The Center for Research Libraries
Global Resources Network

Water Resources

January 19, 2011

CRL Presenters

James Simon

Director, Global Resources Network

simon@crl.edu

(773) 955-4545 x 324

Webinar Agenda

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

http://www.crl.edu

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

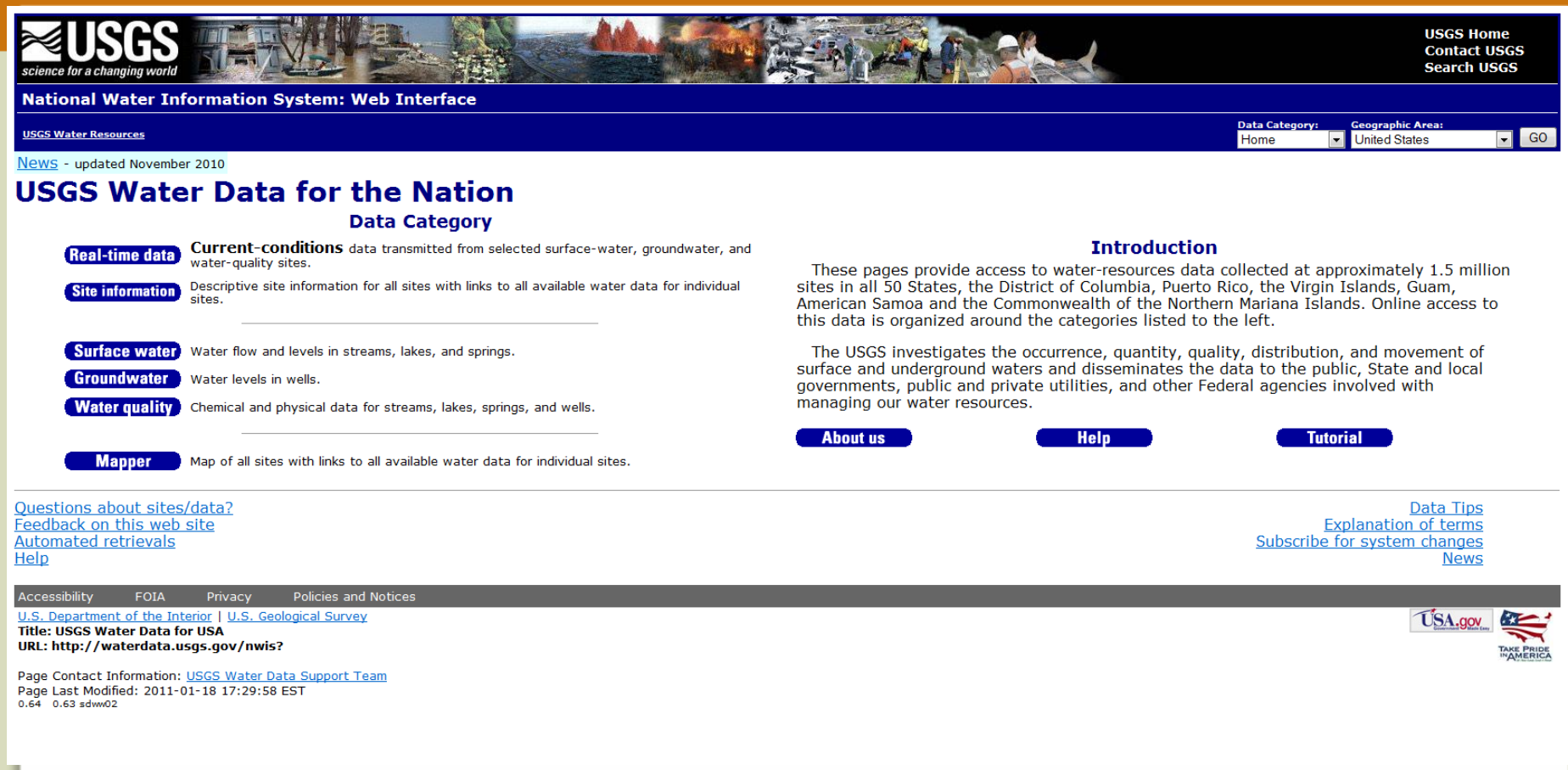
Water resources: collection & access

