



Developing a community hydrologic information system

D. G. Tarboton (1), D. R. Maidment (2), I. Zaslavsky (3), M. Piasecki (4), J. Goodall (5)

(1) Utah Water Research Laboratory, Civil and Environmental Engineering Department, Utah State University, Logan, Utah, USA (david.tarboton@usu.edu / Fax: +1-435-797-1185 / Phone: +1-435-797-3172), (2) Center for Research in Water Resources, University of Texas at Austin, Austin, Texas, USA, (3) San Diego Supercomputer Center, University of California at San Diego, San Diego, California, USA, (4) Department of Civil Engineering, Drexel University, Philadelphia, Pennsylvania, USA, (5) Department of Civil and Environmental Engineering, University of South Carolina, Columbia, South Carolina, USA

The Consortium of Universities for the Advancement of Hydrologic Science, Inc (CUAHSI) has a Hydrologic Information System (HIS) project, which is supported by the U.S. National Science Foundation to develop infrastructure and services to support the advance of hydrologic science in the United States. Hydrologic information science involves the description of hydrologic environments in a consistent way, using data models for information integration. The CUAHSI HIS has been deployed at eleven observatory test bed sites across the U.S. This deployment showed how water observations data collected by academic investigators could be stored in a standard way in a relational database, could be published on the internet, could be federated with water observations data published by water agencies such as the U.S. Geological survey, and could be searched using a concept framework that connects with variables in each individual data source. Advanced data access and analysis capability is provided through the use of web services using a format known as WaterML. An Observations Data Model (ODM) has been developed to provide a standard relational database schema for storing observatory and individual investigator data and to serve as a foundation for the hydrologic information system tools and web services. The web services support access to hydrologic information accessible through a map based

portal, ontology based search engine and directly from applications software such as Excel, Matlab and ArcGIS that have Standard Object Access Protocol (SOAP) capability. A significant value of web services derives from the capability to use them from within a users preferred analysis environment, rather than requiring a user to learn new software. This allows a user to work with data from national and remote observatory test bed data sources, almost as though it was on their local disk. The HIS includes tools for data loading, editing and display, including the Data Access System for Hydrology (DASH) portal, Hydroseek search engine, Time Series Analyst, Data loaders and ODM tools.