Stressor Gradients and Spatial Narratives of the St. Louis River Estuary
Open Archives for Accessing the Science of the Estuary
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April 2, 2014

This short paper provides information about providing access to the science of the St. Louis River Estuary. An important objective of the Stressor Gradient/Spatial Narratives project was development of an open archive to exchange, share and integrate scientific publications and data relevant to the St. Louis River Estuary and contributing watershed. This was the foundation for building spatial narratives and consists of annotated bibliographies and archives for scientific and geospatial data.

Science Bibliographies
A St. Louis River Estuary bibliography was translated from RefWorks into the Mendeley reference manager and academic social network (http://www.mendeley.com/) in June 2013. The "SLRE Library" group (http://www.mendeley.com/groups/3337111/slre-library/) contains 167 bibliographic entries for scientific research covering the St. Louis River Estuary/Watershed.

The Wisconsin Department of Natural Resources completed a bibliography of Lake Superior estuaries in Spring 2012 with funding from the Wisconsin Coastal Management Program (http://dnr.wi.gov/topic/wetlands/documents/cwLakeSuperior/LakeSuperiorEstuariesBibliography.pdf). The "Lake Superior Estuaries" group in Mendeley (http://www.mendeley.com/groups/1969071/lake-superior-estuaries/) contains 337 bibliographic entries.

The Lake Superior National Estuarine Research Reserve (http://lsnerr.uwex.edu/) maintains its own research library and has developed a bibliography with approximately 1,000 entries using EndNote.

[Info about NRRI RefWorks bibliography]

www.mendeley.com/groups/3337111/slre-library/papers/

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mercury | water exchange and rip c...
Harbor Corrosion | mining | Treatment plant
Fishes and Fisheries
Beaches and Beach Health

Processes Affecting Mercury Bioaccumulation in Nearshore Regions of Lake Superior
J P Hurley, H Manolopoulos, K R Rolfhus, H Sakamoto, C L Babiarz, R C Back, in *45th Conference on Great Lakes Research, Winnipeg [Canada], 2-6 Jun 2002 (2002)*

> Tributaries to Lake Superior contribute significant quantities of particulate, colloidal and dissolved total and methyl mercury (MeHg) to nearshore regions and phase partitioning is significantly influenced watershed type. Riverine mixing zones are...

Added 2013-06-03   1 reader

St. Louis Bay Fishery 1986-1994
J P Lindgren, P W Ongstad, J R Spurrier, Walker Minnesota Dept. of Natural Resources MN. Area Fisheries Office., Fish and Wildlife Restoration Program, Washington, DC. *(1998)*

> The St. Louis River estuary (St. Louis Bay) is located on the border between Minnesota and Wisconsin. The estuary, which extends from Lake Superior to the Fond du Lac dam, is 30 km long with a surface area of 4,654 ha (Osborn et al. 1991). Between...

Added 2013-06-03   1 reader

Nancy Schuldt and Paula Maccabee: PolyMet mine can't proceed as proposed
N Schuldt, P Maccabee in *Star Tribune (Minneapolis, MN) (2010)*

> Thousands of citizens, along with environmental groups and tribal cooperating agencies, have expressed concerns that the PolyMet mining project proposed in the Lake Superior watershed would create unacceptable harm to water quality, wetlands,...

Added 2013-06-03   1 reader

Minnesota, Wisconsin stock sturgeon on St. Louis River
S Cook in *Duluth News-Tribune (MN) (1999)*

Full text: DULUTH, Minn. – The Fond du Lac band of Ojibwe isn't the only

http://www.mendeley.com/groups/1969071/lake-superior-estuaries/
Maintained by the Wisconsin Department of Natural Resources
337 papers

www.mendeley.com/groups/1969071/lake-superior-estuaries/papers/

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Pokegama, Little Pokegam and Red Rivers 303d Assessment Project Summary
Wisconsin Department of Natural Resources [WDNR] *(2013)*
Added 3 weeks ago

Erosion and sedimentation in the Nemadji River Basin: Nemadji River Basin final report
Natural Resource Conservation Service *(1988)*
Added 3 weeks ago

An Assessment of the Physical Factors That Trigger Landslides and the Relative Impact of a 500-Year Flood Within the Red River Breaks (Wisconsin/Minnesota)
Ashley Kotz, Crystal Lambert, Andy Breckenridge, Rachel Breckenridge *(2014)*

> The 7.2 mile long Red River is a tributary of the St. Louis estuary in far southwestern Lake Superior. The river downcuts a clay plain from a former glacial lake making the area highly susceptible to landslides when the clay becomes saturated....

