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NOAA news

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George E. Smith of the Atlantic Marine Center helps adjust equipment recently tested by NOAA.

Divers Judge Ability of Suits To Protect in Polluted Waters

Divers often have a lot more to worry about than just sharks. These days divers are venturing into the cooling water systems of nuclear reactors, and diving into waters where toxic chemical spills have occurred. Often, harmful waterborne bacteria from raw sewage and oil from spills pollute the dive site. These conditions are of particular concern to divers engaged in scientific research and specialized commercial work.

The NOAA Diving Office is trying to diminish the risks involved in such diving. During a recent week-long workshop conducted at the Naval Surface Weapons Center's 100-foot deep tank at White Oak, Md., NOAA divers tested many different combinations of dry suits and full face masks. Their purpose was to determine which combinations

of equipment were best for various polluted water diving conditions.

"The object is to isolate the divers from the water in which they are immersed," said Bob Smart, the NOS diving officer. The Vik-
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Byrne Nominated

John V. Byrne, vice president for Research and Graduate Studies at Oregon State University, has been nominated by President Reagan as administrator of NOAA. Dr. Byrne has held various positions with OSU since 1960. He also was program director for physical oceanography at the National Science Foundation in 1966-67; and a geologist with the U.S. Geological Survey in 1966-68.

Congress Asked To Approve Climate Research Request

NOAA officers went to the U.S. Congress in early April to explain funding requests for climate research.

Testifying before the Senate Commerce, Science and Transportation Committee April 6, James P. Walsh, acting administrator, said the multiagency National Climate Plan has yielded "substantial benefits" and urged approval of the administration's \$26 million reauthorization request for climatic research funds.

The five-year National Climate Plan was drafted last year by the National Climate Office in accordance with the National Climate Act. It is aimed at helping avert weather-related problems such as food and fuel shortages through improved forecasting and more efficient dissemination of climatic data. Seventeen federal agencies participate in the program.

Walsh told the committee that among the major priorities of the climate plan is research aimed at:

- Assessing the climatic, social and environmental impact increased concentrations of carbon dioxide (CO²) is having globally;
- Improving knowledge about the oceans' role in storing and transporting heat;
- Identifying the information needed to determine the impact of climate upon world food production and develop strategies for dealing with regional shortages; and
- Determining the effect of solar and earth radiation upon climatic fluctuations.

Walsh said NOAA has expanded its atmospheric sampling of CO² to gain more precise data on the amounts in the atmosphere. He said studies also are continuing into ways to estimate future carbon dioxide levels and the rate at which they will be reached.

Research also began recently into the oceans' ability to transport excess CO² from surface to deep waters, Walsh said.

Researcher's Response to Distress Call Aids in Saving Life of Stricken Sailor

The NOAA ship *Researcher* recently was instrumental in saving a life at sea. During the *Researcher's* last cruise, (Local Tomography Experiment, LTE), southeast of the Bahamas, watch personnel received a distress call from the *Melissa I*, a sailing vessel, about 300 nautical miles north of Puerto Rico. The *Researcher* received her weak transmission over VHF radio.

The *Melissa I* radioed that a crew member was in severe abdominal pain. The *Researcher*, after contacting the U.S. Coast Guard, altered her course to rendezvous with *Melissa I* 90 miles away. The *Researcher* maintained radio communications

with *Melissa I* and relayed positions and medical information to the Coast Guard. As the *Researcher* came within 15 miles of the *Melissa I*, the Coast Guard informed the ship that a helicopter was on the way from Grand Turk. The *Researcher* was then able to reverse course and continue her work.

Shortly, the crew member aboard *Melissa I* was rescued by the Coast Guard and flown to Grand Turk where it was diagnosed she was suffering from acute appendicitis. If it had not been for the *Researcher's* rescue efforts this situation could have ended in tragedy. Instead, a life was saved.

LETTER FROM THE LABS

Magnetic Reversals—Scientists have learned that changes in the earth's magnetic field can be a matter of life and death, when the changes are big enough and the creatures are vulnerable enough. More important, from NOAA's standpoint, is the likelihood that the fatal link between magnetic force and life force is a profound change in climate.

Sometimes, when the polarity of the geomagnetic field reverses, as it does on the average of once every 200,000 years, certain species of one-celled marine organisms become extinct. Near mid-reversal, for the few thousand years that the field is drastically weakened, earth and atmosphere are bombarded by increased cosmic radiation, normally shielded by the field. At first, scientists suspected that it was the cosmic-ray particles themselves that did the creatures in, but this was shown to be unlikely.

