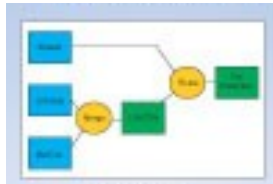


CUAHSI Hydrologic Information System

Goal: Enhance hydrologic science by facilitating user access to more and better data for testing hypotheses and analyzing processes

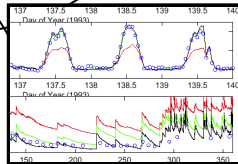
Models



Object

TSType
TSTypeID
Variable
Units
IsRegular
TSInterval
DataType
Origin

TimeSeries
FeatureID
TSDateTime
TSValue



Databases

Analysis

- Advancement of **water science** is critically dependent on integration of **water information**
 - Querying nation's repository of water data
 - Linking small integrated research sites (<100 km²) with global climate models
 - Integrating data from multiple disciplines to understand controls on hydrologic cycle
- It is as important to represent **hydrologic environments** precisely with data as it is to represent **hydrologic processes** with equations

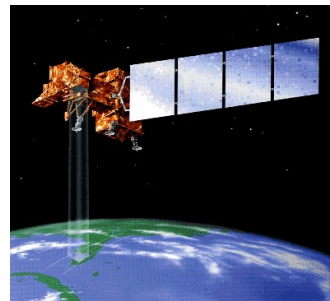
Water quantity and quality



Rainfall & Snow



Remote sensing



Meteorology

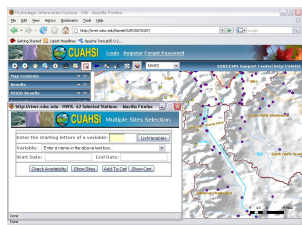
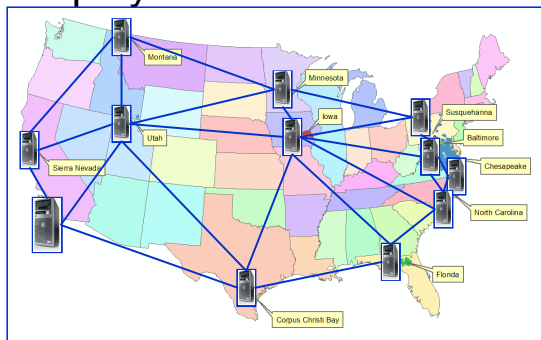


Soil water



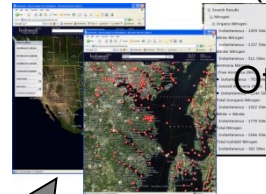
Hydrologic Information System Service Oriented Architecture

Deployment to test beds



Customizable web interface (DASH)

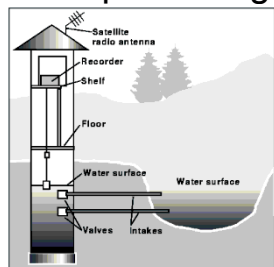
Global search (Hydroseek)



Other popular online clients



Data publishing



ODM DataLoader

ODMTools

Streaming Data Loading

Ontology tagging (Hydrotagger)

Server config tools

WSDL and ODM registration

Test bed HIS Servers



HIS Lite Servers



Central HIS servers



External data providers



HTML - XML

WaterOneFlow Web Services, WaterML

Metadata catalogs

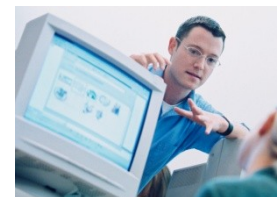
Ontology

Controlled vocabularies

ETL services

WSDL - SOAP

Desktop clients



GIS

Matlab

IDL

Spplus, R

Excel

Programming (Fortran, C, VB)

Modeling (OpenMI)

CI Challenges	Examples in HIS
Better understanding of user needs and research scenarios	User surveys, workshops
Integration of federal data collections, state agencies, observations from PI projects, streaming data	MOUs with agencies, WaterML, common publication and data discovery
Data modeling and integration tools for differently sampled and organized data (observations, grids, spatial data, multimedia)	ODM and extensions
Standardization of data exchange protocols	WaterML and WaterOneFlow services
Huge and heterogeneous nomenclatures, controlled vocabulary, identifier and ontology management and search	Hydroseek and Hydrotagger, CV management system
Supporting data registration and several modes of data discovery, plus rapid analysis of data availability	Central publication and data discovery, OLAP, catalog harvesting
Making the data available as model inputs	Working with OpenMI, CSDMS
Leveraging and interoperation with other domain infrastructures: for atmospheric data, ocean observations, geology and geomorphology, etc.	Incorporating THREDDS, integration with RBNB streaming middleware, GEON
Definition and management of cross-scale complex objects, e.g. digital watershed, digital aquifer, river channel	Ongoing
Organizing development community around a common software development and licensing model	Common CVS, BSD-licensed code
Software packaging, support, training, maintenance and updates, data preservation, and - funding <i>Production HIS</i>	HIS Server and HIS Server Lite for test beds, virtual servers at SDSC