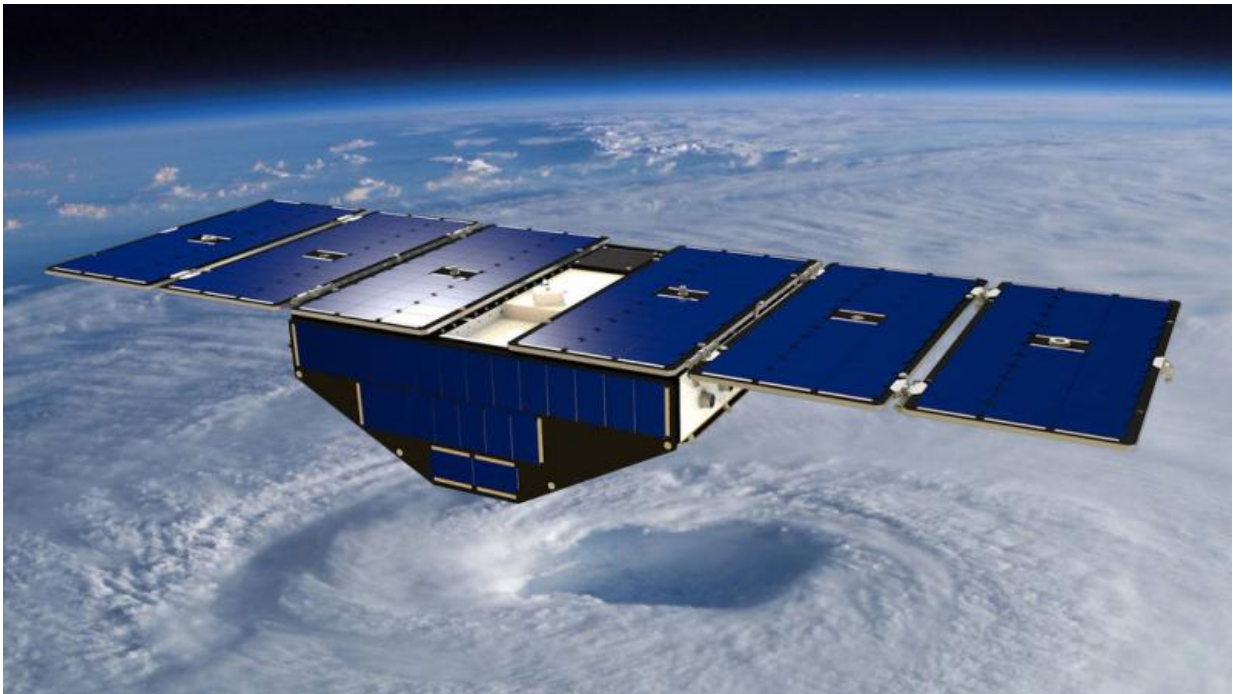


NASA begins to build satellite mission to improve hurricane forecasting

August 20 2015, by Steve Cole



Ten years after Hurricane Katrina formed in the Atlantic, construction of NASA's next-generation hurricane-observing satellite mission now is underway in Texas.

NASA's Cyclone Global Navigation Satellite System (CYGNSS) [mission](#), a constellation of eight microsattellites, will improve [hurricane](#)

[forecasting](#) by making measurements of ocean surface winds in and near the eye wall of tropical cyclones, typhoons and hurricanes throughout their life cycle.

CYGNSS will allow scientists to probe the inner core of hurricanes from space frequently for the first time, using both direct and reflected signals from existing GPS satellites to obtain estimates of surface wind speeds over the ocean. These measurements will advance forecasting methods by providing data that can lead to better predictions of [hurricane](#) tracks, intensities and storm surges.

As the CYGNSS and GPS satellites circle Earth, their interaction will provide a new image of wind speeds over the entire tropics every few hours, whereas a single satellite supplies a new image every few days. The ability to better monitor and predict the rapid changes in hurricane intensity, such as those observed with Hurricane Katrina, is critical to hurricane forecasters and U.S. coastal communities.



Engineers begin construction of the first of eight microsattellites for NASA's Cyclone Global Navigation Satellite System at the Southwest Research Institute in San Antonio, Texas. Communication antennas, attitude control, GPS receiver, and other instrumentation will be installed on the satellite frame in the coming weeks. Credit: SwRI

Earlier this summer, the CYGNSS mission successfully passed two major NASA reviews, clearing the way for integration, testing and preparation of the microsattellites for flight.

"These reviews were a major milestone for CYGNSS, marking the end of the detailed design and planning stages of the mission and the beginning of flight hardware assembly," said Chris Ruf, CYGNSS principal investigator at the University of Michigan, Ann Arbor. "We are now in the last phase of the mission prior to launch and the beginning of a new era in hurricane observations."

The University of Michigan is directing the CYGNSS mission for NASA, including satellite design and production and science data processing. The CYGNSS constellation will be deployed into low-Earth orbit with successive satellites passing over the same region approximately every 12 minutes. The Southwest Research Institute in San Antonio is building and testing the CYGNSS microsattellites and will host the [mission operations center](#) at its Boulder, Colorado location.

Assembly of the first microsattellite began Aug. 14, with the other seven to follow in the next few weeks. The body of each satellite measures roughly 20-by-25-by-11 inches, slightly larger than a standard carry-on suitcase. When fully assembled, the satellites will each weigh about 64 pounds. With the solar panels deployed, each microsattellite will have a wingspan of 5.5 feet. The satellites will be stacked for testing in early 2016.

The mission is scheduled to launch in late 2016 on an Orbital ATK Pegasus XL expendable rocket from Cape Canaveral in Florida, with science operations beginning in the 2017 Atlantic hurricane season.

CYGNSS is a NASA Earth Venture mission in the Earth System Science Pathfinder program, managed by the agency's Langley Research Center in Hampton, Virginia. Other projects in the program include developing high-return Earth science missions with advanced remote-sensing instruments and frequently involve partnerships with other U.S. agencies or international science and space organizations.

More information: For more information about CYGNSS, visit www.nasa.gov/cygnss

Provided by NASA

Citation: NASA begins to build satellite mission to improve hurricane forecasting (2015, August 20) retrieved 24 May 2024 from <https://phys.org/news/2015-08-nasa-satellite-mission-hurricane.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.