The Climate Connection—In 1978, NOAA's Dr. George C. Reid suggested that cosmic rays kill life forms indirectly, with climate as the go-between. While his pro-

cess involved a change in the atmosphere's transparency to solar radiation, a few investigators are pursuing the possibility that drastic changes in the well-known ionizing action of cosmic rays on the atmosphere may play a part in the climate-change process. This series of columns (see NOAA News, March 23) has explored just such a process, acting through the global electrical circuit and its thunderstorms.

The magnetic fields of both the sun and earth are known to help regulate the influx of cosmic rays to the earth's atmosphere. Many sun-related variations of galactic cosmic ray intensity appear to have climatic counterparts, in terms of temperature and circulation changes. Even the global atmosphere's mysterious biennial cycle, involving changes in wind, temperature, and tropopause height, has a corresponding cosmic ray cycle regulated by the sun's extended magnetic field, according to Soviet investigators.

A Hasty Retreat—Changes in the earth's magnetic field may also have climatic consequences. In

By Richard Newell

addition to statistical evidence linking climatic events to geomagnetic reversals over the past few million years, there seem to be climatic links to less dramatic geomagnetic changes. Geophysicist S.K. Banerjee of the University of Minnesota has uncovered evidence suggesting that the Climatic Optimum (7,500 to 5,000 years ago) and the Holocene Warming (10,000 years ago) were both accompanied by a pronounced weakening of the earth's magnetic field.

The Holocene Warming marked the abrupt ending of the most recent glacial period. Of this event, climatologist F.K. Hare of the University of Toronto has said that the northern hemisphere's continental ice sheets "vanished rapidly, leaving us with the mystery of the source of the required energy for melting... I conclude that this is an unsolved riddle, and that somewhere in the evidence is an inconsistency as yet unidentified."

It may be that many weather and climate riddles will be solved, once the magnetics of the sun and earth are taken into account.

Storm System Identified

Large clusters of thunderstorms, recently identified by NOAA scientists appear to modify significantly large-scale weather patterns.

This newly classified thunderstorm system is responsible for much of the severe weather over the central and eastern United States. The clusters were identified from satellite infrared cloud pictures.

Satellite observations show that these long-lasting storms occur frequently at middle latitudes—the temperate weather zone—and probably even in the tropics. They can be identified from above by their high, cold, and rather circular cloud shields. These indicate a central region of deep upward motion usually associated with large areas of rain.

ERL's Robert A. Maddox said these systems "were often too small to be detected by the large-scale weather balloon network, and the severe weather they produced was usually attributed to loosely organized, small-scale processes."

Aboard the Kelez

Cathy Warsh: Sets Course for N.Y. Bight Study

When Cathy Warsh goes to sea, she sets the course.

Warsh is chief scientist of the marine pollution water column monitoring project in the New York Bight area and the sole NOS female scientist assigned to it.

The project's other female scientist is from the Brookhaven Institute in New York and personally was requested by Warsh. Brookhaven received a grant to assist with the study.

Warsh and eight other scientists boarded the *Kelez* in Norfolk, Va., and spend a week in April, June, July and September sampling water along the northeast coastline before docking in New York.

Warsh coordinates "the cruise, ship, and people." As chief scientist for the past year, Warsh is accorded certain privileges. "I get first choice on rooms," she said. She also is authorized to make changes in the project's

instructions as long as they don't imperil the crew's or ship's safety, increase costs, extend the allotted time, or change the project's intent. As director of the office of oceanography, V. Hull has final say.

Dr. Jack Pierce, program manager, described Warsh as "a top notch scientist and a very nice person." The assistant program manager Millington Lockwood said, "I think she does very competent and comprehensive work. She's excellent with the logistics end of sea going."

Throughout her science career, Warsh, as a woman, has been in the minority. She was one of a few women in the graduate physical oceanography program at Florida State. Once, she attended a NOAA scientific meeting, and spied another woman. Excited about exchanging notes on science careers, Warsh approached her only to



Cathy Warsh

discover she was in public affairs.

On the pilot monitoring cruise, Warsh pitches in with the other eight scientists on 12-hour shifts. Water samples are taken at designated sites and analyzed for nutrients and toxins, indicators of the basic "health of the water," Warsh said. Chemical and physical properties also are measured. "The New York Bight area is the worst in terms of pollution because of industry, city wastes and run-offs. There used to be direct dumping," Warsh said. The Hudson River and Delaware and Chesapeake Bays all empty into the Mid-Atlantic Bight.

The data collected is shared at monthly meetings of NOAA divisions and made available to fisheries, environmentalists, and other interested groups.

No significant decline in water quality in the Bight has been detected during the past year, Warsh said. —Heidi Daniel

Swedish System

New Survey Technique Tested

On a clear day in Corbin, Va., you can see forever, or so the representatives of the National Land Survey of Sweden hoped as they demonstrated their motorized geodetic leveling survey system there recently.

