Florida Water-CAT:
Making it easier to share metadata about chemical, physical and biological water monitoring activities

10th National Water Quality Monitoring Conference, May 2-6, 2016
Panel: Useful, Timely, Florida-specific Monitoring Products... From a Council of your Peers

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What is the Water-CAT?

This...

Florida Water Resource Monitoring Catalog
www.water-cat.org

Not this...
Genesis of the Water-CAT

• Conceived by the Florida Water Resource Monitoring Council
• Overall goal is to *improve knowledge of monitoring activities*
  – Create and populate a comprehensive digital catalog of existing and legacy water-resources monitoring activities
  – Make the catalog accessible
  – Continually maintain the catalog
• Developed in partnership with USF
• Launched in May, 2014
Overview of Water-CAT.org

- **metadata for water resource monitoring**
  - Who is monitoring what, where they are doing it, when and why

- **Browse by**
  - Organizations, Projects or Stations

- **Search by**
  - Geography / Map
  - Detailed monitoring attributes
Sarasota Bay, east side, near Manatee County line US-3

Bays and Rivers

Project Description: Surface water ambient monitoring of Coastal Bays in Sarasota County, Florida. The study area is divided into eight segments: Upper Sarasota Bay (Segment US), West Lower Sarasota Bay (Segment 10), East Lower Sarasota Bay (Segment 11), North Roberts Bay (Segment 13), Little Sarasota Bay (Segment 14), Blackburn Bay (Segment 15), Dona and Roberts Bay (Segment DR) and Lemon Bay (Segment LB). The Myakka River was sampled up until October, 2007 (Segments MU and ML). Each segment is divided into 5 polygons. Within each polygon there are 12 randomly-chosen specific sample locations that get repeated once per year in the same month each year. The Station_ID defines the Segment + Station + Month, thereby creating a unique identifier for every sampling site. For example: 10-1-01 is a sample from segment 10 in Sarasota Bay, more specifically from polygon 1 of segment 10, and sampled in month 1 (January). This Station_ID gets resampled every January, and so on with the other sample sites. For several years meter readings were taken from 3 depths both early in the morning and at midday. There were also datalogger deployments that measured diel conditions. The Activity_ID defines these sampling conditions, as follows: Station_ID + Letter for relative depth + Letter for Relative time of day + 2 digits for year. Relative Depth is either M for middepth, T for top, or B for Bottom. Relative time of day is either N for noonish, E for early morning, or D for diel (datalogger). All grab samples were taken midday, middepth. There are several early years of this data set in STORET that do not follow these naming conventions. Users of this data may be confused by this. The previous convention was to create a unique Activity_ID for each sample event based on the Organization Code + Sample Date (year-monthday) + Segment + Station polygon. Users may not realize that sample sites get reused once a year or that this is a stratified random sampling program.

Overview

Organization: Sarasota County Environmental Services
Project Status: Active
Project Duration: -
Sampling Frequency: Discrete - Sampled Monthly
Project URL: Not Provided
Data URL: How to Obtain Project Data

Parameters Monitored

<table>
<thead>
<tr>
<th>Parameter Group</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>Chlorophyll a, corrected for phaeophytin</td>
</tr>
<tr>
<td>Field</td>
<td>Apparent Color, Cloud cover, Depth, bottom, Dissolved oxygen (DO), Dissolved oxygen saturation, Light, underwater extinction coefficient (k), pH, Salinity, Secchi disk depth, Specific conductance, Temperature, water, Turbidity, Wave height, Wind direction (direction from, expressed 0-360 deg), Wind velocity</td>
</tr>
<tr>
<td>Physical/Chemical</td>
<td>BOD, Biochemical oxygen demand, Nitrogen, ammonia (NH3) + ammonium (NH4), Nitrogen, Keldahl Nitrogen, Nitrile (NO2) + Nitrate (NO3) as N, Phosphorus as P, Phosphorus, phosphate (PO4) as P</td>
</tr>
</tbody>
</table>

† Note: This is one of possibly many stations monitored by a project. Each project defines the list of parameters monitored and this station may collect all of the parameters shown or only a subset.
Search

Use this form to obtain a list of monitoring stations that satisfy a specified set of conditions. All search fields are optional. After making your selections, click the SUBMIT button to view a list of stations that satisfy ALL the conditions you specified. You may then choose a particular station to inspect its metadata, or download the metadata for all stations in the list in one of several formats.

NOTES:

1. In general, specifying value(s) in more fields will yield a list with fewer stations; conversely, specifying value(s) for fewer fields will produce a list with more stations.
2. Once you have reviewed your initial search results, you may find it necessary to adjust your search selections several times in order to zero in on the stations of greatest interest to you.
3. Be aware that the database records of many monitoring stations are incomplete, with blanks in one or more metadata fields. Unless stated otherwise, a blank in a particular field will preclude a station from being included in the results list when a search value has been specified for that field.

If you are primarily interested in locating monitoring stations in a particular geographic area, you may find that it is more convenient to use the interactive map of monitoring stations to perform a geospatial search.

