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Satellite, Ship Verify Wave Theory

A sailing schooner joined forces with a satellite and an aircraft in an oceanographic experiment conducted by NOAA this past summer which verified that variations seen on the ocean's surface from space are actually surface signs of deep underwater internal waves.

"The combination of simultaneous spacecraft imagery with shipboard acoustic echo-sounding promises to be a useful new tool in oceanography," says Dr. John W. Apel of the Environmental Research Laboratories' Atlantic Oceanographic and Meteorological Laboratories.

Internal waves and their accompanying surface slicks have long been studied by oceanographers because of their importance in oceanic mixing processes and in modifying underwater wave propagation, and because they may be a source of the slowing down of the earth's rotation.

Dr. Apel, Director of the Ocean Remote Sensing Laboratory, and a colleague, Robert Barnell, first spotted the striations on images made from the National Aeronautics and Space Administration's Earth Resources Technology Satellite (ERTS-1) over the continental shelf off New York.

From characteristics observed in images taken during the first year after the launch of ERTS-1, Dr. Apel and his colleagues deduced that the striations were probably due to very long, slow-moving internal waves traveling under the surface of the sea.

The underwater waves appeared to be generated at the (Continued on page 3)

D.W. Crawford Is Appointed LSC Director



Commander Darrell W. Crawford

Commander Darrell W. Crawford has been appointed Director of the National Ocean Survey's Lake Survey Center in Detroit, Mich. He succeeds Captain Kenneth A. MacDonald. Commander Crawford was formerly the Center's Operations Officer and is being succeeded in that post by Lieutenant Commander John W. DeCoste.

Commander Crawford received his Bachelor of Science Degree in Civil Engineering at Ohio State University and his Master's Degree from Purdue University. He joined the Coast and Geodetic Survey (predecessor of the National Ocean Survey) in 1961. Before being assigned to LSC in 1973, he was Director of the National Geodetic Survey Operations Center in Kansas City, Mo.

Lieutenant Commander DeCoste received his B.A. Degree from the University of Ottawa, Canada. He spent about ten years in the U.S. Navy before becoming a NOAA Officer in 1971.

Tropical Weather Observed in Laboratory

Three scientists with the Environmental Research Laboratories have developed a mathematical model of atmospheric circulation that will enable them to experiment with weather and climate without leaving the laboratory. Dr. Syukuro Manabe, Douglas G. Hahn and J. Leith Holloway, Jr., of the Geophysical Fluid Dynamics Laboratory in Princeton, N.J., recently tested the model by comparing its simulation of seasonal variations in the tropical circulation with observations made in the "real" tropics. They concluded that the model does a good job of describing the major features of the tropical circulation, and provides new insights into the causes and

patterns of tropical climate.

With an accurate, realistic model, says Dr. Manabe, atmospheric scientists can manipulate different variables to see how they influence weather and climate. For example, the model was used to find out if a change in the surface temperature of the Arabian Sea would affect the Indian monsoons. Much of the warm water vapor that drives the monsoon comes from the Arabian Sea. Experiments with the NOAA circulation model suggest that cooling the sea would decrease the intensity of the monsoons. Other experiments, says Dr. Manabe, might apply to the causes of drought in Africa.

The researchers observed weather in the tropics of their model, simulated with high speed computers. The model takes into account such factors as seasonal changes in the amounts of solar radiation reaching the earth's surface, sea surface temperatures, and the distribution of mountain ranges, all of which influence circulation and weather.

The earth is girdled in the tropics by a belt of heavy rainfall, the tropical rainbelt. Over the continents, the rainbelt moves through different latitudes with the seasons, sometimes straddling the equator. Although some researchers have suggested that the rainbelt avoids the equator over the continents, the rainbelt in the NOAA model displays no such tendency.

The researchers note that the model has some flaws. For example, the easterly winds in the stratosphere of the model tropics are more intense than in the true stratosphere, and relative humidity in the lower troposphere of the model is higher than that observed. But on the whole, they conclude, the model makes a realistic imitation of tropical circulation, and should be a powerful tool for experiments with weather and climate.

