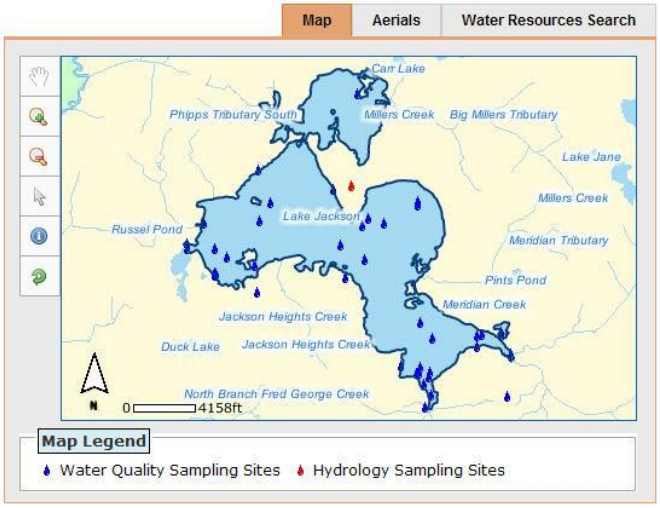
Atlas Programs Bring Water to the Web

The Water Atlas is an innovative web-based tool that can help the public better understand our natural waters and be a great boon to water managers. Using Geographic Information Systems (GIS), active web pages, and web-enabled database management systems, the Water Atlas websites are designed to provide citizens, scientists, professionals, and planners with comprehensive and current water quality, hydrologic and ecologic data. In addition, they provide information about local conservation efforts, volunteer and recreational opportunities, and a library of scientific and educational materials on water-resource issues.

What is the Water Atlas?

The Water Atlas is a collection of websites created and administered by the USF Water Institute[1] at the University of South Florida in Tampa. Originally created as an atlas of Hillsborough County lakes in 1997, it has since expanded both geographically and functionally and aims to be a "one-stop-shop" for all things water-related. It now includes nine county Atlases and the Tampa Bay Estuary Atlas, and soon will add the Charlotte Harbor Estuary Atlas. In addition to lakes, it also contains water quality and hydrologic data for other types of water bodies, including ponds, rivers/streams, bays, estuaries and inshore marine waters, as well as the watersheds that bind them together.



The mission of the program is to "provide a comprehensive information resource that helps citizens, scientists and resource managers make informed decisions concerning our vital water resources." It does this by providing a spatially-organized, web-delivered view of water resource data. While it is a repository for cold, hard facts, acquiring and organizing information from over 225 different data sets and making it available to the public in multiple formats, it also attempts to give that data meaning by providing "Learn More" articles that tell Atlas users how samples are collected, how they should be interpreted, and explaining their significance. Atlas users can display data in their raw, tabular form or graphically in custom tables and graphs, and can view them in their geographic context via interactive mapping applications. Researchers can download data for chemical, physical, and biological parameters for further analysis. Agencies can use the data to demonstrate

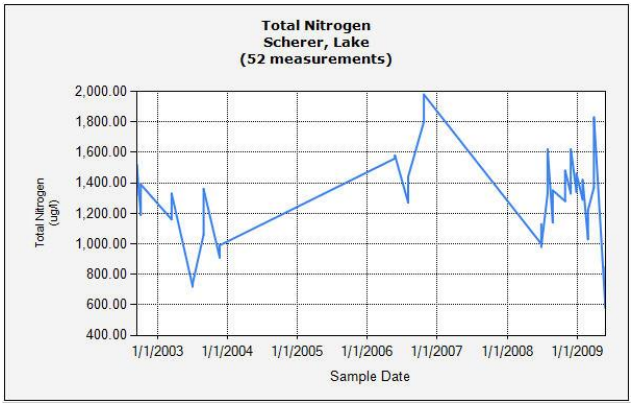
[1] The Water Atlas program originated as part of the Florida Center for Community Design & Research, a research center within the School of Architecture & Design, College of The Arts. In 2014, Water Atlas program faculty and staff merged with the USF Water Institute, within the School of Geosciences, College of Arts & Sciences.

compliance with federal and state stormwater regulations. Water resource managers can create water quality reports and maps to answer questions about the condition of resources.

Public engagement is an essential function of the Water Atlas, giving citizens easy access to water resource data that has been amassed by government agencies using taxpayer funds. Concerned citizens need not be mere consumers of Atlas content; volunteer monitors (LAKEWATCH and others) serve an essential role by submitting water quality samples, reporting on wildlife sightings, promoting and reporting on group cleanup/restoration activities, reporting polluters, and sharing photos and local history. Sponsoring organizations (counties, cities and regional agencies) use the Atlas for conservation outreach, making available informational brochures, booklets and videos, and providing notice of upcoming workshops and volunteer opportunities on the Atlas events calendar. Recreational users can find information on water body location, size and depth, water quality, suitability for recreation, location of parks, beaches, piers and boat ramps, weather, and even fishing reports. A searchable Digital Library makes available to the public environmental assessments, watershed management plans, technical reports, historic information and links to water-related websites. Teachers can utilize the Curriculum component for Sunshine Standard class exercises and explore links to external sites with water-related lesson plans and classroom projects.

