

# noaa week

National Climatic Center

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## Three Appointed To Head Facilities Of Weather Service

The National Weather Service has announced the appointment of three new officials.

Dr. Arthur N. Hull has been appointed Meteorologist in Charge of the Weather Service Forecast Office, Seattle, Wash. Dr. Hull replaces A. L. Zimmerman who retired in August.

Dr. Hull will be in charge of a staff of 40 including meteorologists, Weather Service Specialists, Marine Forecasters, and Electronics Technicians. The Seattle Forecast Office provides comprehensive weather service for the state of Washington and, in addition, ocean weather services for the Washington Coast and coastal waters up to the Gulf of Alaska.

Dr. Hull is leaving the position of Meteorologist in Charge of the Reno, Nev., Forecast Office after having served there for the past two years. Earlier assignments were in Honolulu, Hawaii;

(Continued on page 2)

## Valuable Metals, Plate Tectonics May Be Linked

The Pacific Ocean may be surrounded by a ring of riches, scientists with NOAA and the United Nations believe.

Deposits of oil and metals, according to Dr. Peter A. Rona of the Environmental Research Laboratories and Lawrence D. Neuman of the U.N. Office for Ocean Economics and Technology, are linked to plate tectonics—the global geologic process that includes sea floor spreading and continental drift. Because of this, they say, marine prospectors should concentrate on centers of tectonic activity, and the Pacific Ocean is ringed by them.

The earth's crust is divided into a jigsaw puzzle of irregular plates; some stationary, some moving slowly at a rate of only a few centimeters a year. At undersea ridges along some plate edges, new crustal material wells from the molten mantle of the earth and spreads outward.

(Continued on page 3)

## Porpoise Ban

San Diego U.S. District Court Judge William Enright has refused to grant a preliminary injunction on the Government's ban against killing porpoise during yellowfin tuna purse seine fishing operations.

The judge extended a temporary restraining order against the ban through noon, November 5 to allow the Ninth Circuit Court of Appeals time to consider an appeal by the tuna industry.

## Jersey Waters Recovering From Low Oxygen State

Oxygen conditions have improved in the New Jersey waters according to the NMFS Middle Atlantic Fisheries Center in Sandy Hook, N.J.

Lack of oxygen in the waters off the New Jersey coast caused the death of many fish and shellfish in the area during the summer. An increase in the amount of dissolved oxygen in the water

will permit the bottom dwelling species to begin to recover.

Dr. Carl Sindermann, Director of the Center, said the recovery of the oxygen in the area may be the result of the expected autumn overturn of the water or the result of a recent storm, or a combination of both.

"In any event," Dr. Sindermann said, "I am happy to announce that the protracted ecological event, so costly in terms of our living resources and of New Jersey's ocean-oriented economy, is coming to a conclusion. We will, however, continue to monitor the event and its after-effects."

The low oxygen condition which persisted in the coastal waters all summer is now restricted to a long narrow band, some 15 miles wide, between 40 and 55 miles offshore.

Vessels will assess the total impact of low oxygen regions upon the sea scallop, ocean quahog, and surf clam population, as well as the impacts upon the Middle Atlantic stocks of bottom-dwelling fish and lobsters.

"While, undoubtedly, many finfish and lobster mortalities occurred at the beginning of the low dissolved oxygen period, it is felt that many escaped and have since avoided the area," said Dr. Sindermann. "The major effect of the low oxygen with respect to bottom fish and lobsters may well be economic. For instance, there is every evidence that the spring shoreward migration of offshore lobsters was blocked. New Jersey small-boat lobstermen depend on these migrants to supplement the coastal (indigenous) lobster stocks. Lobster landings in at least two New Jersey counties declined 50 percent or more below last year's catch."

There is also evidence that the normal migrations of summer and winter flounders were disrupted, causing them to swim into areas heavily fished by recreational fishermen, with resulting heavy catches of these species. The effects of the lack of oxygen and the heavy taking of the flounders upon their population will be detected by groundfish survey cruises now being conducted.