- 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

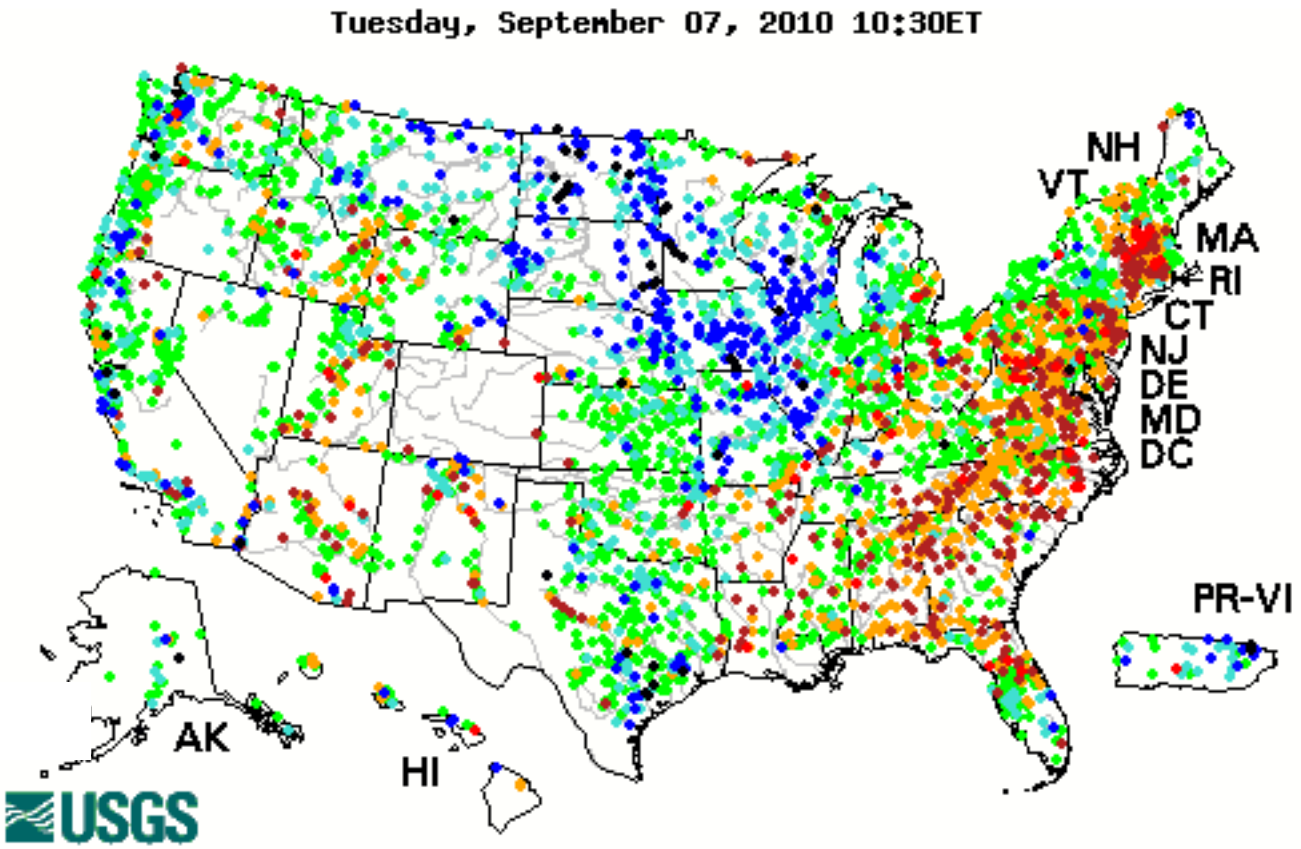
John Faundeen
U.S. Geological Survey
Earth Resources Observation and Science (EROS) Center
Sioux Falls, SD, USA



- Real-time data
- Site Information
- Surface / Ground Water Data
- Water Quality

Real-Time Data

- Daily Streamflow Conditions



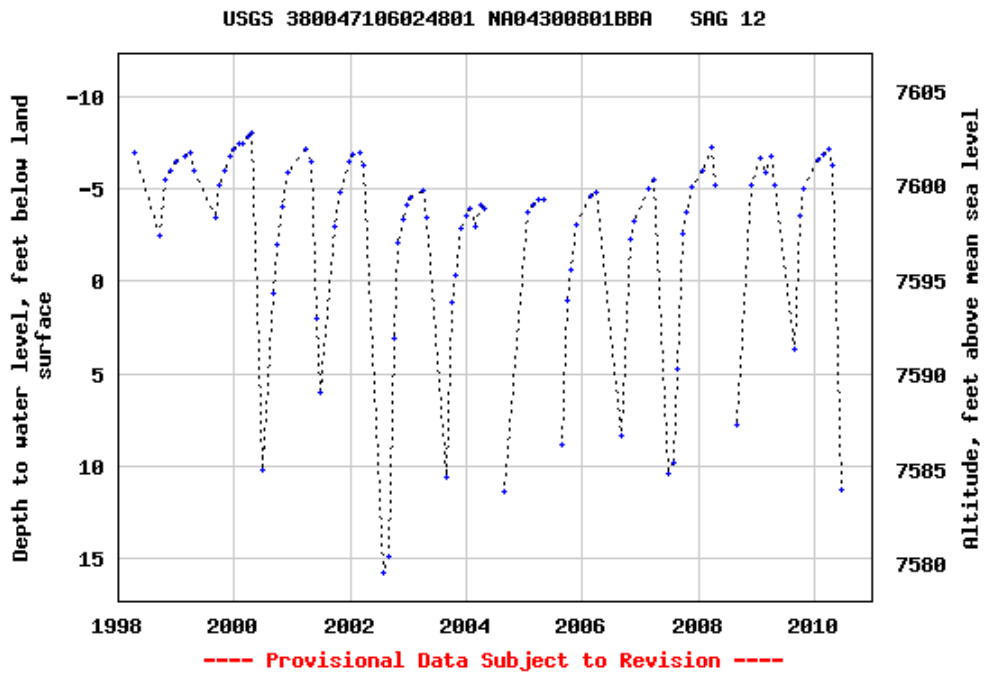
Site Information

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.

