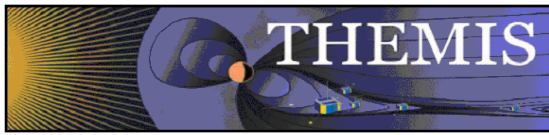


# THEMIS End of Prime Mission (EOPM) Impacts of the THEMIS Education and Public Outreach 2003-2009

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## Inspire and engage teachers and students in THEMIS science

- Place Magnetometers in 10 schools in U.S.
- Develop classroom materials and trainings for teachers on magnetometer data, THEMIS mission, math and science
- Provide support to the teachers with magnetometers in order to engage students in magnetometer data and THEMIS science

## Engage people in auroras and THEMIS at small Planetariums

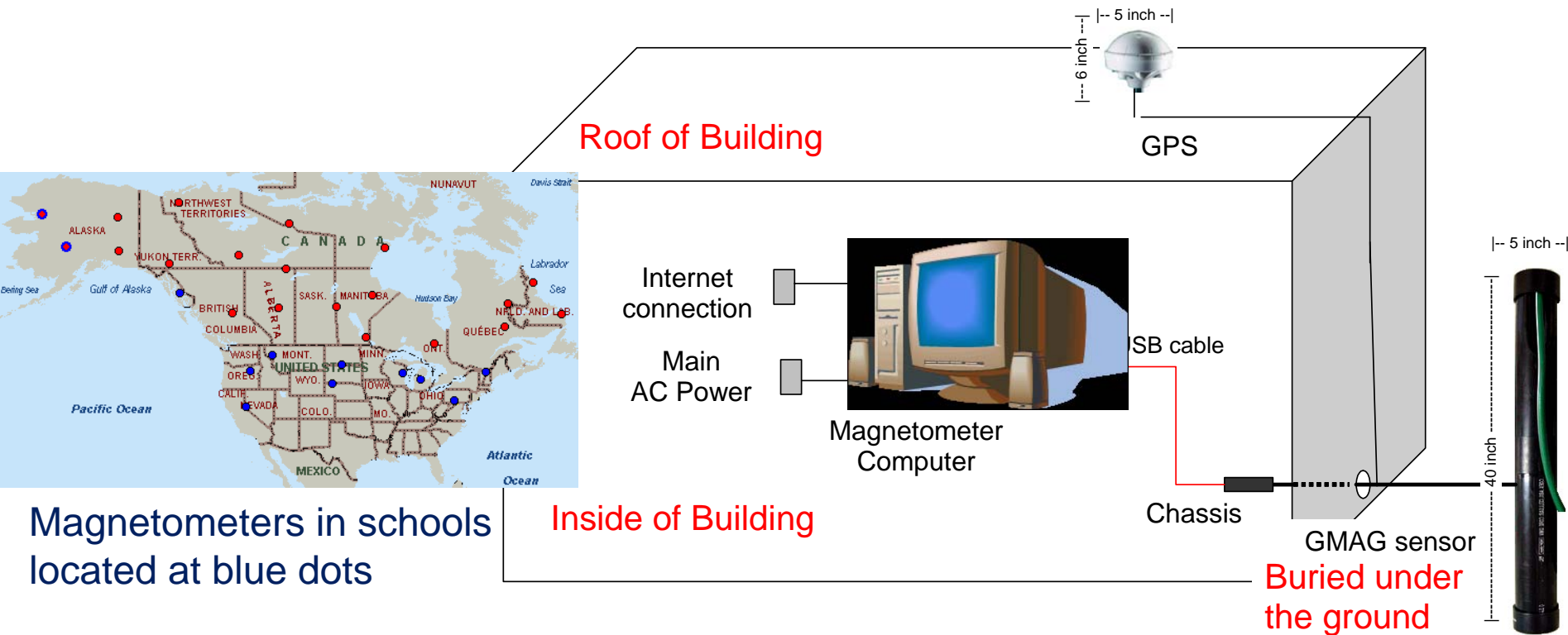
- Update a small Northern Lights Planetarium show with THEMIS data

## Share THEMIS Educational Materials

- Develop a website used by students, teachers, and the general public
- Share THEMIS materials through existing NASA networks

Place Magnetometers in 10 schools in U.S.

- THEMIS placed magnetometers at 13 rural, underserved schools/communities with real-time and archived data on-line for teacher and student use.



