

Marine Weather Forecasts Use Combination of Data

New types of environmental services tailored to the needs of mariners are being developed by NOAA meteorologist-oceanographers in Seattle.

The experimental effort by National Weather Service combines computer predictions of winds, waves, ocean swell, and weather with "handmade" analyses of satellite data, Arctic ice-cover data, ship observations, and other weather information.

Its products include forecasts for tug and barge traffic based in Puget Sound and en route to Alaska, ice advisories for the Bering and Chukchi Seas, and special forecasts for NOAA research vessels and for people caught in weather-connected emergencies at sea.

Developed by the Seattle Ocean Services Unit of the Weather Service Forecast Office, these products give the mariner a degree of specialized weather information similar to that given aviators for cross-country flights. The difference is that ocean forecasters have a limited picture of actual weather conditions at sea, and so have less information upon which to base a

prediction.

The Seattle unit is led by Robert Anderson, formerly with the Naval Oceanographic Office in Maryland, and ocean forecaster Bill Burton. NOAA Lie-

"Weekly Weather & Crop Bulletin"

Now Part of EDS

NWS's Agricultural Weather Support Services Office (NWS/AWSS), located at the Department of Agriculture, was transferred to EDS's Center for Climatic and Environmental Assessment (CCEA) effective March 1.

In cooperation with USDA, the office staff prepares the *Weekly Weather and Crop Bulletin*. They tailor the *Bulletin's* contents to the needs of the grain industry, farmers, commodity interests, other government agencies, etc.

CCEA was established in late
(Continued on page 2)

Dr. Robert M. White To Leave NOAA July 15

Dr. Robert M. White, NOAA Administrator since its inception in 1970, has resigned effective July 15 to accept a position as Chairman of the National Academy of Sciences' Climate Research Board.

Dr. White, who has served under five presidents, first came to Washington in 1963 as Chief of the U.S. Weather Bureau. When NOAA's predecessor agency, Environmental Science Services Administration, was organ-

ized in 1965, he was appointed its Administrator. As ESSA evolved into NOAA, he led the new agency.

Under his guidance, NOAA assumed leadership in atmospheric and oceanic sciences and their application to enhance the quality of human life.

Following are Dr. White's letter of resignation to Commerce Secretary Juanita M. Kreps, and her reply.

Dear Madam Secretary:

As you and I have discussed, there are compelling personal reasons why I must make plans for leaving the government after 13 years of service under five Presidents. It is difficult after all these years of directing the Nation's oceanic and atmospheric efforts to leave. I am deeply grateful to you for your confidence in me that has led you to express the desire that I remain Administrator of the National Oceanic and Atmospheric Administration.

My tenure has been blessed by vast changes in the Nation's oceanic and atmospheric programs and policies. I have seen a rebirth of hope for our Nation's fisheries. I have personally been privileged to participate in successful efforts to save the world's whales. I have witnessed the initiation of landmark efforts to bring about balanced management of our coastal zones. I have been associated with the astounding revolution in the Nation's weather warning system which has seen the first deployment of the technology of satellites, computers and other devices, that have changed weather forecasting from art to science. I could go on at length.

No minute or day has been without its pressures, its frustrations and its satisfactions. It has been an experience like no other, and one that will fulfill me whatever else I now choose to do.

Dear Bob:

It is with deepest regret that I accept, on behalf of the President, your resignation as Administrator of the National Oceanic and Atmospheric Administration. President Carter and I had looked forward to your continuing the outstanding service you have rendered under the leadership of five Presidents since coming to the Department of Commerce in 1963. Your loss will be a great one.

The Nation, the Commerce Department, and NOAA and its predecessor agencies have been fortunate in having you at the helm of so many of our environmental services during a crucial period in our lives. As we have reached ever more deeply into the complex world of science in our search for understanding of the forces of nature, we have also endeavored not to lose our concern for those things around us that need mankind's special attention and protection. Thus, your official attention often was divided equally between the newest weather satellite in the heavens and to seeing to the welfare of creatures of the sea whose extinction was threatened. Your devotion to both was always evident.

In moving to other vital and demanding scientific duties, you take with you our good wishes and warm appreciation for a job well done.



NOAA Administrator Dr. Robert M. White, and other senior NOAA officials briefed Commerce Secretary Juanita M. Kreps on NOAA and its functions, at the Main Commerce building in Washington, D.C., March 24. Shown here is Secretary Kreps, with Commerce Under Secretary-designate Dr. Sidney Harman, answering questions from the audience between briefings. More than 600 NOAA employees attended.

Marine Weather

(Continued from page 1)

tenant Commander Kenneth Lilly, and Captain Graham Britton, Royal Navy (ret.), a noted British meteorologist associated with the Sea Use Council, pioneered the present set of experimental services. (The Sea Use Council is a private, regional organization concerned with the long-term scientific and economic development of the North-eastern Pacific area.) Two additional forecasters are joining the unit this year.

