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U.S. NATIONAL OCEANOGRAPHIC DATA CENTER

CICAR

BIBLIOGRAPHY ON METEOROLOGY, CLIMATOLOGY, AND PHYSICAL/CHEMICAL OCEANOGRAPHY

VOLUME I

PREPARED UNDER CONTRACT BY THE AMERICAN METEOROLOGICAL SOCIETY

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COOPERATIVE INVESTIGATION OF THE CARIBBEAN AND ADJACENT REGIONS

BIBLIOGRAPHY ON METEOROLOGY, CLIMATOLOGY, AND PHYSICAL/CHEMICAL OCEANOGRAPHY

Volume I

Washington, D.C.
1970

Prepared by the American Meteorological Society under Contract
to the United States National Oceanographic Data Center

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FOREWORD

Plans for the Cooperative Investigation of the Caribbean and Adjacent Regions (CICAR), sponsored by the Intergovernmental Oceanographic Commission, generated the need for the collection of all possible references to the published research of the Caribbean and the Gulf of Mexico.

During CICAR, which will last from 1970 to 1972, the United States will join with other countries in carrying out an extensive oceanographic program in the area.

As part of its contribution to this international cooperative program, the National Oceanographic Data Center (NODC) sponsored the preparation of this bibliography. Volume I, prepared for the NODC by the American Meteorological Society (AMS), contains over 3,000 references (2,000 with abstracts) on physical/chemical oceanography, meteorology, and climatology.

Volumes II and III, the biological and geological-geophysical parts, respectively, are available at NODC in microfilm form and can be borrowed for examination or duplication for periods not exceeding 3 weeks. Over 14,000 references have been gathered. These volumes were prepared under the cosponsorship of NODC and the Gulf Universities Research Corporation (GURC).

INTRODUCTION

This abstracted bibliography has been compiled from the files of the Meteorological and Geoastrophysical Abstracts Office of the American Meteorological Society (AMS) and from files of Government libraries in the Washington, D.C., area. Its purpose is to provide the participants of CICAR with a reasonably comprehensive and timely review of the published literature in physical/chemical oceanography and in meteorology/climatology concerned with the Caribbean Sea, Gulf of Mexico, Greater and Lesser Antilles Regions, and the adjacent coastal areas of North, Central, and South America. Articles dealing with weather phenomena outside of this geographical region, but influencing the atmosphere within the area, have been included occasionally. Similarly, references to oceanographic cruise data taken outside of but close to this area were also sometimes included. Although additional literature appropriate to the scope of this bibliography may exist, it had to be omitted due to the restrictions of time, funds, and personnel.

ACCESSIONS

Citations with abstracts (when available) have been grouped into the broad categories of Meteorology and Oceanography. All references in these two sections appear chronologically by year and have been numbered consecutively. Example:

Section	Range of Consecutive Numbers
METEOROLOGY	1 through 2063
OCEANOGRAPHY	2064 through 3079

The citation provides the user with as much information as could be readily verified, including library locations. The more commonly used libraries are listed below along with their abbreviations in the text. Sometimes the abbreviation is followed by a library call number:

AD	Defense Documentation Center, Springfield, Virginia
DAS (or DWB)	Atmospheric Sciences Library, Silver Spring, Maryland
DLC	Library of Congress, Washington, D.C.
DN-HO	U.S. Naval Oceanographic Office Library, Suitland, Maryland
MGA	Meteorological and Geoastrophysical Abstracts, Washington, D.C.

Credit for the preparation of abstracts follows each abstract as "Author," "Author (mod)," or "Staff," indicating that the author included an acceptable abstract, the author-included abstract required significant modification in length or quality, or the abstract was prepared by the AMS staff.

HOW TO USE THE INDEXES

Three basic indexes have been prepared to assist the user in locating references. They are:

1. Subject Indexes (separate for Meteorology and Oceanography).
2. Geographical Indexes (separate for Meteorology and Oceanography).
3. Author Index (comprehensive).

The Indexes appear at the end of the bibliography. Because of their arrangement, 1. and 2. are preceded by Alphabetical Keys listing subject terms and categories. Users of the Indexes will note after reading the following descriptive material that the procedures for use of the Subject and Geographical Indexes are similar. Researchers should first refer to the Alphabetical Keys to find subject (or place) terms, identify the heading under which the terms are located, and then proceed to the appropriate heading in the Subject or Geographical Indexes. The number assigned to each bibliographic entry is the device through which all references may be located.

EXAMPLE OF SUBJECT INDEX*:

For meteorology, a document dealing with "Clouds Observed in Hurricanes" would be subject-indexed as: Hurricanes:Clouds:Observations.

Within the Meteorology Subject Index, any of the three subject-indexing terms "Hurricanes," "Clouds," or "Observations," could be located according to the Meteorology Alphabetical Key as:

For	See
CLOUDS.	.PROCESSES
HURRICANES.	.THING/ACTIVITY
OBSERVATIONS.	.OPERATIONS

Within the appropriate categories in the Subject Index, the subject-indexing entries are positioned alphabetically in the following manner (with the second and third terms further alphabetically sequenced):

Operations (Page 425)

OBSERVATIONS--Hurricanes:Clouds:Observations,

Processes (Page 446)

CLOUDS--Hurricanes:Clouds:Observations,

Thing/Activity (Page 491)

HURRICANES--Hurricanes:Clouds:Observations,

with the appropriate reference number(s) assigned to each index entry.

In oceanography, a document which deals with "Forecasting of Storm Surges in the Gulf of Mexico" would be subject-indexed as: Gulfs:Storm Surges:Forecasting.

By referring to the Oceanography Alphabetical Key we would find:

For	See
FORECASTING.	OPERATIONS
GULFS.	THING/KINDS
STORM SURGES	PROCESSES

In the Oceanography Subject Index, the indexing entries can be located in the same manner as for meteorology.

The user should note that all indexing terms and alphabetical ordering of entries for these indexes are literal, e.g. "Amino Acids," "Storm Surges," "Chemical Analysis," etc. Also, in some cases, if the third term in some indexing strings was judged obscure during the analysis, it was suppressed (by literary warrant) and will not appear as a subject term within a category. If the user notes that some Meteorology indexing refers to Oceanography citations (numbers 2064-

*A more theoretical description of this indexing style may be obtained from NODC.

3079) and some Oceanography indexing refers to Meteorology citations (1-2063), he will find that the citations deal with both subjects and were indexed accordingly.

EXAMPLE OF GEOGRAPHICAL INDEX:

The Alphabetical Key provides in a single, ordered listing, all entries indexed, including general or special geographical regions and specific locations. Each individual entry refers the user to a heading of the larger regional name under which it is alphabetically arranged in the Geographical Index. Example:

For	See
Curaçao.	NETHERLANDS ANTILLES REGION
NETHERLANDS ANTILLES REGION. .	LESSER ANTILLES
LESSER ANTILLES.	CARIBBEAN SEA

The classed Geographical Index is arranged as an alphabetico-classed system, i.e., by major regions ordered in a pattern of indentions indicating geographic subordination. Geographic subordinate headings are also arranged alphabetically, as are their subordinate geographical units. The arrangement of the Geographical Indexes enables the user to find all specific geographic references in a broad geographical region. Example:

CARIBBEAN SEA (Page 518)

LESSER ANTILLES

LEEWARD ISLANDS REGION

Virgin Islands

St. Croix Island

An overall structural guide to the Geographical Indexes follows. To preclude needless searching, explanatory notes are appended to a few entries to indicate what specific sea or land areas are included under those entries.

TROPICS [General area of the Bibliography]

CARIBBEAN SEA [Including (1) subordinated islands and water features not lying within the boundaries of the two subclasses of the Caribbean Sea listed below; (2) islands not lying within the waters of the countries subordinated to the two regional categories, CENTRAL AMERICAN COAST and SOUTH AMERICAN COAST]

GREATER ANTILLES [Islands proper and surrounding coastal water features]

CUBA REGION
JAMAICA REGION
HISPANIOLA REGION
PUERTO RICO REGION

LESSER ANTILLES [Islands proper and surrounding coastal water features]

LEEWARD ISLANDS REGION
NETHERLANDS ANTILLES REGION
WINDWARD ISLANDS REGION

CENTRAL AMERICAN COAST

BRITISH HONDURAS
COSTA RICA

GUATEMALA
HONDURAS
MEXICO
NICARAGUA
PANAMA

GULF OF MEXICO [Including alphabetical listing of named coastal water features of the North American and Mexican coasts]

NORTH AMERICAN COAST

ALABAMA
FLORIDA
LOUISIANA
MISSISSIPPI
TEXAS

SOUTH AMERICAN COAST

COLOMBIA
VENEZUELA

STRAITS OF FLORIDA

YUCATAN CHANNEL

Author Index

A comprehensive Author Index for Meteorology and Oceanography has been provided in a single alphabetical listing of personal authors. Corporate authors are shown if personal authors were not cited. As an additional retrieval device, wholly anonymous entries have been identified by the name of their source-periodical enclosed in square brackets.

NB It is suggested that users in search of a reference, with subject, place, and author entries known, coordinate the use of the three indexes.

1638

1 Taylor, J. "Newes and strange newes from St. Christophers of a tempestous spirit which is called by the Indians Hurry-Cano or whirlwind." 5 Aug. 1638.

1661

2 Hickeringill, E. "Jamaica viewed: with all the ports, harbours and their several soundings ... with the nature of the climate ..." 2d ed. London, 1661. 87 p. DLC.

1671

3 [Americana Series] "Description of a great sea-storm that happened to some ships in the gulph of Florida, in September last." London, 1671. Photostat reproduction in the Massachusetts Historical Society, no. 234, 1929. DLC.

Written by one of the company and sent to his friend at London. - Staff.

1698

4 Langford, Capt. "Observations of his own experiences upon hurricanes and their prognosticks." Royal Society of London, Philosophical Transactions, no. 20, 1698. 407 p.

1733

5 Robertson, Rev. "Short account of the hurricane that pass'd thro' the English Leeward Caribee Islands, on Saturday the 30th of June 1733." London, 1733. 20 p.

1756

6 Browne, P. "Civil and natural history of Jamaica ... Part III." London, 1756. 503 p. DLC.

Account of climate in general, and its effects upon the human body. - Staff.

1772

7 Knox, H. "Discourse, delivered on the 6th of September, 1772, in the Dutch Church of St. Croix." St. Croix, D. Thibou, 1772.

Description of hurricane occurring on 31 August 1772. - Staff.

1776

8 "Almanach de Saint-Dominique." [Almanac of Santo Domingo.] Nantes, 1776? DLC.

Historic, curious, and useful, for the bisextile year 1776. Eclipses, length of days, phases of the Moon are calculated at the meridian of Cabo Frances. - Staff.

1777

9 Robertson, R. "Physical journal kept on board His Majesty's ship RAINBOW." London, 1777. 196 p. DLC.

Ship's log during three voyages to the coast of Africa, and West Indies, in the years 1772, 1773, and 1774. - Staff.

1781

10 Fowler, J. "General account of the calamities occasioned by the late tremendous hurricanes and earthquakes in the West-

1781 cont.

India Islands." London, J. Stockdale. 1781.

Petitions to and resolutions of the House of Commons in behalf of the sufferers at Jamaica and Barbados. Also a list of the committees appointed to manage the subscriptions of the benevolent public towards their further relief. Collated from authentic papers by Mr. Fowler. - Staff.

1786

11 Perkins, J. "Conjectures concerning wind and waterspouts, tornadoes and hurricanes." American Philosophical Society, Transactions, 2:335-347, 1786. DLC.

1791

12 Atwood, T. "History of the island of Dominica." London, 1791. 285 p. DLC.

Description of its location, extent, climate, mountains, rivers, natural productions, etc. - Staff.

1795

13 Moseley, B. "Treatise on tropical diseases; on military operations; and on the climate of the West Indies." 3rd ed. 1795. 586 p. DLC.

1799

14 Lempriere, W. "Practical observations on the diseases of the army in Jamaica, as they occurred between the years 1792 and 1797." London, 1799. 2 v. tables. DLC.

Location, climate, and diseases of that island. - Staff.

1831

15 "Account of the fatal hurricane, by which Barbados suffered in August 1831." Bridgeton, 1831. 146 p. DLC.

Narrative of the convulsions of the elements which several times have occurred and harmed the West Indian islands, by the editor of the "West Indian." - Staff.

1831

16 Redfield, W.C. "Note on the hurricane of August, 1831." American Journal of Science, 21:191, Oct. 1831. DLC.

Gulf Coast hurricane. - Staff.

1831

17 Redfield, W.C. "Remarks on the prevailing storms of the Atlantic coast of the North American States." American Journal of Science, 20:17-51, 1831. chart. Also his:"Observations of the hurricanes and storms of the West Indies and the Coast of the United States." Ibid., 25:114-121, 1834. Also his: "On the evidence of certain phenomena in tides and meteorology." Ibid., 28:310-318, July 1835. Also editorial: "Redfield's law of storms: notice of Col. Reid's work on hurricanes." Ibid., 35:182-184,

1831 cont.

1838. DLC.

The first and most famous of Redfield's articles on the structure and movement of hurricanes submitted for publication in 1830. A chart shows the paths and area of effective winds of two hurricanes of 1830 which bears a striking resemblance to charts of a century later. Prevailing air flow is super-imposed by means of parallel lines with arrows showing direction of winds in this flow in which the storm is embedded. The twelve points are made which include a controversial theory that these storms originate in the doldrums of trade wind belt between 12° and 20°N, move in a broad curve to the NW until they reach a latitude of about 30° N, and recurve to the NE. Size, speed of winds, rate of movement and progressive expansion in different stages of their life history: duration, depth, forward inclination, calm center, upper cloud and steering movements, frictional and orographic effects; thunderstorm activity, and swells which outrun the storms are treated. Several rules for pilots of ships to follow in evading the worst winds and seas are also presented. The later articles are devoted to presentation and analysis of data on other hurricanes. - Staff.

1833

18 Redfield, W.C. "Observations on the hurricanes and storms of the West Indies and the coast of the United States." In Blunt's American Coast Pilot, 12th ed. 1833. 626 p.

1837

19 Redfield, W.C. "On the gales and hurricanes of the western Atlantic." American Journal of Science, 31:115-130, Jan. 1837. DLC.

1839

20 "Winter in the West Indies and Florida." New York, 1839. 199 p. DLC.

Observations on modes of travel, manners, customs, and climates. Also includes description of St. Croix, Trinidad de Cuba, havana, Key West, and St. Augustine as resort areas. - Staff.

1841

21 Espy, J.P. "Philosophy of storms." Boston: Little, Brown and Co. 1841. 552 p. figs. tables. refs. DLC.

Examination of Reid's, Piddington's, and Loomis' storms (pp. 188-293). In the fifth section (pp. 188-293) of this classic work, the author presents observational material compiled by Redfield, Reid, Piddington and Loomis in their studies of cyclonic storms (hurricanes and typhoons) and evidence from log books, newspapers, etc. to refute the claims of the above

1841 cont.

authors that these storms are rotary. He interprets thermodynamic forces of inflow, upward motion condensation due to expansion, outflow at the top and fall of pressure in the center due to heat added by condensation as well as horizontal divergence at the top, and the effect of the steering current. He also denies the possibility that the storms revolve and uses logical arguments to show that the winds flow straight toward the center of a hurricane (or tornado), while admitting that his other principles would apply even if the storms were rotary. - Staff.

1842

22 Redfield, W.C. "Observations on the storm of Dec. 15, 1839." American Journal of Science, 42:112-119, 1842. figs. table. Also his: "On three several hurricanes of the American seas, and their relation to the northers, so called, of the Gulf of Mexico and the Bay of Honduras, with charts illustrating the same." Ibid., ser. 2, 51:1-16;153-169; 333-367; and 52:162-187, 311-334, 1846. figs. charts. tables. refs. DLC.

Author presents two synoptic charts, one for near sunset, and one for near noon of 15 December 1839, showing winds in New England accompanying a hurricane in relation to concentric lines spaced evenly about the storm center. Winds are seen to incline slightly inward suggesting an occasional eccentric wind field and upward motion in the storm center. Author also presents detailed transcriptions of ships' logs, data on hurricanes and cyclonic storms, tables of ships' and land reports, and 23 3-hourly synoptic wind charts for a 3-day period (for the 3-hourly synoptic wind charts for a 3-day period (for the Cuban Hurricane of 4-7 October 1844 as it moved from the Gulf to Nova Scotia). Pressure profiles for many places and a chart showing tracks of all West Indian and Caribbean hurricanes affecting the Atlantic Coast of the United States during 1804-1842 are also presented. - Staff.

1844

23 "Resumen de los desastres ocurridos en el puerto de la Habana y sus jurisdicciones immediatas, del Departamento Occidental de la isla de Cuba. Días 4 y 5 de octubre de 1844." [Resume of disasters which occurred in the port of Havana and its immediate surroundings in the eastern section of the Island of Cuba. October 4 and 5, 1844.] Havana, 1844? 20 p. DLC

1846

24 Redfield, W.C. "On three several

1846 cont.

hurricanes of the American seas. . ." 1846. For abstract see his "Observations on the storm of Dec. 15, 1839." 1842.

1848

25 Evans, Lt. "Stormy Jack." London Nautical Magazine, 1848. pp. 397, 453, 524.

Chronological list of hurricanes which had occurred in the West Indies since the year 1493, with descriptions. - Staff.

1849

26 Redfield, W.C. "Remarks on a letter from R.N. Shufeldt of the U.S. Ship MARION to E. and G. Blunt." London Nautical Magazine, 1849. p. 39.

Describes a Florida west coast hurricane encounter by ship MARION - Staff.

1850

27 Johnston, A.K. "Chronological table of the principal hurricanes which have occurred in the West Indies, within 150 years." In Physical atlas of natural phenomena, Philadelphia, 1850.

1850

28 Reid, W. "Attempt to develop the law of storms by means of facts, arranged according to place and time; and hence to point out a cause for the variable winds, with the view to practical use in navigation." 3rd ed. London: J. Weale, 1850. 530 p. figs. charts. tables.

A systematic presentation of all the known facts about tropical cyclones. The history of the theory of cyclonic storms from Franklin (ca 1749) to Col. James Capper (1801), Redfield (1831) and the author's own work, comprise the first chapter. Then author analyzes Redfield's Hurricanes (1821 and 1830), the Barbados hurricanes (1831 and 1835), hurricanes of 1837 (5 in succession), the Southern Hemisphere weather (Pacific, Mauritius and India), typhoons of the China Sea and Bay of Bengal hurricanes, hurricanes of 1780, storms in high latitudes and Mediterranean, measurement of wind force, waterspouts and dust devils, tornadoes and rules for navigation during hurricanes, and provides an explanation of swell emanating from storms. The analyses include numerous fold-in charts of the structure and path of the greatest hurricanes, and a composite graph showing the diurnal course of different elements for a 2-week period in 1837. - Staff MGA 71-6.

1851

29 Ogilby, J. "Description and history of the island of Jamaica." Kingston and New York, 1851. 46 p.

An account of Jamaica's soil, climate and products. - Staff.

1854

30 Redfield, W.C. "Cape Verde and Hatteras hurricane, of Aug.-Sept. 1853, with a hurricane chart and notices of various storms in the Atlantic and Pacific Oceans north of the equator." New Haven: B.L. Hamlen, 1854. 32 p. figs. chart. refs.

Reports from more than 100 ships in the North Atlantic are cited and analyzed to show the conditions attending the first hurricane of September 1853. It was traced from Cape Verde to Cape Hatteras and then up toward the Scotland-Iceland region. A chart shows the path of this and numerous other hurricanes of the Atlantic and Caribbean together with conclusions as to the circulation in hurricanes and its causes. Author concludes that dynamic theory needs revision. Staff MGA 71-8.

1855

31 Poey y Aguirre, A. "Chronological table comprising 400 cyclonic hurricanes which have occurred in the West Indies and in the North Atlantic within 362 years, from 1493 to 1855, with a bibliographical list of 450 authors, books, etc. where some interesting accounts may be found, especially on the West Indies and East Indian hurricanes." London:Royal Geographic Society, Journal, 25:291-328, 1855. refs. Review in American Journal of Science, ser. 2, 22:452, 1856. Also translation: "Table chronologique de quatre cents cyclones que ont sevi dans les Indes Occidentales et dans l'Ocean Atlantique Nord pendant un intervalle de 362 annees, depuis 1493 jusqu'en 1855." Paris: Dupont, 1862. 49 p. refs. At head of t-p: Depot des Cartes et Plans de la Marine, no. 348.

Lists hurricane dates, location and references or sources of information. Many were taken from Keith Johnston's atlas listing 127 hurricanes (1493-1847), from Schomburgk's tables and from Redfield's meteorological journal from which author copied additional entries. Comments on storms are foot-noted. - Staff. MGA 71-9.

1855

32 Poey y Aguirre, A. "Sur les tempêtes électriques et la quantité de victimes que la foudre fait annuellement aux États-Unis d'Amérique et à l'île de Cuba." [On electrical storms and the number of victims of lightning annually in the United States and on the island of Cuba.] Société Météorologique de France, Annuaire, tome III, 1855. 15 p.

Discusses on pp. 13-15 some cases of lightning observed on the Island of Cuba from 1831-1954. The information was collected from available newspapers. Tabular

1855 cont.
data reported are: annual distribution of 105 cases of lightning collected in diferent localities in Cuba (1831-1854). - Staff.

1856

33 Humboldt, A.V. "Island of Cuba." New York, 1856. Spanish trans. by J.S. Thrasher. DAS.

Discusses the climate of Cuba in general (pp. 150-173). Among the items discussed are temperature, ice, snow, barometric pressure and hurricanes. Tabular monthly and annual rainfall summaries (1811-1815) are recorded for Havana. Monthly mean of hygrometer records and the number of days of cloudy, clear and partially cloudy skies are given. - Staff.

1856

34 [New Orleans Daily Crescent] "History of Louisiana Hurricanes." 16 Aug. 1856.

1856

35 Sánchez-Layas, E. "Huracán en las Antilles en agosto 1856." [Hurricane in the Antilles in August 1856.] Crónica Naval de Espana, 4:129-155, 257-280, 396-415, 532-546, 1856.

1857

36 Blodget, L. "General winter storms of the United States; including hurricanes, etc." In his: Climatology of the United States ... Philadelphia: Lippincott, 1857. pp. 373-404. charts.

View of the regularity of atmospheric disturbances and the likelihood of their being predictable in any but the most general way. Author doubts if the direction and degree of violence of winds will ever be predictable 2 or 3 hours in advance, however, he thinks it would be of the greatest service to agricultural and shipping interests to have previous telegraphic knowledge of the existence and movement of tropical cyclones. The knowledge of probable rotation of hurricanes is of considerable consequence and value, whether the theory of causation is applicable or not. Author subscribes to J.P. Espy's theory of centripetal action and to the storm energy being proportional to the rate of release of latent heat during condensation and precipitation. Several hurricanes (1853-56) are described in detail, and a chronological list of over 60 hurricanes of the Atlantic and Gulf Coast (1700-1856) with details of their nature and resulting damage, are included. - Staff MGA 71-10.

1857

37 Blodget, L. "List of hurricanes on the coast of the south Atlantic states, and on the north coast of the Gulf of Mexico." In his Climatology of the United States ...

1857 cont.
Philadelphia: Lippincott, 1857. pp. 397-403.

1857

38 Dove, H.W. "Über das Gesetz der Stürme." [On the law of storms.] Berlin: D. Reimer, 1857. 115 p. figs. tables. map. refs. Special reprint from his "Klimatologische Beiträge." [Contributions to Climatology.] Also his:"Law of storms, considered in connection with the ordinary movements of the atmosphere." 2d ed. rev. and enl. trans. by Robert H. Scott. London, 1862. 324 p. Also his: "Loi des tempêtes." [Law of storms.] 2d ed. trans. by A. Le Gras. Paris, 1864. 309 p. Also his: "Gesetz der Stürme." [Law of Storms.] 3rd ed. enl. Berlin, 1866. 346 p.

The first edition of this book was translated into English and published in Meteorological Papers of the Board of Trade. The second edition was revised and enlarged in the English translation by adding data at the request of the author. The book discusses the nature of winds and cyclonic storms, the influence of the earth's rotation, the permanent winds (trades and counter-trades), seasonal winds (monsoons, etc.), "the changeable winds" in the Northern and Southern Hemispheres and variation of meteorological elements in cyclones. Staff MGA 71-11.

1858

39 Sagra, R. de la. "Relación de los trabajos físicos y meteorológicos hechos por Don Andres Poëy, tanto en la Habana como en Europa, destinada para servir de introducción a los futuras tareas del Observatorio Meteorológico de aquella ciudad." [Report on the works of Mr. Andres Poëy in physics and meteorology, in Europe as well as in Havana, intended to serve as guidelines for the future work of the Meteorological Observatory of that city.] Paris, 1858. 40 p.

1861

40 Maury, M.F. "Storms, hurricanes and typhoons." In his "Physical geography of the sea and its meteorology." 8th ed. rev. and enl. New York: Harper, 1861. pp. 414-432. figs. tables. refs.

Author discusses storm frequency at sea throughout the world (based on pilots' reports), typhoons, Mauritius hurricanes, West India hurricanes; the cyclone theory of Redfield, Reid, Thom and Piddington; Espy's theory of ascending motion in storms; Dove's "Law of Rotation"; calculation of wind speed vs. pressure gradient from Bernculli's formula; effects of distance and friction on reducing theoretical wind speed; importance of synoptic network over America, Europe and the Atlantic for

1861 cont.

predicting storms at sea; wind changes in a cyclone depending on location of ship; rainfall in a cyclone depending on speed of its movement and theory that a hurricane is neither a perfect vortex nor a trough with air moving directly in and upward and maintained by latent heat and divergence. Examples are given and a table presented showing the average number of cyclones or hurricanes in different months of the year in the West Indies, Indian Ocean, China Sea, Bay of Bengal and Mauitius region. - Staff MGA 71-12.

1861

41 Poëy y Aguirre, A. "Travaux sur la météorologie, la physique du globe en générale et sur la climatologie de l'île de Cuba et des Antilles." [Works on meteorology, the physical world in general and on the climatology of the Island of Cuba and the Antilles.] 1861. DAS.

First part gives a bibliography of observations and writings on meteorology published in political and scientific journals of Havana and Madrid from 1849 to 1860. Second part is a bibliography of observations and meteorology published in academic collections and scientific publications of Europe from 1854 to 1861. - Staff.

1862

42 Dove, H.W. "Law of storms, considered in connection with the ordinary movements of the atmosphere." 2d ed. rev. and enl. trans. by R.H. Scott, London, 1862. 324 p. For abstract see his "Über das Gesetz der Stürme." [On the law of storms.] 1857.

1862

43 Poëy y Aguirre, A. "Table chronologique de quatre cents cyclones . . ." 1862. For abstract see his "Chronological table comprising 400 cyclonic hurricanes..." 1855.

1863

44 [New Orleans Daily Picayune] "History of Louisiana Hurricanes." 13 and 27 Sept. 1863.

1864

45 Dove, H.W. "Loi des têmpetes." [Law of storms.] 2d ed. trans. by A. Le Gras. Paris, 1864. 309 p. For abstract see his "Über das Gesetz der Stürme." [On the law of storms.] 1857.

1865

46 Gleaner "History of hurricanes. Letter from Plaquemines." New Orleans: Daily Picayune, 16 July 1865.

1866

47 Dove, H.W. "Gesetz der Stürme." [Law of storms.] 3rd ed. enl. Berlin, 1866. 346 p. For abstract see his "Über das

1866 cont.

Gesetz der Stürme." [On the law of storms.] 1857.

1866

48 Poey y Aguirre, A. "Bibliographie cyclonique: catalogue comprenant 1.008 ouvrages, brochures et écrits qui ont paru jusqu'à ce jour sur les ouragans et les tempêtes cycloniques." [Cyclone bibliography: a catalogue of 1,008 works, brochures, and writings which have appeared up to now on hurricanes and cyclonic storms.] 2d ed. corrected and enl. Paris, Dupont, 1866. 96 p. On t-p: "Extrait des Annales Hydrographiques 1865." [Extract from the Annales Hydrographiques 1865.]

In 1855 the author published a catalog of 400 West Indian hurricanes which had occurred since 1493 in the Royal Geographical Society, London, Journal, followed by a bibliography of 44 works on tropical cyclones. This was translated into French and published in 1862. This bibliography contains additions and corrections accumulated over the 10 intervening years, and references to hurricanes, tornadoes and other cyclonic storms. Entries are arranged alphabetically by author and chronologically under the author's name. Bibliographic methods are explained in the Introduction. - Staff MGA 71-13.

1867

49 Cockburn, S. "Report on the River Belize." Belize, B.H., May 1867. 19 p. tables.

Table shows monthly and annual total rainfall amount, summarized by year (1863-1866) for Belize. - Staff.

1867

50 Forshey, C.G. "Storm of October 3, 1867." Galveston News, 4 Oct. 1867.

Hurricane in Gulf of Mexico. - Staff.

1868

51 Eastman, J.R. "Discussion of the West India cyclone of October 29 and 30, 1867." Wash., D.C.: U.S. Naval Observatory, 1868. 17 p. map. DLC.

1868

52 Ernst, A. "Meteorology of Caracas, Venezuela, South America." In Smithsonian Institution, Annual Report 1867, pub. 1868. pp. 473-477. tables. illus. DLC.

1868

53 Moret, J.C. "Storms on the sea coast of Mississippi." New Orleans: De Bow's Review, 38(9):791-796, Sept. 1868.

1870

54 Viñes, B. "Huracanes del 7 y 19 octubre 1870." [Hurricanes of 7 and 19 October 1870.] In Havana. Colegio de Belén, Observatorio Meteorológico, Observaciones

1870 cont.

1869-70, Cuba, 1870. DAS.

1871

55 Ackerman, A. "Register of meteorological observations made at Bois Chêne, near Port-au-Prince, Hayti." American Philosophical Society, Proceedings, 11:499-512, July 1870. Issued Philadelphia 1871.

Early meteorological observations at Rivera Bois Chêne, near Port-au-Prince, are summarized year by year for the period August 1868 thru December 1869. Numerous tables list the following monthly and annual data: precipitation - total, diurnal, nocturnal, number of days with rain, thunder and/or lightning, maximum rainfall with date; temperature - mean, mean maximum and minimum and absolute maximum and minimum; and pressure-mean. - Staff.

1871

56 Bosc. "Cyclone aux Antilles." [Cyclone in the Antilles.] Annales Hydrographiques, ser. 1, 34:403-413, 1871.

1871

57 Havana. Colegio de Belén. Observatorio Meteorológico. "Observaciones correspondientes al mes de octubre de 1870, con la descripción de los huracanos ocurridos en la isla en dicho mes." [Observations made in October 1870 with a description of hurricanes which occurred on the island (of Cuba) in that month.] Havana, Impr. Religiosa, 1871. 18 p.

1872

58 Lapham, I.A. "List of the great storms, hurricanes and tornadoes of the United States (1635-1870)." Philadelphia: Franklin Institute, Journal, 63:210-216, March 1872.

1872

59 Wyman, R.H. ed. "Hurricanes; with nautical directions for avoiding and maneuvering in them." U.S. Hydrographic Office, 1872. 17 p. illus. DLC.

Extracts from the works of C.P. de Kerhallet, captain French navy, and from the "Memoirs on hurricanes etc.," by F.A.L. Keller, hydrographic engineer, French navy.- Staff.

1874

60 Hernandez Poggio, R. "Aclimatación e higiene de los Europeos en Cuba.." [Acclimatization and health of Europeans in Cuba.] Cadiz, 1874. 128 p. DLC.

1874

61 Wall, J.P. "Climate and diseases of the Gulf coast of the Florida peninsula ..." Charleston, 1874. 16 p. DLC.

From Charleston Medical Journal and Review, July 1874. - Staff.

1875

62 Viñes, B. "Apuntes relativos a los

1875 cont.

huracanes de las Antillas en setiembre y octubre de 1875 y 1876." [Notes on West Indian hurricanes of September and October of 1875 and 1876.] 1875. For abstract see his "Investigaciones. . ." [Investigations ...] 1895.

1883

63 Bousicaux. "Cyclone dans la mer des Antilles." [Cyclone in the Caribbean Sea.] Annales Hydrographiques, ser. 2, 5:313-318, 1883. charts. tables.

1883

64 Michaelis, L. "Bemerkungen über die Wind- und Strömungsverhältnisse im Golf von Mexico und die Häfen von Pensacola und Pascagoula." [Wind and current conditions in the Gulf of Mexico and the harbors of Pensacola and Pascagoula.] Annalen der Hydrographie und Maritimen Meteorologie, 11(6):388-390, 1883.

1885

65 [Annales Hydrographiques] "Cyclones dans la mer des Antilles." [Cyclones in the Caribbean Sea.] ser. 1, 7:266-280, 1885.

1885

66 Chase, W.C. et al. "Plan for erecting a health city on the southwest Gulf coast of Florida." Baltimore, 1885. 32 p. DLC.

Papers and letters concerning the climate of Tampa Bay and Point Pinellas. - Staff.

1885

67 Viñes, B. "Practical hints in regard to West Indian hurricanes." 1885. For abstract see his "Investigaciones..." 1895.

1886

68 Bebber, J. van. "Untersuchungen von Elias Loomis über die Form und die Bewegung der Cyklonen." [Research by Elias Loomis on the form and movement of cyclones.] Annalen der Hydrographie und Maritimen Meteorologie, 14(3):89-94, 1886.

Paper on Loomis's "Contributions to Meteorology," [Marine meteorology of the West Indies.] rev. ed., 1885. - Staff.

1887

69 [Annales Hydrographiques] "Mer des Antilles; ouragan du 13 septembre 1876." [Caribbean Sea; hurricane of 13 September 1876.] Its 40:93-98, 1887.

1887

70 Asbeck "Ouragan du 17 août 1886 dans la partie sud de la mer des Antilles." [Hurricane of 17 August 1886 in the south Caribbean Sea.] Annales Hydrographiques, ser. 2, 9:90-102, 1887. charts. tables.

1887

71 Willcox, J. "Fish killed by cold along

1887 cont.

the Gulf of Mexico and Coast of Florida." U.S. Fish Commission, Bulletin, 6:113, 1887.

1888

72 Laboeuf "Cyclone à la Havana." [Cyclone at Havana.] Annales Hydrographiques, ser. 2, 10:536-341, 1888.

1889

73 Brown, D. "Wetter und Strömung bei Barbados." [Weather and current at Barbados.] Annalen der Hydrographie und Maritimen Meteorologie, 17 (6):265, 1889.

1889

74 Ferrel, W. "Popular treatise on the winds." New York:Wiley, 1889. 505 p. figs. tables. refs.

On p. 226-315 of this text is described tropical cyclone theory from a dynamic and thermodynamic point of view. Included is a description of the structure, vertical circulation, temperature distribution, clouds, circulation, frequency, pressure distribution and changes, calms, etc. Mathematical and graphical models are shown and comparisons with observations of actual conditions in several cyclones are tabulated and compared with theory. The St. Thomas Hurricane of 2 August 1837; Manila Typhoon of 5 November 1882; Cienfuegos, 5 September 1882 are given special treatment. Rain and cloud areas, resultant winds and movement, high level winds (Mt. Washington) and the "eye of the storm" are also discussed at some length. - Staff MGA 71-16.

1889

75 Hayden, E. "West Indian hurricanes and the March blizzard, 1888." New York: Forest and Stream Publ.Co., 1889. 39 p.

Lecture delivered before the Seawanhaka Corinthian Yacht Club, New York, 9 February 1889. - Staff.

1890

76 Reid, W. "Meteorological observations made at Sanchez (Samaná Bay), St. Domingo, 1886-1888." London, 1890. DAS.

Entirely tables with explanation. Contains daily observations at specific hours and monthly and annual summaries. - Staff.

1892

77 Ballou, S.M. "Eye of the storm." Pt. 1 American Meteorological Journal, 9(2):67-84, June 1892. Pt. 2, Ibid., 9(3):121-127, July 1892. chart. table. refs. (At head of each article: Papers from the Physical Geography Laboratory of Harvard College, no. 6.)

Presents the nature and cause of 'eye of the storm' at the center of many of the

1892 cont.

most violent tropical hurricanes from accounts from ships' logs, reproductions of barograph traces, tabulated data from 55 cases (1687-1891) on land and sea (as to duration, shift of wind, rate of movement, diameter of eye, place, date and authority), and various attributes of the 'eye'. Theories of Espy, Ferrel and others are examined and the conclusion reached that there is a slight descending motion in the 'eye' caused by centrifugal force in the region of most violent winds. Hurricane centers are not alike - they vary greatly in size, cloudiness, temperature, humidity, pressure, state of sea, etc. Occasionally, sea birds (often mortally injured and exhausted), butterflies and whales are found in the center - an argument against violent upward or downward air motion in the center. - Staff. MGA 71-191.

1893

78 Scherer, J. "Täglicher Gang des Barometers zu Port-au-Prince..." [Daily variation of the barometer at Port-au-Prince ...] Reprint from Vienna Central-Anstalt app. to Annual for 1893. DAS

Mean hourly pressure with daily and monthly summaries at Port-au-Prince are included for the period July 1890-June 1892. The author also compares his observations from 1888-1893 with those of Ackerman from 1865-1869. - Staff.

1894

79 Harris, J.C. "Sea Island hurricanes." Scribner's Magazine, 15(2/3):229-247; 267-284, Feb./Mar. 1894. illus.

Results of an investigation into the situation left on the Sea Islands of the south Atlantic coast of the United States by a hurricane in August 1893 are reported with an urgent appeal for help by the people in distress. A hurricane which affected the Louisiana and Mississippi coasts in October of the same year is also described. The latter hurricane is stated to have claimed a death toll of some 2,000 persons, mostly the aged, the very young and the infirm. Hundreds were found without wounds. "Killed by the sheer pressure and fury of the wind" or "nervous collapse." - Staff MGA 7J-3.

1895

80 Cline, I.M. "Equinoctial storms of Galveston, Texas." American Meteorological Journal, 11:389-390, 1894/95.

1895

81 Harrington, M.W. "Central American rainfall." Philosophical Society of Washington, Bulletin, 13:1-30, March 1895.

1895 cont.

Summarizes for 18 years within the period 1848-1894 precipitation amounts (including means) and monthly and annual 24-hour maximums. - Staff.

1895

82 Harrington, M.W. "Texas monsoons." American Meteorological Journal, 11:41-54, 1894/95.

1895

83 Viñes, B. "Investigaciones relativas a la circulación y traslación ciclonica en los huracanes de las Antillas." [Investigation of the cyclonic circulation and the translatory movement of West Indian hurricanes.] Havana, Imp. del Avisador Comercial, 1895. 79 p. table. refs. DLC. Also English translation by C. Finley, issued as U.S. Weather Bureau, W.B., no. 168, 1898 (special extract from W.B. Bulletin, no. 11, pt. 4). 34 p. table. refs. Also his "Apuntes relativos a los huracanes de las Antillas en setiembre y octubre de 1875 y 1876." [Notes on West Indian hurricanes of September and October of 1875 and 1876.] Havana: E. Iris, 1877. 256 p. map. refs. Also: Translation of his summary of Apuntes...issued by U.S. Hydrographic Office, 1885 as "Practical hints in regard to West Indian hurricanes."

In the 1877 volume, author presents detailed observations of pressure, wind, clouds, rainfall, tides and floods attending the hurricanes of September and October 1875 and 1876 which affected Cuba. Conclusions emphasized in 1895 and 1898 (English) versions are that surface winds converge considerably, low or intermediate clouds follow the classical concentric pattern and the high clouds diverge. - Staff MGA 7I-20.

1897

84 Bigelow, F.H. "Storms, storm tracks and weather forecasting." U.S. Weather Bureau, Bulletin, no. 20, 1897. 87 p. figs. tables. DAS.

Practical handbook for analysis of maps and forecasting storms in the United States on a month-by-month basis. Nature, origin, development, movement and forecasting of West Indian hurricanes is treated under the month of September on pp. 18-21, and under October on pp. 24-25. It is the opinion of the author gained from studying 7 years of weather maps, that hurricanes will recurve up the Atlantic Coast if the blocking High moves out to sea leaving a trough behind, but will continue into the Gulf of Mexico if the High remains persistently on the coast. Author attributes all cyclonic development

1897 cont.

and propagation to movements of anticyclones, which are carried by the general circulation. Staff MGA 71-22.

1897

85 Harrison, J.B. and Williams, J. "Proportions of chlorine and of nitrogen as nitric acid and ammonia in certain tropical rain waters." American Chemical Society, Journal, 19:1-9, 1897. tables.

During the years 1880-1885 determinations of the quantity of nitrogen present in the forms of nitric acid and ammonia were made on samples of rainwater which fell in Barbados, British West Indies, and in other islands of the West Indies. The proportions of combined nitrogen present in the rainwater in the forms of nitric acid and ammonia did not support previous ideas that tropical rainwater contains considerably higher proportions of combined nitrogen than does that of temperate climates. Results are compared with those obtained in New Zealand, Japan, Venezuela, and Reunion. - Staff MGA 12G-33.

1897

86 [Meteorologische Zeitschrift] "Zum Klima von Port-au-Prince." [On the climate of Port-au-Prince.] Its 14:116-119, March 1897. in German.

Summarized mean monthly and annual temperature, precipitation, pressure and wind data for Port-au-Prince based on early observations of Scherer and Ackerman for the periods 1864-1869 and 1888-1895. - Staff.

1898

87 Esconde "Renseignements recueillis sur l'ouragan du 11 septembre 1898 aux Antilles." [Information on the hurricane of 11 September 1898 in the Antilles.] Annales Hydrographiques, ser. 2, 20:65-67, 1898.

1898

88 Hill, R.T. "Climate, flora, and fauna (of Cuba.)" In his "Cuba and Porto Rico with the other islands of the West Indies," 1898. pp. 50-56. DLC.

1898

89 Hill, R.T. "Cuba and Porto Rico with other islands of the West Indies." New York: Century Co., 1898. 429 p. plates. tables. map. DLC.

Gives climatological data of the islands and a description of West Indian waters. - Staff.

1898

90 Hill, R.T. "Island of Porto Rico." In his "Cuba and Porto Rico with the other islands of the West Indies," 1898. pp. 145-153. DLC

1898

91 Hill, R.T. "Island of Santo Domingo." In his "Cuba and Porto Rico with the other islands of the West Indies," 1898. pp. 236-250. DLC.

1898

92 Hill, R.T. "Jamaica." In his "Cuba and Porto Rico with the other islands of the West Indies," 1898. pp. 185-201. DLC.

1898

93 Monte, E.A. del. "Climate of the island of Cuba." 1898. manuscript. DAS.

The first part describes the observatory and instruments used in taking observations. Textual and tabular data are included for various weather elements. The second part deals with West Indian hurricanes. - Staff.

1898

94 Phillips, W.F.R. "Climate of Cuba." U.S. Weather Bureau, Bulletin no. 22, 1898. 23 p. (Publication no. 163) DAS.

Discusses the temperature, rainfall, and some other climatic features of Cuba. Data compiled in tables represent meteorological information available for the island. Temperature and rainfall data are included for New Orleans, Louisiana and Washington, D.C. In addition to these elements, humidity and wind summaries are reported for Havana. Summaries of temperature and rainfall, or of rainfall only, are included for the Mines of San Fernando, Santiago, Matanzas, and Ubajay. - Staff.

1898

95 Scherer, J. "Meteorological Observations at Port-au-Prince, Haiti, January-June, September-October, 1898." Monthly Weather Review, 26, 1898.

Contains daily data with monthly summaries taken at 07 LST(12 GMT) of the following elements: pressure, temperature, dew point, relative humidity, wind velocities, cloud amount, type and direction. For the preceding 24 hrs, total precipitation and maximum and minimum temperature are provided. - Staff.

1898

96 Viñes, B. "Cyclonic circulation and translatory movement of West Indian hurricanes." U.S. Weather Bureau, 1898.

1899

97 Finley, J.P. "Hurricane track charts of the Gulf of Mexico." Boston:Standard Pub. Co., 1899. DNO.

1899

98 Perpina y Pibernat, J. "Circular... sobre el ciclón del glorioso San Ciriaco y compañeros martires, habid en Puerto Rico el día 8 de agosto de 1899."

1899 cont.

[Circular...on the cyclone which occurred in Puerto Rico on 8 August 1899, feast of Saint Cyriacus and martyred companions.] Puerto Rico, 1899. 27 p. DLC.

1900

99 "Album of Galveston the day before and the day after the great storm." For abstract see Lester, P. "Great Galveston disaster..." 1900.

1900

100 American National Red Cross. "Report of Red Cross relief, Galveston, Texas." For abstract see Lester, P. "Great Galveston disaster..." 1900.

1900

101 Cline, I.M. "Special report on the Galveston hurricane of Sept. 8, 1900." For abstract see Garriot, E.G. "West Indian hurricane of Sept. 1-12, 1900." 1900.

1900

102 Coulter, J. "Complete story of the Galveston horror written by the survivors." For abstract see Lester, P. "Great Galveston disaster..." 1900.

1900

103 Garriot, E.G. "West Indian hurricane of Sept. 1-12, 1900." Monthly Weather Review, 28(9):371-377, Sept. 1900. fig. table. Includes, pp. 372-374, Cline, I.M. "Special report on the Galveston hurricane of Sept. 8, 1900."

In terms of life and property losses (6,000 killed, $30 million estimated damage) the hurricane which hit Galveston, Texas, on 8 September 1900 was the worst on record. Cline's account is an eye-witness report by the official in charge of the Weather Bureau Office. Weather Bureau storm warnings are stated to have successfully alerted ships in the area. - Staff MGA 7J-S.

1900

104 Halstead, M. "Galveston: the horrors of a stricken city." For abstract see Lester, P. "Great Galveston disaster..." 1900.

1900

105 Havana. Colegio de Belén. Observatorio. "Observaciones magnéticas y meteorológicas, 1874-80; 1885-89; 1890-95; 1896-1900." [Magnetic and meteorological observations...] 23 v. in 4. DLC.

1900

106 Lester, P. "Great Galveston disaster, containing a full and thrilling account of the most appalling calamity of modern times." Galveston? 1900. 536 p. photos. Also: Coulter, J. "Complete story of the Galveston horror, written by the survivors." Chicago, 1900. 386 p. photos. Also:

1900 cont.

Halstead, M. "Galveston: the horrors of a stricken city." Chicago, 1900. 368 p. photos. Also: Ousley, C. "Galveston in nineteen hundred." Atlanta, Ga., 1900. 346 p. photos. Also: American National Red Cross. "Report of Red Cross relief, Galveston, Texas." Wash., D.C., 1900-1901. 95 p. photos. map. Also: "Album of Galveston the day before and the day after the great storm." Galveston, 1900. 50 p. entirely photographs. Newspaper clippings in pocket. DLC.

Hurricane destruction in Galveston on 8 September 1900 is depicted and shown in photographs. The first three books consist chiefly of accounts by survivors including officials in charge of rescue, welfare, security and other operations. Details of the hurricane, its magnitude and probability of recurrence are also discussed. The fourth volume (Ousley) was published for the benefit of Galveston public schools. - Staff. MGA 7J-6.

1900

107 Ousley, C. "Galveston in nineteen hundred." For abstract see Lester, P. "Great Galveston disaster..." 1900.

1901

108 Alexander, W.H. "Climatology of Antigua, West Indies." Monthly Weather Review, 29(4):165-173, 1901.

1901

109 Jachmann "Cyklon von Galveston am 8. Sept. 1900." [Galveston hurricane of 8 Sept. 1900.] Annalen der Hydrographie und Maritimen Meteorologie, 29(5):218-219, 1901.

1901

110 St. Joseph's Observatory, Belize, British Honduras "Summary of meteorological observations, 1893-November 1901." DAS.

Contains the following data: 8-11 day summaries for October 1894 - January 1895, daily summaries for February 1895 - March 1900 and monthly and annual summaries for Belize, British Honduras. Pressure means, mean maximums and minimums for 1893 - March 1900 and means at 10 and 16 LT for February 1895 - March, 1900; temperature data for February 1895 - March 1900, and means, mean maximums and minimums; dew point temperatures, dry and wet bulb temperatures, and relative humidity, with means for 1893 - March 1900; wind velocities (mph) for 1893 - March 1900; cloud data for 1893 - March 1900, with type and amount; solar radiation data for May 1899 - March 1900 with totals; and precipitation with totals and number of days duration. In addition are monthly and annual precipitation totals, and summaries for 1882-1894 and 1896-1899 for Santa Rita. - Staff.

1901 cont.

1902

111 Alexander, W.H. "Hurricanes: especially those of Puerto Rico and St. Kitts." U.S. Weather Bureau, Bulletin, no. 32, 1902. 79 p. figs. tables. DAS.

Origin and life history of hurricanes are discussed based on convection theory. Hurricanes and their behavior at Puerto Rico and St. Kitts are analyzed and tabulated. - Staff. MGA 7I-26.

1903

112 Alexander, W.H. "Hailstorms in Porto Rico." Monthly Weather Review 31(5):233-234, May 1903. map.

Track of hailstorm of 12 April 1903 shown on map. - Staff MGA D-105.

1903

113 Geographical Society of Baltimore "West Indies - Climate - Hurricanes 1878-1903." DLC.

Map (Scale: 1:11,000,000) of the Caribbean presents hurricane tracks for October and November 1878-1903. - Staff.

1903

114 Hamilton, A. "Few of Hamilton's letters, including his description of the great West Indian hurricane of 1772." New York: Macmillan Co., 1903. 277 p.

1904

115 Bigelow, F.H. "Studies on the circulation of the atmospheres of the sun and of the earth: Results of the nephoscope observations in the West Indies during the years 1899 - 1903." Monthly Weather Review, 32:166-169, 1904. figs.

Results are given in pictorial form and discussed at length. A maximum easterly velocity is seen at the cirrus level. Mean altitudes at which the westward drift reverses is shown, and the winter and summer circulations are shown diagrammatically at each cloud level. - Staff.

1904

116 Bily, J. "Thunderstorms at Tampa, Fla." Monthly Weather Review, 32:457-460, 1904. fig. tables.

Descriptive analyses of thunderstorms at Tampa, Florida. Statistical study of thunderstorm duration and frequency and relations between average monthly rainfall and number of thunderstorms. - Staff MGA H-10.

1904

117 Gutierrez-Lanza, M. "Apuntes históricos acerca del Observatorio del Colegio de Belén, Habana." [Historical notes on the Observatory of the College of Belén, Havana.] Havana, 1904. 178 p. DAS.

Discusses the Observatory at Belén under: 1) description; 2) astronomy,

1904 cont.
magnetism, and meteorology research; 3) recording instruments; 4) library services; and 5) list of observatories and other scientific centers that have exchanged publications with the Observatory. - Staff.

1904
118 Hall, M. "Meteorology of Jamaica." Kingston, 1904. 48 p. tables. DLC.

1905
119 Abbe, C. "Meteorology in Haiti." Monthly Weather Review, 33(2):61, Feb. 1905.
Discussion of a society named "Astronomical and Meteorological Society of Port-au-Prince." - Staff.

1905
120 Drum, W. "Pioneer forecasters of hurricanes." Havana, Observatory of Belén, 1905. 29 p. DLC.

1905
121 Legier, E. "Martinique et la Guadeloupe." [Martinique and Guadeloupe.] Paris, 1905. DNAL.
First chapter contains tabular data for Martinique as follows: seasonal means (dry and cool from November to February; wet and warm from May to October) and annual means of temperature, barometric pressure, state of the hygrometer, rainfall totals (mm) and number of days with rain. The second chapter on Guadeloupe contains monthly and annual means of maximum and minimum temperature; rainfall totals (mm) with number of days with rain; mean temperature (only) for all of the Antilles and Guadeloupe; and monthly and annual rainfall amounts (1873-1880) at Blanchet Morne-à-L'Eau. In addition, a tabular summary (1878-1880) of rainfall variations at 12 stations is shown. - Staff.

1906
122 Talman, C.F. "Climatology of Haiti in the eighteenth century." Monthly Weather Review, 34(2):64-73, Feb. 1906. map. tables.
Author has extracted and translated from French portions relating to the climate contained in the works of M.L.E. Moreau de Saint-Mery, "Description topographique, physique, civil, politique et historique de la partie francaise de l'Île Saint-Dominique Haiti." Philadelphia, 1797. 2 v. Republished in Paris, 1875. A history of meteorological observations up to 1905 is also included. - Staff.

1907
123 Cline, J.L. "Hailstorm at Corpus Christi, Texas." Monthly Weather Review, 35(5):218-219, May 1907.
Description of hailstones. - Staff
MGA D-67.

1907
124 [Monthly Weather Review] "List of hurricanes at Jacksonville, Florida, 1842-1907." Its 35:571, 1907.

1907
125 Serre, P. "Ouragans dans les Antilles; phénomènes qui les accompagnent et manière de les prédire." [Hurricanes in the Antilles; phenomena which accompany them and the way of predicting them.] Annales Hydrographiques, ser. 2, 29:27-30, 1907.

1908
126 Fischer, A. "Hurrikane oder Drehstürme Westindiens." [Hurricanes or cyclones of the West Indies.] Petermanns Mitteilungen, Supplement no. 159, 1908. 70 p. charts. illus. DLC.

1909
127 Bunnemeyer, B. "Report on Texas hurricane of July 21, 1909." Monthly Weather Review, 37:351-353, 1909.

1909
128 Fassig, O.L. "Average annual rainfall of Porto Rico." Monthly Weather Review, 37(11):982-986, Nov. 1909.

1909
129 Scherer, J. "Climat de Port-au-Prince." [Climate of Port-au-Prince.] In Annuaire Statistique de la Ville de Port-au-Prince. 1st ed. 1909. pp. 10-13. tables. in French. DAS.
Describes the average temperature, humidity, pressure, wind, rainfall, thunderstorms and cyclones of Haiti. Tables list mean hourly, daily, monthly and annual data for the period October 1907 to September 1908 at Port-au-Prince. - Staff.

1911
130 Everdingen, E. van. "Drachenbeobachtungen an Bord I. Ms. Panzerschiff DE RUYTER ... während der Fahrt nach Ost-Indien and während des Aufenthalts in W.-Indien, Dez. 1908-Juli 1909." [Kite observations on board Her Majesty's battleship DE RUYTER ... during a voyage to the East Indies and during a sojourn in the West Indies, Dec. 1908 - July 1909.] Netherlands, Meteorologisch Instituut. Mededeelingen en Verhandelingen, 11, 1911. 36 p. DNO.

1911
131 Fassig, O.L. "Climate of Porto Rico." U.S. Weather Bureau, 1911. 12 p.

1911
132 Fassig, O.L. "Normal temperature of Porto Rico." Monthly Weather Review, 39(2): 299-302, Feb. 1911.

1911
133 Fassig, O.L. "Trade winds of Porto Rico." Monthly Weather Review, 39(5):796-799. May 1911.

1911 cont.

134 Theye y Lhoste, C. "Huracán de octubre de 1910." [Hurricane of October 1910.] Havana, 1911. 19 p. DLC.

1912

135 Bunnemeyer, B. "Hurricane of October 11-16, 1912 along southeast coast of Texas." Monthly Weather Review, 40:1549, 1912.

1912

136 Dines, J.S. "Some long periodic fluctuations in the trade winds of the Atlantic." Quarterly Journal Royal Meteorological Society, 38:265, 1912.

1912

137 Dumont, F.T. "Climate of Guadeloupe." Guadeloupe, 1912. 8 p. tables. DAS.

Contains monthly and annual summaries (1892 - 1901) at Camp Jacob, Guadeloupe of: pressure; temperature (°C, °F) at 6, 9, 12, 15, 18, and 21 hr; humidity; and rainfall amounts (year by year), number of days with rain, highest and lowest number of days with rain in a year, and number of days with rain by year. The weather and climate of Guadeloupe are also described. Staff.

1913

138 Fassig, O.L. "Hurricanes of the West Indies." U.S. Weather Bureau, Bulletin, no. 10, 1913. 28 p. plates. tables.

Statistics on hurricane areas, tracks, seasonal variations, frequency, rate of progress, duration, intensity, relation of hurricanes to typhoons and cyclones with respect to monthly and annual frequency (1880 - 1899), signs of approach, and a history of the hurricane of 7 - 20 August 1899 in Puerto Rico and vicinity. Origin of tropical cyclones is discussed, and a table showing latitude and longitude of place of origin and tracks of 134 hurricanes of West Indies with mean paths by months and by years (1876 - 1911); daily movement of 138 hurricanes, and frequency by years (1876 - 1911) of the 3 major types of tropical cyclones are shown. Twenty-five charts of monthly paths of all West Indian hurricanes, their frequency, duration, pressure change (for 10 storms), place of origin, and graphs of hourly observations at San Juan during a hurricane of 8 August 1899; 1 - 5 September 1906; 20 - 24 August 1909 and 6 - 7 September 1910; isohyetal charts for rainfall in Puerto Rico during those storms and a World chart showing tropical storm areas and distribution of pressure and prevailing winds during the hurricane season are included. - Staff.
MGA 7I-28.

1913

139 Lutgens, R. "Vorläufiger Bericht über maritim-meteorologische untersuchungen auf einer Reise nach Westindien." [Preliminary report on maritime-meteorological investigations during a voyage to the West Indies.] Annalen der Hydrographie und Maritimen Meteorologie, 41(2):73-76, 1913.

1913

140 Pickering, W.H. "Year's record with a dew recorder at Mandeville, Jamaica." Royal Meteorological Society, Quarterly Journal, 39(168):326-327, Oct. 1913. table.

A dew recorder, constructed in 1901 by Professor W.H. Pickering, for observations at Jamaica during 1912-1913, was used with satisfactory results. This instrument has a square, blackened iron funnel 60 cm on a side and 10 cm in depth, and was supported in a wooden box at a height of 50 cm above the soil surface. During May 1912 - April 1913 (period of observation), there were only 10 totally cloudy days (7 days in November). Two hundred and ninety-seven nights with dew were observed in this period; the annual amount of dew precipitation was 3.39 cm, mean per night was 0.0116 cm and maximum was 0.040 cm. - Staff MGA 3D-80.

1913

141 U.S. Consul, Puerto Plata, D.R. "Weather conditions in Puerto Plata, Dominican Republic, 1908-1912." Manuscript Report 14 June 1913. 6 p. Previous Report "Weather notes from Puerto Plata, D.R.," 14 Aug. 1909. DAS.

1914

142 Brown, A.H. "Cuban rain record and its application." Royal Meteorological Society, Quarterly Journal, 40(172):295-306, Oct. 1914. Discussion pp. 306-309. figs. tables.

Author found a correlation of -.51 between rainfall of Havana May - October 1914 and of southwest England in following January - March. For a few years, forecasts based on correlation were issued in Symons' Meteorological Magazine. - Staff MGA 2B-11.

1915

143 Cline, I.M. "Tropical hurricane of October 29, 1915." Monthly Weather Review, 45:456-457, 1915.

1915

144 [Monthly Weather Review] "Number of thunderstorms in Galveston, Texas, 1884-1913." Its 46:330, 1915.

1915

145 Topp, R. "Mittlere Tagestemperaturen der Luft und des Wassers sowie das Tagesmittel der relativen Feuchtigkeit und des Luftdruckes während einer Reise nach

1915 cont.

Westindien und zurück." [Mean daily temperatures of air and water as well as relative daily humidity and atmospheric pressure during a voyage to the West Indies and return.] Annalen der Hydrographie und Maritimen Meteorologie, 43(5):204-208, 1915. tables. chart. illus.

1916

146 Ashenberger, A. "Hurricane of July 5-6 at Mobile, Alabama." Monthly Weather Review, 44:402-403, 1916.

1916

147 Cline, I.M. "Tropical hurricane of July 5, 1916 in Louisiana." Monthly Weather Review, 44:403-404, 1916.

1916

148 Hackenbroich, A. "Unperiodische Schwankungen des Luftdrucks und Regens im Tropengebiet des Atlantischen Ozeans." [Non-periodic fluctuations of atmospheric pressure and rain in the tropical Atlantic Ocean.] Annalen der Hydrographie und Maritimen Meteorologie, 44(10):505-519, 1916. tables. illus. refs.

Marine meteorology of the West Indies. Staff.

1916

149 Reed, W.F. "Hurricane of July 5, 1916, at Pensacola, Florida." Monthly Weather Review, 44:400, 1916.

1916

150 Weightman, R.A. "Hurricanes of 1916 and notes on hurricanes of 1912-1915." Monthly Weather Review, 44:686-687. 1916.

1917

151 Cuba. Secretaría de Comercio. "Boletín Oficial de la Propriedad Industrial." [Official bulletin of the patent office.] Annual, 1906.

Meteorological reports are included from 1908 - 1917. - Staff.

1917

152 "Encyclopaedia van Nederlandsch West Indie." [Encyclopedia of the Netherlands West Indies.] Hague and Leiden, 1914-17. DLC.

The section on climate gives a short history of the meteorological observation services and also describes the climate by elements. One table contains mean annual wind distribution by direction (8 pts and calm) and speed (Beaufort scale) at Paramaribo, Curaçao, and St. Eustatius. No period of record is given. Statistics on temperature, rainfall, sunshine and cloudiness are mentioned. - Staff

1917

153 Finch, R.H. "Fish killed by the cold wave of February 2 - 4, 1917 in Florida." Monthly Weather Review,

1917 cont.

45:171-172, 1917.

1917

154 Gutierrez-Lanza, M. "Clima de Cuba." [Climate of Cuba.] In Pan American Scientific Congress, 2d, Wash., D.C., Executive Proceedings, 2:132-172, 1917. DAS.

Introduction gives location and description of the island. A section called "climatological Data" presents a history of observations taken in Cuba beginning in 1796. - Staff.

1917

155 Hall, M. "West Indies hurricanes as observed in Jamaica." Monthly Weather Review, 45(12):578-588, Dec. 1917. figs. tables. refs. eqs.

Author comments on 19 'rules' from Abercromby (1887), with respect to behavior of hurricanes, their structure, resemblance to or difference from extratropical cyclones, effects of rough land masses, tracks, formation of secondaries, high clouds, high temperatures, humidity, rain, thunderstorms in advance of cyclone, pressure, wind gradients, squalls, calm areas, troughs, etc. Application of the 'rules' to hurricanes of 12 August 1915 and 15 August 1916 in Jamaica is discussed. - Staff MGA 7K-12.

1917

156 U.S. Weather Bureau. "Weather code for West Indian and Caribbean Sea observers." 1917. DNO.

1918

157 Antigua. Government Laboratory. "Meteorological register kept at the Government Laboratory, St. John's, Antigua. 1892-95, 1910-18." DAS.

1918

158 Ball, S.C. "Migrations of insects to Rebecca Shoal Lightstation and the Tortugas Islands, with special reference to mosquitos and flies." Carnegie Institution of Washington, Dept. of Marine Biology, Papers, 12(10):193-212, 1918. table. refs. DLC.

To determine whether mosquitos can migrate across the sea for considerable distances, either by own powers of flight or with aid of favorable winds. Conditions and observations at the islands off the southern Florida Keys are reported. Table shows weather conditions in relation to kinds and numbers of insects taken. Conclusions show that certain insects are brought with certain wind directions. - Staff MGA B-75.

1918

159 Brooks, C.E.P. "Meteorology of Belize, British Honduras, 1888-1917,"

1918 cont.

Royal Meteorological Society Quarterly Journal, 44(188):303-306, Oct. 1918.

In general, Belize is healthy except after heavy rains. Table 1 shows averages and extremes at St. Joseph's Observatory (1888 - 1900) of pressure, temperature, relative humidity, cloudiness, wind and rainfall. Table 2 shows averages and extremes at Belize Public Hospital (1894 - 1917). Table 3 shows monthly mean temperature at Public Hospital (1894 - 1905). Table 4 shows monthly rainfall in inches at Public Hospital (1894 - 1917). - Staff MGA 10A-23.

1918

160 Netherlands. Meteorologisch Instituut. "Meteorologische waarnemingen, gedaan op de meteorologische stations in de kolonien Suriname en Curaçao." [Meteorological observations made by the meteorological stations of the colonies of Surinam and Curaçao.] Amsterdam, 1905-18. 14 v. annual. DLC

Superseded by the Institute's "Overzicht der meteorologische waarnemingen verricht op de meteorologische stations in Nederlandsch West-Indie." [Compilation of the meteorological observations made by the meteorological stations of the Netherlands West Indies.] - Staff.

1918

161 Schoenrich, O. "Santo Domingo, a country with a future." New York: The Macmillan Co., 1918. 418 p. DLC.

Chapter 8, pp. 116-131 discusses the topography and climate. Page 129 has a table of summarized data for Santo Domingo City. Monthly and annual data are: temperatures (mean, maximum and minimum), relative humidity (mean), and precipitation (mean amount and mean number of rainy days). - Staff.

1919

162 Cornthwaite, H.G. "Panama thunderstorms." Monthly Weather Review, 47:722-724, 1919. figs. tables.

Shows average number of days with thunderstorms compared with average monthly rainfall at Canal Zone stations. - Staff.

1919

163 Dyke, R.A. "Further notes on the hurricane of August 6, 1918." Monthly Weather Review, 47:419, 1919.

Barograph at Sulphur, Louisiana, was 28.20 in. - Staff.

1919

164 Fassig, O.L. "Work of the U.S. Weather Bureau in the West Indies." Monthly Weather Review, 47:850, 1919.

1919

165 García y Carbonell, L. "Huracán del 9 al 10 septiembre de 1919." [Hurricane of September 9-10, 1919.] DAS.

Hurricane in Cuba (1919) is discussed. The first phase of the hurricane (2-7 September), the second phase in which the cyclonic disturbance is developed with greater energy, the effects of the storm, the trajectory of the storm, and other general considerations are reviewed. - Staff.

1919

166 Grogan, S.A. "Hot winds in Tampico, Mexico, April 6 and 7, 1919." Monthly Weather Review, 47:234, 1919. table.

Description of a hot, dry, southwesterly wind which raised the temperature to a maximum (99°F.) for April 1919. Records of meteorological elements are given and the causes of this fohn-like phenomenon are considered. - Staff MGA 2G-101.

1919

167 Grogan, S.A. "Northers on the east coast of Mexico, their effects and forecast by local observations." Monthly Weather Review, 47:468-471, 1919.

Disasters caused by strong northers are cited. Detailed investigations of this phenomenon and synoptic situations were carried out and a method of forecasting evolved. - Staff MGA 2G-100.

1919

168 Heckathorn, C.E. "Land and sea breezes in the vicinity of Corpus Christi, Texas." Monthly Weather Review, 47:413-415, 1919.

1919

169 Stuart, B.C. "Early Texas coast storms." Monthly Weather Review, 47:641-642. 1919.

1920

170 Pickering, W.H. "Relation of prolonged tropical droughts to sunspots." Monthly Weather Review, 48:589-592, 1920.

Drought in Jamaica is defined as a deficiency of rainfall lasting at least 10 months and exceeding 12 in. From 1873 to 1920 there were 12 droughts, of which 5 followed sunspot maxima (mean duration 1.7 yr, lag at end of drought 2.3 ± 0.5 yr). Four followed spot minima (duration 1.1 yr, lag at end 1.4 ± 0.3 yr) and 3 were independent of sunspots. Relation was significant for prediction. - Staff MGA 2B-22.

1921

171 Brooks, C.E.P. "Rainfall of San Domingo." Meteorological Magazine, 56:73-74, April 1921.

Records from rain gages installed by

1921 cont.
General Manager, W.A. Elders, of Samana and Santiago Railway in 1913. Map shows locations of stations. - Staff. MGA 10A-45.

1921
172 Day, W.P. "Summary of the hurricanes 1919, 1920, 1921." Monthly Weather Review, 49:658-659, 1921.

1921
173 Tannehill, I.R. "Wind velocities and rain frequencies on the south Texas coast." Monthly Weather Review, 49:498-499, 1921.

1921
174 Welsh, M.M., "Bibliography on the climate of South America." Monthly Weather Review, Supplement no. 18, pp. 1-42, 1921.

1922
175 Bowie, E.H. "Formation and movement of West Indian hurricanes." American Meteorological Society, Bulletin, 3(6): 95-96, July-Aug., 1922.

Discussion on local superheating and the counter-current theory, the latter of which is favored by the author. Cyclones do not move with the general winds of the region but may well be governed by the general wind system at intermediate heights. - Staff MGA 7K-13.

1922
176 Brooks, C.E.P. "Rainfall of Venezuela." Royal Meteorological Society, Quarterly Journal, 48:69-71, Jan. 1922.

In spite of scant information (17 stations in 1920), the following tables are shown: Rainfall (1920) with summary in percent and normal rainfall in Venezuela and Trinidad (Caracas - 27 yr, El Perú - 9 yr, Port of Spain - 58 yr). - Staff MGA 10A-53.

1922
177 Chandler, H. "Origin and nature of a tropical hurricane, with special reference to the question of limit of time occurrence and height of possible flood at the port of Galveston, Texas." Dallas, 1922. 68 p. DLC.

1922
178 Day, W.P. "Disturbances in southern waters during the hurricane season." Monthly Weather Review, 50:657, 1922.

1922
179 Kloster, W. "Bewölkungs-, Niederschlags- und Gewitterverhältnisse der Westindischen Gewässer und dem angrenzenden Land." [Cloud, precipitation, and thunderstorm conditions of West Indian waters and the adjacent land area.] Archiv der Deutschen Seewarte, 40(1), 1922.

Discusses clouds, precipitation, and thunderstorm conditions in the West Indian region. Tabular summaries over periods that vary by station and element are

1922 cont.
reported for ocean areas and selected stations in this area. - Staff.

1922
180 McAuliffe, J.P. "Cause of the accelerated sea breeze over Corpus Christi, Texas." Monthly Weather Review, 50:581-582, 1922.

1922
181 Newnham, E.V. "Hurricanes and tropical revolving storms." Gt. Brit. Meteorological Office, Geophysical Memoirs, no. 19, 1922.

1923
182 Brooks, C.E.P. "Meteorological observations at El Perú, Venezuela." Royal Meteorological Society, Quarterly Journal, 49:229-230, Oct. 1923.

Observations taken at El Perú in the Orinoco Valley since 1910. Pressure, temperature, relative humidity, cloudiness, and rainfall are tabulated. - Staff MGA 10A-55.

1923
183 Hernández, J. "The Temperature of Mexico." Monthly Weather Review, Supplement no. 23, 1923. figs. tables.

Hourly means for Mexico City. For the whole country, partly including the United States, there are many maps showing temperature change from month to month and vertical lapse rates. Values are reduced to 10 years. - Staff.

1923
184 McAuliffe, J.P. "Forecasting rain on the west Texas coast." Monthly Weather Review, 51:400-401, 1923.

1923
185 McAuliffe, J.P. "Waterspouts near Corpus Christi, Texas." Monthly Weather Review, 51:402, 1923.

1923
186 Reed, W.W. "Climatological data for Central America." Monthly Weather Review, 51:133-141, 1923. tables.

Describes the climate of central America and contains monthly and annual data which varies by elements and stations for periods of at least 5 years. Temperature (mean maximum and minimum), precipitation (absolute maximum and minimum), relative humidity (mean), clouds (mean amount), and winds (prevailing direction) are included. - Staff.

1923
187 Ward, R. DeC. "Cold waves, northers and blizzards in the United States." Scientific Monthly, 16(5):449-470, May 1923. figs. refs.

On p. 466-468 the chapter entitled 'The Texas Norther' gives general description and theoretical explanation of this

1923 cont.

cold wind which causes a rapid drop of temperature. It is recognized as a local designation of cold wave phenomena and is associated with north-south gradients from the cold northern interior to the warm Gulf of Mexico. When this condition is intensified by the presence of an especially marked cold wave, an anticyclone over the northern plains or a cyclonic storm crossing the western Gulf region, the north winds may come down from the plateaus with great velocity. - Staff MGA 2G-115.

1924

188 Dyke, R.A. "Heavy hailstorms and local squalls at New Orleans with a summary of the previous records of hail." Monthly Weather Review, 52:205, 1924.

1924

189 McAuliffe, J.P. "Severe hailstorm at Corpus Christi." Monthly Weather Review, 52:205, 1924.

1924

190 Mitchell, C.L. "West Indian hurricanes and other tropical cyclones of the north Atlantic Ocean." Monthly Weather Review, Supplement no. 24, 1924. 47 p.

1924

191 Woodring, W.P., Brown, J.S. and Burbank, W.S. "Geology of the Republic of Haiti." Port-au-Prince, Dept. of Public Works, 1924. DLC.

Contains a discussion of the climate (temperature, precipitation, relative humidity, wind and sources of data) on pp. 36-56. The principal sources are the 'Bulletins' of the Observatoire Météorologique, Séminaire-Collège, St.-Martial up to the year 1919. Tables show: temperature (mean monthly and annual) for each year and over the period 1909 - 1919 for 9 stations and precipitation (mean monthly and annual) for 1903 - 1919. Mean monthly and annual precipitation at 33-37 locations, mean hourly humidity at Port-au-Prince (1910), and early colonial records of annual rainfall at 9 locations are included (after L.E. Moreau de St.-Mery, 1797 - 1798). - Staff.

1925

192 Fassig, O.L. "Rainfall and temperature of Cuba." Tropical Plant Research Foundation, Washington, Bulletin, no. 1, 1925. 32 p. DAS.

Following a brief introduction is a map of Cuba showing the location of Cuban stations with normal rainfall amounts. Tabular monthly and annual rainfall and temperature summaries are included for regions (mean of 9 stations for 6 provinces in Cuba) and 10 - 19 stations. Rainfall

1925 cont.

summaries are presented graphically for Havana and also for the 6 provinces of Cuba. - Staff.

1925

193 Georgii, W. and Seilkopf, H. "Results of an aerological expedition to Colombia." Archiv der Deutschen Seewarte, 1925, no. 3. 60 p. (translation) DNO.

Aerology of the Caribbean Sea. - Staff.

1925

194 Metzgen, M.S. and Cain, H.E.C. "Handbook of British Honduras; comprising historical statistical and general information concerning the colony." London, 1925. 461 p. tables. photos. DLC.

Tables found on pp. 120 - 121 contain data for Belize, Honduras (1910 - 1923). Tables give annual temperature (maximum and minimum), relative humidity (highest and lowest), winds (maximum speed and prevailing direction) and precipitation (total amount). - Staff.

1925

195 Steilkopf-Stuene "Ergebnisse von Höhenwindmessungen auf dem nord-atlantischen Ozean und im Golf von Mexico, Feb. bis Mai 1923." [Results of upper wind measurements in the North Atlantic Ocean and in the Gulf of Mexico, Feb. to May 1923.] Archiv der Deutschen Seewarte, v. 43, 1925.

1925

196 Tannehill, I.R. "Sunspots and the weather at Galveston." Monthly Weather Review, 53:221-222, 1925.

1925

197 U.S. Weather Bureau. "Normal monthly and annual rainfall in the Caribbean region." In its Climatological report: West Indies. July, 1925. DAS.

Contains tabular monthly and annual rainfall amounts for selected stations and areas in the Caribbean region. - Staff.

1926

198 Allee, W.C. "Measurement of environmental factors in the tropical rain-forest of Panama." Ecology, 7:273-302, 1926. figs. tables. refs.

Based on meteorological observations on an island in the Gatun Lake January - March 1924. Detailed analysis of meteorological elements, including their vertical lapse-rates. - Staff.

1926

199 Cline, I.M. "Tropical cyclones." New York: The Macmillan Co., 1926. 301 p. figs. plates. tables. refs.

Based on 25 years of uniform specialized observations on the Gulf of Mexico coast and in South Atlantic States (1900 - 1924). Author experienced several major storms and

1926 cont.

was chief forecaster for the southern United States and gulf during this period. Previous studies and theories, climatic characteristics of hurricane belt, hourly changes in wind, precipitation and clouds in cyclone movements and changes, methods of charting, case histories of 19 tropical cyclones (1900 - 1922), analysis of wind and precipitation in 4 large hurricanes and 4 small ones, irregular movements, stagnant cyclones, cloud movements in 6 large, 6 small and in stationary cyclones; temperatures in 3 types of cyclones; steering currents, winds, orographic influences, precipitation distribution, redevelopment, etc. are reviewed. Author concludes that tropical cyclones propagate into areas of heaviest precipitation and strongest convective activity and in direction of cirrus movement, which is not radial or does not spiral outward. - Staff MGA 7I-37.

1926

200 Dyke, R.A. "Tropical storm of August 25-26, 1926 in southern Louisiana." Monthly Weather Review, 54:369-370, 1926.

1926

201 Fassig, O.L. "Rainfall in the Caribbean region." Association of American Geographers, Annals, 16:35, March 1926.

1926

202 Reardon, L.F. "Florida hurricane and disaster." Miami, 1926. 112 p. DLC.

1926

203 Reed, W.W. "Climatological data for the West Indian islands." Monthly Weather Review, 54:133-160, 1926.

General conditions, influence of topography on climate, chief features of climate and climatic conditions in several West Indies islands or groups of islands are discussed. Tabular summaries over periods that vary by station and element are reported for selected stations. - Staff.

1926

204 Reese, J.H. "Florida's great hurricane." Miami, 1926. 93 p. figs. photos. table. DAS.

Account of the passage of a destructive hurricane through Miami, Florida on 17 - 18 September 1926. Details of meteorological development, damage to various structures, experiences of individuals and relief and rehabilitation measures are given. - Staff MGA 7J-16.

1927

205 Brooks, C.E.P. "Mean cloudiness over the Earth." Royal Meteorological Society, Memoirs, 1:127-138, 1927.

Based on data from ships' logs and 1000 land stations. Maps and tables give

1927 cont.

statistics and show Southern Hemisphere to be cloudier than Northern Hemisphere with annual variation greater over land than sea. - Staff.

1927

206 Chapel, L.T. "Winds and storms on the Isthmus of Panama." Monthly Weather Review, 55:519-530, 1927. figs. tables.

Air movements and wind systems at the Isthmus including a wide variety of winds and storms of the Tropics. Tabulated and graphed data include 19 years of records from Colon (1908 - 1926) of air and water temperatures, wind frequency and storms (such as Northers) and 30 hurricanes. Relation between southerly winds and genesis of hurricanes is demonstrated. - Staff MGA 7K-25.

1927

207 Cuba. Secretaría de Obras Públicas. "Memoiria de los trabajos efectuados con motivo del ultimo ciclón que azotó la isla el 20 de octubre de 1926." [Memorandum of public works carried out as a result of the last cyclone which lashed the island on October 20, 1926.] Havana, 1927. 154 p. plates. tables. map. DLC.

1927

208 Santo Domingo. Servicio Meteorológico. "Resumen observaciones, 1910 - 1927." [Observations summary, 1910 - 1927.] DAS.

Summary of diurnal data (1920 - 1927), monthly data (1926 - November 1927) and monthly and annual data (1910 - 1917). - Staff.

1927

209 Theaman, J.R. "Precipitation and temperature of Cuba." West Indies Climatological Paper, no. 34, 1927. DAS.

General description of precipitation, variation of rainfall and temperature of Cuba. The following data for Cuba was recorded: 1) mean precipitation (42 stations), 2) mean and mean extreme temperatures (10 stations), 3) annual distribution of precipitation, 4) annual distribution of mean temperature, 5) direction and steadiness of the wind for a year, 6) mean monthly and annual precipitation amounts (41 stations) and 7) average mean monthly temperature of coldest and hottest months (21 stations). - Staff.

1928

210 Balcom, H.G. et al. "Final report of the Committee of the Structural Division on Florida hurricane." American Society of Civil Engineers, Proceedings, pt. 1, 54(6):1757-1765, Aug. 1928. figs. Also: Bangs, N.H. "Effect of the 1926 Florida hurricane upon engineer designed buildings."

1928 cont.

American Meteorological Society, Bulletin, 10(2):46-47, Feb. 1929.

Damage caused by the Florida hurricane of 17 - 18 September 1926, especially to two buildings (Meyer-Kiser Building and Realty Board Building) is described with diagrams of the structures involved. Structural causes of failure are discussed. Some evidence appeared to suggest the occurrence of wind pressures over 50 and as high as 65 lb per sq ft, but "all the tall buildings consistently designed for a wind load of 20 lb per sq ft survived without serious damage." - Staff MGA 7J-19.

1928

211 Fassig, O.L. "Climate of Porto Rico." Puerto Rico Journal of Public Health and Tropical Medicine, 4(4):199-211, 1928.

1928

212 Fassig, O.L. "Rainfall in the West Indies and Caribbean region." American Meteorological Society, Bulletin, 9:43, Feb. 1928.

1928

213 Fassig, O.L. "San Felipe; the hurricane of September 13, 1928, at San Juan, P.R." Monthly Weather Review, 56:350-352, 1928.

1928

214 Foscue, E.J. "Rainfall of Cuba." Monthly Weather Review, 56:173-176, 1928.

1928

215 Knoch, K. and Lohr, A. "Ergebnisse von Höhenwindmessungen auf dem nordatlantischen Ozean und dem Karibischen Meer im April und Mai 1927." [Results of upper wind measurements on the North Atlantic Ocean and the Caribbean Sea in April and May, 1927.] Archiv der Deutschen Seewarte, v. 46, no. 2, 1928.

1928

216 Kuhlbrodt, E. "Das Strömungssystem der Luft über dem tropischen Atlantischen Ozean nach den Höhenwindmessungen der 'Meteor'-Expedition." [The air flow system above the tropical Atlantic Ocean as determined by the upper wind measurements of the 'Meteor' expedition.] Zeitschrift für Geophysik 4:385-386.

1928

217 Millas, J.C. "Ensayo sobre las huracanes de las Antillas." [Essay on Caribbean hurricanes.] Havana. Academia de Ciencias Médicas, Físicas y Naturales, Anales, 1928.

1928

218 Millas, J.C. "Huracán de la Habana de 1926." [Hurricane at Havana 1926.] Cuba. Secretaria de Guerra y Marina, 1903, Boletin Hidrografico, no. 45:52, 1928.

1928 cont.

Discusses the weather of the area preceding and during the hurricane which struck Havana (1926). Observations made by different individuals at various localities are given. Other items discussed are: 1) the beginning of the hurricane, 2) some of the previous signs accepted as outstanding in the study of hurricanes, 3) the study of the hurricane that struck the capital including notes given to the press, some telegrams relating to this hurricane and information received on the hurricane. - Staff.

1928

219 Netherlands Antilles. Departement van den Landbouw in Suriname. "Meteorologische wearnemingen, Suriname en Curaçao." [Meteorological observations, Surinam and Curaçao.] Amsterdam, 1905 - 18; 1925 - 28. DAS.

Contains monthly and annual rainfall totals at Curaçao (10 - 13 stations), St. Martin (Philipsburg), Saba, Bonaire (Kralendyk and Rincon) and Aruba (Oranjestad). Also included for Curaçao (Willemstad) and St. Eustatius (Oranjestad) are daily (at specified observatories) and monthly means of pressure (mm), relative humidity (percent), wind speed (Bft 0 - 12) and prevailing direction (16 pts), cloud amount (0 - 10) and precipitation (mm). - Staff.

1928

220 Puerto Rico. Central Survey Committee. "Porto Rico hurricane. Report ... " Wash., D.C., 1928. 14 p. DLC.

Reviews losses arising from hurricane of 13 September 1928. - Staff.

1928

221 Reed, W.W. "Climatological data for northern and western tropical South America." Monthly Weather Review, Supplement no. 31, 1928.

1928

222 Sifontes, E. "Lluvia en Venezuela, año de 1925 y 1926." [Rainfall in Venezuela in 1925 and 1926.] Caracas, 1928. 16 p. DLC.

1928

223 Tannehill, I.R. "Severe cold waves on the Texas coast." Monthly Weather Review, 56:41-46, 1928.

1929

224 American National Red Cross. "West Indies hurricane disaster, September, 1928." Wash., D.C., 1929. 92 p. maps. DLC.

Official report of relief work in Porto Rico, the Virgin Islands and Florida. Staff.

1929

225 Ashenberger, A. "Waterspout in

1929 cont.

Mobile Bay, July 27, 1929." Monthly Weather Review, 57:296-297, 1929.

1929

226 Bangs, N.H. "Effect of the 1926 Florida hurricane upon engineer designed buildings." American Meteorological Society, Bulletin, 10:46-47, Feb. 1929. For abstract see Balcom, H.G. et al. "Final report of the Committee of the Structural Division on Florida hurricane." 1928.

1929

227 Dyke, R.A. "Nocturnal temperature inversions near the Gulf Coast." Monthly Weather Review, 57:500-502, 1929. tables. refs.

Differences in temperature between the New Orleans Weather Bureau Office and other locations in and around New Orleans. Anticyclonic conditions favorable for nocturnal inversions or frost are analyzed according to sky and wind conditions. Comparisons are made with inversion data from kite station at Groesbeck, Texas, and Houston station and Floyd Young's data for Medford, Oregon. Staff MGA 7F-20.

1929

228 Fassig, O.L. "On the frequency of hurricanes in the vicinity of Porto Rico." Puerto Rico Journal of Public Health and Tropical Medicine, 5(2):106-113, 1929.

1929

229 Fassig, O.L. "Tentative chart of annual rainfall over the islands of Haiti-Santo Domingo." Monthly Weather Review, 57:296, 1929.

1929

230 Henry, A.J. "Frequency of tropical cyclones (West Indian hurricanes) that closely approach or enter continental United States." Monthly Weather Review, 57:328-332, 1929.

1929

231 Hurd, W.E. "Norther of the Central American Region." Verso of Pilot Chart, Central American Waters Feb. 1929, no. 3500. U.S. Hydrographic Office, 1929. DNO.

1929

232 Molengraaf, G.J.H. "Geologie en geohydrologie van der eiland Curaçao." [Geology and hydrology of the island of Curaçao.] Delft, 1929. DLC.

Chapter I, Part 2 contains: monthly and annual mean rainfall totals (mm), mean maximum and minimum totals, mean seasonal (dry: February - September; wet, October - January) amount and mean departure from normal (mm and percent), mean annual, monthly and seasonal (wet and dry) number of days with rain maximum and minimum with dates, rain intensity (mm), monthly frequency

1929 cont.

of occurrence (percent) of rainfall during 24 hrs (0 - 1, 1 - 5, 5 - 10, greater than 10 mm). Monthly (rainy season: October - January)rainfall intensity (1921 - 1923, 1924 - 1925, 1926 - 1927), monthly (October-January) totals at 5 mm intervals (0 - 1, 1 - 5, etc., to 70 - 75, 185 - 190 mm) for several years (1921 - 1923; 1924 - 1925; 1920 - 1927) and dates with rainfall intensities and amounts for same periods are included, as well as monthly mean number of days with evaporation with maximum and minimum amounts and year of occurrence. Staff.

1929

233 Roberts, E.K. "Hurricane (el huracán de San Felipe, Porto Rico), September 13, 1928." San Juan, P.R., 1929. 77 p. DLC.

Articles reprinted from the New York Herald Tribune, Review of Reviews, Current History and Spanish translations from El Mundo. - Staff.

1929

234 Sifontes, E. "Venezuela meteorológica." [Meteorology in Venezuela.] Caracas, 1929. 98 p. DAS.

Brief remarks on modern methods in meteorology as practiced in Venezuela. Staff.

1929

235 Theaman, J.R. "Climatology of Martinique." West Indies (?), Climatological Paper, no. 2. Indianapolis, 1929. 5 p. DAS.

Monthly and annual rainfall summaries (1921 - 1928) at Bassepoint, François, Marin, Petit Bourg, Robert, Vauclin, Diamant, Marigot, Bassegnac, Galion, Morne Cadets, St. Pierre and Fort-de-France (20 years of record). The climate is briefly discussed and a small table for the entire island of Martinique (combination of 20 stations) contains mean monthly and annual rainfall amounts. A station location list is in the back.
Staff.

1930

236 Bliss, E.W. "Study of rainfall in the West Indies." Royal Meteorological Society, Quarterly Journal, 56(233):67-72, Jan. 1930. Note by C.E.P. Brooks pp. 178-179. fig. tables.

Regression equation for rainfall of eastern islands of West Indies June - December is based on preceding pressure in Central Siberia, Azores and Charleston and temperature of St. Vincent. With a multiple correlation coefficient of 0.69, Brooks traced cause of relation to transmission of temperature variations along North Equatorial Current (increase of surface temperature

1930 cont.

increases June - December rainfall by 6 in). Staff
MGA 2B-133.

1930

237 Day, P.C. and Stone, R.G. "Climate of Puerto Rico. Tables, 1899 - 1930." DAS.

Contains temperature, precipitation, evaporation, wind movement and cloudiness data in manuscript form. - Staff.

1930

238 Fassig, O.L. "On the average monthly and annual rainfall of Porto Rico." Puerto Rico Journal of Public Health and Tropical Medicine, 5(3):322-343, 1930.

1930

239 Fassig, O.L. "On the frequency of hurricanes in the vicinity of Puerto Rico." Monthly Weather Review, 58 (8):326-327, Aug. 1930. tables.

List of 44 hurricanes (1515 - 1899) and data from United States Weather Bureau (USWB) storm warning stations from 1898 - 1930. Analysis presented in tables covers: 1) storm frequencies by months, 2) distribution by centuries and 3) list of 20 hurricanes (1899 - 1926) classified according to wind force and area of action. Probably 1 severe, 6 moderately severe, and 12 harmless hurricanes will appear in Puerto Rico in the next generation. - Staff MGA 7K-27.

1931

240 Antigua. Government Laboratory. "Meteorological observation. Return of rainfall, 1908, 1910-26, 1928-31." DAS.

Distributed by Meteorological Office, London. - Staff.

1931

241 Jamaica. Government Meteorologist. "Jamaica rainfall, 1928, 1930." Kingston, 1929-31. 2 v. DLC.

1931

242 Köppen, W. and Geiger, R. "Handbuch der Klimatologia." [Handbook of Climatology.] v. 2 pt. G, K. Knoch, "Klimakunde von Sudamerika." [Climatology of South America.] 1930. pt. H, 2 K. Sapper, "Klimakunde von Mittelamerika." [Climatology of Central America.] 1932. pt. I, 2 R. de C. Ward and C.F. Brooks, "Climatology of the West Indies." 1934. pt. J, 2 R. de C. Ward and C.F. Brooks, "The Climates of North America." 1936. v. 4 pt. T, 2 G.Schott, "Klimakunde der Südseeinseln." [Climatology of the Pacific Islands.] 1938. pt. R, 2 G. Braak, "Klimakunde von Hinterindien und Insulinde." [Climatology of Farther India and the Malayan Archipelago.] 1931. pt. S, 2 G. Taylor, "Climatology of Australia." 1932.

1931 cont.

243 McDonald, W.F. "Weather conditions affecting the port of New Orleans." Monthly Weather Review, 59:232-233, 1931.

1931

244 McAuliffe, J.P. "Flying weather in the Corpus Christi area." Monthly Weather Review, 59:188-189, 1931.

1931

245 Sifontes, E. "Baja del barómetro y los ciclones Antillanos." [Falling barometer and Caribbean cyclones.] Caraças, Venezuela, El Universal, 27 Oct. 1931. 1 sheet. DAS.

1931

246 Skeete, C.C. "Barbados Rainfall." Pamphlet Department of Science Barbados, no. 9, 5.

1932

247 Hennessy, J. "Hurricanes of the West Indies and north Atlantic." Marine Observer, 9(103):134-136, 1932.

Contains intensity and extent of storms; their frequency, region, origin, track and rate of progression. Some precursory signs of approaching hurricanes are also discussed. Staff.

1932

248 Jamaica. Government Meteorologist. "Meteorological observations, Jamaica, 1929, 1931." Kingston, 1930 - 32. 2 v. DLC.

1932

249 McGregor, A.H. "Hurricanes of the Carribean Sea, Gulf of Mexico, Yucatan Channel and portion of the Atlantic Ocean 1900 - 32." Map Div. DLC.

Map of the West Indies, Bahamas and southeastern United States (Scale 1: 11,000,000) and presents monthly (June - November, 1900 - 1932) hurricane tracks with wind intensities greater than 60 mph. Also included is a frequency table of hurricanes by months for the same period. - Staff.

1932

250 Mitchell, C.L. "West Indian hurricanes and other tropical cyclones of the north Atlantic Ocean." Monthly Weather Review, 60:253, 1932.

Tropical cyclone tracks are shown in 4 charts (1924 - 1932). Number of tropical storms (1887 - 1932) is given. - Staff.

1932

251 Revert, E. "Rainfall irregularity, consequence, forests." Bulletin Agricole de Martinique, no. 6, p. 131, June 1932.

People in Martinique believe that the climate is getting dryer since European colonization because of deforesting and clearing of the land, but this is shown to be incorrect. The variation of the rainfall on the several islands is partly controlled

1932 cont.

by the North Equatorial Current which generally just touches Dominica and brings in a large amount of warm water which gives that island a larger amount of rainfall. As the trade winds vary, so do the current and the climate. Wind from the north causes rain on Dominica, and wind from the south causes rain on Martinique. During winter, winds frequently blow from the south in Martinique. When there is maximum rainfall in Martinique, there is a minimum in Dominica; when there is a minimum in Martinique, there is a maximum in Dominica. - Author(mod).

1932

252 Weightman, R.A. "Tropical storm of August 12 - 14, 1932, in the Gulf of Mexico." Monthly Weather Review, 60:177, 1932.

1932

253 Weightman, R.A., Mitchell, C.L. and Hartwell, F.E. "West Indian hurricanes of August and September 1932." Monthly Weather Review, 60:177-179, 1932.

Hurricane occurred 12 - 14 August in the middle of the Gulf of Mexico and its increase in intensity was phenomenally rapid. A description of this disturbance as well as of others 25 - 31 August (Puerto Rico), 30 August - 15 September (Virgin Islands), 9 - 10 September (southwestern Gulf of Mexico), 26 - 27 September (Puerto Rico) is included. - Staff.

1933

254 Bean, R. "Great hurricane in Florida..." New York, 1933. 61 p. DLC.

A description of Florida hurricane of 1926. - Staff.

1933

255 Dunn, G.E. "Tropical storm of 1933." Monthly Weather Review, 61:362-363, 1933.

Gulf of Mexico hurricane. - Staff.

1933

256 Fassig, O.L. "Trade winds of the eastern Caribbean." American Geophysical Union, Transactions, 14:69-78, 1933. figs.

Using upper wind data for Puerto Rico, author investigated vertical extent of the trade winds and found it to vary from less than 4 km in spring to 8 km in August. Diagrams show average conditions and reveal rapid day to day changes that occur and that are suggestive of forces which may explain tropical hurricanes. - Staff MGA 4E-60.

1933

257 Holtmann, H.O. "Hurricane in Puerto Rico." U.S. Naval Institute, Annapolis, Md., Proceedings, 59(36):199-203, 1933.

Description of a destructive hurricane in Puerto Rico where gales of such strength are not common. Distribution of rainfall

1933 cont.

during the hurricane of September 1933, path of the center of hurricanes of 1928, 1931, and 1932 are included. - Staff.

1933

258 Kesler, C.K. "Stormen in de Caraïbische zee." [Storms in the Caribbean Sea.] Amsterdam, 1932-33. 301 p.

1933

259 McAuliffe, J.P. "Morning showers over the Gulf of Mexico and afternoon showers in the interior near Corpus Christi, Texas." Monthly Weather Review, 61:229-230, 1933.

1933

260 McDonald, W.F. "Low barometer readings in West Indian disturbances of 1932 and 1933." Monthly Weather Review, 61:273-274, 1933. table.

Barometer readings from ship observations of West Indian hurricanes in July, August and September 1933 show 5 pressures below 28.00 in. Observations ranging from 28.50 in down to 27.40 in, include date, name and position of vessel. Tropical disturbances develop as intense vortices of small diameter, expand in area and decrease in intensity as they progress. - Staff MGA 7K-34.

1933

261 Messerly, O. "Cyclone de Camagüey (Cuba)." [Camagüey (Cuba) cyclone.] Revue pour l'Étude des Calamités, 8(30/31):219-225, 1933. Also his: "Cyclone de Saint-Dominique en septembre 1930." [Santo Domingo cyclone of September 1930.] 1931.

1933

262 Mitchell, C.L. "Tropical disturbance of July, 1933." Monthly Weather Review, 61: 200-201, 1933.

Gulf of Mexico storm. - Staff.

1933

263 Mitchell, C.L. "Tropical disturbance of September, 1933." Monthly Weather Review, 61:274-276, 1933.

Gulf of Mexico hurricane. - Staff.

1933

264 Schubart, L. "Ungewöhnliche Bahn eines westindischen Orkans im Nov. 1932." [Unusual track of a West Indian hurricane in Nov. 1932.] Annalen der Hydrographie und Maritimen Meteorologie, 60(4):104-105, 1933.

1933

265 Weightman, R.A. "Tropical disturbance of August, 1933." Monthly Weather Review, 61:233-235, 1933.

Gulf of Mexico storm. - Staff.

1934

266 Boy-Ed, E. "Bedeutung von Orkanmeldungen auf See." [Importance of hurricane reports at sea.] Seewart, 3(2):65-71, 1934. figs. Also his: "Meteorologischer Warndienst

1934 cont.

und Schiffssicherheitsvertrag." [Meteorological warning service and navigational safety treatise.] Ibid., 4(4):154-159, 1935. fig.

Vessels in two hurricanes around the West Indies and a typhoon in the China Sea are described. Confusion could have been avoided if a sufficient number of ships' reports on storm center positions had been sent to other ships and meteorological services. Under the London Treatise on Navigational Safety (1929), captains of ships are required to report details on tropical storms they encounter. - Staff MGA 7J-23.

1934

267 Cline, I.M. "Life history of a tropical storm in Louisiana September 2, 22, 1920." Monthly Weather Review, 62: 249-250, 1934.

1934

268 Cline, I.M. "Tropical cyclone of June 16, 1934 in Louisiana." Monthly Weather Review, 62:249-250, 1934.

1934

269 Dunn, G.E. "Tropical storms of 1934." Monthly Weather Review, 62:457, 1934.

Account of 11 tropical disturbances reported in 1934 in the Atlantic, Caribbean Sea, and the Gulf of Mexico. Tables contain data on the monthly frequencies of West Indian hurricanes and other tropical storms of the North Atlantic Ocean. Synopsis of tropical storms of 1934 is also included. - Staff.

1934

270 Mitchell, C.L. "Tropical disturbance July 21-25, 1934." Monthly Weather Review, 62:251, 1934.

Gulf of Mexico storm. - Staff.

1934

271 Romer, A. "Étude sur la climatologie de la colonie." [Study on the climatology of the colony.] Fort-de-France, Service de Météorologie, 1934. 46 p. tables. graph.

Study of the climate of the colony of Martinique. Contains monthly and annual tabular summaries (1922 - 1932) at Fort-de-France and Morne-des-Cadets of mean temperature (°C), and mean annual number of days with rain. In addition, monthly and annual summaries of mean diurnal variation of pressure, mean maximum and minimum temperatures, total precipitation and number of days with rain, relative humidity, vapor pressure and wind frequency by direction are shown. - Staff.

1934

272 Stevens, W.R. "Tropical disturbance of August 26 - 31, 1934." Monthly Weather

1934 cont.

Review, 62:344, 1934.

Disturbed atmospheric conditions observed in connection with the storm of 26 August 1934 in the north-central Gulf of Mexico. Movement of the center of the disturbance, wind velocities and lowest pressure are described. - Staff.

1934

273 Ward, R. De C. and Brooks, C.F. "Climatology of the West Indies." In Handbuch der Klimatologie, v. 2 pt. 1, Westindien. Berlin, 1934. 47 p.

Discussion of the climatology of the West Indies with descriptions of the climate of individual islands of the area. Tabular summaries that vary by station and element are reported for selected stations. Summaries include the following data: 1) monthly and annual rainfall and temperature means, 2) monthly and annual pressure, wind, relative humidity, and days with fog, thunderstorms, and gales 3) annual temperature and pressure departures from the mean. A list of stations and coordinates is included Staff.

1935

274 Boy-Ed, E. "Meteorologischer Warndienst und Schiffssicherheitsvertrag." [Meteorological warning service and treatise on navigational safety.] 1935. For abstract see his "Bedeutung von Orkanmeldung auf See." [Importance of hurricane reports at sea.] 1934.

1935

275 Braak, C. "Climate of the Netherlands West Indies." Netherlands. Meteorologisch Instituut, Mededeelingen en Verhandelingen, 36(102):89-120, 1935.

1935

276 Brennan, J.F. "Relation of May - June weather conditions in Jamaica to the Caribbean tropical disturbances of the following season." Monthly Weather Review, 63:13-14, 1935.

Data on Caribbean region rainfall, mean diurnal wind and pressure values during May, June and July 1903 to 1934, abnormal conditions of rainfall, surface winds and pressure during May, June and July 1903 to 1934 favorable to hurricane activity and abnormal conditions favorable to no hurricane activity is presented. - Staff.

1935

277 Byers, H.R. "On the meteorological history of the hurricane of November 1935." Monthly Weather Review, 63:318-322, 1935.

Hurricane dissipated in the Gulf of Mexico due to advection into dry Ts air. - Staff
MGA 7K-39.

1935

278 Calvert, E.B. "Hurricane warning service and its reorganization." Monthly Weather Review, 63:85-88, 1935.

History of hurricane warning is outlined. The reorganized United States Weather Bureau (USWB) warning service (effective 1 July 1935) with centers at San Juan, Puerto Rico, New Orleans, Louisiana, and Jacksonville, Florida are described. The USWB methods of reporting and operation are also indicated. - Staff MGA 7J-26.

1935

279 Dominican Republic. Sección de Meteorología. "Estadisticas de las lluvias en la República Dominicana." [Rainfall statistics of the Dominican Republic.] 1935. DAS.

Presents monthly and annual summaries by year (1925 - 1934) of mean precipitation for 13 stations in the Dominican Republic. - Staff.

1935

280 Flohn, H. "Tropical Circulation Patterns." WMO Technical Notes, no. 9.

1935

281 Haeger, H. "Wasserhose im Baham-Kanal." [Waterspout in the Bahama Canal (Windward Passage).] Archiv der Deutschen Seewarte, 4(2):83-85, 1935.

Description of a waterspout observed during a voyage from Puerto Tarafa (Nuevitas), Cuba to Santiago, Cuba, by way of the Windward Passage, 30 September 1934. Staff.

1935

282 Hubert, H. "Les mouvements generaux de l'air atmospherique au-dessus des colonies francaises." [General movement of the atmospheric air above the French colonies.] Annales de Physique du Globe de la France d'Outre-Mer, 2, 21, 23 - 27, 73 - 82, 1935.

1935

283 Hurd, W.E. "Atlantic-Gulf of Mexico hurricane of October 30 - November 8, 1935." Monthly Weather Review, 63:316-318, 1935.

1935

284 McDonald, W.F. "Hurricane of August 31 to September 6, 1935." Monthly Weather Review, 63:269-271, 1935. Also "Lowest barometer reading in the Florida Keys storm of September 2, 1935." Ibid. p. 295.

A new record was established for a minimum barometer reading observed at sea-level in the Western Hemisphere. After a careful investigation, the United States Weather Bureau accepted a pressure of 26.35 in as the official record in the Florida Keys storm of 2 September 1935. Staff.

1935

285 Ray, C.L. "Relation of tropical cyclone frequency to summer pressures and ocean surface-water temperatures." Monthly Weather Review, 63:10-12, 1935. tables.

Spring and summer pressures at San Juan, Puerto Rico and ocean temperatures are inversely related to tropical storm frequencies in the Caribbean. Trade winds of winter had a correlation of +.53 with pressure over the North Atlantic 16 months later. - Staff MGA 2B-133.

1935

286 Robert, G. "Travaux publics de la Guadeloupe." [Public works in Guadeloupe.] Paris, 1935. 294 p. figs. diagrs. maps. DLC.

Includes meteorological data. - Staff.

1935

287 Rossdam. U. "Verlauf eines westindischen Orkans im September 1935." [Course of a West Indian hurricane in September 1935.] Seewart, 6(7):247-250, 1935.

Ship observations of the track and velocity of a hurricane made by the Deutsche Seewart. - Staff.

1935

288 Theaman, J.R. "Precipitation of Martinique with mean annual rainfall map." Indianapolis, 1935. (West Indies Climatological Paper?) DAS.

Rainfall on Martinique ranges from moderate in the northern and southern parts to extremely heavy in the central, interior and highland areas. Tabular data contain: monthly and annual rainfall amounts at 33 stations (1890 - 1934). Also included are annual summaries of rainfall for all the stations of the island. Text describes the rainfall and gives extreme values. A polychrome rainfall map with isohyets at 25 mm intervals is shown (Scale about 1:900,000). Staff.

1935

289 Valloux, C. "Atmosphère et la mer aux Antilles." [Atmosphere and sea in the Caribbean.] In Nos Antilles [Our Antilles], ed. S. Denis, Paris, 1935. Chap. 1. DLC.

1936

290 Bliss, E.W. "Forecasting of Barbados rainfall." Royal Meteorological Society Quarterly Journal, 62:45, 1936.

1936

291 Brennan, J.F. "Meteorology of Jamaica." Kingston, Jamaica.

1936

292 Caribbean and Coast Map Company, Miami, Fla. "Annual Hurricane map." 1921 - 1936. DLC Map Div.

Map (Scale 1:11,000,000) includes islands in the Caribbean Sea, coastal areas of southeastern United States, Central

1936 cont.

America and the northern part of South America. Presents hurricane tracks and monthly (June - November) summaries by year (1921 - 1936). - Staff.

1936

293 De Monts. "Puissance destructive comparée des cyclones en Amérique et dans l'Océan Indien." [Comparative destructive forces of cyclones in America and in the Indian Ocean.] Annales de Physique du Globe de la France d'Outre-Mer, 3(17):157-159, Oct. 1936.

Winds, tides and rainfall in the Florida Florida hurricane of September 1935 and in the strongest typhoons of Reunion Island are compared. Maximum wind speeds of 360 km/hr were observed in the Florida hurricane producing a loading of 1225 kg/m^2 on buildings. In the Indian Ocean, the maximum wind speed may be assumed to be 224 km/hr (estimated from pressure data) which corresponds to a loading of 600 kg; much more than the 280 kg (175 km/hr) design loading prescribed in the Colonial Building Regulations. Tidal waves connected with hurricanes are found to be less powerful than those of seismic origin. Rainfall in the Florida hurricane did not exceed 450 mm during the month as opposed to 2400 mm on Réunion Island. - Staff MGA 7J-30.

1936

294 Gallenne, J.H. "Tropical disturbance of July, 1936." Monthly Weather Review, 64:238-239, 1936.

Gulf of Mexico storm. - Staff.

1936

295 McDonald, W.F. "Average conditions of wind and weather, North Atlantic ocean and West Indian waters." U.S. Weather Bureau, 1936. 9 p. DLC.

1936

296 Meier, F.C. "Collecting microorganisms from winds above the Caribbean Sea." Phytopathology, 26:102, 1936. Abstract of paper presented at the 27th Annual Meeting of the American Phytopathological Society, 1935.

Report of air sampling over Caribbean. Trade winds possible agencies in dissemination of microorganisms. - Staff MGA B-20.

1936

297 Osorio, L.H. "Estudios meteorológicos de Colombia." [Colombian meteorological studies.] Bogotá, 1936. 118 p. diagrs. DLC.

1936

298 Tabio, E.E. "Diez años de observaciones aerológicas al nivel de los curros en La Habana." [Ten years of aerological observations at cloud level in Havana.]

1936 cont.

Cuba. Observatorio Nacional, Boletín, Época III, 1(2):138-147, 1936.

Discussion of observations with results shown in tables. - Staff.

1936

299 Tannehill, I.R. "Tropical disturbance of 1936." Monthly Weather Review, 64:427-428, 1936.

Seventeen tropical disturbances were charted over the North Atlantic Ocean, including the Caribbean Sea and Gulf of Mexico, during the hurricane season of 1936. - Staff.

1936

300 U.S., Congress, House, Committee on World War Veterans' Legislation. "Florida hurricane disaster." Hearings before the Committee on World War Veterans' Legislation H.R. 9486, 74th Cong. 2d sess., 1935, H. Rept. 1936. 592 p. figs. tables.

Testimony of over 20 witnesses before the 20-member Committee is given in full, including documented material presented for the record. The extensive hearings were held between 26 March and 9 May 1936 in connection with "a bill for the relief of widows, children and dependent parents of world war veterans who died as the result of the Florida hurricane at Windley Island and Matecumbe Keys, September 2, 1935." The purpose of the hearings was to fix the responsibility for the loss of life in the veterans' camps affected by the storm and to provide relief for eligible survivors. Contains a comprehensive description of the U.S. Weather Bureau (USWB) hurricane warning service, the full text of all warnings and advisories issued by the USWB in connection with the storm, information on data on which such warnings were based, and detailed explanations in answer to questions by Committee members covering all aspects of the Weather Bureau's actions. - Staff MGA 7J-33.

1937

301 Agricultura (Colombia). "Anuario meteorológico." [Meteorological yearbook.] Bogotá? 1934 - 1937. DLC.

1937

302 Edeler, H. "Witterungsverlauf eines Frühlingstages im östlichen Golf von Mexico." [Meteorological characteristics of a spring day in the eastern Gulf of Mexico.] Annalen der Hydrographie und Maritimen Meteorologie, 65:136-137, 1937.

1937

303 Externbrink, H. "Beitrag zum Wettergeschehen im Golf von Mexico." [Contribution to the Meteorology of the Gulf of Mexico.] Meteorologische Zeitschrift, 54:353-359, 413-417, 1937.

Discussion of origin and movement of

1937 cont.
air masses as well as origin and characteristics of hurricanes. Data on temperature distribution is also included - Staff.

1937
304 Gallenne, J.H. "Disturbance in Gulf of Mexico November 23 - 26, 1937." Monthly Weather Review, 65:392-393, 1937.

1937
305 Hurd, W.E. "Tropical disturbance on the North Atlantic Ocean and Gulf of Mexico, September, 1937." Monthly Weather Review, 65:332-335, 1937.

1937
306 Millas, J.C. "Cuba y su clima." [Cuba and its climate.] In Hidrología y Climatología Médicas, 1937. pp. 246-257.

1937
307 Netherlands. Meteorologisch Instituut. "Overzicht der meteorologische waarnemingen verricht op de meteorologische stations in de Nederlandsch West-Indie." [Compilation of meteorological observations at meteorological stations in the Netherlands West Indies.] Hague, 1919 - 1937. DAS.

Monthly and annual tabular summaries by year for the Dutch West Indies with the following: pressure (mm), temperature (°C), vapor pressure (mm), cloudiness (0 - 10), and rainfall (mm). Stations: Ft. Amsterdam (1919 - May 1921; March 1928 - December 1937), Cas Chikitoe (June 1921 - February 1928). Also includes monthly and annual means of rainfall at Curaçao (9 stations), Bonaire (2 stations), Aruba (1 station), St. Eustatius (1 station), Saba (3 stations) and St. Martin (1 station). - Staff.

1937
308 Provd, S. "Upper Winds at Kingston, Jamaica." Professional Notes, Meteorological Office, London 5, No. 78.

1937
309 Storey, M. and Gudger, E.W. "Mortality of fishes due to cold at Sanibel Island, Florida 1886 - 1936." Ecology, 19:10-26, 1937.

1938
310 Darlington, P.J. "Origin of the fauna of the Greater Antilles, with discussion of dispersal of animals over water and through the air." Quarterly Review of Biology, 13:274-300, 1938. figs. refs.

Investigates how fauna of the four big islands of the West Indies was derived from the mainland, either across the water or over land. The theory and mathematics of dispersal of organisms across the water is reviewed. Diagrams show wind directions and hurricane patterns, a discussion of direction, nature, and lifting power of winds. - Staff MGA B-111.

1938
311 Frolow, S. "Frontologie aux Antilles." [Frontology in the Antilles.] Annales de Physique du Globe de France d'Outre-Mer, 5:118-124, 1938.

1938
312 McDonald, W.F. "Atlas of the climatic charts of the Ocean." Washington, D.C.: Government Printing Office, 1938. charts.

1938
313 St. Lucia. Agricultural Dept. "Rainfall returns, 1918 - 1920, 1922 - 1931." Castries, 1919 - 38. 13 v. tables. DLC.

1938
314 Scofield, E. "On the origin of tropical cyclones, with an analysis of the Caribbean cyclones of 1935 - 36." American Meteorological Society, Bulletin, 19:244-256, 1938.

West Indian tropical cyclones originate primarily in one of three regions: 1) in the western Gulf of Mexico, 2) in the western Caribbean or 3) in the Atlantic Ocean somewhere between the Cape Verde Islands and the West Indies. Those originating in the western Gulf of Mexico or western Caribbean occur during either the early summer (June or July), or during the late summer (September or October). Those which originate in the Atlantic comprise the majority of all storms and they develop primarily during August and September. The year 1935 was characterized by the extremely small number of tropical disturbances reported (five reaching full hurricane intensity), whereas 1936 was characterized by the second largest number ever recorded in one season (a total of 17 with a very small percentage reaching full hurricane intensity.) - Author(mod).

1938
315 Tannehill, I.R. "Tropical disturbance of August, 1938." Monthly Weather Review, 66:240-241, 1938.

Gulf of Mexico storm. - Staff.

1938
316 Torres Marino, R. "Climatología colombiana, geografía física (continuación del libro Armonía física del mundo)." [Climatology of Colombia, physical geography (continuation of the book, Physical harmony of the world).] Bogotá, 1938(?) 110 p. DLC.

1938
317 U.S. Weather Bureau, "Atlas of Climatic Charts of the Oceans." Washington, D.C.: Government Printing Office, 1938.

1938
318 Van Royen, W. "Geographical reconnaissance of the Cibao of Santo Domingo." Geographical Review, 28:556-572, 1938.

Two chapters describe the climate of the Cibao (a coastal plain 140 mi long and 20 mi wide within the Dominican Republic)

1938 cont.

with special emphasis on temperature, winds and rainfall distribution. A rainfall and irrigation map (Scale 1:1,340,000,) showing average annual rainfall amounts with periods of record for 21 selected stations and the principal irrigation districts is included. Staff.

1939

319 British Honduras. Survey Dept. "Atlas of British Honduras." 1939. 10 p. 17 maps. DLC Map Div.

Tables of monthly and annual data summarized over periods which vary by station. Data are: Mean temperature at Belize (12 yrs); and mean precipitation at Cayo (19 yrs), Corozal (27 yrs), Orange Walk (22 yrs), Belize (35 yrs), Stann Creek (17 yrs) and Punta Gorda (27 yrs). Also included are monthly (scale not indicated, about 1:850,000) and annual (Scale 1: 3,000,000) rainfall maps based on the tabular data mentioned above. Monthly maps show equal areas of 0 - 2, 2 - 4, 4 - 6, 6 - 8. 8 - 10, 10 - 15, 15 - 20, 20 - 25 and greater than 25 in. Annual maps show equal areas of 50, 50 - 75, 76 - 100, 101 - 125, 126 - 150 and greater than 150 in. Staff.

1939

320 Canaday, G.L. "Hail and windstorm over south-eastern Louisiana, Feb. 26, 1939." Monthly Weather Review, 67:365-366, 1939. figs.

Path of storm, depth of hailstones, wind velocities and damage are discussed. - Staff MGA D-127.

1939

321 Dyke, R.A. "Upper winds as related to the movement of tropical disturbances over the Gulf of Mexico." American Meteorological Society, Bulletin, 20:281-282, 1939. Abstract only.

Tropical cyclones have a moving environment rate and direction of motion outside the active circulation of the cyclones not very different from the forward movement of the cyclones. The accumulation of data from pilot balloons in recent years in the Gulf States in localities bordering the southern and western shores of the Gulf of Mexico has provided the means of comparing winds of the lower half of the troposphere with movements of tropical storms over the region. Author (mod).

1939

322 Gallenne, J.H. "Tropical disturbance of June 12 - 16, 1939." Monthly Weather Review, 67:175-176, 1939.

Gulf of Mexico storm. Staff.

1939

323 George, J.J. "Causes and forecasting of low ceilings and fogs at New Orleans airport." Eastern Air Lines, Inc. Meteorological Dept., Atlanta, 1939. 31 p.

1939

324 Hurd, W.E. "Tropical disturbance of September 24 - 26, 1939, in the Gulf of Mexico." Monthly Weather Review, 67:340, 1939.

1939

325 Rivera Aceves, J. "Meteorología y climatología de la península de Yucatán." [Meteorology and climatology of the Yucatan Peninsula.] 1939. DAS.

Maps of the Yucatan Peninsula (Scale 1:6,500,000) contain mean number of days with rainfall amounts greater than 0.1 mm (at 30-day intervals) annually (1921 - 1930), and a climatic classification map (after Koppen). Maps are reproductions from maps of Mexico in: "Atlas climatológico de México." [Climatological atlas of Mexico.] pp. 115-134. - Staff.

1939

326 Sashoff, S.P. and Weil, J. "Static emanating from six tropical storms and its use in locating position of the disturbances." Institute of Radio Engineers, N.Y., Proceedings, 27(11):696-700, Nov. 1939. figs.

Describes equipment and methods used by the Universities of Florida and Puerto Rico in obtaining and analyzing static connected with tropical storms. Paths of six storms obtained by triangulating synchronized records of sferics are plotted on charts. It is suggested that discrepancies between these paths and those reported by the United States Weather Bureau may be due to static emanating from the periphery of a storm rather than its center. - Staff MGA 4K-160.

1939

327 Serra, A.B., "La circulation générale de l'Amérique du Sud." [General circulation of the atmosphere in South America.] Rio de Janeiro, Serviço Nacional de Meteorología. 1939.

1939

328 Tycos Rochester "Hail storm in New Orleans - a rare phenomenon." Its 29(2): 58-59, 1939. photos.

Details of the most destructive hailstorm in several decades which was accompanied by lightning, thunder, high winds, hail the size of chestnuts, and damage from wind and hail. Storm was the result of a violent thunderstorm which covered a large area. - Staff MGA D-128.

1939

329 Vasquez, E. "Nueva orientación en los estudios ciclónicos." [New orientation in

1939 cont.

the study of cyclones.] Master's thesis, Univ. of Havana (?), 1939. 66 p. figs. (Vasquez' Spanish résumé translated into English by A.R. Stoesen: "Effect of the zonal discontinuity on tropical cyclones." American Meteorological Society, Bulletin, 22:395-403, 1941. figs.)

Observations of the direction of movement of high clouds (cirrus) and surface winds at Havana (11 yrs) are analyzed to determine place, time of origin and recurvature of tropical cyclones in the 'zonal discontinuity' or region between the zonal winds from the East and from the West. The slowing down of a hurricane when about to recurve is attributed to its proximity to the zonal discontinuity. The upper part of a cyclone having a larger diameter than the lower part is influenced by the westerlies while the lower portion is still entirely in the easterlies. This produces a brake on the movement of the system as a whole. Staff MGA 71-63.

1940

330 Alpert, L. "Rainfall maps of Hispaniola." In American Science Congress, 8th, Wash.,D.C. 1940. Proceedings. 7:423-431. Reprint. American Meteorological Society, Bulletin, Supplement, Dec. 1942.

Included with a discussion of the rainfall distribution of Haiti are 8 maps of Hispaniola (Scale of 1:6,500,000) showing: the island relief; month of minimum rainfall at several locations on the island and mean annual and monthly (February, May, July, September, and November) precipitation based on data from 162 stations. Average period of record was 17 yrs for 79 stations in Haiti and 11 yrs for 83 stations in the Dominican Republic. - Staff.

1940

331 Brooks, C.F. "Some North American connections of Caribbean climate." In American Science Congress, 8th, Wash., D.C., 1940 Meteorology. pp. 297-311. diagrs. DAS.

1940

332 Collins, W. Sons and Company, Ltd. "Collins' West Indian clear school atlas." Glasgow, 1940 (?) 32 p. incl. maps. DLC.

More than 50 physical, political and climatic maps in full color and a complete 16-page index to all maps is included. - Staff.

1940

333 Dingens, P. and Vernemmen, C. "De klimaatindeling volgens de methode van C. W. Thornthwaite, toegepast op de meteorologische gegevens van 339 waarnemingsstations over de gehele wereld verspreid, voor de periode 1931 - 1940." [The Thornthwaite classification of climate applied to the data of 339 meteorological stations around the globe for the years 1931 - 1940.] Natuurwetenschappelijk Tijdschrift, Ghent, 43:3-32, 1961. maps. tables. refs. English and French summaries pp. 3-4.

1940 cont.

Applies the Thornthwaite method of climate classification to 339 meteorological stations over the world using their published data for temperature and precipitation (1931 - 1940). Part 1 deals with an account of Thornthwaite's method based on a calculation of potential evapotranspiration. The different climatic indices, symbols and types are considered. In Part 2, the climatic formula based on the combination of the different symbols is established for each of the 339 stations. To determine the humidity and the aridity index, the water balance was calculated for each station. Maps show the distribution of: potential evapotranspiration (PET), annual deficit, annual surplus, moisture index (I_m) and summer concentration of thermal efficiency. - Staff.

1940

334 Dunn, G.E. "Aerology in the hurricane warning service." Monthly Weather Review, 68:303-315, 1940.

All data taken from Gulf of Mexico area. Staff.

1940

335 Dunn, G.E. "Cyclogenesis in the tropical Atlantic." American Meteorological Society, Bulletin, 21:215-229. 1940.

The simplest method of attack on the problem of cyclogenesis in the tropical Atlantic is through katallobaric waves which are apparently generated along the tropical front between the SW monsoon and the NE trades. Waves initiated in the Cape Verde region move within the NE and E trade toward the Antilles with a frequency of one about every 3 or 4 days. They are usually comparatively stable but are almost invariably attended by a moderate rise in the Ts inversion level. Available data are not entirely conclusive concerning the transition from stable to unstable waves but it apparently depends upon the extent of the destruction of the Ts inversion. - Author.

1940

336 Gallenne, J.H. "Tropical disturbance of August, 1940." Monthly Weather Review, 68:217-218, 1940.

Gulf of Mexico storm. - Staff.

1940

337 Gallenne, J.H. "Tropical disturbance of September, 1940." Monthly Weather Review, 68:245-247, 1940.

Gulf of Mexico hurricane. - Staff.

1940 cont.

338 Hurd, W.E. "Approach of a Gulf of Mexico norther." Monthly Weather Review, 68:30, 1940.

1940

339 Leech, L.P. "Swan Island [sic], 1939." American Meteorological Society, Bulletin, 21:94-196, 1940.

Describes establishment of pilot-balloon and surface observation station at Swan Islands, midway between British Honduras and Jamaica. In the hurricane season (1939), approximately 250 pilot-balloon and 120 radiosonde releases were made with maximum elevations obtained of 33,000 m and 32,000 m, respectively. About 500 surface observations were also taken. - Staff.

1940

340 Miller, E.M. "Mortality of fishes due to cold on the southeast Florida coast 1940." Ecology, 21:420-421, 1940.

1940

341 Russell, R.J. "Climates of Texas." Association of American Geographers, Annals, 35(2):37-52, 1940.

1940

342 Stone, R.G. "Analysis of the resultant winds-aloft at San Juan, Puerto Rico." American Meteorological Society, Bulletin, 21:111-112, 1940.

Mean monthly resultant wind velocities from 1698 pilot-balloon ascents made by the United States Weather Bureau at San Juan (1926 - 1931) were computed and plotted for unit kilometer heights. The number of ascents is adequate for a reliable view of the mean circulation up to 10 km in winter and up to 12 km in summer. For the upper levels, there are more ascents than available from any other Caribbean stations. The mean height of the boundary between the trades and antitrades was determined from: the resultant directions, the ratios of vectorial to mean velocities and an isopleth plot of the mean mass transport. - Author(mod).

1940

343 Stone, R.G. "Note on the distortion of the hurricane San Felipe (II) by the mountains of Puerto Rico." American Geophysical Union, Transactions, 21:254, 1940.

1940

344 U.S. Weather Bureau. "Winds and weather of the West Indian region." 1940. tables. diagrs. charts. DAS.

Contains Caribbean area and Central America (including Mexico) charts of normal distribution of isobars (Scale 1:52,500,000) after Fassig, tracks of tropical storms for June - July and October - November (1924 - 1937) (Scale 1:33,000,000) and tracks of 15 notable storms (Scale 1:27,500,000).

1940 cont.

Also included are charts (Scale 1:30,000,000) presenting weather ship observations for February, May, July, October and December, (1880 - 1933) as follows: average surface wind drift direction, wind constancy and force, distribution of wind speed, direction of middle cloud movement, visibilities, frequency of rain, drizzle, thunderstorms and squalls. - Staff.

1941

345 Alpert, L. "Areal distribution of mean annual rainfall over the island of Hispaniola." Monthly Weather Review, 69:201-204, 1941.

Tabular summaries of mean monthly and annual precipitation are included for 75 stations in Haiti with a period of record varying from 4-73 years and 81 stations in Haiti with a period of record varying from 4-73 years and 81 stations in the Dominican Republic, from 4-31 years. Three maps of the Island of Hispaniola (Scale 1:3,850,000) show: station location in various districts, relief, and mean annual rainfall based on 162 stations with an average period of record of 17 years for 79 stations in Haiti and 11 years for 83 stations in the Dominican Republic. Isohyets and stippling show precipitation range from less than 20 to greater than 100 in. - Staff.

1941

346 Bowdin, J.W. "Causes and forecasting of low ceilings and fogs at Houston, Texas." American Meteorological Society, Bulletin, 22:351-357, 1941.

Describes the geographic situation of the airport and shows types of fog encountered, frequency and characteristics. - Staff.

1941

347 Brooks, C.F. "Apparent rate of progress as affected by changing intensity of hurricane San Felipe (II) while crossing Puerto Rico." American Geophysical Union, Transactions, 22:426-428, 1941.

1941

348 Deppermann, C.E. "On the Occurrence of Dry, Stable Maritime Air in Equatorial Regions." American Meteorological Society, Bulletin, 22:143-149. 1941.

1941

349 Fairchild, J.E. "Rainfall of Martinique." American Meteorological Society, Bulletin, 22:249-255, 1941. figs. ref.

Observed mean annual rainfall totals for Martinique range from 41.68 in for the driest station on the island, Diamant (at sea level) in approximately 125 rainy days, to 220.09 in for the wettest station, Deux Choux (elevation 3500 ft), in approximately 285 rainy days. The strong evaporation and the porosity of the ground lead to such a

1941 cont.

low rainfall effectivity that the southern section, with less than 50 in annually, can support only thorn forest and scrub. Rainfall maps show the close dependence on elevation and exposure to the prevailing easterly trade winds. The wettest areas are the highest sections, which receive more than 190 in a year, centering around the Pitons de Carbet in the north central part of the island and around Mont Pelée de Carbet in the north central part of the island and around Mont Pelée in the extreme northern part. - Author(mod).

1941

350 Frolow, S. "Frontology in the Antilles." American Meteorological Society, Bulletin, 22:200-210, 1941.

1941

351 Frolow, S. "Sur des variations simultanées de la pression dans la région tropicale." [On simultaneous pressure variations in the tropical region.] Mimeographed. Martinique, Service Météorologique, 1941. 13 p. figs. tables. DAS.

"On synchronous variations of pressure in tropical regions." (Translation: American Meteorological Society, Bulletin, 23: 239-254, 1942. figs. tables.)

From about 30 barometer records in Central America, West Indies and West Africa, author found that 70 - 80 percent of 72-hour variations are similar to those at Fort-de-France due to a widespread synchronous periodicity of 6 days. - Staff MGA 2A-111.

1941

352 Galloway, J.C. "Lethal effect of the cold winter of 1939 - 1940 on marine fishes at Key West, Florida." Copeia, 2:118-119, 1941.

1941

353 González, P.E. "Climatología de Venezuela." [Climatology of Venezuela.] Venezuela. Servicio de Meteorología Agrícola, 1941. 159 p. DLC.

1941

354 Guernsey, J.E. "Climatic map of Jamaica on the Köppen system." American Meteorological Society, Bulletin, 22:327-331, 1941. figs.

Jamaican climatology presents a variety of interacting controls and unsolved problems typical of West Indian islands. The transitional location (at lat 18° N) between the subtropical high and the equatorial low is complicated by North American pressure systems. The area (4,450 sq mi) of Jamaica is sufficient to produce a definite continentality effect, especially on the 2,000 ft limestone plateau which

1941 cont.

constitutes the western two-thirds of the island. On the east, the Blue Mountains make an effective orographic barrier (3,000 to 5,000 ft). Precipitation and temperature stations are sufficiently numerous and well distributed to permit reliable application of the Köppen system. There are 271 rainfall gages with records of 10 - 70 yrs, with an average of one gage per 16.4 sq mi. Four temperature records of 10 - 33 yrs represent climates from 7,388 ft on the Blue Mountain Peak to sea level and show a nearly linear relation with elevation. - Author(mod).

1941

355 Gunter, G. "Death of fishes due to cold on the Texas coast, January 1940." Ecology, 22:203-208, 1941.

1941

356 Jameson, H. "Summary of investigations on the diurnal variation of barometric pressure in tropical seas." Royal Meteorological Society, Quarterly Journal, 67:157, 1941.

1941

357 Martinique. Service Météorologique et du Physique du Globe. "Variations simultanées de la pression dans la région tropicale." [Simultaneous pressure variations in tropical regions.] Fort-de-France, 1941. DLC.

Contains pressure graphs (mb) for Fort-de-France and 23 other stations as follows: monthly at 12, 18, and 22 hr variation in 24 hrs and in 72 hrs; variation in 72 hrs at 12 hrs from 5 June - 31 August 1941 (Fort-de-France, only), and mean variation in 72 hrs at 12 and at 22 hr GMT. Tables show amplitude (mb) by sections with a mean at Fort-de-France and 12 other stations, advance in days between maximum, mean and mean of maximum and minimum pressures. It is concluded that there is a marked resemblance in the 72 hr variations of simultaneous pressure at Fort-de-France and 23 other stations with a similarity of variations. - Staff.

1941

358 Millas, J.C. "Genesis of hurricanes of the western Caribbean Sea." American Meteorological Society, Bulletin, 22:78, 1941.

Reports that the period of cyclonic development in hurricanes, from first causative action to full intensity, is more or less even with a mean period of about 8 days. - Author(mod).

1941

359 Millas, J.C. "Value of a reliable hurricane station." American Meteorological Society, Bulletin, 22:321-331, 1941.

Points out the need for a hurricane

1941 cont.
warning system in the Carribean where winds, sea state, terrain, etc. cause unexpected veering off course of many hurricanes. Describes building and staff requirements. - Staff.

1941
360 Platt, R.R. et al. "European possessions in the Caribbean area. The Netherlands territories." New York, 1941. DLC.
Brief discussion (pp. 70-85) on the climate of the Dutch territories. Tabular data includes: mean annual temperatures (°F) and warmest and coolest months at Curaçao (1910 - 1933), Philipsburg (1920 - 1933) and Paramaribo (1899 - 1933); mean annual rainfall amounts (in) and mean rainiest and driest month with totals at Willemstad (1894-1933), Philipsburg (1892 - 1933) and Paramaribo (1847 - 1933). - Staff.

1941
361 Reed, W.W. and Kincer, J.B. "Supplementary climate notes on the West Indian islands." In U.S. Dept. of Agriculture, Yearbook, 1941. DAS, DNAL.

1941
362 Röhl, E. "Nuevas tablas barométricas, preparadas especialmente para las determinaciones altimétricas en Venezuela y otros regiones tropicales." [New barometric tables prepared especially for altimetric determinations in Venezuela and other tropical regions.] Caracas, 1941. 111 p. tables. diagrs. DLC.

1941
363 Stone, R.G. "Frolow on synoptic analysis of Caribbean weather." American Meteorological Society, Bulletin, 22:198-200, 1941.
Examines the research of S. Frolow, director of Meteorological Services of Martinique. - Staff.

1941
364 Sumner, H.C. "Hurricane of October 3 - 12 and tropical disturbance of October 10 - 18, 1941." Monthly Weather Review, 69:303-304, 1941.
Gulf of Mexico hurricane. - Staff.

1941
365 Sumner, H.C. "Tropical disturbance September 9, 1941." Monthly Weather Review, 69:262-266, 1941.
Gulf of Mexico storm. - Staff.

1941
366 U.S. Air Force. "Weather conditions in Latin American and Caribbean areas." Maxwell Field, Ala., 1941 (?). DAS.

1941
367 U.S. Weather Bureau. "Climate of the states; the West Indian islands (including Puerto Rico)." In U.S. Dept. of Agriculture,

1941 cont.
Yearbook, 1941. pp. 1222-1228. DAS.
Tabular summaries are reported for selected stations in the West Indies for the following: annual extreme temperatures, mean temperature for January and July and monthly and annual precipitation amount. Supplemental climatic notes are given for the West Indies and for Puerto Rico. - Staff.

1942
368 Brennan, J.F. "Pilot Balloon Service, Kingston, Jamaica." Kingston, Jamaica, 1942.

1942
369 Buxton, E.B. "Notes on Weather Analysis in the Tropics." U.S. Army Air Forces Weather Research Center 4, no. 4. Collection of Papers prepared for Pan American Airways.

1942
370 Cline, I.M. "Century of progress in the study of cyclones. Aids in forecasting movements and destructive agencies in tropical cyclones." 3d ed. New Orleans, La.: Rogers Printing Co., 1942. 47 p. figs. refs. DLC.
Presidential address, read before the American Meteorological Society's Pittsburgh Meeting, December 1934, is a review of world-wide research on air masses and winds responsible for hurricane genesis. Forecasting is discussed briefly, and the history of the disastrous Galveston hurricane, 8 September 1900, is given. - Staff MGA 7K-58.

1942
371 Contreras Arias, A. "Mapa de las Provincias Climatólogicas de la República Mexicana." [Map of the climatological regions of the Republic of Mexico.] Instituto Geográfico, México.

1942
372 Frolow, S. "On synchronous variations of pressure in tropical regions." American Meteorological Society, Bulletin, 23:239-254, 1942. figs. tables. For abstract see his "Sur des variations simultanées de la pression dans la région tropicale." [On simultaneous pressure variations in the tropical regions.] 1941.

1942
373 Hero, N.C. and Larson, M. "Climates of Colombia, Panama and Venezuela." California Institute of Technology. 1942. 21 p. DAS.

1942
374 Krank, J.P. "Climatological data for the West Indian islands." California Institute of Technology, Meteorological Dept., 1942. 16 p. tables. diagrs. DAS.

1942
375 Lemons, H. "Hail in high and low latitudes." American Meteorological Society,

1942 cont.
Bulletin, 23:61-68, 1942. tables.
Discussion of hailstorm damage in the Caribbean area. Severe hailstorm encountered by S.S. JAIMISON in the Gulf of Mexico at lat 28°48'N in May 1906. - Staff.

1942
376 McDonald, W.F. "On a hypothesis regarding normal development and decay of tropical hurricanes." American Meteorological Society Bulletin, 23:73-78, 117-121, 1942. refs.
Reviews cyclogenesis with respect to Caribbean hurricanes. Concludes that significant differences exist in the cycle of hurricane development, and that inadequate observational capability makes accurate hurricane prediction difficult. - Staff.

1942
377 Massip, S. and Ysalque de Massip, S.E. "Clima de Cuba." [Climate of Cuba.] In their "Introducción a la geografía de Cuba." [Introduction to the geography of Cuba.] 1942. pp. 183-202. DNO.

1942
378 Millas, J.C. "On the genesis of hurricanes of the Western Caribbean Sea." Pan American Scientific Congress, 8th, Wash. D.C. May 1940, Proceedings, 7:291-296, 1942.
The expression 'hurricane embryology,' by the author, encompasses: 1) previous state of the atmosphere, 2) state directly previous to the inception of the hurricane germs, 3) germ period of the hurricane and 4) period of the development of the hurricane. Comments are given under these headings at the end of the discussion. - Staff MGA 7K-61.

1942
379 Sashoff, S.P. and Roberts, W.K., "Directional characteristics of tropical storm static." Institute of Radio Engineers, N.Y., Proceedings, 30(3):131-133, March 1942. figs.
Further details on research reported earlier by S.P. Sashoff and J. Weil. General directional distribution of sferics in relation to prevailing active storm areas is discussed. In connection with a tropical storm which crossed Florida in August 1939, it was found that: 1) apparently no static emanates from the eye of a storm and 2) the relative position of static-producing areas remains fixed with respect to the storm center. - Staff. MGA 7K-172.

1942
380 Stevens, L.A. "Wind roses, Caribbean Sea." U.S. Weather Bureau, Preliminary Report, no. 15, 1942. 5 p. DAS.

1942
381 Stone, R.G. "Scientific Survey of Puerto Rico and the Virgin Islands." New

1942 cont.
York Academy of Science, v. 19, 1942. 126 p.

1942
382 U.S. Army Air Forces "Caribbean weather characteristics and methods of analysis." Feb. 1942. 165 p. DAS.
Discusses the following:structure of the North Atlantic trades, the upper-air conditions in the Caribbean, surface conditions in the Caribbean, weather types in the Caribbean, convectional rains in Barbados, local observations as a basis for forecasts at San Juan, Puerto Rico, synoptic weather analysis in the Caribbean region, forecasting genesis of tropical cyclones in the Caribbean and analyses of 'northers' in the Caribbean region with special reference to November 1940. Daily weather charts of the Caribbean area are given for November 1940. A map with bar graphs for selected Caribbean stations shows the total monthly rainfall amount. - Staff.

1942
383 U.S. Army Air Forces, Headquarters, "Preliminary Report on the Climate of Central America and Northern South America, March to August." Weather Research Center, Directorate of Weather, v. 1, no. 3, 1942. 74 p. DAS. M82.U58t.

1942
384 U.S. Weather Bureau "Average and maximum wind velocities at selected coastal stations in the United States, Hawaiian Islands, Alaska, and Puerto Rico." U.S. Army Air Forces, Weather Research Center ... v. 3, no. 3, 1942. 7 p. DAS M82U58p.

1942
385 U.S. Weather Bureau, "Mexico, the Caribbean region, and northern part of South America." Preliminary Report no. 18, 1942. DAS.
Descriptive and tabular data are given for selected stations in Mexico, Caribbean area and the northern part of South America. A brief description of the climate of Camagüey is presented on p 11 and for Havana on p 104. Monthly summaries for Camagüey and Havana are reported for: percent of observations with visibility greater than 10 mi at 0800, mean days with visibility less than 1 mi, mean days with dense fog, mean days with ceiling unlimited at 0800 and frequency distribution of cloudiness by tenths. For Camagüey only mean days with precipitation (18 yrs) and mean precipitation amount (19 yrs) are recorded. - Staff.

1942
386 U.S. Weather Bureau. "Weather conditions in the Caribbean area and Panama as they affect barrage balloons." Special Report 171, 1942. 27 p. Manuscript. DAS.

1942 cont.

Contains tabular summaries for 9 stations in the Caribbean area. These summaries are: mean, mean extremes and absolute extremes of temperature; mean amounts, extreme amounts, and maximum daily amounts of precipitation; days with rain, days with gales, days with fog, and days with thunderstorms; mean relative humidity; mean cloudiness; prevailing wind direction and mean wind velocities. - Staff.

1942

387 U.S. Weather Bureau, Statistics Div. "Mexico, Caribbean, and Northern Part of South America." Manuscript Preliminary Report no. 18, 1942. 154 p. DAS M82U587p.

1942

388 Valverde, S.A.R. "Geography and climate of the Dominican Republic." U.S. Weather Bureau, Lectures...Hurricane Training Program, 1942. 4 p. DAS.

Brief geographic and climatic description of the Dominican Republic with mean monthly precipitation values for the entire country and mean monthly and annual temperatures for Ciudad Trujillo. - Staff.

1943

389 Frankel, M.H. "Climatic data for selected stations in the West Indies." U.S. Weather Bureau, Special Report, no. 246, 1943. 3 p. DAS.

1943

390 Frankel, M.H. "Climatic statistics for selected stations in the West Indies." U.S. Weather Bureau, Special Report, no. 264, 1943. 14 p. DAS.

1943

391 Hurd, W.E. "Northers of Mexican and Central American waters." U.S. Hydrographic Office, Verso of Pilot Chart, Central American Waters, 1943. DNO.

1943

392 Millas, J.C. "Lluvia en la Habana." [Rainfall in Havana.] 1943. 34 p. DAS.

Study of rainfall at the National Observatory based on 33 years of observations (1909 - 1941). The introduction describes the method of observations and the rain gauges used. Part 2 is a study based on rainfall amount and number of days with rain by year. Also includes summaries of rainfall amount, days with rain, maximum per day, and rainy spells of specified duration. Part 3 is a study on rainfall intensity with tabular data indicating amount, duration, maximum intensity, and data of each rain. - Staff.

1943

393 Millas, J.C. "Meteorological service of Cuba." American Meteorological Society, Bulletin, 24:216-217, 1943.

1943 cont.

Gives a brief history of meteorological observations in Cuba and describes the work of the Observatorio de Belén, the Central Meteorological Office and the Observatorio Nacional in Havana. - Staff.

1943

394 Pan American World Airways, Inc. Eastern Division. "Annual Meteorological Summary." 1936 - 41, 1943. tables. maps. DAS.

Contains mean monthly summaries by year for selected stations in the United States, Central America and the Caribbean area. - Staff.

1943

395 Riehl, H. "Waves in the easterlies and the polar front in the tropics." Univ. of Chicago, Dept. of Meteorology, Miscellaneous Report, no. 17, 1943. 79 p. DAS.

An organized method of synoptic analysis during the hurricane season in the Antilles and Caribbean areas was first established by G.D. Dunn, who found that a chain of isallobaric centers were useful in forecasting displacement and intensity of tropical storms. After the establishment of the Institute of Tropical Meteorology at the University of Puerto Rico as a branch of the Department of Meteorology of the University of Chicago, it was natural to investigate the isallobaric centers in greater detail, especially the upper-air structure connected with them, and also to extend the study over the winter period. Data used for the West Indies were mainly those transmitted currently by United States government agencies in Puerto Rico. Despite observational deficiencies, a fair picture of disturbances up to 20,000 or 25,000 ft could be obtained.- Author(mod).

1943

396 Serra, A.B. and Ratisbona, L. "As massas de ar da América do Sul." [Air masses of South America.] Rio de Janeiro, Serviço de Meteorologia. Translated by Weather Information Branch, Weather Division Report no. 403, 1943. 140 p. figs. On file U.S. Air Force Environmental Technical Application Center. Wash., D.C.

1943

397 Soloman, I. "Weather affecting aviation in the Caribbean." U.S. Weather Bureau, Special Report, no. 239, 1943. 3 p.DAS.

1943

398 Sumner, H.C. "North Atlantic hurricanes and tropical disturbances of 1942." Monthly Weather Review, 71:49-52, 1943.

Review of hurricanes and tropical disturbances that affected the western North Atlantic Ocean, the Caribbean Sea, the Gulf of Mexico and the adjacent coastal areas

1943 cont.

during the season of 1942. Data on highest wind velocities and lowest barometric pressures are listed, where available, as are casualties and estimates of damage. A chart of tracks and a tabular summary of the various storms are included. - Staff.

1943

399 Sumner, H.C. "North Atlantic hurricanes and tropical disturbances of 1943." Monthly Weather Review, 71:179-183, 1943.

Review of hurricanes and tropical disturbances that affected the western North Atlantic Ocean, the Caribbean Sea, the Gulf of Mexico, and the adjacent coastal areas during 1943. Data on highest wind velocities and lowest barometric pressures are listed, where available, as are casualties and estimates of damage. A chart of tracks and a résumé of flights through the centers of two of the storms are included. - Author.

1943

400 Tacubaya, D.F. "Boletín Anual del Servicio Meteorológico Mexicano, 1924 - 1943." [Annual bulletin of the Mexican Meteorological Service, 1924 - 1943.] Servicio Meteorológico Mexicano.

1943

401 Theaman, J.R. "Tropical downpours of Jamaica; maximum precipitation for various periods." Indianapolis, 1943. 20 p. (West Indies Climatological Paper?) DAS.

1943

402 U.S. Army Air Forces. "Hurricanes affecting the Atlantic coast, the Gulf coast, and the southern California coast of the United States." Report no. 636, Dec. 1943. 9 p. DAS.

The tracks of all hurricanes which affected Florida and the Gulf coast during 1887 - 1923 have been plotted by month (June - November). - Staff.

1943

403 U.S. Army Air Forces. "Preliminary Report on the Climate of Guadeloupe (Leeward I.)." Microfilm. Weather Division Report no. 81, June, 1943. 14 p. maps. On microfilm, U.S. Air Force, Environmental Technical Application Center, Wash., D.C.

Description of 13 weather stations. - Staff.

1943

404 U.S. Army Air Forces, Headquarters, "Preliminary Climatic Atlas of the World." Special series no. 1, (revised), July 1943. Prepared by Military Climatology Project, Institute of Meteorology, Univ. of Chicago, with Supp. no. 1, Special Series no. 1. DAS. M82.3U585s.

1943

405 U.S. Hydrographic Office. "Strategic

1943 cont.

aerological surveys, part I, Atlantic area." H.O. no. 222, 1943. Survey no. 41-1, East coasts of Mexico and Central America. DAS.

1943

406 U.S. Weather Bureau. "Charts for Caribbean air route manual." 1943. Special Report, no. 283 (U.S. Army Air Forces no. 391) DAS.

Maps (Scale 1:17,400,000) present mean monthly (January, April, July and October) pressure, winds, temperature, precipitation and cloudiness. Also included is a map of meteorological features of Caribbean area (including Mexico). No period of record is given. - Staff.

1943

407 U.S. Weather Bureau. "Climatic statistics for selected stations in French West Indies and Guatemala." Special Report no. 265, 1943. DAS.

Contains tabular data of monthly and annual summaries of temperature (°F), mean, mean daily maximums and minimums, absolute maximums and minimums; precipitation (in), mean maximums in 24 hrs, greatest and least amounts; number of days with rain greater than .01 in; relative humidity (mean at specific hours) and mean cloud amounts (0 - 10). Period of record varies with each station. - Staff.

1943

408 Visher, S.S. "Some influences on American climate of the Ocean and Gulf." American Meteorological Society, Bulletin, 24:79-84, 1943.

Discusses effect of Gulf of Mexico on climate of coastal areas. - Staff.

1944

409 Bent, A.E. "Climate in relation to microwave radar propagation in Panama." Massachusetts Institute of Technology, Cambridge, Mass. Radiation Laboratory, Report no. 476, 1944.

1944

410 Dunn, G.E. "Analysis and forecasting of tropical cyclones with special reference to the Atlantic Ocean." Institute of Tropical Meteorology, Univ. of Chicago, 1944.

1944

411 Dunn, G.E. "Analysis and forecasting of tropical cyclones with special reference to the Atlantic Ocean." U.S. Air Weather Service, Technical Report no. 105-54, May, 1944. 35 p. DAS.

1944

412 Frolow, S. "Fumerolles de la Montagne Pelée." [Fumaroles of Mont Pelée.] Martinique, Rev. Trimestr., Fort-de-France, 1944. no. 1.

Diagrams of 3 recording thermographs

1944 cont.

of fumaroles on Mont Pelée are compared with diagrams of pressure, wind, temperature (in the sun) and precipitation. High correlations are found between the temperature of the volcano and the atmospheric pressure. Certain details are influenced by the wind but only in so far as the wind is a function of pressure. The mechanism of these relations is not simple since short-period (diurnal) variations of pressure do not influence the temperature. The relation with precipitation is also marked both for short and long periods. Correlations are established with local seismicity. This research brings to light the influence of climatological factors on volcanism. - Author.

1944

413 Frolow, S. "Nouvelles remarques sur les variations simultanées de la pression atmosphérique." [Further remarks on simultaneous variations of atmospheric pressure.] Martinique, Rev. Trimestr., Fort-de-France, 1944. no. 2. pp. 98-106.

Coefficient of correlation calculated for pressure graphs from Fort-de-France and Conakry (1936) was: r less than .30 for 7 percent of year, r greater than .30 but less than .50 for 21 percent and r greater than .50 for the rest of the year. Variations, which are not connected with other weather factors, can reach as much as + 0.6 mb a day; hence it is necessary to eliminate it from synoptic charts if one wishes to compare charts. - Author(mod).

1944

414 Jordan, E.S. "Observational study of the upper-wind circulation around tropical storms." Journal of Meteorology 9:340-346, figs.

All available rawin reports taken within the circulation of tropical storms are combined to obtain a generalized pattern of the upper-wind circulation. The cyclonic circulation decreases rapidly with height, and at 45,000 ft, the circulation is anticyclonic beyond 3 degrees latitude from the center. - Staff.

1944

415 Nichols, R.L. "Mud-pellet rains." American Meteorological Society, Bulletin, 25:342-343, 1944.

Description of mud rains in several volcanic eruptions. At Prêcheur, Martinique during the 1902 eruption of Mont Pelée, houses were pelted with mud balls which, when 2 or more coalesced, formed flattened spheroids 2, 4, and 6 in. in diameter. Author(mod).

1944

416 Norton, G. "Some Notes on Forecasting

1944 cont.

for Atlanta and Miami Districts." U.S. Weather Bureau Research Paper, no. 15, 1944. 30 p.

1944

417 Penndorf, E. and Penndorf, R. "Strömungsverhältnisse in der freien atmosphäre, besonders die des Passates, über dem Karibischen Meer und dem Golf von Mexico." [Flow relationships in the free atmosphere, especially of the trade winds, over the Carribean Sea and Gulf of Mexico.] Annalen der Hydrographie und Maritimen Meteorologie, 72(4):107-116, 1944. tables. charts. refs.

1944

418 Riehl, H. and Shafer, R.J. "Recurvature of tropical storms." Journal of Meteorology, 1(1/2):42-54, Sept. 1944. figs. refs.

Relation of paths of four tropical storms in the Gulf of Mexico and Atlantic Coast areas (1935 - 1941) with the upper wind field. Changes in the height of the base of the polar westerlies is examined. When the base lowers west of a storm in connection with an eastward moving middle-latitude trough and remains low, northward recurvature results. If the upper westerlies cannot maintain themselves in low latitudes however, the storm will by-pass the northern trough and continue to travel westward. Similar tested rules are also stated for several types of abnormal hurricane tracks, and some actual observations are made on the formation of tropical cyclones or storms. In applying these principles to 60 analyses of tropical disturbances for 1935 - 1943, only 3 situations failed to verify. Author (mod) MGA 71-72.

1944

419 Sumner, H.C. "North Atlantic hurricane of October 13 - 21, 1944." Monthly Weather Review, 72:221-223, 1944.

Review of a North Atlantic hurricane which resulted in the loss of over 300 lives and caused property damage in excess of $100,000,000 in the Cuba-Florida area. Data on highest wind velocities, lowest barometric pressures, casualties, and estimates of property damage are included in tabular form. A charted path of the hurricane shows successive 12-hour movements of the center. Author.

1944

420 U.S. Air Weather Service. "Rain-cloud weather reports associated with the frontal passage of 17 - 20 December 1943 in Panama." Technical Report, 105-56, Nov. 1944. DAS.

1945

421 American Meteorological Society "Observations of the clouds and weather during a flight over and into the Gulf

1945 cont.
hurricane of September 18, 1943." Its Bulletin, 26:271-273, 1945.

Observations in a Gulf of Mexico hurricane made on a B-17 in a round trip flight from Oklahoma City by U.S. Air Force and Navy crews. A record was made and evaluated with an aerometeorograph during descent of the plane from above the storm at 30,000 ft down into the eye at 12,000 ft and out through the side of the storm to its outer edge. This was one of the 2 or 3 pioneer hurricane flights. - Staff.

1945

422 Cambiaso, V., J.B. "I. Régimen pluviométrico en la Isla Hispaniola (Santo Domingo). II. Sistema térmico de la Hispaniola (Santo Domingo)." [I. Rainfall regime of the Island of Hispaniola (Santo Domingo). II. Thermal system of Santo Domingo.] Revista de Agricultura, 36(063): 4-44, Nov-Dec. 1945. figs. diagrs. tables.

Description of rainfall and air temperature characteristics of Santo Domingo. Monthly rainfall for 1935 - 1944, mean monthly rainfall for 1935 - 1944 and 1935 - 1939 are given for various stations. Map showing the distribution of rainfall and a graph of the annual rainfall for 1925 - 1944 are presented. Section on temperature presents histograms of the mean daily temperature for various localities, tables of the mean daily maximum and minimum for 1935 - 1944 and the absolute maximum of temperature. - Staff MGA 3.2-142.

1945

423 Cuba. Marina de Guerra. "Radiosonda." [Radiosonds.] Havana, 1945. 27 p. DLC. QC879.C86.

1945

424 Cuba. Observatorio Nacional. "Estado general del tiempo en la Habana en el primer cuatrimestre del año." [General state of the weather in Havana in the first four months of 1945.] Its Boletín, Época IV, 1(1):116-144, 1945.

Includes tables of daily radiosonde data, upper air winds, surface observations, monthly maximum, minimum and mean temperatures and monthly total precipitation at various places in Cuba outside of Havana. Monthly precipitation totals are given for several locations during 1939 - 1944. - Staff.

1945

425 Fletcher, R.D. "General circulation of the tropical and equatorial atmosphere." Journal of Meteorology 2:167-174, Sept. 1945.

1945

426 González Muñoz, A. "Notes históricas sobre ciclones." [Historical notes on cyclones.] Cuba. Observatorio Nacional, Boletín, Época IV, 1(1):57-72, 1945.

Gives references to various cyclones and hurricanes in Cuba during the 17th - 19th centuries as found in historical works, including some not previously catalogued. - Staff.

1945

427 Institute of Tropical Meteorology, Rio Piedras, Puerto Rico (Civilian Staff) "Tropical synoptic meteorology." Handbook of Meteorology, McGraw-Hill Book Company, Inc., pp. 763-803, 1945. figs.

General discussion of: 1) principles of tropical meteorology, 2) synoptic models of the tropics, 3) tropical analysis and 4) tropical forecasting. - Staff.

1945

428 Millas, J.C. "Brisotes en La Habana." [Strong breezes of Havana] Cuba. Observatorio Nacional, Boletín, Época IV, 1(1): 73-84, 1945.

Describes and discusses origins of the strong northeasterly breezes (greater than 12.5 m/s) characteristic of the northern coast of Cuba (and western) with maximum frequency in November and December. Indicates possible connection with failure of coast telegraph lines to salt spray. - Staff.

1945

429 Riehl, H. "Note on tropical storm north of Puerto Rico on September 13, 1945." American Meteorological Society, Bulletin, 26:357-360, 1945. fig. table.

Description of a severe hurricane which passed a short distance north of Puerto Rico on 13 September and struck Florida on 15 - 16 September 1945. As early as 11 September, when observations from the Lesser Antilles first disclosed its presence, there were indications that this storm would not follow the northwesterly path of its predecessor of only two days, but would travel much closer to the main island chain. - Author(mod).

1945

430 Riehl, H. "Waves in the easterlies and the polar front in the Tropics." Dept. of Meteorology, Univ. of Chicago, Miscellaneous Report no. 17, 1945. 79 p.

1945

431 Rutgers, A.A.L. "Ons koninkrijk in Amerika: West Indië." [Our kingdom in America: West Indies.] Hague, 1945. DLC.

History of the settlement of the Dutch in the Caribbean and a review of the development of that area. Contains a description of the climate (pp. 33-37) and tabular data contains the following: mean annual and

1945 cont.
monthly (warmest and coldest) temperature (°C) summaries over periods 1911 - 1915 and 1919 - 1933 at Curaçao and Philipsburg, relative humidity at Paramaribo, Coronie, Kabelstation, Curaçao and Philipsburg, cloud amounts (8, 14 and 18 hr) at Coronie, Paramaribo, Curaçao and Philipsburg and total rainfall (mm) at Willemstad (40 yrs) and Oranjestad, St. Eustatius (53 yrs). - Staff.

1945
432 Santamaria, L. "Promedio de las lluvias en algunos lugares de Cuba, 1922 - 1942." [Mean precipitation in some places in Cuba, 1922 - 1942.] Cuba. Observatorio Nacional, Boletín, Época IV, 1(1):91-94, 1945.

1945
433 Simpson, R.H. "Synoptic meteorology of the Tropics." U.S. Army Air Forces Tropical Weather School, 1945.

1945
434 U.S. Army Air Forces, Air Weather Service. "Analysis of forecasting of tropical cyclones of 1944 in the Caribbean Sea and western Atlantic Ocean with the aid of aircraft reconnaissance reports and rawins." Technical Report 105-15, May 1945. 30 p. DNO.

1945
435 U.S. Army Air Forces, Headquarters, "Forecasting the formation and movement of tropical cyclones in the Caribbean Sea and western Atlantic Ocean." Weather Div. Report no. 962, 33 p. 1945. On file: Headquarters, U.S. Air Weather Service, Scott Air Force Base, Ill.

1945
436 U.S. Army Air Forces, Headquarters, "Tropical meteorology." AAF Manual 105-0-2, 234 p. On file: Headquarters, U.S. Air Weather Service, Scott Air Force Base, Ill.

1945
437 U.S. Hydrographic Office. "Weather summary. South America: northern and north-western part." For use with Naval Air Pilots. H.O. Publ. no. 528. 1945. DAS.

Contains maps (Scale 1:42,500,000) of ocean areas (northern South America including Netherlands West Indies) of monthly (February, May, July, October and December) data (5 to 70 yrs) as follows: average surface wind drift direction, constancy and force; distribution of wind speed in percent of observations within limits of calm, 1 - 3, 4 - 6, and greater than 7 Beaufort force; percent of observations of low clouds, exceptional visibility, haze and fog; frequency of rain and showers, thunderstorms and squalls and bargraphs of monthly and

1945 cont.
annual mean rainfall distribution. - Staff.

1946
438 Bryce, W. "Reference book of Jamaica." Kingston, 1946. 404 p. figs. maps. DLC.

Contains meteorological data. - Staff.

1946
439 Gilbert, J.T. "Report on the hurricane for northern Jamaica, August 20, 1944." Kingston, Jamaica, Meteorological Office, 1946. 4 p.

1946
440 Hiss, P.H. "Netherlands America." London 1946. 225 p. plates. maps. refs. DLC.

A history of the Netherlands Antilles. Appendices contain mean annual (warmest and coldest month) temperature (°F) and rainfall totals (in) at Willemstad (temperature 1910 - 1942, rainfall 1894 - 1942); Philipsburg (temperature 1920 - 1942; rainfall 1892 - 1942) and Paramaribo (temperature 1899 - 1940, rainfall 1847 - 1942). Also gives a general description of the weather. - Staff.

1946
441 Jamaica. Meteorological Office. "Report on the hurricane of Northern Jamaica, August 20th, 1944." Kingston, 1946. 4 p. charts. DAS.

Includes path of the hurricane over Jamaica, pressure, wind characteristics and accompanying weather and damage. Pressure recordings from Palisadoes Airport and Vernam Field (United States Air Force) and records from 2 upper air soundings from balloons at Palisadoes during the hours preceding the storm are included. Over 30 people were killed and property damage amounted to £3,000,000. Charts show hurricane track and rainfall for 24 hrs beginning at 7 a.m. on 20 August. - Staff MGA 7J-58.

1946
442 Riehl, H. and Schacht, E.J. "Methods of analysis for the Caribbean region." American Meteorological Society, Bulletin 27:569-575, 1946.

1946
443 Riehl, H. and Schacht, E.J. "Some Aspects of Puerto Rican Rainfall." American Geophysical Union Transactions, v. 28, no. 3, 1946.

1946
444 Röhl, E. "Climatología de Venezuela." [Climatology of Venezuela.] Venezuela, Ministerio de la Defensa Nacional, 1946. 36 p. DAS.

1946
445 Schacht, E.J. "Mean hurricane sounding for the Caribbean area." American Meteorological Society, Bulletin, 27:324-327, 1946.

1946

446 Schell, I.I. Foreshadowing the winter precipitation in Montana and Florida." American Meteorological Society, Bulletin, 27:33, 1946.

1946

447 Sherman, W.O. "Weather patterns of the eastern Gulf of Mexico." U.S. Air Weather Service, Report for Feb. 1945-March 1946, Study, no. 4a.

1946

448 Simpson, R.H. "Note on the movement and structure of the Florida hurricane of October 1946." Monthly Weather Review, 75: 53-58, 1947. figs. refs.

Radiosonde was released in the eye of the storm and others in the vicinity at Tampa, Florida. Air Force airplane flew over the top of the storm enabling motion pictures of cloud formations to be made. History and movement of storm is described and illustrated by means of cross-sections and adiabatic charts. Pilot described the eye as a solid wall of clouds about 60 miles in diameter. Icing was encountered at 20,000 ft. - Staff.

1946

449 Simpson, R.H., "On the motion of tropical cyclones." American Geophysical Union, Transactions, 27:641-655. 1946.

1946

450 Simpson, R.H. "On the slope of low-pressure axes as a criterion for deepening in the Tropics." American Meteorological Society, Bulletin, 29:9, 1946.

1946

451 Sumner, H.C. "North Atlantic hurricanes and tropical disturbances of 1945." U.S. Hydrographic Office, Pilot Chart of American Waters, no. 3500, 1946.

1946

452 U.S. Weather Bureau. "Forecaster's report on hurricane of October 6 - 9, 1946." DAS.

Describes the path of the storm in the Gulf of Mexico, its intensity and the slight damage it caused. Tabular wind data for 47 stations in the area and Weather Bureau advisories issued during the hurricane are included. - Staff.

1946

453 Vivó, J.A. and Gómez, J.G. "Climatología de México." [Climatology of Mexico.] México. Instituto Panamericano de Geografía y Historía, Publicación no. 19, 1946. 73 p. figs. charts.

Contains standard climatic data for 350 stations arranged by states. Charts include isolines of number of clear days, amount of sunshine, isotherms, extreme maximum and minimum temperature for every third month

1946 cont.

and for the year. Also includes mean temperature of the upper atmosphere, mean surface and upper air pressure, prevailing winds at surface and up to 10 km, annual mean relative humidity, vapor pressure, days with frost, fog, precipitation days and total precipitation. There are also a number of 'climatic classification' charts using various systems such as Köppen, Thornthwaite, etc. Staff. MGA 3.4-228.

1946

454 Woods Hole Oceanographic Institution. "Vertical motion and exchange of heat and water between the air and the sea in the region of the trades." Dittoed. Oct. 1946. 142 p. figs.

Report of studies conducted during the spring of 1946 for Bureau of Ships in the Panama and Caribbean Sea Frontiers. - Staff.

1947

455 British Admiralty, Hydrographic Department, 1947. "Weather Summary: West Indies." H.O. Pub. no. 530, Washington, D.C.

1947

456 Garbell, M.A. "Tropical and equatorial meteorology." New York: Pitman, 1947.

1947

457 Gilmore, M.H. "Tracking ocean storms with seismograph." American Meteorological Society, Bulletin, 28:73-86, 1947. figs. table.

Microseismic Research Project was started by the U.S. Navy (1943) in an effort to find a better and cheaper method for locating and tracking severe tropical disturbances several hundred miles from land. Tripartite seismograph equipment was installed at the Guantanamo Bay, Cuba naval base in 1944. Microseismic data suggest that a storm causes the ocean bottom over which it passes to vibrate and these more or less regular oscillations are called microseisms. They travel outward from the storm center in concentric circles and are recorded on a seismograph. The amplitude of the microseisms recorded for a particular storm appears to depend principally on the storm's intensity and distance from the station and to a lesser degree on the depth of the water over which it passes. The maximum effective distance a storm can be detected in the Caribbean is about 600 miles. Author(mod).

1947

458 Great Britain. Meteorological Office "International meteorological code adopted by the International Meteorological Organisation, Washington, 1947." London, 1947. 39 p. chart. tables. MH-BH.

1947

459 Greenwood, G.W. "Monte Cristi meteorology." 1947. 56 p. DAS.

Graphical presentations of wind, rainfall, temperature, relative humidity, pressure, sunlight and evaporation at Monte Cristi (northwest corner of the Dominican Republic) based on observations since 1940. Also detailed descriptive text on climate and elements. Data on hurricanes at Santo Domingo and monthly rainfall amounts (1945 - 1947) in graphical form at 12 stations are included. - Staff.

1947

460 Gutenberg, B. "Microseisms and weather forecasting." Journal of Meteorology, 4(1): 21-28, 1947. figs. refs.

Certain types of microseisms are correlated with atmospheric disturbances and can be used in weather forecasting to aid in locating tropical disturbances. Publications referring to this method are cited. Method's routine application by U.S. Navy in locating hurricanes in the Caribbean area is discussed, as well as precautions which must be taken in drawing conclusions from amplitudes of microseisms. Author(mod) MGA 5A-148

1947

461 Harris, M.F. "Temperatura de Puerto Rico." [Temperature of Puerto Rico]. In Almanaque Agrícola de Puerto Rico, 1947. pp. 75-82. DAS.

1947

462 Haurwitz, B. "Harmonic analysis of the diurnal variations of pressure and temperature aloft in the eastern Caribbean." American Meteorological Society, Bulletin, 28:319-323, 1947. figs. refs.

1947

463 Klein, W.H. and Winston, J.S. "Path of the Atlantic hurricane of September 1947 in relation to the hemispheric circulation." American Meteorological Society, Bulletin, 28:447-452, 1947. figs. refs.

Movement of Atlantic hurricane of 11 - 20 September 1947, into the Gulf of Mexico rather than up the Atlantic Coast is attributed to dynamic anticyclogenesis over the eastern United States. An attempt is made to explain this anticyclogenesis by the transfer of energy downstream from the mid-Pacific at a rate considerably greater than the speed of individual air particles. The motion and change in intensity of the 700 mb trough and ridge systems are discussed in terms of constant absolute vorticity, horizontal temperature advection and confluence. It is concluded that large-scale features of hemispheric circulation are of great importance for short-range, as well

1947 cont.

as for extended weather forecasting. - Author MGA 7K-72.

1947

464 López, M.E. "Pressure and temperature variations in the free atmosphere over San Juan." Institute of Tropical Meteorology, Univ. of Puerto Rico, 1947 (?) unpublished.

1947

465 Meier, F. "Hurricane warning: notable storms involving sailing ships on our sea coast and Great Lakes." New York: Dutton, 1947. 254 p. photos. DAS.

Popular accounts of twenty storms which caused damage or loss of life in various coastal areas of the United States, from Maine to the Gulf of Mexico, on the Pacific Coast and the Great Lakes. - Staff MGA 7I-77.

1947

466 Riehl, H. "Diurnal variation of cloudiness over the subtropical Atlantic Ocean." American Meteorological Society, Bulletin, 28:37, 1947.

1947

467 Riehl, H. Diurnal variation of moisture and stability aloft in the vicinity of San Juan, Puerto Rico." American Meteorological Society, Bulletin, 28:137-143, 1947. figs. tables. map. refs.

Average values of moisture and stability for the lower troposphere are computed at three-hourly intervals for 24 - 31 October and 6 November to 2 December 1944. Comparison of diurnal moisture and stability variation with diurnal rainfall variation does not yield a satisfactory explanation of the latter. Cloud observations, however, suggest an explanation of the precipitation curve, based on the effect of topography on the field of vertical motion. - Author.

1947

468 Riehl, H. "Diurnal variation of pressure and temperature aloft in the eastern Caribbean." American Meteorological Society, Bulletin, 28:311-318, 1947. figs. tables. refs.

From three-hourly special radiosonde observations, the diurnal pressure and temperature variation is computed for 8 levels between the surface and 16 km. The quality of observations is considered and corrections are applied for the effect of solar radiation on the radiosonde instrument. Both pressure and temperature show large diurnal variations even in the high troposphere. It is suggested that these variations cannot be caused by horizontal convergence and divergence, but must be due to non-adiabatic processes aloft. - Author.

1947

469 Riehl, H. and Schacht, E.J. "Methods

1947 cont.
of analysis for the Caribbean region." American Meteorological Society, Bulletin, 27:569-575, 1947.

1947
470 Sanders, R. "Hurricane of September 19, 1947 in Mississippi and Louisiana." U.S. Weather Bureau. DAS.

Map presents meteorological features and path of the hurricane of 19 September 1947 in Mississippi and Louisiana. Also presented are: 1) descriptive data on the movement of the hurricane, 2) brief estimates of damage and 3) a table with wind, tide and pressure observations for 8 - 85 stations in Mississippi and Louisiana. - Staff.

1947
471 Simpson, R.H. "Synoptical aspects of the Intertropical Convergence near Central and South America." American Meteorological Society, Bulletin, 28:335-346, 1947.

1947
472 Stommel, H. "Entrainment of air into a cumulus cloud." Journal of Meteorology, 4(3):91-94, June 1947. figs. table. refs. eqs.

Theory of convective clouds is presented based on the hypothesis that ascending currents in a cloud entrain air from its surroundings. A method is developed for computing the amount of entrainment from a knowledge of the temperature and specific humidity inside and outside the cloud. The concentration of water in the form of drops is determined and the theory is applied to some observations of trade cumulus made near San Juan, Puerto Rico. - Author(mod).

1947
473 U.S. Hydrographic Office. "Weather summary: West Indies." H.O. no. 530. For use with Naval Air Pilots, Wash., D.C., 1947. 199 p. DAS.

Discusses general climatology of the West Indies with illustrations showing stages in the development of a cyclone wave, hurricane tracks and monthly mean pressure for individual stations plus tabular data giving percentage frequency summaries of elements affecting flying weather at selected places. Winds and weather of ocean areas and brief descriptions of the climate of individual islands of the area are also presented. Upper air data, surface and upper air wind roses and tables with seasonal wind summaries are given for selected stations. Surface data are summarized for specific stations and ocean areas in the West Indies. - Staff.

1947
474 U.S. Navy Aerological Service. "Note

1947 cont.
on the double eye phenomenon as observed during the hurricane, 11 - 20 September, 1947." NAVAER 50-IR-207, 1947. DAS.

Gulf of Mexico hurricane. - Staff.

1947
475 U.S. Weather Bureau. "Weather summary, West Indies, for use with Naval Air Pilot." U.S. Naval Oceanographic Office, H.O. 365, 366 and 530, 1947. 199 p. tables. charts. DAS.

Upper wind data for 11 stations. Wind roses are given for each season for levels up to 26,200 ft for Miami; 32,800 ft for St. Georges (Bermuda), Key West and San Juan (Puerto Rico); 45,900 ft for Kingston and Swan Islands and 20,000 ft for Port of Spain. Resultant winds and percentage frequencies of winds from each direction and for different speed groups are tabulated. Short notes are provided on average velocities, prevailing winds and transition levels. - Staff MGA 4E-151.

1947
476 Virgin Islands of the United States. Agricultural Experiment Station, Christiansted. "Report." 1918 - 19 and 1946 - 47. 15 v. DLC.

Annual report containing climatological and meteorological descriptions and data. - Staff.

1947
477 Wexler, H. "Structure of hurricanes as determined by radar." New York Academy of Sciences, Annals, 48(Art. 8):821-844, Sept. 15, 1947. figs. tables. refs.

Discussion of radar observations of hurricane of 14 - 15, September 1945 as photographed at Orlando, Florida. Path of pressure center is compared with center of rotation obtained from radar scope photographs. Discussion of droplet size necessary for radar returns and weather conditions accompanying this hurricane are reviewed. Analysis of cloud or precipitation bands forming concentric (spiraling inward) rings and a tentative explanation are given. Comparison is made with conditions observed by radar in typhoon of 26 August 1945 and 18 December 1944 in the west Pacific including width of bands, spacing, inward spiraling and the eye of the storm. Path of Florida hurricane is shown and possibility of tilt of axis with height discussed. - Staff MGA 71-79.

1947
478 Wickham, T.C.W. "High pilot-balloon ascents at Piarco, Trinidad." Meteorological Magazine, London 76:251, 1947.

1948
479 Abbot, C.G. "Solar variation attending

1948 cont.

West Indian hurricanes." Smithsonian Miscellaneous Collections, 110(1), 20 April 1948. 7 p. fig. tables. refs.

Values of solar constant were tabulated from 10 days before to 12 days after time when 63 hurricanes were first reported. Averages show a gradual decrease in values for first 10 days and then a sharp minimum on hurricane day, with values increasing on third following day. - Staff MGA 2.4-78.

1948

480 British Admiralty, Hydrographic Dept., "Weather summary: Central America." H.O. Pub. no. 531, Wash., D.C., 1948.

1948

481 Brooks, C.F. "Changes in hurricane progress over land." American Meteorological Society, Bulletin, 29:236, 1948.

Comparison of hurricanes in Jamaica (1928) and Puerto Rico (1944) with reference to effects of movement over land and restrengthening of winds over the sea. - Staff.

1948

482 Caracas Academy of Sciences "Historia de la meteorologiá de Venezuela." [History of meteorology in Venezuela.] Paper presented at the meeting of 31 March 1948, Physical, Mathematical and Natural Dept., Caracas, 1948, 41 p. DLC.

1948

483 Cressman, G.P. "Relations between high and low latitude circulations." Dept. of Meteorology, Univ. of Chicago, Miscellaneous Report no. 24, pp. 65-100, 1948.

1948

484 Freeman, J.C. "Analogy between the equatorial easterlies and supersonic gas flows." Journal of Meteorology, 5:138-146, 1948.

1948

485 Frolow, S. "Observations d'un cyclone tropical en formation." [Observations of a tropical cyclone in formation.] Météorologie, 4th ser., no. 9, pp. 66-71, Jan./Mar. 1948. figs. photos.

Study of a hurricane of the middle of September 1945 which crossed the Antilles to Florida. Successive cloud formations are illustrated by a series of panoramic photos from Fort-de-France showing convergence of cloud lines at a point 350 km to the north. - Staff MGA 7K-76.

1948

486 González P., E. "Datos detallados de climatología de Venezuela." [Detailed data on climatology of Venezuela.] Venezuela. Dirección de Salubridad Pública. División de Malariologiá, Publicaciones, no. 8, Dec. 1948. 639 p. almost entirely tables.

1948 cont.

graphs. DLC.

Volume contains data from numerous stations which did not exist in 1941 when the author's Climatología de Venezuela was published. For Caracas, data (1935) on prevailing winds, average speed of wind, hours of sunshine (1938 - 1946), evaporation (1937 - 1946), rainfall and days with rain (1891 - 1946), maximum rain in 24 hrs (1935-1946), relative humidity (1937 - 1946), maximum and minimum temperatures and pressure (maximum and minimum) are presented. Other station data of rainfall, number of rainy days, temperatures, winds and pressure for each month are tabulated. - Staff MGA 7.3-16.

1948

487 Karl Squires, Engineers. "Hurricane area map." 1925 - 1948. DLC Map Div.

Map (Scale 1:9,000,000) contains hurricane tracks (annual) for the Caribbean area and coastal areas of southeastern United States, Mexico and the northern part of South America. Tabular summaries contain monthly (January - October) hurricane frequencies by year (1925 - 1948). - Staff.

1948

488 Langwell, P.A. "Inhomogeneities of turbulence, temperature and moisture in the West Indies trade wind region." Journal of Meteorology, 5(5):243-246, Oct. 1948. figs. table. refs.

Report of an airplane investigation of convection cells in clear air between cumulus clouds over the ocean near Puerto Rico in April 1946. Clear air turbulence was explained as the remains of a dissipated cloud. - Staff MGA 3K-113.

1948

489 López, M.E. "Technique for detailed radiosonde analysis in the tropics." American Meteorological Society, Bulletin, 29:227-236, 1948. figs. refs.

Various methods of analyzing raobs in the Tropics for forecasting purposes were tested during a 2-yr period at the Institute of Tropical Meteorology, University of Puerto Rico and at other stations in the West Indies. A combination of the best features is recommended. The technique consists in plotting the 24-hr change of contours of isobaric surfaces on a time or space cross-section. Some of the difficulties and limitations of such methods are discussed. - Author.

1948

490 McGregor, A.H. "Hurricane map 1931 - 1948." DLC.

Includes the Caribbean area and the Greater and Lesser Antilles. Presents

1948 cont.

hurricane tracks (light lines), winds (broad lines) not developing into hurricanes and storms regardless of intensity (broad lines) on a map (Scale 1:11,000,000). Tabular summaries show monthly (June - November) hurricane frequencies by year (1931 - 1948). A similar map contains data for the period 1924 - 1946 with tabular summaries of hurricane frequencies. - Staff.

1948

491 New York Univ. Dept. of Meteorology "Weather Analysis of the Tropical Atlantic." Pt. 1 and 2, Weather Div. Report no. 345. 1948 (?). DAS M82.1/264 N532w.

1948

492 Palmén, E.H. "On the formation and structure of tropical hurricanes." Geophysica, 3:26-38, 1948. figs. refs. eq.

Author analyzed radiosonde data for the Caribbean area and found that instability of the convective or conditional type extends through deeper and thicker layers than in extratropical regions. Charts of the North Atlantic area showing differences between temperature of air lifted adiabatically from the surface and that of surrounding air at the 300 mb level suggests a strong tendency toward hurricane formation in the western Atlantic during summer and autumn, and the inability for hurricanes to develop during winter. The vertical structure of hurricanes is studied and illustrated by synoptic analysis of the 17 September 1947 hurricane. - Staff MGA 7-46.

1948

493 Palmén, E.H. "Structure of the tropical cyclone." American Meteorological Society, Bulletin, 29:73-74, 1948. Paper read at the Chicago Meeting of the Society, 29 - 30 Dec. 1947.

Discusses the structure of Atlantic hurricanes and the Miami - New Orleans hurricane of September 1947. - Staff.

1948

494 Powis, A.K. and Thompson, C.A. "Trinidad Weather." Naval Meteorological Branch Circular no. 1, London.

1948

495 Riehl, H. "On the formation of West Atlantic hurricanes." Pt. 1, "Studies of upper-air conditions in low latitudes." Chicago. Univ. Dept. of Meteorology, Miscellaneous Reports, no. 24, 1948. 67 p. figs. charts. tables. refs.

Stable situations occurring in the West Indies are analyzed from a climatological synoptic point of view and are compared with unusual hurricane conditions. Hurricane situations analyzed show lower

1948 cont.

pressure up to 11 km and higher from 12 - 18 km with higher temperature (especially in the upper troposphere) and humidity than the normal tropical atmosphere. Upper air pressure, wind and temperature data for typical situations of cyclogenesis in the West Indies region are analyzed by means of cross-sections, adiabatic, streamline and synoptic charts (to 10 km). Various aspects of cyclogenesis due to superposition and equatorial shear-lines are treated in separate chapters. - Staff MGA 7I-86.

1948

496 Riehl, H. "Radiosonde observation in the eye of a hurricane." Royal Meteorological Society, Quarterly Journal, 74:194-196, 1948.

Radiosonde released at Tampa, Florida, October 1945. - Staff.

1948

497 Riehl, H. "Studies of upper air conditions in low latitudes, I." Univ. of Chicago, Dept. of Meteorology, Misc. Report no. 24.

1948

498 U.S. Beach Erosion Board "Recent storm damage along the coasts of Florida and Mississippi." Its 2(1):1-7, Jan. 1948. DAS.

Description and discussion (including photographs) of damage on the Florida and Mississippi coasts resulting from two hurricanes occurring in September 1947. - Staff.

1948

499 U.S. Navy Aerological Service. "Hurricanes and tropical storms of 1947 Atlantic area." Wash., D.C., March 1948. 119 p. synoptic charts. (NAVAER 50-1R-218). DLC.

Nine hurricanes that invaded the West Indies, Gulf of Mexico or southeastern United States during 1947 are analyzed and described in detail. Full page synoptic charts are reproduced for every 6 hr period during the life of each storm. Tracks of each storm are shown individually and on a composite chart for the entire season. - Staff MGA 2.9-87.

1948

500 U.S. Navy Aerological Service. "Report of hurricane at Key West 18 - 21 September 1948." NAVAER 50-45T-11, 1948. DAS

1948

501 U.S. Navy Hydrographic Office. "Weather summary central America for use with naval air pilots." H.O. Publication no. 531.

1948

502 Visscher, H.B. "Formation of extratropical cyclones in the Gulf of Mexico and the resultant spread of precipitation."

1948 cont.

Eastern Air Lines, Inc. Meteorological Dept., Atlanta, 1948. 30 leaves. figs. tables. (Mimeographed) DAS.

Secondary waves which form along the Atlantic Coast and waves which form in the Gulf of Mexico bring bad weather to the Mississippi valley or southern States. Analysis of 850 mb charts for 2 yrs is accompanied by synoptic charts and rules for forecasting formation of these frontal waves and for forecasting associated weather patterns in the southeast. - Staff MGA 2.1-48

1948

503 Vuorela, L.A. "Contribution to the aerology of the tropical Atlantic." Journal of Meteorology 5:115-117, 1948.

1948

504 Willey, H.F. "Air Weather Service sferics operations in the Caribbean area." American Meteorological Society, Bulletin, 29:287, 1948. Abstract only. American Meteorological Society, Washington Meeting, June 1948.

General description of U.S. Air Weather Service Sferics Network in the Caribbean area. Describes operating principles and reasons for 4-station network. Includes a discussion of general correlations of sferics with weather conditions. - Author (mod).

1949

505 Asociación Nacional de Hacendados de Cuba. "Estado del promedio en pulgadas de lluvia caída mensualmente en los ingenios de Cuba durante los años que se citán a continuación." [Mean monthly rainfall in inches at Cuban sugar cane plantations during the years given below.] Mimeographed. DAS.

Tabular mean monthly and annual amounts of rainfall at Cuban sugar plantations (1940 - 1949). - Staff.

1949

506 Coons, R.D., Jones, E.L. and Gunn, R. "Fourth partial report on artificial production of precipitation: cumulus clouds, Gulf States, 1949." American Meteorological Society, Bulletin, 30:289-292, 1949.

Tests carried out in cooperation with U.S. Air Force, May - June 1949, near Mobile, Alabama. - Staff.

1949

507 Fletcher, R.D. "A hydrometeorological analysis of Venezuelan rainfall." American Meteorological Society, Bulletin, 30:1-9, 1949.

Storm rainfall distribution found to be similar to annual rainfall distribution. Main rain storm on 9 - 12 June 1945 is discussed. - Staff.

1949

508 Forsdyke, A.G. "Weather forecasting in tropical regions." Geophysical Memoirs London, v. 10, no. 82, 1949.

1949

509 "Honduras rustlers in the sky." Time, 54(7):27 15 Aug. 1949.

Brief popular article describing successful dry ice seeding of clouds for rainmaking by the United Fruit Company over the Sula Valley, Honduras. - Staff MGA 11M-146.

1949

510 Kraft, A.J.C. "Netherlands Antilles." Amsterdam, 1949. DLC.

Each island of the Netherlands Antilles is described. Tabular monthly summaries (1948) contain the following: temperature (°C)-mean daily, mean and absolute maximum and minimum; relative humidity; winds-mean, prevailing direction (16 pts), mean speed (mph) and maximum speed by direction; clouds-amounts in percentage of possible within limits of 1/10, 1-5/10, 6-9/10, and greater than 9/10; precipitation (mm)-totals (17 stations in Curacao, Oranjestad in Aruba, Kralendyk, Rincon in Bonaire, Philipsburg on St. Martin, Oranjestad, Concordia on St. Eustatius and The Bottom on Saba. - Staff.

1949

511 Latour, M.H. and Bunting, D.C. "Radar observation of Florida hurricane, Aug. 26 - 27, 1949." Florida. Univ. Engineering and Industrial Experiment Station, Engineering Progress 3(8); Bulletin Series no. 29, Oct. 1949. 11 p. figs. refs. DLC.

More than 2500 radar scope photographs were taken at intervals of 30 sec from which the rate of movement of the hurricane was computed. - Staff MGA 7I-92.

1949

512 McDowell, D.C. "Results of a high-altitude rawinsonde flight over Puerto Rico." American Meteorological Society, Bulletin, 30:65-66, 1949. graph.

1949

513 Owens, C. "Giant of the West Indies." Air Force, 32(1):29-31, 42, Jan. 1949. illus.

Account of activities of the Air Force in hurricane reconnaissance with mention of joint Air Force-Navy-Weather Bureau Hurricane Warning Center at Miami, Florida. - Staff MGA 7J-62.

1949

514 Palmer, C.E. "Equatorial front." Air Material Command, Base Directorate for Geophysical Research. Appendix to the 5th Quarterly Report of the Tropical Project, U.C.L.A. Cambridge, Mass., 1949.

1949

515 Puerto Rico. Bureau of Statistics,

1949 cont.

Investigations and Commercial Services. "Climate and other physical characteristics; temperature, precipitation, relative humidity, hurricanes." In annual book on statistics of Puerto Rico, Fiscal year 1948-49. 50 - 59. tables. DAS.

1949

516 Schaefer, V.J. "Report on cloud studies in Puerto Rico." General Electric Research Laboratory, Schenectady, Occasional Report no. 12, Project Cirrus, April 1949. 16 p.

Purpose of this operation was to determine the type and physical characteristics of clouds that occur in Puerto Rico during the winter months, and to develop and evaluate water seeding techniques. One of the results was the development of a technique for sampling rain in and under a cloud. - Staff MGA C-188.

1949

517 Zoch, R.T. "North Atlantic hurricanes and tropical disturbances of 1949." Monthly Weather Review, 77:339-341, 1949.

1950

518 [Amateur Weathermen of America, Franklin Institute, Philadelphia] "Florida hurricane of October 17 - 18, 1950." Weatherwise, 3(6):136-137, Dec. 1950. figs. photo.

The most violent hurricane to hit Miami since 1926 is described and copies of weather charts and barograph traces (lowest pressure 28.25 in. - 956.7 mb) are reproduced. Heavy damage was confined to a small area. Jacksonville reported 11.73 in of rain and wind gusts of 150 mph were reported (122 mph for 1 min and 97 mph for 5 min). - Staff MGA 7J-67.

1950

519 American Institute of Aerological Research, Denver, Colo. "Annual probabilities of tropical storms, north-western Gulf of Mexico." Houston, Tex. 1950. DLC.

1950

520 American Institute of Aerological Research, Denver, Colo. "Wave and storm factors in offshore structure damage." World Oil, 1 Feb. 1950. pp. 91 - 94.

Case histories of hurricane damage to offshore drilling platforms are an invaluable aid in the design and orientation of such structures. Preliminary report on oceanographic and meteorological factors involved in damage to offshore structures during the hurricane of 3 - 4 October 1949. Report was prepared by the American Institute of Aerological Research for Langham, Langston and Burnett, insurance counselors of Houston, as a part of a study of insurance

1950 cont.

factors in offshore drilling. - Staff.

1950

521 Anderson, E.A. and Saffir, H.S. "Miami suffers slight structure damage in severe hurricane." Civil Engineering, 20(12):36-38, Dec. 1950. fig. photos.

Pictures show damage to radio towers and other structures during hurricane of 17 October 1950. Anemograph record from top of Ingraham Building in Miami shows peak gusts of 150 mph for over 15 min just before calm and wind shift. After the wind shift, peak gusts averaged 120 mph with a maximum gust of 165 mph, probable. Wind pressures on structures are calculated and it is estimated that 150 mph would exert a pressure of 74 pounds per sq ft and 165 mph a pressure of 90 pounds per sq ft. Overturned freight cars indicated 52 per sq ft or more. - Staff MGA 7J-64.

1950

522 Bonney, R.G. [Observer] "Waterspouts, Caribbean Sea." Marine Observer, 20(150): 194-195, Oct. 1950. figs.

Sketches of twin water spouts. - Staff MGA 2.1-85.

1950

523 Brooks, C.E.P., et al. "Upper winds over the world." Great Britain Meteorological Office, Geophysical Memoirs, no. 85, 149 p. 1950. figs. tables. charts. refs.

Part 1 shows details in constructing wind roses and Part 2 includes world charts of 700, 500, 300, 200, and 130 mb topography for each season. Part 3 presents charts of mean standard vector deviation for the same levels. Part 4 includes seasonal charts of stream lines and mean vector speed in the Tropics up to 200 mb. - Staff.

1950

524 Brown, A.H. "Men against hurricane." National Geographic Magazine, 98(4):537-560, Oct. 1950. photos.

Describes detection and warning of hurricanes by means of airborne and ground radar on the coast of Florida. Radar photograph (taken at the Boca Chica Naval Air Station near Key West, Florida) shows the spiral structure of an approaching hurricane about 30 mi away. - Staff MGA 7J-66.

1950

525 Cameron, D.C. "Open season on hurricanes." Weatherwise, 3(5):108-109, 118, 1950.

Briefly describes 6 hurricanes of 1950. A map with tracks is presented showing hurricane which crossed the southern edge of the Dominican Republic. - Staff MGA 2.1-82.

1950

526 Canal Zone. Engineering and Construction Bureau. Meteorological and Hydrographic Branch. "Rainfall and runoff of the Gatun Lake watershed, 1907 - 1948." 1950. 152 p. figs. maps. DLC.

1950

527 Costa Rica. Dirección General de Estadísticas y Censos. "Geografía de Costa Rica (datos básicos)." [Geography of Costa Rica (basic data).] San José, 1950. 25 leaves. DLC.

New edition which contains climatological data. - Staff.

1950

528 Crary, A.P. "Stratosphere winds and temperatures from acoustical propagation studies." Journal of Meteorology, 7:233-242, 1950. figs. tables.

Winds and temperatures at 30 - 60 km levels are calculated from observations made in Panama and Bermuda (1948 - 1949). Results indicate lower temperatures than expected. - Staff.

