

Abel to Head New University Affairs Office

NOAA Research Projects Described At Meeting

Important atmospheric and oceanographic research efforts in which NOAA personnel are playing major roles were featured earlier this month at the annual meeting of the American Geophysical Union in San Francisco. The research projects involve the aurora borealis, lightning, satellite imagery of internal ocean waves, the earth's magnetic field, and water movement in Puget Sound.

Simultaneous observations by three satellites have confirmed that long waves in the earth's magnetic field, which spread the disruptive effects of magnetic storms on earth, are generated far out in space by energetic particles from the sun.

Drs. Joseph N. Barfield of NOAA, R. L. McPherron of the University of California at Los Angeles, and W. J. Hughes of London's Imperial College, reported the results of their satellite measurements.

They found that the low-frequency waves are generated by the solar wind, the constant stream of energetic particles that flows outward from the sun. When the solar wind strikes the magnetopause (the boundary where the earth's magnetic field loses its dominance and bows to the sun's) it generates waves in much the same way as wind does over water, according to Barfield. These waves travel earthward, enter a "resonant region" where they are amplified, and propagate down to the ground. In ways that are still poorly understood, they are in-

GFDL Computer World's Fastest

NOAA now has put the world's fastest, fully-operational computer to work on one of the world's most complicated problems—understanding and predicting weather and climate.

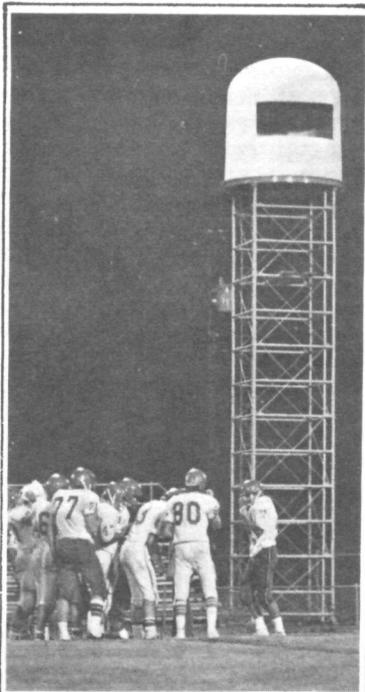
The "Advanced Scientific Computer," the only one of its kind in existence, is running at full capacity at the Geophysical Fluid Dynamics Laboratory in

(Continued on page 7)

involved in magnetic disturbances, which disrupt communication and power transmission on earth.

The scientists detected the waves from magnetometers aboard three satellites in synchronous orbit 22,200 miles (35,720 kilometers) above the earth; the first time several satellites had been used to make such measurements simultaneously. The environmental satellites

(Continued on page 3)



Paul Woolard, the Weather Service's Official in Charge at Norfolk, Nebr., came up with a novel use for an old radome (the protective cover for a radar antenna). The scene is at a Norfolk High School football game and the radome, with some modifications, helps to keep movie cameramen dry and out of the wind during inclement weather.

Grant, Contract Awards Total \$5.5 Million

Grants and contracts totaling \$5,474,013 have recently been awarded by NOAA to assist in scientific research and management programs.

The awards and highlights of the programs include:

State University of New York and Cornell University, a \$1,217,500 Sea Grant for such projects as the development of convenience foods from underutilized fish, reclamation of protein from seafood processing wastes, improved lake-level forecasting to permit emergency water releases from Lake Ontario, and plans to dispose of dredge spoil in central Long Island Sound.

University of Washington, a \$586,837 supplemental contract to continue research on the interaction of oil with sea ice, and for studies of fish and oceanic plant life in the Gulf of Alaska and Arctic waters as part of the NOAA studies being carried out for the Bureau of Land Management which seek to determine the probable ecological impact of oil exploration and development on Alaska's outer continental shelf.

The State of New Jersey, a Coastal Zone Management grant of \$690,000 to continue developing a management program for the land and water resources of the State's coastal zone. The third year of the State's program will concentrate on the preparation of guidelines for commercial and recreation boating operations and for activities involving New Jersey's wetlands, estuarine environment, and shoreline-waterfront.

University of Alaska at Fairbanks, a \$1,168,613 supplemental contract and to the Alaska Department of Fish and Game, a \$964,063 supplemental contract to continue research on

(Continued on page 3)

NOAA has established an Office of University Affairs to be headed by Dr. Robert B. Abel, Director of the National Sea Grant Program. Dr. Abel will be succeeded in the Sea Grant post by Dr. Ned A. Ostenso, Deputy Director and Senior Oceanographer of the Ocean Science and Technology Division, Office of Naval Research.

The reorganization will bring new strength to NOAA, accord-



Dr. Abel

Dr. Ostenso

ing to the Administrator, Dr. Robert M. White.

"The need for a University Affairs Office has been evolving steadily," he said. "Dr. Abel, whose distinguished career in marine science has been built upon collaboration with our major educational institutions, is an ideal choice as its Director. We are fortunate that with the Sea Grant program on a firm foundation, to a great degree through his efforts, he has accepted the challenge of this new post.

"We are equally fortunate that Dr. Ostenso has agreed to assume direction of the National Sea Grant Program, one of the most important marine efforts in the Nation."

RELATED STORIES ON PAGE 2

Oil Spill Team Rushed To Mass.

A team of NOAA scientists has been rushed to Cape Cod, Mass., where a Liberian tanker with 7.6 million gallons of industrial oil aboard is aground off Nantucket Island.

As of December 20, five days after the ship hit shoals and went aground, an estimated 1.5 million gallons of oil had been

(Continued on page 3)

Abel to Head New University Affairs Office

NOAA Research Projects Described At Meeting

Important atmospheric and oceanographic research efforts in which NOAA personnel are playing major roles were featured earlier this month at the annual meeting of the American Geophysical Union in San Francisco. The research projects involve the aurora borealis, lightning, satellite imagery of internal ocean waves, the earth's magnetic field, and water movement in Puget Sound.

