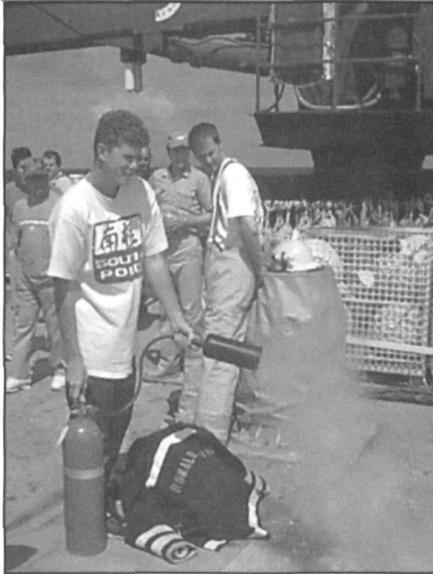


NOAA REPORT

Vol. IX, no. 9

www.publicaffairs.noaa.gov/nr

September 2000



Ens. Catherine A. Marshall/NOAA

Darin Tonks, one of the first "students at sea" on a NOAA ship, learns how to extinguish a fire in a drill aboard the NOAA Ship Brown.

Brown Hosts First Students At Sea

—By Jeanne Kouhestani & Ens. Catherine Martin

Five students and their teacher from South Broward High School in Hollywood, Fla., recently got some unique hands-on research and maritime experience aboard the NOAA ship *Ronald H. Brown* in a first-of-its-kind "students at sea" adventure with NOAA.

The students, participants in their school's marine science magnet program, went to sea on the NOAA ship from July 20 to Aug. 4 and joined in scientific studies of the Axial Seamount, an underwater volcano off the coast of Oregon.

"For years, teachers have had the opportunity to get this type of experience through NOAA's
continued on page 3

NOAA Units Fight Wildfires

—By Pat Slattery & Marilu Trainor

Throughout August, the wildfire situation in the western U.S. looked grim.

On several days during the month, land management agencies were fighting more than 80 large wildfires burning simultaneously.

With at least another month or two remaining in the wildfire season, NOAA employees from several line offices are setting records for the level and length of support in the fire weather program.

"No single federal, state, local, tribal or volunteer agency alone can handle all wildland fires that may

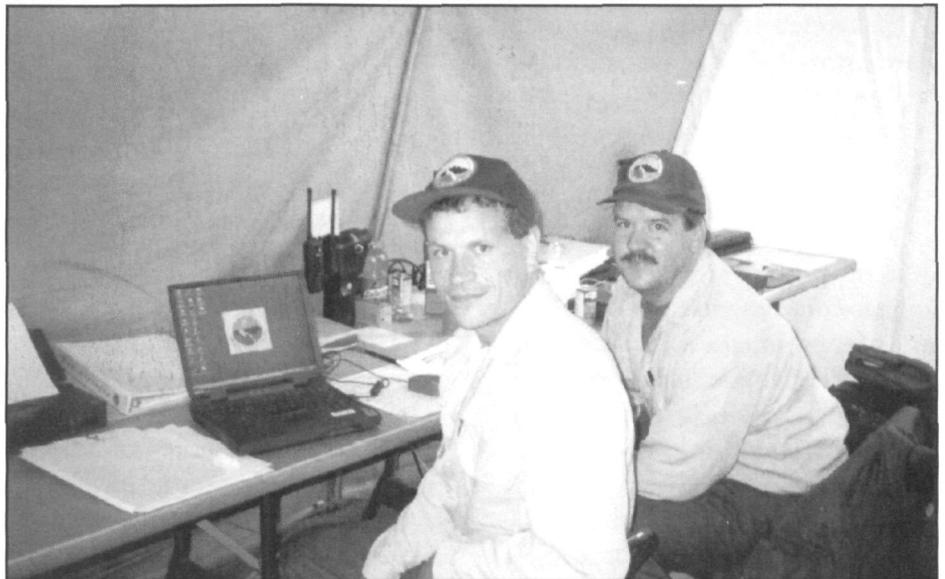
occur in its jurisdiction," said, Rick Ochoa, National Weather Service liaison to the National Inter-agency Fire Center in Boise, Idaho.