1950

529 [Electrical World] "Radar tracks hurricanes: results promise aid in system operation." Its 133(17):91-93, 24 April 1950. For abstract see Jorgensen, R.C. and Gerdes, W.F. "Dow Chemical Company leads industry in using radar for hurricane detection." 1951.

1950

530 Geyer, R.A. "Bibliography of the Gulf of Mexico." Texas Journal of Science, 2(1):44-93, 31 March 1950.

1950

531 Glenn, A.H. "Gulf Coast hurricane design data." World Oil, Dec. 1950. pp. 101 - 104.

1950

532 Gordon, A.H. "Hurricanes at Barbados." Marine Observer, 20(147):37-39, Jan. 1950. fig.

Popular account of the most famous and destructive of the 40 hurricanes which have visited Barbados at irregular intervals since 1674. None has occurred since 1898 (except a weak one on 1 September 1949). Chart shows paths of hurricanes in North Atlantic during 1948 with respect to Barbados. - Staff MGA 4-65.

1950

533 International Civil Aviation Organization. Meteorological Committee. Final Report, Second Caribbean Regional Air Navigation Meeting, Havana, April 1950, issued Montreal, Aug. 1950. 81 p. at head of t-p: Doc. 6972, CAR/2-MET. DAS.

Complete report of transactions and recommendations of the Meteorological

1950 cont.

Committee of the International Civil Aviation Organization (ICAO) which held 8 meetings in Havana on 12 - 27 April 1950. The recommendations concern networks, weather offices, communications, upper air stations, reports from merchant ships, synoptic stations, routine exchanges from various points, etc. Large maps show recommended and existing surface and upper air stations in the Caribbean area. - Staff.

1950

534 Langham, Langston and Burnett, Houston, Tex. "Langburn map, showing Texas and Louisiana offshore lease blocks with annual probabilities of tropical storms." Houston, 1950. DLC.

Map (Scale 1:1,080,000) shows ocean depths in fathoms, magnetic variation chart, and graphs entitled: Annual probabilities of tropical storms and northwestern Gulf of Mexico. Maps were prepared by American Institute of Aerological Research, Pasadena, California. - Staff.

1950

535 Nicaragua. Dirección General de Estadística. "Movimiento meteorológico registrado en la República de Nicaragua durante el período de 1942 al 15 de mayo de 1949." [Meteorological activity recorded in the Republic of Nicaragua from 1942 to May 15, 1949.] Managua, 1950. 22 leaves. diagr. tables. DLC.

1950

536 Riehl, H. "On the role of the tropics in the general circulation of the atmosphere." Tellus, 2(1):1-17, Feb. 1950. figs. refs.

Contrary to older descriptions, air currents in the middle and upper troposphere over low latitudes are not steady but highly variable. A description of the tropical atmosphere in the layers below and above the bases of cumuli leads to an attempt to explain the steadiness of the low-level wind field which contrasts with the high variability of the upper layers. The strength of the mean meridional circulation and the fields of divergence and convergence at the surface are calculated, followed by a summary of available information on the high-level circulation. The field of motion aloft varies greatly with longitude, so that inferences concerning the Tropics as a whole can only be made from maps covering most longitudes. Such maps (300 mb charts) are available for a limited period down to latitude 10° N. They indicate that regions where the easterlies decrease upward alternate with regions of increasing easterlies. - Author(mod).

1950

537 Riehl, H. and Yeh, T.C. "Intensity of the net meridional circulation." Royal Meteorological Society, Quarterly Journal, 76:183-189, 1950.

1950

538 Tiehl, H. and Yeh, T.C. "Some comments on the tradewind cell." Royal Meteorological Society, Quarterly Journal, 76:340-342, 1950.

1950

539 Salivia, L.A. "Historia de los temporales de Puerto Rico." [History of the (tropical) storms of Puerto Rico.] San Juan, Puerto Rico, Imprenta la Milagrosa, 1950. 393 p. chart. tables. refs. DAS.

Description of each of 94 tropical hurricanes which affected Puerto Rico from 16 August 1508 to 21 September 1949. Most of the material was obtained from chronicles or newspaper reports, and although many years of work went into this voluminous publication, it is compiled from a popular rather than a scientific point of view. Useful features are a listing by centuries, a 5 p. bibliography, and a chart of the Caribbean showing trajectories of many tropical storms. - Staff MGA 2.8-70.

1950

540 Straiton, A.W. and Smith, H.W. "Progress of microwave radio scintillations at wind speed on an overwater path." Institute of Radio Engineers, Proceedings, 38(7):825-826, July 1950. fig. tables. refs.

Brief report of results of an analysis of the experimental transmission of 3.2 cm waves over a 26 mi path in the Gulf of Mexico during June and July 1949. It was found that scintillations were due to regions of different electric constant moving across the path, rather than to additional signals caused by scattering effects outside the duct. - Staff MGA 8I-98.

1950

541 Tannehill, I.R. "Hurricanes. Their nature and history particularly those of the West Indies and the southern coasts of the United States." 7th ed. Princeton: Princeton Univ. Press, 1950. 304 p. charts. diagrs. photos. refs.

Study of tropical hurricanes is brought up to date by the inclusion of an appendix in which radar, aircraft reconnaissance, microseisms, automatic weather stations and sferics are discussed in relation to hurricane observing and forecasting. The latest methods are listed, the 1945 - 1949 hurricane seasons reviewed and the bibliography is enlarged by the addition of recent contributions. The body of the book consisting of 15 chapters on winds, storm

1950 cont.

waves, hurricane genesis, tracks and historical accounts of noteworthy hurricanes. Staff MGA 3.5-13.

1950

542 Thompson, W.L. "In the eye of a hurricane." Weatherwise, 3(6):122, Dec. 1950.

Eye witness account of weather and sea conditions in 'eye' of hurricane which appeared south of Cuba on 16 October 1950. Airplane flew in the 'eye' for 21 min. - Staff MGA 2.4-86.

1950

543 Thornthwaite, C.W. "Notes on tropical climatology." Prepared for presentation at the Caribbean Soils Conference, San Juan, Puerto Rico, April 1950. 8 p. figs. refs. (Mimeographed).

Importance of moisture as an element of variation in tropical climatology is stressed. Hydrologic balance of climate must be considered in which evaporation and evapotranspiration play a major role. Aspects of this problem in regions like the Congo Basin and Puerto Rico are discussed and references given to more detailed data sources. - Staff MGA K-200.

1950

544 U.S. Coast and Geodetic Survey. "United States coast pilot, Atlantic coast, Section B, Cape Cod to Sandy Hook." 5th ed. Serial, no. 736, 1 Apr. 1950. 503 p. charts, diagrs. tables. In pocket: Supplement, 1 Jan. 1951, Serial, no. 736-1. DAS.

Describes forecast and warning service of U.S. Weather Bureau, marine climatological service, information services for transoceanic air transport, storm signals, broadcasts by U.S. Coast Guard, reports from ships, publications, and the work of many other bureaus related with shipping. A section on Weather and Climate (pp. 44-66) contains several charts and tables showing pressure, air and water temperature for January, April, July and October along the Atlantic coast and in the Gulf of Mexico and Caribbean. It also includes a list of hurricanes since 1900, and information on winds, fog, thunderstorms, clouds and hurricanes. Complete meteorological tables are appended for 10 stations along the Atlantic coast. - Staff MGA 7I-102.

1950

545 U.S. Dept. of Defense. Panama Area Joint Committee. "Report on consolidation of Armed Forces meteorological facilities in the Panama Area." Quarry Heights, Canal Zone, 14 Apr. 1950. 26 p. chart. DAS.

Recommendations as to the feasibility of consolidating Navy Weather Central at Coco Solo with the Sixth Weather Squadron

1950 cont.

Detachment, Albrook Air Force Base. Duplication in collection, plotting and evaluating weather data would be avoided. - Staff MGA 3.2-8.

1950

546 U.S. Weather Bureau "Mean monthly and annual evaporation from free water surfaces for the United States, Alaska, Hawaii and the West Indies." Technical Report, no. 13, 1950. 10 p. tables. DAS.

Compilation of data on evaporation averages based on U.S. Weather Bureau records from 300 evaporation stations. Daily evaporation amounts, wind movement, air temperature, precipitation and pan water records for a period of 5 years or more prior to 1949 are presented. - Staff MGA 13E-100.

1950

547 Venezuela. Fuerza Aerea. Servicio de Meteorología y Communicaciones. "Boletín Bimestral, año I, num. 1, enero/febrero, 1950." [Bimonthly bulletin, year I, no. 1, Jan./Feb. 1950.] Maracay, Jan. 1950. mostly tables. DAS.

Daily (sometimes 4 times daily) and monthly records of pressure, temperature, rain, humidity, wind, evaporation and sunshine are tabulated for 13 synoptic and 7 climatological stations of the Ministry of Defense of Venezuela. Frequencies of wind direction and velocity, low cloud and visibility appear in some of the bulletins. Staff MGA 4.11-43.

1950

548 Venezuela. Ministerio de Obras Públicas. "Boletín meteorológico bimensual." [Bi-monthly bulletin of meteorology.] no. 1-2, Jan. - Feb. 1950. 28 p. map. chiefly tables.

This publication regularly includes bi-monthly climatic data for Venezuela. Tables show total precipitation, days on which precipitation occurred, maximum diurnal precipitation and maximum intensity of precipitation for more than 190 stations in 17 states and the federal district. Evaporation data are given for 17 stations in 12 states and a map shows the rainfall network. - Staff MGA 2.10-22.

1950

549 Virgo, S.E. "Tropical rainfall from cloud which did not extend to the freezing level." Meteorological Magazine, 79(938): 237-238. Aug. 1950.

Describes rainfall in West Indies in which showers occurred from cumulus and strato-cumulus thousands of feet below the freezing level. - Staff MGA 11-136.

1950

550 Whiting, R.M. "Gulf Coast advection fog, Houston, Texas." Eastern Air Lines, Inc., Meteorological Dept. Atlanta, Sept. 1950. figs. tables. (mimeographed) DAS.

Advection fog and advection radiation type fog in winter (October through April 1946 - 50) are analyzed (252 cases) to find objective methods of forecasting the occurrence, onset and duration of poor ceiling and visibility conditions at Houston, Texas. Among the parameters which are significant are 1,000 ft wind direction and speed, and water temperature off Galveston at 0730 E. Ideal conditions for advection radiation fog (always ground fog) is when air that has been over the Gulf of Mexico during the previous day moves slowly inland and is subject to nocturnal radiational cooling. Sea fog occurs when fog along the coast moves inland and occurs only when sea temperatures and dew point temperatures along coast are less than 70°. - Staff MGA G.1-103.

1951

551 American Meteorological Society. "Department of Meteorology, Florida State University." Its Bulletin, 32:110-111, 1951.

A new department was established at Florida State University in 1949 under the chairmanship of W.A. Baum, who was assisted by S.Hess, T.A. Gleeson and H. Landers. Synoptic laboratories, library facilities, editorship of the Journal of Meteorology and undergraduate courses are described briefly. - Staff MGA 2.10-5.

1951

552 Antilles. Service Météorologique du Groupe Antilles-Guyane. "Normales climatologiques de Fort-de-France-Desaix, Pointe-à-Pitre-Le Raizet, Cayenne-Rochambeau." [Climatological normals of Fort-de-France, Fort Desaix, Pointe-à-Pitre, Le Raizet, Cayenne-Rochambeau.] Martinique, 1951. DAS.

Contains mean monthly and annual tabular data for 2 stations in French West Indies and one station in French Guiana as follows: at Fort-de-France and Fort Desaix, temperature (°C) based on 2-hourly observations and relative humidity based on 2- or 3-hourly observations (1935 - 1960); at Pointe-à-Pitre and Le Raizet, temperature (°C) based on 2-hourly observations and relative humidity based on 2- or 3-hourly observations and sea level pressure based on 4 extreme daily values (1931 - 1960); at Cayenne-Rochambeau, temperature (°C) based on 2-hourly observations, relative humidity based on 3-hourly observations and sea level pressure (tenths of mb) based on 4 extreme daily values (1949 - 1960); and

1951 cont.

rainfall amounts (mm) 1931 - 1960. Also included for all 3 stations are monthly rainfall frequencies in quintiles. - Staff.

1951

553 "Anuario Meteorológico de Venezuela." [Meteorological yearbook of Venezuela. Maracay, Venezuela. v. 1, no. 1, 1951. charts. tables. Issued by Venezuela. Fuerza Aerea. Servicio de Meteorología y Comunicaciones. Sección de Climatología. [Armed Forces. Meteorological and Communications Service Climatological section.] DAS.

Annual summary of meteorological elements and airways data (ceiling, visibility, and wind) for 13 airports and aerological data for Maracay. Frequencies and probabilities of precipitation and of thunderstorms (hourly) are tabulated for 13 stations. Histograms or other graphs and diagrams show the data. - Staff.

1951

554 Bryson, R.A. "Cloudform-stability scale for tropical oceanic areas." American Meteorological Society, Bulletin, 32: 146-150, 1951. figs. refs.

On the basis of experience in Puerto Rico and the western Pacific, a scale for rating convective cloudforms in terms of the thermodynamic stability represented was developed. This scale provides a quantitative measure for the study of diurnal variation of cloudforms, and for weather pattern diagnosis. - Author.

1951

555 Bunting, D.C., Gentry, R.C. and Norton, G. "Florida hurricanes of 1950." Florida. Univ. Engineering and Industrial Experiment Station, Engineering Progress, v. 11, no. 11, Bulletin Series no. 45, July 1951. 36 p. DAS.

Three hurricanes 21 - 31 August, 1 - 7 September and 18 - 21 October 1950 affected Florida. Paper describes paths and winds of each hurricane and gives an estimate of damage. - Staff.

1951

556 Colon, J.A. "On the wind structure above the tropopause over Puerto Rico." American Meteorological Society, Bulletin, 32:52-53, 1951. tables. refs.

Results of 89 soundings which reached 20 km or more are given in the form of wind roses for each km level from 1 km below the tropopause (16 - 17 km) to 7 km above the tropopause. At the tropopause, the prevailing winds changed from W or NW to ENE and the easterlies reached maximum frequency at 3 km above tropopause and were about 6 km deep. Winds are more pronounced

1951 cont.

in summer than in winter. - Staff MGA 2.11-118.

1951

557 Dunn, G.E. "Tropical cyclones." In Compendium of meteorology. Boston, American Meteorological Society, 1951. pp. 887-901. figs. refs.

A comprehensive survey of the origin, structure and behavior of various types of tropical cyclones which may be hurricanes, typhoons, cyclones, bagulos and willy-willies. An outline of the classification of tropical cyclones according to intensity and to stage of development or life history is presented. Surface characteristics, such as air mass arrangement around the cyclones, pressure gradient, oscillation of atmospheric pressure (or pumping) temperature, wind circulation, cloud arrangement, precipitation distribution around cyclones, properties of radar bands produced by cyclones, atmospheric conditions in the 'eye' of the storm and its size and duration, the frequency of thunderstorms and tornadoes and the hurricane waves and hurricane tides are discussed. - Staff MGA 7I-105.

1951

558 France. Ministère de la France d'Outre-Mer. Services des statistiques. "Annuaire statistique de l'Union Française d'Outre-Mer." [Statistical annual of the French Overseas Union.] 1939 - 1949. v. 1. Paris, 1951. DAS.

Chapter A contains statistics on the climate of the French territories overseas, including the Antilles group. Monthly and annual summaries are as follows: Guadeloupe - mean temperatures (°C) and rainfall (mm) totals (Pointe-à-Pitre 1941 - 1945 and Camp Jacob); Martinique, Fort-de-France - mean (1900 - 1914), mean maximum and mean minimum (1949) temperatures (°C), mean totals (31 yrs), totals (1949) of precipitation (mm), mean number of days with rain (greater than 0.1 mm), mean pressure (1947) in mb and mean vapor pressure (mb). - Staff.

1951

559 Frolow, S. "Régimes bariques dans deux réseaux intertropicaux éloignés." [Pressure regimes in two distant intertropical areas.] Météorologie, 4th ser., no. 23: 153-174, July/Sept. 1951. figs. refs. French, English and Spanish summaries p. 153.

Certain marked differences exist between synoptic meteorological processes in temperate and in tropical regions and the 'Norwegian' methods of analysis do not always apply. However, much can be gained by comparing the individual processes in two such widely separated regions of the

1951 cont.

Tropics as the Antilles and the western Indian Ocean. A study of pressure changes due to easterly waves shows that the latter do not exist in the Madagascar Region as they do in the Caribbean. - Staff MGA 3.10-118.

1951

560 Fuhriman, D.K. and Smith, R.M. "Conservation and consumptive use of water with sugar cane under irrigation in the south coastal area of Puerto Rico." Journal of Agriculture of the University of Puerto Rico, 35:1-47, 1951. fig. tables.

Detailed data for soil moisture, rainfall and evapotranspiration. Air evapotranspiration formula is proposed. - Staff.

1951

561 Fultz, D. "Unusual optical double-refraction at high levels in the tropics." American Meteorological Society, Bulletin, 32:102, 1951.

Conditions during pilot balloon ascents at San Juan, Puerto Rico on 2 September 1943 are described in connection with the sudden splitting of the image of the balloon (in the theodolite) into two bubbles. On 3 separate occasions at the 62nd and 71st min of observation, occurred at a height of 17.7 - 20 km, which was near or a little above the tropopause in a milky white cloud layer. - Staff MGA 2.10-186.

1951

562 Gentry, R.C. "Forecasting the formation and movement of the Cedar Keys hurricane, September 1 - 7, 1950." Monthly Weather Review, 79:107-115, 1951. figs. tables. refs.

An analysis of the origin, development, movement and conditions attending an erratic hurricane that remained around the Florida Peninsula for several days. Application of the steering principle (winds at 30,000 ft or the top of the storm were used), which proved to be the most successful forecasting method, is described and illustrated. Life history of the storm was followed by the network of United States and Cuban upper air radar stations, enabling a close watch to be kept on its trajectory and the changes in its structure. Staff MGA 3.7-108.

1951

563 Gerhardt, J.R. "Temperature and moisture soundings over the Gulf of Mexico for March, 1949." American Geophysical Union, Transactions, 32(1):15-25, Feb. 1951. figs. table. refs. eqs.

Heat and moisture transfer processes

1951 cont.

over the ocean are investigated on the basis of a series of 4-hourly soundings between the sea surface and 45 ft (above the surface) in the Gulf of Mexico off Freeport, Texas. Comparative moisture values are shown for various levels in a series of graphs. Observations compare favorably with previous determinations for variation of evaporation coefficient with wind speed and for logarithmic distribution of moisture. - Staff MGA 2.9-105.

1951

564 Gordon, A.H. "Severe hurricanes of August, 1949, in the Bahamas and Florida." Marine Observer, 21(153):197-199, July 1951. figs.

Account of the hurricanes of 21 - 25 August and 24 - 29 August from the SS MATAROA which passed through the region of development. - Staff MGA 2.11-82.

1951

565 Graves, M.E. "Relation between the tropopause and convective activity in the subtropics (Puerto Rico)." American Meteorological Society, Bulletin, 32:54-60, 1951. figs. refs.

There is no apparent relationship between the high, cold tropopause of the subtropics and convective activity in the troposphere and the secondary tropopause rises prior to cessation of convective activity for 48 hrs or more. These conclusions were reached after studying temperature lapse rate curves based on radiosonde data for San Juan, Puerto Rico (1942 - 1945). The data was compared with wind, pressure and rainfall index data for the same period. - Staff MGA 2.11-55.

1951

566 Grimes, A. "Equatorial Meteorology." Compendium of Meteorology, Boston, 1951. p. 881.

1951

567 Guilmet, B. "Note sur la météorologie tropicale. Introduction au bulletin d'études du service météorologique du groupe Antilles-Guyane." [Note on tropical meteorology. Introduction to the bulletin of studies of the meteorological service of the Antilles-Guiana group.] Météorologie, 4th ser., no. 22:77-97, April - June 1951. figs. refs. French, German and Spanish summaries p. 77.

Reviews the principles of analysis and forecasting of hurricanes in the West Indies, and discusses shear lines, surge lines, easterly waves and polar air masses in the trade wind belt of the Western Atlantic and Caribbean. Cross sections and panoramic (schematic) diagrams of the structure of the

1951 cont.

hurricanes of 11 - 19 July 1946, September 1946 and June 1947 are presented. Charts are presented showing six possible synoptic situations and accompanying winds, weather and developments. - Staff MGA 3.7-105.

1951

568 Guilmet, B. and Zonzon, J. "Note sur la météorologie tropicale." [Note on tropical meteorology.] Météorologie, 4th ser., no. 21:32-48, Jan. - March 1951. figs. French, English and Spanish summaries p. 32.

Author summarizes: 1) the physical and dynamical properties of tropical air masses and air currents, 2) the methods of analysis employed in the Intertropical Zone and 3) the properties of the principal types of tropical circulation observed over the North Atlantic and the Caribbean, i.e., the steady trades, the equatorial currents, and disturbances in the trades. Staff MGA 3.1-86.

1951

569 James, R.W. "Note on the vertical structure of a typhoon." Monthly Weather Review, 79:205-207, 1951. figs. refs.

Compares vertical structure of typhoon 'Kitty' as determined at Tokyo, Japan with the structure of a hurricane over Tampa, Florida on 19 October 1944 and finds two characteristic decay rates in both instances. Author concludes that a general pattern for tropical lows exists and a similar vertical structure characterizes mature extratropical disturbances. - Staff MGA 3.7-106.

1951

570 Jorgensen, R.C. and Gerdes, W.F. "Dow Chemical Company leads industry in using radar for hurricane detection." American Meteorological Society, Bulletin, 32:221-224, 1951. figs. Also: "Radar tracks hurricanes: results promise aid in system operation." Electrical World, 133 (17):91-93, 24 April 1950. photos.

Radar has been used since June 1948 by the Dow Chemical Company for detecting hurricanes approaching its Freeport, Texas plant. This plant must start closing 12 hrs before the hurricane strikes for security during the storm. Advance and accurate warnings save 'false alarm' shutdowns which are costly. Three radar stations operated by the U.S. Weather Bureau, 3 by industrial concerns and 2 by educational institutions are operating on the Gulf Coast to obtain more detailed and continuous information on hurricanes. - Staff MGA 7J-82.

1951

571 Kingsland, D. and Pritchard, D.J.A. "Lunar halo, North Atlantic Ocean, Caribbean Sea." Marine Observer, 21(151):16-17, Jan. 1951. fig.

On 5 January 1950, a lunar halo (25°) was observed with a second moon displaced 10' from that of the true moon. On 7 March a 22° lunar halo was intersected by an unexplained arc. - Staff MGA 2.7-189.

1951

572 Langmuir, I. "Studies of tropical clouds." General Electric Research Laboratory. Schenectady, Final Report, Project Cirrus, 30 July 1951. pp. 279-295. DAS.

Author found cloud formations in Honduras during the dry season to be particularly suited for seeding studies. Cooperating with Joe Silverthorne, of the United Fruit Company, he carried out several experiments using single ice pellets, water or carbon dioxide both for stimulating and preventing rainfall. Particularly good results obtained from seeding with single pellets modified the clouds considerably. Motion pictures were made of unusual cloud formations and were used to study growth of cumulus when both seeded and not seeded. Water scoop measurements made by aircraft are described. - Staff MGA 3.3-77.

1951

573 Langwell, P.A. "Forced convection cell circulation in clear air." American Geophysical Union, Transactions, 32(1):7-14, Feb. 1951. table. refs.

Study of the origin of cloudless cells within extensive trade wind cumulus cloud areas found in the West Indies. Characteristics of 2-dimensional convection cells are compared with cells over the ocean north of Puerto Rico. It was shown that large, slow moving cells exist and will persist for 1 or 2 hrs. - Author(mod) MGA 2.9-117.

1951

574 Ligda, M.G.H. "Radar storm observation." In Compendium of meteorology. Boston, American Meteorological Society, 1951. pp. 1265-1282. figs. table. refs. eqs.

Reviews observational and practical aspects of radar storm detection. Contains description of hurricane detection in the Gulf of Mexico and Caribbean area. - Staff MGA 3.10-10.

1951

575 Neumann, J. "Land breezes and nocturnal thunderstorms." Journal of Meteorology, 8(1):60-67, Feb. 1951. figs. tables. refs.

Concludes that the curvature of the coastline in such diverse littorals as the eastern Mediterranean and the Gulf coast of the United States is an important factor in the diurnal variation of the frequency of thunderstorms. The high

1951 cont.

percentage of daylight thunderstorms in some parts of the Florida Peninsula appears to be consistent with the high percentage of nocturnal thunderstorms in areas on the Gulf Coast. - Author.

1951

576 Norton, G. "Hurricanes of the 1950 season." Monthly Weather Review, 79:8-15, 1951.

Hurricanes in North Atlantic area, Caribbean and Gulf of Mexico. - Staff.

1951

577 Palmer, C.E. "On High-Level Cyclones Originating in the Tropics." Transactions, American Geophysical Union, 32:683-695, figs.

Two weather situations (June 1946 and March 1949) suggest that cyclonic circulations may originate in the high tropical troposphere (above 30,000 ft and between 15°N - 10°N) and remain stationary as long as two weeks while developing downward to 20,000 ft or less. They may then move out of the Tropics into higher latitudes where they appear on 500 mb or lower contour maps as 'cold lows' similar to those described by Palmer. - Staff.

1951

578 Palmer, C.E. "Tropical meteorology." In Compendium of meteorology. Boston, American Meteorological Society, 1951. pp. 859-880. figs. refs.

Comprehensive discussion of the history of the development of the climatological method, the air mass method and the perturbation method for investigating tropical meteorology. A section on the perturbation method contains material concerning the Gulf of Mexico and Caribbean area. - Staff MGA 3.10-12.

1951

579 Pilsbury, R.K. "Some new short term temperature means for eleven stations in Jamaica." Kingston, Meteorological Office, 1951. 5 p. graphs. map. DAS.

Data presented in graphical and tabular form with station location chart and brief annotation. Stations range from sea level to 4,900 ft. In addition, extreme temperatures at Blue Mountain Peak (7,400 ft) for period 1891 - 1900 are included and compared with Kingston (33 years of record) data. - Staff MGA 3.10-166.

1951

580 Port-au-Prince, Haiti. Séminaire-Collège St.-Martial. Observatoire Météorologique. "Bulletin Pluviométrique, Années 1948, 1949, 1950." [Rainfall bulletin, 1948, 1949, 1950.] (1951?) 94 p. mostly tables. DAS.

1951 cont.

Daily rainfall totals for 32 stations in Haiti are tabulated for each month of the years 1948, 1949 and 1950. Monthly totals and number of days with rain are given at the bottom of the page for each station. A summary of weather conditions (pressure, temperature, rainfall, departures from normal and peculiarities of the rainfall of each month are given at the end of each year's data tables. - Staff MGA 5.2-38.

1951

581 Prentiss, L.W. "Gulf hurricanes and their effect on the Texas coast." In Conference on Coastal Engineering, 2nd, Houston, Tex., 1951. Proceedings.

1951

582 Schmidt, F.H. "Streamline Patterns in Equatorial Regions." Journal of Meteorology, 8:300-306, 1951. figs. table.

It is found possible to apply simple kinematic methods to streamline patterns in the Tropics. Considerations of the complicated connection between pressure and wind in low latitudes are avoided by these methods. Results show that some currents in the Tropics may be considered to be stationary. Staff.

1951

583 Sherman, L. "On permanent perturbations of zonal atmospheric motion, with applications to low latitudes." Journal of Meteorology, 8:84-95, 1951. figs.

Basic equations are used for study of zonally propagated permanent-type flows which have small relative velocities. - Staff.

1951

584 Shisler, K. "Initial solution to the hurricane problem of the offshore oil operator in the Gulf of Mexico." American Meteorological Society, Bulletin, 32(3): 79-88, Mar. 1951. figs. table. refs.

Necessity for adequate warning of the exact time and strength of hurricane onset to allow for shutting down offshore oil drilling in the Gulf of Mexico is stated. A series of charts is presented for use in calculating average evacuation periods during hurricanes originating in the Atlantic, Caribbean and Gulf. Techniques followed during a typical storm are outlined and knowledge of synoptic meteorology, climatology and oceanography are combined. Staff MGA 2.9-48.

1951

585 Sifontes, E. "Climas comparativos: Puerto España, Trinidad; Bolívar, Caracas (el mar, el llano, la cordillera)." [Comparative climates of Port of Spain, Trinidad; Bolívar, Caracas (with respect to the sea, the plains and the mountains).]

1951 cont.

Caracas, Imprenta Nacional, 1951. 23 p. photos. tables. At head of t-p: "Meteorología tropical." [Tropical meteorology.] DAS.

Discussion of climatic elements: temperature, pressure, humidity, cloudiness, dew, precipitation, sunshine, wind, etc., with illustrative tables of data for Ciudad Bolívar, Caracas and Puerto España in Venezuela and Trinidad. Data are compared with other mountain, plain (llanos) and seacoast climates of the Tropics. Illustrations of the regions are included. Staff MGA 9.8-243.

1951

586 Sifontes, E. "Temperatura y presión atmosféricas en función con la altura." [Atmospheric temperature and pressure as functions of height.] Caracas, Imprenta Nacional, 1951. 19 p. photos. tables. At head of t-p: "Notas del trópico." [Notes on the Tropics.] DAS.

Temperature and pressure values obtained during a flight over Venezuela (2,000 m) are given, as well as notes concerning clouds and other weather observations. Staff MGA 9.6-105.

1951

587 Thornthwaite, C.W. "Water balance in tropical climates." American Meteorological Society, Bulletin, 32(5):166-173, May 1951. figs. refs.

Studies of Ramdas, Bernard and Hardy on the hydrologic balance in India, Belgian Congo and Trinidad are reviewed. Thornthwaite's method of calculating potential evapotranspiration is applied to a study of the water balance of Puerto Rico and the Belgian Congo. Moisture climates of these areas are illustrated on maps and the water balance of Santo Domingo is discussed. - Staff MGA 3.3-170.

1951

588 U.S. Air Weather Service. "Hurricanes of 1950: narrative history of each storm and comments on hurricane reconnaissance." Technical Report, no. 105-77, July 1951. 92 p. tables. photostat. DAS.

Illustrated analysis of 13 tropical storms in the Caribbean and north Atlantic (7 August - 29 October 1950), and discussion (with data) of reconnaissance activities of the Air Force and Navy during that season. - Staff MGA 7J-89.

1951

589 U.S. Air Weather Service. "Some aspects of hurricane forecasting." Technical Report 105-76, June 1951. 31 p. diagr. DAS.

Based on experience obtained by the Air Force Hurricane Office (1947 through 1950), an attempt is made to formulate

1951 cont.

systematically the present knowledge of origin, intensification, movement and rules for forecasting hurricanes in the West Indies and Caribbean. Rules for determining the point of recurvature and the steering of hurricanes are given special emphasis. Analysis and forecast procedures are included with an appendix which shows the relation of storm waves to hurricanes in the Gulf of Mexico. - Staff MGA 3.7-107.

1951

590 U.S. Dept. of State, "Weather stations cooperative program in Cuba. Agreement between the United States of America and Cuba, effected by exchange of notes signed at Havana, June 30, 1950, entered into force, July 1, 1950." U.S. Treaties, etc. 1945. Publication 4016, 1951. 7 p. DAS.

An agreement effective through 30 June 1953 where the U.S. Weather Bureau (USWB) furnished radiosonde, rawinsonde and pilot balloon equipment to Havana and Camagüey, Cuba. USWB also provided technicians, instructions, and facilities. The Cuban Meteorological Service additionally provided quarters, facilities, personnel and transmitted the observations twice a day. Staff MGA 3.7-25.

1951

591 U.S. Weather Bureau. "Sunshine and cloudiness at selected stations in the United States, Alaska, Hawaii, and Puerto Rico." Technical Paper, no. 12, 1951. 16 p. tables. DAS.

Data on average number of hours and percentage of possible sunshine as well as percentage of cloudiness and number of clear, partly cloudy and cloudy days for several hundred stations in the United States, Alaska, Hawaii and Puerto Rico. Staff MGA 3.11-129.

1952

592 American Institute of Aerological Research, Denver, Colo. "Report on cloud-seeding potentialities in Central Cuba. American Sugar Refining Company, Cunagua & Jaronu." Report no. 70, 25 March 1952. 23 p. tables. figs. refs. DLC.

A preliminary survey of climatic, orographic and other factors used in planning cloud seeding operations for the American Sugar Refining Corporation plantations in central Cuba. Relationship of rainfall (May - October) to harvested cane (scatter diagrams) indicates 529 - 588 additional "arrobas [1 arroba equals 25.35 U.S. lbs] per cab. [1 caballería equals 33.2 acres]" for each additional inch of rain (range 25 - 50) at Cunagua and Jarome. The clouds, precipitation, winds and weather patterns

1952 cont.

over Cuba are discussed. May through October is recommended as most suitable season for ground and occasional airplane AgI seeding. Sites for most favorable location of ground generators are indicated. Staff MGA 4.8-64.

1952

593 Belize, British Honduras. "Summary of meteorological observations, 1948 - 1952." tables. DAS.

Monthly and annual data summarized by year for Belize include: sea-level pressure-mean, absolute maximum and minimum; temperature-mean, mean maximum and minimum, absolute maximum and minimum; clouds-number of days clear and overcast; precipitation - total amount, 24-hr maximum with dates, number of rainy days and winds - direction frequency (8 points and calm). Staff.

1952

594 Brown, W.F. "Volcanic ash over the Caribbean, June 1951." Monthly Weather Review, 80:59-62, 1952. figs.

Haze reported by aircraft up to 14,000 ft over the Caribbean Sea is attributed to a volcanic eruption on Fogo Island in the Cape Verde Group on 12 June 1951. Cloud column was reported to reach 25,000 ft with ashes falling on Fogo and Brava islands. Activity decreased 17 June, increased again 26 June (cloud to 12,000 ft) and then subsided. Spread of haze is indicated by daily charts and isochrones 15 - 26 June. Charts show 700 and 850 mb contours and 10,000 and 5,000 ft winds over area. Staff MGA 5.4-85.

1952

595 Bunker, A.F. "Characteristics of the homogeneous layer and of adjacent layers." In Bunker, A.F. et al., Vertical distribution of temperature and humidity over the Caribbean Sea, 1952. chap. 5, pp. 68-76, DAS. DNO.

The homogeneous layer of nearly dry-adiabatic lapse-rate of temperature and almost constant mixing ratio is one of the most characteristic phenomena in the lower atmosphere of this region. It is also of utmost importance for the energy budget of the hydrosphere and the atmosphere. Author.

1952

596 Bunker, A.F. and Stommel, H. "Methods of observation and reduction of data [and] presentation of data." In Bunker, A.F. et al., Vertical distribution of temperature and humidity over the Caribbean Sea, 1952. chap. 2 and 3, pp. 6-61. DAS, DNO.

Description of observational techniques

1952 cont.

used by the expedition with methods of reduction. It was considered desirable to publish this material because of the sparsity of upper-air observations in this region. - Author(mod).

1952

597 Bunker, A.F. et al. "Vertical distribution of temperature and humidity over the Caribbean Sea." Papers in Physical Oceanography and Meteorology, v. 11, no. 1, 1952. 82 p. figs. tables. refs. DAS. DNO.

The observations presented and discussed in this paper were obtained as part of a research project conducted under contract NObs-2083 with the U.S. Bureau of Ships by Woods Hole Oceanographic Institution. All observations were made during the spring of 1946 at about lat 19°30'N, long 66°W (north of San Juan, Puerto Rico), and at about lat 10°N, long 79°30'W (north of Coco Solo, Panama). Special attention is given to the temperature and humidity distributions in the vertical and to their interpretation in the light of meteorological principles. Author(mod).

1952

598 Cauvin, A. "Weather and climate of Haiti." In U.S. Weather Bureau, Lectures... Hurricane Training Program. New Orleans, 1952. 4 p. DAS.

Included with the excerpts from the official diary of the New Orleans hurricane training program (1942) are lectures by the student members of the class. The climate and topography of Haiti are described briefly and tables show the mean diurnal temperature range by month for Port-au-Prince (1888 - 1910) and the mean monthly relative humidity for 'several years'. - Staff.

1952

599 Chase, J. "Comparison of certain wind, tide gauge and current data." Woods Hole Oceanographic Institution, Contract N6onr-27701, Technical Report, ref. no. 52-79, Sept. 1952. 10 p. figs. refs.

Values for the trade winds, measured with a geostrophic template from mean weather maps, agreed with surface-current data. Area studied included the trades and an area off the southeast coast of the United States. Template values for the trades (2/9) plus westerlies agreed in both long-time and 3-mo means with tide-gage readings at Bermuda minus those at Charleston, readings at Galveston, and late-summer through early-winter readings for Miami. - Staff.

1952

600 Crary, A.P. "Stratosphere winds and temperatures in low latitudes from acoustical propagation studies." Journal of

1952 cont.
slopes of the ranges. Greatest amounts were 18 in or more in 48 hrs. - Staff MGA 10M-634.

1952
614 Pope, F.W. "A study of weather conditions in Panama with special emphasis on the belt of doldrums." 5700th Reproduction Unit, Albrook Air Force Base, Canal Zone, 1952. 21 p. figs. charts.

1952
615 Port-au-Prince, Haiti. Séminaire-Collège St.-Martial. Observatoire Météorologique. "Bulletin Annuel, Année 1950." [Annual Bulletin, 1950.] 24 Apr. 1952. 40 p. photos. tables. DAS.

Meteorological and seismological data for the observatory of the Seminary College are summarized for 1950. Pressure, temperature, vapor pressure, relative humidity, wind direction frequencies (for different times of the day), cloud cover, diurnal variation of wind frequency, sunshine duration, precipitation and frequency of hours of precipitation are tabulated. Historical sketch of the observatory given on pp. 35 - 40. - Staff MGA 5.2-37.

1952
616 Röhl, E. "Climatografía de Venezuela. 1. pt. Temperatura y humedad." [Climatography of Venezuela. pt. 1. Temperature and humidity.] Caracas. Academia de Ciencias Físicas, Matemáticas y Naturales, Boletín no. 46, 1952. 223 p. DLC.

1952
617 Ross, R.B. "Hurricane Able, 1952." Monthly Weather Review, 80:138-143, 1952. figs. table. refs.

Synoptic study of a hurricane in August 1952 with an unusual path. Account of damages and information on rainfall amounts associated with the storm are included. - Author(mod) MGA 3.7-77.

1952
618 Seilkopf, H. "Zur Entstehung tropischer Wirbelstürme." [On the origin of tropical hurricanes.] Annalen der Meteorologie, 5(3/5):130-140, 1952. figs. refs. German and English summaries p. 130.

In August - October east winds normally are observed up to 12 km over Fernando Noronha, but before West Indian hurricanes develop, these change to S-SW indicating a quasi-stationary trough off of South America. A cyclonic high-level vortex then crosses the Equator without change of rotation, becoming anticyclonic over the Antilles. Author states that this may contribute to the formation of hurricanes. Schematic world charts of cyclone tracks in summer and autumn, and

1952 cont.
quasi-stationary troughs in the opposite hemisphere (extending temporarily to the Equator) support this theory. - Staff MGA 7I-124.

1952
619 Sheppard, P.A. and Omar, M.H. "Wind stress over the ocean from observations in the trades." Royal Meteorological Society, Quarterly Journal, 78:583-589. Discussion in Royal Meteorological Society, Quarterly Journal, 79:302-304.

1952
620 Simpson, J.S.M. "Climatic and synoptic conditions over the Caribbean during the April 1946 expedition." In Bunker, A.F. et al., Vertical distribution of temperature and humidity over the Caribbean Sea, 1952. chap. 4, pp. 63-67. DAS, DNO.

In order to show how observations taken off Puerto Rico fit into the general pattern of climatic and weather conditions in the Caribbean area, this paper presents a survey of the climate of the region and of weather conditions during the time when the observations are taken. Weather situations encountered represent, in general, a relatively undisturbed trade wind regime of early spring. - Author(mod).

1952
621 Snow, E.R. "Great gales and dire disasters." New York: Dodd, Mead Co., 1952. 263 p. plates.

Account of marine disasters on the eastern coasts of North America includes descriptions of hurricanes, shipwrecks and other hurricane destruction. The Galveston hurricane of 1900 (pp. 21-33) and the complete destruction on the Derniere Islands off the southern coast of Louisiana in 1856 (pp. 221-229) are described. - Staff MGA 7J-97.

1952
622 Starr, V.P. and White, R.M. "Meridional flux of angular momentum in the Tropics." Tellus 2:118-125, 1952.

1952
623 Tannehill, I.R. "Hurricanes, their nature and history, particularly those of the West Indies and the southern coasts of the United States." 8th ed. Princeton Univ. Press, 1952. 308 p. figs. tables. refs.

Compilation of scientific and historical material on hurricanes. The chapter in the 7th edition on new techniques in hurricane location and forecasting developed during the war (radar, microseisms, airplane reconnaissance, automatic weather stations, sferics, etc.) has been revised by inclusion of data on storms of the 1950 and 1951 seasons, with additional bibliographic

1952 cont.

references. The basic part of the text (chapters on origin, observation, winds, tornadoes, storm tides or waves, tracks, rainfall in hurricane areas, pressure, clouds, damage and warnings, accounts of historical storms, chronology of all West Indian hurricanes and frequency tables) remains the same. - Staff. MGA 4.7-9.

1952

624 Tannehill, I.R. "Weather around the world." Princeton, 1952. DAS.

Chapter 9 (pp. 82-94) discusses the weather in the West Indies. Appendix A (pp. 162-185) lists weather data for selected stations throughout the world. The following monthly summaries are reported: mean extreme temperatures, mean relative humidity, absolute extreme temperatures, number of days with rain, and mean cloud amounts. - Staff.

1952

625 Trinidad. Dept. of Agriculture. "Report." 1945 - 52. DLC.

Annual report containing climatological and meteorological information and data. Staff.

1952

626 U.S. Weather Bureau. "Caribbean Meteorological Broadcast (CARMET). Wash., D.C., 1 Apr. 1952. 11 p. fig. DAS.

A complete schedule of 'CARMET' broadcasts of station WBR, Miami, Florida, which have been transmitted on an experimental basis since August 1951. This subcontinental, international radiotele-typewriter broadcast was established to provide users in the Caribbean Islands with rapid weather information. The bulletins consist of hourly airway weather reports, 24-hr forecasts, 16- and 24-hr route and terminal forecasts, advisories and warnings, surface analyses, surface reports for primary synoptic periods and pilot balloon, radiosonde and reconnaissance flight reports. - Staff MGA 4.3-68.

1952

627 World Meteorological Organization. Eastern Caribbean Hurricane Committee. "Report of second meeting, Trinidad, June 16 - 19, 1952." 13 p. DAS.

Members of the Committee from Canada, the United States and various governments in the Caribbean are listed. Minutes of the meeting, recommendations and reports of working groups are presented. A summary of North Atlantic hurricane and other tropical cyclone activity during 1951 prepared by the U.S. Weather Bureau from shore and weather ship reports is appended. Staff. MGA 4.2-115.

1953

628 British Caribbean Meteorological Service. "Annual report." 1st, 1952. Trinidad, Govt. Print. Off., 1953. DAS.

Status of meteorological services of the British Colonies in the Caribbean area (April 1951) is reviewed. A new organization was established in 1951 to provide a unified service for the area and its status at the end of the first year is described. The service embraces the Bahamas, Barbados, British Guiana, British Honduras, Jamaica, the Leeward Islands, Trinidad and Tobago and the Windward Islands. The report covers hurricane warnings, forecasting, climatological and library services (and finances), staffing aerological observations, etc. A list of sixteen 1951 and 1952 hurricanes which hit the area is appended. Staff MGA 5.3-18.

1953

629 Bunker, A.F. "Investigations into a method of shearing stress determination from an airplane in flight." Woods Hole Oceanographic Institution, Contract N6onr-27702, Project NR-082-021, Technical Report, no. 24, July 1953. 33 p. figs. tables. refs. Unpublished manuscript. DAS.

Shearing stresses and eddy viscosities in the atmosphere are computed on the basis of accelerometer records on an airplane also equipped with a pressure gage anemometer, a hygroscope and a drift sight meter. The report deals with the theory of computation and the necessary observing procedures. Only a part of the total spectrum of eddies can be observed, since small and very large eddies cannot be detected. Actual samples are given for measurements made in the Atlantic trade wind region (north from San Juan and Anegada Islands). The eddy viscosity was 100 - 200 (gm/cm/sec) at 15 m height and rapidly decreased through the lower 300 m. - Author(mod) MGA 5.4-150.

1953

630 Chicago. Univ. Dept. of Meteorology. "Recent studies on tropical meteorology." Contract Noori-20, Task Order 23, Final Report, pt. 2, Mar. 1953. 6 papers, each paper renumbered. Contents: Hughes, L.A. "On the low-level wind structure of tropical storms." 10 p. figs. table. refs. Jordan, E.S. "Observational study of the upper wind circulation around tropical storms." 9 p. figs. refs. Jordan, C.L. "On the low-level structure of the typhoon eye." 9 p. figs. refs. Colón, J.A. "Study of hurricane tracks for forecasting purposes." 10 p. figs. tables. refs. Colón, J.A "Mean summer atmosphere of the rainy season

1953 cont.

over the western tropical Pacific Ocean." 2 p. table. refs. Jordan, C.L. "Comparison between observed and geostrophic winds." 8 p. figs. refs. DAS.

1953

631 Colón, J.A. "Study of hurricane tracks for forecasting purposes." Monthly Weather Review, 81:53-66, 1953. figs. refs.

Statistical analysis of formation and motion of tropical storms in the Caribbean area. Numerous charts of annual and monthly frequencies, probabilities and regions of formation, direction and speed of motion, and persistence are considered. Study is based on data covering 1887-1950. - Staff MGA 5.3-106.

1953

632 Day, R.L. "Weather extremes in Florida during 1950 - 1951." Florida Academy of Science, Quarterly Journal, 16(2): 102-109, June 1953. plates. refs. Abstracted from reprint.

January 1950 was second warmest (+9°F) and driest (0.39") January on record and June also had record heat and drought. Three fully developed hurricanes entered Florida in 1950. The Cedar Key storm of 5 - 6 September brought one of the heaviest rains ever recorded in the United States; 24.50 in or more in a little over 24 hrs. The 18 October hurricane at Miami was accompanied by gusts of 150 mph and rainfall of 15 in (Titusville, Florida). On 25 - 26 November 1950 record low temperature for November (16°F) occurred at Secotan at the time of the great snowstorm of New York City. On 3 - 4 February 1951, another record cold wave brought 10°F to Crestview in northwestern Florida (the record was -7°F at Tallahassee in February 1899). Two in of snow fell at St. Augustine - the heaviest in Florida since 1899. Charts show isobars and mean isotherms for the events. - Staff MGA 7J-101.

1953

633 Fowler, W.J. "Weather of the western Caribbean." Weather, 8(10):304-306, Oct. 1953.

1953

634 Franceschini, G.A. "Distribution of the mean monthly wind stress over the Gulf of Mexico." Texas. A & M Univ. Dept. of Oceanography and Meteorology, Contract AF 19(604)-169. Scientific Report no. 1, Aug. 1953. 19 p. figs. table. refs. eqs. DAS.

Areal distribution of mean monthly and annual wind stress on the Gulf of Mexico is presented. Approximate values of the stress were determined for 2°

1953 cont.

latitude-longitude quadrangles using mean monthly wind tabulations of ship observations. Calculations were based on the assumption that wind stress is proportional to the square of the wind speed. Prominent features of the stress distribution are noted. Qualitative agreement of this distribution with observed mean surface currents in the western half of the Gulf is indicated. A brief discussion of the association in this area between mean surface flow and the mean pattern of surface water temperature is included. - Author(mod) MGA 9F-56.

1953

635 Francis, J.R.D. "Sea, trade winds and weather." Weather, 8(10):306-308, Oct. 1953. refs.

Brief account of an expedition by the Imperial College, London, to Anegada (18°N, 64°W) to test theories of energy transfer in the trade winds. Observations included upper winds and cloud photographs. - Staff MGA 9.9-69.

1953

636 Grinsted, W.A. "Meteorology in the West Indies." Weather, 8(10):300-301, Oct. 1953.

1953

637 Howell, W.E. "Study of the rainfall of central Cuba." Journal of Meteorology, 10(4):270-278, Aug. 1953. figs. tables. ref.

Monthly and annual rainfall pattern in Cuba is related with the circulation pattern. Daily weather charts (1946 - 1950) are classified into 9 types and 4 sub-types. Surface, 1,000 ft and 10,000 ft winds, thermal stability and pressure change were punched on cards. Relationships with rainfall index in central Cuba are tabulated and analyzed. - Staff MGA 5.5-173.

1953

638 Howell, Wallace, E., Associates, Inc. "Evaluation report of 1952 rainfall stimulation program for Central Najasa." Cambridge, Mass. 1953. 7 p. figs. tables. charts. DAS.

Daily isohyetal maps for seeding days, hodographs of upper winds, map of isopercentals of relative anomaly and locations of rain gages and generators are shown. A 33 percent increase of rainfall in the target area as compared with a control area was found with a small probability of chance. Author(mod) MGA 5.8-82.

1953

639 Howell, Wallace, E., Associates, Inc. "Evaluation report of 1952 rainfall stimulation program for Macareño Industrial Corporation of New York." Cambridge, Mass.

1953 cont.

1953. 7 p. tables. figs. charts. DAS.

Daily isohyetal maps with hodographs of upper winds, map of isopercentals of relative precipitation, location of rain gages and generators are shown. A 35 percent increase of rainfall on the target area as compared with a control area was found with a probability of chance of less than 1:100. - Staff MGA 5.8-84.

1953

640 Howell, Wallace, E. Associates, Inc. "Evaluation report of rainfall stimulation program for Central Ermita, May - Dec. 1952." Cambridge, Mass. 1953. 45 p. figs. tables. charts. DAS.

Daily isohyetal maps during summer and winter operations, map of isopercentals of normal rainfall and locations of rain gages and generators are shown. A 53 percent increase of rainfall on the target area as compared with a control area was found which is 3.3 times as large as the standard deviation of observed deviations (probability of change less than 1 equals 1000). - Staff MGA 5.8-81.

1953

641 Howell, Wallace, E., Associates, Inc. "Rainmaking and industry." Cambridge, Mass. 1953 (?). 12 p. port. photos. diagr. DAS.

Explains the needs of agriculture and industry for controlled precipitation, the scientific basis for rainmaking and answers to a number of questions raised by various interests on the practical and legal aspects. The operations of W.E. Howell, Associates in Canada, United States, Cuba, Peru, etc. are described. Staff MGA 11M-423.

1953

642 Howell, Wallace, E., Associates, Inc. "Summary evaluation of cloud seeding operations in Cuba, 1952." Cambridge, Mass. Apr. 1953. 19 p. figs. maps. refs. MH-BH.

Effects of cloud seeding operations conducted in 5 sugar plantations in Cuba are statistically analyzed. Data from target and control areas (and normals), regression equations, correlation coefficients, standard errors and probability ratios are computed and presented in charts and graphs. Author finds a significant increase in rainfall over target areas and shows that the probability of such an increase under natural conditions is as small as 1:2,000. - Staff MGA 5.1-97.

1953

643 Jordan, C.L. "A comparison between observed and geostrophic winds in low

1953 cont.

latitudes." Royal Meteorological Society, Quarterly Journal, 79:153-156, 1953. fig. tables.

Low latitude wind and pressure data are used to determine the mean departure of the actual wind speed from the geostrophic speed The computed departure becomes progressively greater equatorward of 30°N and attains a magnitude of about 10 m/sec at 10°N. - Staff

1953

644 Kendrew, W.F. "Climates of the continents." Oxford, 1953. DAS.

Discusses briefly (pp. 512-527) the climate of Mexico, Central America and the West Indies. Chapter also contains a map with generalized tracks of the West Indies region and tabular mean monthly and annual temperature and precipitation summaries for selected stations in the area. - Staff.

1953

645 Leipper, D.F. "Marine meteorology of the Gulf of Mexico, a brief review." Texas A & M Univ. College Station, 10 Feb. 1953. Technical Report no. 5; Oceanographic Series no. 20, Contract N7onr-487; T.O. 2. 11 p. illus. refs.

A brief review is presented of the marine meteorology of the Gulf of Mexico under the following topics: extra-tropical cyclones, the general air circulation, average conditions, weather-observing stations, typical upper-air soundings, northers (a period of north winds), meteorological tides and hurricanes. Applications of marine meteorology in the gulf are discussed, and further sources of information are listed. The development of marine meteorology in the Gulf of Mexico and other ocean areas is believed to have been delayed by a lack of sufficient information about the underlying water surface. Staff AD-7714.

1953

646 McClelland, M.K. "Oil and weather in the tidelands." World Petroleum, 24(10): 98-99, Sept. 1953. photos.

Account of the career and functions of the industrial consulting meteorologist, Nash C. Roberts, who directs the operations of an off-shore oil drilling company in the Gulf of Mexico (tidelands of the Louisiana Coast) during periods when hurricanes or adverse winds threaten. By precise and personalized forecasting, he enables this company to operate until the last moment when safety demands shutting down or, as in most cases, to continue without interruption when other companies shut down completely for storms that are near but do not actually strike the point of

1953 cont.

operations. - Staff MGA 8C-24.

1953

647 Millas, J.C. "Nortes en la Habana." [Northers in Havana.] Cuba. Instituto Nacional de Hidrología y Climatología Médicas, Archivos, año 1, 1953. pp. 29-44. DAS.

Names and describes 'northers' at various places throughout the world and discusses them at Havana under the following headings: 1) normal, 2) classification at Havana, 3) relation with the atmospheric current, 4) change of pressure on the coast of Texas and pressure gradient at Galveston-Havana, 5) associated rains, 6) the swell caused by the 'northers', 7) time of occurrence in Havana and the relative intensity, 8) duration and 9) the first 'norther' observed in Cuba. Illustrative tables give the occurrence at Havana for each month (October - May) and frequency of duration in hrs (for specified intervals ranging from 6 - 10 hrs to greater than 71 hrs). - Staff.

1953

648 Norton, G. "Hurricanes of 1953." Monthly Weather Review, 81:388-391, 1953. fig. ref.

Tracks of 8 hurricanes (6 of which reached full hurricane force) that occurred in the West Indies (25 May - 10 October 1953) are shown on a chart. Two of these touched the east coast of the United States ("Barbara" passed over Hatteras and "Carol" struck the coast of Maine near Eastport), and two struck the Gulf Coast at the Florida Panhandle ("Alice" and "Florence"). Individual storms are described (including damage). - Staff MGA 7J-109.

1953

649 Quinones, M.A. "High intensity rainfall and major floods in Puerto Rico." American Society of Civil Engineers, Proceedings, v. 79, no. 364, Dec. 1953. 35 p. tables. figs.

Information on rainfall intensities of short duration is essential in estimating flood flows in Puerto Rico. Although 24-hr rainfalls have been recorded at many locations since the latter part of the 19th century, and records are available from 325 rainfall stations throughout the island, only a few of these have self-recording instruments from which short duration records can be obtained. Paper presents compilation of rainfall information in Puerto Rico pertinent to the problem, and studies to derive, from incomplete records available, a tentative pattern of rainfall which may be used as a basis for

1953 cont.

rational determination of flood flows. Normal and high intensity rainfall in Puerto Rico are included. Estimates of flood flows in two streams during two storms appear to be of unusual magnitude even when compared to record breaking floods in the United States and other countries from watersheds of similar size. - Author (mod) MGA 6.1-264.

1953

650 Ramamurti, K.S. "On fluctuations of the atmospheric circulation in the vicinity of South America and their relation to sunspots." Journal of Meteorology, 10:474, 1953.

1953

651 Reese, A., and Spann, R.E. "When the big winds blow (pts. 1, 2)." World Oil, 136(7):48-52, June 1953; 137(1):68-70, July 1953. figs. tables. photos.

Tropical storms will often cause losses of millions of dollars through unnecessary or premature shutdown of oil installations. This article deals with the U.S. Weather Bureau (USWB) Hurricane Warning Service, describing its operations, equipment and methods. The major part of the paper is devoted to storm detection by means of an extensive radar network maintained in the Gulf region by the USWB and several research or commercial organizations. Scientific and technical aspects of radar storm detection are discussed and illustrated. The operation of the radar storm warning service provided by A.H. Glenn & Associates of New Orleans (serving 10 operators) is described. - Staff MGA 7J-110.

1953

652 Riehl, H., and Haggard, W.H. "Prediction of tropical cyclone tracks." U.S. Bureau of Aeronautics (Navy), Project AROWA (TED-UNL-MA-501.12) 1953. 32 p. figs. tables.

Prediction of tropical cyclone movement is investigated in terms of 500 mb flow patterns. Techniques for predicting the zonal meridional components of motion 24 hrs in advance are developed and application of the techniques is demonstrated. Results of application to 1953 Atlantic storm season and examples of the techniques are discussed. - Staff.

1953

653 Sánchez Carrillo, J.M. "Generalidades sobre climatología." [Generalities on climatology.] Maracay (Venezuela), Instituto Nacional de Agricultura. Sección de Meteorología, Aug. 1953. 7 p. Mimeographed. DAS.

General factors including latitude, altitude, continentality, micro-climate,

1953 cont.

albedo, classification (Köppen), climates of Venezuela (tropical rainy, selva, step and humid warm) and Thornthwaite's system are discussed. - Staff MGA 11.2-260.

1953

654 Scott, J.R., "On wind analysis in low latitudes." Royal Meteorological Society, Quarterly Journal, 79:544-545, 1953. fig.

Author suggests that there does exist, on most occasions, a non-divergent flow pattern which would represent quantitatively the horizontal field of flow within reasonable limits for wind estimation. - Staff.

1953

655 Sherman, L. and Carino, I. "Study of hurricane Able of 1952. [and] study of hurricane Baker of 1952." Florida. State Univ. Dept. of Meteorology, Contract Nonr-988(01), Project NR 082 071, Technical Report (unnumbered), 20 Aug. 1953. Each section repaged. charts. refs. Also: "Note on hurricane Able." American Meteorological Society, Bulletin, 35(5):220-222, May 1954. charts. refs.

Surface and upper air streamline charts are presented for hurricane "Able" (28 August - 1 September 1952), and hurricane "Baker" (3 - 6 September 1952) in the West Indies to illustrate the method of analysis whereby the point of cyclonic indraft and the hyperbolic point are plotted for each 6 hrs in respect to a section and movement of the eye of the hurricane. The analyses were made by two analysts independently and the results agree very well. Forecast value is considered. Staff MGA 5.7-90.

1953

656 Sherman, L. and Carino, I. "Study of Hurricane Baker of 1952." For abstract see their "Study of Hurricane Able of 1952." 1953.

1953

657 Sifontes, E. "Meteorología marítima y ciclones Antillanos." [Marine meteorology and Caribbean cyclones.] Caracas, 1953. 59 p. DLC.

1953

658 Simpson, J.S.M. "Aeroplane studies of trade-wind meteorology." Weather, 8(10):291-300, Oct. 1953. figs. Also in: U.S. Office of Naval Research, Research Reviews, Apr. 1953. pp. 12-20. DAS.

WYMAN AND WOODCOCK in the Caribbean and the U.S. Navy's TYRENA project in the trade wind area of the Pacific have shown that 90 percent of the energy received from radiation at the sea surface is transferred by the process of evaporation to the atmosphere. It is carried away to be

1953 cont.

released in these or other latitudes as precipitation by convective cloud cells. The trade wind inversion forms a lid to the upward transfer of moisture in clouds. Recent (June 1952) airplane cloud studies made by Woods Hole Oceanographic Institute near San Juan, Puerto Rico, are described and illustrated. - Staff MGA 13E-136.

1953

659 Simpson, J.S.M. "Marine Meteorology. Some results of a trade cumulus cloud investigation." Woods Hole Oceanographic Institution, Mass. Technical Report no. 23, ref. no. 53-30, refs. Contract N6onr-27702. May 1953. 46 p. illus.

Cross sections through 2 trade wind cumulus clouds are presented which show the temperatures, turbulence, and water vapor content of clouds (and their environment), cloud slope and the external wind profile. The clouds were studied over the Caribbean Sea on the same afternoon in June 1952, and were in differing phases of their life cycles. Measurements were made from a slow-flying aircraft PBY-6A equipped with sensing instruments. Calculations made from the cross sections include total and dynamic entrainment, drafts, slopes and water content. The Stommel-Malkus steady-state model appeared applicable to some clouds and provided consistent results. Evidence on the formation and growth of large trade wind cumulus clouds from several smaller ones and on the precedence in time of earlier cloud towers in the same locality are provided. - Staff AD-11 717.

1953

660 Suarez Gomez, M. "Memoria del huracán de Las Villas de 1952." [Memoir on the Las Villas hurricane of 1952.] Sancti Spiritus, Las Villas, Cuba, Tipografía Venus, 1953 (?). 22 p. diagrs. DAS.

Development and path of a hurricane is described with special reference to its passage over Cuba (24 October 1952) where it had dissipated due to a high pressure center which invaded the Gulf of Mexico from the North American continent. Obstructed by this anticyclone, the hurricane followed the path of least resistance causing irregularities in its trajectory which confirms the 'repercussion theory' of Millas. Accompanying basic meteorological data are given. - Staff MGA 12.3-296.

1953

661 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Transfer processes operating at the ocean boundaries. Data report, section 3, wind velocity, January 1951 to September 1952." Project 30,

1953 cont.

Contract N7onr-48704, Mar. 1953. 96 p. tables. DNO.

Research conducted in cooperation with the Gulf Coast Producing Division of the Pure Oil Company. - Staff.

1953

662 Texas. A & M Univ. Dept. of Oceanography and Meteorology. "Wind velocity data, Jan. 1951 to Sept. 1952." Contract N7onr-48704, Project 083-071, Project 30, Transfer processes operating at the ocean boundaries, Data Report, Sec. 3, Mar. 1953. 96 p. entirely tables. DAS.

Hourly data for wind speed and direction 64 ft above mean water level (1 January - 30 September 1951) and data at 8, 16, 32 and 64 ft above mean water level (1 October 1951 - 31 August 1952) was collected. All measurements were made on an offshore oil platform south of Louisiana with a Green 8-contact weather vane and standard 3-cup anemometers. - Staff MGA 12M-544.

1953

663 Twist, T.F. "Weather of the eastern Caribbean." Weather, 8(10):303-304, Oct. 1953.

1953

664 U.S. Navy Weather Research Facility. "Prediction of tropical cyclone tracks, research project." AROWA 12-1253-101, 1953.

1953

665 Vitvitskiĭ, G.N. "Klimaty Severnoĭ Amerika." [Climate of North America.] Moscow: Gosudarstrennoe Isdatelstro Geografischeskoi Literatury, 1953. 287 p. figs. numerous tables. refs.

A synoptic and statistical review of the North American climate including Mexico, Central America and the West Indies. Staff.

1954

666 Birchfield, G.E. "Ship reports of cloudiness as an aid in low latitude weather analysis." 1954. For abstract see Jordan, C.L. "On the mean thermal structure of tropical cyclones." 1954.

1954

667 Byers, H.R. "Atmosphere up to 30 kilometers." In Kuiper, G.P., Earth as a planet. Univ. Chic. Press, 1954. pp. 299-370. figs. tables. refs.

A systematic summary of the latest knowledge of the origin and structure of tropical cyclones is found (pp. 344-357) in this review of tropospheric and stratospheric physics. The seasonal, regional, scalar, marine, thermodynamic, sub-tropical and structural peculiarities of tropical cyclones are discussed. Their origin

1954 cont.

(according to Riehl) caused by juxtaposition of an easterly wave under a westerly wave is investigated. The mechanism that causes some to dissipate (cold core) and others to develop or intensify (warm core) is also treated. The nature of the 'eye' and the spiral precipitation bands is effectively illustrated by means of 8 radar photographs of the hurricane of 21 September 1948, made at Key West, Florida by the U.S. Navy. Staff MGA 7I-146.

1954

668 Colón, J.A. "Case study of the high tropospheric wind field." Chicago. Univ. Dept. of Meteorology, Contract N6ori-02036, Project NR 085 003, Report on Research (unnumbered), June 1954. 10 p. figs. table. refs. DAS.

Describes the period 29 March - 2 April 1953 when a high level trough traversed the whole Caribbean from west to east, influencing the cloud and weather structure of the troposphere. The study is based upon streamlines at 3,000 ft obtained from upper air stations and ships' surface winds, and upon constant pressure charts at 1,000, 500 and 200 mb. The upper air charts were constructed with the aid of thickness analysis and the 1,000 mb chart was derived by converting sea level pressure from the surface chart. An analysis is presented of the daily synoptic history, the upper trough and vertical motion and of the upper wind field. Synoptic charts, streamline charts, constant pressure charts, cross-sections of wind speed, etc., are presented. - Staff MGA 6.7-241.

1954

669 Crary, A.P., Kennedy, W.B. and Bushnell, V.C. "Atmospheric winds and temperatures at heights up to 60 kilometres as determined by acoustical propagation studies." Proceedings of the Toronto Meteorology Conference, 9 - 15 Sept. 1952. pp. 9-13, 1954. figs. table.

Results of measurements of temperature profiles up to 50 km, maximum wind speed and wind directions in Canal Zone, Florida, and Bermuda. - Staff.

1954

670 Davis, W.R. "Hurricanes of 1954." Monthly Weather Review, 82:370-373, 1954. fig. refs. Also: Dunn, G.E., Davis, W.R. and Moore, P.L., Addendum to "Hurricanes of 1954." Ibid., 83(12):314, Dec. 1955. fig. DAS.

The 1954 hurricane season is identified by pronounced meridional circulation, hurricanes recurving northward at low

1954 cont.

latitudes, absence of tropical storms in Florida, Georgia and the Gulf States and the passage of three hurricanes through the North Atlantic States and New England. The histories of the individual hurricanes "Alice," "Barbara," "Carol," "Dolly," "Edna," "Florence" and "Hazel" are described in detail and a map showing the paths of the hurricanes is presented. In the Addendum, the track of a hurricane in the mid-Atlantic that occurred from 30 September - 5 October 1954, but which was not included in list of 1954 because it was unnamed, is shown on a large chart. - Staff MGA 8.3-164.

1954

671 Dominican Republic. Servicio Meteorológico de la Marine de Guerra. "Curso de observadores, Manual B, Pt. B, Observaciones meteorológicas (realización y cifraco.)" [Observers' course. pt. B, Manual B. Meteorological observations, computing and coding.] Ciudad Trujillo, Aug. 1954. 84 p. figs. tables. refs. Mimeographed. For abstract see its "Curso de observadores, Manual A..." 1955.

1954

672 Dominican Republic. Servicio Meteorológico de la Marina de Guerra. "Notas suplementarias del curso de meteorología sinóptica (tomadas de los cursos de entretamiento de Department of Weather, U.S. Air Force Technical School, Chanute Air Force Base, Illinois, y adaptadas al español por Fernando Huerta.)" [Supplementary notes of the course in synoptic meteorology, taken from the training course of the Dept. of Weather, U.S. Air Force Technical School, Chanute Air Force Base, Illinois, and trans. into Spanish by Fernando Huerta.] 8 Nov. 1954. 33 lectures (unpaged). figs. Mimeographed. DAS. Also: "Notas suplementarias del curso de meteorología sinóptica: temas diversos." (Supplementary notes of the course in synoptic meteorology: various themes.) Nov. 1955. each section repaged. figs. DAS.

Supplement gives a thorough course in synoptic, dynamic and physical meteorology for practical use (in Spanish). Most of the material is from standard sources (e.g., Petterssen). - Staff MGA 9.8-4.

1954

673 Donn, W.L. "Relationship between microseism period and storm position." Science, 119(3080):55-57. 8 Jan. 1954. figs. tables. refs.

Microseism periods associated with 14 hurricanes in the western North Atlantic, Caribbean Sea and Gulf of Mexico over a number of years have been plotted

1954 cont.

at the appropriate storm positions. Records from 15 stations were used although only a few may have recorded a particular microseism storm. Results show a definite period 'flow' over the Gulf of Mexico, with 'highs' generally southeast of Bermuda, and south of the continental shelf to the south of Newfoundland. A less prominent 'high' occurs to the north of the West Indies arc. Intermediate periods exist between Bermuda and the east coast. Period seems to show a correlation with water depth. Variation with position seems to negate any significant ocean wave relationship. Author MGA 7I-128.

1954

674 Dumont, M. "Contribution à l'étude de la prévision des cyclones dans la zone des Petites Antilles." [Contribution to the study of hurricane forecasting in the area of the Lesser Antilles.] Journal Scientifique de la Météorologie, 6(22):59-68, Apr./June 1954. figs.

Describes general circulation in the northwest Atlantic and lists meteorological indications of the development of a hurricane in the French Antilles. Frequency and trajectories of hurricanes (shown on maps) are discussed. An account of hurricane "Carol" (September 1953) including the synoptic situation and local meteorological conditions at Fort-de-France (12 - 25 September 1953) are presented. Role of the equatorial current in the formation of hurricanes is mentioned - Staff MGA 7K-145.

1954

675 Durst, C.S. "Variation of wind with time and distance." Geophysical Memoirs, v. 12, no. 93, Air Ministry, London, 1954. 32 p.

Standard vector variations and correlation coefficients at various levels to 50,000 ft. Data is given on the problem of wind variations with time and place and the statistics are based on several series of observations. Data is primarily for England, but also Behrin, Nairobi, Larkhill, San Juan, Malta, Miami-Tampa, Molta-Wheelus Field, Larkhill-Rome and New Orleans-Brownsville. - Staff.

1954

676 Fawbush, E.J. and Miller, R.C. "Types of air masses in which North American tornadoes form." American Meteorological Society, Bulletin, 35:154-165, 1954. figs. tables. refs.

Analysis of 286 soundings obtained in connection with tornadoes which have occurred in several parts of the United States. Three types of air masses in which tornadoes

may form are distinguished. Type 1 has a moist layer at 850-500 mb and very dry air above with winds increasing with altitude and is characteristic of the Great Plains tornadoes. Type 2 is found in the region of the Gulf of Mexico and adjacent states from Texas to Florida. No stable area or inversion occurs above the moist layer. Steep lapse rates, high humidities and decreasing winds with height are characteristics which identify the air mass. Type 3 is found in California and Oregon, and is characterized by cool moist air to great heights with steep lapse rates (conditionally unstable) and has winds increasing with height. Staff MGA 10B-54.

1954

677 Florida. Div. of Water Survey and Research. "Summary of observed rainfalls on Florida to Dec. 31, 1952." Water Survey and Research Paper, no. 11, 31 Aug. 1954. 334 p. plates, mostly tables. DAS.

Rainfall records for Florida from 419 stations totaling 78,728 station mos and obtained from 21 other agencies besides the U.S. Weather Bureau (which had 80 percent of the records available) have been located, corrected, compiled and analyzed since 1947 and published in detail in this volume. The charts include rainfalls equalled or exceeded 1 yr in 10, 1 yr in 2 and every full yr for each mo. Data and isohyets appear on each chart. The tabular data include records at stations in operation after 31 December 1947 (active stations), by sections of the state and stations inoperative but with 10 yrs or more records. Station indexes and location maps are included showing active and inactive stations. In addition to the total rainfall for each mo and yr during the entire period of record for each station, there is an analysis of the amount of rainfall which was equalled or exceeded in 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 percent of the yrs in any given mo. Data for Key West date back to 1832. Staff MGA 6.10-9.

1954

678 Franceschini, G.A. "Modification of air masses over the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract AF 19(604)-169, Final Report, Oct. 1954. 3 p. DAS.

Administrative report outlining research activities and indicating results. It is concluded that modification of air masses depends mainly on the water temperature of the gulf. A denser observational

network is needed and locations in the states bordering the Gulf of Mexico at which certain weather data are regularly recorded are presented. These are auxiliary stations whose data are not published by the government weather services and are not available through normal channels. The elements observed, frequency of observation and length of record are tabulated. Author(mod) MGA 12N-472.

1954

679 Franceschini, G.A. "Modifications in tropical air crossing the Gulf of Mexico toward the United States." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract AF 19(604)-169, Scientific Report, no. 3, Apr. 1954. 12 p. figs. table. refs. DAS.

Changes occurring in the lower levels of maritime tropical air moving across the Gulf of Mexico are measured. Computations are based on radiosonde observations made at the termini of selected trajectories. Each trajectory is discussed and it appears that modifications can be explained qualitatively in terms of surface water temperature distribution and horizontal mass divergence of the air. - Author MGA 8.9-181.

1954

680 Higgs, R.L. "Severe floods of October 12 - 15, 1954 in Puerto Rico." Monthly Weather Review, 82:301-304, 1954. figs. tables.

One of the worst floods in the history of Puerto Rico occurred 12 - 15 October 1954. Heavy rainfall (26.07 in fell at Toro Negro Dam 11 - 16 October) responsible for floods resulted from a circulation involving an east-west oriented shear line extending from hurricane "Hazel" (west of Haiti) to the Leeward Islands region. Maps of rainfall and flood distribution of areas covered by flood warnings are presented. Daily rainfall amounts (11 - 16 October) for over 20 Puerto Rican stations and estimated flood damage figures are tabulated. Activity of the warning service is discussed briefly and termed timely and adequate. Staff MGA 7J-123.

1954

681 Howell, W.E. "Rainfall stimulation for hydro-electric power." Water Power, 6(1): 16-21, Jan. 1954. figs. Also his: "Ours or theirs?" Ibid., v. 6, no. 8, Aug. 1954. 8 p. figs. tables.

In the first article, history of cloud seeding, benefits of increased precipitation in various economic fields and geographic locations and requirements of a commercial weather modification program are discussed.

1954 cont.

Air evaluation of methods based on single storms is reviewed. A regression method involving control areas is explained and illustrated by the example of seeding operations in Cuba (1953) including air evaluation of runoff data. Average increase of rainfall in projects at various times and places is found to be 26 percent. Comparison of this average with the mean of the percentage figures (35 percent) shows that the larger percentage increases must have been associated with the smaller rainfalls. Staff MGA 6J-238.

1954

682 Johnson, R.E. "Estimation of friction of surface winds in the August 1949 Florida hurricane." Monthly Weather Review, 82: 73-79, 1954. figs. refs.

Equations of motion are adapted for use in computing the tangential and normal components of friction in a model hurricane. Values of the components of friction are estimated from surface data of the August 1949 Florida hurricane. The computations are based upon mean pressure and wind profiles describing the front and the rear portions of the storm within 28 to 70 mi from the center as it moved through the Lake Okeechobee region. The tangential component of friction appears to be greater than the normal component in the region to the rear of the center, while in advance of the center the opposite is generally observed. All friction curves show a continuous increase of friction with wind speed. - Author MGA 7K-146.

1954

683 Jordan, C.L. and Jordan, E.L. "On the mean thermal structure of tropical cyclones." Journal of Meteorology, 11(6): 440-448, Dec. 1954. figs. tables. refs. Also issued as: Chicago Univ. Dept. of Meteorology, Contract N6ori-02036, Project Nr085 003, Reports on Research (unnumbered), Mar. 1954. 13 p. figs. refs. Appended: Birchfield, G.E. "Ship reports of cloudiness as an aid in low latitude weather analysis." 4 p. figs. refs.

About 300 radiosonde ascents within 6° latitude of centers of mature hurricanes in West Indian area (1946 - 1952) give mean temperatures at levels up to 50 mb, tropopause structure, surface pressure and heights of standard isobars. Geostrophic components along and across direction of motion give a resultant to right of track at low levels and to left at high levels. A West Indian hurricane 4 - 7 September 1953) and Okinawa typhoon (16 - 19 August 1951) show features consistent with mean values.

1954 cont.

Staff MGA G.5-130.

1954

684 Leipper, D.F. "Marine meteorology of the Gulf of Mexico: a brief review." In U.S. Fish and Wildlife Service, Fishery Bulletin, no. 89:89-98, 1954. figs. table. refs.

Analytical review of meteorological conditions in the Gulf of Mexico including a discussion of extratropical cyclones; general circulation effects; average pressure and wind conditions; observing stations; typical upper air soundings at Swan Islands, New Orleans and Brownsville; northers; tides; hurricanes; applications of marine meteorology in the gulf and sources of information (pilot charts, and other Hydrographic Office-U.S. Weather Bureau publications). - Staff MGA 7.5-42.

1954

685 Ludlum, D.M. "Weatherwatch: Summer 1954-heat and hurricanes." Weatherwise, 7(5):134-135, Oct. 1954. figs. Also his: "Weatherwatch: Autumnal heat and hurricanes." Ibid., 8(6):150-153, Dec. 1955. figs. DAS.

In the first article, maps show departure from normal of temperature and precipitation in July and August 1954. The general circulation pattern leading to the extreme heat and drought are explained. A short account of the disastrous hurricane "Carol" which went over New England without adequate warning is given. The second article discusses the September 1955 heat in southern and central United States; record heat at Los Angeles in early September (110°F on 1 September and 108° on 2 September); Connecticut flood of 14 - 17 October 1955; and hurricanes "Gladys," "Flora," "Hilda," "Ione" and "Janet," with charts to show details of temperature and precipitation distribution and path of hurricane "Ione" across North Caroline (19 - 20 September 1955) with fixes every hr. "Janet" in late September left 60,000 homeless in Yucatan just 10 days after "Hilda" had devastated the same area, leaving more than 300 dead in the 2 storms. - Staff MGA 7J-127.

1954

686 [Marine Observer] "Purple light [in] Caribbean Sea." Its 24(165):145-146, July 1954.

Unusual observation (13 July 1953) of a purple light. - Staff MGA 8.1-368.

1954

687 Mather, J.R. (ed.) "Measurement of potential evapotranspiration." Johns Hopkins Univ. Laboratory of Climatology, Publications in Climatology, v. 7, no. 1, 225 p.

1954 cont.

Results of evapotranspiration measurements made in several climatic regions of the world (1947 - 1953) are reported in this collection of 14 papers. Critical examination is made of the accuracy of the evapotranspirometer and efficiency of Thornthwaite's formula. - Staff.

1954

688 Netherlands West Indies. Dept. Sociale en Economische Zaken (and) Meteorologische Dienst. "Statistiek van de meteorologische waarnemingen in de Nederlandse Antillen." [Statistics of meteorological observations in the Netherlands Antilles.] 1954. 18 p. mostly tables. In Dutch and English. DAS.

Includes mean values of temperature, dewpoint, relative humidity, pressure, wind speed and direction, cloudiness (percent), monthly averages of rainfall, number of days with rain, temperature, dewpoint, relative humidity, clouds, pressure, wind and precipitation (for Curaçao airport), rainfall and rainy days for over a score of stations in Curaçao, Aruba, Bonaire, St. Martin, St. Eustatius and Saba for 1954. Text explains heavy rains at Aruba for year (and for October) due to hurricane "Hazel" which gave 350 mm of measurable precipitation compared with normal October of 50 mm. - Staff MGA 7.6-77.

1954

689 Riehl, H. "Tropical meteorology." New York: McGraw-Hill, 1954. 392 p. tables. figs. refs.

Deals with many aspects of tropical meteorology and tropical cyclones: winds, temperature, rainfall, local and diurnal effects, convection, cloud physics, tropical rain, tropical observations, analysis, divergence, vorticity, waves in the easterlies, the general circulation and low latitude disturbances. Chapter 11 (pp. 281-357), entitled Tropical Storms, deals especially and thoroughly with the most recent concepts of the field. A list of 79 recent references with an index is provided. Staff MGA 7I-196.

1954

690 Riehl, H. "Variations of energy exchange between sea and air in the trades." Weather, 9(11):335-340, 1954.

1954

691 Seaman, L.H. "Hurricane Hazel October 5 - 21, 1954." U.S. Weather Bureau, Climatological Data, National Summary, 5(1):381-385, 1954. DAS.

1954

692 Sherman, L. and Carino, I. "Note on hurricane Able." American Meteorological Society, Bulletin, 35:220-222, 1954.

1954 cont.

charts, refs. See their "Study of Hurricane Able of 1952." 1953.

1954

693 Simpson, J.S.M. "Marine meteorology: an example of an orographic-convection cell in the tradewind region." Woods Hole Oceanographic Institution, Mass. Technical Report no. 30, ref. no. 54-43, June 1954. Contract N6onr-27702. 26 p. illus. tables. refs.

A series of four helical aircraft soundings across the Island of Puerto Rico on a sea-breeze day were analyzed and interpreted. The observations gave height distribution of temperature, moisture, and small-scale turbulence at four verticals along the air flow. Additional cloud observations were obtained by photography. The existence of a fairly symmetrical orographic-convection cell with ascent over the island and compensating subsidence in a surrounding ring is established. The field of motion in the convection cell is deduced from the observations together with the theoretical work on flow over heated islands by Simpson and Stern (1953). The plausibility of the motion field is then tested by construction of a moisture budget for part of the cross section delineated by the soundings. - Author (mod) AD-35-713.

1954

694 Simpson, J.S.M. "Marine Meteorology. On the formation and structure of downdrafts in cumulus clouds." Woods Hole Oceanographic Institution, Mass. Technical Report no. 31, ref. no. 54-56, Contract N6onr-27702, Aug. 1954. 14 p. illus.

Data from March and April 1953 tradewind cloud flights were employed in the development of a physical theory concerning the origin and structure of downdrafts at the edge of cumulus clouds. Calculations are presented to support the theory that the downdraft originates at the top of the cloud from air which has been a part of the updraft. Air released from the updraft at the cloud top may acquire sufficient negative buoyancy to begin a rapid downward acceleration. Cloud traverses were made in a manner similar to one previously employed (J.S. Malkus [Simpson], Journal of Meteorology, 11:220-237, 1954), and calculations from this set of traverses were based upon the steady-state model of an entraining cumulus draft described in the cited reference. Staff AD-38-106.

1954

695 Simpson, J.S.M. and Ronne, C. "Case of cumulus clouds extending into the high tropospheric jet stream." American Meteorological Society, Bulletin, 34:425, 1953. Abstract

1954 cont.

only. (American Meteorological Society, National Meeting, 25 - 28 Jan. 1954, Program).

During an expedition to the Caribbean area in the spring of 1953 undertaken jointly by the Imperial College, London, and the Woods Hole Oceanographic Institution, a very interesting low-latitude jet stream situation was encountered. High cumulonimbus clouds, reaching higher than 45,000 ft, were photographed simultaneously by time-lapse motion pictures from Anegada Island (120 mi ENE from San Juan, Puerto Rico) and by still photography from an aircraft a known distance from the Island. Due to the excessive vertical wind shear on this day (30 mps/km over a height interval of about 600 meters), calculations of rates of mixing between clouds and environment are of considerable interest. - Author (mod).

1954

696 Simpson, J.S.M. and Ronne, C. "Marine meteorology: concerning the structure of some cumulus clouds which penetrated the high tropical troposphere." Woods Hole Oceanographic Institution, Mass. Technical Report no. 27, ref. no. 54-18, Contract N6onr-27702, 19 Mar. 1954. 38 p. illus. refs.

Some extremely large oceanic trade-wind cumulonimbus clouds extending to 40,000 ft into a region of strong winds and intense vertical shear have been studied by means of time-lapse photography. A simultaneous still picture of the clouds taken a known distance and direction away from the motion pictures permits triangulation upon the clouds and calculation of the vertical and horizontal motions of several of the individual towers. By means of a nearby radiosonde observation, it was established that air forming the strongest of these towers must have risen from a nearby cloud base with little or no dilution of its buoyancy by mixing with the clear-air surroundings. The model of Malkus [Simpson] and Scorer (1954) concerning the erosion of cumulus towers is reviewed and tested upon these towers with satisfactory results. Author (mod) AD-28 035.

1954

697 Smith, G.W. "Evapotranspiration in Trinidad, B.W.I." Johns Hopkins Univ. Laboratory of Climatology, Publications in Climatology, 7(1):125-139, 1954. figs. tables. DAS.

Considerable effort was made to achieve homogenous measurements of potential evapotranspiration. Since it was found that the results depend very much on the depth of the water level, 20 cm, instead of 50 cm

1954 cont.

originally suggested by Mather, was adopted. The temperature throughout the yr is fairly uniform in Trinidad so that the errors of Thornthwaite's formula (which neglects humidity) are closely related to evaporation measured by an atmometer (correlation 0.87). Daily values of temperature, precipitation, computed and measured evapotranspiration (4 tanks) and some evaporation from bare soil are presented for October 1952 - December 1953. Location of the station: lat 10°38'N, long 61°24'W. - Author (mod) MGA 6.2-239.

1954

698 Stark, L.P. and Richter, D.A. "Cyclogenesis in the Gulf States, January 1954." Monthly Weather Review, 82:35-41, 1954. figs. refs.

Analysis of 3 cases of cyclogenesis in Louisiana or Gulf States region on 10, 15 and 21 January 1954. In all 3 cases, cyclogenesis occurred on the stationary front of a powerful outbreak of Arctic air from Canada. Various regularities are noted as being useful for forecasting such occurrences. A 500 mb cold low or trough was located over the southwestern United States 24 hrs before the cyclogenesis in every case. The combination of cold air advection at 850 mb and a thickness increase (1000-500 mb) resulted in surface pressure falls. - Staff MGA 6.2-149.

1954

699 Tucker, G.B. "Trade wind expedition." London. Royal College of Science, Scientific Journal, 24:86-96, 1954. fig. plates. refs.

Describes an Imperial College (London) expedition to Anegada, a low, flat island in the Virgin group, to study the structure of Trade Winds at the sub-cloud layer and surface drag effects. Balloon observations at 10 min intervals were made at 2 points on the northeastern coast, 2 1/2 km apart. Continuous records of pressure, temperature, humidity and wind were obtained at 3 sites (one on lee side). There was also a program of time-lapse cloud photography - Staff MGA 8.2-184.

1954

700 World Meteorological Organization. "British Caribbean Meteorological Service." WMO Bulletin, 3(1):28-30, Jan. 1954. figs.

A newly established service with headquarters in Port of Spain, Trinidad with main meteorological offices providing 24-hr service for aviation in Trinidad, Jamaica and the Bahamas. Other territories included are: British Guiana, Barbados and British Honduras. - Author MGA 73-29.

1954

701 World Meteorological Organization. Regional Association 4. Eastern Caribbean

1954 cont.

Hurricane Committee. "Report of the Third Session, March 1954." DAS.

W.A. Grinsted, chairman of committee, presided. Seven members (from Canada, the United States, Bermuda, France, Netherlands, Antilles, Dominican Republic and British Caribbean territories) were present. One invited expert (from Venezuela) and 15 advisers plus 7 observers were present. The meeting was held 24 - 26 March 1954 at Kent House, Port of Spain, Trinidad. Modifications in the Hurricane Warning Service; coordination of radiosonde work, improvement of entire Caribbean network (synoptic, pibal and rawinsonde), training of observers, solar radiation network (13 stations to be established in Venezuela), radio teletype equipment, and Caribbean Meteorological broadcasts (CARMET) International Geophysical Year, ship reports, communication facilities, WMO Technical Assistance Program and a number of other subjects were discussed. Three resolutions and 22 recommendations were made and are included. - Staff MGA 7I-154.

1955

702 Ackerman, B. "Buoyancy acceleration and precipitation formation in tropical cumuli." Univ. of Chicago, Report on Cloud Physics Research, Technical Note no. 2, 1955. 30 p.

Study of winter clouds near Puerto Rico with bases 2,000 - 2,500 ft, tops 6 - 10,000 ft and diameter 1/2 - 1 mi. Most clouds were tilted. On page 11: "The fact that none of the clouds developed echoes when the shear was greater than 6 ft/sec/1,000 ft, suggests that an upper limit exists, above which the probability of precipitation from winter trade-wind cumuli is very low." - Staff AD-64-243.

1955

703 Adler, I. "Hurricanes and twisters." New York: Alfred A. Knopf, Inc., 1955. 143 p. diagrs. photos. DLC.

Account of the world's most famous hurricanes or typhoons and storm tide disasters in history, with simple schematic diagrams and explanations of the mechanics of thermodynamics of hurricane genesis and movement, recurvature, etc. Tornadoes, hailstorms, tidal waves (tsunamis), willy-willies and Bay of Bengal cyclones are also mentioned or described. Modern methods of detecting, tracking, reporting and forecasting hurricanes, especially in the Caribbean and the United States are emphasized. - Staff MGA 7I-155.

1955

704 Alaka, M.A. "Case study of an easterly

1955 cont.

jet stream in the tropics." Chicago. Univ. Dept. of Meteorology, Contract Noori-02036, (unnumbered) Technical Report, Mar. 1955. 24 p. figs. tables. refs. DAS.

By means of cross sections (time and space) for the Caribbean radiosonde stations, 500 and 200 mb contour charts, 200 mb streamline and isotach charts, meriodional cross sections to 100 mb level, cloud cover, and relative vorticity charts for period 1 - 4 August 1953; a case history of an easterly jet and its movement is analyzed and attending weather conditions interpreted. Wave motions, wind field, shear, convective activity, thermal and dynamic structure are treated with respect to position of maximum jet concentration (or vice versa). Staff MGA 7.10-152.

1955

705 Alpert, L. "Notes on warm-cloud rainfall." American Meteorological Society, Bulletin, 36:64-68, 1955. figs. tables. refs.

Describes characteristics of cumulus clouds from which rain fell in Puerto Rico. Description of the growth of a rain cloud from below to above the 0°C level is presented. Map shows distribution of observations of warm cloud rainfall. - Staff MGA 6F-349.

1955

706 Alpert, L. "Panama tornadoes." American Meteorological Society, Bulletin, 36:171-172, 1955. figs.

With the aid of photographs, the author describes 2 tornadoes observed by him in Panama on 10 June 1943 and in July 1942. The rainfall in both cases was behind the tornado cloud. The 'collar' phenomenon was not observed. - Staff MGA 7.5-129.

1955

707 Alpert, L. "Silver iodide cloud seeding in Puerto Rico." American Geophysical Union, Transactions, 36(2):227-234, Apr. 1953. figs. tables. refs.

The results of field work in Puerto Rico in November 1953, as a consultant for the Puerto Rico Water Resources Authority to investigate the possibilities of stimulating rainfall through cloud seeding with silver iodide ground generators. Often, rain fell from warm cumulus clouds with tops between 8,000 and 12,000 ft, far below the -5°C level (17,000 - 18,000 ft) where silver iodide first becomes effective as a nucleating agent. Clouds that were observed to grow to the -5°C level started to give rain when the tops were between 8,000 and 12,000 ft and those clouds usually yielded such intense showers that seeding to increase the fall could result

1955 cont.

in destructive erosion and floods. An analysis of meteorological records for the dry season indicates that the trade inversion would form an effective ceiling to the penetration of silver iodide smoke aloft. - Author (mod) MGA 6J-291.

1955

708 American Institute of Aerological Research. "Cold weather in southern Florida." Denver, Colo., Report no. 289 A 1955. 17 p. DLC.

Prepared for Florida Home Heating Institute. - Staff.

1955

709 Ballenzweig, E.M. "Large-Scale vertical motions in the atmosphere." Technical Report no. 36 on Marine Meteorology, Ref. no. 55-53, Contract Nonr-172100, Sept. 1955. 40 p. illus. tables. refs.

A synoptic study of the heating of cold air as it flows off the coast of North America. It was found that an important parameter, the vertical motion, could not be determined reliably by the Bellamy-Sheppard technique. It was thought that a review of the various methods of estimating vertical velocity would lead to a better understanding of the problem. The conclusion reached is that the calculation of vertical motion by most kinematic techniques to a reliability better than ±50 percent borders on the impossible over the ocean. The only hopeful avenues are, 1) the application of vorticity methods using geostropic vorticity, and 2) a crude kinematic technique founded on an empirical rule with an indeterminate physical basis. - Staff.

1955

710 Bannon, J.K. and Jones, R.A. "The mean wind at 60 mb." Meteorological Research Committee, London, M.R.P. no. 925, 1955. Supplements "Upper winds over the world." Great Britain Meteorological Office.

1955

711 Barbados Weather Observers' Association. "Hurricane Janet at Barbados, Sept. 22, 1955." Memorandum prepared by the Association and published in the Journal of the Barbados Museum and Historical Society, 1955. 12 p. tables. DAS.

History of hurricane "Janet" weather conditions, state of sea, damage and warnings issued in first hurricane to hit Barbados in 57 yrs (others were in 1780, 1831, and 10 September 1898). Winds were not strong (100 - 115 mph), rain and flooding not excessive and loss of life confined to 35 people, half of whom were killed by a shelter collapsing. About

1955 cont.

8100 small houses were ruined and 20,000 people left homeless. Fifteen thousand small houses were damaged and 200 larger ones seriously damaged. Crops (other than sugar) were severely damaged. - Staff MGA 8.10-148.

1955

712 Batchelder, C.H. and Coen, E. "The years of rainfall at Turrialba and Batán, Costa Rica." Abaca Research Report, no. 35, 1955.

1955

713 Benton, G.S. "More hurricanes in your future." Johns Hopkins Magazine, 7(1): 6-7, 29 - 32, Oct. 1955. fig. port.

A popular or semitechnical article on hurricanes of 5 types which affect the Atlantic Coast States. The Cape Verde storms (Type 1), which carry the greatest potential destructive power, strike the Gulf Coast; whereas Type 4 storms (West Indies) strike Florida, the Carolina Coast or recurve out to sea. Recently, hurricanes have more frequently affected the North Atlantic and New England States. Up to 20 yrs ago, they seldom penetrated north of Cape Hatteras. Hurricanes are increasing in frequency, too, according to the author. Paths of the different types and examples of disastrous hurricanes up to 1955 are cited and illustrated. - Staff MGA 7J-140.

1955

714 Boughner, C.C. "Hurricane Hazel." Weather, 10(6):200-205, June 1955. figs.

The hurricane season of autumn 1954 was unusually severe along the Atlantic coast. "Hazel" appeared in the eastern Caribbean on 5 October and, blocked by an anticyclone over the North Atlantic, travelled from North Carolina to South Ontario in 12 hrs on 15 - 16 October. Its winds and heavy rain caused considerable damage. - Staff MGA 7J-142.

1955

715 Brown, E.N. and Willett, J.H. "Three-slide cloud droplet sampler." American Meteorological Society, Bulletin, 36:123-127, 1955. figs. refs.

A cloud droplet sampler for use in airplane soundings was developed by the Cloud Physics Project at the University of Chicago. Various techniques of particle collection (impingement or impaction), photographic, electronic (charge) and light scattering techniques are described. The sampler is based on Golitzine's (1951) technique using 3 movable slides. Collection efficiency, sources of error, and results obtained in Puerto Rico by the Cloud Physics Project November 1953 - March 1954 are discussed and illustrated by charts, photographs and

1955 cont.
schematic diagrams. - Staff MGA 6F-351.

1955
716 Brown, H.A. "Frequency of northers at Galveston, 1950 - 1955." In Survey of the Galveston-Port Arthur harbor approach area. Texas A & M Research Foundation, Project 77, Appendix to Final Report, Sept. 1955. DNO.

1955
717 Bunting, D.C. "Comparison of six great Florida hurricanes." Weatherwise, 8(3):54-67, 78-79, 82, June 1955. diagr. tables. photos.

Six of the 12 greatest hurricanes in 74 yrs of Florida's history are charted and described, and damage and structure (radar photographs) illustrated. Details of origin, path, rate of movement, lowest pressure over Florida, maximum winds, accompanying precipitation, storm tides, damage, loss of life, radius, gradient wind (extreme) and kinetic energy are tabulated and discussed. These hurricanes occurred in 1926, 1928, 1929, 1944, 1947 and 1949. The lowest pressure was 27.43 in at West Palm Beach on 16 September 1928. Staff MGA 7.2-136.

1955
718 Byers, H.R. "Geographical differences in cloud populations." Archiv für Meteorologie, Geophysik und Bioklimatologie, ser. A, 8(3):180-184, 1955. tables. refs. English, German and French summaries pp. 180-181.

The Cloud Physics Project at the University of Chicago has been studying droplet growth in cumulus by radar and by special flights to learn local conditions under which rain is precipitated. Over the seas around Puerto Rico, 499 clouds were observed. If tops were below 6,000 ft they returned no echoes but the percentage increased to 100 for tops above 11,500 ft. All tops with temperatures of 5°C produced echoes. The freezing level was 12 - 14,000 ft. Over the island (191 clouds), no echoes were received with tops below 7,000 ft and only 44 percent were received for clouds above 12,000 ft. In New Mexico, echoes form only when cloud top is much below freezing temperatures. Differences are attributed to slow growth of clouds over sea (giving time for coalescence) compared with heated land, and to the presence of numerous giant nuclei over the sea. - Staff MGA 6G-239.

1955
719 Byers, H.R. and Hall, R.K. "Census of cumulus-cloud height versus precipitation in the vicinity of Puerto Rico during the winter and spring of 1953 - 1954."

1955 cont.
Journal of Meteorology, 12(2):176-178, 1955. figs. ref.

Simultaneous flights were made at cloud top levels and through trade cumuli near Puerto Rico. Over water clouds returning a precipitation echo increased from 0 percent below 6,000 ft (tops) to 100 percent at 11,500 ft (freezing level 13,500 to 15,000 ft). Relations were found between ambient humidity and the presence of stable layers. About 53 percent of the clouds developed precipitation during their life cycle. - Staff MGA 6F-352.

1955
720 Cadrecha Alvarez, J. and Fernandez Castro, J. "Numbers and kinds of air-borne, culturable fungus spores in Havana, Cuba." Journal of Allergy, 26(2):150-152. Mar. 1955. fig. table. refs.

Authors summarize data on the spore load of culturable fungus in the air at Havana during different annual seasons. The occurrence of atmospheric molds, detectable on Sabauraud's agar, is shown on a graph. Spores are very abundant from October to February and for a short period as late as May and early April. The time when asthma and rhinitis were most severe coincided with the highest prevalence of fungi producing alergenic symptoms. - Staff MGA 8.3-307.

1955
721 Chapman, W.T. and Sloan, Y.T. "Paths of hurricanes Connie and Diane." Monthly Weather Review, 83:171-180, 1955. figs. table. refs.

Describes surface synoptic features associated with hurricanes "Connie" and "Diane". Examines Simpson's warm tongue technique and Riehl and Haggard's computation and high level steering method to predict the 24-hr movement of hurricanes. Staff MGA 8.3-162.

1955
722 Charnock, H., Francis, J.R.D. and Sheppard, P.A. "Medium-scale turbulence in the trade winds." Royal Meteorological Society, Quarterly Journal, 81(350):634-635, Oct. 1955.

Summary of paper describing observations by airplane at Anegada (lat 18°15'N, long 64°20'W) with discussion, mainly by J.S.M. Simpson. - Staff MGA 713-192.

1955
723 Dominican Republic. Servicio Meteorológico de la Marina de Guerra. "Curso de observadores, Manual A. Partes meteorológicas (descifrado, interpretación y representación de los informes internacionales)." [Observers' course, Manual A.

1955 cont.

Meteorological parts: decoding, interpretation and presentation of international reports.] Ciudad Trujillo, Mar. 1955. 31 p. figs. DAS. Also: "Pt. B, Manual B, Observaciones meteorológicas (realizacion y cifrado)." [Observers' course. pt. B, Manual B, Meteorological observations, computing and coding.] Ciudad Trujillo, Aug. 1954. 84 p. Mimeographed. figs. tables. refs. DAS.

Manual of instructions for observers, especially those in the Tropics, with general principles of meteorology and observational instructions, codes and tables for all types of surface and upper air wind observations. Pt. A gives complete international codes (in Spanish). - Staff MGA 10L-647.

1955

724 Dominican Republic. Servicio Meteorológico de la Marina de Guerra. "Notas suplementarias del curso de meteorología sinóptica: temas diversos." [Supplementary notes of the course in synoptic meteorology: various themes.] Nov. 1955. For abstract see its Notas suplementarias ... Nov. 1954."

1955

725 Dunn, G.E., Davis, W.R. and Moore, P.L. "Hurricane of 1954." Addendum. Monthly Weather Review, 83:314, 1955 For abstract see Davis, W.R. "Hurricanes of 1954." Monthly Weather Review, 82:370-373, 1954.

1955

726 Dunn, G.E., Davis, W.R. and Moore, P.L. "Hurricanes of 1955." Monthly Weather Review, 83:315-326, 1955. figs. table. refs.

Thirteen tropical storms, 10 of which were of hurricane force, occurred in 1955, nearly equalling record of 11 hurricanes in 1950. Theory of Namias and C.R. Dunn (1955) regarding planetary circulation anomaly resulting in high frequency of hurricanes of anomalous path is shown to be similar to that of Garriott (1906, Hurricanes of 1955 proved the most disastrous in history and broke all records for damage. Individual hurricanes are described and dropsonde temperatures near and in the 'eye' of "Connie" and "Diane" are reported. The barograph trace for "Janet" (Chetumal, Mexico) shows record 27.00 in. Radar reports of "Connie," "Diane" and Ione" are analyzed and illustrated and tracks of all storms shown on chart. Frictional influences were found to cause a curvature to the left in 3 hurricanes.
Staff MGA 7J-143.

1955

727 Florida. Division of Water Survey and Research. "Information on excessive rainfalls in Florida." Water Survey and Research Paper, no. 13, 15 Mar. 1955. 56 p. tables. graphs. DAS.

Depth-area-duration tables, storm patterns and mass rainfall curves are presented for 30 major storms in Florida (1887 - 1943). For hurricanes across Florida between 1942 and 1952, a section on maximum recorded rainfall is presented by months, and gives records for 51 stations for varying periods (1, 2, 3, 6, 12 and 24 hrs). Curves showing frequency of short intense rainfall are given for 5 stations (24 - 53 yrs record to 1949). Isohyetal charts for 1 mo, 2 mos or year equalled or exceeded in 1 yr out of 2, 5, 10, 25, 50, or 100 yrs are given for southern Florida. - Staff MGA 7.6-192.

1955

728 Florida. Division of Water Survey and Research. "Summary of observed rainfalls on Florida, to Dec. 31, 1952. Supplement." Water Survey and Research Paper no. 11, Supplement, 10 May 1955. 60 p. almost entirely tables. DAS.

After research paper no. 11 issued 31 August 1954 was published, the U.S. Weather Bureau furnished histories for Florida rainfall stations indicating that a number of stations had been moved or records erroneously combined. As a result, data for 74 stations have been revised and monthly and annual values published for each station (totals and percentages for period of record). - Staff MGA 7.6-188.

1955

729 Gentry, R.C. The 1954 hurricane season." Weatherwise, 8(1):12-17, Feb. 1955 figs.

Hurricanes of 1954 are described and their paths are shown on a map. The pressure contours at 300 mb associated with the development of hurricane "Carol" and its path to Long Island and those for hurricane "Hazel" are reproduced.
Staff MGA 7K-154.

1955

730 Hiser, H.W. "Some interesting radar observations at Miami." Proceedings, 5th Weather Radar Conference, Evans Signal Laboratory, N.J. 1955.

1955

731 Hogan, J.T. "I.M. Cline, expert on hurricanes." Science, 122(3173):753, Oct. 1955.

High points in the life of Isaac Monroe Cline, who died in New Orleans on 3 Aug. 1955 at the age of 94. He was born in

1955 cont.

Monroe County, Tennessee on 13 October 1861, received a B.A. degree from Hiwassee College in 1882 and a medical degree from the University of Arkansas in 1885. He served 53 yrs in the U.S. Weather Bureau, retiring in 1934 to devote the rest of his life to an art shop and to restoring famous American paintings. He successfully forecast the Galveston hurricane of 8 September 1900, the hurricane in which he suffered the loss of his wife. He also forecast several other hurricanes and floods of the Mississippi River. He was the author of several books. - Staff MGA A8.6-53.

1955

732 Hosler, C.R. "Study of easterly waves in the Gulf of Mexico." U.S. Air Force, Air Weather Service, Wash., D.C. Apr. 1955. 60 p. tables. illus. Study no. 2.

Synoptic analysis is presented of a series of easterly waves that entered the Gulf of Mexico from 1946 - 1954. Topics discussed are origin, structure, weather distribution, maintenance, displacement, intensification, termination, effect on weather inland and seasonal flow patterns. - Staff AD-69 057.

1955

733 Hubert, L.F. "Case study of hurricane formation." Journal of Meteorology, 12(5):486-492, Oct. 1955. figs. refs.

Genesis of hurricane "Alice" is examined by analyses of 24-hr changes of 1,000, 700, 500 and 300 mb surfaces over Gulf of Mexico region for 27 - 30 May 1953. Vertical motion is inferred from changes of mean temperature. These showed: 1) convergence through a deep layer in lower troposphere induced a cold low, 2) convergence in a shallow layer near the surface induced ascent of surface air north of the surface low, 3) isobaric surfaces raised by warming and 4) superposed warm air in the upper troposphere or stratosphere and in the lower troposphere. Stage 2 provided the trigger for hurricane formation. Staff MGA 7I-162.

1955

734 Hubert, L.F. and Clark, G.B. "Hurricane surge: an interim report." U.S. Weather Bureau, June 1955. 34 p. figs. refs. DAS.

The hurricane surge is defined and the difference between the hurricane surge and the extratropical storm surge pointed out as due to the curved wind field and highly concentrated area of high winds. There are 3 surge producing forces: 1) wind driven water, 2) convergence of

1955 cont.

wind driven currents, 3) barometric effect and 4) concentration of wave energy by refraction and funneling. Seiches and shoaling are discussed from a theoretical and practical viewpoint. Histories of 16 hurricane associated surges (1900 - 1949) along the Atlantic and Gulf Coasts are reviewed and details for each shown on separate charts. - Staff MGA 7I-163.

1955

735 Langmuir, I. "Critique of the design of experiments on cloud seeding and statistical methods for their evaluation." General Electric Research Laboratory, Schenectady, Report, no. 55-RL-1263, July 1955. pp. 125-168. DAS.

In this report prepared for the U.S. Advisory Committee on Weather Control, author gives a detailed account of his observations as a special consultant invited to visit the operation of the Cloud Physics Project of the University of Chicago at Ramey Field, Puerto Rico, 11 - 14 February 1954. The operation involved seeding of trade-wind clouds with 410 gallons of water dumped from airplanes in 18 sec. Meteorological conditions, cloud structure and effects of seeding are discussed. The author also makes several suggestions for improving evaluation techniques applicable to the seeding of individual clouds from airplanes. - Staff MGA 11M-619.

1955

736 Ligda, M.G.H. "Analysis of motion of small precipitation areas and bands in the hurricane Aug. 23 - 28, 1949." Massachusetts Institute of Technology, Dept. of Meteorology, Weather Radar Research, Contract DA-36-039 SC-64472, Technical Note, no. 3, May 1955. 41 p. figs. refs. DAS.

Analysis is based upon motion pictures of the hurricane taken at the University of Florida, College of Engineering. The film was taken at 30 sec intervals over 18 hrs of plan-position indicator (PPI) displays of Signal Corps Radar Type B (SCR-B). The author made 30 vector patterns, each vector length representing the circulatory movement of small precipitation areas. The findings indicate a relatively consistent difference between small precipitation area and surface wind velocity and direction. Consideration of the banded structure includes the inner and the outer bands. It is stated that the cause of this spiral structure may be a microfrontal or perhaps a squall line phenomenon. Excellent PPI displays and graphical presentation of their details are given. - Staff MGA 11H-93.

1955

737 Lodge, J.P. "Study of sea-salt particles over Puerto Rico." Journal of Meteorology, 12(5):493-499, Oct. 1955. figs. table. refs.

Variations of nuclei concentration with altitude and meteorological conditions with overland trajectories have been studied by the Cloud Physics Project at the University of Chicago on the basis of measurements made during 11 flights (12 December 1953 - 16 April 1954) near Puerto Rico. Ground samples were also taken. Sampling techniques from aircraft are shown by a drawing, and results of observations are presented in graphs of 1) vertical distribution of nuclei content under various conditions and on various days, 2) variation of chloride nuclei concentration at ground level with distance inland and 3) variation of concentration of chloride particles of sizes > 3μ, >6μ, and >10μ with time from 1204h to 1335h 13 December 1953. - Staff MGA GI-155.

1955

738 Ludlum, D.M. "Weatherwatch: Autumnal heat and hurricanes." Weatherwise, 8(6): 150-153, Dec. 1955. For abstract see his "Weatherwatch: Summer 1954 - heat and hurricanes." 1954.

1955

739 Miller, E.R. "Plan for the organization of a hurricane warning system in the Dominican Republic." World Meteorological Organization, WMO Bulletin, 4(3):124-126, July 1955. photo. refs. DAS.

Under the U.N. Technical Assistance Program, the Dominican Republic is developing a service to make local use of hurricane warning centers and to develop an efficient warning system. The program started in 1954. Warnings are received from the U.S. Weather Bureau office in San Juan, Puerto Rico and transmitted by telegraph to the Central Meteorological Office at Ciudad Trujillo. Issuance, dissemination, and precautionary measures for protection of life and property are discussed in separate sections, and floods in the 1954 hurricane season are summarized. - Staff MGA 7J-155.

1955

740 Namias, J. and Dunn, C.R. "Weather and circulation of August 1955, including climatological background for hurricanes Connie and Diane." Monthly Weather Review, 83:163, 1955.

1955

741 Palmer, C.E. et al. "Practical aspect of tropical meteorology." Air Force Cambridge Research Center, Mass., no. 76, 1955. 195 p.

1955 cont.

Techniques of deriving the weather from upper air wind analysis. - Staff AD-106 017.

1955

742 Riehl, H. "Weather analysis in tropical regions." NAVAER, 50-IP-534, 99 p. 1955.

1955

743 Rodewald, M. "Hurrikan-Saison 1954." [Hurricane season 1954.] Wetterlotse, no. 92:168-171, 1955. fig.

Tracks of "Carol", "Dolly", "Edna" and "Hazel" are shown and the damage briefly described. A pressure of 938 mb was recorded for "Hazel". - Staff MGA 17.2-137.

1955

744 Rodewald, M. "Hurrikan-Saison 1955 schon bis JANET." [Hurricane season 1955 already up to Janet.] Wetterlotse, no. 93:206-207, 1955.

Brief account of the 10 hurricanes which struck North America before the end of September 1955. - Staff MGA 7.4-155.

1955

745 Rodewald, M. "Norder im Mexiko-Golf." [Norther in the Gulf of Mexico.] Wetterlotse, no. 84/85:41-52, 1955. figs.

Description of a norther experienced on board the MARIA WEITERT on 11 - 13 November 1954 off Tampico with squalls up to 60 kts. Bi-hourly wind and pressure and a synoptic analysis of the situation are given. The storm began with a high over the southern states of the United States and a depression was centered about lat 23° N, long 93° W. The cold air pushed southwest of the depression and the high pressure advanced southwestwards. - Staff MGA 6.10-189.

1955

746 Rodewald, M. "Unzeitgemässer Hurrikan Alice." [Untimely hurricane Alice.] Wetterlotse, no. 83:26-34, 1955. figs.

Account of the West Indian hurricane (29 December 1954 - 4 January 1955) when the season should have ended. - Staff MGA 12N-291.

1955

747 Rudloff, D. and Rodewald, M. "Bericht über das Zusammentreffen der M/S BERLIN mit dem Hurrikan Ione am 20. September 1955." [Report on the encounter of M/S BERLIN with hurricane "Ione" on 20 September 1955.] Wetterlotse no. 94/95:230-236, 1955. figs.

The BERLIN received first warning of "Ione" on 14 September and on the 19th it changed course to the south, but the hurricane changed direction to the east. Oil and water ballast were pumped overboard and the ship continued to SSW passing south of, though near, the center. Staff MGA 7.4-157.

1955

748 Saveier, W.J. "Principles of meteorological analysis." Chicago: Univ. of Chicago Press, 1955. 438 p.

Chapter 13 is devoted to tropical analysis. - Staff.

1955

749 [Science News Letter] "Rain making succeeds in tropical clouds." Its 67(23):367, 4 June 1955.

Statement by Horace R. Byers on successful seeding of nonfrozen cloud droplets with water spray. Experiments sponsored by the U.S. Air Force were conducted over the open sea near Puerto Rico. Statistically significant positive results were obtained. - Staff MGA 11M-679.

1955

750 Sherman, L. and La Seur, N.E. "Reconnaissance of the complete hurricane." American Meteorological Society, Bulletin, 36:152-158, 1955. figs. table. refs.

The need for locating the hyperbolic point as well as the 'eye' of a hurricane is stressed and the kinematic need is analyzed in terms of the wind field of a cyclonic system. The location of hyperbolic points from aircraft over the ocean is discussed and observations obtained from flights into hurricanes "Carol", "Dolly" and "Edna" during August - September 1954 to the regions of the hyperbolic points described. - Staff MGA 7.2-138.

1955

751 Sievers, J.R. "On the formation of precipitation in tropical cumulus." Dissertation submitted to the Div. of Physical Science, Univ. of Chicago, 1955.

1955

752 Simpson, J.S.M. and Scorer, R.S. "Erosion of cumulus towers." Journal of Meteorology 12:43-57, 1955.

1955

753 Simpson, R.H. "Weather Bureau sizes up the hurricane problem." Bell Telephone Magazine, 34(3):144-152. 1955. photo. figs. Also: Simpson, R.H., Johnson, A.W. and Gentry, R.C. "Operation of the National Research Project." Weatherwise, 9(4): 111-120, Aug. 1956. figs.

Two popular articles on hurricanes with particular reference to the National Hurricane Research Project (NHRP) Project WILDWIND. The first article discusses hurricane forecasting, recent shifts in the distribution of hurricane paths in the North Atlantic area and possible causes, and the possibility of control of hurricane movement. In the second article, the objectives, aircraft reconnaissance program, data analysis program and other tasks

1955 cont.

connected with the project are described. Staff MGA 7J-166.

1955

754 Sumner, H.C. and O'Connell, T.J. "Hurricane rains cause devastating floods." Weatherwise, 8(5):124-126, Oct. 1955. figs.

Brief account of the rainfall and flood conditions accompanying hurricanes "Connie" and "Diane" during 1955. Maps with isohyets of rainfall caused by these hurricanes are presented. - Staff MGA 7J-168.

1955

755 Tannehill, I.R. "Hurricane hunters." New York: Dodd, Mead & Co., 1955. 271 p. photos.

History of hurricane investigations from the earliest days (Redfield, 1821 - 31; Reid, 1831; and Piddington, 1845) to the most recent work of the U.S. Air Force and Navy hurricane patrols (1943 - 55). Many famous disasters are reviewed with incidental information such as use of radar and tracer balloons, the naming of the hurricanes, the attempts to dissipate the hurricane by seeding, the nature of the 'eye', typhoon narrative, early practice of ships and airplanes to avoid hurricanes (making it difficult to track them once they were discovered) and warnings issued by radio. Staff MGA 7.4-5.

1955

756 U.S. Air Weather Service, Scott Air Force Base, Ill. "Local forecast study, Ramey Air Force Base, Puerto Rico." Nov. 1955.

1955

757 U.S. Navy "Marine climatic atlas of the world." North Atlantic Ocean, v. 1, 17 p. charts NAVAER 50-1C-528.

Includes graphs of frequency distributions (by seasons), heights of pressure surfaces (850, 700, 500, 300, and 200 mb), temperature, humidity, head and tail wind components, aircraft icing potential and tropopause heights. Based on extended periods of record mainly to 1955. - Staff.

1955

758 U.S. Navy Weather Research Facility. "Prediction of tropical cyclone tracks, second research report." AROWA 12-0755-141, 1955.

1955

759 U.S. Navy Weather Research Facility. "Weather analysis in tropical regions." AROWA 12-0755-140, NAVAER 50-1P-534, 1955.

1955

760 U.S. Weather Bureau. "Bulletins and advisories issued by Weather Bureau Airport Station, San Juan, Puerto Rico; Weather Bureau Office, Miami, Florida and Weather

1955 cont.

Bureau Office, New Orleans, Louisiana on hurricane Janet, 0300 EST September 22, 1955 through 2300 EST September 29, 1955." 1955. 14 p. DAS.

Compilation consists of a bulletin, an alert and 15 advisories from San Juan, 11 advisories from Miami and 6 advisories from New Orleans. - Staff.

1955

761 U.S. Weather Bureau. "Bulletins and advisories issued by Weather Bureau Office, Miami, Florida and Weather Bureau Airport Station, Wash., D.C. on Hurricane "Connie" 0100 EST Aug. 4, 1955 through 1400 EST Aug. 13, 1955." 1955. 32 p. Also its: Bulletins. . .issued by Weather Bureau Airport Station, San Juan, Puerto Rico; Weather Bureau Office, Miami, Florida and Weather Bureau Airport Station, Wash., D.C. on Hurricane "Ione" 1000 EST 14 Sept. 1955 through 1100 EST 21 Sept. 1955. 1955. 24 p. Also its: Bulletins. . .issued by Weather Bureau Office, Miami, Florida and Weather Bureau Airport Station, Wash., D.C. on Hurricane "Diane" 0700 EST 11 Aug. 1955 through 2300 EST 17 Aug. 1955. 1955. 20 p. DAS.

Verbatim reproductions of a total of well over 100 advisories issued by U.S. Weather Bureau offices in connection with 4 hurricanes of the 1955 season. - Staff MGA 7J-171.

1955

762 U.S. Weather Bureau. "North Atlantic hurricanes and tropical disturbances." Climatological Data, National Summary, 6(13):80-85, 1955. DAS.

1955

763 U.S. Weather Bureau. "Notes on hurricane habits and habitats." L.S. 5504, 12 July 1955. 2 p. DAS.

Summary of knowledge about the origin, movement, frequency (per yr and per mo), wind speeds, forward movement, life span, destructive area, storm waves, lowest pressure, greatest rainfall, and the 'eye' of the hurricane. In 1933, there were 21 hurricanes and 1 in 1890. Average is 8 per year with September the month with highest frequency. Highest wind recorded was 186 mph at Blue Hill (1938). Lowest pressure was 26.35" (892 mb) at Long Key, Florida. - Staff MGA 7J-173.

1955

764 U.S. Weather Bureau. "Notes on the Weather Bureau hurricane warning system." L.S. 5503, 9 May 1955. 2 p. DAS.

The U.S. Weather Bureau hurricane warning service is described briefly. Five forecast centers (Boston, Washington, New

1955 cont.

Orleans, Miami and San Juan, Puerto Rico) cover the ocean and land areas. Four advisories are issued each day (5:00 and 11:00 a.m. and p.m. EST) but when a storm nears land, additional advisories may be issued. Alerts and warnings are distributed immediately on every available teletype, radio, television or other communication channels. - Staff MGA 7J-175.

1955

765 U.S. Weather Bureau. "Rainfall intensity-duration frequency curves for selected stations in the United States, Alaska, Hawaiian Islands and Puerto Rico." Technical Paper no. 25, 1955. 53 p. refs. mostly graphs. DAS, DLC.

Rainfall intensity-duration curves for 5 min to 24 hrs for 2, 5, 10, 25, 50 and 100 yr periods are presented for 203 U.S. Weather Bureau stations in the United States, Alaska, Hawaii and Puerto Rico (arranged alphabetically by states), using the Gumbel (1941) method of extreme annual values (on log-log paper). - Staff MGA 9.5-221.

1955

766 Viaut, A. "Cyclone Hazel." [Hurricane Hazel] Meteorologie, no. 38:99-111, Apr./June 1955. figs. English and Spanish summaries p. 99. DAS.

The development and movement of hurricane "Hazel" (October 1954) is analyzed with the help of synoptic surface and 500 mb charts. The effect of a marked polar anticyclone on the hurricane's trajectory and its vertical development is discussed. Staff MGA 7K-189.

1955

767 Wiley, S.C., Dodd, A.V. and Chambers, J.V. "Environmental handbook of Fort Sherman and Fort Gulick, Panama Canal Zone." U.S. Quartermaster Research and Engineering Center. Environmental Protection Research Div., Technical Report E. P.-17. DAS.

1955

768 Willett, H.C. "Study of the tropical hurricane along the Atlantic and Gulf Coasts of the United States." N.Y. Inter-Regional Insurance Conference, Oct. 1955. 63 p. figs. table. refs. DAS.

A complete scientific and statistical study of a hurricane in the West Indies, Caribbean and Atlantic Coast States. The hurricane is defined and described with respect to genesis, structure, intensity, movements, tracks, size, force, modification and destructiveness (winds, floods, ocean currents and heavy rainfall). There is also a detailed statistical analysis and

1955 cont.

interpretation of hurricane incidence (402 storms) for 1900 - 1954 by regions and subregions, and intensity plus forecasts of expected activity for the next 5, 30 and 60 yrs based on solar relationships and past statistical trends. - Staff MGA 7.3-10.

1956

769 Ackerman, B. "Buoyancy and precipitation in tropical cumuli." Journal of Meteorology, 13(3):302-310, June 1956. figs. tables. refs.

Observations made by aircraft in tradewind cumuli around Puerto Rico. Buoyancy was calculated from excess of cloud temperature over environment. Temperature in clouds varied on scales of 1,000 and 100 - 200 ft of cloud thickness. Radar echoes verified that precipitation depended on excess of temperature, environmental humidity and wind shear. Scatter diagrams of echo versus no echo explain 87 percent of occurrences of rain with formation in upper parts of clouds accompanied by a decrease in cloud buoyancy. Some clouds were sprayed with water; heavy (but not light) spraying increased probability of precipitation when buoyancy was not favorable for natural precipitation. Staff MGA 7.10-227.

1956

770 Alpert, L. "Possibilities of initiating rainfall in Puerto Rico by means of cloud seeding." In International Geographical Congress, 18th, Rio de Janeiro, Aug. 1956. Summaries of Papers, pub. in Revista Geográfica, 19(45):54, 1956. DAS.

1956

771 Barton, J.C. and Stockhausen, J.H. "Increase of cosmic-ray intensity in Jamaica due to a solar flare." Journal of Atmospheric and Terrestrial Physics, 9(2/3):161-162, Aug./Sept. 1956. figs. ref.

Increase from 6,000 to 8,000 counts per 1/2 hr was observed on the night of 22 - 23 February 1956. - Staff MGA 8.2-159.

1956

772 Battan, L.J. and Braham, R.R. "Study of convective precipitation based on cloud and radar observations." Journal of Meteorology, 13(6):587-591, Dec. 1956. figs. ref.

Observations of precipitation and cloud-top height in the central United States and in the Caribbean area obtained from radar-equipped airplanes. Data were analyzed in terms of the fraction of clouds of a given height which contained precipitation. These data are compared with observations of a similar type taken by Braham, Reynolds and Harrell in New Mexico.

1956 cont.

It was concluded that the condensation-coalescence process can account for the formation of precipitation in convective clouds in all three regions but in varying areas of the clouds. - Author(mod) MGA 8.4-84.

1956

773 Bergeron, T. "Planning research on tropical hurricanes." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 269-279. figs. DAS.

The network of observations should be increased and more data collected. Improved analysis will be possible by reference to structure and function of models established for particular areas and seasons. Practical forecasting will follow from these improvements if they are based upon a better understanding of the life history of tropical hurricanes. - Staff MGA 14.10-599.

1956

774 Brango, N. "Navy participation in the United States hurricane warning service." In Tropical Cyclone Symposium, Brisbane, Dec. 1956, Proceedings. 1956. pp. 119-120. DAS.

Roles of the U.S. Navy's Typhoon Tracking Center at Guam, the Hurricane Tracking Center at Miami and the Navy Weather Central in hurricane or typhoon reconnaissance and forecasting. Also discussed are Project AROWA's role in research on forecasting and the Office of Naval Research (ONR) in investigating forecasting problems such as numerical weather predictions, high level balloon and rocket soundings and the operation of automatic weather stations. - Staff MGA 11.3-204.

1956

775 British Caribbean Meteorological Service. Port-of-Spain, Trinidad. "Climatological summaries, 1955." Issued 1956 (?), unpaged. mostly tables. Mimeographed. DAS.

Tables are presented (1 page for each station) giving standard monthly and annual climatic data (1955) for 49 stations. A consolidated table giving monthly and annual precipitation and maximum 24-hr precipitation for 35 selected stations in the Bahamas, Jamaica, British Honduras, St. Kitts, Barbados, Trinidad, British Guiana, etc. are included. For several stations, 07h, 13h and 19h data are included. Staff MGA 9.3-262.

1956

776 Bruinenberg, A. "Use of commercial airline inflight and post flight reports in hurricane detection and forecasting." In Caribbean Hurricane Seminar. Ciudad

1956 cont.

Trujillo, 19 - 25 Feb. 1956. Final Report, 1956. pp. 160-165. DAS.

Aireps or Pomars with accurate D-values and with data on clouds and wind will be very useful to the meteorologist. Their value will increase if pilots and navigators personally contact the forecaster on arrival. The importance of pilot debriefing, even after short flights, is emphasized. - Staff MGA 14.8-517.

1956

777 Byers, H.R. "Historical résumé of research relating to weather modification." In Conference on the Scientific Basis of Weather Modification Studies, Arizona Univ., Tucson, Apr. 1956. Proceedings. 1956. 8 p. refs. DAS.

Early attempts at modifying the weather or producing rain (1893 - 1945) are reviewed. Scientific studies of rain forming or of cloud physics processes which made possible the advances since 1946 when Schaefer et al made the first dry ice (and later silver iodide) experiments, Project CIRRUS, tropical (warm) rain formation and other phases of cloud physics research in many countries, including Cuba and Puerto Rico, are discussed. Staff MGA 11M-695.

1956

778 Cambiaso, V., J.B. "Century of Dominican cyclonology: period from 1851 to 1951." In Caribbean Hurricane Seminar, Ciudad Trujillo, 19 - 25 Feb. 1956. Final Report, 1956. pp. 105-108. DAS.

Abstracts from the author's book, "Century of Dominican Cyclonology," reviewing 335 cyclones and hurricanes occurring in 1887 - 1935. At least 1 or 2 cyclones were registered yearly. An annotated list of notable cyclones in Santo Domingo 1851 - 1951 is included.- Staff MGA 12N-294.

1956

779 Caribbean and Coast Map Company, Miami, Florida. "1956 hurricane map, compiled from authentic data furnished by the United States Weather Bureau, showing all tropical storms of hurricane intensity for the past five years (1951 - 1955 inclusive)." 1956. 38 x 54 cm in color. DAS.

Shows name and year of each hurricane which affected the Gulf of Mexico, Caribbean or Atlantic west of long 60°W during 1951 - 1955. Ten of the 30 storms touched coastal areas of the United States between Florida and Cape Cod. None hit Texas or Louisiana, although 6 reached Mexico south of Brownsville. Facts and data on hurricanes are given. - Staff MGA 7J-182.

1956

780 Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. "Final Report of the Seminar held under the joint auspices of the government of the Dominican Republic, the U.N. Technical Assistance Administration and the World Meteorological Organization." Ciudad Trujillo, pub. by the Govt. of the Dominican Republic, the UNTAA and the WMO, 1956. 401 p. figs. photos, tables. DAS. Spanish translation issued Ciudad Trujillo, 1957, with title, "Seminario sobre los huracanes del Caribe..." [Seminar on Caribbean hurricanes...] 409 p. DLC.

The papers presented at the Seminar are arranged into 5 sections: 1) Opening addresses; 2) structure, formation and dynamics of hurricanes; 3) Observations, analysis and forecasting; 4) Research and 5) Hurricane effects and precautionary measures. - Staff MGA 11.6-23.

1956

781 Charnock, H. "Vertical transfer of momentum in the trades (summary)." In International Union of Geodesy and Geophysics (IUGG), Association of Meteorology, Rome, Sept. 1954. Scientific Proceedings. London, Butterworth, 1956. p. 413. DAS.

Studies on wind structure in the lowest 1,500 m carried out at Anegada in the British Virgin Islands during spring 1953. Vertical transport of momentum was decreased in relation to mean wind structure and the horizontal field of pressure. Staff MGA 10.1-204.

1956

782 Charnock, H., Francis, J.R.D. and Sheppard, P.A. "Investigation of wind structure in the trades: Anegada 1953." Royal Society of London, Philosophical Transactions, ser. A, 249(963):179-234, 18 Oct. 1956. figs. tables. refs. eqs.

Two theodolite pilot balloon ascents were made between 12 March - 7 April 1953 to 1500 m from the small flat island of Anegada (lat 18°N, long 64°W). Vertical profiles of components along U and normal to V showed a marked maximum in U at 350 m and V increased up to 900 m and was constant above. Observations at nearby islands showed that the horizontal velocity gradients were small. Mean profiles of U and V are shown for each day; the height of maximum U varied from 125 - 1,400 m and the profile of V varied but was usually increasing negatively with height. The effect on horizontal motion was examined by comparing ascents on windward and leeward sides of the island and from a boat. They showed convergence on the SE end of the island up to 300 - 500 m with divergence above and

1956 cont.

further downwind. - Staff MGA 8.6-130.

1956

783 Chicago. Univ. Dept. of Meteorology. "Cloud physics research." Contract AF 19 (604)-618, Final Report, 31 Jan. 1956. 32 p. fig. tables. refs.

A summary of research and conclusions drawn from the Midwest and in Puerto Rico during 1953 - 1955 under this contract. Instrumentation, flight and field programs, physics and chemistry of atmospheric particles, studies of cloud growth and precipitation mechanisms (growth of Cu clouds, buoyancy of clouds and precipitation formation, liquid water content, shape of raindrops, formation of lines of convective clouds, etc.). Precipitation can be induced in tropical clouds by injecting water droplets and the water coalescence process is paramount even in the Midwest during summer. - Staff MGA 11M-696.

1956

784 Clayton, W.H. "Wind stress measurement at Caplen Pier." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project 24 C, Final Report, Aug. 1956. 49 p. figs. tables. refs. DAS.

1956

785 Colón, A. "On the formation of hurricane Alice, 1955: with notes on other cold-season tropical storms." Monthly Weather Review, 84:1-14, 1956. figs. table. refs.

Although it was claimed that hurricane "Alice" (29 December 1954 - 4 January 1955) was the first tropical hurricane to affect the Caribbean in the cold season, evidence is presented to show that similar cyclones have occurred (e.g., 1 - 10 January 1951) before. "Alice" was a nonfrontal or warm core cyclone embedded in the easterlies with winds of hurricane proportions. Surface and 500 mb charts, time sections (0 - 60,000 ft) for Bermuda and San Juan, composite wind and streamline maps and comparative soundings (dropsonde in 'eye' and radiosonde at San Juan, Puerto Rico) plus a sample map for the storm of January 1951 are discussed. Damage amounted to a little over half a million dollars from rain and tides on Saba and Anguilla in the Antilles. The storm resulted from a favorable combination of these events: 1) blocking in the mid-Atlantic, 2) a strong easterly flow and 3) a cut-off or fractured trough over warm waters. - Staff MGA 7K-169.

1956

786 Contreras-Arias, A. "Dos aspectos del efecto de la actividad ciclónica tropical sobre el territorio mexicano." [Two

1956 cont.

aspects of the effect of tropical cyclonic activity over Mexican territory.] Boletín de Estudios Especiales, 6(68):137-168, 25 Aug. 1956. photos. figs. tables. DAS.

Analysis of hurricanes "Gladys", "Hilda" and "Janet" (September 1955) and floods which devastated the east coast of Mexico (September and October) as a result of the associated long continued heavy rains. Review of data from previous hurricanes is included. Course of the flood at Tampico, which rose to 20 ft on 6 October is portrayed on a graph and in photographs. Economic and agricultural losses are analyzed Relation between amount of precipitation, closely related to hurricanes, and crop yield is shown. - Staff MGA 9.1-191.

1956

787 Contreras Arias, A. "Two aspects of the tropical cyclonic activity over the Mexican territory." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 332-395. figs. photos. tables. DAS.

Describes the destructive effects of hurricanes and the manifestation of an atmospheric current favoring precipitation. Report contains data on the number of tropical disturbances observed since 1921, barograms for "Hilda" and "Janet", tables of rainfall and wind direction related to "Gladys", "Hilda" and "Janet", data from synoptic stations in Yucatan for "Hilda", rainfall distribution maps, hurricanes and tropical depressions on Mexican synoptic maps since 1921 with movement of each, rainfall at selected stations and indices on crop yields. - Staff MGA 13.5-569.

1956

788 Davies, D.A. "Technical assistance." In Carribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 9-15. DAS.

An expression of appreciation to the people and government for their contributions with an explanation of the World Meteorological Organization (WMO) Technical Assistance Program. Paper emphasizes the training program for forecasters and observers. - Staff MGA 13.3-45.

1956

789 Dean, G.A. and Palmer, C.E. "The need for upper wind observations on the Equator." American Meteorological Society, Bulletin, 37:(170-171), 1956.

1956

790 Delourmé, A. "De la circulation atmosphérique et de l'influence de l'air polaire dans les régions intertropicales de l'Atlantique." [Atmospheric circulation

1956 cont.

and the influence of polar air on the intertropical regions of the Atlantic.] Météorologie Nationale, Mémoires, no. 41, Paris, 47 p. 1956.

1956

791 Donn, W.L., Milic, P.L. and Brilliant, R "Gravity waves and the tropical sea breeze." Journal of Meteorology, 13(4):356-361, Aug. 1956. figs. tables. refs.

Records of a microbarovariograph at Guantanamo Bay, Cuba (August 1952) are analyzed for 5 - 40 min of each hour. Before 11 h EST, waves of 5 min predominate increasing to 10 min at 11 h and 22 min at 14 h. From 13 h through 18 h the mean period is 17 min. A sea breeze of 9 - 13 km from SE occurred daily beginning at 11-12 h and showed similar fluctuations. The waves are not convective but are due to internal wave motion below gravity waves aloft. A theoretical model of a tropical sea breeze is shown and discussed. - Staff MGA 7.11-167.

1956

792 Dumont, A. "Notes of a study relative to the formation of hurricanes in the Antilles region." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 223-237. maps DAS.

Cyclones of 1955 were studied with reference to their initial trajectories and areas of formation. Initial conditions are: a previous existence of a trough line of convergence, or an organized easterly wave or a closed circulation in the currents from the east. Other possible conditions are the partition of the sub-tropical belt of the Atlantic high pressure into two or three different anticyclonic structures with height and the appearance of polar air having a component of displacement southeastward on its arrival in the northern portion of the tropical trough. Zones of formation in the Atlantic and Lesser Antilles are noted followed by a brief discussion of the trajectories of beginning cyclones. - Staff MGA 12L-289.

1956

793 Dunn, G.E. "Areas of hurricane development." Monthly Weather Review, 84:47-51, 1956. figs. refs.

Study of 242 hurricanes (1901 - 1955) shows the locations where tropical storms reach hurricane intensity for the year and for separate months during the hurricane season. Chart for August shows, in addition to each location with year indicated, the predominant wind direction (by means of arrows) and the predominant wind force (by stippling). Of 242 hurricanes, 40 developed into disturbances moving away

1956 cont.

from the Intertropical Convergence Zone (ITCZ) in the Panama region, whereas most of the remaining 202 developed into easterly waves. Most hurricanes do not develop in the "doldrums", but in the trade wind zone. Those which do develop in the ITCZ region, develop slowly (up to 6 days to reach hurricane intensity) whereas intensification in easterly waves is more rapid. - Staff MGA 7I-197.

1956

794 Dunn, G.E. "Hazel hurricane." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 205-222. figs. refs. DAS.

Hurricane "Hazel" is described from its beginning on 4 October over the Windward Islands. The hurricane's track through the Carolinas and on to Canada, as well as its final stages in the North Atlantic, are detailed. - Staff MGA 12N-295.

1956

795 Dunn, G.E. "History and development of hurricane forecasting in the Atlantic area." In Caribbean Hurricane Seminar, Ciudad Trujillo, 19 - 25 Feb. 1956. Final Report, 1956. pp. 95-104. refs. DAS.

First mention of Atlantic hurricanes appears in logs of the voyages of Christopher Columbus to the New World (1495). Benjamin Franklin (1743) found that the storm system moves and the movement is not controlled by surface wind. Contributions by Farrar (1819), Redfield (1831), Reid (1831) and Piddington (1839) are noted. Technical developments and growth in basic understanding since 1844 are outlined. - Staff MGA 12L-562.

1956

796 Dunn, G.E. "Network requirements for hurricane forecasting." In Caribbean Hurricane Seminar, Ciudad Trujillo, 19 - 25 Feb. 1956. Final Report, 1956. pp. 156-159. DAS.

Procedures for hurricane forecasting in the Tropics and subtropics have not been established sufficiently to permit definite recommendations for a specific observational network density. However, Caribbean organizations should work toward developing a network that fulfills the recommendations of the Committee for Synoptic Weather Information of the International Meteorological Organization (IMO) Paris 1946. Efforts should be made to secure more aircraft reconnaissance, more inflight reports from commercial aircraft and radar coverage should be expanded.
Staff
MGA 12L-563.

1956

797 Dunn, G.E. "Three most severe hurricanes of record." Weatherwise, 9(4):126-127, Aug. 1956.

A tabular compilation of the 3 most severe hurricanes affecting 57 cities in the United States, Puerto Rico and Cuba from 1871 to date. The maximum wind, lowest barometer reading and date of each storm are given. The highest speed was 149 mph at San Juan, Puerto Rico on 13 September 1928. The lowest barometer reading was 27.05 in at Havana on 10 October 1846. Greatest speed in the United States was 134 mph on 14 September 1944 at Cape Henry, Virginia. Staff MGA 7J-184.

1956

798 Dunn, G.E., Davis, W.R. and Moore, P.L. "Hurricane season of 1956." Monthly Weather Review, 84:436-443, 1956. fig. table. refs.

Hurricanes were fewer in number and weaker in intensity during 1956 than usual. Eight tropical storms developed with 4 reaching hurricane intensity. Two reached the coast of North America (both in the Gulf of Mexico). Case histories of each of the storms and a summary of damage, deaths, a chart showing tracks and a discussion of the reason for the low number are presented. - Staff MGA 9.6-164.

1956

799 Garcia Bonnelly, J.U. "Cyclones which caused damage on the Island of Hispaniola." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 243-251. DAS.

Chronological list of cyclones since 1494 with several annotations. - Staff MGA 12N-278.

1956

800 Gentry, R.C. "1955 hurricane season." Weatherwise, 9(1):11-13, 29-31, Feb. 1956. fig. ref.

The 13 tropical storms (including hurricanes "Alice" to "Katie") of 1955 in the western Atlantic and Caribbean are listed and shown on track charts. Each separate storm is discussed in some detail. - Staff MGA 7.8-140.

1956

801 Gentry, R.C. "Objectives and basic design of the National Hurricane Research Project." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 255-264. fig. refs. DAS.

The program, beginning in May 1956, is planned to continue for a minimum of 4 or 5 yrs. Data collection and aircraft investigation programs will permit the testing of a number of working hypothesis concerning hurricane inception, movement

1956 cont.

and development. However, they are designed primarily for the collection of information needed to accomplish the following objectives: to ascertain what makes hurricanes form and move (i.e., the energy budget of the hurricane) and to determine important parameters in forecasting and how these can best be observed by aircraft and other means. Staff MGA 12N-296.

1956

802 Gentry, R.C. "Tropical analysis." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 166-172. refs. DAS.

In a tropical analysis program, maps should be used that portray conditions in both the lower and higher portions of the troposphere. Because pressure gradients are weak, it is better to put major emphasis on wind analysis rather than on pressure analysis. Time cross sections are useful for forecasting in the vicinity of the observing station, and also for a considerable distance downwind. - Staff MGA 12.10-244.

1956

803 Goldbrunner, A.W. "Intertropical convergence zone, waves in the easterlies and the formation of hurricanes to the east of the Lesser Antilles." In Caribbean Hurricane Seminar, Ciudad Truhillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 80-92. figs. refs. DAS.

Summary of synoptic situations observed in the areas of the Atlantic, east of the Lesser Antilles and north of the coast of South America. Concepts of the intertropical depression with its convergence zone and the deepening of easterly waves lead to the conclusion that these systems play a secondary role in the formation of hurricanes. There must be a sudden impulse in the atmosphere that immediately causes the formation of hurricanes. Neither the convective, frontal nor Riehl's theory explain this. A cold air droplet can act as a trigger for such an impulse. - Staff MGA 12N-168.

1956

804 Jordan, C.L. "Aerial reconnaissance of hurricanes." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 122-140. figs. refs. DAS.

The relative advantages of low and upper level penetrations and peripheral reconnaissance are compared. Reconnaissance data substantiate the concept that tropical cyclones are warm-core disturbances of great vertical extent. However, viewing

1956 cont.

the 'eye' as a congruent area of low pressure with weak or calm winds and little cloudiness is a gross over-simplification. Location of the 'eye' is often made with radar scopes, but the wind field and the pressure are the primary criteria in determining the extent of the 'eye'. Both the state of the sea and electrical activity in tropical cyclones are viewed critically. Staff MGA 12.9-323.

1956

805 Jordan C.L. "Applications of numerical weather prediction techniques in the tropics." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 192-204. figs. refs. DAS.

Use of high speed electronic computers for the prediction of atmospheric flow patterns should be extended into the Tropics. The results of some numerical forecasts which have been extended into tropical areas are presented and may help in preparing 2 or 3-day forecasts of the general path of hurricanes. Vast areas in the Atlantic are without aerological data which imposes severe restrictions on numerical prediction in the Tropics. An increased aerological network in the Caribbean scheduled for 1956 should provide more useful data. - Staff MGA 12.9-290.

1956

806 Germain, H. "Synoptic analysis for West Africa and the southern part of the Atlantic Ocean." Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, pp. 173-186, figs.

A brief description of air masses, the continental intertropical front or monsoon front, squall lines, trade wind fronts, cold fronts and maritime intertropical fronts. - Staff.

1956

807 Grace, R.J. "Betsy's roving eye." Monthly Weather Review, 84:311-312, 1956. fig.

Account of the sinusoidal motion of the narrow (8 - 18 mi) 'eye' of "Betsy" 11 - 12 August 1956) as it moved WNW across the Caribbean. This motion was broken up when the hurricane turned NW and came within the influence of the Virgin Islands and Puerto Rico where the 'eye' varied from 6 - 25 mi in diameter. Damage in Puerto Rico was estimated at $25 million, mainly to agriculture. Only 9 people were killed, but 12,000 - 15,000 were homeless at Yabucoa. Radar fixes every 1/2 hr from 0500 to 1730 12 August are shown on chart.- Staff MGA 12N-297.

1956

808 Grimes, A.E. "Bibliography on the climate of Cuba, prepared by the Foreign Area Section of the Office of Climatology." U.S. Weather Bureau, 2 Oct. 1956. 23 p. refs. Mimeographed. Also her: "Secondary bibliography on the climate of Cuba." 1956. 13 p. refs. Mimeographed DAS.

These 2 bibliographies contain 114 annotated references to articles or sources of data on the climate of Cuba arranged alphabetically by author. - Staff MGA 9.8-49.

1956

809 Hawkins, H.F. "Weather and circulation of September 1956, including a discussion of hurricane Flossy and September's typhoon tracks." Monthly Weather Review, 84:336-342, 1956. figs. refs.

Hot weather in the Pacific Southwest, continued drought in the Great Plains, only 1 hurricane in the Caribbean and 6 typhoons in the Far East are among the notable features of the general circulation and attending weather in the Northern Hemisphere described and illustrated in this article. The easterlies were strong enough to give high 'hurricane probability', but fine structure necessary for full development of tropical storms in Atlantic and Caribbean was lacking. - Staff MGA 8.11-167.

1956

810 Hosler, C.R. "Study of easterly waves in the Gulf of Mexico." American Meteorological Society, Bulletin, 37:101-107, 1956. tables. refs.

Sixty-three easterly waves in the Gulf of Mexico (1946 - 1954) were analyzed with respect to their origin, structure, weather distribution, maintenance, displacement, intensification, termination, effect upon inland weather and seasonal incidence. Tables giving a summary of weather data of Brownsville, Texas relative to easterly wave passage at this station, data on the structure and weather distribution of the easterly waves, displacement data and seasonal incidence are presented. - Staff MGA 8.9-172.

1956

811 Jordan, C.L. "Experiment in low-latitude numerical prediction with the barotropic model." Journal of Meteorology, 13(3):223-235, June 1956. figs. tables. refs.

The experiment consisted of a total of twenty 24-hr numerical forecasts of the 500- and 200-mb topography prepared for periods during the spring and summer months. Forecasts were made with the barotropic prediction model and the geostrophic approximation. The problems of upper-air analysis in these areas and the applicability of the barotropic model in low latitudes are

1956 cont.

considered. The results at 500 mb were generally much better than at 200 mb and compare favorably with previous barotropic series. Deficiencies in the predicted motion of synoptic systems were most marked in the vicinity of troughs with sharp curvature and with smaller-scale cyclones and anticyclones. The general results suggest that, at 500 mb, the barotropic model is capable of producing worthwhile predictions of the flow patterns as far south as lat 15° N. - Author (mod) MGA 7.10-102.

1956

812 Koteswaram, P. "Easterly jet streams over the Tropics." Chicago Univ., Dept. of Meteorology, Research Report, 1956. Multigraphed.

1956

813 Koteswaram, P. "Seminar on hurricanes, Ciudad Trujillo, Feb. 1956." 1956. For abstract see Swope, P.H. "Caribbean Hurricane Seminar..." 1956.

1956

814 Laban, J. "Hurricane Janet at Swan Island [sic]: a personal encounter." Weatherwise, 9(4):120-123, Aug. 1956. figs.

Account of experiences in the weather station at Swan Islands in the Caribbean during the passage of "Janet" (27 September 1955). Wind increased during the 0909 radiosonde observation (Raob) from 14 mps (30 mph) to gale force about the time the balloon reached 45,000 ft. Around 1100 h, winds reached 75 mph from N and later were greater than 100 mph, destroying the building. The island was stripped of about 10,000 cocoanut trees by winds estimated at 200 mph. - Staff MGA 7J-189.

1956

815 Lamb, A.J. "Producción de lluvia artificial." [Production of artificial rain.] Asociación de Técnicos Azucareros de Cuba, Havana, Memorias de la Conferencia Anual, 30:99-101, 1956. table. DNAL.

Climatic conditions are similar to Bermuda. Silver-iodide or dry ice cloud seeding by Howell Associates in Canada, the United States, Peru, Colombia and Cuba (1951 - 1955), resulted in a 17 - 20 percent average increase of precipitation. More precise results are expected by extending the operations from Oriente and Camagüey to Las Villas, Matanzas and Havana. - Staff MGA 11 M-711.

1956

816 Ligda, M.G.H. "Use of radar for hurricane observation." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 141-155.

1956 cont.

figs. refs. DAS.

Radar was used to determine position of spiral bands, apparent center of the storm and the general extent of precipitation. The propagation of radio energy is described. Heavy dependence is placed upon aircraft reconnaissance but a well planned network of surface stations in the Caribbean area would be helpful in the location and surveillance of storms between reconnaissance flights. - Staff MGA 13.5-570.

1956

817 Lilly, D.K. and La Seur, N.E. "Statistical study of some Caribbean wind data." Florida. State Univ. Dept. of Meteorology. Contracts AF 19(604)-753, CWB-8586 and CWB-8822, Scientific Report no. 3, 1 Dec. 1956. 32 p. figs. refs. DAS.

Report discusses results of a pilot study of a 3-mo (September 1953, August and September 1954) sample of wind observations from stations in the tropical Atlantic and Caribbean area. The need for quantitative information on the magnitude and characteristics of local effects on wind reports at each station in order that the data can be more intelligently used for synoptic wind analyses, and statistical wind parameters together with their physical interpretation prompted the study. Information obtained on local effects have proved useful in synoptic wind analysis, while statistical results indicate that extension of the computations to the improved network of stations now being established by the National Hurricane Research Project should yield valuable and representative statistical parameters of the atmospheric flow in this region. More intensive evaluation of local effects, especially their interaction with synoptic features, is also planned. Author (mod) MGA 11.3-37.

1956

818 Lugo Santos, A. "National Board of Refuge and Assistance Against Hurricanes in the Dominican Republic." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956, Final Report, 1956. pp. 303-305. DAS.

Civilian and military buildings and facilities are used as public refuges during hurricanes. Loss of life has been considerably minimized because warnings have been adequate. - Staff MGA 12L-490.

1956

819 McQueen, H.R. and Rammer, W.A. "Unusual movement of the Gulf of Mexico cyclone, April 10 - 13, 1956." Monthly Weather Review, 84:166-178, 1956. figs. refs.

Analysis of a storm (10 - 13 April 1956)

1956 cont.

in the Gulf of Mexico. It provides, "an example of the acceleration, deceleration, stagnation, cyclogenesis and deepening that may occur during the life of one of these Lows." Situation was complicated further by development of a cold core low at this time over the Carolinas. Factors associated with erratic movement of the storm are considered and a comparison of forecasting techniques and analyzed charts from the National Weather Analysis Center and the Joint Numerical Weather Prediction Unit are made. - Staff MGA 11.2-195.

1956

820 Malone, T.F. "Weather hazards in offshore operations." World Oil, 142(7): 176-184, June 1956. figs. photo.

Lack of adequate weather reports in Gulf of Mexico adds to difficulty in forecasting tropical line squalls and hurricanes for offshore drilling operations. Problems encountered and recommendations for improvement of service include: 1) regular reports from offshore rigs 4 times per day, 2) one or more weather radar sets at places where offshore operations are intense, 3) 24-hr professional meteorological service, 4) network of automatic weather stations at rigs not now reporting and 5) direct consultation between operators and meteorologists. - Staff MGA 9.2-131.

1956

821 [Marine Observer] "Abnormal refraction [in] Pacific Ocean, South China Sea, Caribbean Sea [and] South Atlantic Ocean." Its 26(173):143-145, July 1956. figs.

On 4 August 1955, at lat 21°36'S, long 141°29'W, the Moon was greatly enlarged and rimmed with red. On 12 September 1955, at lat 9°26'N, long 109°39'E, it changed to a double crescent. Descriptions are given of the image refraction of a ship in the Caribbean Sea and of cliffs of Lobos Islands. - Staff MGA 8.1-366.

1956

822 Millas, J. "Cloud motions and sea swell in hurricane detection and analysis." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 109-121. refs. DAS.

Discussion of visual techniques in detecting signs of approaching hurricanes. Father Benito Viñes' work on a general law of cyclonic currents at different levels was helpful, but his second law is applicable only to large or very large cyclones. Bands of parallel high clouds have a point of convergence, and according to Viñes, the focus of convergence

1956 cont.

indicates approximately the bearing of the center. Particulars on methods of cloud observations are explained. - Staff MGA 12M-557.

1956

823 Millas, J. "Theory of the repercussions the bands of activity." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956, Final Report, 1956. pp. 280-287. figs. refs. DAS.

An attempt to correlate solar flare activity, electromagnetic waves of particles of solar origin with hurricane phenomena. Hurricanes appear to reoccur with solar flare activity. - Staff MGA 14.11-679.

1956

824 Moline, J. "Necessity of more knowledge on hurricanes and protection against their disastrous effects." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. p. 5-8. DAS.

The Technical Assistance Program of the United States and the World Meteorological Organization (WMO) together have helped train personnel and provide equipment for improved studies of hurricanes. The public is being advised, and construction engineers are providing precautionary measures in a common effort to protect a country from damages caused by hurricanes. - Staff MGA 12L-385.

1956

825 Noble, G. and Lebrija Celay, M. "La sequía en México y su previsión." [Drought in Mexico and its prediction.] Ingeniería Hidráulica en México, 10:85-98, figs. graphs. table.--A reproduction of a part of a book: "Análisis de algunas sequías registradas en el país a partir del año de 1875." [Analysis of some droughts recorded in the country since 1875.]

Contains detailed analysis of mean synoptic patterns and particular situations which result in drought in Mexico. Staff.

1956

826 Nupen, W. "Annotated bibliography on tropical cyclone theory." Meteorological Abstracts and Bibliography, 7(11):1405-1443, Nov. 1956.

Contains 198 items with subject and geographic information. Many items deal with the Gulf of Mexico and Caribbean area. Staff.

1956

827 Nupen, W. and Rigby, M. "Annotated bibliography on tropical cyclones, hurricanes and typhoons." Meteorological Abstracts and Bibliography, 7(9):1115-1163,

1956 cont.

Sept. 1956.

Contains 199 items with subject and geographic outlines. Many items deal with the Gulf of Mexico and Caribbean area. Staff.

1956

828 Palmén, E.H. "On the dynamics of tropical hurricanes." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 34-55. figs. tables. refs. DAS.

Discussion of the general conditions relating to the formation of hurricanes. Equations for frictional dissipation are also given. The decay of a tropical hurricane and revival of hurricanes at higher latitudes are explained. The kinetic energy for the development of a hurricane is derived from the convective instability of a tropical atmosphere. - Staff MGA 13.5-573.

1956

829 Parsons, J.L. "San Andrés and Providencia: English-speaking islands in the western Caribbean." Univ. of California Publications in Geography, 12(1):1-84, 1956. plates. maps. refs. DAS.

Monograph on the colonization, political, social, cultural, economic, and physical geography of English-speaking islands in the western Caribbean (San Andrés and Providencia at lat 12°N, long 80°W). Section on climate gives highlights of a 10-yr record (1932 - 1941) of rainfall, hurricanes and droughts. Temperatures are estimated from the U.S. Weather Bureau records at Swan Islands (1941 - 1950). Staff MGA 9.8-239.

1956

830 Pawling, J.W. "Climate of Central America." Thesis, Clark Univ., Worcester, Mass., 1956. DAS.

Discusses terrain and climatic control by latitudinal position, atmospheric pressure, winds, altitude and terrain. Monthly and annual total precipitation are summarized Staff.

1956

831 Peterson, A.D. "Bibliography on the climate of Venezuela." U.S. Weather Bureau, Wash., D.C. 1956. Abstracts.

1956

832 Peterson, A.D. "Secondary Bibliography on the Climate of Venezuela." U.S. Weather Bureau, Wash., D.C. 1956. Abstracts.

1956

833 Port-au-Prince, Haiti. Séminaire-Collège St.-Martial, Observatoire Météorologique. "Cyclone Hazel, 11 - 13 octobre 1954." [Hurricane "Hazel," 11 - 13 October

1956 cont.

1954.] Bulletin Annuel, 1954:59-70, 1956. diagrs. photos. table. DAS.

Although hurricane "Hazel" did a great deal of damage in the United States, it was considered minor to the damage done in the southwest corner of Haiti where 500 to 1950 mm of rain (20 to 78 in) fell in the mountains 11 - 20 October 1954. History of previous tropical storms and damage by areas are also presented along with pictures of wind and flood damage. - Staff MGA 7J-183.

1956

834 Portig, W.H. "Lluvia en El Salvador C. A., y huracanes." [Rainfall in El Salvador, Central America, and hurricanes.] Comunicaciones del Instituto Tropical de la Universidad de El Salvador, 5(2-3):97-98, 1956.

Rainfall over Central America shows a maximum when a hurricane recurves near Cuba. - Staff.

1956

835 Power, J. "Building construction and precautionary maintenance in hurricane areas." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 291-301. refs. DAS.

Causes of hurricane damage are discussed with particular emphasis on the action of wind. The effect of hurricane loads on structures is considered. Design factors and recommendations are made for preventative maintenance. - Staff MGA 13.5-571.

1956

836 Richter, D.A. and DiLoreto, E.A. "Transformation of hurricane Flossy into an extratropical cyclone, 25 - 29 September 1956." Monthly Weather Review, 84:345-352, 1956. figs. refs.

Details on origin, blocking, recurvature and structure of hurricane "Flossy" of 1956. Includes synoptic and upper air data charts. - Staff MGA 12.3-293.

1956

837 Riehl, H. "Formation of hurricanes." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 69-79. figs. refs. DAS.

Four stages of hurricane development are discussed: occurrence of an initial disturbance, formation of tropical depression, deepening to hurricane strength and deepening to great intensity. - Staff MGA 13.5-574.

1956

838 Riehl, H. "Motion of tropical storms." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 187-191. fig. table. refs. DAS.

Statistical techniques for forecasting

1956 cont.
may be used until better facilities become available. Given the track and current motion of a storm, one can predict the path with high probability and the 24 hr position within defined limits of error. Given the history of 3-day movement, deviation of an individual situation from the mean can be determined. - Staff MGA 13.5-575.

1956
839 Riehl, H. "Outlook for future research." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 265-268. DAS.

1956
840 Riehl, H. "Structure of tropical storms." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 56-68. figs. refs. DAS.

A consideration of the essential features of the upper air structure of mature tropical cyclones and the balance requirements for the maintenance of steady state conditions. Computations of Schacht, Hughes, and E.Jordon on the thermal and wind structure of these storms furnished part of the observational material. In addition, observations from 1954 and 1955 were used. - Staff MGA 13.5-576.

1956
841 Ryan, P. "Isallobars and extrapolation as aids to prediction of movement." Tropical Cyclone Symposium, Brisbane, 10 - 14 Dec. 1956. Proceedings, pp. 343-354.

Using tropical disturbance tracks, an evaluation was made of the accuracy of the following forecasting parameters: bearing and distance of katallobaric centers, extrapolation and isallobaric gradient. The forecast and actual movement of cyclones are compared. - Staff.

1956
842 Schoner, R.W. and Molansky, S. "Rainfall associated with hurricanes and other tropical disturbances." U.S. Weather Bureau. National Hurricane Research Project, Report no. 3, July 1956. 305 p. Pre-printed report. figs. tables. DAS.

Data on rainfall associated with hurricanes which occurred since 1900. There were 78 storms in the Gulf of Mexico coastal region, 111 in the South Atlantic coastal region and 25 in the North Atlantic coastal region. The data given for each hurricane include: 1) meteorological summary, 2) tabulated amounts of rainfall for specified areas (in sq mi) and specified periods of duration and 3) isohyetal maps for the total storm and parts of it. - Staff

1956
843 Showalter, A.K. "Thermal distribution in and near tropical hurricanes." U.S. Weather Bureau, Wash., D.C. 1956. unpublished

1956
844 Sifontes, E. "La evaporación en los llanos de Venezuela." [Evaporation in the plains of Venezuela.] Caracas, Venezuela, Talleres Tipográficos 'El Globo,' 35 p.

Booklet contains articles on 1) Evaporation in the plains of Venezuela; end of summer in the valley of the Orinoco, 2) Evaporation in the plains of Venezuela; rainy season and 3) Summer winds; zone of the Venezuelan plains. - Staff.

1956
845 Simpson, J.S.M. "Differential heating in the trades and its relation to cloud formations." 1956. Unpublished manuscript on file at Woods Hole Oceanographic Institute.

1956
846 Simpson, J.S.M. "On the maintenance of the trade-winds." Tellus, 8:335-350, 1956.

1956
847 Simpson, J.S.M. "On the structure of trade-wind air below cloud." Woods Hole Oceanographic Institution, Mass. Technical Report no. 40 on Marine Meteorology, Aug. 1956. Ref. no. 56-52, Contract Nonr-172100. 42 p. illus. tables.

The moisture and temperature structure of the tradewinds mixed layer are compared under conditions of strong versus weak trades. The data used are two series of aircraft psychrograph soundings made over the ocean near Puerto Rico in early spring. The first sounding was accomplished in conditions of strong undisturbed trades and high zonal index (10 - 28 April 1946). The second was during conditions of weak rather disturbed trades and low zonal index (18 March - 7 April 1953). Considerable variation in structure of the lowest air accompanies changes in the trades regime which may give rise to significant fluctuations in energy input at the source region for atmospheric circulations. Further studies for investigating the relation between air and ocean structure at their boundary are suggested by the evidence which may relate to the formation of tropical storms. - Author (mod).

1956
848 Simpson, R.H., Johnson, A.W. and Gentry, R.C. "Operation of the National Hurricane Research Project." Weatherwise, 9(4):111-120, Aug. 1956. For abstract see Simpson, R.H. "Weather Bureau sizes up the hurricane problem." 1955.

1956

849 Stepanova, N.A. "Bibliography on the climate of Costa Rica." U.S. Weather Bureau, Wash., D.C. 1956. Abstracts.

1956

850 Stepanova, N.A. "Bibliography on the climate of Guatemala." U.S. Weather Bureau, Wash., D.C. 1956. Abstracts.

1956

851 Stepanova, N.A. "Bibliography on the climate of Honduras." U.S. Weather Bureau, Wash., D.C. 1956. Abstracts.

1956

852 Stepanova, N.A. "Bibliography on the climate of Panama." U.S. Weather Bureau, Wash., D.C. 1956. Abstracts.

1956

853 Stepanova, N.A. "Secondary bibliography on the climate of Panama." U.S. Weather Bureau, Wash., D.C. Abstracts.

1956

854 Swope, P.H. "Caribbean Hurricane Seminar: new venture in technical assistance." World Meteorological Organization, WMO Bulletin, 5(2):42-45, Apr. 1956. photos. DAS. Also: Koteswaram, P. "Seminar on Hurricanes, Ciudad Trujillo, Feb. 1956." Indian Journal of Meteorology and Geophysics, 7(3):209-214, July 1956. DAS.

In the article by Swope, photograph shows 56 participants from 18 countries attending the Seminar (16 - 25 February 1956) at the University of Santo Domingo, Ciudad Trujillo, Dominican Republic. D.A. Davies, Secretary General of World Meteorological Organization (WMO) welcomed participants and delivered an address on technical assistance. Forty lectures by 24 meteorologists from 14 countries covered subjects of theory, networks, radar tracking, storm tides, floods, numerical forecasting, aircraft reconnaissance, construction, tropical analysis, warning systems and future research. Lecturers are listed. Article by Koteswaram reviews ideas presented by the major participants as well as the general transactions. - Staff MGA 7K-194.

1956

855 Tannehill, I.R. "Hurricane." Review by the Office of Climatology, U.S. Weather Bureau. 1956. 22 p. figs. tables. DAS.

Brochure on tropical hurricane history, causes, formation, regions of formation, tracks, motion, eye of storm, frequency, pressure, rainfall, storm surges, law of storms, signs, forecasts, warnings, radar, weather reconnaissance, etc. The latest techniques and data (through 1955) are included in the text. - Staff MGA 9.5-163.

1956

856 Tannehill, I.R. "Hurricanes, their

1956 cont.

nature and history, particularly those of the West Indies and the southern coasts of the United States." 9th rev. ed. Princeton Univ. Press, 1956. 308 p. figs. tables. refs.

This edition of Tannehill's classic work on hurricanes (originally published in 1938) contains 6 pages of description of hurricanes from 1952 - 1955 plus charts of tracks of West Indian hurricanes for each year from 1952 through 1955. The various topics covered in the separate chapters are: history, winds in hurricane, storm waves, origin, tracks, rainfall, pressure, signs of approach, unusual motion, frequency, destructive effects, warning and precautions, early hurricanes (15th - 18th century) hurricanes of 19th century, of 20th century and a list of storms from 1494 to 1900 (from Poëy et al). The appendix is concerned with observing and forecasting by modern methods (radar, microseisms, sferics, upper winds, synoptic charts, etc.). - Staff MGA 7.6-3.

1956

857 Thuronyi, G. "Annotated bibliography on tropical cyclone effects." Meteorological Abstracts and Bibliography, 7(10): 1270-1309, Oct. 1956.

Contains 205 items with subject and geographic outlines. Many items deal with the Gulf of Mexico and Caribbean area. - Staff.

1956

858 U.S. Beach Erosion Board. "Hurricanes affecting the coast of Texas from Galveston to Rio Grande." Technical Memorandum, no. 78, Mar. 1956. figs. maps. tables. refs. DAS.

Hurricanes and tropical cyclones entering Texas from the Gulf of Mexico (1818 - 1955) are listed and charted and the damage caused by each mentioned. A total of 54 storms was found in the records. A rough cyclic distribution of hurricane yrs was found with a rough correspondence to sunspot cycles (peaks of increasing or sunspot max, troughs of minimum or diminishing activity). A forecast for 1956 - 1959 to be a hurricane year is made (in agreement with Willett). All storms occurred in June - November with a peak of 31 percent in September - Staff. MGA 7J-197.

1956

859 U.S. Naval Air Station, Norfolk, Va., "Intensification of tropical cyclones in Atlantic and Pacific areas." Research Report, no. 4 on Task 12 of the Applied Research Operational Weather Analyses Project AROWA. Oct. 1956. 28 p. illus.

Variations in the intensity of tropical cyclones are compared to flow patterns in the upper troposphere. The related 200-mb

1956 cont.

flow pattern is discussed for the 65- to 90-(minimal), 100-to 130-(average), and over 150-km (extreme) intensity classifications. Both Atlantic and Pacific data are used in the study. Atlantic 200-mb charts are used as examples since more data are available from the Gulf of Mexico and Caribbean area. They consist of 200-mb map sequences and flow patterns of 1) 2 simultaneous hurricanes which were located near Cuba and Puerto Rico on 15 September 1955, 2) cyclogenesis over the Caribbean on 20 September 1955 which developed into a hurricane near Barbados on 22 September 1955, and 3) a hurricane located south of Guantanamo Bay, Cuba on 11 October 1954. - Staff AD 114508.

1956

860 U.S. Navy. Weather Research Facility. "Intensification of tropical cyclones, Atlantic and Pacific areas, fourth research report." AROWA 12-1056-151, 1956.

1956

861 U.S. Navy. Weather Research Facility. "Objective prediction of 24-hour tropical cyclone movement." AROWA 12-0556-148, NAVAER 50-IP-542, 1956.

1956

862 U.S. Weather Bureau. "Bibliography on the climate of Colombia." 1956. Foreign Area Section, Office of Climatology, Abstracts. DAS.

1956

863 U.S. Weather Bureau. "Bibliography on the climate of Costa Rica." Report no. WB/BC-14, Mar. 1956. 15 p. DAS.

Lists 55 reports by title and author. Includes descriptive comments concerning the contents of the cited reports. - Staff.

1956

864 U.S. Weather Bureau. "Bibliography on the climate of Honduras." Report no. WB-BC-17, Feb. 1956. 9 p. DAS.

Lists 33 reports by title and author. Includes descriptive comments concerning the content of the cited reports. - Staff.

1956

865 U.S. Weather Bureau. "Hurricane circuit, WB PL 7021, manual of operations." 1956. 12 p. Mimeographed. DAS.

Instructions for observers and operators on the Gulf of Mexico Hurricane Circuit. The circuit consists of 43 U.S. Weather Bureau, 1 Civil Aeronautics Administration, 7 U.S. Navy and 2 U.S. Air Force stations in Texas, Louisiana, Alabama, Georgia, Florida and Missouri. - Staff MGA 7J-199.

1956

866 U.S. Weather Bureau. "Hurricane Flossy, September 21 - 28, 1956: (a

1956 cont.

preliminary report)." Weekly Weather and Crop Bulletin, 43(40a):1-4, 1 Oct. 1956. fig. tables.

Hurricane "Flossy," first hurricane of the season to hit the United States, entered the Mississippi River Delta and swept across the southeastern coastal area. Its highest winds were estimated at between 90 and 110 mph. Heavy storms and tornadoes were observed and onshore winds brought above normal tides and wave action to coastal towns. Details of "Flossy's" track are mapped and data are given on charts for all states affected. - Staff MGA 12N-298.

1956

867 U.S. Weather Bureau. "Hurricanes: a quick reference guide to synoptic charts of hurricanes that threatened or entered the United States, 1954 - 1955." June 1956. 44 p. 380 charts. DAS.

Six-hourly surface and 500 mb charts of all hurricanes affecting the United States during 1954 - 1955 are presented in chronological order on 380 full page photographs. The maps are indexed on 44 charts (5° squares) showing the path and direction of hurricanes plus the name, date and hour of the location of its center at a given 6-hourly observation time. - Staff MGA 7I-199.

1956

868 U.S. Weather Bureau. "Index of assembled meteorological data related to hurricane Janet 0300 EST September 22, 1955 through 2300 EST September 29, 1955." Office of Climatology, Ashville, 1956. 17 p. DAS.

Pamphlet issued to inform users of the collections of available publications (microfilm of manuscripts and autographic meteorological records) of surface and upper air data along the path of hurricane "Janet" from 0300 EST on 22 September 1955 through 2300 EST on 29 September 1955. - Staff.

1956

869 U.S. Weather Bureau. "Monthly normal temperatures, precipitation and degree days." Technical Paper, no. 31, 39 p. almost entirely tables.

Temperature, precipitation and degree day normals for 1921 - 1950 for 387 stations in the United States, Hawaii, Texas, West Indies, and Pacific Islands are presented in tabular form. - Staff.

1956

870 U.S. Weather Bureau. "Uniform index of assembled meteorological data related to Hurricane Connie, 0100 EST August 4, 1955 through 1400 EST August 13, 1955 and Hurricane Diane 0700 EST August 11, 1955 through

1956 cont.

2300 EST August 17, 1955, available at National Weather Records Center, Asheville, N.C." Prepared by Climatological Services Div., Asheville, N.C., 1956. 25 p. illus.

1956

871 U.S. Weather Bureau. National Hurricane Research Project. "Objectives and basic design of the National Hurricane Research Project." American Meteorological Society, Bulletin, 37:263-269, 1956. refs.

Description of the objectives of the National Hurricane Research Project sponsored by the U.S. Weather Bureau. Includes an account of the type of information to be collected and a listing of the research tasks assigned to the Research Operations Base in Florida. The inception of hurricanes, structure, movement, changes of intensity, development and floods are discussed. Diagrams showing the general organization of the project, a model of hurricane circulation incorporating revisions based upon data from aircraft reconnaissance and a map showing the proposed network of radiosonde stations which will operate continuously for a 30 mo period beginning 1 May 1956 are presented. - Staff MGA 8.7-182.

1956

872 Vila, P. "Grandes aires climatiques du Venezuela." [General climatic regions of Venezuela.] In International Geographical Congress, 18th Rio de Janeiro, Aug. 1956. Summaries of Papers, publ. in Revista Geográfica, 19(45):64-66, 1956. DAS.

1956

873 Westermann, J.H. and Zonneveld, J.I.S. "Photogeological observations and land capability and land use survey of the island of Bonaire." Netherlands. K. Instituut voor de Tropen, Mededeling no. 47. 1956. DNAL.

Treatise is concerned largely with land use and management of the island of Bonaire. The climate is semi-arid and annual rainfall varies between 340 - 680 mm with a mean annual temperature of 27°C. Table presents monthly and annual rainfall totals at Rincon and Kralendyk (1905 - 1933) and a yearly rainfall total (1940 - 1955) for Bonaire (compiled from averages of the stations Rincon, Kralendyk, Bolivia, Willemstoren, Tras Montagne and Washington). There is very little cloudiness and rain falls in brief heavy showers. Temperature maximum and minimum are 30 and 24.5°C, respectively. Relative humidity is about 75 percent. - Staff.

1956

874 Whitehouse, U.G. and Brown, A.N. "Analysis of air-sea surface boundary layer

1956 cont.

temperature (1930 - 1935) at fourteen fixed stations on the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Technical Report no. 19, Contract N7onr-48702, Mar. 1956. 9 p. text 37 p. illus. and tables. (Oceanographic Survey of the Gulf of Mexico.) DAS.

General analysis of sea surface and air temperature data is given for 14 fixed hydrographic shore stations in the northern Gulf of Mexico (1931 - 1935). Analysis is based on records from the files of the U.S. Fish and Wildlife Service, Washington, D.C. Annual, seasonal and short period variations in temperature are discussed. A basic diagrammatic guide to air-sea surface boundary layer temperature readjustment mechanisms is presented. - Author (mod).

1956

875 Woodcock, A.H. and Spencer, A.T. "Airborne flame photometer and its use in the scanning of marine atmospheres for sea-salt particles." Woods Hole Oceanographic Inst. Mass., Technical Report no. 14, Ref. no. 56-63, Contract Nonr-79800. 15 p. illus. tables. refs.

The flame photometer measures and records the average voltage output of a photocell which is exposed to sodium flashes in a flame. It consists of an enclosed gas burner or torch into which a mixture of air and propane gas is introduced. The mixture is ignited in flight by a spark and the flame is viewed by a 1P21 photomultiplier tube through a lens and a multilayer interference filter. The output voltage of the photomultiplier tube is a function of the light from the sodium flashes which occur in the flame as the salt aerosols are heated. The best flame characteristics were obtained at an air speed of 90 mph, an air intake orifice diameter of 2.36 mm and a propane flow rate of 57 g/hr. Results were obtained in the regions of Pompano Beach, Florida and Saint Thomas, Virgin Islands. The average vertical distribution of weight of sea salt in clear air is compared to the average airborne sodium in clear air and cumulus clouds. - Staff AD-113 111.

1956

876 World Meteorological Organization. Regional Association IV. Eastern Caribbean Hurricane Committee. "Report of the Fourth session of the Committee, Ciudad Trujillo, Dominican Republic, April 25 - 27, 1956." 1956. 32 p. DAS.

Transactions of meeting attended by 6 members, 9 advisers and 7 observers under chairmanship of W.A. Grinsted. Resolutions

1956 cont.
concern communications, warnings, exchange, publication of climatic information, hurricane seminar, nomenclature and technical assistance. The organization of a Hurricane Warning Service, a review of the 1954 and 1955 hurricane seasons, papers given at a seminar 16 - 26 February in Ciudad Trujillo, and a review of the United States Hurricane Research Project are included in detail. - Staff MGA 9.9-53.

1957

877 American Meteorological Society. "Hurricanes and tropical storms 1887 - 1956." Weatherwise, 10(4):132-133 and 139, Aug. 1957. table. (Reprinted from U.S.W.B. Weekly Weather and Crop Bulletin, 1 July 1957.)

Yearly data for total number of hurricanes and tropical storms in all areas of the Atlantic. Number reaching the United States coast, loss of life and damage in all areas and in the United States are described. - Staff MGA 12N-300.

1957

878 Anido Artiles, A. "Ciclones para 1956." [Cyclones of 1956.] Cuadernos de Meteorología, 1(1):14-16, Jan. 1957. Cuba.

1957

879 Anido Artiles, A. "Ciclones para 1957." [Cyclones of 1957.] Cuadernos de Meteorología, 1(3):38-39, July 1957. Cuba.

1957

880 Anido Artiles, A. "Departmento de Meteorología de la Universidad Central 'Marta Abreu' de Las Villas." [Department of Meteorology of the Marta Abreu Central University of the Province of Las Villas.] Cuadernos de Meteorología, 1(1):3-10, Jan. 1957. Cuba.

1957

881 Anido Artiles, A. "Hipótesis sobre la formación de los ciclones antillanos." [Hypothesis on the formation of the cyclones of the Antilles.] Cuadernos de Meteorología, 1(2):1-46, Apr. 1957.

1957

882 Anido Artiles, A. "Lluvia en la Universidad Central." [Rainfall at the Central University.] Cuadernos de Meteorología, 1(1):29-30, Jan. 1957.

1957

883 Anido Artiles, A. "Mas altas temperaturas de Cuba se registran en la Región Central." [Highest temperatures of Cuba are recorded in the Central Region.] Cuadernos de Meteorología, 1(1):17-18, Jan. 1957.

1957

884 Ballenzweig, E.M. "Fluctuations in frequency of tropical storms." Weatherwise, 10(4):121-125, Aug. 1957. figs. refs.

A frequency histogram of tropical storm occurrence in the Atlantic shows peaks at 5-6 per yr and at 10 per year. Other features of the frequency distribution and circulation patterns associated with high and low frequencies of hurricanes are discussed and illustrated with charts and graphs. - Staff MGA 10.6-191.

1957

885 Ballenzweig, E.M. "30-day hurricane probability statements." Mariners Weather Log, 1(5):122-123, Sept. 1957.

The Hurricane Warning Centers at Miami, Florida, have been issuing twice each month, on an experimental basis, 30-day hurricane probability statements for areas along the Gulf and Atlantic coasts. Work in this field was started in mid-June 1957 and the first experimental statement was issued in the same month. By this combined effort, the best estimate of the probability of hurricane occurrences based on statistical and synoptic considerations can be made. Staff MGA 11.3-202.

1957

886 Ballenzweig, E.M. "Weather and circulation of September 1957, including a discussion of tropical storm activity." Monthly Weather Review, 85:315-325, 1957. figs. tables. refs.

September was characterized by a reversal of circulation patterns of July and August with a mid-continent trough and coastal ridges. Blocking occurred in Greenland and the Bering Sea, instead of in northwestern Canada as in August. Four tropical cyclones, of which 2 were hurricanes, developed in the Atlantic and Gulf of Mexico. Three formed in the eastern Pacific and 6 in the western Pacific. Sea surface temperatures were higher than critical limit of 81°F set by Palmén and well above the long period average. Tropical storms in Atlantic are related to 5-day mean circulation. - Staff MGA 10.4-18 4.

1957

887 Bannon, J.K. and Steele, L.P. "Average water-vapour content of the air." Great Britain Meteorological Research Committee, M.R.P. 1075, 1957.

World charts of mean water vapor for the seasons at 850, 700 and 500 mb (1951 - 1955). - Staff.

1957

888 Baum, W.A. "Florida's weather and climate (1957?)." Reprinted from the Florida Handbook, 6th biennial ed., Tallahassee, Fla.: Peninsular Publishing

1957 cont.

Co., 1957. 18 p. tables.

1957

889 Beckinsale, R.P. "Nature of tropical rainfall." Tropical Agriculture, 34(2): 76-98, Apr. 1957. figs. tables. refs.

The importance of the Tropics with respect to rainfall lies not only its large geographic area but in the greater depth of the tropical troposphere compared with the extratropical troposphere (18 km:9 km). The annual rainfall regime with respect to latitude, seasonal and regional variations, intensity, year-to-year variability and causes (convective, orographic and cyclonic or frontal) are discussed and illustrated by schematic diagrams, tables and statistical graphs based on data from various sectors (Puerto Rico, Malaya, Brazil and East Africa). - Staff MGA 10.4-263.

1957

890 Bjerknes, J. and Venkateswaran, S.V. "A model of the general circulation of the Tropics in winter." California, Univ. at L.A., Final Report, Contract AF 19(604)-1286, art. 3, 1957. 28 p. figs. tables.

Dynamical analysis of the general circulation of the trade wind zone. - Staff.

1957

891 Botley, C.M. "Some great tropical auroras." British Astonomical Association, Journal, 67:188-192, 1957.

A number of auroral displays in low latitudes are listed, including 12 tropical, Five coincided with strong or very strong sunspot maxima. - Staff.

1957

892 Braham, R.R., Battan, L.J. and Byers, H.R. "Artificial nucleation of cumulus clouds." Meteorological Monographs, 2(11): 47-85, July 1957. figs. tables. refs.

Summarizes research (1951 - 1954) by Chicago University Cloud Physics Project in the laboratory, the Caribbean and the Central Mississippi Basin. History of the project, instrumentation, design of program (physical and experimental), location of flight sectors, seeding elements and their treatment, analysis of data (scatter diagrams, histograms and contingency tables) for both test areas and for treated and untreated clouds, laboratory work on particle size and origin, coalescence, capture, etc. Conclusions: 1) importance of ice-crystal or water condensation and coalescence processes differs in the 2 areas, 2) over the Caribbean, the all-water process is the dominant or exclusive one, 3) over the continent both processes pertain and 4) large valve water spray treatment was often successful.

1957 cont.

Staff MGA 10.8-18.

1957

893 Brooks, F.E. "Final report of radio results for 1955 Gulf of Mexico propagation tests." Univ. of Texas, Mar. 1957. 27 p.

1957

894 Byers, H.R., Sievers, J.R., and Tufts, B.J. "Distribution in the atmosphere of certain particles capable of serving as condensation nuclei." In Conference on the Physics of Cloud and Precipitation Particles, Sept. 1955. Proceedings. New York: Pergamon Press, 1957. pp. 47-72. figs. refs.

Collections of chloride particles on flights in Illinois and in the lower Mississippi valley are compared with those made in Puerto Rico. Large chloride particles are found at flight altitudes in the interior of the continent even though they are scarce at the ground. Giant particles giving a sulfate and magnesium reaction appear to be somewhat more numerous than the chlorides. The previous air trajectory does not seem to have a very great effect on the observations. - Author (mod) MGA 9.6-198.

1957

895 Chambers, J.V., Dalrymple, P.C. and Jones, H. "Wet Tropics: limits and characteristics." Quartermaster Research and Engineering Command, Technical Report no. EP-63, 1957.

1957

896 Chapman, S. "The aurora in middle and low latitudes." Nature, 179:7-11, 1957. figs.

Isochasms of Northern and Southern Hemispheres are shown and related to lines of geomagnatic latitude. Some auroras have been observed close to the geomagnatic or geographical equator. Outstanding tropical auroras are listed. - Staff.

1957

897 Colón, J.A. "Study of the conditions over Puerto Rico during the passage of hurricane Betsy with emphasis on the changes in the structure of the radar bands." American Meteorological Society, Bulletin 38(2):88. Feb. 1957. Abstract only. (American Meteorological Society, National Meeting and Conference on Hydrometeorology, 19 - 21 Mar. 1957, Program.)

During the morning of 12 August 1956, Hurricane "Betsy" moved in a northwest track across the central part of the island of Puerto Rico. The topography of Puerto Rico consists essentially of a mountain range oriented EW with maximum heights around 4,000 ft. In its path across the island, the hurricane moved over the

1957 cont.

mountain barrier and out over water again in a period of approximately 3 hrs. During this interval, the storm was tracked by a radar installed at the San Juan Airport. The radar film obtained was studied to determine the effect of the mountain barrier on the configuration of the radar bands. Selected photographs of the radar scope are presented showing the structure of the storm at different positions over the island. Pressure observations over the island show filling of the central pressure overland and quite sudden deepening when the storm moved over water again on the north side of the island. - Author(mod).

1957

898 Cook, C. "On the prediction of three-day hurricane motion." Chicago. Univ. Dept. of Meteorology, Contract N6ori-02036, Project NR 082-120, ONR, Project AROWA, NBA, Report on Research (unnumbered), July 1957. 12 p. figs. table. refs.

A quantitative method for the prediction of 3-day hurricane motion from vertically integrated mean flow charts is developed using the 7 hurricanes of August and September 1955 and several other storms of that period. Key areas in the United States that were affected by those hurricanes as they moved from the West Indies into the United States are indicated. Staff MGA 11.3-127.

1957

899 Cunningham, R.M. "Circulations in and around cumulus as deduced from detailed temperature and humidity measurements." American Meteorological Society, Bulletin 38(2):88, Feb. 1957. Abstract only. (American Meteorological Society, National Meeting and Conference on Hydrometeorology, 19 - 21 March, 1957, Program.)

Cumulus clouds in New England, Arizona, Florida and Puerto Rico were probed at several altitudes with an aircraft instrumented with a rapid response thermometer and refractometer. The curves traced by these instruments are explained in terms of physical processes and air circulations involved. Photographs of each cloud help in this interpretation. A life history is suggested for a typical cloud in each region. - Author.

1957

900 Davis, W.R. "1956 hurricane season." Weatherwise, 10(1):18-21, 32, Feb. 1957. fig.

The year 1956 was one of the lightest hurricane seasons on record. Only 3 reached hurricane intensity with one lasting for only a few hours. Six tropical depressions

1957 cont.

were also tracked. All storms were small and none were intense except "Greta" (NE of Puerto Rico) for a short period. Considerable damage was done in Puerto Rico by "Betsy". - Staff MGA 9.6-163.

1957

901 Decker, F.W. "Instrumentation and techniques for Army weather observation." Oregon State College, Dept. of Physics, Contract DA-36-039 SC-73186, 3d Quarterly Technical Report, 1 Sept. - 30 Nov. 1957. 39 p. figs. diagr. map. tables. refs. Mimeographed. DAS.

This research booklet contains various preliminary research reports on: the determination of storm intensity using radar, the precision tracking of storm cells and bands, weather effects on radio wave propagation, the electrification of storms and the movements of Hurricane "Audrey". Selected weather radar data are examined and a coordination of every possible kind of data on certain classical situations such as hurricanes, thunderstorms, wave cyclones and frontal passages is suggested. - Staff MGA 11.7-229.

1957

902 Fisher, E.L. "Exchange of energy between the sea and the atmosphere in relation to hurricane behavior." See his "Hurricanes and the sea surface temperature field." 1957.

1957

903 Fisher, E.L. "Hurricanes and the sea surface temperature field" [and] "Exchange of energy between the sea and the atmosphere in relation to hurricane behavior." U.S. Weather Bureau, National Hurricane Research Project Report, 8 June 1957. 46 p. figs. table. refs. DAS. "First paper appeared originally as N.Y. Univ. College of Engineering. Research Div. Dept. of Meteorology and Oceanography, Contract Cwb-8631, Technical Paper no. 1, July 1956. Second paper appeared originally as its Contract Cwb-8948, Technical Paper no. 2 (and Final Report on the Hurricane Project), Jan. 1957."

Part 1 is a study of how the sea surface temperatures in the vicinity of hurricanes affected their path and development. Eleven hurricanes which occurred in the West Indies region (1953 - 1955) were studied. It was concluded that hurricanes tend to follow warm water areas in the belt of easterlies and when wind shear forces the hurricane from warm water to cold water areas, they weakened or dissipated. Causes are discussed in Part 2. Previous attempts to develop the energy flux over the sea

1957 cont.

(Sutton, Sverdrup, Jacobs et al.) are reviewed and Jacobs' equation applied to data. Hurricanes seem to respond to changes in eddy flux, even to the point of possible weakening when stationary (due to cold water being brought to the surface). Staff MGA 9.2-197.

1957

904 Flohn, H. "Studien zur Dynamik der äquatorialen Atmosphäre, I, Horizontale und vertikale Windkomponenten auf dem Atlantik." [Studies on the dynamics of the equatorial atmosphere. I. Horizontal and vertical wind components on the Atlantic.] Beiträge zur physik der Atmosphäre, 30:18-46, 1957. figs. tables.

Concerns the kinematical equator and vorticity. - Staff.

1957

905 Florida. State Univ. "Meteorology and climatology at Florida State Univ., Tallahassee, Florida." July 1957. 25 p.

Describes the facilities and activities at Florida State University for graduate and undergraduate work in meteorology, climatology and oceanography. The teaching staff, curriculum, courses and other information about the school are outlined. Staff MGA 10.10-64.

1957

906 France. Institut National de la Statistique et des Études Économiques pour la Métropole et la France d'Outre-Mer. "Annuaire de la Martinique." [Annual of Martinique.] 1952 - 1956. Paris, 1957. DLC.

Chapter 2 on climatology (pp. 10-15) contains a discussion on the following elements of climate of Martinique (1951 - 1955): temperature, sunshine, wind speed, prevailing wind direction and cyclones. Tabular data contain monthly and annual summaries at Fort-de-France as follows: temperature (°C) - maximum and minimum; precipitation (mm) - totals and number of days with rain; relative humidity-means; sunshine (hrs)-totals; wind speed (mps)-means and wind direction-(specified direction and calm) in percent frequencies. In addition, monthly and annual means of rainfall at 22 stations in Martinique are included as well as a map of Martinique (Scale 1:425,000) with mean annual isohyets and totals. - Staff.

1957

907 Gerrish, H.P. "Mesocale studies of instability patterns and winds in the tropics." U.S. Army Electronics Command, Ft. Monmouth, N.J., Technical Report ECOM-00443-F, Sept. 1967. 72 p. figs. photos. charts. tables. refs. (Miami Univ. Institute

1957 cont.

of Marine Science, Contract DA 28-043 AMC-00443 (E), Report no. 14; Final Report, 1 June 1965 - 31 May 1967, issued Sept. 1967.) DAS. DLC.

Rainfall rates in easterly waves and air mass showers at the University of Miami were studied using raindrop camera data collected for the Illinois State Water Survey in 1957 - 1958. Two severe rainstorms in south Florida are discussed and analytical techniques are appraised. Special attention is given to the storm of 13 - 15 October 1965 which produced more than 21 in of rain in 12 hrs in the Pompano Beach area. Small scale organization and location of the heaviest rain areas were determined using attenuated radar video. An evening 'angel' pattern on radar is shown to be useful in classifying the types of atmosphere. A revised climatology of tornadoes and waterspouts in this area is presented and discussed. Refractive conditions associated with tornadoes, waterspouts, and hail are also described, and mean temperature soundings are illustrated for these events. - Author (mod) MGA 193-292.

1957

908 Gilbert, S.C. and La Seur, N.E. "Study of the rainfall patterns and some related features in a dissipating hurricane." Journal of Meteorology, 14(1):18-19, Feb. 1957. figs.

A detailed investigation of the hourly rainfall patterns accompanying hurricane "Florence" (1953) over the Gulf States and southeastern United States. Demonstrates the pronounced asymmetry in the decay of release of latent heat, primary energy source of the storm. This appeared to be associated with the incorporation of dry air into the storm circulation in the layer from 800 to 400 mb. This dry air is first drawn in from the outer portions of the left-front quadrant, then sweeps around the storm into the right-rear and right-front quadrants. - Author (mod) MGA 8.6-209.

1957

909 Haggard, W.H. "Hurricane frequencies." Mariners Weather Log, 1(1):2-4, Jan. 1957. figs.

A graph shows annual frequencies of North Atlantic hurricanes (1879 - 1956). The number decreased during 1887 - 1929, then increased and remained at a higher level for the next 25 yrs. Tracks on these charts are essentially the same as those on Redfield's chart published in 1835. A large time graph shows days or periods when tropical storms occurred in the Atlantic and Caribbean each yr during

1957 cont.

1887 - 1955. Hurricanes are frequent from the 3rd week of August to the 2nd week in October. - Staff MGA 12.3-289.