Simultaneous observations by three satellites have confirmed that long waves in the earth's magnetic field, which spread the disruptive effects of magnetic storms on earth, are generated far out in space by energetic particles from the sun.

Drs. Joseph N. Barfield of NOAA, R. L. McPherron of the University of California at Los Angeles, and W. J. Hughes of London's Imperial College, reported the results of their satellite measurements.

They found that the low-frequency waves are generated by the solar wind, the constant stream of energetic particles that flows outward from the sun. When the solar wind strikes the magnetopause (the boundary where the earth's magnetic field loses its dominance and bows to the sun's) it generates waves in much the same way as wind does over water, according to Barfield. These waves travel earthward, enter a "resonant region" where they are amplified, and propagate down to the ground. In ways that are still poorly understood, they are in-

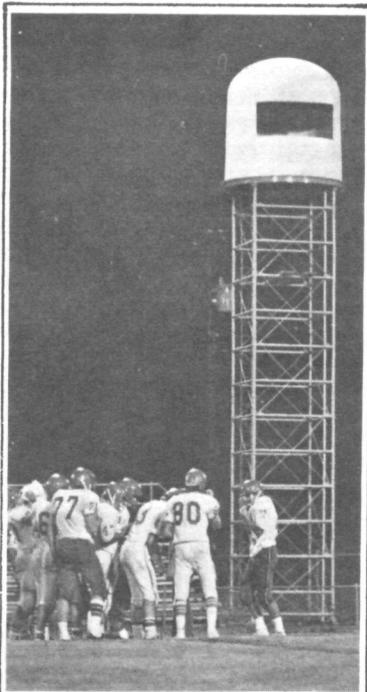
GFDL Computer World's Fastest

NOAA now has put the world's fastest, fully-operational computer to work on one of the world's most complicated problems—understanding and predicting weather and climate.

The "Advanced Scientific Computer," the only one of its kind in existence, is running at full capacity at the Geophysical Fluid Dynamics Laboratory in
(Continued on page 7)

involved in magnetic disturbances, which disrupt communication and power transmission on earth.

The scientists detected the waves from magnetometers aboard three satellites in synchronous orbit 22,200 miles (35,720 kilometers) above the earth; the first time several satellites had been used to make such measurements simultaneously. The environmental satellites
(Continued on page 3)



Paul Woolard, the Weather Service's Official in Charge at Norfolk, Nebr., came up with a novel use for an old radome (the protective cover for a radar antenna). The scene is at a Norfolk High School football game and the radome, with some modifications, helps to keep movie cameramen dry and out of the wind during inclement weather.

Grant, Contract Awards Total \$5.5 Million

Grants and contracts totaling \$5,474,013 have recently been awarded by NOAA to assist in scientific research and management programs.

The awards and highlights of the programs include:

State University of New York and Cornell University, a \$1,217,500 Sea Grant for such projects as the development of convenience foods from underutilized fish, reclamation of protein from seafood processing wastes, improved lake-level forecasting to permit emergency water releases from Lake Ontario, and plans to dispose of dredge spoil in central Long Island Sound.

University of Washington, a \$586,837 supplemental contract to continue research on the interaction of oil with sea ice, and for studies of fish and oceanic plant life in the Gulf of Alaska and Arctic waters as part of the NOAA studies being carried out for the Bureau of Land Management which seek to determine the probable ecological impact of oil exploration and development on Alaska's outer continental shelf.

The State of New Jersey, a Coastal Zone Management grant of \$690,000 to continue developing a management program for the land and water resources of the State's coastal zone. The third year of the State's program will concentrate on the preparation of guidelines for commercial and recreation boating operations and for activities involving New Jersey's wetlands, estuarine environment, and shoreline-waterfront.

University of Alaska at Fairbanks, a \$1,168,613 supplemental contract and to the Alaska Department of Fish and Game, a \$964,063 supplemental contract to continue research on
(Continued on page 3)

NOAA has established an Office of University Affairs to be headed by Dr. Robert B. Abel, Director of the National Sea Grant Program. Dr. Abel will be succeeded in the Sea Grant post by Dr. Ned A. Ostenso, Deputy Director and Senior Oceanographer of the Ocean Science and Technology Division, Office of Naval Research.

The reorganization will bring new strength to NOAA, accord-



Dr. Abel **Dr. Ostenso**
ing to the Administrator, Dr. Robert M. White.

"The need for a University Affairs Office has been evolving steadily," he said. "Dr. Abel, whose distinguished career in marine science has been built upon collaboration with our major educational institutions, is an ideal choice as its Director. We are fortunate that with the Sea Grant program on a firm foundation, to a great degree through his efforts, he has accepted the challenge of this new post.

"We are equally fortunate that Dr. Ostenso has agreed to assume direction of the National Sea Grant Program, one of the most important marine efforts in the Nation."

RELATED STORIES ON PAGE 2

Oil Spill Team Rushed To Mass.

A team of NOAA scientists has been rushed to Cape Cod, Mass., where a Liberian tanker with 7.6 million gallons of industrial oil aboard is aground off Nantucket Island.

