

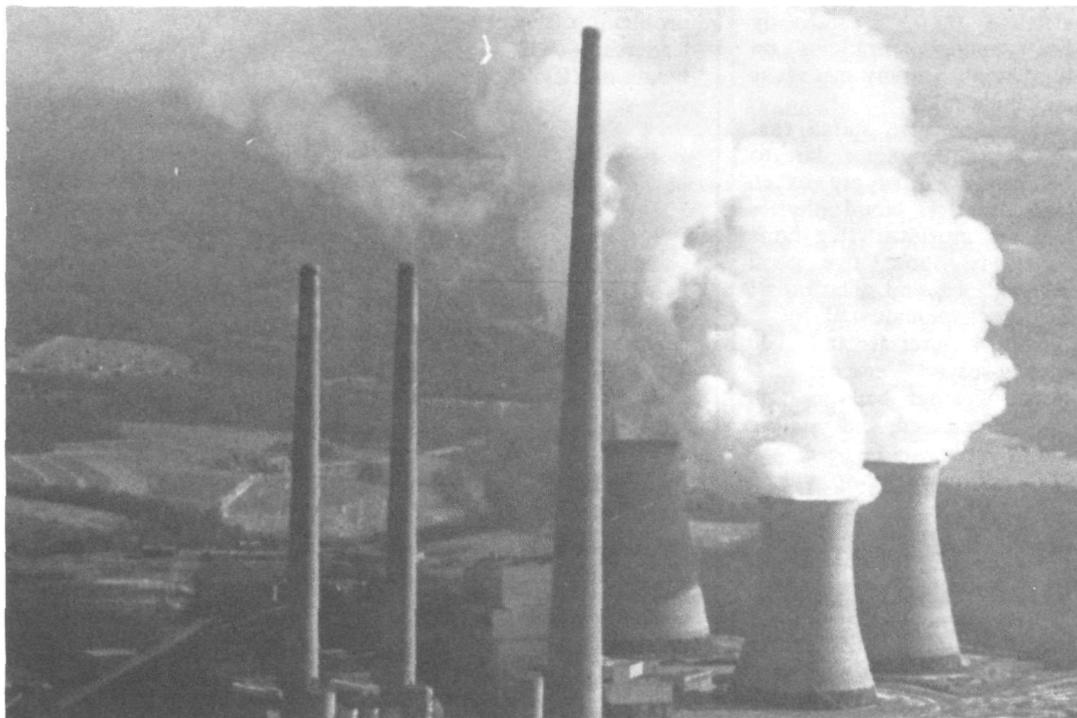


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U.S. DEPARTMENT OF COMMERCE

# NOAA news

National Oceanic and Atmospheric Administration



**Cloud effects** — Airborne particulates from coal-fired power plants can cause more liquids and larger water drops to form in clouds downwind from the facilities, a NOAA study shows. The study, the first of its kind on the effects of fossil fuel emissions upon cloud formation, will be reported on in an up-coming issue of

## Fla. Evacuation Plan Funded

NOAA is helping to fund the drafting of a plan for evacuating some 250,000 persons from six Florida counties subject to flooding during hurricanes.

The agency has awarded \$60,000 for the project. Another \$30,000 in matching funds has been provided by the Southwest Florida Regional Planning Council (SWFRPC).

The evacuation plan is aimed at moving the residents — approximately 100,000 of whom live in mobile trailers — from low-lying areas well in advance of high water. It is being drafted by researchers with the Florida Sea Grant program headquartered at the University of Florida in Gainesville.

Under the Sea Grant program, NOAA provides qualified institutions with funds for conducting marine research, advisory and educational services.

The six counties that will be served by the plan are Collier, Charlotte, Lee, Sarasota, Glades and Hendry. All have experienced flooding caused by hurricanes, the worst occurring in the two inland counties of Glades and Hendry.

Ronald H. Eastwood, executive director of the SWFRPC, and Wayne E. Daltry, the planning director, said portions of the plan already have been completed. They said the major remaining task is coordination

*(Continued on p. 4)*



## Signing of Seabed Act Welcomed

Administrator Richard A. Frank issued this statement in conjunction with President Carter's signing of the Deep Seabed Hard Mineral Resources Act:

We welcome the new responsibilities assigned to NOAA by the Deep Seabed Hard Mineral Resources Act, which was signed into law by President Carter. NOAA intends vigorously to pursue the tasks given us, so that a comprehensive national program can become effective while we await successful conclusion of the Law of the Sea Treaty.

We expect that this legislation will encourage private investment in the development phase of commercial ocean

*(Continued on p. 3)*

## Alaska Gets Aid to Offset Oil Impacts

Administrator Richard A. Frank today presented Alaska's Governor Jay S. Hammond with a \$317,000 grant to help that State plan for offshore oil and gas leases.