1957

910 Heastie, H. "Average height of the standard isobaric surfaces over the temperate and tropical regions in July." Great Britain, Meteorological Research Committee, M.R.P. 1066, 1957. 3 p. charts.

This is a correction to C.E.P. Brook's "Upper winds over the world." - Staff.

1957

911 Hiester, N.K. and Marynowski, C.W. "Application of solar energy in Puerto Rico." Stanford Research Institute, (SRI), Project no. S01838, Final Report, 1957. 30 l. diagrs. DAS.

1957

912 Higgs, R.L. "Analysis of the squally wave in the Atlantic, July 18 - 19, 1957." Monthly Weather Review, 85:251-253, 1957. figs.

Case history and analyzed charts of the Caribbean (18, 19 and 20 July 1957) show 200 mb flow and surface analysis, with details of a storm that did not develop into a hurricane. The Intertropical Convergence Zone (ICZ) was north of its normal position near the Guianas, and 3 waves formed along its 2000 mi extent. The storm threatened the Antilles (Windward Islands) but weakened before it did any damage. - Staff MGA 10.6-193.

1957

913 Hoover, R.A. "Empirical relationships of the central pressures in hurricanes to the maximum surge and storm tide." Monthly Weather Review, 85:167-174, 1957. figs. tables. refs.

Regression lines are presented for use in forecasting maximum storm surges and tides in hurricanes on the basis of central pressure. Hurricanes are classified according to whether they reach the Gulf Coast (24 cases) or Atlantic Coast (18 cases). Surge profiles for "Ione" (September 1955) and "Carol" (August 1954) for the coastal areas of North Carolina and Cape Cod are shown. Observed, predicted and lunar tides for Norfolk for "Connie" (August 1955) are presented together with other basic data. - Staff MGA 11.1-173.

1957

914 Ivanov, N.N. "Mirovaia karta ispariaemosti." [World map of evaporativity] Leningrad, Gidrometeoizdat, 1957. 37 p. tables.

Includes notes on theory, application, chart description, and variations in evaporativity for all continents. Means and

1957 cont.

extremes are given. - Staff.

1957

915 Jordan, C.L. "Mean atmosphere for the West Indies area." U.S. Weather Bureau. National Hurricane Research Project, Report no. 6, May 1957. 17 p. figs. tables. refs. DAS.

Mean monthly aerological records for 10 yrs (1946 - 1955) for Miami, San Juan and Swan Islands, for levels up to 30 mb (78,000 ft) are summarized. Data are presented in tables and isopleth charts to show standard conditions of temperature, humidity, and height of pressure surfaces. Differences between these results and previous data are shown graphically. Staff MGA 9.9-115.

1957

916 Jordan, C.L. "Mean soundings for the hurricane eye." U.S. Weather Bureau, National Hurricane Research Project Report no. 13, Sept. 1957. 10 p. figs. tables. refs. DAS.

Mean soundings to 500 mb for the hurricane 'eye' based on 39 dropsondes (1955 - 1956) are presented and discussed for weak, moderate, and intense hurricanes. Soundings in the 'eye' and in the rain area for hurricane "Betsy" (1956) are analyzed and compared with the mean soundings. In general, warmer temperatures aloft at all levels are related with increasing intensity of hurricanes. - Staff MGA 12N-301.

1957

917 Kasparbauer, W. "Synoptische Luftdruckbeobachtungen im Karibischen Raum und ihre Fehler." [Synoptic pressure observations in the Caribbean region and their errors.] Meteorologische Rundschau, 10(2):52-53, Mar./Apr. 1957. figs.

Mean isobars are drawn (May - June 1956) for Central America and the West Indies. Data show that almost all important maxima and minima occurred simultaneously over the whole region. - Staff MGA 8.9-143.

1957

918 Ketchum, D.D. "Proposed method for tracking radiosonde balloons." 1957. 3 p. For abstract see Woods Hole Oceanographic Institution. "Meteorological and oceanographical research in tropical waters." 1957.

1957

919 Klein, W.H. "Weather and circulation of June 1957: including an analysis of hurricane Audrey in relation to the mean circulation." Monthly Weather Review, 85:208-220, 1957. For abstract see Ross, R.B. and Blum, N.D. "Hurricane Audrey,

1957 cont.

1957." Ibid. June 1957.

1957

920 Lee, D.H.K. "Climate and Economic Development in the tropics." New York: Harper & Row, Publishers, for the Council on Foreign Relations, 1957. 182 p. maps. diagrs. - Review by M. Bates in Geographical Review, 48:449-451, 1957.

1957

921 Metropolitan Life Insurance Co. "Hurricanes - past and present." Statistical Bulletin, 38:6-8, July 1957. table.

Major hurricane targets in the United States are the Atlantic and Gulf coasts. "Audrey", appearing in June, was the first hurricane of 1957, and moved across Louisiana and eastern Texas. Two other severe June hurricanes hit the United States during 1926 - 1956. Other hurricane frequency data are shown. - Staff MGA 12N-305.

1957

922 Moore, P.L. et al. "Hurricane season of 1957." Monthly Weather Review, 85:401-408, 1957. figs. refs.

Eight tropical storms, 3 of which were of hurricane force, occurred in 1957 in the Atlantic and Gulf of Mexico. Each is discussed in detail, especially "Audrey" (25 - 28 June), which was the most destructive. Most storms hit the Gulf Coast rather than the East Coast. During "Carrie", a ship sank near the Azores with a loss of 80 lives. Property damage was $152 million for the United States and 390 lives were lost and 192 persons missing in "Audrey", the greatest loss of life since the 1938 New England hurricane. - Staff MGA 10.4-195.

1957

923 O'Donnell, G.P. "Climatological Summary for Sabana del Mar, Dominican Republic." Mar. 1957. Mimeographed. DAS.

Short description of the Dominican Republic and the location of weather stations. The history and location of the Sabana del Mar weather station prior to the establishment of the Cooperative Hurricane Observing Station, is described including the topographical features of the area. Tabular monthly summaries for each yr and over a period (temperature 1941 - 1956, precipitation 1939 - 1956) include: temperature-means, mean extremes, and absolute extremes and precipitation-means, extreme maximum daily amounts and mean and extreme number of days with rain. Graphs are also included. - Staff.

1957

924 Palmén, E.H. On the mean meridonal circulation in low latitudes of the

1957 cont.

Northern Hemisphere in winter and the associated meridional and vertical flux of angular momentum." Societas Scientiarum Fennica, Commentationes physico-mathematicae, Helsingfors. v. 17, no. 8, 1957. Also issued as Univ. of Calif., Dept. of Meteorology, General Circulation Project, Final Report, Paper no. 7. DAS. M(055) F516 w.

1957

925 Palmén, E.H. and Riehl, H. "Budget of angular momentum and energy in tropical cyclones." Journal of Meteorology 14: 150-159, 1957.

1957

926 [Petroleum Engineer] "Nature's deadly weapon, hurricanes: their force, formation and forecasting." Aug. and Sept. 1957. 13 p. figs. photos. Includes 2 articles: Riehl, H. "How hurricanes form." Also his "Hurricane motion and its forecasting."

In addition to a description of hurricane "Audrey" (1957), the article contains two papers by H.Riehl. In the first paper, thermodynamic and dynamic aspects of hurricane formation, and posibilities of forecasting hurricane formation on the basis of sea temperature and the general circulation are discussed. The second paper takes up the factors determining hurricane tracks and methods of hurricane track prediction. - Staff. MGA 11.3-131.

1957

927 Portig, W.H. "Temperaturschwankungen der freien Atmosphäre in den Tropen." [Temperature variations of the free atmosphere in the Tropics.] Annalen der Meteorologie, 8(3/4):125-127, 1957.

In the Tropics, the tropopause is considerably higher than in other latitudes. Very low temperatures are observed at 16 - 18 km. Temperature oscillations in the Tropics are slight at high altitudes as well as at the surface. Tables developed from United States daily weather map data show mean temperatures and extreme values (April 1956) at Balboa, Panama, Guantanamo and Cuba for levels from 500 to 150 mb. Frequency of 24-hr temperature variations between 500 and 150 mb in April 1956 are presented. Lowest temperature in Balboa was always at the 100 mb level (16,500 m) and at Guantanamo at 80 or 100 mb (occasionally up to 18,000 m). - Staff MGA 10.10-263.

1957

928 Portig, W.H. "Wettervorhersage in Mittelamerika." [Weather forecasting in Central America.] Umschau, 57(7):212-213, 1 Apr. 1957. figs.

Chief difficulties of weather

1957 cont.

forecasting in San Salvador are the paucity of synoptic stations and absence of data from the Pacific. Thunderstorms coming from the SE are difficult to forecast, but most rain comes in showers from the eastern Pacific and Atlantic. Hurricane tracks and northers during the dry season are shown on a chart. Difficulties of forecasting are increased by sudden and violent weather changes. - Staff MGA 8.7-132.

1957

929 Ramage, C.S. "Surface weather chart analysis in low latitudes." Scientific Report no. 2, Contract AF 19(604)-1942. Univ. of Hawaii, Honolulu, 1957. 23 p. figs. tables.

Low latitude analyses should include pressure and density field analysis with wind analysis. A scheme is outlined for a master surface wind analysis chart using streamlines and isotachs. This scheme might be used for tropical forecasting. Staff.

1957

930 Ramanadham, R. and Vidyavathi, K. "Size distribution of raindrops from layer type clouds in Tropics." Meteorological Society of Japan, Journal, ser. 2, 35:221-226, 1957.

Large variation in droplet size distribution has been examined. Variations recorded at the surface are caused by modifications to droplets between the level of origin and the ground. - Staff.

1957

931 Reid, R.O. "On the classification of hurricanes by storm tide and wave energy indices." Meteorological Monographs, 2(10):58-66, June 1957. figs. tables. refs.

Two indices for classifying hurricanes with respect to their capacity for producing storm tides and waves on a continental shelf are suggested. Application of these indices to hurricane data of the United States since 1900 indicates the logarithms of these indices possess nearly Gaussian distribution. This affords an approximate means of evaluating the average rate of occurrence of storms having a given level of intensity, defined by either the wave energy index or storm tide potential for a particular site. Rate of occurrence is computed for the northwestern Gulf of Mexico shelf area. - Author MGA 12.2-303.

1957

932 Riehl, H. "How hurricanes form." For abstract see Petroleum Engineer "Nature's deadly weapon...hurricanes." 1957.

1957

933 Riehl, H. "Hurricane motion and its

1957 cont.

forecasting." For abstract see Petroleum Engineer "Nature's deadly weapon, hurricanes." 1957.

1957

934 Riehl, H. and Simpson, J.S.M. "On the heat balance and maintenance of circulation in the trades." Royal Meteorological Society, Quarterly Journal, 83(355):21-29, 1957.

1957

935 Ross, R.B. and Blum, M.D. "Hurricane Audrey, 1957." Monthly Weather Review, 85:221-227, 1957. figs. refs. Also: Klein, W.H. "Weather and circulation of June 1957: including an analysis of hurricane Audrey in relation to the mean circulation." Ibid., 85:208-220, 1957. figs. refs.

A synoptic analysis of conditions attending hurricane "Audrey" (25 - 28 June 1957) which was responsible for the loss of life of over 500 people and caused 150 to 200 million dollars worth of damage. Whole villages in the tidewater or bayou area of Louisiana were demolished. Heavy rains and high winds did considerable damage as far north as Ontario. Accompanying tornadoes also occurred in Alabama. The 500 and 200 mb analyses and cross section charts show cause of deepening, stratospheric warming, low tropopause, etc. June 1957 weather in the United States was notable for a continuation of the tornadoes, heavy rains and floods of the 3 preceding months. General circulation, jet stream and other features for the month are discussed. Staff MGA 12.3-294.

1957

936 Saltsman, E.J. "Selective annotated bibliography on climatic maps of Mexico." U.S. Weather Bureau, 1957. 15 p. 48 items.

Annotated references to climatic maps of Mexico are arranged chronologically (1920 - 1956) and indexed by author, subject and map scale. - Staff.

1957

937 Sánchez Carrillo, J.M. "Aspectos generales del clima en Venezuela." [General aspects of the climate of Venezuela.] Venezuela. Dirección de Agricultura. Div. de Extensión Agrícola, ser. A, no. 4, 1957 (?) 19 p. Mimeographed. DAS.

Since there is little (less than 3°C) difference in mean temperature between the warmest and coldest months of the year in Venezuela, the mean annual temperature is a good indicator of the thermal relations between regions, especially between high and low altitude stations as shown on a mean annual isotherm chart. At least 93

1957 cont.

percent of the country lies below 800 m, and 1 percent greater than 2,000 m. The climate of each geographic region is described and the isohyetal and isothermal characteristics reviewed systematically. Climate, human adaptation and climatic studies in Venezuela are reviewed. - Staff MGA 10.6-289.

1957

938 Sanders, F. "Application of pressure-averaged flow to the problem of hurricane displacement." Mass. Inst. of Technology. Dept. of Meteorology, Contract AF 19(604)-1305, Scientific Report no. 6, Feb. 1959. 73 p. figs. table. refs. DAS.

The motion of hurricanes is considered in relation to the pattern of flow averaged with respect to pressure over the layer bounded by the 1,000 mb and 100 mb surfaces. Application of the barotropic prediction model together with an appropriate graphical horizontal averaging of the pattern of flow yields a basic 'steering' current in which the hurricane may be expected to move. The motion of hurricanes "Carol" and "Hazel" (1954), "Betsy" (1956) and "Daisy" and "Ella" (1958) is compared with corresponding patterns of the steering current. The root-mean-square magnitude of the vector error in specification of the concurrent storm motion is slightly larger than 3 knots. Twenty-four-hour displacement forecasts are made on the assumption that the steering current is steady. It is concluded that significantly greater accuracy in short range prediction of hurricane displacement can be achieved only with a substantial increase in the amount of data available throughout the troposphere in the vicinity of the storm. - Author (mod) MGA 11.3-133.

1957

939 Schell, I.I. "On the Nature of Tropical Storms Relationships." Tufts Univ. Medford, Mass. Ref. no. 57-1, Apr. 1957. 10 p. illus.

A 25-yr series of sea surface temperatures, winds and cloudiness over several areas in the tropical Atlantic between lat 20°N and 4°S was examined with regard to the frequency of tropical Atlantic storms during two 8-yr periods and one 9-yr period. During the first two periods the average tropical storm frequency was 6.1 and 5.8 per yr and these values were associated with below average wind speeds during the August - October season. It is concluded that the lack of tropical storms in the South Atlantic is due to the zone of favorable wind and temperature conditions during the Southern

1957 cont.

Hemisphere summer. - Author (mod) AD-155 435.

1957

940 Schoner, R.W. "Characteristic and generalized isohyetal patterns for Gulf and East Coast hurricanes." U.S. Weather Bureau, 16 Oct. 1957. 18 p. figs. refs. DAS.

Hurricane precipitation is defined as that which occurs from 24 hrs before to 48 hrs after a hurricane crosses the coast. The 72-hr precipitation period is divided into three 24-hr periods: 1) pre-hurricane, 2) hurricane and 3) post-hurricane. Data for hurricanes (1887 - 1956) were analyzed and the patterns described for the following areas: 1) Texas coast, 2) Middle Gulf coast, 3) East Gulf coast, 4) Florida east coast 5) South Atlantic coast and 6) North Atlantic coast. Factors affecting precipitation amounts and patterns are: topography, coastline orientation, direction of motion, speed and intensity of storm and extra-tropical weather systems. No one pattern could be found for any region to indicate a possible hurricane precipitation model. Charts show the general motions and patterns and those of selected storms. Staff MGA 10.6/17.

1957

941 Simpson, J.S.M. "Trade cumulus cloud groups: some observations suggesting a mechanism of their origin." Tellus, 9(1):33-44, Feb. 1957. figs. refs.

On a recent field trip to the western Caribbean, temperature gradients in surface layers over the trade-wind oceans were found and related to the presence of cumulus cloud groups. The cloud groups generally formed over and slightly downwind of warm spots which were several km in extent and 0.1-0.3°C in magnitude. Clouds were not found in the absence of warm spots although warm spots were occasionally encountered without clouds. Air circulation, similar to but weaker than that produced by heated land masses, is hypothesized to exist over oceanic warm spots. Observed differences in low-level moisture structure between clear and cloudy areas may be related with air circulation and its evolution with time. Some suggestions are made concerning the life cycles of trade cumuli. - Author (mod) MGA 8.10-225.

1957

942 Sumner, H.C. "North Atlantic tropical storms, 1956." Mariners Weather Log, 1(1):5-7, Jan. 1957. fig. Also his: "North Atlantic tropical storms, 1957." Ibid., 2(1):7-11, Jan. 1958. fig. Also his "North

1957 cont.

Atlantic tropical storms, 1958. Ibid., 3(1): 5-11, Jan. 1959. figs. Also his: "North Atlantic tropical cyclones, 1959." Ibid., 4(1):2-7. Jan. 1960. figs. DAS.

Development and progress of tropical storms over the North Atlantic, Caribbean Sea and the Gulf of Mexico during each year with paths shown on charts. - Staff MGA 12N-341.

1957

943 Tolefson, H.B. "Atmospheric temperature observations to 100,000 feet for several climatological regions of the northern hemisphere." U.S. NACA Technical Note no. 4169, 1957. Monthly temperature data observed at Thule, Barrow, International Falls, El Paso, San Juan, Wiesbaden and with ocean vessels (lat 34°N, long 164°E and lat 35°N, long 48°W) are shown for 1951 - 1955. Upper air temperatures are for 10 levels (850 - 10 mb). - Staff.

1957

944 U.S. Air Weather Service. "Weather message contents handbook." Air Weather Service (AWS) Manual, 105-2, pt. 2, Jan. 1957. Each section repaged. Included in same binder: Revisions, no. 1-6, dated 4 Jan. - 10 Oct. 1957. Supersedes AWS Manual 105-2, pt. 2, 1 Dec. 1955. DAS.

Detailed manual outlining contents of weather bulletins originating or transmitted on U.S. Air Force circuits in Zone 1 (Caribbean and South America). Transmissions include bulletins, facsimile charts, codes, list of stations transmitting, etc. Surface, upper air and airways data (and forecasts) are listed. Chart of Northern Hemisphere shows section included in each facsimile chart. - Staff MGA 11.7-15.

1957

945 U.S. Interdepartmental Hurricane Warning Conference. "Minutes of the Feb. 26 - 28, 1957 Conference, Miami, Fla." 1957. 28 p. DAS.

1957

946 U.S. Weather Bureau. "Hurricane circuit, WB PL 7021, Manual of operations." Rev. May 1957. 13 p. Mimeographed. DAS.

A manual for telecommunication transmissions on Hurricane Circuits in the southern States. Stations on various circuits (7061, 7062, and 7021) are listed with call codes. There are 44 Weather Bureau, 1 Civil Aeronautics, 1 U.S. Air Force, 1 Federal Civil Defense Administration and 8 U.S. Navy stations in Florida, Georgia, South Carolina, North Carolina, Alabama, Louisiana, Texas and Missouri. Staff MGA.

1957

947 U.S. Weather Bureau. "Hurricanes: a quick reference guide to synoptic charts of hurricanes that threatened or entered the United States, 1952 - 1956." Rev. June 1957. 44 p. charts. DAS.

The guide prepared in 1956 for 1954 - 1955 hurricanes has been expanded to cover all major hurricanes for 1952 - 1956 which occurred in the eastern United States, western Atlantic, West Indies, Gulf of Mexico and Caribbean. An index (44 p.) of charts for hurricanes crossing any given 5 in square of latitude and longtitude is provided. Surface and 500 mb charts for 6-hr periods covering: "Betsy" and "Flossy" (1956); "Able", "Baker", "Charlie" and "Fox", (1952); "Barbara", "Carol", "Dolly", "Edna" and "Florence" (1953) make up the bulk of the report. - Staff MGA 9.1-32.

1957

948 U.S. Weather Bureau. "Hurricanes and tropical storms in Gulf of Mexico 1875 - 1956." New Orleans, 1957. DAS.

Maps show the tracks of individual hurricanes and tropical storms in the Gulf of Mexico (1875 - 1956). - Staff.

1957

949 U.S. Weather Bureau. "Quantitative prediction of 36-hour hurricane movement. A preliminary report on its National Hurricane Research Project." West Palm Beach, Fla., 11 May 1957. 26 p. figs. DAS.

Report describes research at the National Hurricane Research Project Research Operation Base, West Palm Beach, Florida. The development of a quantitative prediction technique of hurricane movement for 18 and 36 hrs in advance is presented. Most of the work was accomplished during the period 23 April - 11 May 1957. The procedures used and the results obtained are given in detail and the results are tabulated. Numerous graphs are included to illustrate various phases of the investigation. Staff MGA 12L-386.

1957

950 U.S. Weather Bureau. National Hurricane Research Project. "Survey of meteorological factors pertinent to reduction of loss of life and property in hurricane situations." Progress report of work accomplished under P.L. 71, 84th Congress, 1st Session. Report no. 5, Mar. 1957. 87 p. tables. figs. refs. DAS.

A detailed and systematic summary of the latest available knowledge on hurricanes and their:1) destructive force, 2) regional frequency, 3) damage producing characteristics, 4) forecasting, 5) warnings and 6) storm surges. Analysis of data on

1957 cont.

frequency and damage pertains mainly to the coasts of the United States from Maine to Texas. Tracks, frequency diagrams and much other illustrative material is included. Staff MGA 8.10-23.

1957

951 U.S. Weather Bureau, Office of Climatology. "West Indian Hurricanes." Mariners Weather Log, 1(4):73-83, July 1957. figs. table.

West Indian hurricanes are tropical cyclones with winds of 65 kts or more. Four active regions of storm development are: the Atlantic east of the Lesser Antilles, the western Caribbean Sea, the Gulf of Mexico and the Atlantic east of southeastern Florida. Hurricanes move in the direction of the prevailing winds of the particular area. Their wind system is more or less circular, with a comparatively calm center. Its strongest winds are near the center and to the right of the track. In some of the largest hurricanes, the diameter of the area of destructive winds may be as much as 400 to 500 mi. In 1956 the average annual frequency of tropical storms was 7.9. Staff MGA 12N-311.

1957

952 Venezuela. Servicio de Hidrologia. "Instructivos elaborados por el Servicio de Hidrología. 1. parte. Meteorología." [Instructions for the Hydrological Service. pt. 1. Meteorology.] 2d ed. 1957. DAS.

1957

953 Veracruz, Mexico. Instituto de Meteorología Náutica. "Boletín Climático." [Climatic Bulletin.] v. 4, no. 32, 33, 35, and 38, Feb. - Mar, May - June, Aug. 1957. 5 pieces, 8 p. each. tables. DAS.

This bulletin contains short articles on various aspects of the weather, notes on weather events and on the normal climatic regime of Veracruz, Mexico and tide and solar lunar data for each day. Articles included are: Artificial rain (February 1957), Atmospheric physics (February 1957), Earth temperatures in geologic time (February - March 1957), International Geophysical Year (IGY) (March and August 1957), Instructions for observers (March and May, 1957), Geophysical research (May 1957) and Weather in astronomy and physics (May - June 1957). - Staff MGA 10.1-137.

1957

954 Wagner, N.K. "Description of a micrometeorological and oceanographic measurement program in conjunction with radio propagation tests over the Gulf of Mexico." Abstract only. In American Meteorological Society, National Meeting with Section of

1957 cont.

Meteorology, American Geophysical Union, 29 Apr. - 2 May 1957, Program. American Meteorological Society, Bulletin, 38:165, 1957.

In the spring of 1955, an over water measurement program was conducted by the Electrical Engineering Research Laboratory of the University of Texas about 35 mi off the coast of Louisiana on two oil drilling platforms in the Gulf of Mexico. The program was designed so that the resulting meteorological data would: 1) help the radio engineer to determine which atmospheric and sea surface variables affect the reflection of radio signals and 2) be of interest from a strictly micrometeorological standpoint. Meteorological data were obtained with a number of instruments ranging from standard 3-cup anemometers to the Crain micro-wave refractometer. Gulf wave heights were measured with a step gage, while the longer period variations were obtained by means of a surf beat gage designed and built by the Applied Physics Laboratory of Johns Hopkins University. Author (mod).

1957

955 Wagner, N.K. and Gerhardt, J.R. "Final report of meteorological and oceanographic results for 1955 Gulf of Mexico propagation tests." Texas Univ. Mar. 1957. 34 p.

1957

956 Waldrip, W.J. "Farming and ranching risk as influenced by rainfall, no. 3, Rio Grande Plain of Texas." Texas. Agricultural Experiment Station, Miscellaneous Publication, no. 241, Nov. 1957. 35 p. figs. refs. DAS.

Continuing a series of studies on rainfall conditions in various parts of Texas, this paper contains precipitation data for 30 stations in the Rio Grande Plain. For each station, there is a graphical presentation of: 1) annual total precipitation, 2) monthly mean precipitation and 3) a brief discussion of rainfall probabilities, persistence tendencies and seasonal distribution characteristics. Lengths of the records vary from 28 - 86 years. Effects of precipitation distribution upon farming practices are discussed in general terms. - Staff MGA 11.6-55.

1957

957 Weems, J.E. "Weekend in September." New York: Holt, Rinehart & Winston, Inc. 1957. 180 p. photos.

Account of the Galveston, Texas hurricane of 8 September 1900. This storm was

1957 cont.

responsible for the loss of 8,000 lives and is said to be the worst recorded disaster to hit the North American Continent. The book is written in a personal narrative style, based on numerous references. The writings of Isaac and Joseph Cline and Daisy Thorne Gilbert, who are the central figures of the narrative, were used extensively by the author. - Staff MGA 10.1-35.

1957

958 Wiewall, M. "Further observations of ionospheric drifts and related phenomena with spaced radio receivers." Puerto Rico. Univ. College of Agricultural and Mechanic Arts, Contract AF 19(122)-476, Study of Ionospheric Winds, Scientific Report no. 4, and Final Report, Jan. 1957. 167 p. figs. tables. refs. DAS.

Compilation of data on seasonal and diurnal height variations in ionospheric drift. Directions and speeds were obtained by vertical incidence pulse echoes at 2.33 and 4.57 mc using a tripartite receiver network at Mayagüez, Puerto Rico (February 1954 - summer 1956). Equipment is described and illustrated, computation techniques outlined and turbulence conditions analyzed. The method of "similar fades" has been replaced by the 6-point correlation method of Yerg (1955). - Staff MGA 10.1-274.

1957

959 Wilson, B.W. "Incipient wind-generation of ocean waves by a norther." American Meteorological Society, Bulletin, 38:399-404, 1957. figs. table. refs. "Paper presented 140th Nat. Meeting of AMS [American Meteorological Society], Oct. 1955. Oklahoma A. and M., Stillwater, Okla."

An analysis of the meteorological and oceanographic conditions encountered by the A.A. JAKKULA during a cruise on 6 March 1955 in the Gulf of Mexico east of Galveston during the passage of a "norther." Photographs of wave and squall conditions are included with synoptic and isochronal charts. The wind was from the south causing 4 to 5 ft swells of 5 to 6 sec period. The wind became calm about 1315 h, but with the advent of a North wind, ripples developed on the otherwise glassy southerly swells. Charts and nomograms are included. - Staff MGA 9F-187.

1957

960 Woods Hole Oceanographic Institution. "Meteorological and oceanographic research in tropical waters." Contract Cwb-9032, Periodic Status Report, 1 July - 30 Sept. 1956. Jan. 1957. 5p. Also Periodic Status Report, 1 Oct. - 31 Dec. 1956, Apr. 1957.

1957 cont.

8 p. refs. DAS.

Reports present results of observations of two cruises in the Caribbean taken by the CRAWFORD. A description is given of a method which would make use of a small surface search navigation radar on the CRAWFORD combined with a modified radiosonde transmitter on the balloon. Staff MGA 12M-1034.

1957

961 Woods Hole Oceanographic Institution. "Meteorological and oceanographic research in tropical waters." Contract Cwb-9032, Periodic Status Report, 1 Oct. - 31 Dec. 1956. Apr. 1957. 8 p. refs. For abstract see its "Meteorological and oceanographic research in tropical waters." Periodic Status Report, 1 July - 30 Sept. 1956. Jan. 1957.

1958

962 Ackerman, B. "Turbulence around tropical cumuli." Journal of Meteorology, 15(1):69-74, Feb. 1958. figs. tables. refs.

Analysis of cloud observations made in the Caribbean area during the winter of 1953 - 1954. Rapid fluctuations in airspeed experienced by an airplane have been used to define the area distribution of turbulence associated with a cumulus cloud. In the majority of clouds examined, the turbulence was not confined to the cloud but was distributed around it asymmetrically which appeared to be related to cloud shear. A mechanism by which the observed cloud turbulence pattern may form is described. - Author.

1958

963 Adem, J. "Auroras observed in Mexico and Cuba during the International Geophysical Year." International Geophysical Year, 1957/1958. Comité Nacional Mexicano, Results of the IGY in Mexico, Report no. 1:1-9, Dec. 1958. figs. table. DAS.

Aurora was observed September 1957 in northern Mexico (Guaymas at lat 28°N, and Hermosillo at lat 29°N). The top of the reddish veil was at an angle of 35° and rays reached 45° above the horizon. Another was observed on 23 September 1957 at several places in Cuba (orange-red to dark red) to a height of 25° above the horizon towards the north. A third was seen on 11 February 1958 at several places in Mexico and Cuba. Red and orange colors were observed in the arc which reached 45° at the upper boundary in Mexico and was 30° in Cuba. The same aurora was observed all over the United States throughout the night. In lower latitudes, it started later than at high latitudes and the lowest

1958 cont.

latitude where it was observed was at 19°07' N at Atzomoni, Mexico. - Staff MGA 10.10-94.

1958

964 Alaka, M.A. "Case study of an easterly jet stream in the tropics." Tellus, 10(1): 24-42, Feb. 1958. figs. tables refs.

Easterly current at 200 mb over the southern Bahamas and Florida is identified as a jet stream which had originated in middle latitudes and had travelled along the eastern periphery of an anticyclone situated over the southeastern United States. Properties of this current are studied and compared with those associated with middle latitude jet streams. It was found that horizontal and vertical wind shears near its axis are comparable with those observed near the usually much stronger middle latitude jet streams. The mechanism responsible for concentration of kinetic energy in this narrow current is shown to be independent of any temperature contrast between two air masses in the lower and middle troposphere. The current is shown to be maintained by pressure differentials and the continuous production and destruction of kinetic energy occur as a result of accelerations in laminar flow rather than by lateral or frictional stresses. Observed weather is found to be influenced by the resonance and interference of the upper jet stream with waves in the lower easterlies. - Author (mod) MGA 10.4-176.

1958

965 Alexander, C.S. "Geography of Margarita and adjacent islands, Venezuela." Univ. of California. Publications in Geography, 12(2):85-193, 1958. plates. figs. tables. refs. DAS.

Chapter 2 covers climate and weather of Margarita Island based on precipitation records at La Asuncion (1921 - 1940) which is 20 mi off the coast of Venezuela at the eastern edge of the arid zone of the Caribbean. These islands have a winter maximum of precipitation caused by troughs that break up the trades. On the continent there is a summer maximum with the driest season in spring and early summer. Causes are reviewed and examples of the seasons (1950 - 1952) are cited. Convective activity is stronger inland and on the larger islands, but does not appear on small islands in the prevailing easterlies. Staff MGA 10.4-280.

1958

966 Ballenzweig, E.M. "Formation of tropical storms related to anomalies of the long-period mean circulation." U.S. Weather Bureau. National Hurricane Research Project, Report 6, no. 21, Sept. 1958. 16 p. figs. ref. DAS.

By using composite charts of time averaged means, many details of the role of large scale circulation in influencing the generation of tropical cyclones are discussed. The formation of tropical storms is shown to be concentrated in five areas in the Atlantic and the longer period circulation features accompanying cyclogenesis in these areas is presented with the help of a series of charts containing anomalous features. Conditions favorable to the formation of tropical storms are found to differ among the different areas. The composite charts appear to be useful as guides in the preparation of long range forecasts of hurricane formation, once the mean circulation has been predicted. Author (mod) MGA 12N-280.

1958

967 Barton, J.C. and Stockhausen, J.H. "Time variations of the cosmic ray intensity in Jamaica." Philosophical Magazine, ser. 8 3(25):55-62, Jan. 1958. figs. refs.

A counter telescope has been used to study high energy radiation at lat 18°N. A barometric coefficient of -0.14±0.02 percent per mb was deduced from the semi-diurnal pressure variation. The average counting rate decreased on days of high geomagnetic activity, but simultaneously there appeared a large increase in the diurnal variation. Author (mod) MGA 9I-5.

1958

968 Battan, L.J. "Influence of the environment on the initiation of precipitation in tropical cumuli over the ocean." Tellus, 10(4):466-471, Nov. 1958. figs. refs.

Analysis of the likelihood of precipitation in cumulus clouds observed over the ocean in the vicinity of Puerto Rico. It is shown that the probability of rain in a cloud having a particular height depends on environmental conditions. The principal factors governing precipitation initiation are stability, vertical wind shear and depth of the moist layer. On the west side of polar troughs moving into the Tropics, these parameters have values which make precipitation likelihood small. Author (mod) MGA 10.7-264.

1958

969 Beltran, E. "Report on the Caribbean region." In UNESCO, Humid tropics research: Problems of humid tropical regions, Paris, 1958. pp. 25-42. DLC.

1958

970 Bjerknes, J. "Related fluctuations

1958 cont.

of tradewinds and northern climates." Geophysica, 6:169-177, 1958. fig. tables.

Article analyzes the implications of the meridional heat flux represented by a time change in the North Atlantic tradewinds. - Staff.

1958

971 Blair, W.B. "Analogs of Canal Zone climate in East Central Africa." Canal Zone Analogs. U.S. Quartermaster Research and Engineering Center. Environmental Protection Research Div., Technical Report, EP-90, June 1958. 24 p. maps. tables. refs. DAS.

The climate of East Central Africa is compared with that of Balboa Heights and Cristobal in the Canal Zone. Distributions of areas of analogy of climatic elements and combinations of these elements are shown on maps. Most of the study area is too hot and too dry for analogy with the tropical environment of the Canal Zone. No part of the study area has enough rainfall to be comparable with Cristobal. The one area that is closely analogous to Balboa Heights is the Congo Basin, W of long 30°E and S of lat 7°N. Highlands in Kenya, Uganda, and Ethiopia are the only areas which are too cool for analogy with either Canal Zone Station. Relative humidities in most of the desert and interior regions are too low for analogy. Areas with the greatest mean monthly precipitation have mean cloudiness conditions nearly analogous to the Canal Zone. Analogy of mean wind speeds with those in the Canal Zone is erratically scattered throughout East Central Africa. - Author (mod) MGA 10.2-317.

1958

972 British Caribbean Meteorological Service. "Annual Report, 1957." Port-of-Spain, Trinidad, 1958. 19 p. [The 6th annual report of the Consolidated Meteorological Service (begun in 1951), for the Caribbean area.] DAS

The report consists of a summary of the work of the department during 1957, details of the various activities of the different sections and a survey of the year's work in the several colonies (Bahamas, Jamaica, Trinidad and Tobago, Antigua, Barbados, British Guiana, British Honduras, Dominica, Grenada, Montserrat, St. Kitts, St. Lucia, St. Vincent, Virgin Islands, etc.). A list of hurricanes with descriptions and a list of members of the staff and where they are located are included.
Staff

1958

973 Bryson, R.A. and Lahey, J.F. "March of the seasons." Wisconsin. Univ. Dept. of Meteorology, Contract AF 19(604)-992, Final Report, Mar. 1958. 41 p. figs. charts. tables. refs. Appendix of list of Scientific Reports under the Contract. DWB.

Annual variations of pressure, circulation indices and synoptic patterns are discussed with respect to the 'natural seasons.' Singularities in annual variation of synoptic patterns and indices are discussed. 'Singularities' are defined as anomalies in large or medium scale seasonal patterns of combined weather elements. These singularities are illustrated for the Midwest, Caribbean and Arizona as well as for the United States. - Staff MGA 10.10-234.

1958

974 Chambers, J.V. and Blaut, J.M. "Analogs of Canal Zone climate in Middle America. (Canal Zone Analogs, No. 1)." U.S. Quartermaster Research and Engineering Center. Environmental Protection Research Div., Technical Report, EP-87. Apr. 1958. 20 p. charts. tables. DAS.

Climatic analogs of Cristobal and Balboa Heights in the Panama Canal Zone and other places in Central America, Mexico, Caribbean and southern United States are shown on large color charts. A general description of the climate of Middle America and the Canal Zone are given. Graphs of the annual course of temperature, precipitation, rainy days, sunshine, relative humidity and winds are given for both Canal Zone stations. Analog maps cover mean temperature of the warmest and coldest month, mean maximum and minimum temperature of warmest and coldest month, mean daily range of warmest month, mean annual precipitation, mean precipitation of wettest month and number of wet months, humidity of driest month, cloudiness and wind speed of wettest month. Several maps show combination of elements in analogs. - Staff MGA 10.4-9.

1958

975 Clark, J.R. and French, W.O. "Some interesting aspects of a subtropical depression." Monthly Weather Review, 86: 186-196, 1958. figs. refs. Comment by Eugene W. Hoover. Ibid., 86:333-334. 1958.

During the period 18 - 28 May 1958, a subtropical depression formed in the Caribbean Sea and moved NNE and parallel to the east coast of the United States. The low pressure became extra-tropical and continued northward west of Greenland with many interesting features. It gave heavy rains to the Miami area causing some local

1958 cont.

flooding and it had all the prospects of becoming a full scale hurricane but the winds never reached storm speed (greater than 38 mph) until after the depression became extra-tropical. - Author (mod) MGA 10.11-159.

1958

976 Coen, P.E. "Climas de Costa Rica." [Climates of Costa Rica.] Ciudad Universitaria, San José, Costa Rica. 16 Apr. 1958. 13 p. map. "Conference given in Faculty of Sciences and Letters, Section of Geography and History of University of Costa Rica." DAS.

General remarks on climate, solar energy, atmospheric phenomena, observation stations, macro- and microclimate. Additional comments on climatic maps for Costa Rica showing thermal provinces, rainfall limits, hydrologic balance, evapotranspiration and limits of rainfall regime which appear in the Statistical Atlas of Costa Rica (1949) are made. The treatment leans heavily on Köppen, but no actual data or maps are presented in this report. Staff MGA 12.4-291.

1958

977 Colón, J.A. "Study of surface winds in the vicinity of Mayagüez, P.R." San Juan, Puerto Rico, U.S. Weather Bureau, Jan. 1958. 11 p. figs. tables. DAS.

Analysis of wind regime at an airport on the west coast of Puerto Rico for the purpose of establishing an atomic energy plant. Records for February 1950 - 1957 are used and aerological observations made at San Juan are analyzed by seasons. Easterlies comprise 92 percent, 86 percent, 98 percent and 89 percent of the winds at 5,000 ft in the 4 respective seasons, but at 30,000 ft, westerlies occur 53 percent of the time, and at 40,000 ft they occur 64 percent of the time (in summer). Nocturnal flow, temperature and rainfall means and extremes are also considered. - Staff MGA 11.11-255.

1958

978 Crutcher, H. "Upper wind distribution statistical parameter estimates." U.S. Weather Bureau, Technical Paper no. 34, 1958. 59 p.

Seasonal wind parameters are shown at 850, 700, 500, 300 and 200 mb for 108 stations all over the Northern Hemisphere (1948 - 1953). - Staff.

1958

979 Davis, W.R. "1957 hurricane season." Weatherwise, 11(1):17-19, 36-37, Feb. 1958.

Hurricane season in 1957 compared with past 15 - 20 yrs. "Audrey" (25 - 27 June), "Bertha" (6 - 11 August), "Carrie" (6-21 September), "Debbie" (5 - 7 September), "Esther" (12 - 19 September) and "Frieda" (20 - 26 September) are described and paths shown on chart. "Carrie" was charted over the longest track on record (6,000 mi) from origin near African coast to Bermuda and across the Atlantic to Ireland. Staff MGA 12N-324.

1958

980 Di Loreto, E.A. and Hamada, M. "Cold low over southeastern United States, July 1 - 6, 1958." Monthly Weather Review, 86: 277-283, 1958. figs. refs.

During the summer months, anticyclonic circulation persists at the surface over the southeastern United States. The airmass is usually either convectively unstable or in the process of becoming so, due to strong insolation and the availability of moisture from the Gulf of Mexico and the Atlantic Ocean. Because frontal systems and surface cyclonic circulation are lacking, showers and thunderstorms occurring in this airmass have been attributed to release of conditional instability by surface heating. Studies by Byers and Rodebush indicate that thermal instability, though a necessary condition, is not in itself sufficient cause for the development of widespread cloudiness and thunderstorm activity. Baum's study indicated that occurrence of thunderstorms in Florida cannot be determined purely from the standpoint of thermodynamics. This study explains, on the basis of dynamically induced convergence, a cloud and precipitation pattern that developed with the upper cold low pressure circulation over the southeastern United States, 1 - 6 July 1958. - Author (mod) MGA 10.7-156.

1958

981 Douglas, M.S. "Hurricane." New York: Holt, Rinehart & Winston. Inc., 1958. 393 p. photos. refs.

Popular account of hurricanes and their devastation along the coasts of the United States from Miami to Texas, and in the West Indies from the earliest historical records to 1957. Gives in chronological order, highlights from newspaper accounts of hurricanes, shipwrecks, scientific article on hurricanes from Redfield and Esky to Riehl and Simpson, books on hurricanes by Reid, Cline, Tannehill and conversations with the research and operational personnel of the Hurricane Research Project at West Palm Beach, Florida, and many others. - Staff MGA 10.6-23.

1958

982 Gentilli, J. "Geography of Climate."

1958 cont.

2d ed. rev. Perth: Univ. of Western Australia Press, 1958. 172 p. figs. maps. tables.

Various climatic elements are treated in separate chapters. Tropical climatology and meteorology are included. - Staff.

1958

983 Gentry, R.C. "National Hurricane Research Project 1957 season." Mariners Weather Log, 2(5):145-148, Sept. 1958. figs.

On the basis of data collected by research flights during the 1957 season, the following tentative conclusions for forecasting of hurricanes have been reached: 1) hurricanes move in the direction and with the speed of the mean winds inside the strong circulation of the storm, 2) winds measured at flight level by aircraft can be used to describe the low level wind field, 3) air circulations around the hurricane in the middle troposphere interact with the circulation of the storm in such a manner as to put a damper on the intensity of the hurricane and 4) interactions between circulations at high and low elevations in the atmosphere determine whether a disturbance can develop into a hurricane. Staff MGA 12N-326.

1958

984 Gentry, R.C. "Re-evaluation of the problem of predicting hurricane movement." In Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958. Proceedings, American Meteorological Society, 1958. sec. H1, pp. 1 - 8, figs. refs. DAS.

Along with the review of forecasting literature, the so-called 'Basic Current' movement is re-examined as part of the current knowledge of factors influencing hurricane movement. The activities and results of the National Hurricane Research Project are considered. The U.S. Weather Bureau hurricane forecasts during 1955 - 1957 are reviewed and a classification of accuracy of forecasts is given. - Staff MGA 12L-527.

1958

985 Gherzi, E. "Forecasting of tropical cyclones." Loyola Univ., New Orleans, La. 1958. 86 p. fig. photos. charts.

1958

986 Gilman, C.S. and Myers, V.A. "Winds and pressures in hurricanes." In Conference on Coastal Engineering, 6th, Univ. of Florida, Dec. 1957. Proceedings, 1958. pp. 1-18. figs. refs. DAS.

Information on hurricane surface winds, pressures and rainfall are summarized. Also factors that have caused past hurricanes in

1958 cont.

the United States are discussed. - Staff MGA 12.2-84.

1958

987 Goldie, N., et al. "Upper air temperature over the world." Great Britain. Meteorological Office, Geophysical Office, Geophysical Memoirs 13, M.O. 631a, 1958. 228 p.

Includes upper air temperature data for 1941 - 1952 at 700, 500, 300, 200, 150 and 100 mb levels. Vertical cross-sections for selected stations and meridians, charts of minimum and mean temperature at the tropopause and charts of mean pressure at the tropopause are shown. - Staff.

1958

988 Great Britain. Meteorological Office. "Tables of temperature, relative humidity and precipitation for the world. Part II. Central and South America, the West Indies and Bermuda." London, 1958. DAS.

Contains monthly and annual tabular summaries for numerous stations as follows: temperature (°F)-mean daily, absolute maximum and minimum and mean of highest and lowest; relative humidity-mean at 0830 and 1430 in percent of observations; precipitation (in)-means, maximum in 24 hrs and mean number of days with rain $\geq$ 0.04 in. Period of record ranges from 24 to 70 years. Staff.

1958

989 Grimes, A.E. "Bibliography on the climate of Cuba." U.S. Weather Bureau, July 1958. 58 p. 224 items with abstracts. DAS.

Bibliography includes items on cloud seeding and hurricanes in the Cuba area. Articles are listed alphabetically by author and an alphabetical subject index is appended. Items are briefly annotated. Staff MGA.

1958

990 Gutnick, M. "Climatology of the trade-wind inversion in the Caribbean." American Meteorological Society, Bulletin, 39:410-420, 1958. figs. tables. refs.

A climatological analysis of the Caribbean trade wind inversion from radiosonde observations made twice daily (0300 and 1500 GCT) for a period of 3 yrs during January, April, July and October at 6 stations in the Caribbean. The seasonal, spatial and diurnal variations of the following parameters of the trade wind inversion were analyzed: frequency, topography (height), thickness (vertical extent), strength (temperature difference between the base and top of the inversion), moisture distribution through the inversion

1958 cont.

and moisture content of the air above and below the inversion. The trade wind inversion occurs most frequently during winter and least frequently during summer or autumn. - Staff MGA 11.10-338.

1958

991 Haggard, W.H. "Birthplace of North Atlantic tropical storms." Monthly Weather Review, 86:397-404, 1958. figs. refs.

Adjusted tracks of North Atlantic hurricanes and tropical storms for 72 yrs provide a consistent set of data for examining the birthplaces of these storms. For 59 yrs (1899 - 1957), portions of the adjusted storm tracks from the point of origin of first closed circulation to the point of first hurricane intensity are presented. The origins show a regular seasonal shift eastward and later westward across an area east of the Lesser Antilles. The data support Mitchell's conclusion that the eastern Caribbean is not a birthplace of tropical storms. The results are discussed in relation to the available observational network in hurricane breeding grounds. Author (mod) MGA 10.10-237.

1958

992 Haggard, W.H. and Cry, G.W. "Climatological index for North Atlantic tropical storm activity." In Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958, Proceedings, American Meteorological Society.1958. sec. A1, pp. 1-10, figs. tables. refs. DAS.

A simple intensity index based on maximum wind velocities is demonstrated and discussed. Tabulated daily data (1899 - 1958) are available for modification of the index as required. - Staff MGA 12.2-300.

1958

993 Harrington, E.L. "Observations on the appearance and growth of tropical cumuli." Journal of Meteorology, Boston, 15(2):127-130, Apr. 1958. figs. tables. refs.

During studies of trade wind cumulus in the vicinity of Puerto Rico during the winter of 1953 - 1954 and autumn 1954, the following observations were made: large trade wind cumulus were found daily within about 30 mi of the north shore of the island and within about 60 mi of the south shore and clouds developed in groups with some occurring in lines and others isolated. A study of the rate of ascent and descent of cloud tops based on time lapse photography indicated that the rise of cloud tops was not continuous, but in steps. Growth rate computations for radar

1958 cont.

echoes in New Mexico, Ohio and near Puerto Rico and for cloud tops in New Mexico and Puerto Rico reveal that growth rates of over-water trade wind cumulus are considerably less than those over the United States. Staff MGA 10.6-256.

1958

994 Hartwell, F.W. "Forty years of the Weather Bureau: the transition years." Foreword by F.W. Reichelderfer. Handset and printed by the author at Long Train Studios, Bolton, Vermont, 1958. 173 p. illus. refs. DLC.

The author recounts many incidents on the transitional period of the U.S. Weather Bureau from his entrance into government service (1900) as a printer at Lincoln, Nebraska to his retirement (1935). During this period, he served as Meteorologist in Charge (MIC) of a special hurricane station at Cienfuegas, Cuba (1904), Key West and Sand Key, Florida, Richmond, Virginia (1908), San Juan, Puerto Rico, (1909 - 1919, 1930 - 1935) and Burlington, Vermont (1919 - 1930). He retired at the age of 62 (compulsory after 15 years of service in the Tropics) to spend a quarter of a century in Vermont. A chronology of hurricanes in Puerto Rico and a glossary of meteorological terms are appended. Staff MGA 9.11-36.

1958

995 Hawkins, H.F. and Gentry, R.C. "Case studies of tropical cyclogensis." In Technical Conference on Hurricanes, Miami Beach, Fla., 12 - 22 Nov. 1958. Proceedings, American Meteorological Society, 1958. sec. G3, pp. 1-8. figs. DAS.

Hurricanes "Daisy" and "Becky" are considered. It was found that the latter moved faster than wind speeds within 100 mi of the storm center. Ventilation probably contributed to the lack of intensification. Staff MGA 12.2-301.

1958

996 Hilleary, D.T. "National Hurricane Research Project aircraft instrumentation." In Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958. Proceedings, American Meteorological Society, 1958. sec F6, pp. 1-18. figs. DAS.

The instrumentation for aircraft used in the National Hurricane Research Project was selected by a special advisory panel on instrumentation. The design of the instrumentation system was to minimize data reduction time and manpower. Details of the instrumentation are given. - Staff MGA 12N-330.

1958

997 Hiser, H.W. "Radar analysis of two severe storms in South Florida." American Meteorological Society, Bulletin, 39:353-359, 1958.

Plan position indicator (PPI) and range-height indicator (RHI) photographs are analyzed and compared. The significant features of the storms are compared with the findings of other researchers in different parts of the United States - Staff.

1958

998 Hiser, H.W. "Radar estimates rainfall." Sea Frontiers, 4(3):147-152, Aug. 1958. figs.

Describes studies carried out by the Marine Laboratory of the University of Miami under the sponsorship of the U.S. Weather Bureau to explore various methods of estimating flood producing rains through the use of integrated or time exposed photographs. Scientific data and findings are now available from recent radar experiments (1955 - 1957). During a 3-hr period on 27 February 1957, a total area of 31,500 sq mi in southern Florida was observed. Rain gage readings were verified with the radar photo-integrations. The manner in which rainfall is seen and recorded by radar is explained and the Integrator Cameras are described. Illustrations include a Photo-Electronic Densitometer and a Radar Antenna located at the University of Miami. An integrated radarscope photograph showing rainfall in the vicinity of Miami on 27 February 1957 and an 'iso-echo density' map near West Palm Beach for 27 February 1957 are shown. - Staff MGA 14B-20.

1958

999 Hoose, M. and Levine, R. "Forecasting strong winter winds over Puerto Rico and the Virgin Islands." Monthly Weather Review, 86:425-434, 1958. figs. tables. refs.

Wintertime synoptic situations leading to the occurrence of strong surface winds over coastal waters of the Dominican Republic, Puerto Rico, Virgin Islands and the northern Leeward Islands are discussed. Six-hourly average wind speeds for oceanic areas adjacent to Puerto Rico are obtained from ship reports and related to surface pressure gradient. Onsets of surface winds of 20 kts or greater are found to follow the crossing of the East Coast of the United Stated by a migratory anticyclone with above critical central pressure, or the occurrence of strong trade winds above the gradient level at San Juan, Puerto Rico as a nonmigratory anticyclone intensifies. Results are combined with objective forecasting rules for predicting the onsets

1958 cont.

of strong winds 12 to 24 hrs in advance. Author MGA 11.3-85.

1958

1000 Hoover, E.W. "Suggested explanation for some irregular moving tropical cyclones." Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958. Proceedings, American Meteorological Society, 1958. sec H3, pp. 1-12.

1958

1001 Hubert, L.F. "Analysis aids for the American Tropics." Monthly Weather Review, 86:201-218, 1958. figs.

To improve upper air analysis in the American tropics where data are inadequate, maps are drawn for mean thicknesses between constant pressure levels. Also includes a discussion of analysis procedure. - Staff.

1958

1002 Ivanov, N.N. "Atmosfernoe uvlashnenie tropicheskikh i sopredel'nykh stran zemnogo shara." [Humification of tropical and adjacent countries of the world.] Akademiia Nauk SSSR, Geograficheskoe Obshchestvo SSSR Zapiski, n.s., v. 18., Leningrad, 1958. 311 p. figs. maps, tables.

An elaborate study with extensive tables of climatic data of the rainfall evaporation and moisture balance of the Tropics. - Staff.

1958

1003 Johnson, W.O. "Winter minimum temperatures in peninsular Florida: summary of 20 seasons, 1937/38 through 1956/57." Federal-State Frost Warning Service, Lakeland Fla., 1958. 70 p. Almost entirely tables.

1958

1004 Jordan, C.L. "Estimation of surface central pressures in tropical cyclones from aircraft observations." American Meteorological Society, Bulletin, 39:345-352, 1958.

1958

1005 Jordan, C.L. "Mean soundings for the West Indies area." Journal of Meteorology, 15(1):91-97, Feb. 1958. figs. tables. refs.

Mean aerological data for the West Indies area have been prepared from 10-yr records for 3 stations. Mean monthly height, temperature and relative humidity data are tabulated for constant pressure surfaces. More detailed information, including density, potential temperature and specific humidity, is shown for the mean annual and the mean 'hurricane season' soundings. Data are compared with those previously presented and some interesting climatological features discussed. Author MGA 10.1-140.

1958

1006 Jordan, C.L. "Vertical profiles of wind velocity in tropical cyclones." Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958. Proceedings, American Meteorological Society, 1958. sec. E2, pp. 1-6.

Discussion is based on radar wind (rawin) observations in the lower 20,000 ft in Okinawa. Increase of wind speed with height in the lower 2,000 ft can be more than 50 kts in the first 1,000 ft. The wind profiles show complex vertical variations. - Staff.

1958

1007 Keiderling, S.F. "Hurrikane Daisy und Fifi im Spiegel von Kapitänsberichten." [Hurricanes "Daisy" and "Fifi" according to ships' captains' reports.] Wetterlotse, no. 137:225-236, Oct. 1958. figs. tables.

These reports are based upon close-in observations of hurricanes and are accompanied by graphs. - Staff MGA 12.2-302.

1958

1008 Kühlbrodt, E. "Die Höhenwinde über dem tropischen und südlichen Atlantischen Ozean (Messungen der Deutschen Seewarte bis 1939 eingeschlossen.)" [Upper winds over the tropical and southern Atlantic Ocean (including measurements made by the Deutsche Seewarte up to 1939.] Deutsche Atlantische Expedition (Meteor), [German Atlantic expedition (Meteor).] 1925 - 1927. Scientific Report no. 16, pt. 1, Berlin, 1958. 168 p. figs. charts. tables. Also: Abschnitt B, Weitergehende statistische Bearbeitung für ausgewählte Felder. [Pt. B, Further statistical analysis for selected areas.] Ibid. pp. 93-168, 1958. figs. charts. tables.

Results of 7,000 pilot balloon ascents are presented in tabular and graphic form. Staff.

1958

1009 Lahey, J.F. "On the origin of the dry climate in northern South America and the southern Caribbean." Wisconsin. Univ. Dept. of Meteorology, Contract AF 19(604)-992, Scientific Report no. 10, Feb. 1958. 290 p. figs. diagrs. photos. maps. tables. refs. DAS.

Study (doctoral dissertation) of broad weather singularities in the Caribbean (southern dry zone) and in northern South America. The causes of dry conditions are studied, and previous suggestions critically reviewed (i.e., cold water hypothesis, atmospheric motions and topographic description). Frequency of rain by months, evaporation, wind and upper air data are analyzed and shown graphically on maps and

1958 cont.

in tables. - Staff MGA 9.9-21.

1958

1010 Ligda, M.G.H. "Use of radar for hurricane observation." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 141-155. figs. refs. DAS.

Radar is used to determine position of the spiral bands, the location of the apparent center of the storm and the general extent of precipitation. The propagation of radio energy is described. An analysis of the hurricane echo includes a study of banded structure, structure near the 'eye' and motion of small precipitation areas. A well planned network of surface stations in the Caribbean area would be helpful in determining location and providing surveillance of storms between reconnaissance flights. - Staff MGA 13.5-570.

1958

1011 Ludlum, D.M. "Snowfall in Florida." Weatherwise, 11:55, 67, 1958.

Records indicate that Florida experiences measurable snow (up to 5 in. in depth) about once every 50 years and flurries about every 5 years on the average. This is one of the few places in the world where snow falls south of lat 30°N. - Staff.

1958

1012 Martin, R.H. and Bucci, A. "Comparison of two redeveloping Texas lows, January 1958." Monthly Weather Review, 86:29-40, 1958. figs. refs.

Two major cyclonic storms causing torrential rain, snow or cold waves formed at almost the same spot (near Brownsville, Texas) on 5 January and 12 January 1958. The storms followed different courses toward Newfoundland and produced different weather patterns as shown by synoptic charts (sea level, 500 mb and 1000 - 500 mb thickness). In the first storm, the jet stream was deep and in the second it was broad and shallow. A discussion of the developments and features of each day's charts is presented to show similarities and differences. - Staff MGA 10.4-189.

1958

1013 Matano, H. "On the synoptic structure of Hurricane Hazel, 1954, over the eastern United States." Meteorological Society of Japan, Tokyo, Journal, ser. 2 36(1):23-31, Feb. 1958. figs. tables. refs.

The synoptic structure of Hurricane "Hazel" (1954) over the eastern United States is examined from the view point of Namekawa-Aoki's theory and of Namekawa-Sekioka's hypothesis. The analysis shows that this hurricane had the same structure

1958 cont.

as typhoons striking the Japanese islands. "Hazel" was composed of main and secondary centers, and later formed a complex system with an extratropical cyclone formed on a pre-existing front. - Author (mod) MGA 10.3-233.

1958

1014 Miller, B.I. "Rainfall rates in Florida hurricanes." Monthly Weather Review, 86:258-264, 1958. figs. refs.

Hourly rainfall amounts from 16 hurricanes are plotted relative to the center of the storm to obtain the mean areal rainfall rates. The rainfall ahead of the center is greater than that to the rear, but the differences in rates between the right and left sides are not large. Frequency distributions of various hourly amounts are tabulated for stations within about 100 mi of the center. The latent heat of condensation is calculated from the mean areal rainfall data and is found to be about $6x10^{26}$ ergs per day. - Author (mod) MGA 10.11-163.

1958

1015 Miller, B.I. "Three-dimensional wind structure around a tropical cyclone." U.S. Weather Bureau. National Hurricane Research Project, Report no. 15, Jan. 1958. 41 p. figs. refs. DAS.

Divergence, vertical motion and vorticity in and around an Atlantic hurricane in layers of 1-3, 3-6, 6-10, 10-12.5 and 12.5-16 km above sea level are presented in numerous charts. Data south of lat 35°N (from "Hazel", (1954); "Connie", "Diane", "Ione" and "Janet" (1955) and "Betsy" (1956) were tabulated. A total of 1,047 observations at 6 km and by 20 squares of latitude and longitude relative to the center of the storm were obtained. Methods of determining mean wind for a layer, areal means, etc., are discussed and sources of error analyzed. Charts show tangential speed, radial motion, radial motion relative to center, mean wind field, mean divergence and vertical motion in the several layers. Cross sections and profiles are shown graphically and results support Riehl's and Simpson's models. Staff MGA 10.4-197.

1958

1016 Morgan, J.P., Nichols, L.G. and Wright, M. "Morphological effects of Hurricane Audrey on the Louisiana coast." Louisiana. State Univ. Coastal Studies Institute, Contract N7 onr 35608, Technical Report no. 10, 1 June 1958. 53 p. figs. tables. refs. DAS.

Coastal morphological changes resulting

1958 cont.

from hurricane "Audrey", which struck the coast of southwestern Louisiana in June 1957, were influenced by the coastal characteristics and offshore hydrography of the region. Storm 'tides' of hurricane "Audrey" overwhelmed the beaches and resulted in reworking and spreading of their sediments. As an immediate aftermath of the storm, a zone of exhumed marsh was left between the mean Gulf of Mexico level shoreline and the beach sediments. In the western part of the storm-affected region, where the shell-sand beach ridge is more massive, inundation was less extreme, and hurricane effects were quite similar to those observed in association with Atlantic coast hurricanes. The most significant changes resulting from hurricane "Audrey" are directly derived from disturbance of the beach profile through destruction and spreading of beach deposits. Author (mod) MGA 12N-334.

1958

1017 Mueller, E.A. "Climatic variations in raindrop-size distributions." Weather Radar Conference, 7th, Miami Beach, Fla., Nov. 1958. Proceedings, sec. B. pp. 29-32, 1958. tables.

Preliminary results are presented on differences and similarities of raindrop size distribution in Florida and Illinois. At the same rainfall rate, fewer but larger drops occur in Illinois than in Florida. Staff.

1958

1018 Musgrove, R.H. "Flood of June 9, 1957, at Perry, Florida." Florida. Geological Survey, Information Circular, no. 17, 1958. 12 p. figs. DAS.

A tropical disturbance on 7 - 8 June 1957 in the Gulf of Mexico brought heavy rains to the San Pedro Bay swamp areas, causing streams in the vicinity of Perry, Taylor County, Florida, to flood on 9 June 1957. Data on the rainfall that accompanied the storm and peak flows of Spring and Pimple creeks in Perry are presented and discussed. A description of the general features of the floods are given. - Staff MGA 10M-636.

1958

1019 Namias, J. "Forms of the general circulation as related to hurricane genesis and path." In Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958. Proceedings, American Meteorological Society, pp. 1-11, 1958. sec. A2, figs. refs. DAS.

Anomalous forms of the general circulation and frequency and life history of storms. Clues for predicting hurricanes

1958 cont.

well in advance are suggested. Examples of a numerical 5-day mean forecast of the 500 mb circulation pattern are given. - Staff MGA 12L-187.

1958

1020 O'Conner, J.F. "Weather and circulation of January 1958, low index with record cold in southeastern United States." Monthly Weather Review, 86:11-18, 1958.

Features of the general circulation index cycle, cyclone and anticyclone tracks, and unusual conditions in the tropical Pacific and Gulf of Mexico are discussed and supported by charts, graphs, and maps. In the Caribbean Swan Islands, 3 'northwaters' were reported in January 1958, due to a depression of the Western Hemisphere jetstream south of its normal location. Staff.

1958

1021 Palmén, E.H. "Vertical circulation and release of kinetic energy during the development of hurricane Hazel into an extratropical storm." Tellus, 10(1):1-23, Feb. 1958. figs. tables. refs.

The thermal structure of the atmosphere over the eastern and Gulf States of the United States on 15 October 1954. During this time, tropical hurricane "Hazel" entered the American continent and was transformed into an extratropical cyclone of great intensity. The field of divergence and vertical velocity was determined from the horizontal wind field at different levels for 15 October (1500 GCT). Some general conclusions are made concerning the budget of kinetic energy in the whole Northern Hemisphere considering the net effect of the disturbances in the westerlies, the mean meridional circulations, the mean meridional flux of kinetic energy and the frictional dissipation. - Author (mod) MGA 10.3-234.

1958

1022 Palmén, E.H., Riehl, H. and Vuorela, L.A. "On the meridional circulation and release of kinetic energy in the Tropics." Journal of Meteorology, 15:271-277, 1958. figs. tables.

Data from 47 stations between lat 8°N - 36°N for December 1950 - February 1951 and December 1951 - February 1952 (for 1,000, 950, 900, 800 and 700 mb) was compiled. The zonal, meridional and vertical flows of absolute angular momentum associated with mean meridional circulation and large scale eddies in the trade wind belt were determined. - Staff.

1958

1023 Portig, W.H. "Frontdurchgang in Mittelamerika." [Frontal passage in Central America.] Meteorologische Rundschau, 11(4):112-116, July/Aug. 1958. figs. tables. refs.

Cold fronts penetrate into Central America and alter the wind structure, reduce the daily variation of temperature and wind direction and cause showers and thunderstorms. Normally they are followed by a high pressure area over the Gulf of Mexico which produces a north wind opposite to the pressure gradient. A cold front passage in San Salvador in January is described with the aid of a synoptic map. Graphs of wind direction, temperature and numerical data on wind directions and speeds at elevations from 0-3800 m in San Salvador-Ilopango are presented. The deviation of the north wind from the pressure gradient, the complicating role of air mass, change in frontal analysis, distribution of cold fronts in Central America, etc., are discussed. - Author (mod) MGA 2.2-315.

1958

1024 Portig, W.H. "Nortes (Norder) und ihre Vorhersage mit Bordmitteln." [Prediction of northers aboard ship.] Seewart, 1958. pp. 159-164.

Northers (Tehuantepecers) are described and it is shown how they can be forecasted on board ship with daily weather maps. - Staff.

1958

1025 Ramage, C.S. "Hurricane Development." Hawaii. Univ. Institute of Geophysics, Meteorology, Contract No. AF 19(604) 1942. Scientific Report no. 3, June 1958. 30 p. figs. table. refs. DWB M(055)H389sc.

1958

1026 Riehl, H. and Byers, H.R. "Flood rains in the Boconó Basin, Venezuela." Prepared for R.J. Tipton Associated Engineers, for the Ministry of Public Works, Venezuela, 1958. 57 p. figs. table.

A streamline and aerological analysis of weather and wind data since 1952 is used to determine the weather conditions responsible for floods. Theoretical computations for a number of tropical cyclones agree with rainfall and stream flow data. - Staff.

1958

1027 Rodewald, M. "Bahnen der tropischen Wirbelstürme." [Paths of tropical cyclones.] Seewart, 19(2):52-64, Apr. 1958. figs.

Basic rules for determining hurricane motion are developed. Schematic diagrams and an example showing the structure and movement of hurricane "Carrie" (1957) in relation to the general synoptic pattern.

1958 cont.

Staff MGA 11.3-132.

1958

1028 Rodewald, M. "Die Inselwolke." [The island cloud.] Wetterlotse, 128:61-64, 1958. fig.

The term 'island cloud' describes the tropical convective cloud formation over sun heated islands as a result of condensation from rising warm air. - Staff.

1958

1029 Rodewald, M. "Wetterstörungen im karibischen Passatgebiet." [Weather disturbances in the Caribbean trade region.] Wetterlotse, 136:211-215, 1958.

1958

1030 Romer, E. "Westindische Orkane und hölzerne Segelschiffe." [West Indian hurricanes and wooden sailing ships.] Seewart, 19(2):49-52, Apr. 1958. fig. ref.

General description of a voyage by sailing ship through a hurricane off the east coast of the United States in September 1908. This is the only case known to the author in which one of several German wooden ships made the trip from New Orleans to Bremen regularly between the beginning of the century and World War I (invariably during the hurricane season) and encountered a hurricane. - Staff MGA 12N-339.

1958

1031 Schuuring, C. "Atoomexplosies en weersgesteldheid." [Atomic explosions and weather conditions.] Hemel en Dampkring, 53(7):139-140, July 1955. fig.

Summary of studies on the relationship between atomic explosions and weather, especially the possible effect of atomic explosions upon the incidence of hurricanes. Mention is made of the study of Lee Harris, and a map shows the paths of the 1954 hurricanes in the Caribbean. - Staff MGA 12N-292.

1958

1032 Scott, J.R. "Essay on low-latitude wind analysis." Royal Meteorological Society, Quarterly Journal, 84:166-171, 1958. figs. Commented on by C.G. Palmer in Royal Meteorological Society, Quarterly Journal, 84:286-287. 1958. Reply in Royal Meteorological Society, Quarterly Journal, 84:467, 1958.

Author prefers pressure analysis to streamline analysis for predicting equatorial conditions. - Staff.

1958

1033 Shinners, W. "Tropical storm weather." Mariners Weather Log, 2:110, 1958.

1958

1034 Sifontes, E. "Del Orinoco al Ávila." [From the Orinoco to the Ávila peak.] Barcelona, Sociedad Alianza de Artes

1958 cont.

Gráficas, 1958. 26 p.

Brief notes on microclimate of Caracas 21 May - 1 June 1957. Data are tabulated and summarized. - Staff.

1958

1035 Sihvonen, Y.T., Majkowski, R.F. and Slater, W. "Presentation of solar radiation data obtained by a spectroheliometer." Solar Energy, 2:21-25, 1958. figs.

Data taken near Miami (February 1954 - August 1956) gives information concerning the approximate solar power and energy distribution curves, effects of seasons, time of day, meteorological conditions, etc. - Staff

1958

1036 Simpson, J.S.M. "On the structure of the trade wind moist layer." Papers in Physical Oceanography and Meteorology, 13:2, 1958. 47 p.

1958

1037 Simpson, J.S.M. and Riehl, H. "On the dynamics and energetics of the hurricane area." In Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958. Proceedings, American Meteorological Society, 1958. sec. D5, pp. 1-3. DAS.

A dynamic model of the lower inflow of a hurricane is presented. It is shown that maintenance of central pressures (about 963 mb) by moist adiabatic ascent requires about 12.5° increase of the equivalent temperature above the mean tropical subcloud air. This is tested by calculation. Rain and storm efficiency and the role of convection bands are considered and the results are compared with those provided by aircraft reconnaissance conducted by the National Hurricane Research Project. Staff MGA 11.10-294.

1958

1038 Simpson, R.H. and Riehl, H. "Mid-tropospheric ventilation as a constraint on hurricane development and maintenance." In Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958. Proceedings, American Meteorological Society, 1958. sec. D4, pp. 1-10, figs. DAS.

This paper demonstrates that independent evidence exists confirming that lateral advection of midtropospheric air from the outside toward the interior of a storm does occur. Data from hurricanes "Carrie" (1957) and "Daisy" (1958) are submitted as evidence of this theory. Staff MGA 12N-340.

1958

1039 Smith L.G. "Electric field studies of Florida thunderstorms." Conference on

1958 cont.

Atmospheric Electricity, 2d, Portsmouth, N.H., 20 - 23 May 1958. Recent Advances in Atmospheric Electricity, Proceedings. New York: Pergamon Press, 1958. pp. 299 - 307.

1958

1040 Sumner, H.C. "North Atlantic tropical storms, 1957." Mariners Weather Log, 2(1):7-11, Jan. 1958. For abstract see his "North Atlantic tropical storms, 1957."

1958

1041 Technical Conference on Hurricanes, Miami Beach, Fla., 19 - 22 Nov. 1958. Sponsored by the American Meteorological Society (AMS) Committee on Severe Storms and the Miami Meteorological Society. Proceedings, 1958. 48 papers each repaged. figs. tables. refs.

Expanded abstracts of formal papers presented at the Conference. Includes a digest of discussions and conclusions of the Board of Review. - Staff MGA 10.10-9.

1958

1042 Thompson, W.F. "Analogs of Canal Zone climate in India and Southeast Asia." U.S. Quartermaster Research and Engineering Center, Environmental Protection Research Div., Technical Report, EP-91, 1958. 24 p. figs. tables.

India and Southeast Asia are more variable in temperature and more seasonal in precipitation than the Canal Zone. Staff AD 206-427.

1958

1043 Thompson, W.F. "Analogs of Canal Zone climate in South America (Canal Zone analogs, No. 6)." U.S. Quartermaster Research and Engineering Center. Environmental Protection Research Div., Technical Report EP-97, 1958. 24 p. figs. tables. refs. DAS.

Much of interior and eastern South America is climatically similar to the Canal Zone. Highlands throughout the area mapped in this study are too cool for close analogy; subtropical areas in the southern part of the area are too cool in winter. The coast of Venezuela, the northern Brazilian Plateau, northwest Argentina, and the west coast south of Guayaquil are much too dry for climatic analogy. Tropical lowlands considered analogous to Balboa Heights, on the drier, Pacific side of the Canal Zone, have only moderately heavy precipitation and a well-marked dry season. Cristobal has heavy precipitation, though much less than the maximum amounts recorded in tropical South America, and has a brief dry season. Certain areas otherwise climatically similar

1958 cont.

to Cristobal fail of complete analogy because they have no dry season. - Author (mod) MGA 14.7-724.

1958

1044 Thompson, W.F. "Analogs of Canal Zone climate in West Central Africa." U.S. Quartermaster Research and Engineering Center, Environment Protection Research Div., Technical Report EP-93, 1958. 22 p. figs. tables.

Analogy with various single elements is generally coastal. The Sahara is not analogous, but there is a close analogy for the Canal Zone and northern shore of the Gulf of Guinea. - Staff AD 201-152.

1958

1045 Tunnell, G.A. "World distribution of atmospheric water vapor pressure." Geophysical Memoirs, Great Britain Meteorological Office, No. 100, 1958. 61 p. table.

Almost entirely maps. Mean vapor pressure at sea level for the 4 seasons, diurnal variations, association with major climatic types and maximum and minimum values for each season are given. - Staff.

1958

1046 United Nations Educational, Scientific and Cultural Organization. "Problems of humid tropical regions." Humid Tropics Research, Paris: UNESCO, 1958. 102 p. figs. tables. refs. English and/or French summary at end of each article.

This report consists of two parts. The first contains general information which reviews some of the problems of the Amazon, the Caribbean and the South American regions. The geography of each area is outlined with some emphasis on climatic factors and geographic problems of each area. The second part contains information which illustrates specific aspects of some of the problems in Africa, South Asia and the Philippines. - Staff MGA 12.7-12.

1958

1047 U.S. Navy. Fleet Weather Central, Miami, Fla. "Annual Report of Hurricane Season, 1955." 1956 (?). Its OPNAV Report 3140-9. Each section repaged. charts. Also: "Annual Report of the Hurricane Season, 1957." Its OPNAV Report, 3140-9, 1958. 100 p. charts. tables. refs. Title on cover: Annual Tropical Storm Report, 1957. Appended, OPNAV Report, 3140-10, Annual weather reconnaissance report from Airborne Early Warning Squadron Four. 10 p. charts. tables. DAS.

Fourth annual report on hurricanes which occurred in the Atlantic, Caribbean and Gulf of Mexico since 1952. Methods of forecasting, warnings, analysis and

1958 cont.

verification are treated and the numerical results of verification presented and analyzed. Methods of aircraft observation are also evaluated. Reconnaissance fixes and data are shown on charts and in tables and a graph for each storm shows maximum velocity versus time.- Staff MGA 9.11-28.

1958

1048 U.S. Navy. Fleet Weather Facility, Miami, Fla. "Annual Report of hurricane season, 1957." OPNAV Report 3140-9, 1958. 100 p. charts, tables, refs. For abstract see its "Annual report of the hurricane season, 1955." 1958.

1958

1049 U.S. Navy Fleet Weather Facility, Miami, Fla. "Annual Tropical Storm Report, 1957." 1958 (?) For abstract see its "Annual Report of hurricane season 1955." 1958.

1958

1050 U.S. Weather Bureau. "Hurricane Ella, Aug. 30 - Sept. 6, 1958." 26 p. DAS.

On 3 - 6 September, hurricane "Ella" moved across the Gulf of Mexico to the Texas coast. This is a preliminary report of meteorological conditions (with advisories) issued during this hurricane. Staff.

1958

1051 U.S. Weather Bureau, "Index of assembled meteorological data related to hurricane Audrey 2330 EST June 24, 1957 through 0500 EST June 28, 1957." Office of Climatology, Ashville, 1958. 37 p. DAS.

Pamphlet issued to inform users of the collections of available publications on microfilm (35 mm) and autographic surface and upper air meteorological records along the path of hurricane "Audrey" from 24 June 1957 at 2330 EST through 0500 EST 28 June 1957. - Staff.

1958

1052 U.S. Weather Bureau. "Rainfall intensity frequency regime, pt. 2, southeastern U.S.A." Technical Paper no. 29, 1958. 51 p.

Charts and tables showing precipitation frequencies, intensities and extremes including hurricane data. Analysis is also provided. - Staff.

1958

1053 U.S. Weather Bureau. National Hurricane Research Project. "Details of circulation in the high energy core of Hurricane Carrie." Report no. 24, Nov. 1958. 15 p. figs. refs. DAS.

The circulation features of hurricane "Carrie" have shown that the distribution of wind speed, temperature and pressure are features common to most mature hurricanes.

1958 cont.

They are warm core storms but their kinetic energy decreases with speed; and the most intense gradients of temperature, wind, and pressure are concentrated in a narrow band about the center, extending from about 8 miles inside the 'eye' wall outward through the wall cloud. Detailed data are included. - Staff MGA 11.8-204.

1958

1054 Viezee, W. "The mean circulation of the equatorial stratosphere." In Empirical study of air movement near the Equator, Final Report, Contract No. AF 19(604)-2134, Institute of Geophysics, Univ. of Calif. 1958. 65 p.

1958

1055 Wagner, N.K. "Analysis of some overwater wind profile measurements." American Geophysical Union, Transactions, 39(5):845-852, Oct. 1958. figs. tables. refs.

For several days during the spring of 1955, wind-speed profiles were measured from an oil drilling platform in the Gulf of Mexico. Various standard parameters such as friction velocity, roughness parameter, surface stress and resistance coefficient are computed from these profiles. Functional relationships are derived between the various computed parameters and the wind speed at 10 m. A re-analysis of data obtained by Wüst in 1919 shows that it is in very good agreement with the present data. An attempt is made to relate the roughness parameter with the root-mean-square of the water-level fluctuations, and though some indication of a dependence can be inferred, there is too much scatter of the plotted points to arrive at a unique functional relationship - Author MGA 10.6-230.

1958

1056 Wahl, E.W. "Mean monthly 300 and 200 mb contours and 500, 300 and 200 mb temperatures for the Northern Hemisphere." U.S. Air Force. Cambridge Research Center, Geophysical Research Papers, no. 57, 1958. 80 p. figs.

Data from U.S. Weather Bureau, "Monthly Climatic Data of the World," compiled for a 6-yr period (1950 - 1955). - Staff.

1958

1057 Welsh, G.V. "Hurricane, 1926." Chicago, 1958. 31 p. DLC.

Description of Florida hurricane of 1926. - Staff.

1958

1058 West Indies [Federation] Meteorological Service. "Report." Port of Spain, Trinidad. Annual from 1958. DLC.

1958 cont.

Meteorological reports for 1954 - 57 issued by the British Caribbean Meteorological Service. - Staff.

1958

1059 Wexler, Ruth and Simpson, J.S.M. "Tropical meteorology: observational studies of tropical clouds; results of 1956 Caribbean aircraft expedition." Woods Hole Oceanographic Institution, Contracts Nonr 1721(00) and Cwb 9241, Technical Report no. 3, Sept. 1958. 122 p. figs. tables. refs. Unpublished manuscript. DAS.

Tropical cumulus cloud observations made from a calibrated PBY-6a aircraft are presented. The observations were made during August 1956 in the vicinity of Puerto Rico, Barbados and Trinidad in the Caribbean Atlantic region. Measurements of vertical winds, temperature, humidity and liquid water content were made through selected clouds and their nearby surroundings on 8 different days. Supplementary data include spiral aircraft soundings, photography, surface ship observations (during part of the period) and the standard synoptic data from nearby stations. Limitations imposed by instruments, data reduction, and sampling were severe and are described. An interesting case of tropical disturbance passage (15 - 16 August) is studied in detail. Tropical convection is seen to be marginal, with negatively buoyant cloud matter predominating. Active, buoyant bubbles are rare, although their apparent rarity may have been exaggerated by the instrumental and sampling problems. - Author (mod) MGA 12.8-359.

1959

1060 Ackerman, B. "The variability of the water contents of tropical cumuli." Journal of Meteorology, 16:191-198, 1959. figs. tables.

Data show that the magnitude of cloud water content was correlated with the vertical displacement and the horizontal dimensions of the cloud. - Staff.

1959

1061 American Meteorological Society. "Notes of the National Hurricane Project." Weatherwise, 12(4):154-156, Aug. 1959. fig.

The main points of the note are: 1) the first of 31 new high-powered WSR-57 radar sets was installed in July in the Hurricane Research Center at Miami, Florida, 2) some agreements have already been made and others are in progress in connection with data collection, 3) three weather reconnaissance airplanes are being outfitted with new instruments, 4) the construction

1959 cont.

of detachable weather recorders to be flown by air weather reconnaissance planes from Bermuda has been completed, 5) the U.S. Weather Bureau is participating in a research program to investigate the mechanism whereby wind energy is transferred to the sea in the generation of waves and storm surges, 6) the Navy/Weather Bureau hurricane photographic rocket project will have ten complete instrument packages available during the current season, 7) plans are complete for a series of hurricane tracking beacon drops, 8) the National Hurricane Research Project headquarters is going to install a 650 computer and 9) an experimental analysis program is planned for the 1959 hurricane season. Staff MGA 11.8-203.

1959

1062 Arnett, A.B. "National Hurricane Research Project." Mariners Weather Log, 3(4):115-118, July 1959. figs. table.

1959

1063 Ballenzweig, E.M. "Relation of long-period circulation anomalies to tropical storm formation and motion." Journal of Meteorology, 16(2):121-139, Apr. 1959. figs. refs.

Tropical cyclone frequency in the entire North Atlantic and in areas of cyclogensis in the Caribbean Sea and Gulf of Mexico undergo fluctuations which composite charts show to be related to the form and position of planetary waves. Long-period conditions ideal for tropical storm formation in particular areas of the Atlantic show some rather well-defined circulation patterns which are not alike for all areas. These varying circulation patterns are also shown to form the framework for steering tropical cyclones after their generation. It is concluded that the use of various composite charts as guides in the preparation of long range forecasts of hurricane formation and motion is feasible. - Author (mod) MGA 11.5-284.

1959

1064 Bernstein, A.B. and Hosler, C.R. "Temperature patterns along the Atlantic and Gulf coasts." Monthly Weather Review, 87:395-400, 1959. figs.

This investigation serves as an example of the type of local climatological analysis that can be performed using existing data, without the need for setting up new and often costly observational programs. In addition, this study shows an interesting feature of the daily maximum temperature pattern - an 'inland tongue'

1959 cont.

of high temperature - that does not appear on large scale maps of temperature distribution for the United States. Data used in this study was the average daily mean, maximum, and minimum temperatures for approximately 500 cooperative observing stations, as well as first order U.S. Weather Bureau stations along the Atlantic and Gulf coasts. Although the station network used in this study is quite dense, there were three major sources of difficulty: 1) the various cooperative observing stations do not have a uniform period of record, 2) stations are not equally distributed over different kinds of terrain and 3) the absence of observations of air temperature over water made it difficult to analyze coastal areas and regions with inland bodies of water such as Long Island Sound, Chesapeake Bay, and Lake Pontchartrain. Despite these data deficiencies, the networks were sufficiently dense to delineate features of the temperature patterns caused by local topographical features and bodies of water. Author (mod) MGA 11.4-249.

1959

1065 Blair, W.B. and Chambers, J.V. "Canal Zone Analogs VIII, analogs of Canal Zone climate in Australia and New Guinea." U.S. Quartermaster Research and Engineering Command, Natick, Mass., Technical Report no. EP-113, 1959. 26 p. fig. tables.

Areas of complete climatic analogy with the Canal Zone are found in the lowlands of New Guinea. Climates in Australia are not analogous, but some climatic elements are comparable. - Staff AD 226091.

1959

1066 Brown, E.N. and Braham, R.R. "Precipitation-particle measurements in trade-wind cumuli." Journal of Meteorology, 16(6):609-616, Dec. 1959. figs. tables. refs.

During the summer of 1957, University of Chicago Cloud Physics Laboratory operated specialized cloud-physics measuring equipment on research flights of the U.S. National Hurricane Research Project. Clouds were associated with fair weather conditions over the Gulf of Mexico, Bahama Islands, and in the vicinity of Puerto Rico. Three of 11 flights were flown into easterly waves located in the Lesser Antilles and north of Puerto Rico. Precipitation particles in the 100- to 650-μ-diameter range were sampled in a large number of tropical convective clouds. From these data, it is shown that the large concentrations of large drops are associated with low liquid-water contents

1959 cont.

and, conversely, that the large values of liquid water are associated with small numbers of droplets greater than 150μ in diameter. The computed relationship between radar reflectivity, water-content, and median-volume diameter is very similar to that which has been reported for other cloud types. - Author (mod).

1959

1067 Bundgaard, R.C. "On the formation and development of waterspouts." Abstract only. In Pacific Science Congress, 9th, Bangkok, 18 Nov. - 9 Dec. 1957. Proceedings, v. 13, Meteorology. 1959. p. 310. DLC. CU-S.

Observations detailing the structure and life history of waterspouts are presented. Telephotocolor movies were obtained of two waterspouts in Tampa Bay, Florida on 21 June 1953. During the mature state of this waterspout, strong upward motion was observed along the funnel and the upward speed was at least 20 mps (average) over 300 m of its length. Forecasting the general conditions favorable for waterspout formation is considered. - Staff MGA 14.12-449.

1959

1068 Bunker, A.F. "Cloud and environmental vertical velocities, temperatures, humidities, and water contents associated with a shear zone in the trade winds." Woods Hole Oceanographic Institution, Contract Nonr-1721(00) (NR-082021), Technical Report no. 44, 1959. 21 p. figs. tables.

Airplane meteorological measurements were made in the equatorial North Atlantic. Staff.

1959

1069 Byers, H.R. "Methods of estimating the maximum flood." 1959(?). 12 p. table. refs. Typescript. DAS.

After a brief review of the criteria, an account of the 'maximum design flood' methodology as applied to the Boconó Basin in Venezuela is given. The use of a synthetic storm and Riehl's scheme for determining the limiting factor by which the intensity of a storm could be greater than the average were applied. The successful results obtained in forecasting precipitation over large areas by these methods are mentioned briefly. - Staff MGA 11.6-345.

1959

1070 Campan, G. "Note sur la climatologie des Antilles et de la Guyane Française." [Note on the climatology of the Antilles and French Guiana.] France. Météorologie Nationale, Monographies, no. 15, 1959. 26 p. figs. tables. refs.

1959 cont.

This monograph gives climatological data (precipitation, humidity, sunshine, evaporation and wind) for Martinique, Guadeloupe and French Guiana. A chart of mean annual isohyets is drawn for each of these regions and tables indicate the average monthly and annual amounts of rainfall for a certain number of pluviometric stations. In Martinique, the annual depth of rainfall varies from 1.25 m to more than 5 m; in French Guiana, from 2 m to 4.5 m and in Guadeloupe from 1 m to 10 m. The rainfall regime consists of a dry and a rainy season. Author gives information on the variation of the water depth with altitude and develops a classification of the various types of rainfall. Part 4 deals with tropical cyclones in French Guiana. A short historical account is given on the cyclones which crossed these regions, and more particularly on cyclone "Janet" which occurred in the Caribbean Sea during September 1955. - Staff MGA 11.4-290.

1959

1071 Clarke, D.B. "Measurements of radiative flux from an airborne radiometer." Woods Hole Oceanographic Institution, Contract Nonr-1721(00), (Nr-082-021), Technical Report no. 43, Aug. 1959. 14 p. figs. tables. refs. DAS.

Describes an airborne instrument that is being developed to investigate the radiative heat balance in the lower troposphere and the results obtained. The instrument, an adaption of Suomi and Kuhn's (1958) 'economical' or 'poor man's' radiometer, essentially derives the radiative flux by measuring the temperature on opposite sides of an insulator. It was mounted on a R4D Naval Research airplane and in November 1958 was flown from Woods Hole to Trinidad and back with several intermediate stops. Early work on the tropospheric radiative problem relied primarily on indirect theoretical calculations based on the absorption of radiation by water vapor and carbon dioxide. Recently, several investigators have attempted to measure the radiative flux directly. Brewer and Houghton (1956) installed a radiometer in an airplane and took observations up to 40,000 ft. Suomi, Staley, and Kuhn (1958) and Gergen (1958) have used balloon-borne radiometers up to less than 100 mb. With variable cloudiness or thin clouds, such as cirrus, theoretical calculations become uncertain and direct measurements yield the most accurate results. - Author (mod) MGA 12.7-276.

1959

1072 Colón, J.A. "Meteorological conditions over Puerto Rico during hurricane Betsy, 1956." Monthly Weather Review, 87:69-80, 1959. figs. table. refs.

Observations of wind, pressure, rainfall and radar bands recorded over Puerto Rico during the passage of hurricane "Betsy" are presented and discussed. The track across the Atlantic and eastern Caribbean Sea, which shows an apparent sinusoidal oscillation around the mean path, is also included. Photographs of radar observations are presented to illustrate variations in the structure. It is shown that some weakening of the wind field and filling of the central pressure occurred with motion over the land area, and that rapid deepening followed as soon as the hurricane moved over water on the north side of the island. Rainfall observations are compared with those recorded in the great San Felipe hurricane 13 September 1928. - Author (mod) MGA 11.7-281.

1959

1073 Cry, G.W. "Frequency and movement of North Atlantic tropical cyclones." Mariners Weather Log, 3(4):118-125, July 1959. figs. table.

Some clues to tropical storm and hurricane movement in various areas during certain portions of the season may be obtained from a study of the past behavior or climatology of these storms. An extensive compilation of tracks (1886 - 1957) has been completed in the Office of Climatology, U.S. Weather Bureau. In this paper, charts covering the period June - November are presented indicating direction frequency, speed, number of hurricanes and tropical storms. - Staff MGA 12N-244.

1959

1074 Cry, G.W., Haggard, W.H. and White, H.S. "North Atlantic tropical cyclones. Tracks and frequencies of hurricanes and tropical storms 1886 - 1958." U.S. Weather Bureau, Technical Paper no. 36, 1959. 214 p. figs. charts. tables. refs. DAS.

Data from several sources were combined to obtain definitive tracks of all tropical storms (winds 39 to 73 mph) and hurricanes (winds 74 mph or higher). These are shown in 3 series of charts showing trajectories for each year (1886 - 1958); for each 10-day period (1886 - 1958) and for each 10-day period by 10-yr period. Bar graphs give the overall annual frequencies of storms and hurricanes and also centers which crossed the United States coastline, classified by sections of the country

1959 cont.

affected. Among the tables is included a chronological listing of all storms and hurricanes, latitude and longitude of origin, point of recurvature, etc. - Staff
MGA 11.7-283.

1959

1075 Davis, W.R. "Hurricane season of 1958." Weatherwise, 12(1):17-23, Feb. 1959. figs.

The hurricane season of 1958 in the Gulf of Mexico, the Caribbean Sea, and the Atlantic Ocean produced a total of 10 tropical storms, 7 of which reached full hurricane intensity. Four tropical storms affected the United States mainland during the hurricane season. Tropical storms "Alma" and "Ella" passed into Texas and hurricanes "Daisy" and "Helene" skirted along, near and off of the coasts of the Atlantic states. About the middle of October, a complete reversal of the planetary troughridge system over the Northern Hemisphere occurred. This change resulted in a split jet stream over Florida flooding that area with polar air. Tropical cyclone development, which had been quite active since early in August, abruptly terminated. A summary of the individual tropical storms and hurricanes is given with photographs. - Staff
MGA 12.8-292.

1959

1076 Davis, W.R. "Use of ship weather observations at hurricane forecast centers." Mariners Weather Log, 3(4):127-129, July 1959.

1959

1077 Denardo and McFarland Weather Service, Dravosburg, Pa. "Objective method for forecasting Gulf stratus at Maxwell Air Force Base, Alabama." Contract AF11 623 279, Report, July 1959. DDC.

1959

1078 Dyce, R.B. et al. "Aurora-like radar echoes observed from 17° latitude." Journal of Geophysical Research, 64(11): 1815-1818, Nov. 1959. figs. table. refs.

Anomalous echoes are regularly observed by shipborne radar located at Antigua, British West Indies. These echoes, observed at 32 and 140 Mc/s, have many of the characteristics of echoes from the auroras observed in the Arctic, although visible auroras should not be observable at Antigua more frequently than once in 7 yrs. Similar observations at Stanford University indicate a correlation with one kind of sporadic-E ionization. - Author
MGA 11F-33.

1959

1079 Facy, L. "Sur la génèse des

1959 cont.

précipitations dans certains nuages chauds." [On the genesis of precipitation in certain warm clouds.] Geofisica e Meteorologia, 7:7-12, 1959. figs.

Certain normally developed cumulus clouds which formed in tropical maritime air can precipitate rainfall as the result of high water content in the upper part of the clouds. - Staff.

1959

1080 Gangopadhyaya, M. and Riehl, H. "Exchange of heat, moisture, and momentum between Hurricane Ella (1958) and its environment." Royal Meteorological Society, Quarterly Journal, 85(365):278-286, July 1959. figs. tables. refs. [Discussion by] J.S. Sawyer and R.C. Sutcliffe. Ibid., 86(368):276, Apr. 1960. Also issued in: U.S. Weather Bureau National Hurricane Research Project, Report no. 29, Apr. 1959. 12 p. figs. refs.

On 2 September 1958, a tropical storm moved near the center of the network of upper-air observation stations in the Atlantic and Caribbean southeast of Florida. This made possible the determination of the structure of the storm at a radius of 4.5° of latitude from the center including the entire troposphere. It was found that heat export caused a net tropospheric drying and cooling even after the effects of radiation. The inward transport of relative angular momentum was insufficient to balance the flux of angular momentum to the surface as estimated from calculations for mean hurricane conditions. These computations suggested weakening of the disturbance with time. - Author (mod)
MGA 11.5-286.

1959

1081 Garstang, M. "Tropical island rainfall: a study of the rainfall distribution of Trinidad, West Indies." Woods Hole Oceanographic Institution, Contribution, no. 1085, Oct. 1959. 29 p. figs. tables. refs. DAS.

Study based on the concept that climatology cannot be divorced from the dynamics of weather. An attempt is made to outline the meteorological framework of the region of the Tropics and the rainfall of Trinidad is discussed within this framework. Seasonal variation is related to broad scale migrations of subtropical anticyclones and the equatorial trough. The dual rainfall maximum observed during the wet season is related to the synoptic scale patterns of this season. In conclusion the rainfall of this island is summarized by relating the seasonal

1959 cont.
variations to the broadscale meteorological background and the actual distribution to the local scale influences. - Author (mod) MGA 12L-346.

1959
1082 Gherzi, E. "Meteorological notes. A. Drawing of surface weather maps for forecasting the formation and the motion of tropical cyclones. B. Sea-surface temperature and the formation of tropical cyclones." New Orleans: Loyola Univ., 1959. 35 p. figs. charts. refs. DNO.

Gulf of Mexico hurricanes are analyzed. Staff.

1959
1083 Graham, H.E. and Nunn, D.E. "Meteorological considerations pertinent to Standard Project Hurricane, Atlantic and Gulf coasts of the U.S." U.S. Weather Bureau, National Hurricane Research Project, Report no. 33, Nov. 1959. 76 p. figs. tables. refs.

Study of hurricane characteristics in the coastal areas of the Atlantic and Gulf of Mexico was jointly undertaken by representatives of the Hydrometeorological Section, U.S. Weather Bureau and the Office of Chief of Engineers, Corps of Engineers during 1955. A correlation of characteristics in one area with the probabilities of occurrence in other regions of the country was undertaken. The report gives special wind analysis pertinent to the determination of wave and tidal effects of specific locations. Hurricane characteristics are correlated with intensity criterion, latitude, and other features. The report shows a generalized procedure for determining the Standard Project Hurricane for the Atlantic and Gulf Coasts. - Staff MGA 12.1-302.

1959
1084 Graystone, P. "Meteorological Office Discussion on Tropical Meteorology." Meteorological Magazine, 88:113-119, 1959.

1959
1085 Great Britain, Meteorological Office. "Aviation meteorology of the West Indies." Meteorological Report, 3 no. 22, 1959. 85 p. figs. map. tables. refs. DAS.

Report deals with synoptic meteorology and climate and includes bibliography. Six appendices are also given in tabular form as follows: 1) general climatological summaries from January through December over different years for Cuba, Puerto Rico and the West Indies, 2) expected head winds on various air routes and 3) air field weather diagrams. - Staff MGA 13.1-91.

1959
1086 Groening, H.U. "Wind and pressure fields in the stratosphere over the West Indies region in Aug. 1958." U.S. Weather Bureau. National Hurricane Research Project, Report no. 35, Dec. 1959. 10 p. figs. tables. ref. DAS.

High level wind and pressure fields over the West Indies for August 1958 are investigated. In the stratosphere, at 50 mb and 25 mb the steady easterly flow is found to be quasi-geostrophic. Contour analyses did not give a true picture of the wind field at these high levels due to the inaccuracies of the pressure-height data. A method to eliminate these shortcomings is outlined. - Author (mod) MGA 11.7-328.

1959
1087 Haggard, W.H. "Where hurricanes begin." Weatherwise, 12(4):145-150, Aug. 1959. figs. refs.

Hurricanes of the North Atlantic, Caribbean and Gulf of Mexico for June through October are discussed. The beginning of a hurricane should be studied in the region where the development actually occurs and continued to the full hurricane stage. This approach appears reasonable when one considers that minor disturbances, waves and shear lines are always present. The view of Gordon Dunn, the U.S. Weather Bureau's chief hurricane officer, is mentioned. His approach was extended by the author to locate the point on tropical storm tracks where tropical storms first developed. It is admitted that the exact point on a track where a storm attained its tropical storm intensity is questionable. Besides, it is difficult to determine precisely where the closed circulation first appeared. Nine figures included in the paper show the beginning points of North Atlantic tropical storms and hurricanes between 1899 - 1958. - Staff MGA 11.6-279.

1959
1088 Heastie, H. "Average height of the standard iosbaric surfaces over the temperate and tropical regions in January and July." Meteorological Magazine, 88:293-299, 1959.

1959
1089 Heffernan, K.J. and Bracewell, R.N. "Comparison of Florida and California freezing - nucleus measurements, January 1957." Journal of Meteorology, 16:337-339, 1959.

1959
1090 Hennessey, L.J. "He tries to do something about it." Weatherwise, 12(2): 76-77, Apr. 1959.

1959 cont.

A Spanish War veteran (born in 1879) and in feeble health, John M. Lott, performs a service for all members of the Veterans Center (1,600 members) at Biloxi, Mississippi, especially those engaged in fishing. By means of his amateur weather station, equipped with $1,250 worth of instruments, etc., and daily weather maps and radio reports, he has generated a lively interest in local weather at the Veterans Center. Among the equipment (purchased since 1954), are: wind speed indicator, barometer, barograph, thermograph, hygrothermograph, maximum-minimum thermometer, sling psychrometer, rain gage, telescope, radio, etc. - Staff. MGA 14.7-69

1959

1091 Herbert, P.J. and Jordan, C.L. "Mean soundings for the Gulf of Mexico area." U.S. Weather Bureau, National Hurricane Research Project Report no. 30, Apr. 1959. 10 p. figs. tables. refs. Also in Monthly Weather Review, 87:217-221, 1959.

Mean aerological data for the Gulf of Mexico have been prepared from 10-yr records for 3 stations. Mean monthly height, temperature, and relative humidity data are tabulated for constant pressure surfaces. More detailed information including density, potential temperature and specific humidity, is shown for the mean 'hurricane season' sounding. The data are compared with those previously presented for the West Indies area and some interesting climatological features are discussed. - Author (mod) MGA 11.4-198.

1959

1092 Hiser, H.W. "Spying on a tornado!" Sea Frontiers, 5(4):237-242, Nov. 1959. figs.

Describes visual and radar observations of one of Miami's most violent and destructive tornadoes during the night of 17 June 1959. The tornado funnel was about 1 mi east of the Radar Meteorological Laboratory of the University of Miami over the Coconut Grove section of Miami, Florida. Author discusses how tornadoes are formed and compares them with hurricanes. With hurricanes modern warning services usually provide a two or three day interval in which to prepare. But a tornado gives only a few minutes notice (a noise like a heavy freight train going over a trestle) before it strikes. The need for more research is pointed out. Illustrations include photographs of destruction and radar scope echoes of this tornado and of Hurricane "Connie" as seen at Hatteras, North Carolina, during the morning of

1959 cont.

12 August 1955. - Author MGA 14B-34.

1959

1093 Howell, W.E. "Cloud seeding in the American tropics." In Cloud Physics Conference, Woods Hole, Mass., June 1959. Physics of precipitation, pp. 412-423.

Cloud seeding projects carried out in the area are described, evaluated, and discussed. Modification of slowly developing clouds is also discussed. - Staff.

1959

1094 Howell, Wallace E. Associates, Inc., Cambridge, Mass. "Evaluation of cloud seeding for the cane areas of centrales [sugar mills] Francisco and Elia, Province of Camagüey, Cuba, September 1958.- May 1959." 9 p. figs. table. DAS.

Report on the rainfall stimulation activities in the Province of Camagüey, Cuba. Includes tabulated details of the evaluation of the seeding of hurricane "Helen" during 1959 in the areas of the Elia and Francisco sugar mills and the possibility of changing evaluation techniques now in use - Staff MGA 12.1-267.

1959

1095 Johnson, W.O. "Season's report of Federal-State Frost Warning Service (1957 - 1958?)." U.S. Weather Bureau and Univ. of Fla., Agricultural Experiment Stations, 1958. 14 p. charts. Also: Report, season 1958 - 1959, Federal-State Frost Warning Service, Weather Forecasting Mimeo, no. 59-13, 1959. 10 p. table. charts.

Summary of the meteorological conditions of frost for one season. - Staff.

1959

1096 Jolivet, J. "La charge électrique des gouttes de pluie dans les Antilles françaises." [Electrical charge on rain drops in the French Antilles.] Annales de Géophysique, 15:153-178, 1959.

1959

1097 Jordan, C.L., Hurt, D.A. and Iowrey, C.A. "Structure of hurricane Daisy on Aug. 27, 1958." Fla. State Univ. Dept. of Meteorology, Contract Cwb-9395, Scientific Report, 15 Aug. 1959. 29 p. figs. refs. DAS.

An unusually large amount of aircraft reconnaissance data is available from flights into hurricane "Daisy" on 27 August 1958. These data consist of flight level information collected by research aircraft of the National Hurricane Research Project and radarscope films taken from operational reconnaissance aircraft of the U.S. Navy. Hurricane "Daisy" was a small, slow moving storm off the Florida east coast on 27 August with winds in excess of 100 kts in

1959 cont.

the lower troposphere. The concentrated nature of this vortex is shown by flight-level wind and temperature data, and by weather patterns shown on the radar films. Films from the search radar show a central, ring like echo only a few miles thick which corresponds closely with the area of maximum observed winds. The height finding radar shows this central echo, which is associated with the wall clouds surrounding the hurricane 'eye' to be nearly vertical and to extend to about 60,000 ft. - Author (mod) MGA 11H-72.

1959

1098 Kraus, E.B. "Evaporation-precipitation cycle on the trades." Tellus, 11:147-158, 1959.

1959

1099 Krueger, D.W. "Relation between the mass circulation through hurricanes and their intensity." American Meteorological Society, Bulletin, 40:182-189, 1959. figs. tables. refs.

Surface winds observed by ships in the western Atlantic and Caribbean in the vicinity of hurricanes are examined to determine if there is a relation between the mass circulation through a storm and its intensity. Available cases indicate that the central pressure is inversely proportional to the mass inflow. - Author MGA 12N-303.

1959

1100 Malkin, W. "Filling and intensity changes in hurricanes over land." U.S. Weather Bureau, National Hurricane Research Project, Report no. 34, Nov. 1959. 18 p. figs. tables. refs. DAS.

The change in central pressure after landfall of 13 selected hurricanes is analyzed. A formula that fits the average filling curve is given and the average change in pressure gradient after landfall is also evaluated. One of several incidental findings pertains to the consistent values obtained when applying an objective definition for the pressure at the periphery of a hurricane. - Author MGA 11.9-256.

1959

1101 Malone, T.F. "Method for preparing probability forecasts applicable to decision-making when a hurricane threatens." 1959(?). Typescript. 4 p. figs. refs. DAS. (M15.2 M257 me).

Application of Velgas-Miller method for deciding at what point the danger from a hurricane warrants the cost of precautionary measures is discussed. First, the decision criterion of Thompson is explained. Then, by analyzing 447 hurricane movements in the North Atlantic Ocean and the Gulf of

1959 cont.

Mexico, an attempt is made to develop a multiple linear regression equation for prediction. Principal positions are graphically explained. - Staff MGA 12.2-244.

1959

1102 Méndez, O.L. et al. "Determinación micropotenciométrica de cloruro en la atmósfera de la costa norte de Puerto Rico." [Micropotentiometric determination of chloride in the atmosphere on the north coast of Puerto Rico.] Puerto Rico. Depto. de Investigaciones Industriales, Informes Técnicos, 1959. pp. 24-36. figs. tables. refs. DAS.

A study was made in Puerto Rico to determine the concentration of chloride in the atmosphere in the following parts of the island: San Juan, Río Piedras-Caguas, Río Piedras-Carolina, Arecibo-Cambalache, Arecibo-Los Caños and Caguas. A micropotentiometric method was adopted since determinations of low concentrations are not precise with conventional methods. The method utilized a Leeds & Northrup Type K potentiometer (which registers up to 0.01 mV), a Ag-HgCl cell, a bridge of NH_3NO_3 in agar-agar and a galvanometer with an 0.012-0.115 mg of chloride concentration/cm^3. Author (mod) MGA 15.1-336.

1959

1103 Nancoo, M.E. "Whirlwind in Trinidad, West Indies." Weather, 14(8):253-256, Aug. 1959. fig. photos.

Developments leading to the storm which occurred 11 September 1958, are analyzed and the damage described. The synoptic situation for the area from the onset of the deep easterlies in June 1958 up to and including the day after the storm is given. Staff MGA 12N-402.

1959

1104 Palmero, G. "Climatology of cirrus clouds along the Atlantic Missile Range." U.S. Air Weather Service, 4th Weather Group, 1959. 16 p. Typescript.

Analysis of clouds above 25,000 ft showing the frequency and thicknesses of cirrus. - Staff.

1959

1105 Peterson, L.E. and Winckler, J.R. "Gamma-ray burst from a solar flare." Journal of Geophysical Research, 64(7): 697-707, July 1959. figs. tables. refs.

A burst of high-energy radiation coincident with a solar flare has been detected during a balloon flight at 10 gm/cm^2 atmosphere depth and 30° geomagnetic latitude over Cuba. The flare occurred at 1305 U.T. on 20 March 1958 and was associated with solar radio bursts on 1,500

1959 cont.

and 10,000 Mc/s. Terrestrial effects included a Sudden Ionospheric Disturbance (SID), earth-current disturbances and a magnetic crotchet. The 18-sec burst was detected with an integrating ionization chamber and a single Geiger counter. From these two instruments and their ratio , it is inferred that the radiation is due to a gamma-ray flux of about $2x10^{-5}$ ergs/sec cm^2 peaked in the 200- to 500-kv region. The high-energy electrons represent about 1 percent of the flare energy. Only about 0.01 percent of the emitted betatron radiation escaped from the flare region toward the Earth. Author (mod) MGA 11.9-72.

1959

1106 Pisharoty, P.R. "Standard atmosphere for the tropics (m.s.l. to 20 km)." Indian Journal of Meteorology and Geophysics, 10(3):243-254, July 1959. figs. tables. refs.

Mean geopotential heights and temperatures of standard isobaric surfaces over the Asian, Caribbean and Southwest Pacific areas are examined. The examination reveals: 1) that sufficient uniformity prevails over these regions to justify developing specifications for a Standard Atmosphere for the Tropics (SAT) and 2) that the conditions over the Tropics are sufficiently different from the International Commission for Air Navigation (ICAN), International Civil Aviation Organization (ICAO) and National Advisory Committee for Aeronautics (NACA) standard atmospheres to warrant the drawing up of a separate set of specifications. Specifications for a Standard Atmosphere for Asian Tropics (SAAT) and slightly different specifications for a Standard Atmosphere for Tropics for Universal Use (SATU) are presented in the paper. Two computed tables, one showing the distribution of pressure and temperature with height and the other showing the heights and temperature of standard isobaric surfaces, for both the proposed standard atmospheres are presented. Author (mod) MGA 11.10-260.

1959

1107 Portig, W.H. "Air masses in Central America." American Meteorological Society, Bulletin, 40:301-304, 1959. tables.

Air masses can be distinguished by dew point and visibility, especially in the winter (dry season). A tentative classification of air masses is given. Staff.

1959

1108 Portig, W.H. "Fernwirkungen von

1959 cont.

tropischen Wirbelstürmen in Mittelamerika." [Long-range effects of tropical cyclones in Central America.] Seewart, 1959. pp. 12-16.

Most tropical storms in the Western Caribbean and in the Gulf of Mexico produce an improvement of weather (dissolution of clouds) in Central America when far enough away from the storm center. Only recurving hurricanes near Cuba deteriorate the weather in Central America. - Staff.

1959

1109 Price, W. "Hurricane affecting the coast of Texas from Galveston to Rio Grande." U.S. Coastal Engineering Research Center, Wash., D.C., Technical memorandum no. 78, Mar. 1956. 35 p. illus. tables. refs. AD 115551.

1959

1110 Rastogi, R.G. "The diurnal development of the anomalous equatorial belt in the F2 region of the ionosphere." Journal of Geophysical Research, 64:727-732, 1959.

1959

1111 Ratner, B. "Upper air climatology of the United States." U.S. Weather Bureau, Technical Paper no. 32. pt. 1, Averages (1957), pt. 2, Extremes and standard deviations (1958), pt. 3, Vector winds (1959).

Part 1 contains monthly averages for 60 stations including San Juan, Havana and Alaska (1946 - 1955) of temperature, density, humidity and height of pressure surfaces up to 30 mb. Part 2 contains extremes and standard deviations of pressure surfaces up to 100 mb. Part 3 contains vector winds up to 30 mb and values of shear up to 50 mb for the 48 continental states, only. - Staff.

1959

1112 Reichelderfer, F. "United States National Hurricane Research Project." Marine Observer, 29(186):188-191, 1959. figs.

After hurricane catastrophes of 1954 and 1955, the U.S. Congress appropriated funds in the spring of 1955 for an intensive investigation of severe storms and hurricanes. This report describes the basic plan of study of the problem and preliminary results of research made on hurricane "Carrie" 6 - 21 September 1957 and on "Helene" and "Daisy" during 1958. A preliminary conclusion is that an understanding of the distribution of wind near a hurricane core leads to a fair prediction of the movement of such storms. Details on forecasting hurricane movements and techniques used for detecting and tracking

1959 cont.
are discussed. - Staff MGA 12L-492.

1959
1113 Riehl, H. "On production of kinetic energy from condensation heating." In Bolin, Bert, ed. Atmosphere and the sea in motion. New York: Rockefeller Institute Press, 1959. pp. 381-399.

Warm anti-cyclones extending to the high troposphere are usually regarded as 'dynamic' anticyclones. In this paper a situation is presented where a warm high was of thermal origin, but was produced and maintained by release of latent heat of condensation. This situation occurred over the Gulf of Mexico and the southeastern United States during September 1957. Calculations of the energy budget of high pressure showed that over four days analyzed, there was little export or import of heat through the boundary. A gradual increase in the intensity of the system was produced by an excess of local heat source at the ocean surface over net outgoing radiation. The warm thermal high was associated with a 'direct' mass circulation: inflow and convergence near the surface, outflow with divergence near the top. From vorticity and balanced wind considerations, low pressure should develop at the surface underneath the warm high. Thus the mass circulation was directed everywhere toward lower pressure; it released potential and produced kinetic energy. A large export of kinetic energy took place through the boundaries of the system manifested by formation of two jet streams on its northern and eastern peripheries. - Author (mod) MGA 12.7-323.

1959
1114 Ryan, P. "Height of cirrus cloud Australian Meteorological Magazine, 25:76-77, 1959.

Highest cloud tops observed were 54,000 ft. Cloud layers above 50,000 ft are not uncommon. - Staff.

1959
1115 Simpson, J.S.M. and Ronne, C. "Cloud distributions over the tropical oceans in relation to large-scale flow patterns." Cloud Physics Conference, Woods Hole, Mass., June 1959, Physics of precipitation, pp. 45-60.

The relations between tropical cloud patterns and the 3-dimensional synoptic structure have been studied by quantitative time-lapse photography from three aircraft in the North Pacific. A 'tropical Whole Sky Code' was devised and is included. Staff

1959
1116 Smith, G.W. "Solar radiation and the

1959 cont.
duration of sunshine in Trinidad, West Indies." Royal Meteorological Society, Quarterly Journal, 85(366):421-423, Oct. 1959. fig. refs. [Correction] Ibid., 86(369):415, July 1960. refs.

Records of daily solar radiation energy extending over a period of 1 year have been compared with readings of sunlight duration obtained with a Campbell-Stokes recorder. Energy records were made with a bimetallic actinograph. The regression equation obtained for daily values in Trinidad, West Indies was $R = R_A (0.20 + 0.59\ n/N)$, with a correlation coefficient of 0.91, where R = radiation actually received, R_A Angot's theoretical amount of radiation which would reach the earth's surface in the absence of an atmosphere, n = actual duration of sunlight and N = theoretical maximum duration of sunlight. - Author (mod) MGA 11.10-310.

1959
1117 Tabares Martinez, L.E. "Lluvias diarias del Observatorio Cagigal, 1890 - 1958, y su frecencia." [Daily rainfall and frequency, Cagigal Observatory, 1890 - 1958.] Venezuela. Univ. Central. Central de Datos Geofísicos, 1959.

1959
1118 Tenenbaum, O. "[Obituary of] Ivan R. Tannehill." American Meteorological Society, Bulletin, 40:431, 1959.

Ivan Ray Tannehill was born 13 March 1890 at McConnelsville, Ohio and died at Frederick, Maryland 2 May 1959, at the age of 69. He spent 40 years in the U.S. Weather Bureau (1914 - 1954). He received an honorary Doctor's degree at Denison University, Granville, Ohio, and was an excellent writer. Among his best known books are: 'Hurricanes' (1938, 9th ed. 1956) and 'Hurricane hunters and Drought' (1948). He was Chief of the Marine Division (1930 - 1940, Chief of Forecast Division (1940 - 1954) and Assistant Chief of U. S. Weather Bureau (1954). He was active in the International Meteorological Organization (IMO); Vice President and President of Committee for Synoptic Weather Information (1945 - 1950) and delegate to meetings at Salzburg (1937), Berlin (1939), Montevideo (1939), Toronto (1947) and Washington (1947). He was a charter member of the American Meteorological Society (1919 - 1954). - Staff. MGA 12.8-62.

1959
1119 Tschirhart, G. "Les perturbations atmosphériques intéressants l'A.E.F. Méridionale." [Atmospheric pertubations of interest to the A.E.F. Meridionale.]

1959 cont.

Météorologie Nationale, Monographies, no. 13, Paris, 1959. 32 p. figs.

A synthesis of various theories established about atmospheric phenomena affecting the Tropics. After a short survey of the general circulation in the Tropics, various types of disturbances in these regions are investigated. A process of tropical disturbance forming is offered. Staff.

1959

1120 U.S. Weather Service, Wash., D.C. "Gulf Stratus." 16 Mar. 1959. Study no. 8, rev. to Study no. 4. 6 p. illus.

Efforts were made to forecast the formation of low gulf stratus, not associated with frontal activity, at Craig AFB, Alabama by an objective method during April, May and June. Low stratus refers to a ceiling below 2500 ft which forms in the early morning, usually between 0300 and 0900 C. Forecasts were prepared by 1500 the afternoon preceding the days in question. The following predictors were used: 1) average afternoon surface wind direction 1200 - 1500 C), 2) the 2000-ft wind direction obtained from 2d level winds (1200 C raob), 3) temperature-dew point spread (1200 and 1500 C) 4) difference in temperature-dew point spread (1500 - 1200 C) and 5) the surface analysis (1200 C). In using the study, a 'yes' or 'no' forecast for a given day is possible. - Staff AD-217 797.

1959

1121 U.S. Army Ballistic Missile Agency, Huntsville, Ala. "ABMA climatological ringbook. Pt. 1, Ambient temperature as a function of altitude for ten selected stations." DA Technical Report 8 - 59, 19 June 1959. 61 p. tables. DAS. Pt. 2, "Ambient density as a function of altitude for ten selected stations." DA-Technical Report 60-59, 1 Sept. 1959. 55 p. tables. DAS.

These reports present the monthly arithmetic mean and standard deviation (Sigma) of ambient temperature and density values as a function of altitude (1000 - 10 mb or 1 - 31 km) for ten selected stations which include Germany, Greenland, Guam, Hawaii, Libya, Morocco, Panama Canal Zone, Philippines, and Puerto Rico. The data were compiled during the investigation and air evaluation of atmospheric data was accomplished for Army Ballistic Missile Agency missile design criteria. - Author (mod) MGA 11.10-256.

1959

1122 U.S. Army Ballistic Missile Agency, Huntsville, Ala. "ABMA climatological ringbook. Pt. 3, Ambient pressure - height data as a function of altitude for ten selected stations." DA Technical Report 61-59, 1 Sept. 1959.

Mean and standard deviations of pressure-height for: Libya, Greenland, Guam, Hawaii (Lihue), Germany (Berlin, Wiesbaden), Morocco (Point Liantey), Panama (Albrook), Philippines (Luzon), Puerto Rico are shown. AD-227 1 39 Div. 2.

1959

1123 U.S. Navy Fleet Weather Central, Miami, Fla. "Annual report of hurricane season, 1959." OPNAV Report 3140-9, 1959(?). Each section repaged. figs. charts. DAS.

Evaluation of forecast techniques used in preparation of advisories and warnings of hurricanes during 1958. Verification data for direction, speed and distance, plus a summary of hurricane activity and description of each individual storm, its trajectory, positions at numerous 'fixes' and methods used in correcting deficiencies are described. Numerous tables, graphs, charts, maps, nomograms, radar photos, etc., are included. There were 7 hurricanes and 3 tropical storms in 1958 (from "Alma," 14 - 15 June to "Janice," 5 - 13 October) in the Atlantic area. - Staff MGA 12.8-296.

1959

1124 U.S. Navy. Fleet Weather Facility, Miami, Fla. "Annual tropical storm report, 1958." For abstract see its "Annual Report of the hurricane season, 1959." 1959.

1959

1125 U.S. Quartermaster Research and Engineering Center, Natick, Mass. 1959. "Analogs of Canal Zone climate in Indonesia, the Philippines, and Borneo." Technical Report EP-116, Canal Zone Analogs, no. 7, 1959. 22 p. figs. tables.

Maps show the distribution of areas of analogy with the Canal Zone of pertinent climatic elements. Area covered is lat 12°N - 12°S and long 95° - 134°E. Maps are based on data from 23 stations with 7 - 73 years of record. - Staff.

1959

1126 U.S. Weather Bureau. "Hurricane Debra, July 24 - 26, 1959." 8 p. DAS.

Hurricane "Debra" developed just off the Texas coast on 24 July 1959 and passed inland between Freeport and Galveston around midnight. This is a preliminary report of meteorological conditions with bulletins and advisories issued. - Staff.

1959

1127 U.S. Weather Bureau. "Hurricane

1959 cont.

forecasting." Ed. J.S. Winston. Forecasting Guide, no. 3, Apr. 1959. 108 p. figs. tables. refs. DAS.

A concise guide on the forecasting of hurricanes with a minimum of knowledge of structure, mechanics, data, analysis and climatology. The classification, lifecycle, climatology, history and organization of the U.S. Weather Bureau hurricane forecasting service, observational aids (surface, upper air, airplane, reconnaissance, radar, microseisms and sferics), formation, development and short range prediction, motion (long, medium and short-range techniques for prediction), dissipation or transformation, storm effects (wind, rain, floods and storm tides), and appendices giving examples of Riehl, Simpson, Veigas and Miller and Jorgensen methods are reviewed. A bibliography (1951 - 1958) of technical papers on hurricane forecasting and scores of graphical aids and synoptic and climatological charts are included. - Staff MGA 11.2-34.

1959

1128 U.S. Weather Bureau. "Hurricane Judith, October 17 - 21, 1959." 12 p. DAS.

On 17 October 1959 hurricane "Judith" originated in the Yucatan Peninsula and moved across the Gulf of Mexico toward the Tampa Bay area reaching the west coast of Florida on 18 October. This is a preliminary report of the hurricane with the advisories and bulletins issued. Staff.

1959

1129 U.S. Weather Bureau. "Hurricanes: a quick reference guide to synoptic charts of hurricanes that threatened or entered the United States, 1949 - 1958, with Index." rev. Jan. 1959. 2 v. v. 1, 1949 - 1953. and index. v. 2, 1954 - 1958. Looseleaf. Almost entirely charts. DAS.

The index (40 p) allows the user of this voluminous guide to locate synoptic charts for any specific hurricane which affected the United States. Each of the index pages shows the name, date and trajectory of every main tropical cyclone and the location of the center at 0030, 0630, 1230 or 1830 Z within a given 5° square of latitude and longtitude. Surface charts for 6-hourly periods and 500 mb charts for 12-hourly periods for these hurricanes, arranged chronologically below the index. - Staff MGA 11.1-37.

1959

1130 U.S. Weather Bureau. National Hurricane Research Project. "Model hurricane

1959 cont.

plan for a coastal community." Report no. 28, Apr. 1959. 25 p. charts. DAS.

The model community hurricane preparedness plan which is described is intended to offer local authorities in cities and communities along the Gulf of Mexico and Atlantic coasts suggestions as to planning and organization to minimize hurricane losses. Leadership in preparation for hurricane emergencies must come principally from local authorities. They direct municipal and community planning, control most of the facilities which would be used in meeting an emergency, possess the necessary detailed knowledge of the local area and have the immediate responsibility for the welfare of their community and its residents. It is believed that the time and effort spent in developing and maintaining a realistic community hurricane preparedness plan is definitely worthwhile. The plan presented is for a fictitious city, Homeport, in Achilles County, on the Atlantic coast. The plan deals with real hazards associated with hurricanes and shows what might be done to minimize death and destruction. - Author (mod)

1959

1131 Uribea, H. "La zonificación climatológica de Colombia." [Climatological zonification in Colombia.] Cenicafe, Chinchina, Colombia, 10:287-288, 1959. Also: Trojer, H. "Fundamentas para una zonificación meteorológica y climatológica del trópico y especialmente de Colombia." [Foundations of a meteorological and climatological zonification of the Tropics and especially of Colombia.] Ibid. 10: 289-373, 1959. maps.

1959

1132 Veigas, K., Miller, R.G. and Howe, G.M. "Probabilistic prediction of hurricane movements by synoptic climatology." Travelers Weather Research Center, Occasional Papers in Meteorology, no. 2, June 1959. 54 p. figs. tables. refs.

An analysis of the variance procedure used in testing a hypothesis associated with prediction of the movement of hurricanes. The significance of the circulation pattern affecting movements of hurricanes has been tested from the study of the storms from 1924 through 1927 and 1954 through 1956. The study is intended to use climatological data on hurricanes in a form that is more directly applicable to the weather prediction problem. Synoptic weather patterns are tabulated and discussed, especially the surface circulation pattern as depicted by sea level pressure distribution.

1959 cont.

Staff MGA 11.3-209.

1959

1133 Wadsworth, F.H. and Englerth, G.H. "Effects of the 1956 hurricane on forests in Puerto Rico." Caribbean Forester, 20(1/2): 38-51, Jan./June 1959, figs. tables. refs.

In addition to reporting on the effects of hurricane "Betsy," this report describes its track and characteristics in Puerto Rico. The hurricane hit Puerto Rico near Maunabo and left near Camuy and its path, as plotted by radar, is shown diagrammatically. Recorded maximum wind velocities were 92 mph at San Juan and 115 mph at Ramey Air Force Base, 13 mi southwest of the path. Maximum rainfall measured on 12 August was 8.7 in. The pattern of rainfall for selected stations is shown. Staff MGA 12.11-92.

1959

1134 Weather Corporation of America, St. Louis, Mo. "Objective technique for forecasting restrictions to ceiling and/or visibility due to influx of stratus caused by frontal wave formations in the Gulf of Mexico at England Air Force Base, Alexandria, Louisiana." Contract AS 11 623 278, Sept. 1959.

An investigation was conducted to develop an objective technique to forecast the occurrence of ceilings less than 1,500 ft and/or visibilities less than 3 mi due to the influx of stratus clouds. The forecast was to be available 12 to 18 hrs before time of onset, and to be valid for the months of November through April. The study was based on an analysis of current synoptic conditions at midnight and noon for the period of November through April (1952 - 1958). The data showed that the most fruitful weather parameters for developing a forecasting technique were 1) the 24-hr sea level pressure change, 2) the current temperature-dew point temperature spread and 3) the current surface wind direction. - Author

1959

1135 Wiese, R.S. "Hidrología para la canalización del Rió Guaire." [Hydrology of the channeling of the Rió Guaire.] Colegio de Ingenieros de Venezuela, Caracas, Revista, no. 277:5-43, 1959. figs. tables.

Rainfall tables and graphs, storm rainfall studies, rainfall-depth-duration data and rainfall intensity curves are shown for the area of the Caracas Valley. Staff.

1959

1136 Woods Hole Oceanographic Institution.

1959 cont.

"Research in tropical meteorology." Reports issued for work done under Contracts Cwb-8753, 9032, 9241, 9509. Latest report seen: July 1958 - 30 June 1959. 1959. Mimeographed. photos. (Earlier reports have title: "Meteorological and oceanographic research in tropical waters.") DAS.

The contracts required oceanographic expeditions for conducting tropical storm studies (theoretical and synoptic) and studies of tropical convective clouds. A brief summary of progress achieved in the period covered by each report is given and abstracts of papers prepared under each contract are also included. - Staff MGA 14.8-620.

1959

1137 Woods Hole Oceanographic Institution. "Research in tropical meteorology." 1959. For abstract see its "Meteorological and oceanographic research in tropical waters." 1957.

1960

1138 Anstey, R. "Analogs of Canal Zone climate in the Far East. [Canal Zone Analogs, No. 9.]" U.S. Quartermaster Research and Engineering Center. Environmental Protection Research Div., Technical Report EP-141, Oct. 1960. 26 p. figs. maps. tables. refs. DAS.

The climate of the Far East is compared with that of two locations in the Canal Zone: Balboa Heights, representing the drier, leeward, Pacific side of the Isthmus of Panama, and Cristobal, representing the wetter, windward, Atlantic side. Areas of analogy of pertinent climatic elements and combinations of these elements are shown on maps. Nearly all of the study area is comparable with the Canal Zone stations with respect to mean temperature of the warmest month. Much of the lowland area of Japan, Formosa, southern China and a small area in extreme southern Korea have mean annual precipitation analogous to Balboa Heights, but only five areas on the southeast coast of Japan have mean annual precipitation amounts which are analogous to Cristobal. Author (mod) MGA 13.1-540.

1960

1139 Baer, F. and Mihaljan, J. "Bahamas Circle computations, Pt. 1, Design of the experiment." Chicago, Univ. Dept. of Meteorology, Contract Nonr-212119 (unnumbered report) Jan. 1960. 14 p. table. refs. DAS.

Report on opportunities for the study of physical processes of tropical disturbances presented by establishment of the

1960 cont.

National Hurricane Research Project in 1955. Of particular interest are studies and calculations of the following: heat exchange between any disturbance and the outside, moisture exchange, transfer of absolute angular momentum and circulation and work done by pressure forces through the boundary including transfer of kinetic energy. Initial manual calculations gave interesting results by applying the line integral technique, and it is hoped that such a technique may be an aid in the prediction of weather systems. The report is subdivided into two separate parts: 1) program for the computation of the Bahamas Circle and 2) smoothing of irregularly spaced discrete data on a circle. - Staff MGA 13.12-467.

1960

1140 Bunker, A.F. "Heat and water-vapor fluxes in air flowing southward over the western North Atlantic Ocean." Journal of Meteorology, 17(1):52-63, Feb. 1960. figs. tables. refs.

Turbulent transports of sensible heat and water vapor have been measured from an airplane in southerly flowing air masses over the western North Atlantic Ocean. It was found that the lower levels are unstable and warmed by the transport of heat from the water below, while the higher levels are stable and warmed by diffusion from the subsidence inversion aloft. Average values of the upward flux of sensible heat were found to be 2.1 mcal $cm^{-2}sec^{-1}$ in the middle latitudes and 0.1 mcal $cm^{-2}sec^{-1}$ in the Tropics. The downward heat flux was 0.3 mcal $cm^{-2}sec^{-1}$ in the region above the potential temperature minimum formed between the warm air aloft and water warmed air below. Regions studied were: offshore New England, Bermuda and Puerto Rico and Trinidad trade wind regions. - Author (mod) MGA 11.10-277.

1960

1141 Chambers, J.V. "Analogs of Canal Zone climate in the Pacific Islands (Canal Zone Analogs, no. 10)." U.S. Quartermaster Research and Engineering Center. Environmental Protection Research Div., Technical Report EP-142, Nov. 1960. 30 p. figs. tables. refs. DAS.

The climate of the Pacific Islands is compared with that of two localities in the Canal Zone; Balboa Heights, representing the drier, leeward, Pacific side of the Isthmus of Panama and Cristobal, representing the wetter, windward, Atlantic side. The temperatures of most of the Pacific area

1960 cont.

are greatly modified by the warm ocean currents. Only on the mountainous islands do the temperatures vary greatly within short vertical distances from the lowlands to the highlands. The windward slopes of the mountainous islands are the wettest areas to be found in the Pacific area. Complete 4-way analogy with both Canal Zone stations occurs in parts of the Fiji and Society Islands. Parts of the Marshall Islands are analogous to Balboa Heights and parts of the Marquesas Islands are analogous to Cristobal. Many of the Pacific Islands have insufficient rainfall to be analogous to either Balboa Heights or Cristobal. The higher slopes of the volcanic islands are too cold in winter to be analogous to either Canal Zone station. - Author (mod) MGA 13.6-601.

1960

1142 Colón, J.A. "On the heat balance of the troposphere and waterbody of the Caribbean Sea." U.S. Weather Bureau, National Hurricane Research Project, Report no. 41, Dec. 1960. 65 p. figs. tables. refs. DAS.

Study based on mean data for two winter months: December 1956 and January 1957. The structure of the atmospheric circulation shows a 2-layer atmosphere with trade easterlies in the lower layers and a westerly current of equatorial origin centered near 200 mb (40,000 ft). The upper current shows horizontal and vertical concentration of kinetic energy similar to jet streams of middle latitudes. The mean structure and properties of the flow are illustrated with vertical wind profiles, space cross sections and horizontal charts. The energy changes in both the trades and the upper current are studied through integration of the energy equations over a volume bounded laterally by aerological stations around the periphery of the Caribbean Sea. Mass and energy fluxes are evaluated and balance between sources and sinks established for different layers from the surface to the troposphere. The requirements for vertical heat and moisture flow are discussed and it is shown that convective updrafts can account for the required upward transfers. - Staff MGA 13E-241.

1960

1143 Compañia Mexicana de Luz y Fuerza Motriz, S.A. "Operaciones de estimulación de lluvia en las cuencas de Necaxa y Lerma: informe anual, 1959." [Operation of artificial stimulation of rain in the basins of the Necaxa and Lerma Rivers:

1960 cont.

annual report 1959.] Jan. 1960. 16 p. charts. refs. DAS.

Comparisons are made of precipitation amounts in the Necaxa basin (near lat 20°N, long 98°W), where silver iodide seeding operations have been conducted (since 1949). Seeding operations have also been conducted in a control zone about 50 mi to the SE. It was earlier determined, on the basis of 35 yrs of data, that precipitation amounts in the two regions, both equally sensitive to trade flow from the Gulf of Mexico, correlate very well (0.96). A series of graphs is presented showing relative accumulated precipitation amounts (June - October) in the control zone versus the seeded zone in the 15 years before 1949, and in the years when seeding took place. Separate curves are drawn for rainfalls of different amounts, 0-19, 20-49 and =50 mm. In the Lerma basin, where seeding operations have been conducted for 4 yrs, conclusive results have not yet been obtained. The relatively complex meteorological exposure of this region, with flow from both the Gulf of Mexico and the Pacific, make it difficult to evaluate the precipitation data obtained. - Staff MGA 11M-982.

1960

1144 Davis, W.R. "Hurricane season of 1959." Weatherwise, 13(1):19-25, Feb. 1960.

1960

1145 Dueño, B. "Sporadic-E as observed from Mayagüez, P.R. by backscatter sounders." Puerto Rico. Univ. College of Agriculture and Mechanic Arts, Mayagüez, Contract AF 49(638)-172, Research Report, no. 3, 1960(?). 9 p. figs. refs. DAS.

An analysis of sporadic-E activity is presented as observed at Mayagüez, Puerto Rico, from January 1958 to May 1960 on 2 simultaneously recording channels. Sampling was recorded at one minute intervals on 16 mm film. Seasonal and diurnal variations of Es activity, azimuthal variation of sporadic E and motion of Es patches are analyzed. Es shows the peak of activity in midsummer and minor maxima in December and January. Two days of intense activity, distribution of Es occurrences for various times on both channels, occurrences of Es vs azimuth, occurrences per 30-degree sector, sample paths of moving Es patches and a polar plot of measured velocities are shown. - Staff MGA 13.6-217.

1960

1146 Dunn, G.E. and Miller, B.I. "Atlantic hurricane." Louisiana State Univ. Press,

1960 cont.

1960. 326 p. figs. tables. refs. DLC. DAS.

With the death of I.R. Tannehill in 1959, the responsibility for bringing hurricane material to students and the public in a systematic form fell to Gordon Dunn, the leading hurricane expert of the U.S. Weather Bureau for a decade of more. This book gives the latest (up to late 1958) information and data resulting from the research at the National Hurricane Center at Miami, and at other centers in the United States and Caribbean. The book opens with eye-witness accounts (by trained observers) of recent disastrous hurricanes, background information as to terms, girls' names, etc. This is followed by chapters on tropical weather and circulation, hurricane climatology and hurricane characteristics. An appendix gives a tabulation of all tropical cyclones in the United States and Texas from 1635 - 1958, arranged by regions, with damage and intensity data and a glossary of meteorological terms. - Staff MGA 11.11-6.

1960

1147 Florida. Dept. of Civil Defense. "Report on civil defense operations during Hurricane Donna, Sept. 1960." Mimeographed. Sept. 1960. 33 p. map. DAS.

The path of hurricane "Donna" with winds as high as 166 mph which struck Florida on 9 - 11 September 1960 is described and shown on a map. The U.S. Weather Bureau's warnings and pre-disaster and disaster operations of the State Civil Defense Office and of other agencies are discussed. The need for Very High Frequency (VHF) systems on 6 and 2 meters is stressed. Storm damage amounting to nearly 347 million dollars is described and listed by counties. A condensed summary is given of the emergency operations carried out by local civil defense organizations, state and local governments, the American National Red Cross and the Salvation Army. - Staff MGA 14.7-599.

1960

1148 Florida Marketing Bureau. "Agricultural Statistical Summary, Vol. 43, 1959/1960. Acreage Production, Value, Disposition and Transportation Analysis with Seasonal Comparisons." 214 p. almost entirely tables.

The report contains a section which presents 25-yr 'monthly mean' temperature and rainfall records for selected Florida cities. A climatological summary of Florida is included. - Staff.

1960

1149 Frank, N.L. and Jordan, C.L.

1960 cont.

"Climatological aspects of the intensity of typhoons [sic] in Florida." U.S. Weather Bureau. National Hurricane Research Project, Report no. 36, Feb. 1960. 16 p. figs. tables. refs. DAS.

Some aspects of the intensity of typhoons [sic] have been investigated by utilizing central pressure data observed during the period 1950 - 1957. Interannual and seasonal changes in the frequency of storms of different intensities are examined and compared with statistics relating to typhoons [sic] of all intensities covering a much longer period. Geographical aspects of typhoon [sic] formation and intensity have been investigated by plotting the formation points and the points of minimum pressure of individual typhoons [sic] and by preparing maps depicting the frequency of typhoons [sic] of different intensities. Author (mod) MGA 12.1-301.

1960

1150 Gentry, R.C. "Review of recent hurricane research." Weatherwise, 13(5):206-209, Oct. 1960. fig.

The West Indies observational network was strengthened by the establishment of a new station at Bogotá, Colombia. It is expected that a series of observations in the Caribbean will provide information on the important problems of radiation. A recent experiment at Miami was conducted to determine if air motions in the lower and upper layers of the troposphere can be used to predict the occurrence of rainfall. Recently, some storm studies in the Florida area show that hurricanes have occurred in homogenous air. - Staff MGA 12.8-293.

1960

1151 Graham, H.E. and Hudson, G.N. "Surface winds near the center of hurricanes (and other cyclones.)" U.S. Weather Bureau. National Hurricane Research Project, Report no. 39, Sept. 1960. 200 p. figs. tables. refs. DAS.

Data, analysis and inferences on the surface winds near the center of large hurricanes are provided. The first chapter gives a synthesis of wind patterns and an explanation of analysis procedures. The second chapter describes hurricanes dating from 3 September 1821 to 27 June 1957. Winds associated with extratropical storms along the Atlantic Coast 25 November 1950, 6 - 7 November 1953 and 11 - 12 April 1956 are considered separately. The general method used in developing isotach patterns is explained in the first chapter while necessary variations in this method

1960 cont.

are described in the section dealing with particular storms. The analysis of one storm 21 September 1938 is included in summary form. In the process of adjusting observed wind speeds to a common height and frictional surface, several key stations are examined. Observed data used in constructing isotach patterns have been included either on the figures or in the appendix. - Staff MGA 13.7-21.

1960

1152 Great Britain. Meteorological Office. "Tables of temperature, relative humidity, and precipitation for the world." London, H.M. Stationery Off. All tables.

Pt 1, North America, Greenland, North Pacific, 1 - 82. Pt 2, Central and South America, West Indies, 1 - 51. Pt 3, Europe and Atlantic Ocean N of 35°, 1 - 153. Pt 4, Africa, Atlantic Ocean S of 35°, Indian Ocean, 1 - 209. Pt 5, Asia, 1 - 125. Pt 6, Australia and South Pacific Ocean, 1 - 53. - Staff.

1960

1153 Greenfield, S.M. and Kellogg, W.W. "Calculations of atmospheric infrared radiation as seen from a meteorological satellite." Journal of Meteorology, 17(3): 283-289, June 1960. figs. refs.

Since certain constituents (water vapor, ozone, carbon dioxide, etc.) of the atmosphere have pronounced absorption and emission bands in the infrared region of the spectrum, upward radiation from the atmosphere will depend on the distribution and temperature of the constituents. This radiation can be measured from meteorological satellites. Sample calculations of emission by water vapor in three wavelength intervals (at two places in the strong absorption band, 6.0 and 6.2 microns, and in the region of weak absorption, 8 to 13 microns) are shown. Water vapor distributions used in these calculations are those for the United States measured by the University of Chicago. In the water-vapor 'window' at 8 to 13 microns, about two-thirds of the upward emission in the vertical comes from the ground in middle latitudes (low humidities), but only about 1/3 of the surface radiation escapes in the Tropics. - Author (mod) MGA 11J-58.

1960

1154 Harrington, E.L. "Cloud refractive index studies, Pt. 3." Chicago. Univ. Dept. of Meteorology. Cloud Physics Lab., Contract AF 19(604)-1931, Final Report, 2 May 1960. 93 p. figs. tables. refs. DAS.

1960 cont.

Statistical analysis of refractive index gradients has been applied to measurements made in the sub-cloud layers at altitudes from 1,000 to 3,000 ft over the Caribbean Sea. The data were arranged in bivariate frequency tables of the change in N versus the change in S and tests were made to determine if these distributions changed with respect to altitude and horizontal location. The tests revealed a high degree of sampling variability which masked any other variability which might be present. The distributions of the change in N show that over ninety percent of the values are less than one N unit. reflecting the high humidity encountered at these altitudes. Refractive index measurements have been made on additional cloud samples. - Author (mod) MGA 12.5-65.

1960

1155 Heastie, H. and Stephanson, P.M. "Upper winds over the world." Great Britain Meteorological Office. Geophysical Memoir no. 103. Replaces Geophysical Memoir no. 85 (C.E.P. Brooks).

Includes world maps of mean height of 700, 500, 300, 200, 150, 100 mb surfaces for January, April, July, and October based on data for 1949 - 1953. Streamline-isotach charts and charts of standard deviation of the vector mean wind are included. - Staff.

1960

1156 Hershfeld, D.M. and Wilson, W.T. "Comparison of extreme rainfall depths from tropical and nontropical storms." Journal of Geophysical Research, 65:959-982, 1960. figs. tables.

1960

1157 Higgs, R.L. and Riehl, H. "Unrest in the upper stratosphere over the Caribbean Sea during January 1960." Journal of Meteorology, 17:555-561, 1960.

1960

1158 Hills, T.L. "Climatic observations at Waterford, Barbados." McGill Univ., Bellairs Research Institute, Climatological Sec., Barbados, no. 1, (Mar. - Aug. 1959), no. 2, (Sept. - Dec. 1959), no. 3, (Jan. - Apr. 1960), no. 4, (May - Aug. 1960).

Tabulations of maximum and minimum temperature, dry and wet bulb temperature (0900), sunshine, precipitation, potential evapotranspiration (after Thornthwaite), daily wind, evaporation from an open tank, latent evaporation (after Robertson) and soil temperatures are shown. - Staff.

1960

1159 Howell, W.E. "Cloud seeding in the American tropics." American Geophysical

1960 cont.

Union, Geophysical Monographs, no. 5, pp. 412-423, 1960. figs. tables. refs.

Cloud seeding projects in Cuba and Puerto Rico are described. An evaluation of the results are summarized and discussed using models of precipitation formation. A new model is proposed and discussed which will explain the effectiveness of seeding under conditions where clouds develop relatively slowly at the precipitating stage. - Author (mod) MGA 11M-991.

1960

1160 Howell, W.E. "Seeding of clouds in tropical climates." American Society of Civil Engineers. Irrigation and Drainage Div., Journal, 86(Paper 2397):55-77, Mar. 1960. figs. tables. refs.

The more important attempts at cloud seeding carried out in Cuba and Puerto Rico (1948 - 1958) are summarized. Water spray or hygroscopic particles were introduced into warm clouds so as to stimulate rain by the coalescence process. Also, seeding of supercooled clouds with dry ice or silver iodide was accomplished in order to stimulate precipitation by sublimation. The experiments indicate that theory and observation are in substantial agreement regarding the initiation of rainfall by a coalescence process in warm clouds and the influence of salt or water seeding upon rainfall initiation. In order to explain the rain inducing action of silver iodide or ice crystals, the author proposes a new model where a number of convective cells will compete for potential energy, slowly warming and deepening the surface as they increase gradually in size and decrease in number. - Staff MGA 11M-992.

1960

1161 Jehn, K.H. "Microwave refractive index distributions associated with the Texas - Gulf cyclone." American Meteorological Society, Bulletin, 41:304-312, 1960. figs. refs.

Microwave refractive index distributions in the lower atmosphere through the various stages of development of the winter Texas-West Gulf of Mexico cyclone are presented. Analyses includes 'composite' surface and 850 mb charts and vertical atmospheric cross-sections. - Author (mod) MGA 12.6-143.

1960

1162 Jones, R.W. "Tracking of hurricane Audrey 1957 by numerical prediction." Chicago. Univ. Dept. of Meteorology, Technical Report, no. 11, Contract Cwb 9718, Mar. 1960. DAS.

The 2-level baroclinic steering model

1960 cont.

developed by Kasahara (1959) for predicting hurricane trajectories is extended by allowing for the initial velocity of the hurricane. This model is applied to hurricane "Audrey" (1957). An analysis of 4-level data for hurricanes "Betsy" (1956) and "Audrey" (1957) and the results of the "Audrey" forecasts are presented. Author (mod).

1960

1163 Jordan, C.L. "Spawinds for the eye wall of hurricane Daisy of 1958." In Weather Radar Conference, 8th, San Francisco, 11 - 14 Apr. 1960. Proceedings, 1960. pp. 219-226. figs. refs. DAS.

Small scale features in the eye wall of hurricane "Daisy" (27 August 1958) could be identified and tracked for periods up to 10 min from films taken of the APS-20E radarscope of U.S. Navy reconnaissance aircraft. The apparent speed of individual features, relative to the center of the eye, ranged from approximately 95 to 130 kts. The general characteristics of the wind field, as indicated by the movement of the radar echoes, agreed quite well with those shown by wind data for the 13,000 ft level recorded by a reconnaissance aircraft of the National Hurricane Research Project. - Author (mod) MGA 14B-79.

1960

1164 Jordan, C.L. "Tropical meteorology." American Geophysical Union, Transactions, 41(2):194-197, 1960.

1960

1165 Jordan, C.L., Hurt, D.A. and Lowrey, C.A. "On the structure of hurricane Daisy on Aug. 27, 1958." Journal of Meteorology, 17(3):337-348, June 1960. figs. refs.

An unusually large collection of aircraft-reconnaissance data was obtained from hurricane "Daisy" (27 August 1958). It consisted primarily of detailed flight-level information collected by the research aircraft of the National Hurricane Research Project and radar films taken from the operational reconnaissance aircraft of the U.S. Navy. At this time, hurricane "Daisy" was a small, slow-moving storm off the Florida east coast with winds in excess of 100 kts in the lower troposphere. The concentrated nature of this vortex is clearly shown by flight level wind and temperature data and by weather patterns shown on radar films. The films from the search radar show a central ring like echo only a few miles wide which corresponds closely with the area of maximum observed

1960 cont.

winds. - Staff MGA 12.7-341.

1960

1166 Kasahara, A. "A Numerical experiment on the Development of a tropical cyclone." Chicago Univ. Dept. of Meteorology, Technical Report no. 12, Cwb-9718. Also pub. in Journal of Meteorology, 18:259-282, 1960.

1960

1167 Kuo, H.L. "On the initiation of tropical depressions and convection in a conditionally unstable atmosphere." National Hurricane Research Project Report no. 40, 1960. 46 p.

1960

1168 Landsberg, H.E. "Do tropical storms play a role in the water balance of the Northern Hemisphere?" Journal of Geophysical Research, 65:1305-1307, 1960. tables.

1960

1169 Moore, P.L. "Hurricane season of 1960." Weatherwise, 14(1):18-23, Feb. 1960. figs. refs.

A general description of the hurricane season is given and each storm is described individually. During the yr, a total of 7 tropical cyclones developed in the Atlantic-Caribbean-Gulf of Mexico area. Of these, 4 storms grew to hurricane intensity, and only 2, "Donna" and "Ethel," brought hurricane force winds to the coast of the United States. The total property damage during the yr amounted to about $400 million. All except $2 million, was caused by "Donna." A chart showing the paths of North Atlantic tropical cyclones is given. Staff MGA 13.1-359.

1960

1170 Mueller, E.A. and Jones, D.M.A. "Drop-size distribution in Florida." Weather Radar Conference, 8th, San Francisco, 11 - 14 Apr. 1960. Proceedings, pp. 299-305, 1960.

1960

1171 Olson, D.L. "SS Desota encounters hail storm in Gulf of Mexico." Mariners Weather Log, 4:150-151, 1960.

1960

1172 Perrusset, M. "Antilles et Guyane, 3-Météorologie." [Antilles and Guiana, 3. Meteorology.] France. Secrétariat Général à l'Aviation Civile, Revue, no. 103:24-35, Jan. 15, 1960. figs.

Describes organization and composition of the meteorological service in the Antilles-Guiana island group. The service was constructed by the central office and installed at Fort-de-France (Martinique), the meteorological sub-region of Guadeloupe and the meteorological sub-region of Guiana and Inini. Meteorological bulletins from

1960 cont.

foreign networks are received either by radio or teleprinter. The principal tasks of the meteorological forecasting service are: protection against cyclones, assistance to air navigation, assistance to sea navigation and information for the public. The climatological service consists of about 200 observation stations. Schematic climatological charts are reproduced and indicate the annual rainfall in Martinique, Guadeloupe and Guiana. - Staff MGA 12.1-31.

1960

1173 [Physics Today.] "Project ICEF, the Skyhook 60 flights." Its 13(4):36-38, Apr. 1960. For abstract see Schein, M. "High energy particles in the cosmic radiation." 1960.

1960

1174 Plank, B. "Cumulus convection over Florida - a preliminary report." In Conference on Cumulus Convection, 1st, Portsmouth, N.H., 19 - 22 May 1959. Cumulus dynamics: Proceedings, ed. C.E. Anderson, New York: Pergamon Press, 1960, pp. 109-118.

1960

1175 Portig, W.H. "Beiträge zur Meteorologie Mittelamerikas (insbesondere El Salvadors)." [Contributions to the meteorology of Central America (especially of El Salvador).] Deutscher Wetterdienst, Hamburg, Report no. 28, 23 p. DAS. M:551.46 G373e no. 28.

Author summarizes the highlights of his 4 1/2 yrs work as a forecaster. The characteristics of the flow of tropical air are described. The concept of 'instability waves,' which travel faster (from the East) and more frequently than Riehl's easterly waves, is developed. Mean and extreme dew point data are given. Staff.

1960

1176 Portig, W.H. and Gerhardt, J.R. "Research in tropical meteorology." Electrical Engineering Research Lab., Univ. of Texas, Austin. Quarterly Technical Report no. 1, 1 July - 30 Sept. 1960. Contract DA 36-039-SC-84937, 1960. 18 p. tables.

Details are given of research in tropical meteorology. The relationships between meso and synoptic scale circulation patterns for meteorological parameters of particular interest to military operations were investigated. As a prelude to the design of a long range research program, the initial results are presented of an analysis program for the Caribbean area involving the association of perturbations in upper atmospheric circulation patterns with surface variations in precipitation, temperature, and wind fields. - Author AD-247 489.

1960 cont.

1960

1177 Portig, W.H., Kowalik, V.C. and Gerhardt, J.R. "Research in tropical meteorology." Electrical Engineering Research Lab., Univ. of Texas, Austin, Quarterly Technical Report no. 2. 1 Oct. - 31 Dec. 1960. 1 v. Contract DA 36-039-SC-84937, 1960. illus.

A preliminary survey was made on the results of tropical area analyses. Particular emphasis was given to tropical thunderstorms, northers, cloud patterns, special wind circulations, weather anomalies, singularities and instability lines. Differences between tropical and mid-latitude conditions are specifically enumerated. General forecasting techniques and some of the difficulties hampering research progress are outlined. - Author AD-251 701.

1960

1178 Puig Tomas, J., Ledesma, M. and Garcia de Quevedo, J.L. "Preliminary report of the meteorological observations in the vicinity of Puerto Rico Nuclear Center at Mayagüez, Puerto Rico." Univ. Puerto Rico, Oct. 1960. 34 p. (U.S. Atomic Energy Commission, Puerto Rico Nuclear Center Meteorology Report [unnumbered.]) DAS.

Temperature, relative humidity, precipitation and surface wind data are presented graphically for a meteorological station at the provisional site of the Nuclear Center at Mayagüez, Puerto Rico (July 1958 - 29 February 1960). Long period precipitation data for 8 stations in Puerto Rico, and comparative wind frequency curves for the provisional Nuclear Center Station and for the airport at Mayagüez are also presented. Climatic particularities of the area and local conditions influencing wind at the 2 Mayagüez locations are discussed. - Staff MGA 14.4-724.

1960

1179 Riehl, H. and Higgs, R.L. "Unrest in the upper stratosphere over the Caribbean Sea during Jan. 1960." Journal of Meteorology, 17(5):555-561, Oct. 1960. figs. refs. Also issued as: U.S. Weather Bureau, National Hurricane Research Project, Report no. 37, Apr. 1960. 10 p. figs. ref.

Wind observations were taken at a network of stations around the Caribbean at 100,000 to 120,000 in January 1960. After an initial period of strong but variable easterly winds, a large disturbance emanated from the equatorial zone with structure similar to shear lines in the low troposphere during the hurricane season. The

1960 cont.

history of this equatorial shear line is described. - Author (mod) MGA 11.10-305.

1960

1180 Riley, J.A. "Climate of the delta area of Mississippi." Mississippi Agricultural Experiment Station, State College, Bulletin, no. 605, Sept. 1960. 28 p. figs. tables. DAS.

Climatic information about the delta area of the Mississippi based on a study of long-term weather trends is described in this paper for use in designing agricultural programs. Data on precipitation, temperature, sunlight, evaporation, relative humidity and winds are described in separate sections and illustrated in tabular and graphic form. In a section titled, 'Disaster Weather,' the trend and annual average of tropical storms is discussed. The last section is devoted to a discussion of the changing climate of the delta. - Staff MGA 13.1-524.

1960

1181 Rivera Aceves, J. "Estudios climatológico y geográfico de Yucatán." [Climatological and geographical studies of Yucatan.] Master's thesis, Mexico (City) Univ. Nacional, 1960. 19 l. DLC.

1960

1182 Rosenthal, S.L. "A simplified linear theory of equatorial easterly waves." Journal of Meteorology, 17:484-488, 1960.

Streamlines and fields of vertical motion are theoretically computed for easterly waves with their maximum at the Equator. - Staff.

1960

1183 Sansom, H.W. "A note on an unusual fall in humidity on the Equator." Meteorological Magazine, 89:332-335, 1960.

1960

1184 Sawyer, J.S. and Sutcliffe, R.C. "[Discussion on] Gangopadhyaya, M. and Riehl, H. Exchange of heat, moisture, and momentum between Hurricane Ella (1958) and its environment." Royal Meteorological Society, Quarterly Journal, 86(368): 276, Apr. 1960. For abstract see Ganghopadhyaya, M. and Riehl, H. "Exchange of heat..." 1959.

1960

1185 Schatzle, F.J. and Cronise, W.G. "Synoptic and radar photographic presentation on the life cycle of hurricane "Gracie" (1959)." In Weather Radar Conference, 8th, San Francisco, 11 - 14 Apr. 1960, Proceedings, 1960. pp. 403-417. figs. DAS.

It has long been the desire of research and operational activities associated with

1960 cont.

tropical storm detection and tracking to obtain a life cycle pictorial record of a hurricane. This was accomplished during the coverage of hurricane "Gracie" by U.S. Navy reconnaissance aircraft during 18 - 29 September 1959. The life cycle from genesis to dissipation was depicted utilizing selected Plan-Position Indicators (PPI) and Range Height Indicator (RHI) 35 mm slides from the aircraft's 10- and 3-cm radars. - Author (mod) MGA 14B-115.

1960

1186 Schein, M. "High energy particles in the cosmic radiation." Physics Today, 13(4):38-39, Apr. 1960. photos. "Summary of the talk as given in Chicago. Univ. of Chicago Reports 10:405, 1960. DAS. Also: Project ICEF, the Skyhook 60 flights. Ibid. pp. 36-38. figs. DAS.

In Schein's paper, it is indicated that the only way to study basic modes of interaction of high energy particles is by exposing emulsions to cosmic rays. This article discusses briefly the types of collisions of high energy particles which are of interest and the Project ICEF program for studying such phenomena. The second paper describes how in late January 1960, an ambitious cosmic ray experiment was conducted by scientists from 14 nations on the flight decks of the USS VALLEY FORGE, then cruising east of the Leeward Islands and the Caribbean. The object was to send 2 Navy Skyhook balloons of unprecedented size to an altitude of 18 - 22 mi and keep them aloft for 2 full days. The Caribbean area was chosen for its proximity to the Equator, where the Earth's magnetic field serves as a barrier to cosmic rays of energies lower than about 10 Bev. A brief description of the launching is given and it is noted that a balloon once stayed aloft for 32 hrs instead of the planned 48 hrs. Author (mod) MGA 14J-188.

1960

1187 Senn, H.V. and Hiser, H.W. "Mean motion of radar echoes in the complete hurricane." In Weather Radar Conference, 8th San Francisco, 11 - 14 Apr. 1960, Proceedings. 1960. pp. 427-434. figs. refs. DAS.

Radar echo vector motion was studied for 1573 echo trajectories from hurricanes "Edna" (1954), "Connie," "Diane" and "Ione" (1955), "Audrey" (1957) and "Daisy" and "Helen" (1958). After the elimination of storm velocity, echo motion is described both in terms of speed versus crossing angle information and tangential and radial

1960 cont.

components. Results are compared with the shape and motion of spiral bands as well as to wind and radar echo velocity data of other researchers. - Author MGA 14B-118.

1960

1188 Senn, H.B., Hiser, H.W. and Nelson, R.D. "Studies of the evolution and motion of radar echoes from hurricanes, July 1, 1959 to June 30, 1960." Miami. Univ. Marine Laboratory, Contract Cwb-9727, Final Report, Aug. 1960. 55 p. figs. tables. refs. DAS.

During the past two years, radar echo vector motion was studied for over 3,000 echo trajectories from hurricanes "Edna" (1954), "Connie," "Diane" and "Ione" (1955), "Audrey" (1957), "Daisy" and "Helen" (1958) and "Debra" (1959). The preliminary results of the analysis of about half of these data are verified in most respects, but subject to important modification in the region of the wall cloud. Progress on continuing attempts to mathematically describe echo and spiral band motion and to relate that motion to the dynamics of the hurricane is also discussed. A unique feature of several similar Florida hurricanes is presented which may prove operationally useful in determining the direction of motion of these storms when other information is lacking. - Author (mod) MGA 14B-117.

1960

1189 Shapaev, V.M. "Trade wind circulation over the Atlantic Ocean." Leningrad. Glavnaia Geofizicheskaia Observatóriia, Trudy, no. 90, p.130-148. 1960.

1960

1190 Shirley, J.A. "Marine automatic weather stations." Mariners Weather Log, 4(6):191-194, Nov. 1960. For abstract see Shinners, W. "Marine automatic meteorological observing stations." 1962.

1960

1191 Simpson, J.S.M. "Recent developments in studies of penetrative convection and an application to hurricane cumulonimbus towers." In Conference on Cumulus Convection, 1st, Portsmouth, N.H., 19 - 22 May 1959. Cumulus dynamics: Proceedings, ed. C.E. Anderson, New York: Pergamon Press, 1960. pp. 65-84.

1960

1192 Smith, G.W. "[Correction to:] Solar radiation and the duration of sunshine in Trinidad, West Indies." Royal Meteorological Society, Quarterly Journal, 86(369): 415, July 1960. For abstract see his original article 1959.

1960

1193 Southworth, M.P. "Nighttime radio propagation in equatorial regions." Journal of Geophysical Research, Feb. 1960. (A shorter version of this report appears in American Geophysical Union Transactions 41:693-698, Dec. 1960).

The report gives the first results of the International Geophysical Year (IGY) Amateur Radio Research Program. Discusses equatorial propagation paths, daily variations, seasonal variations, relationship to geomagnetic activity, frequency and fading characteristics. - Staff.

1960

1194 Sumner, H.C. "North Atlantic tropical cyclones, 1959." Mariners Weather Log, 4(1):2-7, Jan. 1960. For abstract see his "North Atlantic tropical storms, 1956." 1957.

1960

1195 Texas. Univ. Electrical Engineering Research Laboratory. "Research in tropical meteorology." Contract DA-36-039 SC-84937, First Quarterly Technical Report, 1 July 1960 - 30 Sept. 1960. 18 p. tables. DAS.

Details are given of a research program in tropical meteorology in which efforts will be made to obtain additional knowledge and to further understanding of the relationships between meso and synoptic-scale circulation patterns for meteorological parameters of particular interest to military operations. As a prelude to the design of a long range research program, initial results are presented of an analysis program for the Caribbean area involving the association of perturbations in upper atmospheric circulation patterns with surface variations in precipitation, temperature and wind fields. - Author (mod) MGA 13.2-355.

1960

1196 Texas. Univ. Electrical Engineering Research Laboratory. "Research in tropical meteorology." Contract DA-36-039-SC-84937, Second Quarterly Technical Report, 1 Oct. 1960 - 31 Dec. 1960. 29 p. figs. DAS.

A preliminary survey based on the results of current tropical area analyses and on the personal experiences of the chief investigator in the Tropics is made of selected critical problems in tropical meteorology and of the necessity for further research. Particular emphasis is given to tropical thunderstorms, 'northers,' cloud patterns, special wind circulations, weather anomalies and singularities and instability lines. Differences between tropical and mid-latitude

1960 cont.
conditions are specifically enumerated. General forecasting techniques and some of the difficulties hampering research progress in this area are outlined. Author (mod) MGA 14.286.

1960
1197 Texas. Univ. Electrical Engineering Research Laboratory. "Research in tropical meteorology." 1960. See also Portig, W.H. and Kowalik, V.C. "Some mesoscale meteorological phenomena of the Caribbean area." 1961; and Portig, W.H. and Gerhardt, J.R. "Research in tropical meteorology." 1962; Ibid. 1963.

1960
1198 Thom, H.C.S. "The distribution of annual tropical cyclone frequency." Journal of Geophysical Research, 65:213-222, 1960.

1960
1199 Tisdale, C.F. "The weather and circulation of September 1960, including a discussion of tropical storm activity." Monthly Weather Review, 88:353-361, 1960.

1960
1200 U.S. Navy. Fleet Weather Central, Miami, Fla. "Annual tropical storm report, 1959 (i.e. 1959 Hurricane Season in the Atlantic, Caribbean and Gulf of Mexico)." OPNAV Report 3140.9, 1960(?). 131 p. figs. charts. DAS.

The discussion in this report is organized into four parts. Pt. 1 discusses and evaluates forecasting and observational techniques employed in arriving at conclusions promulgated in hurricane warnings. In Pt. 2, a summary of the tropical storm season including individual storm data consisting of maps is given. Pt. 3 contains a summary of certain special research and evaluation projects conducted by this facility. Administrative procedures are discussed in Pt. 4. Annex A consists of an airborne Early Warning Squadron FOUR Annual Hurricane Reconnaissance Report. - Staff MGA 12.9-325.

1960
1201 U.S. Treaties, etc., 1953 - 1961 (Eisenhower). "Weather stations: cooperative program on Guadeloupe Island. Agreement between the U.S.A. and France..." Wash., D.C.: Government Printing Office, 1960. U.S. Dept. of State. Treaties and other international acts series, 4610. 6 p. DLC J X 235.9.A32.No. 4610.

1960
1202 U.S. Weather Bureau. "Agricultural weather forecasting service pilot project in Mississippi's Delta area; report and evaluation, 1959 crop season,

1960 cont.
recommendations for continuance and extension." Wash., 1960. 43 p. illus. map.

1960
1203 U.S. Weather Bureau. "Average hourly wind speed at Dr. Plesman Airport, Curaçao, Netherlands Antilles, during period 1953 - 1958." San Juan, P.R., Jan. 1960. DAS.

Contains monthly and annual tabular summaries of hourly wind speed (mph) at Dr. Plesman Airport, Curaçao, and a graph shows hourly (at 2 hr intervals, wind speed (mph) by months (1953 - 1958). Staff.

1960
1204 U.S. Weather Bureau. "Hurricane Donna, September 2 - 13, 1960." 73 p. DAS.

On 10 - 11 September 1960, hurricane "Donna" moved along the western coast of Florida. A table contains pressure, wind and rainfall data for Tampa, Florida on 10 September. This is a preliminary report of meteorological conditions with advisories and bulletins issued. - Staff.

1960
1205 U.S. Weather Bureau. "Hurricane Ethel, September 14 - 17, 1960." 16 p. 1960. DAS.

On 14 September 1960, hurricane "Ethel" developed in the central Gulf of Mexico and moved through southeastern Mississippi and northwest Alabama into Tennessee. This is a preliminary report with the advisories and bulletins issued during the hurricane. A table presents highest winds, peak gusts, lowest pressures and highest tides on 15 September 1960 for individual stations. - Staff

1960
1206 U.S. Weather Bureau. "Hurricanes: a quick reference guide to synoptic charts of hurricanes that threatened or entered the United States 1949-60." 3 v. 1960. DAS.

Compilation of surface charts for 6 hourly periods and 500 mb. charts for 12 hourly periods during the occurrence of each hurricane that threatened or entered the United States during the period 1949 - 1960. Some of these hurricanes were in the Gulf of Mexico. - Staff.

1960
1207 U.S. Weather Bureau. "Maximum precipitation [inches] at Weather Bureau City Office, San Juan, Puerto Rico, during the period from 1899 to July 1959." San Juan, 1960(?) 1 l. table. DAS.

1960
1208 Veryard, R.G. and Ebdon, R.A. "Some interesting variations in upper-air

1960 cont.

temperatures." Weather, London, 15:257-261, 1960. figs. tables.

Temperature changes at the 200 mb level were observed at New Delhi. Order of magnitude was greater than 10°C and the length of period was greater than 10 yrs (1949 - 1959). Highest temperature in all mos 1954 - 1957, lowest in 1949. Other stations at: Aden, Hong Kong, Nairobi, Lerwick, Brownsville and Kogoshima show opposite trends from the surface through 100 mb. - Staff.

1960

1209 Wexler, R. and Wexler, Ruth. "Cold clouds over tropical oceans." In Conference on Cumulus Convection, 1st, Portsmouth, N.H., 19 - 21 May 1959, Cumulus Dynamics: Proceedings, New York: Pergamon Press, 1960. pp. 129-134. figs. refs. DLC.

Observations in clear air over tropical oceans of cold clouds as a rather frequent phenomenon are summarized. Results are compared with a theoretical model based on 'bubble' experiments to show the variation of temperature and moisture within a cloud. Characteristics of most clouds were derived from aircraft observations in the Caribbean during August 1956. A cloud development model is described with illustrations of aircraft soundings and of computed cloud temperatures. The existence of cold temperatures in the upper portion of the cloud is indicative of the growing stage of a cumulus. The channeling of the convergent mechanism into the individual cumulus clouds and the inertia of the motion in their lower portion cause the rising air to be colder than the environment. The release of convective instability in the atmosphere is represented by the cumulus cloud with cold temperatures aloft and warm temperatures below. - Staff MGA 15.4-369.

1960

1210 Whitney, L.F. "Cloud conference summary." U.S. Weather Bureau. Meteorological Satellite Laboratory, Report no. 1. July 1960. 22 p. DAS.

This is a summary of the papers given at the Cloud Conference held in Washington, D.C., 14 - 15 December 1959. Speakers reviewed topics as follows: 1) interpretation of clouds as seen in rocket photographs, 2) recognition of cloud forms and systems, 3) showing of Atlas mosaic film, 4) cumulus cloud patterns over the tropical ocean, 5) time lapse film of cirrus and traveling waves taken at the Blue Hill Observatory, 6) temperature inversions over the South Atlantic and 7) cumulus

1960 cont.

cloud photographs from 35,000 - 40,000 ft. Staff MGA 14C-205.

1960

1211 Woodcock, A.H. "The origin of trade-wind orographic shower rains." Tellus, 12:315-326, 1960. figs. tables.

A study of Project SHOWER and other data. - Staff.

1960

1212 Zmuda, A.J. "Ionospheric electrostatic fields and the equatorial electrojet." Journal of Geophysical Research, 65:2247-2253, 1960.

1961

1213 Antilles. Service Météorologique du Groupe Antilles-Guyane. "Normales climatologiques de Fort-de-France, Desaix, Pointe-à-Pitre, Le Raizet, Cayenne, Rochambeau." [Climatological normals for Fort-de-France, Fort Desaix, Pointe-à-Pitre, Le Raizet, Cayenne, Rochambeau.] Fort-de-France, Martinique, 1961(?). 11 l. tables. DAS.

1961

1214 Burkard, O.M. "Maximum of temperature in the middle ionosphere." Nature, 189 (4763):474, 11 Feb. 1961. refs. DAS.

From data of the change of electron-density with height over Puerto Rico, the height dependence of scale height and density have been computed. During the day, the scale height has a maximum at about 200 km and shows considerable daily and yearly variation. Above this maximum, the scale height decreases rapidly. - Staff MGA 12.10-181.

1961

1215 Caskey, J.E. "Further comments on distribution of surface friction in hurricanes." Journal of Meteorology, 18(3): 426-427, June 1961. fig. refs.

Describes a test of Lettau's regression equation. For test purposes, surface pressure and wind data at various storm radii were obtained from the U.S. Army Corps of Engineers network as a hurricane passed over Lake Okeechobee, Florida, on 26 - 27 August 1949. Lettau's equation yielded encouraging results and it is hoped that this will call further attention to Lettau's (1959) concept of the geostrophic drag coefficient. - Staff MGA 13.9-611.

1961

1216 Cleveland, M.J. "Proposal for developing a hurricane plan with a built-in decision-making capability." U.S. Air Force Missile Test Center, Patrick AFB, Fla., Report no. OA WP 61 3, Nov. 1961.

This study was originated to determine a statistical measure of the ability of

1961 cont.

weather forecasters to forecast the movement of tropical storms and hurricanes in the Caribbean Sea area. The knowledge gained was exploited into the formulation of a scheme which provided a probability basis for deciding if and when storm preparations should be made. The objectives here were to present: 1) the results of the statistical study, 2) the probability scheme developed for preparedness decision-making and 3) the outline for developing a hurricane plan with hedging characteristics which incorporates the decision-making mechanism. - Author (mod) DDC.

1961

1217 Colón, J.A. et al. "On the structure of Hurricane Daisy." U.S. Weather Bureau. National Hurricane Research Project, Report no. 48, Oct. 1961. 102 p. figs. table. refs. DAS.

During 25 August to 28 August 1958, aircraft of the National Hurricane Research Project (NHRP) flew a total of 8 research missions into hurricane "Daisy" at levels ranging from 960 to 240 mb. This hurricane developed in the vicinity of the Bahamas during 24 August 1958 and had barely attained hurricane intensity at the time of the first NHRP mission on 25 August 1958. The general characteristics of the winds, temperature, dew point, and cloud and precipitation fields are discussed, including the nature of the fluctuations of these parameters in the hurricane area. The changes that took place during the process of development are analyzed by means of space cross sections perpendicular to the direction of motion on weak and intense days. Selected wind profiles from hurricane "Helene" of 1958 are used to illustrate a type of intensification process different from that observed in "Daisy" illustrating essential differences in the structure and size of the high kinetic energy core. - Author (mod) MGA 14.8-518.

1961

1218 Cooperman, A.I. and Sumner, H.C. "Hurricane Carla, September 4 - 14, 1961 (a preliminary report.)" U.S. Weather Bureau, Weekly Weather and Crop Bulletin, 48(38):7-8, 18 Sept. 1961. fig. table.

Analysis of hurricane "Carla," one of the major Gulf hurricanes of this century which moved into the western Caribbean Sea on 4 September. From the time of its inception, "Carla" moved generally northwestward passing through the Yucatan Channel on the 7th and reaching the Texas coast during the afternoon of the 11th.

1961 cont.

The loss of life directly attributed to "Carla" was about 43 persons and preliminary damage estimates totaled over $300 million. Hurricane data consisting of pressure, wind and rainfall observations for various stations in Texas and Louisiana are tabulated and described. A map tracking the movement of hurricane "Carla" is also given. A brief description of the major historical hurricanes on the Texas coast concludes the article. - Staff MGA 13.10-541.

1961

1219 Cry, G.W. "Climatology of 24-hour North Atlantic tropical cyclone movements." U.S. Weather Bureau. National Hurricane Research Project, Report no. 42, Jan. 1961. 92 p. figs. tables. refs. DAS.

Tropical cyclone movements are an important aspect of hurricane forecasts and warnings. Summaries of 24-hr changes of tropical cyclone center positions for 68 selected areas of the North Atlantic region (1886 - 1958) are presented. The month and year of tropical cyclone origin or detection and the total frequency of passages through each area are included. Points of recurvature, portions of tracks containing complete loops and tables of mean speeds in various latitudes are also shown. - Author (mod) MGA 13.5-577.

1961

1220 Cry, G.W. "North Atlantic tropical cyclones, 1960." Mariners Weather Log, 5(1):1-7, Jan. 1961. figs.

Seven tropical cyclones occurred in the North Atlantic region, including the Gulf of Mexico and the Caribbean, during 1960. Four reached hurricane intensity. Marine losses were recorded in the June tropical storm when a shrimp boat was lost with 3 crewmen off Mustang Island in Texas. In hurricane "Donna," numerous inter-island schooners in the Lesser Antilles were sunk or beached. "Donna" also caused heavy damage and losses to small boats in southern Florida and from North Carolina into New England. A summary of the individual storms is given for the tropical storm of 22 - 28 June; hurricane "Abby" (9 - 16 July); tropical storm "Brenda" (28 - 31 July); hurricane "Cleo" (17 - 20 August); hurricane "Donna" (29 August - 13 September); hurricane "Ethel" (14 - 17 September) and tropical storm "Florence" (17 - 26 September). Tracks of the storms are shown. - Author (mod) MGA 14.10-606.

1961

1221 Dueño, B. "Measurement of ionospheric

1961 cont.

drift by radio-star observations." Journal of Geophysical Research, 66(8):2355-2365, Aug. 1961. figs. table. refs.

Measurement of the fluctuations of signals from the radio-star Cassiopeia have been made at Lajas, Puerto Rico. There exists at this location a great increase in fluctuation activity during June and July which appears to be associated with the large scale changes taking place in the F2 layer during the presunrise period. No significant relationship between fluctuation activity and Es or between fluctuations and spread F were observed. Measurements of drift velocities by means of 3 spaced interferometers have also been made. It has been found that drift is toward SE in the evening hrs and toward NW in the morning with transitions occurring at noon and at midnight. About 75 percent of all the drift measurements taken were analyzed by Putter's method. - Author (mod) MGA 13.9-201.

1961

1222 Durham, K.S. "Study of radar reflectivities from hurricane Debra, July 24 - 25, 1959." In Utilization of AN/CPS-9 radar in weather analysis and forecasting. By Sanford, T.E., ed. Texas A and M Univ. Dept. of Oceanography and Meteorology, Contract AF 19(604)-6136, Final Report, 1961. pp. 110-127. figs. tables. refs. DAS.

A study of the matamorphosis of hurricane "Debra" by determining radar reflectivities in a portion of the left forward quadrant. The average movement of the hurricane was determined by plotting the center position as shown by the photographic record from the AN/CPS-9 radar located at the A & M University of Texas. The positions of all radar echoes were measured for a distance of 50 mi (called reflectivity slice) from the storm center and for the complete distance (called attenuation slice) between the radar site and several points along the reflectivity slice. Calculated reflectivities for hurricane "Debra" (24 - 25 July 1959) are tabulated. - Staff MGA 14B-162.

1961

1223 [Electronics] "World's largest dish to aid A-blast detection." Its 34(4): 20-21, 27 Jan. 1961. photos.

Describes the construction of a giant radio telescope in Puerto Rico which is designed to be the most sensitive instrument ever built for probing the complex structure of the ionosphere.

1961 cont.

Many experiments are planned such as radar probes of distant planets, mapping of the Moon, studying the dynamics of particle fluxes in the solar system, etc. - Staff MGA 14G-65.

1961

1224 Fean, C.R. "Seasonal survey of average cloudiness conditions over the Atlantic and Pacific Oceans." Univ. of Calif., Scripps Institute of Oceanography, Ref. 61-27, 1961. 34 p. charts.

Seasonal summaries of monthly data from U.S. Navy marine climatic atlases. Charts are for total cloud cover less than 2/10 and percentage frequency of low cloud amounts more than 6/10. They are presented seasonally by ocean. - Staff AD 267-488.

1961

1225 France. Service Hydrographique "Antilles." Paris, 1961. (Supersedes years 1951 and 1954.) maps. tables. in French. DNO.

Describes the climate of the Antilles by elements. Monthly and annual summaries contain mean pressure (mb) at Fort-de-France and 2 other stations in the area. For the Antilles, monthly and seasonal tropical cyclones from May - December and the total number in percent with wind speed (Beaufort Force 12) are shown for the period 1887 - 1941. - Staff.

1961

1226 Gordon, I.M. "Nature of γ -emission in solar flares and the formation of cosmic particles in active solar regions." Soviet Astronomy, AJ, 4(5):873-875, Mar./Apr. 1961. refs. Trans. of original Russian: In Astronomicheskii Zhurnal, 37(5):934-937, Sept./Oct. 1960.

The γ-emission observed during solar flares in an airborne balloon experiment over Cuba is due to 2-photon annihilation of positrons formed as a result of nuclear collisions between cosmic protons generated during chromospheric flares. Another possible source for the γ-emission is the reverse Compton effect. It is pointed out that, for the γ-emission to be of an annihilation nature, the γ-emission must have a 'step' function in the E region. Measurements of the intensity of the γ-emission will make possible a quantitative estimate of the efficiency of this mechanism. - Author (mod) MGA 13K-241.

1961

1227 Grimes, A.E. "Annotated bibliography of climatic maps on Cuba." U.S. Weather Bureau, Report no. WB/BM-27, Apr. 1961. 10 p. DAS.

Sponsored by Air Weather Service

1961 cont.

Climatic Center, Washington, D.C. Lists 28 reports by title and author, and includes descriptive comments concerning the content of these reports. - Staff.

1961

1228 Hadeen, K.D. "Microwave potential refractivity distribution over the Gulf of Mexico." Master's thesis, Texas A & M Univ., Jan. 1961. figs. table. refs.

The concept of potential refractivity was introduced to investigate the utility of this parameter as an aid in forecasting tropospheric refractivity distributions. Two isoptic case studies were made of the potential refractivity distributions. The first case study shows the distributions of potential refractivity as a continental polar (cP) air mass invades the Gulf of Mexico. The second case study shows the distributions of potential refractivity as a tropical cyclone moves northwestward across the Gulf. The transition zone between air masses is clearly defined by the packing of the isopleths of potential refractivity. The small changes in patterns of potential refractivity for 12-hr periods indicate that this parameter would be an aid in forecasting topospheric refractivity distributions. - Author (mod).

1961

1229 Hills, T.L. "Tropical research station in the West Indies." World Meteorological Organization, WMO Bulletin, 10(4): 225-227, Oct. 1961. photo.

This station was established at Waterford, Barbados in 1958. Its aims are: 1) to make meteorological observations at a tropical station within the trade wind zone, 2) to do research for the development of agricultural meteorology in an area which is densely populated and largely dependent on agriculture and 3) to create a graduate center for research into the problems of tropical and Caribbean geography. Instruments are described and results published are listed. - Staff.

1961

1230 Hiser, H.W. and Adt, R.R. "Precipitation echo heights in South Florida." In Weather Radar Conference, 9th, Kansas City, Mo., Oct. 1961. Proceedings, 1961. pp. 90-95. figs. table. refs. DAS.

A study was made of the height of precipitation echoes over southern Florida and adjacent waters by use of range-height indicator (RHI) data collected on an MPS-4, 4.6 cm wavelength, height-finder radar. The azimuth, range, height, date and time for all echoes were punched on IBM cards. The weighted mean height of the 15,276

1961 cont.

echoes tabulated between 40 and 80 mi range in all quadrants from the radar for a 2-yr period was 21,000 ft. The effects of theoretical minimum detectable rainfall rate, radar beam width and storm structure are evaluated. Results are also presented according to land or water environment, range from the radar and season of the year. Author (mod) MGA 14B-174.

1961

1231 Hubert, L.F. "Tropical cloudiness, severe storms, and convective cells." In Proceedings of the International Meteorological Satellite Workshop, Wash., D.C., Nov. 1961. Wash., D.C.: Government Printing Office, 1961. pp. 75-89. figs.

Author discusses the utility of satellite observations for synoptic analysis in the Tropics. - Staff.

1961

1232 Johnson, H.M. "Use of satellite data in tropical meteorology." U.S. Air Force, Cambridge Research Laboratories, Geophysics Research Directorate (GRD) Research Notes, 36(2):312-327, 1961.

1961

1233 Johnson, R.M. "Effects of stability on drop-size distributions." In Weather Radar Conference, 9th, Kansas City, Mo., Oct. 1961, Proceedings. 1961. pp. 286-291. figs. table. refs. DAS.

An attempt to reduce the variance occurring in rainfall rate-radar reflectivity relationships was investigated using stability as a criterion. A preliminary investigation employing drop size data and upper air soundings during 30 storms at Miami, Florida, indicated that the positive area generated using the parcel method may be significant in classifying drop size distributions. An IBM 650 computer program was written to obtain the positive area stability index for a large number of soundings. Punched cards of radiosonde observations for Miami, covering the period 20 August 1957 to 15 August 1958, were processed through the computer. A 3 percent reduction in the standard error of estimate over rain type and synoptic type classifications was obtained. - Author (mod) MGA 14B-181.

1961

1234 Jordan, C.L. "Surface pressure oscillations in tropical cyclones." Paper presented at Technical Conference on Hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961.

1961

1235 Jordan, C.L. and Ho, T. "Variations in the annual frequency of tropical

1961 cont.

cyclones, 1886 - 1958." Scientific Report to U.S. Weather Bureau, Contract no. CWB-9873, 1961. 23 p. figs. tables.

A report on the frequency of hurricanes and typhoons in the Atlantic and Pacific. The lack of cycles or trends discouraged further study of other areas. - Staff.

1961

1236 Jordan, C.L. and Schatzle, F.J. "Double eye of Hurricane Donna." Monthly Weather Review, 89:354-356, 1961. figs. refs. Also issued in Technical Conference on Hurricanes, 2d, Miami Beach, 27 - 30 June 1961, Proceedings, U.S. Weather Bureau, National Hurricane Research Project, Report no. 50, pt. 2, 1962. pp. 368-372. DAS.

A detailed description of observations made during the reconnaissance flight on 6 September 1960 with regard to the 'double eye' of hurricane "Donna." The radarscopes are discussed and the misleading term 'double eye' is clarified. Other examples of the phenomenon found in certain typhoons are mentioned. It is concluded that in all cases of intense tropical cyclones, the 'double eye' has been of the concentric type. - Staff MGA 14.8-520.

1961

1237 Jordan, C.L., Schatzle, F.J. and Cronise, W.G. "Some interesting radar features of hurricane Donna." In Weather Radar Conference, 9th, Kansas City, Mo., Oct. 1961, Proceedings, 1961. pp. 6-11. figs. table. refs. DAS.

The 'double eye' of the hurricane observed on 6 September 1960 on the scope of an S-band APS-20E radar at about lat 21.5°N, long 69.5°W, is discussed. Range Height Indicator (RHI) and Plan-Position Indicator (PPI) photographs from APS-45 radar are presented. A table of characteristics of the above 2 radars is included. Observations of the 'bright band' and of cloud structure in and near the 'eye' are discussed and illustrated. - Staff MGA 14B-183.

1961

1238 Jordan, H.M. "Hurricane Carla." Weatherwise, 14(5):192-196, Oct. 1961.

1961

1239 Kasahara, A. "Mechanism for the development of a tropical cyclone." Paper presented at Technical Conference on Hurricanes, 2d, 1961. Miami Beach. Fla., 27 - 30 June 1961.

1961

1240 Ligda, M.G.H., Serebreny, S.M. and Nagle, R.E. "Research toward effective use of weather radar data in weather analysis and forecasting." Stanford

1961 cont.

Research Institute, Menlo Park, Calif., Contract AF 19(604)-3067, Weather Radar Systems Research, Final Report, Jan. 1961. 81 p. figs. tables. refs. DAS.

The program was to continue the Project Weather Watch continental radarscope photography program for 6 months or until the end of 1958 and to study automatic processing of weather radar data using video tapes. The work done is described under the following headings: the significance and use of synoptic scale radarscope observations in weather analysis and forecasting, some precipitation patterns as observed by radar in storms along the west coast of the United States and time factors in observing weather with radar. The studies resulted in: 1) an entirely new method of analog-to-digital data conversion, 2) illustration of the step-by-step evolution of a situation in which a deep, extratropical cyclone formed on the polar front and 3) a possible explanation for the extraordinary development of this particular disturbance. It was found that the rotation of the spiral arms and the center of hurricane "Audrey" (1957) could be much more readily examined at large time compression rates than at those normally employed in making radarscope movies. Numerous illustrations include Weatherwatch film record, and schematic grid of precipitation echo distribution and character associated with the occluded phase of a cold core cyclone, 14 radarscope composites and surface weather charts and 4 maps at the surface and aloft. - Staff MGA 14B-194.

1961

1241 López, M.E. and Howell, W.E. "Campaign against windstorms in the banana plantations near Santa Marta, Colombia, 1956-57." American Meteorological Society Bulletin, 42:265-276, 1961. figs. tables.

Windstorms do great damage in banana plantations near the Sierra Nevada de Santa Marta in Colombia. Most damage was found to be triggered by easterly waves and similar large scale disturbances, though the windstorms themselves remained purely local. Cloud seeding to attempt reduction of windstorm intensity was undertaken during the 1956 and 1957 seasons. The hypothesis was that stimulation of showers early in the diurnal build-up of instability would dissipate some of the instability and reduce insolation at the ground. This would diminish the intensity of later convective overturning. Comparison of damages during seeded seasons with those of preceding and subsequent seasons showed a

1961 cont.

marked reduction in the ratio of severe windstorms to mild ones. During the campaign, a reduction of perhaps as much as 39 percent in damages worth several million dollars annually was estimated. - Staff.

1961

1242 McGill Univ. Bellairs Research Institute. "Annual Report, 1959/1960." Report no. 2, Jan. 1961. 12 p. DAS.

Discusses the following: Institute objectives; apparatus and equipment in operation; establishment of another recording station at Hope Estate, St. Lucia; observational, advisory and experimental work done to date; future research; state of finances and personnel employed; visitors to the present station; etc. A 1 page addendum lists three objectives of an experiment by the Climatological Section of the station. - Staff

1961

1243 Portig, W.H. and Durie, S.J. "Author bibliography." In Texas Univ. Engineering Research Lab., Research in tropical meteorology, Contract DA-36-039-Sc-84937, Final Report, pt. 3, 30 June 1961. 105 p. DAS.

Comprehensive bibliography arranged alphabetically by author. References were obtained from current literature, past issues of Meteorological Abstracts and from personal contacts with United States and foreign specialists in tropical meteorology. Some 1460 items deal with the Caribbean, the tropical Pacific and the Indian Ocean. - Staff MGA 13.8-90.

1961

1244 Portig, W.H. and Gerhardt, J.R. "Design of a long range program of basic research in tropical meteorology." In Texas. Univ. Electrical Engineering Research Lab., Research in tropical meteorology, Contract DA-36-039-Sc-84937, Final Report, pt. 1, 1 July 1960 - 30 June 1961. 30 p. refs. DAS.

A plan is presented of a basic research program in tropical meteorology which will permit a significant contribution to our knowledge of essential meteorological processes in the tropics. A 5-yr project is envisioned involving the participation of several research groups and coordination with existing meteorological organizations and facilities. Selected problem areas are outlined, some of which can be effectively studied using existing data and previous analyses, with the remainder requiring new measurements. It is recommended that details of this plan pertinent to problem area specifications, scheduling, observation team locations,

1961 cont.

instrumentation, logistics and costs be worked out through appropriate study conferences. - Author (mod) MGA 13.6-55.

1961

1245 Portig, W.H. and Kowalik, V.C. "Some mesoscale meteorological phenomena of the Caribbean Area." In Texas. Univ. Electrical Engineering Research Lab., Research in tropical meteorology, Contract DA-36-039 SC-84937, Final Report, pt. 2, 30 June 1961. 57 p. figs. refs. DAS.

Section 1 describes an anticyclonic outdraft over the northern Gulf of Mexico which is the consequence of outflowing cold air produced by thunderstorms. The data fit the model developed for land areas by Fujita and predicted for tropical oceans by Sucksdorf. Section 2 deals with the effect of strong wind shear on tropical cumulonimbus clouds. Section 3 contains a description of the upper air conditions immediately preceding the formation of tropical storm "Arlene." The last section shows mean wind conditions during the period 27 - 30 June 1959 at eight levels. As other studies indicate, the atmospheric layer that displays the greatest and probably most interesting variability is not found in the lowest 20,000 ft. Author (mod) MGA 15.5-335.

1961

1246 Portig, W.H. and Kowalik, V.C. "Very small but persistent cyclonic whirl in the middle troposphere of the northwestern Caribbean." In American Meteorological Society, National Meeting, 21 - 23 May 1961. Program, American Meteorological Society, Bulletin, 42:131-132, 1961.

The middle troposphere over the northwestern Caribbean was characterized by a trough like configuration of contour lines at the 500 - 250 mb levels during the period 7 - 12 May 1959. The westward movement of the trough in the westerlies and its vertical axis require a closed cyclonic circulation of small diameter. The orientation of the axis of the 'whirl' developed a slope towards the south with decreasing height. The path of the 'whirl' began over Cuba and followed a large anti-cyclonic spiral until it disappeared after more than a whole revolution northeast of the Bahamas. - Author (mod).

1961

1247 Reed, R.J. et al. "Evidence of a downward-propagating annual wind reversal in the equatorial stratosphere." Journal of Geophysical Research, 66:813-818, 1961.

1961

1248 Riehl, H. "On the mechanisms of

1961 cont.

angular momentum transport in hurricanes." Journal of Meteorology, 18(1):113-115, Feb. 1961. table. refs.

A discussion on the mechanism through which the absolute angular momentum gained by hurricanes and transferred to the ocean surface is transported inward. Interpretations are based on studies of hurricanes, "Carol" and "Hazel" (1954); "Connie," "Diane," "Ione," and "Janet" (1955) and "Becky," "Daisy" and "Helene" (1958). Inflow of momentum was not well correlated with the relative intensity of the hurricanes and the results are compared with those obtained by Palmén and Riehl (1957). In summary, the momentum flow due to asymmetries as computed here may be omitted as a small term, at least within 600 km radius and in the low troposphere. Inspection of the individual charts suggests that the principal asymmetric features, such as association of the maximum wind with outbound radial motion, would have remained the same had it been possible to analyze maps composited over 24 hrs or more. - Staff MGA 13.1-360.