"At the center, branches of seven

federal agencies work together to exchange support, protection responsibilities, information and training, providing an efficient method for protecting lives, property and natural resources."

Land management agencies
continued on page 6

As of the end of August, 75,000 forest fires have charred nearly five million acres in the United States this fire season, double the annual average.



Scott Birch/NOAA

Troy Lindquist (left) and Chuck Redman, two of the many incident meteorologists who provide critical weather information to land managers battling wildfires, use laptop computers, satellite dishes and portable equipment to analyze weather conditions from a base camp near the Burgdorf Junction fire in Idaho.

Students Become Severe Storms Researchers

—By Lilly Rosado

This summer, Craig Lengyel, a senior at Lyndon State College in Lyndonville, Vt., came a step closer to fulfilling his childhood dream of working in the field of meteorology by participating in a research program for undergraduates at NOAA's National Serve Storms Laboratory, NOAA's Severe Storms Prediction Center and the University of Oklahoma in Norman, Okla.

"Ever since I can remember I have been interested in the weather," Lengyel said. "The weather is interesting because it is always changing. As far as I know, it is the only thing that affects everyone on a daily basis. You can't say that about many other careers."

Lengyel was one of 10 students from across the nation chosen for the 10-week program to work with NOAA and University of Oklahoma researchers.

He assisted laboratory scientist Dave Stenrud on a project modeling the movement of long-lived storms, called Derecho storms, in an attempt to improve forecast of these destructive thunderstorms.

"It is difficult to forecast Derecho storms, because it's hard to figure out how long they will last," Lengyel said.

His research established a significant correlation between the formation of cool air in pools underneath Derecho storms and the longevity or decay of these storms. He was able to successfully determine the storm's persistence for 31 of the 37 models he ran.

"Just interacting with the scientific community at NSSL and
continued on page 7



NYU

Jerry Mahlman makes a point at a climate change meeting in 1990.

Jerry Mahlman: Lab Director

—By Jana Goldman

This is the ninth in a series of profiles of men and women who have been NOAA employees since NOAA was established in 1970.

NOAA's first day as a federal agency, Oct. 3, 1970, was also Jerry Mahlman's first day at work at NOAA's Geophysical Fluid Dynamics Laboratory in Princeton, N.J. Thirty years to the day from that date, he intends to retire from federal service.

Mahlman spent more than half of that time, 16 years, as director of the laboratory, which has long been a world leader in climate change research. He is credited as the virtual founder of two branches of numerical atmospheric modeling, as well as with a number of other pioneering contributions to the fundamental understanding of how the atmosphere operates.

While he has made major contributions to the understanding of climate change and how our physical world works, having published nearly 100 papers in

scientific journals, including an article in "Science" that helped guide the 1997 Kyoto Protocol on climate change, he says he is especially pleased with his work with the many talented and skilled young scientists who are new to the laboratory staff.

"I am proud that we are able to attract, nurture and retain these young scientists," Mahlman says. "These are people that Harvard and MIT would love to have working for them."

Mahlman was a young scientist himself when he left a tenured faculty position at the Department of Meteorology at the U.S. Naval Postgraduate School in Monterey, Calif., to join Joseph Smagorinsky and Syukuro Manabe in their pioneering efforts to develop computer models at GFDL.

It was a time of increasing public awareness of the environment. The year 1970 brought the first Earth Day, as well as the creation of NOAA, the first federal agency devoted to the science of the
continued on page 7

Students at Sea

continued from page 1

teacher at sea program, but this is the first time a group of high school students has come aboard for a research cruise," said Capt. Roger L. Parsons, commanding officer of *Ronald H. Brown*. "We hope the chance to work face to face with scientists and mariners aboard the *Ronald H. Brown* has motivated them to further explore marine science as a future career."

South Broward High School teacher Ted Davis selected the participating students based on their grade point average, teacher recommendations, a student essay and prior ocean experience.

Recent magnet program graduate Jason Chockley accompanied the group as an assistant to Davis.

