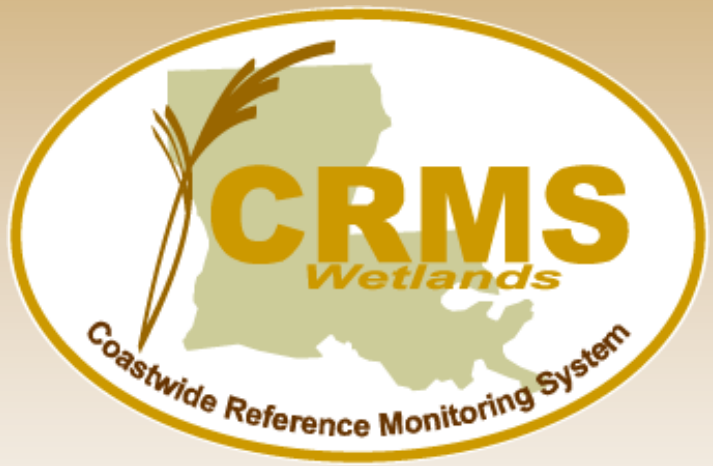
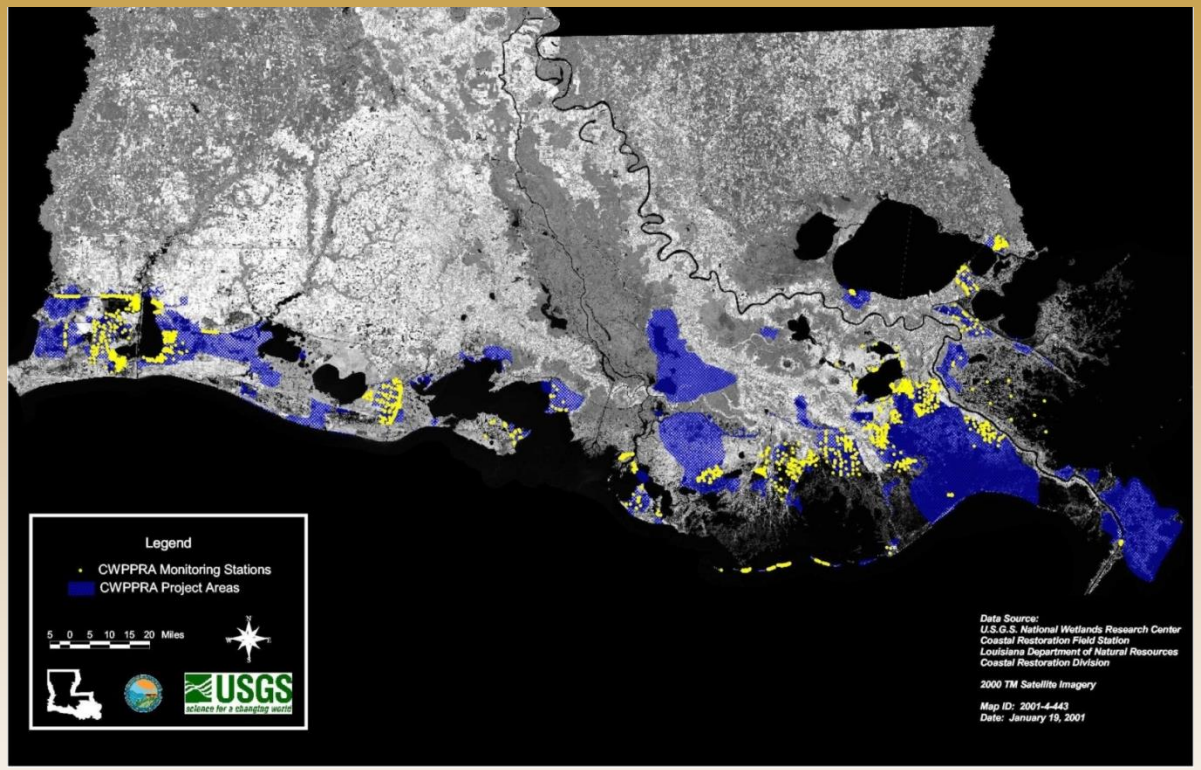
# CRMS Website Training




**April 2014**

http://www.lacoast.gov/crms

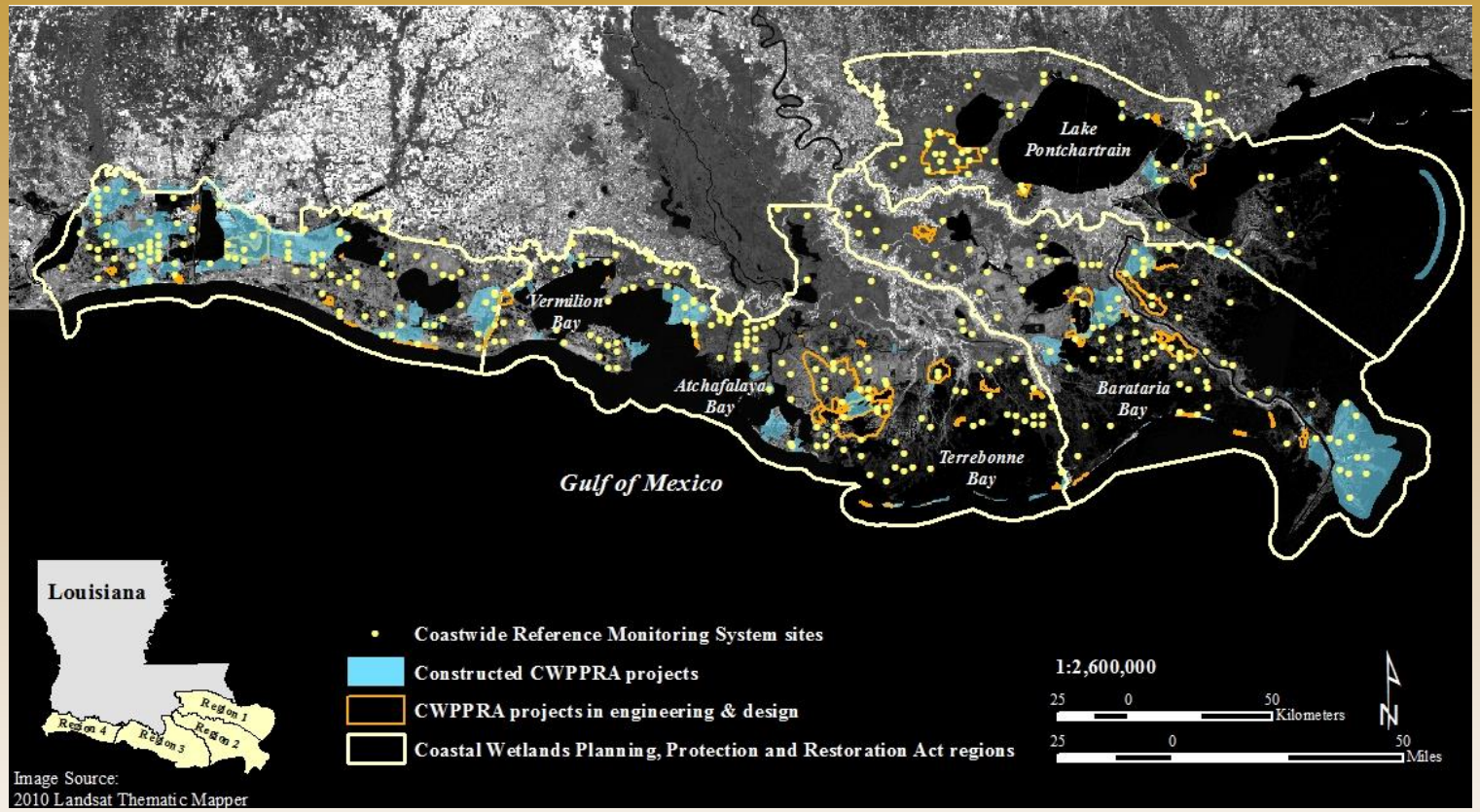



**Restoration project types:** diversions of freshwater and sediments, marsh creation, shoreline protection, sediment and nutrient trapping, hydrologic restoration, and vegetation planting

- CWPPRA was congressionally funded in 1990 and mandated 20 years of restoration project monitoring
- CWPPRA program uses multiple restoration techniques
  - size and types of projects vary
- Initially the program used paired project and reference sites
  - with time, difficult to find “uninfluenced” reference
- Inconsistent monitoring variables and collection frequencies across projects with short data records

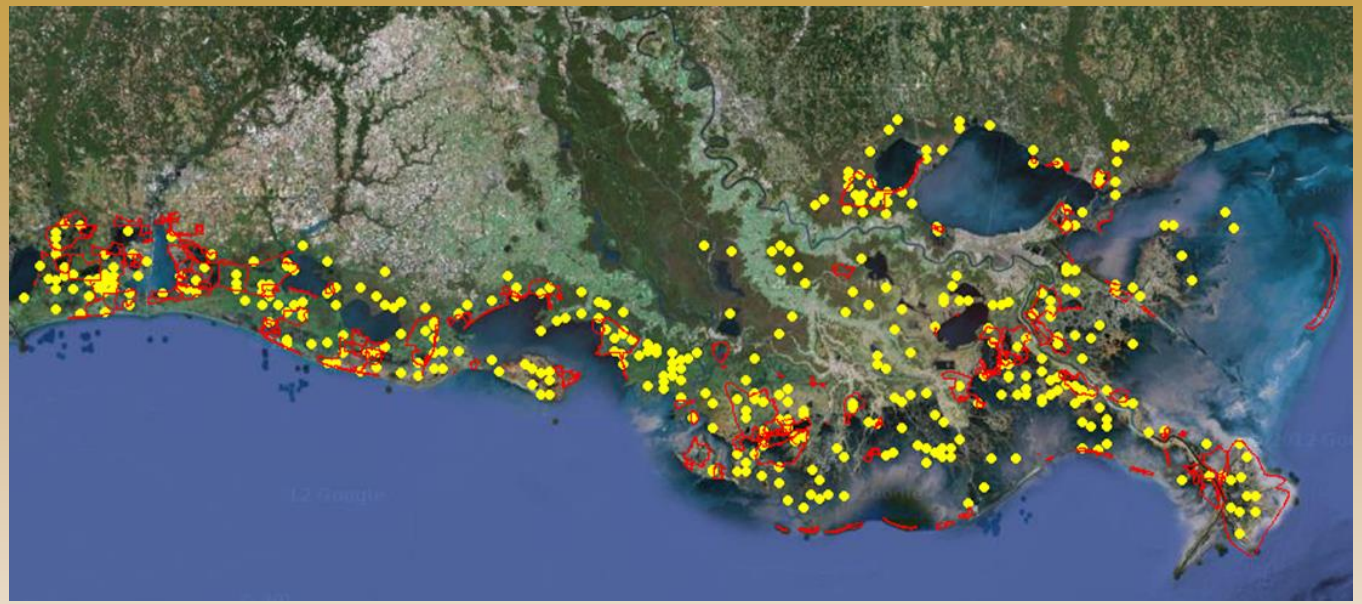
# Coastwide Reference Monitoring System - *Wetlands*

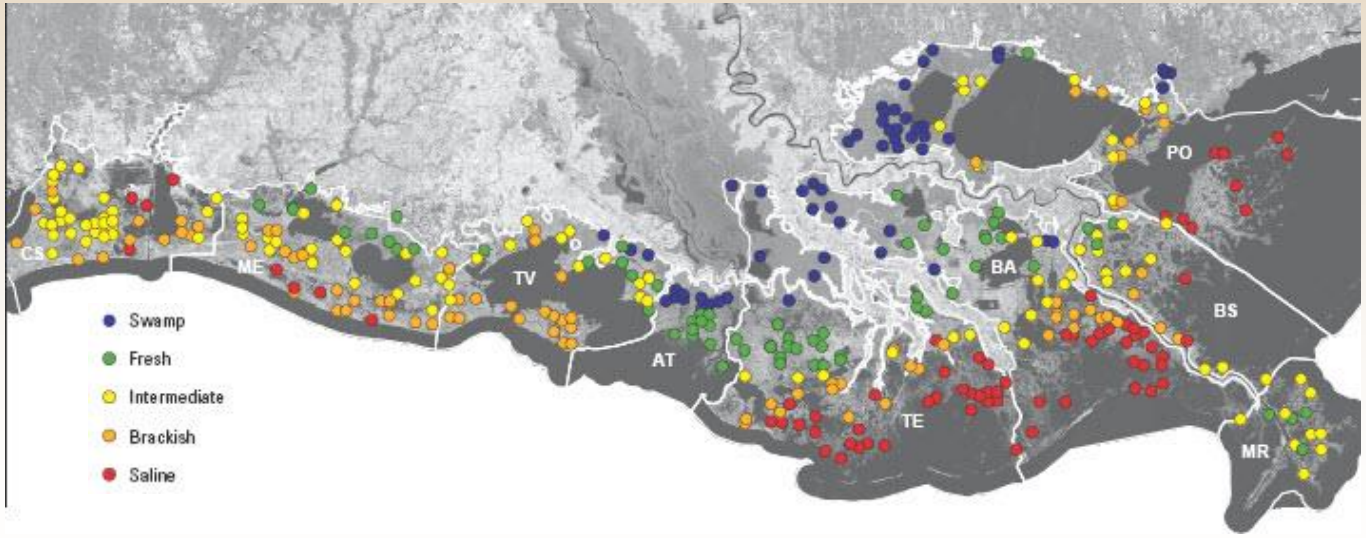
## Purpose



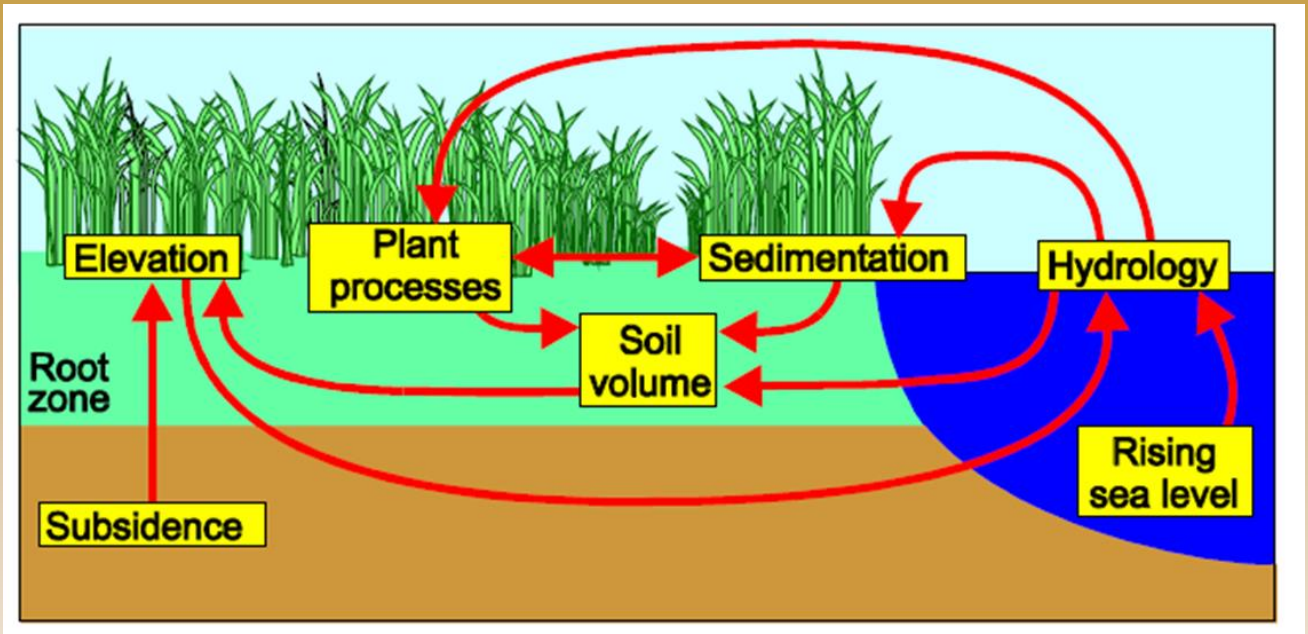

- **To improve our ability to determine the effectiveness of individual coastal restoration projects.**
- **Provide information to evaluate coastal wetlands at the project, basin, and coastwide scales.**
- **To determine the ecological condition of coastal wetlands to ensure that the strategic coastal planning for Louisiana (Coast 2050, LCA, Louisiana Master Plan) is effective in recreating a sustainable coastal ecosystem.**

# CRMS Design and Assessment






- **Funded by CWPPRA in 2003**
- **~ 390 CRMS sites**
- **Long-term dataset (2006-2019)**
- **Sites inside & outside of CWPPRA projects**
- **Sites in swamp, fresh, intermediate, brackish, and salt marsh**
- **Allows for multi-scale assessments through CRMS report cards**
- **Data used for future scenario modeling**



