

## A CLASS OF DISCOVERY



Leader photo by Nathan Falk

Shawano-Gresham School District assistant superintendent Bill Prijic explains the location of a magnetometer that was installed in his backyard near Red River on Monday afternoon. The installation was part of a NASA project, where Shawano Community High School and science teacher Wendy Esch were chosen to participate in the project with 10 other schools across the country. Also pictured are students from Esch's astronomy class, who helped bury the magnetometer and cables.

# SCHS students take part in NASA study of northern lights

By Nathan Falk  
Leader Reporter

**RED RIVER** — Students in Wendy Esch's astronomy class at Shawano Community High School are one step closer to helping NASA uncover a mystery.

SCHS was one of just 10 schools across the country selected by NASA's Education and Public Outreach program to participate in NASA's Time History of Events and Macroscale Interactions during Substorms (THEMIS) Mission. The mission will help scientists investigate a mystery of the Northern Lights, and to help share THEMIS science with other students and teachers across the country.

Students in the class formally became part of the multi-million dollar science project in action Monday, helping to install some special technology to help track substorms.

"This is a good opportunity for students. With astronomy, it's going to help them see what real science is all about," said Esch, who is responsible for carrying out the project. "They can do research, and hypothesize. So we're doing real science instead of written labs. It's going to be an excellent opportunity for them to check it out."



University of California-Los Angeles engineer Don Dearborn explains more about the function of a magnetometer that was installed Monday near Red River to the astronomy class from Shawano Community High School.

To take part in the project, an instrument called a magnetometer was buried in the ground. The instrument is used to measure changes in Earth's invisible magnetic field, which will hopefully help scientists discover the sequence of events that cause spectacular natural light shows of the Northern

and Southern Lights.

"With the data we're collecting we're hoping to find out what comes first, sightings of the northern lights or substorms, and if we find that out we could possibly predict when the northern lights will occur," said SCHS senior Bethany Webster. "It's really interesting since there weren't that many schools chosen, it's surprising that we were selected."

The schools were competitively selected by the Space Grant Consortium in their state together with the THEMIS team to be the host institutions of a \$20,000 magnetometer installed at each school. Wayne Olm, a professor at UW-Green Bay, recommended SCHS for the project.

Originally, the device was supposed to be installed at SCHS but couldn't because it requires unfiltered access to the internet. The school has filtered service, and the filter is a requirement to receive state funding for school internet service, according to Shawano-Gresham School District assistant superintendent Bill Prijic.

On Monday, students helped University of California-Los Angeles engineer Don Dearborn install the

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device. After several other locations in Shawano were deemed unacceptable because of proximity to metal, Prijic offered his backyard in Red River as an option, where the device was buried.

"When I woke up this morning the last thing in the world I thought I would be doing is helping drill a hole in the side of my house to install a magnetometer," Prijic said. "This will give great opportunities to students in the district, so we'll do what we have to do. Things are working well, the computer is connected and going."

The 10 instruments being installed across the U.S., together with instruments in Canada and Alaska, will provide scientists with detailed data about what Earth's magnetic field is doing during a 'magnetic substorm.'

Over the mission's two-year lifetime, data will be compared to the timeline of events which scientists will put together from five satellites, and help scientists test which of the two theories are correct. The five probe Mission, to be launched from Cape Canaveral in 2006, aboard a single Delta II rocket, will be inserted into equatorial orbits that bring them in alignment every four days.

"We will be able to go to websites where they can see what the sun is doing, and it takes about three days to hit, so we can watch the changes in the magnetometer as this event is approaching the earth," Esch said.

Esch has developed a curriculum to teach in her astronomy class which will utilize information from the magnetometer and help students learn more about their environment.

"This was the challenge we as teachers had, to try and take this device and bring it down to the level of a junior or senior in high school, and get them to understand how to read the data and predict things," she said.

Any school can become more involved in the project, because all the data will be available for any school.

"Any other teachers in the area, or anybody anywhere can contact me about it. I've

written a curriculum for my astronomy class that will take about three weeks to go through," Esch said. "Anybody can contact me who would like to be involved, because over the internet anyone can get the data. To be able to know how to use it is another thing."

Dearborn said he is enjoying traveling across the country to install the devices. He has been working at UCLA since the 1960s.

"It's fun meeting the people, I'm having a great time going around to all the sites and meeting people from all different parts of America. And talking to high school kids, it's great — usually I'm hanging around scientists and engineers," he said.

Dearborn was part of the team which built the ground magnetometers. The device is about five inches in diameter and about three feet long. The cables that run from the device to the main computer located indoors are housed in a garden hose.

"I know it looks a little funny. Mice somehow love the insulation that covers the wires, but they won't chew into a garden hose," said Dearborn.

SCHS senior Tomissa Porath said she's excited to be a part of this historic project.

"It's cool to be a high school student working with NASA, and to have this experience," Porath said. "Especially for anyone in the class going into the science field, working with NASA to understand about the magnetic radiation and all that. It's neat that Shawano is being put on the map. I definitely didn't expect to learn about this in astronomy class."

When all the schools' magnetometers are installed and connected, students all over the nation can track the solar storms and participate in this project. For more information on the location and participation of the other schools with THEMIS magnetometers, you can visit the website [http://ds9.ssl.berkeley.edu/themis/schools/geons\\_schools.html](http://ds9.ssl.berkeley.edu/themis/schools/geons_schools.html)