Storm Evacuation Maps Planned For Tampa Area

The National Ocean Survey has underway plans for storm evacuation maps for the Tampa Bay area of Florida, including the cities of Tampa, St. Petersburg, Clearwater, Sarasota, Bradenton, Tarpon Springs, Plant City and all or part of the counties of Pasco, Pinellas, Sarasota, Hillsborough, Polk and Manatee. The small-scale maps are designed to facilitate evacuation of people from endangered areas.

Field work for the four maps for the area is slated to get underway early next year and the maps should be available next fall.

The maps will show emergency evacuation routes, areas subject to flooding from hurricanes or other high waters, and elevations which might afford "safety islands" for storm evacuees. The maps are distributed to state and local officials and community preparedness committees by the National Weather Service and are available also to the public.

To date, maps have been issued for three Gulf coast areas—New Orleans, La., to Mobile, Ala., Galveston to Houston, Tex., and Corpus Christi, Tex.; the Atlantic coast region from Charleston, S.C., to Savannah, Ga.; the Greater Tidewater area of Virginia, including Norfolk; and New York-New Jersey coastal areas, including all of Long Island.

The maps are available to the public for \$2 each from the National Ocean Survey, Distribution Division (C44), Riverdale, Md. 20840.

Buoys Enroute to Marginal Ice Zone Survival Experiment

Two drifting ocean buoys under development are enroute to the Antarctic for a marginal ice zone survival experiment. They will be tested at a Soviet station (Molodezhnoya) on Frith under the direction of Dr. Frank Sechrist of the University of Wisconsin and the second will be tested at an Australian sta-

tion. The experiment will help determine the operational survivability of drifting buoys in marginal ice zones. The buoys will also telemeter environmental data via the Nimbus F satellite. The data buoy program is being carried on under the direction of the NOAA Data Buoy Office.

notes about people



Commander Charles A. Burroughs

Commander Charles A. Burroughs is the new Chief of the Operations Division at the National Ocean Survey's Pacific Marine Center in Seattle, Wash.

He has been Commanding Officer of the Seattle-based nautical charting survey ship *Fairweather* for the past two years.

His service began in 1958 with the Coast and Geodetic Survey, predecessor of the NOS. He has served aboard the *Patton*, *Pathfinder*, *Explorer*, *Mt Mitchell* and *Surveyor*, in addition to the *Fairweather*. Non-sea duty has included assignments with geodetic field parties, as Deputy Director of Executive and Technical Services at NOAA headquarters in Rockville, Md., and as Staff Assistant to the Assistant Secretary of Commerce for Science and Technology.

Dr. James D. McQuigg, Acting Director of the Environmental Data Service's Center for Climatic and Environmental Assessment, presented an invited paper entitled "Weather and Climate Interactions with Grain Yields" at the recent National Agricultural Outlook Conference in Washington, D.C. Dr. McQuigg, the only Federal meteorologist to present a paper at the conference, discussed current grain shortages, the vulnerability of grain production to large-scale weather and climate fluctuations, and the outlook for such fluctuations and their probable impact upon grain production over the next five to ten years. Sponsors



Dr. James D. McQuigg

of the conference were the Economic Research Service, Extension Service, and Agricultural Research Service of the U.S. Department of Agriculture.

George A. Maul, an Oceanographer with the Environmental Research Laboratories' Atlantic Oceanographic and Meteorological Laboratories in Miami, Fla., was honored recently by the National Aeronautics and Space Administration for his contributions to the Skylab missions, conducted between May 1973 and January 1974.

Mr. Maul, who is with AOML's Physical Oceanography Laboratory, was one of the recipients of the NASA Group Achievement Award—Earth Resources Team. The award recognized "outstanding accomplishments in the design, development, operation, and support of the Skylab Earth Resources Experiment."

Cited in particular was the Team's success in obtaining experimental information "... of significant and practical value in providing new methods for the discovery, management, and conservation of the earth's natural resources."

The satellite's Earth Resources Experiment Package consisted of six devices for gathering information including photographs and images of the earth and its oceans. The scientific data is now being applied to agriculture, forestry, ecology, geology, meteorology, hydrology, and oceanography.