## NOAA Aircraft Flies Relief Mission



NOAA's C-130 "flying laboratory" turned a research flight past Pacific hurricane Madeline into the first relief mission into a coastal town isolated by the storm.

While flying the Madeline mission October 8, the NOAA aircraft received a distress call from the airport at Zihuantenejo, about 120 miles (190 kilometers) northwest of Acapulco. The message reported the hurricane had knocked out municipal power and caused widespread damage. The storm had also reduced Zihuantenejo's airport to auxiliary power, so that, with night approaching, its only lights were those along the runway, restricting mercy flights into the stricken area.

Back at Acapulco, the NOAA airplane picked up six technicians and seven hundred pounds of supplies, and took off again for Zihuantenejo. Half an hour later the big ship, linked to Zihuantenejo's controllers by an interpreter on board, touched down on the barely lighted strip.

It left the six technicians and their supplies there, to get the airport ready to receive the relief flights that would follow. It also left 13 cases of emergency rations the airplane carries as survival gear.

The Madeline mission that brought the NOAA research plane to Mexico was a series of low-level passes behind the hurricane as it moved on the coast. On these passes, scientists aboard the plane dropped airborne expendable bathythermographs—instruments which sense changes in ocean water-temperature with depth—to measure the amount of upwelling behind the storm.

This hurricane "cold wake" phenomenon, NOAA scientists believe, is an important indicator of how a storm affects the ocean it traverses, and perhaps how successfully it survives at sea. And, because upwelling brings nutrients to the surface, the phenomenon may also create transient fisheries along the track of the storm.

## EDS Publishes IDOE Program Progress Report

The fifth of a series of progress reports on the International Decade of Ocean Exploration (IDOE) has been published by the Environmental Data Service under a National Science Foundation (NSF) contract. IDOE is a long-term, international, cooperative program to improve the use of the ocean and its resources for the benefit of mankind.

The report, prepared for the NSF Office for IDOE, covers the period April 1975 to April 1976 and provides information, data inventories, and lists of scientific papers. The text is arranged according to established program subject areas for IDOE: Environmental Quality, Environmental Forecasting, Seabed Assessment, and Living Resources. An appendix contains a summary of Reports of Observations/Samples Collected by Oceanographic Programs.

In addition to publishing the progress report, EDS is also under contract to NSF to manage the scientific data collected during IDOE. EDS either has the data or papers described in the progress report, or knows where they may be obtained.

## Three Appointed

(Continued from page 1)

Washington, D.C.; and Las Vegas, Nev.

Donald E. Boggs has been named Official in Charge of the Weather Service Office in Goodland, Kans., succeeding Warren Eckert who recently retired. Mr. Boggs began his National Weather Service career in 1956 as a Meteorological Aide at Tatoosh Island, Wash. He later served at WSO's Asheville, N.C., Ely, Nev., Eugene, Oreg., and Missoula, Mont., in the radiosonde, radar and weather service specialist programs.

Daniel G. Houser has been appointed Meteorologist in



Mr. Houser

Mr. Boggs

Charge of the Weather Service Office in Lansing, Mich., succeeding Bob Babb who retired early this year.

Mr. Houser entered the National Weather Service in 1970 at WSFO Indianapolis, Ind. He was cited while in Indianapolis for his performance during the disastrous April 3, 1974, tornado outbreak.

## Coastal Zone Management Grants Awarded To States of Massachusetts and Illinois

A system that will allow Illinois to predict the social, economic, and environmental impacts of locating public works projects along Chicago's shoreline is being developed in the State under a \$50,000 grant from the Office of Coastal Zone Management.

The State will add \$25,000 to the grant, which supplements a second year grant of \$384,000 it received in June 1975 to continue developing a coastal management program that will achieve the wisest use of coastal lands and waters.

The system is expected to tell, for instance, how or whether a particular project such as a port, breakwater, or shoreline extension through land-fill will affect water quality, increase sediment, alter coastal currents, or destroy natural resources.

To establish the system, the Chicago Department of Development and Planning will determine how the city's four major lakefront development plans relate to one another, develop standard methods for determining the costs and benefits of a project, set criteria for environmental impact assessment, and evaluate numerous laws that must be considered in planning a lakefront project.