1961

1249 Riehl, H. and Simpson, J.S.M. "Some aspects of Hurricane Daisy, 1958." Tellus, 13(2), 181-213, May 1961. figs. tables. refs. Also issued as: U.S. Weather Bureau. National Hurricane Research Project, Report no. 46, July 1961. 64 p. DAS.

Using observations from research flights into hurricane "Daisy" (1958), the authors calculated mass budget, total heat budget, air-sea exchange, moisture budget, precipitation, vertical heat flux, number of 'hot towers,' ventilation, kinetic energy budget and the budget of absolute angular momentum. Also a 2-dimensional analysis of the storm is presented. - Author (mod) MGA 13.9-612.

1961

1250 Schuetz, J. and Fritz, S. "Cloud streets over the Caribbean Sea." Monthly Weather Review, 89:375-382, 1961. figs. refs.

Bands of cumuliform clouds over the Caribbean Sea observed by Tiros I are described. The possible relationship between the occurrence of these bands and the vertical structure of the horizontal winds is discussed. The cloud street orientation is compared with the wind direction. - Author MGA 14C-152.

1961

1251 Senn, H.V. "Hurricane eye motion as seen by radar." In Weather Radar Conference, 9th, Kansas City, Mo., Oct. 1961.

1961 cont.

Proceedings, 1961. pp. 1-5. fig. table. refs. DAS.

The small scale motion of the radar hurricane center is examined for hurricanes "Ione" (1955), "Helene" (1958), "Debra" (1959) and "Donna" (1960) in an attempt to show the relationship between such motion and that which is actually reported and used operationally. It is shown that significantly large and sometimes systematic variations in both the speed and direction of the radar 'eye' exist when observed on either a 5-min or a 1/2-hr time base for all the storms studied. - Author MGA 14B-216.

1961

1252 Shinners, W. "Diurnal pressure variation and tropical cyclone development." Mariners Weather Log, 5:116-117, 1961.

1961

1253 Simpson, J.S.M., Ronne, C. and Chaffee, M. "Cloud patterns in hurricane Daisy, 1958." Tellus, 13(1):8-30, Feb. 1961. figs. table. refs.

Maps of clouds in hurricane "Daisy" (1958) have been constructed from aerial cinephotographs made by the aircraft of the National Hurricane Research Project of the U.S. Weather Bureau. Clouds were located within 5-10 mi relative to the known aircraft path (in coordinates with origin at hurricane center). Horizontal and vertical dimensions of important clouds and cloud forms were measured to within about 10 percent. The photographic maps are compared to radar analyses made from the same and also different aircraft (U.S. Navy WV-4). The most significant results are the remarkable persistence of recognizable cloud patterns throughout the 3 days studied during which the storm deepened and moved about 200 mi and the concentration of convective activity into a few lines of cumulonimbus towers. - Author (mod) MGA 15.5-385.

1961

1254 Smedley, D. "Sources of meteorological and climatological information in the Caribbean region." Caribbean Journal of Science, 1(2):75-78, May 1961.

Lists the national meteorological services in the Caribbean region, names of directors, addresses of administrative offices and West Indies and Caribbean climatological publications received at the office of the U.S. Weather Bureau Territorial Climatologist in Puerto Rico. Author MGA 13.9-57.

1961

1255 Soule, G. "Automatic weather eye." Sea Frontiers, 7(3):140-143, Aug. 1961.

1961 cont.

Describes an unmanned boat type buoy which serves as an unmanned automatic ocean weather station. The buoy, securely anchored, contains a radio transmitter that broadcasts the air temperature, water temperature, atmospheric pressure, wind speed and direction. On 14 September, such a buoy became the first unmanned weather station in history to warn of an approaching hurricane. It was operated by the U.S. Bureau of Standards and monitored by the U.S. Weather Bureau. It was part of a research program for the U.S. Navy conducted by Texas A & M University. Sufficient information was obtained to indicate that this type of station will greatly assist forecasting. Efforts are being made to interest several organizations in the possibility of establishing a network of 8 to 10 fixed weather buoys across the Gulf of Mexico. - Staff.

1961

1256 Sourbeer, R.H. and Gentry, R.C. "Rainstorm in southern Florida, Jan. 21, 1957." Monthly Weather Review, 89:9-16, 1961. figs. tables. refs.

The storm situation of 21 January 1957 was studied and vorticity and horizontal divergence patterns computed from analyzed synoptic maps at low and high elevations of the troposphere. Contour and streamline charts for the period are presented to show that the synoptic parameters ordinarily used in analysis and forecasting would not lead one to expect such heavy rainfall. Computations of divergence are compared with the rainfall charts in an effort to determine the cause of the heavy rainfall which amounted to 21 1/2 in within a 24 hr period. The divergence patterns moved horizontally with time in such a manner that a high level divergence area became superimposed over a low level convergence area at the time of heavy rain. - Author MGA 13.6-588.

1961

1257 Spano, A.F. and Wallace, J.A. "Annotated bibliography on the climate of British Honduras." U.S. Weather Bureau, Oct. 1961. 9 p. 23 items. DAS.

All listed sources containing meteorological and climatological data for British Honduras up to August 1961 are available in the U.S. Weather Bureau Library and in the Library of Congress. Abstracted entries are arranged alphabetically by author and a subject heading index is provided. - Staff MGA 13.11-63.

1961

1258 Stevens, J.A., Low, E.F. and Senn, H.V.

1961 cont.

"Mathematical description of hurricane echo motion." In Weather Radar Conference, 9th, Kansas City, Mo., Oct. 1961. Proceedings, 1961. pp. 410-415. figs. refs. DAS.

General equations of hurricane radar echo motion are developed from hydrodynamical considerations for echoes with undistorted spiral bands. The equations, representing a composite of horizontal motion, describe the motion of individual echoes in hurricanes "Debra" (1959) and "Donna" (1960). A partial model is developed to permit their application to echoes in general where there is a dependence of the motion on echo position and storm speed. A time limit on the life of an echo possessing a positive (inward) crossing angle is found leading to a theoretical limitation of the width of spiral bands. - Author MGA 14B-219.

1961

1259 Striebel, C.T. and Bieber, R.E. "Prediction of upper-air winds over Cape Canaveral." American Meteorological Society, Bulletin, 42:522-526, 1961.

1961

1260 Troup, A.J. "Variations in the 200 mb flow in the Tropics." Meteorological Magazine, 90:162-167, 1961.

1961

1261 Tunnell, L.E. "Objective method of forecasting Gulf stratus at Webb AFB, Texas." U.S. Air Weather Service, Scott Air Force Base, Ill., Aug. 1961.

Most of the entire coastal area is confronted at times with the problem of stratus ceilings caused by moist air which moves up from the Gulf of Mexico. The objective is to determine a method for forecasting stratus ceilings with bases of 2,500 ft or less at Webb AFB, Texas between the hours of 0300 l and 0900 l using data available at 0300 l. It is emphasized that this study is concerned only with stratus caused by moist air moving in from the Gulf of Mexico and not with post-frontal stratus or other situations where stratus occurs. It is hoped that information can be obtained which will furnish a method of forecasting the height of the cloud bases and possibly a method of forecasting certain types of fog. - Author (mod).

1961

1262 U.S. Air Weather Service 8th Weather Group. "Terminal forecast manual." Mississippi, Keesler Air Force Base, May 1961. 79 p. figs. tables. refs. DAS.

This manual is compiled in 4 separate sections: 1) location and topography, 2) weather controls, 3) climatic aids and 4) local forecasting studies. The first

1961 cont.

section describes the geographic location of Keesler Air Force Base, Biloxi, Mississippi, the topography and orographic effects, the surface weather observations and gives the location of various meteorological instruments. The second section deals with the controlling features of the weather at the base and describes in detail the synoptic weather by season. Section 3 discusses the climate data available: annual wind averages, precipitation, fog, thunderstorms, composite tables of averages and extremes and diurnal pressure change charts. The last section deals with average diurnal temperature variations, case studies, forecasting the Gulf Frontal Wave, thunderstorms, maximum downrush of gusts and empirical 'rules-of-thumb'. Staff MGA 14.6-102.

1961

1263 U.S. Air Weather Service, Scott Air Force Base, Ill. "USAF Severe Weather Service." AWS Manual no. 105-41. 15 Apr. 1961. 24 p.

1961

1264 U.S. Navy. Fleet Weather Central, Miami Fla. "Annual Tropical Storm Report, 1960 (i.e., 1960 Hurricane Season in the Atlantic, Caribbean and Gulf of Mexico)." OPNAV Report 3140.9, 1961(?). 131 p. figs. tables. charts. DAS.

This report is presented in 4 parts with an Annex. Pt. 1 is devoted to the discussion and evaluation of forecasts. Pt. 2 contains a summary of the tropical storms of the season. Pt. 3 summarizes certain special research and evaluation projects conducted by the facility. Pt. 4 is devoted to the administrative procedures involved. Annex A is an annual weather reconnaissance report made by Airborne Early Warning Squadron Four. Numerous charts, graphs and tables are included. - Staff MGA 14.7-19.

1961

1265 U.S. Navy. Fleet Weather Facility, Miami, Fla. "Annual tropical storm report, 1961." OPNAV Report 3140.9, 1961. 275 p. DAS.

Collection of data on hurricanes in the Atlantic, Caribbean and Gulf of Mexico. Staff.

1961

1266 U.S. Weather Bureau. "Generalized estimates of probable maximum precipitation and rainfall-frequency data for Puerto Rico and Virgin Islands for areas to 400 square miles, durations to 24 hours, and return periods from 1 to 100 years." Prepared by Cooperative Studies Section, Hydrologic

1961 cont.

Services Division. Technical Paper no. 42, 1961. 94 p. figs. tables. refs.

Maximum rainfalls observed throughout the world are tabulated and plotted. Adjusted maximum observed 24-hr rainfalls (in) for Puerto Rico and for the Virgin Islands are shown on maps. Tropical storms passing within two latitude degrees of Puerto Rico and Virgin Islands (1515 - 1959) are tabulated and the track of hurricane "Betsy" across Puerto Rico (12 August 1956) is shown. The probable maximum precipitation (PMP) is reviewed and isohyets for 1, 6, and 24 hour PMP are shown on maps of Puerto Rico and the Virgin Islands. Staff MGA 13.12-559.

1961

1267 U.S. Weather Bureau. "Hurricane Carla, September 4 - 14, 1961." 1961. 36 p. DAS.

This source contains "Hurricane Carla, September 4 - 14, 1961 (a preliminary report)." by A.I. Cooperman and H.C. Sumner. The article was published in the 18 September 1961 issue of the 'Weekly Weather and Crop Bulletin.' In addition to the article, there are advisories and bulletins issued during the hurricane which crossed the Gulf of Mexico 7 - 11 September 1961. Staff.

1961

1268 U.S. Weather Bureau. "Hurricane Carla, Surface charts for 6 hourly periods and 500 millibar charts for 12 hourly periods: 00Z, September 5, 1961 through 18Z, September 13, 1961." DAS.

Surface charts for 6-hourly periods and 500 mb charts for 12-hourly periods from 0000Z on 5 September 1961 through 1800Z on 13 September 1961 include data for the United States, Mexico, the Caribbean and North Atlantic. - Staff.

1961

1269 Veryard, R.G. and Ebdon, R.A. "Fluctuations in tropical stratospheric winds." Meteorological Magazine, 90:125-143, 1961.

1961

1270 Weather Engineers, Inc. "Pictorial report of Project 'Wind Control'." 2697 Lafayette St., Soquel, Calif., 1961. 66 p. figs. tables.

A report of a cloud seeding program designed to reduce 'blow-down winds' on a banana plantation in Panama. [Sponsored by the United Fruit Company and the Chiriqui Land Company.] Reports describing 1959 and 1960 operations have been prepared and operations are continuing in 1962. This report presents a brief pictorial review of the equipment used, a summary of the

1961 cont.

conditions observed when severe type storms develop and a discussion of the results obtained during the first 3 yrs of operation. Staff.

1961

1271 Weather Radar Conference, 9th, Sponsored by the American Meteorological Society and U.S. Weather Bureau, Kansas City, Mo., 23 - 26 Oct. 1961. "Proceedings." 1961. 445 p. figs. photos. tables. refs. DAS.

Contains 72 papers which are grouped under the following headings: 1) Radar hurricane studies and use of radar in forecasting (severe dealing with hurricanes: "Ione" (1955); "Helene" (1958); "Debra" (1959) and "Donna" (1960); 2) Characteristics of convective storms (7 papers); 3 Hydrological and climatological applications of radar (5 papers); 4) Severe local storms (8 papers); 5) Severe local storms and squall lines (7 papers); 6) Radar measurement of air motion and clear air schoes (7 papers); 7) Computations of reflectivities and attenuation (6 papers); 8) Meteorological echo analysis (8 papers) and 9) Instrumentation and data processing (18 papers). The papers are documented with graphs, tables, maps, photographs and contain bibliographies. Staff MGA 13.5-2.

1961

1272 Wernstedt, F.L. "World climatic data, (Vol. 2), Latin America and the Caribbean." Pennsylvania State Univ., Dept. of Geography, 1961. 87 p. almost entirely tables. DLC.

This is the 2d of 6 volumes to be published which will include climatic data for all countries in the world. Average monthly and annual values of precipitation and temperature are given for at least 10 yrs. The present volume contains data for 31 countries in Latin America and the Caribbean. For some countries (Mexico), over 350 stations are presented. - Staff MGA 161-18.

1962

1273 Ackerman, B. "Hurricane cloud physics research." Chicago. Univ. Dept. of the Geophysical Sciences, Contract Cwb-9720, Final Report, 15 Mar. 1962. 68 p. figs. refs.

The research on the evaluation and analysis of liquid water content measurements carried out from aircraft during hurricane "Carrie" (1957), tropical storm "Becky" (1958), and hurricanes "Daisy" and "Helene" (1958), is summarized. The data were reduced in the form of averages over

1962 cont.

1-sec intervals and values of water content were computed for homogeneous sections and cloud bands composed of 1 or more cells. The cloud water contents were quite low; in only a few instances did they exceed 3 or 4 g/m^3 and the bulk of the measurements was below 1 or 2 g/m^3. Evidence is presented that the water content in a cloud band may increase down-stream, i.e., from the outer end of a cloud line inward as it spirals cyclonically toward the center. - Staff MGA 14.4-698.

1962

1274 Alaka, M.A. "On the occurrence of dynamic instability in incipient and developing hurricanes." Monthly Weather Review, 90:49-58, 1962. figs. refs.

Observations made by the specially instrumented aircraft, operated by the National Hurricane Research Project, establish the occurrence of dynamic instability in the form of anomalous winds in the upper troposphere above hurricane "Daisy" shortly after its inception. Synoptic conditions favorable for the development of anomalous winds are discussed and it is found that these conditions prevailed in the upper troposphere directly above "Daisy" and "Gracie" a short time before they reached hurricane intensity. The role of negative absolute vorticity is shown to vary. In the presence of anomalous winds it is a stabilizing factor which is nonetheless important in channeling outflow at the top of the hurricane. Author (mod) MGA 13.9-610.

1962

1275 Angell, J.K. and Korshover, J. "The biennial wind and temperature oscillations of the equatorial stratosphere and their possible extension to higher latitudes." Monthly Weather Review, 90:127-132, 1962. figs. tables.

In equatorial latitudes, an oscillation in the zonal wind during a 20-mo period has been noted at 25 and 50 mb. The oscillation decreases downward and is almost undetectable at 100 mb. Near the Equator, the biennial temperature maximum occurs 3 mos prior to the biennial west wind maximum. - Staff.

1962

1276 Antilles. Service Météoroligique du Groupe Antilles-Guyane. "Résumé mensuel du temps." [Monthly weather summary.] 1951 - 1962. DAS.

Contains daily and monthly tabular data by year (1951 - 1962) for approximately 6 to 12 stations in the French Antilles and French Guiana of: temperature (°C), maximum

1962 cont.

and minimum; precipitation (mm), total and sunshine (hrs), total. Beginning February 1960, upper air tabular data include the following: at Cayenne and Rochambeau - wind speed and direction at surface, 500, 1000, 1500, 3000, 5000 m at 1100 GMT; at Pointe-à-Pitre and Le Raizet - 4 observations (0500, 1100, 1700, 2300 GMT) of wind speed and direction at mandatory levels (850, 700, 500, 300, and 300 mb) and maximum and minimum temperatures. A brief description of the general weather for each month is included as well as a station list and location map. - Staff.

1962

1277 Army Conference on Tropical Meteorology, 1st Asbury Park, N.J. 10 - 11 May 1962. Sponsored by the U.S. Army Signal Research and Development Lab. "Proceedings." ed. W.H. Portig and J.R. Gerhardt. Texas. Univ. Electrical Engineering Research Lab., Contract DA36-039 SC-89179, Report 7-22, 30 Sept. 1962. 50 p. figs. photos. DAS.

Conference had as its primary objective the evaluation of the current status of our knowledge in tropical meteorology, with particular emphasis on the unsolved problems of meteorological processes in the Tropics as they apply to the mesometeorological scale for land areas. The Conference was sponsored by the U.S. Army Signal Research and Development Laboratory, which also acted as host during the actual meetings. Preparatory arrangements were handled by the University of Texas. Author (mod) MGA 15.6-34.

1962

1278 Bec, R. "Îles et les vents alizés." [Islands and the trade winds.] France. Secrétariat Général à l'Aviation Civile, Revue, no. 114:12-14, 15 Oct. 1962. chart. DLC. Also in: France. Météorologie Nationale, MET-MAR, no. 38:25-28, Jan. 1963.

Article describes the important role played by trade winds in the discovery, history and evolution of the Lesser Antilles and the American islands. The occupation of the Lesser Antilles by the Caribbean Indians and the penetration of Christopher Columbus into the Bahama archipelago are linked with the trade winds. Later these winds exerted an influence upon the slave trade. Today, the development of agriculture and tourism in the Lesser and Greater Antilles, where the climate is ruled by the trade winds, requires the development of meteorology. - Staff MGA 14.12-H92.

1962

1279 Blumberg, R. "Are severe Gulf hurricanes now more probable?" Oil and Gas

1962 cont.

Journal, 17 Sept. 1962. pp. 121-122; 126-129(?), 1962. figs. photos. refs.

Paths of severe hurricanes affecting the northern Gulf of Mexico coast during 1893 - 1919 (low solar activity) are compared with those of the period 1920 - 1961 (high solar activity). The much lower number of Gulf Coast hurricanes (1920 - 1961) is attributed to intensification and zonal shift to the north of the Bermuda-Azores high and the northward shift of the easterlies and westerlies during high solar activity. An increase by 50 - 70 percent in the frequency of severe gulf hurricanes is anticipated for the next four decades, a period of expected low solar activity. - Staff MGA 14.10-600

1962

1280 Blume, H. "Beiträge zur Klimatologie Westindiens." [Climatology of the West Indies.] Erdkunde, 16(4):271-289, Dec. 1962. figs. tables. refs. German and English summaries p. 271.

The climate of the West Indies is influenced by the seasonal and regional changes of precipitation. The types of precipitation together with seasonal distribution and annual totals have been examined in order to obtain a standardization and classification of climates. An interruption of the trade wind currents and of precipitation is caused by the following weather conditions: in summer 1) easterly waves, 2) the intertropical front moving forward to the north and 3) hurricanes and in winter: 1) weak convergence and 2) cold air-bridges from the north. The following areas can be distinguished according to the seasonal distribution of precipitation: 1) those with a rainy season in summer (one or two maxima of precipitation) and 2) those with a rainy season in winter. - Author (mod) 14.11-782.

1962

1281 Cambiaso V., J.B. "Activities and future plans of the National Meteorological Service of the Dominican Republic." (Summary). In Technical Conference on Hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961. Proceedings. U.S. Weather Bureau. National Hurricane Research Project, Report no. 50. pt. 1:62, 1962. DAS.

Describes the developments in the last 10 yrs under the United Nations Technical Assistance program. Included are the work of the forecast center established in 1955; the participation of the Sabana de la Mar station in the SKYHOOK project and the national meteorological network which

1962 cont.

comprises 5 1st-order stations, 3 2nd-order stations, 14 3rd-order stations and 32 4th-order stations. The climatology and Special Studies and Research Branches work in close cooperation and have completed some interesting studies of the factors determining climatic conditions in the Dominican Republic. - Staff MGA 14.5-55.

1962

1282 Chiu, Wan-cheng. "Wind spectra of the troposphere and lower stratosphere over North America." N.Y. Univ. College of Engineering. Research Div. Dept. of Meteorology and Oceanography, Contract AF 19(604)-6146, Scientific Report no. 5, Sept. 1962. 68 p. figs. tables. refs. (AFCRL-62-1022.) DAS.

The energy and cross spectra of the west-east and the south-north wind components were computed at several levels extending from 950 mb to 50 mb at 11 North and Central American stations and 1 Pacific station. It was found that the spectral intensity of the kinetic energy decreases with increasing frequency, the transport of angular momentum is northward at the majority of stations and this transport is strongest at the 300 mb and 200 mb levels. Author (mod) MGA 14.12-497.

1962

1283 Colon, J.A. "Changes in the eye properties during the life cycle of tropical hurricanes." In Technical Conference on hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961, Proceedings, U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 2: 341-354, 1962. figs. refs. DAS.

The author examined time variations in the thermal and moisture properties of the 'eye' during the evolution of intense hurricanes in order to explain the formation of these variations. The changes in the 'eye' properties of hurricanes "Daisy" and "Helene" are described with the aid of graphs. Time changes in central pressure, variations in temperature and in mixing ratio, energy changes in the 'eye' and the deepening of tropical storms are considered. The conditions leading to a reduction in the central pressure are summarized as: 1) an adequate heat source in the underlying water surface and 2) development and organization of the 'eye-wall' in such a way that the subsiding current in the eye is also organized and concentrated in a small area. - Staff MGA 14.10-619.

1962

1284 Conover, L.F. "Evaluation of the eye fixes obtained by radar for hurricane

1962 cont.

Donna, September 1960." In Technical Conference on Hurricanes; 2d, Miami Beach, Fla., 27 - 30 June 1961. Proceedings. U.S. Weather Bureau, National Hurricane Research Project, Report no. 50, pt. 1:85-100, 1962. DAS.

Hurricane "Donna" (9 - 11 September 1960) was under more comprehensive land based and airborne radar coverage than any previous storm in history. The center fixes reported by various radar stations and aircraft are compared. They data are also compared with the documented path of "Donna" over the Florida Keys and up the west coast of the state. The study demonstrates that quite satisfactory operational tracking can be achieved by radar. Author (mod) MGA 14B-238.

1962

1285 Cooperman, A.I. and Sumner, H.C. "North Atlantic tropical cyclones, 1961." Mariners Weather Log, 6(1):1-8, Jan. 1962. figs.

During September, October and the first week of November, 9 tropical cyclones developed in quick succession. On 12 September, 4 hurricanes ("Betsy," "Carla," "Debbie" and "Esther") were being tracked simultaneously. During 1961, only 2 tropical cyclones ("Carla" and "Esther") reached the coastline of the United States. Many of the storms had long histories with 5 hurricanes lasting 10 days. "Esther" required 17 days to run her course. Illustrations include a photograph of hurricane "Anna" as seen by TIROS 3 on 21 July; the destructive path of hurricane "Carla" over Texas and a radarscope photograph of hurricane "Carla" approaching the Texas coast observed by Galveston radar at 0549 CST, 11 September. - Staff MGA 14.7-598.

1962

1286 Cry, G.W. and Haggard, W.H. "North Atlantic tropical cyclone activity, 1901 - 1960." Monthly Weather Review, 90:341-349, 1962.

Descriptions and statistical analyses of the occurrences of tropical cyclones in the Gulf of Mexico during the years 1901 - 1960 are included. - Staff MGA 14.10-605.

1962

1287 Dunn, G.E. "Operational viewpoint of observational requirements for hurricane tracking and forecasting." In Technical Conference on Hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961, Proceedings. U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 1:140-148, 1962. figs. tables. refs. DAS.

1962 cont.

Aircraft reconnaissance, radar, ships, aircraft reports, Marine Automatic Meteorological Observing Stations (MAMOS), satellites and the Hurricane Beacon are discussed as principal sources of data in the Atlantic area. The principal air routes across the tropical and subtropical Atlantic are shown and inflight and postflight reports are discussed. The paper concludes: "In summary, deficiencies in the quality and especially the quantity of pressure and steering data in certain areas limit the accuracy of most of the objective tools for forecasting hurricane movement and this includes numerical weather prediction. There are no prospects for remedying these data deficiencies during the next 2 years." Staff MGA 14C-35.

1962

1288 Dunn, G.E. et al. "Hurricane season of 1961." Monthly Weather Review, 90:107-119, 1962. figs. table. refs.

The authors discuss weather conditions associated with 8 hurricanes of the 1961 season, the value of weather satellites in hurricane detection, the nature of satellite photographs of hurricanes and describe in detail the weather characteristics, tracks, damage, etc., of "Anne," "Betsy," "Carla," "Debbie," "Esther," "Frances," "Gerda," "Hattie" and "Jerry". Figures showing damage, satellite photographs, maps of the paths and daily synoptic maps of the hurricanes are presented. - Staff MGA 14C-36.

1962

1289 Ellis, G.R. "Veranillo in Panama." Geofisica Internacional, 2(2):15-30, Apr. 1962. figs. tables. refs.

A study of the Veranillo (Indian summer) in Panama. The rainy season is often interrupted by dry periods lasting from a few days to several weeks. On the Atlantic side of the Isthmus, dry spells are most common in September and October resulting in a September secondary rainfall minimum, while on the Pacific side the secondary minimum usually comes in June or July. The early season is associated with northerly winds, the late season usually with southerly winds. The two contributing types are a result of orographic effects, but the overall dryness is due to the Isthmus being temporarily beyond the influence of large scale convergence mechanisms. Weather data are given in charts and tables. - Staff MGA 14.12-540.

1962

1290 Endlich, R.M. and Mancuso, R.L.

1962 cont.

"Objective and dynamical studies of tropical weather phenomena." Stanford Research Institute, Menlo Park, Calif., Contract DA 36-039 SC-89092, Report no. 1, 1st Quarterly Progress Report, 1 June - 31 Aug. 1962. 14 p. figs. refs. DAS.

Subjective analyses of an upper air cyclone over the Caribbean were carried out as a means of becoming familiar with data and analysis problems in this region. Computer programs for determining layer averaged values of meteorological quantities and for computing wind shear and lapse rates were applied to the case under study. Computer programs for calculating kinematical values of vorticity, divergence, vertical motion, etc., from rawinsonde data and for mapping layer averaged quantities were nearly completed. Hand computations were made of a stream function, which is intended to be an aid in tropical analysis and to be useful later in dynamical and numerical forecasting. - Author (mod) MGA 15.5-291.

1962

1291 Fritz, S. "Satellite pictures and the origin of hurricane Anna." Monthly Weather Review, 90:507-513, 1962. figs. refs.

Satellite pictures used in conjunction with conventional data indicated that the cyclonic circulation that developed into hurricane "Anna" of 1961 existed a day or more before it was detected with conventional data alone. It is interesting to speculate if the 'area of origin' of many Atlantic hurricanes will be pushed farther eastward as more satellite data become available. - Author (mod) MGA 15B-32.

1962

1292 Gerrish, H.P. and Hiser, H.W. "Mesocale studies of instability patterns and winds in the tropics." Miami, Univ. Institute of Marine Science, Contract DA-36-039 SC-89111, 1st Interim Technical Report, 1 May - 31 Aug. 1962. 25 p. figs. tables. refs. Also, 2d Interim Technical Report, 1 Sept. - 31 Dec. 1962. Apr. 1963. 32 p. figs. table. refs. DAS.

In Report 1, a concentrated case study of winds and echo movement in southern Florida is presented. The synoptic situation for winds aloft charts are discussed and echo tracking equipment and procedures described. Comparisons are made between mean echo motion and upper air winds based upon streamline and isotach analyses. Comparisons are made at grid points. In Report 2, the synoptic situation and an analysis of cloud cover as seen by Tiros 3 satellite are presented. The space-smoothed

1962 cont.

translational motion of observed precipitation echoes most nearly represented the wind flow at 10,000 ft. - Author (mod) MGA 15C-33.

1962

1293 Hawkins, H.F. "Inventory, use and availability of National Hurricane Research Project meteorological data gathered by aircraft." U.S. Weather Bureau. National Hurricane Research Project, Report no. 52, Apr. 1962. 48 p. figs. tables. refs. DAS.

For meteorological researchers, report provides the area, date and time over which the National Hurricane Research Project (NHRP) aircraft gathered meteorological information. Discusses instrumentation and invites members of the meteorological community to make use of the observations which have been gathered by NHRP aircraft in tropical areas. - Staff MGA 14.10-611.

1962

1294 Hill, E.C. "Hurricane forecasts." Mariners Weather Log, 6(5):153-155, Sept. 1962. figs. refs.

Recent detailed observations indicate that the hurricane 'eye' is almost continuously undergoing changes in shape and size. The path of hurricane "Carla" in the Gulf of Mexico in 1961 and a radar picture are shown to demonstrate that the path of the 'eye' often takes the shape of a cycloid. The American Meteorological Society is quoted: "In assessing the course of a hurricane, as in all endeavors at prediction, there will be some residual uncertainty which cannot be eliminated by presently known methods." The effect of the speed of hurricanes on the error of forecast and the magnitude of the average vector error in official U.S. Weather Bureau 24-hr hurricane forecasts for the years 1955 through 1961 are discussed. Staff MGA 14.5-532.

1962

1295 Hiser, H.W., Norman, P.E. and Steen, C.E. "Evaulation and application of a special weather radar receiver system." Miami Univ. Institute of Marine Science, Contract NOw-61-0246-d, Final Report, 22 Dec. 1960 - 19 Feb. 1962. Mar. 1962. 61 p. figs. tables. refs. DAS.

This report covers the evaluation of a specially designed radar receiver system for research and operational use in the field of meteorology. Numerous 2nd- and 3rd-generation modifications and improvements in the SP-IM radar system are described which were necessary to fully

1962 cont.

utilize the new receiver system. Several modernizations and improvements in the model CR-2 radarscope cameras are also presented. Results of a 2-yr study of precipitation echo heights in the south Florida region are summarized. The effects of range attenuation upon Range Height Indicator (RHI) scope measurements of echo tops and minimum detectable rainfall rates and vertical beamwidth stretching of precipitation echo tops are evaluated. Radar observations, synoptic weather data, and eye witness accounts of the Miami tornado of 17 June 1959 are presented and discussed. Author (mod) MGA 14.11-584.

1962

1296 Hubert, L.F. "Tropical cloudiness, severe storms, and convective cells." In International Meteorological Satellite Workshop, Wash., D.C., Nov. 1961. Proceedings, 1962. pp. 75-89. figs. refs. DAS.

A study of a convergence system that existed in the South Pacific Ocean on 11 - 12 May 1960 was observed by TIROS 1 and is included as an illustration of the type of observations that the satellite provides. As the TIROS series ends and the NIMBUS series begins, a much greater coverage will be attained. A composite picture of Hurricanes "Debbie" and "Esther," together with a nephanalysis of the composite, is shown and discussed. A narrow angle picture of an area outlined in an accompanying wide angle picture presents a complicated pattern. This pattern is superimposed on the 30 - 50 mi cellular pattern which was first discovered in TIROS pictures and which could not be seen from the surface of the Earth because of the large scale. The significance of this pattern is discussed. Staff MGA 14/C-84.

1962

1297, Johnson, D.S. "Current USWB meteorological satellite program." In International Meteorological Satellite Workshop, Wash., D.C. Nov. 1961. Proceedings, 1962. pp. 25-30. figs. DAS.

A mosaic prepared from pictures taken by TIROS 1 extending from the eastern North Pacific Ocean across Lower California, Mexico and the United States to a point just east of Lake Michigan is described. Pictures of stratus off the west coast of Baja California and of the California coast are identified. It is concluded that there is an opportunity, with meteorological satellites, to collect data which can be used for studies of large areas of semi-permanent stratus and their associated trade wind inversion. Pictures of Hurri-

1962 cont.

cane "Betsy," clouds, snow and ice obtained by TIROS 3 (nicknamed 'Hurricane Hunter') are shown and discussed. The activities of the laboratory in the interpretation of radiation measurements with satellites are briefly mentioned and subsequent papers are referenced. - Staff MGA 14C-91.

1962

1298 Kraus, E.B. "Heat flux and surface stress on and near an island in the trade wind region." Woods Hole Oceanographic Institution, Contract DA-36-039 SC 90784, Report no. 1, 1st semi-annual Progress Report, 5 June - 5 Dec. 1962. 16 p. figs. tables. CU-S.

This interim report describes preparatory work carried out to determine the heat and momentum flux on the windward and leeward side of a flat island (Aruba) across the trade wind stream. A brief theoretical statement is followed by the description of newly developed winds, temperature and wave height recorders. Investigations to select a suitable island site are also described. - Author MGA 14.9-684.

1962

1299 Landers, H. "On the formation and development of tropical storms." Florida. State Univ. Dept. of Meteorology, Contract Cwb-9873 Scientific Report (Unnumbered), 1 Jan. 1962. 79 p. figs. table. refs. DAS.

Results of investigations in the tropical North Atlantic including the Caribbean Sea and Gulf of Mexico. Problems of initial wave formation and subsequent intensification to the vortex stage are emphasized. The role of thermodynamic influences important to tropical hurricanes is considered. Methods of forecasting initial development and subsequent changes in intensification of Atlantic tropical disturbances based on the combined empirical and theoretical work were developed and tested. - Staff MGA 14.8-621.

1962

1300 La Seur, N.E. "On the role of convection in hurricanes. In Technical Conference on Hurricanes, Miami Beach, Fla., June 1961. Proceedings, pt. 2. U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 2. 1962. DAS.

The author presents evidence that beyond a certain stage, it is convective rather than synoptic scale motions which play the primary role in determining movement, structure and formation of hurricanes. With the aid of synoptic maps, radar diagrams and graphs showing temperature and wind variations, the author

1962 cont.

examines the structure of hurricanes "Ione," "Judith," "Debra" and "Ethel." Despite the large size of "Ione," at 500 mb the various meteorological parameters assumed values and characteristics of a hurricane only in an extremely small area aloft. The inner 1 - 3 percent of the area was dominated by an annular ring of convection which enclosed the 'eye'. Evidence from the upper troposphere indicates that convective motions produce the warmer air aloft. The pattern of temperature anomalies from mean tropical conditions suggests that convection in the 'eye-wall' is the dominant mechanism in their production and distribution on a synoptic scale. - Staff MGA 14.10-624.

1962

1301 Millas, J.C. "Hurricanes of the Caribbean Sea and adjacent regions at the end of the fifteenth century." 1962. See also his "Hurricanes of the Caribbean and adjacent regions, 1492 - 1800." 1968.

1962

1302 Miller, B.I. "On the momentum and energy balance of Hurricane Helene (1958)." U.S. Weather Bureau. National Hurricane Research Project, Report no. 53, Apr. 1962. 19 p. figs. tables. refs. DAS.

Using flight data supplemented by surface ship observations, the vertical fluxes of angular momentum, kinetic energy and sensible and latent heat are calculated for hurricane "Helene" (22 - 30 September 1958). Although the accuracy of the data makes the results questionable, it is found that the coefficient for heat and moisture exchange is about 1.3 times that for angular momentum. From the kinetic energy budget, internal frictional dissipation is obtained as a residual. In the wall cloud region it is found that internal friction exceeds the ground friction, but that elsewhere in the cyclone they are about equal. The importance of internal friction in determining the heat balance is discussed briefly. - Author (mod) MGA 14.10-625

1962

1303 Moore, P.L. "1961 hurricane season." Weatherwise, 15(1):12-25; 41, Feb. 1962. figs.

The 8 hurricanes and 2 tropical storms (which were hurricanes for brief periods) recorded in 1961 are described. The conditions of their origin, the role of TIROS 3 in their detection, their paths and damage are described. - Staff MGA 14C-121.

1962

1304 Nancoo, M.E. "Hurricane Hattie."

1962 cont.

Weather, 17(9):295-304, Sept. 1962. figs. ref.

Hurricane "Hattie" hit British Honduras on the morning of 31 October 1961 and is considered to have been one of the most severe hurricanes ever to have reached the mainland. The death toll of 500 persons was less than that caused by the hurricane of 1931, probably due to the hurricane warning system. The hurricane developed rapidly in an area where weather observations give reasonable coverage. Its development and main features are described. Staff MGA 14.7-603.

1962

1305 Oliver, J.M. "Some notes on tropical storms: Betsy, Carla, Debbie and Esther." Marine Observer, 32(197):128-130, July 1962. figs.

One figure shows tracks of 4 storms, and a 2nd figure is a weather map of North America and the North Atlantic Ocean for 13 September 1961, 0000 GMT. "Debbie" and "Esther" (hurricanes) and "Betsy" and "Carla" (Extra-tropical depressions) are identified. It is unusual to find a single weather map with four such storms. Each storm is briefly described. "Esther" was the first tropical storm to be detected by a weather satellite (TIROS 3). - Staff MGA 14.4-586.

1962

1306 O'Neill, T.H.R. and Jordan, C.L. "On Hurricane Alice of 1954 - 1955." Monthly Weather Review, 90:363-364, 1962. figs. refs.

The author describes and analyzes the off-season hurricane "Alice" which occurred during December - January 1954 - 1955 in the region of the Lesser Antilles. A radar photograph indicates that this hurricane manifested all the radar characteristics associated normally with hurricanes. The maximum wind speeds at the 14-mi radius were computed to be 71 kt and 62 kt. Author states: "An integration of the gradient wind equation from the 28-mi radius where the pressure was 998.2 mb to the 12-mi radius give values of 988.2 and 989.7 mb...." It appears that the central pressure of "Alice" was probably very close to the 987 mb reported by the ARAWAK. - Staff MGA 14.7-604.

1962

1307 Philpott, L.B. "Hattie's history." Marine Observer, 32(198):197-199, Oct. 1962. Also: "Hurricane Hattie Caribbean Sea." Ibid., 32(198):172-174, Oct. 1962. fig.

Development and major characteristics of hurricane "Hattie" are described in

1962 cont.

chronological order from 27 - 31 October 1961. Paper includes an indication of the intensity of the storm and extent of damage. Attention is also given to: 1) "Hattie" was the first hurricane that reached San Andrés Island since 1908 and 2) instead of following the northern track normal for this season, its path was westward by 29 October and west-southwesterly thereafter. - Staff MGA 15.1-378.

1962

1308 Pike, A.C. "Oceanic heat budget as affected by hurricanes." Abstract only. In American Meteorological Society, National Meeting, 25 - 28 Apr. 1962. Program, American Meteorological Society, Bulletin, 43:95, 1962.

Energy transfer processes at the sea surface are investigated over areas of the Atlantic, Caribbean, and Gulf of Mexico, which were affected by 10 well developed hurricanes in 1954 - 1961. Averaged sea surface temperatures during and after the storm passage were observed. Energy extraction rates were computed and compared. Careful studies of the oceanic heat budget during a 9-day period subsequent to each storm, with particular reference to hypothesis that sea-air latent heat exchange is zero in cases where air temperature is greater than sea temperature are described. Author (mod)

1962

1309 Pike, A.C. "Some observations of low-level wind variation in the vertical in tropical cyclones." Colorado State Univ., Atmospheric Science Technical Paper no. 29, 1962. 8 p. figs.

Data obtained from flights into tropical cyclones during the hurricane season 1957 - 1958. The "Frieda" flights were made in a nearly steady state storm of sub-hurricane intensity; all the others were conducted in developing hurricanes. Staff.

1962

1310 Port-au-Prince, Haiti. Séminaire-Collège St.-Martial. Observatoire Météorologique. "Observations de la station de Damiens, année 1962 (et) Donnée d'une partie du réseau pluviométrique, années 1959, 1960, 1961, 1962." [Observations at the Damien station, 1962 (and) Data of part of the pluviometric system, 1959, 1960, 1961, 1962.] 1962(?). tables. DAS.

1962

1311 Portig, W.H. and Gerhardt, J.R. "Research in tropical meteorology." Texas Univ. Electrical Engineering Research Lab., Contract DA-36-039 SC-89179, Interim

1962 cont.

Technical Report, (1 Nov. 1961-30 June 1962.) 26 p. figs. tables. refs. DAS.

First report includes plans for holding a Research Planning Conference on Tropical Meteorology during 10 - 11 May 1962. Conference plans include preparations for the publication of a bibliography and investigations into the circulation of the Caribbean. The second report includes the status of the technical report covering the Proceedings of the Conference in Tropical Meteorology, a partially annotated subject bibliography and specific investigations of mesoscale circulation features of the Caribbean area. This study has shown that: 1) an increase of rainfall in the Tropics is associated with an increase of thunderstorm activity only up to a certain amount of rain beyond which the thunderstorm activity decreases with increasing rain, 2) the ratio of the thunderstorm frequency divided by the amount of rainfall is large in continental climates and small in oceanic climates and 3) tropical rainfall exhibits two extremes: many thunderstorms producing little rain, and much rain connected with few thunderstorms. - Author (mod) MGA 15.6-41.

1962

1312 Reed, R.J. "Temperature fluctuations in the equatorial stratospheric wind oscillation." Unpublished paper, presented at the New York Meeting of the American Meteorological Society. Jan. 1962. 5 p. figs.

1962

1313 Reed, R.J. "Wind and temperature oscillations in the tropical stratosphere." American Geophysical Union, Transactions, 43(1):105-109, Mar. 1962. figs.

A hypothesis that generation of westerly momentum is due to contraction of a zonal ring from great heights and that upward motions are more likely than downward in the vicinity of the equator is investigated. Alternative sources of westerly momentum are supposed to be Reynolds stresses arising from stratospheric eddies that transport momentum in a selective manner. A variation of 10 percent in radioactive intensity is supposed to be capable of causing a sizeable semiannual temperature oscillation, if an absorbing substance is present. At these high levels of the atmosphere, it is plausible, therefore, that the temperature undergoes a semiannual oscillation when peak values reach or come near to the spring and autumnal equinoxes. - Staff MGA 14.2-542.

1962

1314 Restivo, J., Barbarick, D. and

1962 cont.

Reiter, G. "Case history investigation of winter storms which produce sustained surface wind speeds 50 knots or greater at Texas Tower 2 and Texas Tower 3." 4th Weather Wing, Colorado springs, Colo. Sept. 1962. 39 p. illus. tables. refs. - AD-285 612.

1962

1315 Riehl, H. "General atmospheric circulation of the Tropics." Science, 135(3497):13-22, 5 Jan. 1962.

1962

1316 Riehl, H. "Radiation measurements over the Caribbean during the autumn of 1960." Journal of Geophysical Research, 67(10): 3935, Sept. 1962. figs. table. refs. Also issued as Colorado. State Univ. Dept. of Atmospheric Science, Contract Cwb-9918, Atmospheric Science Research, Report no. 2, Mar. 1962. 19 p. figs. refs. DAS.

Observations made over the Caribbean Sea with the Suomi-Kuhn infrared radiometer during 1960 are analyzed. About 120 soundings released at 5 stations ascended to the 100 mb level or beyond. Fragmentary observations above 100 mb indicate that the outward radiative flux increases above the tropopause and gradually approaches values obtained from EXPLORER 7 measurements. Strong cooling of the air above the tropopause is computed to be as much as 5 times that of the troposphere. Day-to-day fluctuation of net radiation from the troposphere was large. Statistical analysis indicated that the control of the net radiation from the troposphere lies mainly in the high troposphere, in the layer of maximum wind. - Author (mod) MGA 14.2-573.

1962

1317 Riehl, H. "Surface processes in hurricane Donna." In Technical Conference on Hurricanes, 2d, Miami Beach, 27 - 30 June 1961. Proceedings, pt. 2, U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 2:314-316. 1962. refs. DAS.

The low level structure and mechanism associated with hurricane "Donna" (1960) are examined. Computed surface drag coefficients reduced to the altitude and wind speeds of lighthouse stations were about 1.5×10^{-3} up to tangential speeds of about 50 kt, then rose to about 5×10^{-3}. The "Donna" trajectory did not bear out that aspect of the Riehl-Malkus model which requires that "the mass must wind its way inward with ever decreasing inflow angle in order that the observed low pressure can be established." The pressure drop increased per distance traveled with wind speed so that the turbulent heat flux also

1962 cont.
increased. - Staff MGA 15.3-351.

1962
1318 Riehl, H., Baer, F. and Veigas, K. "Hurricane formation in the Gulf of Mexico." American Petroleum Institute. Panel on Hurricanes, Technical Report no. 3, Oct. 1962. 27 p. DAS.

In this study, it has been possible to find prediction parameters for Gulf of Mexico hurricane formations on a 24-hr basis for full developmental sample (1944-1949) and for a partial developmental sample (1948 - 1952). Prediction parameters were also successful in a small independent sample of (1960 - 1961). Due to very inactive seasons since 1960, further testing of these parameters is necessary. Author.

1962
1319 Rosendal, H.E. "Tiros V in orbit." Mariners Weather Log, 6(5):161-162, Sept. 1962. fig.

The launching was timed so the satellite's cloud cover camera would be pointed at hurricane and typhoon breeding grounds of the Northern Hemisphere during late August and early September, the peak tropical cyclone period. The orbit was inclined 58° with the Equator. Meaning that the coverage would include most areas of extratropical cyclone activity of both hemispheres. Since the satellite can photograph areas within lats 65°N and 65°S, it could view portions of the polar regions for ice mapping. The failure of the infrared sensoring device and of 1 of the 2 cameras did not seriously impair the primary mission of TIROS 5 which was to hunt hurricanes. The importance of weather satellite data in tracking hurricanes was demonstrated by TIROS 3. A mosaic and nephanalysis of the 881st pass of TIROS 3, showing hurricanes "Esther" and "Debbie" are presented. - Staff MGA 14C-145.

1962
1320 Sabatini, R.R. and Suomi, V.E. "On the possibility of atmospheric infrared cooling estimates from satellite observations." Journal of the Atmospheric Sciences, 19(4):349-350, July 1962. fig. table. refs.

The total atmospheric infrared cooling from the surface to the top of the radiometersonde ascent was calculated for 193 nocturnal ascents at various stations in the United States and the Caribbean. The upward and downward fluxes of infrared radiation were measured with the Suomi-Kuhar radiometer. Correlation coefficients between the total atmospheric cooling rate

1962 cont.
and outgoing infrared flux at the top of the ascent, expressed in Lang/min and regression equations expressing the relationship between atmospheric infrared cooling and outgoing infrared radiation are presented. Staff MGA 14C-274.

1962
1321 Sadowski, A. "Radar analysis of hurricane Donna's recurvature." In Technical Conference on Hurricanes, 2d, Miami, Fla., 27 - 30 June 1961. Proceedings. U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 1: 63-69, 1962. DAS.

During the recurvature of "Donna" over Florida, the radar presentation of the 'eye' changed from circular to elliptical and back to circular. While the 'eye' was elliptical, the major axis rotated from a N-S orientation to E-W. This gyration and its possible use in the early detection of recurvature of hurricanes is discussed. Recurvatures of other hurricanes are also presented. - Author (mod) MGA 14B-254.

1962
1322 Sadowski, A. "Tornadoes associated with Hurricane Carla, 1961." Monthly Weather Review, 90:514-516, 1962. figs. table. refs.

A composite chart of tornadoes associated with hurricane "Carla" during a 4-day period of activity shows that the tornadoes occurred in the right half of the storm system relative to the storm's direction of movement. - Author MGA 14.7-612.

1962
1323 Saint-Amand, P. and Henderson, G.W. "Project Cyclops: an experiment in hurricane modification." U.S. Naval Ordinance Test Station, China Lake, Calif., Nots TP 2751, May 1962. 33 p. figs. DAS.

In 1961, the staff at the U.S. Naval Ordinance Test Station (NOTS) developed a new method of generating silver iodide nuclei and a new means of dissemination. The new device, called CYCLOPS, was used for the first time in a seeding operation on hurricane "Esther" in September 1961. The operation was carried out in cooperation with the U.S. Weather Bureau at the U.S. Naval Station, Roosevelt Roads, Puerto Rico. The first day's operation produced a dramatic and radical change in the thermodynamics of the hurricane for about 1 1/2 hrs. Had more CYCLOPS units been available to continue the attack, far more conclusive results might have been achieved. It is hoped to continue these experiments during the West Indian hurricane season of 1962

1962 cont.

with modified CYCLOPS units. - Author MGA 15G-88.

1962

1324 Senn, H.V. and Hiser, H.W. "Effectiveness of various radars in tracking hurricanes." In Technical Conference on Hurricanes, 2d, 27 - 30 June 1961. Proceedings, U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 1:101-114, 1962. DAS.

The great increase in both quality and quantity of hurricane information which is possible by analysis of data from several radars is shown by means of almost simultaneous photographs from 10 radars during "Donna." Planned Position Indicators (PPI) and Range Height Indicator (RHI) data from several radars in the Florida area are combined in an attempt to show: 1) a comparison between what several individual radars in given quadrants of a storm might expect to see; 2) an analysis of the complete precipitation pattern of hurricane "Donna" on 10 September; 3) the effectiveness of various land based and airborne radars in hurricane tracking and 4) analysis from both theoretical and practical considerations. - Author MGA 14B-256.

1962

1325 Senn, H.V., Hiser, H.W. and Stevens, J.A. "Radar Hurricane research." Marine Lab., Univ. of Miami, Coral Gables, Fla. Final Report, 1 July 1961 - 30 June 1962. Report no. 8982; ML 62361, Contract Cwb-10198, Sept. 1962. 109 p. illus. tables. refs.

Small-scale motion of the radar hurricane center is examined for hurricanes "Ione" (1955), "Helene" (1958), "Debra" (1959), "Donna" (1960) and "Carla" (1961). A relationship between this motion and that which is actually reported and used operationally is attempted. Significantly large variations in both the speed and direction of the radar 'eye' exist when observed on either a 5 min or 1/2 hr time base. Echo vectors relative to the storm center, obtained by vectorially subtracting small-scale 'eye' motion or mean storm motion for longer periods, are presented for 3,805 traced echoes from hurricane "Donna" radar film. Hurricane echo lifetimes and diameters are discussed; theoretical and observed ranges of sea return for the APS-20E airborne radar are given; and an explanation is offered for a serious radar distortion in the shape of the 'eye' of hurricane "Esther" observed during a 1961 flight.- Author

1962 cont.

(mod) - AD-291 185.

1962

1326 Shinners, W. "Marine automatic meteorological observing stations." In Technical Conference on Hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961, Proceedings. U.S. Weather Bureau, National Hurricane Research Project, Report no. 50, pt. 1:165-171, 1962. figs. DAS. Also: Shirley, J.A. "Marine automatic weather stations." Mariners Weather Log, 4(6): 191-194, Nov. 1960. figs.

The Marine Automatic Meteorological Observing Station (MAMOS) proved its value when a unit anchored in the Gulf of Mexico detected the formation of hurricane "Ethel" (1960). The MAMOS and another floating weather station, the Model 3-B known as the hurricane monitoring buoy, and their anchorage systems are described. A block diagram illustrating MAMOS operation and the Code system used in MAMOS are shown and described. The Model 3-B station and MAMOS broadcast information on the air and water temperature, atmospheric pressure and wind speed and direction. MAMOS survived the hurricane winds and high seas and continued to transmit weather information regularly. Staff MGA 14.8-542.

1962

1327 Simpson, R.H. "On the dynamics of disturbed circulation in the lower mesosphere." U.S. Weather Bureau. National Hurricane Research Project, Report no. 57, Aug. 1962. 71 p.figs. tables. refs. eqs. DAS.

Rawinsonde data from the West Indies (15 January to 3 February 1960) were used to investigate the structure and dynamics of a large-scale disturbance in the lower mesosphere. The disturbance consisted of a shearing surface which sloped poleward and moved toward higher latitude at 12 kts. It resembled the equatorial shear line of the troposphere and computations indicated that friction plays a much more important role at these altitudes than it does in the troposphere. The largest vertical motion occurred several hundred km north of the shearing surface where a large area of rising motion had peak values of 0.5 cm sec^{-1}. Neither the vorticity maximum, located just north of the shear line, nor the minimum, 800 km south of the shear line can be attributed to horizontal advection. The indications are that some process in situ is responsible for these large peak values and unique distributions. The importance of

1962 cont.

eddy diffusion of heat in the vertical is discussed. - Staff MGA 14.11-674.

1962

1328 Simpson, R.H. "Synoptic scale disturbance in the ozonosphere." Abstract only. In American Meteorological Society National Meeting. 25 - 28 Apr. 1962. Program, American Meteorological Society, Bulletin, 43:94, 1962.

Rawinsonde data from the West Indies, obtained during a period when most sounding balloons reach 100,000 ft, have been used to examine the structure and dynamics of a synoptic scale disturbance in the ozonosphere. It is shown that neither the geostrophic nor frictionless equations of motion are adequate to describe the circulation of this system. Vertical shearing stresses play almost as important a role as pressure gradient forces in particle acceleration. The mean profile of potential vorticity normal to the shear line is similar to that of the subtropical jet stream, and there is evidence that some in situ process is responsible for the unique distribution and strong gradients of vorticity. In this regard, the importance of eddy diffusion of heat in the vertical is discussed. - Staff.

1962

1329 Singer, I.A., Nagle, C.M. and Brown, R.M. "Variation of wind with height during the approach and passage of hurricane Donna." In Technical Conference on Hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961. Proceedings. U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 1:1-10, 1962. figs. table. refs. DAS.

The Meteorological Group at Brookhaven National Laboratory continuously recorded 3-sec readings of wind velocity at 75, 150, and 300 ft levels for 6 hrs during the approach and passage of hurricane "Donna." The data were obtained from bivanes and aerovanes mounted on a 410-ft tower, and analyzed in four 1.5-hr sections corresponding to the major changes in storm intensity. These sections are referred to as 'before passage,' 'peak wind,' 'eye' and 'after passage.' An analysis of precipitation data revealed that a consistent periodicity existed in 5-min rainfall intensities, and appeared to be related to the distance of the hurricane center from the laboratory site. - Author (mod) MGA 14.1-353.

1962

1330 Spano, A.F. "Annotated bibliography of climatic maps of Colombia." U.S. Weather Bureau, Wash., D.C. 1962. 9 p. 23 items. DAS.

Items, abstracted from DAS and DLC Map Division material up to November 1961, are from English or Spanish sources (South American). Brief subject index is given. Staff MGA 13.10-63.

1962

1331 Stevenson, R.E. "Steam fog at Galveston, Texas." Weatherwise, 15(5): 188-191, 213, Oct. 1962. figs. refs.

The terms 'norther,' 'blue norther,' 'creeping norther,' 'wet norther' and 'smoking norther,' as used by the coastal Texas fishermen, are defined. The article describes a 'smoking norther' observed at Galveston, Texas, on 27 February 1962, when a rapidly moving cold front crossed the coast at noon. The formation of steam fogs in general and fog at Galveston is discussed and illustrated in graphs for 0900 hrs 25 February to 1200 hrs 2 March 1962 of air temperature and dew point at Galveston Airport and surface water temperature at the Pleasure Pier on Seawall Drive, Galveston. Differences are observed between the vapor pressure of the air and the saturation vapor pressure at the water surface, and between the vapor pressure of the air and the saturation vapor pressure at the water surface at 3-hr intervals plotted against the wind velocity. It is concluded that the formation of steam fog following frontal passage was possible only because of a preceding period of warm temperatures. - Staff MGA 14.7-703.

1962

1332 Stevenson, R.E. and Collier, A. "Preliminary observations on the occurrence of air-borne marine phytoplankton." Lloydia, 25(2):89-93, June 1962. fig. tables. refs. Reprinted as Texas A & M College. Dept. of Oceanography and Meteorology, Contributions in Oceanography and Meteorology, 7(189-200):79-83, 1961/1962. DAS DLC.

In January 1962, experiments were initiated to learn if viable organisms were in the air as it crossed the shore at Galveston. Samples obtained on 29 January and 16 February indicated that viable forms can persist in relatively dry and warm air. Both diatoms and phytoflagellates were present in test samples. Plates exposed during a 'norther' produced an excellent culture of flagellates. Staff

1962

1333 Stoddart, D.R. "Catastrophic storm effects on the British Honduras reefs and

1962 cont.

cays." Nature, 196(4854):512-515, 10 Nov. 1962. fig. refs.

Hurricane "Hattie," which passed over British Honduras on 30 - 31 October 1961, was the most severe in the area since hurricane "Janet" in 1955. The extent of the damage to the various islands, reefs and cays is listed. The degree of damage to a particular cay depended on its location relative to the storm track, its composition, i.e., whether sand or mangrove, the size of the island and the nature of the vegetation and human interference. The most conspicuous vegetation changes were the defoliation of mangrove within 40 mi of the storm track and the widespread destruction of coconut palms. Two bird colonies in the devastated area were not markedly affected by the storm. Staff MGA 14.8-616.

1962

1334 Sugg, A.L. "Cyclogenesis: current operational needs and efforts and a few proposals for the future." In Technical Conference on Hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961. Proceedings, pt. 2, U.S. Weather Bureau National Hurricane Research Project, Report no. 50, pt. 2:267-276, 1962. figs. refs. DAS.

The forecaster's position can only be improved if current efforts and operational needs regarding cyclogenesis are surveyed and a decision made on the avenues and procedures to apply to future research. This paper assesses the research problem from the forecaster's point of view. Discussion includes operational needs, problems, current techniques and proposals. Author (mod) MGA 14.8-622.

1962

1335 Technical Conference on Hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961. "Proceedings." pt. 1-2, ed. M.A. Alaka. Issued as U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 1-2, 1962. 408 p. figs. tables. refs. DAS.

Contains 48 papers, some of which are abstracted which were presented in the following sessions of the conference: General papers, Radar Analysis of Tropical Cyclones; Observing Tracking Systems and Facilities; Storm surge; Formation of Hurricanes; Energy Cycles and Models; Circulation and Energy Processes in the Storm Core and Prediction of Hurricane Movement. A brief foreword by Harry F. Hawkins, Chairman of the Program Committee, precedes the papers. The National and

1962 cont.

Greater Miami Branch Officers of the American Meteorological Society, which sponsored the Conference, the members of the Program Committee and the Session Chairman are listed. Also contains a list of 49 National Hurricane Research Project Reports. - Staff MGA 14.4-9.

1962

1336 Treadwell, M.E. "Hurricane Carla, September 3 - 14, 1961." U.S. Office of Civil Defense, Denton, Tex., 1962. 97 p. DAS.

Hurricane "Carla" (3 - 14 September 1961) is discussed under the following headings: Hurricane Warning, Evacuation in Louisiana and Texas, Reception and Shelter, Hurricane Operations, Reentry, Rehabilitation, Disaster Organization and Equipment and Recuperative Ability. A map shows the hurricane track from 0600 CST on 4 September until 0600 CST on Thursday, 14 September. - Staff MGA 15.3-119.

1962

1337 U.S. Corps of Engineers. "Hurricane Carla, September 9 - 12, 1961." Galveston, Texas, R-4-62, 1962.

1962

1338 U.S. Weather Bureau. "Preliminary analysis of surface wind and pressure patterns of hurricane Carla (1961)." Hydrometeorological Branch, Memorandum HUR 7-76, July 1962. DAS.

Memorandum presents surface pressure & wind field charts for hurricane "Carla" for the period 1200 GMT on 9 September 1961 to 1800 GMT on 12 September 1961 at 6-hr intervals. A detailed track of storm movement, time-profile of central pressures and a table of storm parameters is shown. - Staff.

1962

1339 U.S. Weather Bureau. "Use of weather surveillance radar by the Weather Bureau." Technical Planning Study, no. 6, Mar. 1962. 24 p. figs. refs. DAS.

Contains the conclusions and recommendations of the Panel on the Use of Weather Surveillance Radar of the U.S. Weather Bureau's Office of Planning concerning establishment of a nation-wide network of long-range (WSR-57) radar. The panel recommended establishment of 90 stations in 48 states, arranged in a uniform triangular grid (200 n mi apart). There would be 4 stations in Alaska, 3 in Hawaii, and 1 each in Puerto Rico and the Swan Islands. The cost would be $26,000,000 for procurement and installation and $4,500,000 for digitizing and data-

1962 cont.

processing equipment. Operating cost would be $7,000,000/yr. Personnel requirements, research and development needs, etc., are discussed. - Staff MGA 14B-260.

1962

1340 Vitale, C.S. "Bibliography on the climate of Nicaragua." U.S. Weather Bureau, Report no. WB/BC-63, Nov. 1962. 25 p. DAS.

Sponsored by Air Weather Service Climatic Center, Wash., D.C. Sources summarized over a period of time were abstracted for this bibliography. Search was made in the U.S. Weather Bureau Library, Library of Congress, U.S. Hydrographic Office Library and the Library of Pan American Union. - Staff.

1962

1341 Wallace, J.A. and Carraway, D.M. "Annotated bibliography on the climate of Dominican Republic." U.S. Weather Bureau, Nov. 1962. 28 p. 54 titles. DAS.

Contains references on sources which contain qualitative or quantitative climatic data on the Dominican Republic. A subject index is included. - Staff MGA 14.10-64.

1962

1342 Wallace, J.A. and Spano, A.F. "Annotated bibliography on the climate of British Honduras." U.S. Weather Bureau, Apr. 1962. 17 p. fig. 41 items with abstracts. Mimeographed. DAS.

Covers period 1900 to date with map scales, author and subject indexes and abstracts. - Staff MGA 14.7-75.

1962

1343 Weight, M.L. "Annotated bibliography of climatic maps of Nicaragua." U.S. Weather Bureau, May 1962. 10 p. 18 items with abstracts. DAS.

This bibliography consists of items in the U.S. Weather Bureau Library, the Library of Congress and the Department of Agriculture Library. Since very few climatic maps for Nicaragua are available, sources on geographic areas which overlapped all or part of Nicaragua were also used such as climatic maps of Central America the Caribbean area, etc. - Author (mod) MGA 14.5-84.

1962

1344 Wells, F.E. "Development and status of the Weather Bureau's hurricane tracking radar network." In Technical Conference on Hurricanes, 2d, Miami Beach, Fla., 27 - 30 June 1961. Proceedings, U.S. Weather Bureau. National Hurricane Research Project, Report, no. 50, pt. 1:129-139, 1962. figs. refs. DAS.

The hurricane tracking radar network along the Gulf of Mexico and Atlantic

1962 cont.

coasts from its beginning until the time of "Donna" is presented. The important part this network played in tracking this unusually severe and damaging hurricane is stressed. Observations, communications and research procedures are discussed. Plans to provide optimum utilization of present U.S. Weather Bureau radar facilities for the tracking and investigation of the current season's hurricanes are given. - Author (mod) MGA 14B-262.

1962

1345 Wiewall, M. "Study of ionospheric winds. Additional data on the determination of ionospheric drifts and turbulence from radio fading records." Puerto Rico. Univ. College of Agriculture and Mechanic Arts, Scientific Report no. 6 (Final), Contract AF 19(604)2036, July 1962. 278 p. DAS.

Data on ionospheric drift and turbulence over Mayagüez, Puerto Rico during 1959. A new type of receiving antenna system is used and a rough comparison with results obtained with the old system is given. A new concept in computations is also tried. - Author.

1962

1346 Winston, J.S. "Use of Tiros pictures in current synoptic analyses." In International Meteorological Satellite Workshop, Wash., D.C., Nov. 1961. Proceedings, 1962. pp. 95-106, figs. ref. DAS.

Describes briefly the manner in which data from TIROS pictures are acquired and processed for operational use. The functions involved in the operational program are shown in a diagram and the various steps of the program are described. A composite is shown of nephanalyses derived from TIROS 3 pictures in 1 day of operations, 16 - 17 August 1961. Nephanalyses of TIROS pictures and the surface analysis of hurricanes "Esther" and "Debbie" are discussed. Revision of a warm front position off the east coast of the United States on 23 August 1961, on the basis of the TIROS nephanalysis and a TIROS view of a squall line extending from the Great Lakes region toward the lower Mississippi Valley are presented. There are very direct forecast applications of the picture data, particularly for aviation operations where a knowledge of cloudiness is important over ocean areas. A few examples where satellite picture data would be of importance are described, and illustrated. - Staff MGA 14C-213.

1963

1347 Ackerman, B. "Contenido de agua liquida en huracanes." [Liquid water

1963 cont.

contents in hurricanes.] In Spanish and English. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofisica Internacional, 3(4):151-160, Oct. 1963. Also issued as: U.S. Weather Bureau. National Hurricane Research Project, Report no. 62, Apr. 1963. 41 p. figs. refs. DAS.

This report presents the analysis of data collected during the 1957 and 1958 Flights of a B-50 aircraft which covered hurricanes "Carrie" (1957) and hurricanes "Becky," "Daisy" and "Helene" (1958). An example of the water content measurements obtained in a convective band is shown in a graph. Macro-features of the water distribution are described and illustrated in charts and in frequency distribution diagrams for each of the hurricanes. The cloud water content values were low; in only a few instances were they over 3 or 4 g/m^3, and the bulk of the measurements were below 1 or 2 g/m^3. It is concluded that the data permit the use of observed values in the estimates of water and energy balances and that mesoanalyses of the cloud and water distributions provide additional insight into basic hurricane mechanisms. - Staff MGA 15.2-370.

1963

1348 Ames, J. "Correlation between frequency-selective fading and multipath propagation over an ionospheric path." Journal of Geophysical Research, 68(3):759-768, 1 Feb. 1963. figs. refs.

The relationship between selective fading and relative time delays of various propagating modes is studied over a 2,450 km path from Mayagüez, Puerto Rico, to Smyrna, Georgia. Selective fading was measured by propagating a frequency-modulated CW transmission over the path while the modes propagating and their structure were recorded by means of oblique step-frequency soundings. It was confirmed that, when two modes were propagating at the FM-CW frequency, selective-fading nulls were separated in the frequency spectrum by an amount that is the reciprocal of the group time delay between the modes. Such soundings, which can be made by simple modification of existing equipment, allow the degree of multipath to be quickly estimated and can also give clear advance warning of impending circuit failure resulting from falling maximum usable frequency. - Author (mod) MGA 15A-8.

1963

1349 Armstrong, R.J. and Wharton, A.E.B.

1963 cont.

"Effects of the high-altitude thermonuclear explosion of July 9, 1962, 0900 UT, observed at Jamaica." Journal of Geophysical Research, 68(6):1779-1780, 15 Mar. 1963. figs.

Reports briefly on effects observed at Jamaica very soon after the high altitude thermonuclear explosion of 9 July 1962, 0900 UT. Using an NBSC 3 ionosonde, the 0915 ionogram had completely altered in form. The only parameter that showed significant change was F layer minimum which increased by threefold. Night E, which was visible at 0900, could no longer be observed. Scaling of the F layer was made difficult by the presence of spread echoes. The unusual change in F layer minimum can be explained only by increased absorption in the lower regions of the ionosphere. - Staff MGA 15A-14.

1963

1350 Baer, F. "Statistical prediction of hurricane development in the Gulf of Mexico." American Meteorological Society, Bulletin, 44:665, 1963.

Note on Baer's lecture of May 1963 to members of American Meteorological Society, Denver Chapter. - Staff.

1963

1351 Banks, R.W. "Gulf of Mexico cloud observations and the atmospheric water budget." Mather's thesis, Texas A & M Univ. May 1963. 51 p. figs. refs. DAS.

Study to determine if any detectable relationship existed between the atmospheric water budget and satellite cloud observations over a restricted area during 4 consecutive days in July 1961. Upper air data from 9 weather stations bordering the Gulf of Mexico were used in the calculations of water vapor storage, flux, and balance. The cloud observations were related to diagrams and graphs of these computations. Cloudy areas sometimes occurred between stations, therefore the measurements were not always representative of what was happening over the total area. The water vapor in the atmosphere had a stream-like structure as it flowed over the gulf. Clouds were associated with this flow, particularly when it changed direction. Author (mod) MGA 16.1-294.

1963

1352 Bates, F.L. et al. "Social and psychological consequences of a natural disaster; a longitudinal study of hurricane Audrey." National Academy of Sciences, National Research Council, Publication no. 1080, 1963. 190 p. map. diagrs. refs. DLC.

1963

1353 Bunker, A.F. "Report on research in marine meteorology conducted during the period Feb. 1, 1955 - March 31, 1963." Woods Hole Oceanographic Institution, Contract Nonr 1721(00) (NR-082-021), Final Technical Report, Dec. 1963. 11 p.

This final report consists of brief summaries of each of the following studied in the Caribbean-Atlantic region: thermal and humidity structure of the trade winds, cumulus convection, cloud distribution studies, dynamics and energy relations, turbulence and turbulent transport of energy and infrared radiation. Report lists technical reports and papers produced. Staff MGA 15.8-171.

1963

1354 Candelas, G.A. and Candelas, G.C. "West Indies." In Limnology in North America. ed. D.G. Frey. Madison: Univ. of Wisconsin Press, 1963. pp. 435-450. figs. tables. refs. DLC.

This is a report on the possibilities of limnological work in the West Indies. Information is given on general climatological conditions, limnological resources, research accomplished, research institutions of the area and limnological possibilities on the major islands. - Staff MGA 15.5-230.

1963

1355 Carson, R.B. and Hardy, R.C. "On the forecasting of winter fog: a geographical approach." Journal of Applied Meteorology, 2(3):351-357, June 1963. figs. tables. refs. Also: [Comment by] Richard E. Newell and [Reply by] Carson and Hardy. Ibid., 3(3):342-346, June 1964. fig. table. refs.

Forecasting criteria are reviewed as valid only with respect to experience at specific times and places. The empirical approach discloses an anomaly that drier evening air sometimes represents more of a fog hazard than saturated air. A fog forecasting tool using streamline analysis with emphasis on the hyperbolic point preceding a cold front in low latitudes is suggested. Newell comments on Carson and Hardy's fog forecasting method for December at Miami, Florida. A diagram shows that most minimum visibilities of 7 mi fall farther from the evening saturation line that do some visibilities of 7 mi or more. - Staff MGA 16.7-216.

1963

1356 Clarke, D.B. "Radiation measurements with an airborne radiometer over the ocean east of Trinidad." Journal of Geophysical Research, 68(1):235-244, 1 Jan. 1963. figs. tables. refs.

1963 cont.

Direct observations of long wave radiation flux were made over the ocean east of Trinidad, using an aircraft mounted radiometer. The response of the radiometer was such that the measurements were running averages of the flux received over 4 mi. The measurements were made at selected levels in the lower troposphere during sky conditions ranging from clear to overcast. From these data, values of the means and extremes were selected and the radiative cooling was calculated. A heat budget of the subcloud layer was constructed and it was determined that the air in this region was warming at 1°C/day. A description of the construction and performance of the radiometer is given in the first part of the paper. - Author (mod) MGA 14.11-696.

1963

1357 Cramer, W.P. "Investigation of time changes in clouds observed over the Gulf of Mexico and Caribbean Sea during the period 18 - 23 July 1961." Master's thesis, Texas A & M Univ. 1963. 92 p.

A radical change in cloud cover occurred over the Gulf of Mexico between 18 and 20 July 1961. This development occurred when an easterly wave moved westward across the Caribbean Sea into the Gulf of Mexico and combined with an upper trough of polar origin moving eastward through the lower United States. The superposition of these systems resulted in deepening of the combined system and development of an extensive cloud mass. Analyses using conventional data and meteorological satellite data from TIROS 3 were used to identify and follow systems. Regions described as 'dry' by the relative humidity analysis, especially at 700 and 500 mb levels, had insignificant cloud amounts. When the 'dry' area included the 850 mb level, the TIROS pictures always indicated fair weather skies. - Author (mod)

1963

1358 Dickson, R.R. "Weather and circulation of June 1963: interplay between blocking and drought in the United States." Monthly Weather Review, 91:468-473, 1963. figs. refs.

Over much of the Northern Hemisphere, circulation anomalies during June 1963 represented a reversal from those of May. Introduction of blocking into North America had favorable implications for the Gulf Coast and Middle Atlantic States drought areas, but produced another dry area stretching from the Middle Mississippi Valley to the Appalachians. Mean 700 mb contours and height departures from normal

1963 cont.

for June and for the first and second half of the month and the change of mean 700 mb height anomaly from May to June are shown for the greater part of the Northern Hemisphere. Time variations of the speed of 700 mb westerlies are presented graphically. Temperatures over the United States are discussed and presented in charts. A chart of precipitation distribution for June reveals that above normal precipitation fell on most of the parched Gulf Coast area and over much of the moisture-deficient portions of the eastern seaboard. - Staff MGA 15.8-287.

1963

1359 Dominquez A., E. "Hurricanes of the Gulf of Mexico." Weatherwise, 16(5):223-225; 252, Oct. 1963. figs.

Information is given on hurricane occurrence, frequencies, trajectories, rate and direction of movement, rainfall, floods and damage caused by hurricanes in the Gulf of Mexico dating back to 1552. The contribution of the international weather reporting network and the northeastern network in hurricane forecasting is commended. - Staff MGA 15.9-189.

1963

1360 Duke, J.A. and May, J.P. "Supplementary environmental studies near El Real, Panama." Duke Univ., Durham, N.C., Contract DA31 124AROD49, Report, Apr. 1963.

1963

1361 Duke, J.A., Roberts, J. and Grenke, W. "Tropical environmental/mobility studies, Panama, 1961 (Swamp Fox I)." Willson, Nuttall, Raimond Engineers, Inc., Chestertown, Md., Technical Report, TR-63-19, Contract DA -44-177-TC-393, Mar. 1963. 136 p.

During Operation SWAMP FOX I, this study was designed to describe all factors of the tropical forest environment of eastern Panama which affect overland movement. Topics covered are climatology, meteorology, geology, physiography, soils, trafficability, hydrography, botany, and cultural geography. Included are field observations and literature reviews. It is concluded that the major deterrents to mobility in the area traversed by SWAMP FOX I were slippery soils on slopes, narrow gullies and dense jungle growths. It was also concluded that the area traversed by SWAMP FOX I was not typical of surrounding areas. - Author (mod).

1963

1362 Dunn, G.E. et al. "Hurricane season of 1962." Monthly Weather Review, 91: 199-207, 1963. figs. table. refs.

1963 cont.

A general summary of the hurricane season of 1962 with details on hurricanes, "Alma," "Becky," "Celia," "Daisy" and "Ella." Five tropical cyclones, three of hurricane intensity were noted in Atlantic waters during 1962. This was the smallest number since 1939. There was no major hurricane, and no tropical cyclone was noted in the Gulf of Mexico or the Caribbean Sea. In the general circulation, westerlies were well south of their normal position and blocking was unusually strong. It was a cool summer and early fall over most of the northern and central United States. In all but one of the tropical cyclone cases, the perturbation in which the storm eventually developed could be traced back to the intertropical convergence zone, an unusual circumstance in the Atlantic area. Staff MGA 15.9-190.

1963

1363 Fett, R.W. "Detalles estructurales de huracanes revelados por fotografías de satélites." [Details of hurricane structure revealed in satellite photographs.] In Spanish and English. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 3(4): 161-164, Oct. 1963. figs. photos.

Satellite pictures of tropical cyclones suggest pronounced peripheral subsidence. In many instances a clear channel or annular zone of varying width is formed as a result of this subsiding motion at or near the rim of the high cloud shield of the storm. Upper wind and time-section analyses indicate that shear zones, formed or strengthened by outflow effects, are closely associated with subsiding areas. Individual stations in this study were found to have experienced cold air advection aloft prior to passage of the shear line at the 200 mb level, followed by warm air advection in the storm outflow. This resulted in the concentration of the horizontal thermal gradient near the shear zone and apparently aided in the production of an anticyclonic wind maximum in the same area. - Author (mod).

1963

1364 Flitters, N.E. "Observations on the effect of hurricane "Carla" on insect activity." International Journal of Biometeorology, 6(2):85-90, Mar. 1963. fig. refs. English, German and French summaries pp. 89-90.

Observations in the laboratory under conditions of controlled temperature and relative humidity on the effects of low barometric pressures on insect activity

1963 cont.

resulting from hurricane "Carla," one of the largest and most destructive hurricanes to affect the middle coast of Texas. Common insects exhibited nervous activity concomitant with the reduction in barometric pressure. Field studies throughout the critical storm period also indicated unusual arthropod activity. Following the hurricane, certain insect species emerged in unusually large numbers, particularly fall armyworms, wasps and southern green stink bugs. Author (mod) MGA 15.2-369.

1963

1365 Foster, H.E. "Radar composites of hurricane Carla." Abstract only. In Weather Radar Conference, 10th, Wash., D.C. 22 - 25 Apr. 1963. Program, American Meteorological Society, Bulletin, 44(3):174, Mar. 1963.

Hourly radar composite photographs were prepared for "Carla." The movement of echoes was studied in relationship to an irregularity in the storm trajectory. Author (mod).

1963

1366 Gergen, J.L. "[Comment on] H. Riehl: Radiation measurements over the Caribbean during the Autumn of 1960, [and] Reply by Riehl." Journal of Geophysical Research, 68(7):2063-2064, 1 Apr. 1963. refs.

Gergen indicates agreement with Riehl (1962) and adds some comments. In reply, Riehl notes that measurements made by Gergen fit well with the radiation data he presented. The editor's note comments that there is no doubt that cirrus clouds can produce the radiative effects noticed. Gergen and Riehl are probably correct, he states, but neither author has proved the uniqueness of the explanation. - Staff MGA 14.12-463.

1963

1367 Gerrish, H.P. and Hiser, H.W. "Mesoscale studies of instability patterns and winds in the tropics." Miami Univ. Institute of Marine Science, Contract DA-36 039 SC-8911, 2d Interim Technical Report, 1 Sept. - 31 Dec. 1962, Apr. 1963. 32 p. figs. table. refs. For abstract see their...1st Interim Technical Report, 1962.

1963

1368 Gherzi, E. "Electric potential gradient measurements made at Loyola University in New Orleans, La., U.S.A. (1959 and 1960)." Bulletin de Géophysique, no. 13:3-68, Apr. 1963. plates. tables. refs. French summary p. 3.

An attempt was made to prove that the atmospheric state called 'fair weather' differs from the type of air mass prevalent

1963 cont.

at the instant of reading. Only large scale variations were recorded and the synoptic motion of atmospheric electricity was derived independently from local storms and perturbations which are only transient phenomena. The conclusions drawn are approximate, because neither the air-ground current nor the air conductivity were recorded. Besides the state of the ground near the recording station made it impossible to establish a correction which would give the absolute gradient of the observed potential. All values presented in the general tables are direct readings. - Staff MGA 15.5-455.

1963

1369 Jamaica. Scientific Research Council. "Rainfall of Jamaica." Kingston, 1963. 5 p. 14 p. of maps DLC. Rainfall maps Scale 1:850,000.

1963

1370 Landers, H. "On the formation and development of tropical cyclones." Journal of Applied Meteorology, 2(2):206-218, Apr. 1963. figs. refs.

This study presents results of investigations into the cyclogenesis of tropical cyclones for the region of the tropical North Atlantic Ocean, Caribbean Sea and Gulf of Mexico. Initial wave formation and subsequent intensification to the vortex stage are emphasized. The 1000-500 mb shear (thickness) patterns were used as a measure of the depth of the easterlies. A net easterly shear in this layer was found to be favorable for intensification and a net westerly shear unfavorable. Methods of forecasting initial development and changes in intensification of tropical disturbances based on the combined empirical and theoretical work were developed and tested on independent data. - Author (mod) MGA 15.7-313.

1963

1371 La Seur, N.E. and Hawkins, H.F. "Analysis of hurricane Cleo (1958) based on data from research reconnaissance aircraft." Monthly Weather Review, 91: 694-709, 1963.

1963

1372 Ludlum, D.M. "Bibliography of early American hurricanes to 1870." In his Early American hurricanes, 1492 - 1870, 1963. pp. 185-190. DAS.

List of 125 references limited to: 1) published accounts of hurricanes which have crossed or closely approached the coastline of the United States, 2) books or articles on the subject of storm dynamics by Americans or by others if the material

1963 cont.

was discussed in periodicals and affected the thinking of American meteorologists and 3) any works on the subject published by the American press. Only material published before 1870 is included. - Author.

1963

1373 Ludlum, D.M. "Chronological index of early American hurricanes: 1528 - 1870." In his Early American hurricanes, 1492 - 1870, 1963. pp. 191-196. DAS.

1963

1374 Ludlum, D.M. "Early American hurricanes, 1492 - 1870." American Meteorological Society, History of American Weather, no. 1, 1963. 198 p. maps. refs.

Meteorological situations attending the occurrence of hurricanes prior to 1870 which have either closely approached or actually crossed the Atlantic and Gulf coastlines of the United States are listed. The study has been divided into two periods: 1) the voyages of Columbus to 1814 and 2) from 1815 to 1870. Within these two periods, the study has been divided geographically into three areas: from Cape Hatteras North, Cape Hatteras South and the Gulf Coast. A bibliography of 125 references to 1870, a chronological index from 1528 - 1870, and a geographic index by states from 1528 - 1870 are included as appendices. - Author (mod) MGA 15.1-14.

1963

1375 Mancuso, R.L. and Endlich, R.M. "Objective and dynamical studies of tropical weather phenomena." Stanford Research Institute, Menlo Park, Calif., Contract DA 36-039 SC-89092, Quarterly Progress Report 3, 1 Dec. 1962 - 28 Feb. 1963. 14 p. figs. tables. DAS.

Analyses of objectively computed layer quantities (relative humidity, stream function, divergence, etc.) for the Caribbean (5 - 8 May 1959) were completed. The degree of persistence of the stream function was found to be considerably greater than that of heights during this period. The stream function yields were also compared with subjective wind-contour charts independently prepared by Portig of the University of Texas. Investigation of the influence of scale (size of computation triangles) on computed values of divergence and vorticity revealed that magnitude decreased by about 1/2 as the area increased from 2×10^4 to $4 \times 10^5 km^2$. - Author (mod) MGA 15.5-292.

1963

1376 Millas, J.C. "Hurricanes of the Caribbean Sea and adjacent regions during

1963 cont.

the sixteenth century." 1963. see his "Hurricanes of the Caribbean and adjacent regions, 1492 - 1800." 1968.

1963

1377 Miller, B.I. "On the filling of tropical cyclones over land with particular reference to hurricane Donna of 1960." U.S. Weather Bureau. National Hurricane Research Project, Report no. 66, Dec. 1963. 82 p. DAS.

The processes which resulted in the dissipation of a tropical cyclone over land have been investigated. The eddy fluxes of latent and sensible heat and the dissipation of kinetic energy at the Earth's surface have been computed for a 3-day period. On the first 2 days, the cyclone was over water, and on the 3rd day the center was over land. Hence, it was possible to compare the rates of energy exchange at the surface after the character of the lower boundary had changed. Author.

1963

1378 Moore, H.E., et al. "Before the wind: a study of the response to Hurricane Carla." National Research Council, Wash., D.C., Pub. 1095, 1963. 164 p. figs. tables. refs. DAS. DLC.

A study of a large scale evacuation of a disaster threatened locality. The exodus preceding hurricane "Carla" (September 1961) involved the voluntary movement of hundreds of thousands of people in the face of a real threat to their safety. Details are given on the characteristics of "Carla," the decision to issue the warning, the method of warning, the decision making processes in evacuation behavior, the shelter and return and an evaluation of the event. - Staff MGA 15.12-15.

1963

1379 Moore, P.L. "Radar study of shower activity associated with the sea breeze." Abstract only. In Weather Radar Conference, 10th, Wash., D.C. 22 - 25 Apr. 1963. Program, American Meteorological Society, Bulletin, 44:168, 1963.

Based on tabulations of radar echoes observed at stations in Florida and the effect of the interaction of the sea breeze and the general wind on shower distribution. Significant space and time variations in shower activity are found to be associated with changes in general wind regimes. The echo patterns are compared with theoretical distributions of vertical motion within the sea breeze circulation. Author.

1963

1380 [Mount Washington Observatory, Gorham, N.H.] "Hurricane (and) Stormfury." Its News Bulletin, 4(4):10-13, Dec. 1963. fig. DAS. DLC.

Reviews and comments on H.Riehl (1963), "Origin and possible modification of hurricanes," and reports preliminary findings of cloud seeding experiments performed on hurricane "Beulah" (August 1963) as part of Project STORMFURY. The object of the experiments was to duplicate experiments begun in 1961 to seed hurricanes with AgI to determine if the energy patterns in a hurricane could be changed. Although changes occurred, scientists cautioned that hurricanes often have similar changes without human interference. - Staff MGA 16.1-156.

1963

1381 Netherlands Antilles. Bureau van de Statistiek. "Statistiek van de meteorologische waarnemingen in de Nederlands Antillen." [Statistics of meteorological observations in the Netherlands Antilles.] 1953 - 1963. DAS.

Contains hourly, monthly and annual summaries by yr at Princess Beatrix Airport, Aruba; Kralendyk, Bonaire; Princess Juliana Airport, St. Martin and Oranjestad as follows: temperature-mean daily and absolute maximum and minimum; dewpoint-means; relative humidity-means; pressure-means; wind speed-means; precipitation-daily maximum and winds-hourly vectors and annual speeds by direction (deg). At Dr. Plesman Airport, means of temperature (wet and dry bulb), dew point, relative humidity, cloudiness, pressure, (mean and absolute), wind speed (kts) and direction (deg) etc., are shown. - Staff

1963

1382 Neumann, C.J. "Meso-analysis of a severe south Florida hailstorm." Abstract only. In Conference on Severe Local Storms, 3d, 12 - 14 Nov. 1963. Program, American Meteorological Society, Bulletin 44:592-593, 1963.

On 29 March 1963, a thunder-with-hailstorm occurred directly over Greater Miami, Florida. Hailstones up to 3 in. in diameter were recorded and photographed and there is strong evidence that stones of up to 4 in occurred. Two well-defined hail swaths which emerged from opposite ends of an elongated cloud were identified and tracked for about 1 1/2 hr. Although the upper winds were westerly, the cloud and hail swaths moved in a general NNE to SSW direction. Details of wind, pressure and rainfall together with the hail damage pattern itself in the area of the 'hook'

1963 cont.

confirm that a mesocyclone of 3- to 5-mi diameter accompanied the system. Author (mod).

1963

1383 Portig, W.H. and Gerhardt, J.R. "Research in tropical meteorology." Texas. Univ. Electrical Engineering Research Lab., Contract DA-36-039 SC-89179, Final Technical Report, 31 July 1963. 29 p. figs. tables. refs. DAS.

Final Technical Report summarizes research activities since 31 July 1962 carried out by the Electrical Engineering Research Laboratory of Texas University. Four technical reports are included: 1) Upper air flow between lat 50°S and 40°N in July; 2) Rainfall and the bi-annual period; 3) Atmospheric conditions immediately prior to the formation of tropical revolving storms and 4) On the accuracy of radiosonde data in the Caribbean, and a suggestion for improvement. It is concluded that faulty calibration by instrument manufacturers and mesoscale weather phenomena produce most of the data discrepancies. - Staff MGA 15.8-23.

1963

1384 Renderson, D. "Hurricane Hattie, alias Simone, alias Inga." Weatherwise, 16(4):166-168, 174, Aug. 1963. figs. refs.

Occasionally, a westward moving hurricane in the Caribbean Sea or the southern Gulf of Mexico will cross Central America and redevelop on the Pacific Ocean side of the Isthmus. An example of this type of hurricane is "Hattie" (1961). Author cites track and progress of the storm from its inception as "Hattie" north of the Panama Canal, its change into tropical storm "Simone" in the Gulf of Tehuantepec, its redevelopment in the Gulf of Mexico as hurricane "Inga," and final dissipation near the Yucatan Peninsula Author.

1963

1385 Riehl, H. "On the origin and possible modification of hurricanes." Science, 141(3585:1001-1010, 13 Sept. 1963. figs. refs.

Summarizes the important views of various workers on weather modification postulates that external cooling, rather than internal warming, is responsible as the initial accelerating mechanism of a hurricane. Modification of the postulate by rearranging a hurricane's energy was tested (based on Schaefer's experimental proof of controlled interference with condensation - precipitation and Simpson's 'depth charge' seeding producing an

1963 cont.

additional heat source). Although the results of the joint experiment of the U.S. Weather Bureau and U.S. Navy with depth charges somewhat off center of hurricane "Esther" (16 and 17 September 1961) gave no definite proof of the feasibility of asymmetrically rearranging the hurricane's energy, the experiment was encouraging. Staff MGA 15.12-263.

1963

1386 Riehl, H. "Wie entstehen die tropischen Hurrikane?" [How do tropical hurricanes originate?] Umschau, 10:309-313, 1963. DAS.

1963

1387 Rosendal, H.E. "Weather Bureau and Navy scientists to seed hurricanes." Mariners Weather Log, 7(5):172, Sept. 1963.

Project STORMFURY was to be conducted in tropical waters of the North Atlantic and Caribbean Sea by U.S. Weather Bureau and U.S. Navy scientists from 1 August to November. Experiments were designed to determine the effectiveness of seeding techniques and equipment. If no hurricane occurs in the area, 3 very similar cumulonimbus clouds within 300 mi of Puerto Rico will be selected for seeding tests. Two of the clouds will be seeded and the 3rd used as a control cloud. - Staff MGA 15G-82.

1963

1388 Simpson, J.S.M. "Tropical rain induced by a small natural heat source." Journal of Applied Meteorology, 2(5):547-556, Oct. 1963. figs. table. refs.

The possibility of rainfall enhancement by asphalt ground coatings is analyzed by means of observations of natural cloud formations over the small flat island of Anegada. The heated island theory is used to estimate the 'equivalent heat mountain' and updraft associated with island warming. These results are compared with aircraft temperature and moisture cross sections and cloud maps made from time-lapse photographs. The study indicates that the asphalt coating method is sufficiently promising to warrant intensified investigation, for which specific means are suggested. - Author (mod) MGA 15G-72.

1963

1389 Simpson, R.H., Simpson, J.S.M. and Eaton, M.A. "Modification experiment on hurricane Beulah, 1963." Abstract only. In American Meteorological Society, National Meeting, 29 - 31 Jan. 1964. Program, American Meteorological Society, Bulletin, 44:710, 1963.

1963 cont.

On 23 and 24 August, a cloud seeding experiment was conducted in hurricane "Beulah" in which approximately 800 lbs of AgI smoke were injected into convective clouds near the storm center per day. The experiment, conducted by Project STORMFURY, used a total of 10 specially equipped aircraft to examine and monitor changes in structure of the hurricane several hours before and after the seeding. Pyrotechnic AgI dispensers were dropped from 35,000 ft distributing vertical plumes of smoke downward to the freezing level along a radial from the point of maximum wind outward to a distance of about 15 mi. There were distinguishable changes in radar reflectivity similar to those in the seeding experiment in hurricane "Esther" (1961). Details of structural changes and their possible relation to the seeding are discussed. - Author (mod).

1963

1390 Smith, R.L. "Vertical echo protrusions observed by WSR-57 radar." In Weather Radar Conf., 10th, Wash., D.C., 22 - 25 Apr. 1963. Program. American Meteorological Society, Bulletin, 44:177, 1963.

During periods of thunderstorm and anomalous propagation detection by WSR-37 radar at Apalachicola, Florida, narrow vertical protrusions have been observed up to 70,000 ft on the Range Height Indicator (RHI) scope. Before these were observed with anomalous propagation, they were reported as heights or thunderstorm echoes. When they were observed with anomalous propagation, it became apparent that some serious errors in echo height reporting had been made. Observations of these protrusions in typical thunderstorm, shower, and anomalous propagation cases are discussed. - Author (mod).

1963

1391 Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofisica Internacional, 3(3/4):53-178, July/Dec. 1963. figs. tables. refs. Spanish and English text and summaries--Program with abstracts in American Meteorological Society, Bulletin 44:233-247, 1963.

This bilingual edition of the Proceedings of a conference on hurricanes, jointly sponsored by the Union Geofísica Mexicana, the American Meteorological Society and the American Geophysical Union, contains 13 papers on tropical circulation and on the structure of hurricanes. Staff MGA 16.7-25.

1963

1392 Thompson, A.H. and Abbott, G.E. "Vorticity and TIROS III cloud patterns around Esther, 1961." Abstract only. In American Meteorological Society, National Meeting, 29 - 31 Jan. 1964. Program, American Meteorological Society, Bulletin, 44:710, 1963.

Vorticity patterns over the southeastern United States and the area just north of the West Indies were computed by electronic techniques for the period 0000 GMT, 18 September 1961, to 1200 GMT, 21 September 1961. The 'subjective' analyses of these results were compared with the cloud distributions as depicted by the appropriate TIROS data. Geostrophic vorticity values were obtained from the Laplacian of the contour values and the vorticity advection from the Jacobian of the vorticity and the contour values, both expressed in finite difference form. The height values necessary for computation were obtained objectively by fitting a 2nd order polynomial to the available data. - Author (mod).

1963

1393 Tisdale, C.F. and Clapp, P.F. "Origin and paths of hurricanes and tropical storms related to certain physical parameters at the air-sea interface." Journal of Applied Meteorology, 2(3):358-367, June 1963. figs. refs.

Ship-weather and sea-temperature observations were used to obtain averaged values of sea and air temperature, dew-point, windspeed and the transfer of real and latent heat from the sea surface for 10-day and 5-day periods during the hurricane seasons of several years. The area studied comprised the Atlantic south of lat 35°N, the Gulf of Mexico and the Caribbean Sea. Although none of the parameters provided a definite indication in each case of storm formation and path, the energy-transfer parameter showed forecasting promise when averaged for several storms in the sense that storms appear to form downstream from geographical centers of maximum heat transfer. The sea-temperature anomaly (studied for only part of the above data) seems especially consistent in indicating the subsequent track of the storms. - Author (mod).

1963

1394 U.S. Weather Bureau. "Climatological data. West Indies and Caribbean 1921 - 1938; 1941 - 1952; Jan. - Oct. 1963." DAS.

Contains monthly summaries by yr for the Caribbean area with the following: precipitation (mm) and temperature (°C).

1963 cont.

Mean annual summaries of: precipitation (mm), number of days with rain (1921 - 1948) and temperature are also included. - Staff.

1963

1395 U.S. Weather Bureau. "Hurricane Cindy, September 16 - 18, 1963." 12 p. DAS.

Hurricane "Cindy" formed in the northwestern Gulf of Mexico (16 September 1963) and crossed the Texas coast in the Galveston - Port Arthur area on 17 September. This is a preliminary report of meteorological conditions with advisories and bulletins issued. - Staff.

1963

1396 Venezuela. Servicio de Hidrología. "Boletín climatológico." [Bulletin of climatology.] Publicación, no. 1, 1963. 105 p. tables. map. also supp., 1963. 11 p. tables. map. DAS.

1964

1397 Alaka, M.A. "Sobre la naturaleza del mecanismo inicial en la formación de huracanes." [Nature of the triggering mechanism in hurricane formation.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, 4(2/4):231-240, Apr./Dec. 1964. figs. refs. In Spanish and English.

It is shown from theoretical considerations, that if the warming process in hurricane formation continues until the upper anticyclone approaches maximum intensity, dynamic instability in the form of absolute anticyclonic winds is released with respect to the direction of movement of the anticyclone. A model based on the hypothesis that these absolute anticyclonic winds are instrumental in triggering development is proposed and is shown to be supported by available observations. Author (mod) MGA 18.5-243.

1964

1398 Alaka, M.A. and Rubsam, D.T. "Some notes on the formation of hurricanes with particular reference to Hurricane Ella, 1962." In Symposium on Tropical Meteorology Rotorua, New Zealand, Nov. 1963, Proceedings. Wellington, 1964. pp. 641-649. figs. table. refs. DAS.

Observations made at different levels by aircraft of the Research Flight Facility (RFF) of the U.S. Weather Bureau, in conjunction with regular synoptic observations from the coastal United States and Bahamas are utilized in detailed analysis of conditions prevailing during

1964 cont.

the crucial period immediately before, during and after "Ella" (1962) attained hurricane intensity. It is shown that "Ella" did not develop under an upper tropospheric anticyclone. Rather, anticyclonic circulation first appeared in the middle troposphere and gradually extended upwards while the storm was intensifying into a hurricane. - Author MGA 16.8-237.

1964

1399 American Meteorological Society, "University of Miami computing center to be ready in 1964." Its Bulletin, 45:240, 1964. photo.

Announces that construction of a computing center on the main campus of the University of Miami was begun December 1963. Center will contain an IBM 7040 high-speed transistorized digital computer and will house both university research personnel and 4 federal agencies engaged in weather studies. A total of 140 employees of the U.S. Weather Bureau, the National Hurricane Research Center and weather units of the U.S. Navy and U.S. Air Force will conduct research projects planned between government scientists and university researchers. - Staff MGA 16.1-57.

1964

1400 Army Conference on Tropical Meteorology, 3d, Fort Monmouth, N.J., 14 - 15 May 1964. Proceedings. By H.W. Hiser and H.P. Gerrish. Dec. 1964. 174 p. DAS.

Contents: Summary of upper wind observations over Thailand and neighboring areas; meteorological studies of Southeast Asia; preliminary results of the Barbados field program; statistical measure of the importance of convection in tropical rainfall; wind structure over a tropical island; hailstorms from the Tropics to mid-latitudes; atmospheric electricity phenomena in the upper air over Poona, India; friction over the sea; comparison of mean seasonal pressure patterns over Africa with synoptic weather developments; tropical rainfall patterns and associated mesoscale systems; summary of mesoscale studies of instability patterns and winds in the Tropics and subtropics at the University of Miami; convection on the mesoscale; circular cloud system south of Japan; research of the National Hurricane Research Project; climatological aids to tropical analysis and forecasting and feasibility of adding gravity waves to a common model for numerical weather prediction in the Tropics. Staff.

1964

1401 Arnason, G. "Crecimiento de

1964 cont.

perturbaciones incipientes a escala sinóptica en los trópicos." [The growth of incipient synoptic-scale disturbances in the Tropics.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 4(2/4):111-116, Apr./Dec. 1964. figs. refs. In Spanish and English.

The growth rates of tropical disturbances were studied. The preferred scale of motion in a statically unstable atmosphere at rest has been analyzed by Haque (1952) and Lilly (1962) as that of infinitely narrow columns of alternately rising and sinking motions. The barotropic and baroclinic models, simulating the tropical atmosphere, were analyzed. The 'limiting perturbation,' or the transition from neutral to growing waves, is considerably increased by considering the effect of a variable Coriolis parameter. In general, tropical disturbances on a synoptic scale could form in a neutral or conditionally unstable atmosphere which is slightly baroclinic. - Staff MGA 18.7-343.

1964

1402 Bowen, C. "Climatological study of radar echo pictures from Albrook Air Force Base, Panama." Texas. A & M Univ., May 1964. 58 p.

A climatological study of radar echo occurrence can supplement rain gage observations and aid in determining rainfall distribution. Radar data obtained from Albrook A.F.B., Canal Zone were analyzed for April 1961, July 1961 and January 1962 and monthly radar echo occurrence charts drawn. From the analysis of these charts, areas of potentially high and low rainfall were determined. It was resolved from cross sections of radar echo occurrence and topography that no one meteorological process can explain the cloud formations in the Panama area. - Author (mod)

1964

1403 Bradley, D.A. "Tidal components in hurricane development." Nature, 204(4954): 136-138, Oct. 10, 1964. figs. tables. refs.

The criterion for ranking a tropical storm as a hurricane is its attainment of sustained winds of force 12 (Beaufort). At this stage, the pressure drops rapidly and distinct organization of the system into inward spiralling bands takes place. The dates of transition from tropical storm to hurricane status of 269 historical individual hurricanes occurring during

1964 cont.

1899 - 1958 have been investigated. Frequency distributions relating this transition with lunar cycles are developed. The results show that hurricane maturation during this period occurred most frequently on days when the rate of change in the intensity of the Moon's disturbing effect, not the magnitude of the effect itself, was at a maximum. The sign of the rate of change does not appear to be important inasmuch as both the decelerating and accelerating quadrants appear to have been similarly represented in the observed frequencies. - Staff.

1964

1404 Chu, R.T.P. and Spar, J. "Huracán Betsy (1961) visto por Tiros III." [A Tiros 3 view of Hurricane "Betsy" (1961).] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 4(2/4):247-262, Apr./Dec. 1964. figs. refs. In Spanish and English.

TIROS 3 observations have been assembled to show cloud structure over the eastern tropical Atlantic for 24 August 1961 prior to the appearance of hurricane "Betsy," through the formation period 2 - 3 September 1961 and at maturity 7 September 1961. Black-body temperature has been computed from the 8 - 12 micron 'window' IR radiation measurements which were used to estimate macro-scale cloud top topography. The coldest cloud top was found in the circular central cloud mass. The cloud topography changed from large-scale plateau to smaller scale banded structure. As the hurricane matured, the banded structure was replaced by a mound-shaped cloud top. - Staff MGA 18.7-146.

1964

1405 Cry, G.W. "North Atlantic tropical cyclones, 1963." Mariners Weather Log, 8(1):1-7, Jan. 1964. figs.

A description of 7 hurricanes and 2 tropical storms in the North Atlantic. The origin and course of each is given. The most noteworthy was "Flora" occurring between September and October which caused an estimated loss of life of 7,000 persons, the greatest for any Atlantic hurricane since the 'Great Hurricane' of 1780. Staff MGA 15.10-268.

1964

1406 Dunn, G.E. and Miller, B.I. "Atlantic hurricanes." Louisiana State Univ. Press, 1964. 377 p. figs. tables. refs.

The first (1960) edition has been amplified by a new chapter giving a descriptive account of all West Indian

1964 cont.

hurricanes for 1958 - 1963 to supplement detailed statistical tables for the period up to 1958. The only other changes are in the chapter on research, which has been rewritten and updated to incorporate new hurricane reconnaissance, cloud seeding, satellite and laboratory studies and recent references. Basic chapters on background, tropical weather, circulation, hurricane climatology, hurricane characteristics, hurricane swells, surges, weather, energy sources, modification, formation, warnings, destruction, hazards and research are included. - Staff MGA 16.3-2.

1964

1407 Dunn, G.E. et al. "Hurricane season of 1963." Monthly Weather Review, 92: 128-138, 1964. figs. tables, refs.

A summary report on the hurricane season of 1963. Nine tropical cyclones were observed in the Atlantic and all but 2 were of hurricane intensity. No major hurricane crossed the coastline of the continental United States. From the standpoint of loss of life, this was the second most disastrous hurricane season on record in the Atlantic areas as a whole, and will be long remembered in Cuba and Haiti. Details are given on hurricanes: "Arlene," "Beulah," Unnamed, "Cindy," "Debra," "Edith," "Flora," "Ginny" and "Helena." Staff MGA 16.3-229.

1964

1408 Eaton, M.A. "Caza-Huracanes Navales." [Navy 'Hurricane-Hunters'.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 4(2/4):57-62, Apr./Dec. 1964. figs. refs. In Spanish and English.

The great improvement by U.S. Navy 'Hurricane-Hunters' in saving human lives and property is described. A Super Constellation, equipped with meteorological instrumentation and radar scopes, is described. At present, weather satellites have made the first significant advancement in hurricane tracking, but the information transmitted from satellites is limited to that derived from pictures of cloud patterns taken at extreme altitudes. Thus, the surveillance of tropical storms by 'Hurricane-Hunters' is still the most reliable means for determining central pressure, wind velocities, sea conditions, temperature gradients and other data important for an early warning system. - Staff MGA 18.7-139.

1964

1409 Erickson, C.O. "Satellite photographs

1964 cont.
of convective clouds and their relation to the vertical wind shear." Monthly Weather Review, 92:283-296, 1964. figs. refs.

Several TIROS photographs of cumulonimbus clouds and thunderstorms over the Florida area are compared with synoptic surface and upper wind data. Limited evidence suggests that the length and character of the anvils may sometimes be used as qualitative indicators of shear magnitude, the longer and more pronounced anvils being positively correlated with stronger vertical shear. It was also found that cumulonimbus clouds appear as small or medium sized, irregular, bright masses in TIROS pictures. Such clouds often can be tentatively identified from their picture appearance alone. The problems arising from specular reflection and from variations in overall photograph appearance resulting from changing camera angle are briefly discussed. - Author (mod) MGA 16.1-496.

1964

1410 Fetherston, C.E. "Weather fan: the Tampa Bay waterspout." Weatherwise, 17(4):166; 190-191, Aug. 1964. photos.

A brief account of the waterspouts of 25 June 1964 observed in lower Tampa Bay. The first one lasted from 18:10 to 18:15 local. It was accompanied by 5-6 smaller ones of briefer duration. The main waterspout formed at 18:15 local, moved NNE and dissipated at 18:35 local. - Staff MGA 16.4-324.

1964

1411 Fett, R.W. "Aspects of hurricane structure: new model considerations suggested by TIROS and Project Mercury observations." Monthly Weather Review, 92:43-60, 1964. figs. refs.

Satellite photographs of hurricanes reveal the complete storm in relationship to its environment. In many instances 'outer convective bands' or 'pre-hurricane squall lines' appear to partially ring the storm. These bands are usually separated from the rim of the high cloud shield by a relatively clear channel, visible and distinct for long distances along the circumference. Many photographs also reveal extensive areas of convective, cirrus producing cloudiness in the wake of the storm. Time cross section analyses of hurricanes "Carla" and "Anna" suggest peripheral subsidence. - Author (mod) MGA 16.1-468.

1964

1412 Fletcher, R.D. and Johannessen, K.R.

1964 cont.
"Computation of surface winds from aircraft data." In U.S. Interdepartmental Hurricane Warning Conference, 18th, 1964. Report. pp. 21-22. DAS.

Introduction of the use of a normalized coordinate system has disclosed that normalized sea-level pressure profiles through hurricanes and typhoons are remarkably similar. Adoption of a standard normalized profile permits a very simple computation, well verified through observations, of the maximum surface winds of these destructive storms. Recent theoretical studies show that the computation can be improved through consideration of the latitude of the hurricane center and of the size of the central 'eye' of the storm. Observations have supported the theoretical conclusion. - Author (mod).

1964

1413 France, M.D. "Monthly climatological wind and density data for six stations in the region of the Atlantic Missile Range." U.S. Naval Weapons Laboratory, Dahlgren, Va., Report no. NWL-TM-K-27-64, May 1964.

Monthly climatological wind and density data for six World Meteorological Organization (WMO) stations in the Caribbean Sea are presented. These tabulations are based on statistical data obtained from observations extending over approximately 4 yrs (May 1955 to September 1962). For purposes of description, graphical presentations of typical data are given for selected cases. - Author (mod).

1964

1414 Frank, N.L. "1963 hurricane season." Weatherwise, 17(1):16-23, Feb. 1964. charts. photos. tables.

An informative summary of the 1963 hurricane season. A total of 9 storms compares well with the average of 10 storms per yr during the past 3 decades and an average of 8 disturbances over the past 3/4 of a century. "Flora" was the principal hurricane of the season, having been the most deadly in the Atlantic Ocean during this century. Information is also given on "Arlene," "Beulah," unnamed, "Cindy," "Debra," "Edith," "Flora," "Ginny," "Helena" and "Katherine." "Katherine" was a Western Pacific cyclone which influenced the United States mainland. Hurricane "Beulah" provided the setting for the second major hurricane modification attempt. Project STORMFURY is briefly described. - Staff MGA 16.2-222.

1964

1415 Frank, N.L. "Operational usefulness of satellite data during the 1963 hurricane

1964 cont.

season." In U.S. Interdepartmental Hurricane Warning Conference, 18th, 1964. Report. pp. 23-29. DAS.

During the summer of 1963, satellite pictures of the tropical Atlantic Ocean, Caribbean Sea and Gulf of Mexico were received from TIROS 6 and 7 satellites on 200 different passes from July - October. Of this total, 181 can be considered independent; i.e., both satellites photographed essentially the same area on 19 passes. Assuming that 4 passes per day are required for complete coverage, we can estimate the areal coverage by satellites. Complete coverage requires 496 passes for the period July through October. This means satellites had daily views of the area of interest approximately 1/3 of the time. - Author (mod).

1964

1416 Fritz, S. "Observations from satellite in the Tropics." In U.S. Interdepartmental Hurricane Warning Conference, 18th, 1964. Report. p. 48. DAS.

In many areas of the Tropics, very few data are available. The satellite can contribute observations in those areas. Cloud patterns observed by TIROS over the tropical Atlantic, Caribbean Sea and Gulf of Mexico indicate various phenomena, a few examples of which are presented. - Author.

1964

1417 Gardner, M.E. "Determination of the drift direction and velocity of ionospheric winds over Puerto Rico." Boston College. Ionospheric Research Laboratory, Scientific Report no. 1, Contract AF19-628-4178, Sept. 1964. 11 p.

The computer program described was developed from a method of E. Harnischmacher of the Ionosphäreninstitut at Breisach, which analyzes ionospheric wind data automatically upon receipt to obtain drift direction and velocity. Method is based essentially on the concept of similar fades. Results represented are obtained from E layer reflections over Puerto Rico for the years 1958 - 1959. - Author.

1964

1418 Gerrish, H.P. "Estudio de eco-alturas de ciertas ondas mesoescalares en alisios." [Echo-height study of certain mesoscale waves in the trade winds.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 4(2/4):77-84, Apr./Dec. 1964. figs. table. refs. In Spanish and English. DAS.

The heights of convective precipitation

1964 cont.

echoes associated with certain mesoscale waves in the trade winds are studied, using Range Height Indicator radar data. Results of this preliminary study indicate a strong preference for taller echoes to be oriented along and immediately to the rear of the wave axis for waves moving slower than a uniform basic current. This is analogous to the classical model of clouds for synoptic scale waves in the trade winds and is in agreement with the theorem on conservation of potential vorticity. Author (mod) MGA 18.6-100.

1964

1419 Gosdin, M.E. "Meteorological satellite photographs as indicators of cyclogensis and the related cloud distribution and structure over the Gulf of Mexico: a case study." Aug. 1964. Master's thesis. Texas A & M Univ. 32 p. figs. refs. DAS.

The weather pattern that developed in the western Gulf of Mexico during the period 19 - 20 November 1962 was studied. Conventional data and meteorological satellite data from TIROS 5 were used to investigate the formation of an unstable wave on the polar front and the related cyclogenesis. Lack of surface synoptic reports in the Gulf of Mexico precluded accurate location of the wave and associated fronts, but fairly accurate positions were interpreted from the cloud patterns in TIROS photographs. Included in this study are a brief synoptic history of the storm, a descriptive and subjective interpretation of the cloud images and a discussion of the apparent relation between the cloud patterns and conventional analysis. Author (mod) MGA 16.5-337.

1964

1420 Hakkarinen, W. "World of NOMAD-1." In Buoy Technology Symposium, 1st, Wash., D.C., 24 - 25 Mar. 1964. pp. 443-456. figs.

Describes, in narrative style, significant and humorous incidents which occurred during the development and testing program of the marine automatic weather station in the Gulf of Mexico. The presentation was illustrated with slides and a short movie covering latest developments. - Author MGA 16.4-145.

1964

1421 Henry, W.K. and Griffiths, J.F. "Research on tropical rainfall patterns and associated meso-scale systems." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract DA-IAO-11001-B-021-09, 4th, Quarterly Progress Report, 1 Aug. - 31 Dec. 1963. 15 Jan. 1964. 47 p. figs. tables. refs.

1964 cont.

A study of the areal variations of rainfall of the Panama-Costa Rica area show extreme variations of rainfall. Also, daily variations between stations are discussed. Using data from 2 Central American stations with long periods of records, various methods have been attempted where the beginning, ending and duration of the rainy season may be calculated. One of these, using a simple water balance technique, provides consistent results. Analyses for the 2 stations are presented. Author (mod) MGA 16.3-361.

1964

1422 Hoecker, W.H. "Unusual tornado photographs." Monthly Weather Review 92:328-329, 1964. fig.

Presents 2 unusual photographs of the beginning of a tornado at Tampa, Florida taken on 28 July 1963 from nearly beneath the tornado cloud. A few minutes after the photographs were taken the tornado dipped to the ground and damaged trees and house roofs. The central lobes and circular cloud bands suggest rotation of the cloud system. The degree of ellipticity, assuming that the bands were truly circular, suggests that the formation was nearly overhead when the initial photo was taken. Staff MGA 16.4-323.

1964

1423 Holdridge, L.R. et al. "El Real environmental survey, Darien Province, Republic of Panama, 1962." Wilson, Nuttall, Raimond Engineers, Inc., Chestertown, Md., Contract DA-44-177-TC-393, Technical Report Jan. 1964. 345 p.

An environmental survey was conducted in Darien Province, Panama, within a 32-km radius of the village of El Real. The primary objective was to establish a comprehensive body of correlated data on significant environmental factors that affect mobility in the survey area. Field operations were conducted between 15 June and 18 August 1962 by an 11-man team of scientists and technicians from several United States and Panamanian agencies. Environmental studies covered ecology, soils, hydrography, physiography, geology, botany and climatology. - Author.

1964

1424 Hubert, L.F. "Experimento numérico para completar análises tropicales con fotografías de satélites." [A numerical experiment in supplementing tropical analyses with satellite pictures.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica

1964 cont.

Internacional, 4(2/4):85-98, Apr./Dec. 1964. figs. refs. In Spanish and English.

Satellite pictures frequently reveal areas of upward motion associated with low tropospheric convergence. Also, areas of circulation related to vorticity indicating streamlines may be seen. This experiment utilizes an IBM 7090 computer program to improve upon the horizontal velocity field by estimating the divergence and vorticity pattern from pictures. This technique may provide a direct method of interpreting picture data that is not used in the usual estimation of streamline. Author (mod) MGA 18.4-137.

1964

1425 Hubert, L.F. and Timchalk, A. "Accuracy of TIROS hurricane location." Journal of Applied Meteorology, 3(2): 203-205, Apr. 1964. figs. table.

Statistics for 3 hurricane-typhoon seasons (1961, 1962, 1963) are presented. TIROS data used and sources of errors are shown. It is suggested that forecasters, mariners and other recipients of operational storm fixes from TIROS should regard location information to have a probable error significantly less than 60 n mi, unless nephanalysis carries a notation that the storm fix error may be greater than +1°. Where the accuracy estimate is +1°, the error is probably closer to 30-40 n mi, although it will deviate from aircraft fixes, on the average by 50 n mi. The deviations in the 67 cases studied appear to be randomly distributed in regard to angle of view, location, etc., with no indication that any one error source is dominant. - Staff MGA 16.1-206.

1964

1426 Kasahara, A. "Problema clave en el modelo numérico de ciclones tropicales." [A key problem in the numerical model of tropical cyclones.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 4(2/4): 179-186, Apr./Dec. 1964. refs. In Spanish and English.

An attempt is made to express known physical processes in terms of mathematical formulations in the hurricane model based upon Navier-Stokes hydrodynamic equations. The derived equations are integrated, numerically. The 100 mb level was chosen as the top boundary and the 1,000 mb level as the lower boundary. Computations were carried out successfully over a period of 14 days with 1 min time increments. The results of calculation show the development

1964

of hurricane circulation and explain many observed features of tropical cyclones. Staff MGA 18.7-346.

1964

1427 Killian, L.M. "Evacuation of Panama City before Hurricane Florence." National Academy of Sciences-National Research Council. Committee on Disaster Studies, Mar. 1964. DAS.

Study of public reactions to a false alert and to officials who advised the evacuation of Panama City, Florida (25 September 1964) after weather reports indicated this city would receive the greatest force of hurricane "Florence" forecast to contain winds of 160 mph. During the night, the hurricane changed its course and crossed the coast about 100 mi west of the city. Staff.

1964

1428 Kolobkov, N.V. "Uragan Flora." [Hurricane Flora.] Priroda, no. 1:91-94, Jan. 1964. figs.

The course, intensity and damage caused to Cuba by hurricane "Flora" (30 September 1963) is described. The general characteristics of tropical cyclones, including the possible causes of origin, seasonal frequency and movement are summarized on the basis of such examples as typhoon "Nancy" (1961). Data on pressure variations and wind speeds of some typhoons and hurricanes are given. - Staff MGA 16.6-268.

1964

1429 Kraus, E.B. "Heat flux and surface stress on and near an island in the trade wind region." Woods Hole Oceanographic Institution, Contract DA-36-039 SC-90784, Report no. 3; 3d Semi-Annual Progress Report, 15 July - 5 Dec. 1963. 11 p. figs.

Some research programs formulated during the past 6 mos which are related to the present project are described. Scientists scheduled to take part in the forthcoming Aruba expedition are listed. New technical developments under the contract, modifications or improvements of existing equipment and the testing program which occupied most of the attention of the staff are described. - Author (mod) MGA 15.10-311.

1964

1430 Kraus, E.B. "Heat flux and surface stress on and near an island in the trade wind region." Woods Hole Oceanographic Institution, Contract DA-36-039 SC-90784, Report no. 4, Ref. 64-36(b), July 1964.

1964

1431 Lateef, M.A. "Energy generation and

1964 cont.

flux processes associated with a weakening depression over the Gulf of Mexico." U.S. Environmental Science Services Administration (ESSA). National Hurricane Research Project, Technical Memorandum no. 71, 1964. 10 p. DAS

The dissipation, on 21 September 1963, of a depression over the Gulf of Mexico has been investigated in terms of kinetic energy transport and generation processes. To evaluate these processes, data provided by research flights at the 800- and 600-mb levels were used. Results show that the limited atmospheric region under study not only was subject to internal conversion of kinetic to potential and internal energy, but also the kinetic energy was transported to the surrounding atmosphere. - Staff.

1964

1432 Martin, L.A. "Investigation of the rainfall distribution for selected stations in North and Central America." Master's thesis - Texas A & M Univ., 1964. 55 p.

A mean rainfall distribution curve was found to fit the monthly rainfall distribution of all stations in these areas for all seasons. - Author (mod).

1964

1433 Mather, J.R., Adams, H. and Yoshioka, G.A. "Coastal storms of the eastern United States." Journal of Applied Meteorology, 3(6):693-706, Dec. 1964. figs. tables. refs.

Storms resulting in damage to the East Coast of the United States over the past 42 yrs have been classified into 8 different synoptic situations: hurricanes; wave developments east of the southeast coast or in the vicinity of Cuba; wave developments over Florida or the nearby Atlantic coastal waters; wave developments in the Gulf of Mexico west of long 85°W; inland depressions that deepen upon the coast; secondary cyclonic disturbances in the Hatteras area; intense cyclones moving northeastward, west of the coast and strong cold fronts with associated squall lines. The seasonal and geographical distributions of these storm types are investigated. - Author (mod) MGA 16.6-269.

1964

1434 Merritt, E.S. "Easterly waves and perturbations, a reappraisal." Journal of Applied Meteorology, 3(4):367-382, Aug. 1964. figs. refs.

Analyses of tropical perturbations in the Atlantic region (commonly referred to as easterly waves), utilizing observations from meteorological satellites, reveal that

1964 cont.

5 distinctly different cloud distributions occur. These patterns are both linear (similar to the classic Riehl model of the easterly wave) and vortical. The vortical patterns appear most frequently and are often related to a closed cyclonic circulation in the mid-troposphere. Calculations of the horizontal and vertical distributions of divergence and vorticity indicative of the mid-tropospheric circulation in an intense disturbance are shown. Author MGA 16.4-300.

1964

1435 Millas, J.C. "Hurricanes of the Caribbean Sea and adjacent regions during the seventeenth century." Miami. Univ. Marine Laboratory, Final Report. Contract CWB10739, June 1964. 160 p. See also his "Hurricanes of the Caribbean and adjacent regions, 1492 - 1800." 1968.

Research was based on the reading of a number of books in English, Spanish and French, not only directly related with the occurrence of storms in different regions of the West Indes, but also those that could indirectly offer clues concerning accounts of tropical storms. - Staff.

1964

1436 Miller, B.I. "Study of the filling of hurricane "Donna" (1960) over land." Monthly Weather Review, 92(9):389-406, Sept. 1964. figs. tables. refs. For abstract see his "On the filling of tropical cyclones over land with particular reference to hurricane Donna of 1960.1963.

1964

1437 Millman, G.H. "Radar-lunar measurements of the electron content of the ionosphere." Journal of Geophysical Research Research, 69(3):429-440, 1 Feb. 1964. figs. refs.

Faraday rotation of 425 Mc sec^{-1} radar signals reflected from the Moon's surface has been analyzed to yield data on the ionization in the ionosphere. The measurements were taken at Trinidad, West Indies, between January and July 1960. A method is presented which permits resolving the ambiguity of the number of rotations of the plane of polarization when one frequency is employed in radar-lunar studies. The total integrated electron density in a vertical column through the ionosphere inferred from the radar Faraday data is found to undergo a diurnal variation, having a maximum value during the late afternoon. An analysis of other ionospheric parameters, such as the equivalent slab thickness, the scale height and the ratio of the electron content above the peak of the F layer to that below, is presented. - Author MGA 15.11-134.

1964 cont.

1964

1438 Moore, H.E. et al. "... and the winds blew." Hogg Foundation for Mental Health, Univ. of Texas, Austin, Tex., 1964. 221 p. figs. tables. refs. DAS. DLC.

Report on research done by the Disaster Study at the University of Texas and focussed on hurricane "Carla." It supplies the reader with a fair sampling of the information available to those who were forced to make decisions in this emergency that took 45 lives and cost more than $400 million in 1961. This volume is said to be complementary to 'Before the Wind' published by the National Academy of Sciences-National Research Council as Disaster Study no. 19. - Staff MGA 16.4-24.

1964

1439 Mosiño, Alemán, P.A. "Tiempo superficial y configuraciones del flujo aéreo superior en México." [Surface weather and upper air flow patterns in Mexico.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional Mexico City, 4(2/4):117-168, Apr./Dec. 1964. figs. tables. refs. In Spanish and English.

Surface and upper air charts covering the United States, Mexico, Central America and adjacent waters are analysed, using observations at 700, 500 and 300 mb. The chart shows that a large part of Mexico, between lat 14°N and 33°N, is subject to easterly winds during summer and westerlies in the winter. Relatively large amounts of rain prevail over the Mexican land areas, owing to the topography which through lifting, damming and deflecting of the air flow and providing a high level heat source, causes air currents to release their moisture by forced lifting and horizontal convergence. Tropical revolving storms, although not frequent, cause large anomalies in the seasonal rainfall distribution. - Staff MGA 18.7-462.

1964

1440 Newton, O.H. and Riley, J.A. "Dew in the Mississippi Delta in the fall." Monthly Weather Review, 92:369-373, 1964. figs. refs.

Dew affects the quality of harvested cotton in the Mississippi Delta. Dew was measured by collectors patterned after the Duvdvani dew block. Vertical variations were observed at 10 levels above the ground from 3 - 71 in. Dew intensities normally decrease with height and rate of change

1964 cont.

was larger below 24 in than above. Differences in dew intensity were less between stations 40 mi apart than between stations 150 mi apart. Vertical variation of dew, especially below 24 in appears to be a micrometeorological phenomenon and not subject to conventional forecasting techniques. Areal variation of dew at the 24 in level appears to be a macrometeorological phenomenon which is subject to conventional forecasting techniques. - Author (mod) MGA 16.4-444.

1964

1441 Ooyama, K. "Modelo dinámico para estudiar el desarrolo de ciclones tropicales." [A dynamical model for the study of tropical cyclone development.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June, 1963. Proceedings, Geofísica Internacional, Mexico City, 4(2/4):187-198, Apr./Dec. 1964. figs. refs. In Spanish and English.

The development of a tropical cyclone is viewed as a cooperative process between cloud-scale convection as the energy source and cyclone-scale motion as the mechanism of organizing cloud convection. In order to formulate coupling between 2 different scales of phenomena in terms of large scale fields alone, it is hypothesized that the statistical distribution and mean intensity of cloud convection are controlled by large scale convergence of warm and moist air in a surface layer, while the vertical transfer of heat and mass due to clouds are determined from a hypothetical model of cloud convection itself.- Author (mod) MGA 18.5-244.

1964

1442 Orton, R.B. "Climate of Texas and the adjacent Gulf waters." Wash., D.C., U.S. Weather Bureau, 1964. 195 p. figs. tables. refs. DAS.

Provides meteorological information and data necessary for the testing of certain spaceflight apparatus and for the selection of possible spacecraft landing sites. Emphasis is placed on presentation and analysis of data pertaining to sky cover, ceiling height, visibility, winds, local physiography, and the synoptic weather systems that influence or control these factors. South Texas, adjacent Gulf of Mexico waters and north Texas are treated separately. The length of data record vary from 3 to 18 yrs. Information on severe storms, turbulence, sea and land breezes, air pollution and dust devils is included. - Staff MGA 16.3-12.

1964

1443 Portig, W.H. "Condiciones atmosféricas immediatemente antes de formarse una tormenta tropical revolvente." [Atmospheric conditions immediately before the formation of a tropical revolving storm.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, 4(2/4):241-246, Apr./Dec. 1964. figs. refs. In Spanish and English.

Fifteen Caribbean hurricanes, with sufficient radiosonde data to allow reasonably complete analyses, are studied. A rectangular grid 20° long wide and 10° lat high was used in the analysis. - Staff MGA 18.7-239.

1964

1444 Ronne, F. "Marine meteorology." In Woods Hole Oceanographic Institution, Summary of investigations...1963. Ref. 64-12, Apr. 1964. p. 191. DNO.

During 1963, marine meteorology continued to use photography as one of its major tools for collecting and recording phenomena and data and to supplement the extensive field programs undertaken in the West Indies and Indian Ocean. The C-540 aircraft, which was first used this year, was equipped with a data panel which displayed indicating dials for time, compass direction and Doppler navigation. A 35 mm automatic camera was installed to photograph this panel continuously during the operational hrs of flight. An interval of 20 sec between pictures was chosen as being sufficiently frequent to obtain all pertinent information. Author.

1964

1445 Rosenthal, S.L. "Algunos intentos para simular el desarrollo de ciclones tropicales por métodos numéricos." [Some attempts to simulate the development of tropical cyclones by numerical methods.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, Mexico City, 4(2/4):207-221, Apr./Dec. 1964. figs. refs. In Spanish and English.

A mathematical formulation of the genesis of a hurricane was attempted in 3 experiments. A case was analyzed where a weak cyclonic vortex becomes baroclinically unstable and violent overturning on a large scale occurs. In experiment 1, the initial conditions were stable with respect to dry adiabatic nonviscous displacements in the meridional plane. In experiment 2, latent heat

1964 cont.

was released and warming was clearly shown in the temperature field. In experiment 3, surface friction, air-sea heat exchange and vertical mixing of heat and momentum were taken into account. - Staff MGA 18.7-374.

1964

1446 Rudd, M.I. "Tornadoes during hurricane Carla at Galveston." Monthly Weather Review, 92:251-254, 1964. figs. refs.

Presents radar observations of tornadoes which occurred at Galveston, Texas during hurricane "Carla" (12 September 1961). Three of 5 reported tornadoes were detected and observed. It is postulated that tornadoes associated with this and other hurricanes may have escaped detection because of related gain, elevation, angle and beam distortion factors. The possibility of observing tornadoes within a 5-mi radius of the radar and of precisely locating the vortex is encouraging. - Staff MGA 16.2-227.

1964

1447 Sacco, E.J. "Study of the relation of 1000-500 mb thickness anomaly distributions to cyclogenesis in the Gulf of Mexico." Master's thesis, Texas A & M Univ. 1964. 35 p.

In an effort to develop an objective method for forecasting cyclogenesis in the Gulf of Mexico, the 1000-500 mb thickness anomaly parameter was studied. This was accomplished by comparing a representative sample of synoptic situations when cyclogenesis did not occur in the Gulf. It was found that a strong thickness anomaly gradient existed west of the Gulf prior to cyclogenesis, and cyclones seldom form in this area when negative anomalies were being advected into the Gulf from a northerly direction. Positive verification was realized during this study in a number of current synoptic situations. Author (mod).

1964

1448 Simpson, J.S.M. "Modification experiments on tropical cumulus clouds." Science, 145:541-548, 7 Aug. 1964. refs.

1964

1449 Simpson, J.S.M. "Ocean as a laboratory for weather modification experiments." Oceanus, 11(2):16-24, Dec. 1964.

1964

1450 Simpson, R.H. and Simpson, J.S.M. "Hurricane modification: progress and prospects, 1964: Report to U.S. Weather Bureau, Advisory Panel Project Stormfury and National Aeronautics and Space Administration [and] Office of Naval Research." Aug. 1964. 53 p. figs. refs. DAS.

1964 cont.

This report discusses the nature of hurricanes and typhoons and their destructiveness, followed by a description of past experiments in hurricane modification beginning with Shaefer's (1946) experiment with dry ice and Project CIRRUS. As a result of the U.S. Weather Bureau Project, the hurricane is undoubtedly the most intimately exposed and best understood class of atmospheric circulations. The physical basis of the current hurricane experiments, the STORMFURY hypothesis and the experiment on hurricane "Beulah" are discussed and illustrated. The authors stress that "it is of highest priority to determine the amount of supercooled water and the role of freezing in the unmodified situation, for upon this the course and prognosis of hurricane modification largely depends." - Staff MGA 16.8-233.

1964

1451 Spar, J. "Desarrollo de huracanes; una revisión." [A survey of hurricane development.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 4(2/4):169-178, Apr./Dec. 1964. refs. In Spanish and English.

Some theoretical studies on hurricane formation and numerical experiments on hurricane dynamics are reviewed. Several models of instabilities causing a superposition of disturbances contributing to hurricane formation, such as convective, barotropic and baroclinic instabilities are analyzed. Recent numerical experiments on hurricane development are reported. Correct initial conditions essential for dynamical computations of hurricane development can be provided by airplane reconnaissance of easterly waves and other disturbances. - Staff MGA 18.7-348.

1964

1452 Théveneau, A. "Types de temps aux Antilles Françaises." [Types of weather in the French Antilles. Also "Étude des cas particuliers." [Study of individual examples.] by R. Martin and G. Synthe. France. Météorologie Nationale, Monographies, 31, 1964. 64 p. DNO.

1964

1453 Tracy, J.D. "Verification of forecasts of storm motion for tropical cyclones of the Western Hemisphere." In U.S. Interdepartmental Hurricane Warning Conference, 18th, 12 - 13 Feb. 1964. Report, 1964. pp. 49-50. DAS.

A continuing and developing program

1964 cont.

has been in existence at the National Hurricane Center (NHC), Miami, Florida, since 1959 to assess the performance of various forecasting techniques utilized in determining the future course of hurricanes. Most of this work has been done by the National Hurricane Research Project (NHRP). The verification statistics presented deal with operational forecasts of hurricane motion. The parameter used as the verification measure is the magnitude of the vector error in units of nautical miles. - Author (mod).

1964

1454 U.S. Army. Transportation Research Command, Fort Eustis, Va. "Swamp Fox II. Republic of Panama. Vol. II: Environmental Research." Final Report, Project 9R98 003 02, Apr. 1964.

1964

1455 U.S. Interdepartmental Hurricane Warning Conference, 18th, 12 - 13 Feb. 1964. Report, 1964. 51 p. DAS.

The report comprises the following: a summary of aircraft reconnaissance, observations other than aircraft reconnaissance (Atlantic missile range stations radar), advisories and warnings, hurricane drills and exercises, official dates of the hurricane season, etc. - Staff MGA 16.6-32.

1964

1456 U.S. Navy. Fleet Weather Central, Miami, Fla. "Annual Tropical Storm Report, 1963." OPNAV Report 3140.9, 1963. Mar. 1964. 11+55+17+157 p. figs. tables. DAS.

Collection of data (in graphical, tabular and chart form) on hurricanes in the Atlantic, Caribbean and Gulf of Mexico. Eight tropical cyclones occurred in 1963 compared with five in 1962. Accuracy of forecasts was considered to be almost entirely due to good aircraft reconnaissance. Average 24-hr forecast error for period when U.S. Navy reconnaissance was continuous was 53 mi, but was 186 mi when the hurricanes moved into the Atlantic where reconnaissance was not so continuous. The report gives in detail the advisories issued by the Fleet Weather Central at Miami in 1963, the position reports, methods, evaluation, observational techniques, tracks, fatalities, damage reports and a summary for 1963. Staff MGA 16.1-31.

1964

1457 U.S. Treaties, etc., 1963 - 1969 (Lyndon B. Johnson) "Weather stations: continuation of cooperative meteorological program. Agreement between the U.S.A. and

1964 cont.

Jamaica..." Wash., D.C.: Government Printing Office, 1964. U.S. Dept. of State, Treaties and other international acts series, 5681. 8 p. DLC.

1964

1458 U.S. Weather Bureau. "Hurricane Dora, August 28 - September 16, 1964." 71 p. DAS.

On 9-12 September 1964, hurricane "Dora" moved across Florida from the Atlantic to the Gulf coast. This is a preliminary report of meteorological conditions with advisories, bulletins and tabular data (pressure, wind, tides and rainfall) for individual stations along the path of the hurricane. - Staff.

1964

1459 U.S. Weather Bureau. "Hurricane Hilda, September 28 - October 5, 1964." 44 p. DAS.

On 29 September - 5 October 1964, hurricane "Hilda" moved across the Gulf of Mexico, the southeastern part of Louisiana, southern Mississippi and Alabama, northwestern Florida and southern Georgia. This is a preliminary report of the hurricane with the advisories and bulletins issued. - Staff.

1964

1460 U.S. Weather Bureau. "Hurricane Isbell, October 12 - 16, 1964." 20 p. DAS.

Tropical storm "Isbell" reached hurricane intensity while approaching western Cuba (13 October 1964). It continued on a northeasterly course and crossed southern Florida on 14 October 1964. This is a preliminary report with advisories and bulletins issued. - Staff.

1964

1461 U.S. Weather Bureau. "Minimum requirements for aircraft tropical cyclone reconnaissance support, North Atlantic west of 35°W, Caribbean Sea, and Gulf of Mexico." In U.S. Interdepartmental Hurricane Warning Conference, 18th, 12 - 13 Feb. 1964. Report, 1964. pp. 30-39. DAS.

Instrumented aircraft flown into tropical cyclones over the ocean obtain essential storm information which cannot be dependably obtained in any other way. These aircraft fly at levels in the middle and lower troposphere (i.e. below 20,000 ft) and are capable of penetrating severe hurricanes to determine their intensity. Use of these aircraft has been one of the major factors in the success of the hurricane warning service in recent years. The U.S. Weather Bureau is responsible for providing tropical cyclone warning service

1964 cont.
in the North Atlantic west of long 35°W, the Caribbean Sea, the Gulf of Mexico, and the states and territories in and adjacent to these maritime areas. - Author (mod).

1964
1462 U.S. Weather Bureau. "Revised surface wind charts for hurricane Carla (1961)." Hydro-meteorological Branch, Memorandum HUR 7-76A, Dec. 1964. DAS.

Presents revised surface wind charts for hurricane "Carla" at 6-hourly intervals from 1200 GMT 9 September through 1200 GMT 10 September 1961, and at 3-hourly intervals up to 1500 GMT 12 September 1961. There is also a map showing the track of this hurricane. - Staff.

1964
1463 Vanderman, L.W. "Summary of verification of numerical operational tropical cyclone forecast tracks for 1963." U.S. National Meteorological Center, Suitland, Md., Feb. 1964. 18 p.

Hurricane tracking in the Gulf of Mexico. - Staff.

1964
1464 Venezuela. Dirección de Obras Hidráulicas. "Anuario climatológico, 1963." [Yearbook of climatology, 1963.] Publicación Técmoca. 4. 1964. 234 p. tables. maps. DAS.

1964
1465 Venezuela. Dirección de Obras Hidráulicas. "Lluvias de diseño para las hoyas de los ríos Tuy y Guapo." [Rainfall pattern for the Tuy and Guapo river basins.] Informe Técnico, 1, 1964. 17 p. tables. maps. DAS.

1964
1466 Villevieille, A. "Sur l'origine et la génese des cyclones tropicaux de la mer des Antilles." [Origin and genesis of tropical cyclones over the Caribbean Sea.] Académie des Sciences, Paris, Comptes Rendus, 258(4):1295-1296, 27 Jan. 1964.

Study of the tracks of various tropical cyclones ("Donna," "Anna," "Betsy," " "Debbie," "Esther," "Becky," "Celia" and "Daisy") on the basis of meteorological observations (ground-station and radiosonde observations) and of photographic and radiometric observations transmitted by TIROS weather satellites. The results of this investigation suggest some hypotheses on the formation, the thermodynamic mechanism of tropical cyclones and their synoptic behavior. - Staff. MGA 16.4-320.

1964
1467 Vivó, J.A. "Weather and Climate of Mexico and Central America." In

1964 cont.
Handbook of Middle America Indians. Univ. of Texas Press, 1964. v. 1. Natural environment and early cultures. pp. 187-215. DLC.

1964
1468 Weight, M.L. "Annotated bibliography on the climate of the French West Indies." U.S. Weather Bureau, Report no. WB/BC-79, July 1964. 27 p. DAS.

Sponsored by Air Weather Service Climatic Center, Washington, D.C. Bibliography on the climate of the French West Indies includes Martinique, Guadeloupe and dependencies (Marie Galante, Îles des Saintes, Désirade, St.-Barthélemy and French part of St. Martin). Sources were located in the U.S. Weather Bureau Library, the Library of Congress, the U.S. Naval Oceanographic Office Library and the Department of Agriculture Library. - Staff.

1964
1469 Yanai, M. "Experimental objective analysis in the Tropics." Colorado. State Univ. Dept. of Atmospheric Science, Technical Paper, TP-62, Oct. 1964. 26 p.

A 'correction' objective map analysis scheme is developed and tested for surface meteorological elements and upper-air winds in the Caribbean region. In order to overcome the difficulty of getting reasonable analysis over the oceanic area devoid of data, a successive vertical differential analysis technique is employed for the upper wind analysis. Surface map analysis serves as a reliable base for upper wind analyses. A statistical adjustment process is introduced to improve the surface pressure analysis with assistance from the independent wind analysis. For upper wind analyses, vertically averaged winds over 50-or 100-mb pressure intervals are used. Besides a general description of the correction method employed, some technical problems in handling operational data are mentioned. - Author (mod).

1964
1470 Zipser, E.J."On the thermalstructure of developing tropical cyclones." U.S. Weather Bureau, National Hurricane Research Project, Report, no. 67, Jan. 1964. 23 p. figs. tables. refs. DLC. DAS.

To determine the nature of the thermal field in the vicinity of developing tropical cyclones by use of data from the existing operational network, thickness charts were constructed for the West Indies area. The development of 13 Atlantic storms was investigated (1958 - 1962). The thickness and shear patterns in the vicinity of the storm are described

1964 cont.

and comparison made between developing and non-developing cases. Several different thickness layers are compared and rated for their usefulness in delineating the above patterns. The operational utility of thickness charts as an aid in predicting cyclogenesis is evaluated. The 500-200 mb charts appear to be the most useful in defining the thermal field in the vicinity of developing cyclones. - Author (mod) MGA 16.2-225.

1964

1471 Zipser, E.J. and La Seur, N.E. "Study of TIROS data over the tropical Atlantic supplemented by aircraft photography." Abstract only. In American Meteorological Society, National Meeting, 21 - 24 Apr.1964. Program, American Meteorological Society, Bulletin, 54:168, 1964.

During August and September 1963, time-lapse photographic equipment was operated from aircraft of the U.S. Navy's VW-4 reconnaissance squadron, based at Roosevelt Roads, Puerto Rico. Over 9,000 ft of 16-mm color motion picture film and 300 color transparancies were obtained. There was abundant coverage of the tropical Atlantic by TIROS VI and VII during this period, and there were numerous opportunities for direct comparison of TIROS and aircraft photography in both disturbed and undisturbed situations. Several examples are presented which illustrate the capacity of the satellite, aircraft and conventional data to be mutually enhancing. - Author (mod).

1965

1472 Alaka, M.A. and Rubsam, D.T. "Evolution of the kinematic and thermal fields during the development of Hurricane Ella." (1962). Monthly Weather Review, 93:673-686, 1965. figs. tables. refs.

Observations made at different levels by aircraft of the Research Flight Facility (RFF) of the U.S. Weather Bureau, in conjunction with regular synoptic observations from the coastal stations in the United States and Bahamas, are utilized in detailed analysis of conditions prevailing during the crucial period immediately before, during and after "Ella." "Ella" did not develop under an upper tropospheric anticyclone. Rather, anticyclonic circulation first appeared in the middle troposphere and gradually extended upward while the storm was intensifying into a hurricane. Correspondingly, the warm core structure first appeared in the low levels and then spread to the upper troposphere. - Author (mod) MGA 17.1-235.

1965

1473 American Society for Oceanography. "Hurricane Symposium, Houston, Texas, Oct. 10 - 11, 1966." Ed. S.A. Stubbs. Publication no. 1, 1967. 344 p. figs. photos. tables. refs.

Papers presented at the Hurricane Symposium 10 - 11 October 1966 in Houston, Texas, under the sponsorship of the American Society for Oceanography. In addition to considering human and economic losses, the papers presented discussions on individual hurricanes and hurricanes in general, with consideration of structure, climatological features, forecasting, warning systems, energy exchange between the atmosphere and oceans, influence on thermocline structure, upwelling and hurricane modification. Staff MGA 19.10-13.

1965

1474 Army Conference on Tropical Meteorology, 4th, Miami Beach, Fla., 6 - 7 May 1965. "Proceedings." By H.W. Hiser and H.P. Gerrish. Miami. Univ. Inst. of Marine Science, Fourth consecutive annual review of tropical research, sponsored by the U.S. Army Electronics Labs., Contract DA 28-043 AMC-00443(E), Report no. 9, Dec. 1965. 259 p. figs. tables. refs. DAS.

The papers presented at the Conference and the discussions following each of the papers are given. The papers covered the following subjects: regional research in the Tropics, warm core cyclones during the southeast summer monsoon, tropical mesometeorology including tropical rainfall patterns, relation of subtropical high movements to rainfall in the American Tropics, convection and precipitation in the Tropics, hailstorms of low latitudes, diurnal and semidiurnal variations of sensible and latent heat exchange, cloudiness and precipitation over the western tropical Atlantic, rainfall frequency in the area lat 0-30°N, long 30-100°W, etc. Staff MGA 17.8-8.

1965

1475 Barnard, S.O. "Some associations of rainfall in Central America." May 1965. Master's thesis, Texas A & M Univ. 42 p. figs. refs. DAS.

The coefficient of association (the square of the product-moment correlation coefficient) was used to determine relationships of yr-to-yr rainfall variations in Central America. Investigation also included the extent of frontal activity by studying January rainfall in Central America and the rainfall on a meso-scale area on the Pacific coast of Costa Rica and Panama. The Pacific coast areas have

1965 cont.

higher association than do areas in the mountains or on the Caribbean coast. Associations across the Isthmus are very low, with some areas having negative values. From the analysis of association, it is suggested that cold fronts in January influence the rainfall as far south as southern Nicaragua but are restricted to the Caribbean area, and that frontal activity is not evident in the mountains. - Author (mod) MGA 17.8-432.

1965

1476 Baynton, H.W. "Profiles of refractive index and humidity over the West Indies." Monthly Weather Review, 93:171-174, 1965. figs. refs.

Profiles of refractive index over the West Indies based on mean atmospheres of Gutnick and Jordan give no indication of the duct that is usually detected by radar at the trade wind inversion. The discrepancy is attributed to humidities that Gutnick assigns during 'motorboating' of the radiosonde. If the presence of the duct is accepted at the trade wind inversion and the necessary humidity profile inferred, compatible profiles of dew point and index of refraction are obtained. Author (mod) MGA 16.7-266.

1965

1477 Burgos, J.J. "Elementos del balance hidrológico y los tipos de clima de Venezuela estimados por el método de Thornthwaite." [Estimate of the hydrological balance and types of climate of Venezuela according to the Thornthwaite method.] Venezuela. Centro de Investigaciones Agronómicas, Agronomía Tropical, 15:24-27, 1965. refs.

1965

1478 Burgos, J.J. "Estimación del régimen térmico de Venezuela por el método de los gradientes medianos de De Fin y Sabella." [Estimation of the heat budget of Venezuela by the De Fin and Sabella method of mean gradients.] Venezuela. Centro de Investigaciones Agronómicas, Agronomía Tropical, 15:9-26, 1965. ref.

1965

1479 Carey, R.P. "Hurricane season 1965." Western Electric Service, New York, Aug. 1965. pp. 3-5. DAS.

1965

1480 Chaffee, M., Levine, J. and Simpson, J.S.M. "On the relation of aircraft observations to TIROS pictures during the August 1963 Barbados expedition." Woods Hole Oceanographic Institution, Final Report, Contract CWB 10693, Ref. no. 65-24, June 1965. 6 p. charts. photos. Unpublished

1965 cont.

manuscript. DAS.

Objective of Barbados expedition of August 1963 was to obtain low-level observations which could later be related to TIROS satellite pictures. It was intended that wind observations would be obtained with the C54Q Doppler navigation system, supplemented by cloud photographs and records obtained with aircraft. Aircraft instrument problems kept the C54Q aircraft from taking part fully in the observation program during the first half of August. Therefore, TIROS pictures of the Barbados area on 13 and 16 August 1963 were lacking full aircraft observational support. Cloud photographs were taken on the above days from the Woods Hole research vessel CRAWFORD, at Seawell Airport and from the Woods Hole C54Q. Significant relations were established with TIROS pictures and a streamline analysis chart. - Author.

1965

1481 Clement, R. "Essai de classification des différents climats de la Guadeloupe d'après les méthodes de Thornthwaite." [Classification of the different climates of Guadeloupe according to Thornthwaite's method.] Antilles. Service Météorologique du Groupe Antilles-Guyane, 1965. 34 l.DAS.

1965

1482 Cobb, G. "Relation of subtropical high movements to rainfall in the American Tropics." In Army Conference on Tropical Meteorology, 4th, Miami Beach, Fla. 6 - 7 May 1965. Proceedings. Dec. 1965. pp. 78-88. figs. table. refs. DAS.

Eastward movement of the North Atlantic subtropical high pressure cell allows a southerly air flow from the Pacific Ocean to move over Central America and the Caribbean. Subsequent repositioning of the subtropical high, with attendant shear zones and confluence of air streams from the Atlantic and Pacific, is related with the occurrence and distribution of rainfall. Author MGA 17.5-196.

1965

1483 Connell, J. "On the mechanisms of a cold-core wave in the easterlies." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 4th, 22 - 24 Nov. 1965. Program. American Meteorological Society, Bulletin, 46(9):588, September 1965.

On 7 - 8 August 1964 in the western Caribbean, research aircraft executed flight paths which approximated horizontal air trajectories in a coordinate system fixed in a cold core wave in the easterlies

1965 cont.

at several levels of the lower troposphere. Certain portions of the wave region were characterized by cumuli and a thick stratus covering the layer from 10,000 to 40,000 ft. The distribution of latent and sensible heat and vertical motion in a column of air moving through the wave into the cloud region were computed. The role of released latent heat is discussed. - Author.

1965

1484 Connor, J.T. "Weather services of the Environmental Science Services Administration." American Meteorological Society, Bulletin, 45:690-695, 1965.

A report on the weather services provided by the Environmental Science Service Administration during hurricane "Betsy." Information is given on the present and future research to improve the warning services for all hazards of the physical environment, and to broaden our scientific and technological capability to predict and modify the weather. - Staff MGA 17.3-34.

1965

1485 Cry, G.W. "North Atlantic tropical cyclones, 1964." Mariners Weather Log, 9(1):1-9. Jan. 1965. figs.

Reports that the 1964 North Atlantic tropical cyclone season was active. Six hurricanes and 6 tropical storms were observed between 2 June and 9 November 1964. Summaries of the individual tropical cyclones are given. Good warnings and evacuation of coastal areas exposed to the most severe dangers kept casualties in the United States at a low level, but damages to property and crops were about $514 million in the United States and over $75 million in other areas. - Staff MGA 16.7-313.

1965

1486 Cry, G.W. "Tropical cyclones of the North Atlantic Ocean: tracks and frequencies of hurricanes and tropical storms, 1871 - 1963." U.S. Weather Bureau, Technical Paper no. 55, 1965. 148 p. figs. tables. refs.

Records of occurrences and paths of tropical cyclones of storm (39-73 mph) and hurricane force in the North Atlantic region. Charts show tracks of the tropical cyclones: 1) by years (1871 - 1963) and 2) by months and other calendar periods. compared with the 1959 edition, this publication gives new text, tables, figures, charts and a short discussion of possible trends in tropical cyclone frequencies. Staff MGA 17.3-8.

1965

1487 Davitaia, F.F. and Trusov, I.I.

1965 cont.

"Recursos climáticos de Cuba." [Climatic resources of Cuba.] Havana, 1965. 68 p. maps. diagrs. Review in Geographical Review, 58(3):499-500, July 1968. DLC, DNAL.

This is a useful and informative book on Cuban climate, with emphasis on those factors which are beneficial or harmful to industrial and agricultural development. It was made possible by the installation in Cuba, after 1961, of 50 new meteorological stations. The book is divided as follows: introduction, general climatic conditions, heat budget, annual temperature fluctuation, amount of rainfall, annual character of rainfall, maximum and minimum rainfall by months, variability in annual rainfall, evaporation and humidity balance, topographic provinces, climate and agricultural economy, agronomic-climatic conditions for cultivation of sugarcane, etc., and includes an appendix on the organization of the Meteorological Institute of the Academy of Sciences of Cuba. - Staff.

1965

1488 DeAngelis, R.M. "North Atlantic tropical cyclones, 1967." Mariners Weather Log, 12(1):1-6, Jan. 1968. figs. photos. map.

Presents summaries of individual tropical cyclones of 1967. A total of 8 storms was slightly below the 30-yr average of 9.3, but 6 of these reached hurricane intensity which is slightly above the 30-yr average of 5.6. "Beulah" was the only great hurricane with a central pressure recorded below 950 mb for 24 hrs. Hurricane tracks and tabulated data are included. - Staff MGA 19.6-269.

1965

1489 De Bremaecker, J.C. "Microseisms from hurricane 'Hilda'." Science, 148(3678): 1725-1727, 25 June 1965. figs. refs.

As hurricane "Hilda" crossed the Gulf of Mexico, the dominant period of the microseisms shifted from about 8-5 sec as the eye reached water about 150-200 m deep. The conversion of wind energy to microseismic energy is most efficient in water depths from 20-200 m. There is no evidence that 2 periods, one twice the other, are present. - Author MGA 16.12-278.

1965

1490 Dessens, H. "Centre International de Physique des Nuages à Cuba." [International Center for Cloud Physics in Cuba.] Journal de Recherches Atmosphériques, no. 4:173-174, Oct./Dec. 1965.

1965 cont.

Fidel Castro suggested to the Cuban Academy of Sciences that it develop cloud physics research for increasing precipitation for agriculture. In January 1966, the Academy invited the author and Soviet specialists to work on cloud modification. Soviet meteorologists favored dry ice seeding in supercooled clouds by aircraft or shooting a bullet of PbI into a -9°C cloud layer. Because it is difficult to judge the right moment of cloud insemination, the author suggested permanent seeding. It was decided to construct 2 AgI generators on the southern and northern shores and assess the results after a year of operation. Staff MGA 17.10-215.

1965

1491 Dunn, G.E. "Pronóstico de huracanes; una revisión." [Hurricane forecasting: a survey.] In Spanish and English. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 5(4):131-139, 1 Oct. 1965. figs. tables. refs.

In this survey, the author discusses prediction of formation, intensification, dissipation and movement of hurricanes. Official forecasts, persistence and verifications for the 1961 and 1962 seasons are presented in tabular form and discussed. It is concluded that in the Atlantic and Pacific, the Miller-Moore technique has had the best verification during the past 2 yrs. The Riehl-Haggard technique frequently provides the best results when a radical change in direction occurs, but no technique will consistently forecast recurvature with satisfactory accuracy. Staff MGA 18.2-151.

1965

1492 Dunn, G.E. et al. "Hurricane season of 1964." Monthly Weather Review, 93:175-187, 1965. fig. tables. refs.

Over tropical waters of the Atlantic during 1964, 12 cyclones developed with 6 of hurricane intensity. Hurricane days are tabulated for 1954 - 1964 for every mo of the yr, which shows there were 46 hurricane days during 1964. The centers of 4 hurricanes penetrated the mainland of the United States; "Cleo," "Dora" and "Hilda" were severe. Damages and casualties during 1964 were tabulated, which shows 49 deaths and damage of $515,250,000 in the United States. Individual tropical cyclones, named and unnamed, are described in detail supported by meteorological data, e.g., "Cleo," "Dora," "Hilda," and "Isbell." Staff MGA 16.6-264.

1965

1493 Elsberry, R.L. "On the mechanisms of a warm-core wave in the easterlies." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 4th, Miami, Fla., 22 - 24 Nov. 1965. Program, American Meteorological Society, Bulletin, 46:588, 1965.

In order to gain background on the constraints on hurricane development from waves in the easterlies, a warm core wave observed in the Caribbean was studied. Synoptic scale structure and energetics are discussed. The kinetic energy balance indicates an excess of production over the computed dissipation. A heat balance of the system also shows an excess heat source. Models of the mesoscale cloud structure required to balance the heat budget under constraint of kinetic energy balance are proposed. - Author (mod).

1965

1494 Estogue, M.A. and Mapanao, L.D. "Theoretical study of the hurricane boundary layer." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 4th, Miami, Fla. 22 - 24 Nov. 1965. Program, American Meteorological Society, Bulletin, 46:585, 1965.

The distributions of velocity in the boundary layer and surface stress are deduced from pressure profiles of hurricane "Donna." The approach is based on an integration of dynamical equations for axially symmetric, steady-state flow. The effect of eddy exchange processes is specified through a mixing length which increases linearly with height near the surface and asymptotically attained a finite value at infinitely high levels. The computed motion field and surface stress appear to be reasonable. A relationship between the surface stress and a modified surface Rossby number is obtained. - Author.

1965

1495 Fernández-Partagás, J.J. "Survey on hurricane direct strikes in the Caribbean region." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 4th, Miami, Fla., 22 - 24 Nov. 1965. Program, American Meteorological Society, Bulletin, 46:571, 1965.

Direct strikes by storms of hurricane intensity on different countries and territories in the Caribbean region are considered for 1900 to 1964. The month of highest frequency and the frequency distribution throughout the period varied significantly from one country or territory

1965 cont.

to the other, and 'direct-hit-free' yrs were found to be more numerous than initially suspected. Prolonged free periods were commonly observed. - Author (mod).

1965

1496 Florida. Committee on Hurricanes. "Florida hurricanes survey report." Authorized 21 Sept. 1965 by the Cabinet of the State of Florida at the request of Broward Williams, State Treasurer and Insurance Commissioner. 1965. 81 p. figs. photos. DAS.

Surveys the hurricane hazard in southern Florida and the Florida Keys. The contents inelude: naming of hurricanes; glossary of terms; characteristics of hurricanes; hurricane charts and data by decades until 1901; an account of recent hurricanes ("Donna" through "Betsy"); Florida building codes; building construction criteria; inspection methods, etc. Staff MGA 19.12-207.

1965

1497 Frank, N.L. "1964 hurricane season." Weatherwise, 18(1):18-25, Feb. 1965. photos. tables.

The individual life histories of 3 unnamed hurricanes and of hurricanes "Abby," "Brenda," "Cleo," "Dora," "Ethel," "Florence," "Gladys," "Hilda" and "Isbell" are given. A table shows the land affected, damage in dollars, number of deaths, maximum wind speed and lowest pressure for all the storms. Photographs show scenes of damage, aerial views of the circulatory pattern of "Dora" and "Ethel," etc. - Staff MGA 16.8-227.

1965

1498 Freeman, J.C. "Bandas de huracanes como predictoras." [Hurricane bands as predictors.] In Spanish and English. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 5(4):147-151, 1 Oct. 1965.

A theory of geocyclostrophic winds in moist air is reviewed and a relationship between wind and cloud streets or hurricane bands is postulated. The appearance of the bands observed from satellites and radar is related to motion, structure and intensity of the storms. - Author.

1965

1499 Freeman, J.C. and Goldman, J.L. "System of two-dimensional mesoscale analysis and forecasting with friction and moisture." In Army Conference on Tropical Meteorology, 4th, Miami Beach, Fla., 6 - 7 May 1965. Proceedings. Miami, Univ. Dec. 1965. pp. 148-161. figs. DAS.

1965 cont.

The effects of friction and moisture are added to a 2-dimensional model of tropical flow associated with the trade wind inversion under balanced and unbalanced conditions. A model containing some of the recently found characteristics of waves in the trade wind inversion is developed and a simplified approach to the dynamic solution of the problem of motion of this wave is presented. - Author MGA 17.5-185.

1965

1500 Fritz, S., Broderick, H.J. and Timchalk, A. "Observaciones de sistema de nubes por satélites sobre el Mar Caribe." [Satellite observations of cloud systems over the Caribbean Sea.] In Spanish and English. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, 5(3):115-118, July 1965. DAS.

Tropical cloud systems, when viewed from satellites, often display marked organization. When diverging cirrus cloud patterns are associated with very bright cloud masses, they suggest divergence aloft. The presence of high level clouds may be inferred from TIROS 3 pictures or from radiation measurements. In the case of hurricane "Anna" (1961), it developed from a disturbance which moved across the Atlantic Ocean, entered the Caribbean Sea, and on 20 July reached hurricane force. It then moved across the Caribbean Sea, causing considerable damage in northern Honduras and finally entered British Honduras where it dissipated. - Author (mod).

1965

1501 Garstang, M. "Sensible and latent heat exchange in low latitude synoptic scale systems." In Sea-Air Interaction Conference, Tallahassee, Fla., 23 - 25 Feb. 1965, Proceedings, U.S. Weather Bureau, Technical Note 9-SAIL-1, 20 Aug. 1965. pp. 105-146. figs. tables. refs. DAS.

Transfer equations are applied to a set of data collected for 46 days from an oceanographic research vessel in the low latitude western Atlantic. In this region, the lapse rate and shear in the boundary layer of the atmosphere permit the application of the transfer equations with a reasonable degree of confidence. Under these conditions, a linear dependence of the eddy exchange coefficient with wind speed and stability were used to compute latent and sensible heat transfer from time averages over 1 hr of specific humidity, temperature and wind speed at 6 m and at

1965 cont.

the sea surface. Sea surface temperatures were measured at 10 cm and compared with infrared radiometer measurements. By using both streamline analysis and a rainfall amount and occurrence technique, the frequency and size of synoptic systems are determined. This makes possible the construction of summer, winter and annual maps of latent and sensible heat transfer for the tropical Atlantic. - Author (mod) MGA 17.1-637.

1965

1502 Garstang, M. and La Seur, N.E. "Tropical convective and synoptic scale weather systems and their statistical contributions to tropical meteorology." Florida. State Univ., Final Report to U.S. Army Electronic Research and Development Lab. (ERDL), 1965. 55 p.

1965

1503 Garstang, M., La Seur, N.E. and Boaz, R.J. "Equivalent heat mountain: a preliminary study. A report on the program for analysis of data collected in the field observation program on and near the island of Barbados, West Indies." Florida. State Univ. Dept. of Meteorology, Grant DA-AMC-28-034-64-G5, [Unnumbered] Report, Sept. 1965. 26 p. figs. refs. DAS.

Experimental evidence of the effect upon a stable atmosphere of a heated island is presented. Results of zero-lift balloon flights taken over the Island of Barbados in the Caribbean are analyzed to investigate the maximum height to which air particles could be expected to rise in passing over a small, flat island heat source. These results are compared with theoretical calculations of the maximum height based upon investigations of other workers. Author MGA 17.2-266.

1965

1504 Gerrish, H.P. "Effects of rare weather events as noted on meridional cross sections." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 4th, 22 - 24 Nov. 1965. Program, American Meteorological Society, Bulletin, 46:576, 1965.

Meridional cross sections of mixing ratio, potential temperature, equivalent potential temperature, equivalent temperature and wet bulb temperature are examined for times of rare and suppressed weather activity in southern Florida. Radiosonde data from Jacksonville, Miami and Grand Cayman were used. The configuration and slope of the various surfaces are described with particular emphasis on asymmetrics associated with 55 occurrences of rare

1965 cont.

weather events during the moist season. Author (mod).

1965

1505 Gerrish, H.P. "Survey of extremely heavy and prolonged periods of hourly rainfall, tornadoes, funnel clouds, water-spouts and hail in South Florida." In Army Conference on Tropical Meteorology, 4th, Miami Beach, Fla. 6 - 7 May1965. Proceedings. Miami Univ., Dec. 1965. pp. 52-61. fig. tables. refs. DAS.

Twenty-one yrs of weather observations are used to describe the climatology of extremely heavy hourly rainfalls (equal to or greater than 2 in), durations of hourly rainfall of moderate intensity or greater (6 or more continuous hrs with no hr receiving less than 0.11 in), tornadoes, funnel clouds over land and water, water-spouts and hail in the south Florida area. Most of these phenomena occur during the moist season, a period when the area is predominantly under tropical influences. Fifty-five case studies involving these phenomena during June and September in 1957-1962 are examined in detail in order to determine weather features and the magnitude of meteorological parameters. Preliminary 3-dimensional synoptic models are presented and comments made with reference to triggering mechanisms aloft. - Author (mod) MGA 17.5-388.

1965

1506 Gerrish, H.P. and Hiser, H.W. "Mesoscale studies of instability patterns and winds in the Tropics." Miami. Univ. Institute of Marine Science, Contract DA 36-039 SC-89111, Report no. 8; Final Report, 1 May 1962 - 31 May 1965. June 1965. 115 p. figs. tables. refs. DAS.

This report summarizes 3 yrs of work. Pt. 1 is primarily synoptic with sections on mesoscale analysis, rainfall climatology and the sea breeze and climatology of rare weather phenomena in southern Florida. Preliminary models of the low level atmosphere during periods of rare weather events, triggering mechanisms and mesoscale weather patterns in the low level easterlies are included. Pt. 2 contains sections on radar in a tropical environment, estimation of rainfall at the ground using photographic-integration techniques, Constant Altitude Plan Position Indicator (CAPPI) in the Tropics and echo motion shear and vertical profiles of reflectivity in individual tropical showers. Locations of 157 rain gages and 41 anemometers in southern Florida are presented. Nomograms are presented of radar propagation in the mean

1965 cont.
summer tropical atmosphere. - Author (Mod) MGA 17.5-5.

1965
1507 Gerrish, H.P. and Johnson, H.W. "Survey of refractive and temperature conditions associated with moist season tor tornado, waterspout, and hail systems in south Florida." Miami. Univ. Institute of Marine Sciences, Contribution no. 643, 1965. 9 p.

1965
1508 Giusti, E.V. and López, M.A. "Climate and streamflow of Puerto Rico." Caribbean Journal of Science, 7(3/4):87-93, Sept./ Dec. 1968. figs. table. refs.

The average annual streamflow in Puerto Rico is 45 percent of the annual rainfall, or 15 percent more than in the eastern Piedmont of the United States, where it is 30 percent. Climate is assumed to be responsible for this difference as well as for the differences in flows of Puerto Rican streams, which vary from 15 to 85 percent of the annual rainfall. Variations in the climate of Puerto Rico are shown by Thornthwaite's climatic index on a map of the island, and variations among the streamflow to rainfall ratios of Puerto Rican streams are shown to be related to this index. - Author (mod). MGA 20.3-447.

1965
1509 Griffiths, J.F., Henry, W.K. and Rumley, G.B. "Research on tropical rainfall patterns and associated meso-scale systems." Texas A & M Univ., Quarterly Progress Report no. 8, 1 Jan. - 30 Apr. 1965. May 1965. 102 p. figs. tables. refs. (Ref. 65-19T). DAS.

In order to identify mesoscale changes in the variance of precipitation, methods have been devised using the relationship between means and standard deviations. The index of sympathy is used to identify periods of persistent rainfall in geographical areas. The east coast of Costa Rica has a high persistence for some months. Distribution in time and space of rainfall with elevation is investigated for selected stations in Ecuador. - Author (mod) MGA 16.8-373.

1965
1510 Guerra, O. "Invasiones de las masas de aire polar en Venezuela." [Invasions of polar air masses in Venezuela.] Venezuela. Univ. Central. Central de Datos Geofísicos, 1965.

1965
1511 Haggard, W.H. "Configuraciones sinópticoclimatológicas asociadas con ciclogénesis tropical Noratlántica."

1965 cont.
[Climatological-synoptic patterns associated with North Atlantic tropical cyclogenesis.] In Spanish and English. Spanish and English summaries p. 97. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, 5(3): 97-113, 1 July 1965. charts. DAS.

Several groups of North Atlantic tropical cyclogenesis situations were studied. Each group was made as internally homogeneous as possible with respect to seasonal time and geographic location of cyclogenesis. A deliberate effort was made to obtain heterogeneity between groups and homogeneity within groups. Composite patterns of surface pressure, 500 mb heights and temperatures, divergence and vorticity at these levels were developed. Surface to 500 mb thickness was also developed for the groups of storm origins selected. Groups on which no storm development occurred were studied in the same manner. Comparisons are made between genetic and nongenetic patterns for several genetic areas and periods of the storm seasons. Author (mod) 18.2-371.

1965
1512 Harding, E.T. and Kotsch, W.J. "Heavy weather guide." Annapolis, Md., United States Naval Institute, 1965. 209 p. figs. tables. refs. DLC.

Manual for students and seaman on the Tropics. It includes climatology and hurricane formation, movement, characteristics, effects (tides, waves, floods and winds) and warnings, tips from old weather men at sea and ashore. Future prospects for improved knowledge and service due to computers, satellites, radar, buoys and modification by seeding are included. - Staff MGA 16.10-2.

1965
1513 Henry, W.K. and Griffiths, J.F. "Tropical rainfall patterns and associated meso-scale systems." In Army Conference on Tropical Meteorology, 4th, Miami Beach, Fla. 6 - 7 May 1965. Proceedings. Miami Univ. Dec. 1965. pp. 62-77. figs. tables. refs. DAS.

The month of October 1954 in Panama and Costa Rica had 1800 mm of rainfall. This singularity is described and some suggestions offered as to the cause. The rainy and wet seasons are shown for a selection of stations in Central America which illustrate the various patterns obtained. Maps of standard deviation of rainfall are discussed and a correlation between rainfall amount and standard

1965 cont.

deviation is computed. A preliminary report on the use of harmonic analysis is also included. - Author (mod) MGA 17.5-387.

1965

1514 Hill, E.L. and Malkin, W. "Recurvature of hurricane Cleo, 1964 and associated 500 mb streamline analysis." Monthly Weather Review, 93:565-571, 1965. figs. refs.

A discussion on the recurvature of hurricane "Cleo" (1964) and associated 500 mb streamline analysis. The movement of "Cleo," a reorientation of the hyperbolic axis with changes in steering flow and streamline analysis at 500 mb are described. "Cleo" was used to illustrate that a hyperbolic axis can serve as a kinematic feature to characterize steering circulation acting on a tropical storm. An awareness of changes in orientation of the axis appears useful for forecasting storm movement. Staff MGA 16.12-282.

1965

1515 Hiser, H.W. and Senn, H.V. "Mesoscale synoptic analysis of radar and satellite meteorological data." Miami. Univ. Institute of Marine Science, Contract Cwb-10622, Final Report, Feb. 1965. 50 p. figs. table. refs.

Presents 9 case studies in which rectified TIROS photographs of cloud patterns over the southern Florida region are correlated with synoptic weather data and radar observations of mesoscale precipitation. Data from TIROS (August 1962 - October 1963) and of hurricane "Ginny" were used. A summary is given of previous work in the development of an optical rectification and gridding system for satellite photographs. - Staff MGA 16.12-168.

1965

1516 Holliday, C.R. "Hurricane Hunters encounter Cleo." Mariners Weather Log, 9(5):152-157, Sept. 1965. figs.

This article describes an encounter of a a U.S. Navy reconnaissance plane with "Cleo." The Navy Super Constellation, SNOWCLOUD ONE, was damaged and RESEARCH 40 CHARLIE was sent to its assistance. Details are given on the track and behavior of the hurricane. - Staff MGA 16.11-269.

1965

1517 Honduras. Servicio Meteorológico Nacional. "Almanaque Hondureño, 1965." [Honduras almanac, 1965.] Tegucigalpa, 1965. 53 p. tables.

Contains useful data for those engaged in farming, animal husbandry, industry and other activities. It features short articles on solar energy, atmospheric

1965 cont.

pressure, temperature, hurricanes, meteorological instruments, etc. A calendar for 1965 gives phases of the Moon and weather characteristics of each month. Monthly averages of climatic elements are tabulated. Staff MGA 17.7-452.

1965

1518 Hubert, L.F. and Berg, O. "A Rocket portrait of a tropical storm." Monthly Weather Review, 83:119-124, 1965. figs.

Photographs from an Aerobee rocket from White Sands, New Mexico, show cloud patterns of a tropical storm over Del Rio, Texas, and a secondary vortex over southwestern New Mexico. Detailed analyses reveal circulation features missed by usual contour analysis. This illustrates the utility of rocket photo-reconnaissance. Staff.

1965

1519 Jordan, C.L. "Irregularidades a pequeña escala en las rutas de huracanes." [Small scale irregularities in the tracks of hurricanes.] In Spanish and English. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica Internacional, 5(4):141-145, 1 Oct. 1965. table. refs.

Summarizes the evidence for systematic irregularities in tropical cyclone tracks and offers some comments on the physical significance of these features. Tabulated values show that the periods and amplitudes noted by different investigators are quite different. The oscillatory features of hurricanes "Carla" and "Betsy" (shown in a table), which are much better substantiated by observations than those presented earlier, are investigated. It is found that the oscillations in "Carla," although roughly trochoidal in form, are not adequately accounted for by the theoretical work of Yeh. The irregularities in the tracks of hurricanes "Debra" (1959) and "Donna" (1960) examined by Senn (1961) are discussed. - Staff MGA 18.2-243.

1965

1520 Keneshea, T.J., Gardner, M.E. and Pfister, W. "Analysis of ionospheric winds and turbulence over Puerto Rico with a correlation method." Pt. 1. Journal of Atmospheric and Terrestrial Physica, 27(1):7-30, Jan. 1965. figs. table. refs.

Measurements of drift motion in the ionosphere have been made at Puerto Rico using the 3-spaced antenna technique. The fading records from this experiment were analyzed by a correlation method that assured the best overall fit to

1965 cont.

the data. From a statistical analysis of the results, drift direction, speed, characteristic velocity, orientation of the correlation ellipses in the ground plane and their ellipticity and size were obtained. The results indicate a steady wind toward the east during the summer and toward the west during the winter. The data were reduced by methods developed by Yerg, Harnischmacher and Wiewall, all of which require less computer time than the method of best overall fit. Comparisons of different methods were made. - Author (mod) MGA 16.5-552.

1965

1521 Kessler, E. "Parámetros microfísicos en relación con la distribución y precipitación de nubes tropicales y su modificación." [Microphysical parameters in relation to tropical cloud and precipitation distributions and their modification.] In Spanish and English. Summaries p. 79. In Technical Conference on Hurricanes and Tropical Meteorology, 3rd, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, 5(3):79-88, 1 July 1965. figs. tables. refs.

Microphysical parameters and the vertical wind profile are considered in relation to the shapes of spatial and temporal distributions of tropical rainfall. For a particular vertical velocity field, the precipitation beneath an updraft center is concentrated relative to that away from the center by increasing relative numbers of small drops in the distribution of rain particles. The time of precipitation onset at the ground is related to updraft speed, drop distribution parameters, collection efficiencies and cloud conversion rates. - Author (mod) MGA 18.2-336.

1965

1522 Kirst, A. "Informal summary of automated environment data collected off Panama City, Florida, current as of Dec. 31, 1964." Texas A & M Univ. Dept. of Oceanography and Meteorology, 1965. 45 p. entirely tables. Typescript.

A tabulated summary of data stored on tape collected at Panama City, Florida. The listing includes date and time of survey, stations, information on the tapes (file number, storage status, etc.) and parameters stored on each tape (wind direction and speed, air temperature, barometric pressure, currents speed and direction, wave angle, etc.). Explanatory key prefaces the tabulation. - Staff MGA 16.7-767.

1965

1523 Klanke, A. "Precipitaciones diarias del Observatorio Cagigal de Venezuela." [Daily precipitation at Cagigal Observatory of Venezuela.] Venezuela. Univ. Central de Datos Geofísicos, 1965.

1965

1524 Kodrau, O.D. "Kharakteristika shtormovoĭ deiatel'nosti, sviazannoĭ s obrazovaniem tropicheskikh tsiklonov v zapadnoĭ chasti Severnoĭ Atlantiki." [Characteristics of storm activity connected with the formation of tropical cyclones in the western sector of the North Atlantic.] Leningrad. Glavnaia Geofizicheskaia Observatoriia, Trudy, no. 182:50-62, 1965. figs. tables. refs. Russian summary p. 50.

The method of calculation of trajectories of tropical cyclones and of the centers of the formation of storms and hurricanes was used to determine the frequency of storm and hurricane winds over large areas. This method can be used also to determine the frequencies of large daily precipitation amounts observed during the passage of tropical cyclones. Data for 60 yrs (1901 - 1960) on tropical storms in the West Indies and in the tropical sector of the North Atlantic were used. - Author (mod) MGA 17.6-258.

1965

1525 Kraus, E.B. "Heat flux and surface stress on and near an island in the trade wind region." Woods Hole Oceanographic Institution, Contract DA-36-039 SC-90784, Report no. 5, 15 June 1965. Ref. 65-28. MWhB.

Following an introduction dealing with the sequence of activities before, during and after the second Aruba expedition, report describes calibration equipment developed at Woods Hole during the past year. Use of this equipment to reduce wind observations from Aruba is described. The results of double theodolite pilot balloon observations in Aruba are also described in a note which was presented at the Army Conference on Tropical Meteorology, Miami Beach, Florida. - Author.

1965

1526 Kraus, E.B. "Heat flux and surface stress on and near an island in the trade wind region." Woods Hole Oceanographic Institution, Contract DA-36-039 SC-90784, Report no. 6, 15 Sept. 1965. 14 p. illus. DAS.

1965

1527 Kraus, E.B. "Low-level gravity waves in off-shore winds." In Army Conference on Tropical Meteorology, 4th,

1965 cont.

Miami Beach, Fla. 6 - 7 May 1965. Proceedings, Miami. Univ., Dec. 1965. pp. 225-232. fig. table. refs. DAS.

Observations on the lee of the island of Aruba have shown that gravity waves may form close to the sea surface in a region where the air streams off the heated island over the colder sea. The observations suggest the existence of gravity waves whose crests and troughs remain at about the same distance from the coast between successive balloon ascents. The waves develop most strongly at an approximate distance of 3 km from the coast. Altitude and number are at a maximum when the Vaisala frequency in Scorer's equation for 2-dimensional gravity waves is highest; it is least during morning and evening observations. There is also some indication that longer waves become more prominent at higher elevations. - Staff MGA 17.7-233.

1965

1528 La Seur, N.E. "Some climatic and synoptic influences on diurnal variation of rainfall on the Windward Islands." In Army Conference on Tropical Meteorology, 4th Miami Beach, Fla. 6 - 7 May 1965. Proceedings, Miami, Univ., Dec. 1965. pp. 96-106. figs. refs. DAS.

Data from 183 daily rainfall stations on 6 islands of the Windward group in the Caribbean are used to obtain frequency distributions of occurrence and amount of rain over a 3-yr period. An arbitrary classification is used to stratify the rainfall data from self-recording gages on Barbados. Before sorting, no significant cycles can be detected in the 24-hr records. After sorting, diurnal and semi-diurnal variations in the daily rainfall are revealed. The role of synoptic scale disturbances is illustrated and the necessity to order data in some appropriate way before subjecting it to statistical analysis is emphasized. - Author (mod) MGA 17.5-386.

1965

1529 Lambert, D.E. "Hurricane Betsy, petroleum's most expensive storm." World Oil, 161(5):11-13, Oct. 1965.

1965

1530 Mexico. Dirección General de Obras Marítimas. "Estudios de vientos de diferentes puertos de la República Mexicana." [Study of winds of various ports in the Republic of Mexico.] Memorandum Técnico, [Technical memorandum.] no. 1, 1964.

1965 cont.

1531 Millas, J.C. "Hurricanes of the Caribbean Sea and adjacent regions during the eighteenth century." Miami. Univ., Institute of Marine Science, Contract Cwb-10938, Final Report, June 1965. 270 p. refs. DAS.

Final report, contains descriptions of 174 hurricanes and a foreword dealing with the 'Great Hurricane' of 1780 and the 'zone of avoidance.' It also describes a belt of minimum activity over Puerto Rico, Hispaniola and Cuba, which began in the last part of the 16th century, existed throughout the 17th century and ended in the first part of the 18th century. - Staff MGA 16.11-8.

1965

1532 Miller, B.I. "Simple model of the hurricane inflow layer." U.S. Weather Bureau, National Hurricane Research Lab. Report no. 75, Technical Note 18-NHRL-75, Nov. 1965. 16 p. figs. ref. DAS.

A simple numerical model of the hurricane inflow layer has been constructed. A pressure profile representative of an actual hurricane is shown. The effects of turbulent mixing (vertical and horizontal) and of vertical advection on the field of motion were examined. It was found that the use of an eddy viscosity (K_m) proportional to the pressure gradient force and a surface drag coefficient (C_d) as a function of the surface wind speed resulted in the most realistic meridional circulation. The numerical results were compared with observations obtained of hurricane "Donna" (1960). Author (mod) MGA 17.7-253.

1965

1533 Miller, B.I. et al. "Forecasting of hurricane motion by climatological-statistical techniques." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 4th, 22 - 24 Nov. 1965. Program. American Meteorological Society, Bulletin, 46:578.

The modified Miller-Moore and NHC-64 hurricane motion forecast techniques are described. Verification figures are presented for tests of these techniques under operational conditions in recent years. These 2 forecast schemes have been superior to other objective techniques for forecasting hurricane motion in the Atlantic-Caribbean-Gulf of Mexico area. Suggestions for future forecast experiments are made. - Author.

1965

1534 Miller, J.F. "Two- to ten-day rainfall

1965 cont.

for return periods of 2 to 100 years in Puerto Rico and Virgin Islands." U.S. Weather Bureau, Technical Paper no. 53, 1965. 35 p. figs. tables. refs. DAS. DLC.

In a series of maps and diagrams, this report provides generalized estimates of the rainfall-frequency regime of Puerto Rico and the Virgin Islands for durations of 2-10 days and for return periods of 2-100 yrs. A relation for obtaining 2-yr 10-day rainfall values from 24-hr data and orientation was developed. Two-yr 10-day maps were used in combination with a 100-yr to 2-yr (ratio) map for Puerto Rico and for the Virgin Islands to prepare 100-yr to 10-day maps. These were used with generalized duration and return period interpolation diagrams to provide estimates for a 560-point grid for 44 additional maps. - Staff MGA 17.1-371.

1965

1535 Millman, G.H. and Moceyunas, A.J. "Observations of ionospheric scintillations by ultra high frequency radar reflection from Earth's satellites." Journal of Geophysical Research, 70(1):81-88, 1 Jan. 1965. figs. tables. refs.

Radar reflections from artificial satellites tracked at a frequency of 425 Mc sec^{-1} have at times revealed unusual scintillation amplitudes in certain spatial regions of orbital trajectories. The experimental observations were conducted at the U.S. Air Force Trinidad Test Site, West Indies during 1961. An analysis of the data has indicated that perturbations were most likely caused by the presence of ionospheric irregularities along the radar-satellite transmission paths. The scintillations appeared only during the night-time and when the antenna beam was oriented in a southerly direction toward the equatorial ionosphere. The correlation of the experimental data with solar geophysical conditions existing during the time of radar measurements is also presented. - Author (mod) MGA 16.3-115.

1965

1536 Mills, W.C. "Storm rainfall in central and southern Florida." Soil and Crop Science Society of Florida, Proceedings, 25:311-319, 1965.

1965

1537 Morskoĭ, G.I. "Mexican cyclones." Akademiia Nauk Ukrainskoĭ RSR, Kiev. Morskoĭ Gidrofizicheskiĭ Institut, Transactions of the Marine Hydrophysical Institute, 29:14-18, 1964. July 1965. figs. refs. Also pub. as Soviet Oceanography, no. 1, 1964. ser., July 1965. Transl. of

1965 cont.

original Russian "Meksikanskie tsiklony" in its Trudy, 29:22-28, 1964.

Baur (1958), Morskoĭ (1961), and Walker (1928 - 1937) and the April 1941 Washington Symposium on Cyclogenesis on the Atlantic coast are referenced. A chart of mean January air temperatures and of frequency of cyclones taken from Cry et al. (1959) is shown. Concepts are illustrated by a case observed by the author which is depicted by isobaric charts for 13 - 15 February 1960. Author terms the cyclones appearing over the Gulf of Mexico or over neighboring regions (Central America or western Sargasso Sea) 'Mexican cyclones' and lists 4 types. The characteristics of these cyclones are discussed.- Staff MGA 17.4-229.

1965

1538 Myers, V.A. "Moisture and easterly moisture transport at Trinidad." Monthly Weather Review, 93:369-375, 1965. figs. tables. refs.

Frequency distributions are presented of the liquid equivalent of water vapor (precipitable water) at lat 10°N (Trinidad, West Indies) derived from observations by the U.S. Navy rawinsonde station. Distributions are shown by height and by season. Frequency distributions are also presented of the transport of moisture in the prevailing easterly flow. - Author (mod) MGA 16.8-340.

1965

1539 National Engineering Science Co. Houston, Tex. "Catalogue of weather satellite observed weather systems." Contract Cwb-10853, Final Report, Aug. 1965. 7 p. figs. refs. DAS.

Catalog conceived as a method of studying meteorological and cloud systems over the Gulf of Mexico and its surrounding areas. Seventy-six satellite observations, which view all or part of the Gulf region, were selected for comparison with synoptic surface and 500 mb charts which correspond closely in time. The 76 cases were chosen from all TIROS passes through 29 September 1964. They are listed in chronological order by months from January through December - Author (mod) MGA 17.11-132.

1965

1540 Nuttonson, M.Y. "Physical environment and agriculture of Puerto Rico with special reference to the Mayagüez Region and its global agroclimatic analogues." Wash., D.C., American Institute of Crop Ecology, 1965. 49 p. illus. DAS.

Study was conducted in cooperation with the U.S. Weather Bureau using data

1965 cont.

of the U.S. Department of Agriculture, the Department of Agriculture of the Commonwealth of Puerto Rico and the Meteorological Services of various countries. - Author (mod).

1965

1541 [World Oil], "Oceanographer looks at Betsy." Its 161(5):20, Oct. 1965. Gulf of Mexico hurricane.

1965

1542 Pérez Siliceo, E. "Algunas características de la precipitación pluvial en laderas de la Sierra Madre Oriental de México." [Some characteristics of the rainfall over the slopes of the Sierra Madre Oriental in Mexico.] In Spanish and English. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, 5(2):59-62, Apr. 1965. figs. refs.

In connection with experiments on rain stimulation made in the Necaxa River watershed, State of Puebla, Mexico, the characteristics of rainfall are interpreted as representative of the Sierra Madre Oriental slopes in Mexico, at least south of the Tropic of Cancer. The rainy season begins in June with the onset of the trade wind circulation which produces a small number of isolated showers. In November, the storms are associated with polar outbreaks known as 'northers' in Texas and the Gulf of Mexico. Therefore, the rainy season extends from June to October, and during that period, precipitation amounts to 78 percent of the total annual rainfall. - Author (mod).

1965

1543 Pfeffer, R.L. "Dinámica del movimiento de huracanes." [Dynamics of hurricane motion.] In Spanish and English. Spanish and English summaries p. 119. In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, 5(4):119-129, 1 Oct. 1965. figs. refs.

Hurricane motion is discussed from the standpoint of the balance of angular momentum in elements of an array of cylindrical volumes located relative to the moving vortex. It is shown that the initial increase of angular momentum about a local vertical axis is caused by the transport inward of angular momentum from the surroundings. This transport can be accomplished by either of 2 processes: vertical circulations and/or horizontal eddy exchanges. The results reveal that horizontal exchange processes account

1965 cont.

almost entirely for the angular momentum transports associated with the motion of a mature hurricane. - Author (mod) MGA 18.2-241.

1965

1544 Plank, V.G. "Cumulus and meteorological events of the Florida Peninsula during a particular summertime period (Cloud Refractive Index Studies 3A)." U.S. Air Force. Cambridge Research Labs., Hanscom Field, Mass., Environmental Research Papers, no. 151, Oct. 1965. 306 p. figs. tables. refs. DLC.

This paper describes trimetrogon and nose oblique aerial photographs of underlying Florida cumuli obtained during 8 August - 6 September 1957. The contents of this study comprise the following: the observational program and data analysis procedures; the Cu events of the Florida peninsula; meteorolological events correlated with cloud and precipitation events and the causes of the cloud and rainfall events of the peninsula. - Author (mod) MGA 17.11-19.

1965

1545 Portig, W.H. "Central American rainfall." Geographical Review, 55(1): 68-90, Jan. 1965. figs. tables. refs.

A study of Central American rainfall, giving information on solid precipitation, annual rainfall totals, variations in annual rainfall, monthly variations and secular variations in rainfall regimes and the nature of rainfall. It is pointed out that all endeavors to understand these phenomena are hampered by inadequacy of data, especially wind data. - Staff MGA 17.2-300.

1965

1546 Portig, W.H. "Rainfall frequency of the area 0-30°N, 50-100°W." In Army Conference on Tropical Meteorology, 4th, Miami Beach, Fla., 6 - 7 May 1965. Proceedings, Miami, Univ., Dec. 1965. pp. 137-147. figs. tables. ref. DAS.

A climatological study of the water area which separates the isolated areas of Middle America is initiated, using precipitation reports by ships. A number of the resulting patterns of rainfall frequency are interpreted and some temporal and spatial variations are discussed. The equatorial rainfall belt is found to move less than it was believed. - Author (mod) MGA 17.5-381.

1965

1547 Prentice, V.L. "Background study of Puerto Rico; briefing report for use in aerial sensing studies of tropical areas."

1965 cont.

Cold Regions Research and Engineering Laboratory, Hanover, N.H., Report no. 71, Feb. 1965. 72 p.

Contains: 1) natural features - climate, physiography, geology, soils, natural vegetation and 2) cultural setting - population, agriculture, industry, transportation, communication and political and sociological factors. - Staff.

1965

1548 Rajawatana, T. "Investigation of hurricane 'Abby,' July 10 - 16, 1960." 1965. Master's thesis, St. Louis Univ. 110 p. figs. tables. refs. DAS.

Hurricane "Abby" was analyzed for the understanding of typhoons in southeastern Asia. The study was confined to the time of reintensification (14 - 15 July 1960) over the western Caribbean. Streamline analysis and divergence were used in the study of kinematic conditions. The kinematic method was used to compute vertical velocity. It was found that minimum central pressures and maximum wind speed were related. There are 8 principal conclusions summarized in the last chapter. - Staff MGA 17.7-251.

1965

1549 Riehl, H. "Inflow trajectories in hurricane Dora 1964." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 4th, Miami Beach, Fla., 22 - 24 Nov. 1965. Program, American Meteorological Society, Bulletin, 46:585, 1965.

Several research aircraft missions were undertaken during hurricane "Dora" in order to permit detailed computation along the trajectories leading to the maximum wind. The results of these computations are discussed, together with the air-sea interaction parameters and an analysis of how the maximum wind is generated. - Author.

1965

1550 Rohlfs, A.J. "Effects of Hurricane Betsy on shipping in New Orleans." Mariners Weather Log, 9(6):183-185, Nov. 1965. figs.

Hurricane "Betsy" caused over a billion dollars of damage to southeastern and south central Louisiana. Damaging winds reached Baton Rouge, Louisiana, where barges were sunk or driven aground. The damage caused will exceed that of any previous natural disaster in the United States in modern times. - Staff MGA 17.3-242.

1965

1551 Rosendal, H.E. "Northers of the Gulf

1965 cont.

of Mexico and Central American waters." Mariners Weather Log, 9(6):186-188, Nov. 1965. figs.

Discusses the characteristics of the 'northers' of the Gulf of Mexico and Caribbean Sea. Gale or gale force winds may cover a large portion of the Gulf for a period of 1 - 3 days with wave heights reaching 30 ft or more over central and southern areas. As the front passes, winds freshen from a direction usually between northwest and north and the barometer rises rapidly. Staff MGA 17.3-324.

1965

1552 Rudloff, W. "Etwas über die Hurrikane vom Kap Verde-Typ." [Cape Verde type hurricanes.] Wetterlotse, 17(224/225): 145-152, Aug./Sept. 1965. figs.

Discussion of the origin, frequency and characteristics of Cape Verde hurricanes based largely upon material contained in Tannehill's book on hurricanes, on Gentry's proposed model of a hurricane and on a hypothesis of the origin of tropical hurricanes proposed by H. Seilkopf. The mechanism of origin of a tropical hurricane appears to be the passage of a high troposphere cyclonic cold air vortex from the quasi-stationary trough aloft east of South America. In maintaining its direction of rotation, it reaches the region of hurricane formation as an anticyclonic vortex and it becomes the spark for the rapid transformation of a small westward moving equatorial low into a tropical hurricane. The origin of West Indian hurricanes may be attributed to the trough east of South America; the origin of the east Asian typhoons may be ascribed to the South Pacific trough east of New Zealand, etc. - Staff MGA 17.2-204.