Edgar A. Hubin

Edgar A. Hubin of the Environmental Research Laboratories has been appointed Personnel Officer for the combined National Bureau of Standards, Institute for Telecommunication Sciences, and NOAA elements in the Boulder, Colo., area.

He succeeds Dale C. Gough who recently was appointed Director of the Northwest Administrative Services Office in Seattle, Wash.

For the past seven years, Mr. Hubin has been Chief of Management Employee Relations with the Boulder Laboratories. Previously he was a personnel specialist for the U.S. Department of the Army in St. Louis, Mo., and the U.S. Department of Justice in Sandstone, Minn.

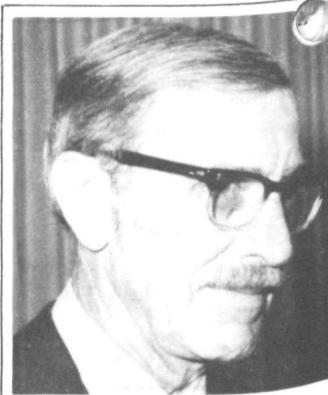
He holds a bachelor of arts degree in social science from Wheaton College in Illinois, and a master of arts degree in political science from the University of Chicago.

The National Ocean Survey's National Oceanographic Instrumentation Center, headquartered at the Washington Navy Yard, has two new Division Chiefs: Luther Bivins is now Chief of the Testing Division, and Bernard P. Polanin heads the Technical Services Division. Both had been serving in acting capacities.

Mr. Bivins joined NOIC in 1971 as Chief of the Evaluation Branch. Prior to that he was employed by the Naval Oceanographic Office where he spent over ten years in the design and development of ocean data acquisition systems.

Mr. Polanin also joined NOIC in 1971 after many years of experience in industry in test facility design and management.

The Testing Division conducts test and evaluation on a variety of ocean instruments, such as current meters, salinity measurement sensors, wave height sensors, acoustic devices and water quality instruments. The Technical Services Division provides the headquarters laboratories and regional calibration centers with test facilities which simulate the ocean environment in the laboratory under controlled conditions.



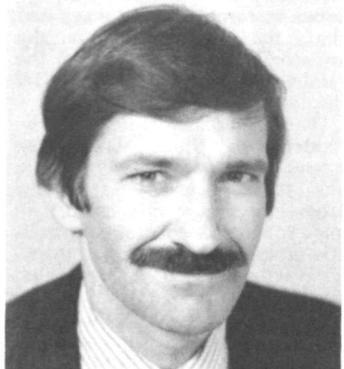
THOMAS A. MANAR, former Chief of the National Marine Fisheries Service Scientific Publications Staff in Seattle, Wash., has been awarded a Commerce Bronze Medal in recognition of his editorial excellence in preparing the *Marine Fisheries Review*, *Special Scientific Reports*, *Circulars*, and *Fishery Facts* for NMFS. He retired recently and resides now in Del Mar, California.

Award Nomination Deadline Extended

The deadline for submission of nominations for the Elmer Newmann Award for Employee Management Relations has been extended to January 31, 1975. For details see memo dated November 25 from Acting Assistant Administrator for Administration to POE Directors.

Retiree Bonus Revised

Due to an error in computation by the Department of Labor, the cost-of-living increase due retired Federal employees, effective January 1, 1975, has been revised downward from 7.4 percent to 7.3 percent.



Luther Bivins



Bernard P. Polanin

noaa week

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NOAA Week reserves the right to make corrections, changes or deletions in submitted copy in conformity with policies of the paper or the Administration.

Catherine S. Cawley, Editor
Anna V. Felter, Art Director

Fairweather Completes Season's Work

During the 1974 field season, the Seattle-based NOAA Ship *Fairweather* completed 9,470 nautical miles of hydrographic surveying—equivalent to more than one-third the circumference of the globe. The vessel, commanded by Commander Charles A. Burroughs, was at sea 191 days. The nautical charting surveys were conducted in the Gulf of Alaska; in Cook Inlet, Alaska; off the northwest coast of Washington; and off the southern California coast. The ship is now in drydock in preparation for the new season.

