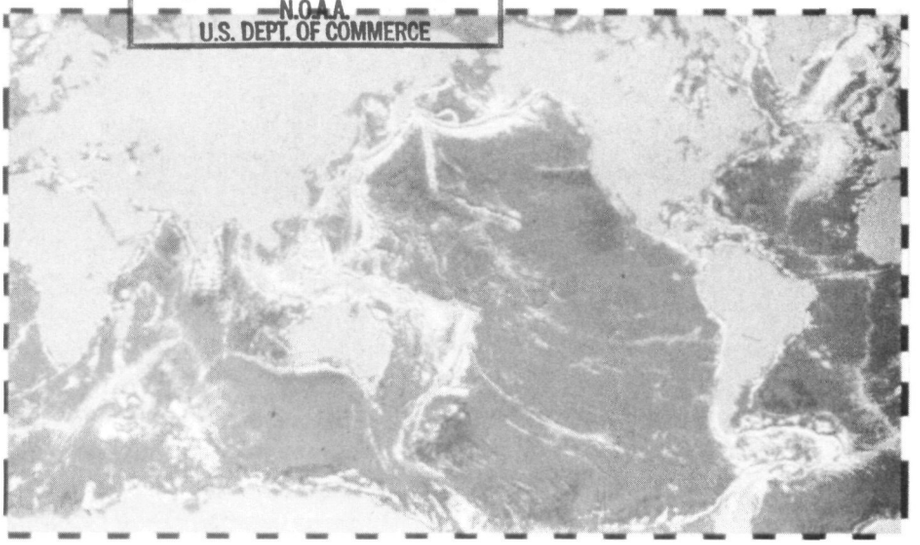
NOAA REPORT

Vol. IV, No. 10 November 1995



The first detailed map of the earth's seafloor, built by NOAA and Scripps Institution of Oceanography scientists from declassified satellite data obtained from the Navy. The original full-color map is available on the Internet.

News Briefs

Greenhouse Gas Absorbed by Land in Northern Latitudes: Unexpected evidence that a large area of the Northern hemisphere is a "sink" or depository for carbon dioxide, a greenhouse gas that is closely associated with global warming, has been released by NOAA scientists.

The evidence, published in the Aug. 25 issue of *Science* magazine, gives the first factual information that a depository for carbon dioxide exists on land, NOAA scientists said. The previous scientific view was that the ocean was a major sink for carbon dioxide, or CO_2.

According to the article, during the time period 1992-93, measurements of carbon 12 and carbon 13 were used to determine the net removal of carbon dioxide from the atmosphere by the oceans and by vegetation on land. The measurements point to a large land depository for carbon dioxide in the temperate latitudes of the Northern Hemisphere during this time period. This means that trees and other vegetation in the northern latitudes are storing carbon instead of releasing it into the atmosphere.

Parallel Processor Successfully Crunches Weather Data: NOAA computer scientists have come up with a new and less expensive way of generating national-scale weather forecasts. For the first time in computing history, a weather forecast model normally run on a large multiprocessor supercomputer

continued on page 8

Future Products Seen in Development

Declassified Satellite Data Becomes Seafloor Map

NOAA scientists have turned recently declassified satellite data into a computer model of the earth's seafloor with detail never before seen.

"We have known more about the topography of Venus, Mars, and the Moon than the bottom of our own oceans—until today," said NOAA scientist Dr. Walter Smith as he introduced a stunning new map of ocean floor structures to the press at NOAA Headquarters last month.

Using satellite sensor data recently declassified by the Navy in combination with data from the European Space Agency, Smith and his colleague, Professor David Sandwell of the Scripps Institution of Oceanography, have generated a computer model of the seafloor in unprecedented detail. The new map, which infers seafloor features from changes in the strength of gravity, provides the first detailed view of ocean floor structures in many remote areas of the Earth.

