

## NOAA to Provide Easier Access to Weather Data

—By Keli Tarp

Researchers and meteorologists will soon have easier access to high-resolution data from the entire national network of NEXRAD weather radars operated by NOAA's National Weather Service.

An experiment called CRAFT, short for the Collaborative Radar Acquisition Field Test project, has shown that the data can be archived and delivered over the Internet in near real time to users.

High-quality radar data are much in demand by researchers to develop better forecasting tools, by private meteorologists to produce specialized forecasts for their clients and, of course, by government forecasters to provide earlier and more accurate forecasts and warnings of severe weather.

The National Weather Service is taking steps to expand on the successful CRAFT experiment, which has proven real-time access to high-resolution data from multiple radars is not only possible, but relatively inexpensive, said Tim Crum, the NEXRAD operations focal point with the NOAA Radar Operations Center in Norman, Okla.

CRAFT was implemented by a coalition of researchers over the past few years, taking advantage of advances in high-speed computer networking capabilities and other technological advances.

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## Captured Bottlenose Dolphins Get Physical Examinations

—By Donna McCaskill

It looked like a scene from an action movie. A team of scientists had assembled on a public boat ramp in Charleston, S.C., very early in the morning in mid-August to begin an organized search by boat.

The group of 40 plus researchers led by NOAA's Center for Coastal Environmental Health and Biomolecular Research in Charleston and the Harbor Branch Oceanographic Institution in Fort

Pierce, Fla., wasn't sure what this first day of searching would bring. But all were nonetheless ready, even eager to look for one of the nation's most beloved marine animals—the bottlenose dolphin.

The plan was for the group to catch as many dolphins as possible, perform a thorough examination of each animal then safely release the animals back into the wild.

The research was conducted under a permit issued by NOAA's *continued on page 2*



Donna McCaskill/NOAA

One of 47 dolphins captured off Charleston, S.C., is given a complete physical examination by veterinarians and marine mammal experts, who constantly monitored the animals' vital signs before releasing them unharmed.

## NOAA, Sea Grant Promote Rip Current Safety

—By Amy Painter

As a crowd gathered on the beach, all eyes focused on a helicopter hovering above a swimmer seemingly in distress in a rip current some 50 yards from shore. Suddenly, the helicopter's side door opened and two men leaped into the churning waves. The men, experienced lifeguards with the Dewey, Del., Beach Patrol, quickly made their way to the swimmer.

Meanwhile on shore, the drama was no less intense. As one lifeguard signaled the guards in the water, directing them around the hazardous rip current, another communicated with the helicopter pilot using a hand-held radio.

Minutes later, the helicopter delivered the swimmer safely to shore and the rescue team celebrated its victory.

Despite its realism, this July 28 "rescue" had been a demonstration, one that was filmed from the cockpit of the Delaware State Police rescue helicopter by Wendy Carey, a coastal processes specialist with the NOAA-cooperative National Sea Grant College Program at the University of Delaware.

Carey is a key member of a new task force established by Sea Grant, NOAA's National Weather Service and the U.S. Lifesaving Association to improve rip current prediction, monitoring, reporting and education.

As Carey's camera continued to roll in the rip tide demonstration, lifeguards dispersed red food coloring into the surf zone to highlight the swirling rip currents. The camera captured the red dye as it was swept seaward in a rip current, illustrating just how turbid  
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## Dolphins

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National Marine Fisheries Service under the authority of the Marine Mammal Protection Act.

"Dolphins represent a good indicator for the health of our oceans," said NOAA's Pat Fair, a co-leader of the study. "They are a top level predator of coastal areas. We'll not only learn about the health of dolphins, we'll learn about the health of the environment, which directly impacts humans."

"What happens to dolphins down the road could definitely happen to us," said Greg Bossart, director of marine mammal research at Harbor Branch and the study's other co-leader.

The geographic focus areas for the study are the Indian River Lagoon in Florida and the coastal areas surrounding Charleston.

The research teams, involving at least 20 collaborating universities and laboratories, spent two weeks in each region.

During August, 47 dolphins were safely caught, physically examined, sampled, marked and released in waters off Charleston.

In July, 42 dolphins from the Indian River Lagoon in Florida were examined.

Study results will be used to monitor the dolphin populations within each region and compare health statistics between the two populations.