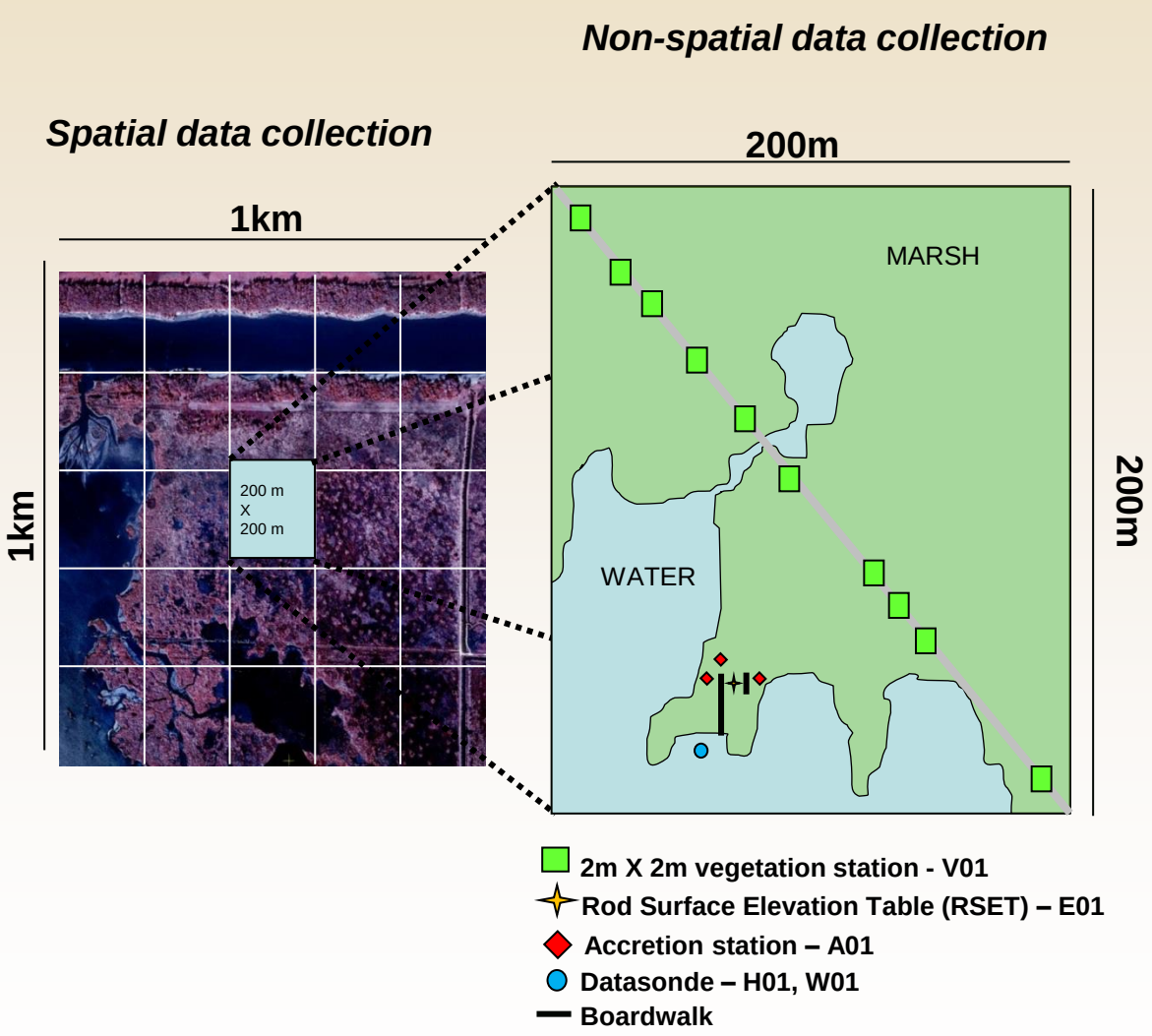

## Questions to address through CRMS:

Did the restoration program:

- reduce coastal wetland loss?
- sustain a diversity of vegetation types within basins?

Is the restoration program effective in reducing major stressors on wetlands (i.e., flooding regime, salinity, elevation change)?

Which project types are the most effective in creating, restoring, protecting and enhancing wetlands?



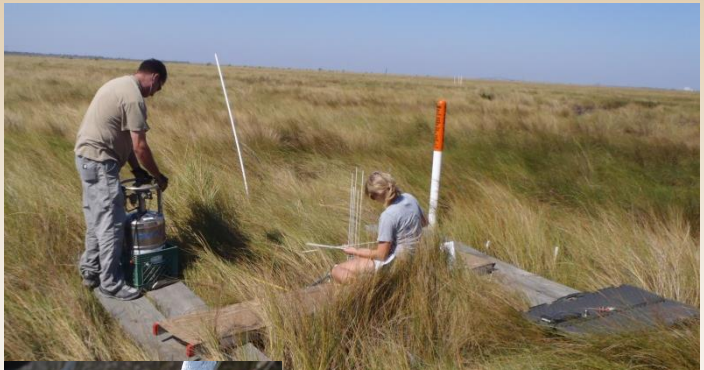

Typical Marsh Site

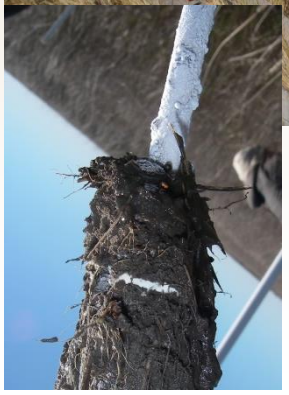
Typical Swamp Site

CRMS Site vs. CRMS Station

**Aerial photo** **2005** **2008**

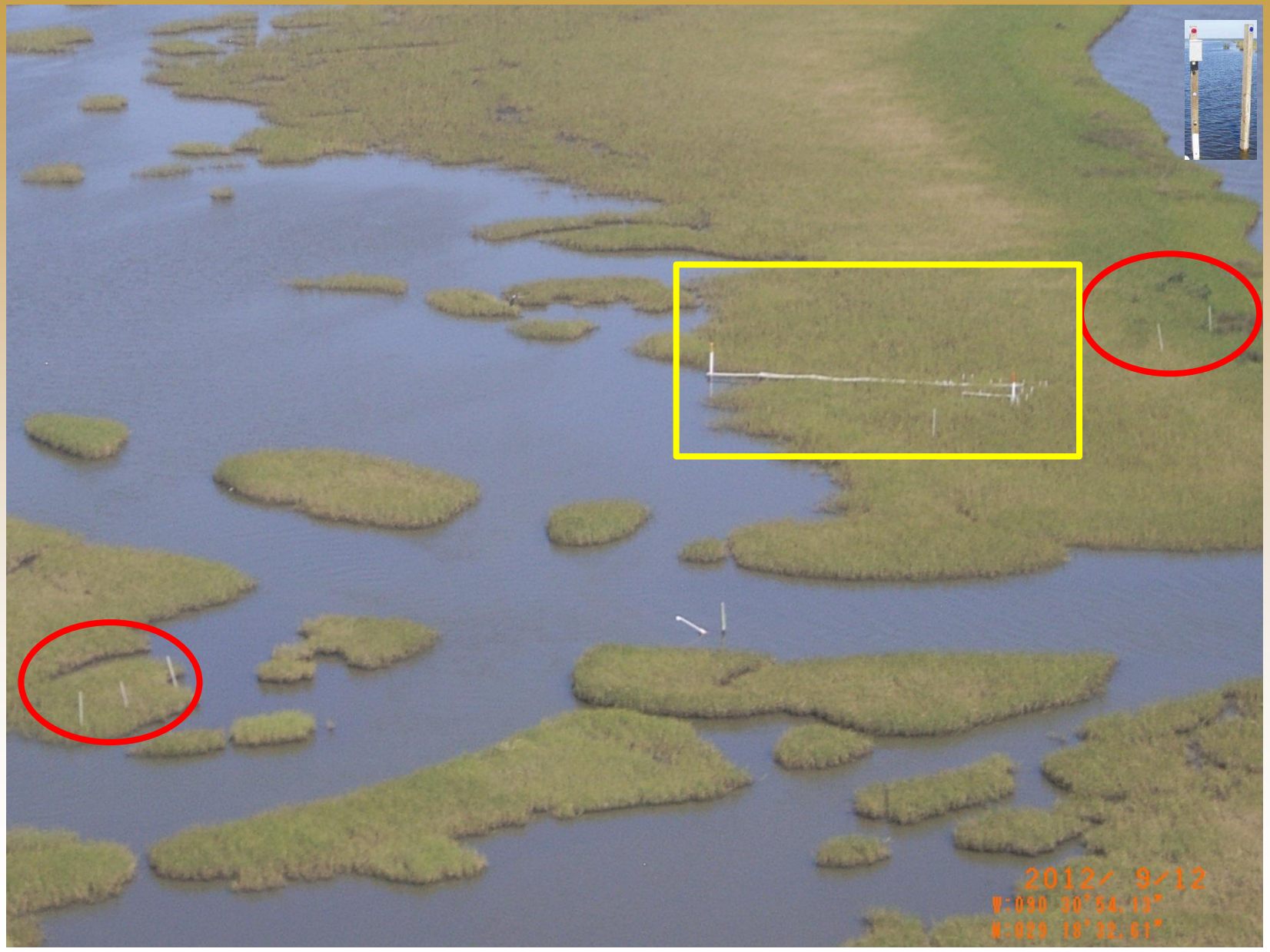
**1km² scale:**
High resolution aerial photography based land:water analyses to investigate land change through time.





**200m² scale:** Field data collection using standardized data collection protocols and consistent sampling intervals

# Site Layout



# Site Data Collection

| Data Type | Parameter | Method | Scale | Frequency |
|---|---|---|---|---|
| **Land change** | Land:Water Ratio | Satellite Imagery | Hydrologic Basin | 3 years |
| | Land:Water Ratio | Digital Aerial Photography | CRMS Site (1 km$^2$) | 3 years |
| **Vegetation** | Emergent Vegetation | Braun Blanquet: % Cover, Species Richness, Height of Dominant Species | (10) 2m x 2m plots per marsh site or (9) plots per swamp sites | Annually during peak biomass |
| | Forested Vegetation | DBH, Canopy Cover, Understory veg | (3) 20m x 20m Forested plots & (9) 6m X6m Understory plots per site | 3 yrs during peak biomass |
| **Soils** | Soil Characteristics | Core samples profiled into 4 cm increments to 24 cm. Bulk Density, OM%, Soil Salinity, pH, and Moisture. | 3 cores, 18 archived samples per site | 6 to 10 years |
| | Vertical Accretion | Feldspar Plots/Cryogenic Cores | 3 plots per site | Twice per year |
| | Marsh Elevation Change | Rod Surface Elevation Table (RSET) | 4 directions per site | Twice per year |
| **Hydrology** | Soil Porewater | 10 and 30 cm syringe sippers | 3 samples per depth per site and at vegetation plots | Variable and annually |
| | Surface Water Salinity, Temp and Water Level | Submersible Data Logger | in available water within 200m of CRMS site or in a well | Hourly |


- State and federal scientists
- Academics
- Computer programmers
- Web developers
- Oversight review- CWPPRA Monitoring Work Group

www.lacoast.gov/crms


www.lacoast.gov/crms

- Provide web mapping viewer
- Summarize and visualize data at multiple scales
- Provide on-the-fly user defined graphics and tools
- Simplify querying and downloading of data
- Develop multi-metric ecological indices
- Develop report card

# Site Overview – Main Menu


## Data

- **Spatial Data / Tabular SONRIS Data Tool / Tabular CRMS Bulk Download**

## Mapping

- **SONRIS / Basic Map Viewer**

## Library

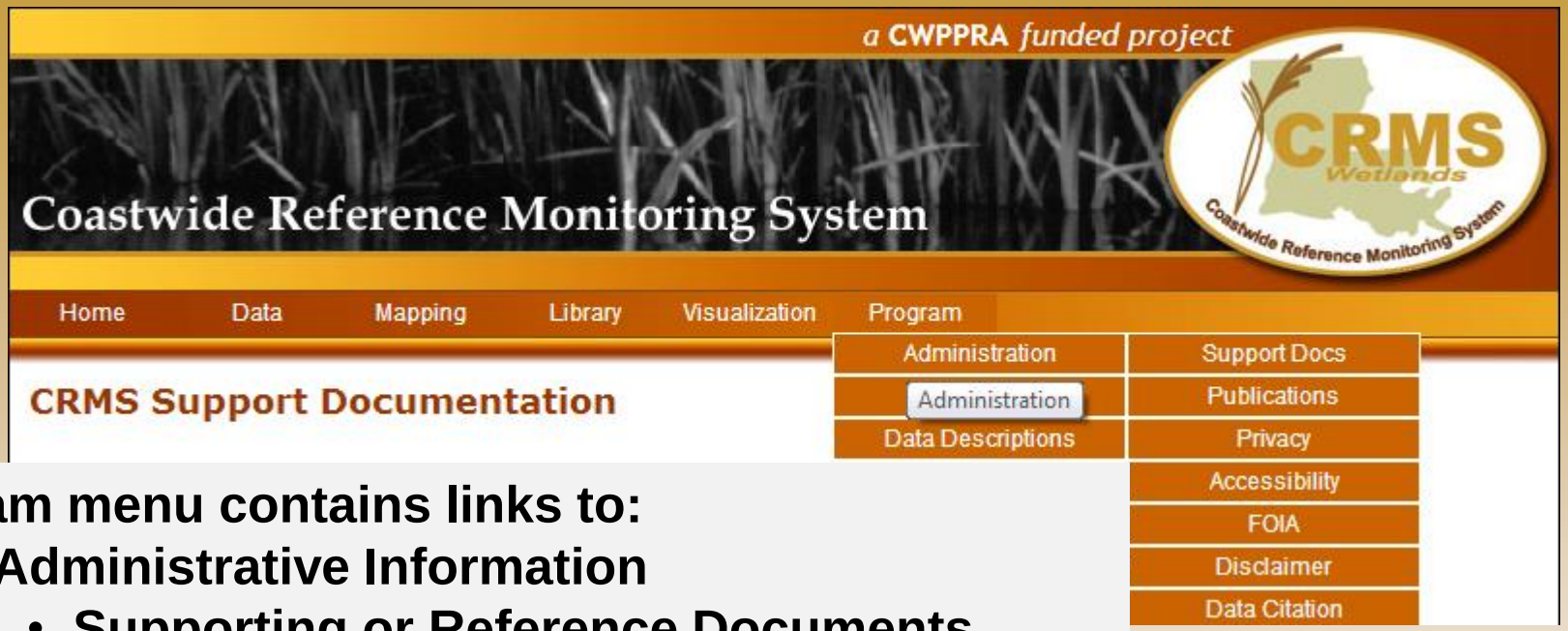
- **Maps / Presentations / SONRIS Reports / CRMS Reports**