The four Swedish surveyors were trying to prove that their pickup truck and two yellow passenger cars could save the U.S. Government several million dollars in resurveying a portion of the National Vertical Control Network.

During the 3-week test period, the Swedish equipment averaged 11 kilometers of surveying per day as compared with the National Geodetic Survey's average of 7 kilometers a day.

The NGS is in the process of resurveying 100,000 kilometers of the U.S. National Vertical Control Network. Measuring of the 80,000 remaining kilometers was scheduled to be completed by 1987. However, Capt. John D. Bossler, director, NGS, pointed out, "we don't have sufficient staffing to complete the program with the present equipment."

Charles Whalen, chief of the NGS Vertical Network Division, said \$11.2 million would be needed to complete the resurvey using the present NOAA system. The yearly budget for the National Vertical Datum readjustment program, \$2.6 million in new funds, plus in-house manpower, amounts to \$4 million a year.

Estimates on finishing the survey using the Swedish system

have run as low as \$6.4 million, Whalen said. The initial outlay would be high, however. Nine units of the Swedish equipment would cost \$360,000 as opposed to \$63,000 for the equipment for nine NOAA teams.

Capt. Bossler said there was no alternative but to adopt a system similar to the Swedish one, but cautioned that high expectations might be premature. Replacement costs, maintenance, and acquisition must be taken into account, he said.

For example, at present it takes 18 months to procure U.S.-made equipment. NGS can't buy the specially-adapted Simca and Daf vehicles used by the Swedes because the vehicles don't pass E.P.A. regulations. Jean-Marie Becker, chief of the National Land Survey of Sweden and the system designer, jokingly offered to rent the two demonstration vehicles to NGS.

Whalen said, "accuracy is very high with the Swedish system. The line of sight is higher which causes less atmospheric shimmer," he said. Because the instrument tripod is higher, heat induced errors are reduced.

Last May at a conference in Ottawa, Canada, Whalen was impressed with Becker's presentation of the system. This led to the recently completed test at Corbin. NGS is still evaluating the data gathered by the Swedes, but preliminary results look very good, Whalen said.

—Heidi Daniel

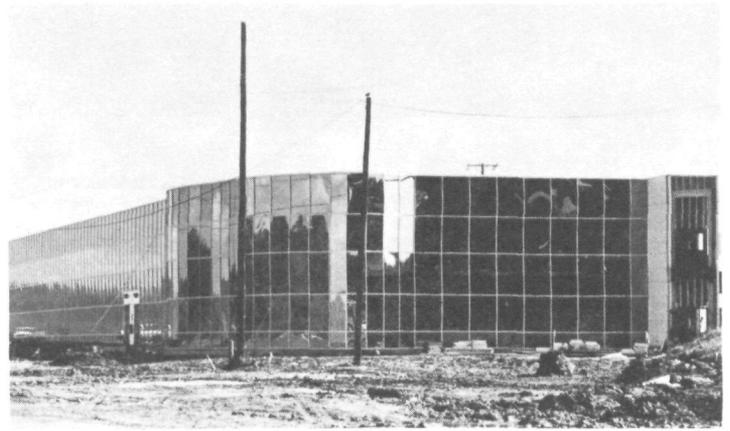
NCC Publishes Heat Stress Data

The National Climatic Center has produced a new "Environmental Information Summary on Heat Stress" in response to growing public demand for information after the great heat wave of 1980.

The 6-page summary lists heat wave safety rules, heat syndrome symptoms and first aid, as well as advice to coaches. Copies of *Heat Stress, Environmental Information Summary C-19* are available from the National Climatic Center, Federal Building, Asheville, NC 28801.

"The Awakening"

The Washington Area Waterfront Action Group (WAWAC) will celebrate with a fishing festival on the Wash., D.C. Mall, May 13-17. It will feature a fishing derby, more than 100 exhibits and demonstrations on conservation, environmental education and fishing, live music and a fish fry. Called "The Awakening", it is sponsored by the Fishing Committee (NMFS is a member) of WAWAC, a newly formed group of capital area business, government and civic organizations.



Construction finished—The exterior of the Operations building at NOAA's new Western Regional Center in Seattle, Wash., is completed. It is the first of five major buildings planned for the site.

300 Prepare for Mid-July Move To NOAA's New Seattle Center

The first NOAA elements will move to Building 1 at the new Western Regional Center in Seattle, Wash., in mid-July. Approximately 300 employees from the Northwest Administrative Service Office; National Marine Fisheries Service, Northwest Regional Office; National Weather Service Forecast Office, and the General Counsel, Northwest, make the move.

Construction of an employee services building, two research buildings and a shops complex will begin in 3 to 4 months. The target date for completion is late 1983. Construction of a single pier for periodic staging activities and occasional visits from NOAA vessels also is planned. The permanent ship berthing facilities for the Pacific Marine Center will remain on Lake Union in Seattle.

