

Hurricanes Charley, Frances, Ivan, Jeanne Hit U.S. Coast

—By Frank Lepore

For forecasters at NOAA's National Hurricane Center in Miami, Fla., anticipating a hurricane season is akin to exploring a lion's den.

The "beasts" in this den are monster cyclones, each about a million cubic miles in size when fully mature. While forecasters know some of the habits of the beast, they respect the uncertainties of each's individual behavior.

Forecasters did expect this season would have more than the average number of six hurricanes.

NOAA's Climate Prediction Center issued seasonal outlooks in

both May and August calling for above normal numbers. The center predicted 12 to 15 named storms whose winds would range from 39 to 73 mph, qualifying them as tropical storms. Of this number, six to eight would grow to hurricane-strength with winds of at least 74 miles per hour. Of these, two to four would be classified as intense, with winds of 110 mph or more. Two major storms would be normal. The center predicted it would be a busy year. No one anticipated just how busy.

Nor could anyone tell in advance
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Hi'ialakai Joins NOAA's Fleet in Honolulu, Hawaii

—By Jeanne G. Kouhestani

Hi'ialakai, the exotic name of the newest addition to the NOAA Fleet, hints of adventure and new frontiers.

Hi'ialakai means "embracing pathways to the seas," a fitting name for a ship that will lead expeditions to the far reaches of NOAA's 99,500-square-nautical-mile Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve.

Hi'ialakai was commissioned a NOAA ship Sept. 3 under the tropical skies of Honolulu, Hawaii, in a ceremony whose attendees included NOAA Administrator Conrad C. Lautenbacher, Jr., Sen. Daniel K. Inouye of Hawaii, who was instrumental in getting congressional funding for *Hi'ialakai* and whose wife is co-sponsor of the ship, Rep. Neil Abercrombie of Hawaii, Rear Adm. Samuel P. DeBow, Jr., director of NOAA Marine and Aviation Operations and the NOAA Corps, and Daniel Basta, director of the National Marine Sanctuary Program. Isabella Abbott, professor emerita at the University of Hawaii and first Hawaiian to earn a Ph.D. in science, was a special guest at the ceremony. Abbott, a co-sponsor of the ship, suggested the name *Hi'ialakai*—not only for its meaning, she said, but because she felt it would be easy for non-Hawaiians to
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Eric Draper/White House

Max Mayfield (right), director of NOAA's National Hurricane Center in Miami, Fla., briefs President George W. Bush on Hurricane Frances at the center on Sept. 8.

Hi'ialakai

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pronounce.

The large, white T-AGOS vessel, a former Navy submarine surveillance ship, was decorated in orange leis and brightly colored flags, offering stark contrast to the shimmering blue sky. The ceremony that welcomed it into the fleet was a unique blend of maritime and Hawaiian tradition. A blessing by a barefoot Hawaiian priest clad in a toga, laurel and lei was followed by a reception on the pier, complete with a trio of male Hawaiian crooners.

Hi'ialakai is the third NOAA ship to be homeported in Honolulu, but the first to be devoted to NOAA's National Ocean Service and coral reef research. NOAA scientists based in Hawaii say they are ecstatic to have this long-awaited resource at hand.

"One of the difficulties of working in those waters is simply getting there," said Randall Kosaki, chief scientist and research coordinator for the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. "And now we have this

'Cadillac' dive ship that greatly improves our ability to monitor the health of our remote coral reef ecosystems," he said. "This capability will help us to conduct research that will produce new insights into how these complex ecosystems function. Ultimately, this knowledge will enable us to improve the management and conservation of these unique and precious resources."

Hi'ialakai is equipped with a recompression chamber and mixed gas capabilities to support diving operations and a multi-beam sonar system to map the ocean floor.

"It's the buzz here that [the reserve] is the last place of its kind on the planet. This mission is going to focus attention on why the world's reefs are in trouble," said Brian W. Bowen of the University of Hawaii's Institute of Marine Biology. "Marine biologists need a baseline of a pristine area, so we're all really excited by this."

The Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve contains about 70 percent of all coral reefs in U.S. waters. This vast area is home to more than
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Hurricanes

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where these tropical cyclones would go and the extent they would punish populations across the western Atlantic. No one could tell how much activity would be crammed into one month, though historically the months of August, September and October are the busiest. No one could know in advance that 16 million Floridians and hundreds of thousands of residents living on small Caribbean islands would be affected by four hurricanes in a six-week span.

What are the odds? More than 30 percent of all the hurricanes to strike the United States over the last 133 years have hit Florida, according to National Hurricane Center data. Seventy-five percent of category 4 hurricanes have hit either Florida or Texas. The last time Florida had nearly this much hurricane activity was in 1964 with three category 2 hurricanes in the same season. The last time any state experienced four direct hits was in Texas in 1886.

The 2004 Atlantic hurricane season began Aug. 9 with the birth of Tropical Storm Charley in the western Caribbean. Charley would blossom days later into a hurricane just south of Jamaica. After bringing rains to Jamaica and the Cayman Islands, Charley struck the western tip of Cuba, its nearly 160-mph winds severely damaging that nation's major tobacco growing region. Charley was impressive, as the NOAA GOES-satellite revealed in successive images on the nightly news.

To forecasters it was clear that the west central coast of Florida would be next. As emergency management officials urged their west central Florida residents to evacuate a 174-mile area that was under a hurricane warning, fore-
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Michael May for NOAA

The new NOAA Ship Hi'ialakai prepares to host visitors following the ship's commissioning in Honolulu, Hawaii, Sept. 3.



Larry Loewen/NOAA

Todd Irby.

Todd Irby Is the Team Member of the Month

—By Jeanne G. Kouhestani

Todd Irby's persistence and determination landed him his dream job in Seattle, Wash., in November 2003 at the Marine Operations Center-Pacific, part of NOAA Marine and Aviation Operations. These same qualities also landed him the honor of being named NOAA Team Member of the Month after less than a year working with the agency.

Irby, a contract employee with Virginia-based RS Information Systems, lived in Virginia since childhood and attended George Mason University in Fairfax, Va. Then last year he moved to Seattle, where he was born, with several years of information technology and network administration experience under his belt.

After an initially discouraging job search, Irby heard through a friend that RSIS was recruiting for a NOAA information technology position in Seattle. Irby said he jumped at the opportunity, calling the center until they finally gave

up and gave him the job.

According to his center supervisor, computer engineer Hank Malcolm, "Todd quickly became an integral part of the IT support team. Todd's contributions as a NOAA team member affect every NOAA employee affiliated with the Marine Operations Center-Pacific."

Irby administers the marine center's computer network, provides desktop hardware and software support, as well as phone support, for the San Diego and Honolulu port offices, and works with the shipboard mail administrators of the Pacific fleet to ensure delivery of email to each vessel's crew. Though his job is shore-based, he said he loves being around the ships and absorbing NOAA culture.

"Working for NOAA is great," Irby said. "I enjoy learning about ocean environments and the equipment NOAA uses in research."

Irby helps set up Internet access for NOAA's Pacific ships when they're in port, a real necessity for crew members often without access to the Web for months at a time. He also helps troubleshoot occasional email glitches when ships are at sea.

"I get involved whenever someone has difficulty with email that can't be resolved from the ship's end," he said. "Though it rarely happens, it can be a challenge because there are delays, and I might have to wait a day to fix it."

According to Malcolm, Irby's "can do" attitude has proven invaluable on a number of occasions, including his willingness to assist the center's Electronics Engineering Division staff with sailing preparations for the reactivated NOAA Ship *Fairweather* and his after-hours efforts that have ensured the security of the marine center network.

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Dana Belden for NOAA

Marcia Hobbs.

Marcia Hobbs Is the Employee of the Month

—By David Gouveia

NOAA's October Employee of the Month is Marcia Hobbs, the secretary for the NOAA Fisheries Protected Resource Division in Gloucester, Mass. Serving as the interface between fishery regulators and the public affected by increased fishery regulations, Hobbs is routinely on the front lines dealing with often frustrated and challenging inquiries.