## Visualization

- **Charting / Bulk Charting / Conceptual Models**

## Program

- **Administrative links / Data Citation / Data Descriptions / Publications**

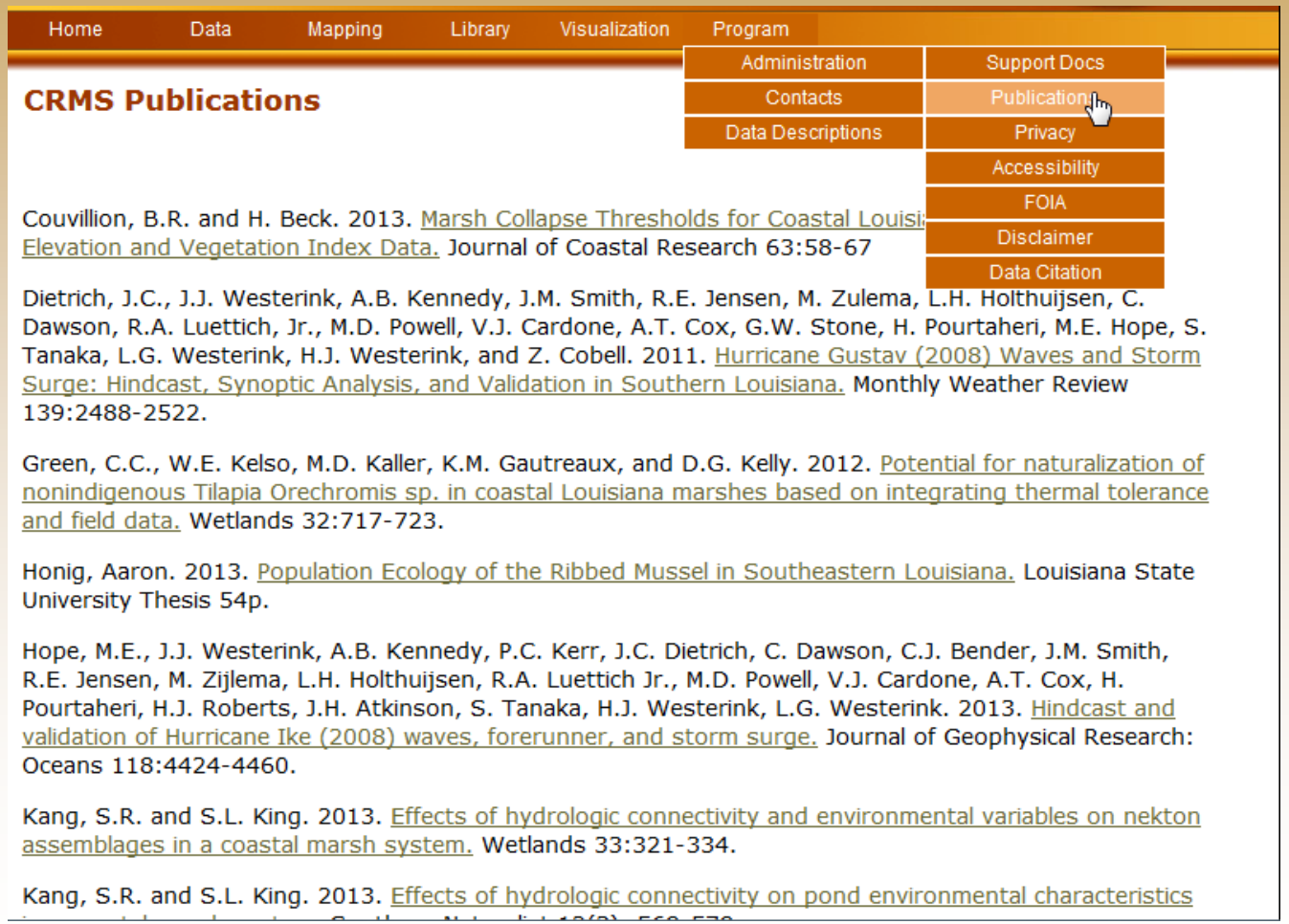


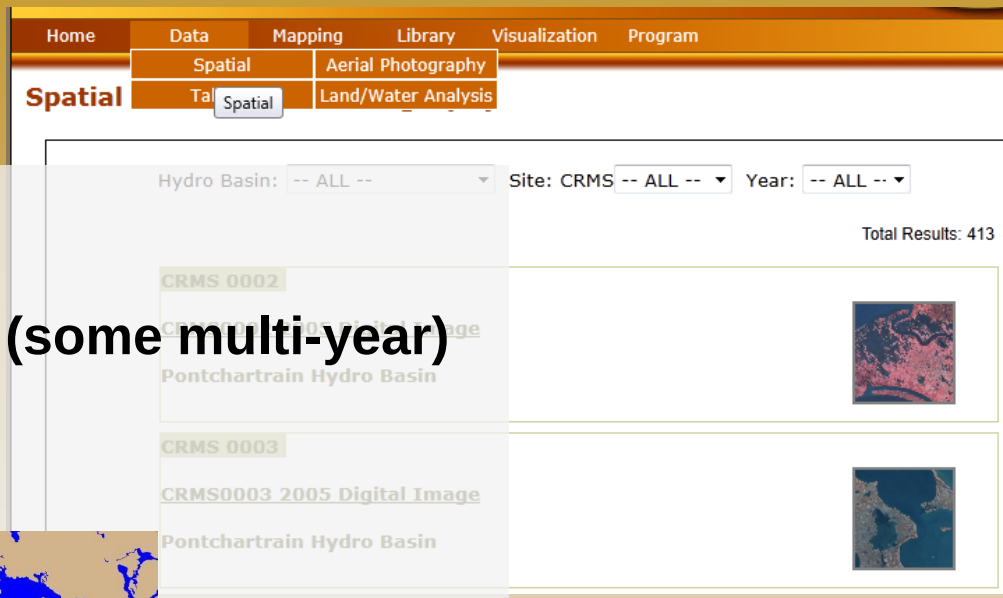

**Program menu contains links to:**

- **Administrative Information**
  - **Supporting or Reference Documents**
  - **CRMS Related Publications**
  - **Privacy and Accessibility Statements**
  - **Freedom of Information Act**
  - **Data Citation**
- **Contacts from both USGS and CPRA**
- **Data Description Information**
  - **Includes analytical framework documents**
  - **Report card analysis explanations**

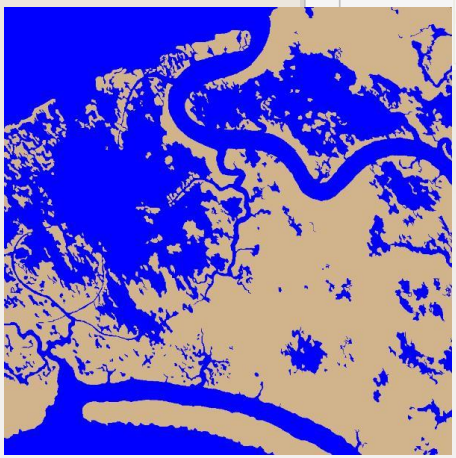
# CRMS Publications Page

## New Page: CRMS Publication Page






- **Data menu contains links to:**
  - **Spatial Data:**
    **Available for each CRMS site (some multi-year)**
    - **Aerial Mosaic**
    - **Land/Water Analysis**

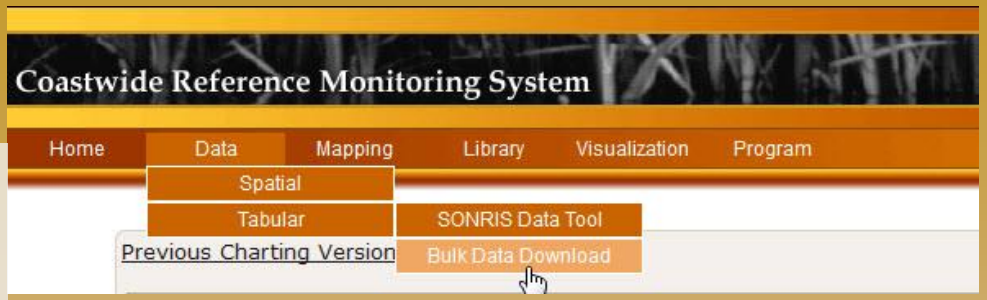


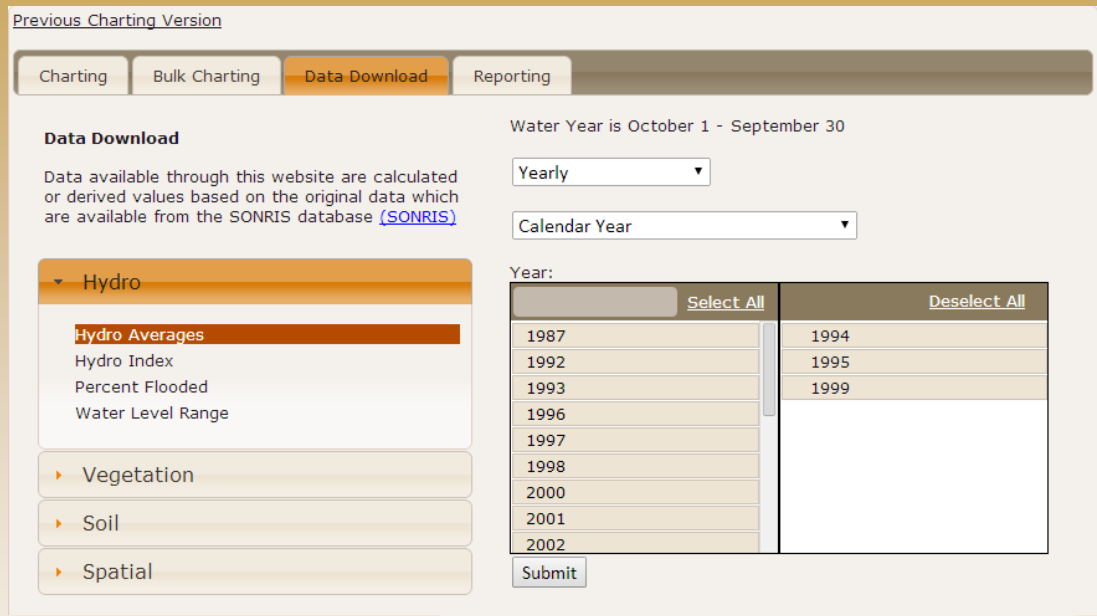
  - **Tabular Data**
    - **Links back to SONRIS data download tools**
    - **CRMS bulk data download tools**

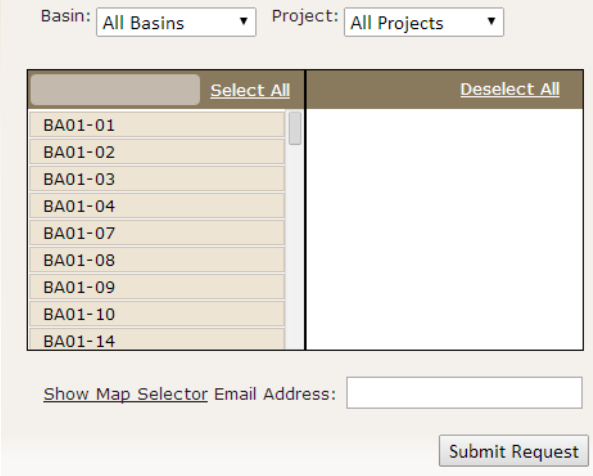
# Data

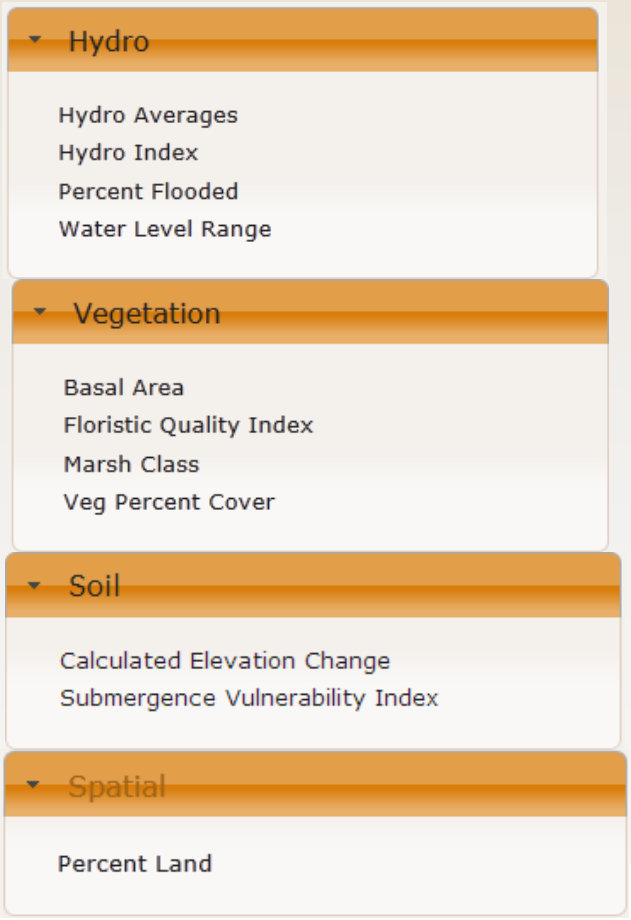
- **CRMS bulk data download**

**All values for selected years, for selected stations**
(queue processes first come first serve)



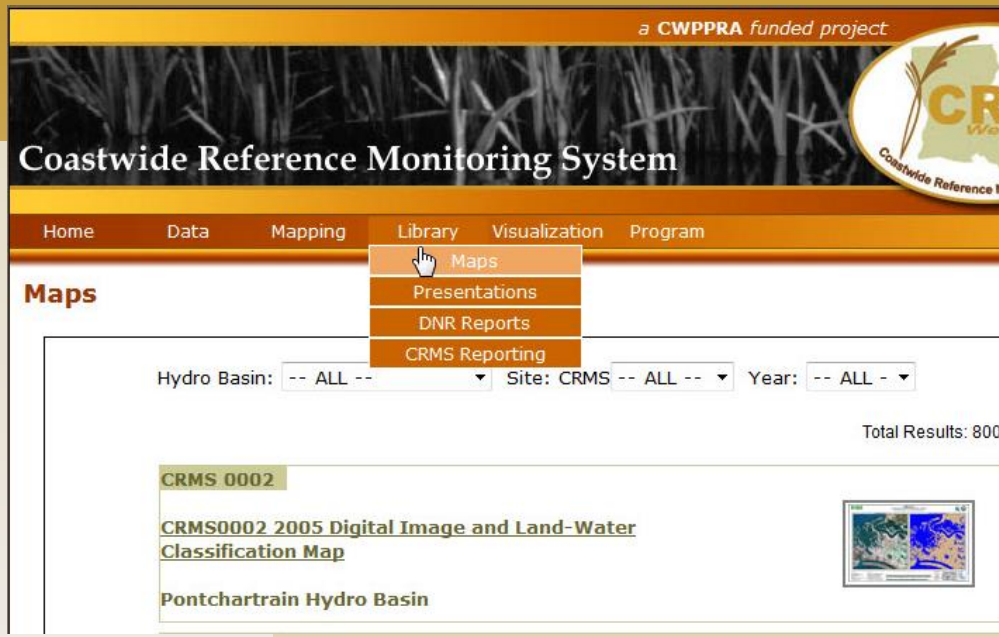



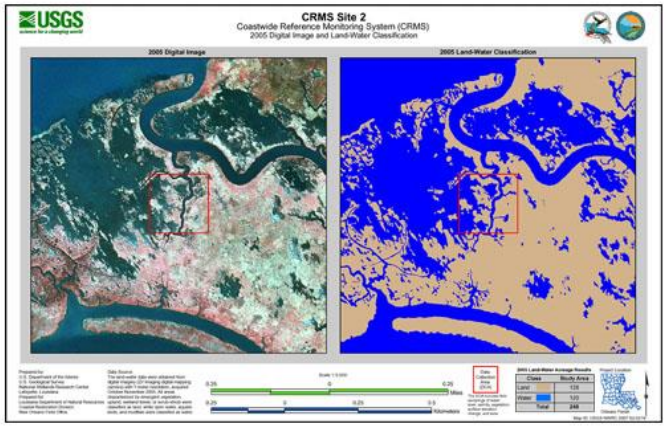



# Library menu contains links to:

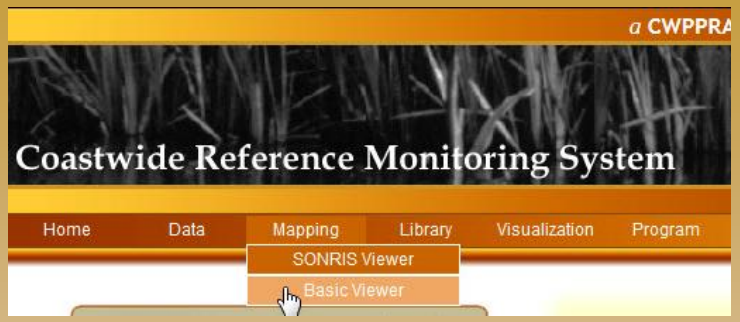
- **Maps:  Available for each CRMS site (some multi-year)**
- **Presentations**
- **Reports (via SONRIS)**
- **CRMS Report Card**

