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Scientists Aim to Improve Forecasts By Flying Into West Coast Storms

—By Barbara McGehan

NOAA's P-3 Orion aircraft and their crews are best known for hunting hurricanes over the Atlantic, Caribbean and Gulf of Mexico in summer and fall.

But these flying meteorological laboratories prove their mettle over the Pacific Ocean as well during the "off" season, when severe Pacific winter storms replace hurricanes as the P-3s' principal quarry.

This winter, NOAA researchers, joined by scientists from the Navy, other government agencies and universities, are flying a P-3 in a project called PacJet, short for the Pacific land-falling jets experiment. Their aim is to develop and test methods to improve short-term forecasts of these potentially devastating ocean-borne weather systems.

During the six-week experiment, which began Jan. 20, the PacJet team of scientists, NOAA Corps pilots, civilian flight engineers, meteorologists and electronic engineers based in Monterey, Calif., will fly into storms that develop along the coast to study the "low level jet," a fast moving current of air that impacts west coast weather patterns.

"The crew is trained to operate in the kind of adverse weather conditions that keep other aircraft on the ground," says James

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New DOC Secretary Evans Makes First Visit to NOAA

—By Dane Konop

Secretary of Commerce Donald Evans made a spur of the moment visit to the NOAA Silver Spring, Md., Metro Center campus Jan. 25, telling a standing-room-only auditorium crowd that he looked forward to working with NOAA employees and recognized the importance of NOAA in the department.

"They tell me NOAA is a large part—50 percent—of the Commerce budget. But NOAA is actually 61 percent of the budget," he said. To much laughter he added, "You'd probably like it to be 75 percent."

Evans, President Bush's best friend, presidential campaign chairman and oil patch partner in the 1970s, also reassured employees about the future of the Department of Commerce, saying he does not favor doing away with the department. "That's not something that's on my agenda," he said with a smile.

The new secretary, speaking without a script, seemed to win over the crowd immediately with his easy going manner—and symbolically by his visit to the NOAA Silver Spring campus.

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Dane Konop/NOAA

Secretary of Commerce Donald Evans (center) stops to chat with individual employees following his get-acquainted address in the NOAA auditorium in Silver Spring, Md., Jan. 25.

Recycled Paper

Scientists Collect 20th Century Air at the South Pole

—By Barbara McGehan

While many of us have shivered through the cold, snowy weather this winter, we can at least be glad we weren't at the South Pole!

"It's a harsh environment," says NOAA researcher Jim Butler. "You've got mostly just the sun above and the snow below. The brightness is stunning."

Butler and Andrew Clarke from NOAA's Climate Monitoring and Diagnostics Laboratory in Boulder, Colo., linked up with a team of scientists from Bowdoin College and the University of Wisconsin to spend most of the month of January at the South Pole, searching for 100-year-old air samples.

Because it never melts, the Pole's relatively pristine snow pack traps pockets of air as it accumulates year after year.

Scientists drill into the snow to specified depths, then draw air from the snow pack at those depths, allowing an almost unlimited amount of air to sample.

Later, in their laboratories, researchers will be able to analyze this sample record for clues to how human activity, such as the burning of fossil fuels, has influenced the atmosphere over time.

"We were extracting air from undisturbed snow pack, so we needed to be located at some distance from other activities going on at the South Pole," Butler said.

Temperatures at the South Pole in January range from -11 to -40 degrees Fahrenheit, and wind speeds average about 11 miles per hour. The South Pole is located at an altitude of around 10,000 feet. "It's high, dry and cold," says Butler.

Including Butler, there were six scientists on the trip. One person suffered from altitude sickness the whole time. Another had a medical emergency. "Whenever something like that happens, it slows down the operations quite a bit," Butler said.

The generator kept breaking down while they were drilling. The "bladder," a device used to help them suck air out of the snow pack, was leaky.

"We finally got the generator working, and the bladder," Butler said. "Then the winch went down. Fortunately, by mistake, a second winch was sent to the South Pole, so that helped. We had to re-solder all the connections. There was a lot of work involved to keep everything running. These are all things you half expect to happen and hope they don't," he said.