Until Now, Guesswork

Marine geologists have been mapping the ocean floors for some time but, because of limited quality and coverage of the available data, they have had to use guesswork. Until now, the most common method of mapping the seafloor has been

continued on page 4

Disaster Team Finds Marilyn Damage Heavy

NWS Disaster Survey Team members investigating the damage caused by Hurricane Marilyn earlier this year found rampant destruction—and some calls for help—in the streets of St. Thomas, capital of the U.S. Virgin Islands.

A NWS Disaster Survey Team investigating the weather service's performance during September's Hurricane Marilyn found rampant destruction in the U.S. Virgin Islands caused by the category 3 storm.

In addition to the Islands' capital, St. Thomas, which sustained extensive damage, the team visited NOAA's National Hurricane Center in Miami, and the Weather Service Forecast Office in San Juan, Puerto Rico, to study the series of events that took place before, during, and following the storm and the service of the NWS and its association with local governments and media.

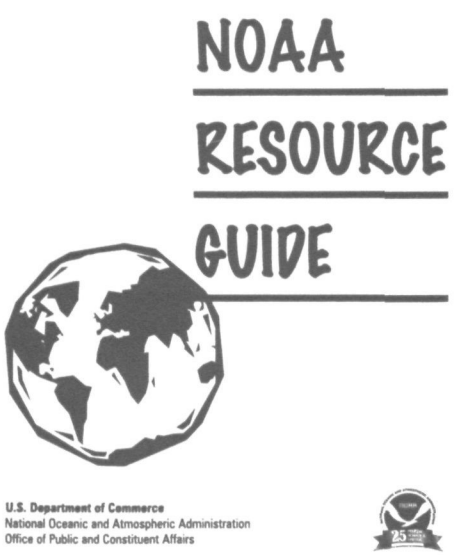
The six-member team, headed by Don Wernley, chief of the NWS Warnings and Forecast branch, left on September 18, two days after the storm hit.

The team members have crafted a draft report listing the major findings and recommendations with a final report due out next month.

—Matt Stout

A Resource-ful Guide to NOAA

Ever wanted to know more than anybody else about NOAA? Get your hands on a copy of the NOAA Resource Guide, and you could become an expert in NOAA-ology.



The Resource Guide, a new book published by NOAA's Office of Public and Constituent Affairs (who also bring you NOAA Report) is a comprehensive look at all NOAA programs, along with explanations of the sometimes obscure scientific terms bandied about every day in this agency. What exactly is an El Niño? What's the difference between a hurricane watch and a hurricane warning? Between an estuarine reserve and a marine sanctuary? The NOAA Resource Guide has answers to just about every question you may have about the agency and its activities.

A limited number of copies are available for NOAA employees. To get a copy of the NOAA Resource Guide, send a fax to 202-482-3154 with your name, work address and phone number. The first 100 requests will get copies. The Guide will also soon be available on-line on the NOAA Home Page on the Internet's World Wide Web at *http://www.noaa.gov.*

El Niño Moves To Cold Phase

Early signs indicate that winter 1995-1996 will not be influenced by El Niño conditions, suggesting that this coming winter could bring drier and cooler weather across portions of the United States than we have experienced in the past several years, according to an NWS advisory.

Sea surface temperatures in the tropical Pacific are cooler than normal and are expected to remain slightly cooler or near normal for the next three to six months, according the National Weather Service's Climate Prediction Center (CPC) in Camp Springs, Md.

International Hydrology Course Co-Sponsored by NOAA

Learning to 'Communicate with the River'

Sharing water resource knowledge and technological expertise is the primary goal of an international course on hydrological forecasting which has trained 175 people from 58 countries over the last 15 years. The course is co-sponsored by NOAA and the World Meteorological Organization.

In the 10-week course taught at the campus of the University of California at Davis, students learn the basic principles of hydrological forecasting by a group of instructors from many different fields, including several Federal agencies, the California Water Resources Department, and the Civil Engineering Department of the University of California at Davis, said Eugene Stallings, a hydrologist recently retired from the National Weather Service. Students get an acquaintance with new technologies the NWS uses to make hydrological forecasts, and spend time out of the classroom visiting sites where the concepts they are learning are being applied.