Although Hobbs does not receive the attention that other NOAA Fisheries staff enjoy, her contributions to individual projects and high standard of personal initiative are equally vital to the overall mission of NOAA Fisheries.

Her most amazing characteristics are her eternally optimistic outlook and "can-do" attitude. On any given day, she juggles a wide range of requests from division staff and directly from the public, all the while maintaining a cool head, said Mary Colligan, the assistant regional administrator for protected *continued on page 8*

Focus On...

NOAA, National Geographic Field Trip to Santa Cruz Is.

—By Francesca Cava

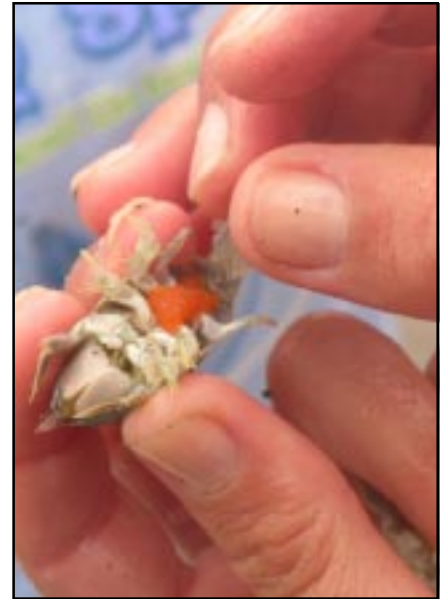
Twelve middle school students and their teachers from primarily urban areas across the country participated in an exciting, four-day expedition in August, sponsored by NOAA and the National Geographic Society, to study and photograph the geology, flora and fauna of California's Santa Cruz Island and the surrounding Channel Islands National Marine Sanctuary.

Their journey began aboard the sanctuary's R/V *Shearwater*, which transported participants to the 96-square-mile island, an environmental oasis. The 62-foot, high-speed

catamaran made short work of the 11-mile journey over rough seas stirred by 30-knot winds. The vessel's exceptional stability gave students a relatively smooth ride, as they whooped with glee at sightings of Pacific white-sided dolphins riding *Shearwater's* bow wave while brown pelicans flew overhead.

Once on the island, the students and teachers spent the next three days exploring Santa Cruz and learning about the island's unique ecology.

Evening presentations provided students and teachers a special opportunity to interact with a



Matthew Sata for NGS

A student examines a sand crab and learns the important ecological role they play.

range of experts, including Greg Marshall, a National Geographic Society inventor, scientist and film maker, who demonstrated how photography is used in scientific inquiries. Using photography taken by cameras attached to marine mammals, called "crittercam footage," Marshall showed how photography can be a tool for systematic analyses of direct observations, while inspiring viewers to want to know more.

Led by society photojournalist Susanna Frohman, students shot over 1,700 images to document their own field experiences on Santa Cruz Island, including hand-carved stone bowls and shells used for commerce by Chumash Indians.

A long, dusty truck ride, the island's only transportation, brought participants to Christy's Beach on the west side of the island. Here, NOAA's Claire Johnson and Laura Francis created an outdoor classroom to explain the importance of sand crabs to the students, how the crabs move with the tide and how to measure and monitor them. Sand crabs live in the swash zone, an area where the

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Matthew Sata for NGS

During a NOAA-National Geographic Society field trip to the Channel Islands National Marine Sanctuary, Richard Murphy of Ocean Futures points out organisms supported by kelp.

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water meets the sand and where they serve as food for both fish and birds. Students collected sand crabs using a sand corer and counted numbers found, measured their size and determined the sex of crabs in their sample.

The following day brought one of the trip's highlights, a kayak tour of the marine sanctuary. Students and their teachers glimpsed playful sea lions and orange flashes of garibaldi, California's state fish, as well as some of the 150 bird species that make Santa Cruz Island their home. The jewel-colored kayaks allowed students to travel over the tops of amber kelp forests, sea grass beds and rocky reefs, where they spotted a variety of sanctuary inhabitants including cormorants, great blue herons, black oyster catchers, sea stars, mussels, barnacles and harbor seals. They learned about the geology of Santa Cruz Island as they viewed giant sea caves and had an opportunity to snorkel at Tinker's Beach near Pelican Bay.