As of December 20, five days after the ship hit shoals and went aground, an estimated 1.5 million gallons of oil had been
(Continued on page 3)

Dr. White Explains Concept of New University Affairs Office

NOAA's Administrator, Dr. Robert M. White, issued the following statement concerning the establishment of the new Office of University Affairs:

The successful discharge of NOAA's responsibilities is dependent upon a broad range of interactions between NOAA and the University community. Traditionally, NOAA has depended upon universities to carry out certain research in support of its activities under grant or contract. The largest of these university efforts has been our Sea Grant program. However, NOAA's interactions with universities extend far beyond those involved in the Sea Grant program, and they are becoming increasingly diverse. Our support of research and development at universities has grown substantially over the past five years, to the point where, today we expend over 33 millions of dollars annually. This support is for research and development in oceanic, atmospheric, fisheries, earth sciences, as well as diverse fields of public policy.

Our interactions with the universities do not stop with direct financial support. Our long standing policy of collocating our research laboratories on university campuses has enabled us to initiate many new forms of collaborative effort with universities. Many NOAA scientists hold professorships in the universities at which the laboratories are located. In turn our laboratories have become foci for facilitating training of students. More recently, we have pioneered new cooperative arrangements such as our Cooperative Institute for Research in Environmental Sciences at the University of Colorado, and we are looking at further cooperative arrangements of similar types in other fields.

We have many educational and training programs which bring us into close contact with universities. Our successful post-doctoral fellow programs with the National Academy of Sciences, and with individual universities has provided opportunities for post-doctoral students to carry out further research under the supervision of our senior scientists. This has been an effective means of providing opportunities to young students and also has provided new young members of our research staffs. Our university educational program for our own employees provides opportunities for over 60 NOAA employees annually to take training in many different fields. We have initiated new public policy fellowship programs with universities such as Stanford and others.

As an organization, we are dependent upon universities for the education and training of the professionals we recruit. Because we are so dependent upon universities for the output of trained personnel for our organization, we have an obligation to see to it that these institutions are capable of continuing such training to provide the personnel that we will need in future years.

A vital channel for our relationships with the academic world are the National Academies of Sciences and Engineering. These institutions provide a means for obtaining advice on matters of deep concern and forums for the examination of critical scientific problems. At the present time, we participate in or interact with many committees in the Academy structure. Problems of recent concern have dealt with climate, ocean pollution, the global environment, nutrition, international affairs, and the vitality of NOAA's research programs. Our interactions have become so numerous that it is necessary to systemize the way in which we conduct our affairs with the Academies. We need a single NOAA focus for the coordination of our participation.

This diversity of relationships with the university community now calls for a means whereby NOAA can effectively deal with them. We need an organizational focus to coordinate our activities where this is necessary, and to foster and stimulate further interest within our own organization in working closely with the university community. In addition, it has become important that we improve the means whereby universities can interact with NOAA in a more systematic fashion. Our organization has become so complex that we need a window on NOAA for the university community.

For these reasons, NOAA is establishing a new Office of University Affairs, within and reporting to the Office of the Administrator.

Directors Abel and Ostenso Bring Wide Variety of Experience

Dr. Abel

Dr. Robert B. Abel has directed the National Sea Grant Program since its creation within the National Science Foundation in 1967.

His experience includes research at the Woods Hole Oceanographic Institution as a chemical oceanographer beginning in 1947.

In 1950, he assumed direction of the Oceanographic Survey Section at the Navy Hydrographic (now Oceanographic) Office where he acted as Chief Scientist of the Navy's Oceanographic Survey Group. From 1955 through 1960 he was assistant to the Director of the Hydrographic Office, acting as Coordinator for Undersea Warfare Programs.

In 1961, Dr. Abel joined the Office of Naval Research as Assistant Research Coordinator for Earth Sciences. His principal occupation, starting in 1961, however, was as Executive Secretary of the Interagency Committee on Oceanography which was created by the President's Science Advisor under the chairmanship of the Assistant Secretary of the Navy.

When Congress created the National Council for Marine Resources and Engineering Development at the Cabinet level, Dr. Abel became assistant to Dr. Edward Wenk, Executive Secretary. He served the Council until creation of the National Sea Grant Program in February 1967.

Dr. Abel was educated at Brown University in Chemistry (1943-1947), at Johns Hopkins University in Oceanography (1950-1954), at George Washington University in Engineering and Engineering Administration (1955-1961), and at American University where he received his Ph.D. in Political Science in 1972.

Dr. Ostenso

Dr. Ned A. Ostenso comes to the Commerce Department from the Office of Naval Research where he has managed a Navy contract research program in the fields of physical oceanography, air-sea interaction, marine geology and geophysics and ocean technology, supported by a budget of \$20 million per year. In

addition he has administered bilateral agreements in oceanography with the U.S.S.R., West Germany, New Zealand, and Australia.

He recently (September 1975 through September 1976) participated in a Foreign Affairs Fellowship Program and a Congressional Fellowship Program sponsored by the Civil Service Commission and the Congress and administered by the American Political Science Association.

He received a Bachelor of Science Degree in 1952, a Master of Science degree in 1953, and a Doctorate in 1962, all from the University of Wisconsin.

In 1953 he joined Woods Hole Oceanographic Institution as a research assistant, leaving for Army service. Before returning to civilian life in 1955, he served as commander of a meteorological research and development team at the Army Arctic Center. He joined Geophysical Services, Inc., from 1955 to 1956, and in 1956 conducted seismology, glaciology and gravity studies in Greenland for Lamont Geological Observatory. The next ten years were spent with the University of Wisconsin. He joined the Office of Naval Research in 1966, as a physical science coordinator. He became program director for marine geology and geophysics in 1968, and assumed his present position in 1971.

NOAA NEWS

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

Articles to be considered for publication should be submitted at least 10 days in advance to NOAA News, Room 221, WSC 5, Office of Public Affairs, National Oceanic and Atmospheric Administration, Rockville, Md., 20852.

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

NOAA Research Projects

(Continued from page 1)

SMS-1 and SMS-2, and ATS-6, a research satellite, are in a line along the earth's equator, each orbiting at a speed that keeps it poised above the same spot on earth. Hughes, Barfield, and McPherron used this satellite arrangement to determine the origin of the electromagnetic waves.

