

An Internet Based Great Salt Lake Information System (GSLIS)

Final Report

Jeffery S. Horsburgh and David G. Tarboton

3/1/2011

Project Description

This project established an Internet-based information system for the Great Salt Lake (GSL) to improve understanding and management of the GSL as an integrated system and to provide a single repository for organizing and sharing GSL data and information. The GSLIS leverages existing software components from the Bear River Watershed Information System and the GSL Hydrologic Observatory website and incorporates data and information from many different agencies and organizations. The GSLIS promotes awareness of existing data and research results related to the GSL.

In the following sections we describe the work that has been done under each of the expected outcomes and deliverables from our original proposal.

Deliverable 1: GSLIS Website

The GSLIS Website (<http://www.greatsaltlakeinfo.org>) provides a public interface to the GSLIS and provides general information about the Great Salt Lake and its surrounding watersheds. It provides navigation to all of the more specialized components, including the Time Series Analyst and Internet Map applications. The GSLIS is hosted on web servers at the Utah Water Research Laboratory at Utah State University and was developed using ASP.Net in Microsoft Visual Studio 2008.

Some general information sections have been developed for the GSLIS. First, in the “Background” section, many unique features of the Great Salt Lake basin are described in detail. Also in the “Background” section are detailed narrative descriptions of each of the major watersheds that contribute to the Great Salt Lake. A dynamic “News” page has been created that enables users to submit links to and descriptions of news events and articles related to the Great Salt Lake. Additionally, a dynamic “Calendar” page has been created that enables users to view and submit calendar events related to the Great Salt Lake (e.g., dates of meetings, conferences, trainings, etc.).

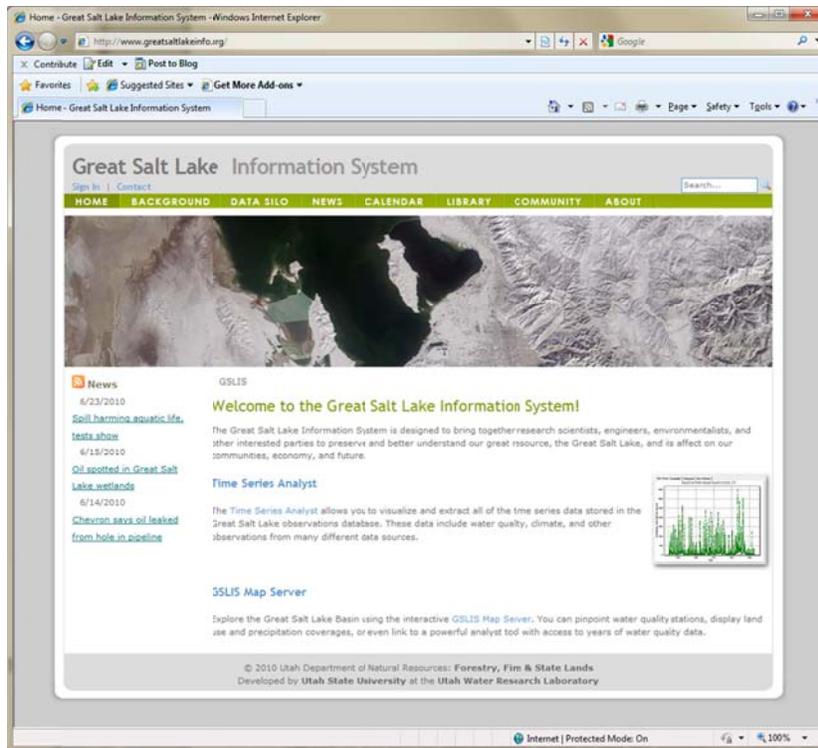


Figure 1. Front page of the Great Salt Lake Information System.

Deliverable 2: GSLIS Data Services

Data from many different agencies and organizations are presented via the Great Salt Lake Information System. This ranges from thematic pages (e.g., climate, streamflow, water quality, etc.) with links to external sites that have data about the Great Salt Lake to specific links to live data feeds from USGS about lake levels, streamflow, etc. In addition, we have built a keyword and map-based data search and download tool that enables users to search across and download data from many different sources of observations, including the USGS National Water Information System, the USEPA STORage and RETrieval (STORET) database, and others.