Added 3 weeks ago | 1 reader

Managing woodlands on Lake Superior's red clay plain
Wisconsin Department of Natural Resources [WDNR] *(2007)*
Added 3 weeks ago | 2 readers

Wisconsin forest management guidelines
Wisconsin Department of Natural Resources [WDNR] *(2003)*
Added 3 weeks ago | 1 reader

Wisconsin's forestry best management practices for water quality
Wisconsin Department of Natural Resources [WDNR] *(1995)*

Top tags in this group
Great Lakes - Coastal Wet... | fish
estuaries | hydrology | plants
water quality | invasive species
Great Lakes - not Superior | birds
Great Lakes - General
Nutrient Cycling & Chemistry | restoration
geomorphology | monitoring
land-use planning | ecology
aquatic macroinvertebrates | Lake Superior
biological indicators | invertebrates

A RefWorks bibliography was prepared at the beginning of the project with entries for scientific research covering the St. Louis River Estuary/Watershed. This bibliography was accessible through RefWorks accounts at the University of Wisconsin-Madison and the University of Minnesota-Duluth. [Please note that the UW subscription to RefWorks ended on June 30, 2013, necessitating the transition to Mendelay.]

Science Data Archives

Digital archives accessible at the University of Wisconsin-Madison were reviewed as a means to provide distributed access to the publications, data and maps relevant to the St. Louis River Estuary and Watershed. These include UW Digital Collections (http://uwdc.library.wisc.edu/), Minds@UW (http://minds.wisconsin.edu) and the Hathi Trust (http://www.hathitrust.org/). The Hathi Trust is a digital repository being developed to support many of the large research libraries in the nation. Several searches were conducted in April 2014 to discover materials relevant to the St. Louis River.

A search for "St Louis River" through UW Digital Collections (http://uwdc.library.wisc.edu/) yielded 5,774 entries.

A search for "St Louis River" through Minds@UW (http://minds.wisconsin.edu) yielded 5 entries, including proceedings of the 2011, 2012 and 2013 St Louis River Estuary Science Summits.
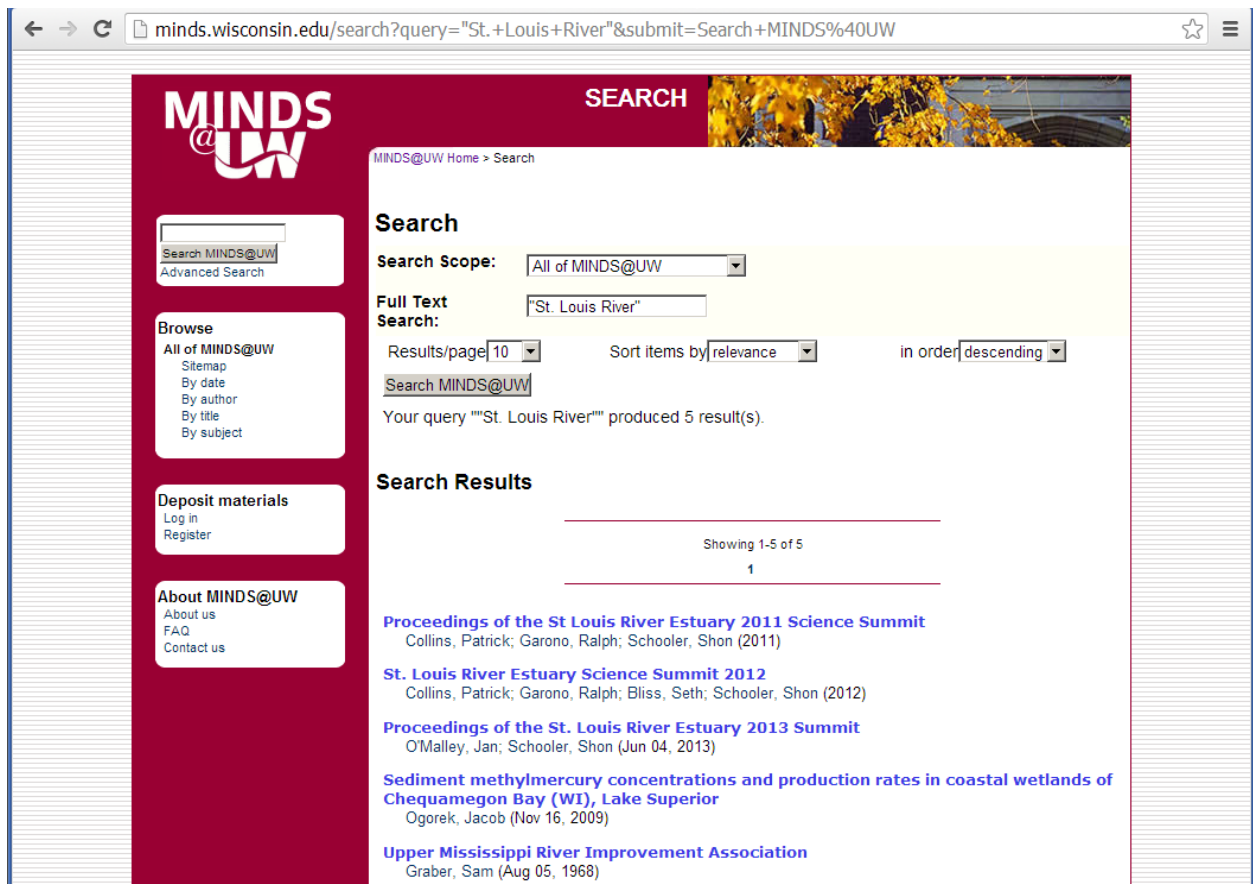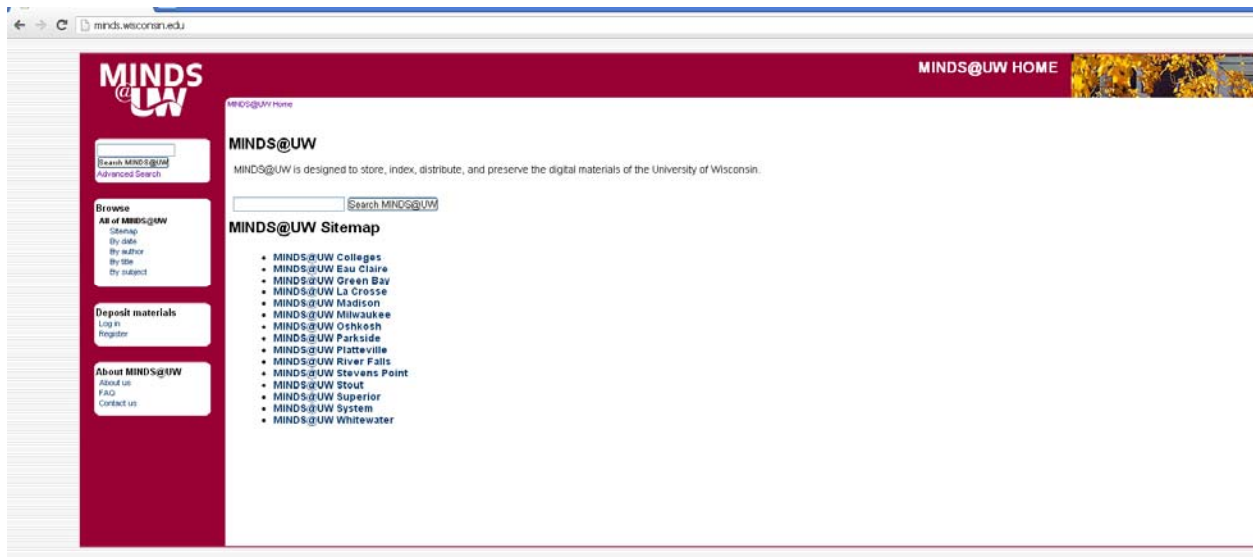
A catalog search for "St Louis River" using Hathi Trust (http://www.hathitrust.org/) yielded 48 entries. A full-text search for "St Louis River" using Hathi Trust yielded 17,554 entries.

