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, Antartica and Sweden.

- Super Pressure Balloon
Monthly Status Review
February 16, 2016

2015 Antarctica Balloon Campaign
Gamma Ray Imager
Polarimeter
for Solar Flares (GRIPS)
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
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
• Collaborate with 7 Eastern Shore School Districts in Virginia and Maryland (Accomack, Northampton, Worcester, Somerset, Wicomico, Dorchester, Caroline)  
• University of Maryland Eastern Shore, Eastern Shore Community College, Salisbury University, Wor-Wic Community College, Virginia Space Grant
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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