Thus far, the Ocean Services Unit has been trying to evaluate how well the services fit the needs of particular users, and whether the products should be considered as possible additions to the regular run of Weather Service data.

Alyeska Pipeline called last spring, Lilly said, wanting a forecast out to six or seven days because they were shipping a critical cargo to Alaska. "We could give them a five-day forecast, and the forecast turned out to be an accurate one."

Other special forecasts have been made for area sailboaters, for NOAA's data-buoy developers, and for the Bicentennial sailing vessel Explorer on the Pacific coastal leg of her voyage to New York.

The ocean weathermen, with research assistance from NOAA's Pacific Marine Environmental Laboratory, also are bringing more "wet" data into their meteorological work, to develop new products for people who use the sea. For example, they expect to develop regional sea-surface temperature maps, based on data from ships and the infrared sensors aboard NOAA satellites. These maps will show where the boundaries are between thermal regimes in the sea—boundaries that generally mean good fishing.

"Bulletin" (Continued from page 1)

1974. In early 1975 the CCEA Assessment Division in Washington, D.C., began providing weekly data, descriptions and assessments to Large Area Crop Inventory Experiment (LACIE) management in Houston, Tex., with copies to others who expressed interest.

Both NWS/AWSS and EDS/CCEA provide weekly global assessments of the crop/climate situation. The for-



Dennis Egan, Station Manager of KJNO, Juneau, Alaska, recently received the National Weather Service's Public Service Award, the first to be presented in Southeast Alaska, for outstanding assistance in disseminating weather information and the extra effort put into the weather aspects of broadcasting. Leif Lie, Meteorologist-in-Charge of the Juneau Forecast Office, presented the Award and a letter of appreciation from Weather Service Director Dr. George P. Cressman.

Track of Dust Storm Followed by Satellites

Two environmental satellites operated by NOAA are helping meteorologists watch the development and spread of dust storms in the Plains States following a storm which was considered among the worst since the "Dust Bowl" days of the 1930's.

The satellites—a geostationary spacecraft positioned 22,200 miles (35,730 kilometers) above Colombia at the equator, and a polar-orbiting spacecraft at an altitude of 935 miles (1505 kilometers) passing over any given spot on the earth twice every 24 hours—showed the movement of the major dust clouds from a storm the week of February 21. The dust cloud originated in New Mexico and Northeastern Colorado, picked up additional dust from West Texas, Kansas, and Oklahoma,

and crossed over Mississippi, Alabama, and Georgia out into the Atlantic Ocean. It affected the atmosphere as far east as Bermuda where the normally crystal-clear skies were hazy for several days.

Over the Plains States, blowing dust was observed at altitudes as high as 17,000 feet (5182 meters), and as high as
(Continued on page 8)

World War II Oil Losses

MIT Ocean Engineers See No Long-Term Effect From Wartime Spills

Tankers sunk off the East Coast of the United States by German submarines in the early months of World War II spilled 20 times as much oil as the Argo Merchant carried without apparent adverse long-term effect on the environment of the Atlantic Coast shorelands, according to NOAA Sea Grant researchers at the Massachusetts Institute of Technology.

The Liberian tanker Argo Merchant, which grounded on Nantucket Shoals in December, spilled six million gallons of oil into New England waters. Many East Coast residents feared an unprecedented ecological disaster.

However, many times as much oil was released into off-

Caribbean Monk Seal Endangered

The Caribbean Monk Seal has been proposed for listing as an endangered species by NMFS and the U.S. Fish and Wildlife Service, under the authority of the Endangered Species Act of 1973.

While it is feared the animal may already be extinct, NMFS believes it should be listed as endangered in case remnant members of the species still exist. This would provide survivors protection under the Act upon discovery.

The former distribution of the Caribbean Monk Seal included the shores and islands of the Caribbean Sea and Gulf of Mexico from the Bahamas west (including the Florida Keys and Cuba) to the Yucatan Peninsula, south along the east coast of Central America and through the western Caribbean Sea, and eastward in the northern Caribbean to the northern Lesser Antilles.

With needs similar to those of the Hawaiian monk seal, placed on the endangered species list last year, the Caribbean monk seal seeks shallow lagoons and reefs for feeding areas; sandy beaches for hauling-out grounds; and permanent islets or beaches above high tide, and adjacent to shallows, for pupping areas.

shore waters from Block Island to Key West between January and June of 1942, when German submarines concentrated their assault on merchant ships in the coastal shipping lane off the eastern seaboard. Many of the ships were tankers, and a total of 145 million gallons of crude and refined oil, the equivalent of 20 Argo Merchants, were spilled into Atlantic waters within 50 miles of shore.

Curious about the impact of this seaborne oil on the Atlantic coastal environment, three M.I.T. ocean engineers, supported by a grant from the Office of Sea Grant, analyzed the spills and evaluated historical and present-day effects on shoreline ecology.

Multiple Use Is Foreseen For Wave Data Research

A coastal wave monitoring program to collect wave data at offshore locations for scientific, environmental and engineering projects has been initiated by NOAA.