Screenshot 1 (top):

catalog.hathitrust.org/Search/Home?type%5B%5D=all&lookfor%5B%5D="St.%20Louis%20River"&page=1&ft=

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Digital Library

FULL-TEXT | CATALOG

"St. Louis River"   All Fields ▼   🔍

Advanced catalog search | Search tips   ☑ Full view only

Refine Results

Showing 1 - 20 of 48 Results for all fields:"St. Louis River"

Subject
Business and industry (11)
Business and Industry (8)
business and industry (8)
Transportation (5)
Politics and government (3)
more...

All items (48) | Only full view (47)

Sort Relevance ▼   1 2 3 Next »

Excursion boat on St. Louis River
Published 1915
ⓘ Catalog Record   🗐 Full view

Author
Brown, Baxter L. 1864- (1)
Brown, Baxter Lamon, b. 1864 (1)
Lanman, Charles, 1819-1895 (1)
Saint Louis (Mo.). City Plan Commission (1)

Bridges across St. Louis River. Hearings ... on H.R. 15727 and H.R. 17762. September 26, 1914.
by United States. Congress. House. Committee on Interstate and Foreign Commerce.
Published 1915
ⓘ Catalog Record   🗐 Full view

Screenshot 2 (bottom):

babel.hathitrust.org/cgi/ls?field1=ocr;q1="St.%20Louis%20River";a=srchls;lmt=ft

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Digital Library

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Refine Results

Search Results: 11,953 items found for **"St. Louis River"** in *Full-Text + All Fields*

Subject
United States (1,277)
Engineering (677)
Railroads (546)
Canada (503)
United States. (435)
more...

All Items (17,554) | Full View (11,953)

25 per page ▼   Prev 1 2 3 4 5 6 7 8 9 10 ... 479 Next >>

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Author
United States. Congress. (478)
United States. Army. Corps of Engineers. (413)
Geological Survey (U.S.) (355)
United States. Mississippi River Commission. (177)
Canada. Parliament. (173)
more...

