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NOAA news

National Oceanic and Atmospheric Administration



Hurricane Conference— Administrator Frank, center, is flanked by William Bonner, deputy director of the National Weather Service, left, and Thomas B. Owen, assistant administrator for Oceanic and Atmospheric Services, right, at a news conference on May 29 on dangers posed by hurricanes.

Hurricane Dangers Explored

The death toll from hurricanes this year could make the record 6,000 hurricane-related fatalities at Galveston, Tex., in 1900 "pale by comparison," NOAA Administrator Richard A. Frank warns. His concerns are based upon the large number of Americans now residing in the potential path of coastal storms and the fact that a major hurricane impacting the coastal United States is long overdue.

There is a possibility that
(Continued on p. 2)

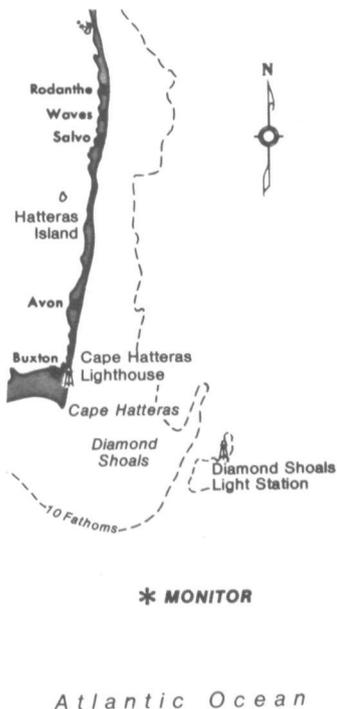
Monitor Must Stay in Place

Two panels of specialist have advised NOAA that the *USS Monitor* is too fragile to be raised from its grave in the Atlantic ocean off the coast of North Carolina, Michael Glazer, assistant administrator for Coastal Zone Management told a news conference in Washington, D.C., on May 20.

Glazer said the specialist — engineers, salvage experts, historians, and archaeologist — confirmed the earlier findings of experts who also concluded that the ship could not be moved.

"The *Monitor* must remain submerged in the waters off Cape Hatteras, the victim of more than a century under water," Glazer stated. "Our judgement is that the *Monitor* should stay in her protected grave-site until such time as a new technology is developed that would cause us to reconsider the decision."

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Burial Site — The above map shows the *Monitor's* location off the North Carolina coast.

Hurricane Allen Heads the List, Followed by Bonnie and Charley

The first hurricane to form in the Atlantic Ocean or the Gulf of Mexico in 1980 will be named Allen, according to the National Weather Service.

It will be followed, if Nature dictates, by Bonnie, Charley, Danielle, Earl, Frances, Georges, Hermine, Ivan, Jeanne, Karl, Lisa, Mitch, Nicole, Otto, Paula, Richard, Shary, Tomas, Virginie, and Walter.

This is the second year in which hurricanes will bear both male and female names.

But why name a hurricane at all?

Short, distinctive given names — male or female — make for quicker and clearer communication when tracking more than one hurricane, the Weather Service notes.

These advantages are especially important when

issuing public statements about storms and in exchanging detailed storm information between hundreds of widely scattered stations, airports, coastal bases, and ships at sea.

The use of easily remembered names greatly reduces confusion when two or more tropical storms occur at the same time.

In the past, confusion and even false rumors resulted when storm advisories broadcast from one radio station were mistaken for warnings concerning an entirely different storm located hundreds of miles away.

Hurricane names are selected from library sources and agreed upon during international meetings of the World Meteorological Organization by those nations involved.

LETTER FROM THE LABS

When the Mount St. Helens volcano exploded with the force of an atomic bomb on May 18, the blast sent a pressure wave rippling through the atmosphere that was detected all across the nation. Fallout from the giant black cloud came in the form of tons of volcanic ash and material that once made up the mountain top, and the debris that was shot up into the stratosphere is expected to circle the earth for several years. Some of the work of NOAA scientists relating to these eruptive effects is described below.

Ten-Megaton Blast— According to Dr. Lester Machta, director of the Air Resources Laboratories in Silver Spring, Md., the pressure wave generated by the blast of the eruption passed through Washington, D.C., about 3½ hours after the volcano blew.

