NASA’s Suborbital Missions Teach Engineering and Technology

Goddard Space Flight Center’s Wallops Flight Facility

Joyce L. Winterton, Ph.D.
Wallops Flight Facility
“goes to where the science is . .”
Programs at Wallops

Small Satellites

Sounding Rockets

Balloons

Aircraft
Sounding Rocket Program
Sounding Rocket Altitudes

Up to 1000 miles

~250 miles
The Scientific Balloon Program is managed at Wallops but flights are conducted in various locations including New Mexico, Antarctica and Sweden.

- Super Pressure Balloon
Gamma-Ray Imager/Polarimeter for Solar flares (GRIPS)
(Dr. Pascal Saint-Hilaire, UC Berkeley)

- GRIPS studied particle acceleration and energy release in solar flares using a combination of high-resolution imaging, spectroscopy, and polarimetry of solar-flare gamma-ray/hard X-ray emissions

- Balloon: 39.57MCF; Susp. Weight: 5,555 lbs.; Float Altitude: 127,000 ft.

- Launch Date: January 19 / Termination Date: January 30

- Total Flight Time: 11 days, 19 hours, 50 minutes

Payload is ready to launch
Airborne Science Research

• Hurricane and Severe Storm Sentinel (HS3)
  – Studying the physical processes that control hurricane intensity change
  – NASA’s Global Hawk unmanned aircraft returning to WFF August – October 2014

New Global Hawk Operations Center at Wallops

NASA Global Hawk at WFF—HS3, August 2012

HS3 Flight Patterns
Space Technology Development and Testing

- **Low-Density Supersonic Decelerator (LDSD)**
  - Developing three Mars atmospheric entry/descent technologies: a 6-meter Supersonic Inflatable Aerodynamic Decelerator (SIAD), an 8-meter SIAD, and a 30-meter Supersonic Ringsail (SSRS) Parachute.
June 2014 Test

- LDSD Test Profile; launch planned Summer 2014
NASA Education Flight Projects

Authentic Technology and Engineering Experiences
NASA Education Internships

Office of Education Infrastructure Division (OEID) Launchpad
An Innovative Solution to Support the STEM Workforce of Tomorrow

Home | Student Opportunities | Student Information | Data Collection and Analysis | Support Systems | Help

Due to scheduled maintenance activities, the OSS and OEPM applications will not be accessible effective Friday, November 15, 2013 - Sunday, November 17, 2013.

The OSSI Summer Session application period is open from November 1, 2013 through March 1, 2014.

NASA CubeSat Space Missions
NASA is now accepting proposals for the CubeSat Launch Initiative. Proposals must be submitted electronically by 4:30 p.m. EST Nov. 26, 2013.

From the submissions, NASA will select the best proposals by Feb. 7, 2014. Developers whose proposals are selected may have the opportunity to see their creations launched as an auxiliary payload on a mission between 2014 and 2017. NASA will not provide funding for the development of the small satellites, and selection does not guarantee a launch opportunity.

Student Challenge Opportunities
2014 NASA and Worcester Polytechnic Institute Sample Return Robot Challenge
NASA and the Worcester Polytechnic Institute in Worcester, Mass., are seeking teams to compete in a robot technology demonstration competition with a potential $1.455 million prize purse. Teams will compete to demonstrate a robot that can locate and retrieve geologic samples from a wide and varied terrain without human control. Registration is open until Jan. 7, 2014. The competition will take place June 11-13, 2014.

NASA Night Rover Energy Challenge
Early registration through July 26, 2013
Regular deadline October 25, 2013
Senior Advisor for Education: Dr. Joyce Winterton, Code 800
Education Specialist: Linda Sherman, Code 160, IPA
Educator Resource Center Coordinator: Samuel Henry, Contractor

**Educator Professional Development**
- Workshops participants included 90 educators from 20 states that will impact 5,572 students
- Educator Resource Center Completed

**STEM Engagement**
- 620 Secondary and High Education students participants in authentic experiences

**Internships**
- 30 collegiate and high school interns from 10 different states

**Institutional Engagement**
- University of Maryland Eastern Shore, Eastern Shore Community College, Salisbury University, Wor-Wic Community College, Virginia Space Grant
USIP

The primary goal is:
• To provide a hands-on flight project experience to enhance the science, technical, leadership, and project skills for the selected U.S. university undergraduate student team.

The secondary goal is:
• To fly a science payload having a purpose relevant to the Science Mission Directorate’s science goals
Wallops: Reaching Farther for Science and Technology

Questions?

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