☐ Bridge over St. Louis River at Grassy Point, Minnesota. Mr. Fletcher, from the Committee on Interstate and Foreign Commerce, submitted the following report.
Published 1894
ⓘ Catalog Record   🗐 Full view

☐ Bulletin. no. 3
by Minnesota Geological Survey.
Published 1887
ⓘ Catalog Record   🗐 Full view

Language
English (11,269)

The "Deep Map" developed by the project team (http://maps.aqua.wisc.edu/deepmap/map.php) includes a "Water Quality Monitoring" layer that provides access to monitoring observation data for the St. Louis River Estuary. It includes access to USGS stream gages, buoys maintained by the Large Lakes Observatory at UMD, monitoring stations in Duluth trout streams maintained by NRRI, and monitoring sites in the estuary maintained by NRRI and partners.
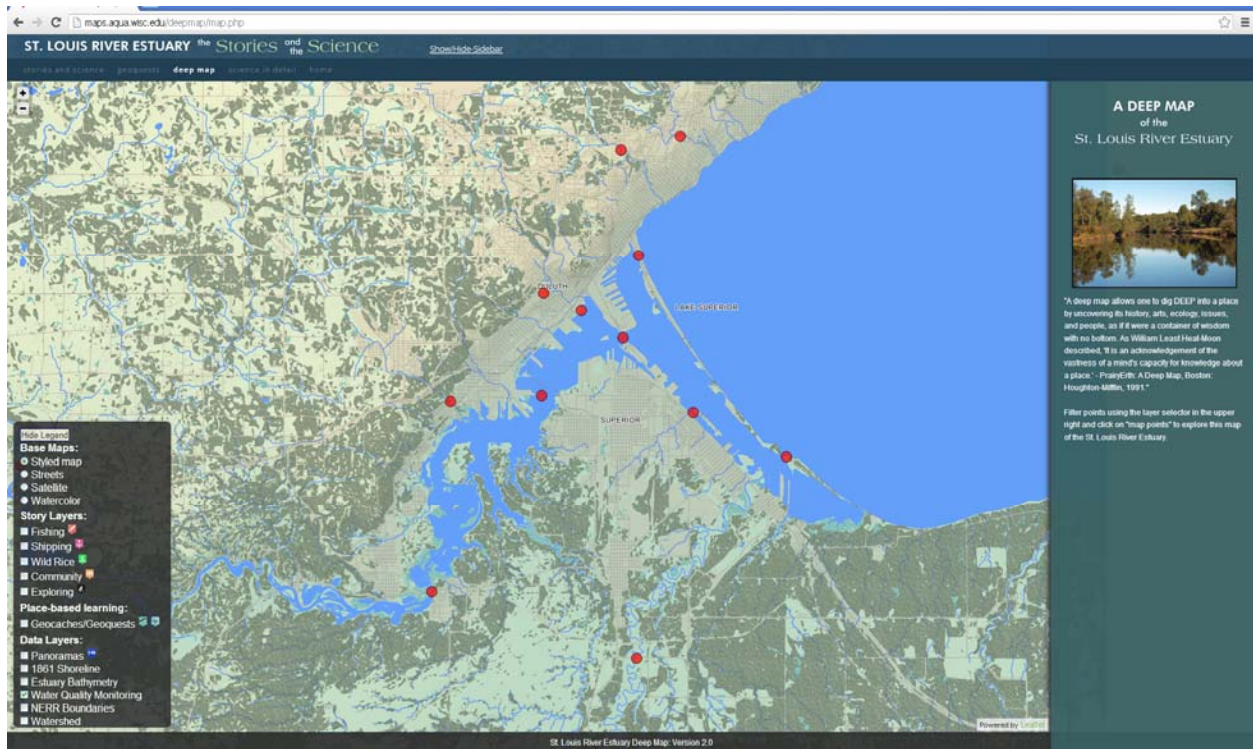
NOAA National Estuarine Research Reserve System, Centralized Data Management Office

The LSNERR monitoring program includes 5 stations along the estuary at the Oliver Bridge, Bong Bridge, Blatnik Bridge, Barker's Island and Pokegama Bay. Data access is provided through the NOAA National Estuarine Research Reserve, Centralized Data Management Office (http://cdmo.baruch.sc.edu/).

http://cdmo.baruch.sc.edu/get/export.cfm

Developed to provide users with quick and easy access to monitoring data. It includes a map-based interface and offers single station exports, yearly authenticated file downloads, charting, and a current conditions display for real-time stations.

http://cdmo.baruch.sc.edu/aqs

Developed to specifically address the data delivery needs of those end-users looking for large amounts of data exported in a format that can be easily imported and manipulated for data analysis. It offers three different query options allowing for mass downloads of annual files, customized queries for specific parameters and multiple stations in the same file, and an option to merge water quality, meteorological and nutrient datasets.

