The Center for Research Libraries
Global Resources Network

Water Resources

January 19, 2011
CRL Presenters

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Webinar Agenda

• Introduction to CRL
• GRN Forum “Global Water : 2010 and Beyond” summary
• Discussion of needs and challenges
• Recommended actions
• Participant feedback
CRL Global Resources

250 academic and independent research libraries

United States
Canada
Hong Kong
CRL Global Resources

A shared collection of 5 million books, journals, archives, documents, and newspapers
CRL Global Resources

Communities of interest identifying and sharing information about critical and at-risk source materials
Global Resources Network

Objectives:

• Provide access to international content
• Inform library collecting and local decisions
Global Water : 2010 and Beyond

• Held October 21-22, 2010
• Co-sponsored with Greater Western Library Alliance (GWLA)
• Attendance: Librarians, scholars, archivists, engineers, government officials, private sector consultants

http://www.crl.edu/events/6674
Global Water: 2010 and Beyond

Day 1
Presentation Session
- Session 1: Preservation of, and Access to, Water-Related Information
- Session 2: New Types and Sources of Documentation
- Session 3: New Methodologies and Areas of Water Research

Day 2
Working Session
- Session 1: Identifying threats and challenges
- Session 2: Toward an action agenda
Water resources: collection & access

- Federal
  - United States Geological Survey (USGS), others
- State / Regional
  - Water Resource Departments
  - Water Resources Research Institutes or Centers
- Local / Municipal
- Education
  - Water Resources Archives
- Private / nonprofit
USGS National Water Information System

Western U.S. University Library Forum
Denver, CO
October 2010

John Faundeen
U.S. Geological Survey
Earth Resources Observation and Science (EROS) Center
Sioux Falls, SD, USA
Real-time data
Site Information
Surface / Ground Water Data
Water Quality
Real-Time Data

- Daily Streamflow Conditions
Site Information

Well Depth

Saguache County, Colorado
Hydrologic Unit Code --
Latitude 38°00'47", Longitude 106°02'48" NAD27
Land-surface elevation 7,595 feet above sea level NGVD29
The depth of the well is 560 feet below land surface.

Breaks in the plot represent a gap of at least one year between field measurements. Download a presentation-quality graph
Water Resources Center
Archives

California’s Water Library
WRCA - Collections

- Unique historic and current information and data about water in California and the West
- Library has approx. 200,000 technical reports on all aspects of water resources & supply
- Archives – house over 155 collections with Collection Guides in the OAC
- Harvesting online documents / Web sites
CA Water DRoP Research Findings

DRoP = Data Repository Project

User Needs Survey and
Data Provider Interviews / Questionnaire
# Participant Demographics

<table>
<thead>
<tr>
<th>Top 5 Occupations</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher / Scientist</td>
<td>43.6%</td>
</tr>
<tr>
<td>Engineer</td>
<td>23.7%</td>
</tr>
<tr>
<td>Consultant</td>
<td>22.0%</td>
</tr>
<tr>
<td>Professor / Educator</td>
<td>21.6%</td>
</tr>
<tr>
<td>Manager / Decision Maker</td>
<td>14.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Top 5 Employers / Affiliations</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>University</td>
<td>26.7%</td>
</tr>
<tr>
<td>State Government</td>
<td>22.5%</td>
</tr>
<tr>
<td>Consultant</td>
<td>16.3%</td>
</tr>
<tr>
<td>Local Government</td>
<td>8.3%</td>
</tr>
<tr>
<td>Federal Government</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

Excerpt from Appendix I, Table 1

Excerpt from Appendix I, Table 2

Total Responses: 241
What are the data needs of this community?

<table>
<thead>
<tr>
<th>Need for California Water Data</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research / analysis</td>
<td>75.5%</td>
</tr>
<tr>
<td>Environmental interests</td>
<td>49.4%</td>
</tr>
<tr>
<td>Decision-making, policy</td>
<td>41.5%</td>
</tr>
<tr>
<td>Decision-making, engineering</td>
<td>41.1%</td>
</tr>
<tr>
<td>Regulation</td>
<td>33.6%</td>
</tr>
<tr>
<td>Decision-making, operations</td>
<td>33.2%</td>
</tr>
<tr>
<td>Education support</td>
<td>33.2%</td>
</tr>
<tr>
<td>Litigation support</td>
<td>15.4%</td>
</tr>
<tr>
<td>Other</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

*Appendix I, Table 3*
What are the data needs of this community?