"The explosion caused a vibration in the atmosphere, which spread out from the source as a train of waves," Machta explained. The inaudible 20-minute wave train consisted of four waves, each lasting five minutes. The leading edge of the series produced a maximum pressure variation of two tenths of a millibar — a force of about nine ten-thousandths of a pound.

NOAA scientists arrived at their estimate of St. Helens' explosive yield, equivalent to a blast of about ten million tons of TNT, by comparing this pressure signal with simi-

lar signals recorded for a distant nuclear explosion.

Plume Trajectories— The eruption injected a considerable amount of ash into the atmosphere to an altitude of about 18 kilometers (11 miles) above sea level. A team of ARL meteorologists prepared predicted multi-level trajectories of the plume, based on the latest upper air charts and National Meteorological Center computer forecasts. The trajectory forecast was updated each day by re-running the computer forecast from the previous day's trajectory endpoints. The scientists used the trajectories to estimate the time of arrival of ash at various points across North America.

As the ash moved eastward it became widely dispersed. The smaller particles remained airborne a great distance from the volcano, while the larger particles fell to the surface. The ash at the lower levels was reported as blowing smoke or dust by the National Weather Service and Canadian weather stations. ARL meteorologist, Roland Draxler found that, based on these reports, the eastward progressions of the blowing dust across the northern states and southern Canada amounted to about 10 to 20 miles per hour. This compared favorably with the predicted low level ash trajectories.

Masking of Global CO₂ Effect— The volcanic debris now circling the globe could

block out some sunlight and cause a slight cooling of the earth's surface over the next five to ten years. According to Dr. Kirby Hanson, director of ARL's Geophysical Monitoring for Climatic Change program in Boulder, this could mask the expected warming effects of increased carbon dioxide in the atmosphere, ruling out early detection of these CO₂-related temperature changes.

Some scientists predict that the increasing input of carbon dioxide to the atmosphere from fossil-fuel burning will double pre-industrial concentrations over the next 50 years. Hanson says that this translates to a warming near the earth's surface of about 4 to 5 degrees Fahrenheit (2 to 3 degrees Celsius), averaged over the Northern Hemisphere.

Over the next five to ten years, scientists had hoped to detect, in an "early warning" sense, the CO₂-induced global temperature increase of a few tenths of a degree that might confirm this prediction. But the surface-layer cooling effects of the St. Helens volcanic particles and gases during this period "could delay detection of carbon-dioxide-induced temperature changes until well after 1990," said Hanson. "This could be an important new development for the carbon dioxide problem." He adds that the CO₂ warming is expected to persist over the next few hundred years.

Columbia River Damage— The NOAA research vessel *Miller Freeman* was at the mouth of the Columbia River on May 30 to study the effects of the volcano on the river's chemistry. The explosion that ripped off the top of Mount St. Helens on May 18, followed by another major eruption a week later, sent millions of cubic yards of mud, silt, and debris down the chain of rivers.

Aside from the costly problem of debris choking the shipping channel, scientists expect a variety of longer-range effects on the chemical and biological processes in the river and nearby ocean. Under the direction of Dr. Herbert Curl, researchers of the Pacific Marine Environmental Laboratory in Seattle studied the transport of particles suspended in the water and mapped the distribution of volcanic ash at the river mouth. They also mapped the distribution of light hydrocarbons and studied how suspended particles and sediments absorb and release trace metals.

The scientists explain that volcanic particles can absorb organic chemicals and metals and release them to the water later on. The ash and cinders will form a sediment layer on the nearby ocean floor, which could smother bottom-dwelling organisms and reduce the long-term abundance of other creatures, including crab and fish.

Potential Dangers of Hurricanes Cited by Frank *(Continued from p. 1)*

a coastal storm in the 1980's "could bring unprecedented human and economic catastrophe," Frank said as the "hurricane season" began June 1.

Frank mentioned specifically the rapid growth of the coastal population. He noted that more than 61 million people — almost as many as occupied all the United States

at the turn of the century — now live in the Atlantic and Gulf coast areas.