The procedure for safely capturing and releasing the dolphins was the same in both Florida and South Carolina, requiring several boats working closely together.

When a dolphin or group of dolphins was spotted, each boat was alerted by radio. The capture boat quickly circled the dolphin with a net while other boats were deployed around the net.

The group can handle up to five dolphins per capture, but on that first day in South Carolina, the dolphins were caught one at a time.

When surrounded by the net, a dolphin would run into the net and get tangled. Five or more scientists would then jump into the water, surround the animal and wrap their arms around it to hold the animal at the surface and disentangle it.

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Donna McCaskill/NOAA

*A dolphin, captured and restrained by Harbor Branch and NOAA-led scientists, is transferred by stretcher to a boat for a physical examination.*



Jerry Slaff/NOAA

Jason McConachy.

## Jason McConachy Is the Employee of the Month

—By Dane Konop

Jason McConachy is one of those people who seem to live to work.

When asked what he does for fun, he said “I don’t have that much fun. [Long pause.] I work.”

For over a year, McConachy, a budget analyst in the NOAA Budget Office in Washington, D.C., and the September Employee of the Month, has been tightly focused on developing and implementing the NOAA Budget Formulation Database, the new electronic version of the NOAA budget.

Working with the budget office’s contractor, RGII Technology, McConachy turned an unmanageable mishmash of hundreds of word processing budget documents into a flexible database that could produce a single, unified budget book.

“It’s a huge document. It’s up to 825 pages now,” said Peter Maxey, chief of the Budget Policy, Products

and Integration Division and McConachy’s supervisor.

“We used to have a set of manilla folders we would set out in the budget office, and everyone would put their final version in that set of folders. Once the folders were filled, we would start the production mode,” Maxey said.

The NOAA budget is produced with a customized version of Microsoft Word for data bases.

“What Jason did for the last year and a couple of months was to work with the contractor to work through all the printing bugs and formatting issues,” Maxey said. “We used to have to send the printer a hard copy. It used to take us three days to set up the print run. It used to take two weeks just to paginate [the budget document].

“He’s been the one who has spent all the time in getting into the details and learning how the software works to make it efficient for us and for developing the processes and procedures that we follow and the instructions for other people to use to make the data base really start humming,” Maxey said.

The process is now automatic.

“You can see [the budget] on the screen. You can edit sections. It’s much easier and faster. We’ve opened it up to more and more people to put their data in, so the actual inputting of the narrative is now much faster than before,” Maxey said.

Maxey credits McConachy with getting the 2005 NOAA budget to the Office of Management and Budget on time.

Thanks primarily to his efforts, Maxey said, the budget office turned out “the product that everyone wanted to see.

“He’s done a great job. We were lucky to get him,” Maxey said.

Indeed, when he joined the Civil  
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Rick Smedley/Northrop Grumman

Diane Deitz.

## Diane Deitz Is the Team Member of the Month

—By Dane Konop

On May 3, 1999, 48 people were killed by a massive outbreak of tornadoes in Kansas and Oklahoma. There were 66 tornadoes in Oklahoma alone, including an F5 tornado that remained on the ground for an hour, blasting a 38-mile path of destruction through the Oklahoma City area. Disaster officials said the death toll would have been much higher were it not for the warnings from NOAA’s National Weather Service that gave people time to find shelter.

Then NOAA Administrator D. James Baker said in a visit to the tornado-damaged area, “The intense effort to modernize the National Weather Service paid off in this single event. All the elements worked. Everyone should be really proud of the front line work or support they did to make this happen.”

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# Focus On...

## A NOAA Day of Caring

—By Chris Smith

At 7 a.m. on Aug. 21, a team of seven volunteers from NOAA Fisheries' Southeast Regional Office met at Rogate Lutheran Church in Clearwater, Fla., to rehabilitate the exterior of the church's meeting hall and parking lot. The occasion was the third time regional personnel participated in the annual United Way of Tampa Bay "Day of Caring."

The Rogate meeting hall is a bustling center of community activity where 22 to 45 senior citizens gather five days a week for hot, nutritious meals and fellowship. With the help of a small army of volunteers, the staff also dispenses 50 to 60 meals-on-wheels five days a week to senior citizens who are unable to meet at the hall.