The Federal grant was awarded under NOAA's Coastal Energy Impact Program and will be augmented by almost \$136,000 in state matching funds.

Frank said 10 major offshore oil leases will be sold in Alaska during the next five years. The sales will involve some 32.1 million acres — an area greater than the state of North Carolina — and will have a substantial impact on Alaska's coastal communities.

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**Montana Rainstorms** – Several of NOAA's newest weather radars may help to form the heart of an ambitious storm study planned for the High Plains of eastern Montana in 1981. The goal of the Cooperative Convective Precipitation Experiment (CCOPE) is to solve some of the basic problems that stand in the way of evaluating weather modification techniques and of predicting precipitation and severe weather.

Two NOAA research aircraft are also slated for use in the experiment. These would join an impressive array of facilities supplied by the National Center for Atmospheric Research, the Department of Interior's Water and Power Resources Service, NASA, NSF, and others.

The project was outlined at a recent seminar at ERL headquarters by NCAR's Dr. Patrick Squires and WPRS's Dr. Bernard Silverman. "Convective storms are sometimes compared with forest fires," Squires commented. "Whereas an inflow of oxygen helps to feed the fire, inflowing water vapor fuels the storm."

Squires stressed the importance of understanding how precipitation processes interact on different scales, from microscale condensation to large-scale convection. He said that the role of atmospheric electricity would also

be studied. "Who knows, electricity might amount to something in precipitation processes," he said, adding that notions to the contrary may stem from the attitude that "We already have enough problems on our hands, so why introduce another one?"

Dr. Silverman stated that the seven Doppler radars to be used will supply excellent data on cloud physics and air motions. "We hope to study about five good storms," he said. The radars will be supplemented by at least 14 aircraft and 100 closely-spaced weather stations. Weather balloons will also be released, and satellite photographs will be used.

A major workshop will be held this fall to define all phases of the project in detail, including the data analysis phase. "The analysis is central to our planning," Silverman said. "Everything we do, we will do with that in mind. We will not go back for more observations unless we know what we're going back for."

Silverman explained that there is more than just scientific interest in the project's success. It may set an example for other programs. "In the past," he said, "people have been leery about entering into this type of cooperative program, where there is no single lead agency and

everyone has an equal voice. But given the emphasis on fiscal restraint, this is the only way we can put together the tremendously complex programs that meteorological problems often call for. The leadership will be in the hands of field directors, who will serve on an alternating basis. This is the type of program we'll be seeing more of in the future."

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**Hawaiian Wind Gusts** – Dr. Everett C. Nickerson, of the new Office of Weather Research and Modification in Boulder, spent two weeks in June coordinating a project with University of Hawaii scientists aimed at improving forecasts of local-scale weather.

Nickerson flew seven missions over the Big Island of Hawaii in a NOAA WP-3D Orion research aircraft as a part of the Hawaii Mesoscale Energy and Climate Project. The P-3 also made low-altitude passes through the channels between the islands to measure the winds there. It's believed that gusty winds in the lee of the Big Island, where strong channel winds collide with lighter breezes, may have caused the disappearance of the research vessel Holo Holo in 1978 with 10 persons aboard, including two NOAA scientists and three University of Hawaii

researchers.

"We observed very strong wind-shear lines while flying 150 feet above the sea surface, out to about 100 miles west of the island," Nickerson reported. "North of the line there were rough seas and whitecaps, while it was almost calm to the south. We knew these shear lines occurred in that general area, but we didn't realize they extended so far offshore."

The main purpose of the Hawaiian study was to test and improve numerical models of mesoscale weather systems.

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**Global Climate** – According to glaciologist Peter MacKinnon, the fallout from volcanic eruptions provides a kind of climatic calendar. Even now, St. Helens ash is settling to form a thin layer on polar ice sheets and mountain glaciers around the northern hemisphere. MacKinnon, who works for World Data Center A for Glaciology, funded by NOAA's National Geophysical and Solar-Terrestrial Data Center in Boulder, explains that scientists can use such ash layers as date markers.

Twenty years from now, for example, the amount of snow and ice lying atop the ash from St. Helens will provide a measure of snow accumulation and a key to polar climatic trends.

## Satellites Aid in Fuel Conservation

Infrared imagery from a polar orbiting NOAA satellite is helping those engaged in Atlantic coastal and trans-Atlantic shipping conserve fuel.

The satellite imagery clearly shows the west wall of the Gulf Stream as it flows up the coast from Florida and then turns eastward.