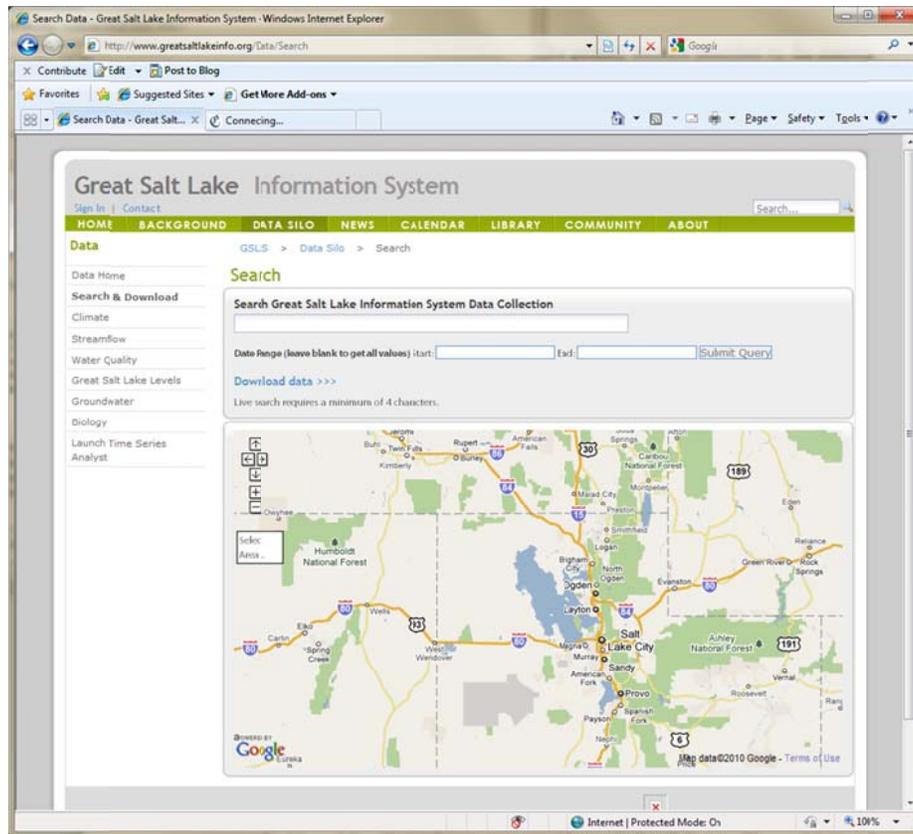


Figure 2. The map based data search and download page of the GSLIS.

Deliverable 3: GSLIS Data Visualization Tools

Two major data visualization and analysis tools were developed as part of the GSLIS. The first is the Time Series Analyst, which was implemented to enable users to plot time series of observational data stored in the GSLIS. The second is the GSLIS Map Server, which presents an Internet map based view of the Great Salt Lake and its contributing watersheds. Some of the geographic information systems (GIS) layers within the online map have been hyperlinked to underlying data so that users can click on geographic features within the map and be taken to a website that presents data for those features. For example, when users click on the location of a USGS streamflow gage with the hyperlink tool, the Time Series Analyst will pop up enabling them to create plots of the data at the selected location.

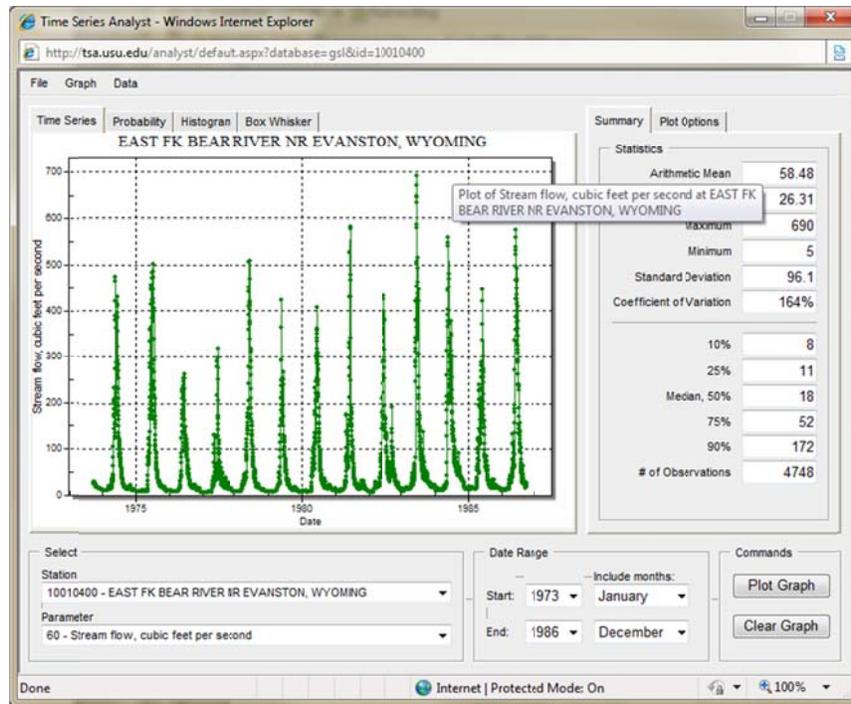


Figure 3. The GSLIS Time Series Analyst.