That same day included a hike between Pelican Bay and Prisoner's Harbor, with breathtaking views of rugged mountains ringed by unspoiled beaches. They also spotted evidence of some of the island's current inhabitants, such as



Susanna Frohman/NGS

Led by a professional photographer from the National Geographic Society, students took photographs to document their field trip.

Santa Cruz's endemic foxes and the non-native feral pigs that threaten the island's environment. Students and teachers completed the 2.1-mile hike led by volunteer Channel Islands National Park naturalist Kathy Oleson, who described the island's wide variety of plant life, including at least five different plant communities: grassland, coastal sage scrub, chaparral, oak woodland and closed-cone pine forest. Students observed native species such as the giant coreopsis, huge yellow flowers that bloom in

the spring and set the hillsides ablaze with color.

All of these activities gave students and teachers alike a chance to experience this exceptional environment, and to learn while they were having fun.

Student Sadee Brown from Oregon listed the things she liked best from the trip: "The kayaking, because we got to see fish, the hiking because of the views and the boat ride because of being able to see sea lions."

As the four-day excursion came to a close, everyone gathered to watch the results of the youth media project—a slide show made up of 100 student photographs documenting their visit entitled "An Island in the Sea: A Visual Journey."

Student Alex Slack from Maine perhaps best captured the essence of the field trip when he wrote, "The things that I am going to remember most are the kayaking adventure, the sand crabs (because I had never seen them before) and the Youth Media Project because it personally showed me the beauty of the island." ☺



Anne Marie Rodriguez for NGS

Students and teachers explore the flora, fauna and geology of Santa Cruz Island.

Hurricanes

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casters repeatedly advised the public to prepare for what was then a category 2 hurricane.

The news media fixated on Tampa Bay as Charley's likely target. But Charley's motion over very warm coastal waters caused the storm to intensify to category 4 hurricane status. A slight wobble to the south by the storm put 145-mph winds into the area of Charlotte Harbor south of Tampa.

Charley was a compact, destructive bulldozer, a 30-mile-wide, hurricane-force wind field, clearing a swath across the state, crumpling mobile homes and manufactured buildings, felling trees and peeling-away metal roofs as if by an erratically operated can opener. Florida's citrus industry was

next, suffering a devastating blow as Charley exited the state's east central coast, damaging the Kennedy Space Center along the way. In terms of raw destruction, Charley was considered the most destructive storm since Hurricane Andrew in 1992.

The next threat, Frances, formed in the Atlantic on Aug. 24, 1,800 miles from Florida. Frances slowly meandered westward, dealing a glancing blow to the Turks and Cacios Islands. By Sept. 3, the storm neared the Bahamas. With images of Charley fresh in mind, east coast Florida residents did not hesitate to seek shelter as the 145-mph, category 4 winds steam rolled

their way across the flat terrain of the Bahamas, headed for the east-central Florida coast.

Frances was mammoth, nearly as large as the state of Florida. Its tropical storm winds radiated nearly 200 miles from the eye. But amazingly, Frances suddenly lost its "umph," weakening to a category 2, with 105 mph winds as it neared landfall Sept. 5 at Sewall's Point on Florida's Treasure Coast. Frances



As it crossed Florida, Hurricane Charley badly damaged even such substantial structures as the Turner Agri-Civic Center in Arcadia, where 1,200 people sought shelter. There were 12 injuries at the center, but no deaths.

NOAA

marched across the state, exiting just north of Tampa, then wandered over the northeastern Gulf of Mexico into the Florida panhandle for a second landfall.

As if on cue, tropical storm Ivan began its odyssey Sept. 2 as an area of disturbed weather more than 3,500 miles from Miami. Ivan gathered strength and rolled westward toward Grenada, bringing 115-mph winds to the tiny island, killing 39. The *Miami Herald* reported as many as 60,000 of the country's 100,000 people were left homeless.