By catching these currents on a northern transit, coastal vessels can reduce power and save fuel with no loss of

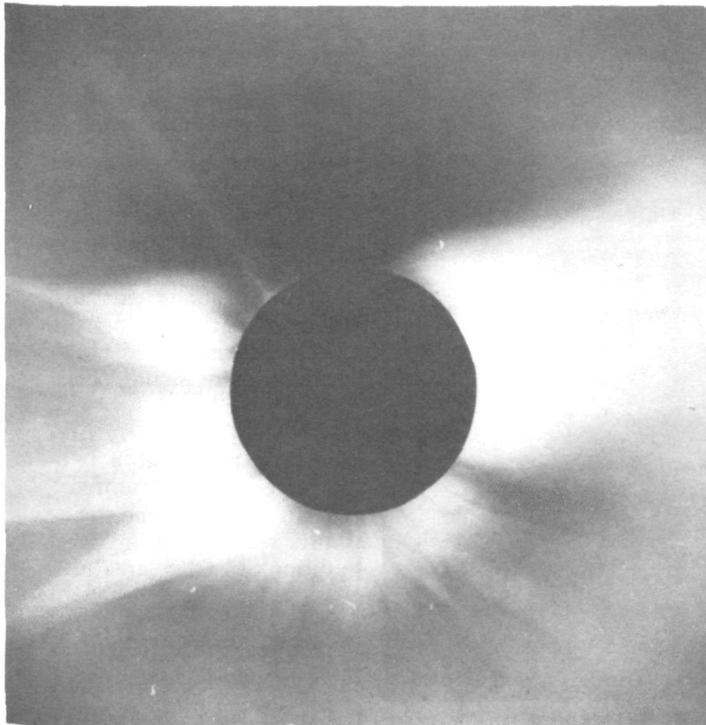
time. Conversely, ships sailing south along the coast can avoid the currents and eliminate the need to increase power to maintain speed.

During trans-Atlantic shipping, advance knowledge of how the Gulf Stream is eddying enables a vessel to adjust its heading to compensate.

Research has shown that a fleet of 11 coastal tankers potentially could save almost \$500,000 worth of fuel annually by using the Gulf Stream.



Imagery of the Gulf Stream from satellite



"Bubbles" and "holes" — Convulsions of the earth's magnetic field can be triggered by bubbles and holes in the sun's corona, setting off magnetic storms.

## Bubbles Disturb Field

"Bubbles" and "holes" in the sun's diffuse outer layer can be as much a cause of disturbances in the earth's magnetic field as solar flares, NOAA scientists report.

Although predicting geomagnetic disturbances remains an obscure art, scientists at the Space Environment Laboratory in Boulder, Colo., are learning more about the solar particle and magnetic field sources that cause this activity. They report that bubble-like clouds of erupting gas in the sun's tenuous halo, the corona, appear to be associated with the two largest storms reported so far during the present 11-year sunspot cycle. In addition to these coronal "transients", there are long-lived sources of high-speed particle streams, called coronal "holes", whose relationship to the sunspot cycle has just been described mathematically by the NOAA investigators.

"One of our most important functions at the Space Environment Services Center is to monitor and predict geomagnetic activity," says forecaster-researcher, Dr. Jo-Ann Joselyn. "Unfortunately, our prediction techniques are not always equal to the task." Joselyn points out that solar flares, with their spectacular outbursts of hot gases, have a strong but often overlooked rival in the production of magnetic storms, namely, coronal transients. These powerful particle eruptions lack the fiery sendoff typical of solar flares, she explains, and are often marked simply by the sudden disappearance of dark bands or "filaments" of gas supported in the corona by strong magnetic fields.

"So far in this sunspot cycle, about 7 percent of all significant flares and 25 percent of all major flares actually produced storm activ-

*(Continued on p. 4)*

## Foreign Fishing Declines

The number of foreign fishing vessels off the Washington, Oregon, and California coasts has decreased since passage of the Fishery Conservation and Management Act.

The National Marine Fisheries Service's Regional Office in Seattle reports that there are only 11 foreign vessels in the area as compared to more than 100 vessels which fished annually off the coast prior to the establishment of the 200-mile fishery conservation zone.

Five of the foreign vessels are Soviet joint venture processing vessels receiving whiting from U.S. trawlers.

Consistent with the President's policy to deny the Soviet Union fishing privileges in U.S. waters, the Soviet Union will not receive a whiting allocation in 1980.

There also are six Polish fishing vessels in the area.

This number may increase as the season progresses, but the total number of foreign vessels in the area at any one time is not expected to be as high as last year. At least once during the 1979 fishing season there were 32 foreign fishing vessels in the area.

