

SCSU professor to do satellite work so NASA can study shining clouds

Bulk of work on \$92 million project will be done on university campus

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A physics professor at St. Cloud State University has been chosen to help build a NASA satellite to study the Earth's upper atmosphere.

John Harlander, a professor in the physics, astronomy and engineering science department, is one of 35 professors, research scientists and engineers from across the country selected to



John Harlander

1 of 35 to work on NASA project

participate in the \$92 million project. The satellite will launch in April 2006 and fly for two years. The project, called the Aeronomy of Ice in the Mesosphere, is paid for by the National Aeronautics and Space Administration. Team members will design, assemble and build the satellite.

"It's wonderful" to be part of the team, Harlan-

der said. "It's been a great experience."

The project will study "night shining" clouds, known as polar mesospheric clouds. The clouds, which are ice clouds, appear to shine at night because they are so high in the sky that they are illuminated by sunlight while the lower atmosphere is dark.

The clouds form in the summer polar region of the atmosphere, also known as the mesosphere, which is the coldest region of the Earth's atmosphere. Temperatures there fall 220 degrees below zero.

The clouds were discovered in 1885, Harlander said. In recent decades, sightings of the clouds have increased. The clouds, which could be the result of global climate change, haven't been and typically can't be seen from Minnesota. The farthest south the clouds have been spotted has been Utah and Colorado, in 1999.



Photo courtesy of Mike Taylor, Utah State University

Noctilucent or night shining clouds, are seen over Utah in 1999 for the first time. The NLC is shining brightly while the cloud in the foreground is in the lower atmosphere and is dark.

The main objective of the satellite will be to study how these clouds form and how they vary, Harlander said.

The satellite will have four instruments. Each measures different aspects of the clouds. Harlander will help design and construct one of those four instruments.

His instrument will measure hydroxyl molecules in the atmosphere, which allows scientists to measure the atmosphere's water content.

Harlander, who has

worked with the U.S. Naval Research Laboratory on related projects since 1993, has taught at St. Cloud State since 1991. He will do a large part of the project work at St. Cloud State. The rest will be done in Washington.

"We hope we have a better understanding of what we set out to measure," Harlander said. "It's important to understand why the atmosphere is changing because we live in the atmosphere. It affects us directly."