The magnetopause curves around the sunward side of the earth, with a "nose" pointing toward the sun. The three space scientists predicted that if the low-frequency waves were generated at the "nose," as they believed, the first satellite to detect the descending wave front should be the one closest to the sun at the time. They found that the wave front did pass each satellite in the predicted order.

Water Movement

A study of winds and currents in the southern Strait of Georgia near Cherry Point, the site of an oil refinery, has shown oceanographers that wind is the dominant force moving the waters—and anything spilled on them, PMEL scientists reported.

They are studying the relative importance of different factors—wind, tide, river flow—affecting water movement in that northwestern channel. Their research has a dual purpose; to understand the currents, and to collect some preliminary data on the area to help design their part of a bigger study.

Dr. James Schumacher, Robert L. Charnell, Norman P. Laird, and C. A. Pearson used their own measurements and current-meter data collected by NOAA's National Ocean Survey.

"We want to know how water responds to variations in local forcing, such as winds," Charnell said. "We're working toward a local model that we can use to tell what the currents in this area will do if the wind is blowing so hard in a certain direction."

The researchers found that winds blow generally along the northwest-southeast axis of the Strait of Georgia. Currents in the southern part of the Strait are dominated by tides, which account for 70 to 80 percent of the total variability in water movement.

One portion of flow that can't be attributed to tide, they

found, is estuarine flow. Fresh water from the Fraser River flows out into the Strait, in the upper part of the water column, dragging along some of the saltier water beneath it. This leads to an inward flow to replace the surface water. Winds modulate this estuarine regime.

Lightning

Seeding thunderstorms with metal-coated fibers prevents lightning by causing the electrical charges in a cloud to leak away, measurements of microwave radiation have indicated.

Dr. David Rust of NOAA and Paul R. Krehbiel of the New Mexico Institute of Mining and Technology used a microwave radiometer aboard an aircraft to directly measure the effects of seeding thunderstorms. They presented their findings at the AGU meeting.

The project headed by Dr. Heinz Kasemir of the ERL Atmospheric Physics and Chemistry Laboratory is aimed at reducing the lightning in thunderstorms by seeding clouds with chaff—aluminized, hairlike fiberglass strands. Lightning is a giant spark between two centers of electrical charge in a storm. When the electrical charges in these centers become strong enough to force a path through the insulating air between them, the discharge of the centers by means of lightning occurs.

During the experimental phase of the project, Kasemir, Rust, and their colleagues in the NOAA group operated on the theory that seeding a storm with chaff could cause the electrical charge to bleed off in harmless corona discharge. Early evidence seems to favor their theory—apparently there is less lightning in seeded than in unseeded storms.

With an airborne microwave radiometer tuned to a certain frequency, Rust and Krehbiel were able to detect the radiation produced by corona discharge from outside a number of storms. They flew around the outside of thunderstorms with the radiometer always pointed inward, while a second plane made repeated penetrations of the storm, dropping chaff within it. Almost immediately after chaff was dropped, the radiometer detected a jump in radiation

(Continued on page 7)

Public Inspects Three Ships During PMC Open House

Approximately 1,200 persons toured NOAA Ships Davidson, McArthur, and Discoverer during the Pacific Marine Center's open house held November 19.

While the three NOAA ships were the featured attractions, PMC's Operations, Processing, and Electronic Engineering Divisions manned displays in shore-side facilities. Additional ex-

hibits were furnished by Pacific Marine Environmental Laboratory/ERL, Northwest Fisheries Center/NMFS, Sand Point Project Group/NASO, and the National Weather Service. An automated hydrographic survey launch, an automated hydrographic plotter, and a model of NOAA's future Sand Point facility were also on display.



PMC personnel were kept busy explaining wheelhouse operations on NOAA ships open for inspection November 19.

Oil Spill Team

(Continued from page 1)

spilled into the Atlantic and was threatening Georges Bank, one of the world's richest fishing grounds.

Deployment of the Spilled Oil Research Team is part of a major environmental study NOAA is conducting for the Department of Interior's Bureau of Land Management. The study is establishing ecosystems baselines to assess the probable impact of petroleum development on Alaska's Outer Continental Shelf.

The Cape Cod spill is the first major cold water spill the SOR team has been able to examine.

Team members—from ERL's OCSEAP Office in Boulder, the Pacific Marine Environment Laboratory in Seattle, and EDS' CEDDA in Washington, D.C.—are measuring wind, currents, and other environmental conditions to determine movement of the oil released from the tanker.

In addition, they are taking water samples from helicopters and the Woods Hole Oceanographic Institution's research vessel Oceanus.

The SOR team is on continuous alert to study spills wherever they occur in hopes of increasing knowledge of how oil behaves in the marine environment.

Grant, Contract

(Continued from page 1)

the potential effects of oil exploration and development activities on Alaska's outer continental shelf - studies being conducted by NOAA for the Bureau of Land Management. Among the projects to be undertaken by the University of Alaska is a study and analysis of climate conditions along the entire coastline of the state. The Fish and Game Department will continue baseline ecological studies of migratory birds, fish and shellfish, seals, and sea otters as part of their program.

