

New Hampshire Space Grant Consortium

2007 Annual Performance Data

University of New Hampshire (UNH)

Morse Hall 305A
Institute for the Study of Earth Ocean and Space
8 College Road
Durham, NH 03824

Director - Professor David Bartlett
(603) 862-0092

<http://www.nhsgc.sr.unh.edu/>

AFFILIATES

BAE Systems of North America (BAE)
Christa McAuliffe Planetarium (CMP)
Community College System of New Hampshire (CCSNH)
Dartmouth College
FIRST Place
Mount Washington Observatory (MWO)
Plymouth State University (PSU)
The Rey Center
UNH Cooperative Extension

PROGRAM DESCRIPTION

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The New Hampshire Space Grant Consortium (NHSGC) is a Designated Consortium funded at a level of \$590,000 for grant year March 2007 - March 2008.

PROGRAM RELEVANCE TO NASA

Space Grant consortia build human capital and research expertise to support NASA programs and missions, expand NASA's expertise and educational networks, and bring knowledge and awareness of space to a broad range of constituents in every state. The NHSGC brings together New Hampshire's educational and scientific communities to foster science education, scholarship, research, and public interest in Earth Science, Space Science, Astrophysics, and in NASA-related fields of biology/medicine, engineering, technology, and computer science.

PROGRAM RELEVANCE TO NEW HAMPSHIRE

The NHSGC provides student and research support for state universities/colleges and community colleges, promotes the attraction of private sector support to educational institutions, facilitates and encourages recruitment of underrepresented groups within New Hampshire, provides pre-service and in-service science teacher training, supports the educational aspect of cooperative extension and informal education/public service programs in New Hampshire.

PROGRAM GOALS

The strategic goal of the NHSGC is: *To stimulate and enhance awareness and understanding of our nation's continuing quest into Space by providing 1) Support to New Hampshire's college and university students in Space-related fields; 2) Space-related educational materials, programs, and resources to the State's educators; and, 3) Greater access to Space-related information and technology for the benefit of the State, its businesses, and citizens.*

The NHSGC pursues this goal across a broad front of programs, with particular emphasis in the following areas:

- 1- Providing fellowships, scholarships, and internships to the State's graduate and undergraduate (including community college) students pursuing studies in NASA-relevant science, engineering, and technology. At all levels, support is connected strongly to mentored research experiences for students. Awards also address the established need for a larger, more diverse U.S. technical workforce.
- 2- Providing resources, information, and training to the State and region's educators in science, math, and technology. At the K-12 level specific emphasis is placed on teacher/student activities incorporating realistic, "hands-on" experience, in support of State and national guidelines for science, math, and technology curricula.
- 3- Creating increased access to NASA-relevant science and technology through informal educational institutions and other programs oriented towards the general public. The intrinsic appeal of Space exploration is utilized as a means to attract larger and more diverse audiences. Access to NASA-relevant geospatial technologies and their applications are enhanced.

PROGRAM ACCOMPLISHMENTS

The key NHSGC accomplishments over the last grant year include:

Major awards to state college/university and community college students totaling 63 scholarship/fellowship recipients and 12 internships/higher education research opportunities for students. Of these awardees, 50.7% were females and 9.3% were under-represented (excluding Asian) minorities.

Undergraduate STEM-courses in the community college system were provided to NH high school students. In total, 320 scholarships were disbursed within the 200 high schools canvassed.

A new "Introduction to Physical Sciences" lecture/lab course was developed and implemented within the community college system. FIRST/UNH offered two science courses for pre-service teachers.

Support was provided for the collaboration of University of New Hampshire (UNH), Elizabeth City State University (ECSU), and regional 2-year colleges, in the development and implementation of a program called **Watershed Watch**. ECSU is a minority-serving institution (HBCU) in North Carolina. This program is a model for recruiting and retaining STEM majors at both campuses. Watershed Watch uses the monitoring of the Merrimack and Pasquotank drainage basins as a STEM undergraduate recruitment and retention tool.

Installation and initial testing of an automated weather station on top of Mount Tecumseh, NH, was funded as a cooperative effort among the Rey Center, the White Mountain National Forest, Booth Creek, Inc., and the Plymouth State University (PSU) Meteorology program. The station will be a centerpiece of the Center's community research and public outreach programs.

Support was provided for **Forest Watch**, which partners UNH scientists with middle/high-school teachers in collecting data on the health of the northern white pine. Over 100 New England schools select a sampling plot of white pine and use field and satellite data to monitor the effects of ozone pollution. Collected data are then compared to tropospheric ozone data obtained from the state and Environmental Protection Agency.

Funding was provided to create an interactive **lunar lander exhibit** featuring NASA's new CEV at the CMP. Over 30,000 people had the opportunity to try their hand at landing the CEV on the Moon this past year.

Development of a planetarium show script on "**Ancient Observatories, Timeless Knowledge**", inspired by NASA's 2005 Sun-Earth Day theme, was funded.

Support was provided for statewide GIS educational activities through Dartmouth, UNH and the Cooperative Extension.

STUDENT ACCOMPLISHMENTS

In the area of education and workforce development, NHSGC accomplishments include:

Fellowship support of 14 graduate students engaged in development of spacecraft attitude controllers for the upcoming NASA Magnetospheric Multiscale Mission (MMS), aurora rocket and satellite experiments, the use of remote sensing for monitoring natural resources, atmospheric chemistry monitoring and analysis, and other NASA-related fields in the area of physics, astronomy, meteorology, engineering and earth sciences.

Stipend and travel support for 5 students in the NASA Academy and internship programs at GSFC, Ames Research Center, and KSC.

Undergraduates obtained "hands-on" experience in the Dartmouth **Greencube** program for small autonomous payloads for sounding rockets, and as UNH Engineering Department mentors to high school students in the FIRST Robotics teams in NH, as well as through faculty-directed research at Dartmouth, UNH, and PSU, and internships at CMP and MWO.