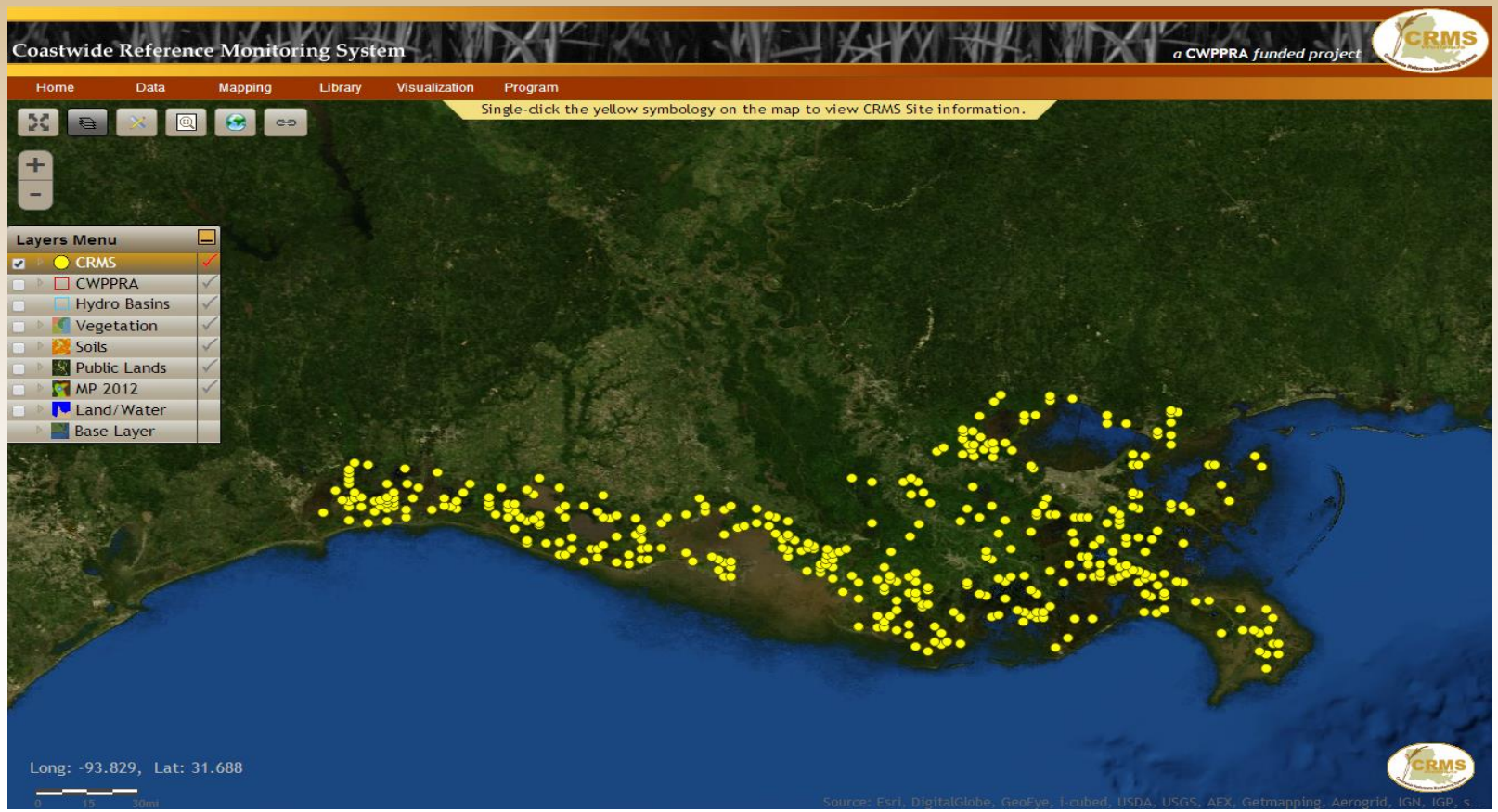



## Mapping menu contains links to:

- SONRIS Viewer
- Basic Map Viewer

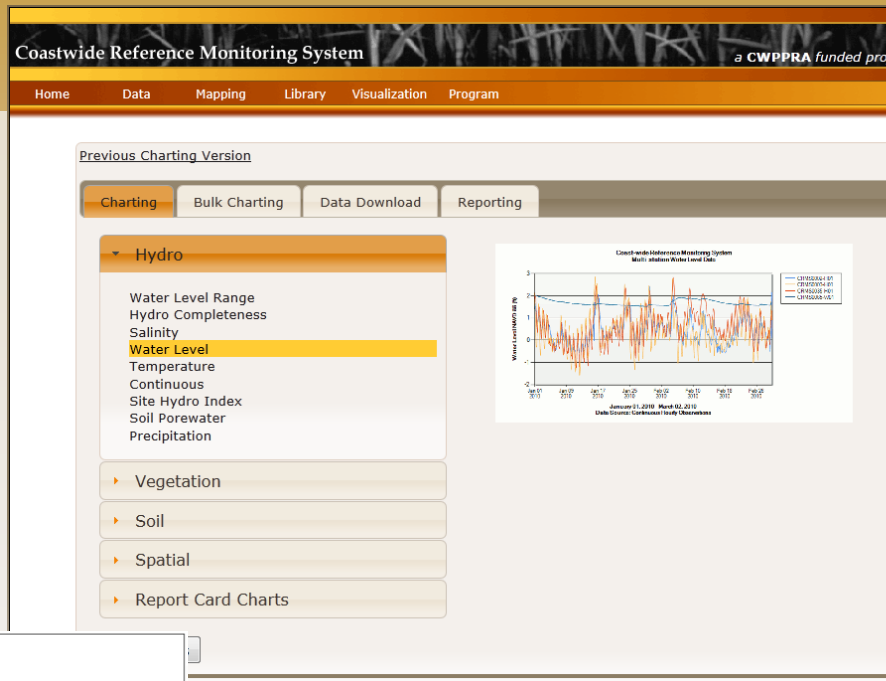


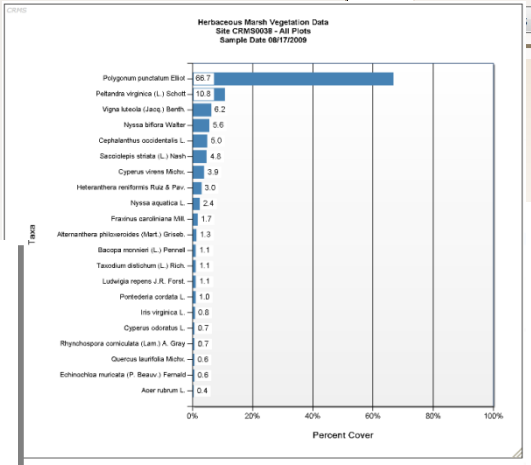



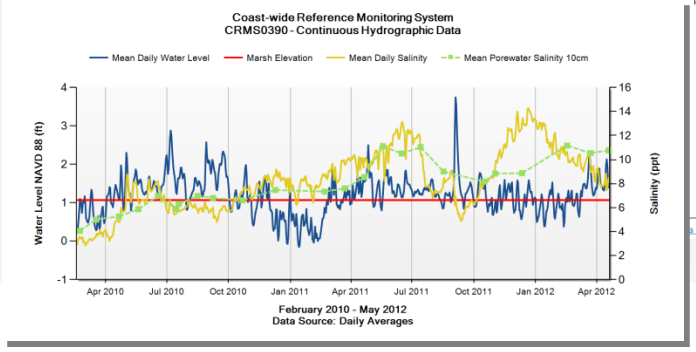
# Visualizations

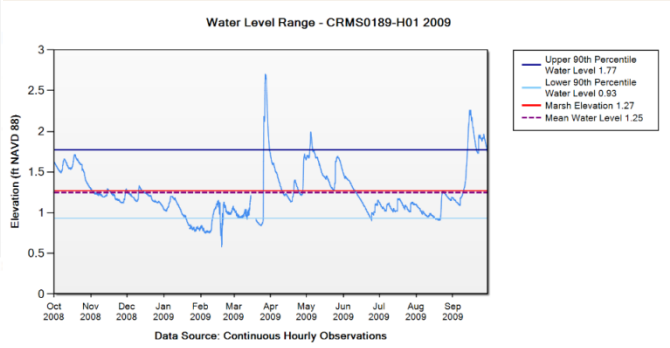

## Visualization menu contains links to:

- **Charts…Lots of Charts.**
  - Surface Elevation/Accretion
  - % Organic / Bulk Density
  - Vegetation
  - Forested
  - Porewater
  - Hydrographic (Salinity, Temp, Water Level)
  - Precipitation
  - Report Card

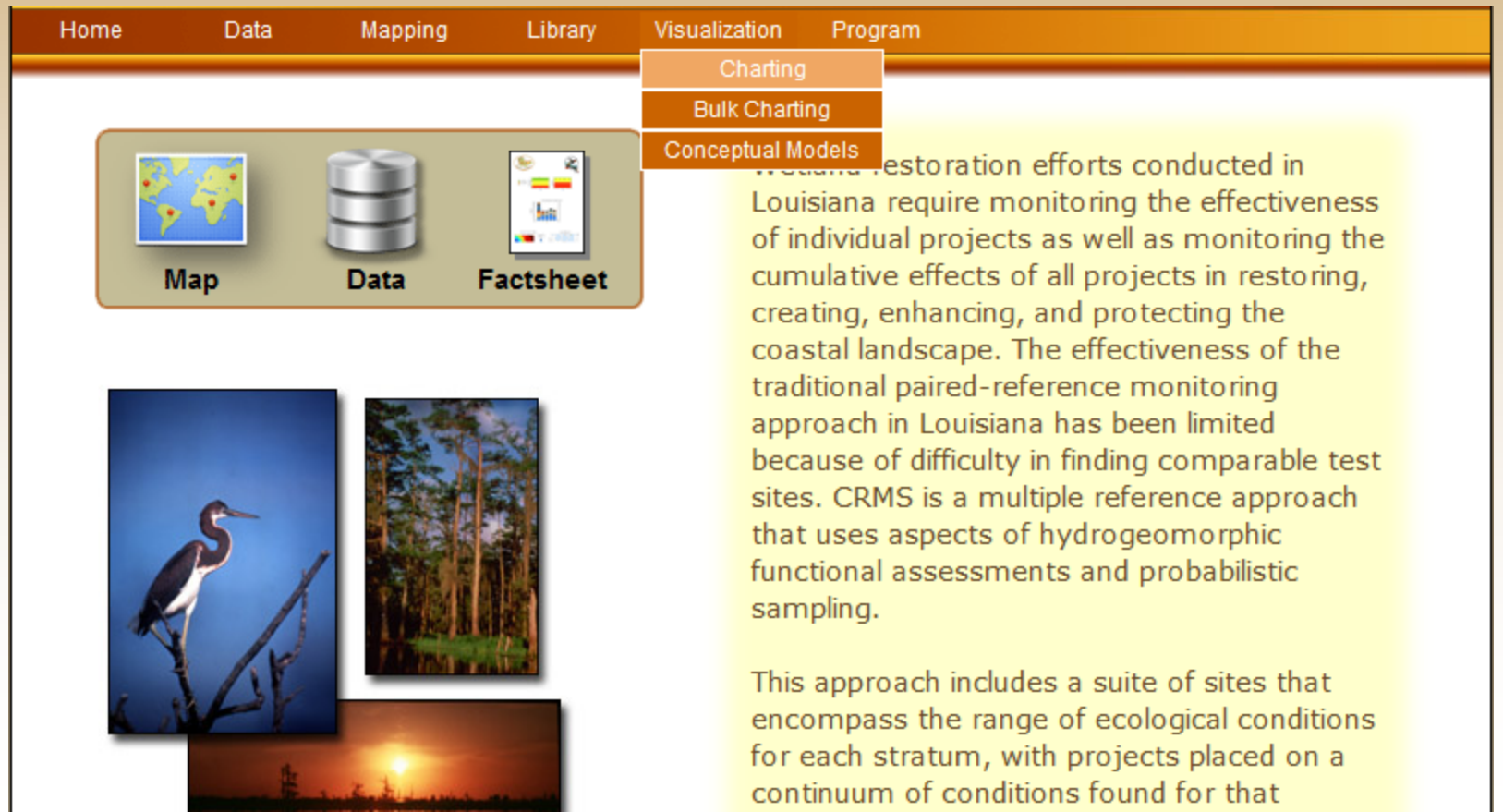


# *Using the charting interface*



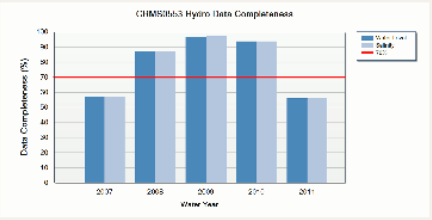
# Charting Usage

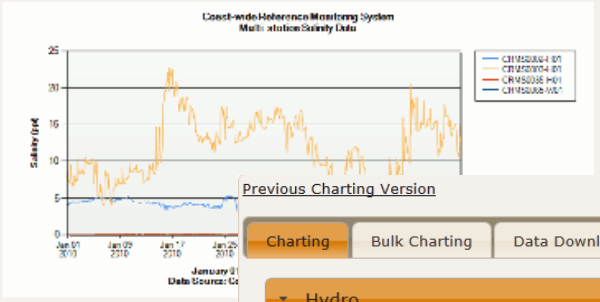
Previous Charting Version

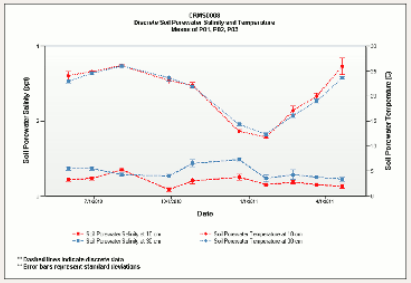
Charting | Bulk Charting | Data Download | Reporting

- Hydro
  - Water Level Range
  - Hydro Completeness
  - Salinity
  - Water Level
  - Temperature
  - Continuous
  - Site Hydro Index
  - Soil Porewater
  - Precipitation
- Vegetation
- Soil
- Spatial
- Report Card Charts