The scientists had six tents, one for each of them, and a "warm" building that was kept at about 40 degrees F. It was about 7 feet by 11 feet, although the available space was more like 4 by 8, Butler said. There the scientists could cook and get warm.

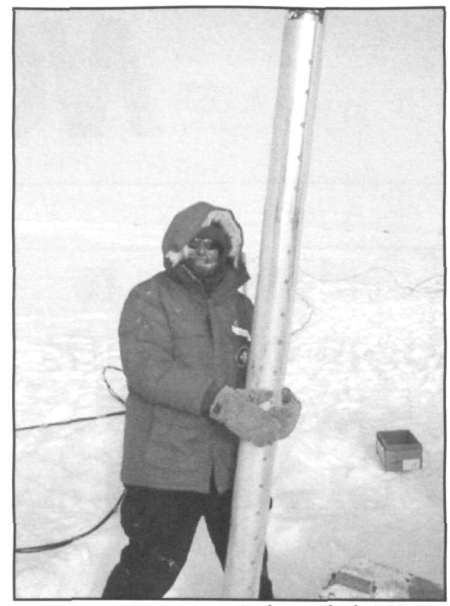
"Sometimes all six of us were inside it—three making dinner after working all day, and the other three making breakfast and preparing to begin the work day. But we had a very agreeable group," he said.

Sometimes they lost track of time.

"We tended to function on a longer day than 24 hours," Butler said. "The sun was the same for 24 hours, so it didn't seem strange to keep working."

"We made sure we had good meals," Butler said. "Several of us liked to cook, so we had pretty decent food. For those who wanted to take shortcuts, we had camping food."

But everything takes a long time at the Pole.



Andrew Clarke/NOAA

NOAA researcher James Butler drills for 20th century air at the South Pole.

"Getting out of bed and getting out of your tent was at best a 15 minute proposition if not longer," Butler said.

Did the cold bother them? "Once it's below zero degrees, who cares," Butler said. "At that point, it's really the wind that makes the difference."

There was a second building, called the "cold building."

"That's where we did our work. The ice cores had to be weighed and measured and the flasks of air were processed there," Butler said.

By the end of the trip, Butler said, "your skin dries up after a while and it's hard to move your fingers."

Would he go again? "Of course! It was fun. There's something exciting about Antarctica—unknown and mysterious. It's so different there," he said.

"It was important that we got these air samples now," Butler said. "Each year that goes by, we lose a year of history, as the snow turns to ice at the bottom of the hole. Just a few years from now, we won't be able to obtain air samples that span the entire 20th century, a time of rapid population, agricultural and industrial growth."

Secretary Evans

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Evans told the crowd that he had been informed earlier in the morning that he would be addressing NOAA employees in the department auditorium in Washington, but told his staff, "That's not what I want to do. I want to go see them. They shouldn't have to come see me."

Evans said in opening, "I want to tell you a little bit about me. The first thing I want you to know is that I care about you. That's why I'm here."

Evans credited his family with inspiring his sense of public service. "I love America and I love all Americans. That's why I'm serving. I had the good blessing of being raised in a family that believed in public service and giving back to this great country," Evans said.

Citing his father's World War II service in France, he said, "I learned that you give back to this great country, and that's what I'm doing here."

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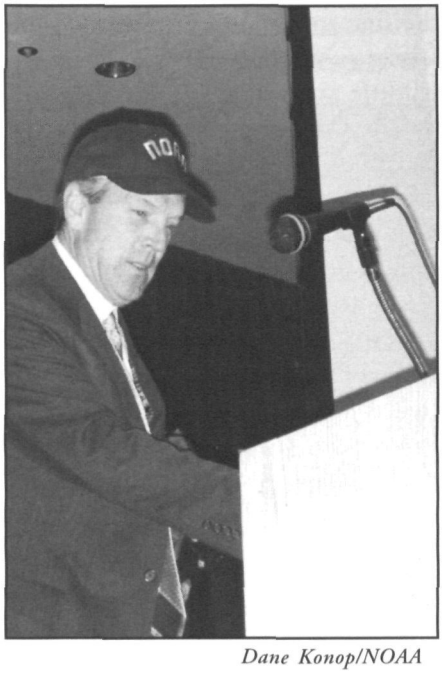


Dane Konop/NOAA

Secretary Evans dons a NOAA hat while addressing NOAA employees in the Silver Spring Metro Center auditorium.

