



NASA Makes History with the Global Hawk

NASA's GRIP (Genesis and Rapid Intensification Processes) mission was in operation from mid-August through late September 2010. A combination of satellites, NOAA and NSF aircraft, and NASA aircraft, specifically a WB57, a DC-8 and the Global Hawk, provided incredible videos, photos, and scientific measurements, producing a treasure trove of data. This was the first time a research mission included the use of the Global Hawk, an unmanned drone that can fly at a maximum 60,000 feet, which was launched from California and remotely piloted at Dryden Flight Research Center. Incredibly, the timing couldn't have been better: at the end of August 2010, as Hurricane Earl rapidly developed from a tropical depression over the Caribbean into a Category 4 hurricane by the time it hit Florida, the Global Hawk flew over this hurricane, capturing unprecedented images of the intensity of a hurricane. The Global Hawk can fly for 26 hours; at one point, data was obtained for a straight ~25 hours. The information acquired from this drone and the data obtained from instruments onboard the DC-8 have been and will continue to be analyzed.

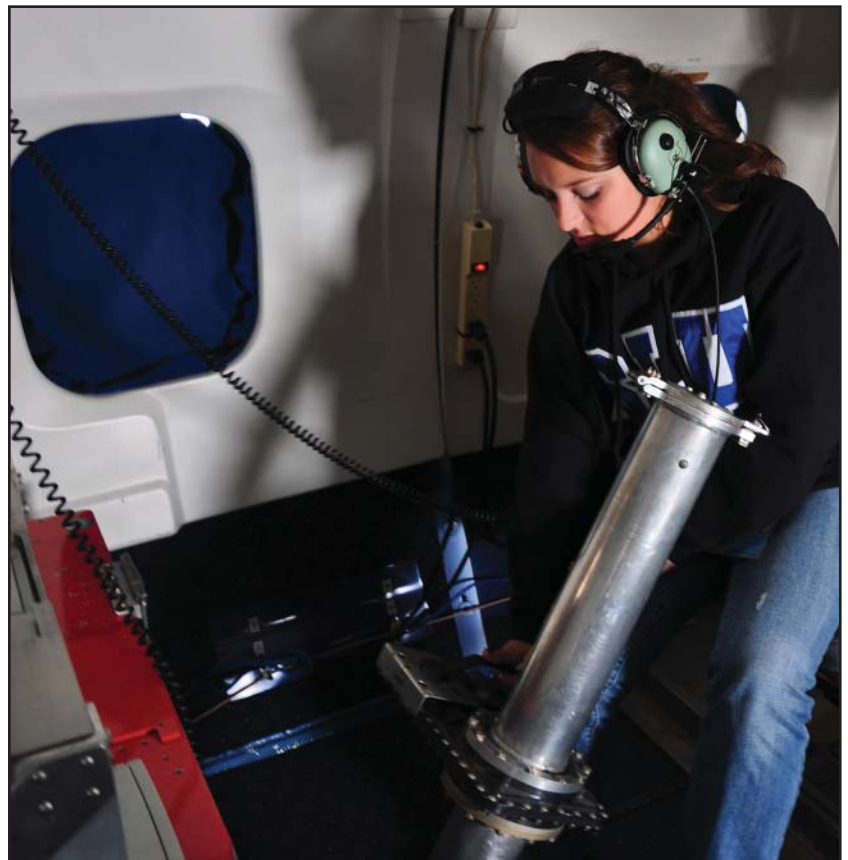
Dropsondes were released from the Global Hawk, and **Ms. Janel Thomas**, a JCET Graduate Research Assistant who is in a masters program in UMBC's Geography and Environmental Systems Department, served as the Dropsonde Scientist. (She can be seen in action in the photo below.) **Dr. Jeff Halverson** of UMBC/JCET, who served as Mission Scientist, explained that as the dropsondes fall through the atmosphere, they collect data such as pressure, temperature, and humidity, all of which help to track how a storm changes over time. This is the goal of the mission: to provide successful documentation of the physical processes that result in the rapid intensification as well as the weakening of cyclones and hurricanes. In turn, the study of the data acquired from this mission will help to improve weather predictions, including the intensity of a storm, which can impact society in numerous ways.

The utilization of the Global Hawk in the GRIP mission along with the news of Hurricane Earl, which was quickly moving up the East Coast, generated much media coverage. Dr. Halverson provided interviews to news outlets nationwide, and also provided an insightful discussion with NASA Goddard's Rob Gutro, which can be viewed here: http://www.nasa.gov/multimedia/videogallery/index.html?collection_id=15959&media_id=17979414.