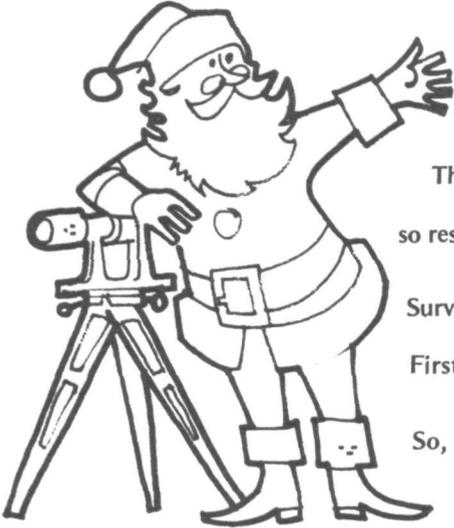
University of Alaska, a \$740,000 Sea Grant to continue programs in marine-related research, education, and advisory services. Research includes studies of Alaskan estuaries to learn the best time to release hatchery-reared salmon fry, a search of the most likely locations of valuable marine mineral deposits, and a way to predict locations of permafrost under the sea.

University of Minnesota, \$107,000 to Sea Grant to further marine-related studies in elementary schools, to develop markets for underutilized fish, and to identify recreational boating problems on Lake Superior.

To all of us in NOAA and our families, best wishes for a joyous holiday season and a happy New Year from myself, Howard Pollock, John Townsend, and our Associate and Assistant Administrators.

Robert M. White

Dr. Robert M. White
NOAA Administrator



Surveying our nation and some foreign lands, with ships and field parties, it's all part of our plan.

The need to survey is universally accepted, so responsible boundaries can all be respected.

Surveys are numbered to the degree they are right.

First order is the best, 15th is way out of sight.

So, to all of our friends from border to border we hope your holidays are truly 1st order.

Allen L. Powell

R. Adm. Allen L. Powell
Director and Employees
National Ocean Survey



GOES AND ITOS WISH TO SEE
A MERRY CHRISTMAS IN EVERY NOAA FAMILY
AND MAY THE NEW YEAR BE THE BEST
FROM ALL THE PEOPLE HERE AT NESS

David S. Johnson

David S. Johnson
Director, National Environmental Satellite Service



Dick Gardner

Dick Foster

John Stalvey

Jolly Mungy

Bob Knecht

Robert W. Knecht
Office of Coastal Zone Management



A PRESCRIPTION FOR A
MERRY CHRISTMAS AND A
HAPPY NEW YEAR, MIX JOY,
GOOD CHEER, AND LOVE.
TAKE DAILY FOR BEST
RESULTS.

Thomas S. Austin

Dr. Thomas S. Austin, Director
Environmental Data Service

As we extend our jurisdiction, we extend to all our NOAA friends our very best wishes for a happy holiday season and the best the new year can bring.



Robert W. Schoning

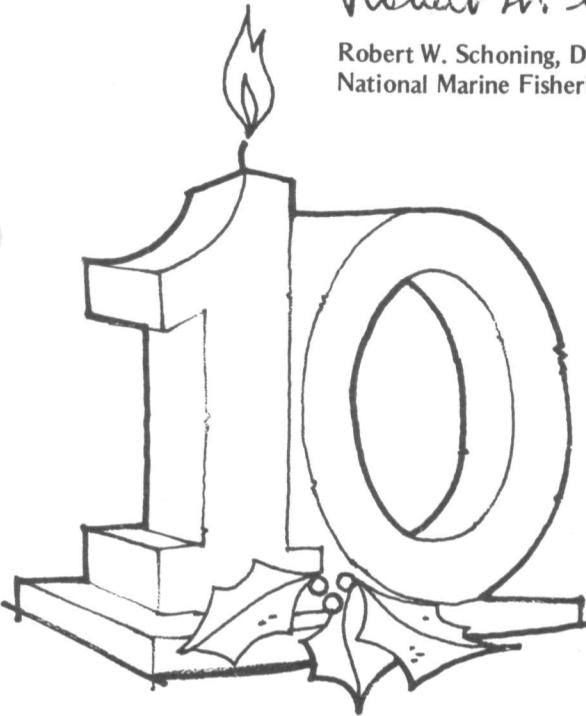
Robert W. Schoning, Director
National Marine Fisheries Service



SEASONS GREETINGS
AND
HAPPY NEW YEAR

George P. Cressman

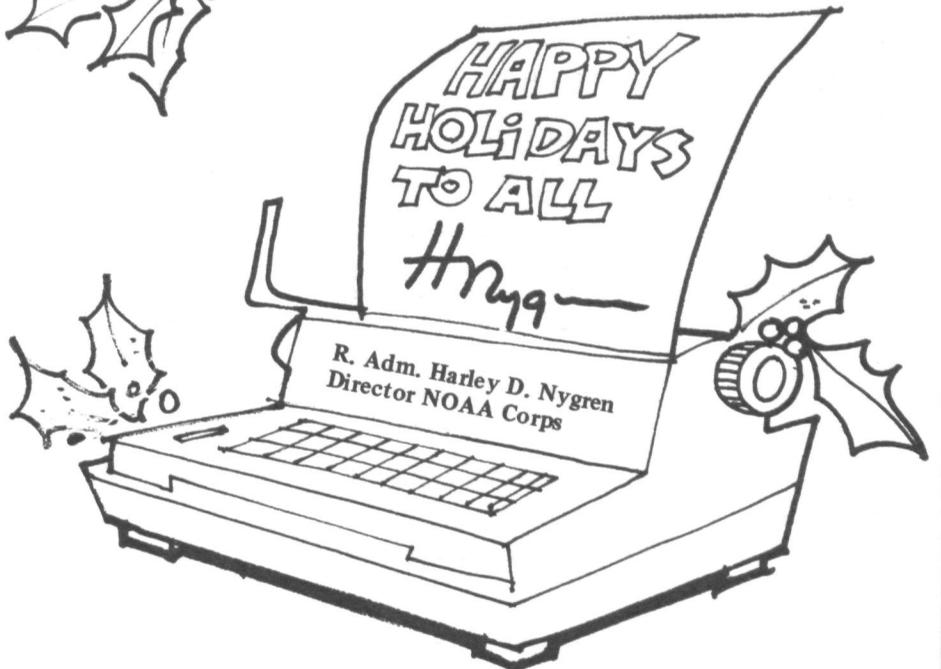
DR. GEORGE P. CRESSMAN
DIRECTOR,
NATIONAL WEATHER SERVICE



Within NOAA, the Office of Sea Grant is uniquely able to reflect not only upon a successful year, but upon its first decade. While, in terms of productivity and goal attainment, the year must rank as our finest, our memories of the first ten enshroud but few sad moments. Accordingly, we enthusiastically add to the conventional greeting of the season, a "Happy New Decade" to all of you (and, of course, ourselves).