Under current guidelines, development of the Chicago shoreline must conform to provisions of the National Environmental Policy Act, the Water Pollution Control Act, and various other regulatory procedures.

According to Illinois planners, the new system will give the State vital information applicable to other geographic areas and development projects, and valuable in developing its coastal management program, for which the State has been awarded a total of \$590,000 by OCZM.

## Business Cards

A new price list for NOAA official business cards has been established. NOAA Directive Manual 68-18 dated 4-6-76, outlines the purpose, authority, format, and procurement of business cards for use in an official capacity by NOAA employees. The cards which must be purchased at the employees expense, may be ordered from the NOAA Employees Association. Prices are: \$4.50 per hundred plus \$1.50 for each additional 100 cards requested with the initial order. Checks should be made payable to NOAA Employees Association and sent to Michael J. DiLeo, NOAA-NWS W331, World Weather Building, Room 410, Washington, D.C., 20233.

Two coastal planning grants to Massachusetts—one of \$200,000 to prepare for onshore impacts of Continental Shelf oil and gas production, the other of \$22,000 for coastal management of Martha's Vineyard—have been awarded by NOAA.

The Martha's Vineyard project represents the first time that planning funds of three Federal agencies will be combined to assist a local government in coastal planning. In addition to the NOAA grant, the Environmental Protection Agency and the Department of Housing and Urban Development have added a total of \$46,500, and the State of Massachusetts \$22,000.

This program will be conducted by the Martha's Vineyard Land and Water Use Commission and will serve as a guide toward achieving rational use of the island's coastal environment and preserving critical natural resources.

If developed and approved, the regional program will be incorporated into a broader statewide coastal program, which is also being developed under provisions of the Coastal Zone Management Act of 1972.

State officials indicated that Martha's Vineyard commission will use the \$90,500 in grant funds to improve the framework for reviewing land developments with greater than local impact, and for designating critical planning areas. The commission already has designated the shoreline surrounding the island as a "geographic area of particular concern."

The commission will also use the funds to develop an open space/recreation plan for the island, test the program against specific problems using development impact data, circulate the program for preliminary review to local governments, state and Federal agencies, and provide a continuous link with local citizens and the Water Quality Management Advisory Board to increase their input in commission decisions.

The funds will be administered by the Massachusetts Executive Office of Environmental Affairs. Overall, OCZM has awarded Massachusetts nearly \$1.4 million to develop a statewide coastal management program, while the state has added another \$700,000 in matching money.

The \$200,000 grant from NOAA, plus \$100,000 in state matching funds, will be used to help local communities maximize the beneficial aspects of offshore energy development, while minimizing the adverse impacts to the fishing industry, environment, tourism, and overall quality of life.

## Lower Cook Inlet Subject of Study Under Contract

Dames and Moore, an international firm with offices in Anchorage, Alaska, has been awarded a \$216,400 contract by NOAA to gather data on marine organisms in Lower Cook Inlet.

The contract is part of a major environmental study conducted by the Environmental Research Laboratories for the Interior Department's Bureau of Land Management. The study seeks to determine the probable ecological impacts of oil exploration and development activities on Alaska's Outer Continental Shelf.

Biological data for Lower Cook Inlet are sparse and, except for Kachemak Bay, provide little insight into the effects of the extreme variability and harshness of the Inlet's physical features on marine organisms.

The southernmost portion of the Inlet, including Kachemak and Kamishak Bays, will be sampled intensively. Locations include Bluff Point, Flat Islands, Barren Islands, Cape Douglas, Augustine Island, and Iniskin Bay.

To concentrate on marine organisms with the greatest likelihood of oil exposure, Dames and Moore biologists will collect samples to a maximum depth of 20 fathoms (37 meters). The intensive sampling program will include dive, intertidal, trawl, dredge and underwater television surveys.

Results of the research will be translated into distribution maps showing where various marine organisms congregate. Other data will include size distribution and dietary habits for abundant or key species.

These data, coupled with results of circulation and oil spill modeling studies, will provide a basis on which to assess future impacts related to oil leasing activity in Cook Inlet.