1965

1553 Sánchez Carrillo, J.M. "Mesoclimas en la cuenca del Lago de Maracaibo." [Mesoclimates in the Maracaibo Lake basin.] Venezuela. Centro de Investigaciones Agronómicas, Agronomía Tropical, 15, 1965. pp. 101-137. refs.

1965

1554 Saunders, P.M. "Some characteristics of tropical marine showers." Journal of the Atmospheric Sciences, 22(2):167-175, 1965.

Small developing shower clouds were studied from a Caribbean island, using visual and radar techniques. Within as little as 25 min of the formation of a cloud, precipitation developed in cloud

1965 cont.

tops to an estimated droplet diameter of 1/2 mm. The subsequent growth of these particles, giving rise to an intensification of radar reflectivity at the rate of an order of magnitude per 60 - 200 sec, is shown to be consistent with growth by gravitational coalescence. In small clouds (tops at heights between 3 and 5 km), the peak reflectivity factor attained in a shower increases rapidly, but in clouds that extend above the freezing level, the peak reflectivity factor does not exceed a value of about $3 \times 10^5 mm^6 m^{-3}$. - Staff.

1965

1555 Schulz, W.A. and Hill, E.L. "Hurricane Hilda, Oct. 1964: selected radar features." Weatherwise, 18(4):152-161, Aug. 1965. figs.

A discussion of selected radar features of hurricane "Hilda," (October 1964). Conditions restricting surface observations are reported, followed by a synoptic analysis of selected pictorial radar coverage. Information is given on the early history and land based radar coverage of "Hilda," some general characteristics and her death. - Staff MGA 17.7-122.

1965

1556 Senn, H.V. "Movimiento del eco de precipitación en radar del Huracán Donna." [Radar precipitation echo motion in hurricane "Donna."] Geofísica Internacional, 5(3):71-78, 1 July 1965. figs. tables. refs. In Spanish and English. Summaries, p. 71.

Radar data consisting of about 3,800 precipitation echoes were obtained by analyzing film from several radars operating during hurricane "Donna." These data are combined to illustrate the complete field of relatively simultaneous echo motion at almost all ranges and azimuths in a hurricane. The field of radar echo motion in hurricane "Donna" (9 September 1960) is compared with radar precipitation echo motion data from hurricanes "Edna" (1954), "Connie," "Diane" and "Ione" (1955), "Audrey" (1957), and "Daisy" and "Helene" (1958). When storm center velocity is eliminated, it is shown that the resulting relative echo motion maximums occur most often to the left of the direction of movement. Possible explanations for this echo motion behavior are discussed. - Author (mod) MGA 17.12-117.

1965

1557 Senn, H.V. "Three-dimensional distribution of precipitation in hurricane Cleo." Abstract only. In Technical Conference on Hurricanes and Tropical

1965 cont.

Meteorology, 4th, 22 - 24 Nov. 1965. Program, American Meteorological Society, Bulletin, 46:570, 1965.

Radar precipitation data obtained during hurricane "Cleo" (1964) by both University of Miami and U.S. Weather Bureau radars in southern Florida are presented. These data included the Planned Position Indicator (PPI) in several antenna positions and Range Height Indicator (RHI) modes, enabling an unusually complete simultaneous picture of both the horizontal and vertical extent of hurricane precipitation for about 24 hrs. In addition, Iso-Echo-Contour circuitry data are used in conjunction with other data to show the relative intensity and position of the heavier echo cores as well as the areal extent of the precipitation. - Author (mod).

1965

1558 Senn, H.V. and Stevens, J.A. "Summary of empirical studies of the horizontal motion of small radar precipitation echoes in hurricane Donna and other tropical storms." U.S. Weather Bureau, National Hurricane Research Project, Report no. 74, Technical Note 17-NHRL-74, 1965. 55 p. figs. photos. tables. refs. DAS.

Echo vectors relative to the storm center, obtained by vectorially subtracting storm center motion, are analyzed for 3,805 traced echoes from hurricane "Donna" radar film. Distributions of crossing angle and radial and tangential echo motion components are presented for various storm speeds, quadrants and ranges from the storm center. Detailed studies show that significant differences in echo motion exist between the echoes which are observed over land and over water, and also between those observed during the night-time and daytime periods. The dependence of echo speed on crossing angle was obtained. When the dependence of echo motion with height was studied using height as a function of range from radar, the results were inconclusive. - Author (mod) MGA 17.7-123.

1965

1559 Sheets, R.C. "Three dimensional large scale structure of hurricane Dora, 1964." Oklahoma Univ. Atmospheric Research Lab., ARL-1470-1, 1965. 30 p. illus. DAS.

1965

1560 Simpson, J.S.M. "Convección tropical y cambio en la frontera aire-mar, una revisión." [Tropical convection and air-sea boundary exchange, a survey.] In Spanish and English. In Technical Conference on Hurricanes and Tropical

1965 cont.

Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings, Geofísica Internacional, 5(2):31-42, Apr. 1965.

The Barbados study is a joint effort of many individuals and institutions. A research vessel will be stationed 250 mi upwind of the island during August 1963, and an instrumental aircraft will map clouds and perform wind boundary layer measurements between ship and island. Barbados is an ideal island to study. A lopsided triangle, 20 by 15 mi in dimension it is almost flat with relatively simple topography. It possesses a rawinsonde station, a versatile radar, a dense and long-operative rain gage and surface station network, and meteorologically cooperative local officials and inhabitants. The purpose of the observations is to describe quantitatively how the island alters the air flow, cloud structure, patterning and precipitation throughout the diurnal cycle, both in good weather and under defined degrees of disturbance. Author (mod).

1965

1561 Simpson, J.S.M. et al. "Study of non-deepening tropical disturbance. A report on the program for analysis of data collected in the field observation program on and near the Island of Barbados, West Indies." Florida. State Univ. Dept. of Meteorology, Grant DA-AMC-28-043-64-Gt, Grant NsG-481/05-007-010 and Contract Cwb 10693. Aug. 1965. 48 p. figs. tables. refs. DAS.

Data from an experimental region based upon the lands of the Windward group in the West Indies. A research vessel in the tropical Atlantic, an instrumented research aircraft and TIROS 6 and 7 are used to study the structure of a specific disturbance which moved through the observational network during 15 and 16 August 1963. - Author (mod) MGA 17.4-221.

1965

1562 Simpson, R.H. "Project Stormfury: an experiment in hurricane weather modification." Geofísica Internacional, 5(2): 63-70, 1 Apr. 1965. figs. photos. refs. In Spanish and English.

A brief account of the developments that led to the establishment of the project is followed by an outline of the present experiment. The results of release of latent heat of fusion in cloud chimney areas by AgI seeding and a summary of results obtained on 16 September 1961 with hurricane "Esther" are included. Illustrations include: radical wind profiles of

1965 cont.

several hurricanes; charts of surface and upper air conditions at 1200 GMT 17 September 1961 and mean wind and D-value profiles for "Esther." - Staff MGA 17.10-210.

1965

1563 Slusser, W. "Wind rose maps of the United States." Weatherwise, 18(6):260-263, Dec. 1965. figs. tables.

Maps showing frequencies of hourly winds from 16 directions during January, July and all year have been prepared from computations for the 1951 - 1960 decade. Another map depicts the mean annual speed from each direction of the hourly winds. The maps show marked seasonal changes in wind direction on the Pacific and west Gulf coasts. Little change from summer to winter is shown in the Great Basin. The wind roses show that the windiest portion of the country is in the Great Plains. Staff MGA 17.5-278.

1965

1564 Smedley, D. "Clima de Puerto Rico." [Climate of Puerto Rico.] San Juan, Departmento de Instrucción Pública, 1965. 25 p. illus. Trans. from U.S. Weather Bureau, Climate of the States (Climatography of the United States, no. 60-52). DAS.

1965

1565 Steinborn, E. "Hurrikan Isbell." [Hurricane Isbell.] Seewart, 26(1):16-18, Feb. 1965. DAS.

1965

1566 Stoddart, D.R. "Resurvey of hurricane effects on the British Honduras reefs and cays." Nature, 207(4997):589-592, 7 Aug. 1965. refs.

On 30 - 31 October 1961, hurricane "Hattie" crossed the atoll and barrier reefs of the British Honduras coast, causing major damage to reefs and islands shortly after a complete survey of island physiography and vegetation had been completed. A detailed analysis of the hurricane induced damage was made 3 mos after the storm. This paper reports the results of a second survey of the area made during March - April 1965, 3 1/2 yrs after the 1st survey. It is concluded that in the areas of major reef damage, recovery will probably take 25-30 yrs or more. - Staff MGA 16.9-393.

1965

1567 Suarez-Caabro, J. "Datos meteorológicos, hidrográficos y planctónicos del litoral de Veracruz, Ver." [Meteorological, hydrographic and planktonic data of the littoral of Veracruz, Mexico.] Mexico (City) Univ. Nacional. Instituto de Biología, Anales, 61(1/2):24-46, 1965.

1965

1568 Technical Conference on Hurricanes and Tropical Meteorology, 4th, Miami, Fla., 22 - 24 Nov. 1965. "Program." American Meteorological Society, Bulletin, 46:563-590, 1965. Abstracts only.

1965

1569 Théveneau, A. "Le Climat de la Guadeloupe." [Climate of Guadeloupe.] France. Météorologie Nationale, Monographies, no. 50, Nov. 1965. 105 p. chart. tables. DAS.

Study based on decennial statistical data since 1950 includes: the seasonal distribution of rains in the annual and diurnal cycles as occurring during the average year, the annual distribution of surface winds in connection with the normal seasonal evolution of atmospheric pressure and a paragraph relating to cyclogenesis and the frequency of cyclones in the course of the contemporary historical period, i.e., from 1825 until the present. Author (mod) MGA 18.2-29.

1965

1570 Thompson, A.H. and Cramer, W.P. "Cloud changes over the Gulf of Mexico during mergence of tropical and extratropical troughs." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 4th, 22 - 24 Nov. 1965. Program, American Meteorological Society, Bulletin, 46:586, 1965.

A radical increase in cloud cover occurred over the Gulf of Mexico between 18 - 20 July 1961. This development occurred when an easterly wave moved westward across the Caribbean Sea into the Gulf and combined with an upper trough of polar origin moving eastward through the lower United States. The superposition of these systems resulted in deepening of the combined system and development of an extensive cloud mass. Analyses using conventional data and meteorological satellite data from TIROS 3 were used to identify and follow the above systems. Author (mod).

1965

1571 Thompson, A.H., Gosdin, M.E. and Jimenez, R.E. "Some remarks on cyclogenesis indications as determined from meteorological satellite observations, with application to the Gulf of Mexico area." Texas A & M Univ. Dept. of Oceanography and Meteorology, Final Report. Ref. 65-23F, Grant WBG-17. Aug. 1965. 34 p. figs. refs. DAS.

Several current theories concerning the genesis of storms based on the dynamics of atmospheric motion suggest specific patterns of the vertical component of motion. The prime features of the patterns

1965 cont.

include evidence of a cloud band oriented roughly E-W and associated with a quasi-stationary or slowly moving baroclinic zone or front having a significant amount of moisture, and of a moving cloud mass upstream of the baroclinic zone. Actual cases are examined and the anticipated patterns found, though masking influences may cause problems in practical applications. Author (mod) MGA 17.4-234.

1965

1572 U.S. Agency for International Development. Regional Aviation Assistance Group. Latin America. "Five year plan for expansion of airway weather reporting in Guatemala." Panama, 1965. 14 p. illus. DAS.

1965

1573 U.S., Congress, House, Committee on Public Works, Special Committee to Investigate Areas of Destruction of Hurricane Betsy. "Hurricane Betsy disaster of September 1965." Hearings on H.R. 11539, 89th Cong., 1st sess., 1965. 213 p. figs. map. DLC.

1965

1574 U.S., Congress, House, Committee on Public Works. Special Committee to Investigate Areas of Destruction of Hurricane Betsy. "Hurricane Betsy disaster of September 1965." Report on H.R. 11539, 89th Cong., 1st sess., 1965. H. Rept. 1164. DLC.

1965

1575 U.S. Federal Aviation Administration Academy. "Flight weather: special hazards and characteristics." Air Traffic Training Publication, Special Series, S-1, 1 July 1965. 108 p. figs. photos. maps. tables. DAS.

Pt. 1 of this weather manual deals with weather hazards of all areas of the United States. Pt. 2 deals with specific areas, including the western and central Gulf Coast. - Staff MGA 19.12-24.

1965

1576 U.S. Interdepartmental Committee for Meteorological Services. "Plan for interdepartmental cooperation in support of tropical cyclone forecast service in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico area." 1965. DAS.

1965

1577 U.S. Weather Bureau. "Hurricane Betsy, August 27 - September 12, 1965." DAS.

Preliminary report with hurricane advisories and bulletins issued. - Staff.

1965

1578 U.S. Weather Bureau. "North Atlantic tropical cyclones: tracks and frequencies of hurricanes and tropical storms 1871 - 1963."

1965 cont.

Technical Paper no. 36, 1965. DAS.

This revision of Technical Paper no. 36 on North Atlantic tropical cyclones (1871 - 1963) covers a larger area and a longer period of record than the first edition (covering 1885 - 1958). A complete revision of text, tables, charts and figures has also been undertaken. A large number of these tropical cyclones and hurricanes, grouped according to general movement characteristics are included. Also discussed are distribution of North Atlantic tropical cyclones and hurricanes and monthly, seasonal and annual frequencies of tropical cyclones and hurricanes. Maps cover a larger area, now including all of Spain, Portugal and a portion of the west coast of Africa plus the eastern portion of the United States and Caribbean area. - Staff.

1965

1579 Venezuela. Dirección de Obras Hidráulicas, "Anuario climatológica, 1964." [Yearbook of climatology, 1964.] Publicación Técnica, 5, 1965. 339 p. tables. maps. DAS.

1965

1580 Venezuela. Servicio de Hidrología. "Boletín climatológico (1964); suplemento año 1963." [Bulletin of climatology (1964); supplement for 1963.] Publicación, no. 2, 1965(?) 12 p. tables. DAS.

1965

1581 Venezuela. Servicio de Hidrología. "Boletín pluviométrico: Número de días de lluvia (y) Número de días con lluvia igual o mayor que 5 mm." [Rainfall bulletin: Number of days with rain (and) number of days with rainfall equal to or greater than 5 mm.] Publicación, no. 3, pt. 2, 1965. tables. DAS.

1965

1582 Venezuela. Servicio de Hidrología. "Boletín pluviométrico: Totales mensuales y anuales de precipitación en mm (y) Lluvias máximas en mm." [Rainfall bulletin: Total monthly and annual precipitation in mm (and) Maximum rainfall in mm.] Publicación, no. 3, pt. 1, 1965. tables. DAS.

1965

1583 Venezuela. Servicio de Meteorología y Communicaciones. "Promedios climatológicos de Venezuela, período 1951/60." [Climatological averages of Venezuela, 1951/60.] Publicación Especial, no. 3, 1st. ed., 1965. DLC.

1965

1584 Wallace, J.A. and Stepanova, N.A. "Annotated bibliography on the climate of Panama and the Canal Zone." U.S. Weather Bureau, Sept. 1963. 38 p. 2 maps. DAS.

An annotated bibliography of 72 literature sources containing meteorological and/or climatological data for Panama and the Canal Zone. It contains references available up to June 1963 in the U.S. Dept. of Commerce, U.S. Weather Bureau Library, Washington, D.C. and in the Library of Congress. Earliest reference is dated 1894. Subject and author indexes are included. - Staff MGA 15.8-57.

1965

1585 Wexler, R. "Tiros and radar observations of a thunderstorm complex over Florida." Monthly Weather Review, 93:523-527, 1965. figs. refs.

An E-W line of thunderstorms passed southward into the Gulf of Mexico and the Florida peninsula. The cold air outflow to the south of this storm was observed by TIROS as a thin line of cumulus clouds. TIROS Channel 2 radiometer readings indicated that a storm over the gulf had the highest cloud tops whereas radar measurements showed the towers over Florida were considerably higher than those over the gulf. The apparent discrepancy is resolved by considering the field of view of the radiometer. - Author (mod) MGA 16.9-107.

1965

1586 White, R.M. and Chandler, R.A. "Project Stormfury: status and prospects." American Meteorological Society, Bulletin, 46:320-322, 1965. refs.

A report on the status and prospects of Project STORMFURY which has been in progress since 1962. In 1963, the project succeeded in carrying through a complex hurricane seeding experiment as well as a series of tropical cumulus seeding experiments. The whole of 1964 was devoted to analysis of results. For 1965, Project STORMFURY'S plans were to correct as many as possible of the deficiencies of the 1963 experiments. Staff MGA 17.7-252.

1965

1587 Wilson, H.M. "Betsy batters Louisiana oil patch." Oil and Gas Journal, 63(38): 77-81, 20 Sept. 1965.

1965

1588 Winston, J.S. "[Comments on S.I. Rasool] Cloud heights and nighttime cloud cover from TIROS radiation data." Reply by S.I. Rasool. Journal of Atmospheric Sciences, 22(3):333-340, 1965. figs. table. refs.

Analyzes results of Rasool's (1964) findings of marked diurnal variations in cloud cover over parts of the Southern

1965 cont.

Hemisphere July - September 1961. Conventional climatological data indicating diurnal variations over ocean regions of not more than approximately 5 - 15 percent are cited as contradicting Rasool's analysis. Average percentage cloud cover for the month of August for day and night stations is plotted, including TIROS 3 data. Inadequacies of TIROS radiation data for measuring diurnal variations, and an examination of possible diurnal variations in TIROS 4 data are discussed. Other questions concerning Rasool's methodology are raised. It is concluded that his findings are to be viewed with great skepticism and will require substantial confirmation. In a reply 'Notes and Correspondence', Rasool justifies his results, noting that diurnal variations of cloudiness over islands in the Southern Hemisphere differ greatly from oceanic conditions. - Staff.

1965

1589 Wulf, O.R. "On winds in the lower ionosphere and variations of the Earth's magnetic field." Monthly Weather Review, 93:655-661, 1965. figs. refs.

Increasing indication of interaction between the stratosphere and mesosphere makes it seem probable that effects from the lower atmosphere will not be uncommon among the variations of the Earth's magnetic field, especially in the form and range of the daily variation of the field. Extending the work of 2 earlier articles, this paper gives the daily variation of the horizontal intensity of the Earth's field for San Juan, Puerto Rico, as the quiet day average for 1948 - 1958 in a form which illustrates seasonal features that the author believes arise from prevailing ionospheric winds. - Author (mod)
MGA 17.1-471.

1965

1590 Zipser, E.J. and La Seur, N.E. "Distribution and depth of convective clouds over the tropical Atlantic Ocean, determined from meteorological satellite and other data." Florida. State Univ. Dept. of Meteorology, Grant Cwb-WBG-36, Final Report, Dec. 1965. 96 p. figs. photos. tables. refs. DAS.

Over the portion of the tropical Atlantic near and east of the Lesser Antilles, a large sample of airborne time-lapse motion pictures was obtained during the wet season of 1963, much of it nearly synchronous in time and space with TIROS satellite coverage. It is found possible to delineate different regimes of a synoptic

1965 cont.

scale on TIROS photographs which airborne photographs show as distinctive cloud characteristics. A close relationship is found between the depth of the convective layer and the brightness of the individual TIROS observed cloud units. - Author (mod)
MGA 17.9-154.

1966

1591 Aarons, J. and Guidice, D.A. "Size of low-latitude ionospheric irregularities determined from the observations of discrete sources of different angular diameters." Journal of Geophysical Research, 71(31): 3277-3280, 1 July 1966. figs. refs.

Using the 1,000 ft spherical reflector radio telescope at the Arecibo Ionospheric Observatory, drifts and scans of sources whose angular diameters varied from 29 min to less than 1 min were taken in October - November 1964 and April 1965. Of the sources observed, 8 had angular diameters of 5 min or less, while the sources 3C392 and 3C157 had angular diameters of 16 min and 29 min. - Staff
MGA 17.11-509.

1966

1592 Alaka, M.A. Rubsam, D.T. and Fisher, G.E. "Experiment in the use of the balance equation in the Tropics." In Army Conference on Tropical Meteorology, 5th, Miami Beach, Fla., 26 - 27 May 1966. Proceedings, Miami. Univ. Oct. 1966. pp. 109-127. figs. charts. tables. refs. DAS.

The balance equation is used to generate geopotential height fields from wind fields at 850, 500 and 200 mb levels during the development of hurricane "Carla" (1961). The results show that, although the generated heights are consistently lower than the reported heights, the differences are within the range of instrumental errors. This is also seen at 200 mb where strong divergence occurs in connection with outflow from the storm. The maximum differences are found where the highest values of the divergence occur. - Author (mod)
MGA 18.3-336.

1966

1593 Allison, L.J. and Thompson, H.P. "Tiros VII infrared radiation coverage of the 1963 Atlantic hurricane season with supporting television and conventional meteorological data." U.S. National Aeronautics and Space Administration, Technical Note, 3127, June 1966. 48 p. figs. table. refs. DAS. DLC.

Eight tropical cyclones of the 1963 North Atlantic hurricane season were studied using TIROS 7 Channel 2 (8 - 12

1966 cont.

microns) radiation data. Seventeen computer produced radiation charts were analyzed in order to delineate the 3-dimensional cloud structure over these storms. Time cross sections were drawn over hurricanes "Cindy" and "Edith" in order to relate the warm core development and upper level outflow of the storms with their respective cloud canopies. - Author (mod) MGA 17.12-252.

1966

1594 American Society of Civil Engineers. "Symposium on consideration of some aspects of storms and floods in water planning." Technical papers presented at the 7 - 9 Oct. 1965 Meeting. Texas Section. Water Development Board, Report no. 33, Nov. 1966. 163 p. figs. tables. refs. DAS.

1966

1595 Army Conference on Tropical Meteorology, 5th, Miami Beach, Fla., 26 - 27 May 1966. "Proceedings." ed. by H.W. Hiser and H.P. Gerrish, Sponsored by U.S. Army Electronics Labs., Ft. Monmouth, N.J.; arranged by the Univ. of Miami. Inst. of Marine Science, Contract DA 28-043 AMC-00443 (E), Report no. 12, Oct. 1966. 185 p. figs. refs. DAS.

The primary interest of this 5th Conference was in the realm of local, small scale meteorological phenomena and problems in the Tropics, specifically excluding hurricanes and typhoons. The objective was to learn as much as possible about recent results and future research plans of U.S. Army contractors in tropical meteorology and to benefit by the experience and special knowledge of other invited guests from the United States and abroad. Author (mod) MGA 18.3-22.

1966

1596 Arnold, J.E. "Easterly wave activity over Africa and in the Atlantic with a note on the intertropical convergence zone during early July 1961." Chicago. Univ. Dept. of the Geophysical Sciences. Satellite & Mesometeorology Research Project, Research Paper no. 65, Dec. 1966. 23 p. figs. refs. DAS.

During the early part of July 1961, a series of easterly waves moved across central and western Africa into the Atlantic Ocean. Most of the waves retained their identity during their Atlantic crossing, moving along the Intratropical Convergence Zone (ITCZ). The waves tended to decrease in intensity, as determined from cloud activity observed by TIROS 3, as they moved from the eastern Atlantic to the central Atlantic region,

1966 cont.

and then increased in activity again as they approached the Caribbean Sea. The structure of clouds is assumed to be indicative of the structure of the ITCZ exhibits which had strong tendencies for multiple banding. Author (mod) MGA 18.8-268.

1966

1597 Berenger, M. "Betsy et Carol." [Betsy and Carol.] France. Météorologie Nationale, Met-Mar, no. 50:44-52, Jan. 1966. figs. DAS.

The trajectories and behavior of 2 tropical cyclones, "Betsy" and "Carol" (1965), which penetrated into temperate zones, are described. In its tropical stage the wind velocities of "Betsy" varied from 30 to 200 kts/hr. The storm caused much damage on shore and at sea. Nephanalyses of the hurricane by TIROS 10 are given on charts. - Staff MGA 17.9-254.

1966

1598 Boyer, E.D. "Five-inch HARP tests at Barbados, West Indies, Jan. - Feb. 1966." U.S. Proving Ground, Aberdeen, Md., Ballistic Research Labs. Memorandum Report BRL-1771. July 1966. 24 p. figs. photo. tables. refs. DAS.

Project HARP has been developing and utilizing a fixed 16 in system, a mobile 7 in system and a relatively light mobile 5 in system to launch meteorological and upper atmospheric research probes. The expected higher efficiency with firings on a weekly basis rather than once every 2 mos, the desirability and possibility of obtaining wind measurements from 100,000 ft to 300,000 ft at an added cost of only $400 per flight and the fact that the installation of a second gun would permit experiments where dual firings are desired, led to the decision to emplace a 5 in system. - Staff MGA 18.5-91.

1966

1599 Briscoe, C.B. "Weather in the Luquillo Mountains of Puerto Rico." Puerto Rico. U.S. Forest Service Institute of Tropical Forestry, Forest Service Research Paper ITF no. 3. Río Piedras, 1966. 250 p.

1966

1600 Burkard, O.M. "Semi-diurnal lunar tides in the ionosphere over Puerto Rico." Journal of Atmospheric and Terrestrial Physics, 28(6/7):689-693, June/July 1966. figs. table. refs.

The N(h) profiles of station Puerto Rico have been used to determine the lunar semidiurnal tide in electron density N between 150 and 300 km. The relative amplitude of the lunar tide remains approximately constant all over the tested

1966 cont.
heights, but it is smaller in summer than in winter. - Author (mod) MGA 17.12-498.

1966
1601 Carlson, H.C. "Evidence for a magnetic conjugate-point origin of ionospheric heating." In NATO Advanced Study Institute, Finse, Norway, April 1965. "Electron density profiles in ionosphere and exosphere: Proceedings." Ed. J. Frihagen. Amsterdam. North-Holland, 1966. pp. 478-492. figs. refs. DAS.

Regular observations of incoherent backscatter spectra of the ionosphere at the Arecibo Ionospheric Observatory in Puerto Rico since June 1964 establish presunrise and postsunset ionospheric heating about the F layer maximum near the winter solstice. The heating observed is interpreted in terms of a streaming of photoelectrons from the sunlit magnetic conjugate point. A semiquantitative model is developed for the phenomenon and is used to explain the detailed observations. Author (mod) MGA 18.2-414.

1966
1602 Carlson, H.C. and Gordon, W.E. "Radar spectrographic estimates of ionic composition from 225 to 1,400 kilometers for solar minimum winter and summer conditions." Journal of Geophysical Research, 71(23):5573-5578, 1 Dec. 1966. figs. refs.

Observed diurnal variations of the ionic composition in the ionosphere over Arecibo are presented in the 225 - 1,400 km altitude range for a typical winter and summer day under solar minimum geomagnetically undisturbed conditions. Sunrise and sunset rates of change of composition are greater in summer than winter. The minimum altitude of the contours of constant composition shifts from local sunrise in summer to midnight in winter. These seasonal differences are ascribed to the effect of photoelectrons streaming from the magnetically conjugate ionosphere. Author (mod) MGA 18.3-555.

1966
1603 Carlson, H.C. and Nisbet, J.S. "Electron densities and temperatures in the F region from backscatter measurements at Arecibo." In NATO Advanced Study Institute, Finse, Norway, Apr. 1965. "Electron density profiles in ionosphere and exosphere: Proceedings." ed. J. Frihagen. Amsterdam, North-Holland, 1966. pp. 470-477. figs. refs. DAS.

Discussion of diurnal variation in electron densities and temperatures in the F region above Arecibo, Puerto Rico. The

1966 cont.
morning build-up and night-time decay of temperatures on several summer and winter days is presented as a function of height. Possible explanations are given for the seasonal differences. During the night, ratios of electron-to-ion temperatures in excess of 1.2 were observed at all times in the region of the F maximum - Author (mod) MGA 18.2-413.

1966
1604 Carr, J.T. "Characteristic meteorology of some large flood-producing storms in Texas: hurricanes." Texas. Water Development Board, Report 33, 1966. pp. 19-29. figs. refs. DAS.

Hurricane cyclogenesis, growth and a model are discussed. A Gulf of Mexico hurricane which produced heavy rainfall in Texas is described and illustrated. Author (mod) MGA 18.6-318.

1966
1605 Chandra, S. and Rangaswamy, S. "Daily response of the ionospheric F region to changes in thermospheric temperature." Journal of Geophysical Research, 71(1):217-225, 1 Jan. 1966. figs. refs.

Effect of thermospheric heating on F region ionization is studied on a daily basis. At Puerto Rico, during the morning hours electron density at fixed heights and maximum electron density follow the same variation as the temperature derived from satellite drag data. Later in the day, when a quasi-equilibrium condition is reached, the production-transport theory of the formation of the F_2 peak appears to be in accord with the observational data. - Author (mod) MGA 17.2-372.

1966
1606 Chiu, Wan-cheng and Crutcher, H.L. "Spectrums of angular momentum transfer in the atmosphere." Journal of Geophysical Research, 71(4):1017-1032, 15 Feb. 1966. figs. tables. refs.

Temporal spectra of angular momentum transfer in the atmosphere were constructed from 8 yrs of wind data at North and Central American stations for many levels in the troposphere and lower stratosphere. Major conclusions are: 1) the spectral intensity, when plotted against frequency, generally decreases with increasing frequency; 2) major transport of momentum is made by eddies that have periods greater than 5 days; 3) spectra for the different levels of each station are similar and 4) in the latitude belt centered around lat 30°N and having a width of about 20° of latitude, the northward transport of momentum is large. - Author (mod)

1966 cont.

MGA 17.6-246.

1966

1607 Christoph, W.P. "Pressure background measurements in the Panama City, Florida area. Oceanographic aspects of the data analysis." U.S. Naval Ordinance Laboratory, Technical Report, TR-66-143, July 1966. 29 p. DNOL.

1966

1608 Clark, G.B. "Hurricane season of 1965." Weatherwise, 19(1):12-17; 22-23, Feb. 1966. photos. charts. tables. refs.

Six tropical cyclones, with 4 reaching hurricane intensity, developed over the tropical Atlantic during 1965. This is the smallest number since 1946. The average has been 10 per yr. The major factors contributing to this lowered hurricane activity were cool temperatures in the Tropics and unfavorable general circulation which developed in September. Details are given on the unnamed storm of 11 - 18 June, "Anna" (21 - 26 August), "Betsy" (8 September - 12 September), "Carol" (16 September - 1 October), "Debbie" (24 - 30 September) and "Elena" (12 - 19 October). - Staff MGA 17.8-307.

1966

1609 Clément, - and Roumiguières, -. "Le Cyclone Cléo." [Cyclone Cléo.] Météorologie, ser. 4, no. 77:33-47, Jan./Mar., 1965. 1966. figs. charts. French, English and Spanish summaries p. 33. DLC.

Emphasizes the role of cold air in the genesis of various disturbances of the tropical Atlantic. Report analyzes appearance and evolution of cyclone "Cleo" which crossed Guadeloupe, Haiti, Cuba, Florida and South and North Carolina in late August 1964. The almost rectilinear path of the cyclone and speed of 'eye' propagation are reported. A general description of weather observations is given. Damage caused by the cyclone on Guadeloupe is given. - Staff MGA 18.6-317.

1966

1610 Clemesha, B.R., Kent, G.S. and Wright, R.W. "Laser probing in the lower atmosphere." Nature, 209(5019):184-185, 8 Jan. 1966. figs. refs.

A description is given of laser probing apparatus in Kingston, Jamaica. The equipment consisted of a Q-spoiled ruby laser used as a transmitter with output energy of 6 J for shots of 5 giant pulses in a 5-micron sec interval. The beam was optically collimated to give a 1/2 beamwidth of 0.15 mrad transmitted vertically. The results of a series of shots were used to plot atmospheric

1966 cont.

scattering power against height from 10 to 60 km. Evidence was found of 2 scattering peaks at 18 and 25 km. Staff MGA 17.8-92.

1966

1611 Colón, J.A. "Air pollution meteorology and transport of pollutants." Presented at Community Air Pollution Seminar, Hotel San Geronomi Hilton, San Juan, 7 Feb. 1966. U.S. Weather Bureau. Southern Region, Technical Memorandum, no. 14, June 1966. 11 p. figs. tables. refs. DAS.

Discussion is divided into 2 main parts: general properties of atmospheric motions relevant to the problem of transport and diffusion in the layer near the surface and the general properties of atmospheric motions in Puerto Rico. Observations of surface winds at San Juan, Ponce and Mayagüez, which reflect the influence of the land-sea circulation, are tabulated and analyzed. It is concluded that smoke should be released under conditions of high winds and unstable thermal conditions and should leave the source with as high a temperature as possible. - Staff MGA 18.1-155.

1966

1612 Colón, J.A. "On the mechanisms for the production of rainfall in Puerto Rico." U.S. Weather Bureau. Southern Region, Technical Memorandum no. 15, June 1966. 12 p. figs. DAS.

Presented at the Conference on Water Resources in Puerto Rico (23 - 24 March 1966), Mayagüez, Puerto Rico. Describes the work of the U.S. Weather Bureau in Puerto Rico, and reviews rain making and other studies contributing to the knowledge of rainfall processes in the Tropics. It includes a discussion of rainfall distribution and map of mean annual precipitation (1931 - 1955). Staff MGA 18.1-141.

1966

1613 Cry, G.W. "North Atlantic tropical cyclones, 1965." Mariners Weather Log, 1(10):1-6, Jan. 1966. figs.

The 1965 North Atlantic tropical cyclone season was below average, as measured by the frequency and duration of storms. Four hurricanes and 2 tropical storms were tracked between 11 June and 19 October. The low frequency was more than offset by the damage produced by "Betsy." Summaries and tracks of individual tropical cyclones are given. Staff MGA 17.6-257.

1966

1614 Davitaia, F.F. "Gidrometeorologiia

1966 cont.

v Respublike Kuba." [Hydrometeorology in Cuba.] Meteorologiia i Gidrologiia, no. 6:45-48, June 1966. figs. refs.

In 1965, the author spent 5 mos at the Academy of Sciences in Cuba studying the natural resources of the country and training scientists. Report begins with a brief history of meteorological observations in Cuba. While regular observations have been kept in Havana for a very long time, the observational network over the country is still sparse. Some notes are given of the way in which the observing, research and forecast activities are administered. - Staff MGA 18.5-49.

1966

1615 Doupnik, J. and Nisbet, J.S. "Electron temperature and density fluctuations in the daytime ionosphere." In NATO Advanced Study Institute, Finse, Norway, April 1965. "Electron density profiles in ionosphere and exosphere: Proceedings." ed. J. Frihagen. Amsterdam, North-Holland, 1966. pp. 493-504. figs. refs. DAS.

Large electron temperature fluctuations have been observed in the F region during the day, using incoherent scatter measurements at Arecibo, Puerto Rico. When fluctuations occur large changes in the equilibrium density distribution result and electron densities in the layer change rapidly. The relationship between the electron densities, thermal energies and heat transport rates during these events is discussed. - Author (mod) MGA 18.2-425.

1966

1616 Duĕno, B. "Phase fluctuations of ground-back-scattered signals." Journal of Geophysical Research, 71(13):3281-3283, 1 July 1966. figs.

Phase fluctuations of ground back-scattered signals were recorded at Mayagüez, Puerto Rico, using a pulse modulated frequency of 16,830 Khz. It was found that: 1) Es-supported ground backscatter has a high degree of phase stability; 2) the leading edge of minimum time delay portion of F2 supported ground backscatter has less phase stability than echo components with longer time delays; 3) an intervening Es layer degrades the phase stability of F2 supported ground backscatter and 4) the phase stability of trans-equatorial echoes is normally of the same order of magnitude as in case 3). - Staff MGA 17.11-523.

1966

1617 Fernández-Partagás, J.J. " 'Unrecorded' hurricane of Oct. 1945." Monthly Weather Review, 94:475-480, 1966. figs. table. refs.

Details and comments on an 'unrecorded' small hurricane which affected the Cayman Islands, central Cuba, and part of the Bahama Islands in October 1945. Author (mod) MGA 17.11-281.

1966

1618 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid tropics." U.S. Army. Tropic Test Center, Fort Clayton, Canal Zone, Panama, Monthly Microclimatic Summary Report, Contract ARPA Order-740, Oct. 1966. 29 p.

Contains detailed microclimatic data for October 1966 from specific sites in the Panama Canal Zone and vicinity. Data in tabular form are summarized for hourly and/or daily observations taken at the surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity, and evaporation. - Author (mod).

1966

1619 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid tropics." U.S. Army. Tropic Test Center, Fort Clayton, Canal Zone, Panama, Monthly Microclimatic Summary Report, Contract ARPA Order-740, Sept. 1966. Nov. 1966. 38 p.

Contains detailed microclimatic data for September 1966 from specific sites in the Panama Canal Zone and vicinity. Data in tabular form are summarized for hourly and/or daily observations taken at the surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author (mod).

1966

1620 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid tropics." U.S. Army. Tropic Test Center, Fort Clayton, Canal Zone, Panama, Monthly Microclimatic Summary Report, Contract ARPA Order-740, Dec. 1966. 25 p.

Contains detailed microclimatic data for December 1966 from specific sites in the Panama Canal Zone and vicinity. Data in tabular form are summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. Author (mod).

1966

1621 Frank, N.L. "[Comments on] L.F. Hubert and A. Timchalk: Accuracy of TIROS hurricane locations." Journal of Applied Meteorology, 5(3):373-375, June 1966. figs. table. ref. Additional Comment, Ibid., 5(4): 541-543, Aug. 1966. figs. table. ref.

The locations of hurricanes, tropical storms and depressions determined from TIROS pictures during the summers of 1963 and 1964 are compared with operational aircraft reconnaissance fixes. The results substantiate the statement made by Hubert and Timchalk that the error in TIROS fixes of hurricanes is probably closer to 30 to 40 n mi, although it may deviate from aircraft fixes, on the average, by 50 n mi. The TIROS positions for cyclones of lesser intensity than hurricanes, such as tropical depressions are considerably poorer than for hurricanes. Author states, "There is a systematic tendency to choose the center within the main overcast area, which usually lies in the eastern semi-circle." - Staff MGA 17.10-132.

1966

1622 Frank, N.L. "Weather distribution with upper tropospheric cold lows in the Tropics." U.S. Weather Bureau, Southern Region Technical Memorandum No. 28, Oct. 1966. 6 p. figs. charts. table. refs. DAS.

Discussion of the nature of upper tropospheric cold lows followed by a study answering the forecaster's question as to what are the conditions which determine whether the low will be 'wet' or 'dry'. The procedure followed in the analysis was confined to the Caribbean region (including Bahama Islands), where data were sufficient to insure fairly accurate positions. Results, summarized in a table, show that the majority of the lows are confined to the upper troposphere and none of them were associated with significant cloudiness. - Staff MGA 18.6-304.

1966

1623 Frank, N.L. and Smith, D.L. "On the correlation of radar echoes over Florida with various meteorological parameters." U.S. Weather Bureau. Southern Region, Technical Memorandum no. 29, Oct. 1966. 3 p. fig. table. refs. DAS.

Reports a study of a unique set of data collected during the summers of 1963 and 1964 dealing with Florida rain showers. Correlation coefficients for humidity, divergence, pressure, temperature and vorticity and radar echoes recorded on a 7.5 by 7.5 mi grid every

1966 cont.

3 hrs at Miami, Daytona Beach and Tampa are listed in a table. Humidity correlations improve rapidly with height reaching a maximum of 650 mb. Showers at 1300 and 1600 local time tend to be associated with warmer surface temperatures and cooler temperatures above 850 mb. Tabulated average echo coverage (percent) at various times during the day for July and August 1963 - 1964 show that the shower distribution reaches a maximum between 1300 and 1600 local time, then drops considerably by 1900 local time. - Staff MGA 18.6-99.

1966

1624 Frank, N.L., Fisher, G.E. and Moore, P.L. "On the use of digitized radar data for the Florida Peninsula." U.S. Weather Bureau. Southern Region, Technical Memorandum, no. 25, Oct. 1966. figs. tables. refs. DAS.

Radar echoes over the Florida peninsula have been recorded every 3 hrs on a 7.5 by 7.5 mi grid during the past 3 summers. This note summarizes the echo distribution for the period May through August 1963. The spatial and temporal variations of convective activity were found to be correlated with the sea breeze. - Author (mod) MGA 18.5-104.

1966

1625 Frisby, E.M. and Sansom, H.W. "Hail incidence in the Tropics." Journal of Applied Meteorology, 6:339-354, 1967. figs. tables. refs.

A review and compilation of information concerning the incidence and frequency of hail in tropical areas. Four areas (America, Africa, Asia and Australia) under which various hail reports are grouped form a total band around the Earth within lat 23 1/2°N and S of the Equator. - Author(mod).

1966

1626 Fukuoka, J. "Algunos problemas con la ocurencia de los huracanes y la dirección de las olas." [Problems of hurricane frequency and wave direction.] Sociedad de Ciencias Naturales La Salle, Memorias 26, no. 73:41-52, 1966. DLC.

1966

1627 Funita, T. and Black, P.G. "Vertical motion of raindrops inside hurricane rain-bands as computed from airborne Doppler winds." In Army Conference on Tropical Meteorology, 5th, Miami Beach, Fla., 26 - 27 May 1966. Proceedings. Miami Univ., Oct. 1966. pp. 128-143. figs. charts. tables. refs. DAS.

A method of computing vertical motion of raindrops which attenuate Doppler beams of an airborne APN 82 wind system

1966 cont.

has been developed. Using data from penetrations through hurricane "Flora" (October 1963), vertical velocities of raindrops inside the 'eye' wall and nearby rainbands have been calculated. These measurements indicate that raindrops inside the inner 'eye' wall are falling and are suspended in the outer part. - Author (mod) MGA 18.3-337.

1966

1628 George, D.H. "Study of the diurnal summer wind system at Galveston, Texas." U.S. Weather Bureau. Southern Region, Technical Memorandum no. 30, Dec. 1966. 11 p. figs. refs. DAS.

An investigation of 30-day hourly wind observations at Galveston Island, Texas, revealed a complex land-sea breeze system. The system is obscured by fairly constant onshore winds resulting from the western extension of the Bermuda High as well as local effects, such as the presence of water on all sides of the land area. The large differences in wind direction on the island are theorized to be due to solenoidal effects. - Author (mod) MGA 18.6-391.

1966

1629 Gerrish, H.P. "Radar aspects of the mid-October 1965 deluge in south Florida." In Conference on Radar Meteorology, 12th, Norman, Okla., 17 - 20 Oct. 1966. Proceedings. pp. 386-391. DAS.

Non-attenuated and attenuated Planned Position Indicator (PPI) radar data are used to study the mid-October 1965 rainstorm that flooded many areas of southern Florida, particularly the Fort Lauderdale-Pompano Beach region. Enhanced analysis and forecast capability for such rainfall is demonstrated through the use of attenuated video. A quantized warning system is suggested to assist the forecaster in such situations. A possible technique for predicting tomorrow's weather using today's non-attenuated radar pattern is illustrated and discussed. - Author (mod)

1966

1630 Gerrish, H.P. "South Florida's dynamic rain duo." In Army Conference on Tropical Meteorology, 5th, Miami Beach, Fla., 26 - 27 May 1966. Proceedings, Miami Univ., Oct. 1966. pp. 14-23. figs. charts. refs. DAS.

Extreme weather in the Tropics invariably is associated with hurricanes. Observations of potential temperature, mixing ratio, precipitable water, potential vertical velocity at 500 mb, divergence and vorticity provide the best insight into

1966 cont.

the synoptic aspects of these situations. Author (mod) MGA 18.3-351.

1966

1631 Gerrish, H.P. and Hiser, H.W. "Mesoscale studies of instability patterns and winds in the Tropics." Miami. Univ. Institute of Marine Science, Contract DA 28-043 AMC-00443(E), Report no. 10, Semi-Annual Report no. 1, 1 June - 30 Nov. 1965. Feb. 1966. 33 p. figs. photos. refs.

Atmospheric refraction and temperature associated with moist season tornado, waterspout and hail systems in southern Florida are surveyed, using routine radiosonde soundings from Miami Airport. Rain camera data are used to provide information on rainfall rates in easterly wave and air mass showers at the University of Miami. Brief comments are made about 2 remarkable rainstorms that produced 24-hr rainfall amounts on the order of 20 in or more in essentially the same portion of the lower east coast of Florida (October 1965). - Author (mod) MGA 17.8-313.

1966

1632 Gerrish, H.P. and Hiser, H.W. "Mesoscale studies of instability patterns and winds in the Tropics." Miami. Univ. Institute of Marine Science, Contract DA 28-043 AMC-00443(E), Report no. 11, Semi-Annual Report no. 2, 1 Dec. 1965 - 31 May 1966. Aug. 1966. 58 p. figs. photo. tables. refs.

Two of the most remarkable rainstorms in Florida's history are described and analyzed. The storm of 13 - 15 October 1965 produced total amounts in excess of 26 in with 24.43 in falling in 24 hrs at Bahia Mar in Fort Lauderdale and 21.28 in in 12 hrs at Pompano Beach. The Halloween storm of 30 October to 1 November 1965 produced total amounts on the order of 14 in in the same general area. Particular emphasis is placed on precipitable water, raob analysis, divergence, vorticity and preliminary radar aspects. - Author (mod) MGA 17.12-411.

1966

1633 Grace, R.J. "Survey of meteorological capabilities and requirements in British Honduras." U.S. Agency for International Development, Regional Aviation Assistance Group, Panama City, June 1966. 24 p. appendices. refs. DAS.

Weather services in British Honduras are considered inadequate for weather forecasting for aviation and other national developments. Necessity for an expansion in the synoptic reporting station network

1966 cont.

and for establishment of a telecommunication system at the Belize International Airport to disseminate observations into a central analysis center is demonstrated. - Staff MGA 18.2-31.

1966

1634 Griffiths, J.F. "Study of the movement of rain areas in Central America, together with a preliminary investigation of West Indian rainfall distribution." In Army Conference on Tropical Meteorology, 5th, Miami Beach, Fla., 26 - 27 May 1966. Proceedings. Miami Univ., Oct. 1966. pp. 50-61. figs. charts. table. DAS.

Technique of harmonic analysis has been applied to rainfall data from the whole of Central America. The first harmonic explains most of the variance (70 percent or more), except on the Atlantic coast of Costa Rica and northwest Panama. Study of some long-period records of rainfall in Barbados and Grenada has shown how extreme rainfalls negate the normality pattern but may be from a synoptically different population. - Author (mod) MGA 18.3-466.

1966

1635 Hastenrath, S.L. "Flux of atmospheric water vapor over the Caribbean Sea and the Gulf of Mexico." Journal of Applied Meteorology, 5(6):778-788, Dec. 1966. figs. refs.

Flux of atmospheric water vapor has been examined as part of a more extensive study on general circulation and energetics in the area of the Central American seas. Analysis is based on twice daily radiosonde data for the entire year of 1960. Eddy moisture flux and flux divergence over the Gulf of Mexico reaches considerable proportions in winter, while it is comparatively small over the Caribbean Sea throughout the year. The water vapor flux divergence is discussed with regard to estimates of large scale precipitation and independent computations of the sensible and latent heat flux at the sea-air interface. Author (mod) MGA 18.3-441.

1966

1636 Hastenrath, S.L. "On general circulation and energy budget in the area of the Central American Seas." Journal of the Atmospheric Sciences, 23(6):694-711, Nov. 1966. figs. tables. refs.

Large scale vertical motion and the atmospheric oceanic energy budget in the Caribbean Sea and Gulf of Mexico are studied with emphasis on seasonal and regional variations using available radiosonde data of the entire year of 1960.

1966 cont.

Atmosphere over the Caribbean Sea exports latent heat during the winter half of the year, changing to import during the summer, while divergence of the latent heat flux prevails over the Gulf of Mexico during most of the year with the exception of midsummer. Ocean currents export heat from the Caribbean Sea during the summer half of the year, while conspicuous import is indicated for the Gulf of Mexico throughout the year, with the exception of midsummer. Tropospheric energetics are discussed with respect to their role in the general circulation. - Author (mod) MGA 18.2-231.

1966

1637 Haurwitz, B. and Cowley, A.D. "Lunar air tide in the Caribbean and its monthly variation." Monthly Weather Review, 94:303-306, 1966. figs. tables. refs.

The lunar atmospheric tide and the solar 24-, 12-, 8- and 6-hourly oscillations have been determined for Willemstad, Netherlands West Indies and Trinidad, British West Indies. Monthly means of these oscillations have been computed for Puerto Rico. - Author MGA 17.9-296.

1966

1638 Henry, W.K. et al. "Research on tropical rainfall patterns and associated mesoscale systems." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 66-3T, 4 Jan. 1966. Contract DA-36-039 SC-89202, Report no. 10, 10th Quarterly Progress Report, 1 Aug. - 31 Dec. 1965. 151 p. figs. tables. refs. DAS.

The contingency index is used to show the differences of rainfall and the terrain in Costa Rica. Unusually heavy rain occurring in Panama during 1935 is identified as to period and region and the seasonal distribution of precipitation in Honduras is illustrated by means of percentage changes in the monthly rainfall. Daily rainfall observations from San Salvador and El Salvador are examined for independence to determine if they may be approximated by a Markov chain probability model. A tabulation of the marginal and conditional probabilities based on a first order Markov chain are presented and examples are given showing how the probability of occurrence for any sequence of wet and/or dry days may be calculated. Author (mod) MGA 17.6-29.

1966

1639 Henry, W.K. et al. "Research on tropical rainfall patterns and associated mesoscale systems." U.S. Army Electronics Research and Development Labs., Ft.

1966 cont.

Monmouth, N.J., Technical Report, ECOM-89202 F, Oct. 1966. 151 p. figs. refs. tables. (Texas A & M Univ. Dept. of Meteorology, Contract DA36039 AMC-8920F, Final Report.) DAS. DLC.

A short summary of previous work and a description of the method of studying monthly percentage changes in rainfall in Central America are given. Spectrum analysis of daily rainfall records indicates peaks near 3 1/2 and 5 1/2-day periods. Long period rainfall series of the national observatories of Venezuela and Ecuador are used to determine rainfall similarities and differences between 2 locations which vary greatly in circumstances. A preliminary analysis of some West Indian stations having long periods of record indicates that pronounced skewness occurs in the distribution. - Staff MGA 18.12-9.

1966

1640 Hess, J. "Statistics of parameters affecting tethered balloon flights." U.S. Air Force. Cambridge Research Labs., Air Force Surveys in Geophysics no. 182, July 1966. 31 p. figs. refs. DAS. DLC.

Presents detailed climatology of launch sites and statistical probabilities of parameters affecting tethered balloon systems for a proposed project in Key West, Florida. Graphs show: hourly frequency distribution of surface winds (by month) on the basis of 10 yrs of data, hourly frequency distribution of cloud cover below 15,000 ft msl, hourly percentage frequency of occurrence of rainfall (over a trace), mean number of days during each month when thunderstorms occurred, monthly 50 and 95 percentiles of scalar wind speed and dynamic pressure at 10,348 ft msl, monthly percentiles of scalar wind speed up to 12,000 ft msl, monthly percentile distribution of dynamic pressure in lbs/ft^{-2} and seasonal frequency of maximum wind speeds for durations of 1 hr to 1 mo. - Staff MGA 18.4-129.

1966

1641 Hill, E.L., Malkin, W. and Schulz, W.A. "Tornadoes associated with cyclones of tropical origin - practical features." Journal of Applied Meteorology, 5(6):745-763, Dec. 1966. fig. tables. refs.

The frequency of reports of tornadoes associated with tropical cyclones is shown to have increased during the past decade. Tornado incidence is demonstrated to be related to the direction of movement of a tropical cyclone and to intensity as it approaches a coast. A heading slightly east of north is most favorable for tornado

1966 cont.

occurrence. Most tornadoes have occurred with tropical cyclones in the Gulf of Mexico which reached hurricane intensity, or with intensifying tropical depressions. Over 80 percent of tropical cyclone associated tornadoes in the Carolinas and Virginia occurred with parent cyclones which had a Florida coast landfall. - Author (mod) MGA 18.4-353.

1966

1642 Howell, W.E. and López, M.E. "Cloud seeding in southern Puerto Rico, April - July 1965." Journal of Applied Meteorology, 5(5):692-696, Oct. 1966. figs. tables. refs.

With the most severe drought on record causing damage and hardship in Puerto Rico, several large private concerns and government agencies decided that an immediate need for water greatly outweighed the uncertainties of cloud seeding. They collaborated to sponsor a program of rainfall stimulation. Emergency operations began 26 April and continued until 18 July 1965. Results were evaluated by estimating the amount of rain that would have fallen if no seeding had been done from average rainfall per rainy day during a 19-yr (unseeded) period. This indicated an increase of 2.69 in, equivalent to a 14 percent increase significant at the 10 percent level. Crop reports suggested the cloud seeding program returned value many times its cost. Author (mod) MGA 17.12-188.

1966

1643 Hutton, R.S. "Possible military significance of contaminants found in tropical atmospheres." In Army Science Conference, West Point, N.Y., 14 - 17 June 1966. Proceedings, 1:501-513, 1966. figs. tables. refs.

A report on an experiment conducted at the Panama Canal Zone Test Center in which films of pure Fe were exposed in the open and under a forest cover inside fiber glass tubes 18 in long and 5 in in diameter. Circular spots and concentric rings which developed under the forest cover when exposed as above and in loosely closed containers are shown in photographs and are discussed. The results show that unless microorganisms, water, and temperature fluctuations are all present, Fe surfaces remain unaffected. It was also found that microorganisms may derive at least some nutrients from atmospheric chemical contaminants. - Staff MGA 18.3-280.

1966

1644 Jordan, C.L. "On the maximum vertical extent of convective clouds." Scientific

1966 cont.

Report to the U.S. Navy Weather Research Facility, Norfolk, Va., 1966. 34 p. figs.

Author raises doubts in regard to the accuracy of many of the extreme cloud heights reported by radar in recent years. Observations and studies made in tropical regions are cited. - Staff.

1966

1645 Jordan, C.L. "Surface pressure variations at coastal stations during the period of irregular motion of hurricane Carla of 1961." Monthly Weather Review. 94:454-458, 1966. figs. refs.

Surface pressure observations at stations along the Texas coast during the approach of hurricane "Carla" (1961) have been examined in an attempt to determine the extent to which the storm as a whole participated in the irregular motion indicated by the storm center tracked by radar. Pressure variations at coastal stations were found to correlate rather poorly with observed changes in the direction and speed of motion of the storm center. The best agreement was shown by the Galveston observations which were made 100 - 150 mi to the right of the storm track. - Staff.

1966

1646 Kadlec, P.W. "Flight observations of atmospheric turbulence." Eastern Airlines, Inc., Dept. of Meteorology, Miami: Final Report, Contract FA66WA-1449, 1966. 52 p. illus.

1966

1647 Kirst, A. and McMath, C.W. "Automated environmental data collected off Panama City, Florida, June 1962 - Dec. 1964." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 66-9T, May 1966. 92 p. figs. tables. refs. Also ... Jan. 1965 - Apr. 1966. Ref. 66-12T, Contract Nonr 2119(4), June 1966. 18 p. fig. table.

Summaries of environmental air-sea data and discussion of data acquisition, handling and reduction system. - Author MGA 18.2-82.

1966

1648 Kirst, A. and McMath, C.W. "Informal summary of automated environmental data collected off Panama City, Florida, current as of Jan. 31, 1966." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr 2119(4), 1966. 69 p. entirely tables. Typescript.

Elements measured include wind speed and direction, air temperature, barometric pressure, current speed and direction, vertical wind speed, differentiated wave

1966 cont.

angle, wave angle slope, water temperature, incoming and reflected radiation, water level, etc. - Staff MGA 17.9-123.

1966

1649 Kodrau, O.D. "Raschet sredneĭ mesiachnoĭ temperatury vozdukha razlichnoĭ obespechennosti v gorakh." [Calculation of mean monthly air temperature of various reliabilities in the mountains.] Leningrad. Glavnaia Geofizicheskaia Observatoriia, Trudy, no. 192:72-85, 1966. figs. tables. refs. Russian summary p. 72. DAS. DLC.

A method is presented in which the linear relationship between air temperature frequency and elevation is established. A complete characterization of mean long-term temperature frequency obtained with this method for Central America and the West Indies shows little differences in the temperature gradients of various frequencies in Central America. With temperature gradients for various frequencies shown on graphs, maps of areal distribution of frequencies of long-term mean annual temperatures can be prepared. In Central America and in the West Indies the effect of the trade wind inversion on the vertical distribution of mean temperature is not appreciable. - Staff MGA 18.7-401.

1966

1650 Koss, W.J. "Objective analysis of pressure height data for the Tropics." Monthly Weather Review, 94:237-257, 1966. figs. charts. tables. refs.

A method for objectively analyzing the geopotential height field on a constant pressure surface using upper air data is described. Special attention is given to the analysis in data-sparse regions in the Tropics. Wind-height relationships are used to augment reported data by extrapolation. The augmented data are used in a least-squares process to generate a polynomial surface which is used as the initial value in an iterative correction routine. The resultant objective analysis is comparable to the subjective analysis produced by an experienced analyst. Comparative examples are presented in which the region of analysis includes the Caribbean Sea, Gulf of Mexico and adjacent areas. - Author (mod) MGA 17.8-205.

1966

1651 Kraft, R.H. "Great hurricanes, 1955-1965." Mariners Weather Log, 10(6):200-202, Nov. 1966. figs.

A hurricane is considered 'great' when its central pressure is 950 mb or less for a period of 24 hrs or more. During 1955 - 1965, there were only 10

1966 cont.

which qualified. Tracks of these hurricanes are shown and brief descriptions of each are included. They were "Connie," "Ione" and "Janet" (1955); "Helene" (1958); "Donna" (1960); "Carla," "Esther" and "Hattie" (1961); "Flora" (1963) and "Betsy" (1965). - Staff MGA 18.4-350.

1966

1652 Kraus, E.B. "Air-sea interaction studies. Aruba Expedition." In Woods Hole Oceanographic Institution, Summary of investigations ... 1965. Ref. 66-3, Mar. 1966. p. 249. DNO.

A second expedition was staged to Aruba in February and March 1965. Observational data are still being processed. Preliminary results are: 1) pronounced internal waves which form in the atmosphere at low levels on the lee of the island and 2) comparison of wind profiles in Aruba and in Buzzards Bay indicate considerably larger surface roughness and wind stress in the Bay. - Author (mod).

1966

1653 Kraus, E.B. "Heat flux and surface stress on and near an island in the trade wind region." Woods Hole Oceanographic Institution, Ref. no. 66-25, 5 June 1962 - 30 Nov. 1965. Contract DA-36-039 SC-90784E, Final Report, Report no. 7, 1966. figs. tables. refs. CU-S, DNO.

The report covers work carried out over 3 yrs on tropical meteorology and air-sea interaction. This included the development of a new type of wave sensor, a stable meteorological buoy and wind and temperature measuring devices and recording equipment. The properties of a special experimental field near Aruba, Netherlands Antilles, is described. An appendix contains reprints of papers published by members of the group between 1962 and 1965. - Author (mod) MGA 18.1-51.

1966

1654 Draus, E.B., Ching, J. and Elsberry, R.L. "Aruba expedition 1965: observations and analysis." Woods Hole Oceanographic Institution, Ref. 66-70, Dec. 1966. 162 p. figs. tables. ref. CU-S, DNO.

The expedition was organized in February - March 1965 to study air-sea interaction processes around a flat island oriented across the direction of the trade winds. The report contains: 1) an outline by E.B. Kraus of the work carried out at Aruba, 2) comparative study of stress, wind and wave developments at different distances from a lee shore by J. Ching and 3) an analysis of aircraft observations in and below the trade wind inversion by

1966 cont.

R. Elsberry. It also provides a record of ~ 30 double theodolite balloon ascents and tables of wind velocities at 2 levels, surface roughness, friction velocity and drag coefficients at different distances from the shore, profiles of temperature, mixing ratio and equivalent potential temperature across the island and the surrounding waters. - Author (mod) MGA 19.5-625.

1966

1655 LaLonde, L.M. "Incoherent backscatter observations of sporadic E." Journal of Geophysical Research, 71(21):5059-5065, 1 Nov. 1966. figs. refs.

Measurements of the characteristics of sporadic E over Arecibo, Puerto Rico by backscatter radar and ionosondes are presented. A comparison of backscatter to ionosonde data indicates that observed layer thicknesses vary between 35 and 850 m. Horizontal structure in 1 dimension has been observed to lie within limits of 1-10 km with reasonable assumptions of cloud velocity. Vertical velocity of the lower layers (90 - 110 km) is of the order of 1 km/hr downward, while that of a thicker, higher layer is observed to be about 1 order of magnitude greater. E_s is observed most frequently during summer, generally forming at sunset when the layers appear to be uncovered by the diminishing ambient electron number density of the E region. Observations of sporadic D layers is also reported. - Author (mod) MGA 18.2-444.

1966

1656 LaLonde, L.M. "Short-pulse backscatter study of the lower ionosphere." In NATO Advanced Study Institute, Finse, Norway, Apr. 1965. "Electron density profiles in ionosphere and exosphere: Proceedings." ed. J. Frihagen, Amsterdam, North-Holland, 1966. pp. 515-521. figs. refs. DAS.

Incoherent backscatter measurements of the lower ionosphere have been made at the Arecibo Ionospheric Observatory. Specific fine-resolution observations are presented for 2 winter days. A 6-km altitude resolution and a 15-min integration time are used to obtain the electron density profiles. An unexpected persistent E region maximum extending from 90 to 125 km was observed at sunset and at night with characteristics different from those observed when sporadic E is present. Values of T_e/T_i, at about 150 km, range from 1.5 to 2.1 during the day and approach unity at sunrise and sunset. - Author (mod) MGA 18.2-445.

1966

1657 La Seur, N.E. "On the distribution of rainfall probability over Barbados." In Army Conference on Tropical Meteorology, 5th, Miami Beach, Fla., 26 - 27 May 1966. Proceedings. Miami, Univ., Oct. 1966. pp. 36-43. figs. table. refs. DAS.

An 11-yr sample of rainfall data from 100 stations on Barbados is used to compute the spatial distribution of rainfall probability over the island. The resulting distributions show a high degree of association with the island topography. It is suggested that release and organization of convection in the form of Cu rows or 'streets' most logically explain the observed patterns. - Author (mod) MGA 18.3-468.

1966

1658 Leipper, D.F. "Gulf of Mexico before and after Hurricane Betsy, 1965." American Geophysical Union, Transactions, 47(1), Mar. 1966.

During 10 - 24 August 1965, a cruise was conducted on R/V ALAMINOS to determine the undisturbed characteristics of the eastern Gulf of Mexico before the arrival of any hurricane of the season. Hurricane "Betsy" crossed the Gulf on 8 - 9 September passing over 3 of the lines surveyed earlier. On 10 September these lines were resurveyed to determine changes caused by the storm and additional observations were made. The resulting data permit a direct comparison of conditions both before and after a hurricane at fixed geographic locations in deep water. "Betsy" appears to have caused upwelling and mixing leading to cool surface waters in 2 areas about 100 mi apart, one to the right and one to the left of the 'eye'. A portion of the warm layer of surface water present before the storm appears to have converged near the center of the 'eye,' and other portions appear to have been transported outside the 2 cold areas. Author (mod).

1966

1659 Levine, J. "Cumulus convection and its interaction with larger scales of motion." Woods Hole Oceanographic Institution, Ref. no. 66-49, Contract NSF GP-1451, Technical Report. Sept. 1966. 7 p. figs. table. CU-S DNO. DAS.

The data reduction procedures used on observations obtained from the Environmental Science Services Administration (ESSA) Research Flight Facility aircraft during Project STORMFURY (1965) operation is described. The parameters to be determined are cloud liquid water content, median

1966 cont.

drop size, turbulent vertical velocity and buoyancy fluctuations in clouds. - Author (mod) MGA 18.3-434.

1966

1660 Levine, J. "Data reduction of Stormfury 1965 cloud observations made from research flight facility aircraft." Woods Hole Oceanographic Institution, Ref. no. 66-50, Contract Cwb-11255, Final Report. Sept. 1966. 6 p. figs. ref. table. CU-S, DNO. DAS.

An outline of work done at the Woods Hole Oceanographic Institute since 1963 on cumulus convection as related to larger scale atmospheric motions is given. In addition, a preliminary analysis of the mesoscale wind field as derived from aircraft Doppler wind observations taken during 1 day of the STORMFURY (1965) operation is described. Scale and magnitude of mesocale divergence and vertical velocity in the trades are inferred. Author (mod) MGA 18.3-435.

1966

1661 Lieb, H. "Project Stormfury." ESSA World, no. 2:4-7, Oct. 1966. DAS.

A nontechnical description of Project STORMFURY, the Environmental Science Services Administration's (ESSA) Research Flight Facility (RFF), and the Airborne Early Warning Squadron FOUR (also known as VW-4 or Navy Hurricane Hunters). In addition to hurricane eyewall experiments, the project investigates the effects of seeding hurricane rainbands and RFF planes have flown hailstorm, air mass and cloud photography study missions. - Staff MGA 18.12-254.

1966

1662 Long, M.J. "Preliminary climatology of thunderstorm penetrations of the tropopause in the United States." Journal of Applied Meteorology, 5(4):467-473, Aug. 1966. figs. tables. refs.

Presents a 4-yr study of penetrations of the tropopause(by more than 5,000 ft) of thunderstorms at 10 locations in the United States. WSR-57 radar data for 1961 through 1964 were used to determine the vertical extent of the penetrations. The largest number of penetrations occurred from the coast of the Gulf of Mexico northward into the mainland, with only 1/10 as many penetrations reported at some of the coastal stations. The highest penetrations also occurred near the center of the country. Areas of maximum penetrations showed more than 20 time periods of 4 consecutive or more of penetrations. - Author (mod)

1966

1663 McGill Univ. Dept. of Geography. "Two studies in Barbadian climatology." Climatological research series, no. 1, 1966. 65 p.

1966

1664 Marcus, S.O. "Evaluation of NOMAD-II data in their meteorological and oceanographic applications." In International Buoy Technology Symposium, 2d, Wash., D.C., Sept. 1967. Transactions, Marine Technology Society, 1967. pp. 379-394. figs. DLC.

Data received from the NOMAD-II buoy in the Gulf of Mexico during the period July to December 1965 are examined. Evaluations are made by comparing NOMAD-II data with the environment and operating consistencies. Data received from NOMAD-II include surface air and sea temperatures, atmospheric pressure, wind speed and wind direction. In the 6 mos of evaluation tests, 96.5 percent of the 1,472 scheduled 3-hourly broadcasts were usable. - Author (mod) MGA 19.3-625.

1966

1665 Marcus, S.O. and Smith, A.L. "Evaluation of data received from Navy NOMAD's in 1964." U.S. National Oceanographic Data Center, Progress Report P-59, June 1966. 46 p. figs. tables. refs.

Data from 2 NOMAD installations in the western Atlantic and Gulf of Mexico have been collected and examined. Comparisons were made between NOMAD observations and detailed map analyses for periods during the passage of hurricanes over each NOMAD. Ship weather reports, which form the basis for a major part of the evaluation, were also evaluated and were found to be generally reliable. Data transmitted by the 2 devices were more accurate than those transmitted by NOMAD 1, before it was replaced in 1964. - Author (mod) MGA 18.1-96.

1966

1666 Marcus, S.O. and Smith, A.L. "NOMAD'S-eye view of hurricanes." Mariners Weather Log, 1(10):7-10, Jan. 1966. figs. refs.

Reports briefly on NOMAD'S observations of hurricanes during September and early October 1964. Hurricanes "Dora" and "Gladys" in the western Atlantic and hurricane "Hilda" in the Gulf of Mexico were recorded. The capability of NOMAD is acceptable for monitoring a hurricane. Staff MGA 17.6-259.

1966

1667 Miami Univ. Institute of Marine Sciences, Marine Laboratory. "Radar hurricane research, 1 September 1965 to

1966 cont.

31 August 1966." Final report. Contract cwb-11266, 1966. 38 p. illus.

1966

1668 Millas, J.C. "Characteristics of the hurricane season in the North Atlantic Ocean including the Caribbean Sea and Gulf of Mexico." Miami. Univ. Institute of Marine Science, Contract Cwb-11179, Final Report, Apr. 1966. 70 p. figs. maps.

Describes all hurricanes, recorded as historical events, from the landing of Columbus on American shores in 1493 up to the present. A statistical analysis of the hurricane season lasting from May through December was accomplished. Highest tropical cyclonic activity month during the hurricane season for the years 1885 - 1964 was September. Origins of 637 hurricanes and tropical storms are tabulated and month-by-month activities discussed in detail. Staff MGA 18.1-203.

1966

1669 Miller, C.F. "Operation Ceniza-Arena: the retention of fallout particles from Volcán Irazú (Costa Rica) by plants and people. Part II." Stanford Research Institute, SRI-MU-4890, Dec. 1966. 257 p.

Summarizes foliar contamination data obtained in the second phase of Operation Ceniza-Arena in Costa Rica, Central America. Measurements were made of the retention of airborne particles (ejected by Volcán Irazú) by the foliage of 13 vegetable plants (including corn), 4 cereal grains and 6 kinds of trees. Additional measurements included surface air temperatures, humidity, wind speed, particle size distributions, projected areas of leaves and other plant parts, planting density, composition and density of the particles, soluble salt content of the particles, contamination of persons and particle fall trajectories. All plants retained at least some of all the airborne particles that arrived at the land plots, including the largest. - Author (mod).

1966

1670 Miller, C.F. and Lee, H. "Operation Ceniza-Arena: the retention of fallout particles from Volcán Irazú (Costa Rica) by plants and people. Part I." Stanford Research Institute, SRI-MU-4890, Jan. 1966. 374 p.

Summarizes data on the retention of fallout particles ejected by Volcán Irazú (Costa Rica) by the foliage of vegetables and native plants that were obtained from field experiments in April and May 1964. The data show that the foliage of plants retain all sizes of falling

1966 cont.

particles. When the relative humidity is greater than about 90 percent, the foliage retains about twice the weight of particles that is retained under drier conditions. In general, it was found that the foliage retained more of the depositing particles than reported for nuclear weapon fallout in the desert regions of the United States and Australia. - Author (mod).

1966

1671 Millman, Peter M. "Big gun on Barbados." Sky and Telescope, 32(2):64-67, Aug. 1966. figs. photos.

A big gun, with its muzzle pointing nearly vertical, was installed on Barbados (lat 13°N). It hurled a 200 lb device 100 mi above the ground to give valuable data on changes in wind shear patterns in the upper atmosphere. Winds were measured by triangulation of the drift of luminescent trains left by the release of highly inflammable trimethylaluminum. Results showed that wind speed can change drastically in a few hours, even reversing direction at levels above 105 km. - Staff MGA 18.1-299.

1966

1672 Nisbet, J.S. and McCrory, D. "Recombination in the nighttime F region from incoherent scatter measurements." In NATO Advanced Study Institute, Finse, Norway, Apr. 1965. "Electron density profiles in ionosphere and exosphere: Proceedings." ed. J. Frihagen. Amsterdam, North-Holland, 1966. pp. 530-539. figs. refs. DAS.

Profiles obtained at the Arecibo Ionospheric Observatory have been used to study night-time recombination. It is shown that large changes in electron ion temperature ratios occur at night in winter under low sunspot conditions up to about 0200 local time. A considerable improvement in the consistency of the results is obtained by the use of the incoherent scatter measurements. Electron ion temperature ratios of greater than unity were observed throughout the night, raising the questions of night-time production, and the effect of this on the results. - Author (mod) MGA 18.2-453.

1966

1673 Orton, R.B. "Characteristic meteorology of some large flood-producing storms in Texas: easterly waves." Texas. Water Development Board, Report 33, 1966. pp. 1-17. figs. refs. DAS.

Dynamic meteorology and synoptic weather characteristics of easterly waves are discussed. The rainstorm of

1966 cont.

9 - 10 September 1952, which produced storm totals up to 26 in, is described in detail. - Author (mod) MGA 18.6-297.

1966

1674 Pagney, P. "Le Climat des Antilles." [Climate of the Antilles.] Paris. Univ. Institut des Hautes Études de l'Amérique Latine, Travaux et Mémoires, v. 15, (2 v.) 1966. v. 1, text, 377 p. photos, refs. v. 2, atlas, unpaged. entirely tables and figs. DLC.

V. 1 presents a detailed study of various properties of the climate of the Antilles and analyzes the type of precipitation observed. Rainfall is an essential element in shaping the tropical climate which has a rhythm of dry and rainy seasons. Tropical characteristics are heavy precipitation, permanent heat and limited evaporation. An attempt is made to link the influence of climate in the Antilles to global atmospheric circulation. V. 2 is a collection of tables and synoptic charts of the Antilles. - Staff MGA 18.12-11

1966

1675 Penn, S. "Temperature and ozone variations near tropopause level over hurricane Isbell Oct. 1964." Journal of Applied Meteorology, 5(4):407-410, Aug. 1966. figs. table. refs.

Temperature and ozone data obtained from hurricane "Isbell" (14 October 1964) by an instrumented U-2 aircraft are used in conjunction with several radiosonde observations to reconstruct features of the structure at the tropopause. The tropopause was inclined upwards toward the 'eye' with a slope of 1:200, except that the slope reached a plateau at a point over the wall clouds. It appeared that the horizontal variation of vertical motion was insignificant in the upper troposphere and lower stratosphere regions over the hurricane core. An unusual feature found in "Isbell" was a deep cloud filled volume over the 'eye' that extended from about 250 to 100 mb. - Author (mod) MGA 17.12-256.

1966

1676 Portig, W.H. "Atmospheric water budget over tropical areas." U.S. Army Electronics Command, Ft. Monmouth, N.J., Technical Report ECOM-01549 (E)-2, Aug. 1966. 52 plus 40 p. figs. charts. tables. refs. DLC.

Different methods for investigating the water vapor budget over the Caribbean Sea and the Gulf of Mexico are discussed and relevant data sources are listed. The diurnal variation is almost the same

1966 cont.

over large portions of the region, irrespective of the geographic conditions near the individual stations. However, a network over the central pacific Ocean does not show a definite diurnal variation comparable with that over American waters. Local and spatial differences of the 12:00Z minus 00:00Z difference are described. Author (mod) MGA 18.5-300.

1966

1677 Portig, W.H. "Diurnal changes of water vapor flux in the Caribbean area." In Army Conference on Tropical Meteorology, 5th, Miami Beach, Fla., 6 - 7 May 1966. Proceedings. Miami. Univ., Oct. 1966. pp. 152-161. figs. charts. table. refs. DAS.

Moisture flux changes between 00:00Z (sunset) and 12:00Z (sunrise). Since the difference vectors are rather consistent over the entire area (except Panama), one must conclude that the changes are not produced by local influences. Four days of 3-hourly data show that the flux difference between 10:00Z (very early morning) and 20:00Z (afternoon) is much larger than that between 00:00Z and 12:00Z A theory of the phenomenon should take into account that, at latitudes smaller than 42°, the diurnal temperature changes spread to the west at speeds faster than sound (1.3 Mach over the Caribbean). Author (mod) MGA 18.3-444.

1966

1678 Rasmusson, E.M. "Atmospheric water vapor transport and the hydrology of North America." Massachusetts Institute of Technology. Dept. of Meteorology. Planetary Circulations Project Report no. A1, 15 May 1966. 170 plus 118 p. figs. refs. (Grant GP-3657) DAS.

Using extensive atmospheric water vapor flux data, a study of the water balance of the North American continent and the neighboring Central American sea, covering the period 1 May 1961 through 30 April 1963, was made. Annual and seasonal values computed for the Caribbean Sea and the Gulf of Mexico are in excellent agreement with independent estimates. Staff MGA 18.11-344.

1966

1679 Reap, R.M. "Preliminary investigation of peripheral subsidence associated with hurricane outflow." Chicago. Univ. Dept. of the Geophysical Sciences, Satellite & Mesometeorology Research Project, Research Paper, no. 63, July 1966. 19 p. figs. refs. DAS.

Synoptic and Nimbus 1 High Resolution

1966 cont.

Infrared Radiometer (HRIR) data were utilized to determine the vertical temperature, moisture, and cloud distribution within the peripheral divergence area associated with hurricane "Dora." Relationships between the 200 mb shear line, high level storm outflow, low level drying and outer convective cloud bands were examined for 8 - 10 September 1964. The principle of vertical coupling was proposed as an explanation for the slowly changing structure of temperature, moisture and cloudiness observed relative to the moving 200 mb shear line. - Author (mod) MGA 18.7-350.

1966

1680 Roman, S.J. "Annotated bibliography on the climate of Haiti." U.S. Environmental Science Services Administration, WB/BC-93, July 1966. 16 p. maps. 44 annotated refs. DAS.

Abstracts of publications up to August 1963 available at the U.S. Weather Bureau library and the Library of Congress includes maps of Haiti and of the Caribbean area and author and subject indexes. Staff MGA 18.4-437.

1966

1681 Ronne, C. "Meteorological studies conducted by Contract NONR 4071 (00): Final Report." Woods Hole, Oceanographic Institution, Ref. 66-5, Feb. 1966. 8 p. CU-S DNO.

Weather modification studies recorded photographically. During April and August 1963, the Barbados Weather Modification Project made extensive use of whole-sky, time-lapse and conventional photography to investigate cloud and rain formation over tropical heat sources. These observations were made from land-based, ship-borne and aircraft stations. In July 1965, further photographic studies were carried out over the eastern Caribbean Sea to evaluate the effect of seeding cumulus clouds with AgI. - Author (mod) MGA 17.8-218.

1966

1682 Rouse, W.R. "Moisture balance of Barbados and its influence on sugar cane yield." In McGill Univ. Dept. of Geography, Two studies in Barbadian climatology, 1966. Pt. A. DAS.

1966

1683 Rush, P.J. "Damage caused by hurricane Betsy at certain U.S. naval shore installations in southeast United States." U.S. Naval Civil Engineering Lab., Pt. Hueneme, Calif., Technical Report N-777, Jan. 1966. 52 p. figs. photos. DAS.

1966 cont.

Observations and analyses were made of certain damage caused by hurricane "Betsy" which occurred in the Bahama Islands and in the southeastern portion of the United States (6 - 10 September 1965). Damage was caused by direct wind forces, wind-blown debris acting as missiles, wind-toppled structures and vegetation, wind-induced waterwaves and tides, uncontrolled waterborne structures and objects, direct rainfall, and flooding of streams and other water areas. Damage to buildings and other frame structures, waterfront and harbor structures and exposed electrical and mechanical facilities are described. Author (mod) MGA 18.3-334.

1966

1684 Sadowski, A. "Tornadoes with hurricanes." Weatherwise, 19(2):70-75, Apr. 1966. figs.

In this analysis of the association of tornadoes with hurricanes, the author discusses those recorded during hurricane "Carla" (1961); their association with hurricanes during the decade 1954 - 1964 and the time of day of occurrence. The results show that tornadoes occur generally in approximately the right forward quadrant of the hurricane with reference to the direction in which the hurricane is moving. Author states: "This type of tornado shows no preferred time of occurrence but develops about equally at all hours of the day and night. Generally the hurricane tornado occurs in the area of gale force winds but not in the area of hurricane force winds." - Staff MGA 17.11-286.

1966

1685 Schrag, R.S. "Review of the methods developed for forecasting stratus in South Central Texas." U.S. Weather Bureau. Southern Region, Technical Memorandum no. 21, Aug. 1966. 22 p. figs. table. refs. DAS.

This manuscript of the U.S. Weather Bureau Southern Region describes and illustrates location and topography, air masses and inversions in the area. This is followed by a discussion of radiation, conduction and evaporation which lead to heat transfer and the results of an analysis of 750 cases of stratus with the aid of a computer. It was found that out of 77 cases, the average error in the forecast time of formation of broken clouds was 102 min. An attempt to reduce the average error to less than 1 hr by exponential or logarithmic curve fitting, and a search for new and better variables proved unsuccessful. - Staff MGA 18.3-226.

1966

1686 Senn, H.V. "Precipitation shear and bright band observations in Hurricane Betsy, 1965." In Conference on Radar Meteorology, 12th, Norman, Okla., 17 - 20 Oct. 1966. Proceedings, Boston: American Meteorological Society, 1966. pp. 447-453. figs. tables. refs. DAS.

Project STORMFURY and other Range Height Indicator (RHI) precipitation data are used to illustrate vertical shear of horizontal wind in "Betsy" (1965). The shear vector was very large negative outward in the lowest 6,000 ft when "Betsy" was undergoing rapid intensification north of Puerto Rico. When the hurricane was more intense and in the Florida Keys area, the shear vector was less negative in most spiral band areas, but was turned more strongly outward across the bands. The bright band was found in almost all parts of the storm, with precipitation heights appreciably exceeding the melting level, especially in and around the 'eye' wall and inner spiral band regions. Author (mod) MGA 18.3-157.

1966

1687 Senn, H.V. "Radar hurricane research." Miami. Univ. Marine Laboratory, Report no. ML-66299, Contract CWB-11266, Sept. 1966. 48 p.

Simultaneous Planned Position Indicator (PPI) and Range Height Indicator (RHI) radarscope film was obtained in both hurricane "Betsy" (1965) and hurricane "Alma" (1966). A study is presented of 30,000 ft of U.S. Navy Reconnaissance film to determine over-water hurricane precipitation patterns which might serve as indicators of the direction of storm center motion. The results are similar to patterns viewed from land-based radars as storms approach. The three-dimensional distribution of precipitation in hurricane "Betsy" (1965) is compared to that obtained during "Cleo" (1964). In addition, Project STORMFURY and other RHI data are used to illustrate the vertical shear of the horizontal winds. The extensive participation in Project STORMFURY planning and operations during 1965 and 1966 are summarized with a brief assessment of results. - Author (mod) DDC.

1966

1688 Shimazaki, T. "Attempt to separate the effects of temperature variation and drift velocity." Journal of Geophysical Research, 71(13):3177-3190, 1 July 1966. For abstract see his "Nighttime variations of F-region electron density profiles at Puerto Rico." 1964.

1966

1689 Shimazaki, T. "Nighttime variations of F-region electron density profiles at Puerto Rico. (Pt. 1)." Journal of Geophysical Research, 69(13): 2781-2797, 1 July 1964. figs. refs. "Pt. 2, An attempt to separate the effects of temperature variation and drift velocity." Ibid., 71(13):3177-3190, 1 July 1966. figs. refs.

Pt. 1 - The origin of the time dependent variations of night-time F region electron density profiles is investigated. Assuming a model atmosphere, the set of parameters that best satisfies the continuity equation over a wide range of height in the F region has been determined from observational data for March 1959. Two cases are considered: one in which the temperature distribution varies with time, and one in which temperature distribution is constant with time.- Author (mod).

1966

1690 Sik, A.E. "Long lurid life of hurricane Betsy." Reprint from Motor Boating, Aug. 1966. 9 p. DAS.

1966

1691 Simpson, J.S.M. "Experimental approach to cumulus clouds and hurricanes." For abstract see U.S. Weather Bureau. "Project Stormfury Annual Report, 1966." 1967.

1966

1692 Simpson, R.H. and Simpson, J.S.M. "Why experiment on tropical hurricanes?" New York Academy of Sciences, Transactions, 28(8):1045-1062, June 1966. figs. refs.

A discussion of the United States seeding experiment, Project STORMFURY, is followed by a description of an experiment which concentrates on a mature hurricane. The typical radial wind profile of hurricane "Daisy" (1958) is compared with that of a tropical storm "Frieda" (1957) and the question is posed as to whether a "Daisy" can be converted into a "Frieda" by the triggering of instability. Approaches to cloud modification such as the prevention of drop coalescence of the cooling of the cloud particles by chemical means should not be applied without construction of hypotheses and preliminary tests conducted on cumulus clouds. Staff MGA 18.6-235.

1966

1693 Sleater, J.K. and Balcom, P.R. "Forecasting 'Gulf Stratus' at Kelly AFB, Texas." U.S. Weather Squadron (24th) Kelly AFB, Texas, Detachment 5, Feb. 1968. 9 p. figs. tables. Typescript. Revision of original Sept. 1959 ed. DAS.

Outlines the development and application of an objective method to provide

1966 cont.

an accurate, short range forecast of the occurrence, non-occurrence and time of occurrence of 'Gulf stratus.' The basic cause is: 1) the advection of moisture into the area at the gradient wind level and 2) radiational cooling. Verification for a 5-mo period (April - 31 August 1959) of 118 forecasts are presented. - Staff.

1966

1694 Squires, P. and Twomey, S. "Comparison of cloud nucleus measurements over central North America and the Caribbean Sea." Journal of the Atmospheric Sciences, 23(4): 401-404, July 1966. figs. table. refs.

The mean concentration of cloud nuclei over Colorado is found to be about 3 times that over the Caribbean up to 5,000 ft above the surface. The contrast decreases upwards and at 17.000 ft, there is no appreciable difference. - Author MGA 17.10-387.

1966

1695 Sticksel, P.R. "Vertical distribution of ozone over Tallahassee, Florida." Florida. State Univ. Dept. of Meteorology, Scientific Report, no. 1, Contract AF 19(628)-4953, 1966. 145 p. illus. DAS.

1966

1696 Thompson, A.H. and West, P.W. "Use of satellite cloud pictures to estimate average relative humidity below 500 mb." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 66-11F, Contract Cwb-11247, Final Report,31 May 1966. 29 p. figs. tables. refs. DAS.

Current quantitative procedures for forecasting clouds and precipitation in the eastern United States require a determination of the distribution of the average relative humidity below 500 mb. This study describes an attempt to obtain a statistical relationship between the clouds (as pictured by meteorological satellites) and the average relative humidity. The area studied is over and near the Gulf of Mexico. Examples are presented to show a suggested average relative humidity analysis based on observations made from meteorological satellites over the waters adjacent to the southeastern United States - Author (mod) MGA 18.5-102.

1966

1697 Tracy, Jack D. "Accuracy of Atlantic tropical cyclone forecasts." Monthly Weather Review, 94:407-418, 1966. figs. tables. refs.

During the past several years, a number of techniques have been developed for forecasting the motion of tropical cyclones

1966 cont.

over areas of the Atlantic, Caribbean and Gulf of Mexico. These forecasts have been collected and verified and probability ellipses have been constructed. While direct comparisons between the forecast methods are difficult (because of inhomogeneity of sample size, differences in times of availability of the forecasts, etc.), it has been found that two of the objective techniques tested result in slightly better forecasts than the others. The accuracy of the forecasts depends on the geographical area and forecast error varies almost linearly with the length of the forecast period. - Author (mod).

1966

1698 Undersea Technology. "Project STORMFURY." Its 7(9):36, Sept. 1966.

Hurricane seeding project will be intensified. Planes from the staging base at Roosevelt Roads Naval Station, Puerto Rico, will bombard eyewall clouds repeatedly with silver iodide over an 8-hr period in an attempt to produce more pronounced, longer-lasting effects than in previous years. - Author.

1966

1699 U.S. Army. Tropic Test Center, Fort Clayton, C. A. "Environmental data base for regional studies in the humid tropics." Semiannual Report no. 1/2. 1 Sept. 1965 - 31 Aug. 1966. Contract ARPA Order-740, Aug. 1966. 176 p.

Contents include a description of observation sites, project accomplishments, climate, soils and hydrology, vegetation, microbiology and chemistry of the atmosphere. Staff.

1966

1700 U.S. Environmental Science Services Administration. Environmental Data Services. "World weather records, 1951 - 1960, vol. 3, South America, Central America, West Indies, the Caribbean and Bermuda." Wash., D.C., 1966. 355 p. mostly tables.

Records cover 13 countries of South America, 8 of Central America and 10 of West Indies, the Caribbean and Bermuda. Records of monthly mean values of station pressure, sea level pressure and temperature, and monthly total precipitation for stations; information on exposure of instruments, hours of observations, methods of adjusting or correcting observational data; lake levels, freeze and thaw dates and sunspot numbers are included as supplied by national meteorological services. Within each volume, data are presented alphabetically by station.

1966 cont.

Staff MGA 18.130.

1966

1701 U.S. Environmental Science Services Administration (ESSA). Geophysical Sciences Library. "Bibliography of materials pertaining to the Gulf of Mexico from the catalogs of the Geophysical Sciences Library, ESSA." Rockville, Md., 24 Oct. 1966. DAS.

1966

1702 U.S. Interdepartmental Committee for Meteorological Services. "Atlantic hurricane plan, 1966." Wash., D.C., Apr. 1966. 62 p. figs. DAS.

Atlantic Hurricane Plan briefly states the following: 1) prepare basic forecasts of tropical cyclones for the use of all Department of Defense (DOD) interests making the analyses necessary for their preparation and 2) publish tropical cyclone forecasts for DOD weather services. Eleven annexes specify in detail the responsibilities and functions of the several cooperating agencies. - Staff MGA 18.1-139.

1966

1703 U.S. Office of Emergency Planning. "Hurricane Betsy, August 27 - September 10, 1965: Federal action in disaster." 1966. 30 p. illus. DLC.

1966

1704 U.S. Weather Bureau. "Hurricane Alma, June 4 - 14, 1966." Wash., D.C., June 1966. 69 p. DAS.

Hurricane "Alma" formed in an extensive band of cloudy, showery weather on 4 June 1966. It was first detected as a tropical depression in the northwestern Caribbean on 5 June and reached hurricane strength on the following day. On 8 - 9 September, this hurricane moved across the Gulf of Mexico from Cuba to the Florida coast between Appalachicola and Tampa. This is a preliminary report on the meteorological conditions and damages along the path of the hurricane. - Staff.

1966

1705 U.S. Weather Bureau. "Model hurricane plan for a coastal community." Wash., D.C., July 1966. 36 p. charts. DAS.

The hurricane preparedness plan, presented for a fictitious city and applicable in a real life situation, is addressed primarily to local authorities in cities and communities along the Gulf of Mexico and Atlantic Coasts. The composition and functions of a hurricane preparedness committee, continuous preparedness and execution of emergency preparations and procedures are discussed. Plans for

1966 cont.

expected tides of 4-8, 9-12 and 13-16 ft msl are outlined and shown on charts. Samples of a hurricane advisory bulletin and of a local statement of the U.S. Weather Bureau are appended. - Staff MGA 18.6-231.

1966

1706 U.S. Weather Bureau. "Plan for a National Hurricane Warning Service." Planning Report no. 3, Feb. 1966. 47 p. appendix. figs. tables. refs. DAS.

The plan is intended as a U.S. Weather Bureau guide in the orderly implementation of an improved nationwide Hurricane Warning Service. It represents current intentions and proposals of the Bureau. The plan provides for: 1) uninterrupted service during all types of emergencies, 2) increased accuracy of hurricane forecasts, 3) extension of reliable forecasts beyond 24 hrs, 4) more effective dissemination of information, 5) increased capability of forecasting hurricane caused flash floods and storm surges and improving the substance of hurricane advisories. - Staff MGA 18.1-45.

1966

1707 Venezuela. Dirección de Obras Hidráulicas. "Anuario climatológico, 1965." [Yearbook of climatology, 1965.] Publicación Técnica, 6, 1966. tables. maps. DAS.

1966

1708 Venezuela. Dirección de Obras Hidráulicas. "Atlas de tormentas." [Atlas of storms.] Informe Técnico, 2, 1966. maps. tables. DAS.

1966

1709 Warfel, C.A.B. "Dynamic aspects of hurricane Dora, 1964." Oklahoma. Univ. Atmospheric Research Lab., ARL-1470-2, 1966. 57 p. DAS.

1966

1710 Watts, D. "Evapotranspiration and energy relationships at Waterford, Barbados, 1960." In McGill Univ. Dept. of Geography, Two studies in Barbadian climatology, 1966. Pt. B. DAS.

1966

1711 Weight, M.L. "Annotated bibliography on the climate of Netherlands Antilles." U.S. Weather Bureau, WB/BC-92, June 1966. 17 p. maps. 35 annotated refs. DAS (U587).

Abstracts of meteorological and climatological sources up to February 1965 in the Library of Congress, libraries of the Department of Agriculture, Environmental Science Services Administration, and the U.S. Naval Oceanographic Office. Also includes an orientation map and maps of Aruba, Curaçao, Bonaire, St. Martin, St. Eustatius and Saba showing locations of

1966 cont.

rainfall stations, and author, geographical, and subject indexes. - Staff MGA 18.5-57.

1966

1712 West, P.W. "Use of satellite cloud pictures to determine average relative humidity below 500 mb." Master's thesis, Texas A & M Univ., 1966. 51 p.

This study describes an attempt to obtain a statistical relationship between clouds and average relative humidity. While a definite relationship was found, the corresponding correlation coefficient did not reveal appreciable significance. In addition, relationship with a significant correlation was found for a short period of summer data. Examples are presented to show a suggested average relative humidity analysis based on observations made from meteorological satellites over the waters adjacent to the southeastern United States. - Author (mod).

1966

1713 Woodley, W.L. "Computations on cloud growth related to the seeding of tropical cumuli." American Meteorological Society, Bulletin, 47:384-392, 1966.

Study of possible cloud growth effects due to heat released when super-cooled water is converted to ice. Calculations are made of the heights to which cloud tops rise assuming that supercooled water is converted to ice at -10°C (the seeded case) or at -30°C (the unseeded case). Specific observations of cloud growth due to seeding are noted, but can only be considered as consistent with these concepts rather than verifying them. The factors important for the seeding effect and the conditions which produce them are also examined. - Author (mod) MGA 17.10-214.

1967

1714 Aarons, J. "Ionospheric irregularities at Arecibo, Puerto Rico." Journal of Atmospheric and Terrestrial Physics, 29(12):1619-1624, Dec. 1967. figs. refs.

Night-time observations of radio stars were made at 4 frequencies in the band 22-38 Mhz with the 1,000 ft reflector at Arecibo, Puerto Rico. Weak ionospheric irregularities were a consistent feature in the 2100-0400 local time period. Observations were made in the fall (1964) and the spring (1965) when the sunspot number was low. It was shown that weak ionospheric irregularities at night are uniform over a large range of latitudes. Scintillation indices increase rapidly at sub-auroral and auroral latitudes such as Sagamore Hill, Massachusetts and Thule, Greenland. - Author (mod) MGA 19.4-401.

1967

1715 Alvarez, R.J. et al. "Presentation of the climatological and hydrological atlas of the hydrological basin of the Caracas Valley." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:632, 1967.

The basin of the Caracas Valley has an area of 652 km^2 and is located inside the mountain range near the coast between lat 10°33'N - 10°20'N and long 66°45'W - 67°45'W. The most important observed storms and squalls are presented with their corresponding synoptic situations, duration, intensities, geographic distribution and corresponding river rises. The whole basin is graphically outlined with its mean sub-basins and secondary drainage accumulation areas, runoffs and transport in progressive integration, annual coefficients of runoff, single and progressively integrated hydrograms, etc. This work also contains microclimatological studies of the valley in connection with the dynamics of the general weather circulation made for various representative time intervals of the year. - Author (mod).

1967

1716 American Meteorological Society. "Cuban over-flights allowed." Its Bulletin, 48:652, 1967.

Cuba will allow the United States to over-fly to observe tropical storms. Flight schedules must be submitted to Cuban Air Transit Control Service and planes must remain in radio communication with that service when in the area under its control. - Staff.

1967

1717 American Meteorological Society. "Project Stormfury 1967." Its Bulletin, 48:663, 689, 1967. figs.

Brief note on Project STORMFURY (1967). The experiments give first priority to multiple seeding of the 'eye' clouds over an 8-hr period in an appropriate hurricane. Another experiment calls for seeding spiral rainbands to determine whether their modification will cause a measurable change in the storm's mechanism. Specially instrumented aircraft of the U.S. Navy, Environmental Science Services Administration and U.S. Air Force will monitor the area for about 17 hrs in order to record changes in storm characteristics. - Staff MGA 19:3-132.

1967

1718 American Meteorological Society. "WMO membership increases." Its Bulletin, 48:649, 1967.

The Caribbean Island of Barbados joined the World Meteorological Organization (WMO) on 21 April 1967. Barbados will become a very active meteorological center this year, when a Special Fund Project of the WMO/United Nations Development Program (UNDP) commences operations. A regional meteorological institute will be established at Barbados to provide the Caribbean region (Guiana, Jamaica, Trinidad and Tobago, and the British Caribbean dependencies) with extensive training and research facilities. Research in tropical meteorology, particularly hurricane warning techniques, will be supported by an improved network of stations and the installation of a weather radar network, both of which will be carried out by the WMO/UNDP project. -Author.

1967

1719 Anstey, R.L. "Physical characteristics of a typical tropical environment." Institute of Environmental Sciences, Annual Technical Meeting, 13th, Wash., D.C., 10 - 12 Apr. 1967. Proceedings, 2 v. Mt. Prospect, Ill., 1:49-57, 1967. figs. refs. DLC.

The environmental setting of Panama, typical for wet tropics, is briefly described. The Panama Canal divides the country into distinctly different physiographic units as follows: eastern Panama, in which the main routes of travel are its streams and tributaries, and mountain ranges and hilly plateaus in the western isthmus. Comparison of the environmental stresses in Panama with those in Vietnam show many close analogies. The wet season in Saigon is 11 mos, similar to that in Cristobal. Mean relative humidity in Vietnam (70 to 89 percent) compares with that of Balboa and Cristobal. - Staff MGA 18.10-513.

1967

1720 Anthes, R.A. and Johnson, D.C. "Generation of available potential energy in hurricane Hilda (1964)." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:619-620, 1967.

The energetics of hurricane "Hilda" (1964) are studied. The generation of available potential energy is shown to be closely dependent on differential heating within the baroclinic structure of the hurricane, occurring primarily in the middle and upper troposphere of the

1967 cont.

core of the storm. The results of the model based on Kuo's work for the latent heat release portray the dependence of deep cumulus convection on the sea surface temperature and indicate that the generation by latent heat release increases non-linearly with the surface temperature. Energy considerations in the formation, steady state condition and dissipation of the hurricane system are discussed within the framework of available potential energy theory. - Author (mod).

1967

1721 Arnold, J.E. "Time change of cloud features in Hurricane Anna, 1961, from the easterly wave stage to hurricane dissipation." Chicago. Univ. Dept. of the Geophysical Sciences, Satellite & Meso-meteorology Research Project Research Paper, no. 64, Jan. 1967. 39 p. figs. refs. DAS.

Development of the basic easterly wave that produced hurricane "Anna" (1961) is followed from the time the wave first gave indications of intensifying until the subsequent hurricane dissipated. Using radiation and photographic data obtained from TIROS 3 (16 July 1961 - 25 July 1961), combined with standard observations taken from radiosonde stations in the path of the storm, a representative picture of storm behavior is obtained. It is found that the cloud activity was originally in 2 adjacent areas with the major cloud activity in the southern portion of the wave and a small cloud area just east of the wave crest. - Author (mod) MGA 18.8-389.

1967

1722 Battelle Memorial Institute, Columbus, Ohio. "Final analysis on potential economic benefits of the marine environment prediction service in the Eastern Gulf of Mexico to Environmental Science Services Administration." 8 Mar. 1968. 62 p. figs. map. tables. DAS.

This study gives a brief description of the elements of the weather and sea state in the eastern Gulf of Mexico and a detailed analysis of the role of Environmental Science Services Administration (ESSA) services in the commercial fishing industry and in recreational boating. For each of these activities, there are examined the existing use of weather services, sources of marine weather information, role of the U.S. Weather Bureau, and trends affecting weather service use. The economic function of existing weather services in commercial fishing, the additional services sought by the industry and a

1967 cont.

summary of the fishermen's evaluation of existing ESSA services are discussed. An appendix includes typical weather reports and forecasts for the eastern Gulf of Mexico. - Staff MGA 20.1-161.

1967

1723 Baynton, H.W. "Microclimate of a cloud forest." In Technical Conference on Hurricanes and Tropical Meteorology, 5th Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:616, 1967.

Mountains penetrate the base of trade-wind cumulus on many Caribbean islands. This paper summarizes a year's meteorological data collected in a cloud forest on Pico del Oeste in Puerto Rico. The variables measured include temperature, humidity, wind direction and speed, rainfall and incoming radiation. The description of the microclimate includes, in addition to means and extremes of the above variables, discussions of wind speed profiles above and below the forest, the anomalous diurnal variability of wind speed, and comparisons of rainfall above and below the canopy. Author (mod).

1967

1724 Blumberg, R. "Hurricane probability in the Gulf of Mexico." Offshore Exploration Conference, 2d, Long Beach, Calif., 21 - 23 Feb. 1967. Proceedings of the OECON. Palos Verdes Estates, Calif., 1967. pp. 675-693. figs. refs. CU-S.

Analyses of long term climate trends in severe hurricane paths suggest that, during the period 1960 - 2000, severe hurricanes in the Gulf of Mexico will be about twice as frequent as they were during the period 1920 - 1960. Conversely, severe hurricanes along the Atlantic coast will be less frequent. Correlation of severe hurricane frequency and path with complex variations in solar activity indicate that long range hurricane forecasts can be significantly improved in the near future. Frequency filtering of solar activity data for these correlations have been performed, using an IBM 360 Model 50 computer. - Staff MGA 19.9-333.

1967

1725 Calvesbert, R.J. "Climatology of meteorological drought in Puerto Rico." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings. ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 42-56. figs. tables. DAS.

The author summarizes the method

1967 cont.

developed by W.C. Palmer for the evaluation of drought as a meteorological anomaly and illustrates the results of this approach in developing a drought climatology for Puerto Rico. The basic steps of Palmer's method are outlined and the computational equations for determining drought severity are presented. The rainfall regime in Puerto Rico is described, and a drought summary of Puerto Rico is presented for the period January 1931 - June 1966. - Staff MGA 19.12-371.

1967

1726 Carlson, H.C. "Ionospheric effects of photoelectrons from magnetically conjugate points and the study of these effects using observations of airglow at 6300A." International Union of Geodesy and Geophysics Chronique de l'U.G.G.I. no. 68:100-102, May 1967.

Airglow observations are helpful in providing information on photoelectrons streaming between magnetic conjugate ionospheres (MCI) and on their effects on the F layer and the magnetosphere. The streaming of the photoelectrons manifests itself in the heating of ambient electrons in the upper F region. At the Arecibo Ionospheric Observatory in Puerto Rico, the electron temperature in the F region was observed to increase by several hundreds of °K, 2 hrs before local sunrise in mid-winter. These seasonal differences are ascribed to the effect of photoelectrons which stream from the sunlit MCI and which in winter cause the local ionosphere to approach its daytime conditions well before local sunrise and to maintain them beyond local sunset. - Staff MGA 19.3-377.

1967

1727 Carlson, H.C. "Preliminary observation of 6300 Å predawn enhancement at Arecibo." In NATO Advanced Study Institute, Univ. of Keele, Staffordshire, England, Aug. 1966. "Aurora and airglow: Proceedings of the Institute." New York: Reinhold, Publishing Corp., 1967. pp. 643-647. figs. refs. DLC.

Presents and discusses incoherent backscatter measurements of ionospheric electron temperatures made at the Arecibo Ionospheric Observatory. Interpretation in terms of a streaming of photoelectrons from a sunlit magnetic conjugate ionosphere leads one to expect a predawn enhancement of 6,300 Å airglow. Author states that there will be a lower and upper latitude limit to this enhancement. - Staff MGA 19.2-410.

1967

1728 Carlson, T.N. "Isentropic upslope

1967 cont.

motion and an instance of heavy rain over southern Florida." Monthly Weather Review, 95:213-220, 1967. figs. charts. table. refs.

During 12 - 15 October 1965, the southern part of Florida received an unusually heavy and prolonged rainstorm. Although the conventional isobaric analyses did not reveal any obvious pre-existing disturbance which would be expected to produce such a result, isentropic charts suggest that intense convection was being initiated and sustained lifting of conditionally unstable air to saturation. Accompanying the heavy rainfall during the 14th was the formation in the lower troposphere of a tropical depression which is thought to have been of convective origin. - Author (mod) MGA 18.8-416.

1967

1729 Carlson, T.N. "Project ECCRO: a synoptic experiment in the Tropics." U.S. National Hurricane Research Lab., Technical Memorandum IERTM NHRL 80, Aug. 1967. 31 p. figs. refs.

An intensive reconnaissance expedition, involving the use of multilevel aircraft flights and special radiosonde ascents, was carried out over the eastern Caribbean during a relatively quiescent period in October 1965. An outline of the type of instrumentation used and the methods applied in reducing, correcting and analyzing the data is given. Sample analyses are presented for each of 5 levels and for 1 of the 6 days of the project, showing the distribution of winds, geopotential heights, temperatures, mixing ratios, vertical velocities and cloud patterns. - Author (mod) MGA 20.3-124.

1967

1730 Carlson, T.N. "Structure of a steady-state cold low." Monthly Weather Review, 95:763-777, 1967. figs. charts. refs.

Analyses of synoptic data gathered over the eastern Caribbean in Project ECCRO October 1965 revealed the presence of an upper tropospheric cold low. With assumption of steady-state motion, the fields of wind, height, temperature, water vapor, vertical velocity, clouds and weather were transferred to a relative coordinate system traveling with the motion on the cold low. These fields, showing the structure of the cold low at 5 different levels in the troposphere, are presented and the evolution of cloud and moisture patterns are discussed. Author (mod) MGA 19.3-186.

1967

1731 Chia, Lin-Sien. "Albedos of natural surfaces in Barbados." Royal Meteorological Society, Quarterly Journal, 93(395): 116-120, Jan. 1967. figs. tables. refs.

In Barbados, albedo values for bare soil surfaces varied according to color, the moisture condition of the surface layer, the presence of limestone concretions and the roughness of the surface. The albedo of vegetation and cane trash was larger under clear skies than under overcast. The estimated mean albedo of Barbados was 16.5 percent. - Staff MGA 18.7-377.

1967

1732 Colón, J.A. "Some aspects of Hurricane Carla, 1961." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs. Publication no. 1, 1967. pp. 1-33. figs. tables. refs.

A brief review of some of the great hurricanes of the Atlantic area in modern times is followed by an assessment of the importance of hurricane "Carla" in this context. Some aspects of its development and life cycle are presented. It developed in the western Caribbean area and moved in a typical track to the NW, passing through the Yucatan Channel, and then in a straight and steady, slow course across the Gulf of Mexico toward the Texas coast. - Staff MGA 19.9-335.

1967

1733 Commercial Fisheries Review. "Hurricane Beulah battered shrimp fleet." Its 29(10):2, Oct. 1967.

In the early morning of 20 September, hurricane "Beulah," propelled by winds of up to 160 mph, smashed into the Brownsville, Texas, area destroying many millions in property and paralyzing the area. "Beulah" struck the South Texas shrimp fleet at about its peak production period. About 8 percent of the boats were put out of service and some were sunk with about 100,000 lbs of shrimp that could not be unloaded in time. - Author (mod).

1967

1734 Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 September 1966. "Proceedings." Held by the Univ. of the West Indies in association with the Scientific Research Council of Jamaica. ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. 107 p. figs. tables. refs. DAS.

Contains a series of papers dealing with the availability of climatological data in the Caribbean, rainfall in Jamaica,

1967 cont.

water surplus and water deficit in Jamaica and Nassau, drought in Puerto Rico, the influences of shelter belts on microclimate and agriculture, analysis in building design for comfort in the tropics, hurricane precautions for buildings, etc. Staff MGA 20.1-22.

1967

1735 Contreras Arias, A. "Características pluviométricas del estado Nueva Esparta." [Pluviometric characteristics of the State of Nueva Esparta.] Sociedad de Ciencias Naturales La Salle, Memorias. 27(76):46-75, 1967.

This island off the coast of Venezuela in the Caribbean Sea can be divided into 3 pluviometric zones: the west zone, where the annual mean, according to 12 yrs of observations, is 610 mm; the east zone, where the mean is 450 mm; and the central zone, where the mean is 336 mm. - Staff.

1967

1736 Cooper, G.W. "Hurricane damage to structures in Gulf of Mexico." Ocean Industry, 2(10):30-34, Oct. 1967. refs.

Reports on damages to structures caused by hurricanes "Audrey," "Hilda," "Carla" and "Betsy." Results suggest the need for: storm size and frequency data; definition of the stress response of specific platform designs to storm loads; definition of the magnitude of transient stresses at points of stress concentration; improved materials specifications relative to defects and notch toughness and more stringent inspection of welding. - Staff MGA 19.6-268.

1967

1737 Cormier, R.V. "Climatology and low-level air pollution potential from ships in Guantanamo Bay." U.S. Navy Weather Research Facility, Norfolk, Va., Report no. NWRF-39-0666-118, Feb. 1967. 102 p.

1967

1738 DeAngelis, R.M. "North Atlantic tropical cyclones, 1966." Mariners Weather Log, 11(1):10-16, Jan. 1967. figs. photos.

Presents a summary of the North Atlantic tropical cyclones of 1966. The season was active beyond the most recent average (1936 - 1965) of 9.5 tropical cyclones and 5.5 hurricanes. Killer hurricanes "Alma" and "Inez" were the only tropical cyclones to affect the United States mainland, inflicting damage estimated at about $15.5 million. Summaries of the individual tropical cyclones follow, with their tracks shown graphically. Staff MGA 18.6-313.

1967

1739 Delany, A.C. et al. "Airborne dust collected at Barbados." Geochimica et Cosmochimica Acta, 31:885-909, 1967.

Wind-borne dust collections have been made on the island of Barbados. From mineralogical and biological examinations, this dust is most likely to be derived from the European-African continents. Fungus and magnetic contents show a marked seasonal variation in accordance with the shift in wind patterns off the African coast. The average concentration is about 5×10^{-12} cm^3 per cm^3 of air. The size distribution of the Barbados dust, which is mainly below 20 microns diameter can be related with the distribution in the Atlantic sediments. Both the dusts and the deep-sea sediments have similar mineral compositions. - Author (mod).

1967

1740 DeLuisi, J.J. "Effect of haze upon Umkehr measurements." Florida. State Univ., Tallahassee. Dept. of Meteorology, Contract AF19(628)-4953, Scientific Report no. 3, 1 July 1967. 164 p. figs. photos. charts. tables. refs. (AFCRL-67-0367) DAS.

The use of miescattering functions in a primary scattering model shows that haze effects an Umkehr curve by slightly increasing the N-values for zenith angles of about 60°-75°, and slightly decreasing the N-values for zenith angles of about 75°-90°. An implication derived from model calculations is that the type and amount of variation of the Umkehr curve depends upon the total optical depth of haze particles and not on the size distribution and refractive index of the haze particles within reasonable limits of variation. The existence of simultaneous balloon-Umkehr data, obtained at Florida State University, permits an experimental analysis of the influence of haze upon Umkehr curves. Author (mod) MGA 19.7-313.

1967

1741 Dunn, G.E. "Florida hurricanes." U.S. Environmental Science Services Administration, Technical Memorandum WBTM SR 38, Nov. 1967. 26 p. figs. tables. refs.

A study on Florida hurricanes, which gives information on: the life cycle of hurricanes, location and tracking, characteristics and related phenomena, frequency in Florida and hurricane warning service in Florida. - Staff MGA 19.7-288.

1967

1742 Dybbroe, O. "Design for comfort in tropical environment." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept.

1967 cont.

1966. Proceedings. ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 81-90. figs. DAS.

The design and construction of buildings in the humid Tropics for human comfort are examined. Includes the following: general principles of orientation of building and selection of building materials; analysis of the climatic conditions of the building site; the aims of the Design Development Group which is to be organized in Jamaica for the experimental study of building in the Tropics; the effect of climate on productivity; and the principles for selecting building sites in Jamaica. Data on various building materials, on the diurnal temperature variation in homes of heavy and light construction, etc., are presented. - Staff MGA 20.1-61.

1967

1743 Edelstein, M.W. "Project Stormfury operation, 1962 - 1967." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:629, 1967. DAS.

Project STORMFURY is a hurricane research program jointly sponsored by the U.S. Department of Commerce, Environmental Sciences Service Administration (ESSA) and the U.S. Department of Defense (Navy). Experiments that have been conducted or are planned under this project include seeding experiments on the entire spectrum of tropical cloud activity, ranging from isolated cumulus clouds to hurricane eyewall cloud formations. Operational flight plans are predetermined for conducting all types of seeding experiments, particularly, those related to hurricane eyewall and rainband clouds. - Author (mod).

1967

1744 Erickson, C.O. "Some aspects of the development of Hurricane Dorothy." Monthly Weather Review, 95:121-130, 1967. figs. charts. refs.

Hurricane "Dorothy" (July 1966) possessed both extratropical and tropical features. A number of factors contributed to storm development, including a well-defined pre-existing disturbance, high level advection of vorticity and kinetic energy, baroclinicity of both the extratropical and tropical storm types and a moderate degree of latent instability. Author MGA 18.7-344.

1967

1745 Essenwanger, O.M. and Reisig, G.H.R. "Wind profile climatology of New Orleans,

1967 cont.

Louisiana." U.S. Army Missile Command, Redstone Arsenal, Ala., Technical Report RR-TR-67-8, 2 May 1967. 49 p. figs. refs. DAS.

Climatological features of the tropospheric wind field at New Orleans, Louisiana were analyzed in terms of wind direction and wind speed. Both the wind direction profiles, in terms of mean and mode, and the mean scalar wind speed profiles are presented for the whole year, the seasons and months. These monthly profiles indicate a systematic dispersion of speed magnitudes, increasing toward spring. The maximum of the mean wind speed at New Orleans, Louisiana, occurs during March, with a value of 83 m sec^{-1} at a height of 12 km. - Staff MGA 19.3-232.

1967

1746 Eyre, L.A. "Concept of water surplus and water deficit and its usefulness in Caribbean climatology." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings. ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 24-27. DAS.

The author uses temperature and humidity tables developed by George F. Jenks and graphs to classify the climate of Jamaica and to investigate climatic variations by means of water surplus and deficit. It is shown that only the October rains provide a water surplus in the southeast area of Jamaica. The analysis of climatic oscillations in Nassau, Bahamas does not confirm the presence of a wet season with 2 maxima in all years as suggested by long term means. - Staff MGA 19.12-429.

1967

1747 Fernández-Partagás, J.J. "Synoptic case study on the incipient stages of hurricane Betsy, 1965." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program. American Meteorological Society, Bulletin, 48:618, 1967.

With the aid of streamline analyses, a synoptic study of the incipient stages of hurricane "Betsy" (1965) has been performed. The hurricane was found to have formed in relation to a mid-tropospheric vortex which 'built down' to the surface some distance to the NE of a filling tropical disturbance whose past history could be followed for several days. The observed superposition of a migratory anticyclone aloft has been envisioned as a possible driving mechanism for

1967 cont.

intensification on 29 August 1965. - Author.

1967

1748 Fougerouze, J. "Agro-climatology in the French Antilles." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings, ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 21-23. DAS.

Describes the data accumulation and research program of the Agroclimatological Section of the Centre de Recherches Agronomiques des Antilles and de la Guyane, which is out-station of the Department of Agroclimatology in the Institut National de Recherche Agronomique (I.N.E.A.-France). Observations of meteorological elements are made in conformity with recommendations of the World Meteorological Organization. Microclimatic studies and investigations of water-plant relationships are being undertaken. - Staff MGA 20.1-54.

1967

1749 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, C.Z. Monthly Microclimatic Summary Report, Contract ARPA Order-740, Apr. 1967. 30 p.

Contains detailed microclimatic data for April 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form and are summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1967

1750 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, C.Z., Monthly Microclimatic Summary Report, Contract ARPA Order-740, May 1967. 28 p.

Contains detailed microclimatic data for May 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form and are summarized for hourly and/or daily observations from surface to 46m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1967

1751 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, C.Z., Monthly Microclimatic Summary Report,

1967 cont.

Contract ARPA Order-740, June 1967. 28 p.

Contains detailed microclimatic data for June 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form and are summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1967

1752 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, C.Z., Monthly Microclimatic Summary Report, Contract ARPA Order-740, Aug. 1967. 32 p.

Contains detailed microclimatic data for August 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form and are summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1967

1753 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, C.Z., Monthly Microclimatic Summary Report, Contract ARPA Order-740, Oct. 1967. 26 p.

Contains detailed microclimatic data for October 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form and are summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1967

1754 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, C.Z., Monthly Microclimatic Summary Report, Contract ARPA Order-740, Dec. 1967. 27 p.

Contains detailed microclimatic data for December 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form and are summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1967

1755 Freeman, J.C. "Concerning a fundamental

1967 cont.

mechanism as related to the Gulf Coast of the United States." Abstract only. In American Meteorological Society Conference on Weather Forecasting, Fort Worth, Tex., 6 - 8 Nov. 1967, Program, American Meteorological Society, Bulletin, 48:597, 1967.

A mechanism whereby small divergence in low level flow damps the upper air pressure systems has been found useful in understanding tropical phenomena. This principle can be of use along the United States Gulf Coast as illustrated by flow charts and satellite photographs of an upper air low pressure cell. - Author (mod).

1967

1756 Garnier, B.J. "McGill's climatological observational and research programme in the Caribbean and Guyane." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings, ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 17-20. DAS.

The contents are as follows: a description of the climatological research program in Barbados, which includes climatological observations, evapotranspiration measurements at Waterford, radiation observations at various sites, a list of climatological studies that have been completed and the climatological research program in Guyana, which includes both macro- and microclimatological observations. Microclimatological stations have been established within a 5 mi radius of Saint Ignatius under different topographic conditions. - Staff MGA 19.12-420.

1967

1757 Garstang, M. "Barbados meteorological experiment." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, Nov. 1967, Program, American Meteorological Society, Bulletin, 48:634, 1967.

An intensive experiment in the interaction of the tropical atmosphere, the ocean and the land will be centered upon the Island of Barbados during the summer of 1968. The scientific objectives of this program are outlined and are described in terms of instrumentation and systems development that have been carried out over the past 15 mos. This experiment is also discussed in terms of the large scale tropical and global research programs of the future. - Author (mod).

1967

1758 Garstang, M. "Development of experimental systems for and the study of meso- and synoptic-scale air-sea interaction."

1967 cont.

Florida. State Univ. Dept. of Oceanography, Grant WBG-90, Final Report, Phase 1, Aug. 1967. figs. refs. DAS.

Progress in the development of experimental systems for the study of meso- and synoptic-scale air-sea interaction is documented for the 1st yr. Scientific objectives are stated on the 3 major systems: semi-stable buoy; sub-cloud tethered balloon and ship system. The systems are described and their current status given. Progress toward the overall goal of carrying out the 1968 Barbados Experiment is evaluated. - Author MGA 20.5-140.

1967

1759 Garstang, M. and Visvanathan, T.R. "Solar and lunar influences on rainfall." Florida. State Univ. Dept. of Meteorology, Grant E-18-67(G), Final Report pt. 1, Aug. 1967. 87 p. figs. tables. refs. DAS.

The occurrence and distribution of rainfall in Barbados are investigated with special reference to the role of local circulation induced by the island, periodicities induced in the distributions by tidal gravitational effects of the Sun and Moon and the influences of solar activity on rainfall distribution. The principal investigations included: 1) determination of lunar and solar influences in hourly and daily rainfall in the time scale of lunar day, solar day and lunar month, including sunspot activity; 2) examination of long-period trends in rainfall for evidence of 26-mo or 18.6-yr oscillations; 3) a likelihood at Barbados that precipitation will occur on certain days of the month and 4) evidence of a greater influence of the tidal force revealed in precipitation of higher intensity. It is concluded that lunisolar tidal influences may be important in synoptic scale processes, but that probably little or no relationship exists between rainfall and solar activity. - Staff MGA 20.6-410.

1967

1760 Garstang, M., La Seur, N.E. and Aspliden, C. "Equivalent potential temperature as a measure of the structure of the tropical atmosphere." Florida. State Univ. Dept. of Meteorology, Report no. 67-10, Contract DA-AMC-28-043-66-235, Final Report 1962-63. 81 p.

Soundings of the tropical atmosphere over the Atlantic Ocean and Barbados are presented in terms of equivalent potential temperature. This quantity is shown to closely equal the total static energy.

1967 cont.

Vertical and temporal variations of total energy agree with subjectively and objectively determined periods of organized disturbances. The results emphasize that the role of low values of total energy must be due to diabatic processes, such as radiation. - Author (mod).

1967

1761 Gentry, R.C. "Hurricane modification experiment." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:629, 1967.

Project STORMFURY was organized to experiment with modification of hurricanes. This is a joint project of the U.S. Navy and the Environmental Science Services Administration. Experiments of the Project are designed to cause a reduction in maximum winds in hurricanes by causing a release of latent heat of fusion in selected areas. A short history of the activities of the project since its inception and a summary of the experimental results obtained thus far are given. Data showing the variation with time of winds of hurricanes under natural conditions are presented. - Author (mod).

1967

1762 Gentry, R.C. "Nature and scope of hurricane damage." In American Society for Oceanography Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs. Publication no. 1, 1967. pp. 229-254. figs. charts. tables. refs.

The following features are discussed: 1) destructive forces of a hurricane; 2) amount of damage and number of people killed since 1900 by hurricanes and the trends these statistics are taking; 3) frequency of hurricanes along the United States coasts and adjacent waters and 4) amount of damage that should be expected in the future and what can be done about the trend of increasing destruction by hurricanes. - Staff MGA 19.9-336.

1967

1763 Gentry, R.C. "Structure of the upper troposphere and lower stratosphere in the vicinity of Hurricane Isbell, 1964." Papers in Meteorology and Geophysics, 18(4):293-310, Dec. 1967. figs. refs. English summary p. 293; Japanese summary p. 310. DAS.

Extensive reconnaissance of mature Hurricane "Isbell" was made 14 October 1964. Data collected at 850, 700, 550, 200 and 150 mb, and in the lower stratosphere, reveal that the storm had a warm

1967 cont.

core (up to 15°C above normal in the 'eye') from sea level up to 115 mb and a cold core between 115 and 90 mb. Convection in the storm was very intense and clouds rose into the stratosphere, with isolated clouds projecting 2.5 km above the tropopause. The tropopause was abnormally high and cold above the hurricane, with the height varying inversely with distance from the storm beyond the vicinity of the 'eyewall.' - Author (mod)
MGA 20.2-257.

1967

1764 Gerard, R.D. and Worzel, J.L. "Condensation of atmospheric moisture from tropical maritime air masses as a fresh-water resource." Science, 157(3794): 1300-1302, 15 Sept. 1967. figs. refs.

A method is proposed whereby potable water may be obtained by condensing moisture from the atmosphere in suitable seashore or island areas. Deep, cold, offshore sea water is used as a source of cold and is pumped to condensers set up on shore to intercept the flow of highly humid, tropical, maritime air masses. This air, when cooled, condenses moisture, which is conducted away and stored for use as a water supply. Windmill-driven generators would supply low-cost power for the operation. The islands of the Caribbean are used as an example of a location in the trade winds belt where nearly optimum conditions for the operation of this system can be found. - Author (mod)
MGA 19.4-325.

1967

1765 Gerrish, H.P. "Mesoscale studies of instability patterns and winds in the Tropics." U.S. Army Electronics Command, Ft. Monmouth, N.J., Technical Report ECOM-00443-13, Contract DA 28-043 AMC-00443 (e), Report no. 13; Semi-annual Report, 1 June 1966 to 31 Dec. 1966. Mar. 1967. 32 p. figs. charts. tables. refs. DAS. DLC.

Summary of work on the extremely heavy South Florida rainstorm that produced more than 21 in of rain in 12 hrs on 14 October 1965. Moisture analysis revealed that the transport of water vapor in the 700-500 mb layer was important for the timing and perhaps severity of the event. A moist tongue at this level could be tracked into the area from the western Caribbean. Frequency distributions of radar video contoured by 26 db attenuation correlated extremely well with the isohyetal analysis. Author (mod)
MGA 18.9-442.

1967

1766 Gerrish, H.P. "Objective climatology of the trade-wind inversion and rapidly drying layers aloft over Miami using superrefractive diagnostic techniques." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:627, 1967.

The trade-wind inversion, its remnants, and other rapidly drying layers in the lower troposphere over Miami, Florida, were studied, using transmitted radiosonde data for 1962 - 1966, inclusive. Pressure, temperature and dew-point data at significant and mandatory levels, twice daily for January, April, July and October, were placed on punch cards and computer-processed. Atmospheric refractivity at radar frequencies was determined. Heights of the levels were not punched, but were computed by machine using the hypsometric equation to avoid possible errors in the transmitted data.
Author (mod).

1967

1767 Golden, J.H. "Life-cycle of convective cloud systems as portrayed by radar and TIROS photographs." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967, Program, American Meteorological Society, Bulletin, 48:624, 1967.

Some of the recent papers on convection have suggested the possibility of using both TIROS and radar data as a method of studying the life-cycle of convective cloud systems. A research project is briefly summarized in which TIROS cloud photographs taken over Florida during summer 1963 were compared with the corresponding time-lapse radar film to study the life-cycle of cumulus convection. Other conventional synoptic surface data were utilized in an attempt to document the life-cycle of various scales of convective cloud systems. - Author (mod).

1967

1768 Goodman, J.M. "Electron content inhomogeneities in lower ionosphere." Journal of Geophysical Research, 72(21): 5542-5546, Nov. 1967.

Faraday rotation experiment was conducted at radio frequencies of 133 and 401 Mhz in conjunction with six Gemini 9 spacecraft transits over Kauai, Hawaii, and Antigua, British West Indies, on 4 June 1966. Rotational ambiguity at 133 Mhz was resolved upon inspection of polarization angle corresponding to a

1967 cont.

radio frequency of 401 Mhz. Polarization resolution was such that irregularities in electron content in excess of 2 x 10^{14} electrons m^{-2} could be detected; over 130 inhomogeneities were analyzed, and ranged between 6 and 530 km in the horizontal. Staff.

1967

1769 Griffiths, J.F. "General trends in pure and applied climatology." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings. ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 103-107. DAS.

In this general survey of present day trends in pure and applied climatology, the author stresses the importance of probabilities in the analysis and interpretation of climatological data. Quantitative statistical climatology is illustrated by probability of occurrence of rainfall amounts in the present growing area of Tanganyika. Graphical representation of the probability of beginning and duration of the rainy season in East Africa, and the use of harmonic analysis in the calculation of mean movement of the Intertropical Convergence Zone as a means of predicting rainfall amount in Central America are shown. - Staff MGA 19.12-421.

1967

1770 Grosske, F. "Cycles in the rainfall regime in Caracas, between 1891 and 1966." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48: 638, 1967.

Based on recorded rainfall by the Cagigal Observatory, Caracas, various cycles can be observed (since 1891) in the pluviosity regime. The pluviosity itself is highly irregular, but cycles appear in continued averages. There is no relationship between the cycle of the annual precipitation and the cycle of the days with precipitation. There are periods with direct relationship between the commencement and the end of a rainy season, but in other periods the relationship is inverse with the result that on the average, the early or retarded commencement of a rainy season has no relation to an early or retarded ending. - Author (mod).

1967

1771 Haggard, W.H. et al. "Hurricane recurvature and satellite photography." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:618, 1967.

Selected hurricane tracks were divided into two groups. One group contained those which underwent classical recurvature patterns, and the other group approached a potential recurvature point and then proceeded W or S without recurvature. Satellite photographs for various times prior to the recurvature or potential recurvature point were examined. Author (mod).

1967

1772 Hagwood, L.B. "Empirical method for forecasting radiation temperatures in the lower Rio Grande Valley of Texas." U.S. Weather Bureau, Southern Region, Technical Memorandum, no. 33, Mar. 1967. 6 p. DAS.

In developing the method presented, it was assumed that the effects of all factors (ground cover and soil type) except water vapor and wind can be indicated by some constant of maximum radiation cooling under ideal conditions. Forecast equations for maximum radiation and for modified conditions and correction for cooling below the dew point are given. The validity of the equations (average forecast error was 0.96°), obtaining the forecast parameters and application in forecasting are discussed. - Staff MGA 18.10-221.

1967

1773 Hall, K.C. "Influence of shelter-belts on micro-climate and agriculture." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings, ed. B. Floyd, Kingston, Technical Information Service, Scientific Research Council, 1967. p. 75-80. refs. DAS.

On the basis of a review of the literature, the author presents a general discussion of the role of shelter belts in modifying the microclimate and their importance in agriculture. The topics examined are the following: the importance of a penetrable barrier in the reduction of wind velocity and intense turbulence on the leeward side of the barrier; the relationship between shelter belt height and extent of area of wind reduction; evaporation, radiation, dewfall and soil moisture in shelter belts and the effect of shelter belts on crops. - Staff MGA 20.1-313.

1967

1774 Hastenrath, S.L. "Computations of the

1967 cont.

tropospheric radiation budget in the Caribbean and Gulf of Mexico area for clear sky conditions." Pure and Applied Geophysics, 66(1):140-155, 1967. figs. refs. In English; English and German summaries.

Computation of solar heating and infrared cooling for clear sky conditions in the area of the Central American seas are presented. Both solar heating and infrared cooling display the most pronounced latitudinal variation in winter, while the distribution is rather uniform in summer. Large heating rates are found in the lower layers over the Caribbean Sea. The infrared cooling shows maxima around 700 mb and below the 950 mb level, in both summer and winter. - Author (mod).

1967

1775 Hastenrath, S.L. "Diurnal fluctuations of the atmospheric moisture flux in the Caribbean and Gulf of Mexico area." Journal of Geophysical Research, 72(16): 4119-4130, 15 Aug. 1967. figs. refs.

The moisture flux at 0000 and 1200Z shows systematic differences, the departure being smallest in winter. The amount of the flux tends to be larger for the morning sounding and is directed into a somewhat more southerly direction in the evening, particularly in the Caribbean area. A relation to the diurnal double wave of atmospheric pressure and diurnal interactions between land and sea is discussed as a possible cause. - Author (mod)
MGA 18.12-331.

1967

1776 Hastenrath, S.L. "Rainfall distribution and regime in Central America." Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser.B. 15(3):201-241, 1967. figs. tables. refs. English, German, French, and Spanish summaries pp. 201-203. DAS. DLC.

Seasonal variations of atmospheric circulation on the western side of the North Atlantic anticyclone imply upward motion over the Caribbean Sea during the summer half-year, with a secondary minimum in July and August. This is associated with variations in the persistence of the trade inversion and the development of easterly waves. The precipitation regime over the Caribbean Sea follows closely the seasonal variations in the field of large scale vertical motion. A large variety in rainfall distribution and regime is found, on the other hand, on the Central American Isthmus.
Author (mod)
MGA 18.10-491.

1967

1777 Hastenrath, S.L. "Study of the kinetic energy budget of the troposphere over the Caribbean Sea and the Gulf of Mexico." Pure and Applied Geophysics, 68:173-185, 1967. figs. tables. refs. English and German summaries p. 173.

The budget of kinetic energy over the Caribbean Sea and the Gulf of Mexico during the winter and summer half-years of 1960 is established for the 1000/850, 850/700, 700/500 and 500/300 mb finite atmospheric layers. Vertical transports, lateral outflow, and generation of kinetic energy are computed directly from twice-daily aerological soundings, while the 'dissipation' term is obtained as a residual. Due to the uncertainties inherent in the computational procedures, however, only limited confidence can be given to the absolute values. - Author (mod)
MGA 19.9-303.

1967

1778 Hawkins, H.F. and Rubsam, D.T. "Budgets of momentum and moisture in hurricane Hilda, 1964." Abstract only. In American Meteorological Society, National Meeting, 268th, Wash., D.C., 17 - 20 Apr. 1967. Program, Its Bulletin, 48:197, 1967.

Research aircraft data are used to determine the budgets of momentum and moisture. Values of surface stress are evaluated, using various formulations, and the associated drag coefficients are determined. Various aspects of the energy budget are discussed. - Author.

1967

1779 Hawkins, H.F. and Rubsam, D.T. "Hurricane Inez: a classic micro-hurricane." Mariners Weather Log, 11(5):157-160, Sept. 1967. charts. photos.

A detailed account is given of hurricane "Inez" (September 1966). "Inez" was unique in many ways: its long slow history before it acquired hurricane characteristics; its initially very small, intense structure and its pause in the Bahamas and path over the Keys with a structure so greatly modified from its initial tight, intense configuration. "Inez" illustrated how helpful satellite pictures can be when ship reports are sparse or lacking. - Author (mod)
MGA 19.2-178.

1967

1780 Hebert, P.J. "Hurricane season of 1966." Weatherwise, 20(1):16-23; 31, Feb. 1967. charts. photos. table. refs.

Presents a summary of the hurricane season of 1966 with details given for each event. A total of 11 named tropical

1967 cont.

cyclones formed in the North Atlantic area, Caribbean Sea and Gulf of Mexico, with 7 of these attaining hurricane intensity. The totals are slightly above the seasonal average for the last 30 yrs of 10 tropical cyclones and 5 hurricanes. "Inez" was the outstanding storm. No storm of hurricane intensity passed through the area designated for Project STORMFURY. - Staff MGA 18.11-282.

1967

1781 Helm, T. "Hurricanes: weather at its worst." New York: Dodd, Mead & Co., 1967. 234 p. figs. photos.

Why a hurricane forms, the first hurricane in Galveston, Texas, the contribution of U.S. Navy's 'Hurricane Hunters' and the modern satellites, methods of protection, survival, etc. are discussed. Tornadoes, typhoons, and storms are also presented. A meteorological glossary and subject index are appended. - Staff MGA 19.2-22.

1967

1782 Hewitt, C.W. "Relationship between rainfall variation and agricultural production." In Conference on Climatology and related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings, ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 69-74. figs. tables. refs. DAS.

The zoning of crops on the basis of rainfall characteristics for planting and applying of fertilizer is examined. The Island of Jamaica is classified into 4 rainfall zones by means of 91-yr average rainfall data on the basis of the system of classification developed by Mohr and Van Baren for Indonesia. A map of the 4 zones is presented; each zone is described with the aid of data on monthly means and annual means of rainfall for various stations and the suitability for various crops. Staff MGA 19.12-363.

1967

1783 Horstmann, J. "Navigation am Wirbelsturm Carol." [Navigation during hurricane Carol.] Seeverkehr, 7(1):21-22, 1967.

Meteorological navigation of MS J.G. FICHTE from the Caribbean Sea to the English Channel is described. "Carol" crossed the Atlantic September/October 1966. Because the movement of "Carol" was difficult to forecast J.G. FICHTE was obliged to change course with resulting delays in passage. The problem of safety and a rational course is discussed. - Staff.

1967

1784 Hubert, L.F. "Hurricane formation as revealed by Alma." Abstract only. In American Meteorological Society, Meeting, 268th, 17 - 20 Apr. 1967. Program, Its Bulletin, 48:195, 1967.

Hurricane "Alma," which developed early in June 1966, was surrounded by upper air observing stations and was under daily observations by satellite. The data show that deepening occurred before warm core solenoids were available to accelerate the circulation; that the deepening was triggered by events in the high troposphere; and that the air was convectively heated in a minimum shear area just outside of the circulation and advected into the low to produce its warm core.- Author (mod).

1967

1785 Jauregui O., E. "Ondas del Este y los ciclones tropicales en México. [Easterly waves and tropical cyclones in Mexico.] Ingeniería Hidráulica en México, 21(5): 197-208, 1967. figs. photos. tables. refs.

Contents include: characteristics of easterly waves in the Gulf of Mexico; conditions for the formation and dissipation of tropical cyclones in the Gulf of Mexico; trajectories of Pacific Ocean cyclones and methods of forecasting the trajectory of tropical cyclones. - Staff MGA 19.9-789.

1967

1786 Johnson, D.R. "Role of terrestrial radiation in the generation of zonal and eddy available potential energy." Tellus, 19(4):517-539, 1967. figs. tables. refs. English summary p. 517; Russian summary, pp. 538-539.

Time averaged estimates of the generation of zonal and eddy available potential energy by infrared radiation are obtained from 198 radiometersonde flights made at 13 stations located in the eastern half of the United States and Caribbean Sea area. From temperature and net radiation data, the vertical profiles of temperature and atmospheric cooling are individually estimated by 'least squares' approximating polynomials. A polynomial integration technique is developed to obtain the time averaged covariance of the cooling and temperature profiles for each of 7 atmospheric layers. - Author (mod) MGA 19.6-255.

1967

1787 Jordan, C.L. "Climatological features of the formation and tracks of hurricanes." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs, Publication no. 1, 1967. pp. 82-101. figs. photos. tables. refs.

1967 cont.

Geographical and seasonal distribution of hurricane formation and character of the tracks of these storms are examined in relation to large scale climatic features and synoptic weather patterns. Comparisons are made with tropical cyclones in other geographical areas to illustrate the importance of climatological features. Author MGA 19.8-307.

1967

1788 Jordan, C.L. "On the diurnal variation of rainfall in Puerto Rico." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program. American Meteorological Society, Bulletin, 48:638, 1967.

Statistics relating to the diurnal frequency of rainfall at three locations in Puerto Rico are examined and compared. Large differences are apparent between stations located near the eastern and the western ends of the island. The Puerto Rico statistics are, in turn, compared with those from other tropical islands and from tropical ocean areas. - Author.

1967

1789 Kent, G.S., Clemesha, B.R. and Wright, R.W. "High altitude atmospheric scattering of light from a laser beam." Journal of Atmospheric and Terrestrial Physics, 29(2):169-181, Feb. 1967. figs. tables. refs.

Measurements are presented of the amount of scattering produced by the atmosphere from an intense light beam projected vertically from a ruby laser in Kingston, Jamaica. They show that the scattering observed from heights up to 80 km may be interpreted principally in terms of Rayleigh scattering from atmospheric molecules. An account is given of the theory of the experiment and of the equipment used. - Author (mod) MGA 18.6-340.

1967

1790 Kodrau, O.D. "Klimaticheskie zakonomernosti i kharakteristika klimata Tsentral'noĭ Ameriki i Vest-Indii." [Climatic regularity and characteristics of the climate of Central America and the West Indies.] Leningrad. Glavnaia Geofizicheskaia Observatoriia, Trudy, no. 212, 1967. 186 p. figs. charts. tables. refs. DAS. DLC.

This monograph presents a description of the climate of Central America and the West Indies and a spatial temporal analysis of the meteorological factors. In addition to extensive data within the text itself, there is an appendix containing tables with climatic parameters of: temperature and relative humidity of the surface layer

1967 cont.

of the atmosphere, cloud cover, precipitation, wind, thunderstorms and fogs. Staff MGA 18.12-10.

1967

1791 Koteswaram, P. "The Upper-tropospheric and lower-stratospheric structure of several hurricanes." Miami: Institute for Atmospheric Sciences, National Hurricane Research Laboratory, Technical Memorandum no. 79, 1967. 72 p. illus. Also issued as: Institutes for Environmental Research Technical Memorandum NHRL-79 and ESSA Technical Memorandum IERTM-NHRL-79.

1967

1792 Landis, A.T. "Transatlantic dust." Undersea Technology, 8(12):19 Dec. 1967.

Author reports on a project of Prof. D.W. Parkin, Liverpool College of Technology. The project collects cosmic dust which are the remains of meteors from outer space that burn up in the Earth's atmosphere. A collecting station was set up in Barbados, 3,000 mi along the tradewinds from Africa. Scripps scientists have shown that this dust nearly all originated from land and suggest that a large portion of the red clay in Atlantic sediments originates as dust from the Sahara. - Author (mod).

1967

1793 La Seur, N.E. "On the description and understanding of hurricane structure." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs. Publication no. 1, 1967. pp. 71-81. figs. refs.

In the past few years, both empirical and theoretical studies of hurricanes have converged upon a common physical framework which has led to significant advances in our understanding of these storms. This framework incorporates several scales of atmospheric motion, each previously recognized as playing a role in hurricane formation and structure. An integrated model, which considers the hurricane as a relatively rare and unique combination of physical processes which interact nonlinearly to their mutual enhancement has evolved. - Author (mod) MGA 19.8-306.

1967

1794 La Seur, N.E. "Some aspects of the tropospheric circulation over the tropical Atlantic Ocean." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program. American Meteorological Society, Bulletin, 48:629, 1967.

Contributions to our knowledge of the circulation in the lower and upper troposphere over the tropical Atlantic Ocean

1967 cont.

which have resulted from research analyses for a period of several years are described. Information on the average seasonal and monthly patterns together with frequencies and tracks of typical synoptic disturbances are included. - Author (mod).

1967

1795 Lateef, M.A. "Vertical motion, divergence, and vorticity in the troposphere over the Caribbean, Aug. 3 - 5, 1963." Monthly Weather Review, 95:778-790, 1967. figs. charts. tables. refs.

Vertical motion, divergence and vorticity have been computed at points over a grid covering the Caribbean and adjoining areas and at 7 levels (1,000 to 100 mb) for 3 - 5 August 1963. The synoptic situation was marked by the westward passage of a low level easterly wave underneath an extensive upper level anticyclone and the presence of an upper tropospheric cyclone over the western Caribbean. Vertical velocities were evaluated from solutions to finite difference approximations of the pressure differentiated form of the continuity equation. - Author (mod) MGA 19.3-167.

1967

1796 Lateef, M.A. and Smith, C.L. "Synoptic study of two tropical disturbances in the Caribbean." U.S. National Hurricane Research Lab., Environmental Science Services Administration (ESSA), Technical Memorandum IERTM NHRL 78, Apr. 1967. 33 p. figs. refs. DAS.

The evolution of the wind and temperature fields during the passage of 2 tropical disturbances across the Caribbean is described with the aid of twice daily streamline and isotherm analyses at 7 levels in the atmosphere. The analyses are based on available data from the existing synoptic station network in the Caribbean and adjoining areas. An attempt is made to relate the upper-tropospheric structures of the 2 disturbances to developments in the lower levels. - Author (mod) MGA 20.3-315.

1967

1797 List, R.J. et al. "Preliminary meteorological data summary, Route 17, July 1966 - June 1967." In U.S. Air Resources Labs., Silver Spring, Md., "Interoceanic Canal Studies." Technical Memorandum, RLTM ARL-1, Nov. 1967. 67 p. figs. tables. DAS.

Summaries of meteorological data in the Darien region of Panama as part of the Interoceanic Canal Studies to determine the feasibility of constructing a new sea-level canal across the American Isthmus. Surface weather and upper air wind data are summarized for July 1966 - June 1967. Author MGA 19.6-112.

1967

1798 Mancuso, R.L. "Numerical procedure for computing fields of stream function and velocity potential." Journal of Applied Meteorology, 6(6):994-1001, Dec. 1967. figs. refs.

A numerical procedure is described for computing a stream function field from the vorticity of the horizontal wind field. The solution for the stream function field is achieved relatively quickly by the iterative process known as the implicit alternating direction method. The same procedure is also used to calculate a velocity potential field from the divergence of the wind field. The computations are performed on a spherical net and have been tested on wind fields over both the United States and the Caribbean. - Author (mod) MGA 19.3-55.

1967

1799 Mancuso, R.L., Endlich, R.M. and Viezee, W. "Tropical analyses based on computer techniques." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:622, 1967.

Describes experiments in objective gridpoint analysis based on standard radiosonde data. The objective analysis procedures carried out for the Caribbean area give results comparable in quality to those obtained by hand analysis. Fields of non-divergent and irrotational winds are determined by a kinematic decomposition of the analyzed wind field, and fields of stream function, velocity potential and balanced height are determined by an implicit relaxation method.

1967

1800 Merritt, E.S. "Atlantic upper tropospheric circulations and tropical cyclone development." Allied Research Associates, Inc., Concord, Mass., Contract N 189(188)-60598A, Final Report, May 1967. 91 p. figs. refs.

Analyses of the Atlantic area 200 mb circulation during the 1963 and 1965 hurricane season show a persistent belt of cyclonic activity 15° south of the center of the Atlantic subtropical anticyclone. This cyclonic belt extends from the northwest coast of Africa to the Gulf of Mexico. Satellite observations indicate: 1) banded cloudiness extending

1967 cont.

northward from the Intratropical Convergence Zone (ITCZ)-type developing disturbances; 2) a belt of clouds 10° north of nondeveloping ITCZ disturbances and 3) a 'hook' or quasi-circular cloud area prior to development of a 'composite-origin' type tropical storm or hurricane. - Author (mod) MGA 19.7-237.

1967

1801 Miers, B.T. "Stratospheric winds over Panama." Journal of Geophysical Research, 72(20):5149-5152, 15 Oct. 1967. figs. refs.

Stratospheric winds over Colón, Panama (lat 9°20'N, long 75°59'W) were studied on the basis of rocket wind data taken from regularly published observations of the Meteorological Rocket Network from March 1966 to January 1967. It was found that wind patterns during January over the Atlantic equatorial regions were influenced by the development of an anticyclone in the Northern Hemisphere. The existence of an easterly stratospheric jet stream over Ascension Island and Colón during January could be explained as part of a Northern Hemisphere winter synoptic situation, which reaches its maximum during that month. Staff MGA 19.4-304.

1967

1802 Miller, B.I. "Energy exchanges between the atmosphere and the oceans." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs, Publication no. 1, 1967. pp. 134-157. figs. charts. refs.

Discusses the exchange processes as they apply to the development and maintenance of tropical cyclones, with emphasis on the exchanges of momentum, sensible heat and latent heat. Surface heat sources raise the equivalent potential temperature of the surface air, thereby permitting warming of the upper atmosphere following ascent. When the oceanic heat source is removed, a hurricane usually dissipates. Staff MGA 19.9-341.

1967

1803 Miller, B.I. "Forecasting the movement of hurricanes." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:618, 1967.

One of the major objectives of the National Hurricane Research Laboratory has been the development and testing of methods for forecasting the movement of hurricanes. Both dynamical and statistical methods have been developed and tested. The

1967 cont.

statistical technique and some forecast verification scores are discussed. The dynamical models being developed at the Laboratory are also described briefly. Author (mod).

1967

1804 Minina, L.S. "Uragan Indes." [Hurricane Inez.] Meteorologiia i Gidrologiia, Moscow, no. 8:18-31, Aug. 1967. figs. refs.

A detailed case study is reported of hurricane "Inez" which occurred in the Atlantic between 23 September - 10 October 1966. In the analysis, all the available surface observations were used, together with satellite nephanalyses. It is concluded that the main cause of the formation of the hurricane was a surge of cold air from temperate latitudes of the Atlantic into the tropical zone. - Staff MGA 19.4-234.

1967

1805 Moore, P.L. "Forecasting and warning systems." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs, Publication no. 1, 1967. pp. 102-113. figs.

Explains that the basic services provided by the hurricane warning system are tailored to fit the needs of the general public and the interests of marine, industrial, aviation, agriculture and the military and space agencies. Objective forecast techniques are briefly described. Staff MGA 19.9-239.

1967

1806 Murphy, C.H. and Bull, G.V. "Nighttime variation of ionospheric winds over Barbados, West Indies." Journal of Geophysical Research, 72(19):4831-4837, 1 Oct. 1967. figs. tables. refs.

Use of gun-launched projectiles to produce luminous trails above 90 km by chemical release. On 4 occasions, 6 trails were produced on the same night so that the nighttime variation of ionospheric winds could be studied. These trails did not show the Rosenberg rotating wind vector phenomena common to higher latitudes. Meridional wind contours showed a well-determined descent during the night, although the zonal wind contours showed no such behavior. - Author (mod) MGA 19.1-269.

1967

1807 Nisbet, J.S. "Neutral atmospheric temperatures from incoherent scatter observations." Journal of the Atmospheric Sciences, 24(5):586-593, Sept. 1967. figs. refs.

1967 cont.

A method is described for calculating neutral atmospheric temperatures from data provided by incoherent scatter soundings of the ionosphere. Under suitable circumstances, the neutral temperatures can be determined quite accurately. The method has at present the unique advantage that temperature fluctuations can be followed continuously throughout a day at one location. Calculated values of neutral temperatures for several days derived from incoherent scatter sounding measurements at Arecibo are presented. It is shown that for the days analyzed, the time of the diurnal temperature maximum was at 1600 ± 1 hr, the diurnal minimum at 0400 ± 1 hr and the average day-to-night temperature ratio was 1.36 ± 0.03. - Author (mod) MGA 18.12-93.

1967

1808 [Ocean Industry.] "Hurricane watchers glean world of data from destructive Beulah." Its 2(10):63-64, Oct. 1967. photos.

"Beulah" caused $1 billion in damage. Data recorded by U.S. National Hurricane Center include: Texas received 14 million acre-ft of moisture; highest wind velocities recorded were 161 mph at sea and 136 mph over land; diameter of the eye reached 30 mi in the Caribbean and 6 - 12 mi over land and "Beulah" spawned over 50 tornadoes. Staff.

1967

1809 Panama. Dirección de Estadística y Censo. "Meteorología, 1966." [Meteorology, 1966.] Estadística Panameña, Ser. L., v. 26, Dec. 1967. 38 p. tables. map. DAS.

The meteorological data for 1966 from 78 weather stations of the Republic of Panama are given in the form of tables. The data cover precipitation, atmospheric temperature, relative humidity, atmospheric pressure and winds. - Staff MGA 19.7-120.

1967

1810 Parkin, D.W., Delany, A.C. and Delany, Audrey C. "Search for airborne cosmic dust on Barbados." Geochimica et Cosmichimica Acta, 31:1311-1320, 1967.

From August 1965 to July 1966, continuous windborne dust collections have been obtained on Barbados, using the mesh technique. The meshes were exposed at the top of a high tower to the easterly trade winds coming directly off the sea. A very large quantity of fine terrestial dust is blown across the Atlantic making a search for extraterrestrial material less than 10 microns impossible. However, the magnetic fraction of this fine dust is only

1967 cont.

of order 0.1 ppm in the wintertime, and this provides an upper limit of about 0.2 tons which falls to earth per day for any magnetic extraterrestrial material of size greater than 1 micron in the atmosphere. Author (mod).

1967

1811 Pearson, A.D. "Hurricane-induced tornadoes: a review." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs. Publication no. 1, 1967. pp. 114-131. figs. charts. refs.

Some 169 tornadoes with hurricanes have been reported over a 155-yr period ending 3 October 1966. Distribution over the past 12 yrs is presented, favoring location in the right front quadrant. Discussion of a preferred time period for formation suggests that the hurricane-induced tornadoes are randomly distributed with time. Several tornado formation theories are reviewed along with indirect observational evidence on outer rainbands. Author (mod) MGA 19.8-311.

1967

1812 Pelissier, J.M. "Easterly waves." Mariners Weather Log, 11(4):117-119, July 1967. figs.

Discussion of weather associated with a typical well-developed easterly wave. An illustration, based on events on 20 June 1966 when an easterly wave was passing through the Lesser Antilles, is given. Ahead of the trough, subsiding air inhibits the normal vertical development of cumulus (Cu) buildups. Flat Cu and hazy weather prevail with little or no rain. Just ahead of the trough line towering Cu begin to form, the normal easterly winds back to northeasterly or northerly and light showers may be encountered. Staff MGA 18.11-264.

1967

1813 Perlroth, I. "Effects of the oceanographic medium on equatorial Atlantic hurricanes." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:614, 1967.

This study was performed in an attempt to determine the relationship between tropical storms reaching hurricane intensity and the mean corresponding oceanographic environmental conditions. An historical analysis of vertical temperature gradients in the equatorial Atlantic (July - September) from the sea surface to the 200 ft level reveals favorable and unfavorable potentials

1967 cont.

in the oceanographic media for intensification of tropical storms to hurricanes. A chart depicting the number and location of tropical storms which reached hurricane intensity during 1901 - 1965 is presented. Author (mod).

1967

1814 Podzimek, J. "Results of measurements of giant condensation nuclei of chlorides in Cuba." Studia Geophysica et Geodaetica, 11(4):470-476, 1967. figs. refs. Russian summary p. 476.

The identification of chloride particles was made by means of the Liesengang rings method. The results of measurements of the overall concentration and of the size spectrum of the nuclei and the airborne measurements of nuclei concentration are given in tables and graphs. The observed concentrations of giant chloride nuclei are, on the average, of about 10^2 to 1. At altitudes up to 4,500 m, the concentration were several tens or hundreds of nuclei to 1. - Staff MGA 19.10-400.

1967

1815 Portig, W.H. "Data base project." In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorology Society, Bulletin, 48:617, 1967.

A micrometeorological, soils, air chemistry and biological project called the Environmental Data Base Project for the Humid Tropics, is being carried out in the Canal Zone by the U.S. Army Tropic Test Center. The meteorological part of the project consists of measuring (at the present time, hourly) several meteorological parameters at 8 heights from 0.5 to 46 m over ground. The highest temperature of the soil surface measured in the open by means of a Barnes infrared thermometer in March 1967 (the month in which the annual extremes are supposed to occur) was 147°F (64°C) with a simultaneous air temperature at 50 cm of 94°F (34°C). Author (mod).

1967

1816 Pyle, A.F. "NOMAD automatic buoy station." In World Meteorological Organization, (WMO) Technical Conference on Automatic Weather Stations, Geneva, 1966. Proceedings, Technical Note no. 82:183-186, 1967. DAS. DLC.

To provide more adequate measurements of the interactions of the atmosphere and the sea, a program of research and development of ocean automatic reporting stations was begun by the U.S. Navy during World War II. This paper describes the Navy

1967 cont.

Oceanographic/Meteorological Automatic Device (NOMAD) developed during the past 15 yrs to provide synoptic weather and oceanographic information in remote areas of the oceans. It transmits atmospheric pressure, air and sea water temperature, wind direction and speed on a 6-hr schedule (hourly with winds greater than 21 kts). Staff MGA 19.4-96.

1967

1817 Rasmusson, E.M. "Atmospheric water vapor transport and the water balance of North America, Pt. 1, Characteristics of the water vapor flux field." Monthly Weather Review, 95:403-426, 1967. figs. charts. table. refs.

Atmospheric water vapor flux over North America and the Central American sea (Gulf of Mexico and Caribbean Sea) has been investigated for 1 May 1961 - 30 April 1963. Mean monthly values of the total vapor flux components are analyzed and the more important aspects of regional vapor flux climatology are discussed and illustrated by maps and cross sections. Author (mod) MGA 18.11-373.

1967

1818 Riehl, H. "Varying structure of waves in the easterlies." In International Symposium on Dynamics of Large-Scale Processes in the Atmosphere, 2d, Moscow, 23 - 30 June 1965. Proceedings, ed. A.S. Monin. Moscow, 1967. pp. 411-417. figs. refs. Russian summary p. 416-417. DAS.

On the basis of recent data obtained in the Caribbean during an easterly wave, the author examined the problem of the maintenance of the energy of waves in the easterlies and the constraints on their intensification until the hurricane stage. The easterly wave of August 1964 and the flight of 2 aircraft at altitudes of 950, 850, 750 and 640 mb are described. The observed wind field and cloud patterns, the thermodynamic transformations and the production of kinetic energy are discussed. Staff MGA 19.3-180.

1967

1819 Riehl, H. and Pearce, R.P. "On the processes governing steady and unsteady waves in the easterlies." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:620, 1967.

Wave like disturbances passing westward through the Caribbean region in the hurricane season are examined in the light of radiosonde and other observations gathered since the inception of the National

1967 cont.

Hurricane Research Project in 1957. In order to assure greatest possible reliability of results, the investigation extended over as wide a spectrum of waves as could be found in the 10-yr record. In particular, steady-state cold core and steady-state warm core waves are included. Also, waves that formed hurricanes under several differing circumstances and waves with abortive attempts at hurricane development are shown. Results of these computations are presented and summarized. - Author (mod).

1967

1820 Rodewald, M. "Spitzkehre des Wirbelsturms Inez." [Sharp change of direction of hurricane Inez.] Wetterlotse, 19(241):1-6, 1967.

After crossing Cuba, hurricane "Inez" veered northward towards the North Atlantic. Near the Bahama Islands at the latitude of southern Florida, the hurricane became stationary, then moved WSW into the southern Gulf of Mexico. The change of direction is described with a possible explanation. Staff.

1967

1821 Rowlandson, L.G. "Measurements on the trade wind inversion at Aruba, N.A., February-March 1965." Mitre Corp., Bedford, Mass., Technical Report, MTR-116, Contract Af-7010, Mar. 1967. 69 p.

The second Aruba Expedition under the direction of the Woods Hole Oceanographic Institution was designed to study sea-air interactions and the characteristics of the trade wind inversion. Aircraft meteorological measurements were made to determine air temperature and vapor pressure patterns as well as radio refractivity fine structure. Measurements, supported by pilot balloon observations, tend to show the existence of a stationary wave over the island. - Author (mod) DDC.

1967

1822 Saint Thomas University, Houston. Institute for Storm Research. "Weather averages and sea states for selected offshore areas." Ocean Industry, 2(11):8-9, Nov. 1967. Entirely data.

Presents tabulated data giving weather averages and sea states for selected offshore areas in Texas and Louisiana, Persian Gulf, Arabian Sea, Cook Inlet, California, Kalimantan (Borneo) and the North Sea during November, December and January. - Staff MGA 19.4-88.

1967

1823 Sánchez Carrillo, J.M. "Mesoclimatic region in central and eastern Venezuela." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:633, 1967.

The purpose of this work is to show a demarcation of climatic regions in the area known as the 'Llanos' of Venezuela Demarcation of mesoclimatic regions and the so-called 'mesoclimates' has been made using: precipitation, temperature, evapotranspiration (real and potential) and water surplus and deficit. Available numerical data for the period 1951 - 1960 for about 45 stations were used for computing the values. - Staff.

1967

1824 Sanders, F. "Barotropic hurricane track forecasting with vertically averaged data and small horizontal grid length." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:618, 1967.

A number of experimental 72-hr numerical barotropic forecasts of hurricane tracks have been made for storms in the Caribbean, West Indies and Gulf of Mexico. The errors in forecast position of the hurricane vorticity maximum have been surprisingly small. To make these forecasts operational and to improve their accuracy, consideration of an automated analysis scheme, analysis in regions of sparse data coverage, meshing of the forecast with a large-scale hemispheric prediction (or otherwise improved boundary conditions) and control of spurious forecast behavior of subtropical anticyclones are considered. - Author (mod).

1967

1825 Senn, H.V. "Radar hurricane research, Sept. 1, 1966 - Aug. 31, 1967." Miami. Univ. Institute of Marine Science, Contract E22-84-67(N), Final Report, Sept. 1967. 40 p. figs. photos. charts. refs.

University of Miami radar operations during hurricane "Inez," October 1966 are summarized. The 3-dimensional data obtained on a Plan-Position Indicator (PPI) and a Range-Height Indicator (RHI) are presented along with an analysis of the rapidly changing 'eye' structure, erratic motion, and quantitative aspects of the horizontal and vertical precipitation patterns. In an effort to determine the theoretical radio propagation conditions in and around tropical storms, refractive indices were computed for the region below 700 mb and for 185 soundings taken in 13 hurricanes

1967 cont.

and typhoon "Marge." Finally, the extensive participation in Project STORMFURY planning and operations during 1966 - 1967 is summarized. - Author (mod) MGA 19.2-175.

1967

1826 Sheets, R.C. "On the structure of Hurricane Ella, 1962." U.S. National Hurricane Research Laboratory, Institutes for Environmental Research, Technical Memorandum NHRL-77, Apr. 1967. 33 p. figs. refs. DAS. DLC.

The U.S. Weather Bureau research aircraft investigates "Ella" during 4 days of a 5-day period. The investigation included 2 days of data obtained before the storm had reached hurricane intensity and 2 days of data obtained after the storm had attained hurricane strength. The structure of the storm is presented in the form of profiles and horizontal cross sections of: winds, temperature, pressure and precipitation fields. - Author (mod) MGA 18.11-283.

1967

1827 Sheets, R.C. "On the structure of Hurricane Janice, 1958." U.S. National Hurricane Research Laboratory, Institutes for Environmental Research, Technical Memorandum NHRL-76, Apr. 1967. 38 p. figs. tables. refs. DAS. DLC.

Hurricane "Janice" first appeared as a disturbed area south of Cuba. The first of 7 missions flown into the storm occurred on 5 October before it had attained hurricane intensity; the last on 9 October just before the storm experienced a rapid acceleration and intensification. The structure during the developing and mature stages is described. Profiles, horizontal cross sections and radar photograph composites are presented. - Author (mod) MGA 18.11-284.

1967

1828 Simpson, J.S.M. "Hurricane modification experiments." In American Society for Oceanography Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs, Publication no. 1, 1967, pp. 255-292, figs. photos. charts. refs.

After stating that the scientific reasons for hurricane modification experiments are at least equally as compelling as the practical reasons, the philosophy on which Project STORMFURY is based is explained. Evidence is set forth to support the view and the hope that hurricanes may eventually be modified. The relation between convective processes and natural variations may well be a key to modeling and controlling the tropical hurricane. - Staff

1967 cont.

MGA 19.9-342.

1967

1829 Simpson, J.S.M. "Project Stormfury." Oceanology International, 2(1):24-26, Jan./Feb. 1967. fig.

Seeding experiments are being conducted by Project STORMFURY. The experiments require 10 to 15 specially equipped aircraft to observe before and after structure. Field experiments on a full-scale hurricane must be backed and guided by laboratory and theoretical numerical experiments. Additional development of modification techniques and their delivery systems are needed. - Staff MGA 18.6-234.

1967

1830 Simpson, J.S.M. et al. "Study of a non-deepening tropical disturbance." Journal of Applied Meteorology, Boston, 6(2):237-254, Apr. 1967. figs. tables. refs. Also [Comments by] Glenn W. Brier and Thomas Carpenter, Ibid., 6(2):425-426, Apr. 1967.

Data for a 3-day period from an experimental region formed by 6 islands of the Windward group in the West Indies, a research vessel in the tropical Atlantic, an instrumental aircraft and TIROS 6 and 7 form the basis for the study of a synoptic-scale tropical disturbance. Detailed analysis, coupled with careful integration of all the observations, should make it possible to describe the structure of a system. Instead, the disturbance is shown to be uncorrelated with any low level perturbation of wind direction; its evolution and its translation depended upon small in situ development and decay effects in the upper troposphere. - Author (mod) MGA 18.7-342.

1967

1831 Simpson, R.H. and Giraytys, J. "Tracking and observation of hurricanes." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs, Publication no. 1, 1967. pp. 34-70, figs. photos. refs.

Facilities and methods currently used for tracking hurricanes and warning the public of the extent of hazards are reviewed. Despite increased information on hurricane movement and intensity as provided by satellite, radar and aircraft, basic data by which suitable numerical models can be developed are still not available. A proposal is made to station a ship in the right rear quadrant of a hurricane. - Author (mod) MGA 19.8-308.

1967

1832 Smedley, D. "Availability of

1967 cont.

climatological information for the Caribbean area." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings. ed. B. Floyd. Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 8-16.

Discusses the need for climatological data in the Caribbean area, with particular reference to agriculture, tourism, construction and air conditioning. Also presents availability of climatic data and ways of improving the utilization of the data collected and operation of the Environmental Data Service of the Environmental Science Services Administration (ESSA) in the Caribbean area. - Staff MGA 19.12-426.

1967

1833 Smedley, D. "Barbados Meteorological Institute." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, Nov. 1967. Program, American Meteorological Society, Bulletin, 48:627, 1967.

A meteorological institute is being established in Barbados under the joint auspices of the United Nations Development Program and the Caribbean Meteorological Council. The staff will include six experts to be provided by the World Meteorological Organization. This paper describes the plans and aims of the project and discusses each of the various portions of the program. - Author.

1967

1834 Steinborn, E. "Hurrikan Beulah." [Hurricane "Beulah."] Wetterlotse, 19(251):194-200, Nov. 1967. fig.

Origin and course of hurricane "Beulah," the 2nd hurricane of the 1967 season, is described with the aid of a map. The report of a ship's captain (H. Bruhn), whose ship lay in Kingston at the time of the hurricane, is presented. - Staff MGA 19.5-204.

1967

1835 Sugg, A.L. "Economic aspects of hurricanes." Monthly Weather Review, 95:143-146, 1967. tables. refs. [Comments by] W.T. Wilson and [Reply by] Sugg. Ibid. 95(7):482, July 1967. refs.

A discussion of economic aspects of hurricanes, considering current estimates of average annual and extreme annual costs. It is indicated that gross forecast errors could cause unnecessary costs which might range from $7 to $17 million. The hurricane warning service saves about $25 million during an average season; it could save as

1967 cont.

much as $100 million during a very active season. - Staff MGA 19.9-201.

1967

1836 Sugg, A.L. "Hurricane season of 1966." Monthly Weather Review, 95:131-142, 1967. figs. tables. refs.

A general summary of the 1966 hurricanes. The season began early and ended late. Hurricane days totaled 50, well above the yearly average of 33. Except for a late May, early June hurricane in 1825, "Alma," the first of the 1966 season, made landfall in the United States earlier in the season than any other hurricane of record. The general circulation features corresponded fairly well with the monthly frequency of tropical cyclone development for the beginning (June) and end (October and November) of the 1966 hurricane season. The correlation was poorest during the months of July and September, the 2 mos with the highest frequency. - Staff MGA 18.9-110.

1967

1837 Taba, H. "National meteorological services of Central America, the Caribbean countries and territories." Geneva, World Meteorological Organization, 1967. 64 p. DAS.

Report on the author's visit to the Caribbean and Central American countries reviews past activities and discusses meteorological services and training of meteorological personnel. Reference is made to the request of the governments of the Caribbean countries and territories to establish an Institute for Meteorology in Barbados. - Staff MGA 19.7-35.

1967

1838 Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, Venezuela, 20 - 28 Nov. 1967. "Program of the Conference ... of the American Meteorological Society with the World Meteorological Organization and the International Union of Geodesy and Geophysics ..." American Meteorological Society, Bulletin, 48:604-639, 1967.

1967

1839 Thompson, A.H. and West, P.W. "Use of satellite cloud pictures to estimate average relative humidity below 500 mb, with application to the Gulf of Mexico area." Monthly Weather Review, 95:791-798, 1967. figs. charts. tables. refs.

Describes a scheme for classifying the cloudiness, as determined from satellite TV pictures, of small areas in the vicinity of radiosonde stations. There is a slight suggestion of seasonal and latitudinal

1967 cont.

trends. Examples show average relative humidity distributions based on observations made from meteorological satellites over the waters adjacent to the southeastern United States - Author (mod) MGA 19.3-58.

1967

1840 Tout, D.G. "Analysis of the 1964 solar radiation record at the Brace Experiment Station, St. James, Barbados." McGill Univ. Dept. of Geography, Climatological Bulletin, 2:29-44, 1967.

1967

1841 Trusov, I.I. "Sutochnye maksimumy osadkov na Kube." [Daily precipitation maxima in Cuba.] Meteorologiia i Gidrologiia, no. 6:70-73, June, 1967. figs. refs.

An analysis has been made of available rainfall data for Cuba in order to determine the variations in the patterns of the yearly maximum 24-hr precipitation totals. The data used were for 465 rainfall stations all with observing periods of more than 10 yrs and 80 percent of them with observing periods of from 20 to 50 yrs. A relationship was found between the values of the mean 24-hr yearly maxima for different stations and the corresponding means of the total precipitation during the wet season (May to October). - Staff MGA 19.3-294.

1967

1842 U.S. Air Force. "Rockets and Arecibo radio telescope used in joint experiments [by] Upper Atmosphere Physics Lab., AFCRL." Office of Aerospace Research, Research Review, 6(11):6-7, Dec. 1967. fig.

A series of rocket experiments was conducted in Puerto Rico in October 1967. The purposes were to acquire data on ionospheric E and lower F regions and sporadic E at tropic latitudes; to measure rapid changes in ionization and the decay of the E region at night and to compare charged particle data obtained 'in situ' by means of rocketborne instruments with data obtained from the ground using the Arecibo telescope. - Staff MGA 20.5-581.

1967

1843 U.S. Army Tropic Test Center, Fort Clayton, Canal Zone, Panama. "Environmental data base for regional studies in the humid tropics." Semiannual Report no. 3, 1 Sept. 1966 - 28 Feb. 1967, Contract ARPA Order-740, Oct. 1967. 236 p.

Presents a resumé of project objectives and methods and descriptions of the operational sites. The climate section (pt. 4) shows data collected and instrumentation used with a description of automatic instrumentation planned. Analyses of daily

1967 cont.

temperature variations and a discussion of soil-surface temperature determination are presented. The section dealing with microbiology and chemistry of the atmosphere contains papers on: airborne and surface deposited microorganisms; observations of microbial populations of forest soil and a discussion of atmospheric particulate matter. - Author.

1967

1844 U.S. Environmental Sciences Services Administration. "Greatest storm on Earth." ESSA World, 2(4):4-9, Oct. 1967. photos. Excerpted from a new ESSA brochure, "Hurricane." DAS.

Great storms originating in the tropics and developing into hurricanes in the temperate zone usually occur along the Atlantic and Gulf coasts from June through November. The National Hurricane Center in Miami provides the Environmental Science Services Administration (ESSA) Weather Bureau stations with a great amount of data. Cloud photographs from ESSA spacecraft orbiting the Earth are received at the National Environment Satellite Center in Maryland. The center coordinates the flow of bulletins and advisories to the public. A "hurricane watch" is a first alert for emergency forces in the threatened area. - Staff MGA 19.3-131.

1967

1845 U.S. Environmental Science Services Administration. "Greatest storm on Earth: hurricane." Wash., D.C., U.S. Government Printing Office, 1967. 38 p. figs. photos. charts. refs.

Contains a detailed discussion on hurricanes intended for the non-specialist reader. It provides in simple descriptive language information on the generation, propagation and decay of hurricanes and on warning service, advisories and bulletins. Environmental Science Services Administration activities in investigating air-sea interactions are explained; in particular, Project STORMFURY is outlined. A bibliography contains references to the literature which provided the technical basis of this booklet. - Staff MGA 19.6-271.

1967

1846 U.S. Weather Bureau "Project Stormfury Annual Report, 1966." Mar. 1967. Sections separately paged. figs. photos. charts. tables. refs. DAS.

Consists of: a map showing the STORMFURY Hurricane Experimental Area, Recommendations of Advisory Panel, a paper entitled "Experimental approach to cumulus

1967 cont.
clouds and hurricanes " by J.S.M. Simpson and a statistical evaluation of the 1965 experiments by G.W. Brier. Forces were assembled at the Roosevelt Roads, Puerto Rico, Naval Base staging area for very successful dry runs, and also in preparation for hurricane "Faith." However, neither the eyewall nor a rainband of "Faith" seeding (specified as first and second priorities for 1966) were carried out because the storm never entered the prescribed seeding area. - Staff MGA 19.4-169.

1967
1847 University Corporation for Atmospheric Research. "Barbados Survey trip." Facilities for Atmospheric Research, no. 5:15, Fall/Winter 1967. DAS.

The survey was made on 5 - 8 July 1967, by 4 members of the Meteorology Department of Florida State University in preparation for the summer 1968 Barbados Meteorological and Oceanographic Experiment(BOMEX). This experiment, one of several which will supply data for planning the Tropical Meteorology Experiment (TROMEX) projected for the early 1970's, will investigate tropical processes. These are the result of continual interaction between the ocean and the atmosphere which must be measured simultaneously at all levels, from small eddies to fluxes extending over hundreds of miles. The equipment to be developed for the project is described briefly. - Staff MGA 20.5-786.

1967
1848 University Corporation for Atmospheric Research. "Instrumenting the Sea Breeze Project." Facilities for Atmospheric Research, no. 4:2-5, Summer, 1967. figs. photo. DAS. DLC.

The scope and aims of the Sea Breeze Project, which involves an investigation of the mechanisms of sea breezes along the Texas gulf coast, are described. The project seeks to verify, experimentally, Estoque's 2-dimensional model and to extend it to 3 dimensions. The topography of the study area and the observational network are described. The 1967 program is outlined. The use of scale analysis for determining the proper use of each instrument and the energy exchanges are discussed. - Staff MGA 19.5-245.

1967
1849 Vanderman, L.W. and Collins, W.G. "Operational-experimental numerical forecasting for the Tropics." Monthly Weather Review, 95:950-953, 1967. figs. charts. refs.

A barotropic forecast model is

1967 cont.
employed at 700 and 300 mb to produce wind forecasts (from 1200Z real data analyses) for the entire tropical belt between lat 48°N and 48°S. Descriptions of the forecast models and examples and verifications of the forecasts are presented. - Author (mod) MGA 19.5-146.

1967
1850 Vickers, D.O. "Very heavy and intense rainfalls in Jamaica." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings, ed. B. Floyd, Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 57-63. tables. refs. DAS.

On the basis of the 91-yr rainfall record for Jamaica, the author discusses the very heavy and intense rainfalls and the associated synoptic scale features (which fall into 3 groups: frontal, hurricane or incipient hurricane), of the phasing of a midtropospheric cold low with an easterly wave trough, etc. - Staff MGA 19.12-369.

1967
1851 Viezee, W., Endlich, R.M. and Mancuso, R.L. "Objective method of analyzing tropical weather." U.S. Army Electronics Command, Ft. Monmouth, N.J., Technical Report ECOM-0170-1, Aug. 1967. 20 p. figs. photos. charts. (Stanford Research Institute, Menlo Park, Calif., Contract DAAB-07-67-C-0170, Report no. 1; Semi-annual Report, 1 Dec. 1966 - 30 June 1967, Aug. 1967.) DAS. DLC.

Describes a computer program which provides gridpoint analysis of geopotential height, wind, stream function, temperature, and relative humidity using standard upper air data. Divergence, vorticity, and vertical motion can be obtained for any desired isobaric layer or level from the objective gridpoint analysis of the wind. The analysis technique is applied to the area of the Caribbean for a 7-day period in July 1966. - Author (mod) MGA 18.12-155.

1967
1852 Wagner, A.J. "Weather and circulation of Sept. 1967: a month of continued record warmth in the West, coolness in the East, and frequent tropical activity." Monthly Weather Review, 95:956-966, 1967. figs. charts. refs.

In most areas of the United States, the temperature patterns of July and August persisted into September 1967, resulting in cool spells, heat waves and dry periods of record-breaking length. Hurricane "Beulah" flooded the entire lower

1967 cont.

Rio Grande Basin and adjacent watersheds with rains in excess of 20 in. Hurricane "Doria" was the first tropical cyclone of record to strike the mid-Atlantic coast while moving in from the northeast. The above main features are described in detail and illustrated in charts. - Staff MGA 19.5-84.

1967

1853 Wint, J. McL. "Hurricane precautions for tropical buildings." In Conference on Climatology and Related Fields in the Caribbean, Mona, Jamaica, 20 - 22 Sept. 1966. Proceedings, ed. B. Floyd, Kingston, Technical Information Service, Scientific Research Council, 1967. pp. 91-101. figs. DAS.

The author discusses the characteristics of Caribbean hurricanes and presents a list of the hurricanes that passed over or very close to Jamaica since 1689, a list of major floods in Jamaica associated with hurricanes or tropical storms and a table giving the tropical storms and hurricanes with centers passing within 150 mi of Jamaica during 1886 - 1965. Staff MGA 20.1-239.

1967

1854 Woodley, W.L. et al. "Aircraft observations in the immediate vicinity of two waterspouts." Monthly Weather Review, 95:799-803, 1967. figs. photos.

Two waterspouts were recently observed aloft from a private aircraft near lower Matecumbe Key, Florida. Color slides and zoom movies of both waterspout vortices on the sea surface and aloft were obtained. A detailed description of the equipment used and a discussion of the synoptic pattern of that day are presented. The data show some interesting details regarding the dynamics of the observed waterspout circulations. Both waterspouts traversed a similar path. A subsequent ground survey of the paths taken over the Key, together with damage reports and eyewitness accounts, indicate that the second waterspout was much more intense than the first. - Author (mod) MGA 19.3-197.

1967

1855 Wulf, O.R. "On pronounced atmospheric modulation of the geomagnetic daily variation." Monthly Weather Review, 95:1-5, 1967. figs. refs.

Seasonal asymmetry in the daily variation of geomagnetic declination has been studied for the observatories of Honolulu, Hawaii, Tucson, Arizona and San Juan, Puerto Rico, for an 11-yr

1967 cont.

period. Behavior unsymmetrical with respect to the seasonal change of solar radiation is conspicuous and suggests the action of an atmospheric factor, probably large scale air circulation in the lower ionosphere. There appears to be a correspondence in time between 2 evident seasonal changes in the daily variation of the declination and in the large scale air circulation in the upper stratosphere. Author (mod) MGA 18.5-487.

1967

1856 Yanai, M. "Evolution of a tropical disturbance in the Caribbean Sea region." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:618, 1967.

The developmental processes of an easterly wave in the Caribbean Sea region into hurricane "Alma" (1962) are described in detail, based upon conventional surface and upper-air data, TIROS 5 pictures and some research flight data. The wave was distinctly cold-cored at the beginning and computations of vertical motions showed that the cold air was caused by upward air motion. - Author (mod).

1967

1857 Yanai, M. and Nitta, T. "Computation of vertical motion and vorticity budget in an easterly wave." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967, Program, American Meteorological Society, Bulletin, 48:620, 1967.

An iterative scheme for obtaining vertical motion and the divergent part of wind velocity from only the rotational part of the observed wind data, using the vorticity equation and the continuity equation, is described. This scheme is suited for the analysis of synoptic-scale motions in the Tropics. The iteration is convergent when absolute values of the absolute vorticity are not too small. - Author (mod).

1968

1858 Alpert, L. "Opportunities for research on tropical meteorological conditions afforded by the meteorological observation network in the Isthmus of Panama." In Army Conference on Tropical Meteorology, 6th, Univ. of Miami, Coral Gables, Fla., 8 - 9 June 1967. Proceedings, Ft. Monmouth, N.J., Jan. 1968. pp. 2-6. DAS. DLC.

Describes: climatic conditions

1968 cont.

and the network of upper air and surface observation stations in the Isthmus of Panama, and the administrative and logistical support for projects provided by the U.S. Army Tropic Test Center in the Canal Zone. The upper air network includes rawinsondes and rocketsondes on the north coast, and a weather surveillance radar and rawinsondes on the south coast, only 40 mi apart. - Staff MGA 19.9-64.

1968

1859 American Meteorological Society. "Bulletin-" v. 49, no. 6, June 1968.

Issue devoted to Barbados studies. Preface, by M. Garstang, describes the geographic position of the island and its history of meteorological observations. Rainfall records cover 110 yrs. The government encourages establishment of research projects, and among institutions with current programs are McGill, Florida State, Birmingham and Miami Universities. The island, occupying a unique position for atmospheric research in the Tropics, is headquarters for the Barbados Oceanographic and Meteorological Experiment (BOMEX) scheduled to begin in 1969. - Staff.

1968

1860 Anthes, R.A. and Johnson, D.R. "Generation of available potential energy in Hurricane Hilda (1964)." Monthly Weather Review, 96:291-302, 1968. figs. photos. tables. refs.

The energetics of hurricane "Hilda" (1964) are studied through the theory of available potential energy applied to a limited fixed region surrounding the storm. Generation of available potential energy is closely dependent on differential heating within the baroclinic structure of the hurricane. Diabatic heating components (condensation, emission of long wave radiation, direct absorption of solar radiation and sensible heating) are modeled, and contributions to the total energy generation from each component are computed. - Author (mod) MGA 19.9-331.

1968

1861 Army Conference on Tropical Meteorology, 6th, Coral Gables, Fla., 8 - 9 June 1967. "Proceedings." by H.W. Hiser and H.P. Gerrish. Univ. of Miami. Institute of Marine Sciences, Radar Meteorological Lab. Technical Report no. 15 for U.S. Army Electronics Command, Ft. Monmouth, N.J., Technical Report ECOM C-0224-15, Contract no. DAAB07-67-C-0224, Jan. 1968. 258 p. DAS.

The primary interest of the meeting was in the realm of local, small-scale meteorological phenomena and problems in

1968 cont.

the Tropics, specifically excluding hurricanes and typhoons. The objective was to learn as much as possible about the recent results and future research plans of the U.S. Army contractors in tropical meteorology and to benefit by the experience and special knowledge of other invited guests from the United States and abroad. Twenty papers were presented at the 2-day meeting. - Author (mod) AD 666229.

1968

1862 Arnold, J.E. "Influence of anomalies in the sea surface temperature field on low level cloud development and its implication to the heat budget at the ocean surface." Abstract only. In VDMG-DGG-AMS-RMS, [Verband Deutscher Meteorologischer Gesellschaften - Deutsche Geophysikalische Gesellschaft - American Meteorological Society - Royal Meteorological Society.] Joint Meeting, Hamburg, Germany, 1 - 5 April 1968. Program, American Meteorological Society, Bulletin, 49:136, 1968.

The sea surface temperature field in the Gulf of Mexico was examined at selected periods during the summer of 1966 and 1967 to determine the distribution of warm and cold water areas. The surface temperature analysis was performed using both commercial ship reports and cruise data taken from Texas A & M Department of Oceanography's ship, R/V ALAMINOS. Using satellite photographs combined with cloud observations from ships, contiguous areas of low level cloud activity could be associated with warm temperature anomalies on the ocean surface. - Author (mod).

1968

1863 Arnold, J.E. "On the question of low-level cloud response to the temperature field of the sea surface." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-20T, Project 286-13, Sept. 1968. Abstract only.

Weekly averages of wind and air-sea temperature differences from ship reports averaged over 4-degree quadrilaterals revealed that increased wind velocities required larger air-sea temperature differences to maintain a maximum cloud amount at low cloud levels for spring and summer. During winter the situation was reversed, with increased wind velocities requiring less air-sea temperature differences to maintain above average cloud amounts. - Author (mod).

1968

1864 Baer, L., Adamo, L.C. and Adelfang, S.I. "Experiments in oceanic forecasting

1968 cont.

for the advective region by numerical modeling. 2. Gulf of Mexico." Journal of Geophysical Research, 73(16):5091-5104, 15 Aug. 1968. figs. refs.

The numerical dynamic model of the advective province of the ocean described in Pt. 1 of this paper was applied to the Gulf of Mexico, using 3 layers. Realistic forecasts were made covering 4-wk periods (672 hrs). Results show that important variations occur in the Gulf over short time periods. Cyclonic circulation in the northwest and in the Yucatan Current are required. - Author (mod) MGA 20.2-694.

1968

1865 Balarama Rao, P. "Electron concentrations and electron and ion temperatures in the F region for magnetically quiet and disturbed conditions." Journal of Geophysical Research, 73(5):1661-1678, 1 Mar. 1968. figs. tables. refs.

Incoherent backscatter measurements of the F region electron concentrations and electron and ion temperatures were made at Arecibo during the sudden commencement magnetic storm of 15 - 16 June 1965. The results obtained are used to describe the quiet and disturbed diurnal behavior of the shape of the electron concentration profile, the contours of constant plasma frequency, the plasma density scale heights in the topside ionosphere and the electron and ion temperatures. - Author (mod) MGA 19.9-573.

1968

1866 Balcom, P.R. "Forecasting 'Gulf Stratus' at Kelly AFB, Texas." U.S. Weather Squadron (24th) Kelly AFB, Texas, Detachment 5, Feb. 1968. 9 p.

An updated revision of an older report. New tables replace monographs of the original study. - Author (mod).

1968

1867 Barnes Engineering Co., Stamford, Conn. "New infrared device to help Navy predict the path of hurricanes." Techniques Newsletter in Infrared and Electro-Optical Instrumentation, 3(1):1, Spring 1968.

Reports that extremely sensitive infrared (IR) equipment is to be placed in operational use by U.S. Navy Hurricane Hunters to aid in plotting the growth and path of hurricanes, typhoons and other tropical storms. The IR radiometers will be used to investigate the relationship between sea surface temperature and the change in intensity and path of violent storms. Through its telescope-like optical system, the instrument collects

1968 cont.

IR radiation naturally emitted from the sea's surface. - Staff MGA 20.4-112.

1968

1868 Battan, L.J. "Research in tropical meteorology." American Meteorological Society, Bulletin, 49:90-92, 1968. photo. Spanish version, pp. 93-95.

This is the banquet address delivered at the 5th Technical Conference on Hurricanes and Tropical Meteorology at Caracas, Venezuela, November 1967. It contains some remarks about research in the atmospheric sciences and suggests where most emphasis is needed. The Global Atmospheric Research Program and weather and climate modification are summarized. A discussion of the exchange of information concluded the address. - Staff MGA 19.9-65.

1968

1869 Baumhefner, D. "Application of a diagnostic numerical model to the tropical atmosphere." Monthly Weather Review, 96:218-228, 1968. figs. charts. refs.

A diagnostic, nonlinear balanced model is applied in order to describe numerically the 3-dimensional structure of the tropical atmosphere. Several comparisons and experiments are made to gain insight into the physical processes and reliability of the model. These include different types of stream functions and temperature analyses, and the addition of surface friction and latent heat. - Author (mod) MGA 19.9-302.

1968

1870 Bianco, J.M. "Address delivered at the inaugurational session [of the 5th Technical Conference on Hurricanes and Tropical Meteorology, Caracas, Venezuela, 20 - 28 Nov. 1967] by the president of the Central University of Venezuela." American Meteorological Society, Bulletin, 49:87-88, 1968. Spanish version, pp. 84-85.

President of the Central University of Venezuela indicates that the University is engaged in serious development of its meteorology department in which systematic training will be given in a dynamic way. The University has started sending its specialists to the most famous institutions of the world for advanced training. It has produced a new climatologic and hydrologic atlas of the Caracas Valley. The site of stations and their graphs with reference to the weather are indicated. Staff MGA 19.9-332.

1968

1871 Blifford, I.H. and Ringer, L.D. "Size and number distributions of tropospheric aerosols over the oceans." Abstract

only. American Geophysical Union, Transactions, 59(4):690 (M35), Dec. 1968.

Aerosol distribution functions for particles with radii in the range of 0.1 - 5.5 microns at altitudes from 15 m above the surface to 9.1 km have been obtained from measurements made over the Pacific Ocean at a point about 240 km west of Santa Barbara, California. Aerosol distribution functions also have been obtained from measurements to altitudes of 7.3 km over the central Pacific Ocean in the vicinity of Palmyra and over the Atlantic Ocean near Barbados. Systematic variations with altitude in particle size have been observed. Author (mod).

1968

1872 "Bomex Bulletin." no. 1, 1968 (?) Prepared by the BOMEX Project Office, an Interagency Scientific Planning Group, Rockville, Md. DNO.

Barbados Oceanographic and Meteorological Experiment (BOMEX) is a bilateral program to be conducted by the government of the United States in cooperation with the government of Barbados. Participation of the United States is conducted on an interagency basis with the Environmental Science Services Administration (ESSA) as the lead agency. The BOMEX Bulletin is intended to provide information concerning plans and schedules for the implementation of BOMEX and to continue the useful exchange between the BOMEX Project Office and interested members of the scientific community throughout the world. - Author (mod).

1968

1873 [Cahiers Océanographiques.] "Expédition Barbados." [Barbados Expedition.] 10(10):862-863, Dec. 1968.

Report on the Barbados expedition made by Florida State University, April - September 1968 in an air-sea interaction study. - Staff.

1968

1874 Carlson, H.C. and Weill, G.M. "Solar cycle variation of conjugate photoelectron flux onset timing deduced from 6300 Å and T. observations." Annales de Géophysique, 23(4):569-572, Oct./Dec. 1967, issued 1968. figs. refs. French and English summaries p. 569.

The solar cycle controls the timing of 6300 Å predawn enhancement caused by photoelectron impact from the conjugate area at sunrise. At Haute Provence Observatory, the onset occurs 70 min earlier at solar maximum than at solar minimum. Temperature observations at Arecibo in

1965 - 1967 confirm the effect; a preliminary calculation shows it is quantitatively interpreted by the combined variations of upper atmospheric neutral temperatures and of the solar ionizing flux through the 11-yr cycle. - Author (mod) MGA 19.10-580.

1968

1875 Carson, R.B. "[Comments on] Joanne Simpson et al.: Study of a non-deepening tropical disturbance and [Reply by] Simpson et al." Journal of Applied Meteorology, Boston, 7(2):298-299, Apr. 1968. figs. refs.

Comments on Simpson et al. (1967) and their reply, stating that they agree with Carson that 'streamlined wind fields from 3,000 through 15,000 ft commonly provide synoptic insight into elongated shower belts.' They indicated that it has been their experience that confluent asymptotes in the tropical wind field must exist nearly vertically through the lower and middle troposphere before significant weather is associated with them, and then only if the speed field is also convergent. - Staff MGA 19.9-439.

1968

1876 Castelan, S.S. "Theoretical research on hurricanes conducted with the use of electric computers." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968, Abstracts of Papers, sec. 1, no. 1.19. DNO.

At present, many questions concerning the behavior of hurricanes remain unanswered because of the lack of adequate observations. This paper briefly reviews progress achieved in understanding the physics of theoretical models of past hurricanes, and presents a new theoretical model of a symmetrical hurricane with 5 layers in the troposphere. In this model, basic equations in the reference system known as 'p/p0' (p = pressure, p0 = pressure at sea level) are used. The release of latent heat and its spread in the troposphere is parameterized as a function of the vertical distribution of the equivalent potential temperature. Author (mod).

1968

1877 Clemesha, B.R. et al. "Preliminary measurements of atmospheric density made using a large new lasersonde." Abstract only. American Geophysical Union, Transactions, 59(4):864 (M7), Dec. 1968.