Meteorological Society Honors NOAA Employees

The American Meteorological Society presented awards to a number of NOAA employees at the society's annual meeting in Albuquerque, N.M., Jan. 17.

Bill Proenza, director of the National Weather Service southern region, received the Francis W. Reichelderfer Award for his "exceptional dedication to public service."

John Feldt, hydrologist in charge of the Southeast River Forecast Center in Peachtree, Ga., received a 2000 National Isaac Cline Award for leadership for instituting organizational changes allowing staff at the center to maximize their potential.

John Michael Coyne, a forecaster and webmaster at the National Weather Service Forecast Office in Corpus Christi, Tex., received a Cline Award for program management and administrative services for his numerous programming contributions, including the SNUFFLE program that enables forecasters to automatically format text weather products as a computer-generated voice for NOAA Weather Radio broadcasts.

Steven F. Corfidi, a lead forecaster with the Storm Prediction Center in Norman, Okla., received the 2001 Exceptional Specific Prediction Award for "his exceptional forecast of the Jarrell, Tex., tornado" on May 27, 1997.

The National Weather Service Forecast Office in Norman was honored with a special award for its "outstanding and well coordinated actions before, during and after the deadly May 3, 1999, tornado outbreak in central Oklahoma." The office shared the award with the Oklahoma Department of Public Safety, television stations KFOR, KOCO and KWTV, the Southwest Independent Repeater Association and the Oklahoma Climatological Society.

David J. Schwab of the Great Lakes Environmental Research Laboratory in Ann Arbor, Mich., and John Kelley of the National Ocean Service in Silver Spring, Md., received a special award as members of a team that developed a coastal forecasting system for the Great Lakes.

David M. Schultz, a research meteorologist at the National Severe Storms Laboratory in Norman, received an Editor's Award for "providing extremely thorough, timely and constructive evaluations of a large number of manuscripts over a diverse range of topics and for special assistance to the editors in evaluating controversial issues" for the society's *Monthly Weather Review.*

Stephen J. Weiss, a lead forecaster at the Storm Prediction Center in Norman, received an Editor's Award for "the completion of several extremely knowledgeable, very constructive and remarkably thorough reviews for manuscripts focused on severe weather detection and prediction" for the society's journal *Weather and Forecasting.* Weiss was also named a society fellow.

Frank D. Marks, Jr., a research meteorologist with the Hurricane Research Division of the Atlantic Oceanographic and Meteorological Laboratory in Miami, Fla., and Ward R. Seguin, engineering chief of the National Weather Service's Automated Weather Information Processing System Program Office in Silver Spring, were also named fellows.

Focus On...