Real Time Data Application

http://cdmo.baruch.sc.edu/get/realTime.cfm

Developed to allow users to view near real time data, real time gauges, and 24 hour graphs with multiple parameters.
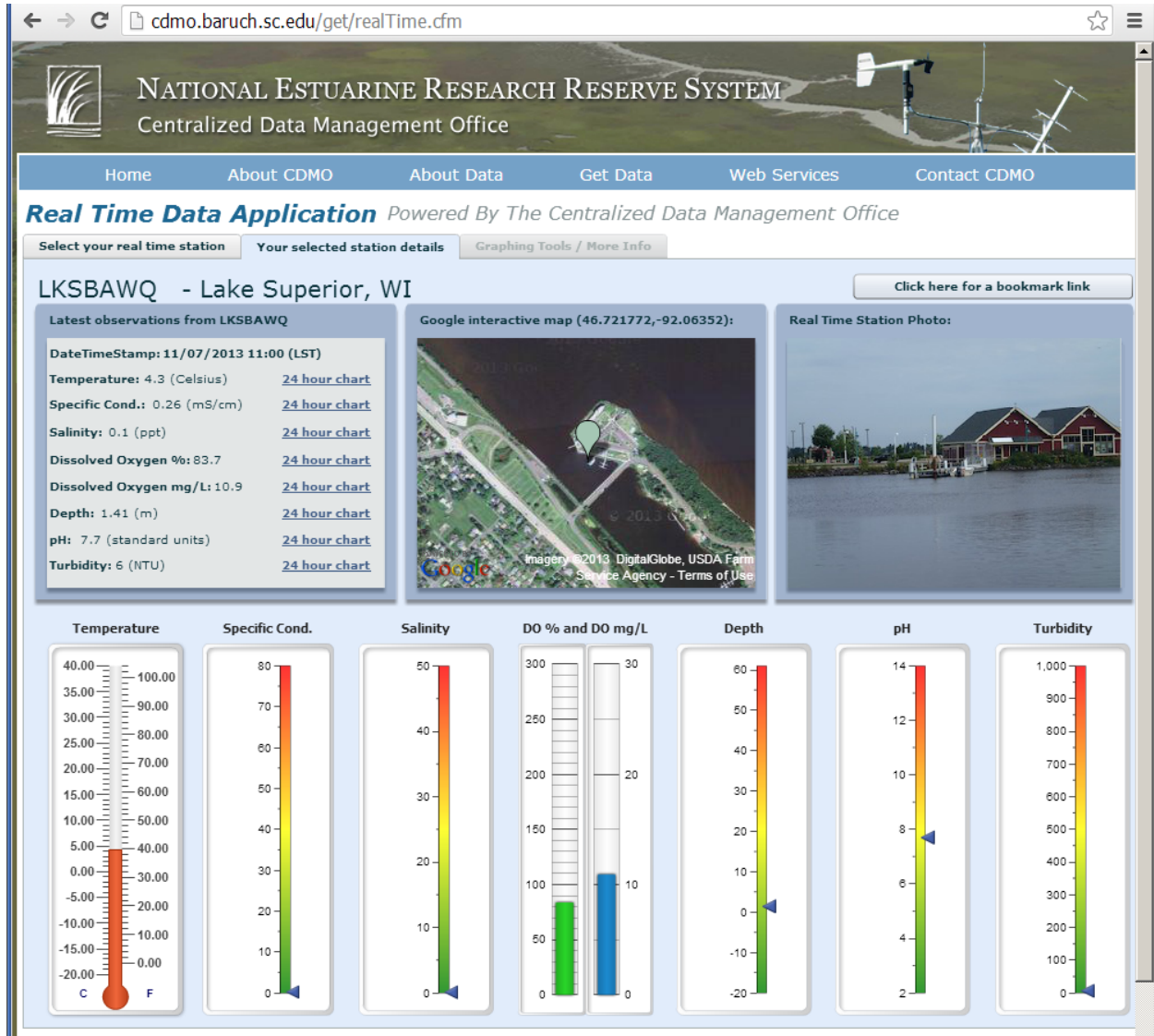
http://cdmo.baruch.sc.edu/get/gis.cfm
Developed to give users access to Reserve boundary, watershed boundary, moderate resolution