One of the lead instructors is Robert J.C. Burnash, a retired hydrologist who was formerly in charge of the National Weather's Service River Forecast Center in Sacramento. He teaches the international students how to measure streamflow and precipitation and how to "communicate with the river," using the river's history to develop mathematical models to forecast water supplies and issue flood warnings.

"It's really fascinating to get a group from so many different countries who come in with the same types of concerns and have to work closely together to solve hydrological problems in the course," Burnash said.

Some of the 175 hydrological forecasters who have taken a course co-sponsored by NOAA at the University of California. Instructor Eugene Stallings, recently retired NWS hydrologist is in the last row, second from right.

'Two Amazing Months'

"The technical trips helped me to understand practically all that was taught," said Carlos Arcelus, an engineer with the National Directorate of Hydrography in Uruguay. He added that he also appreciated "the experience of sharing two amazing months with people from all over the world."

Another student commented that he considered the course "an incredible and very valuable experience, not only for the participants, but also for the teachers and assistants. I have exchanged many ideas and opinions, not only technical but also cultural."

Outside of the classroom students develop a camaraderie with their fellow students and instructors, according to Stallings. He said the groups often use their free time on weekends to see the tourist sights and experience American culture. One of the most popular activities with this year's class was a cookout with instructors and U.C. Davis staff, featuring dishes from each of the participating countries.

The friendships begun during the course even inspired one student to describe the experience in poetry. Chen Xinhua of the People's Republic of China translated his thoughts into English:

We come from many countries,
We have different skin,
But we enjoy the same sun, it is Friendship!

There is a river between you and me—Language.
I take action immediately to swim in the river,
All of you gave me a lot of help.

Most of the students work in fields where they will be able to immediately begin to put what they learn to practical use when they return home, said Stallings. While some will be better equipped to make forecasts of river stages in flooding situations, others will apply their skills to better manage their country's water resources in times of drought.

—Barry Reichenbaugh

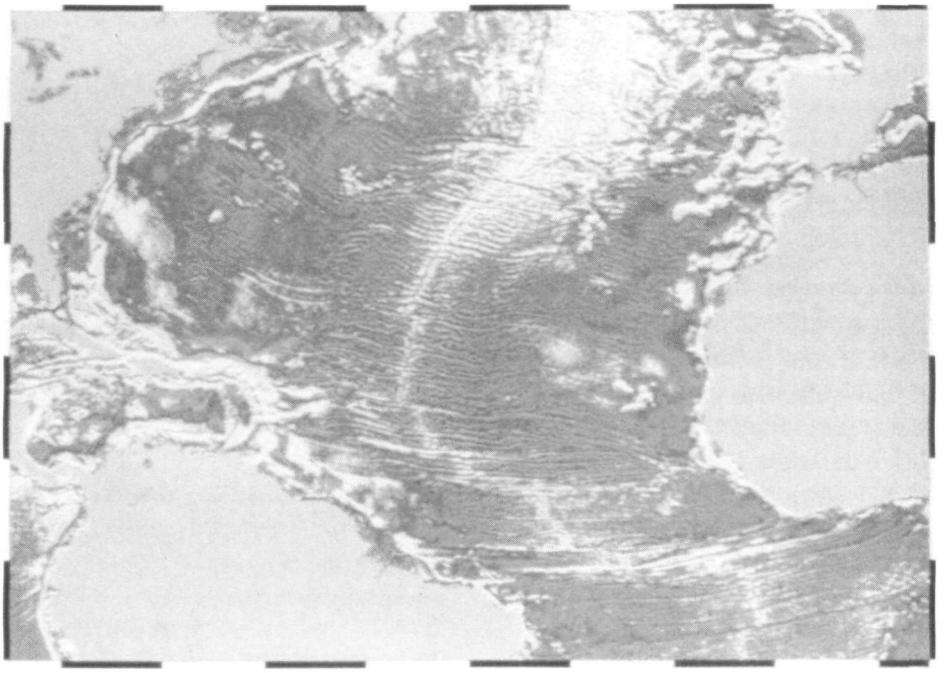
Focus On... New Seafloor Map

continued from page 1

acoustic echo sounder readings taken by ships; only a small fraction of the sea floor has been charted, and in some remote parts of the oceans there are gaps between charted areas the size of Kansas. Much of the available data is also low tech, and inaccurately navigated. Even using the most advanced technologies available today, it would take over 125 years to chart the ocean basins using acoustic devices on ships.