Clear Charts

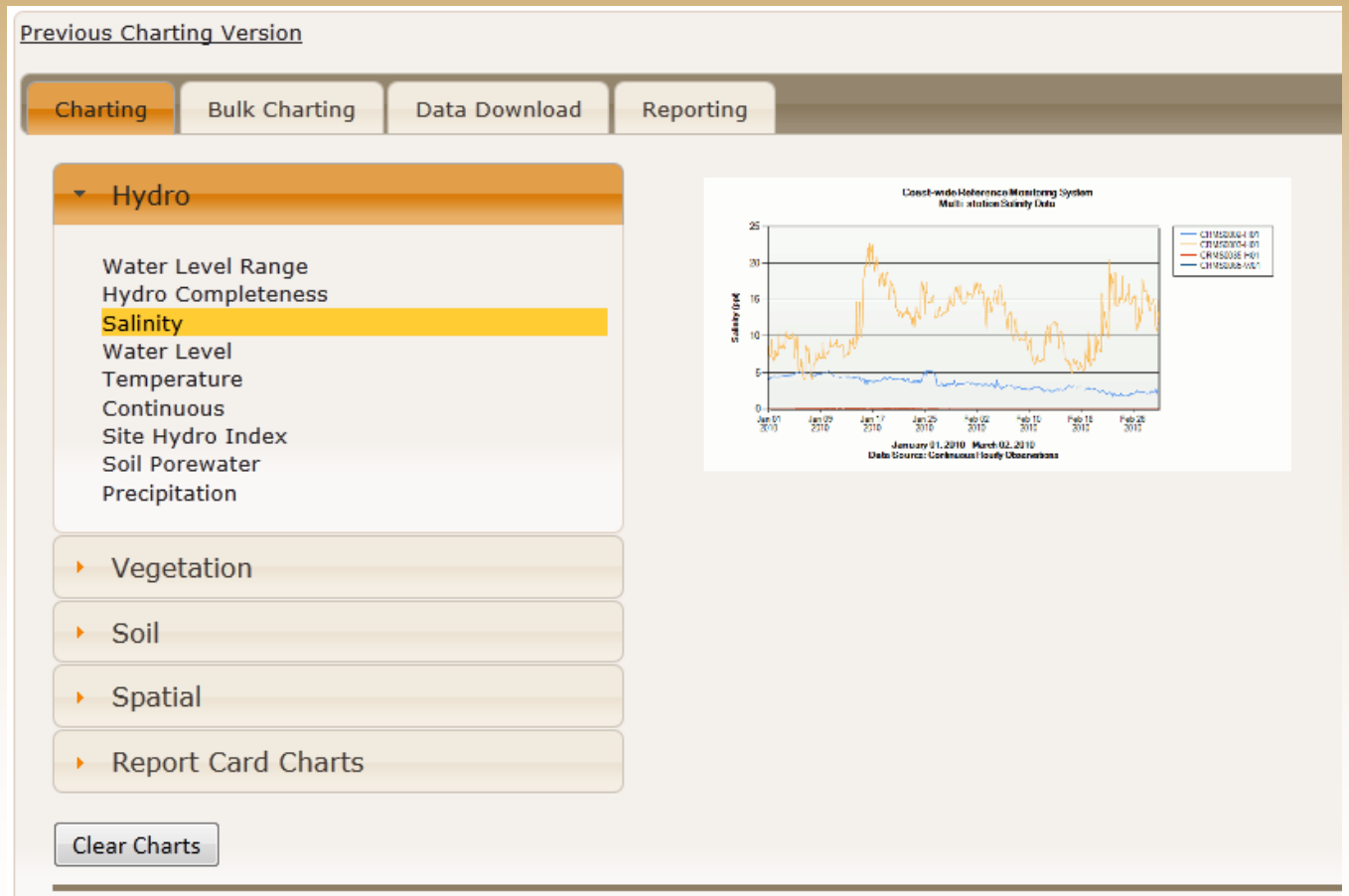






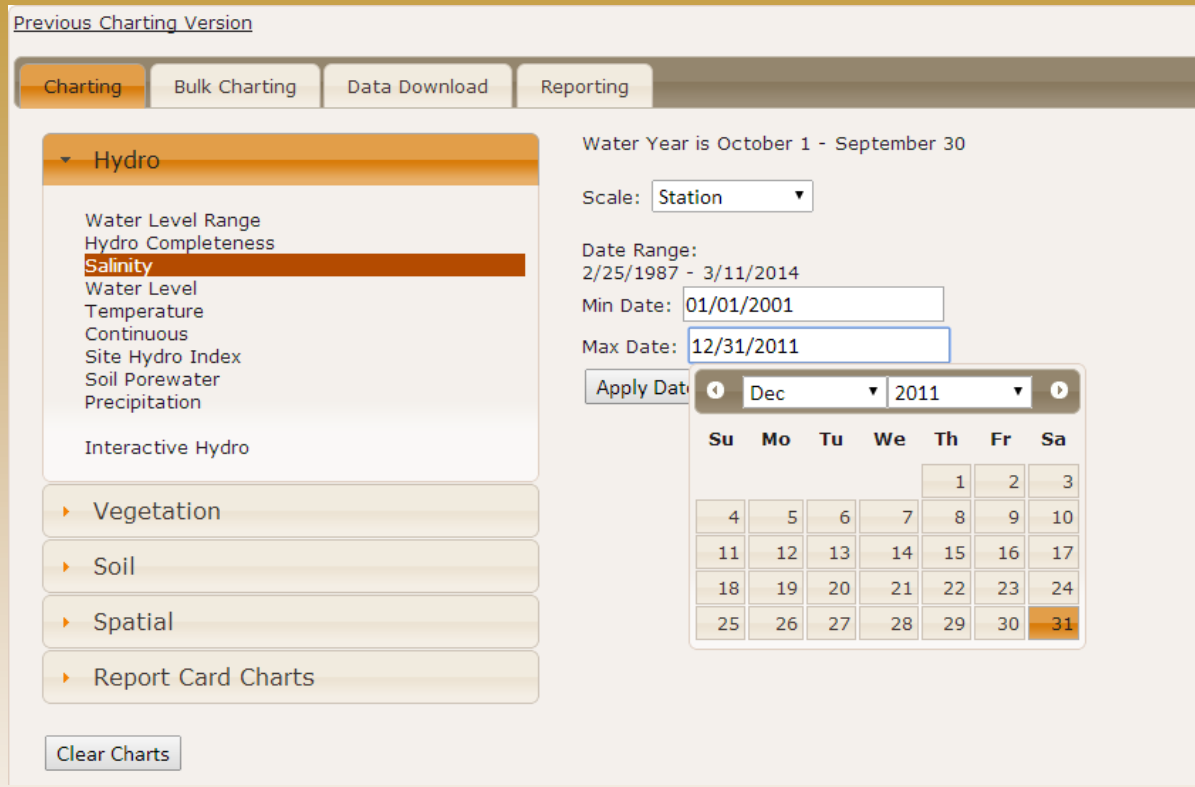
# Charting Usage

1. Pick a Data Category
    1. Hydro
2. Pick a Parameter
    1. Salinity



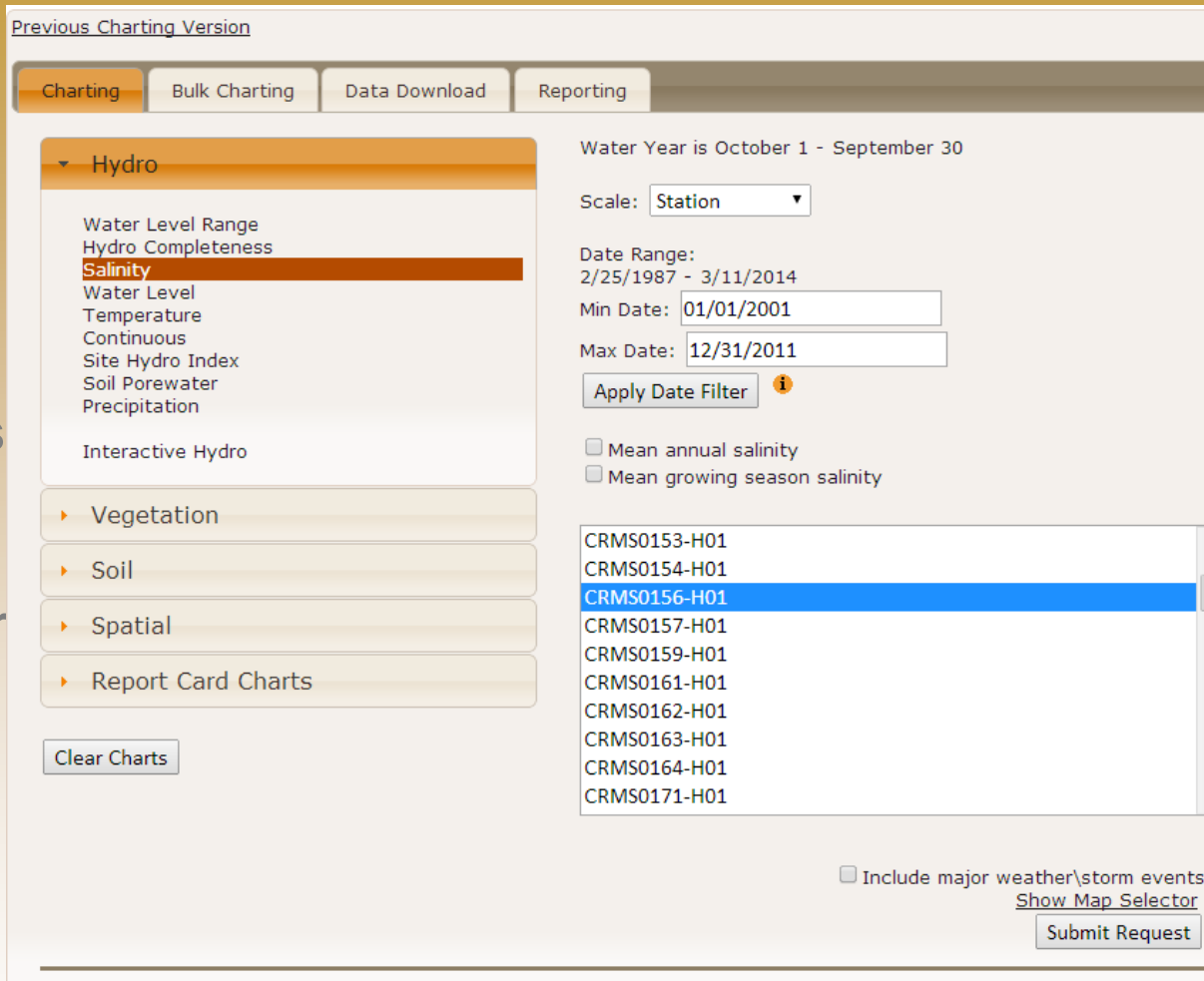
# Charting Usage

1. Pick a Data Category
    1. Hydro
2. Pick a Parameter
    1. Salinity
3. Pick a Scale
    1. Station
4. Enter Start / End Dates
    1. 1/1/2001
    2. 12/31/2011
    3. Apply Date Filter



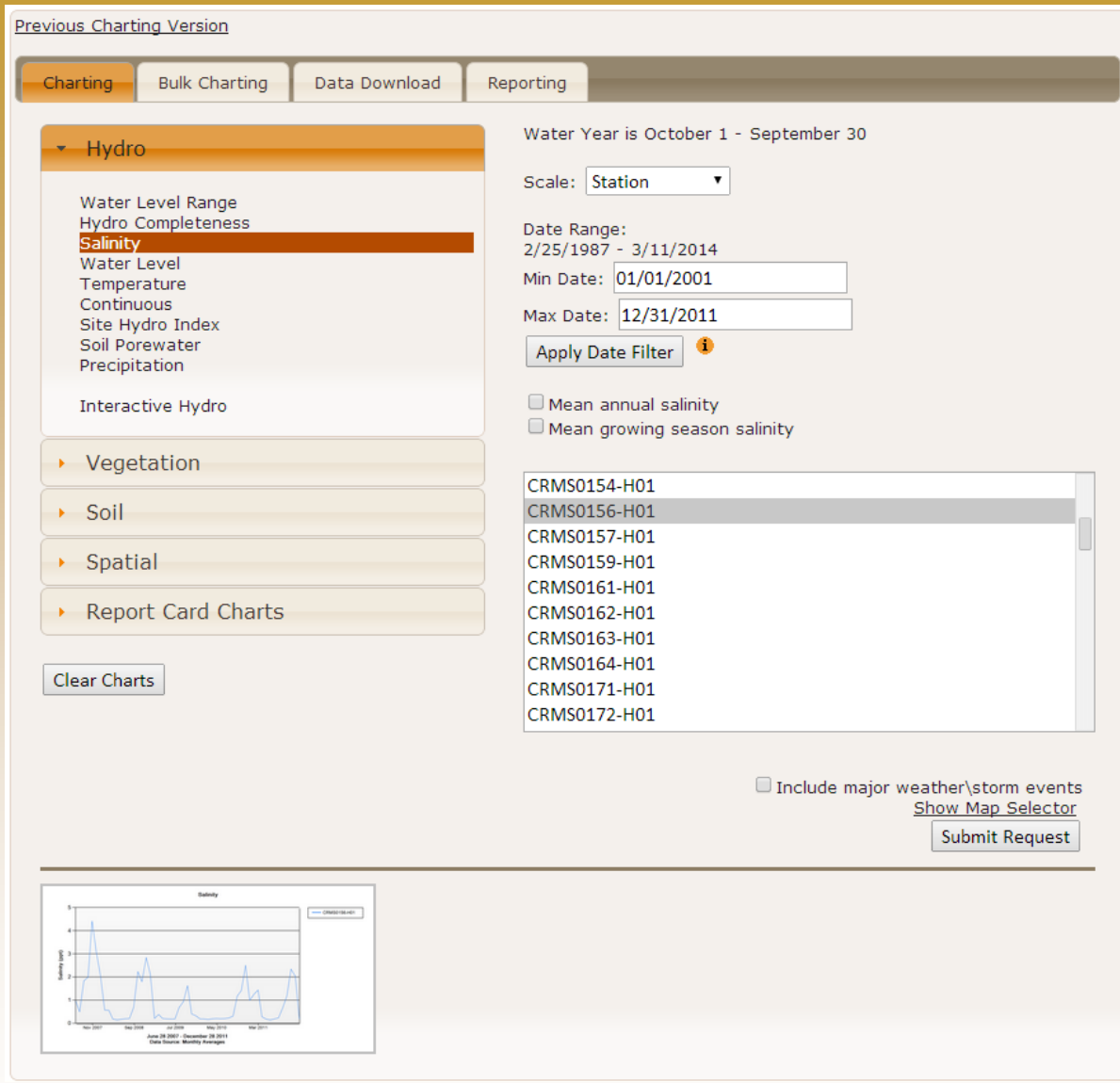
# Charting Usage

1. Pick a Data Category
    1. Hydro
2. Pick a Parameter
    1. Salinity
3. Pick a Scale
    1. Site
4. Enter Start / End Dates
    1. 1/1/2001
    2. 12/31/2011
    3. Apply Date Filter
5. **Pick Site**



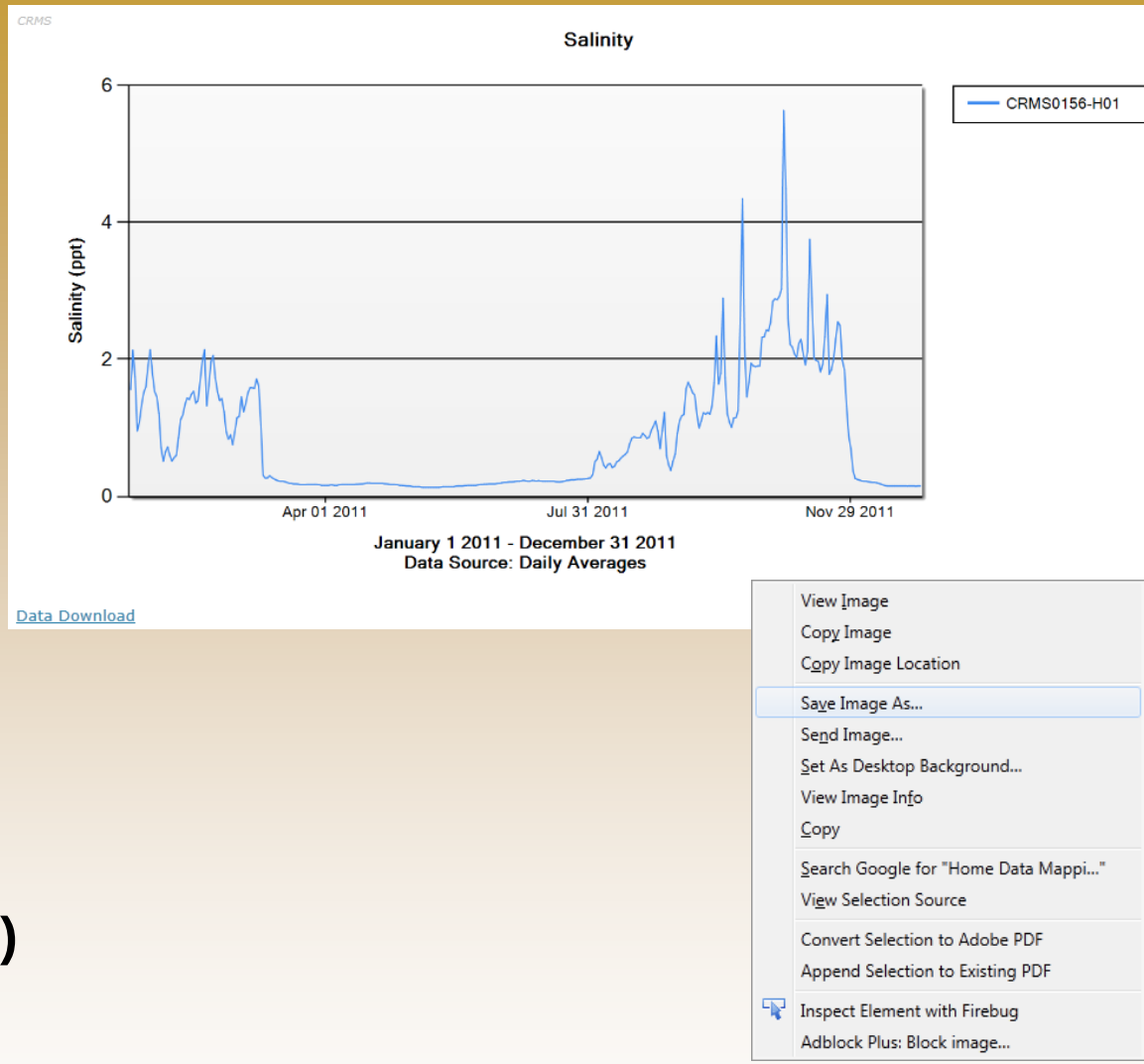
# Charting Usage

1. Pick a Data Category
    1. Hydro
2. Pick a Parameter
    1. Salinity
3. Pick a Scale
    1. Site
4. Enter Start / End Dates
    1. 1/1/2001
    2. 12/31/2011
    3. Apply Date Filter
5. **Pick Site**



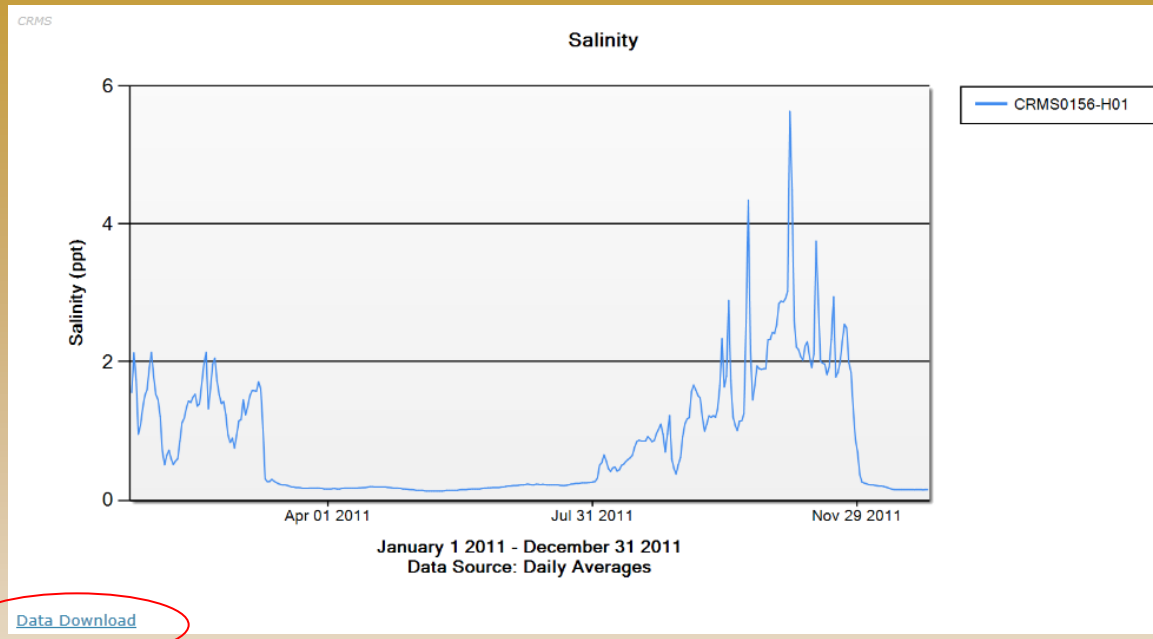
# Charting Usage

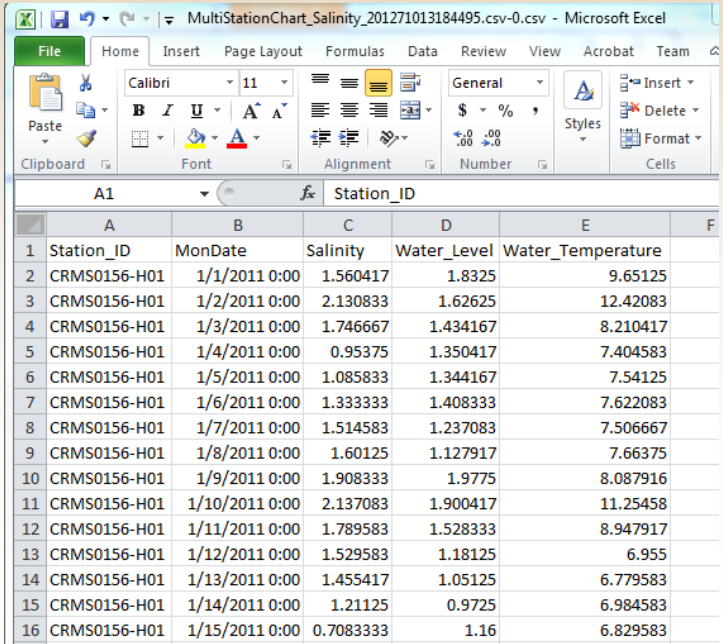
1. Pick a Data Category
    1. Hydro
2. Pick a Parameter
    1. Salinity
3. Pick a Scale
    1. Site
4. Enter Start / End Dates
    1. 1/1/2001
    2. 12/31/2011
    3. Apply Date Filter
5. Pick Site
6. **View Chart**
7. **Save Chart Image**
8. **Download Data (optional)**