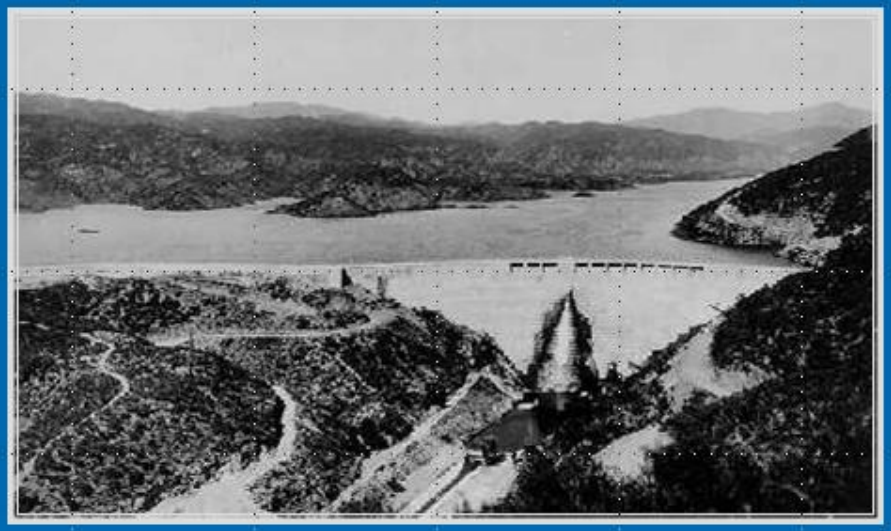
Output formats

- Table of data
- Tab-separated data
- Graph of data
- Reselect period



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

Top 5 Occupations	Percentage
Researcher / Scientist	43.6%
Engineer	23.7%
Consultant	22.0%
Professor / Educator	21.6%
Manager / Decision Maker	14.5%

Excerpt from Appendix I, Table 1

Top 5 Employers / Affiliations	Percentage
University	26.7%
State Government	22.5%
Consultant	16.3%
Local Government	8.3%
Federal Government	7.1%

Excerpt from Appendix I, Table 2

Total Responses: 241

What are the data needs of this community?

Need for California Water Data	*Percentage*
Research / analysis	75.5%
Environmental interests	49.4%
Decision-making, policy	41.5%
Decision-making, engineering	41.1%
Regulation	33.6%
Decision-making, operations	33.2%
Education support	33.2%
Litigation support	15.4%
Other	3.7%

Appendix I, Table 3

What are the data needs of this community?

Category	***Benefit From Improved Access To***
Watersheds / groundwater basins	47.8%
Water quality	43.5%
Discharges	40.9%
Groundwater elevation	35.7%
Receiving water quality	34.3%
Water system operations	33.5%
Streamflow	31.3%
Drinking water quality	21.7%
Aquatic ecology	20.9%
Meteorological	20.0%

Excerpt from Appendix I, Table 8

What features would generate the greatest interest?

Search Features	***Extremely Interested***	***Interested***
Search by geographic location / region	70.5%	23.0%
Map interface to records	59.7%	26.5%
Search by watershed	59.6%	26.8%
Version history	21.5%	44.4%
Data use history	16.7%	40.5%

Community Features	***Extremely Interested***	***Interested***
Users can submit suggestions for additional data sets to acquire	18.0%	44.9%
Users can comment on data	12.1%	41.3%

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

Western Waters DIGITAL LIBRARY

http://westernwaters.org

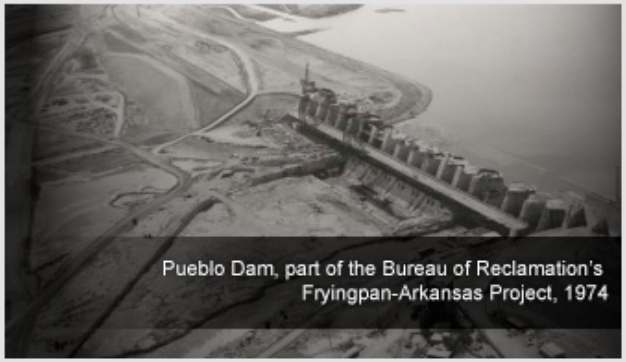
HOME | ABOUT | COLLECTIONS | PARTICIPANTS | FAQ | CONTACT

Search the Collection

Text | Images | Video | All

GO

Advanced Search



Featured | Finding Aids

Papers of Delph E. Carpenter- Colorado State University
Delph E. Carpenter, a lawyer from Greeley, Colorado, forever changed water law in the West.

Joseph B. Lippincott Papers - Water Resources Center Archive
The J.B. Lippincott collection contains correspondence, reports, documents, clippings, and several descriptive photo albums pertaining...

Bear River Watershed Historical Collection- Utah State University
The Bear River Watershed's geography, history, and development are the primary focus of this collection.

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.

Institute of Museum and Library Services | NATIONAL ENDOWMENT FOR THE HUMANITIES | Greater Western Library Alliance

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:

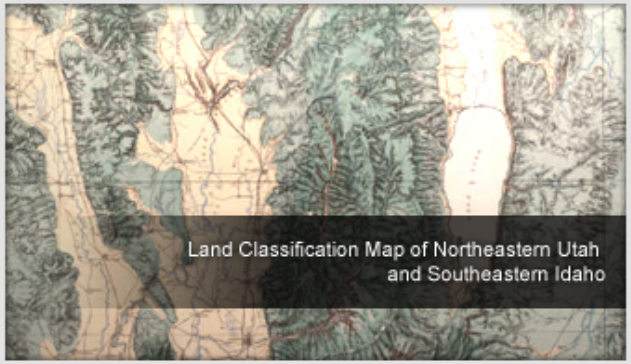
Colorado River/Central Arizona Project Records Collection
The Records of the Central Arizona and Boulder Canyon Project is comprised of selections from the Carl T. Hayden Papers and other sources. As Arizona Congressman from 1911-1970, Hayden influenced natural resource development, water reclamation, 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



Featured | Finding Aids

Grand Coulee Dam Collection - University of Washington
This collection contains photographs and pamphlets of the construction of the Grand Coulee Dam built during 1933 to 1942...

Hoover Dam Collection - University of Nevada - Las Vegas
The Hoover Dam Collection is comprised of photographs and documentary videos about the construction of Hoover Dam in the early 1930s...