"This place is incredibly impor-  
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Chris Smith/NOAA

NOAA Fisheries Southeast Region staff members (left to right) David Dale, Cheryl Franzen and John Kiewiet prepare flower beds at the community meeting hall at Rogate Lutheran Church in Clearwater, Fla.



Chris Smith/NOAA

(left to right) John Kiewiet, Peggy Solomon and Cheryl Franzen spread mulch as Mark Godcharles pressure-washes the exterior of the meeting hall.



Chris Smith/NOAA

(left to right) David Dale, Gary Petrae and John Kiewiet plant shrubs in the beds in front of the meeting hall.

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tant to the senior citizens of this community,” said Peggy Coleman of the Neighborly Care Network, which oversees Rogate’s community outreach programs. “Without it and the many volunteers who keep it running, dozens of people would have no place to go for at least one hearty meal a day and to establish and maintain their friendships.”

According to NOAA’s Mark Godcharles, who has served as the region’s United Way liaison since the region began participating in the Day of Caring program, the United Way receives many applications for help each year and identifies the best candidates based on the availability of funds and the number of volunteers available to accomplish the tasks, as well as the urgency of each situation.

This year, the NOAA team’s tasks were to spruce up the Rogate meeting hall’s exterior to minimize the center’s maintenance costs so more funding could be directed toward serving needy members of the community. In a single day, the



*Chris Smith/NOAA*

*David Dale paints parking lot stripes.*

NOAA team re-stripped two parking areas, painted car bumpers, removed weeds and old bushes from two large flower beds, planted shrubbery and pressure-cleaned the building’s entire exterior, sidewalks

and parking areas.

“The United Way provided the paint we needed and a local company donated the use of the pressure washer for the day. But we couldn’t have done all this work without the team members bringing their own tools, paint brushes, elbow grease and big hearts,” Godcharles said. “It’s our hope that the newly spruced up center will elevate the spirits of the center’s clients, workers and parishioners alike. I’m very proud of our team and their accomplishments.”

“It gives you a great feeling to give back to the community while representing the agency,” said Capt. Gary Petrae, a veteran of all three Day of Caring outings. “On a personal level it just gives you a good feeling to do something for others that you know they can’t do for themselves.”

“Thank you very much for all that the NOAA team did to make Rogate a nicer place for our clients, volunteers, the hearing impaired and the church. It looks wonderful,” Coleman said. ☺



*Chris Smith/NOAA*

*The NOAA team paints parking bumpers in the Rogate meeting hall’s parking lot.*

## Rip Currents

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and swift the flows can be.

"It's thrilling to get footage of the rips," Carey said. "Exercises like this allow us to learn a great deal about surf dynamics."

A rip current behaves like a powerful river of water running from the shore out to sea. They can range in width from 50 feet to over 50 yards and may flow just past the breaking surf or hundreds of yards offshore. Although rip currents may occur at anytime, they are most common during storms and high surf conditions.

Rip current dangers don't end at Labor Day, and may actually be compounded because many beaches are lightly guarded after the traditional end of summer.

"Lots of people come to the beach for one last summer weekend. What they don't realize," according to Dewey Beach Patrol captain Todd Fritchman, "is that rip currents can be very strong this time of year, and lifeguard staffs are stressed with so many patrols heading back to school.

Rip currents account for 80 percent of all surf zone drownings and fatalities and are the number one cause of drownings on ocean beaches, according to the Life Saving Association.

Swimmers caught in a current are instructed to swim parallel to the shoreline until the current relaxes, or to let the current carry them until its force diminishes, then swim back to shore.

Carey is studying rip currents to better understand the forces that drive their development. Her video footage will be used as a teaching tool for rescue personnel and in a public service announcement.

To collect additional rip current and wave information, Carey works with lifeguards throughout Delaware, entering the data on waves



*Peter Hartsock/USPHS*

*A swimmer is lifted from the surf during a mock rip tide rescue.*

and coastal processes into a database that will enable researchers to better predict the dangerous currents.

Carey is also working very closely with meteorologists from the Mount Holly, N.J., Weather Forecast Office, which began a surf zone forecast for the Delaware and New Jersey shoreline several months ago.

Thirteen National Weather Service forecast offices in coastal areas began issuing surf zone forecasts this summer. The forecasts include a rip current outlook—standardized, qualitative rip current information that is available to the public. Feedback received in active dialogues between meteorologists and local beach patrols will enhance the outlook forecasts.

