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Goddard Space Flight Center

Inside Wallops

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NASA Wallops Provides Students a Different "View"

NASA Wallops Flight Facility and the University of Maryland Eastern Shore (UMES) have teamed on a project allowing students to design a remote sensing system for coastal topography and vegetation features using a blimp.

The first flight of the Undergraduate Multidisciplinary Earth Science - Airborne Imaging Research (UMES-AIR) project took place on July 21, 2000.

Photo by G. Bland.

The 21-foot long tethered blimp (above) reached an altitude of approximately 350 feet (.1067 kilometers) above the University of Maryland Eastern Shore campus carrying a downward viewing video camera. UMES-AIR was designed to improve student motivation while involving them in an experimental learning and exploratory research activity pertaining to remote sensing.

The blimp was flown in accordance with Federal Aviation Administration regulations (FAR Part 101) that included both passive and active rapid deflation devices.

Continued work under the project will focus on adding co-aligned cameras with selected filters to provide spectral information useful for agricultural and environmental observations. Future missions include flights over the marsh areas of Wallops Island.

The following UMES students majoring in mathematics, science, engineering and technology under the leadership of Dr. Abhijit Nagchaudhuri (UMES): Matt Watson, Jason Tilghman, Tunde Alade, Ani Panoti, Sushil Milak, Elhibir Albusin, Greg Waters, Jerry Reynolds, Towanda Samples and Lovell Levy. Dr. Nagchaudhuri of UMES Engineering and Aviation directs the Project Sciences Department.

Carl Snow, GN&C Systems Engineering Branch and Tony Baldwin, Real-Time Software Engineering Branch (NASA GSFC, WFF) also participated in the project

NASA aerospace engineer, Geoff Bland, provided expertise on this project that is partially funded by a grant from the NASA Goddard Space Flight Center as well as the University System of Maryland.

UMES has provided lab space and administrative support. Additional support was provided by Prof. Ronney Spencer (UMES) and Construction Technology students who fabricated the Blimp Hangar.

The project was initiated in 1999 and is in keeping with a Memorandum of Agreement between UMES and NASA GSFC to promote such projects.

Congratulations to the NSROC Team

Litton-PRC's NASA Sounding Rocket Operations Contract (NASROC) Facility at NASA Wallops Flight Facility completed an ISO assessment July 17-21 and has been recommended for addition to the existing Litton-PRC scope of registration.

NSROC designs, fabricates, integrates, markets and provides launch services for sounding rockets, targets and associated systems for NASA and other U.S. foreign government, and commercial agencies.

The assessment was conducted by Charles Schmauch on behalf of the British Standards Institution (BSI). The management standard used as a basis for the assessment was ISO 9001:1994.

Principal staff members were Ray Huber, Litton-PRC Director of Quality and Tim Bowser, NSROC System Quality Assurance.

NSROC is an integrated team consisting of Litton-PRC, Orbital Sciences Corporation, Boeing, Arcata, and Reliable Systems Services. The Program Manager is Bill Koselka.

NASA and FAA Announce Winners

In an idea reminiscent of something in George Jetson's fleet, a student team has designed an airplane that can double as a car, to offer true door-to-door service.

NASA and the FAA recognized this and other university student teams for their innovative designs by presenting the 1999-2000 National General Aviation Design Competition awards at a ceremony at AirVenture 2000, the Experimental Aircraft Association's Annual Convention and Fly-In at Oshkosh, WI.

The first place award was presented to a 28-student team from Virginia Tech, Blacksburg, and its collaborating partner, Loughborough University, Leicestershire, United Kingdom. The team, which dubbed its design "Pegasus," undertook the challenge of designing an aircraft that would be "roadable" — capable of both ground and air travel. The ability to switch from aircraft to car-like operation allows such a vehicle to effectively use small airports.

Second place honors went to a seven-student team from Purdue University, West Lafayette, IN, for the "Silairus 490," a six-passenger, high-performance piston engine aircraft with an Air Cushion Landing System (ACLS) in lieu of traditional landing gear. The Purdue team also won the Best Use of Air-Force-Developed Technology award for its incorporation of the ACLS, developed by the United States Air Force.

Third place was awarded to Pennsylvania State University, University Park. The team's design, "Alnighter," is a modern, composite general aviation aircraft. Penn State has the distinction of having won a place-award in each year of the competition.

