

HMI Education & Public Outreach Report

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1. Partnership with Stanford's Haas Center – Undergraduate Students as Outreach Partners

After months of extensive preparation, a course entitled “Science as Service” has been launched at Stanford. This is the first key step in a joint service-learning/communicating science program between the HMI staff and Stanford's Haas Center for Public Outreach. The course is part of a year-long program to a) train undergraduate students in the importance of service to the community whatever their ultimate profession, b) give the students an understanding of the culture and other aspects of reaching diverse audiences, and c) teach them to communicate science via inquiry-based and hands-on learning methods. The new, 1 quarter course was launched on 7 October with 11 Stanford undergraduates. Students who successfully complete the class will have the opportunity to apply for student Science Fellowships. Those who qualify for the fellowships will spend the next 2 quarters performing outreach in the local schools and other Haas-sponsored programs.

2. Solar Planetarium Program

This project is jointly funded by NASA's LWS enterprise, HMI, and some assistance from NSF. We have negotiated with LWS and the Lawrence Hall of Science to partner in development of a solar planetarium program for portable small, interactive planetaria (e.g. Starlabs). We have also arranged for inclusion of the program in NSF's Center for Integrated Space Weather Monitoring (CISM) project. Through CISM, we are collaborating with Rice University, which is funded for the preparation of a full-size solar planetarium program. Jointly with Rice we have been researching ways to provide low-cost full-dome projection to the smaller planetarias. Several systems have been demo-ed, and we believe this technology will soon be available at low enough cost to be accessible to small dome owners (i.e. less than \$10K). With the availability of projection technology, we can now take advantage of the imagery, visual effects, and videos that will be produced by Rice U. for their program and also the modeling imagery produced by the CISM partners. We've held 4 planning meetings with LWS and have a good start on the necessary story board. LWS is ready to begin work as soon as the LWS funding arrives.

Rice U. is taking the lead on full-dome projection. They and we have test demonstrated three products that are nearing completion and may be able to provide us with the projection we need. Rice has already arranged for a demo product to be housed onsite.

3. Science & Technology Museums, Planetaria, Community Colleges, & other Community Partnerships

We have given 2 solar science presentations at The Tech Museum, one at the California Academy of Arts/Morrison Planetarium, and researchers here have visited several classrooms, at the teachers' requests. (Details will appear in the EDCATS database.)

We are jointly worked with the Exploratorium and SECEF to develop a space weather website and webcast series. (Funding for the Exploratorium comes from a NASA IDEAS grant.) We've held multiple meetings, have determined roles and responsibilities, have developed a working plan & milestones, and the Exploratorium demonstrated a mock-up on 10 October. Plans call for a working model by the end of December.

We have started the 14th year of the Palomares 4H Astronomy Project and held a campout at Lake Sonoma, CA for the kids. At the campout, we field-tested Cheri Morrow's new book "A Family Guide to the Sun." Both student and parent feedback will be analyzed by the Space Science Institute's professional evaluator.

4. Evaluation

We have made contact with an individual in Stanford's School of Education who will advise and help us with our evaluation plans. Haas will also work with us in evaluating the science service learning program.

Related programs not entirely funded by HMI:

1. Solar SID

We hired a teacher intern from Chabot Community College (a designated minority-serving institution) to help us develop our Solar Sudden Ionospheric Disturbance monitor. At least 4 prototypes were developed and one chosen. We're currently making enhancements to make the system as inexpensive as possible and easy to be set up for high school students. Concurrently, the monitor is being data-tested in San Leandro High School (a designated inner-city school). We have arranged a collaboration with Umran Inan, a professor here and one of the original developers of radio telescope technology. We have arranged to have 2 of his students work with us on the development of a more sensitive and robust monitor that would be capable of being used for actual research, both by solar astronomers during the day and ionospheric researchers during the night. These systems will be more costly to place in schools, but the students would be working with actual research-quality data.

2. Presentation Bank

We are working with the Education Committee of the AGU Space Physics and Aeronomy (SPA) group, to develop a modern version of their "slideset". The original product was a set of 25 slides designed for scientists to be able to present SPA science to the public. The original set has spotty coverage and was drastically in need of new imagery and information. We have hired a contractor to put together an up-to-date and more interesting set based on PowerPoint. The

new “set” will include modern imagery, videos, and animations as well as extensive commentary.