The newly declassified satellite data have a survey track every three miles, so scientists can be confident that any feature six miles across will not be missed. Another benefit of mapping the ocean floor via satellite is that the features detected are located with great precision.

This data may make it possible to answer such questions such as whether lost aviator Amelia Earhart could have landed on an uncharted island, whether there are any uncharted shallow banks that could be rich with marine life and exploitable by commercial fishing, and whether there are sedimentary basins that might have undiscovered petroleum reserves.



Detail of the new seafloor map, focusing on the North Atlantic Ocean.

How Data Was Gathered

The data used to generate the new map was gathered by the U.S. Navy's GEOSAT spacecraft between March 31, 1985, and October 30, 1986. As the satellite orbited the Earth almost 500 miles up in space, a radar altimeter on board returned readings of the distance from the satellite to the ocean surface accurate to about one inch. The radar waves were reflected by the ocean surface and did not penetrate it, unlike the sound waves of an echosounder, so that the satellite data yield measurements of the shape of the ocean surface, not the ocean floor. However, Smith and his colleagues at NOAA and Scripps have worked out a method for exploring the ocean floors using these data. They first use the satellite data to find tiny changes in the pull of the Earth's gravity field, and then use those gravity anomalies to infer the topography of the ocean floor.

"If I had to choose one thing as being most revolutionary about this map, I would say it is the view it gives us of the fracture zones," said Smith, referring to the scars that are made on the ocean floors as they spread during continental drift. These fracture zones are used to reconstruct the ancient positions of the continents. Such knowledge can be extremely valuable in minerals exploration and in the study of climate change.

Emerged from Gore Task Force

The scientific value of these data was anticipated even as the satellite was flying, and many people have worked a long time to get the data declassified. While a senator, Vice President Gore started a group called the Environmental Task Force, to seek answers to this question: are there technologies and data sets which, because of their military value, are classified, but which would have even greater value to the scientific community and the civilian economy if they could be released? This release of data set is one result of this exercise.

Although the work to declassify the data is done, NOAA's work with the data is really only now beginning, as new scientific, educational and commercial uses can be made of it. The raw data representing the spacecraft's measurement of ocean surface heights is now available from

continued on page 5

Adjustments Necessary for Congress and Public: Friday

Changes Coming to Modernization: Brown

Commerce Secretary Ronald H. Brown, in a report to Congress, has recommended adjustments in the Commerce Department plan to modernize the National Weather Service to ensure better protection for regions where weather services in local areas might be degraded.

The report, prepared by a NOAA team of experts, recommends installation of new weather radars, one new weather forecast office, and the continuation of operations for several weather offices and existing radars in regions that include northern Indiana and northwestern Ohio; the Chattanooga, Tenn., and Huntsville, Ala., areaa; Ft. Smith, Ark., area; Caribou, Maine; Key West, Fla.; and Erie, Pa.

"Our assessment has been exceedingly useful in determining what would be the best plan to ensure the maximum possible protection for the life and property of our citizens," Brown said. "The proposed adjustments will provide the kind of modernization that will help us meet all our weather prediction and warning obligations with the most timely, accurate warnings and forecasts in the world."

"This report represents the culmination of a very thorough, objective and scientific process," Elbert W. Friday Jr., director of the National Weather Service, said. "We now have recommendations that address the concerns of both Congress and the public."

New Radars in Northern Indiana, Ft. Smith

The report recommends installation of a WSR-88D radar along with a fully-staffed weather forecast office in the northern Indiana area to provide forecast and warning services to citizens in northern Indiana and northwestern Ohio.