Native American Water Rights in Arizona - University of Arizona
This collection of federal government documents pertains to the water rights of Navajo, Hopi, and Pima tribes in Arizona.

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

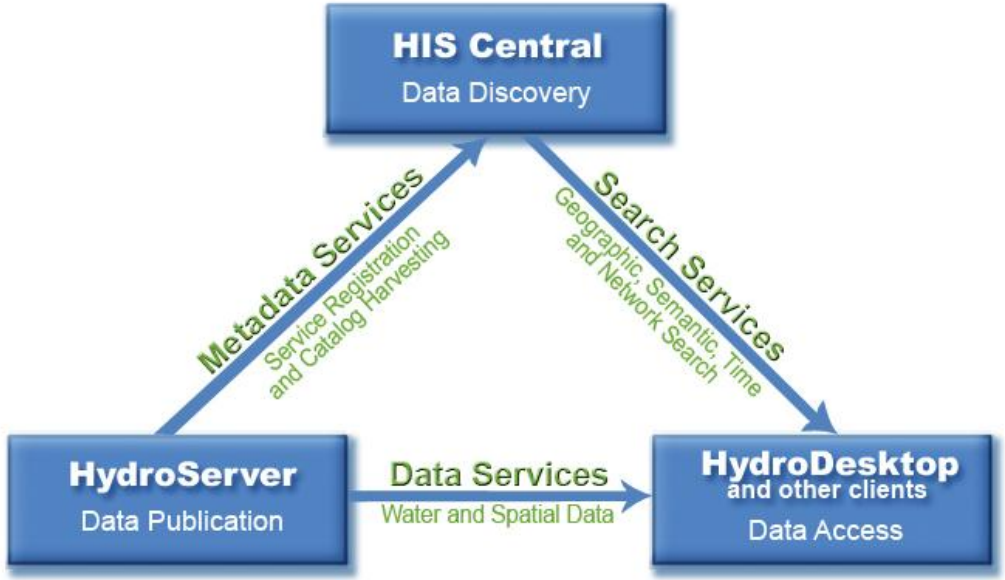
http://his.cuahsi.org

CUAHSI HIS
Sharing hydrologic data

Home | How To | Components | Community | Publications | About Us | Contact Us

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 for the publication, discovery and access of data.

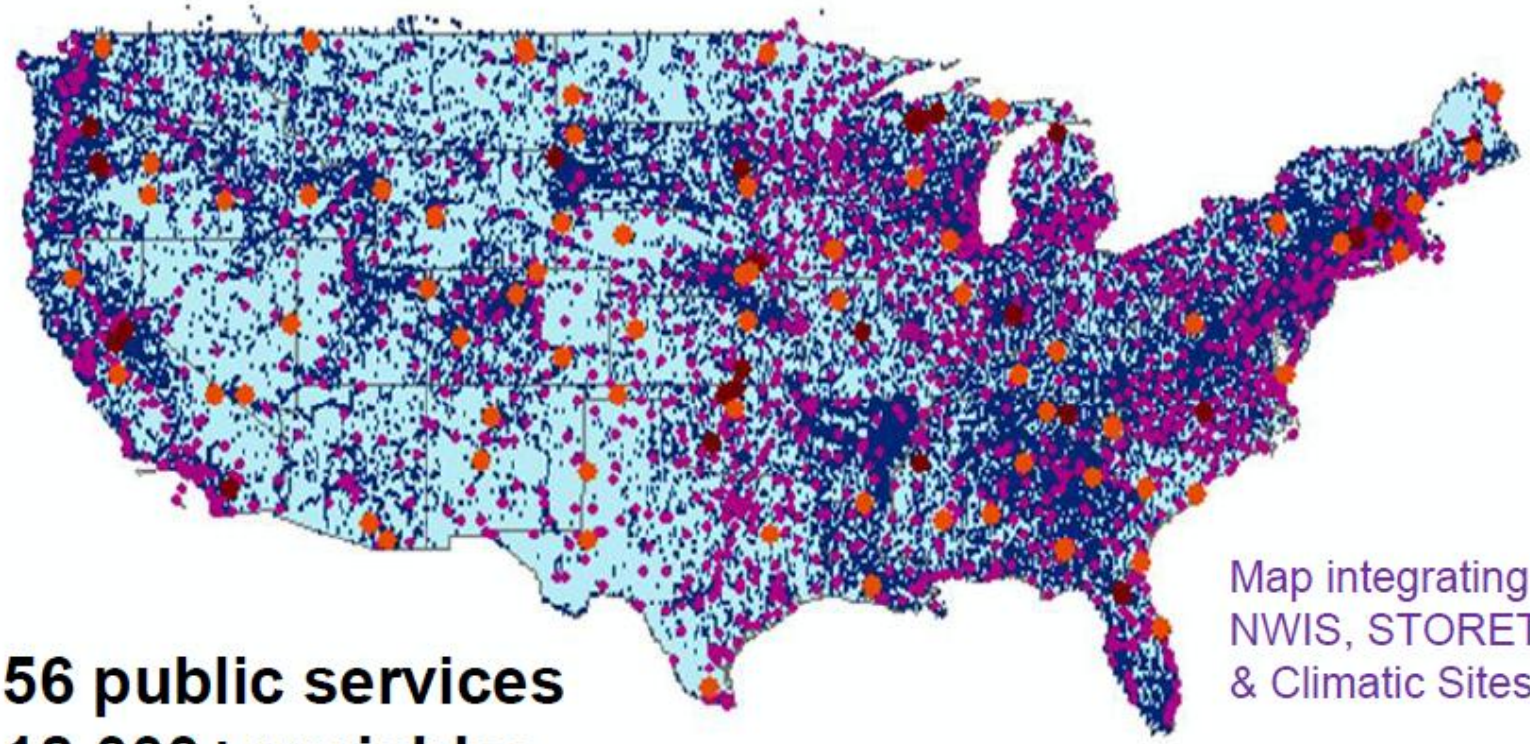
Key Components of CUAHSI-HIS:



There are three types of computers that store and process data:

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



Map integrating NWIS, STORET, & Climatic Sites

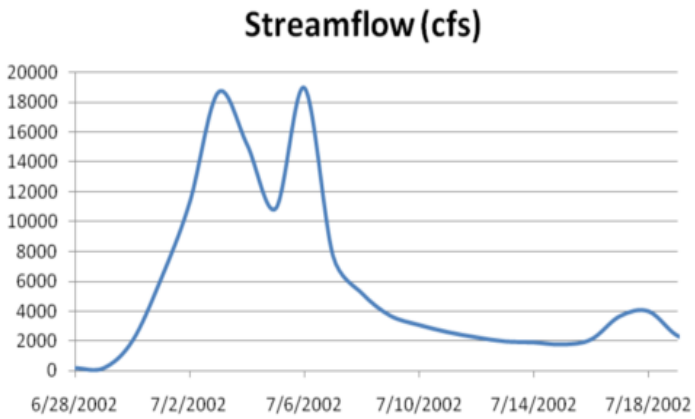
56 public services
18,000+ variables
1.88+ million sites
23.3 million series
Referencing 5.1 billion data values

WaterML

A Web Language for Water Observations Data

GetValues Response in WaterML


```
- <values count="21">
    <value qualifiers="A" dateTime="2002-06-28T00:00:00">203</value>
    <value qualifiers="A" dateTime="2002-06-29T00:00:00">195</value>
    <value qualifiers="A" dateTime="2002-06-30T00:00:00">2010</value>
    <value qualifiers="A" dateTime="2002-07-01T00:00:00">6170</value>
    <value qualifiers="A" dateTime="2002-07-02T00:00:00">11300</value>
    <value qualifiers="A" dateTime="2002-07-03T00:00:00">18700</value>
    <value qualifiers="A" dateTime="2002-07-04T00:00:00">15200</value>
    <value qualifiers="A" dateTime="2002-07-05T00:00:00">10900</value>
    <value qualifiers="A" dateTime="2002-07-06T00:00:00">19000</value>
    <value qualifiers="A" dateTime="2002-07-07T00:00:00">7720</value>
    <value qualifiers="A" dateTime="2002-07-08T00:00:00">5230</value>
    <value qualifiers="A" dateTime="2002-07-09T00:00:00">3710</value>
    <value qualifiers="A" dateTime="2002-07-10T00:00:00">3090</value>
    <value qualifiers="A" dateTime="2002-07-11T00:00:00">2610</value>
    <value qualifiers="A" dateTime="2002-07-12T00:00:00">2260</value>
    <value qualifiers="A" dateTime="2002-07-13T00:00:00">1990</value>
    <value qualifiers="A" dateTime="2002-07-14T00:00:00">1920</value>
    <value qualifiers="A" dateTime="2002-07-15T00:00:00">1780</value>
    <value qualifiers="A" dateTime="2002-07-16T00:00:00">2120</value>
    <value qualifiers="A" dateTime="2002-07-17T00:00:00">3680</value>
    <value qualifiers="A" dateTime="2002-07-18T00:00:00">4010</value>
    <qualifier qualifierCode="A" network="USGS" vocabulary="dv_rmk_cd">Approved for publication -- Processing and review completed.</qualifier>
  </values>
```

. . .Adopted by USGS, and other agencies for Publishing Some of their Data

CUAHSI HydroDesktop - TxData.hdprj

Home | Table | Graph | Edit | Help

Search

Pan | MaxExtents | Add | Attribute
Zoom In | Previous | Identify | Measure
Zoom Out | Next | Select

Map Tools

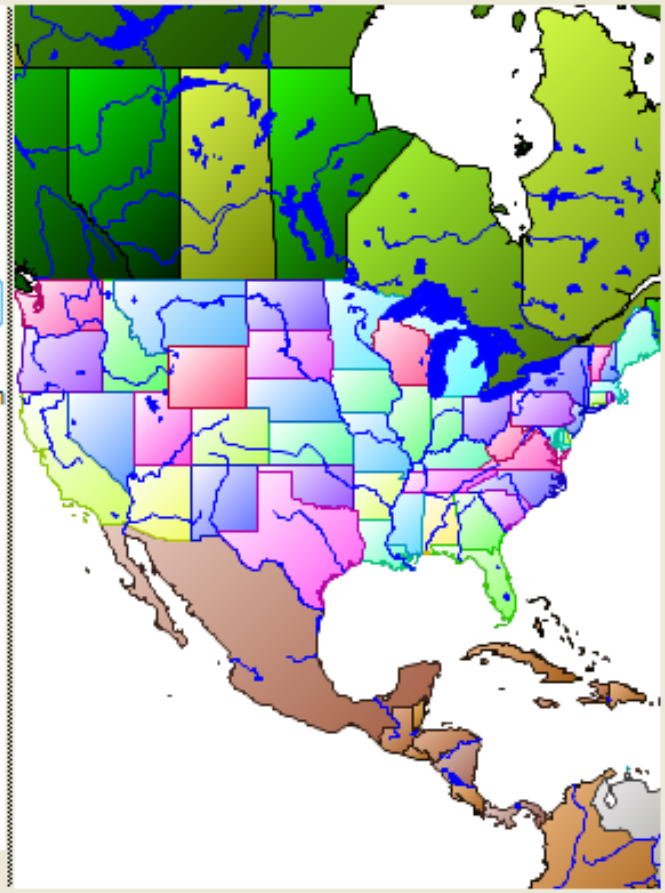
Enable Basemap | Opacity 100 | Bing Street Map