# Charting Usage

1. Pick a Data Category
    1. Hydro
2. Pick a Parameter
    1. Salinity
3. Pick a Scale
    1. Site
4. Enter Start / End Dates
    1. 1/1/2001
    2. 12/31/2011
    3. Apply Date Filter
5. Pick Site
6. **View Chart**
7. **Save Chart Image**
8. **Download Data (optional)**

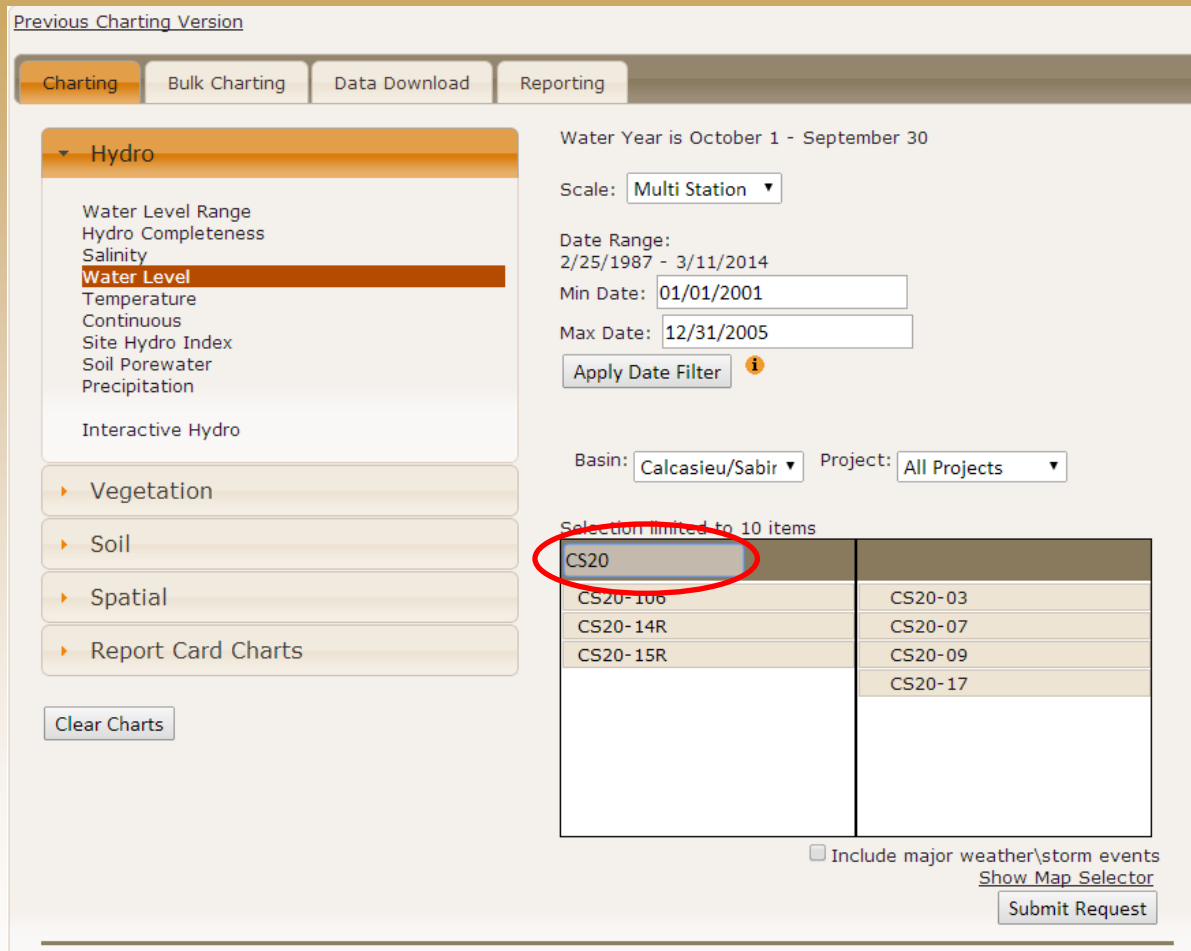


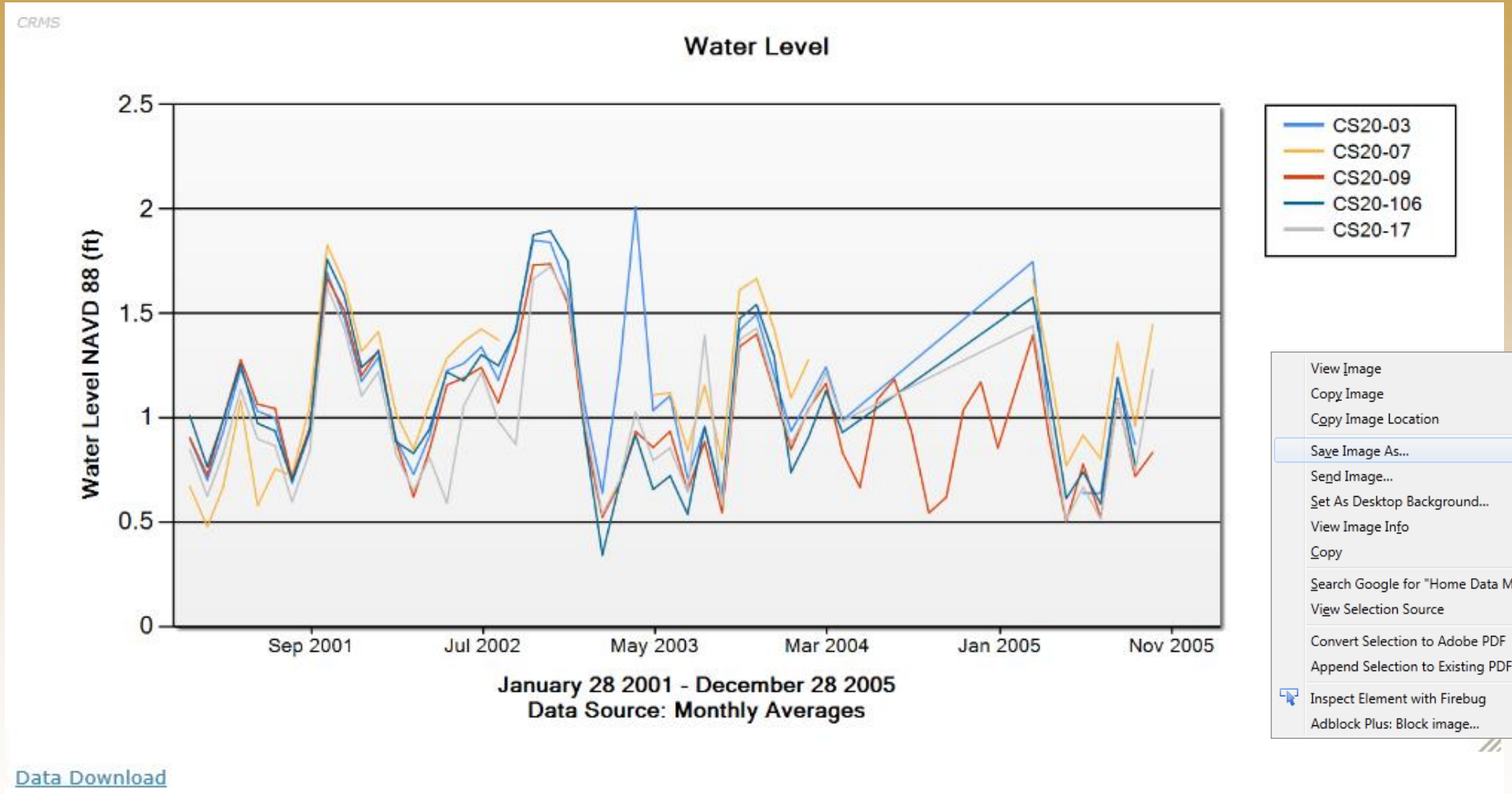

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | Station_ID | MonDate | Salinity | Water_Level | Water_Temperature | |
| 2 | CRMS0156-H01 | 1/1/2011 0:00 | 1.560417 | 1.8325 | 9.65125 | |
| 3 | CRMS0156-H01 | 1/2/2011 0:00 | 2.130833 | 1.62625 | 12.42083 | |
| 4 | CRMS0156-H01 | 1/3/2011 0:00 | 1.746667 | 1.434167 | 8.210417 | |
| 5 | CRMS0156-H01 | 1/4/2011 0:00 | 0.95375 | 1.350417 | 7.404583 | |
| 6 | CRMS0156-H01 | 1/5/2011 0:00 | 1.085833 | 1.344167 | 7.54125 | |
| 7 | CRMS0156-H01 | 1/6/2011 0:00 | 1.333333 | 1.408333 | 7.622083 | |
| 8 | CRMS0156-H01 | 1/7/2011 0:00 | 1.514583 | 1.237083 | 7.506667 | |
| 9 | CRMS0156-H01 | 1/8/2011 0:00 | 1.60125 | 1.127917 | 7.66375 | |
| 10 | CRMS0156-H01 | 1/9/2011 0:00 | 1.908333 | 1.9775 | 8.087916 | |
| 11 | CRMS0156-H01 | 1/10/2011 0:00 | 2.137083 | 1.900417 | 11.25458 | |
| 12 | CRMS0156-H01 | 1/11/2011 0:00 | 1.789583 | 1.528333 | 8.947917 | |
| 13 | CRMS0156-H01 | 1/12/2011 0:00 | 1.529583 | 1.18125 | 6.955 | |
| 14 | CRMS0156-H01 | 1/13/2011 0:00 | 1.455417 | 1.05125 | 6.779583 | |
| 15 | CRMS0156-H01 | 1/14/2011 0:00 | 1.21125 | 0.9725 | 6.984583 | |
| 16 | CRMS0156-H01 | 1/15/2011 0:00 | 0.7083333 | 1.16 | 6.829583 | |

# Multi-Station Charting

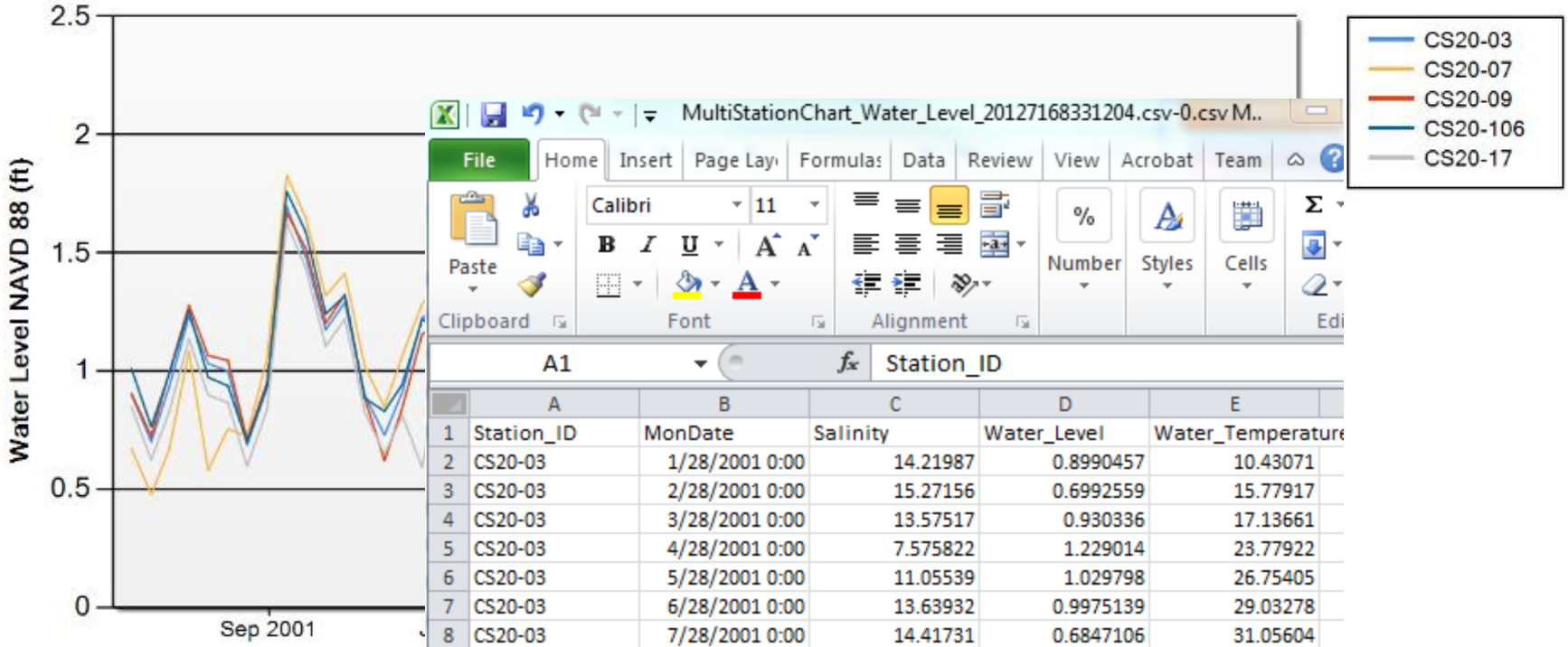
1. Pick a Data Category
    1. Hydro
2. Pick a Parameter
    1. Water Level
3. Pick a Scale
    1. Multi Station
4. Enter Start / End Dates
    1. 1/1/2001
    2. 12/31/2011
    3. Apply Date Filter
5. Pick Stations



# Multi-Station Charting



# Charting Usage




MultiStationChart_Water_Level_20127168331204.csv-0.csv M..

File | Home | Insert | Page Lay | Formulas | Data | Review | View | Acrobat | Team

Calibri 11

Paste | Clipboard | Font | Alignment | Number | Styles | Cells

A1 | Station_ID

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Station_ID | MonDate | Salinity | Water_Level | Water_Temperature |
| 2 | CS20-03 | 1/28/2001 0:00 | 14.21987 | 0.8990457 | 10.43071 |
| 3 | CS20-03 | 2/28/2001 0:00 | 15.27156 | 0.6992559 | 15.77917 |
| 4 | CS20-03 | 3/28/2001 0:00 | 13.57517 | 0.930336 | 17.13661 |
| 5 | CS20-03 | 4/28/2001 0:00 | 7.575822 | 1.229014 | 23.77922 |
| 6 | CS20-03 | 5/28/2001 0:00 | 11.05539 | 1.029798 | 26.75405 |
| 7 | CS20-03 | 6/28/2001 0:00 | 13.63932 | 0.9975139 | 29.03278 |
| 8 | CS20-03 | 7/28/2001 0:00 | 14.41731 | 0.6847106 | 31.05604 |
| 9 | CS20-03 | 8/28/2001 0:00 | 11.12512 | 0.9266398 | 30.03915 |
| 10 | CS20-03 | 9/28/2001 0:00 | 4.940278 | 1.693403 | 27.11963 |
| 11 | CS20-03 | 10/28/2001 0:00 | 6.358652 | 1.480121 | 21.85023 |
| 12 | CS20-03 | 11/28/2001 0:00 | 6.386568 | 1.172375 | 20.29367 |
| 13 | CS20-03 | 12/28/2001 0:00 | 4.994678 | 1.288508 | 15.26509 |
| 14 | CS20-03 | 1/28/2002 0:00 | 4.678748 | 0.8958547 | 13.06359 |
| 15 | CS20-03 | 2/28/2002 0:00 | 5.253036 | 0.7263095 | 13.26759 |
| 16 | CS20-03 | 3/28/2002 0:00 | 13.83337 | 0.9090995 | 17.05582 |
| 17 | CS20-03 | 4/28/2002 0:00 | 13.41743 | 1.224444 | 23.67308 |
| 18 | CS20-03 | 5/28/2002 0:00 | 12.05766 | 1.258804 | 25.77913 |

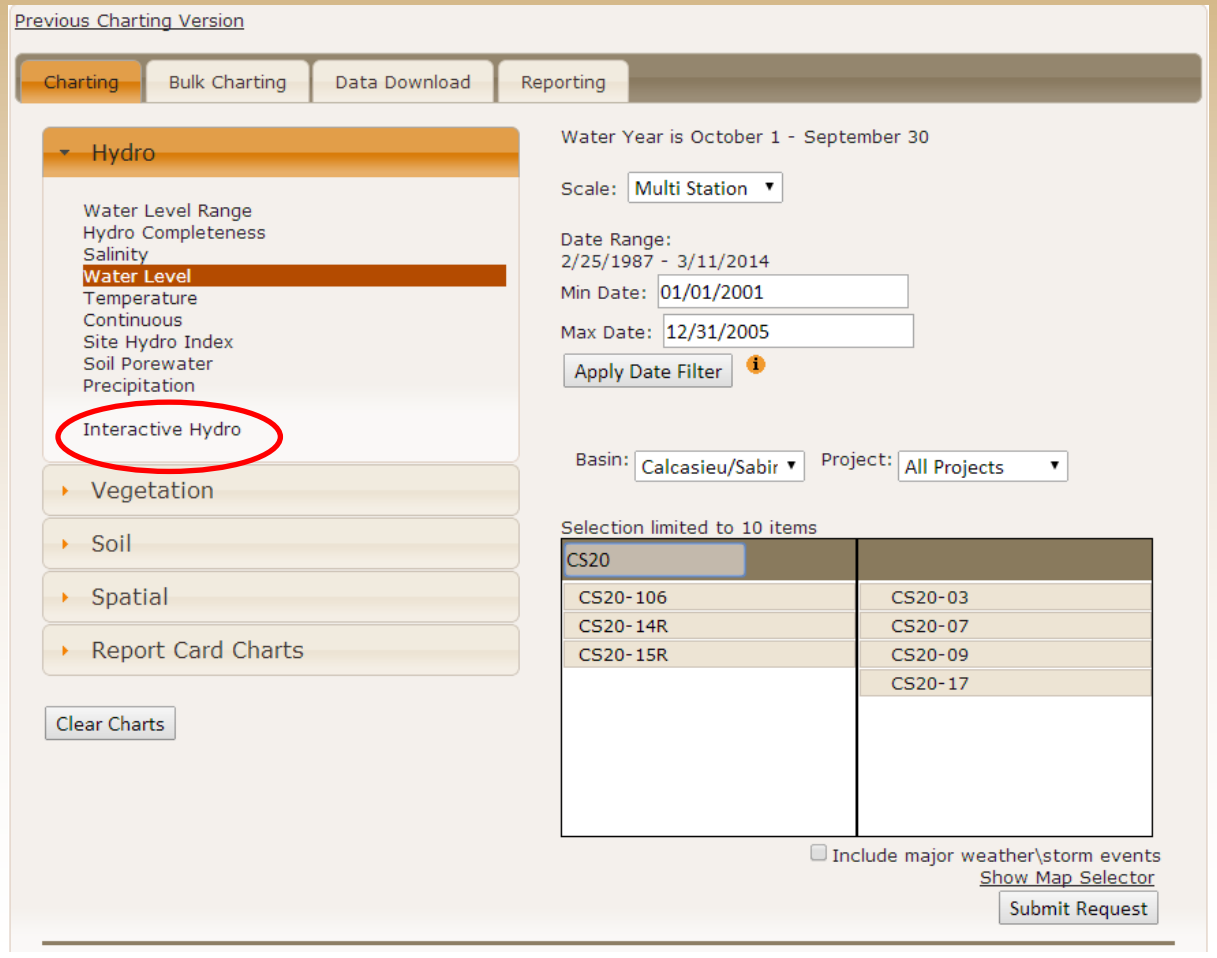
MultiStationChart_Water_Level_2

Average: 9824.390192 Count: 1260 Sum: 9785092.631 80%

Data Download

# Interactive Hydro Chart

Great for hydro data exploration without having to download data.



