UNH News Release: High Schoolers Reach 105K Feet with History–Making UNH Scientific Balloon

UNIVERSITY of NEW HAMPSHIRE

Media Relations

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High Schoolers Reach 105K Feet with History–Making UNH Scientific Balloon


Balloon burst at 105,900 feet.

Balloon burst at 105,900 feet. Photo by Lou Broad.

DURHAM, N.H. — On Monday, July 23, 2012, high school students and their University of New Hampshire mentors successfully flew and recovered a scientific payload that had been carried aloft by balloon to 105,700 feet. Tethered to the balloon, carrying a miniscule Geiger counter to measure cosmic rays, was a three-foot, dish-shaped re-entry vehicle the students built of pink Styrofoam and cardboard. It was designed to drift back to Earth without aid of a parachute – a first for the small ballooning community.

Launched in Brattleboro, Vt., the balloon rose at a rate of 1,000 feet per minute, reaching its maximum height one hour and forty-eight minutes later. Onboard cameras captured images of a cloud-laden Earth against the blackness of outer space.

The four-pound re-entry vehicle drifted 40 miles southeast and landed thirty minutes later in rural Templeton, Mass. with the payload fully intact. The payload also contained an altimeter, two temperature sensors, and the three cameras, two of which were the size of a pack of gum. During the flight, the students successfully obtained real-time measurements of changing levels of cosmic rays and changes in atmospheric temperature and pressure.

The experiment was part of students' four-weekProject SMART (Science and Mathematics Achievement through Research Training) summer residential program at UNH, which concludes this week. The program, now in its 21st year, is designed to help spur high school juniors and seniors into careers in science and mathematics. Students work with faculty in three disciplinary modules: space science, marine and environmental science, and bio- and nanotechnology.

For the space science module, each summer N.H. physics teachers Lou Broad of Timberlane Regional High School in Plaistow and Scott Goelzer of Coe-Brown Northwood Academy guide the students through four weeks of lectures and research in conjunction with UNH Space Science Center/Department of Physics faculty and staff. The balloon project and launch is the culmination of the summer's activities.

Students participating in this year's space science module include junior Malcolm LeClair of Tenafly (N.J.) High School, junior Emerson Montano of Rolling Hills Preparatory School outside of Los Angeles and senior Andrew Mahn of the Sant Bani School in Sanbornton.

“The re-entry vehicle was just sitting there as if someone had gently placed it on the ground,” says Mahn. Indeed, notes Broad, the successful landing without the aid of a parachute proves the validity of the re-entry vehicle’s design.

"This represents a paradigm shift for the whole small ballooning community. I've never seen anybody else use anything but parachutes,” says Broad.

Says Goelzer, “This isn’t a research project but, rather, it’s an educational experience for these students. It’s a simulated satellite project from design through construction, launch, flight, and recovery.”

The whole experiment costs less than $1,000 and the process takes just a few weeks from start to finish as opposed to the years required to design, build, and launch a satellite.

Notes Subhash Minocha, director of Project SMART and UNH professor of plant biology and genetics, “The summer institute has provided the opportunity for a diverse group of students from all across the U.S. and as far away as Jordan to learn the interdisciplinary nature of the various scientific fields and how math and computers converge with scientific research. Students also studied and discussed the applications and implications - economic, social, environmental, legal, ethical and moral - of scientific advancements to society.”

The University of New Hampshire, founded in 1866, is a world-class public research university with the feel of a New England liberal arts college. A land, sea, and space-grant university, UNH is the state's flagship public institution, enrolling 12,200 undergraduate and 2,300 graduate students.

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Photographs available to download:

http://unh.edu/news/releases/2012/jul/img/smartsat_1.jpg
Earth from an altitude of 20 miles (105,600 feet), photographed by cameras onboard a scientific balloon launched by high school students participating in the University of New Hampshire’s Project SMART.

http://unh.edu/news/releases/2012/jul/img/smartsat_2.jpg
Earth from 105,900 feet just as the balloon bursts. Small parts of the shredded balloon can be seen.

http://unh.edu/news/releases/2012/jul/img/smartsat_3.jpg
Project SMART students Emerson Montano (left) and Malcolm LeClair inspect the flight vehicle at the recovery site in Templeton, Mass.

http://unh.edu/news/releases/2012/jul/img/smartsat_4.jpg
Balloon burst at 105,900 feet.

http://unh.edu/news/releases/2012/jul/img/smartsat_5.jpg
Physics teacher Rich Levergood of Londonderry High School puts the flight package through final tests before launch.

All photographs courtesy of Lou Broad.

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