Online Basemap

Delineate

EPA Tool

Map Layers
- Themes
- Base Map Data
  - lakes
  - rivers
  - U.S. HUC
  - U.S. Counties
  - U.S. States
  - Canada Provin
  - Countries



Area | Options | Keywords | Results | Search Management

Active Layer: Countries

Select Field
- NAME
- NAME_LNG
- TYPE

Select Search Parameter

NAME
Afghanistan
Albania
Algeria
American Samoa
Andorra
Angola
Anguilla
Antigua and Barbuda
Argentina
Armenia
Aruba

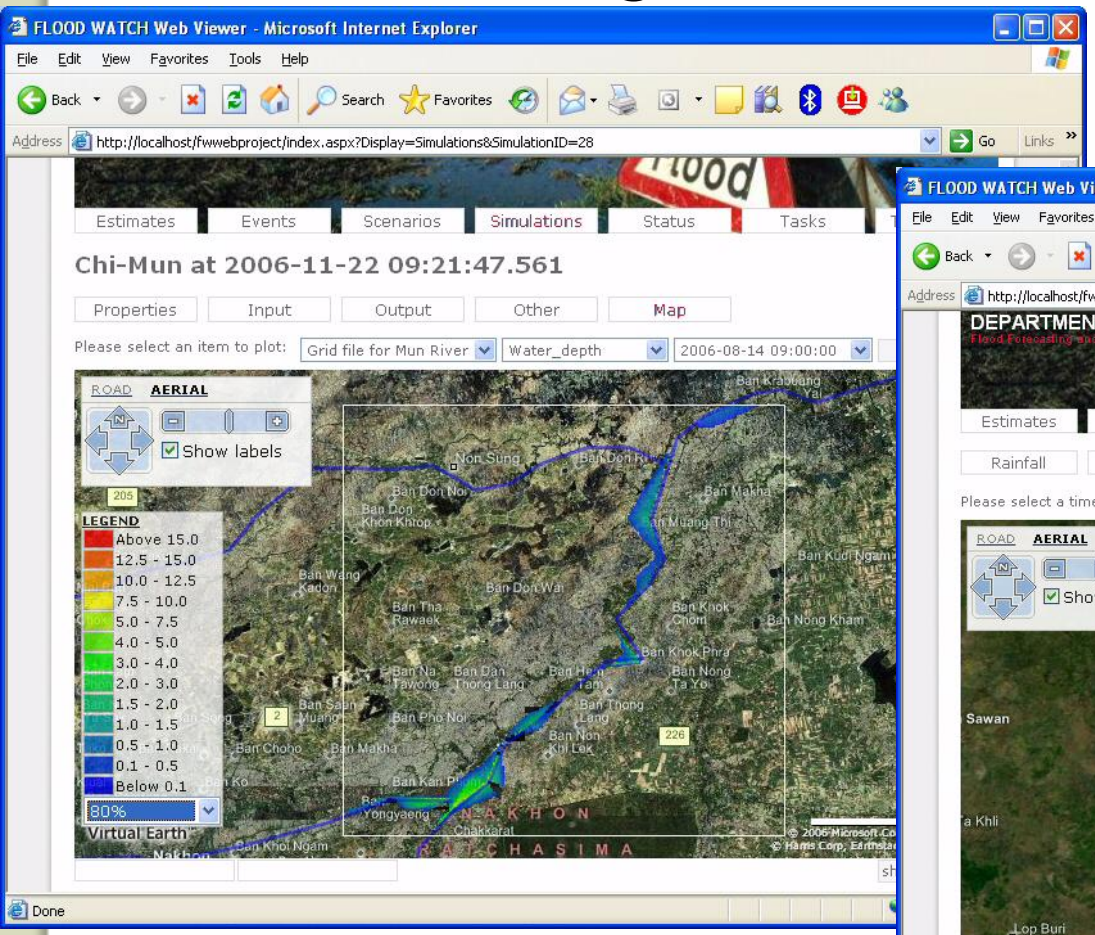
Run Search

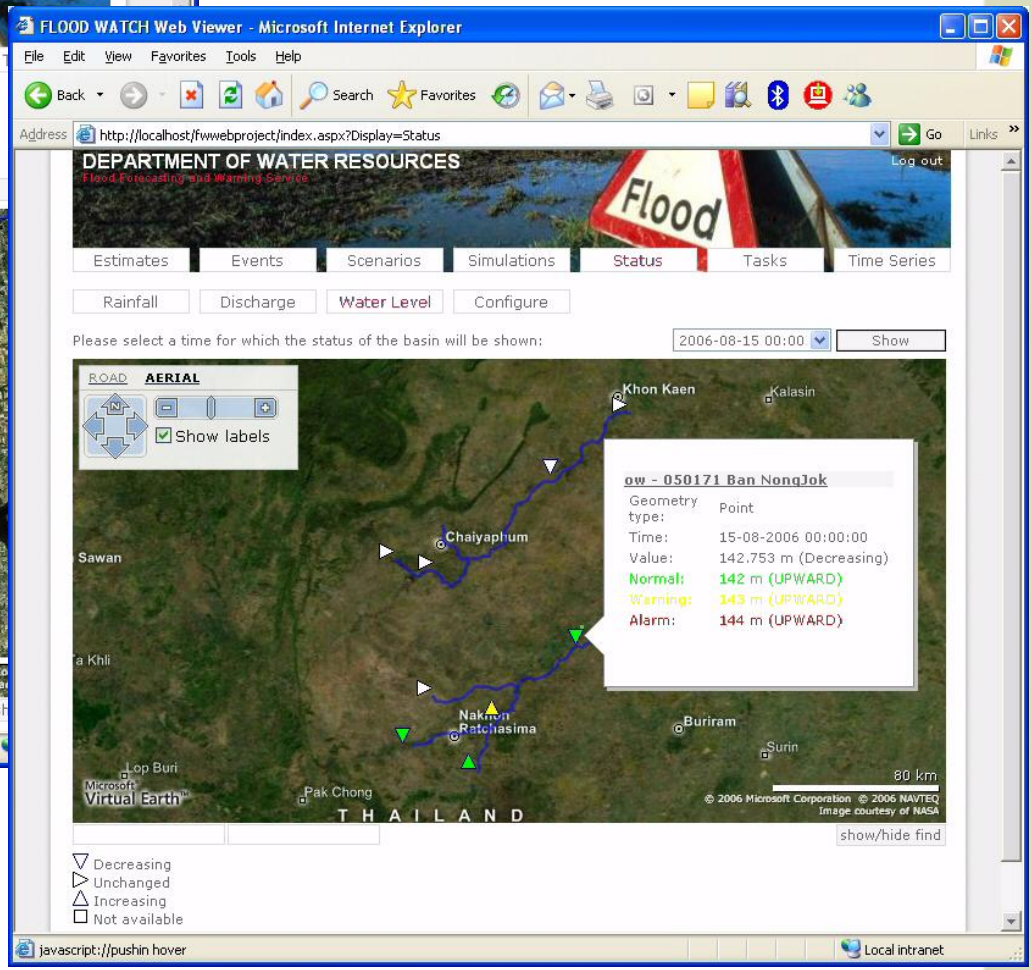
Longitude: 124°31'38"W, Latitude: 61°23'49"N

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

- Growth in demand for water data
- Diversity of actors/producers