The initial results of atmospheric density measurements up to a height of 100 km are presented. These have been made using a very large lasersonde at Kingston,

Jamaica, which has recently been completed. The measurements show the normal exponential variation of atmospheric density with altitude from which the temperature profile is deduced. Often superimposed on this variation are quasi-sinusoidal oscillations in atmospheric density whose amplitudes increase with altitude. The temporal variations of this profile are discussed both in relation to atmospheric oscillations and long term changes. - Author.

1968

1878 Cocho, F. and Grijalva, N. "Influence of a polar front in the Gulf of Mexico." Hamburg. Univ. Institut für Meereskunde, Mitteilungen, 10:184-191, 1968.

Influence of the atmosphere on the surface of the sea is important. This is the case in the Gulf of Mexico where meteorological elements influence the circulation. Movements driven by a polar front were studied by means of a numerical model. - Author.

1968

1879 [Commercial Fisheries Review] "Barbados Project studies tropical ocean's top layers." Its 30(10):15, Oct. 1968.

Seventy scientists directed by Dr. M. Garstang, Florida State University, have completed the Barbados Project, the most ambitious study ever made of the top layers of the tropical ocean and the atmosphere above it. Barbados was chosen as a base because it is the most easterly island in the West Indies. It extends into the Atlantic across the constantly blowing trade winds which mix latent heat, in the form of water vapor, with the air above the sea. Using aircraft, instrument towers, tethered and free-floating balloons, ships and buoys, the meteorologists recorded temperatures, moisture, wind speed and direction, ocean currents and cloud cover on magnetic tapes. - Author (mod).

1968

1880 Crooks, W.M., Hoblitt, F.M. and Mitchell, F.A. "Project Hicat. High altitude clear air turbulence measurements and meteorological correlations. Volume 1." Lockheed-California Co. Burbank. Final Report 13 Mar. 1967 - 31 July 1968. Contract no. F33615-67-C-1461, Nov. 1968. 326 p.

Program objective was to determine the statistical characteristics of high altitude clear air turbulence (CAT) to improve structural design criteria. In addition, meteorological forecasts and analyses were to be correlated with the CAT measurements to improve forecast

procedures. In the extended program, 18.3 hrs of high altitude CAT were located and recorded in flights covering over 156,000 mi from bases in England, Louisiana, Maine, Panama, Florida and California. Actual vertical, lateral and longitudinal gust velocity time histories and power spectra were determined and analyzed. Peak counts of true vertical gust velocity and derived equivalent gust velocity were obtained. A procedure for forecasting high altitude CAT was developed. - Author (mod) AD-846 086.

1968

1881 DeAngelis, R.M. "Hurricane priest." ESSA World, 3(4):16-17, Oct. 1968. DAS.

Presents an account of the work of Fr. Benito Viñes who, in his day, was the greatest authority on Atlantic hurricanes. From 1870, when he became director of the Belen Observatory, Havana, Cuba, through the 1st decade of the 20th century. Fr. Viñes was, in fact, 'Father Hurricane,' and his words and warnings were heeded by all. The path of the September 1877 hurricane correctly predicted by him is shown. The author states that the network established by Fr. Viñes, who died in July 1893, is still an integral part of ESSA's hurricane warning system. His greatest work, "Practical hints in regard to West Indian hurricanes," completed in 1877 and published by the U.S. Weather Service, sold out 3 large printings within a few years. - Staff MGA 20.6-30.

1968

1882 Dodson, E.B. "Professional broadcast meteorologist as seen by management." American Meteorological Society, Bulletin, 49:366-368, 1968.

Explains the policy of the company operating both WKY-TV in Oklahoma City, Oklahoma, and WTVT in Tampa, Florida. The policy has been to get the best qualified professional meteorologists and to give them the best available equipment. - Staff MGA 19.12-103.

1968

1883 Dominican Republic. División de Climatología y Agroclimatología. "Clima y cultivos." [Climate and crops.] Boletín Agroclimatológica, año 3, no. 83-87, 93. 1968.

1968

1884 Duarte, M.P. and Ochoa, H.G. "Study of the thunderstorm which occurred in the city of Caracas and the coastal area of Guaireño on 24 October 1967." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions,

1968, Abstracts of Papers. sec. 1, no. 1.5. DNO.

On 24 October 1967, between 12:09 and 13:10 local time a violent thunderstorm occurred in the city of Caracas and the coastal area of Guaireño. An analogy of the synoptic charts for the days immediately preceding 24 October was made with special reference to the zone between lat 5°N - lat 30°N and long 35°W - long 85°W. The track of this displacement could be followed, and in the surface chart for 12:00 local time on 24 October, the low pressure was found over the affected zones. During the period of the actual thunderstorm a marked reduction of temperature was observed. Author (mod).

1968

1885 Duchon, C.E. "Techniques for evaluating meteorological aircraft data." Texas. Univ. College of Engineering. Atmospheric Science Group, Report no. 9, May 1968. 93 p. figs. refs. DAS.

Two aircraft were flown side-by-side and one-over-the-other across the upper Texas coast, simultaneously gathering meteorological data. The experiments took place during June 1967 in conjunction with the Atmospheric Science Group 'SEA BREEZE Project.' Temperature is analyzed in an effort to estimate the noise in the data. The term noise includes noise put into the data by the recording system, the data reduction system and 'atmospheric noise.' Spectrum and cross-spectrum analysis techniques are applied. A stochastic model of the data is hypothesized from which the computations of noise as a function of frequency are performed. Author (mod) MGA 19.12-77.

1968

1886 Dufresne, R. "Intensité des precipitations à Fort-de-France (Martinique)." [Intensity of precipitation at Fort-de-France, (Martinique).] Martinique. Service Météorologique et du Physique du Globe, June 1968. 16 p.

1968

1887 Dunn, G.E., Gentry, R.C. and Lewis, B.M. "Eight-year experiment in improving forecasts of hurricane motion." Monthly Weather Review, 96:708-713, 1968.

The National Hurricane Center and the National Hurricane Research Laboratory joined forces in an effort to improve techniques for forecasting hurricane motion in the spring of 1959 when the latter moved its headquarters from West Palm Beach to Miami, Florida, into offices adjacent to those occupied by the principal hurricane

forecast office in the United States. Results are now available from verification of forecasts made during the period of increased cooperation between the research and operational forecasting groups. Author (mod) MGA 20.5-160.

1968

1888 Dye, L.W. "Tornado summary for 1967." Weatherwise, 21(1):22-25, Feb. 1968. figs. table.

Presents monthly summaries of tornadoes in the United States during 1967. More tornadoes occurred in 1967 than in any prior year except 1957 and 1965. A total of 841 tornadoes in 44 states on 165 days killed 116 persons, injured over 2,200 and caused millions of dollars of property damage. They were especially numerous in January, June and December. Hurricane "Beulah" triggered 47 tornadoes in Texas on 20 September, setting a new record for hurricanes. No tornadoes occurred in Alaska, Connecticut, Montana, Rhode Island, Vermont and Washington. - Staff MGA 19.9-149.

1968

1889 Erlando Lopez, R. "Investigation of the importance of cumulus convection and ventilation in early tropical storm development." Colorado. State Univ. Dept. of Atmospheric Science, Atmospheric Science Paper no. 124, June 1968. 86 p. figs. tables. refs. DAS. DLC.

Two well documented cases of trade-wind disturbances are studied. One disturbance developed into hurricane "Carla" (1961), while the other failed to intensify. Initially, the 2 cases appeared to be very similar, but on closer inspection the flow patterns in which the disturbances were embedded proved to have significant differences. This paper describes these differences. - Author (mod) MGA 20.1-240.

1968

1890 Fagot, J. "Upper atmosphere winds from gun launched vertical probes (Barbados, 21 - 22 June 1967) (Yuma, 12 June 1967)." Space Instruments Research Inc., Atlanta, Ga. Final Report, Contract no. DA-01-009-AMC-169(X). Aug. 1968. 64 p.

During the night of 21 - 22 June 1967, 2 luminous trails were produced between 89 and 110 km by the release of trimethyl aluminum from projectiles fired from a smoothbore 16 in gun located on the West Indian Island of Barbados (long 57°30'W, lat 13°06'N). On the night of 12 June 1967, an additional trail was produced by a projectile fired from a similar 16 in gun located at Yuma, Arizona (long 114°18'W,

1968 cont.

lat 32°54'N). These trails were photographed from neighboring sites and analyzed to yield wind profiles. This report contains the tabulated wind data from all 3 trails together with plots of wind components, speed and heading versus altitudes. Included in this report are ground plots of trails for all previous shots that had both an up trail and a down trail. - Author (mod).

1968

1891 Fagot, J. "Upper atmosphere winds from gun launched vertical probes (Barbados, 15 - 16 February 1967)." Space Instruments Research Inc., Atlanta, Ga. Contract No. DA-01-009-AMC 169(X), Apr. 1968. 81 p.

During the night of 15 - 16 February 1967, 8 luminous trails were produced between 88 km and 123 km by the release of trimethyl aluminum from projectiles fired from a smoothbore 16 in gun located on the West Indian Island of Barbados (long 57°30'W, lat 13°06'N). These trails were photographed from neighboring islands and analyzed to yield wind profiles. The report contains tabulated wind data from all 8 trails together with plots of wind components, speed, heading and shear components versus altitudes. - Author (mod).

1968

1892 Fagot, J. and Epler, W. "Upper atmosphere winds from gun launched vertical probes (Barbados 19 - 20 September 1966)." Space Instruments Research Inc., Atlanta, Ga. Contract no. DA-01-009-AMC-169(X), Apr. 1968. 62 p.

During the night of 19 - 20 September 1966, 8 luminous trails were produced between 86 km and 135 km by the release of trimethyl aluminum from projectiles fired from a smoothbore 16 in gun located on the West Indian Island of Barbados (long 57°30'W, lat 13°06'N). These trails were photographed from neighboring islands and analyzed to yield wind profiles. Report contains the tabulated data from all 8 trails, together with plots of wind components, speed, headings and shear components versus altitudes. - Author (mod) AD-673 774.

1968

1893 Florida State Univ. Dept. of Oceanography. "Development of experimental systems for and the study of meso- and convective-scale systems and air-sea interaction in the maritime Tropics." Grant, WBG-90 and Grant E22-46-68(G), Interim Final Report, Phase 2, June 1968. 73 p. figs. tables. DAS.

1968 cont.

Outlines the summer 1968 field program of experiments on Barbados for 2 main observing periods. Each consists of 3-day intensive experimental observation periods, separated by 2 days of routine work. The report presents: the field experiment network with 6 baseline observing stations; the time tables for the observation periods; the operations of R/V DISCOVERY and the sequence of individual experiments using balloons, rawinsondes, radiosondes, radar, photography and aircraft flights. Schedules and data requirements are tabulated. Staff MGA 20.5-61.

1968

1894 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, Canal Zone, Contract ARPA Order-740, Jan. 1967. pub. Mar. 1968. 28 p.

Contains detailed microclimatic data for January 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form, summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1968

1895 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, Canal Zone, Contract ARPA Order 740, July 1967. Jan. 1968. 28 p.

Contains detailed microclimatic data for July 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form, summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1968

1896 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, Canal Zone, Contract ARPA Order-740, Sept. 1967. pub. Apr. 1968. 27 p.

Contains detailed microclimatic data for September 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form, summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure,

1968 cont.
precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1968
1897 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, Canal Zone. Contract ARPA Order-740, Nov. 1967. pub. Apr. 1968. 26 p.

Contains detailed microclimatic data for November 1967 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form, summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1968
1898 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army Tropic Test Center, Fort Clayton, Canal Zone, Contract ARPA Order-740, Jan. 1968, pub. Apr. 1968. 23 p.

The report contains detailed microclimatic data for January 1968 from specific sites in the Panama Canal Zone and vicinity. The data are presented in tabular form, summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1968
1899 Fradel, M.A. and Portig, W.H. "Environmental data base for regional studies in the humid Tropics." U.S. Army. Tropic Test Center, Fort Clayton, Canal Zone, Contract ARPA Order-740, Feb. 1968. 34 p.

Contains detailed microclimatic data for February 1968 from specific sites in the Panama Canal Zone and vicinity. Data are presented in tabular form, summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author.

1968
1900 Furley, P. "University of Edinburgh British Honduras-Yucatan Expedition." Geographical Journal, 134(1):38-54, Mar. 1968. figs. table. refs.

The major objective of the expedition during May - September 1966 was to follow up on a preliminary soil survey of British Honduras and the more fragmentary evidence

1968 cont.
available from Guatemalan and Mexican sources with a study of detailed soil-slope transects and a land-capability analysis of selected areas having comparable soil types. This paper reports on the results of these projects and, also, contains a reconnaissance study of the karstic morphology over a more extensive section of the peninsula. A description of the climate and geology includes a map of the climate. Staff MGA 20.3-121.

1968
1901 Garnier, B.J. "McGill University climatology programme in Barbados." American Meteorological Society, Bulletin, 49:636-639, 1968. figs. refs.

The McGill University climate program in Barbados began in 1958 within the framework of land-use studies. From 1958 to 1966, emphasis was placed on maintaining a standard observation station to provide a base for work in agrometeorology. Since 1966, the program has been reorganized to develop energy balance studies at 4 sites on the island with a view to contributing fundamental knowledge of the role of the surface in micro-climates of the Caribbean region. - Author MGA 20.2-442.

1968
1902 Garstang, M. "Role of momentum exchange in flow over a heated island." In Army Conference on Tropical Meteorology, 6th, Univ. of Miami, Coral Gables, Fla., 8 - 9 June 1967. Proceedings, Ft. Monmouth, N.J., Jan. 1968. pp. 178-195. figs. DAS. DLC.

Previous work has treated flow over a heated island (Barbados) primarily from a heat exchange point of view. Here an attempt is made to include momentum exchange in a heated island model. Observations from neutrally buoyant balloons flown over an island are used to illustrate the vertical and horizontal distribution of momentum flux and are related to the model. Author MGA 19.9-316.

1968
1903 Garstang, M. and La Seur, N.E. "1968 Barbados experiment." American Meteorological Society, Bulletin, 49:627-635, 1968. figs. photos. tables. refs.

An intensive experiment in tropical meteorology with emphasis on the interaction of the atmosphere, the ocean and the land will be centered upon Barbados, West Indies, during the summer of 1968. Scientific objectives of this program are outlined, and the means by which these are expected to be attained are described in terms of instrumentation and the systems development carried out over the past 2 yrs.

1968 cont.

Role and importance of such experiments in a tropical atmosphere are emphasized. Author MGA 20.2-247.

1968

1904 Gentry, R.C. "Hurricanes: one of the major features of air-sea interaction in the Caribbean Sea." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968, Abstracts of Papers. sec. 1, no. 1.17. DNO.

Hurricanes are uniquely a product of an oceanic environment, and they begin to dissipate once they are cut off from the energy contained in the warm tropical oceans. A secondary source of energy is the sensible heat transferred from the ocean to the atmosphere inside the hurricane. While the quantity of the sensible and latent heat transferred to the air from the ocean beneath the hurricane is less than that already in the air that crosses the lateral boundaries of the storm, it effectively determines the intensity of the storm. - Author (mod).

1968

1905 Gentry, R.C. "Project STORMFURY, 1968." Abstract only. In American Meteorological Society, Annual Meeting, New York, N.Y. 20 - 23 Jan. 1969. Program, American Meteorological Society, Bulletin, 49:1027, 1968.

Project STORMFURY has continued its experiments of hurricane modification. Preliminary results are available on the field experiments conducted during the 1968 hurricane season. Numerical-dynamical models of hurricanes have been developed to simulate a hurricane sufficiently well for them to be used to obtain information useful in designing field experiments. Author (mod).

1968

1906 Gentry, R.C. and Edelstein, M.W. "Project STORMFURY, a hurricane modification experiment." In National Conference on Weather Modification, 1st, Albany, N.Y. 28 Apr. - 1 May 1968. Proceedings, Boston, 1968. pp. 296-305. figs. refs. DAS.

Discusses Project STORMFURY. The various experiments being planned and the hypotheses involved, specific problems associated with the experiments, plans for the 1968 hurricane season and the data collection effort is discussed. STORMFURY seeks to modify hurricanes by using silver iodide crystals to cause freezing of supercooled water drops and the release of latent heat in selected volumes of the hurricane. The experiments are designed to provide data not only for evaluation

1968 cont.

but for increased understanding of the energy processes of a hurricane which will lead to improved and more sophisticated experiments. - Staff MGA 19.11-213.

1968

1907 Gerrish, H.P. "Mesoscale studies of instability patterns and winds in the Tropics." U.S. Army Electronics Command, Ft. Monmouth, N.J., Technical Report ECOM-0224-16, Feb. 1968. 18 p. figs. tables. refs. DAS. DLC.

The trade wind inversion, its remnants and other rapidly drying layers in the lower troposphere over Miami are studied, using twice daily 'transmitted' radiosonde soundings from January, April, July and October 1962 - 1966. The layers are selected objectively, using the computer and a diagnostic technique based upon the vertical gradient of atmospheric refractivity. It is concluded that the trade wind inversion is most frequently observed in April at 5,000 - 6,000 ft msl. It rises and nearly disappears in July. Frequency distributions also show a substantial number of rapidly drying layers below 1,000 ft msl at 1200Z which are very likely ground layers raised by heating. The most startling observation is the appearance of a rather large number of thick, rapidly drying layers at 2,000 - 3,000 ft msl. These are most numerous in July and subsequent analysis suggests that they are a result of subsidence associated with anticyclonic curvature and attending divergence along the western extreme of the Bermuda Ridge. - Staff AD-830 081.

1968

1908 Gerrish, H.P. "Tornadoes and waterspouts in the South Florida area." In Army Conference on Tropical Meteorology, 6th, Univ. of Miami, Coral Gables, Fla., 8 - 9 June 1967. Proceedings. Ft. Monmouth, N.J., Jan. 1968. pp. 62-76. figs. tables. refs. DAS. DLC.

Climatology of tornado and waterspout occurrences within 75 n mi of Miami is re-evaluated, using significantly more types of data than in any previous study of the area. Events in 1957 - 1966 are examined in detail and particular attention is given to surface synoptic features in conjunction with the highest winds noted within 200 n mi of Miami at 200 mb. A new application of an old mechanism is found to be a useful hypothesis for the formation of tornadoes and waterspouts in the southern Florida area. This hypothesis is described and illustrated. - Author (mod) MGA 19.9-346.

1968

1909 Gerrish, H.P. and Andrews, G.F. "Mesoscale studies of instability patterns and winds in the Tropics." Miami Univ. Fla. Radar Meteorological Lab. Semi-annual Report no. 2, 1 Jan. - 31 May 1968. Report no. 8913-3, 1968. 27 p.

Fluctuations in 10-cm radar video from a diffuse 'angel' pattern on the evening of 20 October 1967 are analyzed, using spectral techniques. Time and range variations in the fluctuations from resolution cell samples along an azimuth of 288° from Miami indicate wave motions along the beam. These motions are described. It is concluded that this type of 'angel' provides a convenient tracer for short-period atmospheric waves. Preparations for data collection during the summer of 1968 are described. - Author.

1968

1910 Golden, J.H. "Waterspouts at Lower Matecumbe Key, Florida, Sept. 2, 1967." Weather, 23(3):103-114, Mar. 1968. figs. photos (some in color), refs.

Describes circumstances leading up to an aerial encounter with 6 waterspouts in the Florida Keys during which unique observational waterspout data were obtained. Still photographs and cinephotographs of the events were taken. Descriptive account of the observations, prevailing weather and certain of the ground-based reports of the waterspouts is given. - Staff MGA 19.8-309.

1968

1911 Goodyear, H.V. "Frequency and areal distributions of tropical storm rainfall in the United States coastal region on the Gulf of Mexico." U.S. Environmental Science Services Administration, Technical Report WB-7, July 1968. 33 p. figs. tables. ref. DAS.

The frequency and areal distributions of rainfall from tropical storms entering the Gulf Coast between Apalachicola, Florida, and Brownsville, Texas, were investigated. Forty-six well developed storms during 1940 - 1965 provided the basic data. The rainfall investigated was for the 48-hr period from 24 hrs before landfall to 24 hrs after. The results of the investigation are presented on a series of charts showing the spatial distribution of 12-, 24- and 48-hr rainfall up to 100 mi inland and within 150 mi on either side of the storm track. - Author (mod) MGA 20.5-293.

1968

1912 Graham, D.M. "Stormfury and the hurricane hunt." Ocean Industry, 3(9):66-

1968 cont.

69, Sept. 1968.

Describes Project STORMFURY from the beginning in 1961 to the 1968 hurricane season. The project extends the hurricane cloud seeding area to the Caribbean and Gulf. - Staff.

1968

1913 Grosske, F. "Sobre la pluviosidad en Caracas." [Rainfall in Caracas.] Caracas, Ediciones del Concejo Municipal del Distrito Federal, May 1968. 143 p. figs. tables. refs. Spanish, English, and German summaries pp. 5-10.

Based on the records of the Cagigal Observatory in Caracas for rainfall from 1891 - 1967. The rainfall regime in Caracas differs from year to year, and the yearly rainfalls and seasonal rains fluctuate. No correlations could be established to predetermine the beginning and the characteristics of the rainy or dry seasons. A forecast of 3 days in respect of the beginning of the rainy season may be issued only under special synoptic situations. A marked cycle referring to the yearly rainfalls has been found to be about 22 yrs. - Author (mod) MGA 20.4-7.

1968

1914 Hamm, D.P. and Lesser, R.M. "Experiments in oceanic forecasting for the advective region by numerical modeling. 1. The model." Journal of Geophysical Research, 73(16):5081-5089, 15 Aug. 1968. figs.

A baroclinic ocean model was developed and adapted for numerical solution by an electronic digital computer. The model is applicable to the advective region of the hydrosphere and is used to compute forecasts for the Gulf of Mexico from synoptic data. - Author (mod) MGA 20.2-693.

1968

1915 Hastenrath, S.L. "Contribution to the wind conditions over the Caribbean Sea and Gulf of Mexico." Tellus, 20(1): 163-178, 1968. figs. refs. English, German and Russian summaries.

The wind conditions are discussed on the basis of 9-yr mean charts for selected pressure levels and meridional cross sections along long 80°W. Over the Caribbean Sea, a vigorous downward motion is found during the 2nd part of the winter half-year, which is fed by convergence in the upper tropospheric southwesterly current. Over the Gulf of Mexico, subsidence is indicated during a great part of the year, changing to ascending motion in mid-summer. - Author (mod) MGA 19.12-268.

1968

1916 Hastenrath, S.L. "Fourier analysis of Central American rainfall." Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B, 16(1):81-94, 1968. figs. table. refs. English, German, and French summaries pp. 81-82.

The annual variation of rainfall at 131 stations over Central America is subjected to harmonic analysis. Maps present the total variance of the mean monthly rainfall, the percentage variance of the first 3 harmonics, the residual contributed by the higher harmonics, the amplitudes and phase angles of the first 3 harmonics and the ratio of the amplitudes of the first to the second harmonics. Annual rainfall curves are reproduced from the first 3 harmonics. - Author (mod) MGA 19.12-362.

1968

1917 Hastenrath, S.L. "Heat budget of the troposphere over the Caribbean Sea and the Gulf of Mexico." Abstract only. In VDMG-DGG-AMS-RMS, [Verband Deutscher Meteorologischer Gesellschaften - Deutsche Geophysikalische Gesellschaft - American Meteorological Society - Royal Meteorological Society] Joint Meeting, Hamburg, Germany, 1 - 5 Apr. 1968. Program, American Meteorological Society Bulletin, 49:127, 1968.

General circulation and the heat and moisture budgets of the troposphere over the Central American seas are studied with emphasis on seasonal and regional variations, using the available radiosonde data of the year 1960. The troposphere as a whole imports potential energy and sensible heat during winter in the Caribbean, and during most of the year in the Gulf of Mexico area. This is caused by the upper tropospheric westerly current originating over the equatorial regions of the eastern Pacific. The tropospheric energetics are discussed with respect to their role in the general circulation. Author (mod).

1968

1918 Hawkins, H.F. and Rubsam, D.T. "Hurricane Hilda, 1964, pt. 1, Genesis, as revealed by satellite photographs, conventional and aircraft data." Monthly Weather Review, 96:428-452, 1968. figs. photos. charts. refs.

The formation of hurricane "Hilda" is followed, using satellite photographs, surface and 200 mb streamline analyses, 500- to 200- mb thickness charts and shear wind analyses. The formation of a strong upper level anticyclone nearly over the

1968 cont.

perturbation coincided with marked warming in the 500- to 200-mb level. Significant deepening was delayed until the disturbance was clear of the Island of Cuba. Profiles of meteorological parameters are studied and details of the structure from photographs and radar film are presented. Author (mod) MGA 19.12-211.

1968

1919 Hawkins, H.F. and Rubsam, D.T. "Hurricane Hilda, 1964, pt. 2, Structure and budgets of the hurricane on October 1, 1964." Monthly Weather Review, 96:617-636, 1968. figs. tables. refs.

Aircraft data from 5 levels (900 to 180 mb) are used to depict the structure of a mature hurricane. Horizontal analyses, vertical cross sections and various budgets, which have been prepared from the research flight data only, are presented. New estimates of the drag coefficient under hurricane conditions are derived from a formulation utilizing the momentum budget in the inflow layer. - Author (mod) MGA 20.3-312.

1968

1920 Hawkins, H.F. and Rubsam, D.T. "Hurricane Hilda, 1964, pt. 3, Degradation of the hurricane." Monthly Weather Review, 96:701-707, 1968. figs. refs.

As hurricane "Hilda" approached the Louisiana coast, it began to entrain more and more of the cool dry air situated over the continent. This resulted in a diminution of the storm to a lesser level of intensity while the center was still well offshore. A much more rapid increase in central pressure occurred after the 'eye' passed inland and the supply of oceanic moisture and heat became inadequate to support a hurricane. Finally, the storm rapidly acquired extratropical characteristics and moved eastward off the southeastern coast. - Author MGA 20.3-313.

1968

1921 Henry, W.K. et al. "Research on tropical rainfall patterns and associated mesoscale systems." Texas A & M Univ., Dept. of Meteorology, Semi-Annual Report no. 3. Aug. 1967 - Apr. 1968. Contract no. DA-28-043-AMC-02313(E), June 1968. 105 p.

Variability of rainfall in Guyana is discussed and demonstrated by use of a contingency index. The changes are shown as areal and seasonal and the size of cells in relationship to the season is demonstrated. The concept that a preceding month can be used as a predictor for a succeeding month is investigated

1968 cont.

for some stations, but scatter diagrams and correlation coefficients indicate that an inaccurate forecast would probably result. Ojives (cumulative frequency vs. cumulative amounts of daily rainfall) used to compare the rainfall in Cambodia with rainfall in Central America were found to be similar. - Author (mod) AD-835 978.

1968

1922 Hiser, H.W. "Radar and synoptic analysis of the Miami tornado of June 17, 1959." Journal of Applied Meteorology, 7(5):892-900, Oct. 1968. figs. photos. refs.

Plan Position Indicator (PPI) and Range Height Indicator (RHI) photographs were taken on the University of Miami radars. The PPI photographs show the familiar hooked echo with cyclonic motion plus what is believed to be divergence aloft in the main echo. A synoptic analysis and evaluation of the tornado conditions and a summary of visual observations by the author and others are also included. - Author MGA 19.10-263.

1968

1923 Hodge, W.T. "Waterspout spotted by Texaco New Jersey." Mariners Weather Log, 12(1):7, Jan. 1968. figs.

Reports an unusual waterspout sighted in the eastern Gulf of Mexico by Texaco New Jersey. As in most cases of waterspouts, the sea temperature was warmer than the air temperature. The wind was easterly at 4 kts; 3 hrs earlier, it had been east-southeasterly at 15 kts. The maps showed no large scale disturbances near the area, but other ships in the eastern Gulf were reporting scattered squalls and thundershowers. The waterspout, a sketch of which is included, shows striking similarity to the typical waterspout shown in an earlier issue (Ibid., 3(4), July 1959). - Staff MGA 19.6-275.

1968

1924 Holle, R.L. "Some aspects of tropical oceanic cloud populations." Journal of Applied Meteorology, 7(2):173-183, Apr. 1968. figs. refs.

Oceanic cloud populations were photographed from R.V. CRAWFORD stationed near lat 13°N, long 55°W during a 22-day period in August - September 1963. A panoramic series of 6 pictures per/hr was taken with a Hasselblad camera around the complete horizon during daylight. These pictures were reduced by photogrammetry to yield oceanic cumulus height distributions related to the synoptic state and time of day. Such quantitative data are useful

1968 cont.

for several types of budget studies and should be applicable for adjacent portions of the tropical North Atlantic Ocean and Caribbean Sea. From this study it is apparent that temporal and spatial scales of the dynamic and thermodynamic variables smaller than the synoptic scale must be examined to explain many aspects of a tropical cumulus population. - Author (mod) MGA 19.7-390.

1968

1925 Hurst, H.T. "Analyzing damage by Betsy." Navy Civil Engineer, 9(3):20-23, Mar. 1968. figs. table. refs.

Hurricane "Betsy" struck the Bahama Islands, southern Florida and other Gulf Coast states September 1965, causing well over 1 billion dollars damage and claiming the lives of scores of people. The U.S. Naval Bureau of Yards and Docks, now the Naval Facilities Engineering Command, was responsible for the design, construction and maintenance of many buildings and port facilities in the path of hurricane "Betsy." The objective of the investigation was: to determine the storm intensity and extent of damage by hurricane "Betsy" in the Bahama Islands, southern Florida and the New Orleans area for the purpose of 1) evaluating current and past design criteria; 2) discovering and defining areas which may need additional testing or research effort in order to improve design criteria and 3) evaluating effectiveness of operation procedures for hurricane conditions. - Author (mod).

1968

1926 Kantor, A.J. and Grantham, D.D. "Climatology of very high altitude radar precipitation echoes." U.S. Air Force. Cambridge Research Labs. Report no. AFCRL-68-0630. Dec. 1968. 130 p.

The frequency and percentage occurrence of radar precipitation echoes from 50,000 - 70,000 ft over the United States is presented. Analyses of 6 years of data from a 31-station WSR-57 weather radar network indicate that probabilities of convective clouds are greatest over 3 regions: the Gulf Coast; a relatively narrow band northward through the Central United States and Florida. Largest probabilities at all levels and locations occur generally in summer, varying from May and June (in central areas) to August over south and southeast coastal regions. - Author (mod).

1968

1927 Kerley, R.H. "Experiment at Barbados." Mariners Weather Log, 12(5):154-156, Sept.

1968. figs.

Provides a brief report on Barbados Oceanographic and Meteorological Experiment (BOMEX). BOMEX planners intend to use 8 oceanographic ships, 1 buoy tender, 10 aircraft and 12 data buoy arrays. These will be deployed in a 500 km^2, with the closest ship stationed 50 mi from Barbados. The National Aeronautics and Space Administration (NASA) plans to contribute satellite information for comparative analysis. Staff MGA 20.5-787.

1968

1928 King, J. "Instrumentation and the weather program." American Meteorological Society, Bulletin, 49:364-365, 1968.

Discusses weather equipment which is readily available and can be modified to perform satisfactorily on television. The techniques used and evaluated at WTVT in Tampa, Florida, are designed to assist TV meteorologists in bringing new dimensions in weathercasting to the public. - Staff MGA 19.12-105.

1968

1929 Kwei, M.W. and Nisbet, J.S. "Presunrise heating of the ionosphere at Arecibo due to conjugate point photoelectrons." Radio Science, 3(7):674-679, July 1968. figs. refs. Also pub. In Conjugate Point Symposium, Boulder, Colo., 13 - 16 June 1967. Papers. U.S. Environmental Science Services Administration, Technical Memorandum IERTM-ITSA 72, July 1967. v. 1, session 2, paper 3, 13 p. figs. refs. DAS.

In winter, the electron temperature at Arecibo starts to increase prior to local sunrise following illumination of the conjugate ionosphere. The roles played by heat conduction along the field line and by photoelectrons that traverse the field line are investigated. Photoelectron fluxes, calculated in the manner described by Nisbet, have been used to examine the mechanism of presunrise heating. - Author (mod) MGA 20.5-565.

1968

1930 Lake, H. "Meteorological effects of rainfall attenuation at 11.7 GHz. In Conference on Radar Meteorology, 13th, McGill Univ., Montreal, 20 - 23 Aug. 1968. Proceedings, ed. J.S. Marshall. Boston, American Meteorological Society, 1968. pp. 510-517. figs. tables. refs.

The results of a measurement and study program to investigate the reliability of transmission at 11.7 Ghz and the relation of propagation effects and atmospheric parameters over an 11.42 mi path in Puerto Rico are presented. A comparison of observed and theoretical attenuation for various rainfall rates is given. A surface refractivity and refractivity gradient analysis indicates the temporal and spatial variations in the transmission medium Author (mod) MGA 20.4-92.

1968

1931 La Seur, N.E. "Equivalent potential temperature as a measure of convective and synoptic scale distrubances of the tropical atmosphere." In Army Conference on Tropical Meteorology, 6th, Univ. of Miami, Coral Gables, Fla., 8 - 9 June 1967. Proceedings, Ft. Monmouth, N.J., Jan. 1968. pp. 196-209. figs. refs. DAS. DLC.

It has long been recognized that the mean state of the tropical atmosphere exhibits a minimum of equivalent potential temperature at mid-tropospheric levels. This quantity is closely proportional to the total static energy, i.e., the sum of the enthalpy, potential energy and the latent energy of water vapor. Synoptic scale variations of the vertical distribution of equivalent potential temperature are studied for a series of radiosonde ascents taken on Barbados and aboard the CRAWFORD during field research. - Author (mod) MGA 19.9-307.

1968

1932 Lateef, M.A. "Vertical motion at 100 mb in the Tropics." Monthly Weather Review, 96:286-290, 1968. figs. tables. refs.

Vertical motion at 100 mb has been computed by the adiabatic method at each of 88 locations on a grid covering the Caribbean and adjoining areas and for each twice-daily map time during the periods 3 - 5 January and 3 - 5 August 1963. The order of magnitude of vertical velocities in both winter and summer was the same; the average values being about 4 mm/sec in winter and 2 mm/sec in summer. Local temperature change and temperature advection averaged about 2°C and 3°C/day in winter, and both were about 1°C/day in summer. The correlation of vertical motion and temperature advection was high, about -0.86. These and other results are illustrated by maps showing the wind- isotherm patterns and the distribution of vertical motion at 100 mb for 6 selected map times. - Author (mod) MGA 19.9-404.

1968

1933 Lessing, L. "Doing something about the weather, in a big way." Fortune, Apr. 1968. pp. 132-138, 171-172. figs.

Advanced computers and new techniques of global weather watching may extend

1968 cont.

accurate forecasts weeks ahead. Barbados Oceanographic and Meteorological Experiment (BOMEX), an immense international effort, is under way to gather the knowledge needed. - Author.

1968

1934 Lettau, B. "Small-scale sea air-interface characteristics in the subtropical Atlantic." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.20. DNO.

A series of field experiments was carried out during the summer of 1968 in the region east of Barbados in an attempt to establish an energy budget at the sea-air interface by actually observing the fluxes of the various energy components through the faces of a small arbitrary volume. - Author (mod).

1968

1935 McPherson, R.D. "Three-dimension numerical study of the Texas coast sea breeze." Texas. Univ. College of Engineering. Atmospheric Science Group, Report no. 15, Aug. 1968. 252 p. figs. charts. tables. refs. DAS.

The effect on the Texas coast sea breeze of irregularities in the coastline, specifically, the effect of Galveston Bay, is examined by means of a 3-dimensional mathematical model which is essentially an extension of an earlier 2-dimensional model developed by Estoque. A 2-dimensional test version of the model is subjected to an extensive series of numerical experiments in order to gain some insight into the characteristics of the model and into its response to variations in some of the modeling assumptions. It is demonstrated that computationally stable solutions can be obtained for periods up to 72 hrs. - Author (mod) MGA 20.2-9.

1968

1936 Mahajan, K.K., Rao, P.B. and Prasas, S.S. "Incoherent backscatter study of electron content and equivalent slab thickness." Journal of Geophysical Research, 73(7):2477-2486, 1 Apr. 1968. figs. table. refs.

Results of electron content and equivalent slab thickness obtained from radar backscatter measurements at Arecibo (lat 18.4°N, long 67°W) are presented and examined in the light of other simultaneously observed parameters such as the height of the F layer peak and electron and ion temperatures. There is a considerable day-to-day variability both in the electron content and the equivalent slab thickness.

1968 cont.

The daytime slab thickness is controlled jointly by the neutral scale height and the extent of thermal nonequilibrium. Author (mod) MGA 19.7-522.

1968

1937 Mallinger, W.D. "View for mariners of Project Stormfury." Mariners Weather Log, 12(4):111-113, July 1968. figs.

Reports that Project STORMFURY forces will be on the alert to modify tropical storms and hurricanes this coming season. The seeding season runs from 1 August - 15 October. The most likely scene of staging operations is the U.S. Naval Station at Roosevelt Roads, Puerto Rico. Some hurricanes could be seeded from bases in Florida. Benefits to the mariner are indicated. A decrease in wind strength near the center of the storm with attendant decrease of sea and swell would permit faster and smoother sailings, resulting in reduced ship and cargo storm damage. - Staff MGA 20.5-184.

1968

1938 Mancuso, R.L. and Endlich, R.M. "Objective and dynamic analyses of tropical weather." Stanford Research Institute, Menlo Park, Calif., Contract DAAB07-68-C-0192, Report no. 1, Semiannual Report, 18 Mar. - 18 Sept. 1968. For U.S. Army Electronics Command, Technical Report ECOM-0192-1, Nov. 1968. 29 p. figs. refs. DAS. DLC.

Preliminary results from a study on determining atmospheric motions from ATS 3 satellite cloud photographs are presented. Using recently developed methods for measuring cloud displacements from 2 or more photographs, it has been possible to obtain cloud-motion data that give a relatively dense and continuous spatial coverage of the Caribbean. Thus, the ATS type photographs should provide significant amounts of tropical data for incorporation into objective analysis and prediction schemes. A brief description is given of a number of computer forecasting techniques that are to be tested on tropical wind analyses. - Author (mod).

1968

1939 Marcus, S.O. "Evidence of a critical wind speed over the ocean." Abstract only. In VDMG-DGG-AMS-RMS [Verband Deutscher Meteorologischer Gesellschaften - Deutsche Geophysikalische Gesellschaft - American Meteorological Society - Royal Meteorological Society] Joint Meeting, Hamburg, Germany, 1 - 5 Apr. 1968. Program, American Meteorological Society, Bulletin, 49:132, 1968.

1968 cont.

Wind measurements from the Navy Oceanographic Meteorological Automatic Device (NOMAD) are obtained from a 3-cup anemometer mounted about 4 m above the sea surface. The relation of wind speeds from NOMAD with wind speeds at a standard reference level (10 m) reveals a unique nonlinear function which tends to support the critical wind speed concept of Munk and the Kelvin-Helmholtz instability. Three categories of wind speeds are discussed with emphasis on the critical wind speed. The data are discussed and are found to be less than ideal for research. - Author (mod).

1968

1940 Mastenbrook, H.J. "Water vapor distribution in the stratosphere and high troposphere." Journal of the Atmospheric Sciences, 25(2):299-311, Mar. 1968. figs. tables. refs.

Fifty-one soundings with balloon-borne frost-point hygrometers provided measurements to a height of 94,000 ft of the vertical distribution of water vapor over Trinidad, West Indies, Washington, D.C., and Thule, Greenland during 1964 and 1965, the International Years of the Quiet Sun. The stratospheric measurements were obtained during the balloon descent with sample collection ahead of the instrument train to avoid extraneous moisture from the flight system. A systematic latitudinal gradient of mixing ratio in the stratosphere is not discernible in the data. Author(mod) MGA 19.7-366.

1968

1941 Merritt, E.S. and Bowley, C.J. "Cirrus canopy evolution in selected Atlantic hurricanes." Allied Research Associates, Inc., Contract no. E-206-67(N), Final Report, May 1968. 93 p. figs. photos. tables. refs. DAS.

Analyses are made of the evolution of satellite-observed Cirrus canopies in hurricane "Hilda" (1964), "Betsy" (1965) and "Inez" (1966). These analyses examine the generation, advection and dissipation processes which are important factors in the satellite-observed canopy evolution. The upper tropospheric field of motion and the distribution and intensity of penetrative cumulus 'hot towers' appear to be the principal evolutionary factors. Modification of the existing field of motion by extra-tropical circulations can produce very rapid changes in the satellite-viewed canopy. - Author (mod).

1968

1942 Miami Univ. Institute of Marine

1968 cont.

Sciences. "Chemistry of the marine atmosphere." In its Annual Report 1967 - 1968, pub. Feb. 1968. pp. 41-42. DAS.

J.M. Prospero collected airborne dust daily at a Barbados station for a 25-month period. There is evidence that dust collected in Barbados originates in Africa and that quantities transported depend on meteorological conditions over Africa and the tropical North Atlantic Ocean. - Staff.

1968

1943 Miami Univ. Institute of Marine Sciences. "Hurricane tritium project." In its Annual Report 1967 - 1968, pub. Feb. 1968. p. 42. DAS.

Describes work by G. Ostlund on investigation of the percentage of rainfall in a hurricane that is derived by evaporation from the sea. The project will determine the relative importance of the sea as a supplier of energy in a hurricane using the radioactive hydrogen isotope, tritium, as a tracer. - Staff.

1968

1944 Miami Univ. Institute of Marine Sciences. "Radar meteorology." In its Annual Report 1967 - 1968, pub. Feb. 1968. pp. 37-38. DAS.

Describes research carried out by the Institute's Radar Meteorological Laboratory under H.W. Hiser. - Staff.

1968

1945 Michelangeli, A. "Address delivered at the inaugurational session [of the 5th Technical Conference on Hurricanes and Tropical Meteorology, Caracas, Venezuela, 20 - 28 Nov. 1967] by the president of the Venezuela National Committee." American Meteorological Society, Bulletin, 49:88-89, 1968. Spanish version, pp. 85-86.

President of the National Committee summarizes the efforts of his country and asks for cooperation. He states "We would be pleased if, with the help and cooperation of countries concerned by our common problems, and with the support of competent authorities, Venezuela could gradually become the research center for tropical meteorology and help in the development of a Latin American center for technical specialization, permitting us to join our efforts with a minimum of expenses for each participating country." - Staff MGA 19.9-340.

1968

1946 Millas, J.C. "Hurricanes of the Caribbean and adjacent regions, 1492 - 1800." Miami, Fla., Academy of the Arts

1968 cont.

and Sciences of the Americas, 1968. 328 p. refs. DAS.

The historical background, including calendar changes which must be kept in mind in dating the hurricanes of 4 centuries, is treated. Contains descriptions of 308 individual cases quoted from various sources, with the author's annotations and critical comments. It also includes a brief discussion of the minimum hurricane activity which apparently commenced late in the 16th century, continued throughout the 17th, and ended in the 1st part of the 18th century in a belt including Puerto Rico, Hispaniola, and Cuba, called the 'zone of avoidance.' - Staff MGA 20.6-06.

1968

1947 Miller, B.I., Hill, E.C. and Chase, P.P. "Revised technique for forecasting hurricane movement by statistical methods." Monthly Weather Review, Wash., D.C., 96:540-548, 1968. figs. tables. refs.

The NHC-64 statistical equations for predicting the movement of hurricanes have been in operational use for 4 yrs. Following the 1966 hurricane season, it was apparent that the equations could be improved. A new forecast technique, based on additional data and additional predictors, has been derived. Tests on independent data for 1966 and on an operational basis during 1967 indicate that the 1967 method is slightly superior to NHC-64. - Author (mod) MGA 20.2-157.

1968

1948 Miller, C.F. "Operation Ceniza-Arena: the retention of fallout particles from Volcán Irazú (Costa Rica) by plants and people. Part II, Appendices." Stanford Research Institute, SRI-MU-4890, Dec. 1966. 299 p.

Summary of: 1) hourly deposit rates of Ceniza-Arena deposits at 2 land plots, and eruptive behavior of Volcán Irazú; 2) meteorological measurements and data; 3) foliar sampling and related information; 4) excerpts from trip itinerary and general observations, 14 June 1964 - 23 February 1965; 5) Ceniza-Arena sieve analysis measurements and 6) foliar specific areas and plant geometry. - Staff.

1968

1949 Moretti, J.E. and Hubschman, K. "Study of the interchange of heat between the ocean and the atmosphere." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.21. DNO.

Relates a descriptive study of the interchange of heat between the ocean

1968 cont.

and the atmosphere in the area of the Caribbean Sea close to Venezuela. The data were obtained from Universidad de Oriente and the LaSalle Foundation. Air temperature (dry and humid) observations were made with an Assmann psychrometer and the sea temperature observations were made with reversible thermometers. Conclusions concern the distribution of various parameters that are involved in heat interchange and its influence on the movement of air masses. - Author (mod).

1968

1950 Morton, W.T. "Study of cloud patterns observed from ESSA 3 satellite photographs and their relationship to sea surface temperatures in the eastern Gulf of Mexico." U.S. Naval Oceanographic Office, Informal Report IR no. 68-118, Oct. 1968. 227 p. figs. maps. refs. DNO.

Cloud patterns in the eastern Gulf of Mexico are the result of frontal systems, terrestrial radiation, atmospheric motions and thermal differences between sea surface and the adjacent air masses. ESSA 3 weather satellite photographs reveal temperature patterns of the surface oceanic environment by the presence or absence of cumulus-type clouds during atmospheric calm periods. Remote sensors and high altitude cloud photographs can present real-time synoptic coverage of ocean surface temperatures provided that accurate ground-truth temperatures are incorporated with the data. - Author mod.

1968

1951 Mueller, E.A. and Sims, A.L. "Effects of Rainfall and Drop Size on the M564 Fuze." Illinois State Water Survey Urbana, Final Report. Contract no. DAAG11-68-C-1342. Oct. 1968. 51 p.

Results of test firings of an M564 fuze in tropical rains are presented. Various rainfall conditions are examined and it is tentatively concluded that the total number of raindrops encountered is more important than the size of the raindrops. - Author AD-849 222L.

1968

1952 Murphy, C.H. and Bull, G.V. "Gun-launched probes over Barbados." American Meteorological Society, Bulletin, 49:640-644, 1968. figs. refs.

Use of 5- and 16-inch guns for vertical soundings is described. Five-inch gun soundings have provided measurements of winds up to 60 km including temperature measurements. Also, projectiles launched from a 16-inch gun provided 67 measurements of winds above 85 km and

1968 cont.
results were correlated with ground-based radio frequency measurements to increase understanding of sporadic-E layers. Author (mod) MGA 20.3-142.

1968
1953 [Ocean Industry] "New components for U.S. weather satellite system." Its 3(1):18, Jan. 1968.

An undersea radioisotope generator will power an oceanographic platform moored off the coast of Puerto Rico. The platform will be instrumented with sensors for making environmental measurements of sea states, ocean currents and wind velocities. As part of the National Aeronautics and Space Administration's (NASA) Nimbus B weather satellite program, it will beam scientific data to ships, planes and satellites. - Author (mod).

1968
1954 [Oceanology International] "BOMEX to test federal coordination." Its 3(5):13, July/Aug. 1968.

Announcement of Barbados Oceanographic and Meteorological Experiment to study air-sea interaction. - Staff.

1968
1955 [Oceanology International] "Trade-wind carriers." Its 3(2):9-10, Mar./Apr. 1968.

Trade winds carry mineral dust and microscopic plants from Africa as far west as the Caribbean Sea. - Staff.

1968
1956 Ochoa, H.G. and Duarte, M.P. "Climate of the Antilles coast of Venezuela." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.8. DNO.

This work is based on data from the meteorological stations on the Venezuelan coast, Curacao and Trinidad. Variations of different meteorological parameters were analyzed and a comparison made between coastal stations. From these analyses it is evident that this zone, like all maritime climates, is characterized by small temperature variations, both diurnal and annual. In addition to the temperature, for which an average of 27°C was estimated, the relative humidity was found to have an average of 78 percent. - Author (mod).

1968
1957 Ostlund, H.G. and Stearns, R.D. "Pre-BOMEX absolute humidity data." Miami. Univ. Institute of Marine Sciences, Contract E-22-99-68G, Technical Report, Sept. 1968. 8 p. tables.
DAS.

1968
1958 Pearce, R.P. "Vorticity budgets derived from Caribbean data." For abstract see Riehl, H. and Pearce, R.P. "Studies on interaction between synoptic and mesoscale weather elements in the Tropics." 1968. Pt. 2, 32 p.

1968
1959 Pedgley, D.E. "Fifth technical conference on hurricanes and tropical meteorology." Weather, 23(7):289-290, July 1968.

Possible African origin of some hurricanes, observation of diurnal changes in the circulation of the high troposphere over the equatorial Atlantic, need for deep warm water to provide energy for developing hurricanes, and the widespread use of satellite photographs in hurricane studies are considered. - Staff MGA 19.12-210.

1968
1960 Pelissier, J.M. "Hurricane season of 1967." Weatherwise, 21(1):14-21, 43, Feb. 1968. figs. table.

The hurricane season began late in 1967. Satellite photographs composited by a digital computer permit a daily view of the entire tropical Atlantic. During the latter part of August, the digitized mosaics revealed that the Intertropical Convergence Zone (ITCZ) had become more active. During 24 August - 3 September, a series of 4 well-defined cloud masses were observed to move westward off the African coast along the ITCZ. The first formed "Arlene," the second "Beulah," the third did not develop further and the fourth produced "Chloe." A statistical summary of the 1967 hurricane season is given, with descriptive information on each hurricane. - Staff MGA 19.9-653.

1968
1961 Portig, W.H. "Humid warm tropical climate and man." Weather, 23(4):177-178, Apr. 1968. refs.

Reports imply that weather of the humid Tropics is exceedingly uncomfortable for people from the temperate latitudes. It is forgotten that much money and effort is expended in temperate climates to mitigate the worst features. If a similar effort is made in tropical areas, living conditions become no less unbearable than in middle latitudes. - Staff MGA 19.10-62.

1968
1962 Prospero, J.M. "Atmospheric dust studies on Barbados." American Meteorological Society, Bulletin, 49:645-652, 1968. figs. refs.

The concentration of dust in the trade

1968 cont.

winds over Barbados has been measured continuously since August 1965; the average dust load for the 25-month period ending in August 1967 is 2.5 micron gm m^{-3}. There is a marked seasonal periodicity in the transport, with average dust concentrations for the summer months being an order of magnitude larger than those for the winter months. In addition, very sharp fluctuations in dust concentrations are observed on a day-to-day basis. There is considerable evidence that the dust originates in Africa and that the composition and quantities of the dust transported are dependent on meteorological conditions over Africa and the tropical North Atlantic Ocean. Author (mod) MGA 20.2-201.

1968

1963 Randerson, D. "Study of air pollution sources as viewed by Earth satellites." Air Pollution Control Association, Journal, Pittsburgh, Pa., 18(4):249-253, Apr. 1968. figs.

Several photographs are presented which illustrate large scale dispersion of atmospheric pollutants. These photographs were taken by astronauts on various manned spacecraft flights. A spacecraft view of a forest fire in the Apalachicola National Forest revealed a rather large smoke plume. Geometrically scaled measurements indicated the plume was approximately 4 mi wide and about 65 mi long. A picture of industrial haze over Houston, Texas, is presented to illustrate an areal distribution of atmospheric pollutants covering an area of about 2600 mi^2. - Author (mod) MGA 20.1-177.

1968

1964 Rao, P.B. "Electron concentrations and electron and ion temperatures in F region for magnetically quiet and disturbed conditions." Journal of Geophysical Research, 73(5):1661-1678, Mar. 1968.

Results are presented of radar backscatter measurements of F-region densities and temperatures obtained at Arecibo (geomagnetic lat 30°N) during a sudden commencement magnetic storm of 15 - 16 June 1965. During a few quiet days in the same season, electron concentration results obtained from backscatter power measurements show quiet- and disturbed-day diurnal variations, contours of constant plasma frequency and plasma density scale heights. Storm-day deviations of some of important F-region parameters are also calculated and presented. - Staff.

1968

1965 Read, R.G. "Evapotranspiration power

1968 cont.

in a tropical forest." Abstract only. In Technical Conference on Hurricanes and Tropical Meteorology, 5th, Caracas, 20 - 28 Nov. 1967. Program, American Meteorological Society, Bulletin, 48:633, 1967. Revised article: "Evaporative power in the tropical forest of the Panama Canal Zone." Journal of Applied Meteorology, 7(3):417-424, June 1968. figs. tables. refs.

Physical processes that affect evapotranspiration and the technique of measuring the drying influence of the air in the tropical forest of the Panama Canal Zone during the rainy season were examined. The time rate of evaporation from the surfaces of white spherical porcelain atmometers was used to determine the evapotranspiration power of this environment. Evaporation, temperature, vapor pressure deficit and relative humidity profiles are shown from the forest floor through 28.5 at the top of the canopy. - Author (mod) MGA 19.9-479.

1968

1966 Riehl, H. and Pearce, R.P. "Studies on interaction between synoptic and mesoscale weather elements in the Tropics: Report no. 1." Colorado. State Univ. Dept. of Atmospheric Science, Atmospheric Science Paper, no. 126, June 1968. figs. charts. refs., Contents: Riehl, H.'Some aspects of cumulus-scale downdrafts.' (32 p.) Pearce, R.P. 'Vorticity budgets derived from Caribbean data.' (32 p.) DAS.

Presents initial results from several Caribbean disturbances to determine whether the downdraft effect could be observed regularly and whether it was in both steady-state and in hurricane producing waves in the easterlies. The energy transfer from the ocean surface is analyzed in relation to changes in the moisture structure of the subcloud layer. The author computes turbulent mass and vorticity transfer along the vertical within the synoptic scale setting preliminary to considering other forms of turbulent exchange. - Staff.

1968

1967 Risebrough, R.W. et al. "Pesticides: transatlantic movements in the northeast trades." Science 159:1233-1236, 1968.

Concentrations of chlorinated hydrocarbons in airborne dust carried by the trade winds from the European-African land areas to Barbados range from less than 1 to 164 parts per billion. The lower limit of the average content of 1 cubic meter of air is 7.8×10^{-14} gm. The contributions of river-borne and atmospherically transported pesticides to parts of

the marine environment are calculated and compared. The amounts of pesticides contributed to the tropical Atlantic by the trade winds appear to be comparable to those carried to the sea by major river systems. - Staff.

1968

1968 Rosen, J. "Simultaneous dust and ozone soundings over North and Central America." Journal of Geophysical Research, 73(2):479-486, 15 Jan. 1968. figs. refs.

Simultaneous soundings of ozone and sub-micron dust over North and Central America are reported. The results show considerably more dust in the equatorial stratosphere than in the higher latitude stratosphere. An increase in the dust concentration is observed near the level of the tropical tropopause and as far north as 60°. The occasional secondary dust maximum and dust layers between the local tropopause and the altitude of the tropical tropopause are attributed to a form of transport other than eddy diffusion. Author (mod) MGA 19.6-217.

1968

1969 Sanders, F. and Burpee, R.W. "Experiments in barotropic hurricane track forecasting." Journal of Applied Meteorology, 7(3):313-323, June 1968. figs. table. refs. The barotropic prediction model applied to tropical circulations provides a significant advance in hurricane track forecasting in regions of relatively dense rawinsonde coverage. A series of test forecasts for hurricanes "Donna" (1960), "Carla" (1961) and "Flora" (1963) illustrate the performance of the model for storms having a wide variety of behavior. - Author (mod) MGA 19.9-221.

1968

1970 Sartor, J.W. "Monthly climatological wind fields associated with tropical storm genesis in the West Indies. Colorado State Univ. Ft. Collins, Dept. of Atmospheric Science, Grant NSF GF-287, ESSA E-22-80-68(G), Dec. 1968. 35 p. figs. tables. refs. DAS.

An empirical study is presented which investigates the relationship of monthly climatological wind fields to tropical storm genesis in the Gulf of Mexico and the western Caribbean. Correlations of parameter deviations with tropical storm genesis is presented. Monthly vertical wind shear deviations are small, yet they show favorable correlations. Positive deviations of mean monthly 850 mb relative vorticity is strongly correlated with genesis in the Gulf of Mexico and is also

favorably correlated with genesis in the western Caribbean. - Author (mod).

1968

1971 Schink, D.R. et al. "Tracer measurement of actual air-sea gas exchange." Abstract only. American Geophysical Union, Transactions, 49(4):692 (M39), Dec. 1968.

A field experiment to measure the rate of gas exchange across the air-sea interface was conducted in September on the Caribbean near Puerto Rico. Wind velocity was 15-20 kts. The tracer, 2 curies of radioactive Xe^{133}, was placed in the center of an explosive charge. The explosive employed ($LiClO_4$ + Al) produced no gaseous reaction products. - Author(mod).

1968

1972 Schoner, R.W. "Climatological regime of rainfall associated with hurricanes after landfall." U.S. Weather Bureau. Eastern Region, Technical Memorandum WBTM-ER, 29 June 1968. 25 p. figs. refs. Also issued as: U.S. ESSA, Technical Memorandum WBTM-ER 29, DAS.

Climatological summaries for southern Texas, South Atlantic, etc., contain information which can be utilized as guides for hurricane rainfall in estimating an area's hurricane rainfall flood potential (HRFP). The data show zonal distribution of hurricane areal and point 24-hr hurricane precipitation. The isohyetal patterns portray the distribution of precipitation in connection with a similarly behaved hurricane. The unusual storms listed for each of the coastal zones represent the upper limits of zonal flood potential. Determination of a region's HRFP depends upon a region's physiographical, hydrological, geological and climatological features. - Author (mod) MGA 20.2-258.

1968

1973 Schoner, R.W. "Florida west coast." In his "Climatological regime of rainfall associated with hurricanes after landfall." U.S. Weather Bureau. Eastern Region, Technical Memorandum WBTM-ER 29, June 1968. pp. 11-13. figs. DAS.

In a review of 19 hurricanes that crossed the Florida west coast, 3 were considered to be typical. The first and most common is a hurricane that enters the Florida west coast, traverses the peninsula and passes directly into the Atlantic. The second applies to a hurricane that, after crossing the Florida Panhandle, continues on a north-northeast course passing over the interior portions of the South Atlantic states. The third pattern represents the rainfall

1968 cont.

distribution associated with a hurricane that, after crossing the Florida west coast, traverses the coastal portions of the South Atlantic states. - Author (mod).

1968

1974 Schoner, R.W. "Middle Gulf Coast (Port Arthur, Texas to Apalachicola, Florida)." In his "Climatological regime of rainfall associated with hurricanes after landfall." U.S. Weather Bureau. Eastern Region, Technical Memorandum WBTM-ER 29, June 1968. pp. 8-10. figs. DAS.

Review of rainfall patterns associated with 28 hurricanes. Three patterns are offered as typical. The first and most common applies to hurricanes that cross the coast from the south, then curve toward the east. The second rainfall pattern was selected for hurricanes that cross the coast from the southeast or south, and curve toward the west. The third pattern applies to hurricanes that, after crossing the Florida peninsula, parallel the north Gulf Coast before re-crossing the middle Gulf Coast in the vicinity of Lake Pontchartrain. - Author (mod).

1968

1975 Schoner, R.W. "Texas coast." In his "Climatological regime of rainfall associated with hurricanes after landfall." U.S. Weather Bureau. Eastern Region, Technical Memorandum WBTM-ER 29, June 1968. pp. 5-7. figs. DAS.

Examination of 23 hurricanes that crossed the Texas coast indicates that they came out of the western Gulf of Mexico, moving toward the N or NW. The intense hurricane rainfall was considered to be either the result of a slow moving hurricane that paralleled the coast, or from a hurricane circulation that redeveloped over the highland region of western Texas. Author (mod).

1968

1976 Schulze, P. "Verschiedene Wettertypen auf den französischen Antillen." [Various weather types in the French Antilles.] Berlin. Freie Univ. Institut für Meteorologie und Geophysik, Meteorologische Abhandlungen, 92(9), 1968. Beilage 126/68. 3 p.

1968

1977 Schulze, P. "Wolkenbildung über der Halbinsel Florida und die damit zusammenhängenden meteorologischen Ereignisse während einer Beobachtungsperiode im Sommer." [Cloud formation over peninsular Florida and associated meteorological events during an observation period in summer.] Berlin. Freie Univ. Institut für

1968 cont.

Meteorologie und Geophysik, Meteorologische Abhandlungen, 92(10), 1968. 2 p. DLC.

1968

1978 [Science News] "Air-sea interactions studied off Barbados." 94(19):476, 9 Nov. 1968.

A vertical column of air and water extending from the top of the atmosphere down to the ocean floor will be investigated beginning 1969 in a large-scale study involving 18 federal agencies and departments. Project BOMEX, the Barbados Oceanographic and Meteorological Experiment, will include a 300 sq mi area of ocean near Barbados island in the Atlantic. Satellites, 7 ships, 10 to 20 aircraft and a variety of buoys will observe and transmit air and water characteristics and movements into a specially designed data-handling system at the space agency's Mississippi Test Facility. - Author (mod).

1968

1979 [Science News] "Stormfury: calming the eyewall." Its 94(7):153-154, 17 Aug. 1968.

Survey of 1968 Project STORMFURY hurricane seeding operations in the Caribbean Sea and Gulf of Mexico. - Staff.

1968

1980 Segman, R. "They fly for science." ESSA World, 3(3):24-26, July 1968. DAS.

Popular article on the history and operation of ESSA's Research Flight Facility in hurricane research in the Caribbean hurricane region. - Staff.

1968

1981 Senn, H.V. and Courtright, C.L. "Radar hurricane research, Sept. 1, 1967 to Aug. 31, 1968." Miami. Univ. Institute of Marine Sciences, Contract E22-61-68 (N), Final Report, Sept. 1968. 31 p. figs. charts. refs. DAS.

A detailed description of the University of Miami radars, the recent changes and the modes of operation used in the spring and summer of 1968 are presented. Participation in the Experimental Meteorology Branch of the Environmental Science Services Administration's (ESSA) cumulus-seeding experiments on the part of the radar meteorological laboratory is also described along with some of the radar problems, their solutions and suggestions for future planning. The extensive participation by the authors in Project STORMFURY's planning, training and operations during 1967 - 1968 is summarized. - Author (mod) MGA 20.5-82.

1968

1982 Sharma, R.P. and Rastogi, R.G. "Lunar

1968 cont.

tides in noon electron density at fixed real heights in the ionosphere over Puerto Rico and Huancayo." Journal of Atmospheric and Terrestrial Physics, 30(3):453-458, Mar. 1968. figs. refs. tables.

Lunar semi-monthly oscillations in electron density at fixed real heights of the ionosphere at noon over Puerto Rico and Huancayo during the periods March 1959 - December 1961 and January 1960 - December 1961 have been computed. The amplitude of the tide, M_2, for both the stations is found to increase monotonically with height during each of the seasons, with approximately 50 times enhancement of tidal amplitude from the base to the peak of the F_2-region. - Author (mod)
MGA 19.7-533.

1968

1983 Simpson, J.S.M., Wiggert, V. and Mee, T.R. "Models of seeding experiments on supercooled and warm cumulus clouds." In National Conference on Weather Modification, 1st, Albany, N.Y., 28 Apr. - 1 May 1968. Proceedings. Boston, 1968. pp. 251-269. tables. refs. DAS.

A numerical model of an entraining cumulus tower has been developed which predicts top heights of seeded and unseeded supercooled clouds in a statistically controlled tropical experiment (1965) by Project STORMFURY. This model has been improved to include the growth and fallout of precipitation particles and the development of radar reflectivity in the cloud tower. Predicted consequences of seeding experiments on both cold and warm clouds are discussed. - Author (mod).

1968

1984 Simpson, R.H. "Disturbances in the tropical and equatorial Atlantic Ocean." Abstract only. In American Meteorological Society, Annual Meeting, 49th, New York, N.Y. 20 - 23 Jan. 1969. Program, American Meteorological Society, Bulletin, 49:1023, 1968.

The meteorological satellite has refocused attention upon disturbances in the Tropics and the equatorial trough, especially in the structure of these disturbances. In some instances, synoptic scale disturbances in the trade winds cannot be related directly to synoptic scale flow dynamics, even in areas where the density of observations is maximal. However, in the Atlantic, the satellite does observe migratory disturbances westward from the coast of Africa which seem to have their origin near Abyssinian Plateau, Africa. Author (mod).

1968

1985 Simpson, R.H. "Role of the sea-air interface in the growth of hurricanes." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.29. DNO.

Numerous disturbances cross the tropical oceans, but less than one-tenth become tropical storms or hurricanes. The problem is one of the energetics in which the oceans are identified as the source of critical fuel for the growth process. The latent heat energy nominally transported into a disturbance by tropical ocean air and released with the formation of rain, can reduce surface pressures little more than one percent. In very severe hurricanes with winds of 60 to 80 mps, the central pressure may be 8 to 10 percent lower than the environment. So the oceans alone can supply the additional heat energy which is critical to the growth of a mature hurricane.- Author (mod).

1968

1986 Simpson, R.H. "Technical programs of the Regional Center for Tropical Meteorology." In Army Conference on Tropical Meteorology, 6th, Univ. of Miami, Coral Gables, Fla., 8 - 9 June 1967. Proceedings. Ft. Monmouth, N.J., Jan. 1968. pp. 15-22. DAS. DLC.

Announces establishment of the Regional Center for Tropical Meteorology (RCTM) as a part of the U.S. Weather Bureau's National Hurricane Center. The RCTM analyses are primarily to serve the forecaster in making prognoses which are concerned with the detection, tracking and development of suspicious disturbances. Discusses the definition of a disturbance, flights into suspicious areas, cold air intrusions across the Equator, thermodynamic processes in the tropical atmosphere and archiving of tropical data. - Staff
MGA 19.9-51.

1968

1987 Simpson, R.H. et al. "Atlantic tropical disturbances, 1967." Monthly Weather Review, 96:251-259, 1968. figs. charts. tables. refs.

This is the first of a series of articles prepared by the National Hurricane Center, summarizing the weaker disturbances of the season. The disturbances of 1967 have been identified from operational circulation analyses at the surface, 850 mb and 700 mb after superimposing cloud and precipitation areas viewed by satellites Staff
MGA 19.8-302.

1968

1988 Smedley, D. "Caribbean Meteorological Institute, a UNDP/WMO [United Nations Development Program Word Meteorological Organization.] project for the improvement of Caribbean Meteorological Services." American Meteorological Society, Bulletin, 49:653-655, 1968. fig.

The purpose and description of the project are set forth and the report calls for the establishment of a Regional Meteorological Institute in Barbados. Information is given on the implementation of the program, training, research, data processing, library and equipment. The UNDP is providing funds for a fellowship program to be awarded to West Indians. The scientists and technicians so trained will replace the World Meteorological Organization (WMO) experts and continue the work of the Institute under the overall direction of the Caribbean Meteorological Council. - Staff MGA 20.4-60.

1968

1989 Smedley, D. "Problems of Data Processing Centre establishment for the Caribbean Meteorological Institute." Bridgetown, Barbados, Caribbean Meteorological Institute, 1968. 24 p. DAS.

1968

1990 Smith, T.B. "Island Meteorology Study." Meteorology Research Inc. Altadena Calif. Contract N123(60530)55005A. Aug. 1968. 136 p.

Report covers an analysis of a selected island wind flow. It includes a discussion of the mean wind flow patterns in the area, their seasonal changes and their influence on diurnal variations which result from changes in air-sea temperature differences. Particular attention is devoted to the frequency and duration of onshore flow near and after sunset. In addition, some comments are made regarding the day-to-day persistence of the onshore flow as it is related to forecasting. Author (mod) AD-844 858L.

1968

1991 Stewart, G.L. and Farnsworth, R.K. "United States tritium rainout and its hydrologic implications." Water Resources Research, 4(2):273-289, Apr. 1968. figs. tables. refs.

Tritium (H_3) concentrations in precipitation, total rainout and rainfall amounts for 1964 and 1965 are listed for 15 stations in the United States, Alaska, and Puerto Rico. Data show that the major increase in H_3 rainout observed in 1963 was followed by a decline of about 27 percent in 1964 compared with 1963, and

1968 cont.

an additional decline of about 54 percent in 1965 compared with 1964. The H_3 data now available make it possible to estimate the H_3 input to the hydrologic environment at any part of the United States. Author (mod) MGA 19.7- 425.

1968

1992 Sugg, A.L. et al. "Hurricane season of 1967." Monthly Weather Review, 96: 242-250, 1968. figs. charts. tables. refs.

The 1967 hurricane season in the North Atlantic, Caribbean Sea and Gulf of Mexico is reviewed. The first tropical cyclone, "Arlene," developed late in the season on 28 August and reached hurricane intensity on 2 September. The late season is explained by the general broad-scale circulation features at middle and low latitudes. An unfavorable pattern for tropical cyclone development persisted through August. The statistically unfavorable positions and the persistence of monthly and daily circulation features accounted for the lack of tropical cyclone development in July and August. - Staff MGA 19.8-303.

1968

1993 Swanson, R.W. et al. "Expanded little Ida - experimental results." General Electric Co. Syracuse, N.Y., Heavy Military Electronics Dept., Contract AF 30(602)-3946, Aug. 1968. 482 p.

This report discusses data collection, reduction and analysis involving 5 major HF propagation experiments. Experiments were concerned with determining HF propagation mode reliability, loss, azimuth of arrival, and spectrum characteristics. Under this effort, 3 propagation circuits were instrumented with transmitting terminals located at Thule, Greenland; Keflavik, Iceland; and Coco Solo, Panama; and central receiving sites situated at the Stockbridge/Starr Hill test annexes, Griffiss Air Force Base, New York. Experimental results discussed are primarily based on data collection over a Coco Solo, Panama to Central New York path. - Staff.

1968

1994 Teitell, L. "Studies of the effects of tropical environments on materials. I. Description of Exposure Sites." Frankford Arsenal, Philadelphia, Pa., Pitman-Dunn Research Labs. May 1968. 65 p.

Background and objectives of U.S. Army studies of the effects of tropical environments on materials is presented. The geography and climate of the Panama Canal Zone and the El Valle area in the Republic of Panama are described. Detailed

1968 cont.

information is given on the location, weather and special environmental conditions at the various tropical sites used for the exposure of materials. Test sites include marine, open sun field, tree-shaded and rain forest sites on the Atlantic side of the Canal Zone at both Fort Sherman and Galeta Island, plus an ammunition storage area at Fort Gulick. - Author (mod) AD-838 701.

1968

1995 Travelers Research Center, Inc. "Atmospheric boundary layer." In its Annual Report, 1968. pp. 13-15. DAS.

In mid-1969, the United States will begin a series of large-scale interagency programs to measure the exchange of energy between the ocean and the atmosphere in the Tropics. The first of the series will be a pilot program conducted over a 250,000 sq mi ocean area east of Barbados, employing ships, aircraft and satellites. Under sponsorship of the Sea-Air Interactions Laboratory of the Environmental Science Services Administration (ESSA), Travelers Research Center (TRC) is participating in the planning of the Barbados Oceanographic and Meteorological Experiment (BOMEX) by developing a series of physical-numerical models of the atmosphere-ocean boundary layer. - Author (mod).

1968

1996 Trusov, I.I. "Usloviia uvlazhneniia territorii Kuby." [Moisture conditions over Cuba.] Meteorologiia i Gidrologiia, no. 4:96-98, Apr. 1968. figs. table.

Selianinov has defined a coefficient of humidity for use in certain agrometeorological work as the ratio of the total precipitation for the period with air temperature greater than 10° to the accumulated temperature for the same period. The coefficients calculated for stations in Cuba indicate that most of the country suffers drought conditions during the period December to March. To illustrate the pattern of the data, a tabulation is given of the percentage frequencies of different ranges of the coefficients for each of the months of November to April for Havana in the period 1926 - 1963. Charts of geographical distribution of moisture conditions for the seasons May - October and November - April are also shown. - Staff MGA 20.3-415.

1968

1997 [Undersea Technology] "NASA installs automatic weather station." Its 9(11):23, Nov. 1968.

1968 cont.

The National Aeronautics and Space Agency (NASA) has installed an automatic weather station on a Shell Oil Company rig about 25 mi south of Galveston, Texas, to transmit data on wave height, wind speed and direction, relative humidity and air and water temperatures to the U.S. Weather Bureau at Galveston. Information is supplied to the Manned Spacecraft Center's Landing and Recovery Division, which conducts at-sea testing and qualification of spacecraft and supporting recovery equipment in the Gulf of Mexico. - Author.

1968

1998 U.S. Air Weather Service. "U.S. Naval Weather Service world-wide airfield summaries, Vol. 7, Central America." Asheville, N.C., Environmental Science Services Administration, Feb. 1968. 348 p. almost entirely data. DAS.

Climatological summaries for selected airfields and for climatic areas in Mexico, Central America, Greater Antilles, Lesser Antilles and other islands. Climatological data applicable to a specified airfield consist of statistical parameters based on actual weather observations made at the airfield. Climatic area data are average (or representative) values based on a sample of climatological data available from weather stations within the area. The airfield and climatic area parameters given in the tabulations are listed and defined. - Staff MGA 19.8-455.

1968

1999 U.S. Air Weather Service, Scott Air Force Base, Ill. "Operations. Weather warnings." Report no. AWS-Manual-55-8-Vol-2. Nov. 1968. 33 p.

The volume describes the products prepared by the Military Weather Warning Center and the National Hurricane Center. It outlines the responsibilities of and the procedures to be followed by detachments in providing weather warning support. Author.

1968

2000 U.S. Army Tropic Test Center, Fort Clayton, Canal Zone. "Environmental data base for regional studies in the humid Tropics." Monthly Microclimatic Summary Report. Nov. 1967. Contract no. ARPA Order-740. 26 p. Apr. 1968.

Contains detailed microclimatic data (November 1967) from specific sites in the Panama Canal Zone and vicinity. The data are presented in tabular form, summarized for hourly and/or daily observations from surface to 46-m levels. Elements listed

1968 cont.

are: temperature, pressure, precipitation, wind speed and direction, relative humidity and evaporation. - Author AD-669 604.

1968

2001 U.S. Army Tropic Test Center, Fort Clayton, Canal Zone. "Environmental data base for regional studies in the humid Tropics." Semiannual Report no. 4, Mar. - Aug. 1967. Contract no. ARPA Order-740. May 1968. 105 p.

Report for the environmental data base project presents a review of project objectives, scope, and descriptions of observational sites and summarizes project activities during the period of March - August 1967. The climate section (Pt. 4) outlines the types of micrometeorological data observed and instrumentation used. The soils and hydrology section (Pt. 5) contains interim data on soil parameters at one satellite site. The vegetation section (Pt. 6) consists of an analytical discussion of the floristic characteristics of the Albrook forest site. The section on microbiology and chemistry of the atmosphere (Pt. 7) contains a discussion on the concentration of carbon dioxide in the tropical atmosphere and a paper on the microbiological content of rainwater. The macrofauna subtask of the project (Pt. 8) presents preliminary results of an insect collection program carried out at different levels. - Author (mod) AD-674 660.

1968

2002 U.S. Environmental Science Services Administration. "How to track a hurricane." ESSA World, 3(4):18-19, Oct. 1968. DAS.

Reprint of hurricane tracking chart provided by Environmental Science Services Administration for public distribution. Staff.

1968

2003 U.S. Environmental Science Services Administration. "Project Stormfury plans announced." ESSA News, 4(31):1, 2 Aug. 1968. DAS.

Announcement of 1968 plans for Environmental Science Services Administration/ U.S. Navy hurricane modification program for the Gulf of Mexico and Caribbean Sea. Staff.

1968

2004 U.S. Interdepartmental Hurricane Warning Conference, 22d, Miami, Fla., 16 - 18 Jan. 1968. "Report of the 1968...Conference, (combining) Atlantic and Pacific." Ad Hoc Group on Hurricane Conference, Subcommittee on Basic Meteorological Services, Feb. 1968. 36 p. tables. DAS.

Summary of minutes of discussions

1968 cont.

and recommendations on the following main topics: aircraft reconnaissance, forecasts and warnings and communications. Presents tables containing vector errors for 12, 24, 48 and 72 hrs of U.S. Weather Bureau (USWB) official forecasts and of the NHC-64 and NHC-67 statistical forecast techniques. Seven attachments containing resumes of work of various agencies in 1967 are appended. - Staff MGA 19.8-178.

1968

2005 U.S. National Oceanographic Data Center. "NODC/ESSA interaction." Its Newsletter, 1-68:5, Jan. 1968. DNO.

Describes National Oceanographic Data Center/Environmental Science Services Administration (NODC/ESSA) liaison on BOMEX project in Barbados. - Staff.

1968

2006 U.S. Naval Oceanographic Office. "Hurricanes blow in." Its Bulletin, 19-68:8, 11 Oct. 1968. DNO.

Brief report on 1967 hurricane season. Staff.

1968

2007 U.S. Research Flight Facility. "ESSA Florida cumulus seeding project, 1968." Operations Plan, 2-68, 1 May 1968. 41 p. figs. maps. forms. DAS.

The purpose of the project was to provide microphysical data on Florida clouds and demonstrate, in Florida cumulus, the causal relationship between AgI seeding and cloud growth that has been established elsewhere. Concentrated cloud seeding, its effect on cloud precipitation physics and the testing and refinement of the dynamical cumulus model (EMB-67) were accomplished. Also covered are the participating agencies and their contributions. - Staff

1968

2008 U.S. Weather Bureau. "Some devastating North Atlantic hurricanes of the 20th century." Wash., D.C., June 1968. 10 p. figs. (ESSA/PI 680024) DAS.

Provides a selected list of 36 hurricanes by year for 1900 - 1967 with paths plotted for pre- and post-hurricane and hurricane stages. Tables list storm date (and name), areas affected, highest wind speed, number of deaths, damage by category and type of damage inflicted. - Staff MGA 20.3-321.

1968

2009 University Corporation for Atmospheric Research. "1968 Barbados Experiment." Facilities for Atmospheric Research, no. 7:17-20, Dec. 1968. DAS.

Report on field operations during pre-BOMEX experiment conducted by Florida State

1968 cont.

University (1966) in Barbados. - Staff.

1968

2010 University Corporation for Atmospheric Research. "Sea Breeze 1968." Facilities for Atmospheric Research, no. 7:24-25, Dec. 1968. DAS.

Report on University of Texas Atmospheric Science Group study of land and sea breeze cycles on the Texas Gulf Coast. Staff.

1968

2011 Van den Berg, C.A. "Caribbean: battle field for weathermen." Weather, 23(11):462-468, Nov. 1968. photos.

The location of the Inter-Tropical Convergence Zone (ITCZ) is determined by a series of subtropical high-pressure cells in the Northern and Southern Hemispheres. During the summer in the Caribbean, the atmosphere is unstable and convection occurs daily. The air masses react quickly to changes in surface environment, thus rapid, short-lived violent instability is released at times in 'preference spots'. The preference spots include islands, relatively warm sea currents, mountains, sandy plains, factory complexes, refineries, etc. - Staff.

1968

2012 Van Sickle, D.R. "Interior drainage for hurricane protection projects." American Society of Civil Engineers. Hydraulics Div., Journal, 94(2):455-480, Mar. 1968. figs. tables. refs.

The design of interior drainage systems for hurricane protection projects involves many aspects of hydrology and hydraulics, rainfall and tide studies, urban hydrology, synthetic hydrograph procedures, reservoir routing, pump selection, etc. Application of these procedures to interior drainage design, with particular reference to the Port Arthur, Texas, hurricane protection project, is presented. Summary of design studies leading to selection of pump station capacities, gravity outlet sizes and other project features is presented. - Author (mod) MGA 19.8-304.

1968

2013 Viezee, W., Endlich, R.M. and Mancuso, R.L. "Objective method of analyzing tropical weather." In Army Conference on Tropical Meteorology, 6th, Coral Gables, Fla., 8 - 9 June 1967. Proceedings, Ft. Monmouth, N.J., 1968. pp. 86-96. figs. refs. DAS.

A computer program is described that provides a grid-point analysis of geopotential height, wind, stream function,

1968 cont.

temperature and relative humidity. Divergence, vorticity and vertical motion can be obtained for any desired isobaric level from the objective grid-point analysis of the wind. The analysis technique is applied to the area of the Caribbean for a 6-day period during July 1966. Available cloud observations from NIMBUS 2 are used to test the reliability of the objective analysis technique. - Author (mod) MGA 19.9-215.

1968

2014 Viezee, W., Endlich, R.M. and Mancuso, R.L. "Objective methods of analyzing and forecasting tropical weather." Stanford Research Institute, Menlo Park, Calif., Contract DAAB-07-67-C-0170, Report no. 2, Final For U.S. Army Electronics Command, Ft. Monmouth, N.J., Technical Report ECOM-0170-F, Feb. 1968. 40 p.

Describes objective methods of analyzing and forecasting tropical weather. A number of computer programs are applied to Caribbean data to test different techniques and provide a basis for studying methods of incorporating satellite cloud data into analyses of the wind field. Relationships of clouds to computed divergence appear to be random. - Author (mod) DDC.

1968

2015 Williams, B.H. and Miers, B.T. "Synoptic events of the stratospheric warming of December 1967 - January 1968." Abstract only. In Conference on Composition and Dynamics of the Upper Atmosphere, El Paso, Texas, 6 - 8 Nov. 1968. Program, American Meteorological Society, Bulletin, 49:846, 1968.

Constant level synoptic analyses employed at 40 km and 50 km illustrate a dramatic change in the semi-hemispheric fields of pressure, temperature and wind before, during and after the breakdown of the circumpolar vortex. Synoptic patterns at these levels are compared with those found in January 1967. A combination of synoptic events associated with compressional heating would account for the polar warming and subsequent breakdown in the vortex. - Author (mod).

1968

2016 Winchester, J.H. "Hurricanes, storms, tornadoes." New York: G.P. Putnam's Sons, 1968. 127 p. illus. DAS.

Popular work on origins, causes, behavior and effects of storms. Chapter 4 gives a description of the Galveston hurricane of 1900. Staff.

1968

2017 Yanai, M. "Evoluation of a tropical disturbance in the Caribbean Sea region." Meteorological Society of Japan, Journal, 46(2):86-109, Apr. 1968. figs. charts. refs. English summary p. 86; Japanese summary p. 109.

The transformation process of a wave disturbance in the Caribbean Sea region into hurricane "Alma" (1962) is studied in detail based on conventional surface and upper-air data, TIROS 5 pictures and some research flight observations. The disturbance was cold-cored in the beginning, but an interaction between the disturbance and a pronounced upper-level shear line situated to the west caused a secondary warm low to form at lower levels near the surface. The initial phase of upper-tropospheric warming over the low developed and the cold-core wave disturbance disappeared. The change of cloud features with the development is also described. Author (mod) MGA 20.4-305.

1968

2018 Yngvesson, K.O. and Perkins, F.W. "Radar Thomson scatter studies of photoelectrons in the ionosphere and Landau damping." Journal of Geophysical Research, 73(1):97-110, 1 Jan. 1968. figs. tables. refs.

The velocity distribution of daytime ionospheric photoelectrons in the energy range 7-20 ev has been investigated at altitudes of about 600 km by measuring the intensity of radar Thomson scatter from the steady-state level of plasma waves in the ionospheric plasma. The measurements were carried out at the Arecibo Ionospheric Observatory. ($L \approx 1.5$, geographic lat 18°N). The theoretical prediction that the Landau damping is orders of magnitude larger than the field-free case and depends strongly on angle was verified experimentally. - Author (mod) MGA 19.4-459.

1969

2019 Bricker, O.P. and Prospero, J.M. "Airborne dust on the Bermuda Islands and Barbados." Abstract only. In Golden Anniversary Meeting, Pre-prints of abstracts, American Geophysical Union, Transactions, 50(4):176, Apr. 1969.

Airborne dust is being continuously sampled on the Bermuda Islands and on Barbados. The average atmospheric dust load over Bermuda in August 1968 was 6.51 microns g/m^3. For the same period, the average atmospheric dust load in Barbados was 1.05 microns g/m^3. The major mineralogic constituent of Barbados dust

1969 cont.

is also quartz, but the samples contain relatively larger amounts of chlorite, muscovite, kaolinite and feldspar as well as smectites and calcite. The source of Barbados dust has been traced to the African continent and the same source is suggested for dust collected on Bermuda. Author (mod).

1969

2020 Carlson, T.N. "Synoptic histories of three African disturbances that developed into Atlantic hurricanes." Monthly Weather Review, 97:256-276, 1969. figs. refs.

Surface and upper air (700 mb) analyses, along with high-quality satellite photographs, are presented for August and September 1967. These show the structure and motion over the continent of Africa of 4 major wave disturbances, 3 of which ("Arlene," "Beulah" and "Chloe") later became Atlantic hurricanes. Out of a seasonal total of 6 hurricanes and 2 tropical storms, 3 hurricanes and both tropical storms developed from African disturbances. The evolution of cloudiness and convection and the intensification of the disturbance at low levels over West Africa are examined. - Author (mod).

1969

2021 Carlson, T.N. and Prospero, J.M. "Radon 222 in the trade winds of the tropical North Atlantic and its relationship to airborne dust transport from Africa." Abstract only. In Golden Anniversary Meeting, Pre-prints of abstracts, American Geophysical Union, Transactions, 50(4):176, Apr. 1969.

The concentration of radon-222 was measured continuously on board Environmental Science Services Administration's (ESSA) research aircraft during a flight from Miami to Barbados to Dakar during 8 - 12 October 1968. The calculated radon-222 concentration ranged over about 2 orders of magnitude, with the highest concentrations being found in areas of dense haze and the lowest above the trade wind inversion. The radon is shown to be associated with dust-laden air which reaches the Caribbean after about a week of travel from its origin over North Africa. - Author (mod).

1969

2022 Carter, L.J. "Project BOMEX: biggest weather study yet." Science, 163(3874): 1435, 1436, 28 Mar. 1969.

Announcement of Barbados Oceanographic and Meteorological Experiment (BOMEX) with a description of its organization, list of

1969 cont.

participants, equipment and cost. - Staff.

1969

2023 [Engineering News Record.] "Camille clobbers two U.S. coasts." Its 183(9): 29-31, 28 Aug. 1969. photos.

Reviews the damage caused by hurricane "Camille" in August 1969 to the Gulf Coast area, particularly to the 75-mi area from Waveland to Pascagoula, Mississippi, north of Chandaleur Sound. The hurricane is considered the most powerful ever to strike the United States. Destruction of and damage to highways, bridges, utilities, buildings, homes and wave and flood control structures are described and illustrated. The Red Cross has reported 5,500 homes destroyed, and more than 12,400 houses uninhabitable; loss of life was greater than 200, and 200,000 are homeless. Power, radar, telephone lines and other utilities were especially severely damaged. The disastrous floods in the James River basin of Virginia, resulting from the storm's final surge inland, are also described. Staff.

1969

2024 [Environmental Science and Technology.] "BOMEX plans firmed." Its 3(4): 305, Apr. 1969.

The Barbados Oceanographic and Meteorological Experiment (BOMEX), the first field experiment in the Global Atmospheric Research Program, will investigate the mechanism of air-sea interaction to achieve a better understanding of the energy transfer steps in a large tropical ocean area. A main objective of the investigation is to determine how the primary storage of the Sun's heat energy occurs in the tropical oceans. BOMEX will study evaporation of water from the ocean to a boundary layer about 5,000 ft high and transfer of energy from the boundary layer to the troposphere. - Author (mod).

1969

2025 Erickson, C.O. "Diagnostic study of an upper cold low." Abstract only. In Golden Anniversary Meeting, Pre-prints of abstracts, American Geophysical Union, Transactions, 50(4):179, Apr. 1969.

A case study of an upper tropospheric cold-core cyclone over the Caribbean area in August 1966. It shows that the laplacian of thermal advection was the single most important factor contributing to vertical motion in the disturbance area. Little cloudiness existed near the cyclone prior to the day of most intense circulation, but the interaction between the upper-level

1969 cont.

cyclone and a low-level perturbation on 9 - 10 August was accompanied by a significant increase in cloudiness and precipitation. - Author (mod).

1969

2026 Grosske, F. "About the Venezuelan high." Abstract only. In Golden Anniversary Meeting, Pre-prints of abstracts, American Geophysical Union, Transactions 50(4):179, Apr. 1969.

From the daily synoptic maps, it can be observed that there exists a strong tendency for the development of a high over Venezuela. The author believes that the Inter-tropical Convergence Zone (ITCZ) is always double but to some extent, narrow over oceans and broad over continents. The existence of high equatorial pressures between two ITCZ's in Venezuela is demonstrated by diagrams of the yearly pressure variation from all Venezuelan synoptic stations. - Author(mod).

1969

2027 Harlin, B.W. "Climate calendar." U.S. Weather Bureau Office, Fort Huachuca, Ariz. May 1969. 38 p.

Report contains, in calendar form, meteorological data for Fort Sherman, Canal Zone, Panama, for the period July 1958 to December 1967, mean daily maximum and minimum temperature; extremes of daily maximum and minimum temperature; monthly extremes of temperature and precipitation and monthly averages of relative humidity, precipitation and wind velocities. A number of supplementary tables are also included, plus wind roses of the monthly and annual wind data. Author (mod).

1969

2028 Hsu, Shi Ang. "Four-dimensional model of sea breeze." Abstract only. In Golden Anniversary Meeting, Pre-prints of abstracts, American Geophysical Union, Transactions, 50(4):169, Apr. 1969.

Three consecutive early-summer field trips to the upper Texas coast have produced data which afford a much clearer view of the sea breeze circulation system than was previously held. Networks of surface observations, of pibal and radiosonde ascents and of aircraft flights have produced observations required for the synthesis of the empirical model presented. In the present study it is shown that the hypothesis of land and sea breeze systems which are governed by the circulation theorem is verified by these observations. Author (mod.)

1969

2029 Hsu, Shi Ang. "Mesoscale structure of the Texas coast sea breeze." Univ. of Texas. College of Engineering. Atmospheric Sciences Group, Report no. 16, Jan. 1969. 237 p. figs. charts. photos. tables. refs. DAS.

1969

2030 Hill, E.W.S., ed. "Camille devastated ocean industries all along the Gulf Coast." Ocean Science News, v. 11, no. 35, 29 Aug. 1969.

Summarizes devastation from hurricane "Camille" along the Gulf Coast, August 1969 which destroyed or damaged industrial plants, port facilities, waterways, navigational aids, dikes, levees, roads and housing. Numerous ships and other craft were sunk, wrecked or beached. Oil platforms were destroyed and offshore oil/gas installations suffered losses of about $150 million. Hydrographic surveys have been initiated in the Mississippi River and elsewhere preparatory to channel dredging. Total damage to the area affected is estimated at over $500 million. - Staff.

1969

2031 Kuettner, J.P. and Barney, W.S. "BOMEX, first start on GARP." Abstract only. In Golden Anniversary Meeting, Preprints of abstracts, American Geophysical Union, Transactions, 50(4):170, Apr. 1969.

The Barbados Oceanographic and Meteorological Experiment (BOMEX) is a cooperative effort of numerous government agencies, universities and industrial laboratories to solve major problems of sea-air interaction. The project will comprise 6 major program areas: vertical flux measurements (primary objective); exploration of large tropical convection systems; radiation studies; satellite observations and general programs in oceanography and in tropical meteorology. A description is given of the planned ship array and measuring systems, aircraft observations and flight plans and the balloon, buoy and satellite systems. Author (mod).

1969

2032 Lear, J. "Thor Heyerdahl's next voyage." Saturday Review, 52(18): 49-56, 3 May 1969. map. photos.

The last 2 paragraphs of this article describe researches of J.M. Prospero (University of Miami) which will be incorporated into the Barbados Oceanographic and Meteorological Experiment (BOMEX) project. By analysis and examination of ESSA 5 satellite photos, Prospero found that cosmic dust-fall on Barbados contained

1969 cont.

grains of African sand borne on the trade winds. Heyerdahl, by his expedition from Morocco to Yucatan in a reed boat, hopes to prove that people from Africa reached American shores long before Columbus and were borne by the same trade winds. Staff.

1969

2033 Millas, J.C. "Hurricanes of the Caribbean and adjacent regions 1492 - 1800." Academy of the Arts and Sciences of the Americas, Coconut Grove, Fla., 1968. 328 p. Review by B.I. Miller in American Meteorological Society, Bulletin, 50:615, 1969.

Compiled from Spanish, French and Italian records. Discusses over 300 hurricanes, including 70 not reported elsewhere. Standardization of the chronology has led to significant changes in the dates of occurrence of some hurricanes. The effects of these storms on agriculture, the economy of the area, and numerous ships are described. - Staff.

1969

2034 Moorcroft, D.R. "Nighttime topside ionic composition and temperature over Arecibo, Puerto Rico." Journal of Geophysical Research, 7(1):315-324, 1 Jan. 1969. figs. refs.

The ionic composition and temperature of the night-time ionosphere over Arecibo, Puerto Rico, have been deduced from Thomson (incoherent) scatter spectra obtained with radar at the Arecibo Ionospheric Observatory on 17 nights between August 1965 - 1966. At no time was more than 20 percent He^+ detected at any height. In general, the transition from O^+ to H^+ was low (475 km) and abrupt in the winter, and higher (675 km) and more gradual in the summer.- Staff.

1969

2035 Murphy, C.H. "Seasonal variation of ionospheric winds over Barbados, West Indies." Journal of Geophysical Research, 7(1):339-347, 1 Jan. 1969. figs. refs.

With the completion of wind data reduction of the two 8-trail nights in September 1966 and February 1967, an analysis of the seasonal variation can be made of the complete set of 6 multi-trail heights. A remarkable feature of the wind profiles measured in September 1966 was the predominance of a wind direction clockwise rotation with increasing altitudes. Although substantial fluctuation in zonal flow was observed throughout a night, the mean nocturnal profiles show

surprising consistency. These nocturnal mean profiles indicated a monsoonal reversal between September and winter flows and a null point for zonal flow at 105 km. - Author (mod).

1969

2036 [Nature] "Apollo's eye view." Its 222(5195):718, 24 May 1969.

Remarkable photograph of the eye of hurricane "Gladys" taken on 17 Oct. 1968 by astronauts in APOLLO 7 at an altitude of 97 mi during the spacecraft's 91st revolution. At the time of the photograph the hurricane was about 150 mi SW of Tampa, Florida. Cuba can be seen in the background. - Author.

1969

2037 [NCAR Quarterly] "Barbados experiment." Its no. 22:6-9, Feb. 1969. photos. map. chart. DAS.

The Barbados experiment of 1968 investigated the relations between small-scale meteorological events and major atmospheric motions, in particular, the turbulent exchange processes in the air-sea boundary layer and their interactions with large-scale systems in the Tropics. The collection of data for sea-air interaction and land-sea-air interactions by means of baseline stations along an east-west direction, buoys and island towers and balloons and aircraft are described. - Staff.

1969

2038 [Ocean Industry] "Air-sea interface studied." Its 4(4):23-25, Apr. 1969. fig.

BOMEX (Barbados Oceanographic and Meteorological Experiment) announcement. Staff.

1969

2039 Plank, V.G. "Size distribution of cumulus clouds in representative Florida populations." Journal of Applied Meteorology, 8(1):46-67, Feb. 1969. figs. tables. refs.

The cumulus cloud populations of the Florida peninsula were photographed periodically and comprehensively on 19 days in August and September 1957, using several high-flying aircraft. Particular sets of these photographs, called population samples, were selected which showed representative examples of the cumulus populations of widespread occurrence of the various days and hours. The equations of a cumulus population model were developed on the basis of the results of the Florida sampling and were employed to facilitate comparisons of the Florida

data with other population data previously reported by Blackmer and Serebreny. Author (mod) MGA 20.5-418.

1969

2040 Quereau, G.A. "Analysis of hurricane Betsy." U.S. Weather Bureau. Southern Region, Technical Memorandum, SR-41, Jan. 1969. 13 p. DAS.

Hourly weather observations from several reporting stations were used to produce analyses of ceiling heights, visibility, precipitation intensity and surface wind gusts associated with hurricane "Betsy" (1965). The data plot was obtained by orienting a coordinate system on the storm center and in the direction of storm movement at hourly intervals. The analyses were made from approximately 280 observations from 14 stations from 1200 CST 9 September to 1700 CST 10 September. - Author (mod).

1969

2041 Rouse, J.W. "Determination of Gulf waves and wind by radar." Gulf Science Year, Texas A & M Univ. Remote Sensing Center Project. Letter dated 30 Apr. 1969.

Measurements made by a NASA/MSC aircraft in the spring of 1968 off the shore of Newfoundland in the North Atlantic verified that radar backscatter can be correlated to the surface winds over the ocean. Investigations by Pierson (1968) have shown the feasibility of utilizing radar scatterometer measurements of ocean waves to predict weather conditions both in the vicinity of the measurements and over a wide region. Based on these findings, proposals for a world-wide program of ocean wave measurements using a satellite-borne radar scatterometer are under consideration. - Author (mod).

1969

2042 Simpson, R.H. et al. "Atlantic tropical disturbances of 1968." Monthly Weather Review, 97:240-255, 1969. figs. tables. refs.

Second of an annual series of reports on Atlantic tropical disturbances prepared by the National Hurricane Center, Miami, Florida. Census of tropical storms shows there were 110 tropical systems in 1968, from which evolved 22 depressions and 7 tropical storms. Four became hurricanes. In the Caribbean there were 7 Intertropical Convergence Zone disturbances and 2 named storms while in the Gulf of Mexico, there were 2 depressions and one named storm.
Author (mod).

1969

2043 Smithsonian Institution. Center for Short-Lived Phenomena. "Veracruz fireball." In its Annual Progress Report 1968. 1 Feb. 1969. pp. 26-27. DAS.

Three huge meteorites turned the night sky into day and shook Veracruz, Mexico, when they crashed into nearby hills at 0215 local time on 27 March 1968. Description of event, action taken by Center for Short-Lived Phenomena and publications by the Center are presented. - Staff.

1969

2044 Soules, S.D. "Two tropical storms viewed by Apollo 7." American Meteorological Society, Bulletin, 50:58-65, 1969. photos. refs.

Hurricane "Gladys," in the Caribbean, and typhoon "Gloria," in the western Pacific Ocean, were photographed in October 1968 by the astronauts on the Apollo 7 spaceflight. In "Gladys," the typical extensive cirrus cloud canopy was not present, permitting an exceptionally clear view of the convective cloud bands and other cloud structure. A photograph of typhoon "Gloria" showed organized, low-level cloud structure within its 50-mi diameter eye. - Author (mod).

1969

2045 Stevenson, R.E. "New tool for studying ocean weather." Ocean Industry, 4(3): 51-55, Mar. 1969. photos. refs.

The natural organization of convective systems into simple cells was recognized by James Tyndall in 1863. Not until Henri Bénard (1900) conducted his classic experiments was there an understanding of the polygonal arrangement of the cells. Bénard's studies were of microscopic systems, and from them was gained the empirical and theoretical recognition of the ideal hexagonal structure in fluid, air or solid resulting from convection. It was Dusan Avsec (1939), however, who developed the fundamental principles and sequences of formation of polygonal convective cells from experiments with cigarette smoke in tiny cloud chambers. Simpson [Malkus] (1962) and Roll (1965) pointed out the probability that such cells would form in the tropical marine atmosphere. It was not, however, until photographs were taken by the astronauts of the GEMINI program of the National Aeronautics and Space Administration that the occurrence of neatly arranged polygonal cumulus cells was verified. - Author (mod).

1969

2046 Sugg, A.L. and Carrodus, R.L. "Memorable hurricanes of the United States

1969 cont.

since 1873." United States Weather Bureau, Southern Region, Technical Memorandum SR-42, Jan. 1969. 54 p. DAS.

The selections of memorable hurricanes in this publication are limited to those which have made landfall in the United States or have been near misses. Most of them were considered major, extreme or great hurricanes. The data were drawn from Monthly Weather Review articles; 'Hurricanes and tropical storms in the Gulf of Mexico; U.S. Weather Bureau Office, New Orleans; 'Atlantic Hurricanes' by Dunn and Miller and 'Hurricanes' by Tannehill. Tracks are from the Weather Bureau Technical Paper No. 55, by Cry. - Author (mod).

1969

2047 Sugg, A.L. and Hebert, P.J. "Atlantic hurricane season of 1968." Monthly Weather Review, 97:225-239, 1969. figs. tables. refs.

The 1968 hurricane season in the North Atlantic areas, Caribbean Sea and Gulf of Mexico is considered in its entirety, and synoptic and statistical aspects of individual storms are discussed. - Author.

1969

2048 [Sunday Star] "Florida rocked by Gulf storm." Its 117(47):A-6, 16 Feb. 1969.

Describes a winter storm of hurricane force which moved in from the Gulf of Mexico and caused destruction in Florida cities and towns on the Gulf. - Staff.

1969

2049 Technical Conference on Hurricanes, 6th, Miami, Fla., 2 - 4 Dec. 1969. "Program." Preprints of abstracts. American Meteorological Society, Bulletin, 50:760-780, 1969.

1969

2050 Thomas, C. "Instant weather." ESSA World, 4(2):18-19, Apr. 1969.

U.S. Weather Bureau operates 19 VHF-FM radio stations broadcasting continuous weather information to farmers, construction planners and boatmen. Of the 19 stations, 5 are on the Gulf Coast at Tampa, Florida; New Orleans and Lake Charles, Louisiana; and Galveston and Corpus Christi, Texas. Staff.

1969

2051 Tirellis, G.G., Nowak, M. and Tyroler, J.F. "Attenuation of visible and near-infrared radiation through a tropical forest during the wet season." Picatinny Arsenal, Dover, N.J., Pyrotechnics Laboratory Technical Report. Jan. 1969. 27 p.

Field-test program was conducted in the Panama Canal Zone to investigate the

1969 cont.

transmission of visible and near infrared (IR) energy through jungle foliage. Results were obtained for 2 spectral regions and for all combinations of detector elevation (5, 25, and 40 ft) and source elevation (ground level, 5 and 10 ft). At a distance of 250 ft, the attenuation was approximately 3 orders of magnitude (1,000) for the visible region and 2 orders of magnitude (100) for the near IR region. In other words, the penetration capacity of the IR energy through jungle foliage was found to be 10 times that of visible light. Author AD-846 422.

1969

2052 U.S. Environmental Science Services Administration. "BOMEX countdown begins; ships outfitted at Gulfport." ESSA News, 5(14):1-2, 4 Apr. 1969.

USC&GS ships OCEANOGRAPHER, DISCOVERER, MT. MITCHELL, RAINIER and USCG cutter ROCKAWAY comprise the array of fixed vessels for Barbados Oceanographic and Meteorological Experiment (BOMEX). Special equipment installed includes signal conditioning and recording devices, sensors, meteorological booms, boundary layer instrument packages and free-fall mooring systems. BOMEX, a study of air-sea interaction, will be the most intensive scientific investigation ever made over a large ocean area. - Author (mod).

1969

2053 U.S. Environmental Science Services Administration. "BOMEX experiment begins." ESSA News, 5(18):3, 2 May 1969.

Five ships and 12 buoys are in position in the 90,000 sq mi BOMEX array in the Atlantic east of Barbados. U.S. Navy and the Research Flight Facility, Air Weather Service will fly cooperative missions from Barbados and Ramey AFB, Puerto Rico. Extensive BOMEX facilities include an Army weather radar on Barbados. Staff.

1969

2054 U.S. Environmental Science Services Administration. "BOMEX study of air-sea interaction to begin in May." ESSA World, 4(2):8-11, 44, Apr. 1969. photos.

Keys to extended prediction sought by the United States in cooperation with the government of Barbados. A study of the links between sea and air has been undertaken with ESSA as the lead agency for the project. Barbados Oceanographic and Meteorological Experiment (BOMEX) is the most intensive scientific investigation ever made over a large ocean area. Author.

1969

2055 U.S. Environmental Science Services Administration. "1969 hurricane season opens." ESSA News, 5(22):1, 30 May 1969.

Announces plans of U.S. Weather Bureau's National Hurricane Center for a continuous weatherwatch on storm-breeding areas of the Atlantic, Caribbean and Gulf of Mexico. Lists names to be assigned to 1969 storms. - Staff.

1969

2056 U.S. Environmental Science Services Administration. "Sea-Air Interaction Laboratory (SAIL)." In Marine Environmental Prediction, Wash., D.C., 1 Jan. 1969. pp. 227-228. DNO.

Reports on the Sea-Air Interaction Laboratory and its planned preliminary field experiment in the Caribbean Sea in the vicinity of Barbados where ships, buoys and meteorological equipment will measure boundary and upper atmosphere conditions. The Laboratory will also take part in the data-gathering phase of Barbados Oceanographic and Meteorological Experiment (BOMEX) in the summer of 1969. Staff.

1969

2057 U.S. Maury Center for Ocean Science. "U.S. Navy participation in the Barbados Oceanographic and Meteorological Experiment." Report no. MC-1, Jan. 1969. 26 p. photos. refs. DNO.

The Barbados Oceanographic and Meteorological Experiment (BOMEX) is a large-scale air-sea interaction field experiment scheduled to be conducted in the vicinity of the island of Barbados in 1969. The objectives of the experiment are: 1) study of the vertical flux of momentum, sensible heat, latent heat, radioactivity and other properties at the interface; 2) study of the vertical and horizontal divergence of these fluxes within the interior of each fluid and 3) study of the feasibility of parametrizing the area-wide integral of at least the surface fluxes from conventional observation at fixed corners of the array. Author (mod) MGA 20.7-700.

1969

2058 U.S. National Oceanographic Data Center. "BOMEX starts." Its Newsletter, 5-69:5-6, May 1969.

Announcement of Barbados Oceanographic and Meteorological Experiment (BOMEX) to take place May - July 1969 over a large ocean area near Barbados. About 1,500 people will be involved in the data-gathering program. The National

1969 cont.

Oceanographic Data Center staff will maintain contact with BOMEX planners to ensure that pertinent data are acquired by the Center. Author (mod).

1969

2059 U.S. Naval Oceanographic Office. "NOMAD buoy." In Marine Environmental Prediction, Wash., D.C., 1 Jan. 1969. pp. 200-203. fig. DNO.

Describes the Navy Oceanographic Meteorological Automatic Device (NOMAD) buoy, history of its research and development, and its meteorological data-gathering performance in the Gulf of Mexico. Staff.

1969

2060 U.S. Weather Bureau. "Hurricane Camille August 14 - 22, 1969: preliminary report." Wash., D.C., Sept. 1969. 58 p. figs. DAS. (MI5.2 U587 hur Camille).

Presents information on the August 1969 hurricane "Camille." The hurricane devastated the Mississippi coast with winds up to 190 mph, tides greater than 30 ft, and torrential rain over Virginia's Blue Ridge Mountains, resulting in extensive flooding and landslides in southeastern Virginia. Origin of "Camille" (first detected as a tropical depression west of Grand Cayman Island), development, movement, barometric pressures, winds, duration and other characteristics and behavior up to final disappearance of the storm southeast of Cape Race are outlined. Preliminary estimates of damage inflicted are provided. Track of "Camille's" course; a table of preliminary tropical cyclone data, date and meteorological parameters; and relevant advisories and bulletins on the hurricane are appended. - Staff.

1969

2061 U.S. Weather Squadron (8th) Ramey Air Force Base Puerto Rico Detachment 15. "Terminal forecast reference file. volume 1." June 1969. 57 p.

Report is a reference file for forecasters. Contains a description of local area climatology, weather regimes, rules of thumb and forecast studies. Author AD-689 779.

1969

2062 Vaughn, C.W. and Curtis, M.A. "Tropic service test of lightweight intrenching tool." U.S. Army Tropic Test Center, Fort Clayton, Canal Zone, Panama, Report no. USATTC-6901004. Jan. 1969.

1969

2063 Vermeer, D.E. and Muller, R.A. "Study of the regional climatology of the American Mediterranean (Caribbean Sea and Gulf of Mexico.)" Gulf Science Year, Louisiana State Univ. Project. Letter dated 21 Apr. 1969.

This project is in the formative stage, having made an initial survey of available literature of research in the Caribbean Sea and Gulf of Mexico. It is anticipated that a regional climatology of the area can be accomplished from the data available from the first-order climatological stations encircling the area, and from specific investigations that have been done in the area. The goal is to develop an analysis of the energy exchange and interface phenomena of the ocean and atmosphere. - Author (mod).

1677

2064 Dassié, F. "Le Routier des Indes orientales et occidentales." "Pilot guide for the East and West Indies.] Paris, 1677. 209 p. Subtitle [trans.]: Treating of the proper seasons for travelling, a description of anchorages, depths of several harbors, and sea ports. With 26 different navigations. DLC.

1739

2065 "Chart of the Bahama Islands with a description of the Gulf of Florida and Windward Passage & c. [etc.] referr'd from the figures here set down, to the general index annexed." London, 1739. To accompany "Description of the Windward Passage..." DLC.

1739

2066 "Description of the Windward Passage, and the Gulf of Florida, with the course of the British trading-ships to, and from the Island of Jamaica. Also an account of the trade-winds, and of the variable winds and currents on the coasts thereabouts ...Illustrated with a chart of the coast of Florida, and of the Islands of Bahama, Cuba, Hispaniola, Jamaica, and the adjacent smaller islands..." London: J. Applebee, 1738. 23, 5, 7 p. map. DLC.

1740

2067 Gonzales Carranza, D. "Geographical description of the coasts, harbours, and seaports of the Spanish West Indies, particularly of Porto Bello, Cartegena, and the Island of Cuba..." London, 1740. 136 p. map. plans. -- From subtitle: With observations of the currents and the variations of the compass in the Bay of Mexico, and the North Sea of America...with an index and a new and correct chart of the whole, as also plans of the Havannah, Porto Bello, Cartegena and La Vera Cruz. DLC.

1753

2068 Echevelar, M. de. "Instrucción exacta, y util de las derrotas, y navegaciones, que se executan en todos tiempos en la América Septentrional, de unos puertos a otros: con las advertencias de sondas, y notas, para poner las en practica. [Useful and exact instruction of courses and navigation used at all times in South America from one port to another: with soundings and notes on their use.] Cadiz, 1753. 41 p. DLC.

1764

2069 Bellin, J.N. "Petit atlas maritime: recueil de cartes et plans des quatre partis du monde." [Little maritime atlas: collection of charts and plans of the four quarters of the world.] Paris, 1764.

1764 cont.

5 v. entirely maps. South America and the Antilles Islands, v. 1. DLC.

1767

2070 Bellin, J.N. "Observations sur la carte de l'îsle de Saint Dominque et de ses débouquements." [Observations on the chart of the Island of Santo Domingo and of its channels.] In his Recueil des Mémoires, pt. 25, Paris, 1767(?). DLC.

1767

2071 Bellin, J.N. "Observations sur la carte du Golphe du Mexique et les îles de l'Amérique." [Observations on the chart of the Gulf of Mexico and of the islands of America.] In his Receuil des Mémoires, pt. 24, Paris, 1767(?). DLC.

1778

2072 Kitchin, T. "New and correct map of the American Islands now called the West Indies, with the whole coast of the neighboring continent." London, 1778. DLC.

1784

2073 San Martín Suarez, J. de. "Tablas modernas, de la situación que tienén, en latitud, y longitud, todas las costas de Tierra Firme, e islas de Barlovento, con sus adyacentes..." [Modern tables of the latitude and longitude of the continental coasts (of the Caribbean Sea) and the islands of Barlovento and those adjacent.] Barcelona, 1784. Microfilm. -- From subtitle: Soundings, depths, reefs, channels, ports, bays, and those most noteworthy in the Gulf of Mexico. DLC.

1789

2074 Bishop, R. "Complete pilot for the Windward Passage; or, directions for sailing through the several passages to the eastward of Jamaica..." London, 1789. 92 p. DLC.

1789

2075 Romans, B. "Complete pilot for the Gulf passage; or, directions for sailing through the Gulf of Florida, named also New Bahama Channel, and other neighboring parts." London, 1789. 74 p. DLC.

1790

2076 Gauld, G. "Account of the surveys of Florida [etc.] with directions for sailing from Jamaica to the West Indies by the west end of Cuba, and through the Gulph of Florida. To accompany Mr. Gauld's charts." London, 1790. 27 p. map. DLC.

1796

2077 Gauld, G. "Observations on the Florida Kays, Reef, and Gulf..." London, 1796. 28 p. -- From subtitle: Directions for sailing along the Kays, from Jamaica by the Grand Cayman and the west end of Cuba; also a description, with sailing

1796 cont.
instructions, of the coast of West Florida, between the Bay of Spiritu Santo and Cape Sable. DLC.

1797
2078 Romans, B. "New Book of sailing directions for Capt. B. Romans Survey of the Gulf of Florida; or the old and new Channels of Bahama and neighboring parts." London, 1797. 74 p. DLC.

1800
2079 "New book of directions to accompany the charts of the Windward Passage, or, Instructions for sailing through the several passages to the eastward of Jamaica, & c. [etc.]..." London, 1800. 87 p. DLC.

1800
2080 Rhodes, J. "General directions for ships sailing into the principal bays of Tobago..." London, 1800(?). 22 p. DLC.

1800
2081 Romans, B. "New and enlarged book of sailing directions for Captain Romans Gulf and Windward pilot..." London, 1800. 46 p. -- Subtitle: Contains full instructions for sailing through the Gulf of Florida; or, the old and new Channels of Bahama; together with directions for the Windward Passage, &c., &c. [etc.] DLC.

1801
2082 Jeffreys, T. "Complete pilot for the West Indies, including the British channel, Bay of Biscay, and all the Atlantic islands: done from actual surveys and observations of the most experienced navigators in His Majesty's and the merchants' service... A new ed., corrected to the present time. Neatly engraved on thirty plates. Comprising 27 charts." London, R. Laurie and J. Whittle, 1801. 27 maps. DLC.

1804
2083 Steel, D. "Steel's Atlantic and West Indian navigator; or Sailing directions, general and particular, for the navigation of the Atlantic Ocean, and of the West Indies." [Pt. 1] 115 p. Pt. 2: Manderson, J. "Examination into the true cause of the gulf stream." 30 p. London, 1804. maps. DLC. VK810.582.

1810
2084 Davy, R. "Victorious voyage of Captaine Amias Preston...and Captaine George Summers to the West India...1595." In Hakluyt, R. "Collection of Voyages," London, 1809 - 1812. v. 4 (1810) pp. 61-66. -- Reprint from 2d ed. of "Principal Navigations, 1598 - 1600." DLC.

1810
2085 Hawkins, Sir J. "Third troublesome voyage...to the parts of Guinea, and the West Indies, in the yeeres 1567 and 1568 by

1810 cont.
M. John Hawkins." In Hakluyt, R. "Collection of Voyages." London, 1809 - 1812. v. 3 (1810) pp. 618-623. -- Reprint from 2d ed. of "Principal Navigations, 1598 - 1600." DLC.

1810
2086 Heather, W. "New West India Pilot." London, 3d ed., 1810 54 p. -- From Subtitle: Containing sailing directions for the Gulf of Florida, Bahamas, Windward Islands, Spanish Main, and Bay of Honduras; describing the capes, headlands, bays, roads, harbours, rivers, rocks, sands, shoals, soundings, &c., &c., &c. [etc.] Compiled from the surveys and observations of many experienced pilots, masters in the Royal Navy, and commanders of merchant ships. DLC.

1810
2087 Hortop, J. "Travailes of John Hortop...set on land within the bay of Mexico...1568." In Hakluyt, R. "Collection of Voyages," London, 1809 - 1812. v. 3 (1810) pp. 598-587. -- Reprint from 2d ed. of "Principal Navigations, 1598 - 1600." DLC.

1819
2088 Purdy, J. "Enlarged sailing directions for the Windward and Gulf passages, the Bahama Islands and channels, the Islands of St. Domingo, Jamaica, and Cuba, the River Mississippi, coasts of Florida, the Martyr,&c. [etc.]..." London, 2d ed., 1819. 128 p. -- From Subtitle: Containing most particular descriptions of all the coasts, of the harbours, and of the Florida-stream...Directions for sailing from Jamaica, to and upon the coasts of terra firma, between Chagre and Cape Vela; including Porto Bello, Cartegena, Santa Marta, &c. By Mr. J. Town. DLC.

1819
2089 Town, J. "Directions for sailing from Jamaica, to and upon the coasts of terra firma, between Chagre and Cape Vela; including Porto Bello, Cartegena, Santa Marta, &c. [etc.]" Appendix to: Purdy, J. "Enlarged sailing directions for the Windward and Gulf passages." London, 1819. DLC.

1820
2090 Spain. Dirección de Hidrografía. "Derrotero de las islas Antillas, de las costas de Tierra Firme, y de las del seno Mexicano." [Pilot Guide of the Caribbean islands, of the continental coasts, and those of the Gulf of Mexico.] Madrid, 1820. 591 p. DLC.

1825
2091 Steetz, W. Instruction nautique sur

1825 cont.
les passages à l'îsle de Cuba et au Golfe de Mexique, par le canal de la Providence et le grand banc de Bahama." [Pilot Guide for the passages of the Island of Cuba and for the Gulf of Mexico, by way of the Providence Channel and the Grand Bahama Bank.] Paris, 1825. 59 l. charts. DLC.

1828

2092 Monnier, P. "Déscription nautique des côtes de la Martinique, précédée d'un mémoire sur des opérations hydrographiques et géodésiques executées dans cette île en 1824 et 1825." [Nautical description of the coasts of Martinique, preceded by a note on the hydrographic and geodesic work carried out on that island in 1825 and 1826.] Paris, 1828. 182 p. chart. DLC.

1829

2093 Norie, I.W. "West India directory, containing instructions for navigating the Caribee, or Windward and Leeward Islands, Porto Rico, Hayti or St. Domingo, Jamaica, Cuba, and the Bahamas; together with the harbors and coasts of America, from Florida to the Gulf of Paria." London, 1827 - 1829. 4 pt. in 1 v. DLC.

1839

2094 Purdy, J. "Colombian navigator; or, Sailing directory for the American coasts and the West Indies." v. 3. London, 2d ed., 1839. 338 p. -- From Subtitle: Descriptions of the winds, seasons, tides and currents, and descriptions for the passages to and among the islands, and to the ports of Guyana, &c. [etc.] General navigation of the Caribbean or Colombian Sea from Leeward to Windward, &c. DLC.

1842

2095 Copley, C. "North Coast of the Gulf of Mexico from St. Marks to Galveston." New York: E. and G.W. Blunt, 1842.

1852

2096 Agassiz, L. "Extracts from the report of Professor Agassiz to the Superintendent of the Coast Survey on the examination of the Florida reefs, keys, and coast." In Report of the Superintendent of the Coast Survey...ending November 1851. 32d Cong., 1st. sess., Senate, Ex. Doc. no. 3, 1852. pp. 145-160. DLC.

1852

2097 Bache, A.D. "Annual report of the Superintendent of the Coast Survey showing the progress of that work during the year ending November 1851." 32d Cong., 1st sess., Ex. Doc. no. 26, 1852. 559 p. DLC.

1852

2098 Bache, A.D. "Notes of a discussion of

1852 cont.
tidal observations, made in connexion with the Coast Survey, at Cat Island, in the Gulf of Mexico." In Report of the Superintendent of the Coast Survey...ending November 1851. 32d Cong., 1st. sess., Senate, Ex. Doc. no. 3, 1852. pp. 127-136. DLC.

1852

2099 "Sailing directions for Porto Rico and the Caribbee Islands: comp. from the latest English, French and Spanish surveys." London: J. Imray and Son, 3d ed., 1852. DLC.

1853

2100 Kerhallet, C.M.P., de "Manuel de la navigation dans la mer des Antilles et dans le golfe de Mexique." [Navigation manual for the Caribbean and the Gulf of Mexico.] Paris, Didot, 1853. 2 v. DLC. VK-971.K38.

1854

2101 Lapelin, F.T. "Reconnaissance hydrographique des côtes occidentales du Centre Amérique, executée par la corvette LA BRILLANTE." [Hydrographic reconnaissance of the east coasts of Central America made by the corvette LA BRILLANTE.] Paris, 1854. 80 p. plans. charts. table. DLC.

1856

2102 Kohl, J.G. "History of the discovery and exploration of the Gulf of Mexico." 1856(?) 4 v. (in 4 cahiers) -- Photostat copy (negative) of original in Library of Congress. This is a copy of the manuscript. 248 p. DAS.

1856

2103 "Nautical description of the Gulf of Mexico and Bay of Honduras, and of the Islands of Porto Rico, Haiti, Jamaica, Cuba, the Bahamas, &c. [etc.] London: J. Imray and Son, 7th ed., 1856. 294 p. -- Compiled chiefly from surveys made by order of the British, United States and Spanish governments. 6th ed. published under title: "Sailing Directory for the West India Islands." DLC.

1857

2104 Bache, A.D. "Approximate cotidal lines of diurnal and semi-diurnal tides of the coast of the United States on the Gulf of Mexico." American Journal of Science, v. 23, Jan. 1857. 17 p. DAS.

1857

2105 Le Rouxeaux de Rosencoat, E.L. "Reconnaissance hydrographique des côtes occidentales du Centre Amérique, province de Veraguas (Nouvelle Grenade)." [Hydrographic reconnaissance of the east coasts of Central America, province of Veraguas (New Granada).] Paris: Imprimierie

1857 cont.
administrative de P. Dupont, 1857. 51 p. DLC. Uk951.L4.

1857
2106 Vanéechout, E.P. "Reconnaissance hydrographique des côtes occidentales du Centre Amérique, province de Veraguas, Nouvelle Grenade." [Hydrographic reconnaissance of the east coasts of Central America, province of Veraguas, New Granada.] Annales Hydrographiques, ser. 1, 13:57-101, 1857. DNO.

1858
2107 France. Dépôt des Cartes et Plans de la Marine. "Portulan général: mer des Antilles et golfe du Mexique." [Pilot Guide: Caribbean Sea and Gulf of Mexico.] Paris, 1858(?) 2 v. maps. -- Maps bear publication dates from 1849 - 1858. DLC.

1860
2108 Bache, A.D. "Gulf Stream explorations, 3d memoir. Distribution of temperature in the water of the Florida Channel and Straits." American Journal of Science, v. 29, Mar. 1860. 7 p. DAS.

1861
2109 Andrews, W.S. " Andrews' illustrations of the West Indies." London, 1861. 2 v. in 1. -- Contents: v. 1. Sailing directions for the Caribbean Sea, Gulf of Mexico and Florida. v. 2. Description of the islands in the Caribbean, Gulf of Mexico and Florida. DLC.

1861
2110 Bache, A.D. "Notes on the coast of the United States." U.S. Coast and Geodetic Survey, Memoir, 7: Western coast of Florida; Memoir 8: Mobile Bay, Mississippi Sound. 1861. 2 pt. DAS.

1861
2111 U.S. Coast and Geodetic Survey. "Preliminary chart of the northeastern part of the Gulf of Mexico." 1861.

1861
2112 U.S. Coast and Geodetic Survey. "Preliminary chart of the northwestern part of the Gulf of Mexico." 1861.

1862
2113 Laurie, R.H. "Laurie's chart of the Gulf of Mexico." London, 1862.

1863
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Detailed illustrated account of damage suffered by various types of structures in Corpus Christi, Texas, on 14 September 1919, from a West Indian hurricane.

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From observations of tides connected with hurricanes in the Gulf of Mexico, a mechanism of hurricane swell is derived. The biggest waves are generated in the right rear quadrant of the storm where the wind direction often coincides with the line of advance. Changes in the position of the rise of storm tide indicate changes in the course of the storm. Dunn quotes the conclusions contained in Cline's paper, discusses their importance as a method of hurricane forecasting and reports that forecasting and warning based on this method of tidal computation are already in use along the Gulf of Mexico. - Staff MGA 7J-10.

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Theoretical discussion of rise of water caused by cyclones. Directions of and damages inflicted by several cyclones in the Gulf area are discussed. - Staff.

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2173 U.S. Engineer School. "Sand movement and beaches, including references on bars, bays, coast changes, currents, erosion, estuaries, shorelines, tides, waves and wave action, with an index." 1929. 114 p. DAS.

Bibliography prepared under the direction of the Chief of Engineers, U.S. Army, by Mr. H.E. Haferkorn, librarian, Engineer School Library, Army War College. Contains many references to Gulf Coast. Staff.

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2174 Sarasola, S. "Movimientos del mar en los ciclones: su importancia en la previsión." [Movements of the sea in cyclones: their importance in forecasting.] In "Huracanes en las Antillas." [Hurricane in the Antilles.] Madrid, 1928. pp. 73-79. Reprinted as: Cuba. Marina de Guerra, Boletín Hidrográfico, no. 102-103, 25 Mar. - 10 Apr. 1930. Article appears on

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reverse side of the two single-sheet bulletins. DAS.

Knowledge of the propagation of hurricane swell is reviewed and several authorities on the subject (Viñes, Cline, Froc, etc.) are quoted. The fact that swell originating in a tropical cyclone propagates to distances over 400 mi is suggested as evidence of its usefulness in storm forecasting. - Staff MGA 7J-20.

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2177 Grace, S.F. "Principal constituent of the tidal motion in the Gulf of Mexico." Royal Astronomical Society, Monthly Notices, Geophysical Supp. 2:70-83, May 1932.

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2178 Cline, I.M. "Tides and coastal currents developed by tropical cyclones." Monthly Weather Review, 61:36-38, 1933.

Storm tides which build up on the coast in the right-hand front of a hurricane result from the storm swells from winds in the right rear quadrant. They are the storm's greatest destructive agency and outstanding indicators of its intensity and direction of movement. Storm tides are sometimes detected as much as three days in advance of the storm and historical instances are cited. Destructive force of currents caused by storm swell running from left to right across the right front hurricane quadrant are described. - Staff MGA 7J-22.

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2179 Grace, S.F. "Principal semi-diurnal constituent of tidal motion in the Gulf of Mexico." Royal Astronomical Society, Monthly Notices, Geophysical Supp.

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3(3):156-162, Feb. 1933. tables. diagr.

1934
2180 Slocum, G. "Regression equations analyzing the immediate antecedents of temperature anomalies in Straits of Florida surface waters." Monthly Weather Review, 62:411-415, 1934.

Since the causes of variations in the Straits of Florida water surface temperatures are many and complex, author deals only with several basic elements considered as single causes. Subject to grouping, practically all of the variations in the surface temperatures of the Straits may be expressed in terms of simple linear algebraic functions of the combined influence of three numerical factors, which are: 1) the local air temperature, 2) the water temperature in the eastern Gulf of Mexico and 3) the percentage of possible sunshine at Key West. - Staff.

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2181 Slocum, G. "Sea-surface temperature summary for the Yucatan Channel, 1912-23." Monthly Weather Review, 62:425, 1934.

Tables of monthly mean sea-surface temperatures. - Staff.

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2182 Haight, F.J. "Notes on current observations, Florida Keys, June, October, November, 1914." Carnegie Institution of Washington, Publication, no. 452 (preprint), 10 Dec. 1935. p. 142. DAS.

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2183 Parr, A.E. "Reports on hydrographic observations in the Gulf of Mexico and the adjacent straits made during the Yale Oceanographic Expedition on the MABEL TAYLOR in 1932." Yale Univ. Bingham Oceanographic Foundation, Bulletin of the Bingham Oceanographic Collection, v. 5, art. 1, 1935. 93 p. DLC.

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2184 Slocum, G. "Sea-surface temperature summaries for various sections of the Gulf of Mexico." Monthly Weather Review, 63:71, 1935.

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2185 Slocum, G. "Sea-surface temperature summary for the east central Gulf of Mexico, 1912 - 1933." Monthly Weather Review, 63:71, 1935.

Monthly and annual sea surface temperatures from January 1912 - December 1933 in the eastern central Gulf of Mexico. - Staff.

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2186 Slocum, G. "Sea-surface temperature summary for the northwestern Gulf of Mexico, 1912 - 1933." Monthly Weather Review, 63:147-148, 1935.

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Monthly and annual mean sea surface temperatures given in tables. - Staff.

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2187 Slocum, G. "Sea-surface temperature summary for the western Caribbean Sea." Monthly Weather Review, 63:113, 1935.

Data on monthly and annual surface temperatures, computed to tenths of a degree for the period 1920 - 1933. - Staff.

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2188 Dietrich, G. "Ozeanisches Nivellement und seine Anwendung auf die Golfküste und die atlantische Küste der Vereinigten Staaten von Amerika." [Sea leveling and its application to the Gulf and Atlantic coasts of the United States.] Zeitschrift für Geophysik, 2(7/8):287-298, 1936.

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2189 Parr, A.E. "On the probable relationship between vertical stability and lateral mixing process." Journal du Conseil, 11(3):308-313, 1936. figs. refs.

Discussion of the principle that vertical stability must promote lateral mixing and vice versa. From research in the Gulf of Mexico. - Staff.

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2190 Parr, A.E. "On the relationship between dynamic topography and direction of current under the influence of external (climatic) factors." Journal du Conseil, 11(3):299-307, 1936. figs.

Discussion of a method for the determination of the entire field of influence of external factors. The influence of external field diminishes from the surface downwards. From research in the Gulf of Mexico. - Staff.

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2191 Dietrich, G. "Fragen der Grossformen und der Herkunft des Tiefenwassers im amerikanischen Mittelmeer." [Magnitudes and origin of deep water in the Caribbean Sea.] Annalen der Hydrographie und Maritimen Meteorologie, 65(8):345-347, 1937.

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2192 Dietrich, G. "Lage der Meeresoberfläche im Druckfeld von Ozean und Atmosphäre, mit besondere Berücksichtigung des westlichen nordatlantischen Ozeans und des Golfs von Mexico." [Sea surface relative to the oceanic and atmospheric pressure fields, with special consideration of the western North Atlantic and the Gulf of Mexico.] Akademie der Wissenschaften, Berlin. Institut für Meereskunde, Veröffentlichungen, new series, A, no. 33:1-51, 1937. Also, "Über Bewegung und Herkunft des

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Golfstromwassers." [On the movement and origin of waters of the Gulf Stream.] Ibid., 33:52-91. 1937. DLC.

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2193 Parr, A.E. "Contribution to the hydrography of the Caribbean and Cayman Seas [sic]." Yale Univ. Bingham Oceanographic Foundation, Bulletin of the Bingham Oceanographic Collection, v. 5. art. 6, 1937. 100 p. DLC. DNO.

Based on observations made by research ship ATLANTIS (1933 - 1934). - Staff.

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2194 Parr, A.E. "On the longtitudinal variations in the dynamic elevation of the surface of the Caribbean current." Yale Univ. Bingham Oceanographic Foundation, Bulletin of the Bingham Oceanographic Collection, v. 6. art. 2, Aug. 1937. DNO.

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2195 Parr, A.E. "Report on hydrographic observations at a series of anchor stations across the Straits of Florida." Yale Univ. Bingham Oceanographic Foundation, Bulletin of the Bingham Oceanographic Collection, v. 6, art. 3, 1937. 63 p. DNO.

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2198 U.S. Hydrographic Office. "Naval Air Pilot, Central America. Corrected to July 1, 1937." Notice to Aviators, no. 13, 1937. H.O. Publ. no. 195, 1937. 262 p. plates. tables. digrs. maps. charts. DLC.

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2199 Clarke, G.L. "Light penetration in the Caribbean Sea and in the Gulf of Mexico." Journal of Marine Research, 1(2):85-94, 1937 - 1938.

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2200 Collier, A. "Salinity as an ecological factor in Texas bays." Texas Academy of Science, Proceedings, 31:14, 1938. DLC.

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2201 Parr, A.E. "Further observations on the hydrography of the eastern Caribbean and adjacent Atlantic waters." Yale Univ. Bingham Oceanographic Foundation, Bulletin of the Bingham Oceanographic Collection, v. 6. art. 4, June 1938. 29 p. figs. refs.

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A review of 1933 records from the eastern Caribbean revealed a great discrepancy in values of surface salinity with previous observations from adjacent parts of the open Atlantic. This discrepancy is greatly reduced in 1937 observations and variations in Caribbean surface salinities are indicated. With reference to deeper layers, 1937 data confirm the findings of 1933. Intrusion of a maximum salinity layer of southern Sargasso Sea origin between surface and minimum salinity layers mainly derived from the North Equatorial Current is largely completed before the water masses enter the eastern Caribbean. Synoptic temperature charts are given for 4 isopycnic surfaces, one corresponding very closely to the maximum salinity surface, another to the minimum salinity layer and the remaining 2 to intermediate layers. - Staff.

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2202 Seiwell, H.R. "Application of the distribution of oxygen to the physical oceanography of the Caribbean Sea region." Papers in Physical Oceanography and Meteorology, 6(1):1-60, 1938.

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2204 Seiwell, H.R. "Lateral mixing and vertical stability in the Caribbean sea region." Journal of Marine Research, 1(3):264-267, 1937 - 1938.

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2205 Dietrich, G. "Amerikanisches Mittelmeer." [Gulf of Mexico.] Gesellschaft für Erdkunde zu Berlin, Zeitschrift, 53(3/4):108-130, 1939. DLC. DNAL.

Summary and evaluation of much of the available information and introduction of some new material on physical oceanography of the Gulf of Mexico. - Staff.

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Sixty-eight yr monthly average air temperature and 24 yr monthly average water temperature (1915 - 1938) shown with maximum difference between air and water temperature slightly more than 10°F. This occurs at time of minimum river temperature in mid-February. In summer, the largest difference is-2.5°F. - Staff.

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2207 France. Service Hydrographique. "Instructions nautiques. Antilles."

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[Sailing directions. Caribbean.] Paris, 1939 - 1940. 2 v. maps. DLC.

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2208 Hamburg. Deutsche Seewarte. "Atlas der Dichte des Meerwassers. v. 11. Amerikanisches Mittelmeer." [Atlas of seawater density. v. 11. American Mediterranean (Gulf of Mexico and Caribbean Sea).] 1940(?) DLC.

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2211 Burgaña, J.M. de. "Contribución al estudio de la oceanografía en los mares de Venezuela en sus relaciones con la pesca." [Contribution to the study of the oceanography of Venezuelan waters in its relationship to fishing.] Venezuela. Servicio de Pesquería, 1941. 60 p. charts. DLC.

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2212 Canal Zone, Panama. "Panama Canal. Pilots' handbook." Mount Hope, Canal Zone, rev. 1 June 1941. 112 p. tables. diagrs. maps. DLC.

1941
2213 Clark, H.L. "Reports on the scientific results of the ATLANTIS Expeditions to the West Indies, under the joint auspices of the University of Havana and Harvard University." Havana. Univ. Sociedad Cubana de Historia Natural "Felipe Poëy," Memorias, 15(1):1-154, 1941.

1941
2214 Montgomery, R.B. "Sea level difference between Key West and Miami, Florida." Journal of Marine Research, 4(1):32-37, 1941. fig. tables. refs.

Eight yrs of monthly data for the reduction in sea level difference from Key West to Miami was studied, and it appeared that: 'there was justification for using sea level difference as an indication of the strength of the Florida Current.' Local winds account for much of the height difference between stations. - Staff MGA 13E-52.

1941
2215 U.S. Hydrographic Office. "Sailing Directions for South America." H.O. Pub. no. 172-4, Wash., D.C., 1935 - 1941.

1942
2216 Gt. Brit. Hydrographic Office. "West

1942 cont.
Indies Pilot, comprising Mona Passage, the Leeward and Windward Islands from Puerto Rico to Trinidad inclusive, the Gulf of Paria and the coast of Guiana." v. 2, 9th ed. London, 1942. DAS.

1944
2217 France. Service Hydrographique. "Instructions nautiques. Golfe du Mexique et Mer des Antilles." [Sailing directions. Gulf of Mexico and Caribbean Sea.] Paris, 1941, with corrections to 1944. 396 p. maps. DLC.

1945
2218 U.S. Army Map Service. "Index map of Lesser Antilles 1:62,500. Corrected to 1945." Its ser. no. E741, 1945. DLC. - Index scale ca. 1:3,000,000.

1945
2219 U.S. Hydrographic Office. "Northern and northwest South America." H.O. Pub. no. 528, Wash., D.C., 1945.

1945
2220 U.S. Navy. "Waves and swell from a tropical storm." NAVAER 50-IT-30, 1945.

1946
2221 Canal Zone, Panama. Dept. of Operation and Maintenance. Marine Division. "Pilots' handbook." 1924 - 1946. figs. maps. DLC.

1946
2222 Canal Zone, Panama. "List of lights, buoys and fog signals. Corrected to Dec. 1, 1946." Mount Hope, Canal Zone, 1946. v. 1, DLC.

Includes east coast of Panama; Atlantic section and the Canal approach. - Staff.

1946
2223 Legrand, H. "Mission hydrographique de la Martinique." [Hydrographic mission in Martinique.] Annales Hydrographiques, ser. 3, 8:33-45, 1946.

1946
2224 U.S. Hydrographic Office. "Rules to prevent collisions of vessels and pilot rules for certain inland waters of the Atlantic and Pacific coasts and of the Gulf of Mexico." H.O. Pub. no. 248, 1946. 62 p. maps. diagrs. DLC.

1947
2225 Katzin, M., Bauchman, R. and Binnian, W. "3- and 9-centimeter propagation in low ocean ducts." Institute of Radio Engineers, Proceedings, 35(9):891-906, Sept. 1947. figs. tables. refs.

Results of sea and shore measurements using radio and radar along with simultaneous meteorological observations. The tests were conducted in the tradewind area off the east coast of Antigua, British West Indies. Several cm wavelengths under various meteorological conditions are considered. - Staff.

1947 cont.

MGA 8I-28.

1947

2226 Millar, F.G. "Microseisms and storm tides." Journal of Meteorology, 4(2):73-74, Apr. 1947. [Comment on: B. Gutenberg "Microseisms and weather forecasting." Ibid., 4(1):21, 1947.]

B. Gutenberg has suggested that microseisms are in all probability caused by high ocean waves. Storm tides associated with tropical storms, described by I.M. Cline (1933), seem to be a more probable cause. The storm tide cannot be directly caused by the static pressure of the atmosphere, as its peak is displaced to the right of the cyclone center. It must be mainly the result of the wind-drift current. Whereas the anomaly of atmospheric pressure at the center of a tropical storm is of the order of 2 ft of water, it is auggested that the maximum storm tide in the open sea is of the order of 10 ft. This considerably exceeds the astronomical tide in the Caribbean, the Gulf of Mexico and the open ocean. - Author.

1947

2227 U.S. Army Map Service. "Antigua Island." Its ser. no. E741, no. 1, 2d ed., 1947. DLC.

Scale 1:62,500. This is a polyclonic projection with form lines approximate and elevations in feet. - Staff.

1947

2228 U.S. Hydrographic Office. "Atlas of surface currents, North Atlantic Ocean." H.O. Pub. no. 571, 1st. ed., 1947. 12 l. of charts. DLC.

1948

2229 Hersey, J.B. and Moore, H.B. "Progress report on scattering layer observations in the Atlantic." American Geophysical Union, Transactions, 29:354, 1948.

Includes data from Gulf of Mexico. Describes the detection on echo sounding records of denser media between the surface and the ocean bottom, and discusses possible origin. - Staff.

1949

2230 U.S. Coast and Geodetic Survey. "United States Coast Pilot: Gulf Coast." 3d ed., 1949. maps. tables. graphs. DAS.

The area concerned lies in a zone of transition between tropical and temperate weather patterns and includes the northern part of South America, Central America and Gulf and East coasts of the United States. Maps (Scale [1:33,000,000]) for this area (including Mexico) contain mean monthly summaries (January, April, July

1949 cont.

and October) of sea level pressure (in) and air and water temperature (°F). No specific period of record is given. - Staff.

1949

2231 U.S. Coast and Geodetic Survey. "United States Coast Pilot, West Indies: Puerto Rico and Virgin Islands." Ser. no. 721, 5th ed., 1949. 296 p. charts. refs. DLC.

1949

2232 Urick, R.J. and Searfoss, C.W. "Microthermal structure of the ocean near Key West, Florida." U.S. Naval Research Laboratory, Report no. S-3392, S-3444, Dec. 1948. Apr. 1949. 2 pt. figs. diagrs. DNO.

Pt. 1. Description of measurements of microthermal variations at constant depth in the ocean are presented and discussed. Also describes a specially developed, fast responding thermopile used for the measurements, and its location on a submarine. Pt. 2. Analysis of the microthermal variations described in Pt. 1 and the average variations, both thermal and spatial, are plotted against depth. Autocorrelation curves are presented for typical recordings. The extent to which the observed variations are capable of bending sound waves or producing reverberations is estimated. - Author (mod).

1950

2233 Geyer, R.A. "Occurrence of pronounced salinity variations in Louisiana coastal water." Journal of Marine Research, 9(2):100-110, 1950.

1950

2234 Leipper, D.F. "Ocean waves and marine oil operations." Oil and Gas Journal, 49(7), June, 1950. DAS.

Mention is made of Symposium on Offshore Drilling Problems. Conclusions state: 1) vertical forces associated with ocean waves are the most damaging, 2) additional data on ocean waves are needed, 3) the Sverdrup-Munk wave theory is not applicable to short fetch winds such as hurricanes in shallow waters and 4) standard forecasts for general public do not contain enough information for the offshore operator. - Staff MGA 7.5-189.

1951

2235 Concela, P. "Geografía marítima de la isla de Cuba. Una descripción detallada de sus costas, canales, cayos y fondeaderos, incluyendo las instrucciones necessarias para la navegación á través de sus costas." [Maritime geography of the Island of Cuba. A detailed description of its coasts, channels, shoals and anchoring-grounds, including necessary instructions for

1951 cont.

navigation on its coasts.] Havana, 1951. 346 p. illus. maps. profiles. DLC.

1951

2236 Glenn, A.H. "Applications of meteorology and oceanography in marine industry on the Gulf of Mexico." Texas Journal of Science, 3(2):190-201, 30 June 1951. figs. photos. table.

A summary of some ways in which a marine meteorologist can apply his knowledge of winds, waves and water level conditions associated with hurricanes, line squalls, northers and cyclones. Techniques may be used for planning and forecasting for offshore oil and fishing industries in the Gulf of Mexico. Bar graphs show verification of wave forecasts for Grand Island, Louisiana in November 1948 and May 1949. - Staff MGA 5K-116.

1951

2237 Glenn, A.H. and Associates. "Report on oceanographic conditions in the Grand Bay, Louisiana area 1941 - 1950." v. 1. Wash., D.C. for Gulf Refining Co., 15 Aug. 1951. 191 p. figs. refs. DNO.

1951

2238 Miami. Univ. Marine Laboratory. "Florida current investigation." Contract Nonr-193(00), Semi-annual progress report, 1 Nov. 1951. 29 p. diagrs. graphs. tables. DAS.

Investigations on the annual variations of average current velocity and monthly average wind stress in the direction of the Caribbean current are summarized, and evidence of the importance of the oceanic wind systems in the maintenance of the Gulf Stream is presented. The gradient of wind stress is analyzed in connection with Munk's theory that the curl of wind stress is the predominating cause of the production of the existing pattern of mass transport streamlines. The relationship between the average drift current and sea level difference at Cat Cays and Miami Beach, the representativeness of sea level observations over a period of three years, variations in Atlantic wind velocity and the results of electromagnetic current measurements between Cat Cays and Miami are discussed. - Staff MGA 9F-21.

1951

2239 Stommel, H. and Woodcock, A.H. "Diurnal heating of the surface of the Gulf of Mexico in the spring of 1942." American Geophysical Union, Transactions, 32(4): 565-571, Aug. 1951. figs. table.

The diurnal temperature changes of the surface layer in the Gulf of Mexico in the spring of 1942 appear to be related

1951 cont.

quantitatively to the computed net flux of heat at the surface and to the wind velocity. It is greatest on sunny, calm days. The eddy surface is computed by: 1) integrating the measured temperature from the surface to a depth below which the temperature does not change with time, 2) the computed surface flux is used as the known flux at the surface in terms of which the flux at lower levels is calculated, and 3) direct determination from the data of the change of temperature with time and with elevation. - Staff MGA 3.9-140.

1951

2240 Texas. A & M Univ. Dept. of Oceanography and Meteorology. "Oceanographic analysis of marine pipe line problems (Atchafalaya Bay, Louisiana and adjacent continental shelf area)." 1951. DAS.

1951

2241 U.S. Coast and Geodetic Survey. "[Correspondence] U.S. Coast and Geodetic Survey to Humble Oil and Refining Co., and answers regarding the symbolization for manuscript topographic maps, nautical charts, and quadrangle maps and names of physical features, especially on and along the coast of Texas on the Gulf of Mexico." Wash., D.C. and Houston, Tex., 1950 - 1951. unnumbered leaves. Typewritten originals and carbon copies of correspondence. DAS.

1951

2242 U.S. Coast and Geodetic Survey. "Surface water temperatures at tide stations, Atlantic Coast, North and South America." Special Pub. no. 278, 1951. rev. ed. 57 p. mostly tables. DAS.

Extensive tables and charts of data on monthly and annual mean temperature of surface water (bucket measurements). Averages for entire period of record and extremes of each year and month are shown. The 82 stations range from Ivigtut, Greenland to Panama and southern Brazil, and in the Gulf of Mexico to Galveston, etc. Some continuous records date from 1914 - 1950 (Baltimore) and broken records date back to 1887. Bi-hourly readings are given for 1949 - 1950 for Bar Harbor, New York, Atlantic City, Washington, D.C., Dayton, Balboa, etc. - Staff MGA 5.4-143.

1952

2243 Blackman, B. and Lindner, C.P. "Harbor and coastal problems on the east Gulf Coast." In Conference on Coastal Engineering, 2d, Houston, Tex., Nov. 1951. Proceedings. Council on Wave Research, 1952. pp. 226-235. DNO.

1952

2244 Canal Zone, Panama, Laws, statutes, etc. "Rules and regulations governing navigation of the Panama Canal and adjacent waters." Mount Hope, Canal Zone, 1st 1915, latest 1952. DLC.

1952

2245 Conference on Coastal Engineering, 2d, Houston, Tex., Nov. 1951. "Proceedings." Ed. J.W. Johnson. Sponsored by the Council on Wave Research, the Southwest Research Institute and Texas A & M Research Foundation, 1952. 393 p. DLC TC203.C6.

Discussions center on the following major areas of investigation: 1) information basic to coastal studies (wave forecasting, currents, salinity, etc.); 2) coastal sediment problems (by area and type); 3) site criteria (with reference to harbors, hurricanes and economics of coastal structures) and 4) design of coastal works (sea walls, lighthouses, marine pipe lines etc.). - Staff

1952

2246 LaGrone, A.H. and Tolbert, C.W. "Reflection studies of millimeter and centimeter radio waves for Gulf of Mexico paths." Texas Univ. Electrical Engineering Laboratory, Contract Nonr 375(01) and Contract NOrd 9195, Report no. 64, 31 Oct. 1952. 12 p. figs. refs. DAS.

Reflection coefficient and time studies are reported for an over-water path in the Gulf of Mexico. Measurements were made at wavelengths of 9.0, 5.3, 3.2 and 0.86 cm, and for grazing angles up to 2.5°. The reflection characteristics were those associated with a plane surface for the longer wavelengths, but showed some deviation from those predicted at the shorter wavelengths. - Author (mod).

1952

2247 Mexico (City) Universidad Nacional. Instituto de Feofísica. "Tablas de predicción de mareas...Puertos Golfo de Mexico." [Tide tables...ports on Gulf of Mexico.] Annual from 1952. DLC.

1952

2248 Reid, R.O. and Bretschneider, C.L. "Annual Report October 20, 1951 - October 19, 1952." Texas A & M Univ., Contract NO_y-27474, 5 Nov. 1952. 6 p.

Observation and analysis program on the measurement of wave forces on a test pile in shallow water of the Gulf of Mexico. Staff.

1952

2249 Reid, R.O. and Clayton, W.H. "Transfer processes operating at the ocean boundaries." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project 30, Contract

1952 cont.

N7onr-48704, Annual report for period ending 14 Mar. 1952. Apr. 1952. 17 p. DNO.

Research conducted in cooperation with Gulf Coast Producing Division of the Pure Oil Company. - Staff.

1952

2250 [Ships and Sailing] "Bottle paper. Drift of bottle paper." Its 1(12):55, May 1952. DNO.

Small chart shows drift in the Caribbean Sea area. - Staff.

1952

2251 Texas. A & M Univ. Dept. of Oceanography and Meteorology. "Physical and meteorological data, cruises 1, 2 and 3 of the U.S. Fish and Wildlife Vessel ALASKA." Contract N7onr-487, Task orders, Project NR 083-036, Oceanographic Survey of the Gulf of Mexico, Project 24, Data Report no. 1, Nov. 1952. 36, 42, 21 p. figs. mostly tables. DAS.

Data on oceanographic and meteorological measurements made at 120 points of the Gulf of Mexico (April 1951 - August 1952). Each point is represented on one report sheet (A & M Ocn. Form 7) containing a single set of measurements of water temperature, salinity and phosphate values at various depths. Values of meteorological elements cover temperature (dry- and wet-bulb), pressure, relative humidity, wind (speed and direction), clouds (type and amount), visibility and general weather conditions. - Staff MGA 4.10-43.

1952

2252 Texas. A & M Univ. Dept. of Oceanography and Meteorology. "Study of transfer processes operating at the ocean boundaries." Contract N7onr-487, Task Order 4, Project NR 084-004, Project 30, Annual report for the period ending 14 Mar. 1952. pub. 15 Apr. 1952. 17 p. figs. DAS.

A summary of progress during the first year on the Texas A & M project of detailed oceanographic research in the Gulf of Mexico. Instrumentation on an offshore oil platform for 'continuous measurements of temperature at 12 different levels in the air, water and sediments, wind speed at 4 levels and wind direction at 1 level; atmospheric pressure; relative humidity; precipitation; evaporation; solar radiation; salinity at 2 depths; water level and surface waves' is described. Some results are presented in graphic form. Staff MGA 9F-49.

1952

2253 Texas. A & M Univ. Dept. of

1952 cont.

Oceanography and Meteorology. "Temperature data, Dec. 1950 to Sept. 1952." Contract N7onr-47804, Project NR 083-071, Project 30, Study of Transfer Processes Operating at the Ocean Boundaries, Data Report - Sec. 1, Dec. 1952. 107 p. entirely tables. DAS.

Temperature measurements were made at an offshore oil drilling platform 15 mi south of Point Chevreuil and 8 mi west of Point Au Fer, Louisiana. Mean water level was about 12 ft. Daily means are given. - Staff MGA 6.6-237.

1952

2254 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Transfer processes operating at the ocean boundaries. Data report, section 1, temperature, December 1950 to September 1952." Project 30, Contract N7onr-48704, Dec. 1952. 107 p. tables. DNO.

Research conducted in cooperation with Gulf Coast Producing Division of the Pure Oil Company. - Staff.

1952

2255 U.S. Coast and Geodetic Survey. "Density of sea water at Coast and Geodetic Survey tide stations. Atlantic and Gulf coasts." Special Publ. no. 279 (rev. 1949 ed.), 1952. 31 p. mostly tables. DLC.

Monthly and annual means and extremes for 50 stations along Atlantic and Gulf Coasts of United States from Eastport, Maine to Key West, Florida, and Port Isabel, Texas. Seasonal variations in average monthly salinity are shown in parts per thousand on graphs for 23 stations. Records date back to 1911 (New York), 1912 (Atlantic City, N.J.) and 1887 (Sandy Hook, N.J.). - Staff MGA 9E-31.

1952

2256 U.S. Hydrographic Office. "Sailing directions for the east coasts of Central America and Mexico, including north coast of Colombia." H.O. Pub., no. 130, 5th ed., 1952. DLC.

First published in 1916 under title: 'Central American and Mexico pilot.' Staff

1953

2257 Adams, R.M. "Oceanographic survey of the Gulf of Mexico." Texas A & M Univ. Annual Report. 15 June 1952. - 30 June 1953. Contract N7onr-487, Task Order 2, 15 p. illus.

Reports are presented of the 3 cruises of the ALASKA for collection of oceanographic and meteorological data. The first cruise was terminated upon the loss of a hydrographic cable. The second cruise

1953 cont.

covered about 2,160 mi. No hydrographic casts were made below 1,200 m. Thirty-four stations were occupied, of which 11 were in water deeper than 1,000 fathoms. Sixty-six bathythermograph observations were made, 2 on each deep station and the others at 2-hr intervals between stations. Wet- and dry-bulb temperature readings were made at 3 levels at 6-hr intervals throughout the cruise. During the third cruise, only 29 of the 55 planned stations were occupied successfully. - Staff AD-16 160.

1953

2258 Burns, R.E., Bertholf, L.B. and Bates, C.C. "Destructive storm surge of 18 March 1952 along the Gulf coast." Abstract only. In American Meteorological Society, National Meeting, 29 Apr. - 4 May 1953. Program, American Meteorological Society, Bulletin, 34:86, 1953.

A storm surge formed in the Gulf of Mexico which moved southwards as far as Progreso and eastwards along the United States coast as far as Key West, Florida. The initial wave crest reached its maximum height in the vicinity of Southwest Pass, on the Mississippi River where the surge advanced as a breaking wave and caused considerable damage. A second crest about 3 hrs later did not break, however. An attempt is made to explain the double crest of the surge and to relate it to existing meteorological and oceanographic conditions. Author.

1953

2259 Franceschini, G.A. "Reliability of commercial vessel reports of sea surface temperatures in the Gulf of Mexico." Texas A & M College, Scientific Report no. 2, Contract AF 19(604)169, Sept. 1953. 11 p. illus.

Sea-surface temperature distributions computed from short-period averages of commercial vessel reports for August 1951 and January and June 1952. They were nearly identical with those derived from oceanographic cruise data. - Staff AD-24 186.

1953

2260 Graham, H.W., Amisin, J.M. and Marvin, K.T. "Phosphorus content of waters along the west coast of Florida." U.S. Fish and Wildlife Service, Special Scientific Report-Fisheries, no. 122, 1953. 43 p. DAS.

1953

2261 Hela, I., Chew, F. and Wagner, L.P. "Some results of the Florida Current Study, 15 May 1953 - 15 November 1953." Univ.

1953 cont.

of Miami, Marine Lab., Coral Gables, Fla. Technical Report on Tropical Oceanography. no. 54-7, Contract Nonr-84001, Feb. 1954. 100 P. illus. tables. - AD-27 232

1953

2262 Hidaka, K. "Contribution to the theory of upwelling." Texas. A & M Univ. Dept. of Oceanography and Meteorology, Technical Report no. 6, Contract N7onr-48702, Feb. 1953. 15 p. figs. table. DAS.

Oceanographic survey of the Gulf of Mexico. The equations defining upwelling are derived by considering a wind having both constant force and direction and blowing steadily and uniformly in a belt of finite width (L) parallel to an infinitely long straight coast. The sea water is assumed to be of uniform density. An analysis of the equations indicated a vertical circulation in the plane perpendicular to the coast as well as a coastal current parallel to the direction of the wind. - Author (mod).

1953

2263 Hidaka, K. "Contribution to the theory of upwelling. Pt. 2. The most favorable condition for upwelling and the coastal currents induced by winds." Texas. A & M Univ. Dept. of Oceanography and Meteorology, Technical Report no. 8, Contract N7onr-48702, Aug. 1953. 10 p. figs. tables. DAS.

Oceanographic Survey of the Gulf of Mexico. Figures are presented to show streamlines of vertical circulation induced in the plane perpendicular to the coast by longshore and offshore winds. Both are clockwise circulations, and the stream functions have negative values. A longshore wind appears to originate upwelled water from deeper layers than does an offshore wind. However, the circulation caused by an offshore wind carries a much smaller amount of water than does that caused by a longshore wind of the same stress. A study of the vertical variation of horizontal currents showed that the angle between the wind and surface current is 45° at the middle part of the wind belt but decreases both toward the coast and outer margin of the wind belt. Author (mod).

1953

2264 Hidaka, K. "Wind-driven sea level change of a shallow sea over a continental shelf." Texas A & M Univ. Dept. of Oceanography and Meteorology, Technical Report no. 9, Contract N7onr-48702, Sept. 1953. 24 p. figs. tables. refs. DAS.

Oceanographic survey of the Gulf of

1953 cont.

Mexico. A theory of wind-driven currents in a shallow sea is developed which takes into account the effect of horizontal momentum transfer and vertical and horizontal mixing. A wind zone of finite width is assumed to extend out from an infinite, straight vertical barrier (coast). Wind directions, depths to the bottom latitude and vertical mixing coefficients induced a maximum rise or fall of the sea level, or none at all. - Author (mod).

1953

2265 Howell, L.G., Neuenschwander, E.F. and Pierson, A.L. "Gulf coast surface waves." Geophysics, 18(1):41-53, Jan. 1953.

1953

2266 Hudson, R.Y. and Jackson, R.A. "Stability of rubble-mound breakwaters. Hydraulic model investigation." Waterways Experiment Station, Vicksburg, Miss. Technical Memorandum no. 2-365, June 1953. illus. tables.

An investigation was undertaken to determine whether the breakwater proposed for construction at Roosevelt Roads, Puerto Rico would be adequate to withstand the attack of the largest waves occurring at the breakwater site. Models were used with linear scales of 1:30, 1:45 and 1:60. It was determined that model prototype transference equations based upon the Froudian relationships were applicable to all important motion occurrences affecting the stability of rubble-mound breakwaters. The Iribarren formula is believed sufficiently accurate for design of rubble breakwaters if used in conjunction with coefficients such as those developed during the model tests. - Staff AD-21 075.

1953

2267 Netherlands. Hydrografisch Bureau. "Zeemansgids voor Suriname en der Nederlandse Antillen." [Sailing directions for Surinam and the Netherlands Antilles.] 3d ed. Hague, 1953. DNO.

1953

2268 Odum, H.T. "Dissolved phosphorus in Florida waters." Florida. Geological Survey, Report of Investigations, no. 9, 1953. pp. 1-42.

Discussion of dissolved phosphorus and origin of phosphate deposits in Florida, including values in ppm for stations in Tampa Bay area. - Staff.

1953

2269 Price, W.A. "Low-energy coast and its new shoreline types in the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contribution, 1953. 9 l. charts. graph. DAS.

1953

2270 Reid, R.O. and Clayton, W.H. "Transfer processes operating at the ocean boundaries." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project 30, Contract N7onr-48704, Annual report for period ending 30 April 1953. Oct. 1953. 26 p. illus. DNO.

Preliminary results are presented of an investigation of the applicability of Prandtl's equation to the determination of wind stresses from the vertical wind gradient in the Atchafalaya Bay region. A study of the correlation of water level oscillations with barometric pressure and wind speed is discussed. - Staff AD-19 393.

1953

2271 Stommel, H. "Examples of the possible role of inertia and stratification in the dynamics of the Gulf Stream system." Journal of Marine Research, 12(2):184-195, 1 Dec. 1953. figs. tables. refs.

A hypothesis is offered to explain certain major features of the Florida Current: 1) the large axial gradient of vorticity, 2) the seasonal fluctuations in the Miami-Cat Cays tide gage difference are twice the amplitude of those in the Key West-Havana tide gage difference and 3) the Havana-Cat Cays difference is at a maximum during the period of minimum flow--the opposite of what might ordinarily be expected. An elementary perturbation theory of meanders in a wide stratified current is presented and its possible application to Gulf Stream meanders is discussed. - Author (mod). MGA 9D-43.

1953

2272 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Physical and meteorological data. Cruise 4 of the U.S. Fish and Wildlife vessel ALASKA." Data Report no. 2, Contract N7onr-48702, June 1953. 40 p. illus.

An Oceanographic Survey of the Gulf of Mexico. Tabulated data are presented for the actual depth, sampling depth, temperature variations, salinity and phosphate percentages. The data were collected in the Gulf of Mexico during 9-27 January 1952. The sampling patterns and the locations of each station are included. - Staff AD-13 684.

1953

2273 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Water level, December 1950 - September 1952...Transfer processes operating at the ocean boundaries." Data Report, sec. 2, Contract N7onr-48704. Jan. 1953. 104 p.

Tabulated daily water level measurements are presented to the nearest tenth

1953 cont.

of a foot for each hour of the day. The data, which were obtained from measurements of an offshore drilling platform, cover the period 15 December 1950 through 31 August 1952. The platform was located about 15 mi south of Point Chevreuil and 8 mi west of Point Au Fer, Louisiana. All measurements were made with a Bendix-Friez water level recorder (Model Fw-1) with a 1:36 gage height ratio. The mean monthly heights varied from 11.7 to 12.4 ft. Staff AD-5626.

1953

2274 Vickers, T.A. "Hurricane at Jamaica, August 1951." Marine Observer, 23(160): 112-113, Apr. 1953.

Account of measures taken by Cable Ship NORSEMAN to ride out hurricane of 16 - 17 August in Kingston harbor. - Staff MGA 7J-114.

1953

2275 von Arx, W.S. and Richardson, W.S. "The surface outcrop of the Gulf Stream front." Woods Hole Oceanographic Institution, Technical Report, Ref. no. 53-24, Contract N6onr-27701. Apr. 1953. 4 p. illus.

The surface expression of the Gulf Stream front was determined between Miami, Florida and long 70°W from Stommel-Parson air-borne radiation thermometer data and photographic and visual observations. Visual and thermometric evidence of the frontal outcrop on the sea surface was discontinuous. The radiation thermometer alone was considered the most reliable index of the front during winter months. The problem of relating the surface evidence obtained from the air to the meander structure observed from ships is discussed. - Staff.

1953

2276 Wagner, L.P. and Chew, F. "Some results of the Florida Current survey, Nov. 15, 1952 to May 15, 1953." Miami Univ. Marine Laboratory, Contract Nonr-840(01), Technical Report (unnumbered), 1 June 1953. 53 p. figs. tables. refs. photos. DAS.

Discussion and graphic representation of results of temperature and current measurements as related to tides and internal waves. Velocity structure was studied through use of a geomagnetic electrokinetograph (GEK). Transport determinations attempted by means of the Malkus-Stern theory show a strong relation between transport and the cross-sectional area above the first strong thermocline. Author MGA 9F-72.

1953

2277 Waterways Experiment Station. Vicksburg, Miss. "Proposed program of investigations for fiscal years 1953 and 1954; tidal flushing of estuaries." Report no. 1, Technical Memorandum no. 2-374, Apr. 1953. revised. Dec. 1953. 13 p.

Proposed investigations are described concerning studies of the tidal flushing of estuaries. Research objectives were to: 1) develop accurate analytical methods for determination of the flushing characteristics of estuaries maintained by the Corps of Engineers and 2) obtain sufficient empirical data from existing hydraulic models of important estuaries for analysis and evaluation of the effect of physical and hydraulic features on flushing characteristics. - Staff AD-20 050.

1954

2278 Austin, G.B. "On the circulation and tidal flushing of Mobile Bay, Alabama, part 1." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project no. 24, Technical Report no. 12, 1954. 28 l. diagrs. graphs. tables. DAS.

An Oceanographic Survey of the Gulf of Mexico. - Staff.

1954

2279 Bretschneider, C.L. "Dissipation of wave energy on the continental shelf of the Gulf of Mexico." In Wave energy on continental shelf, Gulf of Mexico and its dissipation. Texas A & M Univ., 1954. DNO.

1954

2280 Bretschneider, C.L. "Field investigation of wave energy loss of shallow water ocean waves." U.S. Beach Erosion Board, Technical Memorandum, no. 46, Sept. 1954. 21 p. figs. tables. refs. DAS.

A summary of the field investigation and wave data obtained on wave energy loss of shallow water ocean waves carried out during the past 2 years in the Gulf of Mexico. Data were recorded at offshore oil platforms with Woods Hole type 1 pressure head wave recorders. Data were analyzed for the maximum, significant and average of the highest 10 percent. For wind-generated waves in shallow water, it is indicated that the relationship between the maximum wave height and the significant wave height is a function of the depth parameter gd/U^2. - Author (mod) MGA 5K-203.

1954

2281 Bumpus, D.F. "The circulation over the continental shelf south of Cape Hatteras." Woods Hole Oceanographic Institution, Mass. Technical Report, Ref. no. 54-58, Contract N6onr-27701. Aug.

1954 cont.

1954. 15 p. illus. refs.

The hydrography of the continental shelf off North Carolina, south of Cape Hatteras, is controlled by an environment which produces moderate horizontal gradients and weak to moderate vertical gradients in temperature and salinity. In winter, water temperatures may range from 10°C at the coast to 22°C only 60 mi to the SE. Salinity in the sounds, bays and rivers is as low as 18 percent, approximately 32 percent at the inlets, yet a salinity of 36 percent may occasionally be found within 10 mi of the coast and never further than 50 mi away. - Staff AD-40 209.

1954

2282 Chew, F. "Physical oceanography of Key West harbor and approaches." Univ. of Miami, Marine Lab., Final Report, Feb. 1953 - Jan. 1954. Report no. 54-13, Report no. ML 7670, Contract N600s - x-27065, June 1954. illus. tables.

Five major water masses are important in the physical oceanography of the Key West Approaches (KWA). Each is defined by a range of salinity, temperature and transparency characteristics. There are 2 principal water circulation regimes in the area; one during the summer months and the other during fall, winter and early spring. A transitional regime appears in May and June. The salinity, temperature and density in the KWA are vertically homogeneous to a first approximation. Staff AD-36 277.

1954

2283 Clayton, W.H. "Temperature measurements of Caplen Pier." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract N7onr-48702, Project NR 083-036, Project 24C, Technical Report. Aug. 1954. 15 p. figs. photos. refs. DAS.

A measuring system employing copper-constantan thermocouples for multi-point temperature determination at Caplen pier is described in detail. A quantitative review of the establishment of accuracy limits (=.05°F) of this system is also presented. - Author MGA 9E-46.

1954

2284 Coastal Geography Conference, 18 Feb. 1954. "Proceedings." U.S. Office of Naval Research, Wash., D.C. 1954. 71 p. tables. illus. - AD45 544.

1954

2285 Galtsoff, P.S. "Historical sketch of the explorations in the Gulf of Mexico." In U.S. Fish and Wildlife Service, Fishery Bulletin 55:(89):3-36, 1954. figs. maps. refs. DNO.

1954 cont.

Summary of scientific achievements of the many explorations in the Gulf of Mexico from the time of its discovery to the present day. - Staff.

1954

2286 Hela, I., Chew, F. and Wagner, L. P. "Some results of the Florida Current study: preliminary report on the Grand Cayman Cruise, Nov. 15, 1953 to May 15, 1954." Miami, Univ. Marine Lab. Contract Nonr-840(01), Technical Report (unnumbered), July 1954. 36 p. figs. tables. DAS.

Report attempts to show, without using the geostrophic equation, that when the local time change of transport of the Florida Current is positive, the longitudinal current speed east of the current axis is higher than that west of the axis, and vice versa. By means of a simplified vorticity equation, it is concluded that an increasing transport in the Florida Current increases the vorticity of the current while a decreasing transport decreases its vorticity. - Staff MGA 6.9-53.

1954

2287 Jeffrey, L.M. and Creager, J.S. "Literature survey of the Galveston-Port Arthur harbor approach areas." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project no. 77, 1954. 21 l. DAS.

1954

2288 Leipper, D.F. "Physical oceanography of the Gulf of Mexico." In U.S. Fish and Wildlife Service, Fishery Bulletin (89):119-137, 1954. charts. tables. refs. DNO.

The Gulf being nearly enclosed, provides a model ocean in which much may be learned about processes operating in the larger oceans which are not so readily adaptable to comprehensive and systematic analysis. - Author.

1954

2289 Marmer, H.A. "Tides and sea levels in the Gulf of Mexico." U.S. Fish and Wilflife Service, Fishery Bulletin, 55(89): 101-118, 1954. figs. refs. DNAL. DLC. CU-S.

Following introductory remarks on tides and sea levels in the Gulf of Mexico, information is given on harmonic constants, types, semi-diurnal and diurnal tides, mixed types and characteristics of harmonic constants. The disturbing effects of wind and weather, the tide and sea level and availability of tidal data are discussed. - Staff MGA 15.1-198.

1954

2290 National Geographic Society. "West Indies." Compiled and drawn in the Cartographic Division. J.M. Darley, chief cartographer. Wash., D.C., 1954. col. map with 30 insets. -- Issued with National Geographic Magazine, v. 105, no. 3, Mar. 1954. Index, with 4,957 place names. Scale: 1:3,500,000 or 5.24 mi to the in. Transverse Mercator projection. DLC.

1954

2291 Perreault, A. et al. "Reconnaissance report for Lesser Antilles shoran survey, October - November 1953." U.S. Naval Oceanographic Office, 1953. 9 p. DNO.

1954

2292 Price, W.A. "Shorelines and coasts of the Gulf of Mexico." U.S. Fish and Wildlife Service, Fishery Bulletin, 55(89):39-65, 1954. figs. table. refs. DLC. DNO.

Discusses the status of studies of coasts and shorelines and shoreline classification. Information is given on the emergent and submangent shorelines of the gulf. The author applies a quantitative regional approach to the study of the influence of oceanographic processes on shorelines and the associated coastal and shallow-water bottom conditions. - Staff.

1954

2293 Reid, R.O. and Clayton, W.H. "Transfer processes operating at the ocean boundaries." Texas A & M Univ. Final Report 15 Mar. 1951 - 30 Apr. 1954. Contract N7onr-48704, 1954. 5 p. refs.

Analyses were directed toward the correlation of meteorological activity with sea level oscillations and the evaluation of wind stress under varying oceanographic and meteorological conditions. Studies were conducted to: 1) determine the magnitude of wind tides in the Gulf of Mexico, 2) ascertain what portion of the tides are caused by tangential and normal stresses under different conditions of wind speed and initial surface perturbation, 3) evaluate certain fundamental parameters postulated by theoretical considerations of the problem and 4) formulate a general expression applicable to the prediction of setup in a basin which is subject to near uniformity of the meteorological and oceanographic environment. Staff AD-33 142.

1954

2294 Shoemaker, W.S. "Light penetration in the Gulf of Mexico." U.S. Fish and Wildlife Service, Fishery Bulletin, 55(89): 139-141. 1954. tables. refs. DNO.

Summarizes present knowledge and recent efforts in underwater illumination as applied to the Gulf of Mexico. The tabulated data were calculated from Secchi disc depths.
Staff.

1954

2295 Sparger, C.R. and Leipper, D.F. "Progress report for period 1 June 1953 - 30 April 1954." Texas A & M Univ., Research Foundation, Annual Report no. 3, Ref. no. 54-39F. Contract N7onr-487, Technical Order 3, June 1954. 16 p. illus.

A study was made of atmospheric influence on the thermal structure of the sea through an analysis of over 55,000 bathythermographs (BT) from both the Atlantic and Pacific oceans. Supplementary observations from the Gulf of Mexico were also used. The data were processed by choosing a typical BT for a given day. Discussions are presented of indices of heat content and distribution, practical time relations between heat content and distribution, the effect of convection and changing turbulence on the mixed layer, the instantaneous space variations in the mixed layer depth and ocean heat transport. - Staff AD-34 228.

1954

2296 Texas. A & M Univ. Dept. of Oceanography and Meteorology. "Oceanographic survey of the Gulf of Mexico." Contract N7-onr-48702, Project NR 083 036, Annual Report, 30 June 1953 - 30 June 1954. Sept. 1954. 14 p. diagrs. DAS.

One deep water oceanographic cruise was undertaken with the new research vessel in March 1954 and 2 surveys were made of Mobile Bay, Alabama. Of 16 total oceanographic cruises taken during the past year, personnel of the project participated in 11 for a total of approximately 275 man days at sea. Fifty-six man days were spent in the field on the 2 bay surveys by personnel from the project. Oceanographic data from R/V ALASKA cruises were processed and sent to the U.S. Hydrographic Office for additional computation. Sixty-three deep-sea reversing thermometers were calibrated in a tank built by the project for this purpose. Author (mod) MGA 6.8-64.

1954

2297 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Temperature and salinity data for the northern Gulf of Mexico, taken by the R/V ALASKA and the AA JAKKULA during the years 1951 - 1954." 1954. DNO.

1954

2298 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Wave energy on continental shelf, Gulf of Mexico, and its dissipation." 1954. figs. tables. DNO.

1954

2299 Texas A & M Univ. Dept. of

1954 cont.

Oceanography and Meteorology. "Wave force experiments at Atchafalaya Bay, Louisiana." Technical Report no. 38-1, Contract NOy-27474, Feb. 1954. 75 p. illus. tables. refs.

Attempts were made to correlate the total wave force on a vertical pile of circular cross section with the significant wave characteristics for total submergence of the pile. The test pile consisted of three 10-ft sections of 8-in nominal diameter steel pipe connected together by male and female threads in such a way as to give a continuous cylindrical surface at the joints. Final values of the drag and inertial coefficients for 54 waves are 0.38 and 1.42, respectively. These are associated with waves of about 1.5 ft in height and 3.0 sec in period. Staff AD-84 611.

1954

2300 Thompson, W.C. "Energy of waves expended on the continental shelf of the Gulf of Mexico." In "Wave energy on continental shelf, Gulf of Mexico, and its dissipation." Texas A & M Univ., 1954. DNO.

1954

2301 U.S. Fish and Wildlife Service. "Aspects of water pollution in the coastal area of the Gulf of Mexico." Fishery Bulletin. 55(89):555-575, 1954. figs. refs. DLC.

The data upon which this report is based relate principally to sources of pollution lying within 50 mi of the gulf. Discusses the nature of pollution affecting the gulf water, water pollution control agencies, programs, laws and the Federal-State Shellfish Control Program. A summary of water pollution data followed by a report on damages to resources caused by pollution in various parts of the Gulf of Mexico. - Staff.

1954

2302 U.S. Fish and Wildlife Service. "Gulf of Mexico, its origin, waters, and marine life." Fishery Bulletin, 89, 1954. 604 p. figs. tables. maps. refs. DNO.

Summary of present knowledge about the Gulf of Mexico is defined as a partially landlocked body of water indenting the southeastern periphery of the North American continent. Its eastern boundary was drawn from Cabo Catoche at the tip of the Yucatan Peninsula to Key West at the southernmost tip of Florida. This boundary does not constitute a natural barrier; it was arbitrarily determined to

1954 cont.

restrict the scope of the project. Inland, the area under consideration extends to the limits of tidal waters. Author (mod).

1954

2303 Vine, A.C., Knauss, J.A. and Volkmann, G.H. "Current studies in the eastern Cayman Sea [sic]." Woods Hole Oceanographic Institution, Ref. no. 54-35, Contract Nonr 1158(00), 1954. 73 p. figs. tables. refs. DNO.

1954

2304 Wertheim, G.K. "Studies of the electric potential between Key West, Florida, and Havana, Cuba." American Geophysical Union, Transactions, 35(6, pt. 1):872-882, Dec. 1954. figs. table. refs. DAS.

The mass transport of the Florida Current across the Key West-Havana section has been studied by means of associated electrical potential due to the geomagnetic field. An analysis of the seasonal, daily and short-term variations of the transport is presented, as well as a critical discussion of the limitations of the method of measurement employed. Author MGA 12M-361.

1954

2305 Williams, R.H. "Distribution of chemical constituents of sea water in the Gulf of Mexico. U.S. Fish and Wildlife Service, Fishery Bulletin, 55(89):143-151, 1954. tables. refs. DNO.

Chemical data are summarized in order of the decreasing amount of published information: salinity, oxygen, phosphorus, nitrate, nitrite, pH, alkalinity and carbon dioxide components, copper and miscellaneous chemical constituents. - Author.

1955

2306 Austin, G.B. "Some recent oceanographic surveys of the Gulf of Mexico." American Geophysical Union, Transactions, 36(5):855-892, Oct. 1955. figs.

An apparently semi-permanent, large-scale, anti-cyclonic eddy repeatedly observed on 4 earlier oceanographic surveys was investigated in greater detail during Cruise 54-10 of the AA JAKKULA, August - September 1954. Evidence from the 5 surveys made in the region of the eddy indicates that it is an integral part of the Gulf Stream system in the Gulf of Mexico. From the single ship survey of Cruise 54-10, an attempt was made: 1) to locate and define the eddy and 2) to establish whether or not it is a temporary or permanent feature of the Gulf of Mexico and the Yucatan Current, or 3) to determine whether or not it is

1955 cont.

changed physically in space and time, or both. - Author MGA 7.11-62.

1955

2307 Brown, H.A. "Frequency of northers at Galveston, 1950 - 1955." Survey of the Galveston-Port Arthur harbor approach area, Final Report, (app.), Sept. 1955, Texas A & M Research Foundation, Project no. 77, 1955. DNO.

1955

2308 Chew, F. "On the offshore circulation and a convergence mechanism in the red tide region off the west coast of Florida." American Geophysical Union, Transactions, 36(6):963-974, Dec. 1955. figs. tables. refs.

The offshore water is shown to move as a single column. The sloping bottom and the equation of continuity are then applied to show the existence of a horizontal convergence mechanism which, over a period of several weeks, may effect a several-fold increase in concentration of floating particles. The southbound current in the 'loop' is thought of as a Rossby jet which drives the cyclonic eddy offshore. Consideration of the abbreviated vorticity equations shows that organism and hence, the organisms previously concentrated will tend to wash ashore. Some considerations of the effects of wind are also included. - Author MGA 9D-78.

1955

2309 Chew, F. and Wagner, L.P. "Tropical oceanography." Univ. of Miami, Marine Lab. Semiannual Technical Report 15 May - 15 Nov. 1955. Report no. 56-15, ML-13092, Contract Nonr-840(01). 40 p. illus. tables. refs.

An investigation was made of the Cay Sal Bank region of the Straits of Florida; other data were obtained in the area east of Miami. Profiles were drawn for each of the transects which impinge on the Cay Sal Bank. These were drawn for temperature, salinity, oxygen, sigma-t, velocity and volume transport. An attempt was made to reconcile the difference between measurements of the electric potential across the Florida current from Key West to Havana and concurrent hydrographic sections which were interpreted on the basis of geostrophic control. - Staff AD-100 177.

1955

2310 Dowling, G.B., Miller, C.E. and LaFond, E.C. "Sound velocity structure of the Gulf of Mexico waters off Panama City, Florida." U.S. Navy. Mine Countermeasures Station, Panama City, Fla., Technical Paper, no. 39, Mar. 1955. 14 p. figs. refs.

1955 cont.

DNO.

1955

2311 Flinsch, H. "Mechanical recording of waves in the Gulf of Mexico." In Conf. on Coastal Engineering Instruments, 1st, Berkeley, 1955. Proceedings. pp. 120-123. figs. tables. DNO.

1955

2312 Franceschini, G.A. "Reliability of commercial vessel reports of sea surface temperatures in the Gulf of Mexico." Bulletin of Marine Science of the Gulf and Caribbean, 5(1):42-51, Mar. 1955.

The temperature distribution of surface water in the Gulf of Mexico, as determined by certain short-period averages of commercial vessel reports, is shown to be reliable. Comparison is made with the distributions as determined for 3 periods from data obtained by scientific oceanographic surveys made in 1951 and 1952. Comparison is also made with mean monthly sea surface conditions. The suggestion is made that short-period averages of commercial vessel reports be used for practical purposes, i.e., meteorological and oceanographic research and forecasting air mass modification over the gulf. Author (mod).

1955

2313 Geyer, R.A. "Effect of the Gulf of Mexico and the Mississippi River on hydrography of Redfish Bay and Blind Bay." Texas. Univ. Institute of Marine Science, Publications, 4(1):155-168, Sept. 1955. DNO.

1955

2314 Hela, I., Chew, F. and Wagner, L.P. "Some results of the Oceanographic studies in the Straits of Florida and adjacent waters." Univ. of Miami, Marine Laboratory, Semi-annual Technical Report 15 May - 15 Nov. 1954. no. ML 8937, Contract Nonr-84001. Jan. 1955. 74 p. illus. tables. AD-58-489.

1955

2315 Hela, I., Chew, F. and Wagner, L.P. "Tropical oceanography." Univ. of Miami, Marine Laboratory, Semi-annual Technical Report, 15 Nov. - 15 May 1955, Report no. 55-27; ML 10944, Contract Nonr-84001. Sept. 1955. 70 p. tables. illus. AD-79-318.

1955

2316 Keen, J. and Chimiak, W. "Caribbean current survey." U.S. Naval Oceanographic Office, Technical Report, TR-12, 1955. 14 p. figs. refs. DNO.

Analysis of geomagnetic elektrokinetograph (GEK) observations obtained by USS PURSUIT, USS SAN PABLO, and R/V ATLANTIS 14 March - 9 June 1953. Current velocities, volume transport, water mass characteristics and tidal influence are discussed. Staff.

1955 cont.

1955

2317 Leipper, D.F. "Physical, chemical, geological and biological oceanography in Gulf of Mexico." Texas A & M Univ. Annual Report, 30 Apr. 1954 - 30 Apr. 1955. Ref. no. 55-20A, Contract N7onr-48702. June 1955. tables. illus. AD-66 463.

1955

2318 Miller, C.E. and Dowling, G.B. "Oceanographic data collected off Panama City Beach, Florida, during the period 12 January 1955 thru 28 January 1955." U.S. Navy. Mine Defense Laboratory, Panama City, Fla., Data Report, no. 5503, 1955. 14 p. tables. DAS.

1955

2319 Mitchell, C. "Islands to windward; cruising the Caribees." New York: Van Nostrand, 1955. 295 p. figs. maps.

Standard reference work on yachting in the Caribbean area. Each chapter contains geographic and harbor information on separate islands or groups of islands. Appendix contains boat specifications, pronouncing gazetteer, sailing routes and lists of Pilot Charts. - Staff.

1955

2320 Morrill, J.B. and Olson, F.C.W. "Literature survey of the Biscayne Bay area." Florida. State Univ. Oceanographic Institute, Contract N62306s-S-287, 1955. 134 l. Mimeographed. DAS.

1955

2321 Noodt, E. "Temperatur- und Salzgehaltsanomalien in Tiefenhorizonten des Atlantischen Ozeans." [Temperature and salinity anomalies in deep layers of the Atlantic Ocean.] Ph.D. thesis, Christian-Albrechts-Universität, Kiel, May 1955. 59 p. figs. charts. tables. refs. DAS.

Profiles of temperature, salinity and density of the Atlantic Ocean and large charts of the anomalies of temperature and salinity at 200, 800, 1,000 and 2,000 m in the Atlantic and neighboring seas, are presented. These are based on the most recent (as well as older) data for the Gulf of Mexico, Barents, Baffin, Norwegian and Southern (Antarctic) Seas, etc., as well as for the Atlantic (from lat 80°N to lat 80°S). A thorough analysis and literature review are included. Local charts for the Gulf of Mexico and Newfoundland Banks, etc., tables of mean latitudinal

1955 cont.

and depth data and interrelationship between elements are included in the analysis. Staff MGA 9E-93.

1955

2322 Olson, F.C.W. "Hydrography of Alligator Harbor, Franklin County, Florida." Fla. State Univ. Oceanographic Institute, Contribution no. 28, 1955. 168 p. chart. figs. tables. DNO.

1955

2323 Olson, F.C.W. and Morrill, J.B. "Literature survey of the Tampa Bay area." Florida. State Univ. Oceanographic Institute, Contract N62306s-S-287, 29 Aug. 1955. 66 p. figs. tables. refs. DNO.

1955

2324 Redfield, A.C. and Miller, A.R. "Water levels accompanying Atlantic coast hurricanes." Woods Hole Oceanographic Institute, Report no. 1, Ref. no. 55-28, Contract N6onr-27701, June 1955. 24 p. illus. refs.

Tide gage records from various sources were examined in a study of abnormal elevations of the sea surface which accompany hurricanes that cross the eastern United States coast from the sea. The available data included records for the hurricanes of 21 September 1938; 14 - 15 September 1944; 31 August 1954 "Carol"; 11 September 1954 "Edna" and 15 October 1954 "Hazel". Interest was centered on the temporary changes in sea surface elevation which resulted from the large-scale transport of water by the storm as a whole. - Staff AD 69 022.

1955

2325 Richards, F.A. and Redfield, A.C. "Oxygen-density relationships in the western North Atlantic." Deep-Sea Research, 2(3):182-199, Apr. 1955. figs. tables. refs.

A distinctive correlation between oxygen content and sigma t has been shown to exist in the Sargasso Sea. Waters of the Caribbean Sea, Yucatan Channel and Straits of Florida are low in oxygen. Similar oxygen anomalies along the supposed course of the Gulf Stream can be used to delineate its right hand boundary to trace water of southern origins to long 43°W. The distribution of oxygen anomalies across the Gulf Stream show that water of southern origins is present in highly variable amounts, that it is present in the various currents and counter-currents, and that these currents are materially related and do not represent merely the transfer of momentum from southern sources. - Author (mod)

1955 cont.

MGA 9E-96.

1955

2326 Rodewald, M. "Ausmanövrieren des tropischen wirbelsturms Diane, 11. bis 13. August 1955." [Maneuvering to avoid tropical cyclone "Diane" 11 - 13 Aug. 1955.] Wetterlotse, no. 94/ 95:216-229, Nov./Dec. 1955. figs.

M/S COBURG (Haiti to Europe) received the first hurricane warning on 11 August. The track as plotted on board (which differed from that given by Washington) and the avoiding action taken are shown. Observations on the COBURG and the warnings received are tabulated; comments on the peculiarities of this asymmetric hurricane are added. - Staff MGA 7.4-154.

1955

2327 [Science News Letter] "Caribbean warmed up suddenly 10,000 B.C." Its 67(17):265, 23 Apr. 1955.

Radio-carbon datings of deep sea sediments carried out by the U.S. Geological Survey Laboratory show that the Caribbean Sea suddenly warmed up to the temperatures of today. It used to be about 9°F colder. Staff MGA 7.3-255.

1955

2328 Shurman, G.A. "Storm wave force meter." In Conference on Coastal Engineering Instruments, 1st, Berkeley, Calif., 1955. Proceedings, pp. 166-172. diagrs. DNO.

Waves were measured in the Gulf of Mexico. - Staff.

1955

2329 Texas A & M Research Foundation. "Tabulation of sea and swell data, cruises 1 through 8, 1953 - 1955." In Survey of the Galveston-Port Arthur harbor approach area. Appendix to Final Report, Project no. 77, Sept. 1955. DNO.

1955

2330 Texas A & M Univ. "Physical and meteorological data, Cruises 5, 8, and 10 of the U.S. Fish and Wildlife Vessel ALASKA." Data Report no. 3, Ref. no. 55-37D, Contract N7onr-48702, 85 p. Oct. 1955. illus. AD-76 807.

Oceanographic Survey of the Gulf of Mexico. - Staff.

1955

2331 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Literature survey of Lake Charles, La., Gulfport and Mobile, Ala., and Pensacola, Fla., and their approaches." Project 98, Contract N62306s-285, Final Report, 1955. 2 v. tables. -- Contents: v.1 Henry, V.J. and Shenton, E.H. "Geological oceanography;"

1955 cont.

v.2. Jeffrey, L.M. "Physical oceanography;" and Moskovits, G. "Marine biology." DNO.

1955

2332 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Survey of the Galveston-Port Arthur harbor approach area." Appendix to Final Report, Sept. 1955. Texas A & M Research Foundation, Project no. 77, 1955.

1955

2333 U.S. Coast and Geodetic Survey. "Surface water temperatures at tide stations, Atlantic Coast, North and South America." 5th ed. (data through 1954). Special Pub. no. 278, 1955. 69 p. entirely tables. DAS.

Monthly mean, annual mean and extreme sea surface (bucket) temperatures for 97 stations along the Atlantic, Gulf, Caribbean and South American coasts from Panama to southern Brazil are presented. Table 2 gives sea water temperatures from recording thermometers for Bar Harbor, Boston, Battery (New York), Atlantic City, Washington, D.C., Daytona Beach and Canova Beach, Florida. - Staff MGA 8.9-84.

1955

2334 Virginia Geographical Institute, Charlottesville. "Literature survey of San Juan, P.R. harbor and its approach areas." Contract N62306s-266, July 1955. 15 p. table. AD-80 317.

1955

2335 von Arx, W.S., Bumpus, D.F. and Richardson, W.S. "On the fine-structure of the Gulf Stream front." Deep-Sea Research, 3(1):46-65, Oct. 1955. figs. refs.

Airplane and ship observations reported in the Florida Straits reveal a Gulf Stream structure which can be interpreted as a succession of overlapping segments, or shingles. Several scales of shingles appear to occur, some of the order of 100 - 500 km long, some several tens of km and some less than 10 km. Diagrams of the sections observed are presented. The characteristic velocities in the cores of the filaments are around 1 1/2 - 3 in/sec but considerable fluctuations within a day, and of longer period, exist. - Staff MGA 11.5-214.

1955

2336 Waterman, T.H. "Polarization of scattered sunlight in deep water." Papers in Marine Biology and Oceanography, Supp. to: Deep-Sea Research, 3:426-434, 1955. photos. tables. refs. DLC.

Photographic measurements made at 30, 60, 100, 150 and 200 m depth in the

1955 cont.

Atlantic NW of Bridgetown, Barbados, British West Indies (lat 13°N, long 59°W) are discussed and illustrated. It is concluded that scattered sunlight is linearly polarized to considerable depth; the pattern depending on the sun's position. The optical phenomena are important to both surface and deep sea fauna. - Staff MGA 9F-111.