Each Water Atlas is customizable by its sponsoring organization(s), and most contain resource pages for volunteer initiatives or other special-interest topics. These include Adopt-A-Pond, Macroinvertebrate Monitoring, Stormwater Education, Watershed Excursion, Habitat Restoration Mapping, Lake Management, Spring Resources, Stream Waterwatch, Seagrass Monitoring, Oral History, and Neighborhood Stewardship programs.

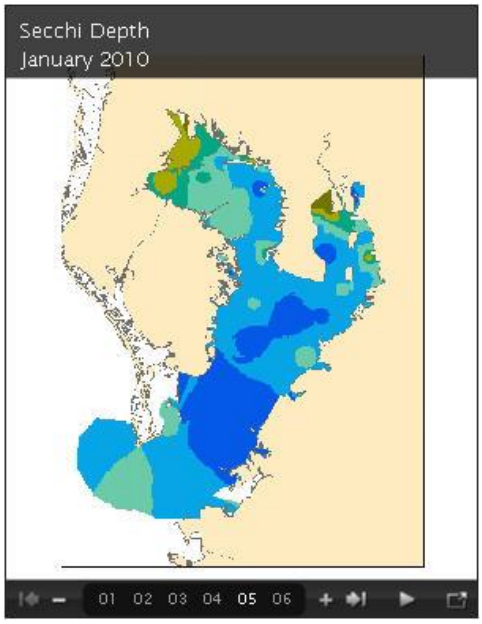
Water Atlas Tools for Accessing Data



Data Download and Graphing: The data download system is the primary tool on the Water Atlas website to retrieve water-related information. Available data are surface water quality, surface water hydrology, groundwater quality, groundwater hydrology, meteorological conditions and near real-time data. Data may be filtered by a combination of Water Body Name, Water Atlas, County, Watershed, USGS Hydrological Unit, DEP Water Body Type, Station Name/ID, Data Source/Provider, Parameter Grouping, Parameter, Quality Assurance Codes, and/or Activity Depth.

Advanced Mapping: This interactive map has multiple, selectable GIS layers and allows a user to create, view and print custom maps. Water bodies, environmental and recreational features, land use and infrastructure, political boundaries, water quality and bathymetry, sampling locations, and aerial photography are some of the choices available.

Real-Time Data: This feature allows users to access water quality, hydrology, rainfall and other weather data in near-real time by clicking a station's marker on an interactive map. The most current reading is displayed, and a graph of recent values is a click away, as is “metadata” about the sampling station and the agency that placed and monitors it.



Water Quality Contour Mapping: This new feature has been implemented in the Tampa Bay Estuary Atlas and is being expanded to include Sarasota Bay. By using a database of sampling data and applying a Inverse Distance Weighting geospatial algorithm, a series of maps are generated that use color value to represent sampling values, allowing the user to visualize spatial differences in water quality and see how they change over time. Dissolved oxygen, salinity, chlorophyll, water color and Secchi depth may be mapped in this way.

The Florida Atlas of Lakes

The ultimate goal of the Water Atlas Program is to have a fully-functioning Atlas for every area in the state of Florida, a dream not yet realized. In an effort to make available statewide lake water quality data, the Florida Atlas of Lakes was created. Launched in 2007 with sponsorship by FLMS and Florida LAKEWATCH, it uses the National Hydrology Database to spatially map over 5300 Florida lakes. Its structure includes individual resource pages and a main or program page. Both page types are managed through a web page administration function that can be used by volunteers and LAKEWATCH coordinators to personalize text and add photos, and communicate via announcements and web-based forms. An interactive viewer allows users to view a map of each lake, showing its spatial relationship to county boundaries, other water bodies, LAKEWATCH sites, lake regions, subregions, swamps and marshes, and USGS subbasins.

The Future of the Water Atlas

Budget shortfalls among local governments have created a challenge to the Water Atlas program's aspirations to expand statewide. A regional approach is being pursued that will allow cost sharing among a larger set of partners in an effort to increase affordability. The Charlotte Harbor Estuary Water Atlas and the Tampa Bay Atlas are regional in scope by virtue of each estuary's multi-county watershed. Water resource issues will undoubtedly continue to be an important focus of regulatory agencies and local governments, and the Water Atlases have the potential to be important tools in statewide assessment, management and public outreach. The USF Water Institute is actively seeking new partners to expand its services to additional regions of Florida. To find out about opportunities to become a Water Atlas Partner call (813) 974-0309 or e-mail Shawn Landry at landry@usf.edu. To explore the Water Atlas websites, visit their gateway portal on the web at http://www.wateratlas.org/