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

Catherine S. Cawley, Editor  
Warren W. Buck, Jr., Art Director

# Valuable Metals In Sea

(Continued from page 1)

usually sliding beneath the other.

Along the trenches and ridges surrounding the Pacific, the IAA and U.N. scientists believe, are immense deposits of oil and metals.

Where oceanic crust is descending below a continent, curved strings of islands, known as "island arcs," form offshore, sectioning the ocean into smaller basins such as the Sea of Japan and the Bering Sea.

According to Rona and Neuman, trenches and island arcs act as barriers that accumulate sediment and organic matter, both from the continent and the ocean basin. Here, oceanic circulation is restricted, oxygen is not replenished in the water, and the organic matter is preserved. Geothermal heat in the trenches and small basins help convert the organic matter to petroleum. Finally, deformation of the sediments by the powerful pressures of colliding plates forms traps where the petroleum can accumulate.

At boundaries where new crust is being generated, as along the East Pacific Rise, hydrothermal processes would concentrate metals, say Rona and Neuman. In the first stage of this process, the two explain, cold, dense sea water descends through cracks in the ocean floor to be heated by contact with hot and molten rocks. It then rises, leaching metals from the crustal rock as it does, and discharges from the ocean bottom as hot springs. Some of the leached metals combine with sulfur in the sea water and precipitate in layers containing copper, iron, and possibly gold. Others precipitate as oxides (compounds with oxygen).

Rich deposits of sulfide metals already have been found along two ocean rifts. About five years ago, the richest known submarine metallic sulfide deposits were found in basins along the rift bisecting the Red Sea, by geologic standards an infant ocean basin. Sediments there contain iron, zinc, copper, and lead, plus small amounts of silver and gold.

At the crest of the Mid-Atlantic Ridge, part of the oldest rift system on earth, a NOAA field study begun in 1972 discovered a hydrothermal field where sediments contain rich layer of manganese oxide, with manganese concentrations of 40 percent. NOAA has made yearly expeditions to that site, continuing to investigate the process of mineral formation.

The scientists conclude, in a recent issue of "Ocean Management," that "the conceptual framework of plate tectonics may be applied to predict areas hundreds to thousands of kilometers in extent of the Pacific

region where certain types of energy and mineral resources are likely to occur." Geologic processes may provide a treasure map for marine and land prospectors.

## Illinois Receives Third-Year Grant For Coastal Plan

The State of Illinois has received a third-year grant of \$400,000 from NOAA to complete development of a management program for its 59-mile coastal area.

Federal, state, and local authorities envision the program will reconcile the wide range of competing coastal uses, and help provide erosion control, promote public access, provide water quality protection, and promote navigation.

In the three annual grants, NOAA has awarded Illinois more than \$1 million, while the state has contributed an additional \$435,000 in matching funds.

The third year of Illinois' development program will be devoted to refining the policies developed earlier through public hearings and intergovernmental coordination; securing the necessary authorities, including legislation, for implementing an approved program; providing assistance to local governments to support local responsibilities in the state-local management partnership; and continuing to provide technical support for shoreline erosion protection to public and private shoreland owners.

A key element of the third year effort will be the development of a system that will enable Illinois to better predict the social, economic, and environmental impacts of locating public works projects along Chicago's shore.

The grant will be administered by the Division of Water Resources, Illinois Department of Transportation.

## USC To Use Part of Sea Grant To Study Effects of Red Tide

The University of Southern California, whose marine research activities date back to 1910, has received a \$485,000 Sea Grant.

Almost \$423,000 in matching funds from the State and local governments and from private industrial sources will augment the grant.

Part of the Federal grant, the seventh annual award to the Los Angeles institution, will be used to assess the effects of "red tide" outbreaks on the ecosystem and to investigate natural oil and tar seeps off the Southern California coast. Development of a marine education curriculum to enhance public awareness of the

## Monthly Sightings Of Foreign Fishery Vessels Decline

For the third consecutive month, the number of foreign fishing and fisheries support vessels sighted off the coasts of the United States has declined—514 in September—from the year's high of 970 sighted in June, according to preliminary reports of the National Marine Fisheries Service.