"This partnership is a national model in that it addresses a major public safety issue at the federal, state and local levels and translates research into information that will save lives," said Tim Schott, a Weather Service meteorologist and a catalyst in the formation of the task force. ☺

## Dolphins

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"Knowing that they are restrained and supported is usually all that it takes to make the animal lie relatively still," Fair said.

After capture, the team would gently lift the animal into a blue canvas stretcher, then hoist it onto a small boat that acted as an examination room.

A team of approximately 15 people were on the boat, waiting to begin an exam that took about an hour. It was here that the project team's advance preparation was readily apparent, for the team had to work quickly, in unison, in a very small area. Everyone had a job, and every job was critical.

Several people were assigned to hold onto the dolphin, particularly the strong tail.

A team of marine mammal experts and veterinarians took various measurements, such as length, weight and temperature. They sampled feces, urine, blood and blubber. During the examination, an animal's vital signs were carefully monitored at all times.

A canvas awning shaded the animal, while buckets of seawater and large yellow sea sponges were used to keep the animal wet.

Using liquid nitrogen, a number was freeze-branded on each dolphin's dorsal fin, and a radio tag was attached to the fin to help scientists track each animal's whereabouts over the next few months.

"Just as a doctor needs to take many measurements before gauging a person's health, we need to complete a full assessment to understand normal and impaired health," Fair said. "We will use this information to correlate dolphin health with environmental data, which will take us closer to understanding how the environment affects man and animals." ☺

## Radar Data

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"The use of Abilene, also known as the Internet2, the country's premier high-speed research network, allows the National Weather Service to deliver significantly greater amounts of high-quality data to a geographically diverse group of users, such as the university and research community," said Guy Almes, chief engineer for the Abilene network.

The new system offers a viable alternative to the current practice of using 8-millimeter tapes to archive the nation's high-resolution radar data, cutting delivery time from months to seconds, increasing the amount of information saved and decreasing processing costs.

When Doppler weather radars were installed nationwide as part of the National Weather Service modernization in the 1980s, the voluminous, yet valuable data the radar network produced could not be archived.

"It is now possible to not only archive the data, but to deliver the data in real time using the Internet," said Kevin Kelleher, deputy director of NOAA's National Severe Storms Laboratory in Norman. "This new system will facilitate ground-breaking advances by a variety of radar data users."

The initial test bed for CRAFT included six weather surveillance radars commonly known as NEXRAD, Kelleher said. Over the past three years, the project has grown to support 62 radars located all over the United States. The broad geographic distribution helped provide an evaluation of overall reliability, network efficiency and real-time ingest on a national level.

"CRAFT has been a great example of an effective partnership in the transfer of technology from the government to the university

and private sector," Kelleher said.

Radar data are a vital component in the services provided by the Weather Channel, said Raymond J. Ban, Weather Channel executive vice president for meteorology science and strategy.

"The CRAFT project has provided our partnership with an effective method of providing the citizens of the U.S. the maximum benefit on the investment they have made in the nation's Doppler radar network. Near real-time distribution of the high-resolution Doppler data to the partnership helps ensure that the nation receives the most timely and accurate weather information our science and technology can provide."

The National Weather Service plans to expand CRAFT to the 121 NEXRAD radars and select Department of Defense weather radars in the continental United States, Crum said.

The expansion will implement the technology nationwide to electronically collect and transmit the data in real time to NOAA's National Climatic Data Center in Asheville, N.C., for archiving. So called "level II" base data, which include high-resolution reflectivity, velocity and spectrum width, will be transported to users over a combination of the NWSNet, the Internet2 network and the commercial Internet.

Current plans call for NOAA to use software technology from the University Corporation for Atmospheric Research's Unidata program to deliver the data to sites across the network, said Linda Miller, external liaison for Unidata.

Crum said the high-resolution radar data will be useful to many different groups.

Weather Service forecasters, for example, will use the high-resolution data to initialize computer forecast models, which will help

them provide more accurate forecasts to the public.

Government and university researchers can use the data to develop better radar algorithms and other tools for forecasters.

The data will have a climatological use as well, according to Stephen Del Greco, NEXRAD program manager for the National Climatic Data Center, a key partner in the project.

