

NOAA Experts Assess the State of the World's Climate

—By Patricia Viets

In a March 14 news conference in Washington, D.C., NOAA climate experts reported the average global temperature this past December through February was the second warmest for the period since record keeping began in the late 1800s. In the U.S., precipitation since September along the eastern seaboard has been the lowest on record, they reported, leading to severe drought from Florida to Maine.

While this current climate assessment was simple and straightforward, spelled out in terms that

could be easily understood by the general public, how NOAA climatologists create this “state of the climate” report remains a mystery to most.

“It’s a rather complex process,” said Jay Lawrimore, chief of the Climate Monitoring Branch of NOAA’s National Climatic Data Center in Asheville, N.C. “It’s not a simple matter of collecting surface data from around the world and averaging the individual station data into a U.S. or global average.”

Monitoring climate conditions
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Federally Employed Women Chapter Chartered at NOAA

—By Dane Konop

A group of NOAA women employees has established a Washington, D.C., regional chapter of Federally Employed Women.

Newly elected officers of the Sea and Skies chapter were formally installed March 20 in a ceremony during the Women’s History Month training conference sponsored by the National Ocean Service in Silver Spring, Md.

The new officers are president Antoinette Hollingsworth, vice president Barbara Banks, treasurer Marcia Butler, recording secretary Joyce Turpin and corresponding secretary Patricia Taylor.

Hollingsworth, a geodetic technician on detail to the Correspondence Unit of the Office of Public and Constituent Affairs, described FEW as “a non-profit, private organization that promotes equality for women and enhances the careers of women in the federal workplace.” The purpose of the Sea and Skies chapter, she said, is “to promote pay equity, diversity, leadership and personal and professional growth” for NOAA women employees.

With the backing of the NOAA leadership, in particular National Ocean Service Assistant Administrator Margaret Davidson, Hollingsworth and Michelle Crockett, the Ocean Service’s acting EEO officer, petitioned the
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Gregory Hammer/NOAA

NOAA climatologists (left to right) Jay Lawrimore, Richard Heim, Anne Waple, Scott Stephens, Matt Menne and Catherine Godfrey of the National Climatic Data Center review graphics and analyze climate conditions for the most recent winter season.

State of the Climate

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around the world in near real-time begins by obtaining the current data, with NOAA's climate data center receiving temperature and precipitation measurements from meteorological stations around the world.

These meteorological data usually arrive during the first five to eight days of each month.

The NOAA climate monitoring team then uses a series of quality control processes developed at the center to ensure the reliability of the collected data before they are merged with existing data sets.

Among the essential sources of data is the United States Historical Climatology Network, made up of 1,221 high-quality meteorological stations in the 48 contiguous states.

Satellite data are increasingly relied upon, including a blended set of satellite and surface station data and a sea surface temperature data set.

To compare the current global climate for land areas with historical data, the team relies most heavily on the Global Historical Climatology Network, a database containing meteorological measurements from around the world that was developed by Thomas Peterson and Russell Vose, both of the National Climatic Data Center.

This data set contains mean temperature data from more than 7,000 stations and monthly precipitation totals for more than 20,000 stations.

"Some of the data go back to the 1700s," said Scott Stephens, a center scientist who studies weather and climate from a global perspective. "The core data are from 1880 to the present time," he said.

During the past century, global temperatures have increased
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Twin Otter Crews Spot Right Whales

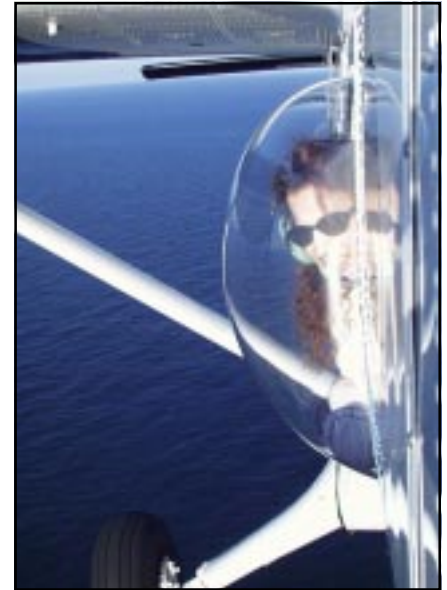
—By Mark Oswell

Skimming over the Atlantic Ocean near St. Simons Island, Georgia, at a mere 750 feet, a lone Twin Otter aircraft searches for an elusive dark spot on the sea of blue below.