This dramatic increase in coastal development already has led to a steep increase in property damage due to coastal storms, Frank noted. Losses due to hurricanes have climbed from about a billion dollars in the decade 1900-1910 to more than \$10 bil-

lion during the 1970's, he pointed out. Frank projected "losses of perhaps \$15 billion in the decade of the '80's," adding that "if the storms are frequent and severe, that figure could go higher."

Frank cautioned that the next major hurricane could strike any place along the Gulf or Atlantic coasts. He voiced major concern, for

"those who cluster on our beaches and barrier islands during the summer." The land in these areas, he explained, could be "totally submerged under the storm surges associated with major hurricanes" and "congested traffic on bridges and highways could imperil the safe evacuation of people from these areas."

Monitor Artifacts, Film Shown In Washington, D.C.



Michael Glazer tells guests that the artifacts on display at the Navy Museum could encourage other missions to the *Monitor* site.



Guests examine the *Monitor* exhibit . . .

(Continued from p. 1)

Glazer held the news conference at the Navy Museum at the Washington Navy Yard where a special exhibit featuring artifacts from the wrecked Civil War vessel was placed on public display for the first time. On the same evening, a new documentary film about the salvaging of the ship, entitled "Down to the Monitor," was previewed for about 200 special guests at the museum.

The artifacts were raised last August during a four-

week expedition to the *Monitor*. They will remain at the Navy Memorial Museum in Washington, D.C., for about a year, Glazer said.

"I hope that these items would encourage professional groups to consider stretching our imaginations with other missions to the *Monitor* in the future," he said. "Such missions might be able to bring the image of the *Monitor* to more Americans, more dramatically, than if the ship itself were raised."



. . . and carefully preserved artifacts from the ship.



Administrator Frank with Jean Buhler and Roger Cook of the Harbor Branch Foundation.

A Calendar of NOAA Tenth Anniversary Events

A number of activities are planned in the next six months to further call attention to NOAA's tenth year as the Nation's first line agency in the provision of environmental science services, and the Federal leader in the establishment of policies for - and management and conservation of - our oceanic, coastal, and atmospheric resources.

A calendar of NOAA events and closely-related Year of the Coast activities follows. An asterisk (*) indicates a "firm" event or item. Other dates and events are subject to change.

JUNE

21 California Projects: Two projects sponsored by a Federal interagency task force: a school poster contest and an exhibit.

JULY

11 *Commissioning of the *Chapman*, new NOAA vessel. Seattle, Wash.

18-19 *Hurricane workshop for media representatives Miami, Fla.

26-Aug. 10 Seattle Sea Fair, a harbor festival. NOAA vessel asked to participate. Other state events and awards. Seattle, Wash.

*Premiere of "I Can . . .", new NOAA film on the Marine Science School for the Handicapped, Washington, D.C.

30 *NOAA magazine: July/August "The Year of the Coast"

AUGUST

6-9 *National Marine Education Association Conference devoted to YOTC. Salem, Mass.

*Thomas Jefferson and John Campanius Holmes Awards to some 30 top volunteer civilian weather observers.

Outdoor public celebrations: Events planned in a Washington, D.C., park and a Maryland park.

SEPTEMBER

6 *NOAA Birthday Picnic. A family picnic and awards ceremony honoring those in continuous service to NOAA since its founding, Washington, D.C.

10 *Oceans '80, an international forum for discussion of engineering in the ocean environment in the next decade, sponsored by the IEE and the Council on Oceanic Engineering, Seattle, Wash.

26 *Woods Hole hosts Third International Congress on the History of Oceanography; 75 papers to be presented by representatives of 22 countries, Woods Hole, Mass.

29-Oct. 3 *Woods Hole hosts Assembly on the Future of Oceanography. Second event marking 50th anniversary of Woods Hole Oceanographic Institution, Woods Hole, Mass.

OCTOBER

4 *NOAA Birthday Ball. A gala dinner dance in the old Pension Building, an historic landmark. Music by two orchestras, Washington, D.C.

Historic exhibit containing artifacts and information about NOAA and its early predecessors to be mounted in lobby of the Department of Commerce, Washington, D.C.

*Dedication of new Operations Building of the Western Regional Center. Seattle, Wash.

6-8 *Marine Technology Society Meeting. Shoreham-Americana. NOAA will exhibit and participate, Washington, D.C.