# Interactive Hydro Chart – same site with the multiple parameters

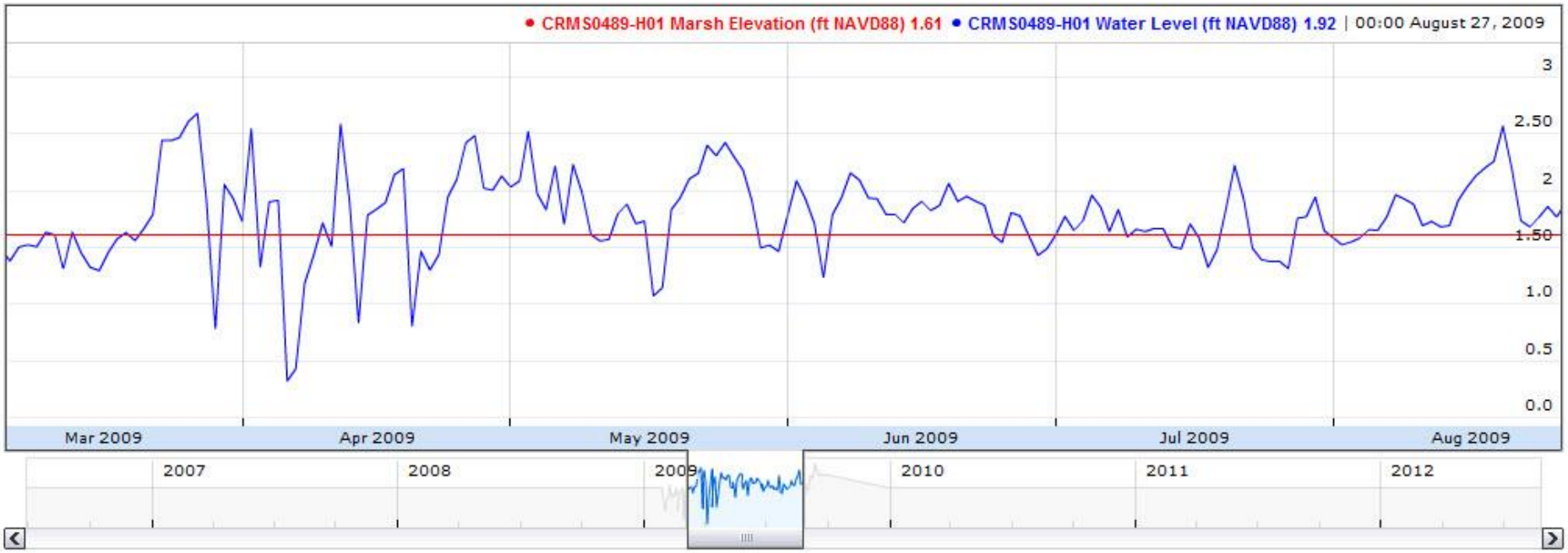
Coastwide Reference Monitoring System

a CWPPRA funded project

Home | Data | Mapping | Library | Visualization | Program

| | | |
|---|---|---|
| CRMS0489-H01 | Water Level | Blue |
| CRMS0489-H01 | Marsh Elevation | Red |
| None | Water Temperature | Orange |

Submit



# Interactive Hydro Chart – multiple sites with the same parameter

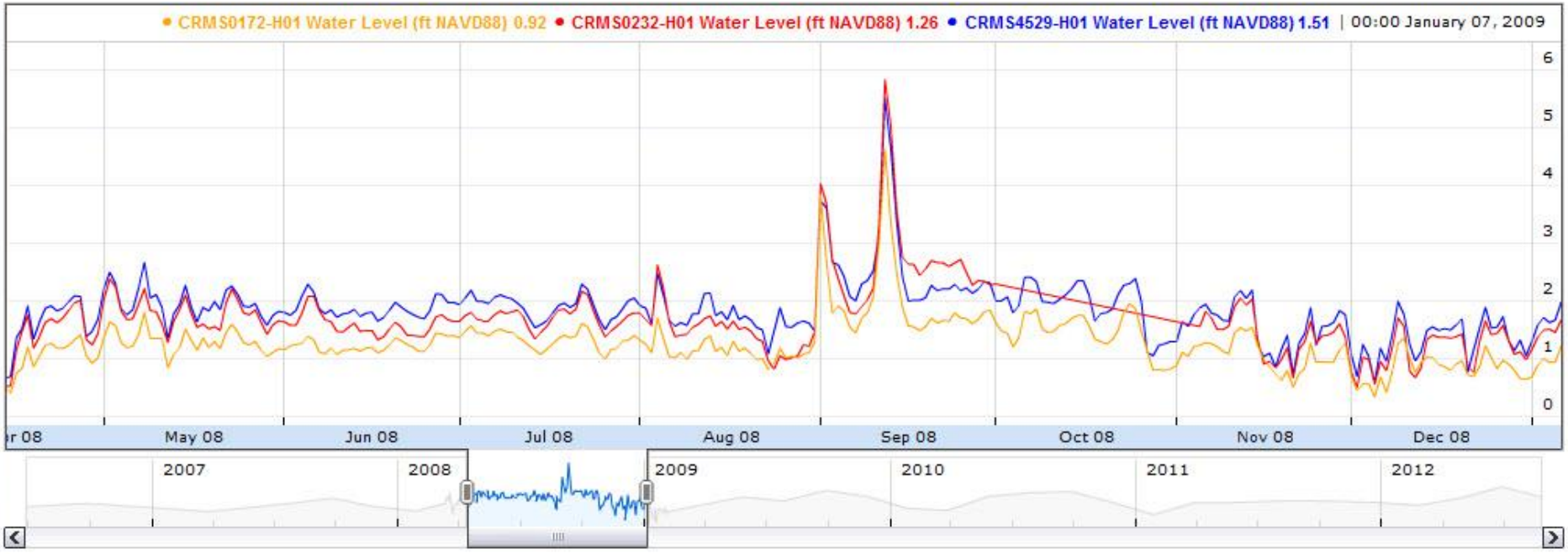
Coastwide Reference Monitoring System

a CWPPRA funded project

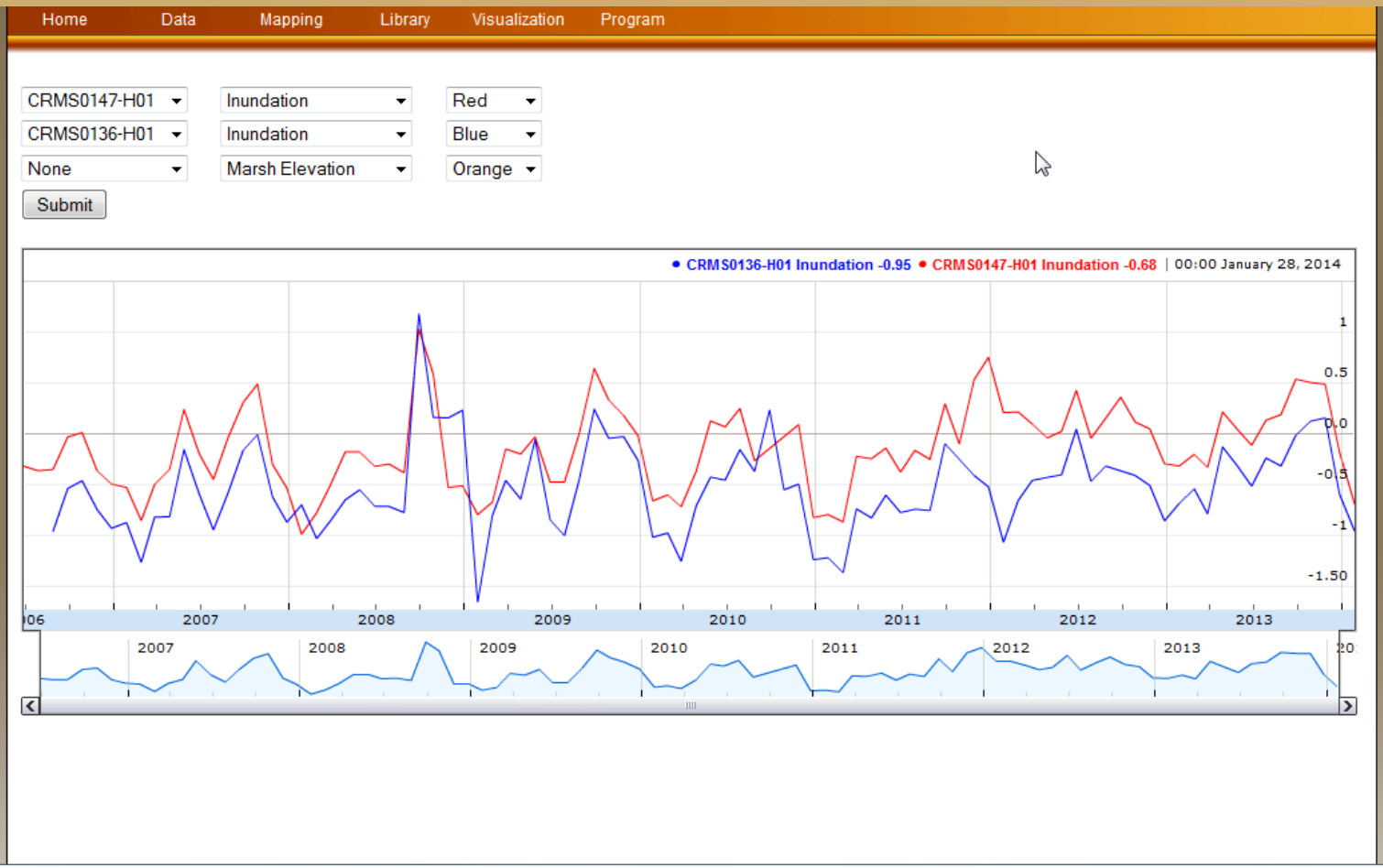
Home | Data | Mapping | Library | Visualization | Program

| | | |
|---|---|---|
| CRMS0232-H01 | Water Level | Red |
| CRMS4529-H01 | Water Level | Blue |
| CRMS0172-H01 | Water Level | Orange |