The mission for these aerial patrols: spot, identify and predict the track of endangered northern right whales.

"NOAA conducts these flights to avoid right whale vessel collisions," said Kathy Wang, marine mammal team leader for the NOAA Fisheries Office of Protected Resources in the southeast region.

A survey crew consists of a pilot, co-pilot, two spotters, a data recorder and sometimes an extra



Lt. John Longenecker/NOAA

Rene DeVito of NOAA Fisheries' northeast region searches the sea surface for right whales in the Great South Channel east of Cape Cod, Mass.

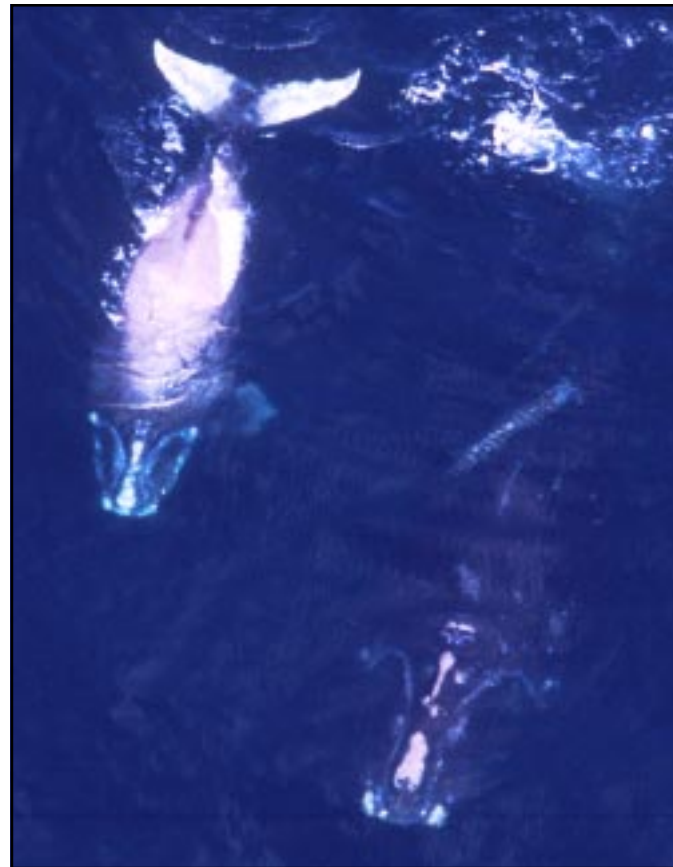
spotter since looking out the convex side-windows can get tiring during the 6- to 7-hour flights.

Once a whale is spotted, the crew moves into action.

"When we sight a whale, we circle over it and drop down to about 500 feet, and the spotters take photos," said Lt. Cdr. Mark Moran, the NOAA Corps pilot for this survey mission.

If there is a ship in the immediate vicinity, the pilot of the aircraft will contact the bridge officers of the vessel to warn them of the whale's presence, Wang said.

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Tim Cole/NOAA

Right whales remain on the surface for long periods of time, making them vulnerable to collisions with unwary ships.



Crystal Williams/NOAA
Susan J. Salvesson.

Susan J. Salvesson Is the Employee of the Month for April

—By Crystal Straughn

Susan J. Salvesson, Assistant Regional Administrator for Sustainable Fisheries in Alaska, has been named NOAA's April Employee of the Month. She is cited for being a "tireless advocate of improving National Marine Fisheries Service management of sustainable fisheries."

According to James Balsiger, the Fisheries administrator for the Alaska region, Salvesson demonstrated outstanding leadership for the region, addressing fishery issues of regional and national importance. She worked hard and fast, he said, to get groundfish quotas pushed through for the 2002 fishing year so that the fishing industry was able to start fishing Jan. 1.

The wholesale value of Alaska groundfish is about \$1.2 billion annually.

Salvesson organized and worked on teams that had to prepare the

supporting analysis for the groundfish rule making that is required by the Magnuson-Stevens Act, the National Environment Policy Act and the Endangered Species Act. She fostered teamwork among the regional staff as well as between the staffs of NOAA Fisheries, the Alaska Fisheries Science Center and the North Pacific Fishery Management Council, whose products were essential to the swift rule-making.