The 175,000 metric tons optimum yield (total allowable catch) of whiting in 1980 has been distributed as follows: 40,000 metric tons have been reserved for the domestic fishery, of which 12,000 may be processed by shore based processors and 28,000 by the foreign processing vessels under the joint venture arrangement. Of the remaining 135,000 metric tons, 35,000 have been put in a reserve to be released later for foreign fishing if not needed by U.S. fishermen. Of

*(Continued on p. 8)*

## Deep Seabed Act Signed

*(Continued from p. 1)*

mining programs. Estimates indicate that the private ocean mining industry will have to raise approximately \$250 million to conduct the necessary intensive technology development and site explorations work. Enactment of the law will encourage such investments providing standard procedures for use by the mining industry. Through this legislation the United States will begin to accomplish its goal of beginning to obtain the mineral treasures of the oceans for the good of humankind."

As President Carter said upon signing the measure:

"This Act will serve three purposes. First, it will ensure that when a Law of the Sea Treaty is implemented, there will in fact be a viable ocean mining industry. Second, it will subject ocean mining operations conducted in the interim to stringent domestic regulation to ensure protection of the marine environment, safety of life and property at sea, prevention of un-

reasonable interference with and conservation of mineral resources. Third, it will encourage nations that embark on ocean mining ventures before the Treaty is in force to manage the activities of their nationals in a similar fashion and to respect licenses and permits issued under this and other national legislation."

NOAA will also hold public hearings on a programmatic environmental impact statement. NOAA will at the same time prepare a draft plan for ocean research to support environmental assessment activity associated with deep seabed mining, as called for in the Act. A draft plan should be completed for comment before the end of the summer.

In addition, under the statute, NOAA will continue negotiations with like-minded nations in order to permit designation of reciprocating states, and to provide for the mutual recognition of the miners of those states.



(Credit: National Park Service – Richard V. Harris)

## “Bubbles” Cause Magnetic Field Disturbances

(Continued from p. 4)

ity,” she states, “but nearly 25 percent of all disappearing filaments can also be associated with geomagnetic storms.”

Joselyn and her co-workers developed some rules-of-thumb to help identify the disappearing filaments that lead to geomagnetic storms. “Basically, we look at the filament’s location and orientation with respect to the background magnetic field,” she says. “It appears that certain changes in the corona’s magnetic field can release coronal material into the solar wind, which is capable of causing geomagnetic disturbances.”

The sun-watchers point out that solar flares and coronal transients are usually most frequent and violent after a peak in activity. The sunspots, dark blemishes across the face of the sun, are most numerous about every 11 years, with one of the strongest peaks now at hand.

The scientists explain that coronal holes, the third major producer of the solar particles that cause geomagnetic disturbances also are linked to

the sunspot cycle. They are most active in the years just before each sunspot minimum. Dr. Steven T. Suess of the Interplanetary Studies Group, said the high-speed “solar wind” streams of gases that flow from these low-density coronal regions spiral out from the rotating sun like water from a revolving sprinkler. As with flares and transients, these streams – when aimed and timed so as to target the earth – can produce convulsions in its magnetic field. However, these long-running streams are sometimes able to spray the earth at 27-day intervals.

Suess is attempting to calculate the behavior of coronal holes, in a long-term effort to predict their earthly effects. “We are now modeling, for the first time, how a coronal hole changes in response to changes on the Sun related to the 11-year sunspot cycle.”

The scientist also looks forward to applying the model to studies of solar wind variations over the 22-year, or double-sunspot, cycle – a cycle that certain climate variations seem to follow. “Based on what other scien-

tists have learned in the past few years,” Suess explains, “it appears that the Sun’s effects on weather and climate may depend on more than sunlight alone. There are hints that the Sun’s extended magnetic field, incorporated in the solar wind, may also be involved.”

## Flood Plan

(Continued from p. 1)

of the evacuation efforts of various county and other governmental agencies.

Residents and the news media in the six-county area will be given a “Citizen Action” leaflet prepared by the Sea Grant researchers. The leaflet will advise on measures to be taken during a hurricane, including the proper evacuation routes to be used.

Daltry underscored the need for the plan by noting the rapid urbanization of the region. He said that its population has increased from approximately 305,750 in 1970 to about 511,000 presently.

## Ixtoc Spill Explored

Sunlight and microscopic creatures appear to be major forces acting on oil spilled into the sea, and a strong influence upon the ocean’s apparent ability to “digest” large quantities of petroleum, ocean chemists and biologists meeting in Miami, Fla., recently reported.

These preliminary findings were explored at a two-day symposium sponsored by NOAA to examine the scientific results of a major expedition to the area of the Ixtoc-I oil spill last September. The Miami meeting represented the first chance the participants – scientists from the United States and Mexico – have had to compare notes on their research results.