The new research program, which involves at-sea wave measurements and statistical analysis of wave data, is based within NOAA's National Ocean Survey. It will provide wave condition information for offshore structure design, beach erosion prevention, improvement of marine forecasts, ocean construc-

Two Rescued When Boat Capsizes

"They were out fishing, and their boat capsized," said Ensign Steven S. Snyder of the NOAA Ship Davidson who assisted in the March 4 rescue of two men from the middle of the Napa River, near Vallejo, Calif.

"Fortunately," said Snyder, "both men were wearing life preservers."

Ensign Snyder spotted the two men clinging to the capsized boat 220 yards from shore.

Bob Issacson, who works in the engine room, assisted Ensign Snyder in the rescue and taking the 12-foot skiff in tow.

Both men and boat were taken to a Napa River marina.

tion projects, marine operations planning, and coastal zone planning.

Announcing that funds have been received to begin the program, project manager Dr. Marshall Earle, of the Oceanographic Division in the NOS Office of Marine Surveys and Maps, said that efforts in 1977 will concentrate on an evaluation of wave measuring systems, studies of user requirements, and evaluation of wind and wave measurements methods to be calibrated with the wave data, and the establishment of procedures to provide real-time wave data to marine forecasters.

"With follow-on funds," said Dr. Earle, "wave monitoring is planned off the Atlantic Coast beginning in 1978, in the Gulf of Alaska in 1979, and in other coastal regions in the following years." Dr. Earle is the Special Assistant to the Division Chief, Captain Wesley V. Hull.

Hydrocarbons

Baseline Study Completed

The first comprehensive survey of existing hydrocarbons in the global ocean shows small quantities of these compounds everywhere, with faint trails of higher concentrations along major routes followed by oil tankers.

The study by NOAA, the U.S. Maritime Administration (MARAD), and Exxon Corporation measured the amounts of hydrocarbons currently present in ocean waters. This knowledge of present-day distributions of hydrocarbons, which can come from a variety of sources besides petroleum, provides a baseline against which future environmental changes can be detected and evaluated.

A final report of the study has now been published by MARAD and NOAA's Marine Ecosystems Analysis Program. In the report Dr. Edward P. Myers of the MESA program, and Charles G. Gunnerson, Environmental Engineering Advisor

for NOAA's Environmental Research Laboratories, conclude that though hydrocarbon levels vary greatly from place to place, most measurements in the upper water levels are in the range of one to 10 parts per billion. In deeper ocean waters, hydrocarbon levels are lower, often less than one part per billion.

The National Academy of Science estimates that six million metric tons of hydrocarbons enter the sea each year. About 35 percent of this can be attributed to leakage incident to the marine transportation of petroleum. River runoff adds 26 percent. Natural seeps and the atmosphere contribute 10 percent each; nonrefining industrial wastes, urban runoff, and municipal wastes a total of 15 percent; coastal refineries and offshore oil production, four percent. Organisms in the sea also produce hydrocarbons, but of a chemical type different from petroleum.

NOAA NEWS

Published biweekly at Rockville, Md., by the Office of Public Affairs for the information of employees of the Commerce Department's National Oceanic and Atmospheric Administration.

Articles to be considered for publication should be submitted at least 10 days in advance to NOAA News, Room 221, WSC5, Office of Public Affairs, National Oceanic and Atmospheric Administration, Rockville, Md., 20852.

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

Nancy Pridgeon, Editor
Warren W. Buck, Jr., Art Director



The Sea Grant Review Panel, organized recently under new legislation for the National Sea Grant Program, held its first meeting in Washington. Attending the day-long session were: (front row, left to right) Dr. Bernard Le Mehaute, Senior Vice President, Tetra-Tech, Inc., Pasadena, Calif.; Alton Lennon, Wilmington, N.C.; Dr. Randolph W. Bromery, Chancellor, University of Massachusetts; Dr. Werner A. Baum, University of Wisconsin; Harold E. Lokken, Manager, Fishing Vessel Owners Assn., Inc., Seattle, Wash., and Marjorie Lass Vesley, Williamsville, .Y.; (back row, left to right) Robert D. Wildman, Associate Director, Office of Sea Grant; Dr. George S. Benton, Vice President, Johns Hopkins University; Harvey Weil, Senior Partner, Kleberg, Mobley, Lockett & Weil, Corpus Christi, Tex.; Dr. Robert M. White, NOAA Administrator; Dr. Sanford S. Atwood, President, Emory University, Atlanta, Ga., (who was elected chairman of the panel); Dr. Ned A. Ostenson, Director, National Sea Grant Program; Dr. Joseph N. Busby, Gainesville, Fla.; Dr. Lyle S. St. Amant, Assistant Director, Louisiana Wildlife & Fisheries Commission, New Orleans, La.; Phillip Eisenberg, Chairman of the Executive Committee, Hydronautics, Inc., Washington, D.C.; Arthur G. Alexiou, Associate Director, Office of Sea Grant; and Robert J. Shephard, Program Manager, Marine Advisory Services, Office of Sea Grant.