Salvesson, who serves as the Alaska region's alternate voting member on the North Pacific Fishery Management Council, successfully explained to the council NOAA's strategy to reduce rulemaking.

"In Alaska, we have the luxury of healthy, productive fisheries which supply a good portion of the fish consumed in the United States. Sue makes key decisions aimed at keeping the fisheries healthy for the long run," Balsiger said. "She is smart, organized, experienced and tenacious. And that is what we need."

Salvesson is grateful to be NOAA's Employee of the Month.

"I appreciate the fact that the agency recognizes the work we do in the field and the importance of that work relative to the mission of the agency," Salvesson said. "I love the challenge of grappling with new and complex issues. I especially appreciate the people I work with in the region, the Alaska Fisheries Science Center and the staff of the North Pacific Fishery Management Council. The work environment that results from hardworking and cooperative people working together towards a common goal is rewarding," she said.

"We have accomplished a lot in the Alaska region during the past 10 years and I am proud of what we have done and of the goals we

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Linda Kurz/USCG
Harold W. Heineken.

Harold Heineken Is Team Member of the Month for April

—By Jeanne Kouhestani

Harold (Hal) W. Heineken, deputy director of the U.S. Coast Guard's Human Resources Service and Information Center in Topeka, Kan., provides something near and dear to the heart of every active NOAA Corps officer: payroll and benefit services.

For his unflinching commitment, professional excellence and service to the NOAA Corps for nearly 20 years, the Office of Marine and Aviation Operations has named Heineken NOAA's Team Member of the Month for April.

When for budgetary reasons the Department of Commerce decided to get out of the payroll business back in the early 1980's and transferred its records to the National Finance Center, the NOAA Corps had a big problem to resolve. The finance center had no mechanism to handle the special pay requirements of service mem-

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Focus On...

PacJet 2002

—By Barbara McGehan

Flying over the ocean in NOAA's WP-3D Orion aircraft, a mere 200 feet above the waves, is definitely not for the faint of heart. But for the scientists and crew aboard the aircraft, it's just another routine work day as they check out weather systems along the Oregon coast.

Their job: improve the short-term forecasting of Pacific storms.

A rotating group of scientists from universities and NOAA research laboratories plus forecasters from the National Weather Service worked together during February and early March to study and measure Pacific storms that bring heavy rain, snow and wind to the U.S. west coast during winter.

Using the NOAA P-3 aircraft, based at the Portland, Ore., International Airport, they flew into almost a dozen storms.

The crew included NOAA Corps officers and civilian flight and electronic engineers from NOAA's Aircraft Operations Center in Tampa, Fla.

The scientists were studying the "low-level jet," a fast moving current of air centered at around 3,000 feet that occurs near cold fronts in winter storms. Researchers believe the low-level jet may be the crucial factor in determining how much rain a Pacific storm dumps on the U.S. west coast.

"These flights over the ocean will fill in some of the gaps in our knowledge and provide us with important data," said Ola Persson, the PacJet field manager from the Environmental Technology Laboratory in Boulder, Co.

The flights would regularly go *continued on page 5*



James D. McFadden/NOAA

Tom Shepherd (foreground) mans the flight director's station, while Lt. Randy TeBeest pilots the P3 aircraft during PacJet 2002.



James D. McFadden/NOAA

Scientists have little time for sightseeing during a research flight, despite occasionally spectacular scenery, such as this view of Mt Hood just outside Portland, Ore.