While underway, the students, who called themselves the "Reefdogs," rotated in shifts of two between

standing bridge watch, working on deck and assisting the scientists.

On the bridge, they were introduced to navigation, ship handling and the responsibilities and duties of an officer of the deck and lookout.

In preparation for the cruise aboard *Brown*, the students had taken an intensive three-day training course from merchant marine trainers on a ship bridge simulator.

On deck, they helped deploy and recover moorings and assisted with deck maintenance.

They also helped scientists from NOAA's Pacific Marine Environmental Laboratory retrieve water samples and prepare conductivity-, temperature- and depth-measuring instruments for deployment.

The ship's officers and crew gave the Reefdogs detailed tours of all the shipboard spaces, briefed them on medical equipment and procedures to be followed in case of an emergency and introduced them to damage control procedures.

During one of the weekly drills, the students had an opportunity to

officers and crew put their hearts and souls into this experience.

"If I were able to correlate these experiences to our state's educational standards, I'm sure that half of them would have been mastered. Something that is difficult to measure, though, is the look of confidence and gratitude that emanates from the faces of these young adults after having earned the respect of NOAA Corps officers and the ship's entire crew," Davis said.

"How do you measure integrity, reverence and leadership?"

These types of educational objectives are obtained by one-on-one mentorship instruction and require just about two weeks of hard work mixed with technology training."

It was more difficult, Davis said, for the students to get a lot of hands-on experience with the scientists, who had to get

their research accomplished during work schedules that left little extra time.

Davis would like to solve this by coming up with experiments for the students to conduct themselves that might prove useful to the scientists, while not hindering the scientists in their own work.

Reefdog Andy Alvarez, a 12th grader, said, "I have been a marine magnet student at South Broward for three years. I enjoy hard work, and although I am not sure what career path best suits me, I hope to find out this summer." ☺



Ens. Catherine A. Marshall/NOAA

Five students and their teacher from South Broward High School in Hollywood, Fla., became the first "students at sea" aboard a NOAA ship during an August cruise aboard the NOAA Ship Ronald H. Brown.

use a fire extinguisher, don full fire fighting gear and handle a charged fire hose.

"It was a great experience for all of us," said Davis. "When I originated the magnet program, we were lucky to be able to take students into the water above their waists. Now, for the first time, we were able to show them what life is really like at sea on a research vessel. The NOAA Corps officers and crew of *Brown* were absolutely fantastic because they kept the kids working and learning all the time. You should see how much the

Focus On...

NOAA's Environmental Monitoring Satellites

—By Patricia W. Viets

In September, the United States is scheduled to launch NOAA-L, the newest polar-orbiting environmental satellite.

The mission of NOAA's newest satellite illustrates the evolution from early satellites whose sole mission was weather monitoring to today's satellites that have a much broader environmental mission.

NOAA's satellite system is composed of two types of satellites.

Geostationary operational environmental satellites, called GOES, provide national and regional short-range warnings and now-casting.

Polar-orbiting operational environmental satellites, called

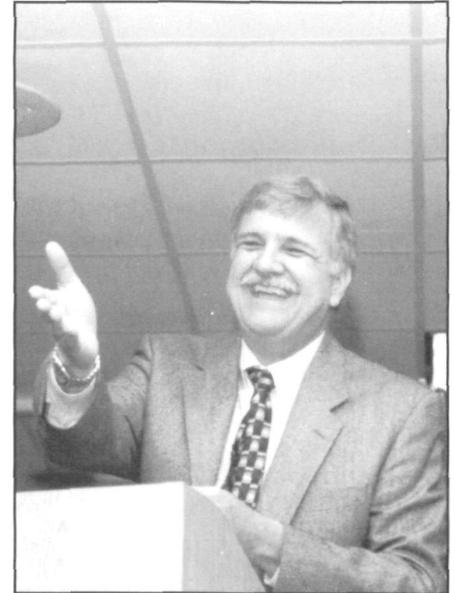
POES, provide global long-term forecasting and environmental monitoring.

GOES and POES satellites also carry search and rescue instruments to relay signals from aviators and mariners in distress.