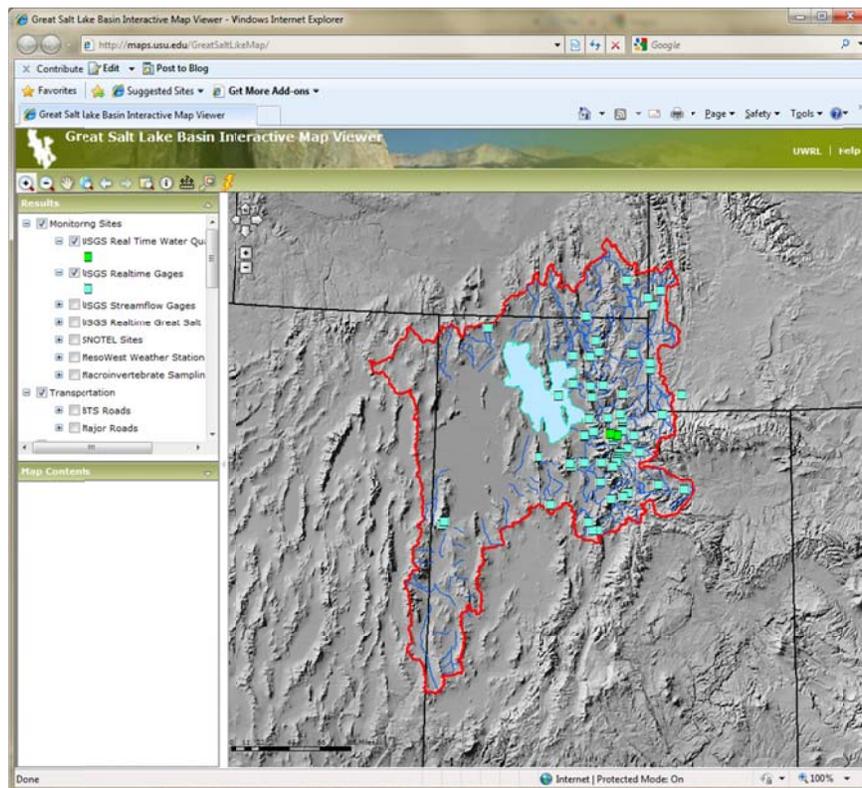


Figure 4. The GSLIS Internet Map Application.

Deliverable 4: GSLIS Digital Library

The GSLIS digital library is a compilation of digital resources related to the Great Salt Lake. There are currently approximately 150 objects in the GSLIS library available for download (or where links are provided so users can download them from the original source in the case that copyright restrictions preclude them being hosted within the GSLIS). The GSLIS library is dynamic, and users can submit new documents, presentations, images, and other digital files at any time. The GSLIS library is moderated to ensure that content added to the library is legitimate.

