Collaborative Environmental Data Access Using the World-Wide Web

Jonathon C. Scott

U.S. Geological Survey, 202 N.W. 66th St., Bldg. 7, Oklahoma City, OK 73112

Biographical Sketch of Author

Jonathon has been employed by the U.S. Geological Survey since 1976, collected hydrologic data in Oklahoma, and coauthored several data and interpretative reports. During the 1980's, Jonathon helped the USGS increase usage of computing technology in hydrologic studies. As a guest lecturer at Langston University, he taught a class in the application of computers to scientific-problem solving. More recently, he led data-management activities for the National Water-Quality Assessment Program and assisted in the design and compilation of databases.

Abstract

Evolving internet and related technologies have created opportunities to improve access to water-quality data. Data providers periodically are required to copy data into national systems by current technologies. This approach has several disadvantages. Data are translated from one database schema into another, resulting in generalizations, subtle changes, and losses of information. Some of the copied data become incorrect, as soon as data in the source database are modified to make corrections. Centralized databases are updated relatively infrequently due to the effort and lack of benefits for the data providers. Finally, data consumers that aggregate data from multiple systems are faced with the problem of duplicated data records, caused by the presence of the same data in more than one database system. Use of the internet, web services, and other evolving computing techniques can improve access to water-quality data in terms of data quantity, quality, and timeliness. The U.S. Geological Survey and the U.S. Environmental Protection Agency have been exploring mechanisms to present a common data-access mechanism for environmental-data archives using a World-Wide-Web portal, such as Window-to-my-Environment. This conceptual approach uses web services, an integrated mapping interface, inventories of site data, and a standards-based approach to data sharing. This approach will incorporate other efforts, including geospatial data standards, date-time standards, and the water-quality data elements list developed by the Advisory Committee on Water Information (http://wi.water.usgs.gov/methods/tools/wqde/index.htm).

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