

Session F1: Data Access through Innovative Web Technologies

Room A105
1:30 – 3:00 pm

0019
F1-1

Using Innovative Technologies to Access Environmental Data

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Diverse water quality and Oregon lake information are available from government agencies, academic institutions, volunteer monitoring organizations and private companies. Obtaining and interpreting the data can prove to be a laborious task due to varying sources and complexities of the data. Portland State University and Oregon Department of Environmental Quality developed a 'one stop shop' web based system for the storage, distribution, publishing and interpretation of Oregon's lake data through a single web portal: the Atlas of Oregon Lakes data exchange < <http://aol.research.pdx.edu/>>. The Atlas implements data standards across multiple platforms, publishes environmental data on line and provides real time statistical calculations. In addition, the Atlas plots water quality data through map and text based interfaces. The Atlas incorporates new technologies such as Pacific Northwest Water Quality Data exchange, web services and geo databases to achieve this goal. The final results include access to databases from different organizations, real time metric calculations, web services to communicate data efficiently and a map based web site. Merging technologies and creating partnerships maximizes the resources to share ideas, utilize new technologies and merge disparate data systems into a single web based system. This partnership provided a solution for a concept that originated from the data users.

0461
F1-2

Introducing the Water Quality Data Portal

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This presentation will introduce the release of the Water Quality Data Portal, a unified query interface providing an easy way to access data stored in various large water-quality databases. The Water Quality Data Portal allows data access through a form-based query interface as well as through standalone web services. A web service is a computer-to-computer protocol that allows for the direct sharing of information. Applications such as Internet portals can use the web services to access data from the various databases without needing an authorized database connection.

The Water Quality Data Portal is being introduced by the USGS and USEPA. Over the past few years, the USGS and the EPA have worked to enhance water quality monitoring data access from their respective water quality monitoring data systems, the National Water Information System (NWIS) and the National STORET Warehouse. Data from both systems may be accessed via common web services and outbound schema. With the public release of the Water Quality Data Portal, data from the USGS NWIS and the EPA STORET system may now be accessed through the common query interface. While the Water Quality Data Portal has been introduced by the USGS and EPA, the common approach to data sharing provides an important framework that other national, regional, or local data partners could use to make water quality data available.

0035
F1-3

Development of a Ground Water Data Portal for Interoperable Data Exchange and Mediation within the National Ground Water Monitoring Network (NGWMN)

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The need for national groundwater monitoring is profound and has been recognized by organizations outside government as a major

data gap for managing groundwater resources. Our country's communities, industries, agriculture, energy production and critical ecosystems rely on water being available in adequate quantity and suitable quality. To meet this need the Subcommittee on Ground Water, established by the Federal Advisory Committee on Water Information, created a National Ground Water Monitoring Network (NGWMN) envisioned as a voluntary, integrated system of data collection, management and reporting that will provide the data needed to address present and future groundwater management questions raised by Congress, Federal, State and Tribal agencies and the public.

The NGWMN Data Portal is the means by which policy makers, academics and the public are able to access groundwater data through one seamless web-based application from disparate data sources. Data systems exist at many organizational and geographic levels; however differing vocabulary and data structures have prevented data sharing and reuse. The data portal facilitates the retrieval of and access to groundwater data on an as-needed basis from multiple, dispersed repositories allowing the data to continue to be housed and managed by the data provider while being accessible for the purposes of the national monitoring network.

This work leverages the Open Geospatial Consortium (OGC) data exchange standards and information models. WaterML2.0, an evolving international standard for water observations encodes groundwater levels and is exchanged via the OGC Sensor Observation Service (SOS) standard. Ground Water Markup Language (GWML) encodes lithology and construction information and is exchanged via the OGC Web Feature Service (WFS) standard. Water quality observations are encoded in the Environmental Protection Agency's Water Quality Exchange (WQX) standard and exchanged via WQX web services. Data exchange between distributed repositories has been achieved through the use of OGC web services and a central mediation hub, which performs both format (semantic) and nomenclature (syntactic) mediation of the raw data and outputs it in a single common format. This architecture allows for the presentation of 'real-time' data, pulled and re-organized on the fly to be viewed in a common format through a web application.

0358

F1-4

Citizen Water Quality Monitoring Data Indexing – The San Diego River Story

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The San Diego River Park Foundation's citizen volunteer water quality monitoring program (RiverWatch) has gathered, processed and shared basic data related to the physical, chemical and biological characteristics of the watercourse on a continual monthly basis over the past 7 years. Data are collected from 12-15 sites located on the main watercourse (San Diego River) as well as a number of principal tributaries within its extensively urbanized lower 150-sq. mi. watershed. Water quality within the 290-sq. mi. lesser developed and protected upper catchment areas which encompass 5 major water supply reservoirs is regularly monitored through public regulatory and water supply agencies. Over the years, the RiverWater team has developed a basic water quality index that provides a means by which seasonal patterns and annual trends in overall water quality by river site, segment or reach can be readily displayed both temporally and spatially via a web portal. This presentation provides our tested and successful collaborative approach to data management, techniques for integrating diverse databases, a robust internal vetting process, and development of a user-friendly web portal for data access and tracking trends in water quality.