Forecasting for the Concorde



As Weather Service people line up to board the Concorde...

A little more than 20 years after the first supersonic plane broke the sound barrier over California's Mojave Desert, the first prototype Concorde was flown. Within the next ten years, supersonic passenger flights were a reality, and aviation weather forecasting techniques had evolved to meet the need.

The Concorde, a joint venture of Air France and British Airways, now flies into Dulles International Airport, just outside Washington, D.C., on a regularly scheduled but trial basis. The Washington, D.C., Weather Service Forecast Office and the Weather Service Office at Dulles cooperate to provide the necessary meteorological information for the Concorde's takeoffs and landings.

Compared to the large subsonic commercial airliners, such as the Boeing 747, the Concorde is relatively small. Its trim hull is only a little over 200 feet long with a wing span of about 84 feet. It can carry about 100 passengers.

The Concorde has a maximum weight at takeoff of 400,000 lbs., including a payload of 25,000 lbs. Much of its weight is in fuel—it has a cruising range of about 3,800 miles without refueling, a cruising altitude of between 50,000 and 60,000 feet, and a cruising speed around Mach 2.

Mach is the term used to mean the speed of sound—first calculated around the turn of the century by Ernst Mach, an Austrian scientist, to be 760 miles an hour at sea level on a "standard" day. Mach 1 is the

speed of sound at any given temperature and altitude. Subsonic commercial planes fly below the speed of sound. The



It's cloudy, windy and cold...

Concorde's cruising speed of about 1360 miles an hour enables it to cut long-distance flight times in half, in many cases.

The Concorde's speed, however, is not a factor in landing. When it approaches any land area, it is flown at subsonic speeds, but it is important that the Concorde's pilot and crew know surface temperature, pressure, humidity and windspeeds.

At takeoff, it's especially important that they know surface conditions for that time. Each takeoff will be through different conditions, so each forecast must be tailored to fit. If the Concorde must take off through unfavorable surface conditions, adjustments may be called for. In at least one case, some of the luggage had to be removed be-

fore the Concorde could go.

The Dulles Weather Service Office prepares special flight folders for all overseas flights, including the Concorde. These contain information on conditions along the route and a terminal forecast in international code for the plane's arrival time in Europe.

Aside from the routine aviation forecasts disseminated by WSFO Washington, D.C., the forecasters brief Concorde operations staff giving 24- to 48-hour forecasts of temperature, pressure, humidity and winds.

These meteorological parameters are then used to compute DENSITY ALTITUDE which is an index to aircraft performance. High density altitude (high

density altitude increases. In addition, both high density altitude and light winds increase the take-off roll.

The Concorde flight folder contains wind flow and temperature charts for high altitudes, and an explanation of the symbols and terms. The maps and charts are xeroxed from the latest ones received at the WSO via teletypewriter and facsimile circuits, and stapled together with a cover giving the plane's identification, estimated time of arrival, and other data.

The flight information allows the navigator on board the Concorde to plot the flight from point to point, using the most favorable winds and altitude. It is also important that the navigator have all the necessary material on board because of the flight's duration and the fact that the plane will be out of radio contact for at least a portion of the time.

As a token of its appreciation, British Airways invited forecasters from the WSFO and their families to tour the Concorde on March 1. About 30 persons met at the British Airways counter at Dulles, traveled in the airport's mobile carrier to where the Concorde was parked, and were ushered aboard in groups of six or seven at a time to view the plane's interior. All were urged to take pictures to their heart's content.

The weather turned windy and cold, but that did not dampen the group's enthusiasm for a first-hand look at the Concorde.



But forecasters are a hardy lot.

And Even Higher

Satellite Images Are Put To Good Use

With the GOES-2 satellite, to be launched on May 25, proceeding on schedule, here's a review of several uses to which satellites are being put today.

More than 120 nations in all parts of the world today are using data from a NOAA spacecraft for such diverse purposes as inventorying forests, controlling floods, and aiding in deep sea drilling.

In what is considered one of the most successful demonstrations of peaceful uses of space technology, countries from Algeria to Zambia daily receive pictures of their parts of the world from NOAA's polar-orbiting satellite.

The spacecraft, orbiting the globe at an altitude of about 935 miles (1505 kilometers), passes within range of a ground receiving station at any given location at least four times in a 24-hour period, according to Robert W. Popham, Coordinator of Satellite Direct Readout Services at NOAA's National Environmental Satellite Service.

The satellite, NOAA 5, was launched in July, 1976, the latest in a series of spacecraft with the capability of transmitting earth images from outer space. Prime purpose of the satellite series, Popham said, is to provide U.S. weather observers with increased data from which to make weather forecasts.