- Inaccessibility of historical information

Discussion: Needs and Challenges

- Growth in demand for water data
- 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/compartmentalization 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

- 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
- Focus attention on need for sustained funding

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
- Focus attention on need for sustained funding
- Work with related efforts to extend availability of resources

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
- 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

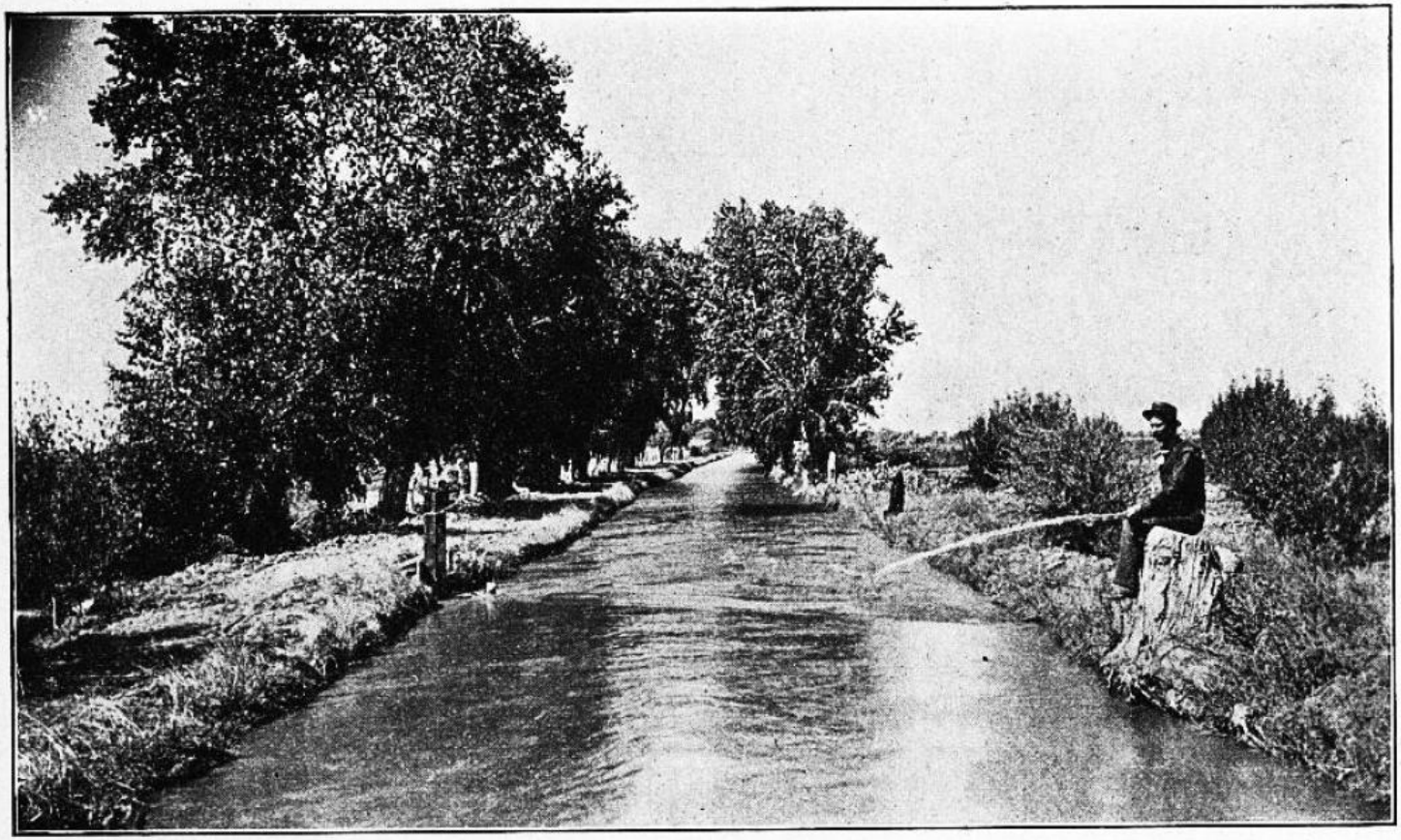
Please join us for a discussion with our presenter.