habitat/land cover maps, and and monitoring station locations.
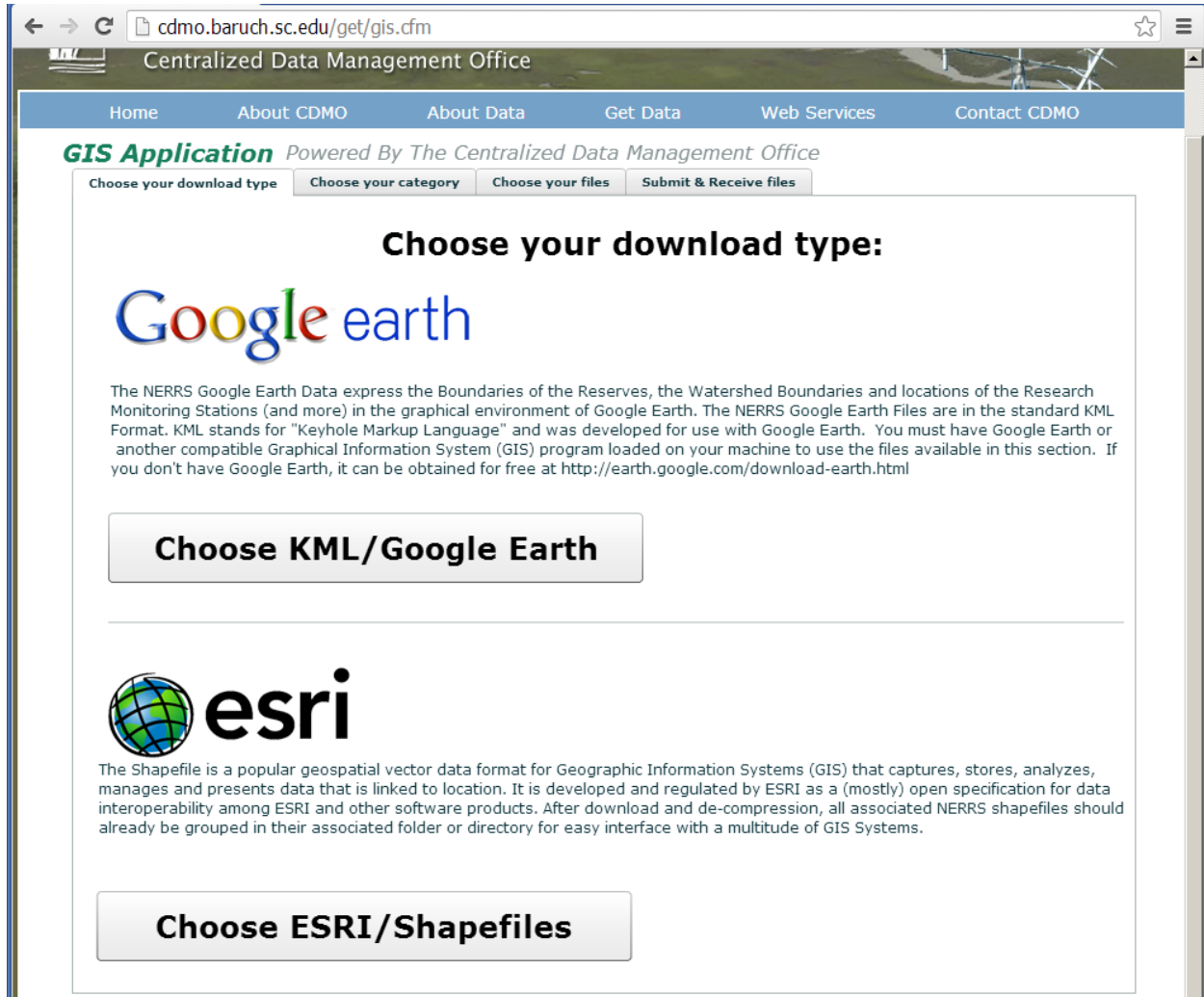
http://cdmo.baruch.sc.edu/webservices.cfm
In an effort to increase distribution and use of the data collected by the NERRS, several web service products were created to allow other individuals and organizations to pull real-time data from their databases.