The Ixtoc-I expedition took a team of scientists to the blown-out wellhead in Mexico’s Bay of Campeche aboard the NOAA ship *Researcher* and a smaller, contract vessel, the *G. W. Pierce*. There, working to within a few hundred feet of the burning well, in an environment where sampling teams had to wear respirators and even the evaporated fresh water aboard the ships acquired a light, oily film, the scientists sampled ocean water, oil, bottom sediments, and organisms. From the wellhead, the ships traced the oil northward toward the Texas coast, sampling as they went.

“The major goals of the voyage were to study how the various hydrocarbon elements of Campeche oil were distributed in Gulf waters, and how chemical, physical, and microbial weathering changed them,” said Dr. Donald Atwood, who leads the ocean chemistry effort at NOAA’s Atlantic Oceanographic and Meteorological Laboratories in Miami, and chief scientist on the Ixtoc-I voyage.

“Understanding how oil behaves in the ocean is crucial to understanding and  
(Continued on p. 5)

## EEO Theme: Sacrifice

Getting ahead requires personal sacrifice. That's the overall theme of a new project of the National Climatic Center's EEO Committee. For many years, the Committee has recognized situations where advancement opportunities seem very limited in the eyes of employees of EDIS' Asheville, N.C., Data Center. Low turnover, a part of the country where most will not leave, and employment restrictions contribute to these problems.

If any theme rings clear, it is that opportunity requires considerable self initiative and determination. Sitting back waiting for Uncle Sam to provide it is ill-advised. The NCC EEO Committee realized that among the 370 employees there

were numerous "success stories" of people who have advanced — principally through their own efforts. Under the capable leadership of Vernell Woldu, a black meteorologist, the committee has embarked on a promotion campaign. Their product: advancement opportunity. Their resources: real live examples from the local work force. Their methods: a newsletter and a display board.

The stories of the employee success cases about those who have advanced themselves are being published in a newsletter entitled "In the Spotlight." Nancy Rathburn, a computer technician in the Center's Data Base Administration Office, was the first story spotlighted.



Careers — Nancy Rathburn (r.) displays poster of her career highlights while Vernell Woldu, NCC/EEOC Chairperson looks on.

Rathburn began her career as a data translator. She interrupted her work to become a mother, returning to NCC in 1977. On her own time, she attended night classes at two local colleges. One of her courses in computer science

helped qualify her for selection to a new career field. This spring she was picked for a NOAA 20-20 training slot where she will major in business administration with emphasis in computer applications.

## Symposium Investigates Organisms' Role in Spill

(Continued from p. 4)

copied with future spills. The *Researcher* expedition was unique in that it was the first study of this sophistication conducted on a major spill at sea. The results of the voyage are a significant contribution to that understanding."

Preliminary findings reported at the Miami meeting included:

—Photo-oxidation — oxidation caused by sunlight — of the drifting oil appeared to be a key to the transformation of oil from droplets into mousse, an oil-in-water emulsion resembling the chocolate dessert in color and texture. Until the *Researcher* voyage, it had been widely believed that mousse forms when the oil enters the water. But this study suggests that mousse does not form until three to 15 nautical miles from the well, and is driven largely by photo-oxidation. "Sunlight drastically altered the oil," Atwood explained. "It caused the hydrocarbon to lose some carbon atoms and take up some oxygen atoms, so that the oil became chemically

more like a soap, and could emulsify." Photo-oxidation also appeared to alter the toxicity of the oil, but the alteration could go either way, the chemists reported.

—The presence of oil appeared to stimulate rapid growth of microbial populations, whose single-celled microscopic creatures fed on the oil. The oil also caused a generic shift in these populations to species which prefer a petroleum diet. This microbial action significantly degraded hydrocarbons, both the relatively stable aliphatic compounds and the more toxic aromatic ones. As one chemist put it, "The ocean has a definite ability to clean itself up." The observed effect on microbial populations did not persist beyond about 25 miles from the wellhead, however, or extend outside the plume of oil itself.

—Experiments aboard the *Researcher* suggested that microbial action might also promote the transformation of oil droplets into mousse. These "microcosm" experiments stressed clean water

and its load of bacteria with various forms of Campeche oil. Where crude oil was used, it eventually formed an emulsion without the help of sunlight, indicating that microbial action alone might be an important factor in mousse formation.

—Microbial degradation of the oil was limited by the amount of nutrients — nitrogen and phosphates — in the water. When this limitation was cancelled by the addition of nutrients, microbial degradation of the oil increased a hundredfold or more. Thus, the scientists reasoned, "fertilizing" the water near a spill should enhance the ability of microbes to degrade the oil.