On Sept. 10, Ivan gathered strength and moved westward, taking aim at Jamaica. Winds of

155 mph raked the southern coast of the island, but a brief shift in track spared the island a direct hit. Still, 16 people were confirmed dead from flooding and mud slides.

Over the next two days, Ivan continued to the northwest, striking Grand Cayman Island. Buildings there fared better than those in Jamaica, but coastal residents were forced to seek shelter in higher elevations. The govern-

ment of the British territories estimated that half of the islands 15,000 homes were uninhabitable.

Forecasters predicted Ivan's relentless march toward the Gulf of Mexico would clip the sparsely populated western tip of Cuba on Sept. 13 with 150-mph winds.

By then, Florida Keys residents were

under mandatory evacuation orders, as the population along the northern Gulf of Mexico from New Orleans to the Florida panhandle braced for a major category 4 hurricane with winds of 135 mph. Ivan's Sept. 16 landfall in Gulf Shores, Ala., just west of the Alabama-Florida state line, placed Ivan's strongest winds over the Florida panhandle. A NOAA buoy in the Gulf of Mexico 75 miles from Dauphin Island, Ala., registered waves 50 feet high. Twelve-foot waves broke at Gulf Shores, Ala.

Emergency managers required two million people to leave endan-

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Hurricanes

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gered coastal areas, including 1.2 million in New Orleans alone.

Ivan was the storm that would not die. It proceeded inland to the northeast, through Alabama and Georgia, with winds, rain and flooding disrupting commercial power for some 750,000 customers. Though depleted in strength by its travel over land, Ivan hung together in its journey up the east coast, re-emerging over the coastal Atlantic Ocean near the Delaware-Maryland-Virginia peninsula.

The remnants of hurricane Ivan managed to retain a cyclone circulation in its travel, now moving south along the Atlantic coast. After crossing Florida a second time, this "Son of Ivan" reformed in the Gulf of Mexico, striking near Lake Charles, La., as a tropical storm on Sept. 23. Ivan, in its various forms, had traveled some 6,000 miles.

With three hurricanes down in six weeks, a fourth hurricane, Jeanne, would soon prove to be an

international killer.

As Jeanne moved over Puerto Rico, the Dominican Republic and Haiti as a tropical storm, its rainfall created massive flooding and mud slides. Tragically, upwards of 2,000 people perished in Haiti alone. As if to taunt Florida residents for a second time, the hurricane spiraled in a lazy corkscrew pattern for several days before making a beeline Sept. 24 to nearly the same Florida location that Frances had struck. But while Frances was a category 2 hurricane at landfall, Jeanne was category 3.

Many Floridians struck by Hurricane Frances weeks before were more paralyzed by fatigue than fear by the time Jeanne arrived. Tens of thousands ignored evacuation orders that applied to some three million people.

Jeanne came ashore in Florida just after midnight Sept. 25 at Hutchinson Island, at almost the same spot where Hurricane Frances had made landfall Sept. 5. The storm's 75-mph winds caused extensive damage in Florida, knocking out power to more than

two million homes and killing half a dozen people.

By 2 p.m., Sept. 29, the hurricane center downgraded Jeanne to a tropical depression. But as it moved north, the remnants of the storm spawned tornadoes well into the mid-Atlantic states and caused flooding through the end of the month.

As hurricane center director Max Mayfield noted, "This [hurricane season] will be one to tell your grandchildren about." ☹

Hi'ialakai

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7,000 marine species, half of which are unique to the Hawaiian archipelago, with countless scientifically unknown organisms just waiting to be discovered.

The ship's new skipper, Cdr. Scott Kuester, said he was proud, and relieved, that the commissioning ceremony came off smoothly and on schedule.

"The biggest challenge in getting there was getting everyone to focus on meeting the deadline," Kuester said. "We had to be ready by Sept. 3. We were short staffed until the very end. We asked a lot of people to spend more hours, and they came through."

This is Kuester's second ship command, and he was eager to get underway.