Climate

Using forecast models and information from environmental satellites and data buoys in the Pacific, NOAA scientists have improved their understanding of oceanic and atmospheric connections and their skills in predicting El Niño and La Niña.

"In part based on satellite data, NOAA accurately forecasted the



Iris Harris/DOC
Assistant Administrator Greg Withee.

impacts of the 1997-1998 El Niño and subsequent La Niña months in advance," said Gregory Withee, NOAA Assistant Administrator for Satellite, Data and Information Services. "These long-range forecasts helped communities, including farmers, city planners, and emergency and utility managers, prepare for potential, often damaging impacts," Withee said.

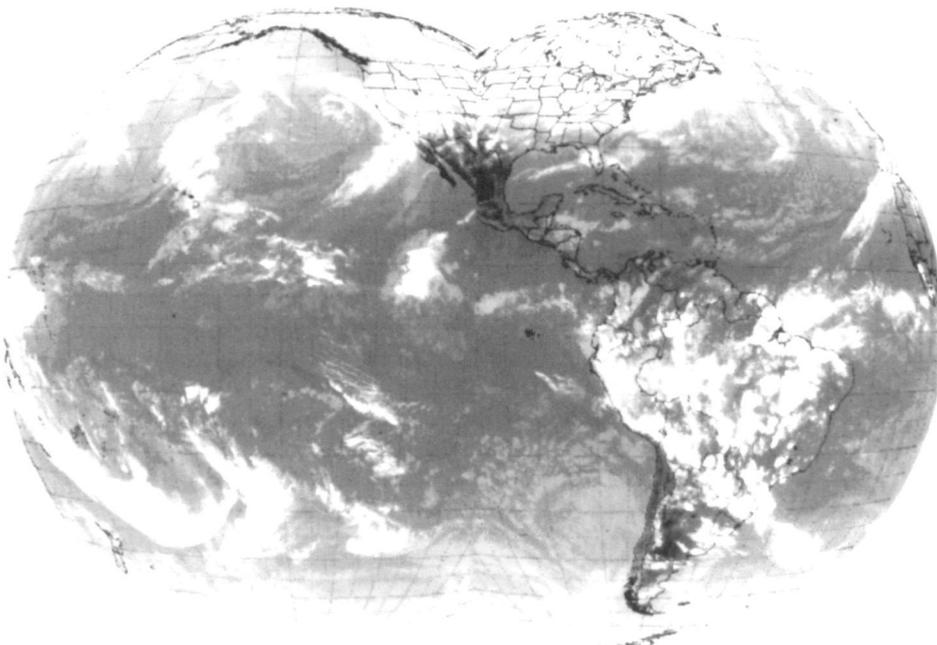
Each spring, when the sun rises over Antarctica, chemical reactions involving chlorine from man-made chlorofluorocarbons contribute to the destruction of ozone in the stratosphere. Observations from instruments aboard NOAA satellites are used along with balloon measurements to determine the size of the ozone hole.

Satellites are also used to measure the global ozone layer, which has deteriorated since 1980, but not to the extent that is observed each spring in Antarctica.