1955

2337 Whitehouse, U.G. "Geological oceanography, laboratory methods." In Survey of the Galveston-Port Arthur harbor approach area. Appendix to Final Report, Sept. 1955. Texas A & M Research Foundation, Project no. 77, 1955. DNO.

1955

2338 Wilson, B.W. "Graphical approach to the forecasting of waves in moving fetches." Texas A & M Univ. Research Foundation For U.S. Beach Erosion Board, Technical Memorandum no. 73, Contract DA 49-055-eng-45, Apr. 1955. 31 p. illus. refs.

A graphical technique is presented by which maximum significant wave heights and periods in moving wind systems may be determined. Deep water data are assembled into a single chart which interrelates significant wave height, period, wind velocity, duration and fetch. A space-time wind-field, representing any given moving wind system in relation to a particular point on a coast, is placed by superposition on the chart to evaluate the characteristics of the waves generated at any specific point in space and time within the wind field. The method accounts for the capacity of the wind: 1) to continuously generate new waves from ripples at all points along any given fetch-line and 2) to progressively build the wavelets into bigger waves. Staff AD-65 351.

1955

2339 Wilson, B.W. "Wave force experiments in the Gulf of Mexico." Texas A & M Univ., Interim progress Report. 20 Oct. 1952 - 19 Dec. 1954. Ref. no. 55-7A, Contract Noy-27474. Jan. 1955. 7 p.

A historical account is given of the work accomplished since October 1951 on wave force experiments in the Gulf of Mexico. Objectives of the research include: 1) the measurement of reactions induced by the ocean waves on a test pile; 2) the determination of actual induced total forces and correlation of these with characteristics of waves which induce the total force; 3) the comparison of

1955 cont.

results with values calculated from existing formulas and from reduced model studies; and 4) the development of a reliable method for the analytical determination of the total force induced on a conventionally set pile by given waves. - Staff AD-79 550.

1955

2340 Wilson, B.W. and Reid, R.O. "Effect of vibrations on the measurement of wave forces." Texas A & M Univ. Technical Report no. 38-2, Ref. no. 55-41T, Contract NOy-27474. Dec. 1955. 54 p. illus.

This report presents a study of the nature of the natural (free) vibrations of a marine oil platform used as a base of attachment for a wave force measuring assembly and the vibrations of the measuring system itself. The objective was to determine to what extent and in what modal form these vibrations might enter into the recordings of wave force as obtained from the test pile. The conclusion is that no very serious repercussions of the vibrations on the wave force measurements need be expected; what there are can be adequately filtered out of the records by analysis procedures. - Author (mod) AD-79 134.

1955

2341 Worthington, L.V. "Downstream increase in volume of the Florida Current." Woods Hole Oceanographic Institution, Oceanographic Studies, Atlantic, Technical Report, Ref. 55-3, 1955. DNO.

1955

2342 Worthington, L.V. "New theory of Caribbean bottom-water formation." Deep-Sea Research, 3(1):82-87, Oct. 1955. figs. refs. Also his: "Temperature increase in Caribbean deep water since 1933." Ibid., 3(3):234-235, Apr. 1956.

A recent section across the Caribbean Sea shows that in the Caribbean deep water, oxygen values have dropped during the last 20 years. Study of the surrounding Atlantic water suggests that the Caribbean deep water has not been renewed since the end of the eighteenth century, coincident with a cold climatic variation at high altitudes in the North Atlantic. The rate of warming derived from water temperature measurements made in the Caribbean Basin in 1933 and 1954 to a depth of 3,000 m indicates that the basin was cut off around 1820. - Author (mod) MGA 12M-1035.

1956

2343 Anderson, W.W., Gehringer, J.W. and Cohen, E. "Physical oceanographic, biological and chemical data, South Atlantic

1956 cont.

coast of the United States, M/V THEODORE N. GILL Cruise 1." U.S. Fish and Wildlife Service, Special Scientific Report - Fisheries, no. 178, Aug. 1956. 160 p. Mostly tables. DAS.

Procedures, methods, equipment and plan of the cruises off the South Atlantic Coast of the United States during 12 February - 7 March 1953. A series of 80 regular stations were set up between Jupiter Light in the Florida Straits and Cape Hatteras. The standard station was at a location off Elbow Cay, Bahamas. Nine special stations were located further offshore for the U.S. Hydrographic Office. Nine cruises were carried out between January 1952 and December 1954. - Staff MGA 10.5-103.

1956

2344 Bretschneider, C.L. "Wave forecasting relationships for the Gulf of Mexico." U.S. Beach Erosion Board, Technical Memorandum no. 84, Dec. 1956. 27 p. illus. refs.

Method is described for computing wind-wave data over the continental shelf along the United States coast of the gulf. The problem is complex since the waves are generated originally in deep water, but under the continued influence of wind, they are propagated shoreward over the shelf where bottom friction and type of bottom profile become important. For the case of winds blowing from sea to land, the forecasting relationships are satisfactory only for depths of 20 ft or greater. At 20 ft or less, the bottom slope changes too rapidly for the theory to apply, and longer period swell will break in the surf zone and obscure the wind-wave pattern. Staff AD-132 762.

1956

2345 Bretschneider, C.L. and Gaul, R.D. "Wave statistics for the Gulf of Mexico off Apalachicola, Florida." U.S. Beach Erosion Board, Technical Memorandum no. 88, 1956. DNO.

Detailed wave statistics for deep water, 96, 48, 24 and 12-ft depths, based on hindcasts from synoptic weather charts for the yrs: 1950, 1952 and 1954 are presented. Refraction coefficients and final wave direction at those depths are presented graphically as a function of wave period and deep-water wave direction. Staff.

1956

2346 Bretschneider, C.L. and Gaul, R.D. "Wave statistics for the Gulf of Mexico off Brownsville, Texas." U.S. Beach Erosion

1956 cont.

Board, Technical Memorandum, no. 85, 1956. DNO.

Detailed wave statistics for deep water, 96, 48, 24 and 12-ft depths, based on hindcasts from cynoptic weather charts for the yrs: 1950, 1952 and 1954 are presented. Refraction coefficients and final wave direction at those depths are presented graphically as a function of wave period and deep-water wave direction. Staff.

1956

2347 Bretschneider, C.L. and Gaul, R.D. "Wave statistics for the Gulf of Mexico off Burrwood, Louisiana." U.S. Beach Erosion Board, Technical Memorandum, no. 87, 1956. DNO.

Detailed wave statistics for deep water, 96, 48, 24 and 12-ft depths, based on hundcasts from synoptic weather charts for the yrs: 1950, 1952 and 1954 are presented. Refraction coefficients and final wave direction at those depths are presented graphically as a function of wave period and deep-water wave direction.

1956

2348 Bretschneider, C.L. and Gaul, R.D. "Wave statistics for the Gulf of Mexico off Caplen, Texas." U.S. Beach Erosion Board, Technical Memorandum, no. 86, Sept. 1956. DNO

Detailed wave statistics for deep water, 96, 48, 24 and 12-ft depths, based on hindcasts from synoptic weather charts for the years: 1950, 1952 and 1954 are presented. Refraction coefficients and final wave direction at those depths are presented graphically as a function of wave period and deep-water wave direction. - Staff.

1956

2349 Bretschneider, C.L. and Gaul, R.D. "Wave statistics for the Gulf of Mexico off Tampa Bay, Florida." U.S. Beach Erosion Board, Technical Memorandum, no. 89, 1956. DNO.

Detailed wave statistics for deep water, 96, 48, 24 and 12-ft depths, based on hindcasts from synoptic weather charts for the years: 1950, 1952 and 1954 are presented. Refraction coefficients and final wave direction at those depths are presented graphically as a function of wave period and deep-water wave direction.

1956

2350 Carlson, Q.H. et al. "Texas tower oceanographic observational program spring and summer 1956." U.S. Hydrographic Office, Wash., D.C. Technical Report no. 41, Oct. 1956. 23 p. illus. tables.

1956 cont.

In April 1955, the U.S. Hydrographic Office initiated the coordination of the oceanographic requirements of all government agencies involving the use of the Tesax towers as observational platforms. The first oceanographic instruments were installed aboard the Georges Shoal Texas Tower in April 1956. Observations made during the months of April, May, June, August and September provide the basis for a preliminary evaluation of the Texas tower as an observational platform and of the adaptability of the instruments tested. - Author (mod) AD-124 407.

1956

2351 Chew F. and Wagner, L.P. "[Florida current study.]" Semi-annual report of investigation. Miami. Univ. Marine Laboratory, Contract Nonr 840(01), Technical Report (unnumbered), May 1956. 40 p. figs. tables refs. DAS.

Data and charts derived from oceanographic or hydrographic cruises in the Cay Sal Bank region in the Florida Straits. It includes bathythermograms and temperature records taken in July 1953 and August 1955. Current velocities, flow patterns, water transport, volume and heat transport, oxygen distribution and salinity are among subjects of charts and texts. - Staff MGA 9E-108.

1956

2352 Drummond, K.H. "Oceanographic data, Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. no. 56-33D 1956. DAS.

1956

2353 Fisher, E.L. "Hurricanes and the sea-surface temperature field." New York Univ. College of Engineering, Technical Paper no. 1: Hurricane Project, Contract Cwb-8731, July 1956. illus.

Behavior of hurricane tracks and variations of the intensity of hurricanes are investigated in a study of the sea-surface temperatures around 11 hurricanes. Data indicated that a hurricane will weaken and even dissipate if it moves over cold water (79°F); this figure varies with the season and situation. Consideration was given to the creation of marked pools of cold water behind some hurricanes. This phenomenon is considered to occur where the top layers of the ocean are not isothermally stratified, and the upwelling induced by the divergence causes the abrupt appearance of the cold water behind the hurricane. Accordingly, the weakening of "Diane" was attributed to its passage over the area of cold

1956 cont.
water left by the recent passage of "Connie." Staff AD-107 087.

1956
2354 Fleming, R.H. and Elliott, F.E. "Some physical aspects of the inshore environment of the coastal waters of the United States and Mexico." Geographical Journal, 122(4):456-465, Dec. 1956. figs. refs.

The coastline is classified geomorphologically. Annual discharges of river basins are estimated: 75 percent enter the Atlantic and 25 percent the Pacific. Annual range of sea temperature and surface salinity are shown. The effects of winds, fresh water discharge and currents cause a much greater range of sea temperature on the Atlantic shore (more than 10°C) than on the Pacific (less than 5°C). - Staff MGA 8.5-85.

1956
2355 Gt. Brit. Hydrographic Office. "West Indies Pilot comprising the mainland shores of the Caribbean Sea and Gulf of Mexico, from Punta Peñas in Venezuela to Cape Sable in Florida, U.S.A., with the adjacent islands." v. 1, 11th ed. London, 1956. DAS.

1956
2356 Harris, D.L. "Some problems involved in the study of storm surges." In Caribbean Hurricane Seminar, Ciudad Trujillo, 16 - 25 Feb. 1956. Final Report, 1956. pp. 306-327. figs. refs. DAS.

The development of reliable techniques for forecasting storm surges requires an examination of the changes in sea level and factors which determine sea level as a function of time and space. Discusses the normal causes of change. Studies are under way, in the hope of establishing a sound basis for forecasting surges. - Staff MGA 12M-554.

1956
2357 Hela, I. "A pattern of coastal circulation inferred from synoptic salinity data." Univ. of Miami, Marine Laboratory, Contribution no. 154, Contract Nonr-84001, 1955. 10 p. illus.

Ocean currents under study were in the Gulf of Mexico. - Staff AD-101 218.

1956
2358 Howell, R.L. "Marine waters (Caribbean area)." In Pan American Institute of Geography and History. Interim Committee on Oceanography, Technical Working Documents ...Mexico, 1956. Chap. 1, pp. 14-16. DNO.

1956
2359 Leipper, D.F. "Physical, chemical, geological and biological oceanography in

1956 cont.
the Gulf of Mexico." Texas A & M Univ. Annual Report, 30 Apr. 1955 - 30 Apr. 1956. on oceanographic survey of the Gulf of Mexico. Ref. no. 56-15A, Contract N7onr-48702. June 1956. illus.

Oceanographic and meteorological data obtained during extensive cruises on the oceanographic research vessel A.A. JAKKULA. Progress is reported on completing and rearranging about 14,000 bathythermograms for calculating average temperature profiles of the Gulf of Mexico. A model study was initiated on the elastic deformation of a laterally loaded circular pile in marine sediments and delta classification was developed to show the influence of hydrologic and sedimentary factors on irregular delta-type shorelines. - Staff AD-102 678.

1956
2360 Merino y Coronado, J. "Variaciones periódicas del nivel del mar en México: costas del golgo." [Periodic variations in sea level on the Gulf Coast of Mexico.] Mexico City. Universidad Nacional. Instituto de Geofísica, Anales, 2:43-59, 1956. figs. English summary p. 42. DAS.

The seasonal periodic variation in sea level on the Gulf coast of Mexico is examined and its possible causes studied. Observations (1952 - 1955) show an annual cycle similar to that observed during one complete 19-yr period in the data of the United States Gulf Coast west of the Mississippi River due to 'long-period meteorological tides.' It is shown that the main factor which produced the periodic changes in sea level is the density of sea water, which, is determined by the salinity. - Author (mod) MGA 9D-129.

1956
2361 Miller, C.E. and Dowling, G.B. "Oceanographic data collected off Panama City Beach, Florida, during the period 9 April 1954 through 26 May 1954." U.S. Navy. Mine Defense Laboratory, Panama City, Fla., Data Report, no. 5603, 1956. 25 p. map. tables. DAS.

1956
2362 Monges L. R. and Maldonado-Koerdell, M. "Marine waters (Mexico)." In Pan American Institute of Geography and History. Interim Committee on Oceanography, Technical Working Documents...Mexico, 1956. Chap. 1: Scientific aspects, pp. 17-19. DNO.

1956
2363 Reid, R.O. "Analysis of wave force experiments at Caplen, Texas, Sun Oil Company Platform." Texas A & M Univ. Final Report. Technical Report no. 38-4,

1956 cont.

Ref. no. 56-2F, Contract NOy-27474, Jan. 1956. illus. tables. refs.

Recordings of the reaction on a 0.719-ft-od circular pile caused by wind waves of about 2.2 to 3.3 ft in significant height and about 3.5- to 4.8-sec mean period were conducted. The mean depth at the site was about 16 ft and the depth of submergence was about 12 ft. A total of 18 satisfactory runs were made, the longest of which was 46 sec. The moment induced by the reaction and that induced by the load are assumed to be in quasi-static balance, at least for wave periods of about 1.6 sec. Staff AD-94 632.

1956

2364 Richards, F.A. and Vaccaro, R.F. "Cariaco Trench an anaerobic basin in the Caribbean Sea." Deep-Sea Research, 3(3):214-228, Apr. 1956. figs. tables. refs. DLC.

The Cariaco Trench is a basin in the Caribbean Sea which is anaerobic below depths of about 375 m to the bottom at 1,400 m. Below 250 m, the water is essentially isothermal at about 16.9°C and has practically uniform salinity and density. The age of the water is estimated to be between 100 and 2,000 yrs. The physical properties of the trench are compared with those of other isolated basins. - Author (mod) MGA 12M-284.

1956

2365 Saito, Y. "Theory of the transient state concerning upwelling and coastal current." American Geophysical Union, Transactions, 37(1):38-42, Feb. 1956. fig. refs.

Upwelling in the Gulf of Mexico and along the coast of California has been treated theoretically by Hidaka for steady-state conditions. An extension of this work is presented which considers the transient state in which upwelling and coastal currents gradually develop in an ocean initially at rest when the wind suddenly begins to blow over the sea surface. Expressions for the component velocity in the x and y directions, for the vertical components, and for the vorticity in the direction of the z axis are derived. A numerical example is included, using the expression derived for the x component of the current. Author MGA 9D-137.

1956

2366 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Limited oceanographic survey of the Mississippi Delta region during the period 17 April - 24 April

1956 cont.

1956." Project no. 77, Data Report, Contract N7onr-487(08), Oct. 1956. figs. charts. tables. DNO.

Presents charts, tables and data sheets for meteorological, Secchi disc, temperature and salinity for 37 stations. Plankton data for 19 tows with percentages of organisms and sediment data for 11 cores are included. - Staff.

1956

2367 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Limited oceanographic survey of the Mississippi Delta region during the period 29 May - 9 June 1956." Project no. 77, Data Report, Contract N7onr-487(08), 1956. DNO.

Presents temperature, salinity, current and sediment data for cores (contributed by NAVOCEANO). Fifty-four stations were operated. - Staff.

1956

2368 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Physical and meteorological data, Cruises 54-2, 54-9, and 54-10 of the A.A. JAKKULA." Contract N7onr-48702, Project NR 083 036, Data Report no. 4, Mar. 1956. unpaged. figs. almost entirely tables. DAS.

Data for observed and standard depths as well as surface weather data for 3 oceanographic cruises from Gulf of Mexico ports across the gulf (2 cruises in a N-S direction and 1 in a E-W direction,) during March, July and August - September 1954. A total of 81 stations were operated and sampling to a maximum depth of 2,500 m (cruise 54-10 to Cuba). - Staff MGA 9F-146.

1956

2369 Tolbert, W.H. and Auston, G.B. "Oceanographic data collected off Panama City Beach, Florida, during period 12 April 1955 through 28 December 1955." U.S. Navy. Mine Defense Laboratory, Panama City, Fla., Data Report, no. 5602, 1956. 175 p. map. DAS.

1956

2370 U.S. Coast Guard. "Proposed eastern Caribbean region, loran fix accuracy and coverage." Oct. 1956. 1 chart. DNO.

1956

2371 Waterman, T.H. and Westell, W.E. "Quantitative effect of the sun's position on submarine light polarization." Journal of Marine Research, 15(2):149-169, Nov. 1956. figs. refs.

Results of over 1,000 measurements of the degree and plane of submarine light polarization at depths of 3 to 41 m at 20 littoral stations in or near St. Thomas, Virgin Islands and at 15 stations

1956 cont.

in Bermuda. Two special polarimetric devices - one an interference analyzer and the other an underwater polarimeter - are described and their use and resulting data presented. Many curves show relation of Sun's altitude or bearing on underwater light or on submarine polarization plane. Extinction coefficients range from 0.05 in clear to 0.185 in turbid water. Type of bottom also affects reflection and hence extinction of illumination. - Staff MGA 8.11-56.

1956

2372 Wilson, B.W. "Observations on incipient wind-generation of ocean waves." Texas A & M Univ. Technical Report on Oceanographic Survey on the Gulf of Mexico, Ref. no. 56-67, Contract N7onr-487, Technical Order no. 2, Feb. 1956. 13 p. illus. tables.

Details are presented of observations and photographs of the sea surface in the Gulf of Mexico, near Galveston, Texas, obtained during a south-north run on a formal cruise of the A.A. JAKKULA, oceanographic vessel of the Texas A & M Research Foundation. The first stage of the run had following winds and swells from the south. After a period of calm, the wind backed to the north and wavelets developed against the southerly swell. Good agreement is obtained between the observed heights and periods of waves and those determined by forecasting procedures which make suitable allowance for the moving fetch and the variability of the wind within it. Author (mod) AD-91 654.

1957

2373 Anderson, W.W. and Gehringer, J.W. "Physical oceanographic, biological and chemical data, south Atlantic coast of the United States, T.N. GILL Cruise 3 and 4." U.S. Fish and Wildlife Service, Special Scientific Report - Fisheries, no. 210, June 1957. 208 p. and no. 234, Dec. 1957. 192 p. Almost entirely tables. DAS.

Cruise 3 operated 77 stations, 15 standard stations, and 9 special stations between Brunswick, Georgia, Cape Hatteras, North Carolina and the tip of Florida starting on 15 July 1953 and ending 12 August 1953. Cruise 4 left Brunswick 1 October 1953, proceeding to Nassau, British West Indies (5 October). Bathythermograph observation, routine meteorological observation and special plankton tows were made throughout the cruise. Tables give weather, cloud type, sea amount, swell amount, visibility, temperature, etc. - Staff MGA 10.5-104.

1957

2374 Bumpus, D.F. "Surface water temperatures along Atlantic and Gulf coasts of the United States." U.S. Fish and Wildlife Service, Special Scientific Report - Fisheries, no. 214, 1957. 153 p. figs. charts. tables. refs. DNO.

1957

2375 Chew, F. and Wagner, L.P. "Results of eleven oceanographic cruises." Univ. of Miami, Marine Laboratory, Technical Report on Investigation 25 June 1956 - 7 May 1957. Contract Nonr-84001, 54 p. illus. tables.

Eleven cruises were undertaken to study the kinematics, dynamics and the variation in the heat transport of the Florida current. The forces included in the equation of motion other than the pressure gradient and Coriolis were investigated through the study of the kinematics of the current. Geomagnetic Elektrokinetograph (GEK) data were collected to determine: 1) the best estimate of the instantaneous current at a locality and 2) the total transport of the Florida current off Miami, Florida. Tabulations are presented of all GEK and hydrographic data accumulated during the investigation. Staff AD-206 541.

1957

2376 Conner, W.C., Kraft, R.H. and Harris, D.L. "Empirical methods for forecasting the maximum storm tide due to hurricanes and other tropical storms." Monthly Weather Review, 85:113-116, 1957. fig. tables. refs.

A simple model of hurricane pressure-wind speed relations is used to derive an empirical formula for predicting maximum tides in connection with hurricanes reaching the continent of North America in the Gulf of Mexico or along the Atlantic seaboard. Thirty cyclones (1893 - 1950) for which tide data were available are analyzed and the maximum tide plotted against lowest pressure of storm as it crossed the coast. Central pressure was found to account for one half of the total variability of storm surge height on the open coast. - Staff MGA 9.3-160.

1957

2377 Drummond, K.H. "Oceanographic data, Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. no. 57-5D, Data Report no. 6, Contract N7onr-48702. Feb. 1957. illus.

Data were collected on Cruises 55-4, 55-7 and 55-8 of the Texas A & M Research Foundation vessel A.A. JAKKULA in the Gulf of Mexico during the period 18 April 1955

1957 cont.

to 14 July 1955. The areas covered by these cruises and the locations of the individual stations are shown. Cruise 55-4 was concerned with observations in the Mississippi Delta from 18 April 1955 to 29 April 1955; Cruise 55-7 with the northeastern portion of the Gulf of Mexico during the period 20 June 1955 and cruise 55-8 with the central portion of the eastern Gulf of Mexico during the period 2 July to 14 July 1955. - Staff AD-122 308.

1957

2378 Florida State Univ. "Oceanographic Institute, 1957/1958." 1957. 16 p. photos. -- "Some recent contributions from the Oceanographic Institute." p. 16. DWB.

A descriptive and illustrative pamphlet on the new Oceanographic Institute at Florida State University, its purpose, staff and facilities on campus and at the Marine Laboratory at Alligator Harbor 43 mi south of Tallahassee. Program and research activities are outlined, the summer school course, etc. are described. Staff MGA 12M-30.

1957

2379 Fuglister, F.C. "Thermal structure of the deep sea." National Research Council, Pub. no. 473:10-18, 1957. figs. DAS.

Data from the North Atlantic, Gulf of Mexico, Labrador Sea and the Norwegian Sea were analyzed. Methods of data collection for oceanographic and meteorological studies are compared. - Staff MGA 12M-746.

1957

2380 Harris, D.L. and Lindsay, C.V. "Index of tide gages and tide gage records for the Atlantic and Gulf coasts of the United States." U.S. Weather Bureau, National Hurricane Research Project Report, no. 7, May 1957. 104 p. figs. tables. refs. DAS.

An extensive tabulation of the highest and lowest tides recorded and period of record at hundreds of tide gaging stations along the eastern coast of the United States and inland tidal waters. Locations of gages and depths in various harbors and coastal stretches are shown on hydrographic charts. - Staff MGA 9D-147.

1957

2381 Hela, H. "Longitudinal and transversal slope of the Florida Current." Geophysica, 5(3):116-123, 1957. refs. DLC.

The relationship shown by Sandstrom between the transversal slope of sea surface and the mean speed of the current is combined with Torricelli's theorem.

1957 cont.

It is shown that the same mean speed of the current between Cat Cay and Miami, Florida really gives both the normally accepted transversal height difference of 59 cm and a longitudinal height difference of 7.6 cm between the Havana - Key West section and Cat Cay - Miami section. Author (mod) MGA 9D-148.

1957

2382 Pore, N.A. "Ocean surface waves produced by some recent hurricanes." Monthly Weather Review, 85:385-392, 1957. figs. table. refs.

An analysis of wave and swell conditions in hurricanes "Hazel" (1954); "Connie," "Diane" and "Janet" (1955); "Betsy" (1956) and the Gulf hurricane of 1950 shows that maximum wave heights, 60-480 mi from the center, occur as often in the right front as in the right rear quadrant. In "Connie," not much difference was found between left and right quadrants. Wave and tide records show that wind conditions in advance of a hurricane are as important as swell in determining water level at coastal points. Composite charts of wave height, direction and period are given for different stages of each storm and composite wind charts for "Connie" and "Diane" are provided. - Staff MGA 10.4-196.

1957

2383 Reid, R.O. "On the classification of hurricanes by storm tide and wave energy indices." Meteorological Monographs, 2(10):58-66, June 1957. figs. tables. refs. eqs.

Two indices for tagging hurricanes with respect to their capacity for producing storm tides and waves on a continental shelf are suggested. Application of these indices to hurricane data of the United States since 1900 indicates the logarithms of these indices possess nearly Gaussian distribution. This affords an approximate means of evaluating the average rate of occurrence of storms having a given level of intensity, defined by either the wave energy index or storm tide potential for a particular site. Rate of occurrence is computed for the northwestern Gulf of Mexico shelf area. Author MGA 12.2-303.

1957

2384 [Research Reviews] "Caribbean's 4,680-foot stagnant 'pool'." Nov. 1957. pp. 12-13.

Cariaco Trench. DNO.

1957

2385 Schell, I.I. "Gaining a better

1957 cont.

understanding of the representativeness of sea surface temperature observations and of the density of these observations for research purposes." Tufts Univ., Medford, Mass., Ref. no. 57-21, Contract Cwb-9011, July 1957. 19 p. tables.

An analysis was made of 3 pairs of historical series of mean monthly sea surface temperatures in the North Atlantic. The results obtained show: 1) the mean decadal temperature dropped approximately uniformly in all 3 areas to its lowest value in the decade 1916 - 1925, rising to its highest value in the decade 1936 - 1945 or 1946 - 1955; 2) by successively eliminating values with few observations per month, the standard deviation tends to become relatively constant and 3) lower (higher) air and sea temperatures tend to be associated with higher (lower) wind speeds, and air and sea temperatures tend to vary together. - Author (mod) AD-155 436.

1957

2386 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Oceanographic expedition to the Bay of Campeche." 1957. DAS.

1957

2387 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Physical, chemical, geological and biological oceanography in the Gulf of Mexico." Contract N7onr-48702, Annual Report, 1 May 1956 - 30 Apr. 1957. 1 May 1957. 18 p. figs. DAS.

Report of 16 oceanographic cruises (1955 - 1957) in the Gulf of Mexico, describing equipment, procedures, routes and stations for each cruise. Future plans are outlined, especially for IGY in 1957 and 1958. - Staff MGA 9.9-67.

1957

2388 Wilson, B.W. "Hurricane wave statistics for the Gulf of Mexico." Texas A & M Research Foundation, For U.S. Beach Erosion Board, Technical Memorandum no. 98, Contract DA 49-055-eng-45. June 1957. illus. tables. refs.

This report contains the results of a statistical hindcast study of the heights and periods of significant waves generated by hurricanes in the Gulf of Mexico (1900 - 1949). Results are presented in a series of polar plots of frequencies of occurrence of waves of given height and period at deep-water (100 fathoms) stations at different bearings offshore from 5 coastal stations (Brownsville and Gilchrist, Texas; Burrwood, Louisiana and Apalachicola and Tampa, Florida). Maximum heights and

1957 cont.

periods were correlated with hurricane characteristics (pressure, radius of maximum winds, forward velocity and direction). - Author (mod) AD-158 633.

1958

2389 Bien, G.S., Contois, D.C. and Thomas W.H. "Removal of soluble silica from fresh water entering the sea." Geochimica et Cosmochimica Acta, 14(1/2):35-54, 1958. figs. tables. refs. DLC. DGL.

Determinations of soluble silica and chlorosity of water samples collected in and around the east Mississippi Delta showed that most of the soluble silica was removed from river water by some process other than dilution with sea water. While biological uptake by diatoms can account for part of this removal, it is more likely that a major portion is removed by inorganic precipitation. It is concluded that this process is an absorption of soluble silica on suspended matter as it comes in contact with electrolytes, rather than a simple formation of salts with electrolytes. - Author (mod) MGA 11.9-181.

1958

2390 Bowen, V.T. and Sugihara, T.T. "Marine geochemical studies with fallout radioisotopes." In International Conference on the Peaceful Uses of Atomic Energy, Paper UN403-01C902, Sept. 1958. tables. refs. DLC.

In connection with a continuing series of studies of related hydrological, chemical and biological processes on the continental shelf, surface samples were collected in midwinter (1956 - 1958). Analyses of the 1956 and 1957 samples are reported here. For comparison, surface samples were collected in the Sargasso Sea, in the Caribbean Sea, and in the Gulf Stream. Analyses of the 1956 samples are reported along with analyses of samples taken in other parts of the Atlantic. Staff.

1958

2391 Bretschneider, C.L. "Engineering aspects of hurricane surge." In Technical Conference on Hurricanes, [1st] Miami Beach Fla., 19 - 22 Nov. 1958. Proceedings, 1958. 26 p. sec. B3, figs. tables. refs. DAS.

Several engineering problems are classified as a general guide to available formulas, techniques and other countermeasures. - Staff.

1958

2392 Bretschneider, C.L. "Revisions in wave forecasting: deep and shallow water." In Conference on Coastal Engineering, 6th,

1958 cont.
Univ. of Florida, Dec. 1957. Proceedings, 1958. pp. 30-67. DAS.

1958
2393 Chew, F. "Interpretation of the transverse component of the geomagnetic electrokinetograph readings in the Florida Straits off Miami." American Geophysical Union, Transactions, 39(5):875-884, Oct. 1958. figs. tables. refs.

The transverse component of the Florida Current was studied by the geomagnetic electrokinetograph (GEK), the use of which is reviewed for the Florida Current. Based on 422 GEK fixes taken over a 5-yr period, including 3 special time series, 2 constituent surface transverse components are shown to exist, both of which involve a return flow at greater depths. One constituent resembles the downstream advection of an internal wave and its current reversing sign every 8 to 16 hrs. The other is a diverging surface flow in the free stream apparently explainable in terms of the vorticity equation. - Author MGA 10.6-68.

1958
2394 Chew, F. and Wagner, L.P. "Technical report of investigation of the kinematics, dynamics and variation in the heat transport of the Florida Current." Miami Univ. Marine Laboratory, Report no. 58-3, 1958. 55 p. DAS.

1958
2395 Collier, A., Drummond, K.H. and Austin, G.B. "Gulf of Mexico physical and chemical data from ALASKA cruises." U.S. Fish and Wildlife Service, Special Scientific Report - Fisheries, no. 249, 1958. 417 p. figs. charts. tables. refs. DNO.

1958
2396 Duarte-Bello, P. "Experiencias con el empleo de equipo oceanográfico en el Golfo de Batabanó." [Experience in the use of oceanographic equipment in the Gulf of Batabanó.] Havana. Univ. de Santo Tomás de Villanueva, Monografía, 4, 1958. 30 p. figs. refs. DNO.

1958
2397 Dunn, G.E. "Hurricanes and hurricane tides." In Conference on Coastal Engineering, 6th, Univ. of Fla., Dec. 1957. Proceedings, 1958. pp. 19-29. figs. refs. DAS.

Most of the maximum tides of record between Cape Hatteras, North Carolina and Brownsville, Texas, have been produced by hurricanes. Some of the highest tides of record northward along the coast from Cape Hatteras to Cape Cod have also been produced by hurricanes. In nature, the quantitative

1958 cont.
contribution of the numerous factors determining the total storm tide has proven impossible to evaluate separately up to this time. - Staff MGA 12N-325.

1958
2398 Farrer, L.A. "Wind tides on Lake Okeechobee." In Conference on Coastal Engineering, 6th, Univ. of Fla., Dec. 1957. Proceedings, 1958. pp. 134-146, figs. DAS.

A summary of the results of a study and collection of data on wind velocities, wind tides and waves. - Staff.

1958
2399 Godwin, H., Suggate, R.P. and Willis, E.H. "Radiocarbon dating of the eustatic rise in ocean-level." Nature, 181(4622): 1518-1519, 31 May 1958. fig. table. refs. DAS.

Radiocarbon dating has been a means of securing absolute dates for the submerged peat beds and former strand lines which are evidence of former transgressions. This method was used to date samples taken from Christchurch, New Zealand, and those from the Mississippi Delta region and other world areas. Conclusions from the study of the specimens are identical with those previously arrived at in Great Britain. - Staff MGA 12M-447.

1958
2400 Hansen, P.G. "[Discussion of] Frank Chew 'On the offshore circulation and a convergence mechanism in the red tide region off the west coast of Florida.'" Texas A & M Univ. Dept. of Oceanography and Meteorology, Contributions in Oceanography and Meteorology, 3:60-89, 195, 1955 - 1957. 1958. DAS.

1958
2401 Harris, D.L. "Hurricane Audrey storm tide." In Technical Conference on Hurricanes, [1st] 1958. Proceedings, p. B1-1 - B-1-16. U.S. Weather Bureau. National Hurricane Research Project, Report no. 23, Oct. 1958. 19 p. figs. refs. DAS.

All studies of hurricane storm tides have been severely handicapped by the lack of sufficient observational data to describe uniquely the development of the flood. Hurricane "Audrey," which crossed the shore near the Texas-Louisiana border on the morning of 27 June 1957, produced the first major unundation of this type. As a result of itensified work by the U.S. Corps of Engineers and U.S. Weather Bureau and with considerable support by the U.S. Coast and Geodetic Survey and other agencies, more data relative to the storm tides have been collected for hurricane

1958 cont.
"Audrey" than for any earlier hurricane. Author (mod).

1958
2402 Harris, D.L. "Hurricane surge." In Conference on Coastal Engineering, 6th, Univ. of Fla., Dec. 1957. Proceedings, 1958. pp. 96-114. figs. refs. DAS.

The landfall of a hurricane is generally accompanied by an increase in the tide level by 4-15 ft above the normal value for the time and place at which the storm crosses the shoreline. This difference between the observed tide and that predicted from astronomical considerations is called the storm surge. The maximum height of the storm surge along the open coast is a function of the storm intensity, but this factor alone is not sufficient to explain more than half of the observed variance in the reported peak storm tides. Author (mod) MGA 12N-328.

1958
2403 Helle, J.R. "Surf statistics for the coasts of the United States." U.S. Beach Erosion Board, Technical Memorandum, no. 108, Nov. 1958. DAS.

Visual observations of surf conditions including period, significant height and direction were begun in 1954 at 27 stations located on the Atlantic, Gulf and Pacific coasts of the United States. Data on heights for the 3-yr period (1954 - 1957), are summarized on a monthly basis in tabular form, and are presented graphically as cumulative frequency curves on an annual basis for each station. A comparison of observed surf and hindcast wave statistics is presented for the station at Grand Isle, Louisiana. - Staff.

1958
2404 Ketchum, B.H. and Shonting, D.H. "Optical studies of particulate matter in the sea." Woods Hole Oceanographic Institution, Contract Nonr-2219(00), Technical Report, Feb. 1958. 10 p. figs. tables. DAS.

Study of particulate matter distribution, using the light-scattering photometer, made on ATLANTIS Cruise no. 240 to the Cariaco Trench in the Caribbean Sea. On this cruise, 5 successful lowerings of a light-scattering photometer were made; 2 near the center of the basin, one on the eastern sill, one on the western sill of the trench and one in St. George's harbor, Grenada, British West Indies. This latter station gave a relative comparison of light scattering of the trench waters with that of shallow harbor water in

1958 cont.
the same latitude. - Author (mod) MGA 12M-790.

1958
2405 McLellan, H.J. "Oceanography and meteorology of the Gulf of Mexico." Texas A & M Univ. Annual Report, 1 May 1957 - 30 Apr. 1958. Contract N7onr-48702. 13 p. 1 May 1958. illus. - AD-201 373.

1958
2406 Maldonado-Koerdell, M. "Breve historia de los estudios oceanográficos en México hasta 1957." [Brief history of oceanographic studies in Mexico to 1957.] Sociedad Mexicana de Historia Natural, Revista, 19(1/4):173-199, 1958.

1958
2407 [Military Engineer] "Current of the Atlantic and Caribbean." Its 50(338): 470, Nov./Dec. 1958. DNO.

1958
2408 Pagney, P. "Mouvements marins d'origine cyclonique. Leurs manifestations dans la mer Caraïbe spécialement sur les côtes de la Martinique." [Sea movements of cyclonic origin: their manifestations in the Caribbean Sea, especially along the coasts of Martinique.] Association des Géographes Français, Bulletin, no. 276/277:61-72, June/July 1958. figs. refs. DLC.

Sea movements caused by hurricanes are hurricane tides and hurricane waves. The author outlines the formation, genesis and evolution of both these phenomena in the case of a full-grown hurricane. A study of morphological changes of the Caribbean coast of Martinique due to the hurricane is also included. - Staff MGA 12N-336.

1958
2409 Richards, F.A. "Dissolved silicate and related properties of some western North Atlantic and Caribbean waters." Journal of Marine Research, 17:449-465, 1958. figs. table. refs.

Dissolved silicate, phosphate, nitrate, and oxygen as well as salinity and temperature were observed in several regions around the Antilles arc and in the Woods Hole-Bermuda area. In other water masses, notably in deep water of the North Atlantic, the Puerto Rico Trench and the eastern Caribbean Sea, and in anaerobic water of the Cariaco Trench, there are higher concentrations of silicate than would be expected from the amounts of phosphate present. These may originate from in situ re-solution of skeletal remains of diatoms or from resolution of bottom deposits followed by

1958 cont.
upward diffusion. - Author (mod) MGA 12M-726.

1958
2410 Skjelbreia, L. "Storm data obtained in the Gulf of Mexico during the hurricane season, 1957." In Technical Conference on Hurricanes, [1st], Miami Beach, Fla., 19 - 22 Nov. 1958. Proceedings, 1958. sec. B-4, 15 p. figs. DAS.

To design offshore structures adequately, a designer needs accurate information on expected wave height and wave forces at the platform site. This paper includes a short description of the measuring and recording equipment and of the methods used in reducing the data, and presents tide and wave data obtained at Bay Marchand, Louisiana, during the 1957 hurricane season. - Staff MGA 12N- 309.

1958
2411 U.S. Hydrographic Office. "Atlas of Pilot Charts, Central American waters and South Atlantic Ocean." H.O. Publication no. 106, 2d ed., 1958. maps. DLC.

Prepared from data furnished by U.S. Hydrographic Office and U.S. Weather Bureau. Consists of periodic issues of Pilot Charts H.O. no. 3,500 and 2,600. Formerly H.O. Pub. no. 576.

1958
2412 U.S. Hydrographic Office. "Sailing directions for the West Indies, vol. 1. D, Bermuda, the Bahama Islands, and the Greater Antilles." H.O. Pub. no. 128, 1958. DNO.

1958
2413 U.S. Hydrographic Office. "Thermal structure prediction, Key West, Jan. - Feb. 1958." 1958. DNO.

1958
2414 Wennekens, M.P. et al. "Straits of Florida physical and chemical data." Univ. of Miami, Univ. of Miami, Technical Report May 1957 - Nov. 1958. Report no. 58-5, Contract Nonr-84001. Dec. 1958. illus. AD-227 252.

1958
2415 Wilson, B.W. "How rough are waters of the Gulf?" Texas A & M Univ. Dept. of Oceanography and Meteorology, Contributions in Oceanography, v. 4, 1958. pp. 263-367. DNO.

Describes wave heights in gales, squalls, hurricanes, etc. - Staff.

1958
2416 Wilson, B.W. "Hurricane wave statistics for the Gulf of Mexico." In Conference on Coastal Engineering, 6th, Univ. of Fla., Dec. 1967, Proceedings, 1958. pp. 68-95. DAS.

1959
2417 Bruce, H.E. and Hood, D.W. "Diurnal inorganic phosphate variations in Texas bays." Texas Univ. Institute of Marine Science, Pub. 6:133-145, 1959. figs. tables. refs. DAS. DLC.

Study undertaken to obtain experimental evidence of phosphate turnover in Texas bays. It was found that the turnover rate was between 10 and 20 days. The strong correlation between diurnal variation in inorganic phosphate and primary production as measured by diurnal pH and oxygen variation suggests the possibility of using the diurnal phosphate cycle as a means of estimating primary production. It appears that if a pronounced diurnal variation of inorganic phosphate is found, primary production is occurring at a significant rate. Under these conditions, the diurnal variation in inorganic phosphate may be useful in primary production considerations. - Staff MGA 14.3-332.

1959
2418 Buljan, M. "Nonadiabatic increase in temperature of deep Caribbean waters and [the] submarine volcanism." In International Oceanographic Congress, 1st, N.Y., 31 Aug. - 12 Sept. 1959. Preprints of abstracts. Wash., D.C., 1959. pp. 534-535. French summary p. 535. DAS.

Hydrographic data collected during 1933 cruises of the ATLANTIS and CHALLENGER. From these data, potential temperatures and densities have been calculated. Results indicate that a non-adiabatic increase in temperature (NAIT) of 0.52 C exists in the deep waters of the Caribbean. Evidence is also presented which shows that the NAIT in the eastern Caribbean is a result of submarine volcanism similar to that observed in the Antillean arc. - Staff MGA 12M-740.

1959
2419 Chew, F. "Friction induced upwelling in the Florida Current." In International Oceanographic Congress, 1st, N.Y. 31 Aug. - 12 Sept. 1959. Preprints of abstracts. Wash., D.C. 1959. pp. 537-539. French summary p. 539. DAS.

The geomagnetic electrokinetograph (GEK) observed surface transverse component of the Florida Current is taken as kinematic evidence for upwelling, when conservation of mass is considered. It is explained that the observed westward transverse motion is a consequense of the frictional effect of the strait wall and represents the organized advection of momentum through the boundary. It is

equal in magnitude to the excess of turbulent flux of momentum per unit area out of the western border of the current over that coming into the zone across the boundary. The immediate source of this organized westward transport of momentum lies in the broad upwelling region to the east of the 10 km zone. - Staff MGA 12M-899.

1959

2420 Chew, F. et al. "Data report of Florida Gulf coast cruises." Miami Univ. Marine Laboratory, Contract Nonr 840(01), Report no. 59-1, June 1959. 113 p. figs. almost entirely tables. DAS.

Hydrographic and chemical data collected for 2 years by Florida State Board of Conservation during 8 major cruises on the continental shelf off the Florida west coast. The first section analyzes over 1,000 bathythermograms, giving date, hour, location, depth of station, sea surface temperature, winds and air temperature. The second section presents the geomagnetic electrokinetograms of surface water movements, the velocities of ocean currents, ocean salinity, phosphorous and nitrate. - Staff. MGA 12M-741.

1959

2421 Curl, H. "Hydrography of the inshore northeastern Gulf of Mexico." In Florida State Univ. Oceanographic Institute, Contribution, no. 113, 1959. pp. 193-205. DAS.

1959

2422 Curray, J.R. and Shepard, F.P. "Sea-level rise along the Texas coast." In International Oceanographic Congress, 1st, N.Y., 31 Aug. - 12 Sept. 1959. Preprints of abstracts. Wash. D.C., 1959. pp. 609-610. fig. French summary p. 610. DAS.

Samples of the shelf off Texas and borings in Texas bays have yielded information needed to date the rise of sea level during the waning of the last great continental glaciers. A graphical comparison of dates derived from the Texas area with dates from various other stable coasts of the world shows considerable similarity. Information indicates a rapid rise in sea level from some time before 17,000 B.P. until 6,000 to 7,000 B.P. - Staff MGA 12M-445.

1959

2423 Daetwyler, C.C. and Kidwell, A.L. "Gulf of Batabanó, a modern carbonate basin." World Petroleum Congress, 5th, 1959. sec. 1, Paper 1. 19 p. figs. maps. Abstract in English and French. NODC.

At least 8 distinct types of carbonate sediments are forming today in the Gulf

of Batabanó off the southwest coast of Cuba. Distribution of carbonate sediment types within the gulf is not random, but forms distinct depositional patterns. Different sediment types are recognized and defined by variations in two textural components: 1) kind and amount of carbonate grains and 2) amount of mud-like carbonate matrix. Distribution and variation of sediment types are influenced more by water circulation patterns in the gulf than by variations in water depth. Study has provided basic information essential for understanding of the depositional environments and facies relationships of carbonate sediments. - Author (mod).

1959

2424 Donn, W.L. and McGuiness, W.T. "Barbados storm swell." Journal of Geophysical Research, 64(12):2341-2349, Dec. 1959. figs. ref.

Severe and damaging surf often strikes Barbados and other islands of the Lesser Antilles. Owing to the broad reef shelf, the nature of this surf has not been well understood. Wave and tide recorders maintained in Barbados during International Geophysical Year have furnished useful data for the explanation of this phenomena. The strong swell responsible for the coastal surge has been related to intense extratropical cyclones in the North Atlantic Ocean through use of wave travel times based on the group velocity appropriate to the period of the observed swell. - Author MGA 12.1-351.

1959

2425 Donn, W.L. and McGuinness, W.T. "Storm swell in the Lesser Antilles, West Indies." In International Oceanographic Congress, 1st, N.Y., 31 Aug. - 12 Sept. 1959. Preprints of abstracts. Wash., D.C. 1959. pp. 746-747. French summary p. 747. DAS.

Explains severe and often damaging surf conditions experienced in the Lesser Antilles, particularly in Barbados. Explanation is given in terms of tsunami or submarine landslide action. Records from wave and tide recorders installed during the International Geophysical Year on the eastern and western coasts of Barbados show that the damaging surf is a result of high swell of the type generated by severe marine storms. In this case, the high swell is related directly to intense extratropical cyclones in the middle latitudes of the North Atlantic Ocean. - Staff MGA 12M-518.

1959

2426 Dronkers, J.J. "Tidal computations in coastal areas." American Society of Civil Engineers. Waterway and Harbors Div., Journal, 85(1):13-24, Mar. 1959. fig. tables.

Computation of tidal motion in shallow coastal waters by means of the harmonic method. This method can be applied by the average engineer. As an example, propagation of the tide in Tampa Bay on the coast of Florida is discussed. - Author MGA 13.12-295.

1959

2427 Gade, H.G. "Energy dissipation from surface waves due to induced motion in soft bottom deposit." In International Oceanographic Congress, 1st, N.Y., 31 Aug. - 12 Sept. 1959. Preprints of abstracts. Wash., D.C. 1959. pp. 752-753. In English and German. DAS.

The mutual effects of progressive wave motion of small amplitude in shallow water and in underlying soft sediments are discussed with emphasis on modification of the surface waves due to energy dissipation in the sediments. Two mathematical models are used, corresponding to observed cases on the continental shelf of the Gulf of Mexico: 1) the sediment behaves like a heavy, viscous fluid of finite depth, over a rigid floor and 2) the sediment is of infinite depth. It is shown that the energy transport from water to sediment is proportional to the wave energy, the ratio of the amplitude at the interface and the surface and the sine of the phase difference between the profiles of the free surface and the interface. - Author (mod) MGA 12M-376.

1959

2428 Hart, T.J. "Possible correlation between weather conditions and discolored water phenomena in the eastern central basin of the Caribbean Sea." Marine Observer, 29(186):191-195, Oct. 1959. fig. refs.

Explanation of similar characteristics that exist in the trichodesmium or sea blooms in the tropical and subtropical seas and the spectacular dinoflagellates near land. The discolored water phenomena in the Caribbean are attributed to the absence of phytoplankton and the presence of a thermocline that cannot be broken by winds of average force 4 (Beaufort). Several other natural causes are given. A list of 11 report papers covering the subject as observed by various ships from the Marine Division of the Meteorological Office during 1954 and 1955 is included.

1959 cont.

A map of the positions of the discoloration phenomena is shown. - Staff MGA 12M-784.

1959

2429 Ichiye, T. "Preliminary study on the hydrography of tidal estuaries on the northern Gulf Coast of Florida." In International Oceanographic Congress, 1st, N.Y. 31 Aug. - 12 Sept. 1959. Preprints of abstracts. pp. 693-694. German summary p. 694. DAS.

Hydrographic data of salinity variation due to tidal currents for 3 shallow bays on the northern Gulf Coast of Florida are described. Data indicate remarkable contrasts. Salinity is almost uniform vertically in Alligator Harbor. In Ochlockonee Bay, on the other hand, surface, as well as bottom salinity changes by more than 10 ppm during 1 cycle. The third case, St. Andrew Bay, is an instance of more complex features of salinity change owing to the configuration of the bay. The data show that the northern and the southern parts of the bay are governed by quite different diffusion processes. Staff MGA 12M-409.

1959

2430 McLellan, H.J. "Data reports for two IGY cruises." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract N7onr-48702, Project NR 083 036. Technical Report, Apr. 1959. 12 p. tables. maps. DAS.

Two cruises were made during 23 March to 3 April and 13 May to 29 June.1958. A survey from Galveston to Kingston, Jamaica; Charleston, South Carolina; St. Georges, Bermuda and Miami, Florida was conducted. Twenty-eight bottom cores were taken and 410 bottom temperature observations were made. - Staff MGA 12M-105.

1959

2431 Maldonado-Koerdell, M., ed. "Boletín Bibliografíco de Geofísica y Oceanografía Americanas (B.B.G.O.A.)." [Bibliographical bulletin of American geophysics and oceanography.] v. 1, 1958. Issued in parts: v. 1, Parte Geofísica, Mexico, 1958. 160 p. v. 1, Parte Oceanográfica, Mexico, 1958. (colophon June 20, 1959). 470 p. Parte Geofísica covers Jan. - Dec. of each year. Parte Oceanográfica covers July - Dec. of 1 year and Jan. - June of the following year. Issued by the Pan American Institute of Geography and History. In Spanish, English, Portuguese and French. Articles in Spanish, English or Portuguese. DPU.

This large compilation of news items regarding oceanographic conferences and research in the Americas during 1957

1959 cont.
(excluding the U.S.) contains scores of abstracts and hundreds of references to articles on all phases of oceanography. Staff MGA 10.11-61.

1959
2432 Merino y Coronada, J. "Observaciones oceanográficas llevadas a cabo en México durante el Año Geofísico Internacional." [Oceanographic observations carried out in Mexico during the International Geophysical Year.] International Geophysical Year, 1957/1958. Comité Nacional Mexicano, Results of the IGY in Mexico, Report, no. 3, 1959. 4 p. DNO.

1959
2433 Metcalf, W.F. "Oceanographic data from the Caribbean Sea CRAWFORD Cruise 17, February - March 1958 for the International Geophysical Year of 1957-58." Woods Hole Oceanographic Institution, Ref. 59-9, 1959. 91 p. Unpublished manuscript.

1959
2434 [Military Engineer] "Underwater discoveries in the Straits of Florida." Its 51(343):403, Sept./Oct. 1959. DNO.

1959
2435 National Academy of Sciences-National Research Council. Committee on Oceanography. "Radio-active waste disposal into Atlantic and Gulf coastal waters." Pub. no. 655, 1959.

1959
2436 Richards, F.A. "Some hydrographic and chemical observations along the north coast of South America, Cabo Tres Puntas, Venezuela to Curaçao, including the Cariaco Trench and the Gulf of Cariaco." In International Oceanographic Congress, 1st, N.Y., 31 Aug. - 12 Sept. 1959. Preprints of abstracts. pp. 657-658. In English and German. DNO.

Chemical and hydrographic observations were made along the eastern Caribbean coast of South America in October and November 1958. Chemical determinations included dissolved oxygen, total and inorganic phosphorus, nitrate, silicate and, in the anaerobic waters of the Gulf of Cariaco Trench, hydrogen sulfice. - Author (mod).

1959
2437 Richards, F.A. and Benson, B.B. "Nitrogen/argon and nitrogen isotope ratios in anaerobic marine environments." In International Oceanographic Congress, 1st, N.Y., 31 Aug. - 12 Sept. 1959. Preprints of abstracts. pp. 896-897. In English and German. DAS.

The nitrogen/argon ratios observed in the oxygen-free waters of Cariaco Trench, in the Caribbean Sea and in the

1959 cont.
Dramsfjord, an arm of the Oslofjord in Norway, correspond to excesses of 2 to 3 percent of the total free nitrogen. Analysis of data from the Cariaco Trench indicates the probability that the free nitrogen biologically formed originates from the reduction of nitrate and nitrite. Staff MGA 12M-705.

1959
2438 Russell, R.J. "Coastal Geography Conference, 2d, Baton Rouge, La., 6 - 9 April 1959. Proceedings." Louisiana State Univ., Coastal Studies Institute, Apr. 1959. 472 p. tables. illus. refs. AD-218 547.

1959
2439 Suarez-Caabro, J. "Oceanography in Cuba." Sea Frontiers, 5(1):14-22, Feb. 1959.

1959
2440 Taylor, C.B. and Stewart, H.B. "Summer upwelling along the east coast of Florida." Journal of Geophysical Research, 64(1):33-40, Jan. 1959. figs. tables. refs.

Oceanographic and meteorological observations made along the southern part of the east coast of Florida are contrasted with those of the northern part to establish anomaly of water temperature. - Staff.

1959
2441 Tolbert, W.H. and Austin, G.B. "On the nearshore marine environment of the Gulf of Mexico at Panama City, Florida." U.S. Navy. Mine Defense Laboratory, Panama City, Fla., Technical Paper, TP161, May 1959. 104 p.

Summary of the oceanography of the nearshore gulf waters off Panama City, Florida which is based upon a 3-yr accumulation of data acquired randomly in time and space. Background information pertinent to an understanding of the environmental data and a description of the uses to which the plotted and tabulated data can be directed is presented. Absolute values and average ranges and trends of the environmental parameters covered will provide the project planner with information which should facilitate a realistic schedule and execution of his task. - Author (mod).

1959
2442 U.S. Bureau of Commercial Fisheries. Biological Laboratory, Gulf Breeze, Fla. "Annotated bibliography of unpublished estuarine research in the Gulf of Mexico, 1925 - 1929." ed. P.A. Butler. New Orleans, Gulf States Marine Fisheries Commission, 1959. 51 p. DLC.

Annotated bibliography of unpublished

season, when the external water is heavier, the deeper layers of the gulf participate in the exchange. It is assumed that seasonal variations are connected to variations in the coastal upwelling and the thickness of the upper water. - Author (mod).

1961

2474 Gade, H.G. "Hydrographic conditions in the Gulf of Cariaco during the months from May to November 1960." Cumaná, Venezuela. Univ. de Oriente. Instituto Oceanográfico, Boletín 1(1):21-47, July 1961. DLC.

Results from monthly cruises during 1960 in the Gulf of Cariaco are presented in the form of a series profiles of isolines of salinity, temperature and oxygen. The total range of salinity was quite small, varying from 36.30 percent to 37.00 percent. In May, June and July, the highest salinities were found near the surface but generally decreased with depth. In the months of September, October and November, the highest salinities were found near the bottom and the lowest at the surface. - Author (mod) MGA 14.11-314.

1961

2475 Gade, H.G. "On some oceanographic observations in the southeastern Caribbean Sea and the adjacent Atlantic Ocean with special reference to the influence of the Orinoco River." Cumaná, Venezuela. Univ. Oriente. Instituto Oceanográfico, Boletín, 1(2):287-342, Dec. 1961. DLC.

Results of density, salinity, temperature and dissolved oxygen measurements made in the Caribbean and adjoining Atlantic regions during 2 cruises in 1960 and April 1961 are presented in vertical sections. The influence of water from the Orinoco River on Atlantic and Caribbean waters and the circulation characteristics involved are discussed in detail. The Amazon discharge is also considered. In an appendix, the anticyclonic circulation in the Gulf of Paria is discussed. - Staff.

1961

2476 Gessner, F. and Hammer, L. "Untersuchungen über das Lichtklima in den küstennachen Meeresgebieten vor Cumaná, Venezuela." [Light measurements in the eastern coastal waters near Cumaná, Venezuela.] Cumaná, Venezuela. Univ. de Oriente. Instituto Oceanográfico, Boletín, 1(1):263-271, July 1961. fig. table. refs. Spanish and English summaries. pp. 263-264; German summary. pp. 269-270.

During September, October and November 1960, light measurements were made in the eastern coastal waters of Venezuela. Transparency of the water was estimated using a Secchi disc. Reading of 15.5 m was obtained, which is a relatively low value for tropical waters. Transmission of light, measured with a photocell, in the first layer of water was 82 percent in the Cariaco Trench, 77 percent in the Gulf of Cariaco and 68 percent in the small Mochima Bay. The turbidity of the water was higher at the station closest to shore. - Author (mod) MGA 15.3-201.

1961

2477 Ichiye, T., Jones, M.L. and Hulings, N.C. "Salinity change in Alligator Harbor and Ochlockonee Bay, Florida." Oceanographical Society of Japan, Tokyo, Journal, 17(1):1-9, Mar. 1961. figs. tables. refs. DAS. DLC.

Hydrographic data from Alligator Harbor and Ochlockonee Bay, Florida, were examined to study salinity variations with tidal variations. Alligator Harbor is described as a neutral bay with an almost uniform vertical salinity distribution. However, in Ochlockonee Bay, surface salinity changes more than 20 percent during one tidal cycle. - Staff.

1961

2478 Kato, K. "Oceanochemical studies on the Gulf of Cariaco, Pt. 1, Chemical and hydrographical observations in January 1961." Cumaná, Venezuela. Univ. de Oriente. Instituto Oceanográfico, Boletín, 1(1):49-72, July 1961. figs. refs. Spanish summary pp. 49-50; English summary. pp. 70-71.

Biochemical characteristics of the water in the Gulf of Cariaco are discussed on the basis of a hydrographical and chemical investigation made in January 1961. Water in the gulf was found to be nearly isohaline, thus the density stratification and stability of the gulf water is largely due to a thermal effect. Lower density surface water is usually carried out by the westward wind drift. Outer Caribbean water enters the gulf between a depth of about 25 m and the sill. By carrying out the surface water, the wind drift leads to an 'upwelling' which occurred at the eastern part of the gulf. Author (mod) MGA 14.12-148.

1961

2479 Lowenstein, R. "Some legal considerations in the ocean disposal of radioactive wastes." Health Physics, 6(3/4):10-113, Oct. 1961.

The development of regulatory norms and adjudication on the ocean disposal of

1961 cont.

radioactive wastes by the Atomic Energy Commission is demonstrated by the decision on the Gulf of Mexico case in June 1960. In its decision of January 1960, the Commission directed that the license for the disposal of radioactive wastes, applied for by the Industrial Waste Disposal Corporation, be issued to the extent of receiving materials, storing them at Houston, Texas, and transporting them to Commission operated disposal sites within the United States. The Government of Mexico expressed disagreement in a note to the U.S. State Department in June 1959, but the Commission's decision did not consider the international implications and found the applicant's proposed equipment and procedures adequate. - Staff. MGA 14.12-152.

1961

2480 McLellan, H.J. and Leipper, D.F. "Oceanography and meteorology of the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract N7onr-48702, Final Report (annual 1 May 1960 - 30 April 1961), June 1961. 65 p. illus. refs. DAS.

This annual report is supplemented with a summary of published papers and technical reports from the project during the 10-yr period. The 14 cruises carried out by R/V HIDALGO during the year are listed. Summaries are presented of studies carried out in the following major fields: 1) physical oceanography and marine meteorology, 2) marine geophysics, 3) geology and geochemistry and 4) instrumentation. A block diagram of the single instrumentation and data-handling system and an overall layout of the pilot field system for 4 of the 6 projects under 1) above are shown. - Staff MGA 14.1-205.

1961

2481 McLeroy, E.G. "Complex image theory of low-frequency sound propagation in shallow water." Acoustical Society of America, Journal, 33(8):1120-1126, Aug. 1961. figs. tables. refs.

The problem of propagation of low-frequency sound in shallow water over several layers and a basement is approached through an image theory in which the first thin layers are lumped together with the water layer. This effective structure is assumed on the basis of expected good transmission through a thin layer (less than 1 wave length thick) having acoustic properties not very different from those of its bounding media. Comparisons of theoretical loss and data obtained at

1961 cont.

Panama City, Florida, are made over the frequency range of 6-244 cps. - Author (mod) MGA 13.5-295.

1961

2482 Miami Univ. Marine Laboratory "Report of data obtained in Florida Straits and off the west coast of Florida, January-June 1960." Report no. ML-61126, Contract Nonr-84001, May 1961. 189 p. illus.

Data were obtained on 8 cruises of R/V GERDA and 1 cruise of R/V PANDA. All the cruises were carried out in Florida Straits and the eastern part of the Gulf of Mexico during the first half of 1960. The general purpose of the cruises was to provide data for the study of the kinematics of the water movements in Florida Straits and adjacent waters, with particular attention to seasonal variations and environmental information for biological studies. - Author (mod) AD-259 334.

1961

2483 Morris, S.B. "Outlook for economic use of fresh water from the sea." American Society of Civil Engineers. Irrigation and Drainage Div., Journal, 87(2, pt. 1): 15-26, June 1961. tables. refs.

The need and market for fresh water from the sea or from inland saline waters are mainly dependent on the cost of producing such water, storing and transmitting it to places of use in competition with other sources of fresh water supply. Foreseeable costs of conversion far exceed prevailing costs of major domestic, industrial and irrigation water supplies. Typical costs are presented for municipal, industrial and irrigation supplies and for current and foreseeable costs of fresh water conversion. - Author (mod) MGA 14.5-325.

1961

2484 Noakes, J.E. and Hood, D.W. "Boron-boric acid complexes in sea-water." Deep-Sea Research, 8(2):121-129, Sept. 1961. figs. tables. refs.

Boron in the Gulf of Mexico, in the form of total, inorganic and organic complexes, was evaluated, using a mannitol titrometric method. Definite correlation between inorganic boron and chlorinity was observed for seawater, both vertically and horizontally, except in the oxygen minimum region. Similar, but less-defined correlation, is found to exist between the organic boron complexes and oxygen distribution. A preliminary investigation using boron-chlorinity ratios for identification of water masses and possible detection of circulatory patterns was

1961 cont.

made in the deep water of the Caribbean. Author (mod) MGA 13.8-351.

1961

2485 Pérez Sori, J.A. "Salinidad, temperatura, presión atmosférica y pH en la playa Habana." [Salinity, temperature, atmospheric pressure, and pH of the Havana coast.] Cuba. Centro de Investigaciones Pesqueras, Contribución, no. 13, 1961. 18 p. DNO.

1961

2486 Pike, A.C. "Oceanic heat budget as affected by hurricane Audrey, 1957." Colorado. State Univ. Civil Engineering Dept., Atmospheric Science, Technical Paper, no. 24, Nov. 1961. 7 p. refs. DAS.

Investigation of transfer processes at the sea-air boundary under varying atmospheric and oceanic conditions in the Tropics to see whether use of ship data plus computational techniques and climatic data taken from the literature would yield results of value. During 26 - 27 June 1957, Hurricane "Audrey" passed northward over the northwestern Gulf of Mexico. The effect of this intense tropical cyclone on the heat budget of the superthermocline water and the restoration of thermal equilibrium after the hurricane were investigated. Sea surface temperatures from ship reports from 23 June through 6 July, and air temperatures for the 'recovery' period were examined. - Staff MGA 14.2-316.

1961

2487 Pore, N.A. "Storm surge." Mariners Weather Log, 5(5):151-156, Sept. 1961. figs. refs.

Defines the storm surge as the rise and fall of sea level caused by a meteorological disturbance; it is closely approximated by the difference between the observed tide and the normal astronomical tide. Various factors producing these storm surges are discussed. The storm surges produced by hurricanes "Carol" in August 1954 and "Donna" in September 1960 are explained with the aid of maps. Storm surges produced by extratropical storms are not as high as those produced by hurricanes but along some coastal areas of New England, extratropical storms have produced very high surges. Methods of forecasting storm surges are indicated. Staff MGA 13.11-395.

1961

2488 Smith, I. "Telemetry automates oceanographic research." Electronics, 34(38):22-23, 22 Sept. 1961. figs.

Electronic sensing and telemetering equipment located in 100 ft of water,

1961 cont.

11 m off the coast of Panama City, was installed to record data at a nearby Navy shore station to be processed at Texas A & M University. The main objectives are summarized. A cooperative effort was outlined by Texas A & M and Southwest Research Institute. - Staff MGA 14D-83.

1961

2489 U.S. Coast and Geodetic Survey. "[Correspondence between the Coast and Geodetic Survey and the Solicitor General, Archibald Cox, concerning the description of the present coast line of Louisiana, prepared for use in the case of United States v. Louisiana et al., no. 10, Original.]" Mar. - July 1961. Includes memoranda and annotations prepared by A.L. Shalowitz. DAS.

1961

2490 Wilson, B.W. "Deep water wave generation by moving wind systems." American Society of Civil Engineers. Waterways and Harbors Div., Journal, 87(2): 113-141, May 1961. fig. refs.

This paper concerns the mathematical justification of a procedure for forecasting wave heights and periods within traveling fetches of variable wind over deep water. The method applies to a fixed wind direction along which both the fetch and the wind magnitude are considered to be variable with time. It adapts observational data on significant heights and periods of waves generated by winds of constant velocity to the general case in which the velocity has a dependency on distance. A direct comparison made between a machine wave hindcast and an earlier one for the August 1915 hurricane that assailed Galveston, Texas, shows good correspondence. Author (mod) MGA 14.1-176.

1961

2491 Worthington, L.V. and Metcalf, W.G. "Relationship between potential temperature and salinity in deep Atlantic water." International Council for the Exploration of the Sea, Copenhagen, Rapports et Procès-Verbaux des Réunions, 149:122-128, 1961. figs. refs.

A discussion of the relationship between potential temperature and salinity in deep Atlantic water between lat 50°N and lat 32°S. Various water masses are identified and their movements traced as: North Atlantic deep water, Antarctic bottom water, Antarctic intermediate water, Mediterranean water and overflow waters. Points of interest noted are the Caribbean basin and the equatorial region in the vicinity of the Romanche

1961 cont.

Trench slopes of the Mid-Atlantic Ridge. Staff.

1962

2492 Bruun, P. et al. "Storm tides in Florida in relation to coastal topography." Florida. Univ. Engineering and Industrial Experiment Station, Engineering Progress at the Univ. of Florida, 16(1), Jan. 1962. 76 p. figs. tables. refs. (Bulletin Series. no. 109.) DAS.

Topography of the Atlantic and Gulf coastal zones of Florida is described. One chapter describes general information about hurricanes in Florida and their effects on sea level in the coastal areas. Another chapter considers the probabilities of extreme high tides and potential danger of flooding in coastal areas. Economics involved in providing fill and rational approach to the determination of the elevation of fill are also discussed. Topographical sectional maps in color show a preliminary analyses of flood-tide elevation and topography. - Staff MGA 14.1-326.

1962

2493 Chew, F. "Florida Current as an intertial flow in a uniformly convergent channel." Deep-Sea Research, 9:131-135, Mar./Apr. 1962. fig. refs.

The steady-state, transverse current component observed in the surface layer of the Florida Current off Miami, Florida is interpreted. The inertial effect within the Florida Straits, shows that constant downstream transport must flow through a channel that constricts downstream. - Author (mod) MGA 14.6-435.

1962

2494 Chew, F., Drennan, K.L. and Demoran, W.J. "Drift-bottle return in the wake of hurricane Carla, 1961." Journal of Geophysical Research, 67(7):2773-2776, July 1962. figs. table. refs.

Most of the drift bottles released off the Mississippi Delta 3 weeks before hurricane "Carla" entered the Gulf of Mexico were recovered from the vicinity where "Carla" crossed the Texas coast. The pattern of the recovered bottles is presented together with a discussion of some possible interpretations. - Author MGA 14.3-339.

1962

2495 Chew, F., Drenna, K.L. and Demoran, W.J. "On the temperature field east of the Mississippi Delta." Journal of Geophysical Research, 67(1):271-279, Jan. 1962. figs. refs.

In the winter of 1960 - 1961, surface

1962 cont.

temperature fronts of a magnitude of 10°F change in 2 - 3 mi were common in the area east of the Mississippi Delta. They separated shallow streaks of cold river discharge from the surrounding Gulf of Mexico water. The streaks were underlain by a layer of similarly cold but more saline water, forming columns of cold water some 200 ft deep. The columns are thought to be the result of confluence of cold waters from 2 sources. The first, the Mississippi estuarine discharge, is composed of cold river inflow and the cold salt wedge; the second is saline loop current water cooled in the area inside the 20 fathom contour, probably in the Breton and Chandeleur sounds. - Author MGA 13.9-332.

1962

2496 Chew, F., Drennan, K.L. and Demoran, W.J. "Some results of drift bottles studies off the Mississippi Delta." Limnology and Oceanography, 7(2):252-257, Apr. 1962. figs. tables. refs.

On the basis of 1,514 drift bottles recovered from a total of 11,088 released off the Mississippi Delta in the fall of 1960 and summer of 1961, the surface circulation in the vicinity is found to include: 1) a current bifurcation immediately east of the delta, 2) a stagnant region south of the delta and 3) extensive 'tide rips' of sargassum weeds and debris across which are found a change in color, salinity and temperature. These features are taken as an expression of a mass field in which a ridge intersects a trough in the sea surface. In support of this interpretation, wind effects are illustrated by examples, and a comparison is made of current speed obtained from drift bottles and other means. - Author (mod) MGA 13.12-358.

1962

2497 Dinger, J.E. "Spectra of ocean waves and microseisms as related to storms at sea." U.S. Naval Research Laboratory, NRL Report 5804, 23 July 1962. 42 p. figs. table. refs. DAS.

Bottom-mounted pressure-sensitive, ocean-wave gages were first installed on the coast of Barbados, West Indies, in 1954. This and subsequent installations were in intermittent operation through 1960. A 2-component horizontal seismograph was also placed in operation on the Island during 1954 and 1955, and a wave gage installation was in operation on Texas Tower No. 2 during the summer of 1956. Pressure and microseismic data were

1962 cont.

obtained in digital form from these installations and subjected to a power spectrum analysis by the Tukey method. Comparisons of sequences of simultaneous ocean-wave spectra and microseisms spectra show a 2 to 1 relation in the period of the waves, which is consistent with the Longuet-Higgins theory of microseism generation. - Author (mod) MGA 15.10-269.

1962

2498 Dowling, G.B. "Scientific diving: applications to physical oceanography." In National Coastal and Shallow Water Research Conference, 1st, Baltimore, Md., Los Angeles, Calif. and Tallahassee, Fla., Oct. 1961. Proceedings. Feb. 1962. p. 441.

The demonstrated usefulness of scientific diving as a research method for shallow water investigations has established it as a now recognized field of endeavor. However, in the past it has been used largely for problems in marine geology and biology; its application to physical oceanography has been limited because of lack of diver-held instrumentation. An instrumentation program to fill this need has been started at the Navy Mine Defense Laboratory, Panama City, Florida, and some results of this program are shown. - Author (mod) MGA 14.9-362.

1962

2499 Dragovich, A. and May, B.Z. "Hydrological characteristics of Tampa Bay tributaries." U.S. Fish and Wildlife Service, Fishery Bulletin, 62(205):163-176, 1962. figs. tables. refs.

Part of a study of Tampa Bay, Florida and adjacent neritic waters in connection with an effort to control the Florida red tide menace. Monthly collections of surface and bottom waters were made from October 1958 to 31 December 1959. Temperature, salinity, total phosphate-phosphorus, inorganic phosphate-phorphorus, nitrate-nitrite nitrogen and copper content were recorded. The observed variations are discussed in terms of differences in precipitation, river discharge and general geological features of the area. The Hillsborough, Alafia, Little Manatee and Manatee rivers are the tributaries which were studied. - Staff MGA 15.11-179.

1962

2500 Duxbury, A.C. "Averaged dynamic topographies of the Gulf of Mexico." Limnology and Oceanography, 7(3):428-431, July 1962. figs. ref.

Cruise Data were used in constructing the dynamic topographies indicative of the mean circulation pattern of the Gulf of

1962 cont.

Mexico. Charts of contours of the 500 db surface with respect to the 1,000 db surface and surface contours with reference to the 600 db surface and with the 1,000 db surface are included. - Staff MGA 14.6-426.

1962

2501 Ewing, J.I., Worzel, J.L. and Ewing, M. "Sediments and oceanic structural history of the Gulf of Mexico." Journal of Geophysical Research, 67(6): 2509-2527, June 1962. figs. tables. refs.

A new technique for underway marine seismic reflection measurements was used in January 1961 to investigate the sediments in the deep basin of the Gulf of Mexico. Reflecting horizons, mapped to depths about 5 km below the ocean bottom or about 10 km below sea level, confirmed and added detail to the section published in 1960 on the basis of refraction data. The reflecting horizons were identified by comparison with seismic refraction and wide-angle reflection data. Measurements were made, in the area of the Sigsbee knoll, along 2 complete crossings of the deep basin, and along some shorter lines in mid-basin. - Author (mod) MGA 14.5-363.

1962

2502 Gaul, R.D. "Instrumentation and data handling system for environmental studies off Panama City, Florida." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr-2119(04), Report [unnumbered], 1 Feb. 1962. 54 p. figs. tables. refs. DAS.

Summary of the instrumentation and data handling equipment procured and installed prior to February 1962 for environmental studies off Panama City, Florida. Detailed descriptions are given on the environmental research concept, the field site, the automated data handling technique, meteorological sensors, water surface profiling, underwater sensors, reference voltages and a time code generator. The power supply, data encoding telemetry, receiving-recording system and data reduction system are explained. - Staff MGA 14D-30.

1962

2503 Gaul, R.D., Kirwan, A.D. and Boston, N.E.J. "Opportunities for environmental research off Panama City, Florida." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr 2119(4), Report [unnumbered], 1 Apr. 1962. 18 p. figs. refs. DAS

In May 1961, the Department of Oceanography and Meteorology, Texas A & M

1962 cont.

University was awarded a contract by the U.S. Office of Naval Research for developing an environmental studies project utilizing two Navy offshore platforms and automated techniques for data collection and analysis. The report describes the present status of the project and indicates some other areas of environmental research that might be exploited with facilities and techniques at hand. Research opportunities in energy flux through the air-sea interface; basic studies of turbulence; circulation and wave modification and sediment dynamics are discussed briefly. - Staff

1962

2504 Gibson, B.W. "Sea surface temperature synoptic analysis." U.S. Naval Oceanographic Office, Technical Report 70, Apr. 1962. 17 p. DNO.

Describes technique for preparing detailed sea surface temperature analyses for large ocean areas. These analyses utilize injection temperature observations taken by commercial ships. The inadequacies of analyses based on average data and some difficulties inherent in contouring scalar fields are discussed. Sea surface temperatures are interpreted according to some concepts derived from cross-sectional profiles and surface current data. Isotach analyses of mean current drift are considered as flow patterns to aid temperature analysis in areas where data are sparse. - Author.

1962

2505 Harris, D.L. "Storm surge observations in hurricanes." U.S. Weather Bureau. National Hurricane Research Project, Report no. 50, pt. 1:185-195, 1962. DAS.

High water marks produced by hurricane "Donna" in Florida, New York and southern New England are shown. A time history of the storm surges at many Atlantic and Gulf coast tide stations is studied. Records for more than 40 hurricanes over the last half century has shown that many different physical processes are important in producing coastal flooding in hurricanes. Five of these processes - astronomical, tides, atmospheric pressure variations, component of the wind directed toward the shore, component of the wind directed parallel to the shore and water transport by waves - are discussed and illustrated by a schematic representation of wave run-up, wave over-topping and ponding.- Staff MGA 14.4-585.

1962

2506 Harris, D.L. "Wave patterns in tropical cyclones." Mariners Weather Log, 6(5):156-160, Sept. 1962. figs.

The principal characteristics of wave forecasting methods widely used in the United States are shown in 3 graphs of significant wave height as a function of wind speed, fetch length and duration. Discrepancies between 2 forecasting systems for very high wind speed, long fetches and long duration are rarely of more than academic interest. It is found that most hurricanes change shape and intensity so slowly that if each observation is plotted relative to the storm center and direction of motion of the center, it is often possible to combine all reports for a period of 24 - 36 hrs on 1 chart to obtain a coherent picture of the wave pattern. One example of this type of chart, using data obtained from hurricane "Carla," is presented together with a composite chart for the wind reports for the same periods. - Staff MGA 14.4-356.

1962

2507 Hutton, R.F. "Red tide research." In National Coastal and Shallow Water Research Conference, 1st, Baltimore, Md., Los Angeles, Calif. and Tallahassee, Fla., Oct. 1961. Proceedings. Feb. 1962. pp. 418-421.

The Florida State Board of Conservation and the U.S. Fish and Wildlife Service are conducting a cooperative red tide research program. The Wildlife Service has been concerned with the growth of the red tide organism, 'Gymnodinium breve Davis,' in laboratory cultures and field study with the organism in relation to its environment, especially in the Tampa Bay, Florida area. The State Conservation Department Marine Laboratory has developed a monitoring system for reporting red tide outbreaks. This system is based on field studies and aerial observations. Observations on red tide outbreaks from 1957 - 1960 are presented in a summarized review. - Author (mod) MGA 13.12-283.

1962

2508 Ichiye, T. "Circulación y distribución de la masa de agua en el Golfo de México." [Circulation and water mass distribution in the Gulf of Mexico.] Geofísica Internacional, 2(3):47-76, July 1962. figs. charts. refs. In Spanish and English.

Oceanographic data collected by the ALASKA and the A.A. JAKULLA in the Gulf of Mexico from 1951 to 1955 are analyzed. According to seasonal change

1962 cont.

of the temperature and salinity, the water mass in the upper layer is classified into 5 types: 3 coastal and 2 offshore. Three dynamic problems are discussed in the appendices: 1) the wind drift in a circular basin with a shelf is derived and applied to the Gulf of Mexico, 2) the vertical profiles of the temperature and salinity in the upper layer are explained by solutions of the equation of eddy diffusion and advection of heat and water mass and 3) meandering of the Yucatan Current and horizontal stability of gyres are discussed. - Author (mod).

1962

2509 Ichiye, T. "Some results of oceanographic surveys at Stage II off Panama City, Florida." In National Coastal and Shallow Water Research Conference, 1st, Baltimore, Md., Los Angeles, Calif., and Tallahasse, Fla., Oct. 1961. Proceedings, Feb. 1962. pp. 406-407.

Four 24-hr hydrographic surveys were carried out at a Navy platform, Stage II, which is located about 2 mi offshore of Panama City, Florida, in a water depth of 60 ft. Currents were measured with Ekman current meters. The major directions of tidal currents are NW, or SE, almost parallel to the coast, and the currents from surface to 20 ft are to a great degree influenced by the effect of wind. The thermocline develops at a depth of 30 to 40 ft after July and varies with a tidal period. The range of salinity change is between 31 and 34 ppm and shows a fluctuation of the tidal period with temperature. - Author (mod) MGA 13.12-352.

1962

2510 McLellan, H.J. "Oceanography and meteorology of the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr 2119(04), Annual Report, 1 May 1961 - 30 Apr. 1962. pub. 1 July 1962. 40 p. figs. tables. refs. DAS.

The 17 cruises of R/V HIDALGO completed during the report period are listed and the objective of each is briefly stated. The studies summarized in this report include: Investigations of the Yucatan current; Cross air-sea interactions; Survey of the Gulf of Mexico; Water temperatures in the northwestern Gulf of Mexico; Investigations on micro-scale energy exchange between sea and atmosphere; Seismic refraction studies; Contouring temperature recorder; Gravity measurements with LaCoste-Romberg surface-ship meter

1962 cont.

'S-9'; Environmental studies off Panama City, Florida; Geology; Geochemistry and Chemical oceanography. - Staff MGA 14.8-350.

1962

2511 McLellan, H.J. and Nowlin, W.D. "Waters of the Gulf of Mexico as observed in February and March 1962." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project 286, Data Report, 1962. DNO.

1962

2512 Mexico. Dirección de Faros e Hidrografía. "Derrotero de las costas Atlánticas de México, America Central y Colombia." [Pilot chart of the East coasts of Mexico, Central America and Colombia.] Pub. F.H. 101, 1962. 371 p.

1962

2513 Miami Univ. Marine Laboratory. "Report of data obtained in Florida Straits and off the west coast of Florida, Jan. - June 1962." Report 62-11, Contract Nonr-84001, Dec. 1962. 143 p. charts. tables. DAS.

Oceanographic station data collected during the first half of 1962 on 6 cruises with R/V GERDA and 7 cruises with M/V GREEN SEAS in the Florida Straits, the eastern part of the Gulf of Mexico, and the Yucatan Channel. Data were obtained with particular regard to the kinematics of the water movements and also to the physical environment of the shrimp population in the region of the Tortugas Shelf. Sampling procedures, analytical methods and data processing are explained. - Staff MGA 15.2-175.

1962

2514 Miami Univ. Marine Laboratory. "Report of data obtained in Florida Straits and off the west coast of Florida, July - December 1961." Report no. 62-6, Report no. MI 62179, Contract Nonr-84001, June 1962. 108 p. illus. tables.

Data presented were collected during the latter half of 1961 on 6 cruises with the R/V GERDA and 6 cruises with the M/V GREEN SEAS in the Florida Straits and eastern part of the Gulf of Mexico. The data were obtained for studies of the hydrographic conditions prevailing in Florida Straits and adjacent waters, with particular regard to the kinematics of the water movements and also to the physical environment of the shrimp population inhabiting the region of the Tortugas shelf. - Author AD-282 948.

1962

2515 Miami Univ. Marine Laboratory. "Report of data obtained in Florida Straits

1962 cont.

and off the west coast of Florida, January - June 1961." Report no. 62-4, Report no. ML 62133, Contract Nonr-84001, Apr. 1962. 200 p. illus. tables.

Data were collected during the first 6 mos of 1961 on 7 cruises with the R/V GERDA and 3 cruises with the M/V GREEN SEAS in the Florida Straits and eastern part of the Gulf of Mexico. The data were obtained for studies of the hydrographic conditions prevailing in the Florida Straits and adjacent waters, with particular reference to the kinematics of water movements. The included tables show all measurements, observations and samplings made during these multiple cruises, both at the surface and at several depths below the water surface. - Staff AD-277 566.

1962

2516 Muga, B.J. and Sakou, T. "Correlation of water level variations with wave forces on a vertical pile for non-periodic waves." U.S. Naval Civil Engineering Laboratory, Technical note no. N-431, 21 May 1962. 54 p. illus. tables.

Filter techniques employing Fourier transforms developed by Reid (Proceedings of 6th Conference on Coastal Engineering 1958) are used to study measurements of hurricane-generated waves and forces induced on vertical circular piles 2, 3 and 4 ft in diameter. The piles were fixed to an oil well drilling platform located in about 30 ft of water in the open Gulf of Mexico, approximately 100 air mi south of New Orleans, Louisiana. It is concluded that the 'filter' technique while possible not suitable for design, seems useful for analysis of measurements. Author (mod) AD-283 298.

1962

2517 Niskin, S.J. "Some new mechanical devices for oceanographic research." In Marine Sciences Conference, Woods Hole, Mass., Sept. 1961, Marine Sciences Instrumentation, 1:246-250, 1962. figs. refs. DLC.

Areas of oceanographic interest to the Institute of Marine Science of the University of Miami are the Straits of Florida, the Bahama Banks, Florida Bay and the Caribbean. Field problems in these research areas, coupled with specific requirements of various departments at the institute, have prompted development of new oceanographic tools. Three simple, inexpensive mechanical devices are described: a stabilized oceanographic reference marker buoy; a sterile biological sampler and a hydrographic wire slope and

1962 cont.

azimuth indicator. - Author MGA 14D-34.

1962

2518 Park, K. et al. "Amino acids in deep-sea water." Science, 138(3539):531-532, 26 Oct. 1962. table. refs.

Approximately 17 different amino acids in acid hydrolyzates of dissolved organic material in seawater to depths of 3,500 m from the central Gulf of Mexico have been identified by ion-exchange resin chromatography. They are glutamic acid, lysine, glycine, aspartic acid, serine, alanine, leucine, valine plus cystine, isoleucine, ornithine, methionine sulfoxide, threonine, tyrosine and phenylalanine, histidine, arginine, proline and methionine. The results indicate that the dissolved organic material in deep-sea water may make an important contribution to the organic budget of the sea. - Author MGA 14.7-322.

1962

2519 Pérez Sori, J.A. "Datos oceanográficos de la playa Habana." [Oceanographic data on the Havana coast.] Cuba. Centro de Investigaciones Pesqueras, contribución, no. 16, 1962. 28 p. DNO.

1962

2520 Philpott, L.B. "Hurricane Hattie Caribbean Sea." Marine Observer, 32(198): 172-174, Oct. 1962.

Development and major characteristics of hurricane "Hattie" are described in chronological order from 27 - 31 October 1961. Paper includes an indication of the intensity of the storm and extent of damage. Attention is also given to: 1) "Hattie was the first hurricane that reached San Andrés Island since 1908 and 2) instead of following the northern track normal for this season, its path was westward by 29 October and west-southwesterly and thereafter. - Staff MGA 15.1-378.

1962

2521 Ponomarenko, G.P. "Izuchenie techeniĭ Atlanticheskogo okeana v shestom reĭse nis M LOMONOSOV." [Investigation of the currents of the Atlantic Ocean during the 6th voyage of the scientific research vessel M. LOMONOSOV.] Akademiia Nauk SSSR. Morskoĭ Gidrofizicheskiĭ Institut, Trudy, 25:17-47, 1962. figs. tables. refs. DLC.

The sixth voyage of M LOMONOSOV was the first oceanographic expedition to be carried out by Russian scientists in the region of the Gulf Stream and the Antilles. Results of observations on the currents of the Atlantic Ocean include: program and

1962 cont.

working procedure of the expedition; instrumental measurements of currents; measurement of the physical fields for investigating zonal properties of water masses; measurements of temperature and salinity of water at depths of 600 - 1,500 m; special measurements of temperature and salinity of frontal zones of water masses and a detailed analysis of hydrological observations made in the North Atlantic and Labrador currents, the Gulf Stream and Antilles and in the North Equatorial and Canary Currents. Extensive data on temperature and salinity distribution and on direction and velocity of currents are presented in tables and graphs. - Staff MGA 14.6-444.

1962

2522 Price, J.B. and Priddy, R.R. "Colorimetric determinations of nitrite and nitrate nitrogen in brackish coastal waters." Abstract only. In National Coastal and Shallow Water Research Conference, 1st, Baltimore, Md., Los Angeles, Calif. and Tallahassee, Fla., Oct. 1961. Proceedings, Feb. 1962. pp. 446-447.

A simple, rapid colorimetric procedure has been developed for determining the nitrite content of brackish coastal waters. The procedures are presented as an aid to geologists and biologists who have had difficulty in correlating rapidly changing laterial, vertical and hourly chemical content with other brackish water data, especially near shore. The nitrite content of Mississippi's coastal water is 0.03 to 0.05 ppm. Nitrate content is 0.04 to 0.06 ppm. The procedures are modifications of a 1954 method developed by Nelson, Kurtz and Bray for plant and soil analysis. - Author (mod). MGA 13.12-285.

1962

2523 Price, J.B. and Priddy, R.R. "Rapid volumetric determinations of sulphate, calcium, and magnesium in high lime-magnesian brackish coastal waters." Abstract only. In National Coastal and Shallow Water Research Conference, 1st, Baltimore, Md., Los Angeles, Calif., and Tallahassee, Fla., Oct. 1961. Proceedings, Feb. 1962. p. 447.

Rapid methods for determining the sulphate, calcium and magnesium content of brackish coastal waters are desired by geologists and biologists working in the Mississippi Sound. Gravimetric and colorimetric methods are too slow and ponderous and are too difficult to use on shipboard. However, new titrants and new indicators permit titrating brackish water for sulphate, calcium and magnesium ions in 5 to 10 min each. Procedures are modifications of recognized methods. The disodium dihydrogen dihydrate of ethylenediaminetetracetic acid (EDTA) is used as a titrate to complex barium, calcium and magnesium ions. Only 3 samples of brackish water are necessary; 1 to determine combined calcium, magnesium, and excess barium; 1 to determine the amount of combined calcium and magnesium; and 1 to find the amount of calcium alone. Simple calculations show the amounts of sulphate, calcium and magnesium ions. - Author (mod) MGA 13.12-286.

1962

2524 Pytkowicz, R.M. "Effect of gravity on distribution of salts in sea water." Limnology and Oceanography, 7(3): 434-435, July 1962. fig. refs.

An absolute criterion for water motion in a basin or trench is obtained if the salt distribution in a stationary isothermal water column is calculated under conditions of thermodynamic equilibrium. Richards and Vaccaro observed a decrease in salinity with depth in the Cariaco Trench; an anoxic depression off the Venezuelan coast. The present work confirms existence of such a circulation, which is fast in relation to molecular diffusion. - Staff MGA 14.3-329.

1962

2525 Roa Morales, P. "Características del Instituto Oceanográfico de la Universidad de Oriente, Venezuela." [Characteristics of the Oceanographical Institute of the University of the East, Venezuela.] Boletín Bibliográfico de Geofísica y Oceanografía Americanas, Parte Oceanográfica, Mexico City, v. 2, (1959/1961): 513-518, 1962.

Presents a brief description of the objectives and facilities available for research at the Oceanographical Institute of the University of the East, Venezuela. Staff MGA 14.9-348.

1962

2526 Rona, E. et al. "Activation analysis of manganese and zinc in sea water." Limnology and Oceanography, 7(2):201-206, Apr. 1962. tables. refs.

The use of activation analysis for the determination of microgram quantities of Mn and Zn in seawater was investigated. Total Mn and Zn were separated from the other elements of seawater by coprecipitation with iron as hydroxide, and

1962 cont.

divalent Mn and Zn were separated by extraction with diethyldithiocarbamate. Analyses were made from samples of water from different locations and depths of the North Pacific, Atlantic, and the Gulf of Mexico. Evidence indicates a substantial portion of Mn and Zn is held in seawater in a non-dialyzable and non-extractable form. - Author MGA 14.1-154.

1962

2527 Salsman, G.G. "Note on periodic temperature variations in the Gulf of Mexico off Panama City, Fla." In National Coastal and Shallow Water Research Conference, 1st, Baltimore, Md., Los Angeles, Calif., and Tallahassee, Fla., Oct. 1961, Proceedings, Feb. 1962. p. 442

Bathythermograph observations were taken from an offshore platform in 60 ft of water in the Gulf of Mexico near Panama City, Florida. These observations indicate the existence of a vertical temperature variation of a periodic nature. The seasonal variation from a warm 85°F in the summer to a cool 55°F in the winter is typical for northern gulf waters. Conditions are characteristically isothermal from late summer through the entire winter, but in the spring, a well defined thermocline is developed. This thermocline persists from March through July, and exhibits a periodic temperature variation in phase with local diurnal tides. - Author (mod) MGA 13.12-359.

1962

2528 Simpson, J.S.M. "Large-scale interactions." Physical Oceanography. The Sea, ed. M.N. Hill, v. 1, New York: Interscience, Pub. Inc. 1962. pp. 88-294. figs. tables. refs.

A comprehensive review of large-scale interactions between the sea and air, with 2 sections on the Caribbean in particular: joint air-sea energy budget study in the Caribbean region and heat and water-vapor budgets of the Caribbean troposphere. Detailed treatment is given to the determination of air-sea fluxes considering energy budget method of air-sea flux computation and exchange computations by transfer formulas. The climatology of energy exchange and global heat and water budgets are considered with a discussion of mean annual distribution of latent and sensible heat exchange, mean annual distribution of the remaining components of ocean surface heat balance, the annual heat and water budget of the ocean-atmosphere system and the seasonal march of heat balance and exchange. - Staff MGA 15.3-6.

1962 cont.

1962

2529 Stewart, H.B. "Oceanographic cruise report USC&GS Ship EXPLORER - 1960, Seattle, Washington to Norfolk, Virginia, Feb. 2 - April 27, 1960." U.S. Coast and Geodetic Survey, 1962. 162 p. figs. charts. tables. DAS.

Field data obtained during the February to April, 1960 oceanography expedition of USC&GS ship EXPLORER, together with such results from the analyses of these data as are completed to date. Current drift bottles were released at regular intervals; at the Swan Islands, measurements of the surface currents were made by current pole and in the Florida Current off Miami, an attempt was made to measure subsurface currents using anchored radio current meters. Bottom-dwelling (benthic) organisms were dredged from the sea floor in the Caribbean and Straits of Florida from 5 different depths and meteorological observations were taken. - Staff MGA 14.1-211.

1962

2530 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Cruise 62-H-10, July 17 - August 13, 1962, Galveston, Texas -- Kingston, Jamaica -- Nicaragua -- Honduras shelf." Summary Report. 13 Aug. 1962. Ref. no. 62-15T, Contract Nonr-211904, Project NR 083-036, 41 p. illus.

Cruise 62-H-10 was designed for collecting sediment samples from the broad continental shelf off the coasts of Nicaragua and Honduras. The oceanographic R/V HIDALGO proceeded to the Nicaragua-Honduras shelf, where bottom samples were collected. The collection of bottom samples off Pedro Bank, which lies southwest of Jamaica, was also accomplished. The track-line of the cruise is shown and brief descriptions of the various programs carried on during the cruise are given Data are restricted to station locations, bathymetry and surface temperatures. Author AD-284 822.

1962

2531 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Summary Cruise Report, R/V HIDALGO Cruise 62-H-9, 27 June - 12 July 1962. Galveston, Texas -- Campeche Bank." Final Report. Ref. no. 62-17T, Contract Nonr-211904, Project NR 083-036; Grant no. G-24892, 15 p. 12 July 1962. illus.

An instrument structure was established in 20 ft of water on the southern flank of the Arcas Reef. This operation was a

1962 cont.

feasibility study designed to examine techniques to be used in instrumenting the Arcas Reef for physical oceanographic studies. The reef study group, together with about 7 tons of supplies, was landed on Cayo del Centro in the Arcas group and a base camp was established. Gravity data were obtained over a distance of approximately 1,000 mi and 57 bathythermograph stations were occupied between Galveston and Campeche Bank. - Author (mod) AD-289 860.

1962

2532 Texas A & M Univ. Dept. of Oceanography and Meteorology. "Summary report - Cruise 62-H-10, July 17 - Aug. 13, 1962, Galveston, Texas -- Kingston, Jamaica -- Nicaragua -- Honduras shelf." Contract Nonr 2119(04), 1962(?). 41 p. mostly tables. DAS.

Cruise 62-H-10 was designed primarily for the purpose of collecting sediment samples from the little known broad continental shelf off the coasts of Nicaragua and Honduras. R/V HIDALGO left Galveston, Texas, 17 July 1962 for Cayo Arcas, Campeche Bank, Yucatan, Mexico, where a field party of six scientists and technicians was picked up. The vessel proceeded to Kingston, Jamaica and measurements of the Earth's gravity field and solar and terrestrial radiation were made enroute. From Kingston, HIDALGO proceeded to the Nicaragua-Honduras shelf, where bottom samples were collected. - Author (mod) MGA 15.6-193.

1962

2533 Walsh, D.E., Reid, R.O. and Bader, G. "Wave refraction and wave energy on Cayo Arenas, Campeche Bank." Texas A & M Univ. Dept. of Oceanography and Meteorology, Report, 1962. 62 p.

1962

2534 Webster, F. "Departures from geostrophy in the Gulf Stream." Deep-Sea Research, 9:117-119, Mar./Apr. 1962. figs. refs.

Nongeostrophic velocities produced by horizontal gradients of Reynolds stresses have been calculated from observed surface data in the Florida Current region of the Gulf Stream. It was found that the departure from geostrophy is characteristically about 10 percent of the mean velocity. An examination of surface velocity data also shows that horizontal gradients in the Reynolds stresses can produce a transverse velocity in the Florida Straits off Miami. The velocity profile of the nongeostrophic transverse component

1962 cont.

has the same sign and approximately the same magnitude as the observed transverse surface velocity. - Author MGA 14.6-446.

1962

2535 Woods Hole Oceanographic Institution. "CHAIN (Cruise) no. 11; Atlantic Ocean and Caribbean Sea, 26 January - 22 March 1960." Contract Nonr-1367 (00)NR 261-102, Ref. 62-7, Feb. 1962.

1963

2536 Bowen, V.T. and Sugihara, T.T. "Cycling and levels of strontium 90, cerium 144 and promethium 147 in the Atlantic Ocean." In National Symposium on Radioecology, 1st, Colorado State Univ., Ft. Collins, 10-15 Sept. 1961. Proceedings, ed. V. Schultz and A.W. Klement. New York: Reinhold, Pub. Corp. and Wash., D.C.: American Institute of Biological Sciences, 1963. pp. 135-139. tables. refs. DLC. Q H 540.N3.

Presents information on the levels of strontium 90, cerium 144 and promethium 147 in various parts of the Atlantic at various times and discusses the processes which move these nuclides through the marine hydrosphere. Surface water concentrates are given for 60 stations in the Atlantic and Caribbean (1956 - 1960). The details of 1 deep station are given, together with curves from this and 6 other stations. The development of a picture of the changing patterns of surface homogeneity of strontium 90 content is revealed, as well as of the high accumulation per unit area of oceans. - Staff

1963

2537 Bretschneider, C.L. and Collins, J.I. "Prediction of hurricane surge; an investigation for Corpus Christi, Texas, and vicinity." Houston, Tex., National Engineering Science Co., Technical Report, SN-120 to U.S. Army Engineer District, Galveston, 1963.

1963

2538 Bruce, J.G. "Current studies." In Woods Hole Oceanographic Institution, Summary of investigations...1962. Ref. 63-18, June 1963. p. 4. DNO

ATLANTIS Cruise 274 was made to examine the current structure in a region bordering the northern Antilles island arc. Stations were made approximately on a line between San Juan, Puerto Rico, and lat 23°N, long 66°W. Each location was sampled twice with a 3-week interval between the samplings. At 3 locations along the line (lat 21°34'N, 20°56'N, and 20°10'N.) swallow floats and drogues were set at various depths from 200 m to

5,500 m and seemed to indicate a fairly steady flow toward the E to NE from 1,500 m down to 4,500 m. The depth of greatest velocity, approximately 8 cm sec^{-1}, seemed to be at 2,000 m, while at 4,500 m the velocity was 2-3 cm sec^{-1}. Above 1,500 m the movement seemd turbulent in nature with no strong surface currents. In one case, using a float and a drogue, continuous tracking was made at 2,000 m for 10 days, indicating a steady flow E to NE. It may be possible for a transport of approximately 50 million m^3 sec^{-1} to have existed for this period. - Author (mod).

1963

2539 Charney, J.G. "Gulf Stream as an inertial boundary layer." In Wind-driven ocean circulation: a collection of theoretical studies. 1963. pp. 81-92. figs. DAS. DLC.

The purpose of this article is to show that the main features of the western currents in their generating areas can be accounted for by treating the motions as boundary layer flows in which only pressure and inertial forces act. Specifically, an explanation is advanced for the Florida Current, that portion of the Gulf system in which most of the flow is generated and in which the current remains parallel to the coast. After the current leaves the continental slope, it may no longer be treated as a boundary layer nor even as a steady-state flow. Discussions deal with construction of a model, derivation of the governing equations, determination of empirical functions, solution of the equations, comparison of theory with observation and the application of the geostrophic approximation. - Staff MGA 15.12-163.

1963

2540 Cochrane, J.D. "Yucatan Current." In Texas A & M Univ. Dept. of Oceanography and Meteorology, Unpublished Report, Ref. 63-18A, 1963. pp. 6-11.

1963

2541 Colón, J.A. "Seasonal variation in heat flux from the sea surface to the atmosphere over the Caribbean Sea." Journal of Geophysical Research, 68(5): 1421-1430, 1963.

The annual variations in the heat flux to atmosphere over the Caribbean Sea area are studied through a computation of the monthly heat balance of the oceanic body. Various components of the heat balance are computed from available climatological information; the heat flux is obtained as a residual. A sample of bathythermograph

observations accumulated through the years and compiled at the Woods Hole Oceanographic Institution was used in evaluating the rate of change of the heat content of the water body--the heat storage term. The annual range and annual average are higher than previous estimates. A separate evaluation, using turbulence transfer formulas with data for a section of the Caribbean Sea, was also made; the results compared well with the heat balance computations. - Staff.

1963

2542 Corcoran, E.F. and Alexander, J.E. "Nutrient, chlorophyll and primary production studies in the Florida Current." Bulletin of Marine Science of the Gulf and Caribbean, 13(4):527-541, 1963.

Inorganic and total phosphates, Kjeddahl nitrogen, ammonia, nitrite and nitrate nitrogen and iron and silicate have been measured at a station in the Florida current 40 mi east of Miami, Florida, in 738 m of water. This station has been occupied at monthly intervals for 31 mos. Standing crop and primary production have been measured by chlorophyll and C^{14} methods for 9 mos. Nutrient concentrations were low in the upper waters. Factors controlling production in this region and which differentiate it from those of higher latitudes are: 1) shallow winter mixed layer, 2) low concentration of nutrients and 3) a rapid re-cycling of nutrients. - Author (mod).

1963

2543 Davis, A.B. "Design of hurricane flood protection works on the upper Texas coast." In Conference on Coastal Engineering Engineering, 8th, Mexico City, Nov. 1962. Proceedings, ed. J.W. Johnson. Berkeley: Council on Wave Research, 1963. pp. 563-577. figs. tables. refs. DAS.

Reports on studies and the design of protective structures at Texas City on the upper Texas coast. Information is given on the design hurricane, design storm surge, wave characteristics and interior drainage. Staff.

1963

2544 Dinger, J.E. "Comparison of ocean-wave and microseism spectrums as recorded at Barbados, West Indies." Journal of Geophysical Research, 68(11):3465-3471, 1 June 1963. figs. refs.

Power spectrums computed from recordings of ocean waves and microseisms made at Barbados, West Indies, are compared. The ocean-wave spectra show abrupt onsets of waves having energy peaks in the low-

1963 cont.

frequency end of the spectrum which can be compared with the onset of energy peaks in the low-frequency end of the microseism spectra, but at a frequency double that of the ocean waves. A delay of 18 to 24 hrs is observed between the onset of the ocean waves and the corresponding development of energy in the microseism spectra, which may be attributable to the time required to develop an interfering wave patterns in the vicinity of the island. Author (mod) MGA 14.12-200.

1963

2545 Drennan, K.L. "Surface circulation in the northeastern Gulf of Mexico." Gulf Coast Research Laboratory, Ocean Springs, Miss. Oceanography Section, Contract Nonr 3198, Technical Report no. 1, 1 Dec. 1963. 116 p. figs. plates. tables. refs.

Twenty cruises were conducted in the regions east and south of the Mississippi Delta (September 1960 - October 1962). The general features of the surface circulation in the northeastern gulf are presented from an analysis of surface density distribution, an extensive drift bottle study (6,400 recoveries) and studies of wind-induced drift (stress). Hydraulic heads formed by discharge from eastern passes extend some 70 - 90 mi seaward. Convergence lines associated with strong density gradients are commonly found along southern boundaries of these areas. The surface circulation is depicted as: an eastward flow during spring and early summer and a southwest flow over the continental shelf during late summer and fall, which appears to continue westward and into the southwestern gulf. The existence of the southeast flowing loop current also is indicated in the offshore region southeast of the delta at this time. Flow during winter months is to the southeast and appears to be a result of the northward migration of the loop current. Staff MGA 16.2-27.

1963

2546 Florida State Univ. Oceanographic Institute. "Research on diffusion and surface phenomena in the ocean." Contract Nonr-988(11), Report for the year 1962/1963. Issued 1963. 7 p. DAS.

Progress report of the research carried out at the Oceanographic Institute, Florida State University from 1 March 1962 through 28 February 1963. Information is given on an internal wave survey off Panama City. A literature survey on internal waves and a theoretical study of internal waves is also provided. - Staff.

1963

2547 Fukuoka, J. "Comparison of upwelling near the coast of Venezuela with upwelling near the equator and west of South America." In Association of Island Marine Laboratories of the Caribbean, Meeting, 5th, 6 - 8 Nov. 1963. Report. p. 22.

In the Caribbean Sea, especially near the coast of eastern Venezuela, a remarkable degree of upwelling has been detected. In accordance with the direction of the trade winds (with an easterly direction), the transport of water by wind is directed toward the north. Then, water with a low temperature flows towards the surface as a compensatory reaction. Also, an eastward countercurrent is present in this region. - Author (mod).

1963

2548 Fukuoka, J. Ballester, A. and Cervigon, F. "Análisis de las condiciones hidrográficas del Mar Caribe. IV." [Analysis of hydrographic conditions in the Caribbean Sea, pt. 4.] Sociedad de Ciencias Naturales La Salle, Memorias, 23(66): 254-264, 1963.

1963

2549 Gaul, R.D. and Kirst, A. "Data acquisition and handling system for nearshore oceanographic research." In International Telemetering Conference, 1st, London, 1963. Proceedings, 1:175-181, 1963. figs. table. refs. DLC.

Describes an automated system established for continuous monitoring of oceanographic parameters in the vicinity of 2 fixed platforms off Panama City, Florida. The system accomodates a variety of transducers, each with a variable voltage output covering a single standard range. The recordings are demodulated and converted to computer compatible form in a separate data reduction system. A general description is given of measurement instruments now in use for determination of wind and current speed and direction, air and water temperature, barometric pressure and wave amplitude. - Staff.

1963

2550 Gorsline, D.S. "Oceanography of Apalachicola Bay, Florida." In Los Angeles. Univ. of Southern Calif. "Essays in marine geology in honor of K.O. Emery, 1963." pp. 69-96. graphs. tables. DLC.

1963

2551 Guthrie, A.N. and Shaffer, J.D. "Measurements of sound velocity made while anchored in the Virgin Islands basin." Columbia Univ. Hudson Labs., Dobbs Ferry, N.Y., Technical Report, no. 107, Contract Nonr-266(84), 18 Sept. 1963. 15 p. figs.

1963 cont.

table.

National Bureau of Standards velocimeter was used to obtain measurements of the fluctuations in the velocity of sound at three shallow depths in the Virgin Islands Basin. The instrument was suspended from an anchored ship. During 1 run, a sumultaneous measurement was made with a resonant cavity meter. The observed fluctuations are characterized in terms of the coefficient of variation and the autocorrelation function. The method of analysis was designed to reduce the effects of instrument motion upon the result. Author.

1963

2552 Harris, D.L. "Characteristics of the hurricane storm surge." U.S. Weather Bureau, Technical Paper, no. 48, 1963. 139 p.

1963

2553 Harris, D.L. "[Discussion of] Harold R. Davis: Computer solution of storm surges." American Society of Civil Engineers, Waterways and Harbors Division, Journal, 89(1):75-76, Feb. 1963. fig. refs. Original article in Ibid., Aug. 1962.

A discussion of the paper, 'Computer solution of storm surges.' The applicability of Davis' basic formula for wind setup is questioned and it is suggested that Hellstrom's equation (1941) was put to use where it was not intended by Hellstrom; conditions at Pleasure Pier tide gage in the Gulf of Mexico at Galveston, Texas during hurricane "Carla" are used in illustration. It is noted briefly that 2-dimensional numerical models which require the use of a computer for a solution are being developed by several groups in the United States, Japan, West Germany, the Netherlands and Great Britain. - Staff.

1963

2554 Hurley, R.J. and Fink, L.K. "Ripple marks show that countercurrent exists in Florida Straits." Science, 139(3555):603-605, 15 Feb. 1963. figs. table. refs.

About 60 percent of the area shown in photographs taken at the axis of the Florida Straits exhibits well-defined current ripple marks. These ripples indicate a flow of water of at least 0.2 to 0.6 kts from the north. This current is in the opposite direction from the surface currents of 2 to 4 or more kts. Author MGA 15E-58.

1963

2555 Keller, M. "Tidal current surveys by photogrammetric methods." U.S. Coast and Geodetic Survey, Technical Bulletin,

1963 cont.

no. 22, Oct. 1963. 20 p. figs. charts. tables. DAS.

Describes the application of photogrammetric techniques to the measurement of currents in bays and harbors and of the circulation in large water bodies. Included are explanations of the principle on which the method is based, equipment and material used, survey operation, photogrammetric measurements, reduction of data and the status of this type of survey. Illustrations cited are Charleston Harbor, South Carolina Acracoke Inlet, North Carolina, and Tampa Bay, Florida. - Staff MGA 15.10-156.

1963

2556 McLellan, H.J. and Nowlin, W.D. "Some features of the deep water in the Gulf of Mexico." Journal of Marine Research, 2(3):233-245, Sept. 1963. figs. tables. refs.

In the central Gulf of Mexico, 52 stations having depths greater than 1,500 m were occupied within a 7-week period. The data for waters below sill depth (2,000 m) show that the ranges of potential temperature and salinity are very limited, although weak vertical gradients indicate a slight positive stability. Water characteristics are consistent with the concept of flooding through the Yucatan Channel, but the data are inadequate to examine the possibility of present day exchange. In contrast to the potential temperature and salinity, which show no horizontal variations, the dissolved oxygen content appears nonuniform on all horizontal surfaces below the sill depth. - Author.

1963

2557 Miami Univ. Institute of Marine Sciences. Marine Laboratory. "Investigations of American tropical and subtropical seas 1 June 1962 through 31 May 1963." 1963. Reports 63-5, Contract Nonr 840(01) and Nonr 4008(02). 36 p. illus.

1963

2558 Monroe, F.F. "Model study of offshore wave tripper." In U.S. Beach Erosion Board, Bulletin, v. 17, July 1963.

Results are presented of tests performed on a model offshore structure used as a wave tripper. Such a structure was proposed as hurricane protection for the shore of Texas City, Texas. - Staff.

1963

2559 Park, K. and Hood, D.W. "Radiometric field measurement of CO_2." Limnology and Oceanography, 8(2):287-289, Apr. 1963. figs. refs.

By using radioactive C-14 O_2 to label

1963 cont.

1 phase only of the air-sea system, 1 directional transfer of CO_2 across the air-sea boundary can be investigated. Presents a summary of an experiment performed in the field in February 1960 in the southern Gulf of Mexico. Although the experiment had inherent disadvantages, the use of C-14 O_2 for the measurement of C-12 O_2 appears practical because the isotopic effect would be smaller than experimental errors to be expected. - Staff MGA 15.3-226.

1963

2560 Rhodes, H.J. and Boland, R.A. " "Contribution of Matagorda Bay model to design of Matagorda Bay deep draft navigation project." In Conference on Coastal Engineering, 8th, Mexico City, Nov. 1962. Proceedings, Berkeley, 1963. pp. 598-615. figs. DAS.

Considers the use of a hydraulic model as an aid to design engineers in the design of a deep-draft navigable channel from the Gulf of Mexico across Matagorda and Lavaca Bays. Information is given on the type of model used, field data requirements, adjustment and verification of the model, testing of proposed improvement plans and the analysis of test results. Limitations of the model are pointed out. Staff

1963

2561 Ridley, E. "Oceanography - west coast of St. Croix, Virgin Islands." U.S. Naval Oceanographic Office. Informal Manuscript Report. no. 0-34-63, 1963. 88 p. figs. tables. refs. DNO.

Time-series oceanographic data off the west coast of St. Croix, examined for variations in physical properties which significantly affect sound propagation, show changes on the order of 3 m sec^{-1} occurring over a 12-hr period. Examination of historical data shows possible changes in sound speed which might exceed 8 m sec^{-1}. For use of the area as a tracking range, studies should be conducted on at least a seasonal basis, and some method should be devised whereby the environment may be monitored during actual tracking operations. - Author (mod).

1963

2562 Robinson, B. "Where the trade winds blow; a yachting guide to southern waters; Florida, the Bahamas, Puerto Rico, the Virgin Islands, the Windwards and Leewards." New York: Charles Scribner's Sons, 1963. 310 p.

1963

2563 Roden, G.I. "Sea level variations

1963 cont.

at Panama." Journal of Geophysical Research, 68(20):5701-5710, 15 Oct. 1963. figs. table. refs.

Forty-eight-year records of sea level and other variables were analyzed for Balboa and Cristobal. It was found that from 1909 to 1962, the sea level had increased by 8.5±1.5 cm at Balboa and 7.1±2.0 cm at Cristobal. No significant trends were found in the climatological records. The increase in sea level at Panama, therefore, is probably due to subsidence of the land. The sea level oscillations at Balboa are similar to those occurring elsewhere along the northwest coast of South America. The root-mean-square amplitude of the annual sea level oscillation is 10.5 cm at Balboa and 3.8 cm at Cristobal. The corresponding values of the non-annual sea oscillations are 4.5 cm and 3.3 cm, respectively. - Author (mod).

1963

2564 Sakou, T. "Salinity regime and exchange characteristics of a shallow coastal bay system." Texas A & M Univ. Dept. of Oceanography and Meteorology, Grant NSF GI9780, Technical Report, 63-21T, Aug. 1963. 155 p. figs. tables. refs. DAS.

A shallow coastal bay system consisting of several bay units, each of which is characterized by quasihomogeneous salinity and by relatively restricted interconnecting tidal passes, has been investigated with respect to its salinity regime and exchange characteristics. Particular emphasis is on the temporal features of the salinity and their predictability from known controlling factors. Data from prototype and hydraulic model observations for the Lake Pontchartrain-Lake Borgne system have been used for the analysis. A salinity prediction model is formulated on the basis of the equations of continuity and of salt conservation. - Author (mod).

1963

2565 Smith, F.G.W. "Investigations of American tropical and subtropical seas sponsored by the Office of Naval Research." Miami Univ. Marine Laboratory, Progress Report, 1 June 1962 - 31 May 1963. 36 p.

Report contains: Chemical oceanography and marine geochemistry including kinetics and physical chemistry of sea water surface films, primary production and distribution of trace elements, carbonate chemistry on Bahama Banks and geochemistry of sediments; sedimentation and stratigraphy including paleotemperature,

1963 cont.

foraminifera studies, coccolith studies and sedimentation; morphology of the sea floor including topography of the Straits of Florida and ripple marks in the Straits; physical oceanography including investigations in the Florida Straits, general circulation in the ocean and data reduction and oceanographic instrumentation including a doppler current meter, instruments and devices and marine operations. Staff.

1963

2566 U.S. Beach Erosion Board. "South shore of Key West, Florida." Annual Bulletin, 17:83-84. 1963. DAS.

The study area comprises the south shore of Key West and is about 4 mi in length, the problem area being about 6,200 ft in length and lying just east of the middle of the study area. The shore of the study area is exposed to waves of the Straits of Florida, but large waves are broken up to a considerable extent by a reef lying about 5 mi offshore. The predominance of energy components in deep water is such that a westward littoral transport would be expected. However, due to lack of sand on the shallow rocky bottom, no signs of appreciable littoral drift are apparent. - Author (mod).

1963

2567 U.S. Fish and Wildlife Service. "Inventory of oceanographic data for the western North Atlantic Ocean and the Gulf of Mexico (Oceanographic station data, bathythermograph observations, and sea-surface temperature observations)." Circular 176, Dec. 1963. 1 p. 39 charts prepared by the National Oceanographic Data Center (NODC), DNO.

Inventory of oceanographic observations in atlas form, giving: 1) oceanographic stations (from NODC records of January 1963), 2) bathythermograph observations (May 1960) and 3) sea surface temperature observations (National Weather Records Center, September 1957). Charts cover the area of the continental shelf of the western North Atlantic from Newfoundland to lat 20°N, plus the Gulf Stream and adjacent waters. - Staff MGA 15.10-26.

1963

2568 U.S. National Oceanographic Data Center. "Evaluation of NOMAD data." Progress Report, P-14, Aug. 1963. 16 p. figs. refs. DNO.

Evaluation of the transmission and reception records for the various parameters transmitted by the Naval Oceanographic Meteorological Automatic Device

1963 cont.

(NOMAD) the world's first workable, deep-water-moored, unmanned oceanographic and meteorological telemetering station in the Gulf of Mexico. Time graphs of air temperature, sea surface temperature, barometric pressure, wind speed, wind direction and wave height received by the two U.S. Federal Communications Commission monitoring stations in Ft. Lauderdale, Florida, and Kingsville, Texas, support the evaluation of the transmitted data with respect to time for reasonable continuity and internal consistency. - Staff.

1963

2569 U.S. Naval Oceanographic Office. "Atlas of pilot charts, Central American waters and South Atlantic Ocean." 2d ed., 1955. Pub. no. 106. Wash., D.C., 1963. maps. DAS.

Prepared from data furnished by U.S. Naval Oceanographic Office, Department of the Navy and by the U.S. Weather Bureau, Department of Commerce. - Staff.

1963

2570 U.S. Naval Oceanographic Office. "Loran-A table: Gulf of Mexico." Pub. no. 221 (127);(128), 1963. DNO.

1963

2571 U.S. Naval Oceanographic Office. "Oceanographic station data, USS SAN PABLO cruise no. 31034 of October and November 1962." Informal Manuscript Report, no. 0-21-63, 1963. 138 p. tables. DNO.

A compilation of oceanographic data obtained 25 October through 8 November 1962 by the USS SAN PABLO off the west coast of St. Croix, Virgin Islands. Observations included 128 Nansen casts, 17 Kullenburg cores and 262 bathythermograms. A note considering the reliability of salinity values is included. - Staff.

1963

2572 U.S. Naval Oceanographic Office. "Oceanographic survey operations in West Indies waters, spring 1962." Informal Manuscript Report, 0-27-63, Aug. 1963. 99 p. figs. tables. Unpublished Manuscript. DNO.

Oceanographic survey operations in West Indies waters during the spring of 1962 were conducted from aboard the USS REQUISITE (AGS-18). Observations included 59 oceanographic stations, 275 bathythermographs and 13 cores. Ship's track, station locations, survey methods, data analysis techniques, oceanographic station data listings and core analysis summary sheets are presented.

Author (mod).
MGA 15.6-194.

1963

2573 Venezuela. Instituto Nacional de Canalizaciones. "Dragado de agitación con brazo en el canal de Maracaibo, Venezuela." [Dredging by agitation with a mechanical arm in the Maracaibo Canal, Venezuela.] In Conference on Coastal Engineering, 8th, Mexico City, Nov. 1962. Proceedings, Berkeley, 1963. pp. 645-674. figs. tables. refs. DAS.

Shoaling in the canal leading into Lake Maracaibo, Venezuela, necessitated serious dredging operations. Dredging by agitation has been in operation, and information is given on the dredge itself and its effectiveness. The theoretical justification for the dredging operation is presented. - Staff.

1963

2574 Weiser, E.A. and Armstrong, J. "Design of deep draft navigation channel from Gulf of Mexico into Matagorda Bay, Texas." Conference on Coastal Engineering, 8th, Mexico City, Nov. 1962. Proceedings, Berkeley, 1963. pp. 578-597. figs. tables. refs. DAS.

Reports on studies of various plans for the design of a dependable deep draft navigation channel from the Gulf of Mexico to Port Lavaca, Texas. The problem area is described in detail. It was concluded that knowledge of sediment movement is not complete enough to predict the amount of shoaling which will occur. Staff.

1963

2575 Whitmarsh, D.C. "Underwater-acoustic-transmission measurements." Acoustical Society of America, Journal, 35(12):2014-2018, Dec. 1963. figs. refs.

Results of studies carried out in the Key West area during the summer of 1962 are summarized. It was found that a directly received pulse-amplitude fluctuation varied as the square root of the range. There is also some indication that fluctuation decreases with depth. Surface reflected pulses show, on the average, a loss of about 1 db on reflection in a very low sea state; surface reflected pulses show much greater fluctuation than the direct pulses and the fluctuation tends to decrease with range. Author (mod) MGA 15.8-184.

1963

2576 Wilson, B.W. "Deep water waves generated by hurricane Audrey of 1957." In Conference on Coastal Engineering, 8th, Mexico City, Nov. 1962. Proceedings, Berkeley, 1963. pp. 533-554. figs. refs. DAS.

1963 cont.

Analysis of hurricane "Audrey" (24 - 27 June 1957) in the Gulf of Mexico is described using all available ship reports and weather data from United States and Mexican sources. A detailed meteorological analysis defines the changing surface pressure and wind systems at 3-hr intervals, from which the space-time wind fields have been derived for selected paths of wave generation bearing on the Louisiana coastline. A numerical technique of moving fetch wave prediction has been used to determine the characteristics of the waves in deep water that would have been prevalent in various parts of the Gulf of Mexico during passage of the hurricane. For 2 deep water locations, the effects of multi-directional wave generation are considered. - Author MGA 15.3-217.

1963

2577 Worthington, L.V. "North Atlantic circulation." In Woods Hole Oceanographic Institution, Atlantic oceanography...1962-1963. Ref. 63-26, Sept. 1963. (pp. 2-3 deal with Caribbean Sea). DNO.

Examination of deep temperature measurements made in the Caribbean in 1933, 1934, 1937 and 1958 has raised the question of whether or not the deepest waters of the Caribbean are becoming warmer. The Yucatan, Cayman, Colombian and Venezuelan basins have been examined, but scarce deep temperature measurements persist. Roughly speaking, the deepest water in the Cayman basin appears to have been 0.03°F warmer in 1958 than in the earlier surveys, the Yucatan 0.02°F warmer, the Colombian 0.01°F warmer, and the Venezuelan essentially unchanged. The 1958 data have been put through a computer program to determine stability. All the basins except the Venezuelan appear to have a layer (varying in thickness) of neutrally stable water from the bottom up. - Author (mod).

1964

2578 Allstrom, F. "Track charts, bathymetry, and location of observations, ATLANTIS II, cruise no. 14, North Atlantic Ocean and Caribbean Sea, October 20, 1964 - December 20, 1964." Woods Hole Oceanographic Institution, Ref. no. 65-8, 1964. DNO.

This report contains charts of Cruise no. 14 of R/V ATLANTIS II in the North Atlantic Ocean northwest of the Amazon River Delta and in the Eastern Caribbean including the Cariaco Trench. There are 22 charts plotted on a Mercator Projection showing the track of the cruise from the

1964 cont.

first to the final hydrographic station (ATLANTIS II stations 431-513).- Author(mod).

1964

2579 Amstutz, D.E. "Analysis of the salinity regime of the Mississippi River-Gulf Outlet Channel." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 64-21T, Contract Nonr 2119 (04), Aug. 1964. 60 p. figs. tables. refs.

A least squares regression analysis of the spatial distribution of salinity in a vertical section along the major axis of the Mississippi River-Gulf outlet channel is carried out, employing a 2-dimensional orthogonal polynomial regression relation to represent the spatial structure. The spatial structures were observed monthly during both high and low tide conditions for 13 mos. The 10 polynomial coefficients, constituting the third degree regression relations for each of these structures, are analyzed for correlation with various salinity regime influencing phenomena. - Author (mod) MGA 16.6-653.

1964

2580 Beaufort, R. "Cuba." Undersea Technology, 5(11):10, Nov. 1964.

Reports that 22 Russian oceanographers arrived at Havana (18 August 1964) to work with Cubans on studies on the oceanography and resources of the Gulf of Mexico and Caribbean. - Author (mod).

1964

2581 Beaufort, R. "Dominican Republic." Undersea Technology, 5(11):10, Nov. 1964.

Reports that with ratification by the Dominican Republic, the 1958 Geneva Convection on the Territorial Sea became effective on 10 September 1964. This convention lays down procedures for drawing base lines from which the limits or territorial waters are measured and specifies median lines as the boundaries between adjacent countries. The convention also allows a state to establish a contiguous zone up to 12 mi from its baseline in which it may exercise control of shipping for protection of revenue or public health, but without exercising national sovereignty. - Author (mod).

1964

2582 Boston, N.E.J. "Observations of tidal periodic internal waves over a three day period off Panama City, Florida." Texas A & M Univ. Dept. of Oceanography and Meteorology, Report no. TAMUREF-64-20T, Contract Nonr 211904, Report for 19 - 22 June 1962. Aug. 1964. 60 p.

Temperature, salinity and current

1964 cont.

data were taken during the period from noon on 19 June to noon on 22 June 1962, off Panama City, Florida. The survey covered an area of approximately 80 sq mi in water depths from 60 to 100 ft. A study of the data showed that temporal variations in the depths of the top, center and bottom of the thermocline were closely related to the amplitude and phase of the surface tide. The relationship varied with depth and distance from shore. - Author (mod).

1964

2583 Chew, F. "Sea level changes along the northern coast of the Gulf of Mexico." American Geophysical Union, Transactions, 45(1):272-289, Mar. 1964. figs. tables. refs.

A discussion of sea level changes along the northern coast of the Gulf of Mexico, where a July minimum in sea level is widespread. Considers mostly sea level atmospheric pressure as a possible cause of the July sea level minimum, the mean winds and the mean current. Monthly changes in sea level are correlated with changes in the winds producing net onshore and offshore water transport. The correlation is supplemented by relating the same variables for 2 recent 5-yr periods at 3 localities. The results reveal a correspondence between a westward increase in the intensity of winds producing offshore transport and a similar increase in the magnitude of the July minimum in sea level. - Staff MGA 16.1-285.

1964

2584 Collier, A. "American Mediterranean." Natural environment and early cultures. v. 1. Handbook of Middle American Indians. Texas Univ. Press, 1964. pp. 122-142. DLC.

Description of the Gulf of Mexico. Staff.

1964

2585 Corcoran, E.F. and Alexander, J.E. "Distribution of certain trace elements in tropical sea water and their biological significance." Marine Science of the Gulf and Caribbean, Bulletin, 14(4):594 601, 1964.

An investigation of the distribution of iron, copper, and nickel was made in the tropical waters of the Florida Current. Methods were developed for the direct colorimetric measurement of iron and copper and were utilized in this study. Iron and copper exist primarily as 'soluble' organic complexes. Nickel was precipitated as carbonate from sea water. Its

1964 cont.

concentration was determined by the extraction of an organic complex and subsequent colorimetric analysis. Its distribution followed closely the distribution pattern of copper. - Staff.

1964

2586 Dillon, D.B. "Vertical sections of sound velocity in the North Atlantic Ocean." U.S. Naval Oceanographic Office, Informal Manuscript Report, no. 0-29-64, July 1964. 5 p. figs. (unpublished.) DNO.

Fourteen south-to-north vertical sections of sound velocity from the Equator to lat 70°N have been prepared from data located in 5-degree zones of longitude from long 10°W through long 80°W in the North Atlantic Ocean. In addition, 12 west-to-east vertical sections based upon data located in 5-degree zones of latitude from the Equator through lat 60°N are also presented. Isopleths of sound velocity are shown in increments of 25 ft sec^{-1}. The major acoustic features of the North Atlantic are interpreted briefly in terms of the water masses involved and the thermohaline circulation. - Author (mod).

1964

2587 Drennan, K.L. "Infrared survey technique as a means of determining Mississippi River discharge patterns and surface flow along the northern Gulf Coast." In Techniques for infrared survey of sea temperature, Report of a workshop, U.S. Bureau of Sport Fisheries and Wildlife, Circular no. 202, Nov. 1964. pp. 69-75. figs. charts. DNO.

Gulf Coast Research Laboratory, under sponsorship of the U.S. Office of Naval Research, is conducting a study of the circulation along the northern coast of the Gulf of Mexico, including a study of the distribution of temperature and salinity in the upper layers of the area immediately east of the Mississippi Delta. Drift bottles were released to obtain approximations of surface current speed and direction. These data along with direct current measurements have enabled the determination of seasonal variations in Mississippi River discharge patterns and surface currents in the area. - Author (mod).

1964

2588 Dunkle, W.M. and Witzell, G.K. "Track charts, bathymetry, and location of observations, CHAIN Cruise no. 41, North Atlantic Ocean, Caribbean Sea, December 1 - 14, 1963." Woods Hole Oceanographic Institution, Report no. WHOI-Ref-64-48, Contract Nonr-4029(00), Nov. 1964. 24 p. DNO.

1964 cont.

Contains charts of cruise No. 41 of the CHAIN in the North Atlantic Ocean and Caribbean Sea. There are 17 charts plotted on a mercator projection showing the track of the entire cruise. Soundings are read at equal time intervals, usually every 5 min, and at each break in slope. Author (mod).

1964

2589 Fukoka, J. "Análisis de las condiciones hidrográficas del Mar Caribe. VII. De la relación con las condiciones hidrográficas cerca de la desembocadura del Orinoco." [Analysis of hydrographic conditions in the Caribbean Sea. Pt. 7. Relationship with hydrographic conditions at the mouth of the Orinoco.] Sociedad de Ciencias Naturales La Salle, Memorias, 24(69):277-307, 1964.

1964

2590 Fukuoka, J. "Observaciones oceanográficas cerca de la isla de Trinidad y en las afueras de la desembocadura del río Orinoco." [Oceanographic observations near the Island of Trinidad and in the vicinity of the mouth of the Orinoco River.] Sociedad de Ciencias Naturales La Salle, Memorias, 24(67):91-97, 1964. DLC.

1964

2591 Gaul, R.D. and Boykin, R.E. "Northeast Gulf of Mexico hydrographic survey data collected in 1963." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 64-26T, Nov. 1964. 89 p. DAS.

The survey region extends from the Mississippi Delta to Cape San Blas (about 200 n mi) and offshore to the 200 fathom depth contour (50 to 70 n mi). The surveys serve 2 primary purposes: 1) to provide background information on the physical environment over the shelf to aid in interpretation of phenomena observed in the vicinity of nearshore platforms off Panama City, Florida; 2) to study the distribution of physical properties as related to circulation over and outside the shelf. - Staff.

1964

2592 Grijalva, N. "Numerisch-hydrodynamische Untersuchungen im Golf von Mexico." [Numerical-hydrodynamical research in the Gulf of Mexico.] Ph.D. diss., Hamburg Univ., 1964.

1964

2593 Harris, D.L. and Hoover, E.W. "Pronosticando marejadas fuertas inducidas por huracanes." [Forecasting hurricane-induced peak storm surges.] In Technical Conference on Hurricanes and Tropical Meteorology, 3d, Mexico City, 6 - 12 June 1963. Proceedings. Geofísica

1964 cont.
Internacional, 4(2/4):63-76, Apr./Dec. 1964. figs. table. refs. In Spanish and English. DAS.

The relationship between the velocity and direction of a hurricane and the peak surge of water level is investigated for establishing a warning system of hurricane induced floods. Meteorological and oceanographic factors generated by macro-, meso- and micro-scale processes are analyzed. A relation found between the highest storm surge reported in a hurricane and the central pressure of the storm is plotted in a graph. - Staff MGA 18.7-341.

1964

2594 Hart, T.J. "Oceanography in the Caribbean and eastern Atlantic." Nature. 204(4957):434-436, 31 Oct. 1964.

1964

2595 Marcus, S.O. "Evaluation of NOMAD-1 data for meteorological and oceanographic applications." In Buoy Technology Symposium, 1st, Wash., D.C., 24 - 25 Mar. 1964. Transactions. 1964. pp. 311-333. figs. tables. refs. DNO.

Part of a report being prepared at the request of the Meteorological Management Division, Bureau of Naval Weapons, U.S. Navy, and is neither a complete nor final evaluation. Data transmitted by NOMAD-1 in the central Gulf of Mexico during the years 1958 - 1962 are examined. Evaluations are made of the dependability of the device in reporting regularly, its ability to be copied, and the quality of its data. All data have been arrayed and examined for internal consistency. Author (mod) MGA 16.4-135.

1964

2596 Mathisson, J.C. "U.S. Coast and Geodetic Survey ships PEIRCE and WHITING." International Hydrographical Review, 41(1):17-21, Jan. 1964. figs.

Describes 2 new U.S. Coast and Geodetic hydrographic survey ships (PEIRCE and WHITING). They are identical in construction and will be used in both hydrographic and oceanographic work along the Atlantic Coast of the United States and in the Gulf of Mexico. Both have the latest electronic navigational and communication equipment including gyro- and autopilot, surface search radar, radio direction finder, Loran A receiver, Shoran positioning system, Hi-Fix positioning system, an electromagnetic underwater log, magnetic compass, whistle, rudder angle indicator, gyro repeater, deep water depth recorder UQN-IF, a precision depth recorder UQN-IF, 2 shoal water depth

1964 cont.
recorders, etc. - Staff MGA 16.3-631.

1964

2597 Mexico. Dirección de Faros e Hidrografía. "Campaña oceanográfica Atlántico 'Operación Neptuno', plataforma continental del Golfo de México entre Punta Delgada y Punta Roca partida del 5 al 10 de mayo de 1963." [Oceanographic cruise 'PROJECT NEPTUNE' on the continental shelf of the Gulf of Mexico between Punta Delgada and Punta Roca from the 3d to the 10th of May 1963.]

1964

2598 Mexico. Dirección General de Obras Marítimas. "Estudio en modelo reducido para el puerto de Matamoros, Tamps." [Study using a reduced scale model for the port of Matamoros, Tamaulipas.] Memoria no. 4, 1964. 41 p. DLC.

1964

2599 Montague, C.M. "Yachtsman's guide to the Caribbean." Grand Rapids: Seaport Pub. Co., 1964. 306 p. charts. map. plans. DLC.

1964

2600 Neubauer, J. "Deep sub pens in Cuba." Undersea Technology, 5(6): 15 June 1964. DNO.

Reports that Russians have built deep submarine pens on the northern coast of Cuba in Matanzas Bay. Matanzas Bay is so deep that submarines do not have to surface to reach the pens, which are provided with a special system of gates controlling the flow of water. - Author (mod).

1964

2601 Neubauer, J. "Submarine build-up in Cuba." Undersea Technology, 5(11): 39, Nov. 1964. DNO.

Reports that Russians have launched a heightened military build-up in Cuba which includes oceanographic studies of the sea currents in the Caribbean and Gulf of Mexico. Aim of Russian effort is to find a stratum of water in which submarines may lie undetected by sonar devices. More than 250 personnel are involved in the expedition which will last for a year or longer. Expedition headquarters are aboard the 400-ton KOVALIESKY, completely equipped with electronic instruments. Areas to be covered include many islands and ports of the Caribbean and the Gulf of Mexico, including the west coast of Florida up to Pensacola, the mouth of the Mississippi River and offshore from Galveston and Corpus Christi. - Author(mod).

1964

2602 Okuda, T. "Calcium and magnesium

1964 cont.

contents in the river and sea waters of a tropical area." Cumaná, Venezuela. Univ. Oriente. Instituto Oceanográfico, Boletín, 3(1/2):118-135, 1964.

The contents of calcium and magnesium in 171 water samples collected from Río Unare, Laguna Unare, the Cariaco Trench, the Gulf of Cariaco in Venezuela and the Barra das Jangadas and Rio Capiberibe in Brazil were analysed. It was found that a relation between chlorinity and the concentration of calcium showed a marked difference in the different rivers in the initial stage of mixing of fresh and saline waters, but such a difference was not found for magnesium. There was a clear inverse relation between the seasonal variation of chlorinity and of the chlorinity factors of calcium and magnesium in Laguna Unare. Staff.

1964

2603 Rucker, J.B. and Magan, R.L. "Oceanographic data report, Venezuela-British Guiana coast, Sept. 1963 (USS PREVAIL AGS-20)." U.S. Naval Oceanographic Office, Informal Manuscript Report, O-22-64, 55 p. DNO.

Data collected from the USS PREVAIL (AGS-20) during September 1963 from along the Venezuela-British Guiana coast are presented in this report. These data include: 70 surface temperature and salinity determinations, 46 bathythermograph lowerings and 40 bottom sediment samples and bottom water temperatures. Author.

1964

2604 Schuller, R.E. and McLellan, H.J. "Oceanographic Research Vessel ALAMINOS." Texas A & M Univ. Dept. of Oceanography and Meteorology, NSF Grant G-22387, Ref. 64-6F, Final Report, Feb. 1964. 59 p. figs. photos.

Report on the conversion of the FS 227 into R ALAMINOS named to honor Anton de Alaminos, one of the earliest students of the American Mediterranean. Information is given on the FS 227, its acquisition, design requirements, conversion and descriptions of its final structure, operation and function. The text of addresses made at its dedication ceremony 3 December 1963 are included. - Staff.

1964

2605 Tanner, W.F. "Nearly-ideal drift system along the Florida pan-handle coast." Zeitschrift für Geomorphologie, 8(3):334-343, Sept. 1964. refs. In English; German and French summaries. DLC.

1964

2606 Tolbert, W.H. and Salsman, G.G. "Surface circulation of the eastern Gulf of Mexico as determined by drift bottle studies." Journal of Geophysical Research, 69(2):223-230, 15 Jan. 1964. figs. tables. refs.

During the 28-month interval from September 1960 through December 1962, drift bottles were released periodically from a stationary platform located 20.4 km offshore from Panama City, Florida. Of the 951 bottles released, 276 were recovered. Approximately 67 percent of the returns have been found along a 350 km section of coastline extending from Cape St. George west to the Florida-Alabama line; 20 percent of the returns were from the Florida east coast and Keys and 12 percent were found along the coasts of Alabama, Mississippi, Louisiana and Texas. - Author (mod) MGA 15.11-171.

1964

2607 Venezuela. Instituto Nacional de Canalizaciones. "Informe Anual 1963." [Annual Report, 1963.] Caracas, 1964. 81 p. figs. maps. DNO.

This is a detailed report on the 1963 operation of the Maracaibo channel (connecting Lake Maracaibo and the Gulf of Venezuela) and the Orinoco River. Included are descriptions of: the dredges and dredging operations; navigation and navigational facilities; hydrographic work including soundings, triangulation and leveling; hydrologic studies including meteorology, tides, currents, sedimentation salinity and monthly hydrologic balance; marine biology and construction work done in 1963. Illustrations include profiles of the waterways; hydrographs of the Orinoco River; diagrams of the dredges, cuts and embankments; and charts of costs and receipts. - Staff. MGA 16.3-59.

1964

2608 Wüst, G. and Gordon, A.L. "Stratification and circulation in the Antillean-Caribbean Basins, pt. 1, Spreading and mixing of the water types, with an oceanographic atlas." Vema Research Series, no. 2, New York: Columbia Univ. Press, 1964. 201 p. plates. tables. refs. CU-S, DLC. GC2(7)8.5.C.3W8.

First of a 2-part study on the stratification and circulation of the water masses in the basins of the Antillean-Caribbean region between lat 8°N and lat 25°30'N and between long 55°W and long 89°W. It includes the southwest sector of the North American Basin. The study investigated the

1964 cont.

interaction between sea and atmosphere and the circulation patterns of the surface, in the depths, and at the bottom. The core method for indicating the thermal-haline and oxygen constitution of oceanic basins in relation to permanent circulation is described. - Staff MGA 16.6-20.

1964

2609 Zeigler, J.M. "Hydrography and sediments of the Gulf of Venezuela." Limnology and Oceanography, 9(3):397-411, July 1964. figs. tables. refs.

Examines sediments of the Gulf of Venezuela and relates them to the hydrography. New data support the general conclusions of Redfield (1955) that the Gulf of Venezuela and Calabozo Bay operate as 2 estuarine cells driven by the trade winds and by outflow from Lake Maracaibo. New data also show that water enters the outer gulf from the northwest and flows at mid-depths towards the southeast in response to upwelling taking place off the coast of Paraguaná. Sediment parameters that reflect circulation best are shells of pelagic foraminifera, sand distribution and silt clay distribution. Of unknown importance is the distribution of resistant focal pellets and the distribution of carbonate (shell material). - Author (mod).

1965

2610 Billings, G.K. and Harriss, R.C. "Cation analysis of marine waters by atomic absorption spectrometry: Gulf of Mexico coastal waters." Texas Journal of Science, 17(1):129-136, Mar. 1965. figs. tables. refs. DLC.

Concentrations of Na, K, Mg, Ca, Sr and Rb are determined by direct-flame photometry. The correlation between Ca, Sr, Rb ions and salinity depends on the function of the amount of mixing of sea water and river changes. It is concluded that flame photometry, (atomic absorption spectrometry) appears ideally suited to water analysis for major and trace cations because of its inherent speed, sensitivity and precision. - Author (mod) MGA 17.8-663.

1965

2611 Bishop, A.D. and Louden, L.R. "Separation and identification of amino acids in Galveston and Baffin bays, Texas." In Ocean Science and Ocean Engineering Conference, 1st, Wash., D.C. 14 - 17 June 1965. Transactions. 1965. 2:1104-1108.

This work was done to point out the need for more detailed studies of the

1965 cont.

coastal and deep-sea waters of the world. The amino acid content of a known contaminated bay area, Offot's Bayou, Galveston Bay, Galveston, Texas and an uncontaminated but highly saline bay area, Baffin Bay, southeast of Kingsville, Texas are reported and compared. - Author (mod).

1965

2612 Bogdanov, D.V. "Algunos rasgos de la oceanografiá del Golfo de Mexico y del Mar Caribe." [Outline of oceanography of the Gulf of Mexico and Caribbean Sea.] Soviet-Cuban Fisheries Investigations, National Institute of Fisheries, Republic of Cuba, 1965. pp. 23-45. In Russian; Spanish abstract.

Analysis of the principal characteristics of oceanographic conditions in the Gulf of Mexico and Caribbean Sea based on research made by Russian ships (1962 - 1964). - Staff.

1965

2613 Boudreau, R.D. "Skin temperature of the sea as determined by radiometer." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 65-15T, Contract Nonr 2119(04). May 1965. 68 p. figs. tables. refs. DAS.

Study to determine the radiation temperature of the sea, to compare this radiation temperature with the surface layer temperature and to attempt to associate any differences between these temperatures with other standard meteorological parameters. Approximately 250 hrs of radiation data collected in the Gulf of Mexico and Caribbean Sea during July and August of 1962 aboard HIDALGO. Hourly observations of air temperature, wet-bulb temperature, surface layer temperature and wind velocity, and known radiation relationships were used to determine the skin temperature of the sea which was compared with bucket temperature readings. - Staff MGA 17.1-607.

1965

2614 Brown, M.V. and Richard, J.H. "Interference pattern observed in reflection from the ocean bottom." Acoustical Society of America, Journal, 37(6):1033-1036, 1965.

A strong interference pattern has been observed in the reflection of monochromic acoustic pings from the ocean bottom. In this experiment, performed in the Gulf of Mexico at lat 24°16'N, long 85°15'W, the pings had a frequency of 120-5 cps, a length of 0-12 sec, and were repeated every 5 sec. The transmitter was at a depth of 75 ft and the receiver at 3,000 ft.

1965 cont.

The energy in successive bottom reflections varied by as much as 6 to 1, with a mean fluctuation of 30 percent. This rapid change in level was largely owing to the fact that the source was shallow and the air-water interface was rough. Averaging the bottom reflections in groups of 10 produced a moderately smooth relation between signal level and range. This relation exhibits a pronounced interference structure. The pattern observed can be interpreted in terms of a 130-ft bottom layer having a velocity of 6,650 ft sec^{-1}. Staff.

1965

2615 Cochrane, J.D. "Equatorial currents of the western Atlantic." Texas A & M Univ. Dept. of Oceanography and Meteorology, Oceanography and Meteorology of the Gulf of Mexico, Progress Report, Ref. 65-17T, 1965. pp. 6-19.

1965

2616 Cochrane, J.D. "Yucatan Current and equatorial currents of the western Atlantic." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 65-17T, Unpublished Report. 1965. pp. 6-27.

1965

2617 Fukoka, J. "Hydrography of the adjacent sea. II. Some characteristics of oceanographical conditions in the Caribbean Sea, especially in the region adjacent to Venezuela." Cumaná, Venezuela. Univ. de Oriente. Instituto Oceanográfico, Boletín, 4(2):234-245, 1965.

In general, the ocean current in the Caribbean Sea flows from east to west, but some data indicate a strong eastward current at about lat 13°N - 14°N along long 64°30'W. This countercurrent may be caused by a large eddy due to a submarine ridge, (Aves Ridge) which extends north of Margarita Island. - Staff.

1965

2618 Fukuoka, J., Ballester, A. and Cervigon, F. "Analysis of hydrographical condition [sic] in the Caribbean Sea, pt. 3, especially about upwelling and sinking." In Studies on oceanography. Seattle: Univ. of Washington, 1965. pp. 145-149. figs. refs. CU-S.

Oceanographical conditions in the Caribbean Sea, especially in the Cariaco Trench, are analyzed. South of Coche Island, upwelling in the south and sinking in the north are studied. These phenomena are also seen in the Caribbean Sea. Author (mod) MGA 16.3-685.

1965

2619 Gaul, R.D. and Boykin, R.E. "Northeast Gulf of Mexico hydrographic survey data collected in 1964." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 65-8T, Mar. 1965. 93 p. DAS.

Summarizes data collected during periodic hydrographic surveys made in 1964 over the continental shelf and slope of the northeastern Gulf of Mexico. The survey region extends from the Mississippi Delta to Cape San Blas (about 200 n mi) and offshore to the 1,000-fathom depth contour (100 to 110 n mi). The surveys serve 2 primary purposes: 1) to provide background information on the physical environment over the shelf to aid in interpretation of phenomena observed in the vicinity of nearshore platforms off Panama City and 2) to study the distribution of physical properties as related to circulation over and outside the shelf. Staff.

1965

2620 Ichiye, T. "Geostrophic eddies in the ocean, pt. 1." Columbia Univ. Lamont Geological Observatory, Technical Report CU-2663-21, Aug. 1965. 18 p. figs. refs.

The results of observations of eddies with dimensions of several kilometers to a few hundred kilometers are reviewed. Detailed measurements of an eddy off California revealed the quasi-geostrophic structure of an eddy of intermediate size. Eddies in the eastern half of the Gulf of Mexico are described from hydrographic data collected since 1950. Case histories and dynamical structure generated by cutoff of increasing meanders of the Gulf Stream and the Kuroshio are discussed Author (mod) MGA 16.11-784.

1965

2621 Jones, R.S., Copeland, B.J. and Hoese, H.D. "Study of the hydrography of inshore waters in the western Gulf of Mexico off Port Aransas, Texas." Texas. Univ. Institute of Marine Science, Publ. 10:22-32, 1965. DLC.

A 1-yr study of hydrography was conducted during 1962 and 1963 on a 25 n mi transect oriented 112° from Port Aransas, Texas. Thermal stratification was found to exist approximately 50 percent of the time at most stations, with turnover in October and March. Light penetration was an effective method of distinguishing water masses. Optical density profiles increased in slope near the bottom during summer, indicating more opaque water on the bottom. - Staff.

1965

2622 Karo, H.A. "Establishment of tidal

1965 cont.
datums [sic], Florida." Shore and Beach, 33(1)27-28, Apr. 1965. DAS.

1965
2623 Konrad, W.L. "Analysis of sea water from the Tongue of the Ocean." Acoustical Society of America, Journal, 38(6):1061, Dec. 1965. table. refs.

Chemical analysis of sea water sampled in the Tongue of the Ocean is presented as a function of depth. Water temperature and sound velocity are also tabulated. The results are typical of the Caribbean, with the exception of somewhat larger percentages of bicarbonate and calcium ions. - Author (mod) MGA 17.6-697.

1965
2624 La Lanza Espino, G. de. "Algunas características hidrográficas del sistema litoral de Veracruz, Ver." [Hydrographic characteristics of the littoral system of Vera Cruz.] Mexico City. Univ. Nacional. Instituto de Biología, Anales, 36(1/2): 319-322, 1965.

1965
2625 La Lanza Espino, G. de. "Estudio preliminar de algunos factores físicos y químicos de las aguas costeras de Veracruz." [Preliminary study of certain physical and chemical factors of the coastal waters of Veracruz.] Ph.D. thesis, Mexico Univ., 1965. 17 p.

1965
2626 Leipper, D.F. "Gulf of Mexico after hurricane Hilda: preliminary results." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 65-12T, Contract Nonr 2119(04), Unnumbered Report, Apr. 1965. 19 p. figs. refs. DAS.

Hurricane "Hilda" crossed the Gulf of Mexico on 30 September - 4 October 1964, developing into a very severe hurricane in the central Gulf. Sea temperature data available prior to the storm indicated a typical late summer situation with some surface temperatures running above 30°C. Beginning on 5 October, a 7-day cruise was conducted over the area where hurricane winds had been observed. Using the U.S. Bureau of Commercial Fisheries vessel GUS III, 4 crossings of the hurricane path were made; 1 where maximum 150 mph winds were observed, 1 south where the winds had first reached 120 mph, 1 north where they had decreased to 120 mph and 1 in shallow water (40 fathoms) where prior data had been collected by the U.S. Fish and Wildlife Service from their Galveston Biological Laboratory casts to 125 m.
Author (mod)
MGA 16.8-231.

1965
2627 List, R.J. "New inter-oceanic canal feasibility study: meteorological program." In Army Conference on Tropical Meteorology, 4th, Miami Beach, Fla., 6 - 7 May 1965. Proceedings, Dec. 1965. pp. 45-51. fig. ref. DAS.

Plans to investigate the feasibility of constructing a sea level inter-oceanic canal, including the possibility of using nuclear excavation techniques are reviewed. The establishment of a 2-yr data collection program in eastern Panama and in northern Colombia is requested. An extensive meteorological program, including radar wind stations, weather surveillance radar, synoptic surface observations, wind towers, rain gages and tetroon-tracking is planned. - Author (mod) MGA 17.5-56.

1965
2628 Ljoen, R. and Herrera, L.E. "Some oceanographic conditions of the coastal waters of eastern Venezuela." Cumaná, Venezuela. Univ. Oriente. Instituto Oceanográfico, Boletín, 4(1):7-50, July 1965. figs. refs. Spanish and English summaries p. 8.

Oceanographic characteristics of coastal waters of the southeastern Caribbean area are discussed on the basis of observations made on R/V GUAIQAUERI during the dry and rainy seasons of 1963. Topography of the surveyed region and its influence on space distribution of oceanographic parameters are reviewed. T-S relationships and vertical distribution of physical parameters serve to show the seasonal differences encountered in the area. Similarly, variations between seasons are shown by comparison of the horizontal distribution of temperature, salinity and density at the top layer and at the layer of maximum salinity for April and November cruises. Influence of fresh water runoff from South American rivers, especially the Amazon and Orinoco is also discussed. - Author MGA 17.6-647.

1965
2629 Maxwell, W. "Track charts, bathymetry, and location of observations, CHAIN Cruise no. 46, North Atlantic Ocean and Caribbean Sea, with studies made around the Island of Hispaniola, Feb. 18 - April 10, 1965." Woods Hole Oceanographic Institution, Ref. no. 65-61, Dec. 1965. photo. map. almost entirely charts. CU-S, DNO.

Contains charts of Cruise 46 of R/V CHAIN in the north Atlantic Ocean and Caribbean Sea. There are 54 charts plotted on a mercator projection showing the track of the entire cruise. Report shows

1965 cont.

continuous daily observations including types of information gathered at each of 16 stations. Soundings are read at equal time intervals, usually every 5 min at each break in slope. - Author (mod) MGA 17.6-660.

1965

2630 Miyazaki, M. "Numerical computation of the storm surge of Hurricane Carla 1961 in the Gulf of Mexico." Oceanographical Magazine, 17(1/2):109-140, Nov. 1965. figs. tables. refs.

The storm surge of hurricane "Carla" (1961) in the Gulf of Mexico is computed by numerical integration of the dynamical equations. Input data consist of sea level distributions of observed wind and pressure at 6-hr intervals throughout the 3-day period selected for the study. Computed variations of sea level are in good agreement with tide gage observations in this region. - Author (mod) MGA 17.9-251.

1965

2631 Morel, A. "Résultat des measures de diffusion de la lumière effectuées lors de la croisière no 25 du bâtiment océanographie CHAIN." [Results of measurements of light diffusion made during cruise no. 25 of the oceanographic vessel CHAIN.] France. Cahiers Océanographiques, 17(2): 107-121, Feb. 1965. figs. refs. English summary pp. 119-120.

Report of measurements of light scattering made on board the oceanographic vessel CHAIN of Woods Hole Oceanographic Institute during cruise no. 25 (April 1962) in the Sargasso Sea and the Caribbean Sea. All stations were on the long 65°W meridian between lat 42°N and lat 12°N. The waters of the Sargasso Sea are known to be very limpid. The scattering of white light at right angles of the incident beam provoked by suspended particles is of the same order as the scattering caused by the water molecules themselves for water near the surface. - Staff MGA 16.11-771.

1965

2632 Newlin, J.D. et al. "Preliminary program of direct current measurements over the northeastern shelf of the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 65-25-T, 1965. 19 p. maps. diagrs. DAS.

1965

2633 Nowlin, W.D., Durham, D.L. and Reid, R.O. "Preliminary program of direct current measurements over the northeastern shelf of the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology,

1965 cont.

Ref. 65-25 T, Contract Nonr 2119(04), 14 Sept. 1965. 13 p. figs. DAS.

Measurements of subsurface currents supplemented by observations of temperature and salinity were planned for the late spring or early summer of 1965 to determine what fraction of the temporal variations of temperature and salinity is due to advection and what fraction is due to internal wave action for the region concerned. Instruments and field tests of their components carried out at Panama City, Florida, 5 - 9 June 1965 are described. The results of the tests are discussed and presented in graphs of current direction and speed. - Staff MGA 17.2-631.

1965

2634 Parvulescu, A. and Mitchell, D.D. "Stability of propagated sound. II." In Acoustical Society of America, Annual Meeting, 69th, Wash., D.C. 2 - 5 June 1965. Its Journal, 37(6):1218, June 1965.

Authors examined the spatial fine structure of propagation between slightly displaced transducers and the temporal stability in a fixed geometry. In February 1963, U.S. Navy Underwater Sea Laboratory (USNUSL) facility on Fishers Island was used to study propagation over shallow water in Block Island Sound. With fixed geometry, relative phases between arrivals showed no variations over 12 ft. In September 1963, in the Straits of Florida, and with the collaboration of John C. Steinberg of the University of Miami, it was found that at 15 n mi, a displacement of 2 ft was sufficient to grossly change the relative phases of diverse arrivals at a fixed shallow hydrophone. - Author (mod).

1965

2635 Pequegnat, W.E. and Berner, L. "Oceanography and meteorology of the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 65-17 T, Contract Nonr 2119(04), Progress Report (Unnumbered), June 1965. 96 p. figs. tables. refs. DAS

Summaries of research conducted through the Texas A & M Research Foundation on the oceanography and meteorology of the Gulf of Mexico. The ALAMINOS was commissioned for these studies. This report contains a description of the equatorial circulation. Other studies include those on the Yucatan Current, sea temperature for synoptic oceanography, sea-air interaction, air-sea interaction measurements of currents on the Gulf

1965 cont.

shelf, research activities with the Office of Naval Research (ONR) support, environmental studies off Panama City, Florida, etc. - Staff MGA 16.10-752.

1965

2636 Pore, N.A., Angelo, A.T. and Taylor, J.G. "Hurricane 'Cindy' Galveston Bay tides." U.S. Weather Bureau, Technical Note, 11-TDL-2, Techniques Development Laboratory Report no. 2. Sept. 1965. 8 p. figs. tables. refs. DAS.

Of any U.S. hurricane, hurricane "Cindy" (September 1963) probably produced the most completely recorded set of tide data in a bay. Hydrographs showing the water levels in Galveston Bay, along with pertinent meteorological data, are presented. - Author (mod) MGA 17.2-201.

1965

2637 Rand McNally and Company. "Rand McNally imperial map of West Indies and the Caribbean." Chicago, 1965. col. map with 30 insets. DLC. - Scale 1:3,500,000; 1 in. equals 55 mi, 1 cm equals 35 km.

1965

2638 Richardson, W.S. and Schmitz, W.J. "Technique for the direct measurement of transport with application to the Straits of Florida." Journal of Marine Research, 23(2):172-185, 15 May 1965. figs. table. refs.

A method is described by which the volume transport per unit width of a water column is obtained from measurements of the run time, depth and horizontal deflection of a freely falling instrument. Measurements of the north-south component of transport in the Straits of Florida using this technique gave 35.5 1.2×10^6 m^3 sec^{-1} on 16 - 17 August 1964. The surface currents and east-west components of transport are also given. - Author MGA 16.11-799.

1965

2639 Slowey, J.F. et al. "Distribution of gamma emitting radionuclides in the Gulf of Mexico." Rhode Island Univ. Narragansett Marine Laboratory, Occasional Publication, 3:109-129, 1965.

This preliminary study of the distribution of some of the gamma-emitting radionuclides in the Gulf of Mexico has brought out several interesting and important observations. Mn^{54}, which is produced from neutron activation of iron, was found present in all the water samples examined and in concentration comparable to that of the fission-produced isotopes, Zr^{95} - Nb^{95}, Ru^{106} and Ce^{144}. The data suggest that a portion of the Mn^{54} may come

1965 cont.

in as manganese dioxide which is relatively insoluble in sea water and would tend to either form a colloid or precipitate out as particulate matter. - Staff.

1965

2640 Staub, W. "Entstehung und Alter des Golfstroms. Florida-strom." [Origin and age of the Gulf Stream. Florida Current.] Zeitschrift für Geomorphologie, 9(2):237-246, June 1965. figs. refs.

1965

2641 Stelzenmuller, W.B. "Tidal characteristics of two estuaries in Florida." American Society of Civil Engineers. Waterways and Harbors Div., Journal, 91(3):25-36. Aug. 1965. figs.

Study of tidal characteristics of the Waccasassa River and the Fenholloway River estuaries in the Gulf of Mexico (Florida). Information is given on the influence of wind on tides and annual variations of sea level. Both estuaries have an exponential increase of cross section with downstream distance and are in category of partly mixed estuaries. Influence of hurricanes is included. Staff MGA 17.1-645.

1965

2642 Stevenson, R.E. and Armstrong, R.S. "Heat loss from the waters of the northwest Gulf of Mexico during hurricane Carla." Geofísica Internacional, 5(2): 49-57, 1 Apr. 1965. figs. refs. In Spanish and English. Spanish and English summaries p. 49.

Because the energy exchange is several orders of magnitude greater than that in the more usual tropical storm, hurricanes provide a unique laboratory for the examination of atmosphere and ocean forces. However, it is virtually impossible to take detailed 'in situ' measurements of water temperature changes. It was a fortuitous set of circumstances by which changes in the water temperature distribution caused by hurricane "Carla" in the northwestern Gulf of Mexico were preserved for investigation at a more peaceful time. - Author (mod) MGA 17.8-309.

1965

2643 Stevenson, R.E. and Armstrong, R.S. "Modification of water temperatures by hurricane Carla." In Sea-Air Interaction Conference, Tallahassee, Fla., 23 - 25 Feb. 1965. Proceedings. U.S. Weather Bureau, Technical Note 9-SAIL-1, 20 Aug. 1965. pp. 191-208. figs. ref. DAS.

A brief account of the modification of water temperatures by hurricane "Carla."

1965 cont.

Information is given on northwestern Gulf waters in the fall of 1961, the temperature distribution of surface waters and upwelling and cooling. It seems apparent that the heat loss from the water must have been orders of magnitude more than the 2.2×10^{18} cal/24 hrs originally calculated. Cooling extended to a greater depth than shown by the temperature curves. - Staff MGA 17.3-250.

1965

2644 Sturges, W. "Water characteristics of the Caribbean Sea." Journal of the Marine Research, 23(2):147-162, May 1965. figs. tables. refs.

The volume of Caribbean Sea water in bivariate classes of potential temperature vs salinity has been estimated from 76 hydrographic stations. The resulting statistics are presented on a pair of characteristic diagrams. The outstanding feature of the diagrams is the strong mode: nearly 1/2 of all Caribbean water lies within 0.1°C and 0.02 per mil of the mode. At 3.9°C, it was within 34.98 per mil. In each basin, the deep water is remarkably homogeneous, but the deep waters are different in the eastern Yucatan and Cayman and eastern Columbian and Venezuelan basins. There appears to be no inflow of deep water through the Virgin Passage, but there may be sporadic inflow through the Windward Passage into the western basins. - Author (mod) MGA 16.11-802.

1965

2645 Taney, N.E. "Vanishing resources found anew." Shore and Beach, 33(1): 22-26, Apr. 1965. DAS.

Describes sand beaches on the Gulf Coast. - Staff.

1965

2646 U.S. National Oceanographic Data Center. "Evaluation of NOMAD data for 1963 in oceanographic and meteorological applications." Progress Report P-34, Feb. 1965. 33 p. figs. tables. ref. (Unpublished Manuscript) DNO.

During 132 days of continuous operation (25 July to 3 December 1963), NOMAD-1 deployed at lat 25N, long 90W, in the central Gulf of Mexico, probed and telemetered 12 environmental parameters every 6 hrs. Air temperature, barometric pressure, wave height, wind direction and wind speed were radio-telemetered. These data converted to digital values of NODC are evaluated in this 'Unpublished Manuscript'.
Staff.

1965

2647 Webster, F. "Measurements of eddy fluxes of momentum in the surface layer of the Gulf Stream." Tellus, 17(2):239-245, May 1965. figs. tables. refs.

Observations are reported in which the action of eddies in the Florida Current produced a surface flux of momentum towards higher mean velocities. The results are in contrast to what would be expected if the eddies acted as a frictional dissipation mechanism. Associated with the momentum flux is a surface transfer of kinetic energy from the eddies to the mean flow. The results from 4 locations along the length of the Florida Current are compared. The kinetic energy transfer between fluctuations and mean flow is found to be similar in magnitude at all locations and is restricted primarily to the zone of cyclonic shear of the mean surface velocity field. - Author (mod) MGA 16.6-641.

1965

2648 Wilson, B.W. "Analysis of wave forces on a 30-inch diameter pile under confused sea conditions." U.S. Coastal Engineering Research Center, Technical Memorandum, no. 15, Oct. 1965. 85 p. figs. tables. refs. DLC.

Discusses methods developed (1955 - 1957) in the analysis of wave force measurements on a 30-in diameter test pile in water depth of 40 ft in the Gulf of Mexico. Procedures for reducing the raw data to a form suitable for digital computer operations are outlined. Measurements of wave elevation, n(t), at the pile obtained by a motion picture camera, were successfully checked with measurements of vertical reaction, $R_z(t)$, on the double-hinged pile suitably adjusted by a numerical frequency response operator technique. The use of an equivalent force, $F_e(t)$, for correlation with the velocity and acceleration components derived from n(t), is finally justified by a pilot analysis of synthetic data, from which it was found possible to recover from the analysis technique the values of drag and inertial coefficients input into the synthetic data. - Author (mod) MGA 17.6-739.

1965

2649 Zeigler, J.M. and Athearn, W.D. "Hydrography and sediments of the Gulf of Darien." Woods Hole, Mass. Oceanographic Institution, Ref. 65-29, Contract Nonr-2196(00), NR 083-004, June 1965. 6 p. figs. table. DN-HO.

Circulation in the Gulf of Darien at the juncture of Central America and South America is that of a typical estuary; fresh

1965 cont.

water flowing seaward over salt water which is moving landward. Details of the circulation seem to be complex, with faster flowing currents adjacent to the eastern coast; but variations in climate probably cause current distribution to change from season to season. Inasmuch as the Atrato River has been mentioned as a possible site for a new canal between the Atlantic and Pacific Oceans, it is of great interest that sedimentation seems to be much greater off the mouths of the southern distributaries than off the mouth of the northern channel at Playa Tarena. This indicates that the northern distributary may be easier to maintain as a canal. - Author MGA 16.10-754.

1966

2650 Angino, E.E. and Billings, G.K. "Lithium content of sea water by atomic absorption spectrometry." Geochimica et Cosmochimica Acta, 30(2):153-158, Feb. 1966. fig. tables. refs.

Li concentration in seawater was determined without prior chemical separation by the use of atomic absorption spectrometry. Seventy samples of sea water from both the North Atlantic and Gulf of Mexico were analyzed. Li content showed a slow but steady decrease with depth in samples from both locations and also showed a weak covariance with salinity. - Author (mod) MGA 17.11-734.

1966

2651 Angino, E.E., Billings, G.K. and Andersen, N. "Observed variations in the strontium concentration of sea water." Chemical Geology, 1:145-153, 1966. figs. refs.

On samples obtained from 5 widely separated areas of the North Atlantic Ocean, 91 determinations of strontium were made. These include surface and deep-water samples from both the cold North Atlantic area and the warm subtropical Caribbean area. The use of an 'average' figure for strontium in sea water should be discouraged, as it is clear that the soluble strontium content does vary considerably; consequently, the assumption of a constant strontium/chlorinity ratio in the ocean is in error. - Author (mod).

1966

2652 Arena, J.E. "Track charts, bathymetry, and location of observations, CHAIN Cruise no. 55, North Atlantic Ocean--Caribbean Sea, November 11 - December 19, 1965." Woods Hole Oceanographic Institution, Contract Nonr-4029(00) NR 260-101, Technical Report, Ref. 66-7,

1966 cont.

Mar. 1966.

This report contains charts of cruise 55 of CHAIN in the North Atlantic Ocean and Caribbean Sea. There are 51 charts plotted on a Mercator projection showing the track of the entire cruise. Soundings are read at equal time intervals, usually every 10 min, and at each break in slope. All soundings are based on a sound velocity of 800 fathoms sec^{-1} and are corrected only for depth-of transducer. Author (mod).

1966

2653 Arnold, G. "Caribbean Sea - Oceanography." In Encyclopedia of Oceanography 1966. pp. 175-181. figs. tables. refs.

1966

2654 Behrens, E.W. "Surface salinities for Baffin Bay and Laguna Madre, Texas, April 1964 - March 1966." Texas Univ. Institute of Marine Science, Pub. 11:168-173, Nov. 1966. figs. refs. DNO.

1966

2655 Belousov, I.M. "Okeanologicheskie issledovaniia Sovetsko-Kubinskoĭ morskoĭ ekspeditsii." [Oceanological investigations of the Soviet-Cuban Sea Expedition.] Okeanologiia, 6(2):379-386, 1966. figs. table. DLC. Transl. into English in corresponding issue of Oceanology. DAS. DLC.

Investigations of Cuban waters and the Gulf of Mexico carried out on 8 cruises of AKADEMIK A. KOVALEVSKIĬ (August 1964 - July 1965) in accordance with a 1963 agreement between Cuban and Soviet Academies of Science. Scope of the hydrological and biological work is shown in a table with stations and routes shown on maps. Preliminary analysis of the results shows a close inter-relationship between hydrological conditions and biological productivity in the Gulf. Geological work of the expedition revealed 2 mountain ranges, tectonic fractures and several hitherto unknown submerged mountains. An extensive system of canyons on the northern slope of Cuba was also found. - Staff MGA 17.10-664.

1966

2656 Bowin, C. "Narrative of CHAIN cruise no. 41." Woods Hole Oceanographic Institution, Ref. 66-62, Contract Nonr-4029(99), Dec. 1966. 20 p.

The narrative report of CHAIN cruise 41 includes the chief scientist's journal, a summary track chart and a log of stations occupied. This cruise to the Caribbean region was made for 2 purposes:

1966 cont.

1) to conduct a geophysical survey of the area, including bathymetric, gravity and magnetic measurements as well as coring and heat flow measurements in the area, and 2) to complete the installation and check-out of the new oceanographic data processing and control system. The port-of-call was Kingston, Jamaica. A break in a salt water line of the CHAIN forced the early termination of the cruise at Guantanamo, Cuba. Staff.

1966

2657 Bowin, C. "Narrative of CHAIN cruise no. 46." Woods Hole Oceanographic Institution, Ref. no. 66-63, Dec. 1966. 48 p.

The narrative report of CHAIN Cruise 46 includes the chief scientist's journal, a summary track chart and a log of stations occupied. The cruise was made in 2 parts: first, to conduct a geophysical survey in the Caribbean region, and second, to participate in a survey of the coastal waters of the eastern United States in connection with a Joint Oceanographic Institutions Deep Earth Sampling (JOIDES) program. The scientific program included echo sounding; continuous seismic reflection profiling; bathymetry, gravity and magnetic measurements and dredging, coring, bottom photography and heat flow measurements. Ports of call were Oranjestad, Aruba; Santo Domingo, Dominican Republic and Kingston, Jamaica. - Author (mod).

1966

2658 Bowin, C. "Narrative of CHAIN cruise no. 55." Woods Hole Oceanographic Institution, Ref. no. 66-64, Dec. 1966. 28 p. chart. DNO.

This narrative report of CHAIN Cruise 55 includes the chief scientist's journal and a summary track chart. The purpose of this cruise to the Caribbean was to investigate the geological relations between the Yucatan Basin, Cayman Ridge, Cayman Trough, Nicaraguan Rise, Columbian Basin and the Venezuelan Basin. The scientific program included echo sounding, gravity, magnetic and surface temperature measurements. Ports of call were Cristobal, Panama Canal and Willemstad, Curaçao. Author.

1966

2659 Bretschneider, C.L. "On wind tides and longshore currents over the continental shelf due to winds blowing at an angle to the coast." Pasadena, Calif. National Engineering Science Co., Report SN-134-17, Contract Nonr-4177(00), Dec. 1966. 45 p. figs. tables. refs.

1966 cont.

This paper is an extension of earlier work on the bathystrophic storm tide theory originally proposed by Freeman, Baer and Jung (1957) and later applied by Bretschneider and Collins (1963) to studies in the Gulf of Mexico. The study begins with the equations of hydrodynamical motion in 2 dimensions. It is assumed that: 1) the net transport shoreward is insignificant compared with the longshore transport, 2) the rate of precipitation impact and the water surface slope parallel to the coastline are negligible and the bottom friction factor to be used with the longshore current can be approximated by use of n in Manning's equation. - Staff MGA 18.8-351.

1966

2660 Bretschneider, C.L. and Pick, G.S. "Bibliography on storm surges and related subjects." Pasadena, Calif. National Engineering Science Co., 1 Aug. 1966. Contract non4-4177(00), 1966. 48 p. DNO.

A comprehensive bibliography on storm surges and related subjects. Extensive use was made of the library facilities of the Coastal Engineering Research Center of the U.S. Army Corps of Engineers. It is remarked that in shallow water the total water depth becomes very important in generation, propagation and dissipation of energy. Thus it is important to study storm surges as related to wave modification over the continental shelf. Staff MGA 18.5-56.

1966

2661 Canada. Oceanographic Data Centre, Ottawa. "Western North Atlantic and Caribbean Sea, Feb. 1 to Feb. 27, 1965." Data Record Series, no. 2, CODC Reference: 03-65-001, 1966. 78 p. figs. photos. charts. tables. refs. DNO.

Data collection procedures and a machine generated data record are described. Serial oceanographic data collected at the surface and at 50, 100, 200, 300, 400 and 500 m are tabulated. The main purpose of this survey, conducted on the 'observation platform' of CCGS HUDSON during the track, St. Andrews, New Brunswick--San Juan, Puerto Rico and return (1 - 27 February 1965) was to obtain biological information on tuna and swordfish. This issue lists only the oceanographic observations of temperature, salinity and oxygen. A surface thermistor was towed during the cruise over a distance of about 1,400 mi. - Staff MGA 18.3-646.

1966

2662 Clark, J.G., Dann, R. and Yarnall, J.R.

1966 cont.

"Recent results from the Straits-of-Florida underwater-sound-propagation study." Acoustical Society of America, Journal, 40(5):1195-1197, Nov. 1966. figs. refs.

The phase vs time patterns of acoustic signals transmitted across the Straits of Florida in March 1966 show close similarities with corresponding patterns presented recently by Steinberg and Birdsall (1966), which were obtained 14 mos earlier. Both diurnal and tidal periodicities appear in the patterns; the phases of the tides were approximately the same during the 2 test intervals. The phase patterns at recently installed hydrophones located 2 - 3 mi from the sound source also show the characteristic periodicities observed at locations across the Straits. All data obtained from this program lead to the conclusion that signal phase, in sharp contrast to amplitude, is basically very stable, and that many of the fluctuations that do occur may be associated with large-scale environmental events. Author MGA 19.5-644.

1966

2663 Cochrane, J.D. "Currents and waters of the western equatorial Atlantic." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 66-23 T, 1966. pp. 28-32. (Oceanography of the Gulf of Mexico, progress report.)

1966

2664 Cochrane, J.D. "Some characteristics of motion in the upper layers of Yucatan Current east of Campeche Bank." In International Oceanographic Congress, 2d, Moscow, 1966. Abstracts of papers, no. 85, pp. 85-86. DNO.

The Yucatan Current is the strong segment of the Gulf Stream which passes through Yucatan Straits. Between there and the north edge of Campeche Bank, the current has been observed by vessels of Texas A & M University during May 1960 - 1962 and 1965, October - November 1959 and 1961 - 1962, and February and August 1965. All observations are consistent with a marked seasonal variation in current strength. The May series indicated stronger currents than those of October - November. Similar variations are shown by other series of observations in the region. - Author (mod).

1966

2665 Collins, J.I., Lee, R.E. and Lemehaute, B.J. "Explosion waves and run-up. Vol. I. Wave run-up on islands: feasibility study." Pasadena, Calif., National Engineering Science Co., Report no.

1966 cont.

NESCO-SN-300, v. 1, Contract DA-49-146-XZ-501, Dec. 1966. 145 p.

A study was made to determine the feasibility of modeling the run-up of explosion waves on the Hawaiian Islands by the run-up of normal sea and swell on small islands of the Caribbean and offshore California. It was concluded that, although explosion waves and natural waves are dissimilar, such a field program would yield valuable information on the influence of local conditions. - Author.

1966

2666 Commercial Fisheries Review. "ALUMINAUT recovers instruments from ocean bottom." Its 28(12):8-9, Dec. 1966.

The deepest known search and recovery mission has been successfully accomplished for the U.S. Navy by ALUMINAUT, the world's deepest diving submarine, under contract to the U.S. Naval Oceanographic Office. The 51-ft, 6-man, all aluminum sub set a record by performing a 3,200-ft ocean-bottom search for oceanographic instruments lost off of St. Croix, Virgin Islands. The submarine recovered the 2,100-lb package of instruments in 3,150 ft of water in mid-October 1966. - Author(mod).

1966

2667 Dowling, G.B. "Low frequency shallow water internal waves at Panama City, Florida." U.S. Navy. Mine Defense Laboratory, Panama City, Fla., Report no. 313, Nov. 1966. 62 p. figs. refs.

Internal waves were investigated in water depths of 60 to 100 ft (18 to 30 m) during the time of strong summer stratification, and in the presence of well developed internal tides. Cross-spectral analyses indicate that free, low-frequency, internal waves were present during the 3-day survey, although the data were contaminated by incoherent noise due to turbulence. The data were found to satisfy the characteristic equation from internal wave theory. - Author (mod).

1966

2668 Drennan, K.L. "Airborne measurements of infrared sea temperature in the northern Gulf of Mexico." Gulf Coast Research Laboratory, Oceanography Section, Ocean Springs, Miss., Contract Nonr-3198(01), Technical Report no. 2, Dec. 1966. 10 p. figs. tables. refs.

Quasi-synoptic measurements of the radiation temperature of the sea were conducted over the northern Gulf of Mexico on a near monthly basis during the period November 1963 to June 1965. These data indicate the seasonal and spatial

1966 cont.

variations of surface temperature, Mississippi River discharge patterns, the effect of the passage of a severe hurricane on the sea surface temperature field and the major surface features of the circulation in the northern Gulf. - Author MGA 18.10-691.

1966

2669 Fairbridge, R.W. "Caribbean Current." In Encyclopedia of Oceanography, 1966. p. 175. refs.

1966

2670 Finucane, J.H. and Dragovich, A. "Hydrographic observations in Tampa Bay, Florida, and the adjacent Gulf of Mexico, 1963." U.S. Fish and Wildlife Service, Data Report no. 14, Sept. 1966. 83 p. figs. tables. refs. DNO.

Hydrographic and primary productivity data are presented for Tampa Bay, Florida, and the adjacent Gulf of Mexico (1963). Observations include tide stage, water temperature, salinity, total and inorganic phosphate-phosphorus, total soluble nitrogen, dissolved oxygen, pH, light transmission, water color, cloud cover, cloud type, visibility, wind velocity, wind direction and sea state. Values for chlorophyll, ultraviolet absorption and primary production are given. These data were collected during field operations in estuarine studies of the eastern Gulf of Mexico. - Author.

1966

2671 Fukuoka, J. "Coastal upwelling near Venezuela." Cumaná, Venezuela. Univ. Oriente. Instituto Oceanográfico, Boletín, 5(1-2):84-95, Dec. 1966. In English; English, Spanish, and French abstracts. figs. refs. DLC.

Upwelling is seen along the eastern part of the Venezuela coast. Hydrographic data indicate year-to-year variations in the rate of upwelling. Analyses of sparse data taken during the springs of 1963 and 1964 indicate that upwelling rates correlate with wind speeds. - Author (mod).

1966

2672 Fukuoka, J. "Some characteristics of oceanographical conditions in the Caribbean Sea, especially in the region adjacent to Venezuela." In International Oceanographic Congress, 2d, Moscow, 1966. Abstracts of papers, no. 136, 1966. pp. 125-126. DNO.

Study of the characteristics of oceanographic phenomena in the sea near Venezuela. There is a strong westward current at lat 13°N in the eastern Caribbean Sea with a maximum velocity of 130 cm sec^{-1}, but it becomes weak in the

1966 cont.

central Caribbean Sea. North of this strong westward current, a strong eastward current is present. Existence of these contrary currents has been found in data of 1937 and 1958. It is not known whether this strong eastward current consists of a long current belt from west to east or is due to a part of an eddy. A study is being made of coastal upwelling in the sea near Venezuela and may be explained by the distribution of the wind system. In 1964, coastal upwelling was strong and can be explained by variations of the trade winds. - Author (mod).

1966

2673 Gainer, T.H. "Theoretical investigation of the M2 constituent of the tide in the Gulf of Mexico." Master's thesis, United States Naval Postgraduate School, May 1966. 91 p. figs. tables. refs.

Ability to predict tides in the open sea is of value to oceanographers and coastal engineers. This study attempted to attain a goal of deep sea tidal prediction by application of the hydrodynamic equations to individual tidal constituents. Similar treatments by Hansen and Rossiter with less general application were very successful. Specific solutions were sought in the Gulf of Mexico for the M2 tidal constituent in an attempt to explain abrupt shifts in tidal forms along the Gulf Coast. - Author (mod) MGA 18.1-741.

1966

2674 Gaul, R.D. "Circulation over the continental margin of the northeast Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology. Ref. 66-18 T, Aug. 1966. 116 p. figs. photos. tables. refs.

Shows a composite picture of the ocean circulation over the continental shelf and slope of the northeastern Gulf of Mexico as inferred from hydrographic and current observations made during 1963 - 1966. An attempt is made to define the dominant circulatory features and to assess temporal variations due to tides and seasonal changes. The region of study extends from the Mississippi Delta to Cape San Blas and offshore to about the 2,000 m depth contour. - Staff MGA 18.4-720.

1966

2675 Gaul, R.D. "Environmental research off Panama City, Florida." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 66-21 F, Aug. 1966. 69 p. figs. photos. charts. tables. refs.

Summarizes 5 yrs of study of environment in the Gulf of Mexico off Panama City,

1966 cont.

Florida, and presents a compilation of the hydrographic data collected in 1966. A program synopsis gives information on the research facility, automated data handling, cooperative investigations, project research and a fiscal summary. - Staff MGA 18.4-706.

1966

2676 Gaul, R.D., Boykin, R.E. and Letzring, D.E. "Northeast Gulf of Mexico hydrographic survey data collected in 1965." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 66-8T, Apr. 1966. 202 p. figs. tables. refs. DAS.

Summarizes data collected during periodic hydrographic surveys made in 1965 over the continental shelf and slope of the northeastern Gulf of Mexico. The survey region extends from the Mississippi Delta to Cape San Blas (at about 200 n mi) and offshore to about the 1,000 fathom depth contour (100 - 110 n mi). Hydrographic observations consisted mainly of vertical profiles of temperature and salinity obtained by means of bathythermographs and salinity determinations of water samples taken at selected depths, or by salinity/temperature/depth (STD) instrument. In addition, several thousand drift bottles were released at selected locations in the survey area. - Staff MGA 17.10-657.

1966

2677 Gordon, A.L., Grim, P.J. and Langseth, M. "Layer of abnormally cold bottom water over southern Aves Ridge." Science, 151 (3717):1525-1526, 25 Mar. 1966. figs. refs.

A thermograd record obtained over the Aves Ridge indicated existence, at the time of observation, of a cold layer of water in the lowest 13 m undergoing high-frequency internal oscillations. The great discontinuity in temperature across the sediment-water interface and the lack of agreement with the normal temperature structure indicate that the layer was a transient feature. This abnormal condition may be related to the passage of a hurricane 3 days earlier. - Author MGA 17.8-695.

1966

2678 Harding, J.L. and Nowling, W.D. "Gulf of Mexico." In Encyclopedia of Oceanography, 1966. pp. 324-331.

1966

2679 Ingham, M.C. and Mahnken, C.V.W. "Turbulence and productivity near St. Vincent Island, B.W.I., a preliminary report." Caribbean Journal of Science, 6(3/4):83-87, 1966.

Tuna schools and bird flocks were found to be concentrated in an area west of St. Vincent Island. Plankton

1966 cont.

displacement volumes and primary productivity in the upper mixed layer of this area were higher than in the Atlantic. Bathythermograph data revealed the presence of turbulent eddies. The increased productivity of this area is possibly a consequence of downstream turbulence on the Caribbean side of St. Vincent Island. Staff.

1966

2680 Keshishev, V.N. "Runoff in eastern Cuba." Soviet Geography: Review & Translation, N.Y., 8(1):1-12, Jan. 1967. figs. tables. refs. DAS. Transl. of "O rechnom stoke vostochnoĭ Kuby." Moscow. Universitet, Vestnik. ser. 5, Geog., 21(2):71-78, Mar./Apr. 1966. figs. tables. refs.

Discussion of hydrological characteristics and economic uses of the rivers of Oriente Province, Cuba, and climatic and orographic features of the province affecting river runoff. Tables show intra-annual variations in precipitation and runoff in 1961 for various river basins of Oriente Province, precipitation and runoff during hurricane "Flora," mean long-period amounts of precipitation and runoff for 5 river basins and distribution of water resources in all the 7 provinces of Cuba. - Staff MGA 18.1-770.

1966

2681 Manheim, F.T. "Distribution of interstitial salts in drill cores from the bottom of the Atlantic Ocean off Florida." In International Oceanographic Congress, 2d, Moscow, 1966. Abstracts of papers, no. 273, 1966. p. 238. DNO.

Interstitial water from 5 Paleocene to Recent core series, taken on the Joint Oceanographic Institutions Deep Earth Sampling (JOIDES) offshore drilling project, has been analyzed for chloride and major cations. It appears that forces tending to concentrate brines in the deeper parts of many older sedimentary basins may operate at depths of only a few tens of meters in young sediments, as has been noted by Pushkina (1963). The downward increases in salinity are greater than can be accounted for by gravitative settling and simple ion migration in a thermal gradient (Soret effect). - Author (mod).

1966

2682 Mexico. Dirección de Faros e Hidrografía. "Guaderno de faros, costas de México, América Central y Colombia [Manual of lighthouses, coasts of Mexico, Central America and Colombia.] Publicación, F.H. 201, 1966. 94 p.

1966

2683 Miami Univ. Institute of Marine Science, Marine Laboratory. "Investigations of tropical and sub-tropical seas, 1965 - 1966." Progress Report 66-2, Contract Nonr 4008 (02), 1966. 96 p. illus.

1966

2684 [Ocean Industry] "Ethyl-Dow's Freeport plant produces half of U.S. bromine supply from Gulf of Mexico waters." Its 1(6):15, 18, Oct. 1966.

Plant at Freeport, Texas can produce over 100 million lbs of pure bromine annually, using the acid (SO_2) process to obtain 50 lbs of bromine per million lbs of seawater. - Author.

1966

2685 [Ocean Industry] "Gulf Coast Telephone christens PEGGY G." Its 1(6):10, Oct. 1966.

Cable-laying vessel ready to begin placing 800 mi of cable on the Gulf of Mexico floor to connect offshore platforms off Louisiana. A description of vessel is provided. - Author.

1966

2686 Okuda, T. and Benitez, J. "Nota sobre el contenido de elementos nutritivos en el agua de la Fosa de Cariaco, Venezuela." [Note on the content of nutritive elements in the water of the Cariaco Trench, Venezuela.] In International Oceanographic Congress, 2d, Moscow, 1966. Abstracts of papers, no. 316, 1966. p. 273. Abstract in Spanish. DNO.

The Cariaco Trench is a depression 1,400 m deep, situated on the northeastern coast of Venezuela, where there is an anaerobic zone extending from 400 m in depth to the bottom. This work presents typical vertical distribution of nutritive elements, especially nitrogen, organic (total, suspended and dissolved), as well as inorganic (ammoniac, nitrite and nitrate) in this anaerobic condition. Results obtained should give an interpretation of the process of transformation of organic and inorganic nitrogen. - Author.

1966

2687 Payne, R.E. and Beckerle, J.C. "Sound velocity profiles between Bermuda and the Antilles." Woods Hole Oceanographic Institution, Technical Report, Ref. no. 66-52, Aug. 1966. 31 p. figs. tables. refs.

On Cruise 11 of R/V ATLANTIS II in June - August 1964, 70 sound velocity profiles (SVP 211-290) were made over an area between Bermuda and Puerto Rico bounded approximately by lat 19° - 32°N and long 65° - 72°W. The profiles are

1966 cont.

presented with some interpretation, description of the shipboard equipment and calculation methods. - Author (mod).

1966

2688 Pequegnat, W.E. and Berner, L. "Oceanography of the Gulf of Mexico: progress report." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 66-23T, Sept. 1966. 82 p. figs. charts. tables. refs.

The ALAMINOS made 20 cruises. In the region near Panama City, Florida, work was carried out by DROGUE, ANTILLA and VIRAZON. Summaries are given of research of the past year. Included are reviews of work in physical oceanography, geophysics, geology, geochemistry, chemistry instrumentation and biofouling. - Staff MGA 18.4-708.

1966

2689 Piip, A.T. "Precision sound velocity profiles in the ocean. v. 1. The sound channel in the Bermuda-Barbados region Nov. - Dec. 1963." Columbia Univ. Lamont Geological Observatory, Technical Report Cu-3-66, Jan. 1966. 49 p. figs. refs. DNO.

High-precision consecutive sound velocity depth profiles of the sound channel in the ocean are presented from 17 stations in the Bermuda-Barbados area for November - December 1963. Data are displayed both in the form of families of individual profiles with time information, and as composite envelopes for each station, emphasizing the total spread at each site. Author MGA 17.11-730.

1966

2690 Richardson, W.S. "Direct measurement of the transport of the Florida Current." In International Oceanographic Congress, 2d, Moscow, 1966. Abstracts of Papers, no. 352, 1966. p. 300. DNO.

A technique for the direct measurement of the volume transport per unit width of an ocean current is described. A section of measurements across a current permits integration to obtain the total transport. The results of such measurements taken across the Florida Current and channels adjacent to the Straits of Florida are given. - Author.

1966

2691 Rossov, V.V. and Santana, H. "Algunas características hidrológicas del Mediterráneo Americano." [Some hydrological characteristics of the American Mediterranean.] Cuba. Instituto de Oceanología, Estudios, 1 (1):47-77, Nov. 1966. figs. refs. English summary p. 47.

The authors intended to complement

1966 cont.

current knowledge of the hydrology of the American Mediterranean region and of its Atlantic borderline waters. They devoted their attention to the occurrence of upwelling and sinking, which are considered of primary interest to the fisheries industry of Cuba. - Author (mod) MGA 19.5-668.

1966

2692 Russell, T.L., Schoettle, V. and Chown, R.G. "Ocean wave force instrumentation." American Society of Civil Engineers. Waterways and Harbors Div., Journal, 92(4):1-16, Nov. 1966. figs. refs.

The need for improved data for use in design of offshore structures resulted in the design, construction and operation of instrumentation for measuring forces exerted by large ocean waves on structural members. The resulting equipment, installation and calibration techniques are described along with brief comments on developmental philosophy and history of operations. A self-contained portable instrument package was developed to measure and record ocean wave heights and wave forces acting at 8 elevations on a 3-ft diameter platform leg. The completely self-actuating instrument system was installed in a platform 19 mi off Louisiana in a water depth of approximately 100 ft. Installation took place during the summer of 1960 and the system was operated successfully through the fall of 1963. During this period, data were recorded during some 30 storms, including hurricane "Carla" (1961), during which wave heights ranged to 40 ft. - Author (mod) MGA 19.5-635.

1966

2693 Saville, T. "Study of estuarine pollution problems on a small unpolluted estuary and a small polluted estuary in Florida." Engineering Progress at the Univ. of Fla., 20(8), Bulletin Series no. 125, Aug. 1966. 202 p. figs. tables. refs.

Composite of studies made by scientists and engineers of the Department of Bio-environmental Engineering at Florida University. Studies of physical, chemical and biological factors of a polluted and unpolluted estuary; development of measures to evaluate the ability of such estuaries to assimilate wastes under natural and controlled conditions and analyses of the present and potential development of areas contiguous to a given estuary were performed. Estuaries of the Waccasassa and the Fenholloway Rivers on the Gulf Coast of Florida were studied. - Staff MGA 18.5-719.