NOAA Divers Judge Suits

(Continued from p. 1)

ing brand variable volume dry suit, made in Norway, and the AGA full face mask with regulator, made in Sweden, were the most promising combination of the six types of dry suits and four types of masks and helmets tested. But Dr. J. Morgan Wells, director of the NOAA Diving office, added, "...there were problems with all, none were perfect."

The major problem with most combinations was in devising a neck seal between the dry suit and the headgear which would not restrict the diver either in mobility or in ease of respiration, but which at the same time be watertight and restrict the flow of air between the hood and suit.

Researchers from the U.S. Navy's Medical Research Institute in Bethesda, Md., conducted another phase of the workshop. These researchers have a contract with NOAA to study the effects of waterborne bacteria on divers. Dr. Itzhak Brook took samples of bacteria from the ear canal and the skin behind the ear of the

divers both before and after dives.

In previous experiments, Dr. Book had found that naturally occurring bacteria—present before the diver entered the water—increased rapidly. Thus, even if the diver's ear was kept isolated from the polluted water, there might be a risk of ear infection. He speculated that the warm, moist environment of a diver's hood was providing an ideal medium for bacterial growth. As a baseline, he took ear samples of persons who then wore hoods, but did not enter the water to see if the bacteria multiplied at the same rate as in the samples taken from those who actually dove.

A safety bulletin will be issued NOAA divers warning of certain potentially hazardous weaknesses in some of the combinations tested. As Dr. Wells said, "We don't want to protect the diver from polluted water with equipment which may wind up physically injuring him."

Dr. Richard H. Bennett, senior research oceanographer and principal investigator of AOML's Marine Geotechnical-Seafloor



Dr. Richard H. Bennett Stability Program was an invited speaker at a NATO International Workshop on Marine Slides. The meeting, held in Faro, Portugal, was attended by experts on seafloor stability. Dr. Bennett described his latest geotechnical research on the role of pore water pressures in affecting the stability of submarine sediments.

* * *

William E. Kennedy, NWS Great Lakes Port Meteorological officer, was awarded a plaque for his work promoting safe boating on Lake Erie. Kennedy has been in charge of the Marine Weather Program in Cleveland for 28 of his 39 years with NWS.



Capt. Ray E. Moses receives the "key" to the ship as he relieves Capt. Ronald L. Newsom of command of the NOAA Ship *Researcher*. Capt. Moses comes to the ship after a tour of duty with the Marine Data Systems Project.

* * *

Dr. Donald C. Malins was a visiting scholar at the Woods Hole Oceanographic Institution, in Massachusetts in mid-April. Dr. Malins is director of the Environmental Conservation Division at

NOAA's Northwest and Alaska Fisheries Center. His main lecture was on the search for man-made chemicals in the marine environment. During his visit, Dr. Malins also conducted two departmental seminars on marine pollution and its effect on marine life.

* * *

Senator Slade Gorton, D-Wash., spoke at the dedication of NOAA Weather Radio station WXM-62 in Olympia. In addition to round-the-clock broadcast of weather information, the station provides



Sen. Slade Gorton

special details of flash floods and weather warnings related to the Mount St. Helens area. Recovery efforts have been underway since shortly after the May 18, 1980 eruption. However, a serious threat remains from flash flooding and the occasional venting of the volcano.

* * * *

Carl Paul Johnson was appointed meteorologist in charge of the NWS office in Yuma, Ariz.

Johnson is a 27-year veteran of NWS. He was most recently assigned to the Weather Service office in Las Vegas, Nev. Previous experience also includes service in the U.S. Air Force, Air Weather Service and as a meteorological support specialist at the Kennedy Space Center.

Award recommendations for the DOC Gold and Silver Medal awards are due to MB/PER53 by May 15.

The Gold Medal, the highest departmental award, is granted for rare and outstanding contributions of major significance to the department, the Nation, or the world.

The Silver Medal, the second highest award, is granted for contributions of unusual value to the Department.

Forms CD-242, "Recommendations for Medal Award," and Form CD-223, "Citation for Medal Awards," should be completed for each nomination.

Justification for the awards must include specific examples of the contribution. In cases where the nominees for Gold and Silver Medals are supervisors, a statement documenting their involvement in and support of the NOAA EEO Program must be included.

Nominations, except those based on heroism, *must be* accompanied by an outstanding performance rating or appraisal.

The nominations require the approval of the head of the appropriate major line component in which the nominee is employed.

Nominations based primarily on long and faithful service or constituting retirement testimonials will not be approved.

Forms and additional information concerning the submission of these awards may be obtained from servicing personnel officers. More detailed guidance is available in the Personnel Handbook Chapter 10, Section 02.

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