*Open House events around the country given increased focus in 1980.

6-9 *Sea Grant Association meeting. Annual meeting of representatives of industry and the university community, Mackinac Island, Mich.

30 NOAA magazine: Sept./Oct. Tenth Anniversary Issue

16-20 *NOAA Tenth Anniversary event. Open House on board the *Researcher* for Executive/Legislative branches and public, Washington, D.C.

NOVEMBER

9-11 *Maritime Social Studies Workshop on "The Management and Protection of our Coasts Through Education," Newfound Harbor Marine Institute, Big Pine Key, Fla.

17-20 *The CZ '80 Conference: Co-sponsored by NOAA and the American Society of Civil Engineers with involvement of numerous Federal agencies and private organizations, Hollywood, Fla.

Scientific symposium/seminar planned by NOAA and presentation of new Administrator's Award for Scientific Achievement, Washington, D.C.

DECEMBER

6 Dedication of Oceanography Building. Ship in port. Bay St. Louis, Miss.

14-16 *Maritime Social Studies Workshop. The second of two. Newfound Harbor, Fla.

NOAA-N Fails To Make Orbit

NOAA-N, launched May 29, failed to reach its planned orbit, according to NASA officials, and will fall back to earth destroying itself on reentry.

A malfunction of one of the two booster engines in the Atlas F launch vehicle caused the satellite to enter an elliptical rather than circular orbit, creating problems ground controllers were unable to resolve.

The satellite had been scheduled for a circular, near-polar orbit 470 miles above the earth, but because the engine suffered a 25 percent decrease of thrust, all flight events took place later than planned and the craft ended in an elliptical course ranging from 150 to 900 miles above the earth. That profile rules out effective use of monitoring equipment.

"The failure of the launch will certainly prevent us from being able to provide complete support to satellite data users as planned," Dr. Clifford A. Spohn, deputy director of the National Environmental Satellite Service, said. "We look forward to the launching of a back-up satellite to fill this gap later this year.



U.S. Power Squadron Officials Visit NOS Offices

High ranking officials of U.S. Power Squadrons (USPS), headed by Vice Commander William W. Chambers, second in command of the 60,000-member private boating organization, paid a two-day visit to the National Ocean Survey (NOS) last month. Captain Lavon L. Posey, NOS, Chief Marine Chart division, and his staff hosted the meeting with USPS' Coopera-

tive Charting committee.

The sessions were held to discuss plans, policies, procedures, and goals for the Cooperative Charting program. That effort is a joint project conducted by members of USPS and NOS' Marine Chart division. Chart deficiencies are noted and sent to NOS and credit points are awarded according to the value of the submis-

sion. At year's end, NOS makes the appropriate awards for outstanding work to those USPS divisions and units that submitted material of value. The program, begun in 1963, is now in its 17th year. Since its establishment, it has grown steadily not only in volume but also in the quality of material being reported.

(Continued on p. 7)

NOAA Urges Boating Safety

NOAA says safe boating may depend on the skipper's knowledge of the weather and up-to-date nautical charts.

Calling attention to its year-round services to boaters during National Safe Boating Week - June 1-7 - the agency is urging that boaters listen to National Weather Service forecasts and to use up-to-date nautical charts.

"When a new edition of a nautical chart is published," says the National Ocean Survey, "the use of an old chart for navigation is dangerous. Natural and artificial changes, many of them critical, are occurring constantly. It is important that boaters obtain up-to-date charts at regular

intervals."

Recent symbol changes for two aids to navigation by the Office of Marine Surveys and Maps have affected the junction and obstruction buoy symbols and the triangular port side daymark symbols. The Survey recommends that mariners familiarize themselves with these new symbols and all other navigation symbols and abbreviations on nautical charts.

In addition to NOAA's compilation and publication of nautical charts, the National Weather Service operates NOAA Weather Radio, which provides weather forecasts and warnings to recreational boaters.

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Chart Workshop—More than 50 U.S. Coast Guard Auxiliary members recently attended a national Chart Updating Workshop at Pacific Marine Center in Seattle, WA. Participants learned how hydrographic surveys are conducted while visiting the NOAA Ship RAINIER and her launches. They saw the compilation of survey manuscripts in PMC's Processing Division, learned how to take and plot sextant fixes, and examined the relationship of the Chart Updating Program to the NOS charting efforts.