—The blown-out well was not the only source of man-made pollutants. Chemical analyses of samples taken close to the well showed the presence of pthalates, a toxic synthetic organic similar to PCB's, and not found naturally in Gulf of Mexico waters. Scientists theorized that the pthalates may have come from oil-dispersant used on

the spill, but emphasized that the actual source was not known at present.

—The oil did not appear to be distributed throughout the vertical water column. One of the large uncertainties during the spill was that drifting oil had become neutrally buoyant and was floating underwater, invisible from the air. But scientists reported that subsurface oil went out only about 25 miles from the wellhead, and rarely descended below about 50 feet. Away from the plume itself, the amount of the dissolved oil in water samples was at "background levels" — that is, no more than would be found there naturally.

### USC Gets Grant

NOAA has awarded a \$158,700 contract to the University of Southern California in Los Angeles to develop, in cooperation with the agency's Pacific Marine Environmental Laboratory, a system for assessing marine pollutants.

**PUB-  
LICATIONS**

**Tide Tables**

NOAA has published 1981 tide tables for the east coast of North and South America and Greenland.

The 285-page book is the second of six annual volumes of predictive tide and current data compiled by the Office of Oceanography in NOAA's National Ocean Survey. It includes high and low water predictions, local mean time for sunrise and sunset, and for moonrise and moonset tables.

*Tide Tables 1981 - East Coast of North and South America* can be purchased for \$5.35 a copy from the Na-

tional Ocean Survey, Distribution Division (C44), 6501 Lafayette Avenue, Riverdale, MD 20840, or from National Ocean Survey sales agents throughout the Nation.

**Climate Guide**

*The Visitor's Climatic Guide to West Michigan's Shore*—the latest in a series of environmental resort brochures—has just been released.

The guide was produced by the Michigan Sea Grant Advisory Service and the National Oceanographic Data Center of the Environmental Data and Information Service. It contains a seasonal breakdown of weather and

recreational opportunities, dividing the Michigan coast of Lake Michigan into three regions, each with its own activities and climate descriptions.

The guide includes climatic tables for each season, stressing the elements of interest for the particular season.

In addition to fishing, boating, and swimming, the guide describes events such as the Seaway Festival in Muskegon, Holland's Tulip Festival, and many Oktoberfests.

The brochure is available free of charge from Resort Guides, National Oceanographic Data Center (D762), EDIS/NOAA, Washington, DC 20235

**Alaska Gets Aid to Offset Oil Impacts**

*(Continued from p. 1)*

Alaska will use the grant to help forecast demands for drilling equipment and employment during the next several years. In addition, the money will be used to help the state analyze the possible impact of drilling activity in the lease sale area.

The State agencies, including the Departments of Natural Resources, Community and Regional Affairs, Environmental Conservation, and Fish and Game, also will use some of the funds to conduct research and studies that will help determine which lease sales to approve.

The coastal zone program has provided Alaska with about \$4.5 million annually in support of coastal management. Moreover, the state received an additional \$4 million during the past three years specifically to help it deal with the onshore effects of oil and gas exploration. The Alaska Municipal Bond Bank is now administering a \$50 million NOAA low-cost loan to provide public facilities to local governments affected by coastal energy development.

**CURRENT  
NOAA  
VACANCIES**

NOTE: This listing includes only NOAA-wide or DOC-wide vacancies: Vacancies posted only within a local commuting area are excluded.

Announcement Number	Position Title	Grade	Organization	Location	Issue Date	Closing Date
EDIS-80-107(EAF)	Supervisory Physical Scientist	GS-15	EDIS	Washington, D.C.	7/11	8/11
ER-80-41(SB)	Supervisory Meteorologist	GS-14	NWS	Columbia, S.C.	7/11	8/1
NWS-80-121(FM)	Meteorologist	GS-14	NWS	Silver Spring, Md.	7/11	8/1
EDIS-80-108(EAF)	Meteorologist	GS-13	EDIS	Columbia, Mo.	7/11	8/1
		(may be filled at GS-12 level)				
AMC-80-15(WW)	Supervisory Cartographer	GS-13	NOS	Norfolk, Va.	7/9	7/30
WR-80-80DD)	Meteorologist	GS-13	NWS	San Francisco, Calif.	7/15	7/29
SER-80-37(MR)	Computer Systems Analyst	GS-12	NMFS	Miami, Fla.	7/15	7/29
CR-80-47(GL)	Lead Electronics Technician	GS-12	NWS	Kansas City, Mo.	7/15	7/29
SR-80-69(JG)	Meteorologist	GS-12	NWS	Atlanta, Ga.	7/15	7/29
		(may be filled by lower grade)				
EDIS-80-106(EAF)	Librarian	GS-12	EDIS	Rockville, Md.	7/11	8/1
ER-80-43(SB)	Meteorologist	GS-12	NWS	Boston, Mass.	7/15	7/29
ERL-80-225(VP)	Meteorologist	GS-11	ERL	Research Triangle Park, N.C.	7/15	7/29
		(promotion potential to GS-12)				
HQS-80-112(CG)	Secretary (Steno)	GS-06	HQS	Rockville, Md.	7/15	7/29
NWS-80-122(FM)	Travel Clerk	GS-06	NWS	Silver Spring, Md.	7/15	7/29
ER-80-44(SB)	Meteorological Technician	GS-5/6/7/8/9/10	NWS	Richmond, Va.	7/18	8/1
NWS-80-123(TAD)	Clerk (Typing)	GS-04	NWS	Cam Springs, Md.	&615	8/5
	Clerk-Stenographer	GS-05	NWS	Camp Springs, Md.	7/15	8/5