Obituaries

Lt. Cdr. D.E. Whelan

Lieutenant Commander Daniel E. Whelan, Jr., died at Pacific Palisades, Calif., on December 3. He retired in 1926, but was recalled to duty in 1943 and retired again in 1953. He served with the old Coast and Geodetic Survey 18 years.

Edward W. Wiley

Edward W. Wiley, of the Warehouse Section at the National Ocean Survey's Atlantic Marine Center in Norfolk, Va., died on November 28. He had been with NOS for almost four of his ten years' Federal service. He is survived by his wife and five children, who live in Norfolk.



THE FIRST CLEAN AIR AWARD PRESENTED TO A FEDERAL AGENCY by the Lung Association of Mid-Maryland was accepted recently for NOAA by Dr. Robert M. White (center), NOAA Administrator, and Linda Trunzo, Chief of the Employee Relations Section of the Personnel Division. NOAA was cited for "improving the quality of life by working for cleaner air" by coordinating carpools for its employees in the Washington Metropolitan Area. The plaque was presented by Edmund T. Burke, President of the Lung Association of Mid-Maryland.

Satellite and Sailing Ship Team Up for NOAA Experiment

(Continued from page 1)
edge of the continental shelf by tides during late spring through fall when solar heating causes a layer of warm, light water to overlie the colder, denser water below," Dr. Apel explains. "A narrow strip of smooth surface water is created over a portion of each wave, which then propagates along and serves as an identification tag for the underlying oscillation during calm conditions."

Dr. Apel and his colleagues, Dr. John R. Proni, H. Michael Byrne, and Ronald L. Sellers, chartered the research vessel *Westward*, a 100-foot staysail schooner, for a six-week New York-to-Bermuda scientific voyage during June and July of

this year to verify the existence of the underwater waves. The *Westward* was selected because the scientists felt one of their new observational instruments, an acoustic echo-sounder, would function much more sensitively in the quiet environment of a sailing vessel.

To carry out the experiment, the *Westward* moved synchronously with several ERTS-1 overpasses during two 18-day periods while NASA gathered data from the satellite. In addition, a NASA U-2 aircraft, flying at 60,000 feet over the New York Bight between Sandy Hook and the Hudson Canyon, tested the Goddard Space Flight Center's coastal zone color scanner in conjunction with the *Westward*

on two other days. The Miami research team correlated the ERTS, U-2, and surface camera imagery with subsurface measurements of internal waves taken aboard the sailing vessel with thermistors, bathythermographs, acoustic echo soundings, and salinity temperature and depth probes. The resulting data verified that the surface slicks did have underlying internal wave motion associated with them, and that the slicks were the objects being seen in spacecraft and aircraft photographs. The results of the experiment were reported at the Fall Annual Meeting of the American Geophysical Union in San Francisco, Calif.



PARTICIPANTS IN THE ADVANCED PREDICTION TECHNIQUES COURSE held at National Weather Service Headquarters November 11-22 were (standing, from left) Larry Whitehead, Portland, Maine; Walter Cottrell, Instructor, NWSH; Jim McDonnell, Instructor, NMC; John Bottomley, Minneapolis, Minn.; Michael Franjevic, Bismarck, N.Dak.; Charles Saylor, San Francisco, Calif.; David Fehling, Seattle, Wash.; Russell Johnson, Washington, D.C.; Robert Kistler, NMC; Clifford Dey, NMC; James Henderson, Birmingham, Ala.; George Quereau, Fort Worth, Tex.; Otto Karst, National Environmental Satellite Service, Washington, D.C.; Gifford Ely, New Orleans, La.; Abraham Ruiz, Charleston, W.Va.; Jerry

Youngberg, Portland, Oreg.; Robert Pike, Boston, Mass.; John Lee, Kwajalein Island; Clarence Wardman, Louisville, Ky.; Charles Hauck, Forest Service, Macon, Ga.; William Ryan, Forest Service, Riverside, Calif.; Walter Hattman, Reno, Nev.; Alexander Sadowski, Instructor, NWSH; John Michener, Kansas City, Mo.; (seated, from left) Thomas Burt, NWSH, Washington, D.C.; Walter Hall, Atlanta, Ga.; Joseph Miller, NWSH, Kansas City, Mo.; Charles Cochran, Phoenix, Ariz.; Barbara McKain, Cheyenne, Wyo.; Alfonso Castaneda, Lubbock, Tex.; Max Traunfeld, New York, N.Y.; (front row, from left) Dr. Charles Chow, Instructor, NWSH; and Maury Pautz, Course Supervisor, NWSH.