More than 800 APT (Automatic Picture Transmission) receivers are operated not only by government agencies of 121 countries, but also by academic institutions, scientific groups, local communities, and even commercial TV stations, Boy Scout troops, and amateurs who enjoy receiving messages from outer space.

According to Popham, many of the receiving stations are home made, often constructed for less than \$300, and incorporate such items as coat hangers, rolling pins, and other odds and ends to create the three basic elements of a low-cost APT system for acquiring satellite imagery: a VHF band antenna, a receiver, and a recorder.

Use of the imagery by foreign governments varies widely depending upon the environmental conditions and concerns of a given nation or region. In North Africa, for example, analysis of

satellite imagery by specialists with the Food and Agricultural Organization of the United Nations helps that agency control locusts which pose a serious threat to area agricultural crops.

Satellite imagery helps ice-watchers in Finland and other Baltic areas monitor ice conditions and schedule aircraft overflights to observe what is happening to shipping lanes in ice-choked waters.

From the Atlantic

Pictures from space helped mariners sailing the eastern Gulf of Mexico conserve fuel and improve transit times this past winter by showing them where Gulf currents were flowing through that body of water.

The information on the Gulf Loop Current, a circulation of water that moves roughly clockwise through the eastern portion

of the Gulf of Mexico, comes from the geostationary satellite GOES-1. Additionally, commercial fishermen in the area are using the information to locate potentially more productive fishing grounds. Ocean-going vessels taking advantage of the swift currents of the Gulf Stream have realized

significant fuel savings, according to a study conducted by Exxon Company, USA, in cooperation with NOAA.

As a result of the study, all Exxon vessels sailing the Gulf of Mexico and the Atlantic Seaboard today are routinely using Gulf Stream data, with a potential annual fuel savings of about a third of a million dollars.

To the Pacific

Satellite pictures of weather patterns over the Pacific Ocean are helping sugar cane growers in Hawaii even out the odds in a multi-million dollar gamble with nature.

With weather an important factor in the complex process of growing and harvesting a profitable crop, the Waialua Sugar Co., Inc., on the island of Oahu has found satellite imagery provided by NOAA an invaluable source of information.

Weather—especially rain—is both friend and foe of sugar cane growers. Moisture at the right time is essential; at the wrong time disastrous.

Convection and trade wind showers are the main weather hazards during the spring and fall harvesting seasons each year. When a cane field of 50 to 75 acres is ready for harvest—about two years after planting—it first must be burned, a process which must abide by State and Federal air pollution regulations. Too, the tactical procedures for burning a particular field depend heavily upon wind direction and speed.

After burning, the crop remains must be harvested within

24 to 36 hours to avoid spoilage, and at a rate to assure a steady, but not overwhelming, flow of cane to the processing mill. Significant rainfall during this period interferes with getting the

heavy harvesting vehicles into the field, and also hastens deterioration of the burned cane, which has a potential market value of up to one quarter of a million dollars.



Visiting scientists from Venezuela met with the Director of the National Environmental Satellite Service recently to discuss the possibility of a satellite readout station in their country. Shown (from left) are Dr. Nelson Heinandez; Donald Wiesnet, NESS; David S. Johnson, NESS; Dr. Jaime Amorcho; Dr. Miriam Guilarte; and Dr. Mario Escalona. Prof. Diane Ingrahm (not shown) was also a member of the delegation.

Recognition for the superior employee

Should It Be A Cash Award?

There are two general categories of cash awards—one is for sustained superior performance, the other is for a special act or service. An individual, a former employee, or the estate of a deceased employee, provided the performance took place while the person was a Government employee, is eligible. The cash award for sustained superior performance (SSP) is based on individual work performance which exceeds performance requirements of regularly assigned duties for a period of at least six months. In cases where this is the basis for the recommendation, the amount of award must be consistent with the award scale based on the individual's grade, as follows:

GS 1 - 4	\$130 - \$195
GS 5 - 8	195 - 260
GS 9 - 11	260 - 325
GS 12 - 13	325 - 390
GS 14 - 18	390 - 455

No exceptions to this scale will be approved and the award amounts in this scale do not apply to group recommendations. The other broad category of cash awards is the special act or service (SA or S) category. Performance in these cases may or may not be directly related to official job responsibilities. Also, there is no time requirement to be met here as in the SSP category. Instead, there must be something unique about the performance itself, or the work situation, such as tangible savings, working under difficult conditions,

accomplishing an extraordinary workload in a short time to meet deadlines, etc. The special act or service cash award can be made to an individual or to a group, whereas the sustained superior performance award can be made to an individual only. The cash amount for SA or S awards is based on the tangible or intangible value of the contribution or achievement, and Exhibits A and B (the Awards Scales for Tangible and Intangible Benefits) or Chapter 10, NOAA Personnel Handbook should be used in determining the amounts. Recommendations should include a statement of the dollar amount saved by the contribution if the savings can be calculated. Where the benefits

are determined to be intangible, the recommendation should contain a description of the non-monetary benefits and the adjectives from Exhibit B which most nearly describe the value of benefit and extent of application of the accomplishments. These adjectives provide the monetary award range within which a supervisor can recognize an achievement. The total amount of the award for a group will generally be the amount authorized for that type of award if made to one person. However, where individual shares of such a group cash award appear inappropriate, the approving authority may deviate from the amount ordinarily authorized, and the case should be documented accordingly.