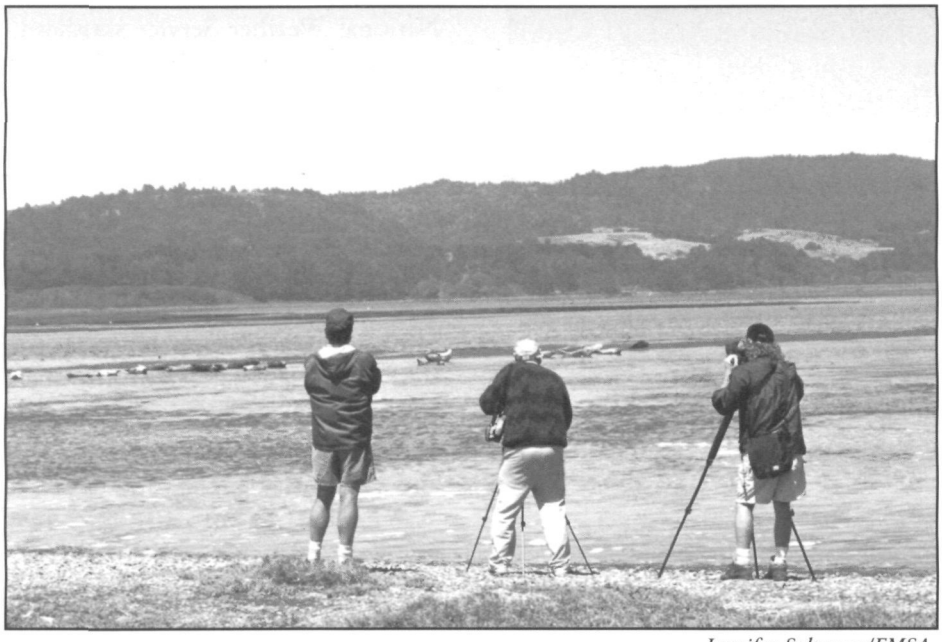
Decades of Dedication: The Gulf of the Farallones National Marine Sanctuary

—By Paul B. Wong

This year the Gulf of the Farallones National Marine Sanctuary is celebrating 20 years of protecting the environment within a 1,255-square-mile marine area off the California coast.

Within its boundaries of open ocean, salt marshes and coastal beaches, a rich ecosystem thrives that includes gray whales, Stellar sea lions, common murres and ashy storm petrels.

The Gulf of the Farallones National Marine Sanctuary has not only endured for the last 20 years, it has grown stronger through increased public support and has responded to changes over time and events that impact the creatures and habitats it monitors.



SEALS volunteers monitor a harbor seal colony in Tomales Bay. *Jennifer Saltzman/FMSA*

Paul B. Wong/NOAA

A new common murre exhibit was established at the sanctuary visitor center in Pacifica.

Over the last two decades, the population of the San Francisco Bay area increased by 3 million to a total of 8 million.

Challenged by an oil spill from the tanker *Puerto Rican* in 1984, the sanctuary responded with programs such as Beach Watch. This award-winning program, developed to take advantage of citizen concern for the marine environment, was NOAA's first volunteer monitoring program.

Today, Beach Watch involves 110 trained volunteers who monitor the shoreline and survey wildlife along more than 100 kilometers of beaches. These volunteers are often the first to respond on scene during a boat grounding, oil spill or wildlife stranding.

The Gulf of the Farallones Sanctuary is using 2001 to look back at its 20 years of accomplishments while working to achieve an important goal—increasing the sanctuary's visibility by reaching out to surrounding residents with a series of 20th anniversary events that will highlight the incredible diversity of sanctuary resources.

In January, Peter Pyle of the Point Reyes Bird Observatory kicked-off the 20th anniversary with a lecture on the sanctuary's population of white sharks. The sanctuary has the highest concentration of white sharks in the world!

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Kayakers explore the Gulf of the Farallones during a sanctuary sponsored trip.

Maria Brown/FMSA

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To allow the public an opportunity to experience the sanctuary, a variety of outings are planned: whale watches, kayaking, tidepooling and birdwatching trips. This summer, a "sanctuary explorer" day camp will be offered to economically disadvantaged youth. In the fall, the sanctuary is hosting a premiere of its new video. An open house will feature speakers and a marine environmental fair.