Additionally, it calls for installation of a remotely-linked WSR-88D radar to the southwest of Ft. Smith, Ark., to service the Ft. Smith area, and one in the area between Chattanooga, Tenn., and Huntsville, Ala. In Caribou, Maine, and Key West, Fla., weather office operations will continue until the National Weather Service can ensure reliable communications, maintenance, and community and emergency outreach activities. The report also said existing weather radars should continue in operation in Erie, Pa., and South Bend, Ind., until the weather service completes a study of so-called lake-effect snow on weather conditions. The study is to be completed by January 1998.

Secretary Brown has decided that the weather service office and weather radar in Williston, N.D., will continue to operate for two years while the weather service conducts an operational evaluation to assess if weather radar data and information from other systems provides adequate information to detect, and warn for, all weather phenomena of concern.

'Thorough, Objective and Scientific Process'

"This report represents the culmination of a very thorough, objective and scientific process," Elbert W. Friday Jr., director of the National Weather Service, said. "We now have recommendations that address the concerns of both Congress and the public."

Seafloor Map Unveiled

continued from page 4

NOAA's National Ocean Data Center in Washington, D.C., on a set of four CD-ROM discs. Over the coming months, new products, such as marine gravity fields and predicted sea floor topography, will be made available. A picture of what kinds of products will be coming, as well as full-color versions of these maps, can be had on the Internet's World Wide Web at *http://www.ngdc.noaa.gov/mgg/announcements/announce_predict.html.*

—Eliot Hurwitz

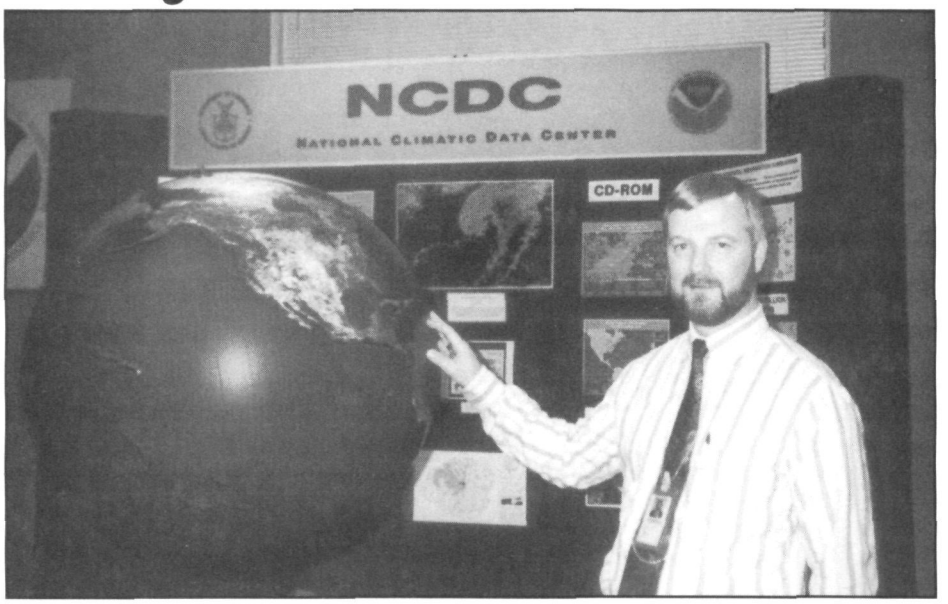
Climate Center Gets Some Illogical Mail

Usually, the climate is fairly logical around Asheville, N.C. It snows in the winter and gets hot in the summer.

But some of the mail sent to NOAA's National Climatic Data Center can get down right illogical. Or so says NCDC staffer Jim Hughes, who's kept a few of the strange letters he's received over the years.

You've got to give the Post Office credit for delivering some of these letters to their rightful place. Among the addresses he's seen for NCDC are...

- ❒ National Flymatic Center
- ❒ National Climatic Date Center
- ❒ National Climatic Data Center, Climate Illogical Services Section
- ❒ National Traumatic Data Center (asking about the "phrase of the moon" for a night in February 1986)
- ❒ National Car-Matic Data Center
- ❒ National Climax David Center



NCDC staffer Jim Hughes keeps some very illogical mail at the Center's headquarters in Asheville, N.C.