"My biggest hope for the mission," Kuester said, "is to be an invaluable resource for helping to preserve America's ocean treasures. We've got a good opportunity and a great responsibility to do this."

Hi'ialakai sailed Sept. 13 on its maiden voyage to conduct a research and baseline monitoring cruise in NOAA's Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. The reserve is currently in the process of being designated NOAA's fourteenth national marine sanctuary. ☹



Dane Konop/NOAA

Despite frequent warnings, some motorists continue to ford flooded roadways, as did this driver when the Potomac River flooded in West Virginia following hurricane Frances.

Irby

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When the two NOAA ships *Fairweather* and *Hi'ialakai* were on an accelerated schedule to begin operations, Irby helped get their computer systems in order by making sure they had appropriate virus and program software installed.

When new crew members came aboard the reactivated *Fairweather* from other ships, he had to change their email records to reflect that, then get them up and running while in port. Once ships get underway, email is run via satellite and time spent on line is costly.

Malcolm said one of Irby's customers told him, "Todd is tenacious and won't quit on a user's difficult computer problem. He will investigate and find if there is a solution. Sometimes he will later come back with other attempts to solve the problem even after a user has accepted the fact that the problem may not lend itself to resolution. He is very talented and extremely capable in resolving IT problems."

"Dealing with the people here and on the ships is really nice," Irby said. "It's hard to find a workplace where everyone is on the ball, is smart and wants to do a good job."

Irby's enthusiasm for NOAA has spilled over into his personal life as well. An avid sailor, he bought his own 25-foot sailboat a year and a half ago and listens religiously to NOAA's marine forecasts before going out on Puget Sound.

"It's amazing how much NOAA information I use when I go sailing," he said. "I get the marine reports to see how the winds are blowing."

When asked if he'd ever been caught in a storm, he replied, "Never! I listen to the NOAA reports!" ☺

Hobbs

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resources. "Marcia's attitude and actions foster an atmosphere of support that is visible in more content and productive employees. As a consequence of the model Marcia provides for all division staff, we have excellent morale and an incredible team," Colligan said.

Hobbs joined NOAA's National Marine Fisheries Service in 1993, serving as a secretary for the Habitat and Protected Resources Division. However, as the division grew, NOAA Fisheries split the division to better serve the public. Following her heart and love of animals, she said, Hobbs chose to serve as secretary for the Protected Resource Division.

"I love animals and have always wanted to be involved in some way with the conservation of animals, particularly those species that are endangered or threatened," Hobbs said.

Hobbs has developed and implemented a wide range of measures that have increased productivity and efficiency to ensure that NOAA Fisheries' mandates under the Marine Mammal Protection Act and Endangered Species Act are achieved. She routinely reviews management operations and practices and seeks ways to make internal adjustments to improve the quality of the work environment for NOAA employees as well as the quality of the product delivered to the public.

Given the integral services Marcia provides NOAA Fisheries staff and the public on a daily basis, it is more difficult to isolate a single example for recognition, said Christopher Mantzaris, the NOAA Fisheries deputy regional administrator. Marcia is deserving of recognition for the daily and constant contribution she makes personally and professionally that enhance the

operation of the Protected Resources Division within NOAA, he said.

When not handling her many duties at NOAA Fisheries, Hobbs enjoys her summers fly fishing with her husband, spending time with her family at their favorite summer retreat in Wells Beach, Maine, and playing with her three dogs. As a testament to her love of animals, all three dogs were rescued from broken homes. In the winter months, Hobbs, an avid basketball fan, rarely misses a Tufts University basketball game, as she enjoys watching her son serve as assistant coach.

"I love working for NOAA Fisheries Protected Resources Division. It combines my two loves—the ocean and animals," Hobbs said.

"Through her strong commitment and dedication to serving the division and the public and her genuine concern for the well-being of people and animals, Marcia has raised the bar for all NOAA employees," Colligan said. "Marcia is indispensable in coordination of the day-to-day operations of the division, and her attention to detail, understanding of the regulatory complexities and enthusiastic attitude are an essential ingredient to her success." ☺

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