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## Drone aircraft joining hurricane-research missions

By [LEE BOWMAN](#)  
September 18, 2005

Hurricane researchers flew a small drone aircraft through Tropical Storm Ophelia as it passed Virginia's Eastern Shore last week, demonstrating a new way to probe the storms at low altitudes that human pilots seldom dare.

"Hurricane Hunter" planes flown by the U.S. Air Force Reserve and the National Oceanic and Atmospheric Administration regularly fly back and forth across hurricanes that threaten landfall, measuring pressure, humidity, waves and winds with a variety of instruments. The U.S. military has been flying into hurricanes regularly since the 1950s.

Dropsondes - cylinders about the size of tennis-ball cans - are dropped from the aircraft with a small parachute. As the devices slowly fall through the hurricane, they relay readings to the aircraft and the National Hurricane Center by radio and satellite links.

But even though the hardy weather reconnaissance planes can stay inside a storm for up to several hours and drop dozens of the instrument bundles, they don't venture into the turbulent zone just above the ocean surface.

The remotely piloted Aerosonde puts nothing but itself at risk as it skims the bottom of a hurricane. It's at this level where the ocean's warm-water energy is transferred to the atmosphere just above it. This is where the strongest winds of a hurricane are found and where they impact people.

"If we want to improve future forecasts of hurricane intensity change, we will need to get continuous low-level observations near the air-sea interface on a regular basis," said Joe Cione, a hurricane researcher at NOAA's Atlantic Oceanographic and Meteorological Laboratory in Miami and lead scientist on the unmanned-vehicle project.

"Manned flights near the surface of the ocean are risky. Unmanned aircraft such as the Aerosonde are the only way. With this flight, we saw what hopefully will become routine in the very near future."

The robotic aircraft, which has been under development by NASA and Aerosonde North America for the past four years, was able to catch up with Ophelia from NASA Goddard Space Center's Wallops Island Facility near Chincoteague, Va.

During a 10-hour flight, the 5-foot-long vehicle was able to pick up the same information that parachuted instruments relay to NOAA, as well as readings from an infrared sensor that was used to estimate the underlying sea temperature. Readings were taken and relayed every half-second as the storm moved off North Carolina's Outer Banks and past the Virginia coast.

Although robotic aircraft have been widely used by the military and intelligence agencies overseas in recent years, civilian agencies like NOAA, the Forest Service and others are only beginning to test them.

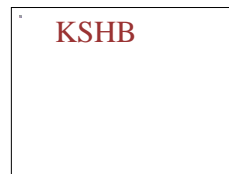
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Lt. Cmdr. Harris Halverson, a NOAA pilot who's flown numerous missions through hurricanes himself and is head of an agency working group formed in July to consider the potential of unmanned aircraft systems, said it's unlikely that drones will replace human hurricane hunters in the near future.

"The technology is still in its early stages, and the reconnaissance aircraft pack a lot of equipment that robotic aircraft can't bring in, but they can augment the information," Halverson said.

"It's way too early to say UAVs (unmanned aerial vehicles) will replace the traditional aircraft, but if they can do it better or more cost-effectively at some point in the future, that's a possibility," the NOAA officer added.

On the Net: <http://www.noaa.gov>

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