Note: This site requires that browser cookies and javascript be enabled in order to function properly. Some third-party browser plugins also may cause unexpected errors or interfere with its operation.
Organizations

Listed below are those organizations that participate in water resource monitoring in Florida and have station metadata in this Catalog. Included are federal, state, regional, county and municipal agencies, as well as volunteer/nonprofit organizations and educational/research institutions. Note that larger state and regional agencies may have more than one listing, with different districts, departments, or programs being listed as separate organizations. The search tool may be used to filter the list of organizations displayed; it is case-insensitive and will match text anywhere in the organization name.

Organization Filters
Text Search 🔍

county

10 organizations per page
Showing 1 to 10 of 22 organizations

<table>
<thead>
<tr>
<th>Organization Name (click for details)</th>
<th>Number of Projects (click to view)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alachua County Environmental Protection Department (Florida)</td>
<td>2</td>
</tr>
<tr>
<td>Brevard County Stormwater Utility Department (Florida)</td>
<td>6</td>
</tr>
<tr>
<td>Broward County Environmental Protection Department</td>
<td>1</td>
</tr>
<tr>
<td>Charlotte County Department of Health</td>
<td>2</td>
</tr>
<tr>
<td>Charlotte County Stormwater Division</td>
<td>2</td>
</tr>
<tr>
<td>Collier County Coastal Zone Management Department (FL)</td>
<td>3</td>
</tr>
<tr>
<td>Collier County Pollution Control (Florida)</td>
<td>16</td>
</tr>
<tr>
<td>Environmental Protection Commission of Hillsborough County</td>
<td>9</td>
</tr>
<tr>
<td>FDEP Okaloosa County Environmental Council</td>
<td>1</td>
</tr>
<tr>
<td>Lake County Water Resource Management</td>
<td>6</td>
</tr>
</tbody>
</table>
Contents of the Water-CAT

- 98 organizations (so far)
  - Florida STORET
  - Water Management Districts
  - US Geological Survey

- 1,874 monitoring projects

- 105,634 monitoring stations
Maintaining the catalog metadata

- STORET and USGS used as initial source of metadata:
  - Comprehensive but incomplete
  - Lacks detailed project information

- 167 Data providers asked to provide updated/missing information

- Ongoing challenges
  - Data providers have limited time
  - Expansion to include biological and other types of monitoring
  - Adapting to changes in technology
    • Adobe Flash & responsive design
Modifications balance detail vs. limited time

• Active status of stations
  – Originally “Active” vs “Inactive”
  – Added an “inferred active/inactive” (4-year cutoff)

• Monitored parameters
  – Originally linked to station
  – Now generalized to project
  – Easier for data providers
Accommodate different users

- Obtaining buy-in by overworked metadata providers
- Website for novice (public) and advanced (professional) users
- Avoiding presentations that might be misinterpreted by the public or policy makers
  - e.g., active vs inactive stations
- Adapting to changes in technology
  - Adobe Flash
  - Small-screen responsive design
Accommodating novice and advanced users
Accommodating novice and advanced users
Modifications to include Biological Monitoring

KEYWORDS replace water related analytes:
- All STORET analytes/characteristics
- Plus, Characteristic groups: Atmospheric; Biological; Discharge/Flow; Hydrologic; Inorganic; Metal; Nutrient; Organic; Other Meteorological; Physical; Rainfall; Water Level; Water Quality

THEMES describe monitoring purpose:
- Regional Ecosystem Assessment
- Trend Analyses
- Habitat Assessment
- Regulatory
- Saltwater Intrusion
- Research
- Resource Management
- Potable water supply
- Other
What’s next

• Metadata catalog updates
  – Continue to acquire new and updated metadata

• Water-CAT website improvements
  – Monitor and improve performance
  – Implement web-admin and tools for online updates
  – Notification system request updates from data providers
  – Create linkages to Florida STORET replacement
    • WIN – Water Information Network (2017)
Expansion for Terra-CAT

- FWC Species and Habitat Monitoring Programs Catalog
  - Partnership with FWC
  - Modify for biological/ecological monitoring
  - Including species and habitat

- Add polygons/areas and lines/transects to monitoring “sites”

- Improve bulk uploading / automated data transfers
Thank you!

www.water-cat.org

www.waterinstitute.usf.edu

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Sponsors

Knowledge

The catalog is being developed with the guidance of members of the Florida Water Resources Monitoring Council, a council of stakeholders from many disciplines and organizations that participate in water resource monitoring and management. Organizations represented in the FWRMC include:

- Florida Lake Management Society
- Florida Department of Health
- Florida Department of Agriculture & Consumer Services
- Florida Department of Environmental Protection
- Florida Fish & Wildlife Conservation Commission
- University of Florida/IFAS Volunteer Monitoring Programs
- Florida Local Environmental Resource Agencies
- National Oceanic & Atmospheric Administration
- Northwest Florida Water Management District
- South Florida Water Management District
- Southeast Coastal Ocean Observing Regional Association (SECCORA)
- Southwest Florida Water Management District
- St. Johns River Water Management District
- Suwannee River Water Management District
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Geological Survey

Support

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