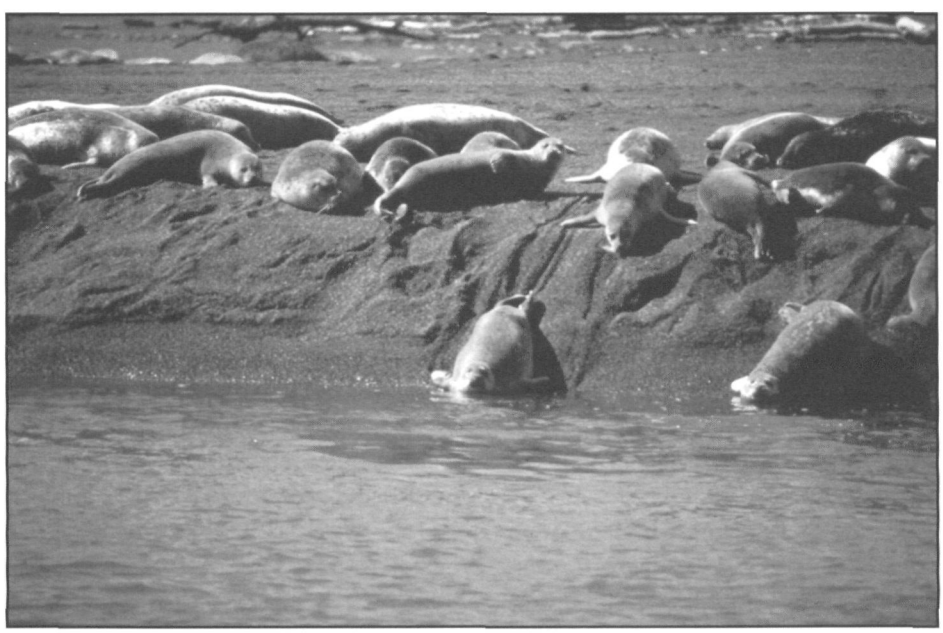
Another program, called SEALS, will be recruiting and training volunteers who want to get involved in sanctuary programs. The SEALS program monitors harbor seals and nearby human activity. Docents educate visitors on minimizing disturbances to seal colonies in Tomales Bay and Bolinas Lagoon.

Thanks to the docent program, clam diggers and fishers, who were previously responsible for 51 percent of the disturbances to harbor seals, are now only involved in less than one percent of these interactions.

The SEALS program has also been active in developing a responsible wildlife viewing program including a "paddler's etiquette."

The public outreach programs are presented in cooperation with the non-profit Farallones Marine Sanctuary Association. For the 20th anniversary, the association has published an events calendar featuring stunning color photos of various marine wildlife and other sanctuary highlights.

As sanctuary manager Ed Ueber often says, "Citizens provide the hands, eyes, ears and soul of marine resource protection in the Gulf of the Farallones National Marine Sanctuary."



Jamie Hall

Harbor seals haul out to rest and enjoy the sun.

PacJet

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McFadden of NOAA's Aircraft Operations Center.

These flights over the ocean collect weather data that land-based instruments often cannot provide.

The P-3 "hurricane hunter" aircraft is packed with weather-measuring instruments, carrying a Doppler radar antenna in its tail—the first Doppler radar ever flown, a surveillance belly radar and other airborne data collection systems.

Under the plane is the "ozone shark," a four-foot-long bullet-shaped instrument that measures air quality, painted to look like a shark.

Using a new satellite communications link, the scientific team is now able to communicate with forecasters on the ground on a real-time basis, enabling researchers to send forecasters radar images, audio transmissions and other information directly from the aircraft.

"This capability has already proven to be a great help to forecasters," said Robert Diaz, Jr., meteorologist in charge at the Weather Service forecast office for San Francisco Bay.

There are also ground-based instruments that measure winds and water vapor, and a new GOES satellite scan for cloud-tracked winds.

The P-3 Orion that is flying in PacJet has a decal of the Muppets' "Miss Piggy" on its side that smiles mischievously at onlookers. It makes the plane look friendly and appealing. But don't be misled; flying on the aircraft is not like being a passenger on a comfortable commercial airliner.

On the side of the plane, next to the image of Miss Piggy, are decals representing each of the 61 hurricanes the plane has flown through.

During PacJet, scientists aboard the aircraft drop small instrument packages like unarmed bombs from the belly of the P-3 as it flies through a storm. As they fall toward the sea surface, these dropwindsondes continuously measure and radio back to the aircraft air pressure, humidity, temperature, wind direction and speed, providing a detailed look at the structure of the storm and its intensity.

James Carroll/NOAA

Robert Diaz, Jr., meteorologist in charge of the National Weather Service forecast office in Monterey, Calif., meets the press during PacJet media day, while a NOAA P-3 stands by.

