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Great Lakes RESTORATION

EPA

Tools for Discovering and Accessing
Great Lakes Scientific Data

Background

The Great Lakes Restoration Initiative (GLRI) is a multidisciplinary and interagency effort focused on the protection and restoration of the Great Lakes (GL) using the best available science and applying lessons learned from previous studies. The U.S. Geological Survey (USGS) contributes to the GLRI effort by providing resource managers with information and tools needed to meet restoration goals. This includes contributing scientific expertise and delivering findings to the GL community through meaningful information products.

One of the strengths of the GLRI is its interagency approach; however, this can create challenges when coordinating the large number of restoration activities being performed by GL governments, tribes, academics, nonprofits, and industry. There is a vast array of data being produced by both the USGS and its partners, and it is crucial that scientists, managers, policymakers, and the public can easily locate the biological, geological, geospatial, and water-resources data being generated.

The USGS strives to develop data products that are easy to find, easy to understand, and easy to use through Web-accessible tools that allow users to learn about the breadth and scope of GLRI activities being undertaken by the USGS and its partners. By creating tools that enable data to be shared and reused more easily, the USGS can encourage collaboration and assist the GL community in finding, interpreting, and understanding the information created during GLRI science activities.

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Science in the Great Lakes (SiGL) Mapper

http://wim.usgs.gov/SiGL

A map-based data discovery tool that spatially displays basinwide, multidisciplinary monitoring and research activities conducted by both USGS and its partners from all five Great Lakes.

To capture information about all the scientific efforts being undertaken by USGS and its partners, the USGS developed the **SiGL Mapper**. The SiGL Mapper is a data-discovery tool that provides searchable access to detailed, project-specific information about what, where, when, and how GL data were collected and connects users with data repositories, publications, and contact information so they can easily access the project's results.

The purposes of the SiGL Mapper are as follows:

- *Support strategic GL data collection and analysis.* SiGL can increase the access and visibility of existing efforts, aid in identifying areas and topics that need more study, and enable future projects to build on existing data.

- *Capture and display GL activities spatially.* Allowing users to view GL data in spatial context provides a quick, visual understanding of where research activities are occurring and allows those without geographic information system capabilities to view and share their data spatially.

- *Increase access and connectivity to datasets, both large and small.* SiGL can connect dynamically with large, enterprise-data repositories (like ScienceBase) or simply display descriptive metadata and contact information, providing access to smaller datasets that may not be available online.

As of April 1, 2015, SiGL contained 257 projects (53 with monitoring sites and 204 without, including all USGS GLRI projects), representing 65 different Federal and State agencies, municipalities, Tribes, universities, and nonprofit organizations throughout all five Great Lakes.
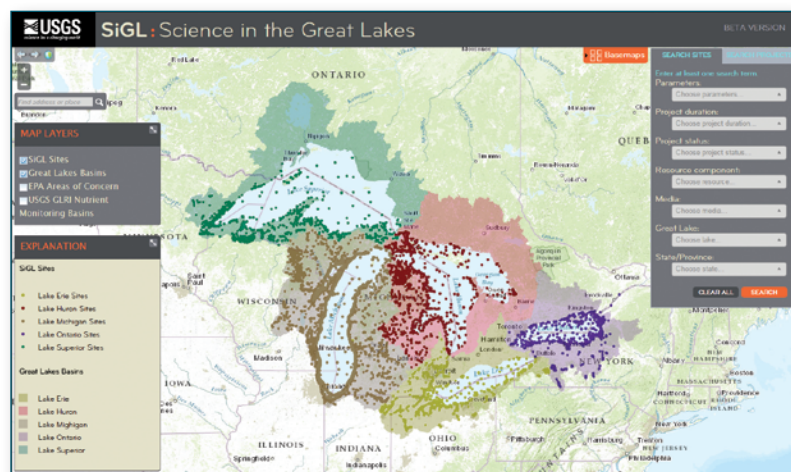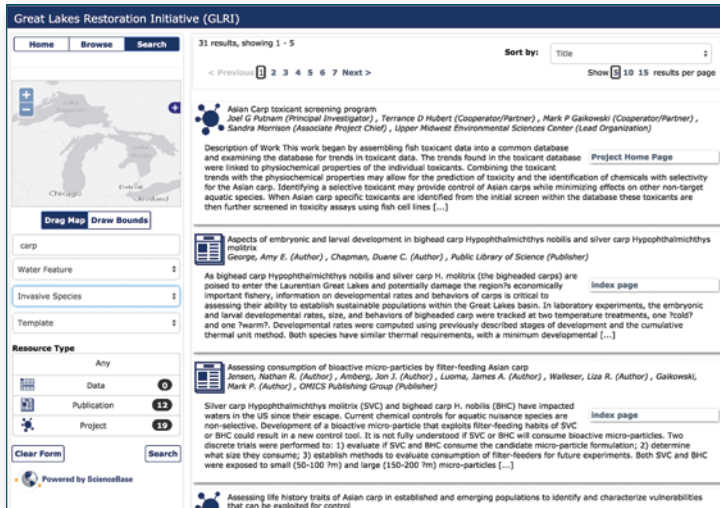