Or A Quality Step Increase (QSI)?

There is only one basis for a QSI and that is continuing high quality performance of not less than six months in the same grade or position which justifies the conclusion that high quality performance is characteristic of the employee and that he or she shows promise of continuing such performance indefinitely at substantially the same high level. This further implies that the nominee is not scheduled for promotion in the foreseeable future because the "promise of performance continuing indefinitely at the same high level"

would be nullified after promotion. Performance requirements would naturally be higher after promotion and what might be considered "high quality performance" at the grade 9 level, for example, might be only "acceptable or satisfactory" on the grade 11 level.

On the surface, it might appear that the SSP cash award and QSI can be utilized interchangeably, since they both require performance exceeding requirements for at least six months but this is not true. Some of the differences are as follows:

The SSP award justification requires only that one or more of the most important job elements has been performed in a manner substantially exceeding normal requirements and that the employee's total performance is of a higher level than that required to merit a regular periodic within-grade increase. The QSI requires that all of the most important job elements have been performed in a manner substantially exceeding normal requirements and performance of other job elements has exceeded normal require-

ments. Also, the employee may not have had a QSI during the past 52 weeks; he or she may not be in step 10 of his or her grade and he or she must be a general schedule employee who is eligible for regular within grade increases. Also, because the award benefits from a QSI continue to accrue to an employee (possibly even into retirement) the QSI recognizes both past and projected performance on the job, while the SSP cash award recognizes only past performance.

NOAA Personnel Division Lists Current Vacancies

Announcement Number	Position Title	Grade	MLC	Location	Issue Date	Closing Date
A 1485	Oceanographer	GS-9	ERL	Seattle, Wash.	3-18-77	4-1-77
360-77	Fishery Biologist	GS-12	Marine F. Office	Rockville, Md.	3-18-77	4-8-77
361-77	Operations Research Analyst	GS-12	NOS	Riverdale, Md.	3-18-77	4-8-77
363-77	Physicist	GS-14	ERL	Boulder, Colo.	3-18-77	4-8-77
364-77	Oceanographer	GS-13	ERL	Seattle, Wash.	3-18-77	4-8-77
365-77	Geologist	GS-13	ERL	Boulder, Colo.	3-18-77	4-8-77
374-77	Comm. Spec.	GS-11	NWS	Silver Spring, Md.	3-22-77	4-5-77
375-77	Elec. Engineer	GS-9	NWS	Sterling, Va.	3-22-77	4-5-77
376-77	Elec. Tech.	GS-9, 10, 11	NWS	Silver Spring, Md.	3-22-77	4-12-77
367-77	Ecologist	GS-11	Admin.	Rockville, Md.	3-22-77	4-12-77
366-77	Supervisory Geodesist	GS-13	NOS	Rockville, Md.	3-22-77	4-12-77
371-77	Chief, Resources Mgt. Staff	GS-14	Admin.	Washington, D.C.	3-22-77	4-12-77
372-77	Mgt. Analyst	GS-12	Admin.	Washington, D.C.	3-22-77	4-5-77
370-77	Program Analyst	GS-13	Admin.	Washington, D.C.	3-22-77	4-5-77
368-77	Oceanographer	GS-12 (11)	ERL	Miami, Fla.	3-22-77	4-5-77
377-77	Elec. Tech.	GS-10, 9, 8, or 7	NWS	Goodland, Kans.; Houghton Lake, Mich.; Marquette, Mich.; Springfield, Ill.; Williston, N.D.	3-24-77	4-7-77
378-77	Supervisory Physical Science Tech.	GS-8	NOS	Norfolk, Va.	3-24-77	4-7-77