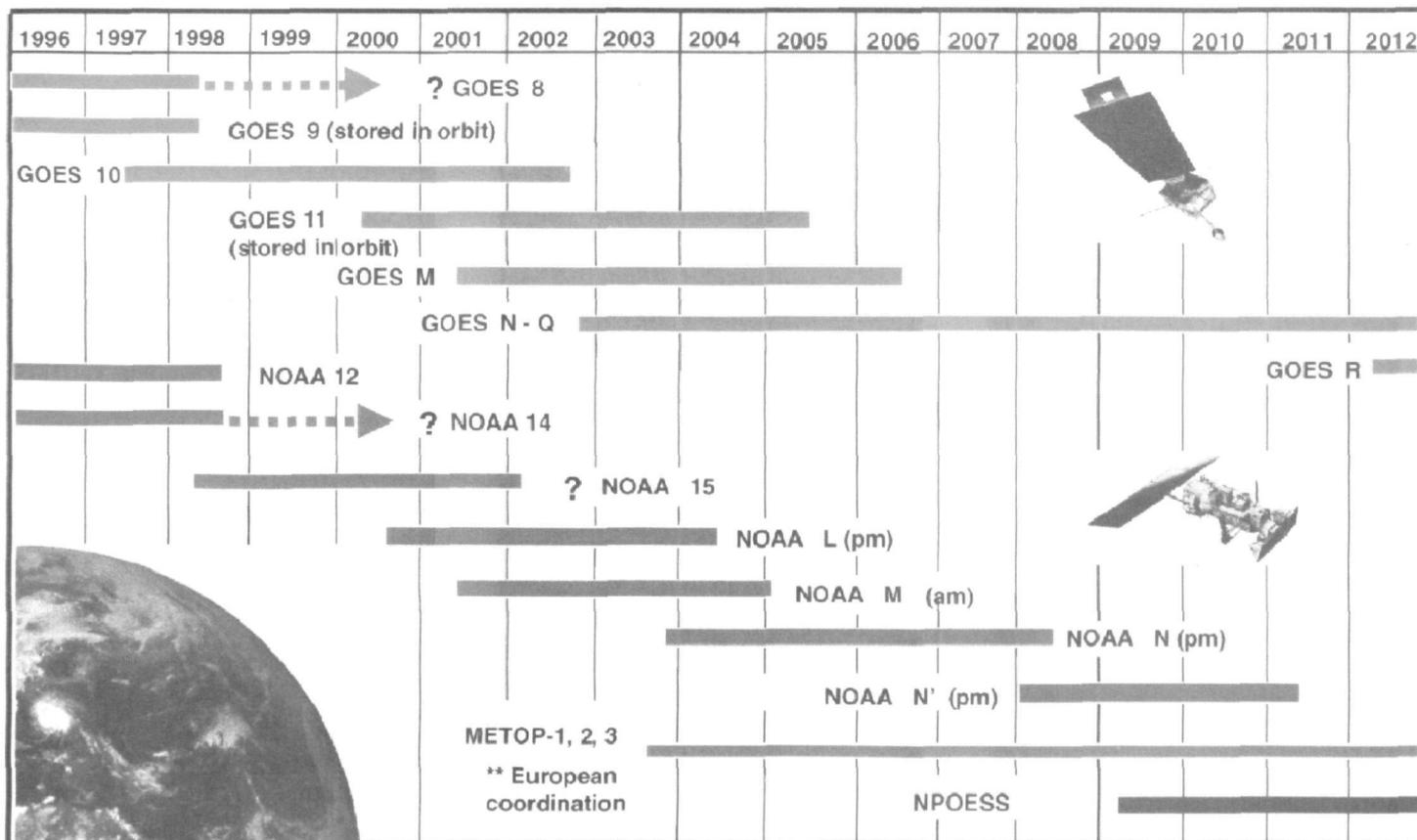
Oceans

Using data from NOAA's polar-orbiting operational environmental satellites, NESDIS develops charts showing sea surface temperature anomalies, a mainstay on television news reports during El Niño.

continued on page 5



Satellite coverage by GOES 9 (left) and GOES 8.



The schedule of NOAA satellite launches.

continued from page 4

In addition to these charts, NESDIS also produces coral bleaching HotSpot Charts showing warmer-than-usual areas in the oceans where coral bleaching could take place.

At the other end of the temperature scale is the National Ice Center in Suitland, Md., a joint operation where Navy, NOAA and Coast Guard employees monitor the ice in the ocean.

NOAA's CoastWatch program maps the United States coastal oceans daily.

"Daily sea surface temperature products are available from the CoastWatch web site within hours of acquisition," said Withee.

"This information is used by a variety of people—meteorologists, fisheries scientists, environmental managers and commercial and recreational fishermen—to accurately detect and track ocean features," Withee said.

Agriculture

Data from NOAA's satellites are also used to produce color-coded maps of vegetation conditions estimated by the vegetation and temperature condition index. The index is used to characterize vegetation conditions from extremely poor to excellent.