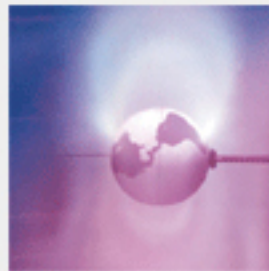
Develop classroom **materials** and trainings for teachers on magnetometer data, THEMIS mission, math and science

- THEMIS developed five books with classroom activities, student worksheets, and background information (reviewed by THEMIS teachers and NASA and improved with this feedback)

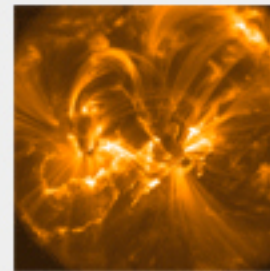
Magnetism and  
Electromagnetism  
Grades 8-12



Exploring Magnetism  
on Earth  
Grades 8-12



Space Weather  
Grades 9-14



Earth's Magnetic  
Personality  
Grades 9-14



Develop classroom materials **and trainings for teachers** on magnetometer data, THEMIS mission, math and science

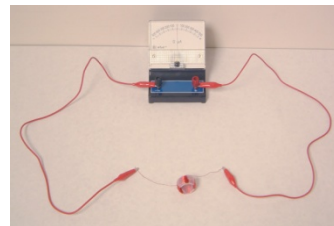
- THEMIS provided intensive professional development for **20 teachers** associated with magnetometer sites over four years; **8 of the teachers estimated reaching more than 2,720 students** with THEMIS-related materials/ideas, 75% of which are minorities in science.

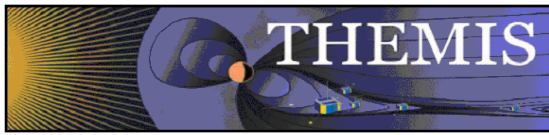




Develop classroom materials **and trainings for teachers** on magnetometer data, THEMIS mission, math and science

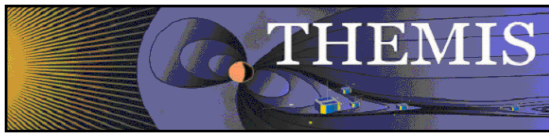
- THEMIS funded a permanent site in Nevada for teacher trainings, that began with training **42 elementary and middle school teachers**, primarily from Nevada and, since then, has trained some **180 teachers** in the first three years after the site opened. It is still operational w/o NASA funding.
- THEMIS trained **550 K-12 teachers** in 30 workshop trainings, reaching **48,400 students**





Provide support to the teachers with magnetometers in order to engage students in magnetometer data and THEMIS science

- Teachers using magnetometer data with their students provided evidence of the project's positive impact on students' attitudes toward science, increased enrollment in science, and choosing science as a career.
- The NewsHour with Jim Lehrer featured three students affected by the THEMIS education program at the Petersburg, Alaska magnetometer site.
- The NewsHour potentially reached more than 5 million viewers in two airings, according to Nielsen ratings, and was picked up by National Public Radio.

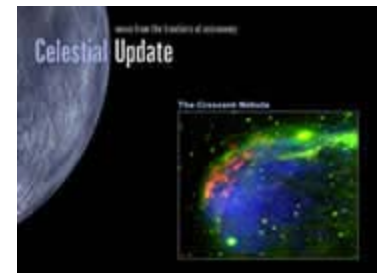


## Engage public at planetariums

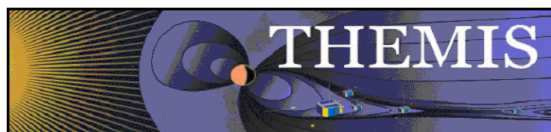


Update a small Northern Lights Planetarium show with THEMIS data.

- THEMIS changed plans to save cost and maintain the same impact by creating an aurora THEMIS ViewSpace exhibit, an internet-fed self-updating, permanent plasma screen exhibit from the Space Telescope Science Institute
- The ViewSpace museum plasma screen show is currently in 200 museums and science centers around the world and is estimated to have been shown 5,500 times per month
- The network of museums in which ViewSpace is exhibited grows at a rate of 3 to 4 per month







## Share THEMIS nationally

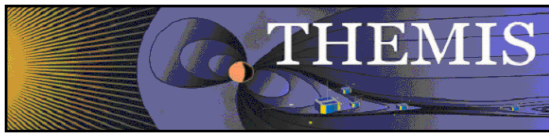


- Develop a website used by students, teachers, and the general public
- Share THEMIS materials through existing NASA networks
- THEMIS Education website has had close to **900,000 successful requests for pages** since 2003
- Over **20,000 CD-ROMs** with THEMIS classroom books and **25,000 THEMIS flyers** have been sent to teachers around the country through NASA's Sun-Earth Day program and teacher trainings



Heliophysics Educator Ambassador program: Its goal is to develop the capacity of over 70 educators to train other teachers on NASA heliophysics science and educational resources, including using magnetometer data in new classrooms.

Coordination with a variety of NASA E/PO partners affords THEMIS E/PO many opportunities to share resources nationally without duplication of effort.



## Acknowledgments



**Dr. Nahide Craig** was the THEMIS E/PO Lead from 2003 until 2007. She made many of these outcomes possible.

The direct impact on students comes from the many teachers who have been part of the THEMIS program, especially the 'core' teachers with magnetometers

Victor Trautman – Alaska;  
Laura Orr – Oregon  
Cris DeWolf – Michigan  
Jim Bean – Nevada  
Terry Parent – Nevada  
Wendy Esch – Wisconsin  
Harriet Howe – North Dakota  
Wendell Gehmann – South Dakota  
Gail Bushey – Nevada  
Manju Prakash – Maine, Massachusetts

Thanks also to THEMIS scientists and engineers who volunteers their time in many outreach and teacher events throughout the years.