Do the letters have anything in common? "They're all from lawyers," Hughes said.

With Your Help, a First Night With All Cheers, No Booze

NOAA's Silver Spring Metro Center campus facilities will take on a new look and feel as they become part of the more than 40 sites of Montgomery County's first annual First Night New Year's Eve celebration.

The event is an alcohol-free way of bringing members of the community together to celebrate the new year with a grand festival of visual and performing arts. An estimated 10,000 people are expected to attend. First Night, is a unique way to foster public appreciation and support of the visual and performing arts. Started in Boston in 1980, First Night festivals have spread across the United States, from Cape Cod to Honolulu.

Entertainment Through the Night

Montgomery County's First Night will feature continuous live entertainment from 3 p.m. through midnight, and will have something for people of all ages. First Night kicks off with children's activities followed by a wide range of arts and crafts exhibits throughout the festival grounds. In addition, dancers, musicians will be part of the family entertainment, both indoors and out, rain or shine.

'96 FIRST NIGHT MONTGOMERY COUNTY

NOAA volunteers are needed to help make Montgomery County's First Night New Year's Eve festival a great success. The six sites at NOAA's facilities will need people to be greeters, ushers and part of the cleanup crew. This is a wonderful opportunity to make this event a family affair. If you have any high schoolers in your home, they can volunteer as well and will receive credit for community service.

Admission buttons can be purchased for $7 at 31 Giant Food locations in Montgomery County after Thanksgiving ($10 after Christmas and at the festival). Discounted group sales are also available.

Volunteer Information

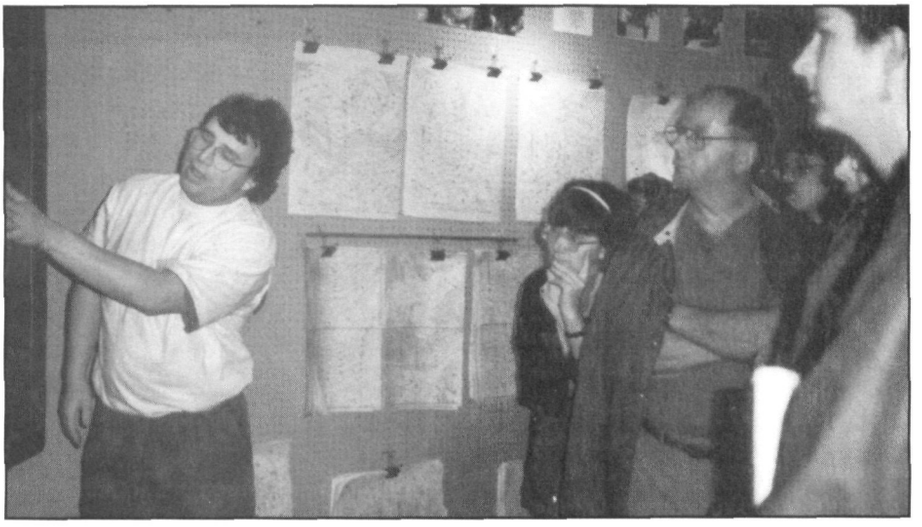
To volunteer, call Sean Maloney at (202) 392-4630 or Carrie Brient at (301) 986-2045. For more information about First Night contact the 24-hour hotline at (301) 217-3655.

NOAA plays a big role in the Montgomery County community. Volunteering for the event will add a personal NOAA touch to the first annual First Night celebration.

—Greg Hernandez

Science Center Open House a Big Success

Despite intense rain showers which lasted the entire day, nearly 1,200 people of all ages attended the NOAA Science Center Open House in Camp Springs, Md., on Oct. 14 to learn how weather forecasts are made, disseminated and used. Former NOAA employees, weather buffs, private meteorologists and people interested in NOAA's weather forecasting operations were among the visitors.



Russ Schneider of NCEP's Hydrometeorological Prediction Center explains weather maps to NOAA Science Center Open House visitors.