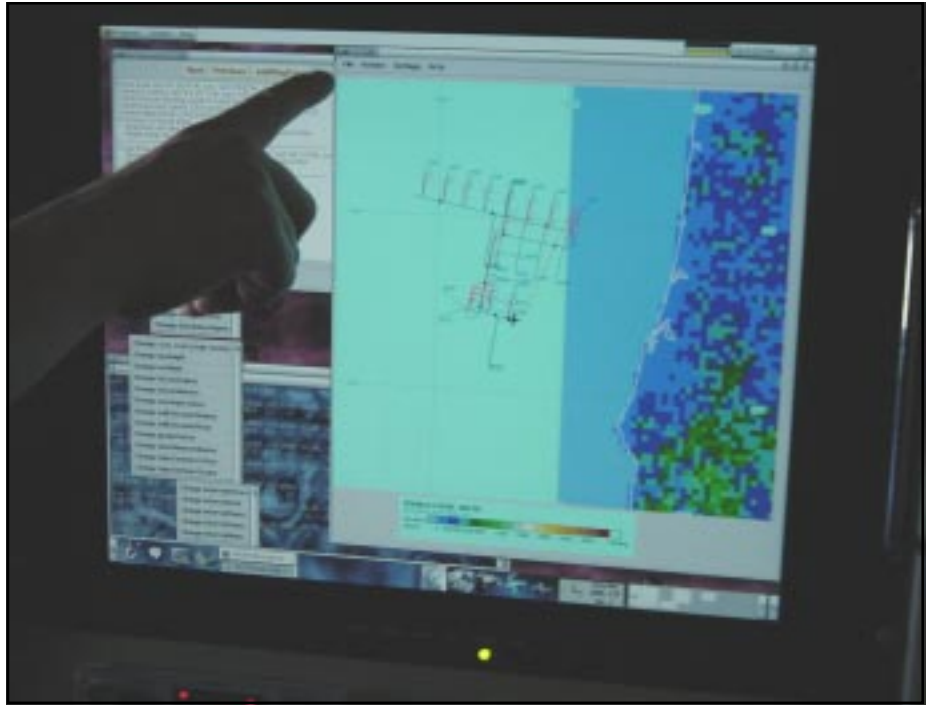
David P. Jorgensen/NOAA

Jason Knievel (foreground), a National Research Council post doctoral student at NOAA's National Severe Storms Laboratory, and David White, a scientist with NOAA's Environmental Technology Laboratory, examine computerized plots of data collected during a PacJet flight off Oregon.

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down to 200 feet above the waves and then spiral up to 8,000 feet, measuring the wind and making other calculations. When the plane dove below 500 feet, everyone on board was required to put on a special life vest.

Persson said flying low doesn't bother him. "There's no time to worry," he said. "We're too busy making decisions, communicating with the pilot and just doing our



James D. McFadden/NOAA

The aircraft's work station computer shows wind speed and direction in red and blue, an airplane icon to indicate the P3's current position and a picture of the track of the aircraft.

job. I've really got to be focusing the whole time."

Often they fly into wind shear situations, especially when they fly lower. "But we aren't intentionally looking for turbulence and bumps," Persson said. "It just

happens that where the wind shear is, the storms are more interesting."

Part of the PacJet mission was to validate models based on satellite data. "We wanted to be out there when the satellite passed over, so our flights took off between 1 and 3 in the morning or 1 and 3 in the afternoon," Persson said.

The researchers were also able to download radar images to weather forecast offices several times during the flights.

The WP-3D Orion is a versatile resource for researchers since it can fly at a variety of altitudes, providing observations at levels critical for defining weather systems.

According to William Schneider, science and operations officer for the Weather Service office in Portland, "This year's PacJet provided a great opportunity for the researchers to work directly with our forecasters. By providing very specific feedback to the research community, we see a better end product which our forecasters can use to improve the forecasts people use every day." ☺



Ola Persson/NOAA

PacJet flight director Tom Shepherd (left) and William Schneider, science and operations officer at the Portland, Ore., Weather Service Office, prepare to board the NOAA P3 aircraft.

FEW Chartered

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FEW national office in January to establish a NOAA chapter. The FEW national board voted to charter the NOAA Sea and Skies chapter Feb. 16.

There are now 61 Sea and Skies members, including 21 who joined during the March 20 meeting.

Although most chapters draw members from specific geographic areas, NOAA employees in other regions can join the Sea and Skies chapter or other FEW chapters in their region. Employees can belong to more than one chapter in addition to their national membership.

Hollingsworth said the Sea and Skies chapter will hold monthly meetings, generally at lunch time, on NOAA's Silver Spring Metro Center campus and in local restaurants.

She said the Sea and Skies chapter is researching using teleconferencing so that NOAA

employees who are not located in Silver Spring can participate in meetings.

Hollingsworth said she is now organizing chapter committees for legislation, finance, public relations, bylaws, special events and training.

Although it's not a social organization, Hollingsworth expects FEW to sponsor some social functions, including recruiting meetings and possibly a group ocean cruise.