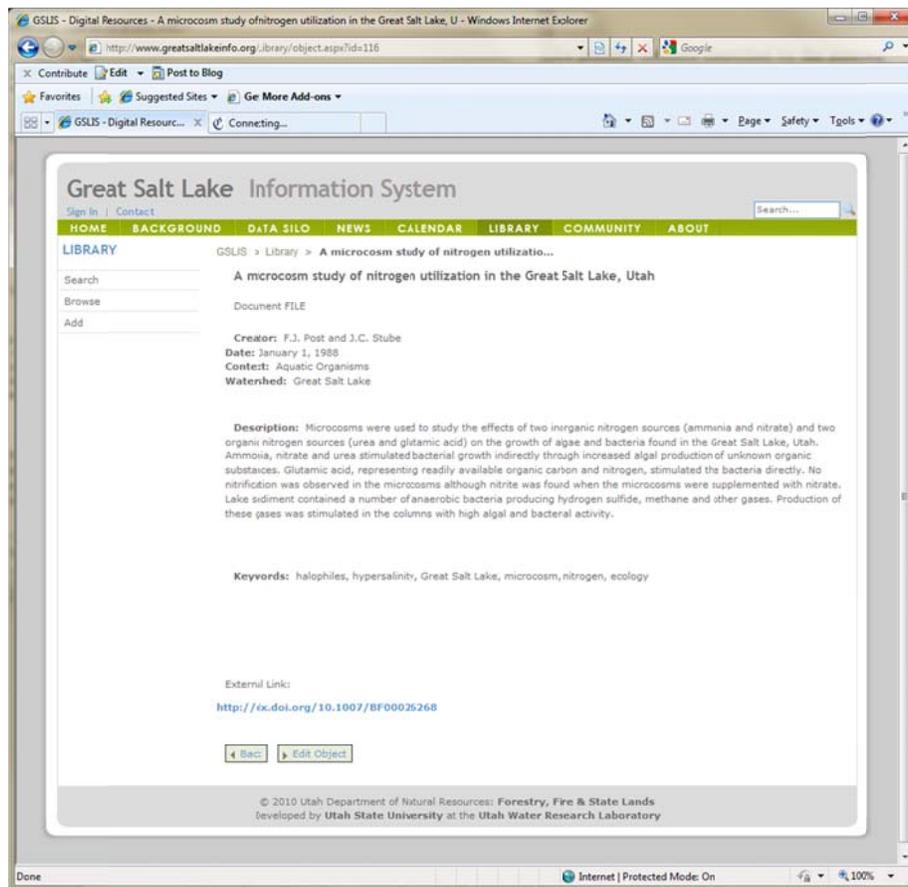


Figure 5. A details page for one of the items in the GSLIS digital library.

Deliverable 5: GSLIS Resource Guide

The Resource Guide functionality has been added to the GSLIS in sections. First, we have created a directory of people working on GSL related issues. In addition, we have created a directory of organizations working on GSL related issues, and a listing of research projects related to the GSL. Users can browse through these listings or they can search them using specific keywords to find a person or organization with expertise in the subject that they are interested in. All of the pages in the Resource Guide are dynamic, and users can add people, organizations, or projects to the GSLIS database by filling in online forms. Similar to the GSLIS

library, the Resource Guide is moderated to ensure that content that is submitted to the GSLIS is legitimate.

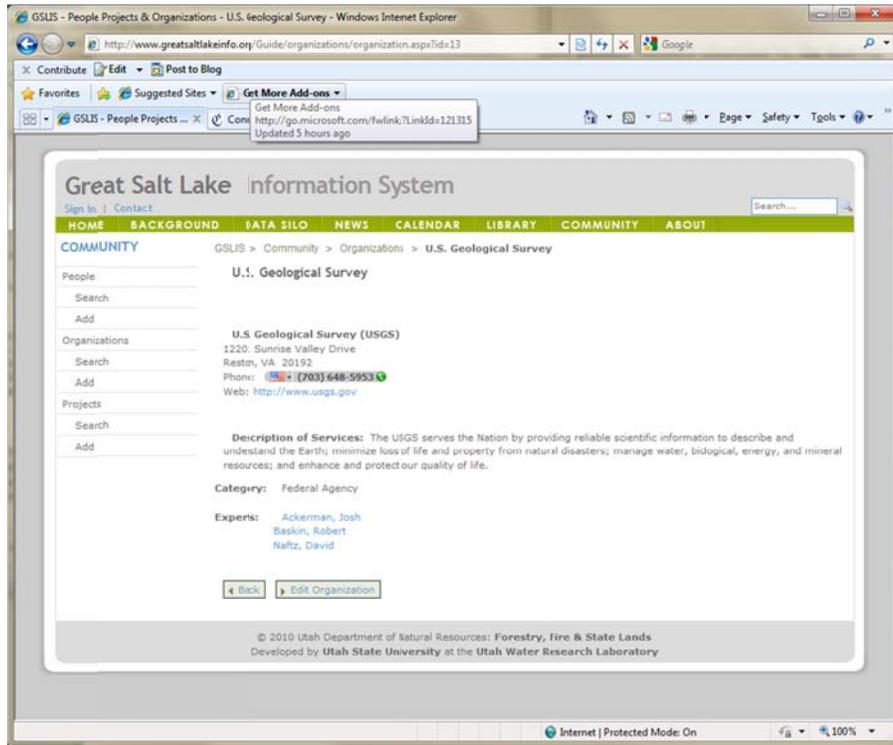


Figure 6. Details page for an organization within the GSLIS Resource Guide.

Summary

Although we are complete with our contract with the State of Utah, we are continuing to support the Great Salt Lake Information System at the Utah Water Research Laboratory. There are also a number of enhancements to the existing system ongoing as part of a student project that is sponsored by the UWRL (outside the scope of our contract with the state). We expect these enhancements to be completed in the next month or two.