The plane flies for eight to ten hours at a time, at altitudes ranging from 15,000 feet to 300 feet, depending on the measurements they are making as they cut back and forth through a storm.

The ride can be rough.

"A strong stomach is definitely an advantage for a scientist aboard the aircraft," said one crew member at the start of the project.

"It's continuous hours of what, on a commercial airliner, would be called severe turbulence," said researcher Stan Benjamin of NOAA's Forecast Systems Laboratory, who had just flown aboard the aircraft into a vicious storm off the coast of California.

"Eventually the seat belt sign is turned off and they say it's okay to walk around. But unlike an airliner, you still have to hold on to something all the time. If you were on a commercial plane, the food carts would be flying," Benjamin said.

The first powerful storm that Benjamin, the P-3 crew and other researchers flew into in late January caused drenching rain, hail, 50-mile-an-hour winds and snow in the Sierra Nevada Mountains.

As they flew back and forth through the front, waterspouts in the ocean were sighted along with dangerous lightning.

Towering waves smashed the California shoreline, as forecasters up and down the coast issued marine warnings.

Science operations officer William Schneider from the Weather Service forecast office in Portland, Ore., who was working in the PacJet operations center during the storm, called it "one of the most actively convective storms I've seen on the west coast."

Secretary Evans

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Evans, a Houston, Texas, native, also talked about his friendship with President George W. Bush. "The president and I moved to Midland in 1975," he said. "We were moving back to his hometown. We moved there to pursue the good old American dream—to build a career and raise a family and give back to the community."

In Midland, Evans joined Tom Brown, Inc., a large independent energy company now based in Denver, Colo. Evans resigned as the company's board chairman and chief executive officer Jan. 19.

Evans also served as chairman of the Bush/Cheney 2000 presidential campaign and as finance chairman of Bush's 1994 and 1998 gubernatorial campaigns.

"I had the great joy of traveling across America in the last few years, meeting wonderful people everywhere who care about this great land," Evans said. "I simply like to tell people, 'If you love America, you're a friend of mine.'"

Evans, who displayed a subtle, self-deprecating sense of humor, said he was still getting used to his new job and preparing to bring his family to Washington. "I can't get used to people calling me Mr. Secretary," he said. "In fact, my son, who is 11 years old and who will be moving up here this summer, went to school the other day and was telling his fellow classmates he was going to be moving. 'My dad no longer has the job of chairman of this oil and gas company. He's going to be a weatherman.'

"That's fine with me," the new secretary said. "Being a weatherman is A-okay."

He and his wife, Susan Marinis Evans, also have two grown daughters.

Evans, who earned a B.S. in mechanical engineering in 1969 and an M.B.A. in 1973 from the University of Texas, said he had a lot to learn about his new job as secretary. "I'm an engineer. I'm a scientist," he said. "I can't wait to learn more about NOAA and more about fish. I know I'm going to learn a lot about fish," Evans said to much laughter from the crowd.

Referring to his Congressional confirmation hearing, Evans said, "They wanted to have mine early. I said, 'I don't mind going early because they probably shouldn't expect me to know very much.' And guess what? I didn't disappoint them.

"But it went fine, as I obviously got confirmed," he said. "I'm honored and humble to be here to serve."

Evans said he looks forward to working with NOAA scientists on "the very important issues we're going to be responsible for," citing global climate change as an example.

"I look forward to listening to you and hearing what's on your mind and letting you educate me as to the science and the various areas we're responsible for," he said. "I'll do my best to represent each and every one of you."

Evans said he depends heavily on first-hand observation to make decisions. "I like to be close to the action. I will take the time to try to see you from time to time," he said. "I'm one who believes in management by wandering around and getting as deep in the organization as you can and talking to the people who are closest to the situation," he said.

After his talk, Evans spent about 20 minutes speaking individually with employees who mobbed him as he made his way out of the auditorium for a meeting with the NOAA leadership. He then toured Weather Service offices on the Silver Spring Metro Center campus.