Forest Fires

Using satellite data, NESDIS monitors fires and the potential for fires with data that show the position and size of the fire spot, together with imagery showing the burning and burn-out areas and smoke. Forest and grassland maps are used to identify the nature of the ground cover where the fire is located.

The Space Environment

Instruments aboard NOAA's polar-orbiting satellites are used to provide a space weather storm

warning system. The space environment monitor aboard GOES is designed to provide real-time measurement of space weather, flares, solar radiation storms, radio blackouts and geomagnetic storms. These measurements are important to power companies, satellite operators, radio communicators and those monitoring astronauts in space.

The Future

In 1994, President Clinton decided to merge military and civil operational meteorological satellite systems into a single, national system. The program, the National Polar-orbiting Operational Environmental Satellite System, or NPOESS, is expected to provide more than \$1.8 billion in savings in acquisition and operational costs compared to the cost of continuing the planned separate satellite systems within the Departments of Defense and Commerce. ☺

Wildfires

continued from page 1

depend on NOAA forecasts to determine how many firefighters are needed and the best ways to use them, to plot daily strategies and to keep firefighters safe. National Wildfire Coordination Group chairman Don Artley said, "Fire weather forecasts from incident meteorologists are absolutely critical to fire suppression."

During the summer fire season, and whenever fire fighting resources are stretched thin, meteorologist Ochoa briefs the fire directors and the national inter-agency coordination center regarding current and expected weather.

"Each spring, National Weather Service forecast offices begin issuing twice-daily fire weather summaries to customers such as the Bureau of Land Management or National Park Service," said western region fire weather program manager Scott Birch. "We also respond to requests for very specific current weather information before agencies enact their controlled burn plans. These spot weather forecasts provide critical information that land management agency officials use to develop strategies for their burn plans," Birch said.

Staff at Weather Service offices assume extra duties when one of their teammates is deployed as an IMET. Central region meteorological services division chief J. Mike Looney said, "Our most important role is to prepare, train and provide resources to the IMETs to help them do their job. The meteorologists in charge at offices deploying IMETs to other areas and regional offices work together to fill in for an important member of the forecast team who could be gone

several times during the fire season."

"I'd say the toughest part of working a fire on-site is you have to adapt to the situation, which is different for each fire," said Chris Maier, an IMET at the Weather Service forecast office in Salt Lake City, Utah. "Forecasting out of our offices or a major interagency communications center near the fires—using some of the resources we're accustomed to such as land-line telephones, faxes and our latest AWIPs computer system—is one thing.

"If you start feeling sorry for yourself, all you have to do is look around to see the crews out there hour after hour putting their lives on the line."—National Weather Service incident meteorologist Chris Maier

"But forecasting for wildfires from a mountain ridge top using a laptop computer and a few other instruments is something else all together. Being an IMET is definitely a high-pressure job done under less than ideal circumstances. If you start feeling sorry for yourself, all you have to do is look around to see the crews out there hour after hour putting their lives on the line. They're the ones who really sacrifice, and we admire them for their dedication," Maier said.

Weather Service western region director Vickie Nadolski spent two days visiting the meteorologists and the fire camps in the Bitterroot National Forest near Missoula, Mont., in early August. "As part of the planned modernization of the National Weather Service, meteorologists in offices across the country received enhanced training in the science of forecasting for fire weather situations. This training has strengthened and broadened our ability to handle the increased workload of providing critical weather information for so many

simultaneous fires in recent years," Nadolski said.

While IMETs and Weather Service forecasters provide direct assistance to firefighters and fire managers, others in NOAA, such as the National Centers for Environmental Prediction, provide important assistance in other areas.

"At the Climate Prediction Center, the 'Drought Monitor,' updated weekly, provides an ongoing assessment of dryness conditions and, thereby, highlights the areas or regions of the country that face the greatest concern for wildfire conditions," center director Ants Leetmaa said. "Products such as this brought early attention to

land management agencies that they could be facing a long and rough season ahead. Climate Prediction Center forecasters regularly update an array of materials and forecasts used by NOAA offices and other agencies," he said.

