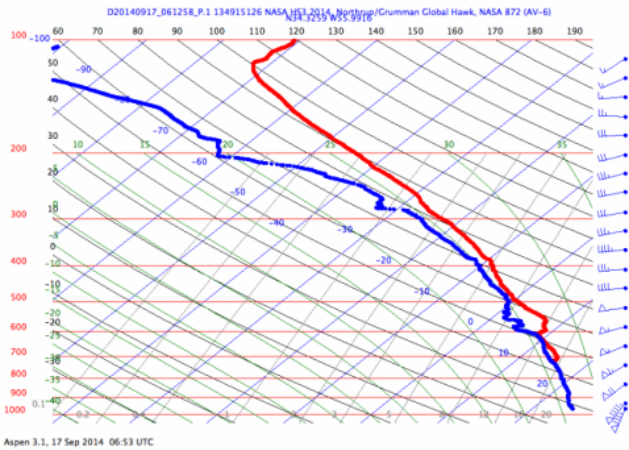


NASA's HS3 looks Hurricane Edouard in the eye

30 September 2014, by Rob Gutro



This graph of data from a dropsonde on Sept. 17 shows very strong, hurricane-force winds at the surface of Hurricane Edouard. Credit: NASA

During the Global Hawk's seventh science flight on Sept. 17, "the remotely piloted aircraft released a dropsonde from 62,000 feet along the inner edge of the eyewall on a south to north pass," said Michael L. Black, research meteorologist at the Hurricane Research Division, NOAA's Office of Oceanic and Atmospheric Research - Atlantic Oceanographic and Meteorological Laboratory in Florida.

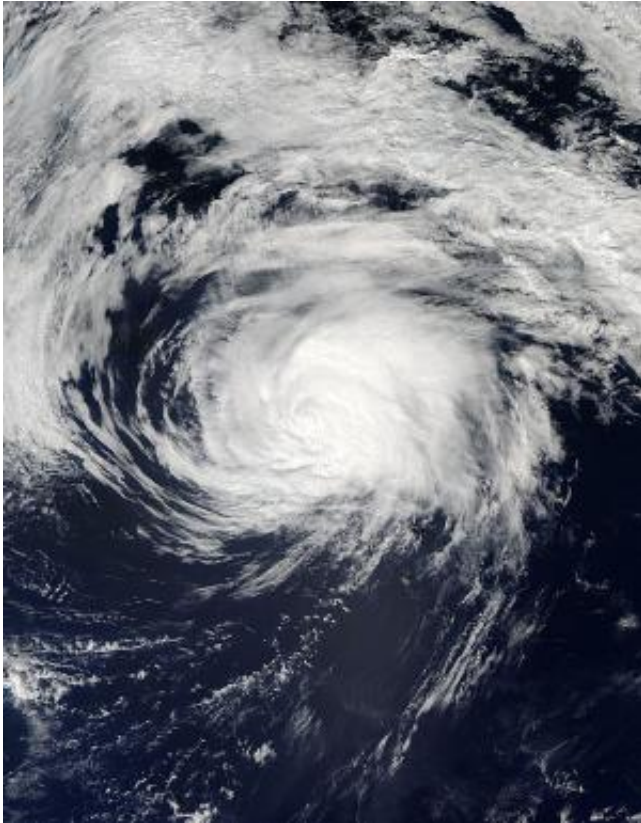
Black said, "The sonde started out on the south side of the eye and rotated around to the eastern eyewall. The sonde reported a sea-level pressure of 963 millibars, surface winds of 90 knots [103.6 mph, or 166.7 kph], and average low-level winds of 95 knots."

The data showed that Edouard was indeed still at least a strong Category 2 hurricane, possibly Category 3, as the strong winds continued to be observed near the ocean surface.

NASA and NOAA scientists participating in NASA's Hurricane and Severe Storms Sentinel (HS3) mission used their expert skills, combined with a bit of serendipity on Sept. 17, 2014, to guide the remotely piloted Global Hawk over the eye of Hurricane Edouard and release a sonde that rotated within the eye as it descended and fell into the eyewall of the storm at low levels.

NASA's HS3 mission has returned to NASA's Wallops Flight Facility on the Eastern Shore of Virginia for the third year to investigate the processes that underlie hurricane formation and intensity change in the Atlantic Ocean basin.

NOAA's Advanced Vertical Atmospheric Profiling System (AVAPS) aboard Global Hawk No. 872 released 88 dropsondes into the hurricane that measured temperature, humidity and winds throughout the depth of the troposphere, the region of the atmosphere where humans and aircraft experience weather.



NASA's Aqua satellite flew over Tropical Storm Edouard on Sept. 18 at 1:45 p.m. EDT that showed the eye had disappeared and the bulk of clouds pushed east of center. Credit: NASA Goddard MODIS Rapid Response Team

Basically, the dropsonde, along with 87 others during this flight, provided readings from top to bottom of the critical region of the atmosphere, giving scientists a perfect view of winds, temperature and pressure throughout the whole depth of the storm.

On Sept. 18, Global Hawk No. 872 took off at 7:15 a.m. EDT to return to investigate Edouard as it moved over cooler Atlantic waters and was expected to weaken. This mission was the eighth science flight during the current campaign for the Global Hawk. During the flight, the Global Hawk ejected 50 dropsondes and observed the decay of Hurricane Edouard to tropical storm strength and recorded the beginning of the demise of the storm that included the decoupling from the mid- and low-level centers of the storm.

Overall, the Global Hawk flights into Edouard documented its formation into a tropical storm, its rapid increase in intensity into a major, Category 3 storm, and its decay back to a tropical depression thereby capturing the life cycle of a classic [hurricane](#) with roots from a tropical wave from Africa.

The HS3 mission is funded by NASA Headquarters and overseen by NASA's Earth System Science Pathfinder Program at NASA's Langley Research Center in Hampton, Virginia. It is one of five large airborne campaigns operating under the Earth Venture program.

The HS3 mission also involves collaborations with partners including the National Centers for Environmental Prediction, Naval Postgraduate School, Naval Research Laboratory, NOAA's Unmanned Aircraft System Program, Hurricane Research Division and Earth System Research Laboratory, Northrop Grumman Space Technology, National Center for Atmospheric Research, State University of New York at Albany, University of Maryland - Baltimore County, University of Wisconsin, and University of Utah. The HS3 mission is managed by the Earth Science Project Office at NASA Ames Research Center in Moffett Field, California. The aircraft are maintained and based at NASA's Armstrong Flight Research Center in Edwards, California.

Provided by NASA's Goddard Space Flight Center

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