Cdr. Fleming Is New Skipper Of NOAA Ship Albatross IV

Cdr. Michael H. Fleming has been appointed C.O. of the NOAA Ship *Albatross IV*.

Fleming, a NOAA commissioned officer since 1961, has served aboard various oceanographic and hydrographic survey vessels, with gravity and photogrammetric field parties, with the National Environmental Satellite Service, and as a liaison

officer at the State Department's Office of International Affairs. He commanded the survey ship *Lester Jones* and the nautical charting vessel *Davidson*, was chief of the Operations Division of NOAA's Pacific Marine Center, Seattle, Wash., and most recently was Port Captain, Northeast Support Facility, Woods Hole, Mass.



FILMS

NOAA's Employee Assistance Program has a variety of films available for loan. Several films are designed to instruct supervisors on how to deal with employees who need help for personal and work problems and how to use the Employee Assistance Program. These films include: "The Dryden File" and "We Don't Want to Lose You." Another film appropriate for viewing by employees is "Chalk Talk on Alcohol." It outlines the scope of the alcohol problem and the factors influencing attitudes and behavior with respect to alcohol and alcoholism. For information about borrowing any of these films, call Sue Balboa, NOAA EAP Coordinator, (301) 443-8105 or write to: NOAA - MB/PER53 Personnel Division, 6001 Executive Blvd., Rockville, Md. 20852.

CURRENT NOAA VACANCIES

Announcement Number	Position Title	Grade	Organization	Location	Issue Date	Closing Date
NWS-80-96(FM)	Supervisory Meteorologist	GS-14	NWS	Silver Spring, Md.	5/27	6/18
NOS-80-69(LAD)	Budget and Program Coordinator	GS-14	NOS	Rockville, Md.	5/27	6/18
HQS-80-80(AM)	Budget Analyst	GS-14	HQS	Rockville, Md.	5/27	6/18
SR-80-59(JG)	Supervisory Hydrologist	GS-14	NWS	Slidell, La.	6/2	6/16
NOS-80-70(DB)	Supervisory Geodesist	GS-13	NOS	Rockville, Md.	5/27	6/18
ERL-80-146(VP)	Meteorologist	GS-12	ERL	Boulder, Colo.	5/27	6/18
		(promotion potential to GS-13)				
CR-80-34(MK)	Meteorologist (Forecaster)	GS-12	NWS	Ann Arbor, Mich.	6/5	6/19
		(may be filled by GS-11)				
CR-80-33(GL)	Meteorologist	GS-12	NWS	Indianapolis, Ind.	6/4	6/18
		(may be filled by GS-11)				
NWS-80-98(GZJ)	Communications Specialist	GS-12 or 13	NWS	Silver Spring, Md.	5/28	6/18
NWS-80-99(WL)	Meteorologist	GS-12	NWS	Camp Springs, Md.	5/28	6/18
		(promotion potential to GS-13)				
WR-80-69(DD)	Supervisory Electronics Technician	GS-11	NWS	Seattle, Wash.	6/4	6/18
		(promotion potential to GS-12)				
ER-80-35(SB)	Electronics Technician	GS-10	NWS	Atlantic City, N.J.	6/2	6/16
CR-80-32(MK)	Hydrologic Technician	GS-10	NWS	Louisville, Ky.	6/4	6/18
		(may be filled by GS-9 level)				
AMC-80-10(WWF)	Personnel Staffing and Employee Relations Specialist	GS-7/9	NOS	Norfolk, Va.	6/5	6/19
NOS-80-71(MME)	Engineering Technician	GS-6 (Temp. NTE 1 year)	NOS	Washington, D.C.	6/2	6/16
UMTP-80-87(JW)	Post Graduate Intern Program	GS-4	HQS	Washington, D.C. & Selected Field Locations	5/27	6/17
UMTP-80-87(JW)	Post Graduate Intern Program	GS-4	HQS	Washington, D.C. & Selected Field Locations	5/27	6/17

NOAA Officers Rescue Woman

Cdr. Merritt Walter, Robert Maness, Lt. Kenneth Holden, and Lt. Thomas Russel of NOAA's Atlantic Marine Center recently rescued an elderly woman from drowning in the Elizabeth River near the Norfolk, Va., facility.