Scientific data for the St. Louis River Estuary is accessible through the LakeSuperiorStreams website (http://www.lakesuperiorstreams.org/), which currently serves educational information and data visualizations about water quality along the North Shore of Lake Superior.

Real Time Data

http://www.lakesuperiorstreams.org/streams/data/Java/index.html

The Real Time Data viewer allows exploration of data from sensors in Duluth streams, observation stations in the estuary and buoys in Lake Superior.

http://www.lakesuperiorstreams.org/streams/data/map/index.html
A new Data Launch Pad provides a map-based interface to real-time data from water quality sensors.
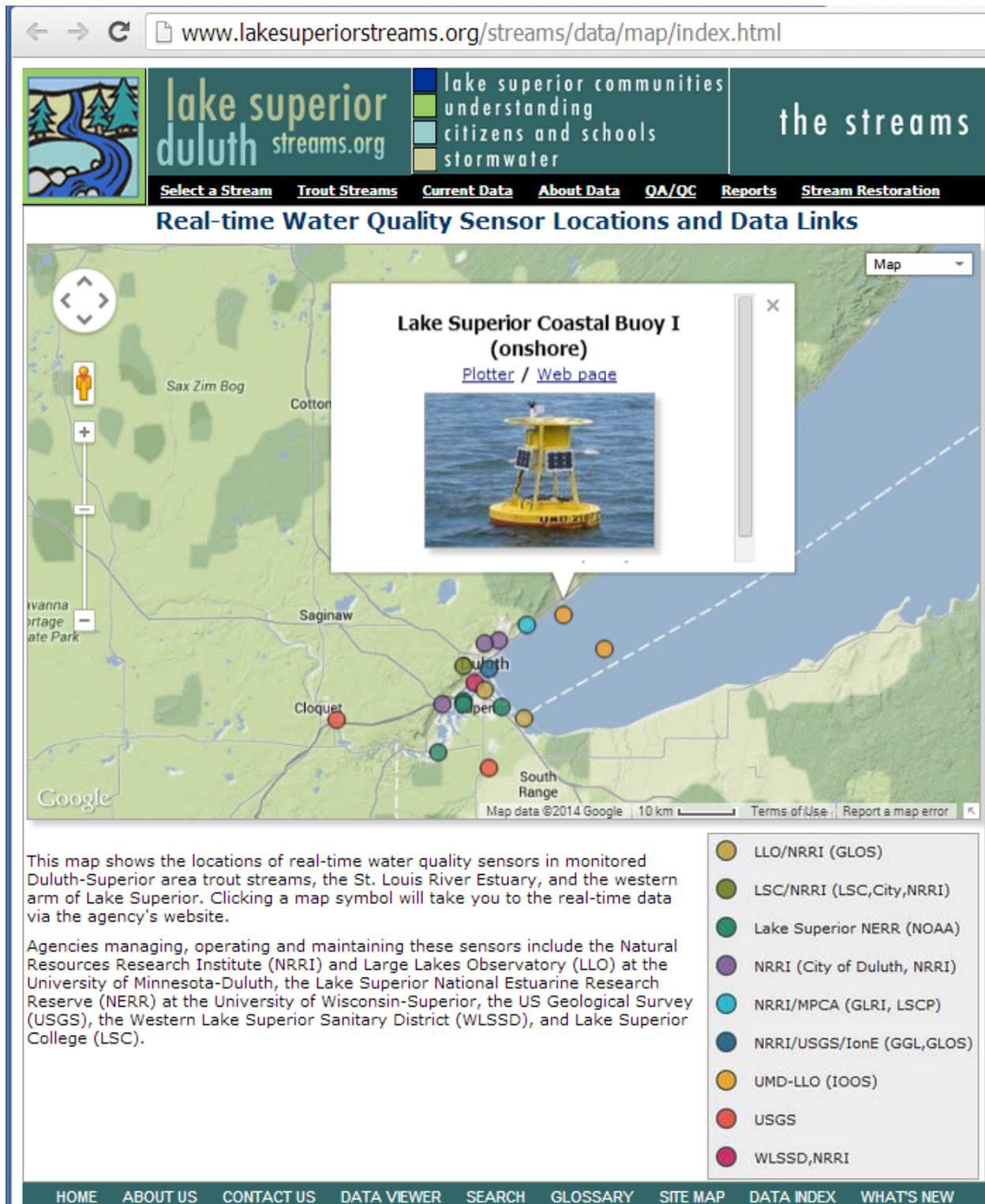
Geospatial Data Archives

Both the University of Wisconsin Sea Grant Institute and the Natural Resources Research Institute at the University of Minnesota, Duluth maintain geocatalogs that promote discovery and access to geospatial data. They utilize GeoNetwork software (http://geonetwork-opensource.org/), where data custodians can author interoperable catalog services that adhere to standards adopted by the Open Geospatial Consortium (http://www.opengeospatial.org/). UW Sea Grant's geocatalog (http://maps.aqua.wisc.edu/geonetwork) is a component of the Wisconsin Coastal Atlas (http://wicoastalatlas.net/) and includes 57 datasets as of April 2, 2014, two of which are specific to the St. Louis River.   NRRI's geocatalog (http://gisdata.nrri.umn.edu/geonetwork/) includes 21 data sets as of April 2, 2014, four of which are specific to the St. Louis River. Additional geospatial data sets that intersect with the St. Louis River watershed can be accessed through the Minnesota Coastal GIS (http://www.nrri.umn.edu/CoastalGIS/) and the catalog section of the Wisconsin Coastal Atlas (http://wicoastalatlas.net/Default.aspx?tabid=63).

http://maps.aqua.wisc.edu/geonetwork/

GetCapabilities Request
http://maps.aqua.wisc.edu/geonetwork/srv/en/csw?request=GetCapabilities&service=CSW&Version=2.0.2

DescribeRecord Request
http://maps.aqua.wisc.edu/geonetwork/srv/en/csw?request=DescribeRecord&service=CSW&version=2.0.2

GetRecords Request (searched for records containing "St. Louis River" returned two records)
http://maps.aqua.wisc.edu/geonetwork/srv/en/csw?request=GetRecords&service=CSW&version=2.0.2&namespace=xmlns(csw=http://www.opengis.net/cat/csw)&resultType=results&outputSchema=http://www.opengis.net/cat/csw/2.0.2&outputFormat=application/xml&maxRecords=10&typeNames=csw:Record&elementSetName=summary&constraintLanguage=CQL_TEXT&constraint_language_version=1.1.0&constraint=AnyText+LIKE+%27%25st.%20louis%20river%25%27

http://gisdata.nrri.umn.edu/geonetwork/

GetCapabilities Request
http://gisdata.nrri.umn.edu:80/geonetwork/srv/en/csw?request=GetCapabilities&service=CSW&version=2.0.2