Throughout the day, National Weather Service, National Environmental Satellite, Data, and Information Service, and PRC employees explained and demonstrated the steps meteorologists, oceanographers and other scientists take to provide national and international weather and climate information to the country.

"The Open House was terrific," said Ned Schaffer of Bryanstown, Md., one of the many visitors who toured the Center. "It was interesting to learn about all the different tools meteorologists use in forecasting. I was impressed with how exacting they are."

While touring the NOAA Science Center, visitors watched meteorologists prepare daily weather forecasts, listened to scientists explain climatology, viewed satellite imagery and learned about the importance of computers in accurate weather forecasting.

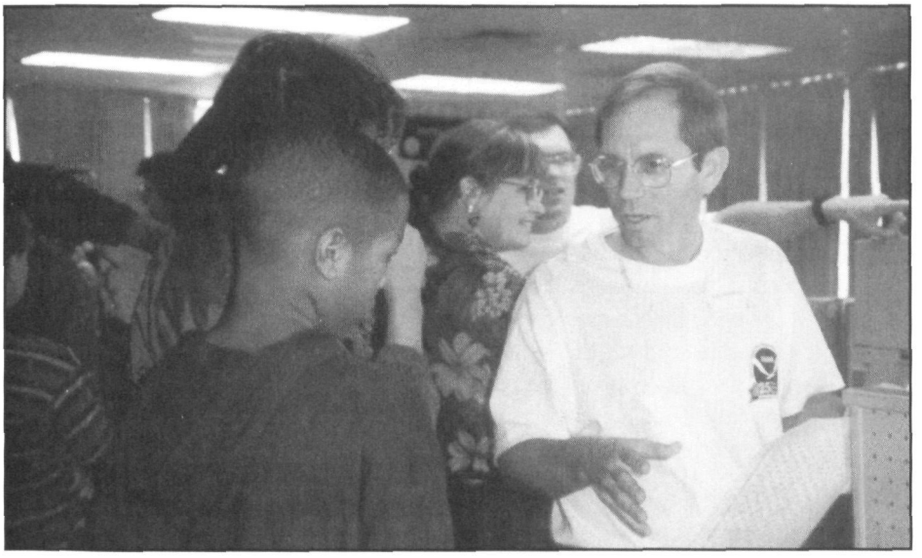
"It was great," said Jerry Delaney, Administrative Officer of NCEP's Hydrometeorological Prediction Center and Open House co-chairperson. "Visitors told us that they were very impressed by the exhibits, the demonstrations, and the level of knowledge and courtesy shown by our employees."

"Judging by visitor response and turnout, this Open House was the most successful yet," added co-chairperson and visual information specialist for NESDIS John Shadid. "The three and a half months of preparation and planning really paid off. We worked hard to make the Open House an educational and enjoyable experience, and I feel we met that goal."

More than 100 NOAA and PRC volunteers, uniformed in NOAA Science Center T-shirts, gave demonstrations, greeted visitors and directed traffic on seven of the center's eight floors.

The NOAA Science Center is the world's largest weather computing facility where NOAA Science Center scientists prepare 24-hour forecast guidance for national and international customers including weather service field offices, other government agencies and private meteorological services. The last Open House was held in 1990.

—Kim Comba



Steve Henderson of NCEP's Hydrometeorological Prediction Center explains aviation forecasting to Open House visitors.

continued from page 1

has been run on a regular basis on a Massively Parallel Processor.

