Creating a Heliophysics Community of Practice for Formal Educators

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Our Vision

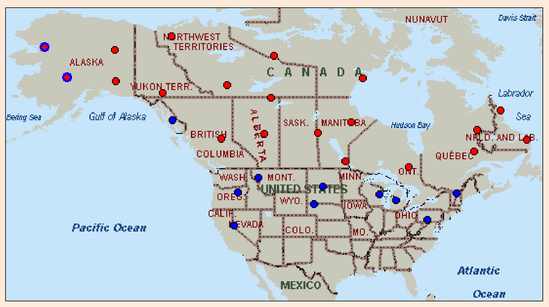
An active, collaborative community of practice that provides formal educators with support and resources for teaching heliophysics.

Our Goal

Our goal is to keep NASA Science Mission Directorate (SMD) middle and high school educators engaged in teaching heliophysics in meaningful and effective ways.

Background: GEONS Program

This community of practice initiative grows out of the Geomagnetic Event Observation Network by Students (GEONS) project which is run the by the THEMIS-ARTEMIS mission Education/Public Outreach program. Starting in 2004, the GEONS project established ground-based magnetometers at schools around the United States.



The blue dots show the locations of the teachers who have participated in the GEONS program.

Over the years, some of the GEONS teachers stayed in contact with each other. This informal community of practice kept the teachers engaged with the magnetometers and committed to teaching heliophysics.

"We need a chance to use materials and come back and see how other people use it. You get an investment that way."
- Vic Trautman, GEONS Teacher

"Face-to-face time to talk about random things, to tell each other what you do…and increase your comfort level [is important]."
- Laura Orr, GEONS Teacher

Evaluation of the GEONS program indicate that participating teachers reported an increased confidence in teaching heliophysics, inspiration to obtain master's degrees in astronomy and physics, increased student engagement in science, and subsequent participation in other NASA SMD projects.

Reference: *THEMIS 2003-2009 Final Evaluation Report*, Cornerstone Evaluation, 2009.

Acknowledgements

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What is a Community of Practice?

A community of practice is a group of people informally bound together by shared expertise and passion for a joint enterprise.

Hallmarks of a community of practice (CoP) include:

- Members self-select to be a part of the CoP;
- Members share their experiences and knowledge in an informal, free-flowing way;
- CoP typically have core participants whose passion for the topic energizes the community and who provide leadership;
- A large CoP is often subdivided by geographic region and/or subject matter to encourage people to actively take part;
- CoP are self-perpetuating: as they generate knowledge, they reinforce and renew themselves.

Reference:

Communities of Practice: The Organizational Frontier, by E.C. Wenger and W.M. Snyder, Harvard Business Review, 2000.

Questions in Moving Forward

Who is going to lead this community of practice?
Research about communities of practice clearly shows that the community must be lead by the members themselves. In this case, that means the teachers. The RBSP EFW instrument E/PO is providing honoraria for eight teachers to act as "seed teachers" to provide leadership for this community of practice.

Who is going to facilitate the community?
Although the teachers will be leading, this community of practice will need facilitating. This would include organizing the logistics of webinars, setting up discussion boards, and coordinating meetings. Pieces of this are already being done by various E/PO groups, such as THEMIS-ARTEMIS, RBSP EFW and HEA. We are interested in talking with other groups who would like to be involved.

Where are we going to get teachers from?
We are hoping that other NASA SMD Heliophysics mission and EPOESS E/PO programs will be interested in collaborating on this initiative.

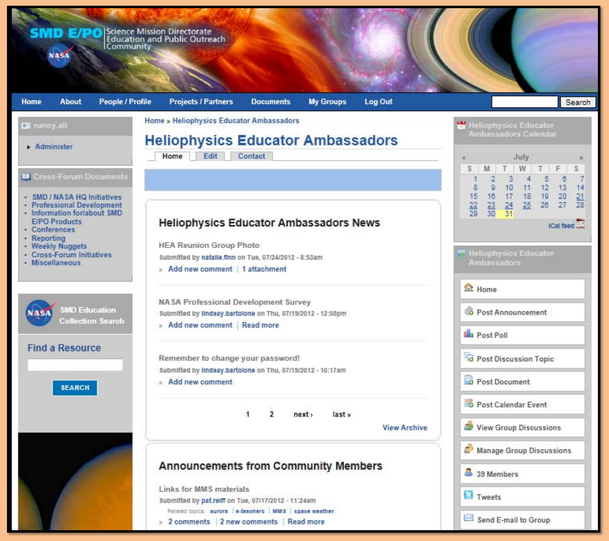
How is this effort going to be funded?
Initially, this effort is being funded by THEMIS-ARTEMIS and RBSP EFW E/PO. However, we envision that as the community continues and expands, the funding will come from multiple projects and missions.

If you are interested in collaborating on this effort, please contact the authors of this poster or thumb-tack your business card to the poster.

What would a Heliophysics Community of Practice look like?

Based on information suggested by the GEONS teachers, we envision that this heliophysics community of practice would have both an online and in-person components.

Online Discussion Boards
Online discussion boards would provide a place for teachers to share resources, ask and answer questions related to teaching heliophysics. There would be sub-boards for specific areas of interest. For example, teachers who were involved in a specific workshop could have a sub-board to interact with the other participants who attended the same workshop.



One possibility for an online discussion board is the NASA SMD Workspace at www.smdepo.org.

The Heliophysics Educator Ambassadors have started using the workspace to share news and announcements.

Webinars or Online Tag-Ups
Periodic video- or teleconferences could include presentations by scientists, sharing best teaching practices and examining misconceptions in heliophysics. The exact topics and structure of these webinars would be determined by the teachers themselves.

Email Listserv and/or Newsletter
An additional way to disseminate Heliophysics-specific resources, announcements, etc. Items could be contributed by teachers as well as heliophysics E/PO professionals and scientists.

In-Person Meetings
Teacher feedback emphasizes that face-to-face meetings are invaluable in fostering relationships that can then continue online. While providing travel funds for face-to-face meetings is costly, "meetings-of-opportunity" could be scheduled to coincide with teaching conferences, such as NSTA, AAPT or CAST.

GEONS teachers discuss heliophysics concepts.