<table>
<thead>
<tr>
<th>Category</th>
<th>Benefit From Improved Access To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watersheds / groundwater basins</td>
<td>47.8%</td>
</tr>
<tr>
<td>Water quality</td>
<td>43.5%</td>
</tr>
<tr>
<td>Discharges</td>
<td>40.9%</td>
</tr>
<tr>
<td>Groundwater elevation</td>
<td>35.7%</td>
</tr>
<tr>
<td>Receiving water quality</td>
<td>34.3%</td>
</tr>
<tr>
<td>Water system operations</td>
<td>33.5%</td>
</tr>
<tr>
<td>Streamflow</td>
<td>31.3%</td>
</tr>
<tr>
<td>Drinking water quality</td>
<td>21.7%</td>
</tr>
<tr>
<td>Aquatic ecology</td>
<td>20.9%</td>
</tr>
<tr>
<td>Meteorological</td>
<td>20.0%</td>
</tr>
</tbody>
</table>

Excerpt from Appendix I, Table 8
What features would generate the greatest interest?

<table>
<thead>
<tr>
<th>Search Features</th>
<th>Extremely Interested</th>
<th>Interested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search by geographic location / region</td>
<td>70.5%</td>
<td>23.0%</td>
</tr>
<tr>
<td>Map interface to records</td>
<td>59.7%</td>
<td>26.5%</td>
</tr>
<tr>
<td>Search by watershed</td>
<td>59.6%</td>
<td>26.8%</td>
</tr>
<tr>
<td>Version history</td>
<td>21.5%</td>
<td>44.4%</td>
</tr>
<tr>
<td>Data use history</td>
<td>16.7%</td>
<td>40.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community Features</th>
<th>Extremely Interested</th>
<th>Interested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users can submit suggestions for additional data sets to acquire</td>
<td>18.0%</td>
<td>44.9%</td>
</tr>
<tr>
<td>Users can comment on data</td>
<td>12.1%</td>
<td>41.3%</td>
</tr>
</tbody>
</table>

Excerpts from Appendix I, Tables 24 and 26
Water resources: collection & access

- Documents
- Data
- Applications & tools
New means of accessing data

- Digital libraries
- Data repositories
- Advanced data applications
Welcome to Western Waters Digital Library

The Western Waters Digital Library (WWDL) provides free public access to digital collections of significant primary and secondary resources on water in the western United States. These collections have been made available by research libraries belonging to the Greater Western Library Alliance (GWLA) and other academic library partners. The WWDL is a valuable resource for researchers, policy makers, scholars, Native American tribes, professionals working in various fields, and others interested in contemporary and historic water issues.
WWDL Overview

• Led by Greater Western Library Alliance (GWLA)
• Funded by IMLS (2003-2005) and NEH (2007-2010) grants
• Objectives:
  – Begin developing comprehensive information resource
  – Establish a viable technical infrastructure
  – Serve as a collaborative model
• Initial river basins focus:
  – Platte, Colorado, Rio Grande, and Columbia
NEH Project Outcomes

• Expanded collaborative relationships established in 2003-2005
• Exceeded objective to digitize 20,000 pages related to water policy and environmental history by digitizing or making accessible some 47,739 manuscript pages, legal documents, and photographic images (now over 75,000 in total)
• Added initial repository of 30 Encoded Archival Description (EAD) finding aids, linked to corresponding digital objects
Collections

The following descriptions provide a brief overview of some of the featured collections.

Arizona State University:

**Colorado River/Central Arizona Project Records Collection**
The Records of the Central Arizona and Boulder Canyon Project is comprised of selections from the Carl T. Hayden Papers and other sources. As Arizona Congressman from 1911-1970, Hayden influenced natural resource development, water reclamation, and land-use management, culminating in 1968 with the Central Arizona Project (CAP) to transport Colorado River water to Phoenix and Tucson via a series of aqueducts.

Brigham Young University:

**Central Utah Project Records**
The Central Utah Project, planned and constructed by the Bureau of Reclamation, is the most significant water resource development program in the state. The Project enables Utah to use most of her share of Colorado River water. The collection includes information about the Colorado River and its tributaries as well as documentation relative to the Center Utah Project, including annual reports, news reports, and other material dating from 1964.

**Wallace Foster Bennett Papers**
During his tenure in the United States Senate (1951 – 1974), Wallace Foster Bennett was deeply involved in water issues in the West and helped pass legislation for the creation of the Central Utah Project. The Bennett Papers reveal his concern for the conservation and proper use of natural resources. Senator Bennett played a key role in approval of the Upper Colorado River Act, in addition to the passage of the Small Reclamation Projects Act, the Watershed Act of 1954, and the Dixie Reclamation Project.

**Arthur V. Watkins Papers**
Arthur V. Watkins was elected to the United States Senate in November 1946 and represented the state of Utah until 1959. Between 1954 and 1957, Watkins sponsored legislation supporting the Upper Colorado River Storage Project. The project included the construction of many reservoirs for water storage and conservation. These smaller projects were necessary for water needs in the west and centered around the Colorado River.
CUAHSI-HIS Overview

• Consortium of 126 universities, colleges, and research institutions from the U.S. and around the world

• The CUAHSI Hydrologic Information System (HIS) provides web services, tools, standards and procedures that enhance access to more and better data for hydrologic analysis.
  – a national cyberinformation system for sharing hydrologic data,
  – research into hydrologic information science, and
  – support for the hydrologic information community.