Robert B. Abel

Robert B. Abel Director
National Sea Grant Program



School Days

Administrative Trainees Graduate

November 18 was graduation day for the members of Administrative Trainee Group, Administrative Technician Group, and the Administrative Fellow Group. Don E. Sarreals, Meteorologist, NWS, addressed the groups. Certificates were awarded to Administrative Trainees Emi Kamachi, Charlene Pass, Justine Kreutter, Patricia Robinson, Maude Valentine, and

Dorothy Fortson. Beverly Gonzales was awarded a certificate at her field site. Administrative Fellows included Frederick Beaudry, Ola Watford, Ernest Kyle, and Joanne Davis. Edwin Lowery and Shirley Purcell received certificates at field sites. Administrative Technicians who graduated were Marie Lara, Fletcher Eckard, and Deborah Johnson.



At graduation ceremonies at Headquarters Personnel Division recently were (front row, from left) Emi Kamachi, Charlene Pass, Justine Kreutter, Patricia Robinson, (back row) Don E. Sarreals, Jr., Meteorologist, NWS, Maude Valentine, Dorothy Fortson, and Mr. Theodore P. Gleiter, Assistant Administrator for Administration.

**Insurance Buyer Beware!
Some Claims Misleading**

The Personnel Division has been receiving complaints that life insurance benefits represented to be supplemental (in the case of employees enrolled in FEGLI) and/or endorsed by the Civil Service Commission (in the case of non-enrolled employees) are being marketed to NOAA employees, both at home and at work, in a misleading manner.

Private life insurance companies have every right to sell life insurance benefits to Federal employees. They have no right to mislead employees into believing that the company's insurance plan is in any way supported by or connected with FEGLI or the Civil Service Commission. Nor do they have the right to frighten Federal employees into buying insurance which they may not need, to supplement their FEGLI coverage after it begins to reduce at age 65 or at retirement, which-

ever is later. Before entering into any transaction involving life insurance which is represented as being supplemental to FEGLI and, perhaps authorizing payroll allotments to cover the premiums, employees should seek counseling from their servicing personnel office.

Because most cases of alleged sales practices relate to oral sales pitches which are hard to substantiate, there is little the Commission can do in most cases and they do not encourage the forwarding of such cases to them. Referral of misleading sales practices should be referred to local agencies such as a Consumer Protection Agency, Better Business Bureau, and the State Insurance Commission, and also reported to the Personnel Division.

FEGLI, at this time, is the only life insurance program supported by the CSC.

NOAA Personnel Division Lists Current Vacancy Announcements

Announcement Number	Position Title	Grade	MLC	Location	Issue Date	Closing Date
150-77	Program Analyst	GS-13	NOS	Rockville, Md.	12-13-76	12-28-76
151-77	Program Specialist	GS-13	NOS	Rockville, Md.	12-13-76	12-28-76
147-77	General Engineer	GS-13	NOS	Riverdale, Md.	12-9-76	12-31-76
148-77	Fishery Administrator	GS-14/15	NMFS	Portland, Oreg.	12-9-76	12-31-76
553-76 (Amendment)	Physical Scientist	GS-15	HDQS	Rockville, Md.	12-9-76	12-31-76
160-77	Oceanographer	GS-11	ERL	Seattle, Wash.	12-16-76	1-2-77
162-77	Electronics Tech.	GS-10	NOS	Providence, R.I.	12-16-76	1-3-77
163-77	Geodesist	GS-12	NOS	Rockville, Md.	12-16-76	1-3-77
152-77	Procurement Agent	GS-9	NOS	Norfolk, Va.	12-13-76	1-4-77
153-77	Electronics Tech.	GS-9	NOS	Norfolk, Va.	12-13-76	1-4-77
154-77	Electronics Tech. (2 or 3 vacancies)	GS-8/9/10 or 11	NOS	Norfolk, Va.	12-13-76	1-4-77
155-77	Supv. Electronics Engineer	GS-11	NOS	Norfolk, Va.	2-13-76	1-4-77
156-77	Supv. Electronics Engineer	GS-12	NOS	Norfolk, Va.	12-13-76	1-4-77
157-77	Supv. Fishery Biologist	GS-13	NMFS	Woods Hole, Mass.	12-16-76	1-4-77
158-77	Meteorological Tech.	GS-10	NWS	Grand Island, Nebr.	12-16-76	1-4-77
171-77	Fishery Biologist	GS-12	NMFS	Gloucester, Mass.	12-21-76	1-5-77
164-77	Supv. Physical Science Tech.	GS-10	NOS	Norfolk, Va.	12-20-76	1-7-77
165-77	Supv. Physical Science Tech.	GS-8	NOS	Norfolk, Va.	12-20-76	1-7-77
167-77	Supv. Meteorologist P/A	GS-12	NWS	Fresno, Calif.	12-20-76	1-7-77
168-77	Supv. Meteorologist P/A	GS-13	NWS	Reno, Nev.	12-20-76	1-7-77
159-77	Supv. Physical Scientist	GS-15	NESS	Camp Springs, Md.	12-16-76	1-10-77
161-77	Meteorologist	GS-15	EDS	Washington, D.C. or Columbia, Miss.	12-16-76	1-10-77
166-77	General Engineer	GS-12	NOS	Norfolk, Va.	12-20-76	1-14-77

NOAA Research projects described *(Continued from page 3)*

levels that persisted for some minutes indicating corona discharge.