Cdr. Walter, who spotted the woman from his office window, said that it was not known how long she had been floating face down when the rescue team pulled her into an AMC launch.

Lt. Holden administered mouth-to-mouth resuscitation and started her breathing. Cheryl Taylor, another AMC employee, observed the rescue from a nearby building and called the rescue squad, who brought the woman to a local hospital where she recovered.

It was believed that the woman had been fishing under the Elizabeth River bridge when she fell into the water and was swept away in the current.

Sediment Transport Study

Assisted by NOAA Sea Grant

A grant of \$165,600 to the University of Delaware to measure the relationships between coastal waves and sediment movement has been announced by NOAA Administrator Richard A. Frank.

The study is a part of a major Sea Grant project known as Nearshore Sediment Transport Study (NSTS) that is investigating erosion and other hydrographic activities in the coastal surf zone.

Dr. Robert G. Dean of the Department of Civil Engineering at the University of Delaware is head of the project which will measure and characterize the net accumulation of sediment in a "trap" that was formed when a breakwater was built in the Santa Barbara (California) Harbor during the early 1930's.

Dean's group periodically will measure the amount of sediment in the trap over a year's time span, and then formulate a set of data characterizing the sediment — including the depth of the water, the volume of sand, and the bathymetric contours of the sea floor.

Each week-long series of measurements, repeated every 4 to 6 weeks, will determine the volume of sediment which moved into the area

since the previous measurement. A preliminary survey, in December 1979, indicated that two winter storms had moved roughly 80,000 cubic meters of material into the trap.

Santa Barbara Harbor, according to Dean, is marked by the erosion to the east that began the first year after construction of the breakwater, and has become more intensive ever since. Government agencies spend as much as \$400,000 per year to transfer sand mechanically and hydraulically from the west side to the continually eroding east side, Dean said.

Dean's group spends 4 to 5 days, from dawn to dark, in a small vessel with a fathometer, continuously recording depths as the boat moves. Each trip covers about 4 kilometers along the shore, about 800 meters from shore. The boat's horizontal position also is recorded continuously on magnetic tape.

The resultant data correlations enable the scientists to establish a contour map of the sea floor and then to compare it with the previous maps. The year-long study should give a picture of how, and how much, sediment moves during both stormy and fair weather periods.



Chinese Visitors—Five members of the Marine Sediment delegation from the Peoples Republic of China recently visited the National Ocean Survey for a briefing on the Survey's marine and oceanographic services. From left to right are: Qin Yunshan, marine geologist; Chen Jiuyu, marine geomorphologist; Shi Zhongyang, marine geologist; Alice Hogan, International Affairs; Rear Admiral H. R. Lippold, Jr., Wei Peng, head of the delegation, Jin Qingming, marine geologist, and Mei Jinsheng, interpreter.

NOTES ABOUT PEOPLE

John Festa, a scientist with the Physical Oceanography Laboratory, part of the Atlantic Oceanographic and Meteorological Laboratories on Virginia Key, and Dr. Donald V. Hansen, director of the same laboratory, received outstanding paper awards of \$350 each for authoring a paper depicting the nature of an estuary by modeling its turbulence, temperature, and salinity variations. Their research proves a long-standing theory that estuaries are more turbulent than fresh waters leading into them or salt water bordering their outlets. Dr. Carlisle Thacker, an oceanographer with the Sea-Air Interaction Laboratory, received an outstanding paper award of \$700 for his research on modeling storm surges brought by hurricanes. The papers were recognized for originality, scientific importance, writing quality, and relevance to NOAA missions.

* Peter Black, a meteorologist with NOAA's National Hurricane and Experimental Meteorology Laboratory, was given a team award by the National Aeronautics and Space Administration for his participation in the GEOS-3 satellite project.

* Staff members of NOAA's Miami laboratories were honored at an awards ceremony May 15 for outstanding authorship and service, and participation in global weather and satellite experiments. The awards were made by Dr. Wilmot Hess, director of NOAA's Environmental Research Laboratories.

