NASA's HS3 mission may target Cape Verde Island hurricanes in 2013

May 29 2013

On Dec. 21, 2012, at 1515 UTC (10:15 a.m. EST) the Moderate Resolution Imaging Spectroradiometer (MODIS) instrument aboard NASA's Aqua satellite captured a clear view of the Cape Verde islands from its orbit in space that clearly showed all 10 islands in the group. The Cape Verde Islands are located about 350 miles (570 km) from Africa's west coast. The 10 islands cover approximately 1,500 square miles (4,000 square km). Credit: NASA Goddard MODIS Rapid Response Team

The Cape Verde Islands off the coast of western Africa are well-known to hurricane scientists because that's a region where a number of tropical cyclones form during the Atlantic hurricane season. NASA's multi-year Hurricane and Severe Storms Sentinel, or HS3, mission may explore tropical cyclones of Cape Verde origins when it takes to the skies again this August.

HS3 returns this summer after several successful flights in 2012 by one of NASA's unmanned Global Hawk aircraft gathered data from hurricanes Leslie and Nadine. This year NASA will be sending two Global Hawks above stormy skies to help researchers and forecasters uncover information about hurricane formation and intensity changes. HS3 will use the two aircraft carrying an array of instruments this summer, flying from a base of operations at NASA's Wallops Flight Facility in Wallops Island, Va.

The tropical cyclones HS3 will explore may include Cape Verde storms, like Hurricane Nadine in 2012. For more information about how the HS3 mission explored Nadine during the 2012 mission, visit NASA's Hurricane Nadine web page.

According to the National Oceanic and Atmospheric Administration (NOAA), Cape Verde-type hurricanes are those Atlantic basin tropical cyclones that develop into tropical storms fairly close (600 miles, or less than 1,000 km) to the Cape Verde Islands and then become hurricanes before reaching the Caribbean. This type of storm typically occurs in August and September, but in rare years there may be some in late July or early October. The number of this type of storm ranges from none up to five per year - with an average of around two.

During the Hurricane & Severe Storm Sentinel mission, NASA's Global Hawk performed a grid flight pattern over Tropical Storm Nadine on Sept. 26-27, 2012. This image shows the flight pattern as the Global Hawk was flying back to its deployment base at NASA's Wallops Flight Facility on Sept. 27. Credit: NASA

NASA conducted a Cape Verde hurricane research campaign in 2006. The two-month research project known as NAMMA-06 (short for NASA African Monsoon Multidisciplinary Activities) flew NASA's DC-8 aircraft into small disturbances in the eastern Atlantic that had the potential to become Cape Verde hurricanes. NAMMA was NASA's contribution to the European- and African-led African Monsoon Multidisciplinary Activities (AMMA) experiment carried out in and near

West Africa in 2006.

The HS3 campaign constitutes a significant advance over the earlier NAMMA, given the ability of the Global Hawk aircraft to loiter over the Cape Verde/East Atlantic region for much longer periods of time than the DC-8 could.

"The DC-8 data in NAMMA were very limited and we had to rely more on satellite data and NOAA G-IV data," said Scott Braun, HS3 principal investigator and research meteorologist at NASA's Goddard Space Flight Center in Greenbelt, Md. "With the HS3 mission, we hope to obtain a more complete data set that can better answer some of the questions raised in that study."

The Atlantic hurricane season runs primarily from June 1 through Nov. 30, peaking in mid-September.

The HS3 mission is supported by several NASA centers including Wallops; Goddard; Dryden Flight Research Center in Edwards, Calif.; Ames Research Center in Moffett Field, Calif.; Marshall Space Flight Center in Huntsville, Ala.; and the Jet Propulsion Laboratory in Pasadena, Calif. HS3 also has collaborations with partners from government agencies and academia.

More information: www.nasa.gov/HS3

Provided by NASA's Goddard Space Flight Center