For more information regarding the GRIP mission, please visit NASA's site: www.nasa.gov/grip/.

(Figure at right) Ms. Janel Thomas prepares to release a dropsonde into the atmosphere.

Photo courtesy of Ms. Thomas.



Celebrating JCET's Renewal!

October 1, 2010 marks a very special date for JCET: the successful renewal of the organization's Cooperative Agreement with NASA Goddard's Earth Science Directorate, through 2014! Formed in 1995, JCET has become an internationally recognized center of research and scholarly excellence. JCET has been a central factor in transforming UMBC into a Carnegie High Research Activity university, and it has spawned other Centers at the UMBC (including the Goddard Earth Sciences and Technology [GEST] Center and the Center for Research in Exploration and Space Sciences [CRESST]). JCET has also transformed GSFC, providing a model of a well-run University center that interacts seamlessly with a major government laboratory. Yet it remains distinct from other UMBC Centers because of its inclusion of undergraduate and graduate education as its core activity. JCET's faculty have the opportunity to affiliate within their academic discipline, to mentor graduate students, to teach a formal three-credit course, and to become Research Professors at UMBC. This provides a distinctive career path for JCET faculty who may, later in their careers, become civil servants or professors at UMBC or other universities. Since JCET's inception, four JCET faculty have been hired at UMBC as full-time faculty and six as faculty at other universities. In addition, six have gone on to become civil servants at GSFC, and two have gone on to positions in federal laboratories.

Since JCET's previous renewal on October 1, 2005, JCET's faculty have written 352 peer-reviewed publications appearing in the scientific literature. JCET's faculty have affiliated with six academic departments at UMBC (Physics, Geography, Mathematics, Chemistry, Computer Science and Mechanical Engineering), and have taught a total of 70 undergraduate and graduate level courses. Many JCET faculty have mentored graduate students in these departments and have helped ignite numerous successful careers in the sciences. During the past five years, JCET faculty have submitted 370 grant proposals and delivered 942 conference presentations, talks and non-refereed publications. In all, a total of 47 research faculty and 4 support staff contributed to this remarkable run of productivity. The success of these past five years must also be attributed to the steadfast leadership of Dr. Raymond Hoff, JCET's Director, and his dedicated staff both at UMBC and at NASA Goddard.

Proposal Awards

NASA ROSES recently announced the funding of submitted proposals to the TERRA/AQUA opportunities. There were 325 proposals submitted and 87 awarded. Among the 87 funded proposals, 5 were proposals submitted by JCET and GEST faculty members: **Dr. Juying Warner** and **Dr. Forrest Hall** (JCET) & Drs. Lyapustin, Reale, and Z. Zhang (GEST).

In his solicitation, *Multi-Sensor Retrieval of Vegetation 3-D Structure and Biomass using Physically-Based Algorithms*, Dr. Hall proposes "new terrestrial ecosystem products for biomass, biomass change and 3-D vegetation structure," and focuses on the use of the BioPHYS-MFM algorithm, as it has contributed to the MODIS Science Team and "resulted in significant progress in the field of biophysical structural information retrieval.

Dr. Warner's proposal, *New Global Measurements of Tropospheric NH₃ and HDO from AIRS*, focuses on developing "new daily and global tropospheric products of NH₃ and HDO from AIRS hyperspectral measurements, ... products that will add value to AIRS's products that contribute to weather forecasts, climate studies, and air quality monitoring."

Next JCET All-Hands Meeting:
Wednesday, March 9, 2011
9:00 a.m. in UMBC's UC Room 312

Meet JCET's GRAs

In addition to **Ms. Janel Thomas**, a GRA working with Dr. Halverson in UMBC's Geography & Environmental Sciences M.S. Program, JCET is fortunate to have three other outstanding Graduate Research Assistants.

Mr. Jaime Compton, who previously participated in JCET's Earth Science Explorers program, is currently in UMBC's Atmospheric Physics M.S. program with Dr. Ray Hoff as his thesis advisor. Jaime is also a member of UMBC's Atmospheric Lidar Group and contributor to the Smog Blog.

Mr. Thishan Dharshana and **Ms. Lijun Diao** are both in the Atmospheric Physics Ph.D. program at UMBC. Thishan is supervised by Dr. Charles Ichoku of GSFC, and Lijun's supervisor is Dr. William Olson.

Congratulations!

Ms. Brizette Lewis, our Executive Administrative Assistant, was recently awarded her B.S. degree in Information Technology from Kaplan University. Congratulations on this accomplishment, Brie!

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