The Storm Prediction Center in Norman, Okla., provides one- and two-day forecasts of fire weather conditions, identifying the areas of most serious threat. The center's fire weather forecasts predict where extreme fire conditions are expected to occur and highlight areas where dry thunderstorms (those with little or no precipitation) are expected to produce significant lightning (more than 100 strikes) that could cause new fires. Outflow winds from these storms can produce strong and damaging wind gusts from all directions, creating dangerous situations for firefighters.

"The forecasters and fire officials in the field know better than anyone the conditions they face each afternoon," said Phillip Bothwell, a fire weather researcher *continued on page 7*

Wildfires

continued from page 6
at the Norman center. "We try to emphasize areas where fire conditions may become more severe in the next few days. By highlighting an area one or two days in advance during a summer such as this when all fire fighting resources are stretched to the max, we can give fire officials a heads up on allocating their resources. If they plan ahead to get people and equipment on the lightning sparked fires quickly, they can keep the fires from becoming raging infernos."

Using the GOES 8 geostationary satellite, analysts at the National Environmental Satellite Data and Information Service team up with others at the Office of Oceanic and Atmospheric Research's Air Resources Laboratories to help identify hot spots, track smoke plumes and prepare computer model runs of smoke trajectories.

These models are used to prepare air quality forecasts and assist local agencies in issuing air quality health alerts. As the wildfires grow in number and intensity, they put more smoke and other pollutants into the lower atmosphere, increasing the danger for those with asthma and other breathing difficulties.

Salt Lake City IMET Chris Gibson summed up his feelings. "We walk the fire lines with the land management agency's fire behavior analysts to know what the fuels are like as part of our job. It's tough work for all of us. It's always hot and we're wearing fire-retardant protective clothing and hard hats for our safety. It's an amazing experience. But we're only in mid-season of this fire year, and from the conditions I've seen, we're in for a long haul. It could take heavy rains or early snows in those deep canyon areas to put out some of these fires." ☺

Student Researchers

continued from page 2
seeing their dedication to the advancement of weather research was amazing," Lengyel said. "The research experience gave me a better overall perspective of my field—something I could not get in the classroom."

The students' experience was made possible through a collaborative program between NOAA and the University of Oklahoma, started in 1990 and funded by the National Science Foundation to attract young people to research, especially women, people with disability and minorities.

Students participate in individual and group research, supplemented by tours, field trips and lectures. They also present papers reporting the results of their research.

"The program gives students a taste of research and is also a great resource for exploring research topics that would go unattended in a year or two," said Stenrud.

NSSL scientist Daphne Zaras, this year's program coordinator for NOAA's involvement, said, "About 70 to 80 percent leave the program with a better idea of what they want to do, and many go on to careers in research."

Past participant Pamela Mackeen currently works at the severe storms lab and credits her involvement as a factor in obtaining her job after graduation.

"In college I did not have a clue what it meant to be a research scientist. The research experience for undergraduates program helped me better understand where I fit within a career track in research and what is involved in conducting research," MacKeen said. "It gave me an opportunity to network and make contacts within my field. I can't imagine where I would be had I not participated." ☺

Mahlman

continued from page 2
atmosphere and the oceans and understanding how they work.

Since then, Mahlman has not only become a leader in scientific circles, but in public ones, as well. Because of his ability to explain complex situations in understandable terms, he is often quoted in publications ranging from *The New York Times* to *Rolling Stone*.

"My nephew saw the piece I did with *Rolling Stone*, where I was quoted," Mahlman said, "and he called me to tell me, 'That was way cool, Uncle Jerry.'"

Mahlman is also able to show how physical processes affect the everyday lives of the *Homo sapiens* who inhabit the Earth. For instance, CBS News wanted to do a major interview with him about climate change. Mahlman agreed to be interviewed, but also suggested that the reporter talk to people who live on Smith Island in Maryland about how rising ocean levels are affecting them personally. Viewers saw not only a federal scientist explaining what was happening, but heard from people who were watching their way of life disappear.

Mahlman has always "told it like it is." While that may not always be popular within a federal government system, it remains one of his principles. His honesty and integrity were the reasons Vernon Derr, former director of NOAA's environmental research laboratories, called Mahlman and Dan Albritton, director of the Aeronomy Laboratory in Boulder, his "Eagle Scouts."

