

10-12-2010

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### Recommended Citation

Sims, David, "UNH Space Science Center to Build Four Instruments for New Weather Satellites" (2010). *UNH Today*. 3469.  
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## Media Relations

# UNH Space Science Center To Build Four Instruments For New Weather Satellites

October 12, 2010

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DURHAM, N.H. – Scientists, engineers, and students from the University of New Hampshire's Space Science Center (SSC) recently saw a fourfold increase in their role to provide a critical instrument onboard the National Oceanic and Atmospheric Administration's (NOAA) third-generation weather satellites currently under construction.

With the increase comes an additional \$3 million in funding for a project total of \$10.6 million under NOAA's Geostationary Operational Environmental Satellite (GOES) Program.

The SSC was originally contracted to design and build a single Energetic Heavy Ion Sensor (EHIS) for the Space Environment In-Situ Suite (SEISS) on the GOES-R satellite, which when launched will be the first in a series to replace the nation's aging, 30-year-old weather satellites. But in the wake of passing a series of critical engineering tests on an proof-of-concept instrument, the center was informed that three additional instruments would be needed for the GOES-S, -T, and -U satellites.

While some 80 percent of the instrumentation onboard the GOES satellites will be dedicated to tracking Earth-based weather, the space environment suite, of which the EHIS is a part, will point upward towards space to monitor one of the components of "space weather" – the constant stream of energetic particles in space that is sometimes greatly enhanced by activity on the Sun. The UNH-built instrument will measure particles with the highest energy ranges – particles that can pose great risk to satellites, astronauts, and transpolar aircraft crews.

"Space weather is now considered a part of weather. It's known that these large solar storms can generate charging effects that can impact satellites and, when they hit Earth, generators on the ground," says UNH research associate professor Clifford Lopate, lead scientist for the EHIS instrument.

Lopate, of the UNH Institute for the Study of Earth, Oceans, and Space (EOS) and Department of Physics, adds, "Over three decades our understanding of what's happening out in space has changed, so our needs for measurements have changed." Moreover, Lopate notes, the 30-year-old technology on the current GOES satellites will not serve us well in the future as Earth's changing climate puts more and more demands on satellite technology to analyze climate phenomena and accurately predict weather.

The EHIS incorporates a unique design, developed by Lopate's UNH colleague, astrophysicist James Connell, called the Angle Detecting Inclined Sensor system, or ADIS. The sensor employs a very simple and conservative approach in terms of the technology and replaces heavier, more complex detectors. ADIS is therefore very reliable, which is critical for weather satellites that must remain robust to be fully operational over 15 years in orbit. Because these are long-lasting missions UNH personnel will likely play a support role for the EHIS instruments for years to come.

UNH is a subcontractor in the project as part of an original 2006 award through the National Aeronautic and Space Administration (NASA), working in coordination with the NOAA GOES program, of \$101.7 million to Assurance Technologies Corporation (ATC) of Chelmsford, Mass. for development of the SEISS.

The UNH team plans to deliver two EHIS instruments in 2011 and 2012, respectively. The first satellite in the GOES series is scheduled to launch in 2015.

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 2,200 graduate students.

 
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T-hall

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