Screenshot of the initial view of the Science in the Great Lakes (SiGL) Mapper.

USGS Great Lakes Restoration Initiative (GLRI) Web Site

http://cida.usgs.gov/glri

An outreach and discovery tool that assists users in locating information pertaining to USGS GLRI projects, publications, and datasets.

Screenshot of the **U.S. Geological Survey Great Lakes Restoration Initiative (GLRI) Web site** showing results from a search.

In order to make GL science more accessible, the USGS developed an informational, dynamic Web site to showcase their GLRI efforts. This site allows users to browse or search for information about USGS GLRI science projects as well as publications and datasets resulting from those projects. The Web site currently contains information describing approximately 75 projects (completed and in progress), 66 publications, and 11 datasets.

Web-site content is stored and managed in ScienceBase—a collaborative USGS data-cataloging and data-management platform—which also can serve as a repository for scientific data. Through Science-Base, scientists and outreach staff can manage their project information directly and without Web-development skills. Changes to content in ScienceBase are automatically reflected in the Web site. Additionally, ScienceBase content may be easily incorporated into partner or collaborator Web sites and tools, like the SiGL Mapper.

Environmental Data Discovery and Transformation (EnDDaT) Tool

http://cida.usgs.gov/enddat/

Aids researchers, local managers, and modelers in retrieving publicly available data, aggregating data from disparate sources, and processing those data through a single Web-accessible user interface.
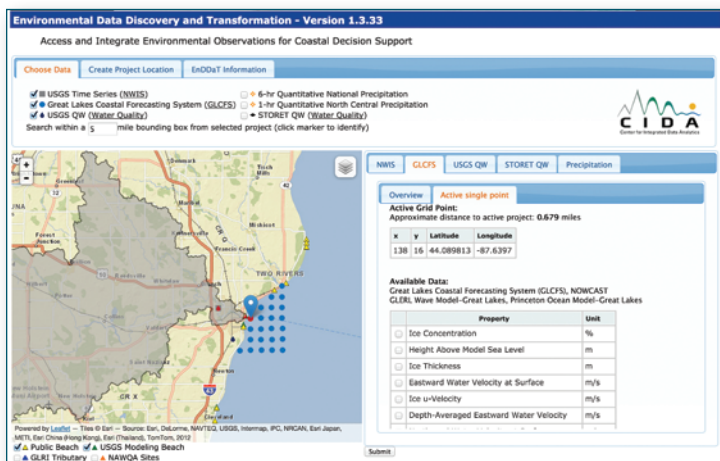
Screenshot of data-selection options in the **Environmental Data Discovery and Transformation (EnDDaT)** tool.

The amount of data necessary to build and run environmental models has increased appreciably as these models have become more intricate and comprehensive. Accurate environmental forecasting, for example, requires real-time or near real-time data. As a result, efficient data discovery, aggregation, and processing have become barriers to environmental-modeling efforts.

The **EnDDaT** tool was developed to assist environmental modelers with the discovery of data from a variety of sources, compiling and processing those data, and performing common transformations. The EnDDaT tool is capable of retrieving publicly available data resources through standard Web services, aggregating the disparate data sources, and processing the data through a single Web-accessible user interface. Additionally, the tool provides a variety of output formats and data-visualization tools. Services also are available for direct integration with modeling software. These capacities aid in model building and running by allowing scientists to more efficiently obtain, aggregate, and manipulate the data necessary for these purposes.

References Cited

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