MEETING

Community Modeling in Hydrologic Science

Scoping Workshop on a Community Hydrologic Modeling Platform (CHyMP); Washington, D. C., 26–27 March 2008

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As one of two major new initiatives for its next 5-year phase, the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI), is proposing to launch a major effort toward the development of a Community Hydrologic Modeling Platform (CHyMP), which will support a range of research and applications in water cycle science.

Recently, the National Science Foundation (NSF), the National Academy of Sciences (NAS), and CUAHSI jointly sponsored a workshop for CHyMP. The goal of this first workshop was to survey the range of perspectives on the need for community modeling in hydrology, as well as on the scope, form, and requirements of such an activity. Planned outcomes from this meeting are the establishment of a CHyMP working group with a report to the community on the rationale and preliminary strategy for undertaking community modeling in hydrology. This working group will also be responsible for the development of two larger, community-based workshops that will lead to the development of a formal proposal to the NSF for the development and implementation of the platform.

Twenty-five participants attended this first workshop. Key findings and recommendations from the workshop are described briefly here.

An important outcome of the meeting was the unanimous agreement among participants that the hydrologic community should embrace the CHyMP activity. The group agreed that CHyMP should be a systematic, community-based effort to develop modular components of the water cycle that could be (1) linked together to provide a framework for integrated water cycle modeling, (2) implemented across scales, and (3) utilized to address complex hydrologic research questions that could not be attempted in its absence. Other attributes of the platform are that it should do the following:

- link to atmospheric and ocean general circulation models and fully coupled Earth system models;
- link to biogeochemical, ecological, surface dynamics, and environmental engineering models;
- provide capabilities for forward and inverse modeling, optimization, and stochastic analyses;
- readily interface with data in the CUAHSI Hydrologic Information System;
- guide observatory and network design;
- contribute substantively to environmental decision making, management, and policy; and
- serve as an educational tool.

Specifically, the group enthusiastically recommended the near-term development of the CHyMP from existing model components and software packages; a longer-term commitment to explore the role of multiphysics modeling as a key component of the CHyMP; and that an important use of the CHyMP is to be a framework for national water cycle modeling and prediction that will serve as a critical focal point for the hydrologic community.

Next steps for the CHyMP effort include the writing and delivery of the rationale report and planning for follow-on workshops in winter and fall of 2009. Following these workshops, and with input from CUAHSI, NSF, and other sponsors, the CHyMP working group will refine its strategy to move toward the implementation phase.

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ABOUT AGU

Exploration Station Brings AGU Science to Children and Parents

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More than 20 families from the Fort Lauderdale, Fla., area attended AGU's pilot family science event, "Exploration Station," held on 26 May as part of the 2008 Joint Assembly. During the event—which was organized by AGU's education staff, the Association for Astronomy Education, and the Solar Physics Division of the American Astronomical Society—children and parents had the opportunity to discuss science with researchers and to get involved with many hands-on activities.

Many of the 10 exhibits focused on solar physics and astronomy. Adults and children alike were fascinated by the exhibits, including one presented by Pat Reiff of the Rice Space Institute, Houston, Tex., that featured films about the Sun and other topics. The films were shown in a Discovery Dome, a portable digital theater that projects images across nearly the entire inside of an inflatable dome.

Marty Quinn of Design Rhythmics Sonification Research Lab, Lee, N. H., captivated attendees with an exhibit that featured an interactive apparatus that blended solar imagery and music. While a projector displayed images from NASA's Solar Terrestrial Relations Observatory (STEREO) mission onto the floor, a Web camera installed next to the projector tracked movements of people standing within its field of view. A computer translated these movements into a cursor traveling across the surface of the projected image. Correlating to the movement of the cursor, Quinn's software mapped changes in image colors to sampled musical instruments, and mapped changes in image brightness to alterations in pitch. The result was a musical rendering of a visual image. Quinn has used this translation technique to bring image data to people with visual impairments and to create unique music from scientific data.

Deborah and Phil Scherrer of Stanford University, Stanford, Calif., who had set up spectroscopy experiments and a Star Lab portable planetarium, also drew crowds to their exhibit. Deborah Scherrer said she considers it vital for scientists to contribute to education and public outreach. Through activities such as Exploration Station, scientists have an opportunity to tailor their interests and resources toward K-12 education, she said.

Phil Scherrer said the exhibit fascinated visitors, including one boy who "lit up when asked if he would like to build his own spectroscope." He said the boy methodically read the instructions and assembled the instrument. "He was ecstatic, broke into a huge smile, and went away proclaiming, 'I made it myself and it works.' That moment alone made the entire experience so meaningful for me. How often does one have the opportunity to reach a child like that?'"

Some exhibits concentrated on science closer to home. For instance, a research