CALENDAR OF EVENTS

- April 11-13
Boston, Mass. International Conference on Chitin/Chitosan, hosted by Massachusetts Science and Technology Foundation and the Massachusetts Institute of Technology Sea Grant Program. (Contact: Massachusetts Science and Technology Foundation, 10 Lakeside Office Park, Wakefield, Mass., 01880.)
- April 17-20
Biloxi, Miss. Second Annual Tropical and Subtropical Fisheries Technological Conference of the Americas. Theme: "Fisheries Development-Where From Here?" Sponsors: NMFS, Mississippi Sea Grant Extension Service, National Fisheries Institute, and Texas A&M University. (Contact: E. Spencer Garrett, NMFS, P.O. Drawer 1207, Pascagoula, Miss., 39567.)
- May 10-13
20th Conference on Great Lakes Research, sponsored by the International Association for Great Lakes Research: co-hosts: Great Lakes Environmental Research Laboratory of NOAA and the University of Michigan. (Contact: Dr. Andrew Robertson, Coordinator, Great Lakes Environmental Research Laboratory, NOAA, 2300 Washtenaw Ave., Ann Arbor, Mich. 48104.)
- May 30-June 3
Washington, D.C. Spring Meeting of the American Geophysical Union. Abstracts due by March 4. (Contact: AGU, 1909 K St., N.W., Washington, D.C., 20006.)
- Aug. 22-Sept. 3
Seattle, Wash. International Association of Geomagnetism and Aeronomy/International Association of Meteorology and Atmospheric Physics joint symposia. [Carbon dioxide cycle conference portion scheduled for Aug. 31-Sept. 2 under auspices of the American Geophysical Union and the American Meteorological Society. Contact: Dr. C.D. Keeling, Scripps Institution of Oceanography, Box 109, La Jolla, Calif., 92093.] (Contact: Dr. Stanley Ruttenburg, IMAP, NCAR, Boulder, Colo., 80303.)

Tiny Puerto Rican Island To Be Restored

Bombarded by Navy Ships and aircraft for nearly 40 years, the tiny Puerto Rican island of Culebra will be a step closer to restoration as a natural scenic area with a grant of \$295,000 to be made next month by NOAA.

The grant is for administration of the Culebra segment of Puerto Rico's coastal zone management plan. A Certificate of Approval for the Culebra segment will be awarded to Governor Carlos Romero Barcelo of Puerto Rico by Robert W. Knecht, NOAA's Acting Associate Administrator for Coastal Zone Management, in San Juan on April 15.

The island of Culebra is about 7 miles long by 3 1/2 miles wide, and has a population of nearly 1,000. It lies about 17 miles east of Puerto Rico. The U.S. Navy established a target range on part of the island in 1936, and used the range continuously until 1975.

Little water is available on Culebra, restricting possible population increases, but there is a great deal of natural beauty that makes limited tourism a possibil-

ity. In addition, Culebra provides nesting sites for two species of turtles that are listed as endangered, the hawksbill and leatherback, and two that have been proposed for threatened status, the loggerhead and the green sea turtle.

A Problem In Hydrology

In this, the year of the drought, we thought it might be nice to review how much water is in an inch of rain.

Since an acre contains 43,560 square feet, rainfall of 1 inch over 1 acre would yield 6,272,640 cubic inches of water, or 3,630 cubic feet. Since a cubic foot of water weighs about 62.4 pounds, the weight of an inch of rain over 1 acre of surface would be about 226,512 pounds. Since a gallon of water weighs 8.345 pounds, an "inch of rain" on 1 acre would equate to about 27,154 gallons.

—from NWS Central Region Hq. "News and Views"

Solar Wind Traced

Unique Sensor To Warn Of Magnetic Disturbance

NOAA scientists are using satellite sensors to warn space agencies and managers of telecommunications and power transmission systems when disruptive storms and regional disturbances are expected in the earth's magnetic field.

The new system, put into operation only a few weeks ago at ERL in Boulder, Colo., is the only one of its kind in the world, and already has given timely notice of a developing magnetic storm.

Set up by Drs. Joseph N. Barfield and Robert L. McPherron of ERL's Space Environment Laboratory, the system provides a constant, and immediate, visual display of magnetic measurements made by instruments on two satellites.

Magnetometers aboard the spacecraft measure the strength of the earth's magnetic field. Certain changes in the magnetic readings signify magnetic substorms—small-scale disturbances that affect a part of the field. The satellite magnetometers also can detect precursors of a substorm, such as compression of the earth's magnetic field by an increase in the solar wind—the stream of energetic particles

flowing from the sun.

Within a day after the system became operational, it began to indicate a magnetic storm, which magnetometers on earth confirmed two hours later.

Reservists and NOAA Corps Must File NOAA 51-2

Department of Commerce Administrative Order 202-910 Appendix C, F.03 requires NOAA to maintain adequate statistics on the military status of our employees, for the purpose of providing guidance, insofar as practicable, for the conduct of personnel management in connection with a national emergency. This order applies to all employees of NOAA, including the Commissioned Corps.

Any employee who is a member of the Armed Forces Reserve and the Commissioned Corps of NOAA who has not been asked to complete NOAA Form 51-2 (Revised 3-76) should contact their servicing personnel office for completion of the form.



Dr. Brain Rothschild, Director of NMFS's Long Range Planning (left), Ms. Kathy Schoepfle, of the Adams Group, and Gene Cope, NMFS Consumer and Trade Education Specialist, are shown accepting first prize—the "Addy" Award—in the eighth annual American Advertising Federation competition. The award, the advertising world's Oscar, was presented to NMFS and their contractor, the Adams Group, for printed and visual materials prepared for the national conference of Regional Fishery Management Councils held this past September.