FEW also holds annual national and regional training conferences.

FEW membership is open to all current and retired federal government employees, including contractors and military personnel.

There are \$25 annual national dues and \$10 chapter dues.

FEW focuses its efforts in four major areas: training, legislation, EEO compliance and diversity. Hollingsworth said FEW has joined federal unions and other employee groups advocating for the family leave act, long-term health care insurance and pay equity. ☺

Heineken

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bers, and there was a looming void in services.

The Coast Guard came to NOAA's rescue, with Heineken leading the charge.

"Hal was instrumental in developing the memorandum of agreement between NOAA and the Coast Guard regarding this take-over of active duty allowances and processing," said Steve Eisenberg, who is chief of the Officer Services Division at NOAA's Commissioned Personnel Center. "He was initially a key player in engineering the MOU and, as you can imagine, there were quite a few things that had to be done. It was very complex."

Heineken oversaw the conversion of the Commerce data to the Coast Guard system, a major undertaking in itself.

Because the NOAA Corps has a number of unique requirements, Heineken had the additional responsibility of adapting the system to accommodate the Corps' special needs. He even provided office space and computer equipment for several employees from the Commissioned Personnel Center in his facility in Kansas at no charge to NOAA, and continues to do so.

Eisenberg emphasized that Heineken didn't just write the MOU and drop the challenges of executing it into someone else's lap. "He has consistently followed through on the MOU and worked with the NOAA Corps to maintain a high level of service," Eisenberg said.

"He exemplifies the best of the Coast Guard's 'can do' attitude, Eisenberg said. "While others might say, 'What can I do for you?' Hal says, 'Here's what I've done for you.' He's very pro-active."

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Ron Bell/DOC

Antoinette Hollingsworth (left) is congratulated on being elected the first president of NOAA's Sea and Skies chapter of Federally Employed Women by FEW national vice president Jeanette Height.

Heineken

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Heineken's primary responsibilities, of course, lie with the Coast Guard. Yet when it comes to making decisions that affect the operation of the Human Resources and Service Information Center, he always keeps the NOAA Corps and its special needs in mind.

"He is constantly on the lookout for us. He always calls to make sure we are aware of any administrative or legislative changes that will affect us," Eisenberg said.

Heineken has received a number of commendations from the Coast Guard over the years for his exemplary service, the latest in February. Though the citation accompanying his commandant's superior achievement award is far too long to quote in full, his achievements in handling the NOAA Corps pay services were noted.

The citation reads, "Consistently looking for ways to improve government efficiency, Mr. Heineken arranged for the National Oceanic and Atmospheric Administration to be served by the Coast Guard payroll system. This initiative saved millions in development and operating costs for the Department of Commerce and delivered significant service improvements to NOAA officers."

When Capt. David Peterson, now director of NOAA's Commissioned Personnel Center, was chief of payroll for the Corps, he got to know Heineken. He recalled that Heineken "has always been concerned that the relationship between the NOAA Corps and Coast Guard be smooth and trouble free.

"We have had nothing but the best of relationships, largely due to the professionalism of Hal Heineken. He has always come through for us when we've had a question or needed a problem resolved," Peterson said. ☺

Right Whales

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With the plane circling overhead, the spotters in back take several photos of the whale to make a positive identification. Individual northern right whales can easily be identified by the pattern of yellowish callouses on their head, mouth and eyes.

While the spotters are photographing a whale, the pilots are relaying the information to the U.S. Navy's Fleet Area Control and Surveillance Facility in Jacksonville, Fla.

This starts the early warning system

process, which seeks to reduce the number of ship strikes by providing real-time whale locations to vessel operators.

"Right whales were spotted at this time at this location, and were headed in this direction," is the type of information passed along, according to Moran.

Once the information is received, the Navy then notifies the Coast Guard and any Navy ship in the region.

The warning is then sent to all ships in the area via IMMARSAT communication and the NavTex system.

Having current information about whale positions allows captains of large ocean-going freighters, cruise ships, tankers, recreational vessels and Navy ships to avoid these slow giants.

Weighing in at over 60 tons, the northern right whale is one of the largest whales found in the Atlantic.

These enormous creatures were once nearly hunted to extinction by whalers who deemed them the "right" whale to harvest, due to

their slow speeds and tendency to congregate on the surface.