"I really was an Eagle Scout, but he didn't know that," Mahlman said with a smile. "Years later, I learned that Dan was an Eagle Scout, too."

One of his hallmarks is his integrity about the science.

continued on page 8

Bruce A. Wright, chief of NOAA's Exxon Valdez Oil Spill Research and Restoration Office in Juneau, Alaska, has been named a science advisor to the Pew Oceans Commission by Alaska Governor Tony Knowles. The recently established commission will focus on threats to living resources in U.S. waters and the measures needed to restore and sustain the health of the marine environment.

Constance Sathre, an attorney-advisor in the Office of General Council, has been selected as a Mansfield Fellow. Named for former Senator and Ambassador to Japan Mike Mansfield and his wife Maureen, the fellowships provide government employees with a year of intensive, full-time study of the Japanese

News Briefs

language and other subjects in the United States, followed by a year working in Japan.

Irwin T. David, the Weather Service's chief financial officer/chief administrative officer, has received the Association of Government Accountants' Frank Greathouse Distinguished Leadership Award, conferred upon government employees who have provided sustained, outstanding leadership in financial management over a period of years, resulting in notable contributions to accounting and auditing.

Edward N. Rappaport is the new deputy director of the Tropical Prediction Center-National Hurricane Center in Miami, Fla.

Mahlman

continued from page 7

Throughout his career, Mahlman has been frequently called to provide scientific testimony at Congressional hearings and has consistently refused to let political pressures influence his testimony.

In May, he was among a handful of scientists called to testify before Sen. John McCain, chairman of the Senate Commerce Committee, about global warming. Framing his testimony in gambling parlance, Mahlman said it is a "virtually certain bet that this problem will refuse to go away."

Mahlman, too, will "refuse to go away," in a sense. While he is leaving federal service, he still plans to remain active in the climate change arena. He has been approached to serve on a variety of committees and panels, as well as invited to lecture at numerous universities.

During Mahlman's tenure, GFDL developed the first comprehensive coupled atmosphere-ocean model used to demonstrate successful predictions of El Niño/La Niña events a year in advance and created a comprehensive, focused research program that provided major world leadership in producing the science base that now anchors the world-wide debates on human-caused climate warming and its likely impacts on life and social challenges.

The comprehensive hurricane prediction system that is now used directly by NOAA's National Centers for Environmental Prediction and the U.S. Navy was also developed during Mahlman's tenure.

These accomplishments have not gone unrewarded.

Mahlman has many awards and honors for his 30 years of work including the first Jule G. Charney

Lecturer Award given by the American Geophysical Union in 1993 in recognition of "the top figure in his field...who can provide a visionary overview," and the American Meteorological Society's highest honor, the Carl-Gustaf Rossby Research Medal in 1994 for "pioneering work in the application of general circulation models to the understanding of stratospheric dynamics and transport."

Mahlman also received the U.S. Department of Commerce Gold Medal in 1986 and the Presidential Distinguished Rank Award in 1994.

He has served on a number of national and international science committees and panels, including as U.S. delegate to the World Climate Research Program and the National Research Council's Board on Sustainable Development.

Summing up a 30-year-career in a few words is a difficult task.

Mahlman recently made a list of joys and disappointments of his time with NOAA.

"The 'joys' side was twice as long as the 'disappointments' side," he said. "Among the major disappointments are funding and the budget process. But I am deeply privileged to have been GFDL director," Mahlman said. ➤

The NOAA Report is a monthly publication for NOAA employees from the Office of Public and Constituent Affairs, Washington, D.C.

Address comments to:

Editor, The NOAA Report

1315 East-West Highway

SSMC3, room 10853

Silver Spring, MD 20910

301-713-9042 (voice)

301-713-9049 (fax)

E-Mail: dane.konop@noaa.gov

NOAA Report Online: <http://www.publicaffairs.noaa.gov/nr>

Barbara Semedo, Director, OPCA

Dane Konop, Editor

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