* Drs. James McFadden and Stig Rossby of the Research Facilities Center received an award for their efforts during the first global weather experiment last year. NOAA's research flight center was also given a unit citation for flying in excess of 2,300 hours during scientific missions last year.

Dr. John R. Apel, director of NOAA's Pacific Marine Environmental Laboratory in Seattle, Wash., and Dr. Harold O. Mofjeld, an oceanographer at PMEL recently received a GEOS-3 team award from the National Aeronautics and Space Administration.

The award was given to principal investigators or other scientists who participated in the gathering or analysis of GEOS-3 satellite data.

Specifically, Mofjeld received a certificate award for his development of a tide model for the western North Atlantic Ocean in support of the calibration program for the altimeter aboard GEOS-3. This information was used by NASA to help estimate the effect of the ocean, to derive the correct geoid, or shape of the spherical earth. Geoid information is of value to geophysicists who need the accurate data for studying plate tectonics and for other solid earth research, and to oceanographers determining sea surface waves, tides, and ocean currents.

Apel was awarded a NASA certificate for his guidance in the successful gathering and analysis of data from GEOS-3 satellite, launched in May 1975.

Boating Safety

(Continued from p. 5)

The relationship between NOS and private organizations has been beneficial. The Power Squadrons' knowledge has contributed to water safety for all mariners and they have aided NOS in continually producing and distributing up-dated products.

The meeting concluded with a tour of NOS' chart-making facilities, including the automation effort. Rear Commander William Reogelein, Chairman of USPS' Cooperative Charting committee, and Captain Posey termed the meeting a success.

FROM THE GALLEY

DEVILED CLAMS

2 cans (6½ to 8 ounces each) minced or chopped clams

Milk

1/2 cup thinly sliced celery

1/4 cup chopped onion

1/4 cup chopped green pepper

4 tablespoons butter or margarine

3 tablespoons flour

1 teaspoon dry mustard

1/2 teaspoon salt



1/4 teaspoon paprika

2 hard-cooked eggs, chopped

1/8 teaspoon leaf thyme

4 to 6 drops liquid hot pepper sauce

3/4 cup slightly crushed corn flakes

Drain clams; save juice. Add milk to clam juice to make 1½ cups liquid. Cook celery, onion, and green pepper in 3 tablespoons butter or margarine until onion is tender, but not brown. Stir in flour, mustard, salt, and paprika. Add liquid; cook until sauce is thickened, stirring constantly. Stir in clams, egg, thyme, and pepper sauce. Spoon into 6-ounce ramekins or large shells. Melt remaining tablespoon butter or margarine. Add corn flakes; mix carefully to coat evenly. Sprinkle over clam mixture. Bake in moderate oven, 350°F., until hot and bubbling, 20 to 25 minutes. Makes 6 servings.

NOS Publishes 1980 Edition of Great Lakes Coast Pilot

The 1980 edition of the *U.S. Coast Pilot 6 (Great Lakes)*, designed to assist the maritime industry and recreational boaters in safe navigation, is now available.

Coast Pilot 6, long known as the "Bible" of the Great Lakes mariner, is published by the National Ocean Survey. It contains more than 600 pages of facts on physical features and changing conditions that boaters should know for safe navigation on the Great Lakes, the St. Lawrence River above St. Regis,

the New York State Barge Canal System, Lake Champlain, and other connecting waterways.

In addition to the usual navigational information, the 1980 edition contains 23 photographs of various harbor entrances and other important landmarks.

The 1980 edition may be purchased for \$8.50 from the National Ocean Survey, Distribution Division (C44), 6501 Lafayette Avenue, Riverdale, MD 20840, or from National Ocean Survey sales agents throughout the Nation.



Exhibit – The 6th Annual Southern California Regional EAA Fly-In and Sport Aviation Convention was held at Chino Airport, Calif., April 26-27. Sylvia Graff, Fire Weather Forecaster, WSFO, Los Angeles (L) and Stan Bryte from the WSO, Los Angeles displayed and distributed several hundred NOAA handouts to the pilots and public in attendance. Also helping out at the exhibit were Henry Meyer and Henry Yamada. An aviation display with the latest available charts and a NOAA weather radio were used to brief the pilots. Approximately 22,000 persons attended.

NOAA news

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