The decline is attributed to the seasonal changes in the location and abundance of various stocks of fish taken by the foreign fleets.

Contrary to the general decline was an increase in activities in the New England area. In August there were 37 vessels reported from five countries off New England, but in September the number increased to 112 from seven countries.

The counts were made by representatives of the NMFS and by personnel of the U.S. Coast Guard, conducting joint fisheries enforcement patrols from Coast Guard aircraft and cutters. The ships included in the total were within 200 miles of the U.S. coast and came from 13 foreign nations.

role of the oceans and ocean resources in public policy will also continue.

Red tide has been occurring with increasing frequency in Los Angeles Harbor over the past several years. Some of the plankton, known as dinoflagellates, are toxic. They can reach enormous concentrations—as many as two million cells per gallon of seawater—giving a reddish color to the water. Shellfish that consume the plankton can retain the toxic substance, posing a health threat to man.

The researchers will study the beneficial use of the red tide blooms as a direct food source by certain animals in the food chain. The scientists say there is a potential for manipulating the blooms by controlling nutrients that enter the harbor as sewage, thus enhancing commercial fish populations in the area.

Researchers also are investigating cannery wastes in the Southern California area which may serve as a food supplement to fish populations rather than as a contaminant. Work is now underway to determine the "assimilation capacity" of Los Angeles Harbor and to apply the information as a waste management and planning tool.

The rapid expansion of offshore oil and gas leasing and subsequent drilling has placed renewed importance on assessing the effects of natural oil and tar seeps, according to Sea Grant-supported scientists in the chemical engineering and geological science departments at USC. Under this year's grant, investigators will try to determine the origin of beach tars and will examine seeps in Santa Barbara and Santa Monica Bays.

Other work in the engineering field is aimed at assessment of the sand resources of Southern California beaches, determining where ocean currents have transported beach sand in the past and where that sand might be expected to go in the future. The results will help engineers predict the best location for, and impact of, jetties and breakwaters.

## Weather Radio Dedication Held

On September 15, dedication ceremonies were held in Santa Maria, Calif., for the new NOAA Weather Radio located at San Luis Obispo, Calif. The San Luis Obispo installation is the first of two to be located between San Francisco and Los Angeles to provide full coverage along the southern California coast. The second installation will be located near Santa Barbara.



A Unit Citation recently was awarded the NOAA Officer Training Center Staff at Kings Point, N.Y., in recognition of leadership and accomplishment in carrying out the effective training program for more than 100 newly commissioned officers of the NOAA Corps over the past two years. The staff consists of (from left) Lt. Michael C. Meyer, Lt. (jg) Karen L. Pasciuti, Ms. Elaine M. Mayer, and Cdr. Kenneth F. Burke.

## NOAA Anniversary Observances



Observance of NOAA's sixth anniversary at the National Ocean Survey's Atlantic Marine Center in Norfolk, Va., attracted more than 500 visitors on Oct. 8. While hundreds viewed exhibits depicting NOS, NWS, and NMFS activities, the NOAA Ship Mt. Mitchell hosted hundreds more during the successful AMC Open House program.



The Weather Service Forecast Office in Portland, Oreg., held Open House October 3 to observe NOAA's sixth anniversary. Among the 400 persons who attended, was this group of visitors with forecaster Joy Riley.

## Processing System Upgrading Underway

The Harris Corporation of Ft. Lauderdale has been awarded a \$254,265 contract by NOAA to upgrade the computerized hydrographic survey processing system at the National Ocean Survey Atlantic Marine Center in Norfolk, Va.

The installation at Norfolk will be compatible with, and will serve as backup to, the present data processing facility at the NOS Pacific Marine Center in Seattle, Wash. The upgraded computer system will be installed later this year.

With the addition of a graphic digitizer and a flat-bed plotter, both to be purchased separately, the Atlantic Marine Center's system will achieve full capability for efficient processing and plotting of digital hydrographic survey data.