Dominion Virginia Power Honors Rear Adm. Fields

—By Jeanne Kouhestani

Rear Adm. Evelyn J. Fields, director of the Office of Marine and Aviation Operations, joined the ranks of such notable African-Americans as Colin Powell, Thurgood Marshall, Oprah Winfrey, Michael Jordan and Ronald H. Brown on Jan. 24 when she too was honored with the "Strong Men & Women: Excellence in Leadership" award from Dominion Virginia Power at an inspiring ceremony in Richmond, Va.

Each year nine outstanding African-Americans are selected for the award. A poster collage of their portraits, painted by renowned artist Carl Owen, and biographical materials are distributed to about 12,000 schools in Virginia, North Carolina, West Virginia, Pennsylvania and Ohio during Black History Month.

According to Thomas E. Capps, chairman, president and chief executive officer of Dominion Virginia Power, "These leaders did not burst upon the scene fully formed. Someone nurtured them from childhood, through teen years into adulthood.

"Our young people need role models at all levels—from those who touch their lives daily to renowned leaders who have shown great strength in overcoming everyday obstacles. We hope that these images and life stories will inspire the next generation of wise, strong and knowledgeable leaders."

Fields is the first woman and first African-American director of the Office of Marine and Aviation Operations and the NOAA Corps. She was also the first woman officer in the U.S. uniformed services to command an ocean-going ship.

2000 Presidential Rank Award Goes to Usha Varanasi

—By Ali Senauer

Usha Varanasi, director of the Northwest Fisheries Science Center in Seattle, Wash., has received a 2000 Presidential Rank Award for Meritorious Service.

The award recognizes government senior executives who direct innovative and significant research efforts, foster partnerships and community relations to achieve results and deliver outstanding service.

Varanasi's leadership at the center has resulted in several new and highly successful multi-disciplinary research programs, including the cumulative risk initiative, which analyzes salmonid population trends relative to environmental and human-induced impacts and activities, and a marine groundfish research program which is improving stock assessments and resource surveys in the Pacific Northwest.

Varanasi has also been instrumental in developing win-win scenarios between fishers and the scientific community by establishing agreements with private charter vessels to conduct scientific research needed by the agency, launching a port interview program on the West Coast to bring center scientists, fishers and state biologists together to improve catch logbooks, and developing an electronic fish catch logbook, which will provide a nationwide system for real-time electronic collection of fisheries dependent data.

Carol Murray/NOAA

Sen. Patty Murray (left) congratulates Usha Varanasi on her Presidential Rank Award.

The World Meteorological Organization awarded its Vaisala Award Jan. 16 to seven NOAA scientists and their co-authors for a scientific paper they published in the *Bulletin of the American Meteorological Society* entitled "Ground Based Remote Sensor Observations During PROBE in the Tropical Western Pacific." The award-winning NOAA authors are **Edgeworth Westwater**, **Yong Han**, **James Churnside**, **Joseph A. Shaw**, **Michael J. Falls**, **Kenneth S. Gage** and **Warner Ecklund**. The Professor Vilho Vaisala Award, which consists of a medal, a diploma and cash, annually honors an outstanding scientific research paper in the field of meteorological instruments and methods of observation.

News Briefs

H. Lee Dantzler is the new director of the National Oceanographic Data Center in Silver Spring, Md. Dantzler, an oceanographer, comes to NOAA from the Johns Hopkins University Applied Physics Laboratory in Laurel, Md., where he specialized in environmental information systems technology.

Robert L. Mairs has been named chief information officer of the National Environmental Satellite, Data and Information Service. He was the deputy director of the Office of Satellite Data Processing and Distribution, where he managed one of NOAA's largest data processing facilities, ensuring access to users from around the world.

Aeronomy Laboratory director **Dan Albritton** has received the 2001 Pacesetter Award in Science from the publisher and board of directors of the Boulder, Colo., *Daily Camera*. The award recognizes his many contributions to Boulder, NOAA, the nation and the world in three scientific areas—ozone depletion, climate and air quality—and in communicating scientific understanding to decisionmakers in these three arenas.

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