New York City WSFO, WSO Consolidated

Consolidation of the functions of the New York National Weather Service Forecast Office formerly located on the Bronx Community College Campus and the Weather Service Office at Rockefeller Center was completed on December 13. The combined office at 30 Rockefeller Plaza in New York City will provide public and aviation forecasts, public marine, climatological and air pollution services together with hazardous weather warnings to New York City, Rockland and Westchester Counties, Northern New Jersey, Long Island and the surrounding coastal waters. Harold Gibson is in charge of the combined office (see NOAA WEEK, December 6, 1974.)

personnel perspective

Current Vacancies in NOAA

To insure that NOAA employees are aware of job possibilities throughout the agency, a list of current NOAA-wide vacancies is published below. Employees interested in any of the listed vacancies

should contact their servicing personnel office for information of where to apply.

Announcement No.	Position Title	Grade	MLC	Location	Issue Date	Closing Date
330-75	Hydrologist	GS-13	NWS	Harrisburg, Pa. Hartford, Conn.	12/12/74	12/27/74
331-75	Supv. Meteorologist	GS-12	NWS	Richmond, Va.	12/12/74	12/27/74
332-75	Hydrologist	GS-12	NWS	Buffalo, N.Y.	12/12/74	12/27/74
333-75	Program Support Assistant	GS-10	HDQS	Washington, D.C.	12/12/74	12/27/74
344-75	Hydrologist	GS-12	NWS	Cincinnati, Ohio	12/16/74	12/31/74
345-75	Cartographic Tech.	GS-7	NOS	Norfolk, Va.	12/16/74	12/31/74
346-75	Construction Representative	GS-11	NWS	Tampa, Fla.	12/16/74	12/31/74
347-75	Meteorologist	GS-7	ERL	Princeton, N.J.	12/16/74	12/31/74
349-75	Meteorologist	GS-13	NWS	Buffalo, N.Y.	12/17/74	1/2/75
350-75	Supv. Meteorologist	GS-12	NWS	San Diego, Calif.	12/17/74	1/2/75
99-75	Admin. Officer	GS-13	NOS	Rockville, Md.	12/12/74	1/3/75
(re-open)						
358-75	Supv. Meteorologist	GS-15	NWS	New Orleans, La.	12/18/74	1/3/75
359-75	Supv. Meteorologist	GS-13	NWS	Salt Lake City, Utah	12/19/74	1/4/75
360-75	Meteorologist	GS-12	NWS	Fairbanks, Alaska	12/19/74	1/4/75
362-75	Meteorological Tech.	GS-10	NWS	Rochester, N.Y.	12/23/74	1/8/75
363-75	Electronics Tech.	GS-11	NWS	Cape Hatteras, N.C.	12/23/74	1/8/75
364-75	Supv. Meteorologist	GS-13	NWS	Charleston, W.Va.	12/23/74	1/8/75
365-75	Meteorologist	GS-12	NWS	Suitland, Md.	12/23/74	1/8/75
366-75	Meteorologist	GS-12	NWS	Des Moines, Iowa	12/23/74	1/8/75
367-75	Meteorological Tech.	GS-10	NWS	Des Moines, Iowa	12/23/74	1/8/75
348-75	Electronics Engineer	GS-13	NWS	Silver Spring, Md.	12/17/74	1/9/75
361-75	Computer Specialist	GS-12	NOS	Rockville, Md.	12/19/74	1/11/75

Health Benefits Information

Public Law 93-246, signed into law last January, increased the government's contribution to Federal employees' health insurance premiums from 40 to 50 percent effective the first pay period beginning on or after January 1, 1974. The law also called for increasing the government's share of the premium from 50 to 60 percent in January, 1975. Examples of the bi-weekly premium rates for the two most popular government-wide plans follow:

Plan	Total Premium	Gov't. Pays	Emp. Pays
Blue Cross Blue Shield			
High Self	13.04	7.64	5.40
High Family	31.81	18.93	12.88
Low Self	4.08	3.06	1.02
Low Family	9.99	7.49	2.50
Aetna Life Ins. Co.			
High Self	11.52	7.64	3.88
High Family	28.70	18.93	9.77
Low Self	6.35	4.76	1.59
Low Family	15.74	11.81	3.93

Contrary to premature published reports during the time that the U.S. Civil Service Commission was negotiating rate/benefit changes, Blue Cross/Blue Shield benefits for treatment of mental illness will not be reduced for 1975, except that a \$50,000 lifetime limit per person, beginning with 1975 expenses, will be imposed on supplemental benefits payable for covered care of mental illness.

There will be a change for AETNA mental illness benefits. For 1975, the number of outpatient therapist visits for which benefits are payable will be limited to 20 per year, per person or twice that number if treatment is in a community health center.

Another important change is that, beginning in 1975, Blue Cross/Blue Shield will no longer cover private duty nursing care for hospitalized patients.

The above discussed changes have been outlined in BRI 41-117, "Open Season Instructions," which was distributed to all employees.

Integrity of The Merit System

President Ford recently declared his commitment to assuring the integrity of the Civil Service system and his determination to keep the Federal Service a Career Service in which men and women will be accepted on their ability and promoted on their merit. The Civil Service Commission has taken action to make changes in the system in those areas found to be less than adequate in meeting these principles. These changes include:

1. Placing greater responsibility on Federal managers and supervisors to certify as to the accuracy of official position descriptions.

2. Restricting of authority to make temporary Limited Appointments to meet special needs.

3. Requiring agency review and certification to the CSC of all

Night Shift Differential Pay For Prevailing Rate Employees

A recent decision of the Comptroller General has changed the official interpretation of "majority of hours," which is the basis for determining pay of Federal Wage System employees for night shift differential. The Comptroller General has determined "majority of hours," to mean five or more hours of an employee's regular, scheduled eight-hour shift and must be interpreted in whole hours. Previously, "majority of hours" had been interpreted as any time over four hours in an eight-hour shift, and agencies had been advised to pay night differential on this basis. A number of employees have been overpaid as a result. A decision regarding a blanket waiver of all overpayment claims under these conditions is pending with the Comptroller General. "Majority of hours" now means that an employee who does not work at least five hours on the shift for which night differential is paid is not entitled to the premium pay for any of the hours worked. It also means that the employee is entitled to night differential for the entire eight hours worked, if five hours are worked on a shift entitling the employee to the differential.

The shift during which the five hours is worked comprises the basis for which the differential is paid for the entire eight hours. Therefore, if the employee works the five hours during the 10 percent differential shift he or she receives eight hours pay at 10 percent. Likewise, if the five hours worked is during the 7 1/2 percent differential shift, he or she receives eight hours pay at 7 1/2 percent. A tour of duty involving four hours worked during the 7 1/2 percent differential shift and four hours worked on the 10 percent differential will result in eight hours paid at 7 1/2 percent since a majority of hours (five hours) is not worked during the 10 percent shift but a majority is worked during a period in which night differential is payable. Meal breaks are also counted to determine the differential rate to be paid. Employees regularly assigned to a night shift continue to receive night shift differential when temporarily assigned to a day shift. Similarly, employees temporarily assigned to the second shift from the third shift continue to receive a 10 percent differential.

Managers of Federal Wage System positions have been alerted and the NOAA Finance Division is issuing separate instructions to Time and Attendance Clerks.

Schedule C positions.

4. Requiring that the head of each department and agency assure that "Statements of Employment and Financial Interest" for government officers and employees are submitted as required under the Standards for Ethical Conduct.

In line with number one above, a pamphlet entitled "The Federal Manager's Responsibilities under the Merit System" is presently being distributed to each Federal manager and supervisor.



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