The researchers also found they could estimate the strength of the corona current from the radiometer signal. The discharge current apparently is weaker than the charging current of the storm—in other words, the chaff does not completely dissipate the storm's electricity. But, the scientists conclude, it is apparently enough to bring about a considerable reduction in lightning activity.

Aurora

Scientists with NOAA and five universities have used satellite measurements to put together a picture of powerful electric currents flowing in the aurora borealis which cause magnetic disturbances on the ground below.

The researchers used simultaneous measurements from two polar-orbiting satellites and a number of ground stations. The data are stored at EDS's National Geophysical and Solar Terrestrial Data Center in Boulder, Colo. Dr. Yohsuke Kamide of the Cooperative Institute for Research in Environmental Sciences, an endeavor of NOAA and the University of Colorado, presented the group's findings at the AGU annual meeting.

The sun radiates a continuous flow of energetic particles known as the solar wind, Dr. Kamide explained, which distorts the Earth's magnetic field, flattening it on the sunward side and drawing it into a long tail on the side away from the sun.

Some of the energetic particles of the solar wind become trapped in this tail.

During the magnetic storms that follow a solar flare, this stored energy is released and flows along magnetic field lines into the ionosphere at the earth's polar regions. Brilliant auroras, containing powerful electric currents called auroral electrojets, result.

Using information from satellites and ground-based magnetic measurements, Dr. Kamide and his colleagues obtained simultaneous measurements of the currents and auroras for 30 cases. They have fused these measurements into a composite diagram showing the direction of currents flowing horizontally in the ionosphere, vertical currents flowing along magnetic field lines, and the resulting magnetic perturbations on the ground. They related these to visual aspects of the aurora and time of day.

Associated with Dr. Kamide on the project are Herbert W. Kroehl of NOAA's Environmental Data Service; Dr. Gordon Rostoker of the University of Alberta, Canada; Dr. Syun-ichi Akasofu of the University of Alaska; Dr. Thomas A. Potemra of Johns Hopkins; and Dr. Ching Meng of the University of California at Berkeley.

Internal Waves

Internal waves generated beneath the oceans' surface may gain new prominence above the seas with the publication of the first collection of satellite images of internal waves just completed by two ERL scientists.

According to Drs. C. B. Sawyer and John R. Apel, co-authors of the publication, which was announced at the AGU meeting, the satellite images give a broad view of internal waves that would be impossible to obtain from shipboard or from a limited number of moored instruments.

The collection should be useful to oceanographers, commercial fishermen, offshore drilling companies, and submarine navigators for determining where and when the hidden waves occur.

Apel, Director of the Pacific Marine Environmental Laboratory in Seattle, Wash., and

Robert Charnell, also of PMEL discovered the signatures of the internal waves while analyzing images from the National Aeronautics and Space Administration's first Earth Resources Technology Satellite (now known as LANDSAT-1) in 1974. Although the waves have their highest amplitude underwater, and cause scarcely any up and down movement at the surface, they are marked at the surface by a series of bands of alternately rough and smooth water. The waves in the rough bands send sunlight to the satellite and appear bright in the images, while the slicks look dark. The internal waves were later identified positively by concurrent sea-truth observations conducted by the scientists.

GFDL Computer

(Continued from page 1)

Princeton, N.J., following installation, refinements, and modifications which have taken more than a year to accomplish. Now, ERL scientists at the Princeton laboratory are using the computer to construct and test numerical models of the atmosphere, oceans, and all the complex processes that determine the weather.

The new computer can perform 50 million additions per second, two to five times faster than any previous computer. Its central memory can store one million words.

This enormous capacity is necessary for the work of the laboratory, constructing computer models for the earth's atmosphere and oceans, and for a multitude of smaller-scale phenomena, such as hurricanes, jet streams, and ocean currents.

With the computer, a mathematical universe can be set in motion, allowing the scientists to see how well their model simulates the behavior of the real atmosphere or predicts the effects of a change in the system, such as a decrease in stratospheric ozone. The scientist plugs a set of initial conditions—prevailing temperature, humidity and wind distribution, for instance—into the model, and the computer calculates how these conditions would evolve over time in the model universe.

US-USSR Develop Finfish Resource Survey Program

More than 200 US-USSR scientists, officers, and crews of 13 research vessels, totaling 49 cruises, have helped in the development of a research vessel survey program that can provide annual inventories of finfish resources.

Underway since 1967, the joint fisheries research provides a model for a coordinated survey program for the 18 member nations of the International Commission for the Northwest Atlantic Fisheries (ICNAF).

Research vessel data on species distribution and abundance have now become a vital part of the data base used for stock assessment for the entire ICNAF area (the Northwest Atlantic Ocean). Approximately 100 major studies have been generated entirely or in part by the accumulated data.

The bilateral effort provided the first estimates of such population data as growth and mortality for major species like cod, silver hake, red hake, yellowtail flounder, and redfish.

The United States and the Soviet Union undertook the cooperative program as an essential part of a 1967 bilateral fisheries management agreement dealing with the fisheries resources of the Northwest Atlantic Ocean.

Throughout the decade, the surveys and related studies on the fishing power of various trawls were the key elements of the program. The program included studies on the development of fish stock surveys, and on the spawning, growth, feeding, and mortality of major species.

