

Scientists test new marine robot hurricane-hunters

Harriet McLeod, Reuters

(Reuters) - As Tropical Storm Isaac was on its path through the Caribbean before becoming a hurricane in the Gulf of Mexico this week, U.S. scientists were testing an experimental new weather spy tool - an unmanned, marine robot about the size of a surfboard that can gather storm data at sea level.

A National Oceanic and Atmospheric Administration (NOAA) research laboratory in Miami sent the "Wave Glider," a floating platform of sensors with an underwater stabilizer christened Alex, into ocean waters about 100 miles north of Puerto Rico last week to try to intercept Isaac.

"Isaac did not barrel right over it," said Alan Leonardi, deputy director of NOAA's Atlantic Oceanographic and Meteorological Laboratory in Miami, after the storm passed to the south of the island before turning north and making landfall near New Orleans as a Category 1 hurricane.

"But Isaac being the size storm it is, the Wave Glider was able to collect data from the outer rain bands. We can't steer a hurricane, but we did get good data out of it."

A few days later, scientists got a second look at Isaac, from another Wave Glider - named G2 - on a separate oil and gas mission in the Gulf of Mexico.

The eye of Isaac passed barely 60 miles east of G2, enabling it to collect valuable ocean data, including evidence of a dramatic drop in water temperature, "suggesting that Isaac was vacuuming the heat from the Gulf," according to its manufacturers, Liquid Robotics, based in Sunnyvale, California.

Bill Vass, CEO of Liquid Robotics, grew up in Louisiana and is a veteran of hurricanes. His grandparents died in Hurricane Camille in 1969, and his family lost a home to Katrina.

CLOSE ENCOUNTER

"We are proud that it was able to survive the mission," battling 85 mph sustained winds, and gusts up to 120 mph," he said. "Hopefully the Wave Glider will make it possible to better predict the severity and risk to everyone in the Gulf Coast area in the future."

Testing of another robotic boat, the Emergency Integrated Life-Saving Lanyard, or EMILY, will begin in the Pacific Ocean off California this week, said Justyna Nicinska, project manager for NOAA's Weather In-Situ Deployment Optimization Method.

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Its builder, Hydronalix, based in Green Valley, Arizona, launched EMILY in 2010 as a robotic lifeguard. For NOAA, the builder outfitted the 5-foot, 5-inch (1.65-meter) boat with storm data-gathering sensors.

NOAA bought 10 EMILYs at \$30,000 each last spring, Nicinska said. Researchers said they plan to send one into a tropical storm by the end of the 2012 hurricane season.

Both Wave Glider and EMILY can measure a tropical storm's surface air temperature, wind chill, barometric pressure, actual wind speed, relative wind speed, wind direction, ocean temperature and ocean salinity, researchers said.

Both will be less expensive to operate than C-130 hurricane-hunter flights or NOAA ocean research vessels that cost \$10,000 to \$20,000 a day to operate, Leonardi said.

The tiny boats will also be used for other NOAA projects in marine resources, fisheries, archaeology, imagery and bottom topography, researchers said.

But meteorologists hope to plug the craft's storm data into forecast models and better predict when a tropical storm is going to intensify into a hurricane, researchers said.

"We're trying to understand what happens at the ocean surface, which is where the energy transfer happens between the ocean and the overlaying hurricane," said Erica Rule, spokeswoman for NOAA's oceanographic and meteorological laboratory.

"Heat energy becomes the kinetic energy that drives the hurricane, and it comes from the warm water that they pass over," she said. "It's why hurricanes die when they go over land or over colder water."

AUTONOMOUS, MILITARY VERSION

The Wave Glider is so rugged it can stay at sea for a year at a time relying on renewable energy from technology that converts wave motion into energy for propulsion.

Solar panels power the onboard communications and sensor equipment, and it can be piloted by satellite from the company's California offices.

The robots are already being used in marine research by scientists off the coast of California monitoring great white sharks. A military version, dubbed the "Shark" has also been adapted for intelligence, communications and surveillance operations.

"The Department of Defense is a big customer of ours," said Vass.

Leonardi said his NOAA lab is working with the builder to have several ready for the 2013 hurricane season. They will be placed in a line east of the Leeward Islands in the path of an approaching tropical storm, he said.

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"It's what we call a picket fence," he said. "The dream scenario would be to have six or 12 of these all get run over by a storm."

(Additional reporting by David Adams; Editing by David Adams and Todd Eastham)

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