The Best Retrofit Design Award was presented to a four-student, University of Oklahoma, Norman, team for development of an innovative, multi-mode tuned-exhaust system that offers noise reduction while improving the airplane's performance.

The competition is managed for NASA and the FAA by the Virginia Space Grant Consortium. Guidelines can be requested from msandy@odu.edu or at (757) 865-0726.

Riding out the storm

What is a storm surge?

A storm surge is a large dome of water often 50 to 100 miles wide that sweeps across the coastline near where a hurricane makes landfall. Storm surges can range from four to six feet for a minimal hurricane to greater than 20 feet for the stronger ones. The stronger the hurricane and the shallower the offshore water, the higher the surge will be. This can cause severe flooding in coastal areas, especially when the storm surge coincides with normal high tides. Water weighs about 1,700 pound per cubic yard; extended pounding by frequent waves can demolish any structures not specifically designed to withstand such forces. Along the immediate coast, storm surge is a greater threat to life and property, even more so than the high winds.

How much rainfall and flooding can a hurricane produce?

Hurricanes, tropical storms and depressions are capable of producing abundant amounts of flood producing rainfall. During landfall, a hurricane rainfall of 6 to 12 inches is common. If the storm is large and moving slowly, greater amounts can be expected. To estimate the potential rainfall amount (in inches), divide the storm's forward motion into 100. For example, a storm moving five miles per hour could produce 20 inches of rain.

What kind of damage can happen from a hurricane's winds?

As winds increase, pressure against objects is added at a disproportionate rate. Pressure force against a wall increases with the square of wind speed. A 25-mph wind causes about 1.6 pounds of pressure per square foot and places 50 pounds of force on a four by eight sheet of plywood. In 75-mph winds, the force becomes 450 pounds and in 125-mph winds, it becomes 1,250 pounds.

How accurate are hurricane forecasts?

The National Weather Service's National Hurricane Center in Miami, Fla., prepares the official hurricane watches, warnings and advisories for the U.S. and adjacent ocean areas. Major advances have been made in hurricane forecast accuracy in the past 25 years due to improved satellite imagery and more sophisticated computer models. The average 72-hour forecast position error is about 300 miles. The average 24-hour forecast position error is 100 miles. This distance can mean the difference between destructive winds and storm surges and experiencing little more than "tropical storm" conditions. Hurricane intensity changes are quite difficult to predict. The best plan is to expect the worst. A good rule of thumb is to plan for a storm that could arrive one category stronger and 12 hours sooner than predicted

PAO Digital Photo.

Tony Goodyear, (left), Public Affairs Office, gives campers some tips on building a water rocket during the second week of Space Academy 2000. Spaceflight Academy, held on three separate weeks, is a week-long residential summer camp for students interested in learning about the science and engineering of rockets and space flight. The Academy is supported by NASA Wallops Flight Facility, U.S. Navy, Virginia Space Flight Center and the Eastern Shore Regional Partnership.

Exchange News

Renaissance Festival tickets are now available in the Wallops Exchange, Bldg. E-2.

The Festival runs from August 26 through October 22, 10 a.m. - 7 p.m. Ticket prices are $13.00 for adults and $5.50 for children.

For additional information contact Pam Milbourne, x2020.

NASA Visitor Center Events Scheduled for August

August 5 and 19 — Model Rocket Launch

A model rocket launch will be held at 1 p.m. Models of various rockets will be launched. Model rocketeers are invited to bring their own rockets and launch them. The launch will be canceled if it is raining or winds exceed 18 mph.

August 6 —Biking Tour

There will be a biking tour of the Wallops Main Base beginning at 3 p.m. The tour is 3 miles long and takes approximately one hour. Participants must bring their own bicycles, wear a helmet and sign up at the Visitor Center. The tour will be canceled if it is raining. For further information, call x2298.

Fish Fry
All you can eat
Aug. 4
6 p.m.
Bldg. F3

Wallops Shorts……..

Sounding Rocket Launch

A NASA Terrier-Black Brant sounding rocket was successfully launched from the White Sands Missile Range, N.M., on July 26. The payload was a solar physics experiment to study the physical properties of the solar corona. Dr. Joseph Davila, NASA Goddard Space Flight Center was the principal investigator.

Fire Department Responses

July 21 to July 27
Aircraft Stand-bys — 35
Fire Alarms — 4
Ambulance Calls — 0
Mutual Aid Assistance — Standby with a rescue truck and ambulance during the Chincoteague Pony Swim

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