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

Open Discussion

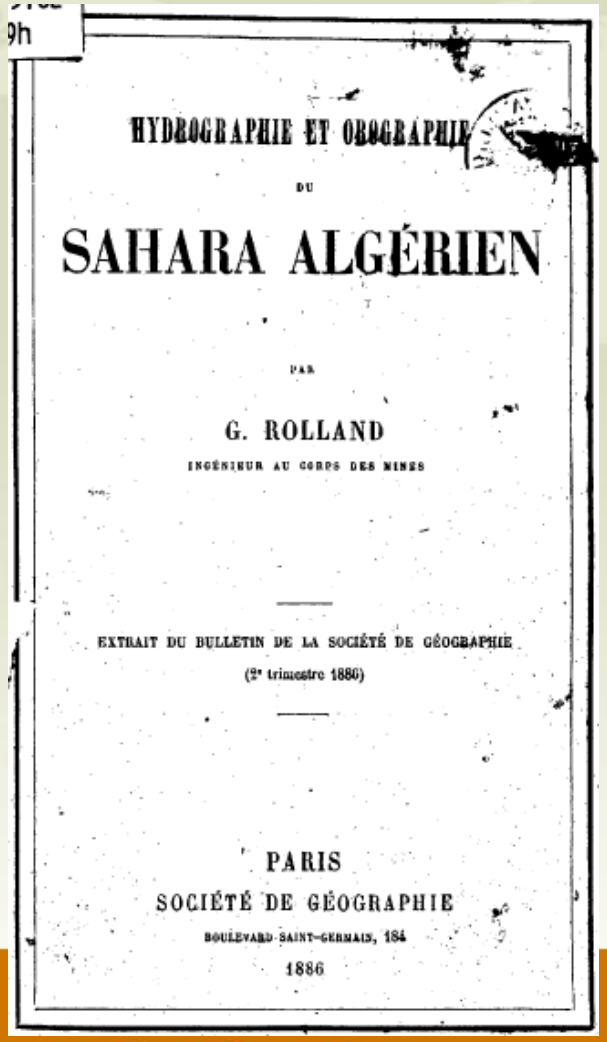
- What resources are your patrons using? What needs have they expressed?
- What services does your library provide for use/instruction?
- What tools have you developed / do you promote among your constituents?
- What needs or priorities do you have that might be addressed collaboratively?

CRL Collections



SALT RIVER VALLEY CANAL.

CRL Collections



HYDROGRAPHIE ET OROGRAPHIE

DU

SAHARA ALGÉRIEN

PAR

G. ROLLAND

INGÉNIEUR AU CORPS DES MINES

EXTRAIT DU BULLETIN DE LA SOCIÉTÉ DE GÉOGRAPHIE

(2e trimestre 1886)

PARIS

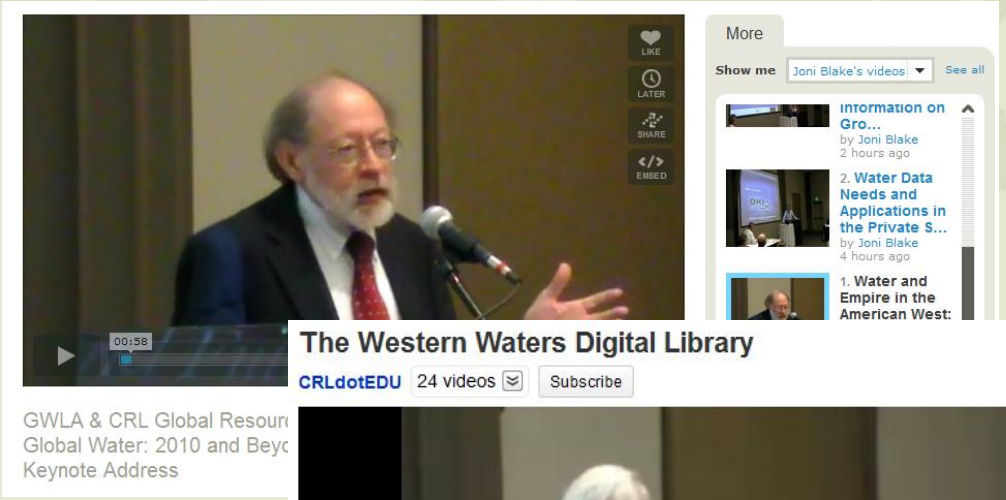
SOCIÉTÉ DE GÉOGRAPHIE

BOULEVARD SAINT-GERMAIN, 184

1886

Global Water : 2010 and Beyond

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



The Center for Research Libraries
GLOBAL RESOURCES NETWORK

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 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
- Find CRL on Facebook