Geographically Distributed Hydrologic Information System for National and Investigator Water Data

The National Science Foundation has funded 11 WATERS Test Bed projects to test various aspects of observatory design and operation. These two-year projects are developing technologies ranging from collection of data from floating sensors to determining optimal placement of real-time nitrate sensors. Test Bed sites are located in a range of environmental conditions and include the Santa Fe basin in North-central Florida. This Test Bed project develops new approaches to address science questions about loading of nitrate to watersheds and deploys nitrate sensors in different locations to investigate the relationship between flow mixtures and nitrate loads.

All Test Bed sites are beta test locations for the deployment of a hydrologic information system (HIS) and related project server that enables the Test Beds to archive and publish their own data on the World Wide Web in a standardized relational database schema known as the Observations Data Model (ODM).

The Santa Fe basin Test Bed has published groundwater levels, nitrate sensor data, and individual investigator data in a map interface called DASH. National datasets are also published on the Test Bed HIS systems including data sources such as the USGS National Water Information System (NWIS) and the EPA Storage and Retrieval System (STORET).

The HIS is a geographically distributed network of hydrologic data sources and functions that are integrated using web services. It enables you to query networks of observation sites and to extract observation data from them in the form of time series of measurements at individual sites or collections of them. The goals of the HIS are to unite the nation's water information, to make it universally accessible and useful. It is a geographic, consistent, efficient way for investigators to share research data and related metadata to enable the synthesis, visualization and evaluation of the behavior of different hydrologic systems.

Keywords: nitrate, database, flow, discharge, prediction, modeling, sensors

This abstract relates mostly to new technologies that allow investigators to share information for data inputs to modeling.

Issues: Nutrient enrichment of surface, ground and coastal waters
Challenges: Public health, wildlife health, ecosystem health and water resource sustainability