American scientists and vessels came primarily from the NOAA National Marine Fisheries Service NEFC in Woods Hole, Mass. Soviet scientists and vessels came primarily from the Atlantic Research Institute of Marine Fisheries and Oceanography in Kaliningrad on the Baltic Sea.

Employees who are subject to state tax withholdings for the State of California may notice a minor change in their state tax for salary checks dated on or after January 12, 1977.

BEST FISH BUYS

According to the NMFS National Fishery Education Center in Chicago, the best fish buys for the next week or so are likely to be medium frozen shrimp and squid along the Northeast Seaboard; fresh croaker and fluke in the Middle Atlantic States, including the D.C. area; fresh speckled trout and redfish in the Southeast and along the Gulf Coast; monkfish fillets and monkfish and frozen shrimp in the Midwest; Alaskan shrimp and Dungeness crabmeat in the Northwest; and frozen shrimp and Dungeness crab in the Southwest.

FISH RECIPE



Serving steaming hot, rich oyster stew during the holidays is a tradition of long standing. It's great to serve for casual get-togethers such as trimming-the-tree parties or to have ready

when the family returns from trying out the new sleds and skates, or while watching the big parades on television. Oyster stew spells "home" to many people the world over.

YULE-TIME OYSTER STEW

- | | |
|---|--------------------------------|
| 2 cans (10 ounces each) frozen oysters | 1 cup milk |
| 1/4 cup sliced green onion | 1 teaspoon salt |
| 1/4 cup margarine or cooking oil | Dash cayenne |
| 1 can (10-1/2 ounce) condensed cream of potato soup | 2 tablespoons chopped pimiento |
| 2 cups light cream or half and half (half milk, half cream) | Paprika or chopped parsley |

Thaw frozen oysters; drain, reserve liquor. Cook green onion in margarine or cooking oil until tender, using a large saucepan. Add soup, half and half, milk, oyster liquor, salt, and cayenne;

stir. Heat well, stirring occasionally. Add oysters and pimientos, heat 3 to 5 minutes or until edges of oysters begin to curl. Sprinkle with paprika or parsley. Makes 6 servings.

Climate/Health Meeting Results Now Available

The summary and recommendations of the Climate and Health Workshop held at Research Triangle Park, N.C., June 8-9 have been published and are available from the Environmental Data Service. The workshop was called as a step toward better coordination between health and climate specialists in the use of existing data and the formulation of long-range plans in this area. An account of the workshop may be found in *NOAA* magazine of October 1976. The complete Climate and Health Workshop: Summary and Recommendations, edited by May Laughrun, may be ordered from Science Advisor (D5x1), Room 17, National Climatic Center, Federal Building, Asheville, N.C., 28801.

Severe Storm Center Holds Open House

Open House was held in observance of NOAA's sixth anniversary at the Weather Service's National Severe Storms Forecast Center in Kansas City, Mo., on November 5. According to the Center's Director, Allen Pearson, 1,200 visitors attended. Static displays were placed in the facility's lobby movies were shown, and surplus weather balloons were released as part of the observance. The open house was planned and executed by Mrs. Jane Parvin and Mrs. Margaret Coonfield, the Center's secretaries.

McCarter Named Station Head At Yuma NWS

Wayne McCarter has been appointed Meteorologist in Charge of the Yuma, Ariz., Weather Service Office. He replaces Victor Cotten who retires in December. McCarter will transfer



Mr. McCarter

from the Los Angeles, Calif., Weather Service Forecast Office.

Mr. McCarter is a graduate of San Diego State University. He served in the U.S. Army Air Corps during WWII as a navigator and also as a weather officer. Earlier National Weather Service assignments have been at Winslow, Ariz.; Ft. Huachuca, Ariz.; and San Diego, Calif.

OBITUARIES

Lewis S. Cotton

Lewis S. Cotton, a member of the NOAA Data Buoy Office from 1971 to 1974, died in New Orleans, La., November 16. He served in the U.S. Navy during World War II and during the Korean conflict. Prior to his retirement from NOAA in June 1974, he received an award for the development of an economical explosive line cutter to recover expensive mooring line when deep-ocean moored buoys are being retrieved for refurbishment.

Wesley Bode

Wesley Bode, a meteorologist at the Weather Forecast Office in San Antonio, Tex., died December 1. He joined the National Weather Service at Abilene, Tex., in 1958, and also served at NWS facilities in Great Falls, Mont., Wake Island, and Honolulu, Hawaii, before moving to San Antonio in 1967. Mr. Bode is survived by his wife, Marjorie, of 10222 Fox Hollow, San Antonio, Tex., 78217, and two children, Susan and John.



Graduates of the Weather Service Operations course held October 27 - November 18, at the NWS Technical Training Center in Kansas City, Mo., are (seated from left) Charles H. Smith, Washington, D.C.; Jack W. Kowalski, Lansing, Mich.; Philip H. Postel, Richmond, Va.; Jehu F. Derrickson, Atlantic City, N.J.; Manuel G. Williams, Fort Wayne, Ind.; Robert P. Grimes, Worcester, Mass.; and Ralph Robb, Lihue, Hawaii; (standing from left) Larry McEwen, Instructor; John R. Halfast, Flagstaff, Ariz.; William E. Weaver, Jr., Athens, Ga.; James F. Blair, Columbus, Ga.; Carl P. Johnson, Stockton, Calif.; Lloyd M. Spyres, Tulsa, Okla.; Carl J. Schilling, Madison, Wisc.; Robert A. Herzog, Jr., Seattle, Wash.; Douglas L. Davis, Huntsville, Ala.; and Samuel L. Perry, Camp Springs, Md.

National Oceanic and Atmospheric Administration

ERRATA NOTICE

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

Discolored pages
Faded or light ink
Binding intrudes into the text

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

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