DescribeRecord Request
http://gisdata.nrri.umn.edu/geonetwork/srv/en/csw?request=DescribeRecord&service=CSW&version=2.0.2

GetRecords Request (searched for records containing "St. Louis River" returned four records)
http://gisdata.nrri.umn.edu/geonetwork/srv/en/csw?request=GetRecords&service=CSW&version=2.0.2&namespace=xmlns(csw=http://www.opengis.net/cat/csw)&resultType=results&outputSchema=http://www.opengis.net/cat/csw/2.0.2&outputFormat=application/xml&maxRecords=10&typeNames=csw:Record&elementSetName=summary&constraintLanguage=CQL_TEXT&constraint_language_version=1.1.0&constraint=AnyText+LIKE+%27%25st.%20louis%20river%25%27
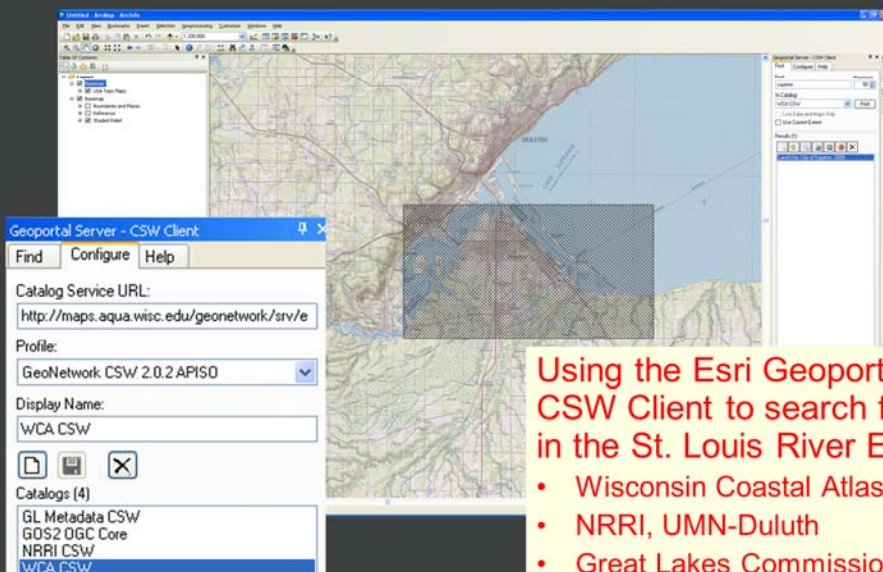
The Wisconsin Coastal Atlas project team tested linking the interoperable geocatalogs at UW Sea Grant and NRRI to demonstrate sharing geospatial data from distributed sources to address trans-boundary issues in the estuary. A presentation titled "Networking Coastal Web Atlases to Address Regional Scale Issues" was recorded on December 6, 2011 as part of the Ecosystem-Based Management Tools Network webinar series (http://www.ebmtools.org/networking-coastal-web-atlases-address-regional-scale-issues.html). The section on the Wisconsin Coastal Atlas as an interoperable resource runs from 31:08 to 57:15, with the description of linking interoperable catalogs for the St. Louis River Estuary starting at approximately 52:00.

SharedGeo (http://www.sharedgeo.org/), an organization focused on promoting data sharing based in Minnesota, has accessed and utilized the catalog service for the web (CSW) accessed through WCA GeoNetwork. The SharedGeo Collaborative Mapping Catalog (https://hub.sharedgeo.org/projects/GLRI/geonetwork/) harvests metadata records from the WCA GeoNetwork, as well as other interoperable catalogs. Their catalog contains 5,142 records and a search on "St. Louis River" yields 16 records.

Great Lakes Metadata Catalog, Great Lakes Observing System
http://data.glos.us/metadata/
220 records
Search on Lake Superior: 78 records

Great Lakes Metadata Catalog, U.S. Geological Survey
http://cida.usgs.gov/glri/geonetwork/
21 records
Search on Lake Superior: 2 records

Weather and Water Information Gateway - Discovering Ontario DataProject
https://www.appliometadata.lrc.gov.on.ca/geonetwork/
10,602 records
Search on "Great Lakes": 402 records

USGS Coastal and Marine Geology Program
http://cmgds.marine.usgs.gov/geonetwork/
615 records
Search on "Great Lakes": 9 records

Data.gov
Search on St. Louis River Estuary. 20 datasets found.
Search on St. Louis River. 340 datasets found.
Search on Lake Superior. 60 datasets found.
Search on Great Lakes. 717 datasets found.