"For the first time, we'll have a more reliable flow of data that people can use in real time or from the near real-time archives," Del Greco said. "When coupled with modern data delivery techniques and visualization tools provided by the National Climatic Data Center, access and use of this data will be easier and more user friendly."

In addition, Crum believes the availability of level II data will create a growth area for private weather companies.

"The National Weather Service is working to ensure this data is readily available to private sector users for development of their own value added products," Crum said.

Phil Cragg, lead engineer for the project at the Weather Service's Office of Science and Technology in Silver Spring, Md., said the Weather Service data collection network will be implemented in a two-phased approach.

"We will support continued CRAFT operations, add data compression/data manager computers at additional Weather Service sites and connect these additional sites to the Weather Service data collection network by the end of 2003," Cragg said.

In the second phase, the Weather Service will install the required compression and data manager software on NEXRAD systems and connect select Department of Defense radar sites to the data collection network by the end of 2004. ☺

## McConachy

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Service in July 2002, McConachy was able to pick and choose from among the various federal agencies.

After receiving a B.A., *cum laude*, in political science and history from Eastern College in St. Davids, Pa., McConachy earned a master's degree in public policy from American University in Washington, D.C. While at American, McConachy worked as a program analyst trainee at the Federal Highway Administration.

Following graduation from American University, McConachy was named a Presidential Management Intern. Unlike student interns, PMIs become full-time employees and can generally hire on with the agency of their choice.

Instead of FHA, McConachy chose NOAA.

Although he had no scientific background, McConachy was already familiar with the agency.

"When I was growing up, I was into weather. My parents took me in maybe junior high to visit the forecast office at Lehigh (Pa.) International Airport," McConachy said. "We had a gentleman who brought us around and we watched him recording for [NOAA Weather Radio]. We looked at their equipment and stuff like that. It was pretty cool," McConachy said.

It helped confirm his interest in public service.

As part of his PMI training, McConachy is due for a rotational assignment outside NOAA.

But the budget process is continuous, and a budget analyst's work is never done.

"We're expecting him to finish up the documentation on the system so we can keep it running while he's gone," Maxey said.

McConachy will be back at NOAA next spring, just in time for the '06 budget. ☺

## Deitz

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That all the elements of the modernization worked that day was due in no small part to the efforts of September Team Member of the Month Diane Deitz, a systems analyst with Northrup Grumman Information Technology, working with the National Weather Service's AWIPS Network Control Facility in Silver Spring, Md.

Deitz had been involved with the Advanced Weather Information Processing System program since "day one," she said, helping make sure the system was properly integrating the Weather Service's new technology—from the radars to work stations to the automated surface observing system.

Prior to the killer tornado outbreak in Kansas and Oklahoma in May 1999, Deitz had uncovered a problem with the radar at the weather forecast office in Norman, Okla., and was working with the forecast office and the NOAA Radar Operations Center there on a fix.

One night that spring she was home online and on the telephone with David Andra, science and operations officer at the forecast office, when a tornadic storm hit Norman.

"We were in the midst of a breaking tornado event when we had damage going on," Andra recalled. "It was essential that the [AWIPS] stay up and keep running. I would say, 'It looks like the data are five minutes behind.' She would find ways to make things move faster, stop things that maybe were taking too much time."

"I could hear the chaos going on in the weather forecast office," Deitz said. "I was on speaker phone with Dave and I could hear through the loudspeakers the sirens going off." From the calm isolation of her home, Deitz said she was

"humbled. I was shaking in my boots."

Andra said, "Without her help fixing the system, I don't believe our AWIPS would have allowed us to perform nearly as well as we did on May 3 of 1999."

The AWIPS Network Control Facility, where Deitz works, monitors how well the system is performing, 24 hours a day, 365 days a year. It responds to thousands of alarms a day from the system, all of which must be checked out.

Deitz is the facility's data analysis manager, and her specialty is the weather radars.

"She constantly looks at all the NEXRAD radars to ensure the radars are up and functioning properly," said Randy Chambers, the Network Control Facility's operations manager. "At any given point within the NEXRAD network of radars there could be anywhere from 15 to 20 percent of them down for maintenance—not functioning properly."

Deitz then works closely with the Radar Operations Center and the staff at the forecast offices to find solutions.

"She is exceptional," Chambers said. "Her number one goal is customer satisfaction. To a lot of folks in the field, she is the Network Control Facility." ☺

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