"IF YOUR APPLICATION IS NOT RECEIVED IN THE SERVICING PERSONNEL OFFICE BY THE CLOSING DATE, YOU WILL NOT BE CONSIDERED FOR THE VACANCY . . . ."

**New Medical Form Required**

When you need medical services and/or supplies, you now must use a new form, Federal Employees' Compensation Program Medical Provider's Claim Form CA-1333. The Office of Workers' Compensation Programs (OWCP) is continuing the automation of claims adjudication and bill paying. Any employee authorized by Form CA-16 to obtain medical services is required to use this new form, which is available in your personnel office.

## NOTES ABOUT PEOPLE

Dr. Ray E. Jensen has been appointed Director of the National Weather Service, Southern Region, Fort Worth, Tex. Jensen was formerly chief of the Data Acquisition Division, Southern Region Headquarters, 1971-73. He directed the Environmental Science Service Center (ESSC), Auburn, Ala., 1974-75 and the ESSC, College Station, Tex., 1975-77. While at College Station, he was also the Southern Regional Technical Coordinator for Agricultural Meteorology. Jensen came to the Southern



Dr. Ray E. Jensen

Region after serving as director of the Pacific Region since 1978.



Dr. Thomas H. Grayson

Dr. Thomas H. Grayson was recently appointed Deputy Director of the National

Weather Service, Southern Region, Fort Worth, Tex.

Grayson came to Fort Worth from the Central Region NWS where he served as chief of Scientific Services Division for seven months. He has been with the National Weather Service since 1971. In 1975, he was promoted to Chief of the Computer Systems Branch at TDL then transferred to WSFO, Reno, Nev., to serve as Principal Assistant. In 1979, he was again promoted to Deputy MIC for WSFO, Ann Arbor, Mich.

## Helfert Appointed Senior Representative to AgRISTARS

Dr. Michael Helfert has been named the senior NOAA representative to the multi-agency AgRISTARS (Agriculture and Resources Inventory Survey through Aerospace Remote Sensing) program at the NASA Johnson Space Center in Houston, Texas.

In 1979, Helfert left Monroe to accept a visiting professorship at the U.S. Coast Guard Academy.

He received his doctorate from the University of Texas in 1974. His major field of study was physical geography with specialties in the atmospheric, environmental, marine, and geo-sciences. He reported at Johnson Space Center on June 16.

Helfert will be responsible for three major areas of NOAA involvement in AgRISTARS. He will serve on the interagency Program Support Staff which is responsible for a coordinated plan of action for NASA, USDA, NOAA, Interior, and AID; assure that NOAA/EDIS scientific interests and requirements are recognized in planning and implementation activities; manage EDIS resources in support of the Foreign Com-

modity Production Forecasting program of AgRISTARS; and serve as a NOAA representative for interface control documentation to other programs of AgRISTARS, i.e., supporting research, early warning, yield model development and soil moisture.

He has worked as an environmental consultant engaged in a field project to monitor the environmental impact of extended sand and gravel operations on underground water, and was also engaged in a study of the micro-climate effects of albedo changes.

In 1975, Helfert became an assistant professor at Northeast Louisiana University where he developed the University's first bachelor of science degree program in the atmospheric sciences. He proposed, initiated, and secured funds for the Climate Research Center at Monroe; set up a Class A agricultural substation; provided operational forecasts for counties in northeast Louisiana; and worked with National Weather Service personnel to obtain data and equipment for his mini-weather service.