Currently, these animals are on the endangered species list, as only 300 of the giants have been identified in the North Atlantic.

Although these survey flights don't always spot whales, their goal is commendable.

"The Twin Otter flights have contributed significantly to the whale protection effort. In particular, the aircraft play an important role in finding entangled whales and in relocating entangled whales

that have been tagged by disentanglement teams for further rescue work," said William Hogarth, Assistant Administrator for NOAA Fisheries. "The Twin Otters

have also contributed to the scientific study of right whales, providing the platform for researchers to photograph individual whales that may be useful in making population estimates," he said.

Managed, maintained and operated by NOAA's Aircraft Operations Center in Tampa, Fla., the Twin Otters are particularly well suited for this type of work. Designed to operate in the harsh environment of northern Canada and Alaska, they have established a legendary reputation for ruggedness and reliability. Their solid stability, excellent visibility and ample payloads make them ideally suited to serve NOAA's needs.

The whales winter in their breeding grounds off the Florida-Georgia coast and in Gray's Reef National Marine Sanctuary in Georgia. In late February, some right whales begin to turn north in an annual migration to the waters off Maine and the maritime provinces of Canada, all the while under the watchful eyes of the NOAA Twin Otter. ☺

Weighing in at over 60 tons, the northern right whale is one of the largest whales found in the Atlantic.

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approximately one degree Fahrenheit. To ensure that this reading and other observed trends and variability are not biased by non-climatic influences, algorithms developed at NCDC during the past 10 to 15 years remove non-climatic factors such as instrument changes, station moves and changes in observer practices.

For the sea surface of the Earth, the team uses historical data from ocean-going vessels dating back to the 1800s. These data, as well as data from ocean buoys, are blended with

NOAA satellite data using a technique devel-

oped at the National Climatic Data Center by Richard Reynolds and Thomas M. Smith.

To calculate the combined land and sea surface conditions, the team uses another statistical technique for creating a land-sea temperature index developed by several of the center's scientists.

"If all of this sounds complicated, calculating the data for the United States is no easier," Lawrimore said.

The climate team receives data from several sources and uses various databases developed at NCDC to analyze current conditions and place them in historical perspective.

The National Climate Data Center works with NOAA's Climate Prediction Center to rapidly acquire data from sources such as the nation's 13 river forecast centers and the automated system for collecting snowpack and related climatic data in the western U.S. sites.

Data are also received from about 900 automated surface observing system stations, including about 250 stations operated by the National Weather Service. The other stations are predominately from military stations and small airport sites.

The near real-time data are then combined with previously collected data using specialized techniques developed at NCDC to place current climate conditions in historical perspective.

In addition to monitoring the global and national climate, NOAA scientists closely monitor regional drought conditions in the United

States and provide monthly historical perspectives.

These analyses contain numerous records of drought from 1900 to the present.

Based on the Palmer Drought Index, a standard measure that considers precipitation, water demand and water loss through runoff and evaporation, "Severe to extreme drought affected about 21 percent of the contiguous United States as of the end of February 2002," said the climate data center's Richard Heim, who is responsible for assessing and reporting drought conditions throughout the U.S.

At the March 15 news conference, NOAA climatologists said they foresee no quick end to the current drought in the United States.

But Heim put the current drought into historical perspective.

During the height of the U.S. "Dust Bowl" in the 1930s, he said, more than 60 percent of the United States was in a severe to extreme drought. ☺

Salveson

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have set for ourselves in the future," Salveson said. "From a supervisor's perspective, I think I've been successful in hiring bright, hardworking people and then allowing them to do their job in a supportive environment."

Salveson said she finds that the Alaska region seems to be on the forefront of many complex and controversial fishery issues that the agency must address.

"I am rewarded by being a part of the process of working toward solutions and being involved in the development of innovative fishery management programs. The development of management measures for the Alaska fisheries and their implementation, while not perfect, have set a high standard that often is held up as an example to other parts of the nation," she said.

Salveson, married with two children, resides in Juneau, Alaska. In her spare time she supports a local team of young people and their coaches on the Juneau Jumper Rope Skipping Demonstration Team. She said she also enjoys skiing, hiking, working out at the gym, cooking, reading and striving for quality family time. ☺

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

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