## Lieutenant Wins Corps' Diving Pin

The NOAA Corps Diving Pin has been awarded by NOAA to Lt. David J. Tennesen. Lt. Tennesen qualified for the pin while assigned to the NOAA Ship Davidson in 1974 and 1975. He is presently assigned to the Office of Aeronautical Charting and Cartography where he is undergoing NOAA Aviator flight training in support of the flight edit program for aeronautical charts produced by the National Ocean Survey.



Lt. Tennesen

## South Pacific Center Receives \$55,000 Grant

Scientists at the Micronesian Mariculture Demonstration Center in the Western Carolina Islands of the Pacific will continue their research into developing techniques to establish a commercially viable aquaculture program under a \$55,600 grant announced recently. The funds will be matched by \$116,400 in non-Federal funds.

Under a cooperative program with the Hawaii Institute of Marine Biology, researchers at the Center in Palau are working primarily to develop commercial farming of rabbitfish and Malaysian prawns. This could contribute both to the economic stability and to the food resources of Micronesia, where the sea has been the traditional source of animal protein for the population, and aquaculture suits traditional fishing orientation.

Past research efforts with rabbitfish put the Demonstration Center at the forefront in developing aquaculture methods for these fish, which are becoming increasingly popular among fish culturists because of their excellent flavor, ease of spawning, herbivorous feeding habits and adaptability to captive conditions.

During the coming year, Center scientists will concentrate on determining the most suitable local species of rabbitfish for culture, and improving hatchery techniques, feeding methods and maturation processes for that fish.

Malaysian prawn studies will be devoted primarily to conducting trials with various local foods in fresh and brackish water ponds, and with investigating the growth potential of different strains of the prawn.

Additionally, the Center is developing an extensive program to inform the Micronesian public of the methods, techniques and potential of marine resource development in the tropical islands.

## AOML Gets An Historic Piece of Memorabilia

The Atlantic Oceanographic and Meteorological Laboratories in Miami, Florida, part of the Environmental Research Laboratories, have been given a section of the 1858 first trans-Atlantic cable, a validation certificate by Cyrus Field, and a facsimile copy of the September 4, 1858, issue of *Harper's Weekly*, devoted exclusively to the completion of the cable. The authentic items will be mounted and added to the collection of marine materials of historic interest on the walls of the Laboratories.

## Scientist Studies Chemical Makeup Of Precipitation

A \$36,393 grant for continuation of research on various collection devices and procedures currently used in precipitation chemistry studies has been awarded to Cornell University in Ithaca, N.Y., by the Environmental Research Laboratories' Air Resources Laboratories.

The award was made to Dr. Gene E. Likens, professor of ecology at Cornell. Dr. John M. Miller, a Meteorologist at the ARL in Silver Spring, Md., will be monitoring the project.

According to Dr. Likens, no comprehensive, long-term observations of precipitation chemistry have been reported for the U.S. However, there are several studies currently underway including precipitation networks operated by the U.S. Geological Survey and the Environmental Protection Agency.

"One of the more interesting and potentially important findings of recent studies of precipitation chemistry is the surprising acidity of rain and snow in the northeastern U.S.," Dr. Likens reports. "The presence of these acids is related to air pollution from the combustion of fossil fuels. If these acids are not neutralized by alkaline substances also present in the atmosphere, they ultimately fall to the earth's surface with precipitation and may adversely affect both terrestrial and aquatic ecosystems. These effects potentially represent a serious environmental problem."

Dr. Likens and his colleagues have discovered that in the summer and autumn the acid-forming components of precipitation—chloride, sulphates, and nitrates—are found primarily in wet fallout, and that this discovery has important ramifications concerning the source of these chemicals and their control. As a result the Cornell team plans further study of the chemicals during all seasons.

They will correlate 30 elements found in aerosols at the collection site with particulate matter analyzed from 12 different collectors positioned in the same research region, and determine the distribution of trace metals among components of precipitation.

In addition, they will monitor the various collection devices simultaneously and continuously for one year and test for differences in chemical content of precipitation attributable to collection procedures and type of collector. Some of the devices, in use around the world, are provided by ARL.



# **National Oceanic and Atmospheric Administration**

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