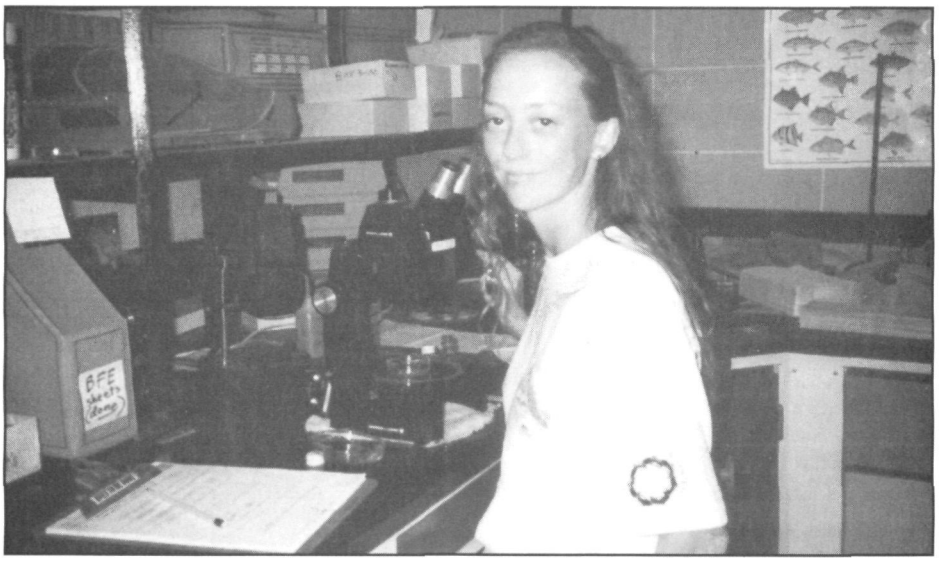
Using a simulated operational environment, computer scientists at NOAA's Forecast Systems Laboratory in Boulder, Colo., have successfully demonstrated the feasibility of running complex weather forecast models on Massively Parallel Processor (MPP) computers. The scientists use real-time weather data and make real weather forecasts every three hours on a regular basis, but in a research setting. According to Tom Henderson of the Forecast Systems Laboratory, "We believe we are the first to demonstrate quasi-operational use of an MPP system for national-scale weather forecasting."

News Briefs

Dutch Harbor-Unalaska Is Nation's Top Fishing Port For 1994: Commercial fishermen brought 699 billion pounds of fish, worth $224 million, to the port of Dutch Harbor-Unalaska, Alaska, in 1994—making it the port with both the highest volume and greatest dollar value of fish in the country.

NMFS officials said the port of Dutch Harbor-Unalaska netted the top landings slot for a seventh straight year. However, landings there dropped more than 94 million pounds over 1993 figures, due to declines in pollock and halibut landings. Meanwhile, the number two and three ports of Empire-Venice and Cameron, La., saw significant growth in 1994 due to increases in the menhaden catch, with total landings of 432 million pounds and 402 million pounds.

Landings at Dutch Harbor-Unalaska were valued at $224.1 million, a new record for value. Kodiak, Alaska, was second, with landings valued at less than half that of Dutch Harbor, while the New Bedford, Mass., catch value was third.



Sarah Heath, a volunteer at the NMFS Panama City lab, helps with fish reproduction studies.

NMFS Panama City Lab Volunteers Aid in Marine Science Projects

A seven-month old volunteer project using the talents of local residents has been able to give the scientists at NMFS's Panama City, Fla., lab the work force resources needed for additional projects.

"Many projects could not be done without volunteer help," said Rosalie Shaffer, a technical information specialist and the project's coordinator.

To get the project started, Shaffer surveyed staff members to learn of the variety of work, and the number of hours needed from volunteers. Survey responses identified many project areas that could use volunteer help. A public advertisement for volunteer workers was placed with local newspapers, senior citizen associations and other local groups.

Call-in responses were overwhelming—many calls came in from people who wanted to donate time. An article that appeared on the front page of the Waterfront section of the Panama City *News Herald* newspaper prompted many of the calls.

Volunteer workers toured the lab and learned about the agency's mission. They became acquainted with various research studies and how they could help. Project leaders described the work needed for each project, interviewed volunteers and assigned workers to jobs that best matched their skills.

The volunteers come from all ages and walks of life—workers with full-time jobs, students, homemakers, and retirees among them. What they all have in common is an enthusiastic desire to become actively involved in marine science.

NOAA Report is a monthly publication for NOAA employees from the Office of Public and Constituent Affairs, Washington.
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July 23, 2010