1966

2694 Schmitz, W.J. "Conservation of potential vorticity in the Florida Current off Miami." In International Oceanographic Congress, 2d, Moscow, 1966. Abstracts of papers, no. 377. 1966. p. 321. DNO.

Data previously published on the Florida Current off Miami and pilot data obtained during the process of developing a direct transport technique suggest that deviations from conservation of potential vorticity could be within experimental error (10 percent) in the center of the zone of anticyclonic shear using quasi-synoptic time scales. The results of an experiment designed to test for potential vorticity conservation on quasi-synoptic time scale to 30 days verify this hypothesis The experiment was carried out over both cyclonic and anticyclonic zones. The validity of the hypothesis varies with cross stream position and with time scale. The results are used to construct a physical model of the Florida Current. - Author(mod).

1966

2695 Schmitz, W.J. and Richardson, W.S. "Preliminary report on Operation Strait Jacket." Miami. Univ. Marine Laboratory, Contract Nonr 4008(02), Data Report, Pub. 66-1, Mar. 1966. 222 p. figs. tables. refs. DAS.

Describes the purposes, design, methodology and preliminary results of an experiment carried out in the Florida Current off Miami, Florida. The primary purpose of the experiment was to test a class of hypotheses on the inertial character of the Florida Current. Preliminary results indicate that the anticyclonic zone of the Florida Current is, to a first order approximation, inertially controlled. Conclusions from the experiment are restricted to a specified set of time and space scales. - Author (mod) MGA 18.6-684.

1966

2696 Schroeder, E.H. "Average surface temperature of western North Atlantic." Bulletin of Marine Science of the Gulf and Caribbean, 16(2):302-323, 1966.

1966

2697 Steinberg, J.C. and Birdsell, T.G. "Underwater sound propagation in the Straits of Florida." Acoustical Society of America, Journal, 39(2):301-315, Feb. 1966. figs. tables. refs.

In a fixed-system study of relationships between variations in underwater sound transmission across the Straits of Florida and variations in environmental factors, an unexpected degree of phase

stability was observed. The phase of the received wave, referenced to the phase of the transmitted wave, varied less than 100° during intervals of 1/2-1 hr. Intervals of 1-4 hr occurred in which the phase varied less than 360°. In other intervals, the phase drifted in positive or negative directions at maximum rates of 5° - 15°/ min^{-1}. The observations were made during a 4-day continuous test employing 420-c sec^{-1} continuous wave (CW) transmission. Results for individual arrivals by different paths, obtained in subsequent transmission employing pseudo-random sequences, were consistent with the CW observations. Author MGA 17.12-689.

1966

2698 Stevenson, R.E. and Leipper, D.F. "Waters over the shelf of the northern Gulf of Mexico after hurricane Betsy: September, 1965." In International Oceanographic Congress, 2d, Moscow, 1966. Abstracts of papers, no. 408, 1966. pp. 349-350. DNO.

Hurricane "Betsy" entered the Gulf of Mexico on 8 September 1965, after crossing the southern tip of Florida. Hurricane velocity winds extended 130 km from the center and wind speeds of 190 km hr^{-1} were measured near the 'eye.' The average forward speed of the storm as it crossed the Gulf of Mexico was 24 km hr^{-1}. R/V ALAMINOS of Texas A & M University, cruised along the edge of the continental shelf and occupied a series of bathythermograph stations on 23 - 24 August 1965. From the data collected on these cruises, analyses were made of the water structure before and immediately after the hurricane, and an insight gained of the rate at which waters affected by a violent storm may return to normal, seasonal conditions. Author (mod).

1966

2699 Taylor, J.G. "Approach to the analysis of sea surface temperature data for utilization in hurricane forecasting in the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 66-25 T, Contract 2119(04), Oct. 1966. 92 p. charts. graphs.

Sea surface temperature (SST) patterns have been analyzed for 4 major hurricanes in the Gulf of Mexico in an effort to determine if routinely available SST data might be more fully utilized as an aid to the hurricane forecaster. SST data reported by merchant vessels are the primary data used in this study. Mean daily SST charts were prepared for approximately 10 - 12 days prior to the time when each hurricane moved inland. Also, a series of 3-day, 5-day and 7-day mean SST charts were prepared for hurricane "Hilda." The SST charts for hurricanes "Audrey," "Carla," and "Hilda" were plotted and analyzed with the point of hurricane landfall known. - Author (mod).

1966

2700 Van Baalen, C. and Marler, J.E. "Occurrence of hydrogen peroxide in sea water." Nature, 211(5052):951, 27 Aug. 1966. table. refs.

H_2O_2 in sea surface water samples taken near Port Aransas, Texas, was measured using the sensitive scopoletin-peroxidase fluorescence technique of Andreae, Perschke and Broda. Experience of the authors suggests that the presence of traces of H_2O_2 is a constant feature of sea water taken from this area. No specification was made as to the source of H_2O_2. - Staff MGA 18.1-688.

1966

2701 Walsh, D.E. "Space oceanography project." Texas A & M Univ. Dept. of Oceanography and Meteorology, Status Report, Feb. - Oct. 1966. Contract Nonr-2119(04), Oct. 1966. 45 p.

During this period, the primary research activity was in the form of aerial studies on the Mississippi outflow pattern into the Gulf of Mexico. Two flight missions were made over this region, using specially configured National Aeronautics and Space Administration aircraft for multisensor measurements. This report indicates other scheduled operations that could not be carried out due to either weather or non-availability of the aircraft. Project staffing, facilities and capabilities as well as projected research plans for the forthcoming year are outlined, together with a consideration of arrangements whereby the utilization of remote sensors for oceanographic studies may be made effective. - Author.

1966

2702 Woods Hole Oceanographic Institution. "Oceanographic and underwater acoustics research conducted during the period Nov. 1, 1965 - April 30, 1966." Progress Report, Ref. 66-43, Contract Nonr-4029(00) NR 260-101, July 1966. 57 p. figs. refs.

The objective of the contract was to provide broad environmental background needed for the design, developmental testing and operational guide lines of underwater devices of the U.S. Navy. The contract work consisted of a broad research program in oceanic acoustics,

1966 cont.

physical oceanography and sea-floor properties. Resulting papers concern analysis of underwater sounds of biological origin, sound reflections in and beneath the ocean, sediment ponding in the deep ocean, sediment basins of the Mediterranean Sea, the geophysics and geology of parts of the North Atlantic, Indian Ocean and the Red Sea, manipulation of deep-sea cameras and geological applications of sea-floor photography. - Author (mod) MGA 18.5-653.

1966

2703 Worthington, L.V. "Caribbean deep water." In Woods Hole Oceanographic Institution, Summary of investigations... 1965. Ref. 66-3, Mar. 1966. pp. 236-237. DNO.

Review of the problem of deep water renewal in the Cayman and Venezuelan basins of the Caribbean Sea. In September 1963, 2 sections were made by the CRAWFORD. There was no downward trend of the isotherms and no evidence that the deep water in the basin was being renewed at the present time. It further appeared that the deepest waters of the Cayman Basin had become about 0.03°C warmer since the original oceanographic surveys made from ATLANTIS in 1933 and 1937 by A.E. Parr. - Author (mod).

1966

2704 Worthington, L.V. "Recent oceanographic measurements in the Caribbean Sea." Deep-Sea Research, 13(4):731-739, Aug. 1966. figs. refs.

Two oceanographic sections were made across the 2 deepest sills of the Caribbean Sea in September 1963. One was conducted from the Atlantic Ocean into the Venezuelan Basin through the Anegada and Virgin Island passages; the second was conducted from the Cayman Basin into the Atlantic through the Windward Passage. These sections differ from Wüst's (1963, 1964) sections, in that there is no evidence that bottom water is entering the Caribbean at the present time. Cayman Basin bottom water appears to have been warmed about 0.03°C since the surveys made by Parr (1933, 1937). - Author MGA 18.1-701.

1966

2705 Worthington, L.V. and Webb, D.C. "Studies of vertical motion." In Woods Hole Oceanographic Institution, Summary of investigations...1965. Ref. 66-3, Mar. 1966. pp. 233-234. DNO.

In February 1965, the CRAWFORD was briefly available for investigations of the Cayman Basin south of Cuba. Comparisons of old (1933 - 1937) and new (1958 - 1963) deep temperature data have indicated

1966 cont.

that the deepest waters of this basin have risen 0.03°C, probably from heat flow through the earth. As a result, vertical convection might be taking place, since the deep water is neutrally stable. An instrument was developed for measuring these changes and contains a neutrally buoyant float which has inclined propeller-like blades which translate any vertical motion past the float into rotation. Author (mod).

1967

2706 [American Meteorological Society.] "Gulf Science Year planned." Its Bulletin, 48:924-925, 1967.

Reports on Gulf Universities Research Corporation (GURC) sponsored research year to make synoptic observations and analyses to assess the condition of the Gulf of Mexico and the variability of its waters and resources. - Staff.

1967

2707 Armstrong, R.S. "Subtropical underwater of the eastern Gulf of Mexico." Commercial Fisheries Review, 29(3):46-48, 1967.

1967

2708 Armstrong, R.S. and Grady, J.R. "GERONIMO cruises entire Gulf of Mexico in late winter." Commercial Fisheries Review, 29(10):35-40, Oct. 1967. figs.

Reports that R/V GERONIMO occupied 114 hydrographic stations, collected surface salinity samples and made bathythermograph casts at 281 stations in the Gulf of Mexico. It was found that warm water from the Caribbean Sea is the main driving force for the gulf circulation. The water enters the gulf along the western side of the Yucatan Straits and streams north to about lat 28°N. It then turns sharply to the south and leaves the Gulf through the Florida Straits. - Staff MGA 19.11-693.

1967

2709 Armstrong, R.S., Grady, J.R. and Stevenson, R.E. "Cruise 'Delta I' of the GERONIMO." Commercial Fisheries Review, 29(2):15-18, Feb. 1967.

Describes cruise of R/V GERONIMO in Mississippi Delta to acquire oceanographic information and 'ground truth' for the photography of Gemini II manned space flight. - Author.

1967

2710 Arnold, J.E. et al. "Ground truth requirements for remote sensing of oceanographic features." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr-2119(04), Report, Nov. 1967. 23 p.

1967 cont.

For almost 2 years, the spacecraft oceanography project (SPOC) at Texas A & M University has been studying the use of remotely sensed data from aircraft to determine oceanographic features in the Mississippi Delta region of the Gulf of Mexico. Past experience has shown that the present 'ground truth' program is inadequate due to the non-availability of research ships and other sophisticated instrument platforms. All the important physical parameters on the sea surface and in the atmosphere above should be measured. Staff.

1967

2711 Bennett, C.M. "Power spectra of bottom pressure fluctuations in the near-shore Gulf of Mexico during 1962 and 1963." U.S. Navy Mine Defense Lab., Panama City, Fla., Report 344, Nov. 1967. 23 p. figs. charts refs.

A study of the power spectra of over 1,200, 30-min records of sea bottom pressure fluctuations is presented. The data were collected in the Gulf of Mexico off Panama City, Florida, at a depth of 19.2 m from June 1962 - May 1963. The emphasis is on the method of data presentation rather than collection, analysis and interpretation. The power spectra are presented as 3-dimensional plots and contour plots of power spectral density vs frequency and time. It is observed that the use of the narrow-band gaussian model for the seaway is reasonable, and that the spectrum can change significantly over a 3-hr period. The buildup and decay of power spectral levels during a Gulf storm in otherwise calm weather is illustrated. Author (mod) MGA 19.5-663.

1967

2712 Blumberg, R. "Offshore risks." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs, Pub. no. 1, 1967. pp. 294-303. figs. photos.

An introductory paper considering offshore risks discussed by a panel of experts. Panel consisted of an engineer with a major offshore pipeline company, an executive of one of the nation's largest insurers of offshore drilling and production equipment, an expert in maritime law, a senior vice-president of one of the largest offshore drilling contractors, a research worker in offshore risk criteria and a manager of one of the major offshore operators. At least 4 major offshore operators who have been aggressive in oceanographic research

1967 cont.

programs have not suffered a major platform failure as a result of hurricanes. Staff MGA 19.9-334.

1967

2713 Bogdanov, D.V. "Sobre la variabilidad de las condiciones oceanográficas en el Mar Caribe y el Golfo de México." [Variability of oceanographic conditions in the Caribbean Sea and Gulf of Mexico.] Soviet-Cuban Fisheries Investigations, National Institute of Fisheries, Cuba, 1967. 2:21-38. In Russian; Spanish abstract.

Reports on continuation of work begun in 1962. New data collected in 1964 - 1965 are presented from observations made at 470 stations. - Staff.

1967

2714 Bretschneider, C.L. "Maximum sea state for the North Atlantic hurricane belt." Ocean Industry, 2(9):43-52, Sept. 1967. figs. refs.

The purpose of this study was to predict the maximum sea state for the North Atlantic hurricane belt between the equator and lat 30°N. A standard project Atlantic hurricane was developed to generate an estimated maximum sea spectrum south of lat 30°N. For this simulated hurricane, the maximum value of the significant wave height and the corresponding significant wave period were calculated by use of wave-forecasting techniques. The resulting significant wave height and period are H_s=62 ft and T_8-19 sec. Details are given on the methods of forecasting waves, hurricane classification and hindcast wave spectra. Staff MGA 19.6-267.

1967

2715 Bretschneider, C.L. "Storm surges." Advances in Hydroscience, 4:341-418, 1967. bibliog. pp. 411-418.

A comprehensive review of the nature of storm surges, with special reference to its potentials for applications to solutions of problems in engineering design. A historical review is followed by case histories and documentation. Attention is given to understanding surface winds, wind fields and stress, bottom topography, coastal configurations and surface roughness. Study of the open coast involves basic hydrodynamic equations, decay of current parallel to coast after wind has ceased, and wind tides over the continental shelf. - Staff MGA 19.9-790.

1967

2716 Brogden, W.B. and Warnke, D.A. "Three-dimensional trend-surface analysis

1967 cont.

of oceanographic data." International Journal of Oceanology and Limnology, 1(4): 227-236, Oct. 1967. figs. tables.

Physical, chemical and microbiological data from closely spaced stations in a small area southeast of Alligator Harbor were fitted to 3-dimensional linear, quadratic and cubic models by the method of least squares. Investigated parameters included salinity, temperature, light penetration, reactive silica and microbial population. Cubic trend hypersurfaces seemed to furnish the best representation of the regional variation for most parameters as indicated by analysis of variance. - Author (mod).

1967

2717 Bumpus, K.G. and Dunkle, W.M. "Track charts, bathymetry, and location of observations, ATLANTIS cruise no. 223, March 7 - June 3, 1956; BEAR cruise no. 140, Feb. 27 - June 3, 1956, North Atlantic Ocean and Caribbean Sea." Woods Hole Oceanographic Institution, Ref. no. 67-14. Mar. 1967. 238 p.

Report contains charts of Cruise 223 of the ATLANTIS and charts of Cruise 140 of the BEAR in the North Atlantic and Caribbean Sea. There are 112 charts plotted on a Mercator projection showing the track of both ships. Soundings were read at equal time intervals, usually every 10 min, and at each break in slope. All soundings were based on a sound velocity of 800 fathoms sec^{-1} and were corrected for depth-of-transducer. - Author (mod).

1967

2718 Busby, R.F. "DR/V ALUMINAUT recovers current meter array from depth of 3,150 feet." Geo-Marine Technology, 3(5):41-44, May 1967. figs. photos.

The ALUMINAUT, under contract to U.S. Naval Oceanographic Office, located and successfully retrieved a current meter array in 3,150 ft of water off the west coast of St. Croix, Virgin Islands. This recovery is the deepest known instrument retrieval accomplished to date by a manned submersible. - Author (mod).

1967

2719 Carr, J.T. "Hurricane affecting the Texas Gulf Coast." Texas. Water Development Board, Report no. 49, June 1967. 58 p. figs. charts. tables. refs. DAS.

Along the Texas Gulf Coast, damage from high water caused by hurricanes and their heavy rains has been greater than the damage done by hurricane winds and hurricane-spawned tornadoes combined. Land subsidence in certain coastal areas of heavy ground-water and oil withdrawals has

1967 cont.

amounted to as much as 5 ft during the period 1905 - 1964. A total of 32 hurricanes affected Texas during the period 1900 - 1965. A Standard Project Hurricane has been designed for small radius, mean radius and large radius hurricanes moving at various speeds of translation. Author (mod) MGA 19.1-190.

1967

2720 Clark, J.G. and Yarnall, J.R. "Long range ocean acoustics and synoptic oceanography--Straits of Florida results." In U.S. Navy Symposium on Military Oceanography, 4th, Wash., D.C., May 1967. Proceedings. 1:309-364. DNO.

Presents data and discusses some of the results obtained in the Straits of Florida during the Lunar Cycle Test One operation. The studies are basically transmission experiments. A propagation model is given, and the properties of the medium are inferred from the results of the experiment. Staff.

1967

2721 Cochrane, J.D. "Yucatan Current, upwelling off northeastern Yucatan, currents and waters of western tropical Atlantic and of eastern tropical Pacific." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project 286, Progress Reports. Ref. 67-11T:14-20, Contract Nonr 2119(04), June 1967.

1967

2722 Collins, J.I. "Wave statistics from Hurricane Dora." American Society of Civil Engineers, Waterways and Harbors Div., Journal, 93(2):59-77, 1967.

Detailed statistical investigations of observed waves at Panama City, Florida, during hurricane "Dora" are presented. Some of the effects of non-linearities are shown, and a correlation of ordinary wave statistics, with wave spectra is attempted. A method of estimating the wave spectrum from significant wave height and mean wave period is proposed. - Staff.

1967

2723 Crombie, D.D. and Watts, J.M. "Observations of coherent backscattering of hectometric radiowaves from along the sea surface." U.S. Environmental Science Services Administration, Technical Memorandum IERTM-ITSA 38, Feb. 1967. 34 p. figs. refs. DAS.

Describes an experiment utilizing an iononde at a beach site on the Gulf of Mexico as a means of demonstrating sea echoes. Observations of coherent backscatter from the surface of the sea at ranges up to 200 km are described. The

1967 cont.

It flows directly over the steep slope in the reference layer found by Defant's method which is similar to that of the Gulf Stream. The baroclinic mass distribution extends to approximately 1,200 m but below this, the flow is weak (less than 5 cm sec^{-1}, except in the depths of the Cayman and Yucatan basins where currents of over 10 cm sec^{-1} occur). - Author (mod) MGA 19.5-655.

1967

2739 Gretner, P.E. and Simmons, G. "Short-time temperature variations in the waters of the Gulf of Mexico." Journal of Geophysical Research, 72(8):2263-2266, 15 Apr. 1967. figs. refs.

Temperature measurements indicate that the waters of the Gulf of Mexico are in motion. Internal waves seem to be pronounced in the depth range - 500 to - 1,000 ft, at least for the summer and fall months. Results show that the thermal gradient reaches a maximum at the thermocline, (at approximately - 200 ft) where it is of the order of 7°F per 100 ft. It decreases with depth and is only approximately 0.15°F per 100 ft below - 3,500 ft. At shallow depths, a small vertical movement will produce a large temperature oscillation, whereas at greater depths larger vertical motions are required to produce the same thermal effect. - Staff MGA 18.11-770.

1967

2740 Griffiths, R.C. and Simpson, J.G. "Estructura de salinidad en el Golfo de Cariaco, Venezuela." [Salinity structure of the Gulf of Cariaco, Venezuela.] Venezuela. Investigaciones Pesqueras, Serie Recursos y Explotación Pesqueros, 1(7):277-301, 1967.

This report is part of an environmental inventory of the area in which most of the sardine fishery in eastern Venezuela is conducted. The salinity of the Caribbean Sea is determined according to Parr (1937). The salinity maximum at about 200 m exceeding a value of 36.5 ppm originates in the Sargasso Sea. The lower surface salinities originate from equatorial Atlantic water. - Author (mod).

1967

2741 Griffiths, R.C. and Simpson, J.G. "Estructura térmica del Golfo de Cariaco, Venezuela, de agosto de 1959 hasta agosto de 1961." [Temperature structure of the Gulf of Cariaco, Venezuela, from August 1959 to August 1961.] Venezuela. Investigaciones Pesqueras, Serie Recursos y Explotación Pesqueros, 1(4):116-169, 1967.

1967 cont.

It is necessary for resource assessment purposes to determine: 1) fishery dependent factors, influencing the size and age structure of the resource and 2) fishery independent or environmental factors. The latter are very important in pelagic fisheries, such as those for sardine and anchovy, and they may be so great as often to obscure changes in abundance caused by changes in fishing intensity. To make an inventory of the environmental conditions in the Gulf of Cariaco, a study of the temperature structure was initiated. Author (mod).

1967

2742 Grijalva, N. "Report on physical oceanography work done in Mexico during the triennium 1964 - 1968 (to the International Union of Geodesy and Geophysics, Switzerland, Sept. 26 - Oct. 7, 1967)." Mexico City. Universidad Nacional. Instituto de Geofísica, Anales, 12:31-41, 1966. pub. Sept. 1967. fig. refs.

Information is given on the mareographic service, tide forecasting, hydrographic studies, oceanographic research and publications resulting from these activities. - Staff MGA 19.11-68.

1967

2743 Gulf South Research Institute. "Support for an international symposium on oceanography with special emphasis on hurricane research." Baton Rouge. Final Report, GSRI Project no. AS-III, 1967. 351. (Prepared for Louisiana State Science Foundation.) DLC.

1967

2744 Hamburg. Deutsches Hydrographisches Institut. "Golf von Mexico, Küste der Vereinigten Staaten, Galveston Bay, Einfahrt mit den Häfen von Galveston und Texas City." [Gulf of Mexico, coasts of the United States, Galveston Bay, entrance with the harbors of Galveston and Texas City.] Chart no. 913, new chart, Nov. 1967. Scale: 1:30,000. Limits: Lat 29° 16'00"N - 29°26'00"N, Long 94°36'00"W - 94°55'24"W.

1967

2745 Hamburg. Deutsches Hydrographisches Institut. "Mittel-America, Panama-Kanal." [Central America, Panama Canal.] Chart no. 981, new ed., Dec. 1967. Scale: 1:45,000.

1967

2746 Harris, D.L. "Hurricane storm surges." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs. Pub. no. 1, 1967. pp. 200-228. figs. charts. refs.

Principal characteristics of storm

1966 cont.

physical oceanography and sea-floor properties. Resulting papers concern analysis of underwater sounds of biological origin, sound reflections in and beneath the ocean, sediment ponding in the deep ocean, sediment basins of the Mediterranean Sea, the geophysics and geology of parts of the North Atlantic, Indian Ocean and the Red Sea, manipulation of deep-sea cameras and geological applications of sea-floor photography. - Author (mod) MGA 18.5-653.

1966

2703 Worthington, L.V. "Caribbean deep water." In Woods Hole Oceanographic Institution, Summary of investigations... 1965. Ref. 66-3, Mar. 1966. pp. 236-237. DNO.

Review of the problem of deep water renewal in the Cayman and Venezuelan basins of the Caribbean Sea. In September 1963, 2 sections were made by the CRAWFORD. There was no downward trend of the isotherms and no evidence that the deep water in the basin was being renewed at the present time. It further appeared that the deepest waters of the Cayman Basin had become about 0.03°C warmer since the original oceanographic surveys made from ATLANTIS in 1933 and 1937 by A.E. Parr. - Author (mod).

1966

2704 Worthington, L.V. "Recent oceanographic measurements in the Caribbean Sea." Deep-Sea Research, 13(4):731-739, Aug. 1966. figs. refs.

Two oceanographic sections were made across the 2 deepest sills of the Caribbean Sea in September 1963. One was conducted from the Atlantic Ocean into the Venezuelan Basin through the Anegada and Virgin Island passages; the second was conducted from the Cayman Basin into the Atlantic through the Windward Passage. These sections differ from Wüst's (1963, 1964) sections, in that there is no evidence that bottom water is entering the Caribbean at the present time. Cayman Basin bottom water appears to have been warmed about 0.03°C since the surveys made by Parr (1933, 1937). - Author MGA 18.1-701.

1966

2705 Worthington, L.V. and Webb, D.C. "Studies of vertical motion." In Woods Hole Oceanographic Institution, Summary of investigations...1965. Ref. 66-3, Mar. 1966. pp. 233-234. DNO.

In February 1965, the CRAWFORD was briefly available for investigations of the Cayman Basin south of Cuba. Comparisons of old (1933 - 1937) and new (1958 - 1963) deep temperature data have indicated

1966 cont.

that the deepest waters of this basin have risen 0.03°C, probably from heat flow through the earth. As a result, vertical convection might be taking place, since the deep water is neutrally stable. An instrument was developed for measuring these changes and contains a neutrally buoyant float which has inclined propeller-like blades which translate any vertical motion past the float into rotation. Author (mod).

1967

2706 [American Meteorological Society.] "Gulf Science Year planned." Its Bulletin, 48:924-925, 1967.

Reports on Gulf Universities Research Corporation (GURC) sponsored research year to make synoptic observations and analyses to assess the condition of the Gulf of Mexico and the variability of its waters and resources. - Staff.

1967

2707 Armstrong, R.S. "Subtropical underwater of the eastern Gulf of Mexico." Commercial Fisheries Review, 29(3):46-48, 1967.

1967

2708 Armstrong, R.S. and Grady, J.R. "GERONIMO cruises entire Gulf of Mexico in late winter." Commercial Fisheries Review, 29(10):35-40, Oct. 1967. figs.

Reports that R/V GERONIMO occupied 114 hydrographic stations, collected surface salinity samples and made bathythermograph casts at 281 stations in the Gulf of Mexico. It was found that warm water from the Caribbean Sea is the main driving force for the gulf circulation. The water enters the gulf along the western side of the Yucatan Straits and streams north to about lat 28°N. It then turns sharply to the south and leaves the Gulf through the Florida Straits. - Staff MGA 19.11-693.

1967

2709 Armstrong, R.S., Grady, J.R. and Stevenson, R.E. "Cruise 'Delta I' of the GERONIMO." Commercial Fisheries Review, 29(2):15-18, Feb. 1967.

Describes cruise of R/V GERONIMO in Mississippi Delta to acquire oceanographic information and 'ground truth' for the photography of Gemini II manned space flight. - Author.

1967

2710 Arnold, J.E. et al. "Ground truth requirements for remote sensing of oceanographic features." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr-2119(04), Report, Nov. 1967. 23 p.

1967 cont.

For almost 2 years, the spacecraft oceanography project (SPOC) at Texas A & M University has been studying the use of remotely sensed data from aircraft to determine oceanographic features in the Mississippi Delta region of the Gulf of Mexico. Past experience has shown that the present 'ground truth' program is inadequate due to the non-availability of research ships and other sophisticated instrument platforms. All the important physical parameters on the sea surface and in the atmosphere above should be measured. Staff.

1967

2711 Bennett, C.M. "Power spectra of bottom pressure fluctuations in the near-shore Gulf of Mexico during 1962 and 1963." U.S. Navy Mine Defense Lab., Panama City, Fla., Report 344, Nov. 1967. 23 p. figs. charts refs.

A study of the power spectra of over 1,200, 30-min records of sea bottom pressure fluctuations is presented. The data were collected in the Gulf of Mexico off Panama City, Florida, at a depth of 19.2 m from June 1962 - May 1963. The emphasis is on the method of data presentation rather than collection, analysis and interpretation. The power spectra are presented as 3-dimensional plots and contour plots of power spectral density vs frequency and time. It is observed that the use of the narrow-band gaussian model for the seaway is reasonable, and that the spectrum can change significantly over a 3-hr period. The buildup and decay of power spectral levels during a Gulf storm in otherwise calm weather is illustrated. Author (mod) MGA 19.5-663.

1967

2712 Blumberg, R. "Offshore risks." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs, Pub. no. 1, 1967. pp. 294-303. figs. photos.

An introductory paper considering offshore risks discussed by a panel of experts. Panel consisted of an engineer with a major offshore pipeline company, an executive of one of the nation's largest insurers of offshore drilling and production equipment, an expert in maritime law, a senior vice-president of one of the largest offshore drilling contractors, a research worker in offshore risk criteria and a manager of one of the major offshore operators. At least 4 major offshore operators who have been aggressive in oceanographic research

1967 cont.

programs have not suffered a major platform failure as a result of hurricanes. Staff MGA 19.9-334.

1967

2713 Bogdanov, D.V. "Sobre la variabilidad de las condiciones oceanográficas en el Mar Caribe y el Golfo de México." [Variability of oceanographic conditions in the Caribbean Sea and Gulf of Mexico.] Soviet-Cuban Fisheries Investigations, National Institute of Fisheries, Cuba, 1967. 2:21-38. In Russian; Spanish abstract.

Reports on continuation of work begun in 1962. New data collected in 1964 - 1965 are presented from observations made at 470 stations. - Staff.

1967

2714 Bretschneider, C.L. "Maximum sea state for the North Atlantic hurricane belt." Ocean Industry, 2(9):43-52, Sept. 1967. figs. refs.

The purpose of this study was to predict the maximum sea state for the North Atlantic hurricane belt between the equator and lat 30°N. A standard project Atlantic hurricane was developed to generate an estimated maximum sea spectrum south of lat 30°N. For this simulated hurricane, the maximum value of the significant wave height and the corresponding significant wave period were calculated by use of wave-forecasting techniques. The resulting significant wave height and period are H_s=62 ft and T_8-19 sec. Details are given on the methods of forecasting waves, hurricane classification and hindcast wave spectra. Staff MGA 19.6-267.

1967

2715 Bretschneider, C.L. "Storm surges." Advances in Hydroscience, 4:341-418, 1967. bibliog. pp. 411-418.

A comprehensive review of the nature of storm surges, with special reference to its potentials for applications to solutions of problems in engineering design. A historical review is followed by case histories and documentation. Attention is given to understanding surface winds, wind fields and stress, bottom topography, coastal configurations and surface roughness. Study of the open coast involves basic hydrodynamic equations, decay of current parallel to coast after wind has ceased, and wind tides over the continental shelf. - Staff MGA 19.9-790.

1967

2716 Brogden, W.B. and Warnke, D.A. "Three-dimensional trend-surface analysis

1967 cont.

of oceanographic data." International Journal of Oceanology and Limnology, 1(4): 227-236, Oct. 1967. figs. tables.

Physical, chemical and microbiological data from closely spaced stations in a small area southeast of Alligator Harbor were fitted to 3-dimensional linear, quadratic and cubic models by the method of least squares. Investigated parameters included salinity, temperature, light penetration, reactive silica and microbial population. Cubic trend hypersurfaces seemed to furnish the best representation of the regional variation for most parameters as indicated by analysis of variance. - Author (mod).

1967

2717 Bumpus, K.G. and Dunkle, W.M. "Track charts, bathymetry, and location of observations, ATLANTIS cruise no. 223, March 7 - June 3, 1956; BEAR cruise no. 140, Feb. 27 - June 3, 1956, North Atlantic Ocean and Caribbean Sea." Woods Hole Oceanographic Institution, Ref. no. 67-14. Mar. 1967. 238 p.

Report contains charts of Cruise 223 of the ATLANTIS and charts of Cruise 140 of the BEAR in the North Atlantic and Caribbean Sea. There are 112 charts plotted on a Mercator projection showing the track of both ships. Soundings were read at equal time intervals, usually every 10 min, and at each break in slope. All soundings were based on a sound velocity of 800 fathoms sec^{-1} and were corrected for depth-of-transducer. - Author (mod).

1967

2718 Busby, R.F. "DR/V ALUMINAUT recovers current meter array from depth of 3,150 feet." Geo-Marine Technology, 3(5):41-44, May 1967. figs. photos.

The ALUMINAUT, under contract to U.S. Naval Oceanographic Office, located and successfully retrieved a current meter array in 3,150 ft of water off the west coast of St. Croix, Virgin Islands. This recovery is the deepest known instrument retrieval accomplished to date by a manned submersible. - Author (mod).

1967

2719 Carr, J.T. "Hurricane affecting the Texas Gulf Coast." Texas Water Development Board, Report no. 49, June 1967. 58 p. figs. charts. tables. refs. DAS.

Along the Texas Gulf Coast, damage from high water caused by hurricanes and their heavy rains has been greater than the damage done by hurricane winds and hurricane-spawned tornadoes combined. Land subsidence in certain coastal areas of heavy ground-water and oil withdrawals has

1967 cont.

amounted to as much as 5 ft during the period 1905 - 1964. A total of 32 hurricanes affected Texas during the period 1900 - 1965. A Standard Project Hurricane has been designed for small radius, mean radius and large radius hurricanes moving at various speeds of translation. Author (mod) MGA 19.1-190.

1967

2720 Clark, J.G. and Yarnall, J.R. "Long range ocean acoustics and synoptic oceanography--Straits of Florida results." In U.S. Navy Symposium on Military Oceanography, 4th, Wash., D.C., May 1967. Proceedings. 1:309-364. DNO.

Presents data and discusses some of the results obtained in the Straits of Florida during the Lunar Cycle Test One operation. The studies are basically transmission experiments. A propagation model is given, and the properties of the medium are inferred from the results of the experiment. Staff.

1967

2721 Cochrane, J.D. "Yucatan Current, upwelling off northeastern Yucatan, currents and waters of western tropical Atlantic and of eastern tropical Pacific." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project 286, Progress Reports. Ref. 67-11T:14-20, Contract Nonr 2119(04), June 1967.

1967

2722 Collins, J.I. "Wave statistics from Hurricane Dora." American Society of Civil Engineers, Waterways and Harbors Div., Journal, 93(2):59-77, 1967.

Detailed statistical investigations of observed waves at Panama City, Florida, during hurricane "Dora" are presented. Some of the effects of non-linearities are shown, and a correlation of ordinary wave statistics, with wave spectra is attempted. A method of estimating the wave spectrum from significant wave height and mean wave period is proposed. - Staff.

1967

2723 Crombie, D.D. and Watts, J.M. "Observations of coherent backscattering of hectometric radiowaves from along the sea surface." U.S. Environmental Science Services Administration, Technical Memorandum IERTM-ITSA 38, Feb. 1967. 34 p. figs. refs. DAS.

Describes an experiment utilizing an iononde at a beach site on the Gulf of Mexico as a means of demonstrating sea echoes. Observations of coherent backscatter from the surface of the sea at ranges up to 200 km are described. The

range of frequencies used was between 2.6 and 8.5 Mhz corresponding to sea wavelengths of 58-17 m and periods of 6.1-3.3 sec. Observations using 2 'Beverage' antennas, each oriented at 45° to the coast, show that the amplitude of the scattered signal depends on direction. - Staff MGA 18.10-113.

1967

2724 Cumaná, Venezuela. Universidad de Oriente. Instituto Oceanográfico. "Boletín Bibliográfico, no. 4, Jan. 1967." [Bibliographic Bulletin, no. 4, Jan. 1967.] ed. G. Gonzalez G. 149 p.

Lists holdings of serials and monographs in the Library of the Institute as of 31 December 1966. - Staff MGA 19.2-46.

1967

2725 Cumaná, Venezuela. Universidad de Oriente. Instituto Oceanográfico. "List of papers published on physical and chemical oceanography of South Caribbean Sea." 1967. 10 p. DLC.

1967

2726 Darchen, J. "Considérations météo-océanographiques sur le système du Gulf-Stream, pt. 1." [Meteorological oceanographical considerations of the Gulf Stream system, pt. 1.] France. Météorologie Nationale, MET-MAR, no. 55:21-33, Apr. 1967. figs. DAS.

A review of the history of the study of the Gulf Stream, from the time of discovery and exploration beginning in 1492 to the present, is followed by a general discussion of the dynamics of currents (primary and secondary forces). In the North Atlantic, marked differences in air and water temperatures in the winter result in conditions favorable for evaporation and a consequent increase in the density of the surface water. The Gulf Stream system as a part of the large Atlantic circulation is discussed and illustrated. - Staff MGA 19.2-563.

1967

2727 Dragovich, A. and Sykes, J.E. "Oceanographic atlas for Tampa Bay, Florida, and adjacent waters of the Gulf of Mexico, 1958-61." U.S. Fish and Wildlife Service, Circular 255. 1967. 466 p. mostly charts. refs. DLC. DNO.

1967

2728 Drennan, K.L. "Investigation of sea surface temperature patterns in the Gulf of Mexico as determined by an airborne infrared sensor." Gulf South Research Institute. Dept. of Oceanography. Environmental Sciences and Engineering Laboratory. Ref. 67-0-1, Contract N00014-67-C-0514, Aug. 1967. 76 p. figs. charts.

refs.

Recent advances in infrared technology have made possible synoptic surveys of sea surface temperature of large oceanic areas from aircraft. In an effort to employ this technology in studies of the circulation of the Gulf of Mexico, 6 flights were conducted over the central and southern Gulf in 1965 and 1966. Oceanographic cruise data and commercial vessel reports of sea temperature taken during this period, have shown that airborne measurements of infrared radiation from the sea surface may be used to delineate horizontal patterns of surface temperature. Author (mod) MGA 19.4-676.

1967

2729 Dunkle, W.M. and Witzell, G.K. "R/V CHAIN cruise no. 60. Summary cruise report. Track charts, bathymetry and location of observations: North Atlantic Ocean, Caribbean Sea--Gulf of Mexico, 18 May - 30 June 1966." Woods Hole Oceanographic Institution, Ref. no. 67-10, April. 1967. 94 p.

Report contains charts and cruise summary of CHAIN Cruise 60 in the North Atlantic Ocean, Caribbean Sea and Gulf of Mexico. There are 39 charts plotted on a Mercator projection showing the track of the entire cruise. Soundings are read at equal time intervals, usually every 10 min and at each break in slope. All soundings are based on a sound velocity of 4,800 fathoms sec^{-1} and are corrected only for depth-of-transducer. - Author (mod).

1967

2730 Durham, D.L. and Reid, R.O. "Analysis of tidal current observations over the northeastern shelf of the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 67-1-T, Contract Nonr 2119(04), Apr. 1967. 110 p. figs. tables. refs.

A taut wire subsurface buoy system was designed and utilized in 300 ft of water over the northeastern shelf of the Gulf of Mexico offshore from Panama City, Florida. Nearly continuous 'in situ' current measurements at 2 water depths during the period of 0600 CST on 13 June 1965 to 1200 CST on 26 June 1965 were obtained. Spectral and harmonic analyses were performed to determine the dominant tidal components present in the northward and eastward components of these current measurements. The eastward and northward components of the diurnal tidal currents were found to have amplitudes of 5.15 cm sec^{-1} and 2.28 cm sec^{-1}. - Author (mod)

1967 cont.

MGA 18.11-768.

1967

2731 France. Service Hydrographique. "Amérique du Nord (côte est) et Grandes Antilles de Halifax à Porto Rico - Îles Bermudes." [North America (east coast) and Greater Antilles from Halifax to Puerto Rico--Bermuda Islands.] Chart no. 6024, 1967. Scale: 1:3,166,900.

1967

2732 France. Service Hydrographique. "Mer des Antilles, mouillages de la côte sud de la Jamaique." [Caribbean Sea, anchorages of the south coast of Jamaica.] Chart no. 3472, Oct. 1967. Scale: Baie Portland, 1:99,200; Port Morant, 1:12,300. Former charts 3472 and 3895.

1967

2733 Garcia, A.E. and Reid, R.O. "Objective method for determination of the stream-function for the non-divergent part of observed oceanic surface currents." Texas A & M Univ. Dept. of Oceanography and Meteorology, Project 286, Technical Report, Ref. 67-16 T, Contract ONR: Nonr 2119(04), Aug. 1967. 46 p. figs. refs.

Objective techniques were utilized for determining the steamfunction for the non-divergent part of a 2-dimensional vector field. Surface currents were observed in the eastern Gulf of Mexico during Cruise 66-A-8 of Texas A & M University R/V ALAMINOS (5 - 22 June 1966). Geomagnetic-electrokinetograph data gathered during this cruise were utilized to obtain a 2-dimensional vector field with values of the surface current velocity displayed at discrete points on a regularly spaced grid. - Author (mod).

1967

2734 Garrett, W.D. "Organic chemical composition of the ocean surface." Deep-Sea Research, 14(2)221-227, Apr. 1967. tables. refs.

Samples were collected under various oceanographic conditions from the Atlantic and Pacific Oceans, the Gulf of Lower California, the Gulf of Mexico and the Bay of Panama to determine the surface active chloroform soluble components present in the sea surface. The chloroform soluble organic constituents were isolated from these samples and were analyzed by various gas chromatographic techniques. The major chloroform soluble organic constituents of the sea are fatty esters, free fatty acids, fatty alcohols and hydrocarbons. - Author (mod) MGA 18.8-700.

1967

2735 Gaul, R.D. "Eddies observed over the

1967 cont.

continental slope of the northeast Gulf of Mexico." American Geophysical Union, Transactions, 48(1),Mar. 1967.

Eddies have been observed over the continental slope of the northeastern Gulf of Mexico that are 50 - 100 km across and extend to depths of 500 m or more. Well defined gyres of comparable scale have not been detected over the shelf or outside the continental slope by either direct observation or inference from dynamic topography. Two remarkable aspects of these vortices are that they are found intermittently over a period of 3 yrs and that both cyclonic and anticyclonic rotation have been observed. The eddies may build up and decay locally or could be part of a system of vortices that travels along the shoreward boundary of an intensified current in deeper water. Author.

1967

2736 Germany. Deutsches Hydrographisches Institut. "Westindien-handbuch." [West Indies handbook.] Hamburg, 3d ed. 1958 - 1967. 3 v.

Areas covered include the north coast of South and Central America, Lesser Antilles, Virgin Islands, Greater Antilles, Cuba, Bahamas, Florida Straits and Gulf of Mexico. - Staff.

1967

2737 Geyer, R.A. "Oceanography of the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr-2119(04), Progress Report, June 1967. 58 p.

Summary of Texas A & M oceanographic research in the Gulf of Mexico during the past year. Included are reviews of work in physical oceanography, geophysics, geology, geochemistry, chemistry, instrumentation and biofouling. Several special reports have been issued by individual investigators that discuss specific research activities in detail. Field work carried out aboard the R/V ALAMINOS is summarized, and publications, papers and reports resulting from the work are presented. - Author (mod).

1967

2738 Gordon, A.L. "Circulation of the Caribbean Sea." Journal of Geophysical Research, 72(24):6207-6223, 15 Dec. 1967. figs. tables. refs.

The geostrophic method was applied to 6 north-south hydrographic profiles across the Caribbean Sea and 1 across the Yucatan Straits. An axis of flow exists in the southern third of the Caribbean Sea.

1967 cont.

It flows directly over the steep slope in the reference layer found by Defant's method which is similar to that of the Gulf Stream. The baroclinic mass distribution extends to approximately 1,200 m but below this, the flow is weak (less than 5 cm sec^{-1}, except in the depths of the Cayman and Yucatan basins where currents of over 10 cm sec^{-1} occur). - Author (mod) MGA 19.5-655.

1967

2739 Gretner, P.E. and Simmons, G. "Short-time temperature variations in the waters of the Gulf of Mexico." Journal of Geophysical Research, 72(8):2263-2266, 15 Apr. 1967. figs. refs.

Temperature measurements indicate that the waters of the Gulf of Mexico are in motion. Internal waves seem to be pronounced in the depth range - 500 to - 1,000 ft, at least for the summer and fall months. Results show that the thermal gradient reaches a maximum at the thermocline, (at approximately - 200 ft) where it is of the order of 7°F per 100 ft. It decreases with depth and is only approximately 0.15°F per 100 ft below - 3,500 ft. At shallow depths, a small vertical movement will produce a large temperature oscillation, whereas at greater depths larger vertical motions are required to produce the same thermal effect. - Staff MGA 18.11-770.

1967

2740 Griffiths, R.C. and Simpson, J.G. "Estructura de salinidad en el Golfo de Cariaco, Venezuela." [Salinity structure of the Gulf of Cariaco, Venezuela.] Venezuela. Investigaciones Pesqueras, Serie Recursos y Explotación Pesqueros, 1(7):277-301, 1967.

This report is part of an environmental inventory of the area in which most of the sardine fishery in eastern Venezuela is conducted. The salinity of the Caribbean Sea is determined according to Parr (1937). The salinity maximum at about 200 m exceeding a value of 36.5 ppm originates in the Sargasso Sea. The lower surface salinities originate from equatorial Atlantic water. - Author (mod).

1967

2741 Griffiths, R.C. and Simpson, J.G. "Estructura térmica del Golfo de Cariaco, Venezuela, de agosto de 1959 hasta agosto de 1961." [Temperature structure of the Gulf of Cariaco, Venezuela, from August 1959 to August 1961.] Venezuela. Investigaciones Pesqueras, Serie Recursos y Explotación Pesqueros, 1(4):116-169, 1967.

1967 cont.

It is necessary for resource assessment purposes to determine: 1) fishery dependent factors, influencing the size and age structure of the resource and 2) fishery independent or environmental factors. The latter are very important in pelagic fisheries, such as those for sardine and anchovy, and they may be so great as often to obscure changes in abundance caused by changes in fishing intensity. To make an inventory of the environmental conditions in the Gulf of Cariaco, a study of the temperature structure was initiated. Author (mod).

1967

2742 Grijalva, N. "Report on physical oceanography work done in Mexico during the triennium 1964 - 1968 (to the International Union of Geodesy and Geophysics, Switzerland, Sept. 26 - Oct. 7, 1967)." Mexico City. Universidad Nacional. Instituto de Geofísica, Anales, 12:31-41, 1966. pub. Sept. 1967. fig. refs.

Information is given on the mareographic service, tide forecasting, hydrographic studies, oceanographic research and publications resulting from these activities. - Staff MGA 19.11-68.

1967

2743 Gulf South Research Institute. "Support for an international symposium on oceanography with special emphasis on hurricane research." Baton Rouge. Final Report, GSRI Project no. AS-III, 1967. 351. (Prepared for Louisiana State Science Foundation.) DLC.

1967

2744 Hamburg. Deutsches Hydrographisches Institut. "Golf von Mexico, Küste der Vereinigten Staaten, Galveston Bay, Einfahrt mit den Häfen von Galveston und Texas City." [Gulf of Mexico, coasts of the United States, Galveston Bay, entrance with the harbors of Galveston and Texas City.] Chart no. 913, new chart, Nov. 1967. Scale: 1:30,000. Limits: Lat 29° 16'00"N - 29°26'00"N, Long 94°36'00"W - 94°55'24"W.

1967

2745 Hamburg. Deutsches Hydrographisches Institut. "Mittel-America, Panama-Kanal." [Central America, Panama Canal.] Chart no. 981, new ed., Dec. 1967. Scale: 1:45,000.

1967

2746 Harris, D.L. "Hurricane storm surges." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs. Pub. no. 1, 1967. pp. 200-228. figs. charts. refs.

Principal characteristics of storm

1967 cont.

surges are illustrated with records from past storms. Phenomena responsible for these features are discussed from a theoretical point of view. It is pointed out that we do have a useful degree of skill in predicting storm surges, but more fundamental research is needed before fully satisfactory predictions will be possible. Author MGA 19.8-301.

1967

2747 Hayes, M.O. "Hurricanes as geological agents: case studies of Hurricanes Carla, 1961, and Cindy, 1963." Texas Univ. Bureau of Economic Geology, Report of Investigation no. 61, Aug. 1967. 54 p. figs. photos. charts. tables. refs.

Tropical storms, which cross the Texas coastline with a frequency of 0.67 storms per year play a major role in near-shore sedimentation on the southern Texas coast. Greatest geological effects of these storms are produced by wind-driven waves and by storm surges. The comparison of a part of the nearshore environmental complex of a segment of the southern Texas coast before and after hurricane "Carla" shows the effects of the storm. - Author (mod) MGA 20.2-259.

1967

2748 Higgs, R.H. and Carroll, J.C. "ALUMINAUT magnetometer operations, St. Croix, Virgin Islands, 1966." U.S. Naval Oceanographic Office, Informal Report, IR no. 67-33, Mar. 1967. 28 p. figs. photos. refs. DNO.

The U.S. Naval Oceanographic Office demonstrated the practicality of conducting geomagnetic surveys from deep diving submarines during operations aboard Reynolds Aluminum Company's ALUMINAUT near St. Croix, Virgin Islands, in October 1966. Placing a magnetometer sensor (modified for deep water operation) 8 ft in front of ALUMINAUT on an aluminum boom minimized the effects of the submarine's magnetic field on the survey measurements. Data analysis reveals that errors caused by the remaining submarine's field at the sensor are small and easily correctable. Author (mod) MGA 15.9-586.

1967

2749 Hole, W.L. "Strong, seasonal bio-acoustic source of the eastern Caribbean." Columbia Univ. Hudson Laboratories, Dobbs Ferry, N.Y., Technical Report no. 133, Contract ONR Nonr-266(84). Feb. 1967. 44 p. figs. tables. refs.

Bio-acoustic pulse trains recorded annually from January to March in the Lesser Antilles region and northward have

1967 cont.

been studied. Pulses lasting from about 50 to 150 m sec are emitted at a rate of 1 - 5 sec^{-1} for durations up to 2 min. Recordings in the frequency band to 300 hz with bottomed hydrophones show a principal frequency in the range of either 160 - 190 hz or 260 - 300 hz at low or high repetition rates. Arrival time differences at a grid of 4 hydrophones have been used with a computer program to calculate source locations and, with certain assumptions, their kinematics. - Author (mod).

1967

2750 Hubertz, J.M. "Study of the Loop Current in the eastern Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. no. 67-4T, Contract ONR Nonr 2119(04), May 1967. 102 p. figs. table. refs.

A physical oceanographic survey was made in June 1966, using an instrument which measures salinity and temperature as continuous functions of depth. Data were also gathered, using Nansen casts, bathythermographs and the geomagnetic electrokinetograph. The Loop Current was found to extent to lat 27°30'N with a smaller secondary loop at its northern tip. Average speeds in the current were 2 kts, with associated transports of 45 x $10^6 m^3$ sec^{-1} around the major loop within the Gulf. The Loop Current bounded a water mass, the eastern gulf loop water, distinct from that found elsewhere in the Gulf of Mexico. - Author (mod).

1967

2751 Hunter, J. "Pipe line repairs under 58 feet of water." Ocean Industry, 2(12):37-40, Dec. 1967. figs. photos.

Transcontinental Gas Pipe Line Corporation carefully rehearsed, in a simulated environment, the cutting, welding and x-raying operations later successfully carried out in the Gulf of Mexico. - Author.

1967

2752 [International Marine Science.] "Gulf Coast Research Laboratory, Ocean Spring, Mississippi." Its 5(2):27, Apr. 1967.

Describes the laboratory, library and museum. - Staff.

1967

2753 Jones, L.R. "International Law: the three mile limit or more; it's anyone's guess." Journal of Air Law and Commerce, 33(2)356-361, 1967.

This is a note on a recent decision on the meaning of the terms 'territorial

1967 cont.

waters.' Employers Mutual Gas Company vs Samuels, 407 S.W. 2d 839 (Texas Civil Appeals 1966) held that the 'territorial waters' of the United States extended 3 marine leagues (10.359 statute mi) from the state of Texas into the Gulf of Mexico. The 3-mi limit concept from a principle stated by Bynkershoek in 1703 through the 1958 Geneva Conference is traced. Staff.

1967

2754 Krieg, J.L. "Hurricane risks as they relate to offshore pipelines." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs. Pub. no. 1, 1967. pp. 304-313. figs. charts.

The experience gained thus far by operators in the offshore area indicates that the most successful protection of a pipeline can be obtained by the burial of the pipeline. The risks from factors other than hurricanes are also discussed, such as damage by barge anchors and drilling equipment to pipelines being constructed. Staff MGA 19.9-339.

1967

2755 Kuhn, R. "Atlas [of] water masses and density stratification, Vol. 1, Western North Atlantic Ocean." U.S. National Oceanographic Data Center, General Series Publication G-9, 1967. 2 p. charts. refs. DAS. DLC. DNO.

This automatically plotted atlas is intended to present the information in the portion of the water column between approximately 300 m and 3,000 m and to serve as a new kind of inventory of the more than 350,000 oceanographic stations currently held in the archives of the National Oceanographic Data Center. The atlas area (lats 20° - 60°N, longs 30° - 100°W) is divided into 2° rectangles in regions with complex water mass-density structures and into 5° rectangles in more uniform regions. - Staff MGA 18.12-34.

1967

2756 Leipper, D.F. "Observed ocean conditions and Hurricane Hilda, 1964." Journal of the Atmospheric Sciences, 24(2):182-196, Mar. 1967. figs. tables. refs.

Hurricane "Hilda" crossed the Gulf of Mexico and developed into a very severe hurricane. Sea temperature data available prior to the storm indicated a typical late summer situation, with some surface temperatures running above 30°C. The observed temperature-depth structures after the storm indicated that the warm ocean surface layers were transported

1967 cont.

outward from the hurricane center. Sea surface temperatures decreased by more than 5°C over an area of some 70 to 200 sq mi and a cyclonic current system was observed around the area of greatest hurricane intensity. - Author (mod) MGA 18.6-314.

1967

2757 Leipper, D.F. "Sequence of current patterns in the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 67-9, June 1967. 18 p. figs. refs. Also in American Geophysical Union, Transactions, 48(1), Mar. 1967.

The primary current in the Gulf of Mexico is in the form of a loop entering through the Yucatan Channel and eventually leaving through the Florida Straits. It transports some 25 to 45 million m^3 of water at 1 to 4 kts. It is known to be variable in position, but little information concerning the exact nature of the variations is published. A series of 8 cruises of about 2 wks duration each was conducted by the author over a 30-mo period in the different seasons. - Author (mod) MGA 18.11-758.

1967

2758 Lesser, R.M. "Research on oceanographic forecasting." Lockheed-California Co., Burbank, Report no. LAC-20333, Contract Nonr 3935(00), Final Summary Report, Aug. 1962 - Dec. 1966. 25 p.

The results of this work demonstrate that a computationally stable dynamic model has been developed for the advective region. Vertical velocities in the Florida Straits region and in other locations reach the same order of magnitude as horizontal currents. More control of the effects from inflow and outflow regions should be maintained. Effects of the surface layer, irregular bottom and non-constant borders are also needed to make the model more comprehensive. - Staff.

1967

2759 Lockwood, M.G. and Carothers, H.P. "Preservation of estuaries by tidal inlets." American Society of Civil Engineers, Waterways and Harbors Div., Journal, 93(4):133-152, Nov. 1967. figs. refs. DLC. TC 1.A4.

A basic proposition of the Texas Water Plan is to use gulf waters as much as possible to preserve bay and estuary environments, thereby minimizing needs for fresh water. The complex problems involved in the design and building of balanced tidal inlets to allow free inflow of adequate gulf water are reviewed

1967 cont.

from the standpoint of coastal engineering and tidal hydraulics. Environmental controls include use of inlets to both increase and decrease salinity, aid circulation and mixing of the waters and provide sufficient tidal flushing to help the estuary assimilate treated return flows. - Author (mod) MGA 19.2-573.

1967

2760 McFadden, J.D. "Sea-surface temperatures in the wake of Hurricane Betsy (1965)." Monthly Weather Review, 95: 299-302, 1967. figs. refs. DLC. QC 983.A2.

Following the passage of hurricane "Betsy" (1965) through the Gulf of Mexico, 2 flights were made 5 days apart aboard a research aircraft to collect sea surface temperature with an infrafred radiometer. The purpose was to study the effects of a hurricane on the sea surface temperature field. Data from the 1st flight, which occurred 1 to 2 days after the hurricane's passage, showed 2 cores of colder water to the right of the storm's track and very little structure to the left. The flight made 5 days later still showed a core of colder water to the right, but its shape had been badly distorted by the surface current system. - Author (mod) MGA 18.9-263.

1967

2761 McMath, C.W. "Informal summary of automated environmental data collected off Panama City, Florida." Texas A & M Univ. Data Processing Center, Contract Nonr-2119(04), Report, Mar. 1967. 23 p.

1967

2762 Nowlin, W.D. and McLellan, H.J. "Characterization of the Gulf of Mexico waters in winter." Journal of Marine Research, New Haven, Conn., 25(1):29-59, Jan. 1967. figs. refs. DLC. GC1.J6 [49el].

Results of a rapid survey of the Gulf of Mexico (winter of 1962). Variations in the characteristics of the water in several core layers are described. Circulation has been examined on the basis of dynamic computations and geomagnetic electrokinetograph measurements. In the eastern gulf, water enters through Yucatan Strait and leaves through the Florida Straits, flowing in an anticyclonic loop that extends well into the gulf. In the western gulf, circulation is anticyclonic around an elongated cell oriented NE-SW over the gulf basin. Sufficient similarities are seen in data obtained in other years to suggest that this pattern is typical of the circulation in winter. Author (mod) MGA 19.1-560.

1967

2763 O'Brien, J.J. and Reid, R.O. "Nonlinear response of a two-layer, baroclinic ocean to a stationary, axially symmetric hurricane, Pt. 1, Upwelling induced by momentum transfer." Journal of the Atmospheric Sciences, 24(2):197-207, Mar. 1967. figs. table. refs. Also: O'Brien, J.J. "Pt. 2, Upwelling and mixing induced by momentum transfer," pp. 208-215, figs. refs.

Study of the theoretical description of upwelling induced in a stratified, rotating, 2-layer ocean by momentum transfer from an intense stationary, axially asymmetric atmospheric vortex. The dynamic internal response of the ocean is assumed to be axially symmetric, which permits consideration of the solution in 2 independent variables - radial distance and time. Numerical integration via the method of characteristics is utilized to obtain values of radial velocity, tangential velocity and depth of the upper layer for a period of 2 days. A second model which includes mixing is considered. The dynamic internal response of the ocean is assumed to be axially symmetric, which permits consideration of the solution in 2 independent variables, radial distance and time. Numerical integration via the method of characteristics is utilized to obtain values of depth-averaged radial and tangential velocities, depth of the upper layer, and density contrast for a period of 2 days. Transfer of momentum between the air and the sea and between the upper and lower layers of the ocean is included. Author (mod) MGA 18.6-316.

1967

2764 [Ocean Industry.] "Access to unique computer will aid Gulf coast firms." Its 2(11):5, Nov. 1967. photo.

Control Data Corporation will install a 6600 computer capable of performing more than 3 million operations sec^{-1} to aid gulf coast personnel engaged in the ocean industry in reducing data to usable form. - Author.

1967

2765 [Ocean Industry.] "GURC will direct extensive Gulf of Mexico research." Its 2(12):49-50, Dec. 1967.

Gulf Universities Research Corporation will, in 1970, begin a synoptic research effort in the Gulf of Mexico comparable to the Indian Ocean Expedition. Total time could be 4 yrs, with a total cost of $10 million. - Author (mod).

1967

2766 [Ocean Industry.] "Measuring waves

1967 cont.

and currents." Its 2(11):18-19, 53, Nov. 1967. fig. photos.

Esso Production Research (EPR) is operating a hybrid taut-line buoy in the Gulf of Mexico which measures waves and currents. The sea-floor recorder operates unattended for a 30-day period. The buoy itself contains a mixture of oceanographic, aerospace and EPR laboratory developed components. - Author (mod).

1967

2767 [Ocean Industry.] "Mobile platform with 60-foot wheels proposed for Gulf." Its 2(2):19-20, Feb. 1967.

1967

2768 [Ocean Industry.] "Ocean Systems takes 'er down to 636 feet." Its 2(9): 37-38, Sept. 1967. DNO.

Oceans Systems and Esso Production Research Company jointly planned and executed a project to determine diver proficiency and perform underwater work at great depths. Two divers participated in the 8-day project in the Gulf of Mexico and established records for both the deepest and longest open-sea saturation dives. Author.

1967

2769 Ostericher, C. "Oceanographic cruise summary, Atlantic Fleet Tactical Underwater Range; southeast Puerto Rico, 1967." U.S. Naval Oceanographic Office, Informal Report, IR 67-76, 1967. 44 p. figs. tables. refs. DNO.

An oceanographic survey of a proposed Fleet Tactical Underwater Range off the southeastern coast of Puerto Rico was conducted during March - April 1967. Data collected included: temperature, salinity, surface currents, moored current meter measurements, bottom sediments, bottom photographs and ambient noise. Preliminary analysis of the data indicated that the distribution of physical properties was normal for the time of the year, but current speeds were somewhat higher than anticipated. The bottom was revealed to be exceedingly flat in the basin, which is an area of ponded sediments. Included in the report are the ocean station data listings and the calculations used in the analysis of the moorings. - Author (mod).

1967

2770 Pawlik, C.L. et al. "Texas coast hurricane flood protection studies." American Society of Civil Engineers. Hydraulics Div., Journal, 93(6):147-168, Nov. 1967. figs. tables. refs.

The concept and physical features of a comprehensive plan for protection of Texas

1967 cont.

coastal areas against hurricane floods are described. Technical procedures involved in the computation of hurricane surge hydrographs on the open coast and in the inland bay areas are presented, and supplemental hydraulic model studies are discussed. Hurricane flood protection plans now under study for both large geographical areas and small localized areas are outlined. Typical problems in design and construction of the authorized Freeport and Port Arthur Hurricane Flood Protection projects are discussed briefly. Author MGA 19.2-173.

1967

2771 Perdikis, H.S. "Hurricane flood protection in the United States." American Society of Civil Engineers. Waterways and Harbors Div., Journal, 93(1):1-24, Feb. 1967. figs. tables. refs. DLC. TC1.A4.

Studies for hurricane flood protection of coastal and tidal areas bordering the Atlantic Ocean and the Gulf of Mexico have provided information pertaining to behavior and frequency of hurricanes, forecasting methods, improved warning services, means of preventing loss of lives and damages to property and general engineering aspects and economics of structural measures. Structural measures were found economically justified at 41 of 77 specific localities studied. - Author (mod) MGA 18.8-263.

1967

2772 Perlroth, I. "Hurricane behavior as related to oceanographic environmental conditions." Tellus, 19(2):258-268, 1967. figs. refs. English summary p. 258; Russian summary p. 268.

This study was performed in an attempt to determine the nature of the relationship of hurricane behavior to the thermal structure of water masses over which the hurricane passes. Data for this study were obtained from synoptic sea surface weather reports transmitted to the U.S. Weather Bureau by ships of opportunity. Observations were made to establish the relationship of pressure variations to changes of sea surface temperatures. Hurricanes "Esther" (1961), "Ginny" (1963), "Cleo," (1964), "Dora" (1964) and "Hilda" (1964) were used as examples to relate the central pressure to oceanographic environmental conditions. - Author (mod) MGA 19.5-203.

1967

2773 Pyle, A.F. "NAFI automatic buoy station." In World Meteorological Organization (WMO), Technical Conference on

1967 cont.

Automatic Weather Stations, Geneva, 1966. Proceedings, Technical Note no. 82:187-188, 1967. (WMO 200.TP. 104).

Describes the (Naval Avionics Facility Indianapolis (NAFI) buoy intended to fill a gap between the small free-floating spar buoy and the large boat-type buoy whose design and construction are based on experience with the NOMAD buoy, 1955 - 1963. Seven NAFI buoys to be delivered late in 1966 and early in 1967 will be evaluated using a common communications system. - Staff MGA 19.4-95.

1967

2774 Simpson, J.G. and Griffiths, R.C. "Distribución de densidad en el Golfo de Cariaco, Venezuela Oriental." [Density distribution in the Gulf of Cariaco, eastern Venezuela.] Venezuela. Investigaciones Pesqueras, Serie Recursos y Explotación Pesqueros, 1(8):305-327, 1967.

Winds tend to cause isothermal conditions in the Gulf and the influence of salinity on the density is often important. The winds may also bring about isohaline conditions. However, rapid changes of salinity have been observed to occur, followed by a comparatively rapid and sustained mixing of the 2 waters of different salinities. - Author (mod).

1967

2775 Slowey, J.F., Jeffrey, L.M. and Hood, D.W. "Evidence for organic complexed copper in sea water." Nature, 214(5086): 377-378, 22 Apr. 1967. fig. table. refs.

Investigations are reported which give evidence of the existence in seawater of strongly complexed Cu-organic compounds that are extractable into a nonpolar solvent in the absence of any chelating agent. Data are presented on the analytical results for samples collected at different depths in the Gulf of Mexico. The largest amounts of extractable Cu were found at depths in which sinking decaying organisms were most likely to release organic compounds into the seawater. - Staff MGA 18.8-698.

1967

2776 Stevenson, R.E. "Gulf oceanography program." In U.S. Bureau of Commercial Fisheries, Circular, no. 268, Sept. 1967. Report of the Biological Laboratory, Galveston, Texas, fiscal year 1966. Contribution, no. 266. pp. 33-43. figs. charts. DNO.

Program begun in 1965 describes the oceanographic environment of the Gulf of Mexico. The purposes of the program

1967 cont.

are to: 1) define the water masses, subunits and their variations; 2) enumerate those atmospheric and oceanographic factors that produce variations and modifications of the waters; 3) determine the range of the variations and modifications in time and space and 4) combine these evaluations into practical techniques of forecasting oceanographic conditions in the waters of the Gulf of Mexico. - Author.

1967

2777 Stevenson, R.E. and Leipper, D.F. "Influence of the hurricane on the structure of the thermocline, Pt. 1-3." In American Society for Oceanography, Hurricane Symposium, Houston, Texas, Oct. 1966. ed. S.A. Stubbs. Pub. no. 1, 1967. pp. 158-199. figs. photo. charts. refs.

A 3-part discussion on the influence of the hurricane on the structure of the thermocline. According to Stevenson, the 'stovepipe' effect beneath the 'eye position' is easily noted, as is the depression of the thermocline on either side. It appears that Leipper's analysis (1966) is correct - that the warmer surface water was transported from the areas of the 'eye'. The removal of the surface water beneath the 'eye' developed a divergence which produced the upwelling of the deeper and cooler water. - Staff MGA 19.9-343.

1967

2778 Symposium on Marine Sciences and Industrial Potential, Houston, Tex., 14 June 1967. Proceedings. Sponsored by Texas Univ. College of Business Administration Foundation, Texas A & M Research Foundation and Gulf Universities Research Corporation, 1967. 263 p. DLC.

1967

2779 Szabo, B.J. and Joensuu, O. "Emission spectrographic determination of barium in sea water using a cation exchange concentration procedure." Environmental Science and Technology, 1(6):499-502, June 1967. fig. tables. refs.

A concentration technique employing Dowex 50W cation exchange resin is described for the determination of barium (Ba) in sea water. The separated Ba is precipitated as fluoride together with calcium and strontium and measured by emission spectrographic analysis. The vertical distribution of Ba in sea water has been measured in the Caribbean Sea and the Atlantic Ocean. - Author (mod) MGA 18.12-687.

1967

2780 Szabo, B.J., Koczy, F.F. and Ostlund,

1967 cont.

H.G. "Radium and radiocarbon in Caribbean waters." Earth and Planetary Science Letters, 3(1):51-61, Sept. 1967. figs. tables. refs.

Measurements of vertical and areal distribution of radiocarbon (Ra-226) and O indicate that the deep water (more than 1,500 M) of the Colombian and Venezuelan basins is not presently renewed. The renewal time of deep water in these basins is estimated between 50 and 400 yrs. The Ra content is found to be rather uniform in the Venezuelan basin. - Author (mod) MGA 19.1-544.

1967

2781 [Undersea Technology.] "Gulf Coast diver's haven." Its 8(7):29-32, July 1967.

The U.S. Navy Mine Defense Laboratory at Panama City, Florida, has broadened its base of experimentation and research to the point where it is now the principal center for diving equipment and technique development. - Author (mod).

1967

2782 [Undersea Technology.] "New ocean sciences lab opens at Corpus Christi." Its 8(9):43, Sept. 1967.

A new Ocean Sciences and Engineering Laboratory is being installed at Corpus Christi, Texas. Philip Oetking, of Southwest Research Institute is director of the new facility staffed by scientists and engineers. The 46-ft vessel WRANGLER is being converted into a sea-going research vessel. Electronic equipment will be placed on offshore drilling platforms for recording and transmitting scientific information. - Author (mod).

1967

2783 [Undersea Technology.] "Three-Four ocean pressure graphs." Its 8(9):41, Sept. 1967.

California Computer Products, Incorporated has produced 2 types of graphs showing ocean pressure from the same computer processed data-conventional 2-dimensional contour chart and 3-dimensional graph. Both show the spectral power density of ocean bottom pressure at different frequencies as a function of time. The 3-dimensional graphs proved easier to analyze. Objective of the study was the interpretation of the behavior of ocean waves in the middle zone between deep water and the surf zone, with emphasis on the method of data processing and presentation. A pressure transducer located at a depth of 19.2 in the Gulf of Mexico off Panama City, Florida, was used to measure fluctuations

1967 cont.

in ocean bottom pressure produced by these middle zone waves. - Author (mod).

1967

2784 Underwood, J.W. "Oceanographic cruise summary Salvops Vieques, USS HOIST (ARS-40)." U.S. Naval Oceanographic Office, Informal Report, IR 67-16, 1967. 6 p. DNO.

An oceanographic survey was conducted off the eastern tip of Vieques Island, August 1966. The purpose of the survey was to obtain current, bottom sediment and underwater photographic data for immediate use by U.S. Navy divers working in the area. Observed currents were predominantly tidal, with a nearly constant phase relationship between maximum flood and ebb and predicted high and low tides. Observed currents were also significantly stronger than predicted currents and times of maximum flood and ebb tide occurred later than predicted. Author (mod).

1967

2785 Unger, R. and Veenkant, R. "Underwater sound propagation in the Straits of Florida: the MIMI experiment of 3 and 4 February 1965." Michigan Univ. Cooley Electronics Laboratory, Technical Report no. 183, 3674-12-T, Contract ONR Nonr-1224(36), May 1967. 90 p. figs. tables. refs.

An experiment was conducted on 3 - 4 February 1965 as a part of the study of underwater sound propagation in the Straits of Florida, called Project MIMI. A special pseudo-random modulation of a 420 hz carrier was used to probe 1-way multipath propagation. The non-modulated carrier was used for continuous-wave analysis. This report describes the experiments the data processing and presents the results of these analyses in photographic form. Author.

1967

2786 U.S. Coast and Geodetic Survey. "Florida, Cape Kennedy to Key West." Chart no. 1112, 11th ed., 2 Oct. 1967. Scale: 1:466,940.

1967

2787 U.S. Coast and Geodetic Survey. "Florida, Florida Keys, Alligator Reef to Sombrero Key." Chart no. 1250, 7th ed., 11 Dec. 1967. Scale: 1:80,000.

1967

2788 U.S. Coast and Geodetic Survey. "Florida, Tampa Bay to Cape San Blas." Chart no. 1114, 7th ed., 25 Sept. 1967. Scale: 1:456,394.

1967

2789 U.S. Coast and Geodetic Survey. "Louisiana, Mississippi River Delta."

1967 cont.

Chart no. 1272, 20th ed., 4 Sept. 1967. Scale: 1:80,000. Plans: Southwest Pass, South Pass. Scale: 1:40,000.

1967

2790 U.S. Coast and Geodetic Survey. "Louisiana, New Orleans to Houma (879) and Houma to North Bend (880)." Chart no. 879/880, 6th ed., 18 Dec. 1967. Scale: 1:40,000.

1967

2791 U.S. Coast and Geodetic Survey. "Texas, southern part of Laguna Madre." Chart no. 1288, 7th ed., 16 Oct. 1967. Scale: 1:80,000.

1967

2792 U.S. Coast and Geodetic Survey. "Texas, Upper Galveston Bay, Houston Ship Channel, Dollar Point to Morgan Point." Chart no. 519, 4th ed., 30 Oct. 1967. Scale: 1:25,000.

1967

2793 U.S. Coast and Geodetic Survey. "United States coast pilot 5: Atlantic coast. Gulf of Mexico, Puerto Rico, and Virgin Islands." 6th ed. 1967. DAS.

1967

2794 U.S. Coast and Geodetic Survey. "U.S. Nautical Chart Catalog, no. 1, Atlantic and Gulf Coasts including Puerto Rico and the Virgin Islands." Wash., D.C. 1967. 1 sheet. DAS.

1967

2795 U.S. Coast and Geodetic Survey. "West Indies, Virgin Islands, Virgin Gorda to St. Thomas and St. Croix." Chart no. 905, 6th ed., 18 Dec. 1967. Scale: 1:100,000.

1967

2796 U.S. Coast and Geodetic Survey. "West Indies, W coast of St. Croix Island, Frederiksted Road." Chart no. 937, 3rd ed., 11 Dec. 1967. Scale: 1:20,000. New limits: lat 17°38'00"N - 17°46'57"N, long 64°50'17"W - 65°02'00"W.

1967

2797 U.S. Dept. of Transportation and U.S. Coast Guard. "Withdrawal of proposed modifications of line of demarcation between high seas and inland waters." Issued 16 Oct. 1967. 32 Federal Register 14775, (25 Oct. 1967).

Announcement of withdrawal of certain proposed modifications of the line of demarcation between the high seas and inland waters in the Gulf of Mexico, starting from Cape St. George, Florida and along the coastline to Mexico. The proposed modifications were set forth in Federal Register 8763-8765 (20 June 1967). Staff.

1967

2798 U.S. National Council on Marine Resources and Engineering Development. "Oceanographic analysis of GEMINI photography." In United States activities in spacecraft oceanography, 1 Oct. 1967. pp. 23-43. photos. DNO.

Two photographs and analyses show: 1) Texas-Louisiana coast from altitude of 300 km on 14 November 1966 and 2) Surinam coast on 21 July 1966. Analyses describe topographic and oceanographic conditions. Cover-photo shows Laguna de Terminos and the Bay of Campeche on the Yucatan Peninsula, Mexico, taken from GEMINI 5, 22 August 1955. Exposure was made at 2009Z. - Staff.

1967

2799 U.S. Naval Oceanographic Office. "Catalog of nautical charts and publications Region 2, Central and South America and Antarctica." Pub. no. 1-N, Region 2, 6th ed., 1 Oct. 1967. 24 p. DNO.

1967

2800 U.S. Naval Oceanographic Office. "Guatemala, E coast, Puerto Barrio and Matias de Galvez." Chart no. 1575, 15th ed., Nov. 1967. Scale: 1:12,500. New limits: lat. 15°41'00"N - 15°49'00"N, long 80°34'15"W - 88°39'49"W.

1967

2801 U.S. Naval Oceanographic Office. "Historical environmental data, Gulf of Mexico, Area 18." Comp. by W.T. Morton, W.L. Perry and R.S. Rushton. Deep Ocean Surveys Div., June 1967. 19 p. charts. refs. looseleaf. DNO.

This data compilation provides information on the physical oceanography, the bathymetry, the physiographic provinces and the geophysics of the Gulf of Mexico. Displays were compiled from interpretations of data available in the archives of the National Oceanographic Data Center. A general description of the Gulf of Mexico is followed by information concerning the historical oceanographic background. Staff MGA 19.3-610.

1967

2802 United States v. State of Louisiana, 389 U.S. 155, 88 S.Ct. 367, (1967).

The United States brought this action against Louisiana and others seeking the limitation of the grants to the states of submerged lands, under the Submerged Lands Act (67 Stat. 29,43 U.S.C. [United States Code] sec. 1301-1315) to those lands extending three marine leagues from the natural coastline. It was argued that the grant extended from the seaward edge of artificial jetties constructed in the Gulf of Mexico. The court held the grant

1967 cont.

in the Submerged Lands Act to be determined at the time the state entered the Union, where the grant extends to three marine leagues and grants each party sixty days in which to submit their proofs respecting the extent of such grants. - Staff.

1967

2803 Van Schuyler, P. and Hunger, A.A. "Volume scattering and oceanographic study of an area in the eastern Gulf of Mexico." U.S. Naval Oceanographic Office, Informal Report, IR no. 67-34, May 1967. 48 p. figs. refs. DNO.

Volume reverberation data from the deep scattering layer and oceanographic data for June 1966 are presented for an area located in the Gulf of Mexico. Volume scattering strength values are presented for 1/3 octave bands between 2.5 Khz and 20 Khz. Values of scattering strengths range from a minimum of -69 db at 2.5 Khz to a maximum of -48 db at 5 Khz. Diurnal variations of scattering strength with frequency are shown, the values decreasing with increasing frequency. - Author (mod) MGA 18.11-738.

1968

2804 Allen, R.H. and Spooner, E.L. "Annotated bibliography of BEB and CERC publications." U.S. Coastal Engineering Research Center, Wash., D.C., Miscellaneous Paper, no. 1-68, July 1968. 141 p.

A bibliography of Beach Erosion Board (BEB) publications from 1940 to 1963 and of Coastal Engineering Research Center (CERC) publications from 1963 through 1967. A summary or abstract accompanies each title. Included is a list of Beach Erosion Control Reports, many of which are studies of the Gulf coast that have been published as House Documents. - Author (mod) MGA 20.4-28.

1968

2805 Andersen, N.R. "Strontium and barium distributions in the Caribbean Sea." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968, Abstracts of Papers, sec. 1, no. 1. 24.

The analyses of seawater samples from the Atlantic Ocean have demonstrated that a variation in the strontium/chlorinity ratio with respect to depth exists. Additionally, this variation has been tentatively shown to characterize the Antarctic Intermediate Water at the ocean stations studied in the equatorial region of the Atlantic Ocean. Barium distributions have shown a much greater element to chlorinity ratio and do not appear

1968 cont.

to be associated with any one single oceanographic parameter. - Author (mod).

1968

2806 Anderson, W.W. "Issues and programs: Bureau of Commercial Fisheries, Dept. of Interior." In Research & marine resources Gulf of Mexico investigations, 1968. pp. 1-3. DNO.

Report on programs related to the Gulf of Mexico. - Staff.

1968

2807 Armstrong, R.S. and Grady, J.R. "Late-summer waters of the Gulf of Mexico." Commercial Fisheries Review, 30(8/9): 56-60, Aug./Sept. 1968. figs. (U.S. Fish and Wildlife Service, Separate no. 823.)

Narrative of U.S. Bureau of Commercial Fisheries R/V GERONOMO Cruise 16 (14 August - 8 October 1967) in the Gulf of Mexico. Cruise 16 was the second in a series of hydrographic surveys designed to cover all waters of the Gulf with the goals of describing the sea and determining how waters and currents change in time. One hundred fifty-one hydrographic stations were occupied, using Nansen bottles with reversing thermometers at standard depths. A total of 298 bathythermograph casts were made and samples of surface water for salinity determination were drawn at each lowering. - Author (mod).

1968

2808 Ayala-Castanares, A., Cifuentes, J.L. and Silva Lopez, D. "Consideraciones sobre la posible participación de México en las Investigaciones Cooperativas en el Mar Caribe y Regiones Adyacentes (CICAR)." [Considerations with respect to the possible participation of Mexico in the Cooperative Investigations in the Caribbean Sea (CICAR).] Mexico. Dirección General de Distritos de Riego, Memorandum Técnico, 1968. 54 p. DNO.

Memorandum in the form of a Preliminary Regional Bibliography 1950 - 1968 presented at the CICAR coordinating meeting at Curaçao, November 1968. - Staff.

1968

2809 Bailey, J.S. and Stevenson, R.E. "Space photography of some oceanic phenomena." In National Telemetering Conference, Houston, Tex., Apr. 1968. Record, 1968. pp. 296-300.

Points out that the unique advantage of satellites for oceanic studies is the capability of real-time synoptic coverage of the Earth's surface. Examples are given of studies of coastal processes in the Laguna de Términos; Texas and Louisiana currents and coastal processes;

1968 cont.
upwelling near Taiwan and convergence phenomena near Florida, Cuba and the Bahamas. - Staff MGA 20.5-717.

1968
2810 Ballester, A. "Periodicity in the distribution of nutrients in the region of the Cariaco Trench." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers, sec. 1, no. 1.26. DNO.

In August 1962, the author started the present study with monthly observations of primary productivity and plant pigments in the region of the Cariaco Trench and neighboring waters. The principal nutrients were analysed in order to discover their distribution in space and time. Thus, on the coastal shelf (in waters between the continent and the islands of Margarita, Los Hermanos, and Los Testigos, east of the Cariaco Trench), the temperatures and oxygen content were always lower than in the region of the Cariaco Trench. Author (mod).

1968
2811 Berninghausen, W.H. "Tsunamis and seismic seiches reported from the western North and South Atlantic and the coastal waters of northwestern Europe." U.S. Naval Oceanographic Office, Wash., D.C., Report no. NOO-IR-68-85, Sept. 1968.

Fifty-four tsunamis which have been reported from the western North and South Atlantic oceans between 1530 and 1964 are included. These tsunamis have been most frequent in the seismically active regions around the eastern Caribbean. Tsunamis have also been reported in other parts of the area from South Georgia and Cape Horn to Iceland. - Author (mod).

1968
2812 Berryhill, H.L. "Issues and programs: U.S. Geological Survey, Dept. of the Interior." In Research & marine resources Gulf of Mexico investigations, 1968. pp. 20-23. DNO.

Report on programs related to the Gulf of Mexico. - Staff.

1968
2813 Bertels, A. et al. "R/V CHAIN cruise no. 75. Summary cruise report prepared by chief scientist. Track charts, bathymetry, and location of observations, North Atlantic Ocean-Caribbean Sea, Lesser Antillean arc and Mid-Atlantic Ridge survey." Woods Hole Oceanographic Institution, Ref. no. 68-81, July 1968. 194 p. DNO.

Summary and charts for R/V CHAIN cruise 75 in the North Atlantic Ocean,

1968 cont.
Caribbean Sea, with surveys over the Lesser Antillean arc and Mid-Atlantic Ridge. Fifty-seven charts plotted on a Mercator projection showing track of the entire cruise except for special surveys. Observations made during the cruise are noted along the ship's track. - Author (mod).

1968
2814 Bessonov, N., Elizarov, A. and Santana, H.A. "Results of the oceanographic investigations made at Bahía de Cienfuegos in October 1967 seen in relation to prawn distribution." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968, Abstracts of Papers. sec. 1, no. 1.16. DNO.

The Cienfuegos Bay provides ideal conditions for a systematic comparative fishing and oceanographic investigation, using an appropriate methodology for continental shelf areas with estuarine characteristics. The month of October following the rainy period was chosen since it was considered ideal as far as the oceanographic conditions are concerned. The most striking features in this part of the year are a marked stratification of the waters and a very reduced transparency. - Author (mod).

1968
2815 Bishop, W.F. "Water system links offshore islands." Civil Engineering, 38(11):40-42, Nov. 1968. figs.

Underwater pipelines, off the Florida west coast are discussed. - Staff.

1968
2816 Bogdanov, D.V. "In the coastal waters of Cuba." Priroda, no. 2, Feb. 1968. p. 62. DLC.

Note on the Russian oceanographic expedition in Cuban waters in 1964. - Staff.

1968
2817 Bowin, C. et al. "Track charts, bathymetry, and location of observations, RV CHAIN cruise no. 75. 16 October - 19 December 1967, North Atlantic Ocean - Caribbean Sea, Lesser Antillean arc and Mid-Atlantic Ridge survey." Woods Hole Oceanographic Institution, Ref. no. 68-81, July 1968.

1968
2818 Bruce, J.A. "Oceanographic cruise summary, marine biofouling studies in Montego and Oyster Bays, Jamaica, January 1967 to January 1968." U.S. Naval Oceanographic Office, Wash., D.C. Report no. NOO-IR-68-116. Dec. 1968. 28 p.

1968 cont.

The U.S. Naval Oceanographic Office conducted biofouling studies in Montego Bay and Oyster Bay, Jamaica, from January 1967 - 1968. The study was in cooperation with the McCullum-Pratt Institute of Johns Hopkins University. A total of 46 fouling panels were recovered from 2 bays. A theory is introduced that in certain habitats, the seasonal rains may trigger reproduction and settlement in the barnacle, frequently the chief member of the fouling community. Author (mod).

1968

2819 Brucks, J.T. "Oceanographic studies in the Lesser Antilles region: II. Antilles Current east of the Windward Islands." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1. no. 1.12. DNO.

Oceanographic data collected in the region east of the Windward Islands on 4 cruises, conducted by the Tropical Atlantic Biological Laboratory, reveal variations in the Antilles Current not evident in atlases of average conditions. Horizontal and vertical sections of temperature, salinity and dynamic height indicate that the current varies widely in velocity and depth. - Author.

1968

2820 Busby, R.F. and Costin, J.M. "Ocean surveying from manned submersibles." U.S. Naval Oceanographic Office, Wash., D.C. Report no. NOO-IR-68-82.

The performance of bathyscaphs and second generation manned submersibles has generated considerable speculation concerning the merits of these platforms as undersea surveying tools. Undersea navigation, launch/retrieval methods and surveying sensors designed for submersible use are unsatisfactory, but their development is being pursued. Although little, if any, ocean surveying has been performed from submersibles, sufficient observations exist to indicate that surface conducted surveying may produce an erroneous impression of the bottom and near bottom environment. - Author (mod).

1968

2821 Caldwell, J.M. "Issues and programs: Corps of Engineers, Dept. of the Army." In Research & marine resources Gulf of Mexico investigation 1968. pp. 24-27. DNO.

Report on programs related to the Gulf of Mexico. - Staff.

1968

2822 Cerame-Vivas, M.J. "OCEAN EAGLE oil spill." Puerto Rico. Univ., Mayagüez.

1968 cont.

Dept. of Marine Sciences, Dec. 1968. 26 p.

Describes activities of the Department of Marine Sciences during the OCEAN EAGLE oil spill. Results of detergent and absorbant toxicity studies with bioassay and adsorbancy tests are included. - Author (mod).

1968

2823 [Coastal Research News,] "Gulf Science Year." Its 2(7):6-8, Mar. 1968.

Scientists are planning the most intensive study of the Gulf of Mexico ever attempted; a Gulf Science Year which will include, among other projects, research on actions of sea and air which cause disasters similar to hurricane "Beulah." A fleet of ships, underwater craft, instrumented buoys, platforms and satellites, may be used to probe the weather, marine life, circulations, geological structures, effects of man and other processes in the Gulf. The total program of planning, observing, analyzing and reporting results may span a 4-yr period. - Author (mod).

1968

2824 [Commercial Fisheries Review.] "Buoy beaming data to ships." Its 30(1): 8-9, Jan. 1968.

The U.S. Naval Oceanographic Office now has an undersea radioisotope generator to power an oceanographic buoy platform that will beam scientific data to ships, planes and satellites. The buoy platform moored off the coast of Puerto Rico, contains an Interrogation-Recording-Location-System (IRLS). It is an experiment to determine the feasibility of finding and obtaining scientific surface data from ocean platforms by unmanned satellites. The radioisotope generator is a 25-w undersea model produced commercially. Attached to a taut-wire-moored buoy 250 ft beneath the Atlantic Ocean's surface, the generator will supply electrical power to the IRLS surface spar float. - Author (mod).

1968

2825 [Commercial Fisheries Review.] "C&GS research vessel christened." Its 30(10):16, Oct. 1968.

The new U.S. Coast and Geodetic Survey vessel RESEARCHER is the first of a new class of compact survey ships. The 2,800-ton, 278-ft ship, capable of handling helicopters, is equipped with the most highly sophisticated electronic and scientific instruments. The ship has an underwater bow bulb to house deep-finding transducer arrays, a 20-ton

oceanographic crane designed to launch and retrieve small research submersibles, the latest navigational and weather devices and can receive satellite transmissions. Completely air-conditioned, it has 4,000 ft of enclosed laboratory space and accommodations for 18 scientists. After completion in 1969, researcher will participate in oceanographic surveys in the Atlantic Ocean and the Gulf of Mexico. - Author (mod).

1968

2826 [Commercial Fisheries Review.] "ESSA Laboratory in Miami." Its 30(10):15-16, Oct. 1968.

The U.S. Coast and Geodetic Survey has opened the Engineering Development Laboratory, a testing facility for oceanographic systems development in Miami, Florida. The laboratory, a branch of the Office of Systems Development, will support the Atlantic Oceanographic Laboratories in Miami. Both are part of the Environmental Science Services Administration (ESSA). The laboratory uses satellite navigation methods to develop projects related to high-speed charting methods and buoy tracking of ocean currents. It is stationing deep-sea buoy arrays in the Caribbean Sea and adjacent Atlantic for ocean currents, tides and wave measurements, including magnetic observations. - Author (mod).

1968

2827 [Commercial Fisheries Review.] "FAO-UNESCO Symposium on Caribbean Sea." Its 30(5):47, May 1968. DAS.

A symposium on 'Investigations and Resources of the Caribbean Sea and Adjacent Regions' will be held in Willemstad, Curaçao, Netherlands Antilles on 18 - 26 November 1968. It will review knowledge and identify gaps in scientific investigations and resources research. Its purpose is to improve scientific cooperation and rational use of marine resources in the Caribbean Sea, the Gulf of Mexico and the adjacent Atlantic Ocean. Another purpose is to facilitate planning of the Cooperative Investigations of the Caribbean and Adjacent Regions (CICAR) to be initiated in 1970 under the Inter-governmental Oceanographic Commission (IOC). - Author (mod).

1968

2828 [Commercial Fisheries Review.] "GERONIMO is taken out of service." Its 30(4):24, Apr. 1968.

Bureau of Commercial Fisheries research vessel GERONIMO was laid up on 8 March 1968. Studies had shown that its research

could be done more effectively and economically by UNDAUNTED and other vessels available in the Gulf of Mexico area. GERONIMO was transferred from Washington, D.C. to the Gulf area in 1965; based at Galveston, Texas. In 1963, it was used with the communications satellite SYNCOM II to transmit oceanographic data. In 1964, GERONIMO participated in the International Cooperative Investigation of the Tropical Atlantic. The vessel, a converted tugboat built in 1944, is 143 ft long and displaces 760 tons. - Author (mod).

1968

2829 [Commercial Fisheries Review.] "Loran 'all weather' navigation begins in Gulf of Mexico." Its 30(11):7-8, Nov. 1968.

On 1 November 1967, a $2 million U.S. Coast Guard radio-electronic system went on the air which provided precise, all-weather navigation throughout the Gulf of Mexico. Three Long-Range Aid to Navigation (LORAN) stations went into operation. Mariners who use it will be able to pinpoint their locations without visual reference. Whether they are out of sight of land, if it's overcast, if the compass is broken, or regardless of winds and currents, LORAN will give them a fast and accurate position fix. Author (mod).

1968

2830 [Commercial Fisheries Review.] "New hydrographic survey vessel commissioned." Its 30(4):12, Apr. 1968.

A new U.S. Hydrographic Survey vessel equipped with electronic devices to probe America's coastal waters was commissioned by the Environmental Science Services Administration (ESSA) on 23 March at Jacksonville, Florida. It was named the MT. MITCHELL. The $4.3 million, 231-ft, 1,660-ton, white-hulled vessel will take part in the U.S. Coast and Geodetic Survey's long-range program of marine charting and scientific exploration in the Atlantic. The ship can cruise 8,000 mi and carry 79 officers, crew and scientists. Its primary function will be to participate in hydrographic surveys in coastal waters in the Atlantic and the Gulf of Mexico. MT. MITCHELL also has some equipment for oceanographic surveying. - Author (mod).

1968

2831 Copeland, B.J., Thompson, J.H. and Ogletree, W.B. "Effects of wind on water levels in the Texas Laguna Madre." Texas Journal of Science, 20(2):196-199, Dec. 1968. figs.

1968

2832 Curra, R.A. "Coastal lagoons of Venezuela." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.7. DNO.

Venezuela has an interesting complex of coastal lagoons along the extensive Caribbean coast which include the following masses of water: Carenero, Tacarigua Lagoon, Unare Lagoon, Píritu, Los Patos, Chacopata Lagoon, Arestinga Lagoon, Las Marites, Campoma Lagoon and Guariquén. The physical-chemical and hydrobiological characteristics of these waters differ, but they have an abundance of nutrients that makes them potentially rich as areas of high biological productivity. In this paper, a general analysis of the coastal lagoons of Venezuela is presented, indicating their location, area and fishery potential. - Author (mod).

1968

2833 Curra, R.A. "Present status of the oceanographic investigations in Venezuela." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.6. DNO.

This paper reviews the physical and human resources of oceanographic investigations. The basic objectives of different marine laboratories in Venezuela are described, along with the financial status of the investigations and the possibilities of establishing a National Committee on Oceanography, a National Program of Oceanographic Research and a National Directorate for the Oceanographic Research Institute. A list of contributions to physical, chemical and geological oceanography in Venezuela is included. - Author.

1968

2834 Darling, J.M. "Surf observations along United States 'coasts'." American Society of Civil Engineers, Proceedings, v. 94, Paper no. 5786, pp. 11-21.

Initially, 27 U.S. Coast Guard stations located at various points along 3 coasts of the United States will participate in a program of the U.S. Corps of Engineers. Personnel at these stations will make visual observations of surf according to prescribed methods at 4-hr intervals. These observations will be recorded on standard forms developed by Coastal Engineering Research Center (CERC) and mailed to them weekly. CERC will analyze these data from each surf station by automatic data processing methods and will publish them in technical memorandum.

1968 cont.

Previously, surf observations were published in statistical form in TM 108 and Annual Bulletin v. 16. - Staff.

1968

2835 Davis, A.B. "Issues and programs: Corps of Engineers, Dept. of the Army." In Research & marine resources Gulf of Mexico investigations, 1968, pp. 28-30. DNO.

Report on programs at this agency related to the Gulf of Mexico. - Staff.

1968

2836 Dodgen, J.E. and Green, J.R. "SORD." In Symposium on Useful Work in the Sea, sponsored by Los Angeles Regional Section, Marine Technology Society, 11 - 12 Dec. 1967. Journal of Ocean Technology, 2(4): 131-136, Oct. 1968. figs.

Describes development and operation of Submerged Object Recovery Device (SORD) with particular reference to a recovery operation at St. Croix, Virgin Islands. SORD has brought up dozens of items valued at hundreds of thousands of dollars from depths to 3,030 ft at locations extending from Western Canada to the Virgin Islands. The versatility of the device has been increased as accessories have been developed for or adapted to the vehicle. SORD sees by TV, hears by sonar, and senses by magnetism. - Author (mod).

1968

2837 Drennan, K.L. "Hydrographic studies in the northeast Gulf of Mexico." Gulf South Research Institute. Dept. of Oceanography. Environmental Sciences and Engineering Labs., Technical Report, Ref. 68-0-1, Jan. 1968. 119 p. figs. refs.

The major circulatory features and distribution of physical properties in the northeastern Gulf of Mexico are presented from a series of 8 quasi-synoptic surveys. Seasonal changes in hydrography and circulation over the continental shelf are shown and discussed in terms of their relationship to the offshore currents, river discharge, winds and tides. Surface current speed and direction are determined from an extensive drift-bottle study and distribution of density. - Author (mod).

1968

2838 Dunkle, W.M. and Witzell, G.K. "Index to major cruises in the Caribbean Sea and adjacent regions made by the Woods Hole Oceanographic Institution 1954 - 1968." Woods Hole Oceanographic Institution, Technical Memorandum, no. 22-68, Nov. 1968. DNO.

1968

2839 Dunkle, W.M., Witzell, G.K. and

1968 cont.

Hays, H.C. "R/V CHAIN cruise no. 75, North Atlantic Ocean - Caribbean Sea, Lesser Antillean arc and Mid-Atlantic Ridge Survey. Summary, cruise report. Track charts, bathymetry, and location of observations." Woods Hole Oceanographic Institution, Ref. no. 68-81, July 1968. 57 charts. DNO.

This report contains a summary and charts for R/V CHAIN Cruise 75 in the North Atlantic Ocean and Caribbean Sea with surveys over the Lesser Antillean arc and Mid-Atlantic Ridge. There are 57 charts plotted on a Mercator projection showing the track of the entire cruise except for special surveys. - Author (mod).

1968

2840 Elizarov, A., Bessonov, N. and Gonzalez, O. "Results of Cuban-Soviet investigations on Campeche Bank area." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.25. DNO.

This paper deals with the results of the investigations carried out on Campeche Bank during the yrs 1962 - 1968 concerning oceanographic conditions, their causes and consequences. Areas of upwelling were studied; it was found to be more intensive in summer than in winter. It is concluded that the productivity of the Campeche Bank is determined by the cyclonic and anticyclonic circulations. Depending upon the currents on the Bank area, the movements of productivity are determined by the Yucatan Current. Author (mod).

1968

2841 Emilsson, I. and Gómez, J.A. "Net of fixed hydrographic stations close to Cuba: some results of the three first cruises." In Sumposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.15. DNO.

As a part of a general plan to investigate the environmental conditions of the sea around Cuba, a net of fixed oceanographic stations was established. The system consists basically of about 60 stations grouped by sections crossing the sea areas which separate the island from the land, the islands and neighboring banks such as the Paso de los Vientos, Canal de Yucatán, etc. - Author (mod).

1968

2842 Emilsson, I., Tapanes, J. and Godoy, J. "Contributions to the hydrography of the continental shelf south of Cuba." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.14. DNO.

The continental shelf bordering the southern coast of Cuba represents an area of considerable extension (40,000 sq km^2) but very shallow depths (5-16 m). Along the exterior parts there are ranges of shallows which limit the communication with the open ocean. Over the shelf itself, a number of shallows and banks also form obstacles to the water circulation. The data used for this analysis consist of about 570 observations of temperature and 460 of salinity. Mean values as well as maxima and minima were calculated of both temperature and salinity in the various sub-regions and for the four seasons of the year. - Author (mod).

1968

2843 Ford, T.B. "Issues and programs: Wildlife and Fisheries Commission, State of Louisiana." In Research & marine resources Gulf of Mexico investigations, 1968. pp. 7-10, DNO.

Report on programs related to the Gulf of Mexico. - Staff.

1968

2844 France. Service Hydrographique. "Mer des Antilles, côte du Venezuela, Lagune de Maracaibo." [Caribbean Sea, coast of Venezuela, Lake of Maracaibo.] Chart 6520, Nov. 1968. Scale: 1:200,000.

1968

2845 France. Service Hydrographique. "Mer des Antilles, côte du Venezuela, Lagune de Maracaibo, de l'entrée à Puerto Miranda." [Caribbean Sea, Coast of Venezuela, Lake of Maracaibo, from the entrance to Puerto Miranda.] Chart 6518, Apr. 1968. Scale: 1:60,000. Formerly chart 6188.

1968

2846 France. Service Hydrographique. "Mer des Antilles, côte du Venezuela, Lagune de Maracaibo, de Puerto Miranda à Cabimas." [Caribbean Sea, coast of Venezuela, Lake of Maracaibo, from Puerto Miranda to Cabimas.] Chart 6519, Apr. 1968. Scale: 1:25,000. Formerly chart 6188.

1968

2847 France. Service Hydrographique. "Mer des Antilles, îles de Montserrat et Barbuda." [Caribbean Sea, islands of Montserrat and Barbuda.] Chart no. 1545, Apr. 1968. Scale: Various.

1968

2848 Fredericks, A.D. "Concentrations

1968 cont.

of organic carbon in the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-27T, Project 286-10, Dec. 1968. Abstract only.

Although the rivers emptying into the northern and western Gulf of Mexico influence the dissolved organic carbon (DOC) and particulate organic carbon (POC) concentrations, they apparently have no influence on the organic carbon of the surface and deep waters off the continental shelf. The DOC and POC concentrations of the surface and deep oceanic waters vary very little with time in contrast to the near-shore Gulf water. Surface waters of the Gulf of Mexico have a DOC concentration range of 2.31 to 1.04 mgC/l and a POC concentration range of 1.911 to 0.031 mgC/l. - Author (mod).

1968

2849 Fukuoka, J. "General circulation of currents and characteristics of upwelling in the Caribbean Sea." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.1. DNO.

In the Caribbean Sea close to the Venezuelan coast, there is a strong current which has some branches of counter currents and also upwelling. In this work, a study is made of the upwelling which occurs in the narrow zone between the continent and Margarita Island and along the peninsulas of Araya and Paria. Almost the same phenomena were observed in both of these areas. It is thought that the same mechanism of upwelling occurs in the system of the Equatorial Current. - Author.

1968

2850 Gaul, R.D. "Investigations of oceanic stratification, currents and surface waves." Westinghouse Electric Corp., Pittsburgh, Pa. Research Laboratories, Contract N00014-67-C-0288, Final Report, Oct. 1968. 20 p. figs. refs. DNO.

Describes investigations of ocean surface waves, currents and stratification conducted November 1966 - September 1968. An analysis was made of vertical stratification observed in the northeastern Gulf of Mexico using data from an earlier environmental research program carried out in 1965 and 1966 by Texas A & M University. Part of the research effort was diverted to the preparation of drift bottle data in a format appropriate for transfer to the National Oceanographic Data Center. The main research effort was on a series of wave measurement comparisons between the U.S. Office of Naval Research

1968 cont.

Convair 'Monster' buoy and a free-floating wave meter. - Author (mod).

1968

2851 Geyer, R.A. "Oceanography of the Gulf of Mexico." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr-2119(04), Progress Report, June 1968. 80 p.

Summary of Texas A & M oceanographic research in the Gulf of Mexico and Caribbean during fiscal year 1968. Included are reviews of work in physical oceanography, geophysical research, sedimentary characteristics, geotechnical properties, acoustic characteristics, remote sensing, air-sea interaction, microwave parameters, chemical oceanography and bio-environmental studies. Field work carried out aboard R/V ALAMINOS is summarized, and publications, papers and reports resulting from the work are presented. - Author.

1968

2852 Gibbs, H.K. "Submerged lands." Virgin Islands Bar Journal, 2(1):1-13, Jan. 1968.

The article discusses the peculiar law concerning title to tidelands of the Virgin Islands arising from the status of that territory as an incorporated territory under the 1963 Territorial Submerged Lands Act. Author analyzes the history of that legislation, paying particular emphasis to its relation to the 1953 Submerged Lands Act and the common law treatment of tidelands. The 1963 Territorial Submerged Lands Act purported to authorize the U.S. Secretary of Interior to convey certain submerged lands to the respective governments of the unincorporated territories of the United States (the Virgin Islands, Guam and American Samoa) under certain conditions or to permit their use under other conditions. - Author (mod).

1968

2853 Giese, G.S. "Coastal physical oceanography in the Caribbean Sea." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.4. DNO.

Eleven percent of the surface area of the Caribbean Sea consists of coastal waters less than 100 m deep. This water overlies flat shelves which vary in width and depth but which are similar in that they all terminate in steep slopes. Almost everywhere, the shelf edge is above the 100 m contour. - Author (mod).

1968

2854 Goudeau, D.A. and Conner, W.C. "Storm surge over the Mississippi River Delta

1968 cont.
accompanying Hurricane Betsy, 1965." Monthly Weather Review, 96:118-124, 1968. figs. charts. refs. DLC. Q C 983.A2.

Selected tide water gage readings taken during hurricane "Betsy" (1965) along the Mississippi River Delta and adjacent areas are graphically presented. The various processes involved in the change in tide water level associated with the passage of a hurricane are discussed. The data are divided into 3 main categories in order to show the storm surge response: 1) along the coast (Gulf Coast gages), 2) on inland waterways (New Orleans area gages) and 3) on an inland lake (Lake Pontchartrain gages). A discussion of surge elevation along the Mississippi River from the mouth to New Orleans is also included. - Author (mod) MGA 19.7-289.

1968

2855 Goulet, J. "Studies of the divergence of the South Equatorial Current off the coast of Brazil." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.2. DNO.

A synoptic description of a small oceanic area northeast of Brazil (lat 4-9°S, long 31-35°W) in the vicinity of the divergence of the South Equatorial Current is presented. The description is based on 146 salinity-temperature-depth records obtained from 11 - 23 October 1966. The significance of small-scale structures of temperature and salinity is discussed. - Author.

1968

2856 Grady, J.R. and Armstrong, R.S. "Gulf oceanography program." In U.S. Bureau of Commercial Fisheries, Circular, no. 295, Dec. 1968. Report of the Biological Laboratory, Galveston, Texas, fiscal year 1967. Contribution, no. 261. pp. 30-35. charts. DNO.

The program, begun in late 1965, examines the short- and long-term changes of the water environment over the continental shelf and the relation of variations to the general dynamics and atmospheric conditions of the Gulf. Report covers a reconnaissance survey of R/V GERONIMO, energy budget, circulation dynamics and trends in oceanic conditions. Author (mod).

1968

2857 Gt. Brit. Hydrographic Office. "Admiralty list of lights, fog signals and visual time signals, column J, 1968: western side of North Atlantic Ocean (United States of America, Gulf of Mexico, West Indies and north coast of South

1968 cont.
America to Cabo Orange), corrected to 18th May, 1968." London, 1968.

1968

2858 Gt. Brit. Hydrographic Office. "West Indies, British Virgin Islands, Tortola to Virgin Gorda." Chart no. 2019, 19 Jan. 1968. Scale: 1:75,000. Limits: Lat 18°14'00"N - 18°32'36"N, long 64°15' 00"W - 64°42'00"W.

1968

2859 Gt. Brit. Hydrographic Office. "West Indies, Trinidad, Boca de Monos, and approaches to Port of Spain." Chart 479, new ed., 24 May 1968. Scale: 1:25,000. Limits: Lat 10°37'12"N - 10°43'32"N, long 61°32'34"W - 61°41'24"W.

1968

2860 Gt. Brit. Hydrographic Office. "West Indies, Virgin Islands, Tortola Island, Road [Town] harbour and approaches." Chart no. 2020, new chart, 19 Jan. 1968. Scale: 1:15,000. Limits: Lat 18°22'42"N - 18°26'30"N, long 64°33'31"W - 64°39'00"W.

1968

2861 Gruver, J.A. "DEEPSTAR and other Westinghouse submersible operations." In Symposium on Useful Work in the Sea, sponsored by Los Angeles Regional Section, Marine Technology Society, 11 - 12 Dec. 1967. Abstract only. Journal of Ocean Technology, 2(4):131, Oct. 1968. DAS.

Submersible DEEPSTAR 4000 has participated in diving programs in the Pacific Ocean, Gulf of Mexico and the Atlantic Ocean. Scientific missions have resulted in over 3,000 successful dives. Discusses the evolution of DEEPSTAR 4000 and its 3-yr history of trials, certification, modifications and mission-oriented applications. Descriptions of instrumentation and operating techniques are discussed. Author (mod).

1968

2862 Gulf Universities Research Corporation. "Research & marine resources Gulf of Mexico investigations. Issues and programs I." Pub. no. 107, Oct. 1968. 37 p. DNO.

Report on a special one-day meeting in Galveston, Texas, (21 May 1968). The meeting was the first in a series which will bring together knowledgeable persons to describe what they are doing and planning to do in the Gulf of Mexico. It is hoped that these meetings will broaden the channels of communication among scientists from various disciplines and serve as a mechanism for information exchange. - Author.

1968

2863 Gutierrez, A. and Pequegat, W.E.

1968 cont.

"Acoustical system for remote bottom contact and current speed determinations." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-21T, Project 286-6, Contract Nonr-2119(04), Oct. 1968. 8 p. DNO.

Need for a simple acoustical telemetering system arose in conjunction with the environmental aspects of a long range study of deep-sea biology in the Gulf of Mexico begun in 1966. Early results of biological sampling suggested the existence of a bottom current of moderate speed in parts of the eastern gulf. Consultation with physical oceanographers revealed that no one had previously suspected that such a current existed in the Gulf of Mexico at depths of 1,700 or more fathoms. It was suggested that as much information as practicable should be obtained on this current during subsequent cruises aboard R/V ALAMINOS. - Author.

1968

2864 Hardy, G.W. "Administration of offshore mineral leasing statutes in the Gulf of Mexico (Louisiana and Texas)." Natural Resources Lawyer, July 1968. pp. 70-85.

Article discusses the history and practices of offshore leasing in the states of Texas and Louisiana. The development of the current legislation is outlined and the general provisions of that legislation are summarized. The article also discusses various problems of federal-state relationships. There is an overlap between state and federal regulation in the area of pollution. There are also problems of conflicting jurisdiction in the area of conservation and production restriction. - Author (mod).

1968

2865 Hastenrath, S.L. "Estimates of the latent and sensible heat flux for the Caribbean Sea and the Gulf of Mexico." Limnology and Oceanography, 13(2):322-331, 1968.

Monthly mean values of the latent and sensible heat flux at the sea-air interface ($Q_e + Q_s$) are derived for the areas of the Caribbean Sea and the Gulf of Mexico, separately: 1) from the multi-annual mean of the oceanic heat budget; 2) from the atmospheric energy budget, on the basis of the available radiosonde data for the entire year 1960 and 3) by the bulk aerodynamic method, using 1960 ship observations. The annual average of the latent and sensible heat transfer in the area of the Central American seas is of

1968 cont.

the order of 270 ly/day. - Author (mod).

1968

2866 Hazelworth, J.B. "Water temperature variations resulting from hurricanes." Journal of Geophysical Research, 73(16): 5105-5123, Aug. 1968. figs. tables. refs.

Daily variations in sea surface temperature at several coastal and lightship stations and the NOMAD buoy during the passages of ten hurricanes are presented. The temperature variations are given for the coastal stations and NOMAD buoy in the Gulf of Mexico for a period from 10 days before to 36 days after the hurricane passed. Generally, marked cooling of the sea surface occurred during the passage of a hurricane. However, examples are noted where a rise in temperature occurred. A comparison was made of the daily temperature variation due to hurricanes as recorded at the coastal and deep water sites. The mean temperatures decrease for the eleven coastal examples and for the thirteen lightship examples was 3.1°F, and for the three NOMAD examples was 6.4°F. Author (mod) MGA 20.3-314.

1968

2867 Ingham, M.C. "Mixed layer in the western tropical Atlantic Ocean." Bulletin of Marine Science, 18(3):561-571, 1968.

Significant differences in the thicknesses of the isothermal and isohaline layers in the so-called mixed layer are reported for the western tropical Atlantic Ocean and the eastern Caribbean Sea on the basis of 339 coarse-scale salinity-temperature-depth records. The differences exceed 7.5m in 45 percent of the records and 17.5 m in 31 percent. The significance of these dissimilarities and the possible reasons for them are discussed. - Author.

1968

2868 International Hydrographic Bureau. "New oceanographic vessel launched for C&GS." Its Bulletin, Nov. 1968, pp. 449-450.

Describes U.S. Coast and Geodetic Survey vessel RESEARCHER. RESEARCHER, a 2,800-ton air-conditioned vessel, is 278 ft long and will have a normal operating range of 13,000 mi. She will have 4,000 sq ft of enclosed laboratory space and accommodations for 13 officers, a crew of 54 and 18 men and women scientists. The vessel will engage in oceanographic surveys in the Atlantic Ocean and the Gulf of Mexico. Her home port will be Miami, Florida, site of the Environmental Science Services

1968 cont.

Administration's Atlantic Research Laboratories. - Author (mod).

1968

2869 [International Marine Science.] "U.S. Naval Oceanographic Offices uses an undersea radioisotope generator to power an oceanographic buoy platform." Its 6(2):5, Sept. 1968.

An undersea radioisotope generator to power an oceanographic buoy platform which will beam scientific data to ships, planes and satellites has been delivered to the U.S. Naval Oceanographic Office, Suitland, Maryland. The buoy platform, containing an Interrogation-Recording-Location-System (IRLS), is an experiment by the Oceanographic Office to determine the feasibility of locating and obtaining scientific surface data from ocean platforms by unmanned satellites. It is one of several such experiments being conducted in connection with the NIMBUS-B weather satellite program. - Author (mod).

1968

2870 Jarvela, L.E. "Oceanographic cruise summary UNITAS VIII cruise around South America August to December 1967." U.S. Naval Oceanographic Office, Wash., D.C., Informal Report, 18 Aug. - 9 Dec. 1967. Report no. NOO-IR-68-14. Mar. 1968. 19 p.

Oceanographic operations were conducted aboard U.S. Navy ships during the UNITAS VIII cruise around South America during 18 August to 9 December 1967. Nansen cast, bathythermograph and bathymetric observations were made around the periphery of the continent. Thermal structure information was utilized for sonar range predictions during the cruise. In the vicinity of the Gulf of Panama, mixed layers were generally shallow and surface temperatures were below average. Mixed layers were deepest in the offshore waters in the Peru current region. Upwelling occurred off Punta Pariñas and appeared to occur at lats 16°S and 30°S. - Staff.

1968

2871 Jensen, E. "Issues and programs: Federal Water Pollution Control Administration, Dept. of the Interior." In Research & marine resources Gulf of Mexico investigations, 1968. pp. 4-6. DNO.

Report on programs related to the Gulf of Mexico. - Staff.

1968

2872 Johannessen, O.M. "Preliminary results of some oceanographical observations between Barbados and Tobago." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.10. DNO.

An investigation of physical and biological oceanography was carried out by Marine Sciences Centre, McGill University with the Canadian Research Vessel HUDSON, Bedford Institute, in a section between Barbados and Tobago 24 March - 2 April 1968. Some of the preliminary results from the physical program, which occupied half of the total observation period, is reported. The section shows that isotherms, isohalines and isopychals have a general slope upwards going from Barbados to Tobago, with the largest slope over the continental slope on the Tobago side. Salinity-temperature-depth observations, using a German bathysone, show that the fine structure is very well developed in the area. - Author (mod).

1968

2873 Joyce, E.A. "Issues and programs: Florida Marine Research Laboratory, Florida Board of Conservation." In Research & marine resources Gulf of Mexico investigations, 1968. pp. 11-13. DNO.

Report on programs related to the Gulf of Mexico. - Staff.

1968

2874 Kaufmann, P. "New research centre in Santa Marta, Colombia." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.9. DNO.

In 1968, an association was formed between the University of Justus Liebig, Giessen, Germany and the Universidad de Los Andes, Bogotá, Colombia. In addition, the organization of a new center for research was started in 1964 on the Atlantic coast of Colombia. The Colombian-German Institute is associated with the Institute of Tropical Research of the University of Giessen and it offers working facilities for visiting scientists in the fields of marine biology, oceanography, zoology, botany, geography and geology. Its favorable location makes the institute an appropriate center for scientific exploration of the southern region of the Caribbean Sea and of northern Colombia. Author (mod).

1968

2875 Kinsman, B. "On field experiments with a sketch of a plan for a wind wave generation experiment to be carried out off Aruba, N.A. aboard the R/V RIDGELY WARFIELD." Johns Hopkins Univ. Chesapeake Bay Institute, Report no. TR-42, Ref.

1968 cont.

68-10, Sept. 1968. 75 p.

The requirements for a field experiment as distinct from a descriptive study or a laboratory experiment are discussed and illustrated by a plan for a study of wind wave generation. - Author (mod).

1968

2876 Lambert, G. "Application of underwater radiography." Materials Evaluation, 26(3):27A-30A, Mar. 1968. figs.

The first emergency welding repair of a break in a submerged operating pipeline was made recently in the Gulf of Mexico using a diving bell and welding procedure previously tested under similar conditions on new construction. Almost all parameters of the finalized technique were either influenced or dictated by conditions imposed by the underwater environment. Radiography was performed successfully and the quality of the weld was acceptable. Conclusions are that similar radiography in deeper water, or open water, are feasible from both a technical and safety standpoint. Author (mod).

1968

2877 Lambertson, C.J. "Relation of University of Pennsylvania to Tektite program." TEKTITE I, jointly sponsored by U.S. Navy, National Aeronautics and Space Administration, U.S. Dept. of Interior and U.S. Coast Guard, Portfolio, 1968 (?) 7 p.

1968

2878 Landis, R.C. and Leipper, D.F. "Effects of Hurricane Betsy upon Atlantic Ocean temperature, based upon radio-transmitted data." Journal of Applied Meteorology, 7(4):554-562, Aug. 1968. figs. tables. refs.

Radio transmitted synoptic data are used to determine the change brought about in the thermal structure of the Atlantic Ocean by the passage of hurricane "Betsy" (1965). Such data for sea surface temperature and bathythermograph observations are regularly available from selected areas. The data for "Betsy" indicate thermal changes in the sea similar to those described previously for hurricane "Hilda," where research data were used. They give evidence of upwelling from 200 ft near the storm track, a 4°F sea surface temperature decrease and downwelling farther away from the track. - Author (mod)
MGA 19.12-208.

1968

2879 Leart, R.T. "Issues and programs: Parks and Wildlife Department, State of Texas." In Research & marine resources

1968 cont.

Gulf of Mexico investigations, 1968. pp. 14-16. DNO.

Report on programs related to the Gulf of Mexico. - Staff.

1968

2880 Leipper, D.F. "Hydrographic station data, Gulf of Mexico August - November Nansen casts, 1965 - 1967." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-13T, Project 286-4, Aug. 1968. Abstract only.

Data are presented for Nansen casts taken in the Gulf of Mexico between August-November during 1965 - 1967. All Nansen casts were taken from the R/V ALAMINOS with standard Nansen bottle and reversing thermometer equipment. The data were processed by computer which interpolated the data to standard depths and calculated certain parameters. Maps which illustrate station locations and current patterns, as represented by the topographies of isothermal surfaces, are included along with notes on the series of cruises and on the procedure used to process the data. Author.

1968

2881 Leipper, D.F. "Hydrographic station data, Gulf of Mexico August - November STD, 1965 - 1967." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-14T, Project 286-4, Aug. 1968. Abstract only.

Data are presented for salinity-temperature-depth (STD) records taken in the Gulf of Mexico between August - November during 1965 - 1967. All STD's were taken from the R/V ALAMINOS with the Bissett-Berman salinity-temperature and depth acquisition system, model 9006. The data were processed by computer which interpolated the data to standard depths and calculated certain parameters. Maps which illustrate the station locations and the current patterns, as represented by the topographies of isothermal surfaces, are included along with notes on the series of cruises and on the procedure used to process the data. - Author.

1968

2882 Leipper, D.F. "Hydrographic station data, Gulf of Mexico, February - March Nansen casts, 1965 - 1967." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-15T, Project 286-4, Aug. 1968. Abstract only.

Data were presented for Nansen casts taken in the Gulf of Mexico between February - March during 1965 - 1968. All Nansen casts were taken from the R/V

1968 cont.

ALAMINOS with standard Nansen bottle and reversing thermometer equipment. The data were processed by computer which interpolated the data to standard depths and calculated certain parameters. Maps which illustrate the station locations and the current patterns as represented by the topographies of isothermal surfaces, are included along with notes on the series of cruises and on the procedure used to process the data. The computer program used to process the data for the series of reports (13T-17T) is also included. Author.

1968

2883 Leipper, D.F. "Hydrographic station data, Gulf of Mexico, February - April STD, 1967 - 1968." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-16T, Project 286-4, Aug. 1968. Abstract only.

Data are presented for salinity-temperature-depth (STD) records taken in the Gulf of Mexico between February and April during 1967 and 1968. All STD's were taken from the R/V ALAMINOS with the Bissett-Berman salinity-temperature and depth acquisition system, model 9006. The data were processed by computer which interpolated the data to standard depths and calculated certain parameters. Maps which illustrate the station locations and the current patterns, as represented by the topographies of isothermal surfaces, are included along with notes on the series of cruises and on the procedure used to process the data. - Author (mod).

1968

2884 Leipper, D.F. "Hydrographic station data, Gulf of Mexico, August 17 - September 5, 1968, Nansen casts and STD." Texas A & M Univ. Dept. of Oceanography and Meteorology, Aug. 1968. 106 p.

The report contains oceanographic data based primarily upon cruises in the Gulf of Mexico. The data represent hydrographic casts obtained either with the standard Nansen bottle and reversing thermometer equipment or with the Bissett-Berman salinity-temperature and depth data acquisition system. The series of cruises was planned in an effort to get synoptic pictures on the temperature-depth structure of the Gulf in the various seasons. Author.

1968

2885 Leming, T.D. "Oceanographic studies in the Lesser Antilles region: I. Turbulence west of the southern Lesser Antilles." In Symposium on Investigations

1968 cont.

and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.11. DNO.

The Tropical Atlantic Biological Laboratory conducted five cruises in the area of the southern Lesser Antilles from 1965 - 1967. Results of two surveys about 2 to 3 weeks apart in 1966 show many eddy like features and a high degree of turbulence west of St. Vincent and St. Lucia. The hydrographic structure of these eddies is described in detail. Geostrophic velocities within the eddies are calculated and some estimates are made of the time scales involved in their formation. The eddies appear to be topographically generated rather than wind generated. - Author.

1968

2886 Linnenbom, V.J. and Swinnerton, J.W. "Cariaco Trench: distribution of low-molecular-weight hydrocarbons." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.23. DNO.

This paper is concerned with the presence and distribution of low-molecular-weight hydrocarbons in the oxygenated and anoxic waters of the Cariaco Trench. With the development of an extremely sensitive gas chomatographic method, measurements were made of methane and other low-molecular-weight hydrocarbons both in oxygenated and anoxic sea water. The occurrence of several hydrocarbons is described. - Author (mod).

1968

2887 McFadden, J.D. "Airborne investigation of the effects of hurricanes on the thermal structure of the surface layers of the ocean." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of papers. sec. 1, no. 1.18. DNO.

One of the more interesting questions that has arisen recently from studies of the interaction between hurricanes and the ocean deals with the effects of the motion of a hurricane on the thermal structure of the surface layers of the ocean. The recent development of an airborne expendable bathythermograph, which is currently being integrated into the Environmental Science Services Administration's Research Flight Facility aircraft oceanographic system, now provides the capability of making synoptic surveys of the vertical temperature structure of rather large ocean areas. The employment of this capability in

1968 cont.
attempting to answer the question of upwelling associated with hurricanes is discussed and possible preliminary results presented. - Author.

1968
2888 McMath, C.W. "Automated environmental data collected off Panama City, Florida September 1966 - April 1966." Texas. A & M Univ. Data Processing Center, Project 286-14, Aug. 1968. 32 p.

Lists the type of air-sea environmental data and periods during which they were acquired by an automated data acquisition system located at the U.S. Navy Mine Defense Laboratory, Panama City, Florida. Data acquisition and telemetry equipment was on 2 fixed platforms, Stage I and Stage II, 11 and 1.6 mi off shore. Author.

1968
2889 Marinos, G. and Woodward, J.W. "Estimation of hurricane surge hydrographs." American Society of Civil Engineers, Waterways and Harbors Div., Journal, 94(2):189-216, May 1968.

Numerically integrated hydrodynamic equations of motion and continuity are used for computing the one-dimensional, nonlinear storm surge along the Texas coast. This method employs onshore and alongshore wind stress components with a moving wind field over the continental shelf. Hurricanes "Carla" (1961), "Audrey" (1957) and the 1949 storm were used for calibration. Other storms were used to verify the method. Surge hydrographs are presented for several locations along the coast to show the effects of varying the standard project hurricane parameters. - Author

1968
2890 Markel, A. "Highlights of ALUMINAUT operations, 1967." In Symposium on Useful Work in the Sea, sponsored by Los Angeles Regional Section, Marine Technology Society, 11 - 12 Dec. 1967. Abstract only. Journal of Ocean Technology, 2(4):131, Oct. 1968.

Describes 3 ocean engineering operations in the Virgin Islands: installation and 'in situ' testing of a suite of oceanographic instrumentation, developmental tests of the Doppler Sonar and Deep Ocean Transponder Systems, approximately 50 mi of cable inspections for American Telephone and Telegraph and the deepest un-assisted search and recovery of underwater weapons and deep ocean transponders.
Author (mod).

1968
2891 Metcalf, W.G. "Shallow currents along the northeastern coast of South America." Journal of Marine Research, 26(3):232-243, 1968. DLC. GC1.J6.

It has generally been considered that the Guiana Current carries South Atlantic Central water in an un-interrupted flow along the northeastern coast of South America and into the Caribbean Sea. Certain phenomena observed in the western tropical Atlantic and in the Caribbean indicate that the picture is not that simple. The formation of the Equatorial Undercurrent, the pattern of the subsurface-salinity maximum along the Brazilian coast, the distribution of lenses of the Amazon River outflow and the relative lack of South Atlantic central water in the Caribbean Sea all suggest that the Guiana Current undergoes major changes somewhere along the Brazilian coast. Recent data indicate that a major interruption in this current occurs in the area off the mouth of the Amazon River. - Author.

1968
2892 Molinari, R.L. "Effect of topography on the Yucatan Current." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 67-24T, Jan. 1968. 50 p. figs. refs. - Written in partial fulfillment of requirements for M.Sc. in Oceanography, Texas A & M Univ.

The effect of topography on a portion of the Yucatan Current, east and northeast of the Yucatan Peninsula, during May of 1962, 1965, and 1966 is investigated. May is chosen because the current is strong at this time and the core of the current is readily discernible. A graphical method is used in solving the conservation of potential vorticity on the basis of actual topography and observed initial velocity. A numerical method based on a simplified topography is also used as a check on the subjectivity of the graphical method. Through this procedure a path of the current core is obtained. - Author (mod) MGA 19.7-747.

1968
2893 National Council on Marine Resources and Engineering Development. "Marine science activities of the nations of Latin America." Wash., D.C. U.S. Government Printing Office, Apr. 1968. 76 p. tables. DNO.

One of 5 volumes devoted to marine science activities of nations of the world. Includes listings of organizations and officials responsible for marine science

1968 cont.

programs and scope of marine research. Author.

1968

2894 Netherlands. Hydrografisch Bureau. "Netherlands Antilles, Curaçao, Sint Anna Bay and Schottegat." Chart no. 2714, new ed., July 1968. Scale: 1:7,500.

1968

2895 Netherlands. Hydrografisch Bureau. "Zeemansgid voor Suriname en de Nederlandse Antillen." [Sailing directions for Surinam and the Netherlands Antilles.] 4th ed. Hague, 1968. DNO.

1968

2896 Nowlin, W.D., Hubertz, J.M. and Reid, R.O. "Detached eddy in the Gulf of Mexico." Journal of Marine Research, 26(2):185-186, 15 May 1968. fig. DLC. GC1.J6.

Presents some preliminary results of an incomplete detailed analysis of observations on the property distributions and currents in the eastern part of the Gulf of Mexico, with primary emphasis on the Eastern Loop Current. Observations were obtained aboard the ALAMINOS in June 1966 and 1967. Given data indicate the presence of a large detached eddy just north of the eastern Gulf Loop Current. The position and strength of the eddy seemed unchanged during a 2-wk interval. Staff MGA 20.3-743.

1968

2897 [Ocean Industry.] "Eight companies gather data on storms in Gulf of Mexico." Its 3(12):25, Dec. 1968.

Eight oil companies jointly sponsored an oceanographic data gathering program from 6 fixed platforms in the Gulf of Mexico off Louisiana. Information on wave heights, wave periods, wind velocity and direction and barometric pressure will be gathered during tropical storms and hurricanes. Each instrument system, housed in an air-conditioned weatherproof shelter, can operate unattended from its own power supply for more than 100 hrs. Author.

1968

2898 [Ocean Industry.] "Harbor surveys for underdeveloped nations." Its 3(12):8-9, Dec. 1968. DNO.

Report on Harbor Assistance Program (HARSAP) of the U.S. Naval Oceanographic Office. HARSAP assists Latin American countries in conducting surveys of harbors and approaches in order to prepare and maintain accurate navigational charts. Countries which have received help include Dominican Republic, Costa Rica, Nicaragua

1968 cont.

and Colombia. - Author.

1968

2899 [Oceanology International.] "Caribbean probe next?" Its 3(5):17, July/Aug. 1968.

CICAR announcement is presented. Staff.

1968

2900 [Oceanology International.] "Nuclear-powered undersea wellhead." Its 3(5): 10, July/Aug. 1968.

First nuclear-powered, acoustically controlled undersea wellhead in operation in the Gulf of Mexico is described. Staff.

1968

2901 [Oceanology International.] "60-day dive planned off Virgin Islands in 1969." Its 3(5):9, July/Aug. 1968.

Announcement of TEKTITE I. Scientists will spend 60 days living and working beneath the waters of Great Lameshur Bay, Virgin Islands National Park. - Staff.

1968

2902 [Oceanology International.] "To survey Caribbean." Its 3(3):10, May/June 1968.

USNS ELISHA KANE will make comprehensive survey of Gulf of Mexico and Caribbean. - Staff.

1968

2903 [Oil and Gas Journal.] "Effect of offshore storms due study." Its 66(44): 49-50, 28 Oct. 1968.

Researchers will measure wind, waves, currents and storm data and how they affect platforms off Louisiana. Gauges and recording gear have been installed on 7 platforms as 2 different projects are initiated. - Staff.

1968

2904 Okuda, T. "Hydrographic and chemical characteristics of the Cariaco Trench." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of papers. sec. 1, no. 1.22. DNO.

The Cariaco Trench is an anoxic basin which ranges in depth from approximately 400 m to 1,400 m. This paper analyses the chemical and hydrographic characteristics of the Cariaco Trench using published data of various sources as well as data for 1963 - 1968. Seasonal variation of: temperature, salinity and sigma-t, were for practical purposes limited to the surface layer down to a depth of 200 - 250 m. The isopycnal surface (26.0 in sigma-t) showed, on the contrary, a great seasonal variation, with a peak in April

1968 cont.

(at a depth of 30 - 50 m) and gradually deepening until November (140 - 160 m). Author (mod).

1968

2905 Ostapoff, F. "Ocean-atmosphere interaction in the area viewed from the oceanographic side." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968, Abstracts of papers. sec. 1, no. 1.28. DNO.

A brief review is given of the large scale circulation and the distribution of water masses once formed under specific climatological conditions at the sea surface in widely separated areas and advected into the Caribbean Sea. Details of the heat and water budget in the area on a seasonal basis and its impact of oceanic conditions, in particular on the sea surface temperature and salinity distribution, are described. A numerical model on time scales of a few days combining the atmospheric and oceanic boundary layers is shown with emphasis on the ocean layer. Author (mod).

1968

2906 Page, J.F. "Survey of Puerto Limón, Costa Rica, under the Harbor Survey Assistance Program." U.S. Naval Oceanographic Office, Informal Report, IR no. 69-16, Nov. 1968. 25 p. charts. photos. DNO.

The U.S. Naval Oceanographic Office (NAVOCEANO), through the Harbor Survey Assistance Program (HARSAP), is aiding other nations in the surveying of ports and harbors. HARSAP provides specialized equipment and experienced hydrographic engineers to instruct and advise personnel from the host nation in hydrographic surveying techniques while they perform an actual hydrographic survey. Upon completion of a survey, the personnel from the participating country have adequate skill and experience to conduct future surveys with only periodic advisory visits by a NAVOCEANO engineer. NAVOCEANO has been conducting 2 HARSAP surveys annually since 1964. - Author (mod).

1968

2907 Parker, C.A. "Effect of a cold-air outbreak on the continental shelf water of the northwestern Gulf of Mexico, Texas." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-3T, Contract Nonr 2119(04), May 1968. 89 p. figs. charts. tables. refs.

Two physical oceanographic cruises with almost identical coverage were conducted over the Texas-Louisiana shelf

1968 cont.

in January 1966. During the 15-day period between cruises, a sustained cold-air outbreak occurred over the survey region. 'Quasi-synoptic' measurements of temperature, salinity and sigma-t document a surface layer which is homogeneous to approximately 100 m (or to the bottom for shallower depths) during both cruise periods. The horizontal gradients in this layer are largest in the 'near-shore' region (less than 25 m depth) where isovalue contours generally parallel shore. Author (mod) MGA 20.1-577.

1968

2908 Paskausky, D.F. and Nowlin, W.D. "Measured and performed phosphate in the Gulf of Mexico region." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-12T, Project 286-2, Contract Nonr 2119(04), July 1968. 19 p. figs. refs. DNO.

Measured and preformed phosphate-phosphorous versus depth are presented for 3 recent cruises to the Gulf of Mexico region. Phosphate characteristics of the subtropical underwater, subantarctic intermediate water and the North Atlantic deep water are identified. Apparent oxygen utilization (AOU) versus measured phosphate are presented for the 3 cruises. Measured phosphate versus AOU and both measured and preformed phosphate versus depth are discussed for a hypothetical idealized station in the Gulf of Mexico. Author.

1968

2909 Pequegnat, W.E. and Pittman, R.V. "Electronic direction indicator for deep-sea photography." Texas A & M Univ. Dept. of Oceanography and Meteorology, Ref. 68-18T, Project 286-6, 20 Aug. 1968. Abstract only.

Description of a new photographic compass unit that facilitates magnetic orientation of deep sea photographs. During the past year, an extensive photographic survey has been made of the deeper aspects of the Gulf of Mexico. This work has been advanced significantly by the fabrication of aluminum camera frames that support a dual camera system. This system is comprised of a 35 mm and a 70 mm camera, three 100-watt sec^{-1} strobe lights, power packs and a magnetic direction unit. With this apparatus, both close up and panoramic pictures taken simultaneously in several combinations of black and white and color films are possible. Since the cameras and 2 of the stobes are in gimballed mountings,

1968 cont.

shots may be taken with cameras pointing in opposite directions, or at convergent or divergent angles on the same side. Author (mod).

1968

2910 Perlroth, I. "Distribution of mass in the near surface waters of the Caribbean." In Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, 1968. Abstracts of papers. sec. 1, no. 1.3. DNO.

This study was performed in order to relate the distribution of mass in the near surface waters of the Caribbean to the history of surface currents, sea surface temperatures and thermocline depths. A computer program was developed to determine the depth of the top of the thermocline using magnetic tapes of digitized bathythermograph data. Results of the analysis of surface currents show seasonal evidence of cyclonic and anticyclonic current shifts adjacent to the east-west orientation of the Caribbean Current. - Author (mod).

1968

2911 Pollio, J. "Undersea studies with the Deep Research Vehicle STAR III." U.S. Naval Oceanographic Office, Informal Report, IR no. 68-103, Dec. 1968. 73 p. figs. DNO.

The manned submersible DEEPSTAR III was used to conduct a series of 21 dives off Key West, Florida, in March 1967. The purpose of the operation was to evaluate the DEEPSTAR III system as a platform from which to conduct underwater photogrammetric and various surveying tasks. Several design features of the submersible, e.g., buoyancy control, payload, endurance and east of maintenance, were of great advantage to its successful performance. However, other features, such as observer comfort, communication, depth sensors and navigation detracted from the vehicle's full capability. Although the launch/retrieval system was inadequate and caused a loss of 11 out of 26 days due to weather, the vehicle itself proved to be adequate for the mission. - Author.

1968

2912 Reid, R.O. and Bodine, B.R. "Numerical Model for Storm Surges in Galveston Bay." American Society of Civil Engineers, Waterways & Harbors Div., Journal 94(1):33-57, Feb. 1968. refs.

Numerical scheme for computation of 2-dimensional, nonlinear storm surges and tides is applied to Galveston Bay, Texas. Allowance is made for overflow of low lying barrier islands and for flooding of and recession from low-lying land areas

1968 cont.

adjacent to the bay. Initial surge or tide, or both, at the seaward end of bay outside of the barrier islands is prescribed System has been calibrated for spring tide conditions and for surge produced by hurricane "Carla" (September 1961). Verification of system was carried out for hurricane "Cindy" (September 1963). - Staff.

1968

2913 Rivas, L.R. "Fisherman's atlas of monthly sea surface temperatures for the Gulf of Mexico." U.S. Bureau of Commercial Fisheries, Circular, no. 300, Nov. 1968. 33 p. figs. charts. refs. DNO.

Atlas was prepared in response to interest expressed by the gulf fishing industry for surface temperature information. It shows that sea surface temperatures fluctuate seasonally and latitudinally with a yearly average of 77°F. This temperature fluctuation causes a seasonal fluctuation in the composition of the shallow water fauna in the northern gulf. Also shows that surface temperatures extend deeper in winter than in summer and that upwelling occurs along the north coast of the Yucatan during summer. In addition to monthly maps for mean surface isotherms, monthly maps for maximum, minimum and average surface temperatures are also given. - Author.

1968

2914 Robinson, P. "Key West drinks sea water toast." National Fisherman, 49(1): 7-C and 14-C, Apr. 1968.

Describes desalination of Gulf of Mexico water. - Staff.

1968

2915 Ross, C.K. and Mann, C.R. "Oceanographic observations in the Jungfern Passage and over the sill into the Venezuelan Basin, February 1968." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of Papers. sec. 1, no. 1.13. DNO.

A series of temperature and salinity measurements were made in the deep part of the channel in the Virgin Passage through and into the Venezuelan Basin. Water with a potential temperature of 3.7°C was found and there was no evidence of colder, heavier, water cascading into the basin to form bottom water.- Author(mod)

1968

2916 Ross, D.I. and Porteous, D.M. "Caribbean Cruise, BAFFIN 03-68, Jan. - March, pt. 1." Canada. Bedford Institute. Atlantic Oceanographic Lab., Dartmouth, N.S., Geophysics Data Report 1-d, 1968.

1968 cont.

3 p. graphs. tables. DNO.

On 10 January, CSS BAFFIN left Bedford Institute for an annual hydrographic training cruise in the Caribbean Sea. As part of this training, a magnetometer was operated on the track south from Halifax to Antigua. This report is a summary of the magnetic field and bathymetry data obtained on that track. - Author MGA 19.10-713.

1968

2917 Rubinoff, I. "When Caribbean and Pacific waters mix." Science, 162(3860): 1329, 20 Dec. 1968.

Describes water exchange when projected sea level canal is completed. - Staff.

1968

2918 Saloman, C.H. and Taylor, J.L. "Hydrographic observations in Tampa Bay, Florida, and the adjacent Gulf of Mexico, 1965 - 1966." U.S. Bureau of Commercial Fisheries, Data Report, 1968. 6 cards (microfiche).

1968

2919 Schmitz, W.J. and Richardson, W.S. "On the transport of the Florida current." Deep-Sea Research, 15(6):679-693, Dec. 1968. figs. tables. refs.

Gives results from the first series of transport measurements made with free instrument techniques. The series consists of the equivalent of 50-60 transects across 4 sections of the current made over a period of about 3 yrs. Based on averages of the data, and a comparison of these averages with previous data, it was found that $32 \pm 3X\ 10^6 m^3\ sec^{-1}$ was the steady-state volume transport of the Florida Current. Monthly or bi-monthly averages lie within this bound and are reproducible. Author (mod).

1968

2920 Seliger, H.H. and Carpenter, J.H. "Studies at Oyster Bay in Jamaica, West Indies. Pt. 2. Effects of flow patterns and exchange on bioluminescent distributions." Journal of Marine Research, 26(3):256-272, 1968. figs. refs. DLC. GC1.J6.

From July 1966 to July 1967, regular observations and some experiments were carried out in Oyster Bay at the eastern end of Falmouth Harbor, Jamaica, W.I. This paper gives a general description of the area and it reports observations on the tidal movement, the density currents, the wind force and direction and the water discharge by the Martha Brae River. A fluorescent pigment, Rhodamine WT, was used in two experiments to measure the exchange rate of Oyster Bay waters with Falmouth

1968 cont.

Harbor. - Author (mod).

1968

2921 Seliger, H.H. and Fastie, W.G. "Studies at Oyster Bay in Jamaica, West Indies. Pt. 3. Measurements of Underwater-sunlight spectra." Journal of Marine Research, 26(3):273-280, 1968. figs. refs. DLC. GC1.J6.

Spectral distributions of ambient underwater sunlight in Oyster Bay, Falmouth Harbor, Jamaica, West Indies, have been measured during the diurnal rise in the stimulable bioluminescent intensity of the marine dinoflagellate, Pyrodinium bahamense. In addition to the changes in light intensity during this period, there are large changes in the relative spectral distributions, as functions of both time and depth in the Bay. The blue-to-red intensity ratios vary by factors of 10 to 100. - Author.

1968

2922 Seliger, H.H. and McElroy, W.D. "Studies at Oyster Bay in Jamaica, West Indies. Pt. 1. Intensity patterns of bioluminescence in a natural environment." Journal of Marine Research, 26(3):244 - 255, 1968. figs. refs. DLC. GC1.J6.

Night and day patterns in the intensities of stimulable bioluminescense in Pyrodinium bahamense were measured during the period of April 1966 through May 1967 in Oyster Bay, Falmouth Harbor, Jamaica, West Indies. During sunset and subsequent to dawn, rapid changes of more than a factor of 1000 in the stimulable bioluminescent intensities resulted from changes in stimulable bioluminescence per organism. During the night - from one hour past sunset through dawn - the total number of photons emitted per individual P. bahamense upon stimulation remained constant. It has been possible, therefore, to assay P. bahamense concentrations by measuring the stimulable bioluminescent intensities during the night. - Author (mod).

1968

2923 Sloane, D. "Unique rescue: Navy crews save a coast." All Hands, no. 618:6-8, July 1968.

Describes removal and salvage of a damaged oil tanker in San Juan harbor, Puerto Rico. - Staff.

1968

2924 Stewart, H.B. "Issues and programs: Environmental Science Services Administration, Dept. of Commerce." In Research & marine resources Gulf of Mexico investigations, 1968. pp. 31-34. DNO.

1968 cont.

Report on programs related to the Gulf of Mexico. - Staff.

1968

2925 Sukhovei, V.F. and Metal'nikov, A.P. "O glubinnom vodoobmene Karibskogo moria s Atlanticheskim okeanom." [Deep sea water exchange between the Caribbean Sea and the Atlantic Ocean.] Okeanologiia, 8(2):203-209, Mar./Apr. 1968. figs. tables. refs. (Russian summary p. 203; English summary p. 209. Trans. into English in corresponding issue of Oceanology.)

Observations made on board the MIKHAIL LOMONOSOV in the Caribbean Sea and in the Windward and Anegada Passages in February 1965, show the Caribbean water transformation and renewal. Recurrent renewal of Caribbean water by the Atlantic waters is discussed. Consideration is given to the possible causes of variations in the deep-sea water exchange between the Caribbean Sea and the Atlantic Ocean. Author MGA 19.12-720.

1968

2926 Symposium on Investigations and Resources of the Caribbean Sea and Adjacent Regions, Willemstad, Curaçao, 18 - 26 Nov. 1968, Abstracts of papers. Rome:Food and Agriculture Organization of the United Nations, Oct. 1968. 82 p. DNO.

Symposium held preparatory to the Cooperative Investigation of the Caribbean and Adjacent Regions (CICAR) program. Staff.

1968

2927 Taylor, G. "Sea surface temperature as an aid in hurricane forecasting." Mariners Weather Log, 12(5):149-151, Sept. 1968. figs.

It is reasonably well established that hurricane formation does not occur unless sea surface temperatures (SST) is equal to or greater than 26° - 27°C. It is suggested that accurate sea water intake readings are suitable for use as SST readings and that there is a strong relationship between SST and hurricane formation and intensity. To illustrate the use of SST charts in forecasting, the author uses those of the Gulf of Mexico while hurricane "Hilda" (September - October 1964) was in progress. A warm tongue of SST extended from Yucatan toward the vicinity of the Louisiana coast prior to the entrance of "Hilda" into the gulf. A figure representing the condition after "Hilda" had moved through the central Gulf of Mexico shows a marked drop in SST values, apparently due to upwelling of colder sub-surface waters

1968 cont.

in the wake of the storm. - Staff MGA 20.5-162.

1968

2928 Treadwell, T.K. "Issues and programs: Naval Oceanographic Office, Dept. of the Navy." In Research & marine resources Gulf of Mexico investigations, 1968. pp. 17-19. DNO.

Report on programs related to the Gulf of Mexico. - Staff.

1968

2929 U.S. Coast and Geodetic Survey. "Alabama-Mississippi, Dauphin Island to Dog Keys Pass." Chart no. 874SC, 4th ed., 12 Oct. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968

2930 U.S. Coast and Geodetic Survey. Alabama-Mississippi, Mississippi Sound and approaches, Dauphin Island to Cat Island." Chart no. 1267, 14th ed., 25 Nov. 1968. Scale: 1:80,000.

1968

2931 U.S. Coast and Geodetic Survey. "Alabama, Mobile Bay." Chart no. 1266, 22nd ed., 14 Oct. 1968. Scale: 1:80,000. Plan: Mobile Ship Channel, Northern end. Scale: 1:25,000.

1968

2932 U.S. Coast and Geodetic Survey. "Cape St. George to Mississippi Passes." Chart no. 1115, 12th ed., 23 Sept. 1968. Scale: 1:456,394.

1968

2933 U.S. Coast and Geodetic Survey. "Caribbean Sea, West Indies, Navassa Island." Chart no. 953, 1st ed., 3 June 1968. (Formerly H.O. chart 1487) Scale: 1:12,000. Limits: lat 18°23'15"N - 18°25'50"N, long. 75°59'40"W - 75°02'50"W.

1968

2934 U.S. Coast and Geodetic Survey. "Choctawhatchee Bay entrance to Pensacola." Chart no. 871, 8th ed., 28 Oct. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968

2935 U.S. Coast and Geodetic Survey. "Florida-Alabama, Pensacola Bay and approaches." Chart no. 1265, 14th ed., 2 Dec. 1968. Scale: 1:80,000.

1968

2936 U.S. Coast and Geodetic Survey. "Florida-Alabama, Santa Rosa Sound to Dauphin Island." Chart no. 872SC, 4th ed., 21 Sept. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968

2937 U.S. Coast and Geodetic Survey. "Florida, Apalachicola Bay to Cape San Blas." Chart no. 1262, 7th ed., 4 Nov.

1968 cont.
1968. Scale: 1:80,000.

1968
2938 U.S. Coast and Geodetic Survey. "Florida. Bahia Honda Key to Sugarloaf Key (853) and Sugarloaf Key to Key West (854)." Chart no. 853/854, 6th ed., 10 June 1968. Scale: 1:40,000.

1968
2939 U.S. Coast and Geodetic Survey. "Florida, Big Spanish Channel to Johnston Key." Chart no. 859, 3d ed., 13 May 1968. Scale: 1:40,000.

1968
2940 U.S. Coast and Geodetic Survey. "Florida, Charlotte Harbor to Tampa Bay." Chart no. 857SC, 7th ed., 8 June 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2941 U.S. Coast and Geodetic Survey. "Florida Chatham River to Clam Pass." Chart no. 1254, 6th ed., 25 Nov. 1968. Scale: 1:80,000. Plans: Naples Bay, Everglades Harbor, Scale: 1:30,000.

1968
2942 U.S. Coast and Geodetic Survey. "Florida Estero Bay to Lemon Bay including Charlotte Harbor." Chart no. 1255, 11th ed., 23 Sept. 1968. Scale: 1:80,000.

1968
2943 U.S. Coast and Geodetic Survey. "Florida, Jupiter Inlet to Fowey Rocks." Chart no. 1248, 9th ed., 19 Aug. 1968. Scale: 1:80,000.

1968
2944 U.S. Coast and Geodetic Survey. "Florida Key West Harbor." Chart no. 576. 11th ed., 8 July 1968. Scale: 1:10,000.

1968
2945 U.S. Coast and Geodetic Survey. "Florida, Key West Harbor and approaches." Chart no. 584. 18th ed., 2 Dec. 1968.

1968
2946 U.S. Coast and Geodetic Survey. "Florida, Lake Wimico to Overstreet and St. Joseph Bay Entrance (867) and Overstreet to St. Andrew Bay (868)." Chart no. 867/868, 4th ed., 26 Feb. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2947 U.S. Coast and Geodetic Survey. "Florida, Matecumbe to Grassy Key (851) and Grassy Key to Bahia Honda Key (852)." Chart no. 851/852, 3d ed., 29 Apr. 1968. Scale: 1:40,000.

1968
2948 U.S. Coast and Geodetic Survey. "Florida, Miami Harbor." Chart no. 547, 8th ed., 2 Dec. 1968. Scale: 1:10,000.

1968
2949 U.S. Coast and Geodetic Survey.

1968 cont.
"Florida, Miami to Marathon and Florida Bay." Chart no. 141SC, 6th ed., 5 Oct. 1968. (Intracoastal Waterway.) Scale: Various.

1968
2950 U.S. Coast and Geodetic Survey. "Florida, Pensacola Bay." Chart no. 490. 25 ed., 5 Feb. 1968. Scale: 1:30,000.

1968
2951 U.S. Coast and Geodetic Survey. "Florida, St. Andrew Bay." Chart no. 89, 7th ed., 28 Oct. 1968. Scale: 1:25,000.

1968
2952 U.S. Coast and Geodetic Survey. "Florida, St. Andrew Bay to West Bay Creek (869) and West Bay Creek to Choctawhatchee Bay entrance (870)." Chart no. 869/870, 6th ed., 2 Dec. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2953 U.S. Coast and Geodetic Survey. "Florida, St. George Sound to Apalachicola Bay (865) and Apalachicola Bay to Lake Wimico (866)." Chart nos. 865/866, 6th ed., 30 Sept. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2954 U.S. Coast and Geodetic Survey. "Florida, St. Joseph and St. Andrew Bays." Chart no. 1263, 8th ed., 15 July 1968. Scale: 1:80,000.

1968
2955 U.S. Coast and Geodetic Survey. "Florida, Tampa Bay and St. Joseph Sound." Chart no. 1257, 13th ed., 3 June 1968. Scale: 1:80,000.

1968
2956 U.S. Coast and Geodetic Survey. "Florida, Tampa Bay, Northern part." Chart no. 587, 19th ed., 25 Nov. 1968. Scale: 1:40,000. Plans: St. Petersburg, Tampa. Scale: 1:20,000.

1968
2957 U.S. Coast and Geodetic Survey. "Florida, Tampa Bay, Southern part." Chart no. 586, 12th ed., 14 Oct. 1968. Scale: 1:40,000.

1968
2958 U.S. Coast and Geodetic Survey. "Galveston Bay Entrance, Galveston and Texas City Harbors." Chart no. 518, 6th ed., Nov. 1968. Scale: 1:25,000.

1968
2959 U.S. Coast and Geodetic Survey. "Galveston to Rio Grande." Chart no. 1117, 9th ed., 4 Mar. 1968. Scale: 1:460,732.

1968
2960 U.S. Coast and Geodetic Survey. "Gulf of Mexico." Chart no. 1007, 21st ed., 7 Oct. 1968. Scale: 1:2,160,000.

1968
2961 U.S. Coast and Geodetic Survey. "Key West to the Mississippi River." Chart no. 1003 (provisional), 7th ed., 23 Sept. 1968. Scale: 1:875,000.

1968
2962 U.S. Coast and Geodetic Survey. "Louisiana, Chandeleur and Breton Sounds." Chart no. 1270. 8th ed., 15 July 1968. Scale: 1:80,000.

1968
2963 U.S. Coast and Geodetic Survey. "Louisiana, Isles Dernieres to Point au Fer." Chart no. 1275, 8th ed., 26 Aug. 1968. Scale: 1:80,000.

1968
2964 U.S. Coast and Geodetic Survey. "Louisiana, Lakes Pontchartrain and Maurepas." Chart no. 1269, 13th ed., 10 June 1968. Scale: 1:80,000.

1968
2965 U.S. Coast and Geodetic Survey. "Louisiana, Mississippi River, Venice to New Orleans." Chart no. 1271, 9th ed., 11 Nov. 1968. Scale: 1:80,000.

1968
2966 U.S. Coast and Geodetic Survey. "Louisiana, New Orleans Harbor, Chalmette Slip to Southport." Chart no. 497, 5th ed., 30 Sept. 1968. Scale: 1:15,000.

1968
2967 U.S. Coast and Geodetic Survey. "Louisiana, New Orleans to Calcasieu River, East section." Chart no. 1050, 9th ed., 28 Oct. 1968. (Intracoastal Waterway.) Scale: 1:175,000.

1968
2968 U.S. Coast and Geodetic Survey. "Louisiana, North Bend to Vermilion River (882) and Vermilion River to Gibbstown (883)." Chart no. 882/883, 3d ed., 19 Feb. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2969 U.S. Coast and Geodetic Survey. "Louisiana-Texas, Calcasieu Pass to Sabine Pass." Chart no. 1279, 12th ed., 25 Nov. 1968. Scale: 1:80,000.

1968
2970 U.S. Coast and Geodetic Survey. "Louisiana-Texas, Sabine Pass and Lake." Chart no. 517, 22d ed., 12 Feb. 1968. Scale: 1:40,000.

1968
2971 U.S. Coast and Geodetic Survey. "Louisiana, Timbalier and Terrebonne Bays." Chart no. 1274, 8th ed., 19 Aug. 1968. Scale: 1:80,000.

1968
2972 U.S. Coast and Geodetic Survey. "Louisiana, Vermilion Bay and approaches."

1968 cont.
Chart no. 1277, 11th ed., 1 July 1968. Scale: 1:80,000.

1968
2973 U.S. Coast and Geodetic Survey. "Mississippi-Louisiana, Dog Keys Pass to Waveland." Chart no. 876SC 4th ed., 26 Oct. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2974 U.S. Coast and Geodetic Survey. "Mississippi-Louisiana, Waveland to Catahoula Bay." Chart no. 878SC, 2d ed., 27 July 1968. Scale: 1:40,000.

1968
2975 U.S. Coast and Geodetic Survey. "Mississippi, Pascagoula Harbor." Chart no. 414, 8th ed., Nov. 1968. Scale: 1:25,000.

1968
2976 U.S. Coast and Geodetic Survey. "Mississippi River to Galveston." Chart no. 1116, 19th ed., 14 Oct. 1968. Scale: 1:458,596.

1968
2977 U.S. Coast and Geodetic Survey. "New Orleans to Calcasieu River, West section." Chart no. 1051, 6th ed., 1 July 1968. (Intracoastal Waterway.) Scale: 1:175,000.

1968
2978 U.S. Coast and Geodetic Survey. "Puerto Rico, Bahía de Fajardo and approaches." Chart no. 921, 9th ed., 27 May 1968. Scale: 1:10,000.

1968
2979 U.S. Coast and Geodetic Survey. "Puerto Rico, Bahía de San Juan." Chart no. 908, 26th ed., 1 July 1968. Scale: 1:10,000.

1968
2980 U.S. Coast and Geodetic Survey. "Puerto Rico, Puerto Maunabo." Chart no. 924, 3d ed., 3 June 1968. Scale: 1:20,000.

1968
2981 U.S. Coast and Geodetic Survey. "Straits of Florida and approaches." Chart no. 1002, 20th ed., 30 Sept. 1968. Scale: 1:200,000.

1968
2982 U.S. Coast and Geodetic Survey. "Texas, Aransas Bay to Aransas Pass (892) and Aransas Pass to Dagger Hill (893)." Chart no. 892/893, 6th ed., 2 Feb. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2983 U.S. Coast and Geodetic Survey. "Texas, Cedar Lakes to Espíritu Santo Bay." Chart no. 889SC, 2d ed.,

1968 cont.
9 Nov. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2984 U.S. Coast and Geodetic Survey. " "Texas, Corpus Christi Bay." Chart no. 425, 10th ed., 10 June 1968. Scale: 1:40,000.

1968
2985 U.S. Coast and Geodetic Survey. "Texas, Corpus Christi Harbor." Chart no. 524, 3d ed., 7 Oct. 1968. Scale: 1:15,000.

1968
2986 U.S. Coast and Geodetic Survey. "Texas, Galveston Bay." Chart no. 152SC, 5th ed., 25 May 1968. Scale: Various.

1968
2987 U.S. Coast and Geodetic Survey. "Texas, Galveston Bay and approaches." Chart no. 1282, 28th ed., 14 Oct. 1968. Scale: 1:80,000.

1968
2988 U.S. Coast and Geodetic Survey. "Texas, Galveston Bay entrance." Chart no. 518SC, 2d ed., 2 Nov. 1968. Scale: 1:25,000.

1968
2989 U.S. Coast and Geodetic Survey. "Texas, Galveston Bay to Cedar Lakes, including the Brazos and San Bernard Rivers." Chart no. 887SC, 2d ed., 9 Nov. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2990 U.S. Coast and Geodetic Survey. "Texas, Houston Ship Channel, Alexander Island to Carpenter Bayou (589) and Carpenter Bayou to Houston, (590)." Chart no. 589/590. 8th ed. 19 Feb. 1968.

1968
2991 U.S. Coast and Geodetic Survey. "Texas, Houston Ship Channel, Atkinson Island to Alexander Island." Chart no. 588, 6th ed., 26 Feb. 1968. Scale: 1:10,000.

1968
2992 U.S. Coast and Geodetic Survey. "Texas, Matagorda Bay and approaches." Chart no. 1284, 12th ed., 24 June 1968. Scale: 1:80,000.

1968
2993 U.S. Coast and Geodetic Survey. "Texas, Matagorda Light to Aransas Pass." Chart no. 1285, 8th ed., 8 July 1968. Scale: 1:80,000. Inset: Continuation of San Antonio Bay.

1968
2994 U.S. Coast and Geodetic Survey. "Texas, northern part of Laguna Madre." Chart no. 1287, 5th ed., 23 Sept. 1968. Scale:
1:80,000.

1968
2995 U.S. Coast and Geodetic Survey. "Texas, Sabine Bank to East Bay, including Heald Bank." Chart no. 1280, 8th ed., 30 Sept. 1968. Scale: 1:80,000

1968
2996 U.S. Coast and Geodetic Survey. "Texas, Stover Point to Port Brownsville including Brazos Santiago [Pass]." Chart no. 898, 5th ed., 22 Jan. 1968. (Intracoastal Waterway.) Scale: 1:40,000.

1968
2997 U.S. Coast and Geodetic Survey. "West Indies, Isla de Culebra, Ensenada Honda to Canal de Luis Peña." Chart no. 915, 6th ed., 10 June 1968. Scale: 1:10,000.

1968
2998 U.S. Coast and Geodetic Survey. "West Indies, Puerto Rico, Bahía de Mayagüez and approaches." Chart no. 931, 9th ed., 21 Oct. 1968. Scale: 1:15,000.

1968
2999 U.S. Coast and Geodetic Survey. "West Indies, Puerto Rico, Bahía de Ponce and approaches." Chart no. 927, 8th ed., 1 Apr. 1968. Scale: 1:20,000.

1968
3000 U.S. Coast and Geodetic Survey. "West Indies, Puerto Rico, E coast, Pasaje de San Juan to Puerto de Humacao and western part of Isla de Vieques." Chart no. 917, 8th ed., 16 Sept. 1968. Scale: 1:40,000.

1968
3001 U.S. Coast and Geodetic Survey. "West Indies, Puerto Rico, Ensenada Honda." Chart no. 922, 7th ed., 11 Nov. 1968. Scale: 1:10,000.

1968
3002 U.S. Coast and Geodetic Survey. "West Indies, Puerto Rico, Punta Petrona to Isla Caja de Muertos." Chart no. 926, 3d ed., 11 Nov. 1968. Scale: 1:20,000.

1968
3003 U.S. Coast and Geodetic Survey. "West Indies, Puerto Rico, S coast, Bahía de Guánica. Chart no. 929, 4th ed., 16 Sept. 1968. Scale: 1:10,000.

1968
3004 U.S. Coast and Geodetic Survey. "West Indies, S coast of Puerto Rico, Guánica Light to Punta Tuna Light." Chart no. 902, 9th ed., 15 July 1968. Scale: 1:100,000. Plan: Las Mareas, Scale: 1:20,000.

1968
3005 U.S. Coast and Geodetic Survey. "West Indies, St. Croix, Christiansted Harbor." Chart no. 935, 4th ed., 15 July 1968. Scale: 1:10,000.

1968

3006 U.S. Coast and Geodetic Survey. "West Indies, St. Thomas, Harbor of St. Thomas." Chart no. 933, 9th ed., 25 Mar. 1968. Scale: 1:10,000.

1968

3007 U.S. Coast and Geodetic Survey. "West Indies, W coast of Puerto Rico." Chart no. 901. 10th ed., 25 Mar. 1968. Scale: 1:100,000.

1968

3008 U.S. Defense Documentation Center. "Gulf of Mexico area study; a report bibliography." Alexandria, Va., Scientific and Technical Information, Search Control no. 001038, Oct. 1968.

1968

3009 U.S. Environmental Science Services Administration. "C&GS MT. MITCHELL commissioned in Jacksonville." ESSA World, 3(3):37, July 1968.

Description of U.S. Coast and Geodetic Survey ship MT. MITCHELL which will carry out hydrographic and oceanographic surveys in Atlantic coastal waters and the Gulf of Mexico. - Staff.

1968

3010 U.S. National Council on Marine Resources and Engineering Development. "British Honduras." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 18-18. tables. DNO.

British Honduras has no scientific activity, marine or otherwise, except for assignment of a United Nations biologist to the Department of Agriculture and Fisheries. A marine research laboratory, named the Tropical Research Center of Belize, has been proposed. - Author.

1968

3011 U.S. National Council on Marine Resources and Engineering Development. "Colombia." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 26-29. table. DNO.

Oceanographic activities are limited in Colombia and little research of good scientific caliber is performed. Because it is the only South American country with both Atlantic and Pacific coasts, consideration of a sea level canal through Colombia has generated interest in the northern (Caribbean) coast. - Author.

1968

3012 U.S. National Council on Marine Resources and Engineering Development. "Dominican Republic." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 33-35. table. DNO.

Marine science is not given high priority in the Dominican Republic. Its

1968 cont.

3 universities do not offer courses in this field. Marine scientific activity is confined to the Navy's Hydrographic Department, which did considerable research before 1965, but which has no operative vessels at this time. - Author (mod).

1968

3013 U.S. National Council on Marine Resources and Engineering Development. "Honduras." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 46-49. table. DNO.

Marine sciences are not an important component of the limited scientific activity in Honduras. All matters pertaining to marine resources, including scientific investigations, are handled by the Ministry of Natural Resources. - Author.

1968

3014 U.S. National Council on Marine Resources and Engineering Development. "Jamaica." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 50-51. table. DNO.

The overall level of scientific activity, including marine studies, is quite modest and is largely confined to the University of the West Indies and a few government departments. - Author.

1968

3015 U.S. National Council on Marine Resources and Engineering Development. "Mexico." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 52-56. table. DNO.

Marine research plays only a small part in Mexican scientific activities. Although Mexico has the longest total coastline in Latin America, its culture is traditionally land-oriented and inland Mexico knows little of the coast. There is little cooperation among the scientific organizations involved in marine science. The University of Mexico trains students and conducts marine research from its field station in Veracruz. - Author.

1968

3016 U.S. National Council on Marine Resources and Engineering Development. "Nicaragua." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 57-58. table. DNO.

Marine science has played an insignificant role in the limited scientific activity of Nicaragua. There are no marine scientists in the country and there is no organization concerned with marine science, oceanography, marine technology, shipbuilding or pollution. Author.

1968

3017 U.S. National Council on Marine Resources and Engineering Development. "Panama." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 59-62. table. DNO.

A nationally coordinated program of research in the marine sciences does not exist in Panama. However, the Panama Canal and related facilities constitute the single most significant contributor to the economy, and research into the feasibility of a second canal has been in progress for some time. The Smithsonian Tropical Research Institute conducts marine investigations at several stations and at a substation at Galeta Island on the Caribbean coast. - Author (mod).

1968

3018 U.S. National Council on Marine Resources and Engineering Development. "Trinidad and Tobago." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 67-68. table. DNO.

This newly independent country has limited economic resources and can afford little more than a modest research effort in the field of marine science. Author.

1968

3019 U.S. National Council on Marine Resources and Engineering Development. "Venezuela." In Marine science activities of the nations of Latin America, Apr. 1968. pp. 72-76. table. DNO.

Marine sciences contribute 10-15 percent of work carried out in the universities, foundations and the Ministry of Agriculture. The Institute of Oceanography at the University of Oriente sponsored by the Ministry of Education performs general oceanographic research and operates 3 research vessels, GUAIQAUERI (175 tons), VICTORIA (15 tons) and PIONERO (10 tons). Professional researchers, technicians and graduate students carry out a broad-based research effort in the Gulf of Cariaco and the Caribbean Sea. - Author.

1968

3020 U.S. National Oceanographic Data Center. "Beer bottles afloat." Its Newsletter, 10-68:7-8, Oct. 1968. DNO.

Drift bottle program of the U.S. Bureau of Commercial Fisheries' Tropical Atlantic Biological Laboratory in the tropical Atlantic and Caribbean. - Staff.

1968

3021 U.S. Naval Oceanographic Office. "Air/surface Loran navigation chart, Gulf of Mexico, Bahama Islands-Mexico-Honduras."

1968 cont.

Chart no. VL 30-34B, 6th ed., June 1968. Scale: 1:2,188,800. Loran-A rates: 3H0, 3H1, 3H2, 2L3, 3H3, 1H4, 1H6, 1H7.

1968

3022 U.S. Naval Oceanographic Office. "Air/surface navigation chart, SE United States-Puerto Rico." Chart no. VL 30-34F, 7th ed., Mar. 1968. Scale: 1:2,188,800. Loran-A rates: 3H0, 3H1, 3H2, 2L2, 2L3, 1H4, 1H6, 1H7.

1968

3023 U.S. Naval Oceanographic Office. "Approaches of the Straits of Florida." Chart no. 944, 102d ed., July 1968. Scale: 1:876,000. Loran-A rates: 3H0, 3H1, 3H2, 3L3, 3H6, W 3H7.

1968

3024 U.S. Naval Oceanographic Office. "Central America, Nicaragua, E coast, Bluefields." Chart no. 1858, 16th ed., Sept. 1968. Scale: 1:20,000. New Limits: Lat. 11°56'30"N - 12°04'30"N, long. 83°34'15"W - 83°47'00"W.

1968

3025 U.S. Naval Oceanographic Office. "Dominican Republic, Approaches to Santo Domingo." Chart no. 2274, 1st ed., May 1968. Scale: 1:50,000. Limits: Lat. 18°10'N - 18°30'W; long. 69°45'W - 70° 15'W.

1968

3026 U.S. Naval Oceanographic Office. "Fleet guide: San Juan." 4th ed. Pub. 925, 1968. DNO.

1968

3027 U.S. Naval Oceanographic Office. "Mexico and Central America, Caribbean Sea, Punta Herrero to Cabo Gracias a Dios, including adjacent banks." Chart no. 394, 68th ed., Oct. 1968. Loran-A rates: 3H1, 3L3.

1968

3028 U.S. Naval Oceanographic Office. "NAVOCEANO men assist Dominican Republic." Its Bulletin, 23-68:1-2, 26 Nov. 1968. DNO.

Specialists, under the Harbor Assistance Program (HARSAP) help the Navy of the Dominican Republic gather information needed to produce accurate nautical charts and publications on harbor areas along the coast of the Caribbean island. HARSAP to date has assisted 7 Latin American nations in conducting surveys of harbors and port approaches. - Author.

1968

3029 U.S. Naval Oceanographic Office. "North America, Gulf Coast of the United States, Mississippi River to Rio Grande." Chart no. 1126, 62d ed., Sept. 1968. Scale: 1:866,500. New Limits: Lat. 25°50'N-

1968 cont.
30°00'N, long. 88°30'W - 97°50'W. Loran-A rates: 3H1, 3H2, 3H3.

1968
3030 U.S. Naval Oceanographic Office. "North America, Mexico, E coast, Tampico to Progreso." Chart no. 2056, 49th ed., Oct. 1968. Scale: 1:909,660. Loran-A rates: 3H0, 3H2, 3H3.

1968
3031 U.S. Naval Oceanographic Office. "Oceanographers take work to the bottom." Its Bulletin, 19-69:4, 11 Oct. 1968. DNO.

The U.S. Naval Oceanographic Office diving scientists train at Naval Underwater Swimmers School, Key West, Florida. - Staff.

1968
3032 U.S. Navy. Symposium on Military Oceanography, 5th, Panama City, Fla., 1-13 May 1968. Proceedings. U.S. Navy Mine Defense Laboratory. 502 p.

1968
3033 Webb, D.C. and Worthington, L.V. "Measurements of vertical water movement in the Cayman Basin." Woods Hole Oceanographic Institution Mass. Technical Report. Contract no. N00014-66-C-0241. May 1968. 8 p.

An instrument has been designed which is capable of sensing and telemetering vertical water movement of less than 1 m hr^{-1} (0.028 cm sec^{-1}). The instrument was used in the deep waters of the Cayman Basin of the Caribbean Sea in an effort to determine whether or not vertical convection results from heat flow through the floor of the basin. - Author AD-686 858.

1968
3034 Whico Map and Publishing Co., Houston, Texas. "Whico oil and gas Gulf Coast atlas, South Texas, Texas Gulf Coast, So. Louisiana and Off-shore." 1967-68 ed. DLC. DNO.

1968
3035 Wilson, W.S. "On the origin of certain breakers off the Island of Aruba." Johns Hopkins Univ. Chesapeake Bay Institute, Report no. TR-43, Ref. 68-13, Oct. 1968. 34 p.

Eastward-traveling swell developing into breakers and having a period estimated to be between 13 and 14 sec appears intermittently along a beach on the lee side of Aruba, an island lying off the coast of Venezuela in the trade winds. It is suggested that waves, generated by winter storms off the mid-Atlantic coast of North America, propagate southward to Mona Passage where they are refracted in a shoal area. They propagate across the Caribbean Sea toward Aruba where they are refracted

1968 cont.
in a shoal area off the northwest tip of the island and arrive on the leeward coast. Author (mod).

1968
3036 Worthington, L.V. "Water circulation in the Caribbean Sea and its relationship to North Atlantic circulation." In Symposium on Investigations and Resources of the Caribbean and Adjacent Regions, 1968. Abstracts of papers. sec. 1, no. 1.27. DNO.

The sources of Caribbean sea water are the passages between the Greater and Lesser Antilles through which Atlantic water enters. Evidence is presented that the deepest sources are inactive at the present time. Water mass characteristics suggest that most of the water which passes through the Caribbean Sea enters through the northern passages between the Greater Antilles, but dynamic computations suggest that it should enter through the southern passages between the Lesser Antilles. A method of resolving this dilemma is proposed. - Author (mod).

1969
3037 American Geophysical Union. "Oceanographic and marine campus." Its Transactions, 50(2):51, Feb. 1969.

Texas A & M University will begin to construct its new oceanographic and marine campus at Galveston, Texas, within a year. The campus will house the Texas Maritime Academy, the Marine Laboratory and other oceanographic installations and will serve as home port for the university's 2 research ships. - Author.

1969
3038 Armstrong, R.S. "Late-winter waters of Yucatan Straits, a 1968 GERONIMO survey in Gulf of Mexico." Commercial Fisheries Review, 31(2):33-36, Feb. 1969. charts. DAS.

Cruise 20 of R/V GERONIMO (8 February-5 March 1968) was made in the Yucatan Straits area to: 1) determine if the survey area was large enough to cover the circulation patterns that might be detected by APOLLO spacecraft sensors and if the station grid was adequate to bring out these features and 2) examine the waters in this area of the Gulf of Mexico to establish how the deep water in the Caribbean flows over the relatively shallow sill (about 2,100 m deep) of the Yucatan Straits. - Author.

1969
3039 Bouma, A.H. and Rezak, R. "Oil found on Knolls on Gulf's continental rise." Ocean Industry, 4(5):73-77, May 1969. figs. ref.

1969

3040 Capurro, L.R.A. "Oceanography using remote sensors." Texas A & M Univ. Dept. of Oceanography and Meteorology, Contract Nonr-2119(04), Rept. no. A/M-Ref. 69-2F, 15 Jan. 1969. 109 p.

Airborne tests of multi-spectral remote sensors have been conducted on 8 occasions during July 1966 to September 1968 over the Mississippi Delta area and eastern Gulf of Mexico to determine their usefulness in surveying river, coastal and deep-sea phenomena. Four of these tests were supported concurrently by oceanographic research vessels. Passive remote sensors-principally metric cameras, infrared imagers and microwave radiometers--were flown at 1,500, 5,000, 10,000 and 50,000 ft above sea level. In addition, studies into the relationship between low cloud development and horizontal anomalies in the sea surface temperature field and studies into basic microwave research have been conducted at Texas A & M University. Author (mod).

1969

3041 [Commercial Fisheries Review.] "Four scientists will live at 50-foot ocean floor 60 days." Its 31(1):7-9, Jan. 1969. figs. map.

Describes TEKTITE I an underwater habitat off St. John, Virgin Islands to determine the kind of marine research scientists can conduct in the sea. - Staff.

1969

3042 DePalma, J.R. "Study of deep ocean fouling, Straits of Florida and Tongue of the Ocean, 1961 to 1968." U.S. Naval Oceanographic Office, Wash., D.C. Report no. NOO-IR-69-22, Apr. 1969.

A deep ocean fouling study was conducted in the Straits of Florida and in the Tongue of the Ocean between June 1961 and January 1968 to determine the distribution patterns of offshore biofouling communities. Test panels were exposed at selected depths to 1,737 m and distances to about 4 mi off Fort Lauderdale, Florida, and Andros Island, Bahamas. A total of 88 species of fouling organisms was collected. - Author.

1969

3043 Gilmour, A.E. "Precise temperature measurements in the Cayman Trench." Deep-Sea Research, 16(4):197-203, Apr. 1969. figs. tables. refs.

A description is given of measurements made on a north-south section across the Cayman Trench using a precise bathythermograph with quartz crystal temperature sensors. The main instrument specifications

1969 cont.

are given. The observations revealed that the water above 4,300 m was stably stratified. Below this depth the temperature gradient was within 2 percent of the adiabatic temperature gradient, and the water stability was presumed to be positive almost everywhere, but very small. Salinities were nearly uniform below 2,500 m. Also, below 4,300 m the observed temperatures at the deep stations for a given depth were bracketed in a range of less than 0.003°C. - Author (mod).

1969

3044 Gulf Universities Research Corporation (GURC). "Alphabet soup. GSY/GEP/IDOE progress." Its Review, 3(6):4, Feb. 1969. DAS.

Meetings sponsored by Gulf Universities Research Corporation on the theme of the Gulf of Mexico as a model ocean. Staff.

1969

3045 Gulf Universities Research Corporation. "Gulf of Mexico: a model for the decade." College Station, Texas, Pub. no. 93, Feb. 1969. 43 p. maps. tables. DNO.

Preliminary draft of a report prepared for National Council on Marine Resources and Engineering Development on the development of a regional marine program in the Gulf of Mexico to be considered for inclusion as part of the International Decade of Ocean Exploration (IDOE). Author (mod).

1969

3046 Gulf Universities Research Corporation. "Gulf of Mexico: a model for the decade." College Station, Texas. Pub. no. 109, Apr. 1969. 70 p. photos. maps. charts. tables. DNO.

Report to the National Council on Marine Resources and Engineering Development on development of a regional marine program in the Gulf of Mexico. - Author.

1969

3047 International Hydrographic Bureau. "Cooperative Investigations of the Caribbean Sea and Adjacent Regions (CICAR)." Its Bulletin, Feb. 1969. p. 38. DAS.

The International Coordination Group for CICAR held a symposium in Curaçao, 25 - 26 November 1968. Admiral Langeraar, international coordinator for this program, has informed the International Hydrographic Bureau that he will see that all doubtful hydrographic data in this area are investigated. - Staff.

1969

3048 Ives, G.O. "Gulf platforms record ocean data." Petroleum Engineers, 41(5):

1969 cont.

94, 96, 99, 102, May 1969. figs.

1969

3049 Jacobs, M.B. and Ewing, M. "Mineral source and transport in waters of the Gulf of Mexico and Caribbean Sea." Science, 163(3869):805-809, 21 Feb.1969. figs. refs.

Mineral particles suspended in the Gulf of Mexico and Caribbean Sea were analyzed in relation to clay mineral distributions in bottom sediments; to sedimentation processes active in the region, and to the prevailing currents. Circulation in the upper layers of water flowing from the Caribbean, carrying a micaceous-rich mineral assemblage, has exercised an influence on mineral transport into the Gulf of Mexico, different from the montmorillonite-rich load delivered by the Mississippi River. Particulate matter, suspended in North Atlantic water and Amazon River discharge, enters the Caribbean through the Lesser Antilles and contributes to the detrital mineral content of Caribbean water, as does that carried by the wind. - Author.

1969

3050 Lannan, J. "Four Americans beginning 2-months underseas test." Washington Evening Star, 117(46, 47, 48):1, 3, 6, Sat., Sun., Mon., Feb. 15, 16, 17, 1969.

Three newspaper articles written from St. John, Virgin Islands, describing preparations for TEKTITE I, undersea habitat experiment, the habitat, equipment and personnel. - Staff.

1969

3051 Leipper, D.F. and Cochrane, J.D. "Detached eddy in the Gulf of Mexico." In Golden Anniversary Meeting, Preprints of abstracts, American Geophysical Union Transactions, 50(4):199, Apr. 1969.

Using a strategic approach based upon shipboard analysis of bathythermograph observations rather than the common survey approach where courses and spacing of stations are planned in advance, an isolated eddy which was located in the Gulf of Mexico in August 1965, is described. The temperature gradients indicating strength of flow in the eddy were comparable to those in the East Gulf Loop Current. Author (mod).

1969

3052 Leming, T.D. and Ingham, M.C. "Oceanic conditions in the eastern Caribbean Sea and adjacent Atlantic, 6 August - 6 October 1965 (part of GERONIMO Cruise 6)." U.S. Fish and Wildlife Service. Data Report 33, Mar. 1969. 35 p. (1 microfishe). figs. refs.

1969

3053 McCoy, F.W. "Bottom currents in the western Atlantic between the Lesser Antilles and the Mid-Atlantic Ridge." Deep-Sea Research, 16(4):179-184, Apr. 1959.

Examination of bottom photographs taken from the corehead of a piston corer during November and December 1967, between the Lesser Antilles and the Mid-Atlantic Ridge indicates that southerly bottom currents flow over the western Guiana Basin. Author (mod).

1969

3054 "Marine sciences program." TEKTITE I, jointly sponsored by the U.S. Navy, National Aeronautics and Space Administration, U.S. Dept. of Interior and U.S. Coast Guard, Portfolio, 1969(?) 13 p.

Purpose of TEKTITE I was to determine the ability of man to live in an underwater habitat, to adapt to saturated diving conditions for prolonged periods and to perform scientific research missions on the ocean floor. A comprehensive review of multi-agency/industry project presents the scope of the studies and research programs to be undertaken. The habitat, facilities, equipment and support systems are described. Special areas of interest and objectives of participating agencies are covered in this report. - Author.

1969

3055 Maury Center for Ocean Science Washington, D.C. "U.S. Navy participation in the Barbados oceanographic and meteorological experiment." Report no. MC-1, Jan. 1969. 32 p.

The Barbados oceanographic and meteorological experiment (BOMEX) is a large-scale air/sea interaction field experiment scheduled to be conducted in the vicinity of the Island of Barbados in late spring and early summer 1969. The air/sea interaction objectives of the experiment are: 1) study of the vertical flux of momentum, sensible heat, latent heat, radioactivity and other properties at the interface and the horizontal transport of these properties through the lateral boundaries of the observational array, and the study of the vertical and horizontal divergence of these fluxes within the interior of each fluid; 2) study of the feasibility of formulating the area wide integral of surface fluxes from conventional observations at fixed corners of the array and 3) related studies in physical oceanography and micro- and meso-scale meteorology. BOMEX will provide an excellent opportunity to conduct related experiments within a well-controlled

1969 cont.

observational network. - Author (mod) AD-681 085.

1969

3056 Merrifield, R. "Undersea studies with the deep research vehicle Deepstar-4000." U.S. Naval Oceanographic Office, Wash., D.C. Report no. NOO-IR-69-15. Mar. 1969. 92 p.

The U.S. Naval Oceanographic Office used the Westinghouse submersible DEEPSTAR 4000 for 13 dives during October - November 1967. Marine geology, biology and the physical properties of the water column were studied on the 10 deep dives of this series. These dives were accomplished along the East Coast of the United States and in the Caribbean. Similarities in the bottom features at widely separated sites as well as dissimilarities in adjacent areas are particularly noteworthy. During this operation, DEEPSTAR 4000 was evaluated as a deep oceanographic survey vehicle (DOSV). The lack of an all-weather capability and the limited payload hampered this study, but the overlapping fields of the viewports and the ability to operate in very close proximity to the bottom, regardless of terrain, are desirable features that should be included on any future DOSV. - Author AD-855 886.

1969

3057 Murray, S.P. "Wind-generated currents near the coast." In Golden Anniversary Meeting, Preprints of abstracts, American Geophysical Union, Transactions, 50(4): 192, Apr. 1969.

In order to determine the effect of the coastal boundary on the Lagrangian and Eulerian fields of local (wind-generated) currents, a program of direct observations is in progress. The study area lies seaward of a long, straight stretch of Santa Rosa Island, Florida. Observations have been confined to water depths ranging between 10 ft and 50 ft. Concurrent measurements are taken of the local wind velocity (on the beach) and the induced current as a function of depth and distance offshore. A new bidirectional integrating ducted meter is used to determine the steady-current velocity in the zone of orbital wave motion. - Author (mod).

1969

3058 [New Scientist.] "Marine research programme for new seabed habitat." Its 41(636):344, 13 Feb. 1969. DLC.

Describes TEKTITE I, a 4-man 60-day experiment underwater. The experiment is related to a conference on oceanology, Oceanology International, held in Great Britain in February 1969. - Staff.

1969

3059 [New Scientist.] "Studying man's reaction to being trapped." Its 41(636): 327, 13 Feb. 1969.

Describes TEKTITE I, its aims, personnel and equipment to be placed on the ocean floor off St. John, Virgin Islands. Staff.

1969

3060 Nowlin, W.D., Paskausky, D.F. and McLellan, H.J. "Recent dissolved oxygen measurements in the Gulf of Mexico deep waters." Journal of Marine Research, 27(1):39-44, 15 Jan. 1969.

In 1963, it was suggested that rather large gradients of dissolved oxygen exist in the Gulf of Mexico below a sill depth of between 1,500 m and 1,900 m. However, measurements made on 3 cruises during 1966 and 1967 indicate that there is no clearly discernable horizontal variation in dissolved oxygen in these waters. Only slight vertical oxygen gradients exist below the sill depth; the mean value obtained is approximately 5.0 ml l^{-1}. The data obtained in 1966 and 1967 are compared with data obtained on 7 previous cruises in 1935, 1958, 1959, 1962 and 1964. - Author.

1969

3061 [Ocean Industry.] "TEKTITE I: experimental living in the sea." Its 4(1): 58-60, Jan. 1969.

Four scientists will descend to 50-ft depth in water off St. John, Virgin Islands, to study marine life and underwater habitat. - Staff.

1969

3062 [Oceanology International.] "TEKTITE 60-day stay underway." Its 4(2):13, Mar/Apr. 1969.

Brief report on TEKTITE I, undersea laboratory immersed in 15 meters of water on the ocean floor off St. John, Virgin Islands. Aquanauts will study marine life and the effects of underwater living. - Staff.

1969

3063 [Oceans.] "F.G. Walton Smith Interview." Its 1(2):18-25, Feb. 1969. photos. DNO.

Interview with F.G.W. Smith, director of the Institute of Marine Sciences, University of Miami. Reviews the accomplishments of the Institute with special reference to research in the Gulf of Mexico and Caribbean Sea. - Staff.

1969

3064 Quinn, A. "Project TEKTITE I, four-man underwater laboratory." Undersea Technology, 10(2):48-49, Feb. 1969.

1969 cont.

Description of an ocean project at Great Lameshur Bay, St. John, Virgin Islands. Staff.

1969

3065 Reid, R.O. "Simultaneous monitoring of the flow and thermal structure at Yucatan Channel and the Straits of Florida." Gulf Science Year, Texas A & M Univ. Dept. of Oceanography Project. Letter dated 28 Apr. 1969.

A pilot study is planned to make a limited number of direct current measurements with Swallow floats in the Yucatan Channel and to emplant a taut wire system with 3 Richardson current meters. The latter will serve as a check and also provide time series from which the tidal signal can be determined. The duration of this experiment is limited to about 20 days. Adequacy of navigation will be a critical factor. - Author (mod).

1969

3066 Sarkisyans, A.S. and Knysh, V.V. "The experience in calculations of a level surface and current speed in the Caribbean Sea." Meteorologiia i Gidrologiia, no. 3:87-93, Mar. 1969. In Russian; English abstract. figs. refs.

Presents calculations for seasonal currents in the Caribbean Sea on the basis of a density field and atmospheric sea-level pressure which are known from observations. Data are given in the form of contour maps for level surfaces and maps of speed vectors at different levels. Staff.

1969

3067 [Science Journal, London.] "TEKTITE I." Its 5(4):18, Apr. 1969. fig.

Announcement of United States multi-agency/industry experiment in undersea living off the Virgin Islands. - Staff.

1969

3068 [Science News.] "Second is first." Its 95(7):161-162, 15 Feb. 1969.

Compares TEKTITE I, an underwater program, with SEALAB 3. - Staff.

1969

3069 Smithsonian Institution. Center for Short-Lived Phenomena. "OCEAN EAGLE spill." In its Annual Progress Report 1968. 1 Feb. 1969. pp. 24-25. photo. DAS.

Tanker OCEAN EAGLE, loaded with 5.7 million gallons of crude oil, split in two 3 March 1968 in pounding seas at the entrance to San Juan harbor, Puerto Rico. Oil from the wreckage fouled the harbor and several miles of beaches. Description of event, action taken and publications by the center are presented. - Staff.

1969

3070 Sonu, C.J. "Velocities in a nearshore circulation cell." In Golden Anniversary Meeting, Preprints of abstracts, American Geophysical Union, Transactions, 50(4): 192, Apr. 1969.

Velocities in a nearshore circulation cell, both in plan view and across the depth, were measured by using a ducted impeller current meter on a sandy coast of northwestern Florida. Water movement between adjacent rips was found to be directed predominantly shoreward because of translation of waves over a shallow bed, but was basically oscillatory. Water movement of sustained direction, one that may be called 'current,' occurred in the feeder and rip channels. Similar frequencies appeared both in the velocity and water-level fluctuations, with a time lag on the order of 10 sec between them. Results of cross-spectral analysis are discussed. - Author (mod).

1969

3071 Thrasher, L.W. and Aagaard, P.M. "Measured wave force data on offshore platforms." In Offshore Technology Conference, 1st Annual, Houston, Tex., 18 - 21 May 1969. Preprints. 1:83-95, 1969.

Wave forces on vertical cylinders and wave profiles were measured with instruments on 2 oil production platforms in 30 ft (1954 - 1958) and 100 ft (1960 - 1963) of water, respectively, in the Gulf of Mexico. Wave data were recorded during a number of storms and for waves up to 40 ft in height. The purpose of this paper is to present the following background information that defines the wave force data being made available: 1) Instrumentation, 2) Raw data collected and 3) Data Processing steps. - Author (mod).

1969

3072 [Undersea Technology.] "GURC pushes program for Gulf of Mexico." Its 10(3): 48, Mar. 1969. DNO.

Describes the [$12 million oceanographic program for research and exploration in the Gulf of Mexico for the Gulf Science Year, under the direction of Gulf Universities Research Corporation. - Staff.

1969

3073 [Undersea Technology.] "IOC cooperative Caribbean investigation." Its 10(2): 30, Feb. 1969. DNO.

The Intergovernmental Oceanographic Commission (IOC) has announced plans for a 3-yr large scale cooperative investigation (beginning January 1970) of the Caribbean Sea and its adjacent regions.

1969 cont.

Note describes the scope and aim of the investigation, participating nations, etc. Staff.

1969

3074 [Undersea Technology.] "TEKTITE officials looking ahead to new projects." Its 10(4):26, 28, Apr. 1969.

Success of TEKTITE I, man-in-the-sea study off St. John, Virgin Islands, has prompted project leaders to consider TEKTITE I-A, which would use the same habitat for a longer mission involving a greater degree of operational mobility than the first experiment. New location might be off Puerto Rico or in the Gulf of Mexico. - Staff.

1969

3075 [Undersea Technology.] "TEKTITE underway." Its 10(3):11, Mar. 1969.

Brief news note on TEKTITE I. - Staff.

1969

3076 U.S. National Oceanographic Data Center. "First meeting of CICAR Coordination group." Its Newsletter, 1-69:5-6, Jan. 1969.

Report on Curaçao meeting, 25 - 26 November 1958, on Cooperative Investigations in the Caribbean and Adjacent Regions (CICAR). - Staff.

1969

3077 U.S. National Oceanographic Data Center. "Spacecraft oceanographic photos available on loan." Its Newsletter, no. 11 - 69, Nov. 1969. pp. 5-7. photos (color). 70 mm.

National Oceanographic Data Center (NODC) in cooperation with the National Aeronautics and Space Administration (NASA) and the Naval Oceanographic Office (NAVOCEANO) has obtained copies of 70 mm color photographs taken with a hand-held Hasselblad camera during the APOLLO 9 mission. - Staff.

1969

3078 U.S. National Oceanographic Data Center. "Wave-force data for Gulf of Mexico available." Its Newsletter, no. 11 - 69, Nov. 1969. pp. 9-10.

Microfilmed records with accompanying reports and digitized data on magnetic tapes compatible with IBM 7074 system (7-channel, 556-b.p.i.) have been deposited at tne National Oceanographic Data Center (NODC) by the Chevron Oil Field Research Company, representing Standard Oil Company of California. Data include: 1) Wave Project I microfilmed oscillograph records (6 reels); 205 hrs of records from hurricanes, tropical storms and winter storms; 6 reports on 1

1969 cont.

reel of microfilm and approximately 500 individual waves digitized at 0.2 sec intervals and 2) Wave Project II (3 reels); 77 hr of records from 1 hurricane and several storms; 6 reports on 1 reel of microfilm; approximately 100 individual waves and 76 min of continuous records digitized at 0.2 sec intervals. - Staff.

1969

3079 U.S. Naval Oceanographic Office. "Did you know that..." Its Bulletin, 2-69:7, 20 Jan. 1969.

U.S. Navy from 1836-1842 maintained a Mosquito Fleet at Indian Key, Florida, consisting of small ships, barges and 140 canoes used to chase Seminole Indians into the Everglades. - Author.