

MEETINGS

Building and Sustaining Community Cyber-Infrastructure for the Hydrologic Sciences

**CUAHSI Water Data Center Conference on Hydroinformatics and Modeling;
Logan, Utah, 17–19 July 2013**

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As part of its mission to empower scientists to discover, use, store, and share water data from multiple sources, the Consortium of Universities for the Advancement of Hydrologic Sciences, Inc. (CUAHSI) Water Data Center (<http://wdc.cuahsi.org>) held a conference to provide a forum for researchers working in hydroinformatics and modeling, scientists using and managing large amounts of data, and others interested in advancing standards and best practices for water data access, discovery, and sharing.

One focus was how cutting-edge water science doing cross-disciplinary work is enabled through cross-disciplinary data access. Emilio Mayorga (University of Washington) laid out the central challenge: How can the hydroinformatics and geoinformatics communities “foster a diverse ecosystem of data publication and access approaches, with greater cross-communication” and keep “focus on [the] primary audience, while being porous to others?” Participants discussed ways of meeting this challenge.

Some researchers are developing new community “information models”—representations

of concepts, relationships, constraints, rules, and operations that are necessary to specify and interpret data for different scientific communities. Leaders of the Observations Data Model version 2 project, for example, presented work on developing a common data model that will accommodate and extend interoperability of observations derived from both in situ sensors and ex situ samples. Such heterogeneity of data is common in interdisciplinary Earth science investigations and observatories, such as the U.S. National Science Foundation–funded Critical Zone Observatories.

Participants also presented on a wide variety of projects that will help field scientists and individual researchers take advantage of cutting-edge hydroinformatics. New frameworks and community portals such as HydroShare (<http://www.hydroshare.org>), a collaborative website being developed for better access to data and models in the hydrologic sciences, and CyberGIS (<http://cybergis.cigi.uiuc.edu>), a software system that couples GIS technology with the ability to handle very large spatial data sets and complex analysis software, are being developed with science-specific community participation and objec-

tives. Participants from several federal and state agencies, including NASA and the U.S. Geological Survey, discussed efforts to develop applications that increase discovery, access, and use of their vast data holdings by researchers and the public.

Another overarching theme at the conference was the importance of an active and engaged scientific community in the development of cyber-infrastructure. This is international in scope, and the conference included presentations about the implementation of CUAHSI Hydrologic Information Systems (HIS) cyber-infrastructure in Italy, New Zealand, and Africa. This worldwide reach has been enabled by the standards-based, open source, service-oriented architecture developed by the CUAHSI HIS project and now operationalized by the CUAHSI Water Data Center. The conference demonstrated CUAHSI’s support of researchers’ efforts in software innovation and standards development in order to support federation of water data across multiple data systems and identified next steps, such as coordinating changes in the CUAHSI HIS information model and ontology with these other projects to further interoperability and cross-domain use, as well as future technical conferences to sustain the dialogue.

Abstracts and presentations are available at <http://www.cuahsi.org/WDCconf2013.aspx>.

—JENNIFER ARRIGO, Consortium of Universities for the Advancement of Hydrologic Sciences, Inc. (CUAHSI), Medford, Mass.; email: jarrigo@cuahsi.org; DAVID TARBOTON, Utah State University, Logan; and ALVA COUCH, CUAHSI Water Data Center, Medford, Mass.