## Visiting Norwegian Scholar Commended on Performance

Eliann Egaas, a research associate from the Fishery College of Norway (University of Bergen), worked for the past year as a visiting scholar at the Northwest and Alaska Fisheries Center, Seattle, Washington.

Egaas worked in a group, supervised by Dr. Usha Varanasi of the Center's Environmental Conservation Division. The project concerned the effects of multiple-contaminant exposure of fish on the hepatic drug metabolism and interactions with DNA. The Center sponsored her attendance at the Conference of the Federation of American So-

cieties for Experimental Biology in August 1979 in Portland, Oregon. In April 1980, she presented preliminary results of her research at the Annual Meeting of the Federation in Anaheim, California. Egaas returned to her position at the Norwegian University in June 1980.

Egaas received a Bachelors in Chemistry and Biology as well as a Masters in Fish Nutrition (1977) from the University of Bergen. Her stay in the United States was supported by a grant from the Council for International Exchange of Scholars under the Fullbright Program.



Award — Eliann Egaas, (r.) receives a Certificate of Appreciation from Dr. Donald C. Malins, director of the Environmental Conservation division, Seattle, Wa.

## FROM THE GALLEY

### BOMBAY CRAB CURRY

- 1 package (6 ounces) frozen king, snow, or other crabmeat or 1 can (6½ or 7½ ounces) crabmeat
- 2 tablespoons margarine or butter
- 1 cup chopped peeled apple
- 1 cup chopped onion
- 1 clove garlic, minced
- 1-1/2 teaspoons curry powder
- 1 tablespoon flour
- 1-1/2 teaspoons sugar
- 1/4 teaspoon salt
- 1-1/4 cups water
- 1 chicken bouillon cube, crumbled



- 1/4 cup light raisins
- 1 cup quartered cherry tomatoes
- 1/3 cup coarsely chopped pistachio nuts
- 1 teaspoon grated orange rind
- 4 servings hot fluffy rice
- Curry condiments: toasted coconut, shredded carrot, orange wedges, chutney

Thaw crabmeat if frozen; drain well. Remove any remaining shell or cartilage. Cut or break into chunks. Melt margarine or butter in saucepan. Add apple, onion, and garlic; cook over moderate heat until very tender, about 10 minutes. Add curry powder; cook 2 to 3 minutes, stirring constantly. Stir in flour, sugar, and salt. Add water, bouillon cube, and raisins; cook just until thickened, stirring constantly. Cover; simmer about 10 minutes to blend flavors, stirring constantly. Fold in crabmeat, tomatoes, nuts, and orange rind; heat. Serve on rice with desired condiments. Makes 4 servings.

## Act Leads to Less Foreign Fishing

(Continued from p. 3)

the 100,000 metric tons available to the foreign fishery, approximately 40,000 metric tons have been allocated to Poland and 30,000 metric tons to Mexico. Ninety percent of the Mexican allocation is held in reserve, however, pending clarification of Mexico's intent to enter the fishery and use the allocation. "The remaining 30,000 tons are still in the bank," says Dr. Gene Kruss, Acting Regional Director of the Northwest Region. "It is not clear at this time how much of this will be allocated this season."

"There have been complaints that the Soviet joint venture vessels are allowed to fish within 6 miles of the coast," said Dr. Kruss. "First, joint venture vessels are only receiving U.S. caught fish; they are not fishing this year. Second, requiring the processing vessels to stay outside of 12 miles, like the foreign fishing vessels, would be imposing hardships on our U.S.

fishermen who choose to fish inside of 12 miles. The quality and value of whiting are dramatically reduced if the fish are not processed immediately. It is difficult and of questionable legality to discriminate against these U.S. fishermen solely on the basis of where they sell their fish. In order to preclude the Soviet receiving vessels from a 6 - 12 mile area we would need a sound conservation and management reason. No such reason has been identified."

Dr. Kruss, also noted that our cooperative fishery research vessel with U.S. personnel aboard has recently departed from this area. Another research vessel is expected to participate in a joint survey later in the season. "The use of foreign research vessels supplements the U.S. vessels being used and greatly expands our capacity for obtaining badly needed data in a timely manner" says Dr. Kruss.

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The 1980 Marine Fisheries Technology graduating class at the University of Rhode Island, Wickford, RI, includes: Front row (l. to r.) Lt. Craig Berg, Lt.(JG) Gary Barone, Capt. Bert Hillier (instructor), Lt. Alan Bunn, Capt. George Gamache (instructor); back row (l. to r.) Ens. John Leslie, Cdr. Fidel Smith, Lt. Gary Johnson, Lt.(JG) Ellen McDougal, Cdr. Richard DeRycke, Dr. John Sainsbury (instructor), and Lt. Cdr. Stewart McGee.

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