• Vision: an interoperable linked geospatial infrastructure for water resources data

http://his.cuahsi.org
The CUAHSI Hydrologic Information System (HIS) is an internet-based system for sharing hydrologic data. It is comprised of databases and servers, connected through web services, to client applications, allowing for the publication, discovery and access of data.

Key Components of CUAHSI-HIS:

1. **HIS Central** — contains copies of metadata which facilitates searches; works like a search engine, in that it harvests metadata from the data servers and allows it to be efficiently searched by the clients.
Metadata Catalog, October 2010

56 public services
18,000+ variables
1.88+ million sites
23.3 million series
Referencing 5.1 billion data values
WaterML
A Web Language for Water Observations Data

GetValues Response in WaterML

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Streamflow (cfs)

Chicago, 7/19/02

...Adopted by USGS, and other agencies for Publishing Some of their Data
Water resources: use

- Research / analysis
- Legal claims / settlements (current / historical)
- Long-term assessments (drought / flood)
- Environmental / ecological impact
- Hydrologic modeling
San Diego Flood Forecast Modeling

Potential project results: Output to website, text messaging/paging, reverse 911, and Google Earth

Source: DHI
Discussion: Needs and Challenges

• Growth in demand for water data
Discussion: Needs and Challenges

- Growth in demand for water data
- Diversity of actors/producers
Discussion: Needs and Challenges

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- Diversity of actors/producers
- Inaccessibility of historical information
Discussion: Needs and Challenges

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- Diversity of actors/producers
- Inaccessibility of historical information
- Non-discoverability of current information
Discussion: Needs and Challenges

• Growth in demand for water data
• Diversity of actors/producers
• Inaccessibility of historical information
• Non-discoverability of current information
• Diffusion/compartmentalization of efforts
Discussion: Needs and Challenges

- Growth in demand for water data
- Diversity of actors/producers
- Inaccessibility of historical information
- Non-discoverability of current information
- Diffusion/compartamentalization of efforts
- Funding
Discussion: Priorities

• Share information on extant efforts
  – Data sources
  – Data types
  – Metadata standards / fields
  – Harvestability
  – Selection criteria & strategies
Discussion: Priorities

• Coordinate efforts on national/international level
  – Work with USGS, NARA to articulate community needs for long-term preservation; with National Library bodies (NAL, GPO, LC) on access to published material
Discussion: Priorities

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• Focus attention on need for sustained funding
Discussion: Priorities

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• Focus attention on need for sustained funding

• Work with related efforts to extend availability of resources
Discussion: Priorities

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  - Work with USGS, NARA to articulate community needs for long-term preservation; with National Library bodies (NAL, GPO, LC) on access to published material
- Focus attention on need for sustained funding
- Work with related efforts to extend availability of resources
- Pool resources to sustain successful programs
Discussion: Priorities

- Obtain consensus on standards/platforms
  - Preferred formats of data
  - Common metadata standard (WaterML?)
  - Community-developed tools
  - *de facto* standards and practices to become norm
Discussion: Priorities

• Obtain consensus on standards/platforms
  – Preferred formats of data
  – Common metadata standard (WaterML?)
  – Community-developed tools
  – *de facto* standards and practices to become norm

• Leverage capacities where they exist
  – Exploit infrastructures and technologies in place
  – Extend outreach to community to promote tools/services
Open Discussion

Please join us for a discussion with our presenter.

Press *6 to unmute your phone to ask a question, or submit your comments to the online chat.
Open Discussion

- What resources are your patrons using? What needs have they expressed?
- What services does your library provide for use/instruction?
- What tools have you developed / do you promote among your constituents?
- What needs or priorities do you have that might be addressed collaboratively?
CRL Collections
Global Water: 2010 and Beyond

http://www.youtube.com/user/CRLdotEDU
Upcoming Webinars

- Print and Digital Archiving: February 9
- Medieval Resources: March 9
- CRL General Meeting: April 21
- CRL Collections and Services: May 11 and Oct. 2
- News Preservation: July 13
- Middle East/Islam: August 10

Visit [http://www.crl.edu/about/timeline](http://www.crl.edu/about/timeline) for more information
For More Information

- James Simon, Director, Global Resources Network, simon@crl.edu (773) 955-4545 x 324

- Please fill out our follow-up survey: http://www.surveymonkey.com/s/CRL_Water_Webinar_Jan-11

- Slides and videos from “Global Water: 2010 and Beyond” are posted at http://www.crl.edu/events/6674/follow-up-material and on YouTube: www.youtube.com/crldotedu

- Visit www.crl.edu

- Sign up for CRL Connect: www.crl.edu/connect

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