FROM THE GALLEY



NEW ENGLAND BROIL

2 pounds cod, pollock,
or other fish fillets,
fresh or frozen
1/4 cup salad oil
1/4 cup water
2 tablespoons wine vinegar
2 cloves garlic, crushed
1 bay leaf, crushed

1-1/2 teaspoons salt
1/2 teaspoon paprika
1/4 teaspoon crushed
red pepper
6 thick tomato slices
1 cup soft bread
crumbs
3 tablespoons butter or
margarine, melted

Thaw frozen fillets. Skin fillets and cut into 6 portions. Place fish in a single layer in a shallow baking dish. Combine remaining ingredients except tomatoes, crumbs, and butter. Pour sauce over fish and let stand for 30 minutes, turning once. Remove fish and reserve sauce for basting. Place fish in a single layer on a well-greased bake-and-serve platter, 16 by 10

inches. Arrange tomato slices around fish. Broil about 4 inches from source of heat for 8 minutes. Baste fish once during broiling with reserved sauce. Remove from heat. Combine crumbs with butter or margarine and sprinkle over tomatoes. Broil 2 to 3 minutes longer or until fish flake easily when tested with a fork. Makes 6 servings.

BEST FISH BUYS

According to the NMFS National Fishery Education Center in Chicago, the best fish buys for the next week or so are likely to be frozen haddock and fresh pollock fillets along the Northeast Seaboard; fresh sea bass and scup in the Middle Atlantic States, including the D.C. area; fresh flounder and Spanish mackerel in the Southeast and along the Gulf Coast; frozen smelt, breaded fish sticks and portions in the Midwest; fresh smelt, steamer clams, and Dungeness crabs in the Northwest; and whole, cooked Dungeness crabs in the Southwest.

Food from the Sea

More Seaweed Is A Goal

Research directed toward increasing production of seaweeds important to the chemical industry for use in food and pharmaceutical products is among activities to be carried out by the University of Washington under a NOAA Sea Grant of \$1,475,000.

The seaweed studies are among 44 projects in research, education, and advisory service to be executed during 1977. The program will be augmented by \$959,000 in non-Federal funds.

With the seaweed projects, the Sea Grant researchers will pursue two approaches to increase production of several algae in seaweed which are sources of the chemical com-

pound carrageenin. This compound has wide usage in industry as a stabilizer and smoothing agent in products ranging from baby foods to film emulsions. One research effort will attempt to develop techniques for growing seaweed in tanks, while the other will use artificial nets, seeded and placed in shallow subtidal areas, on which to grow seaweed.

Employees who are subject to state tax withholdings for the State of New York may notice a minor change in their state tax for salary checks dated on or after April 6, 1977.

NOTES ABOUT PEOPLE



Capt. Burroughs Dr. Brown

"A Workshop on the Impact of Brine Disposal on the Marine Environment" was held in Houston, Tex., Feb. 17-18. The Workshop was organized by Texas A&M University's Sea Grant Program and sponsored by the Marine Assessment Division of EDS's Center for Experiment Design and Data Analysis (CEDDA) under an interagency agreement with the Federal Energy Administration (FEA).

NOAA participants included Dr. Dail Brown of EDS' Marine Assessment Division; Captain Charles Burroughs, NOAA Corps Officer assigned to EDS; Dr. Ford Cross, Atlantic Estuarine Fisheries Center (NMFS), Beaufort, N.C.; and Don Moore, Gulf Coastal Fisheries Center (NMFS), Galveston, Tex. Other organizations representing the Federal government, state agencies, private industry and the university community were: Environmental Protection Agency, Federal Energy Administration, U.S. Geological Survey, Moody College, Texas A&M University,

Massachusetts Institute of Technology, Louisiana State University, Texas Parks and Wildlife, and Energy Resources, Inc.

Dr. John B. Pearce, a supervisory fishery research biologist for NMFS's Northeast Fisheries Center, has been awarded a Regional Special Award of Merit by the Environmental Protection Agency.



Dr. Pearce

Dr. Pearce, Manager of the Center's Environmental Assessment Division at Sandy Hook, New Jersey, has developed a comprehensive program to document the effects of ocean dumping in the New York Bight on the area's fish and shellfish resources. This multidisciplinary program includes biochemical, physiological, ecological, microbiological, and behavioral studies. During 1976, Dr. Pearce's Division led the study of the major summer fish kills off New Jersey and contributed much of the biological analysis of the fish, benthic invertebrate, sediment, and water samples collected in the wake of the ARGO MERCHANT oil spill.

National Oceanic and Atmospheric Administration

ERRATA NOTICE

One or more conditions of the original document may affect the quality of the image, such as:

Discolored pages

Faded or light ink

Binding intrudes into the text

This has been a co-operative project between the NOAA Central Library and the Climate Database Modernization Program, National Climate Data Center (NCDC). To view the original document, please contact the NOAA Central Library in Silver Spring, MD at (301) 713-2607 x124 or Library.Reference@noaa.gov

HOV Services
Imaging Contractor
12200 Kiln Court
Beltsville, MD 20704-1387
July 23, 2010