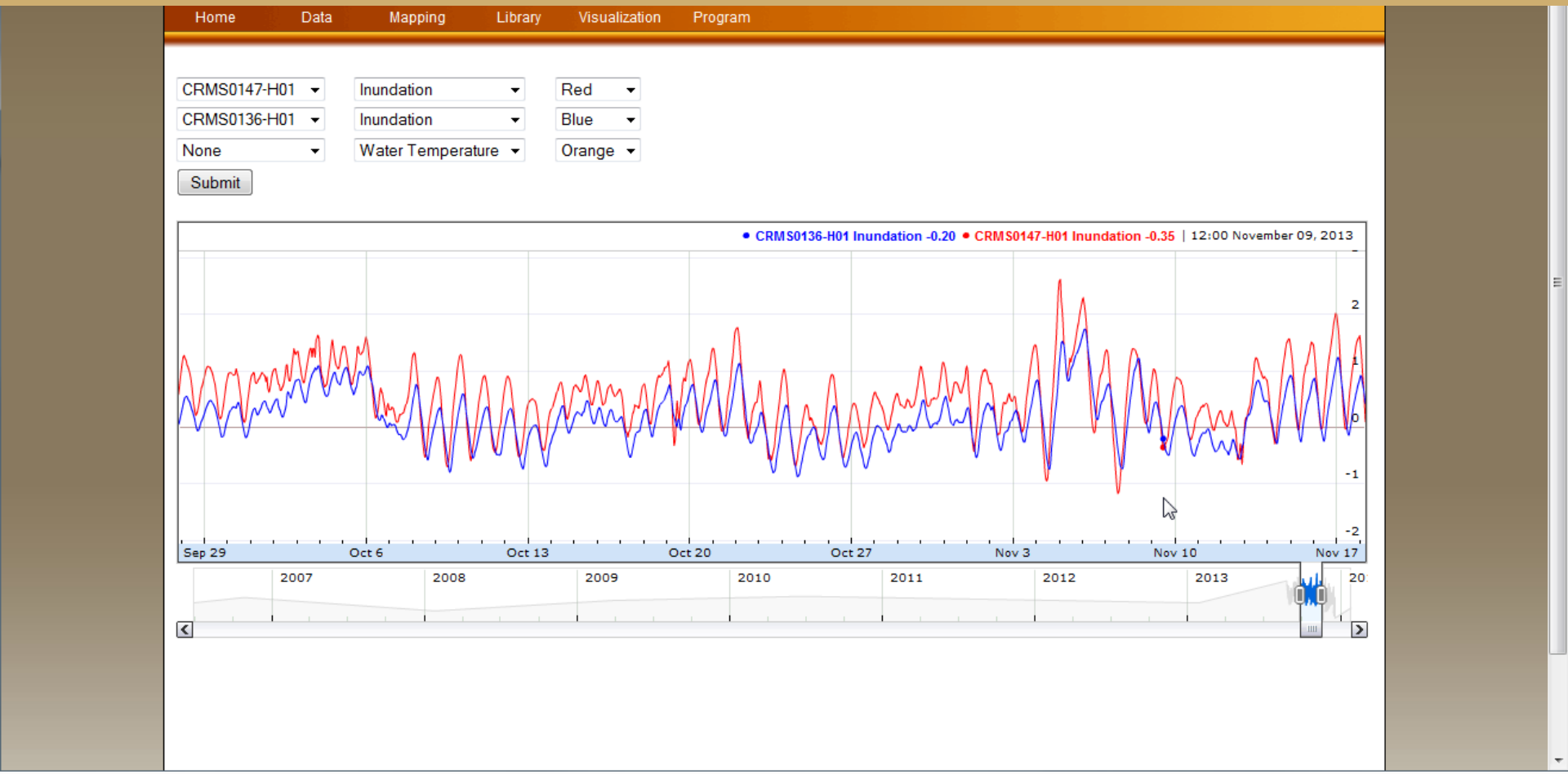
Submit



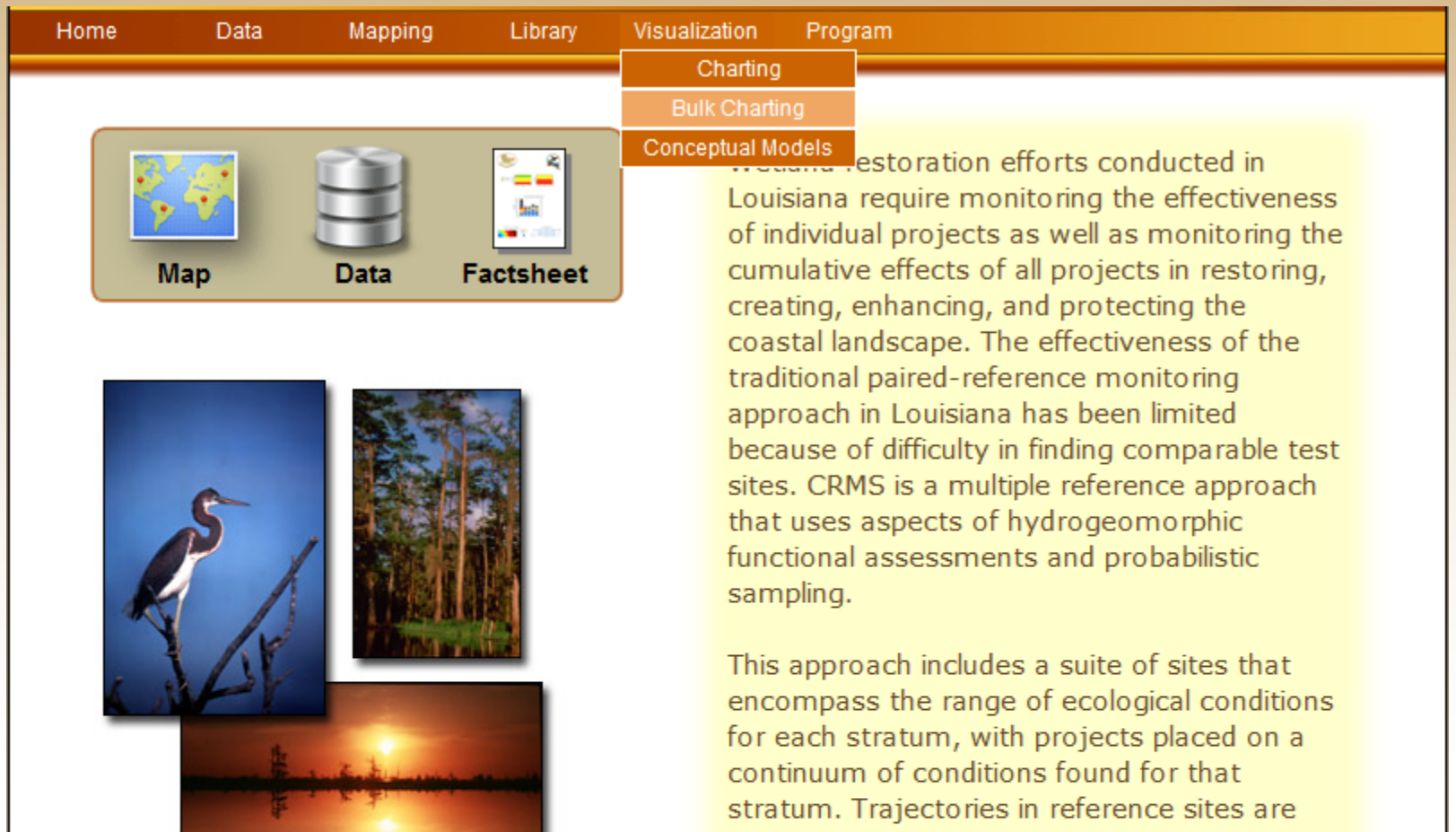
# Interactive Hydro Chart – full period of record shows monthly averages



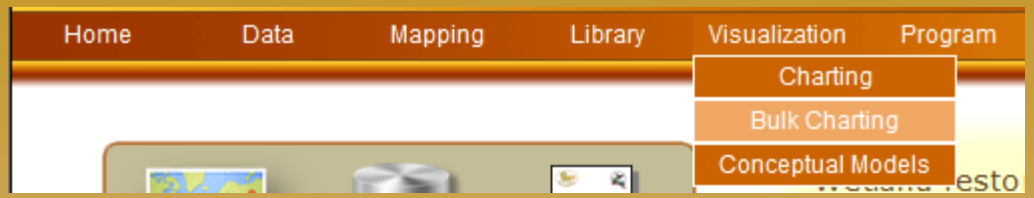
# Interactive Hydro Chart – smaller time range increases frequency of visualized data (i.e., hourly vs. monthly)



# *Bulk charting*



# Bulk Charting




Previous Charting Version

Charting | Bulk Charting | Data Download | Reporting

**Bulk Charting**

- Hydro
  - Water Level Range
  - Hydro Completeness
  - Salinity
  - Water Level
  - Temperature
  - Continuous
  - Site Hydro Index
  - Soil Porewater
  - Precipitation
- Vegetation
- Soil
- Spatial
- Report Card Charts

Water Year is October 1 - September 30

Scale: Station

Date Range:
2/25/1987 - 3/11/2014

Min Date: 01/01/2001

Max Date: 12/31/2005

Apply Date Filter

Basin: All Basins  Project: CS-20

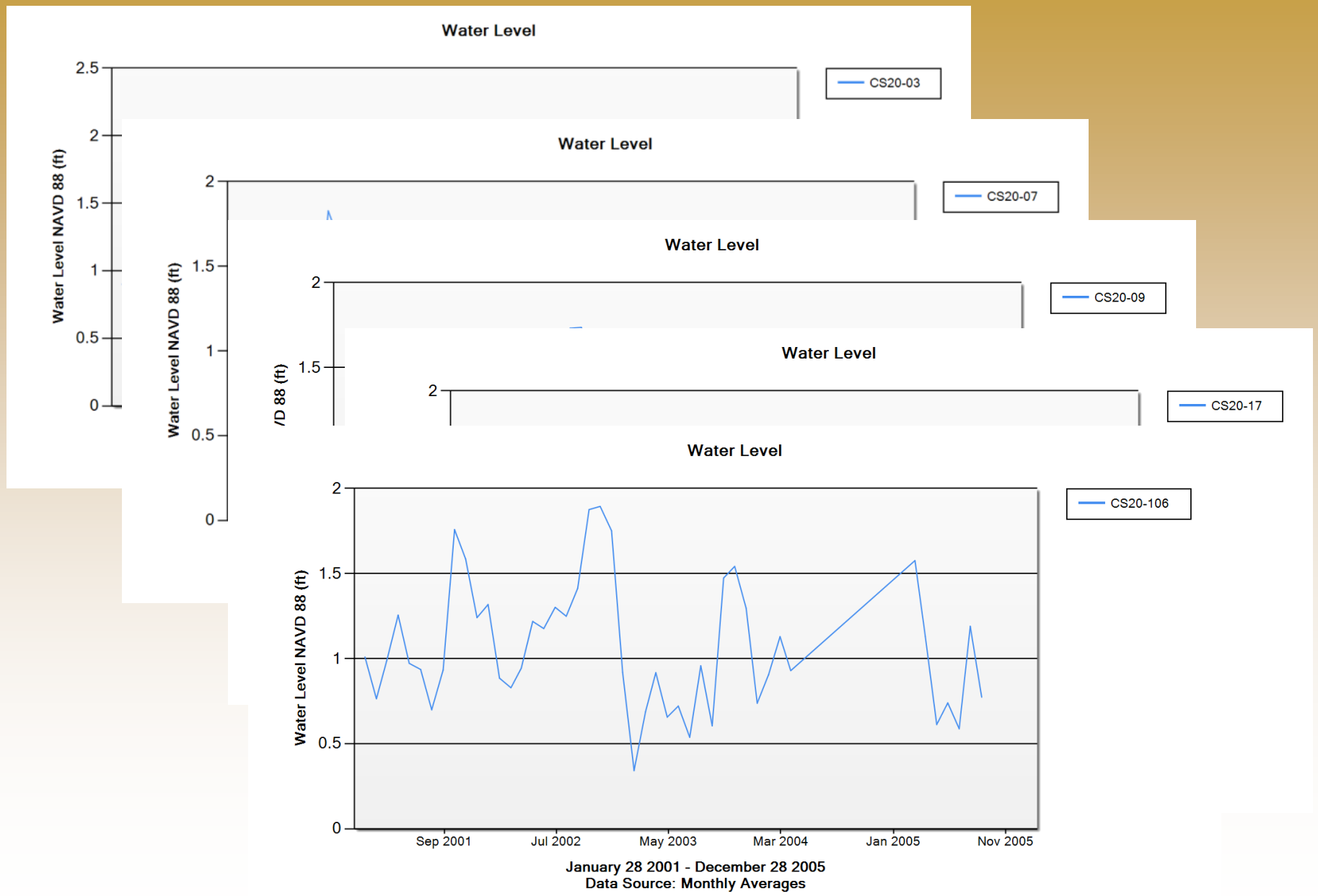
| Select All | Deselect All |
|---|---|
| CS20-14R | CS20-03 |
| CS20-15R | CS20-07 |
| | CS20-09 |
| | CS20-106 |
| | CS20-17 |

Show Map Selector

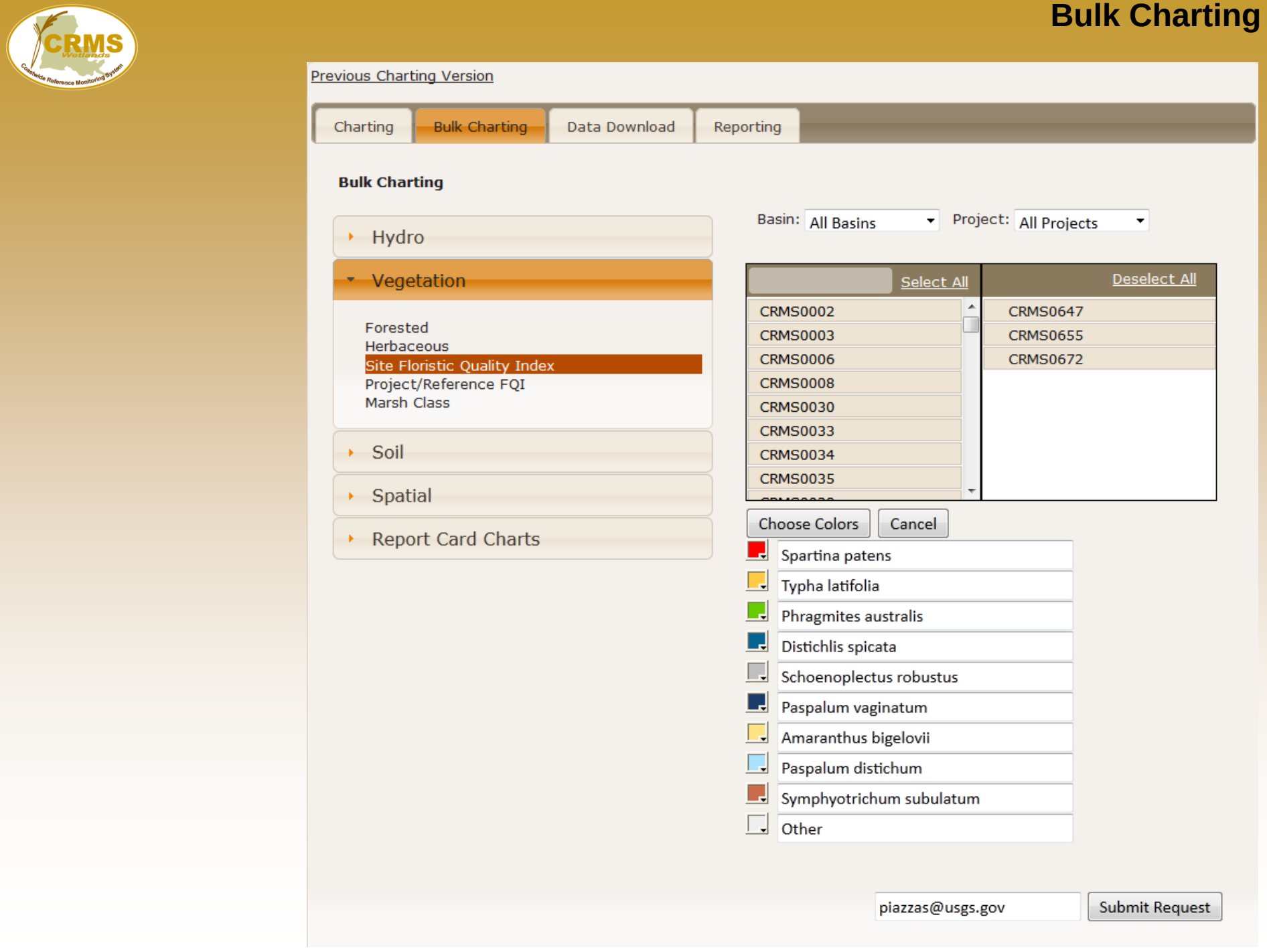
Submit Request

# Bulk Charting

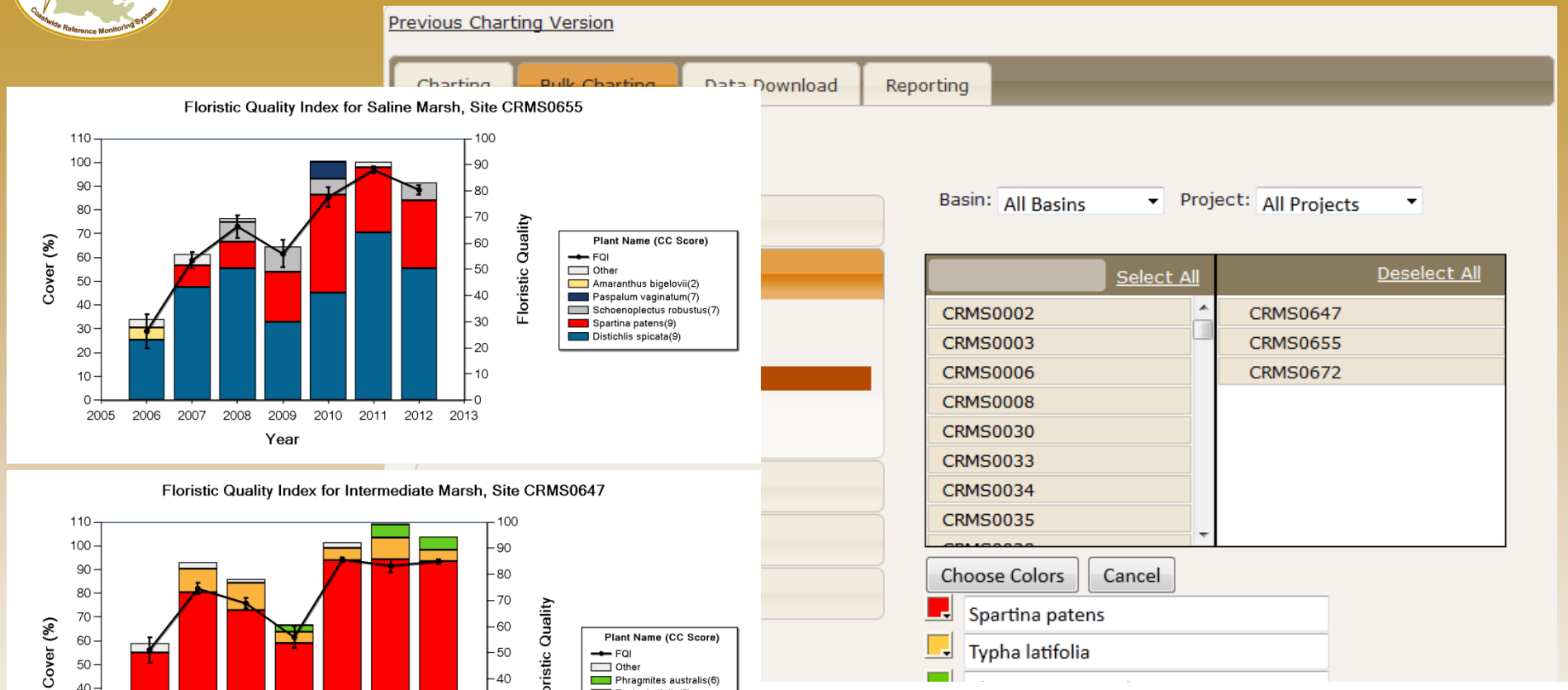
Multiple charts with same set up.



# Bulk Charting



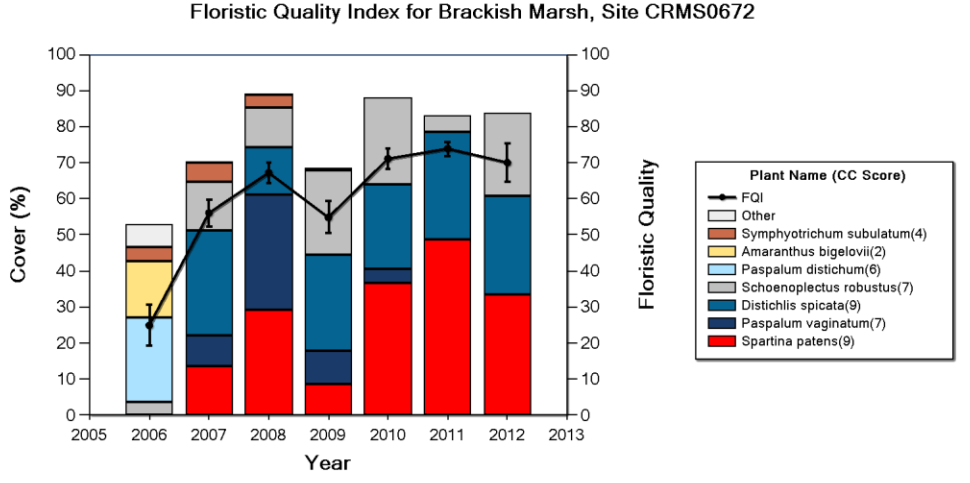
# Bulk Charting



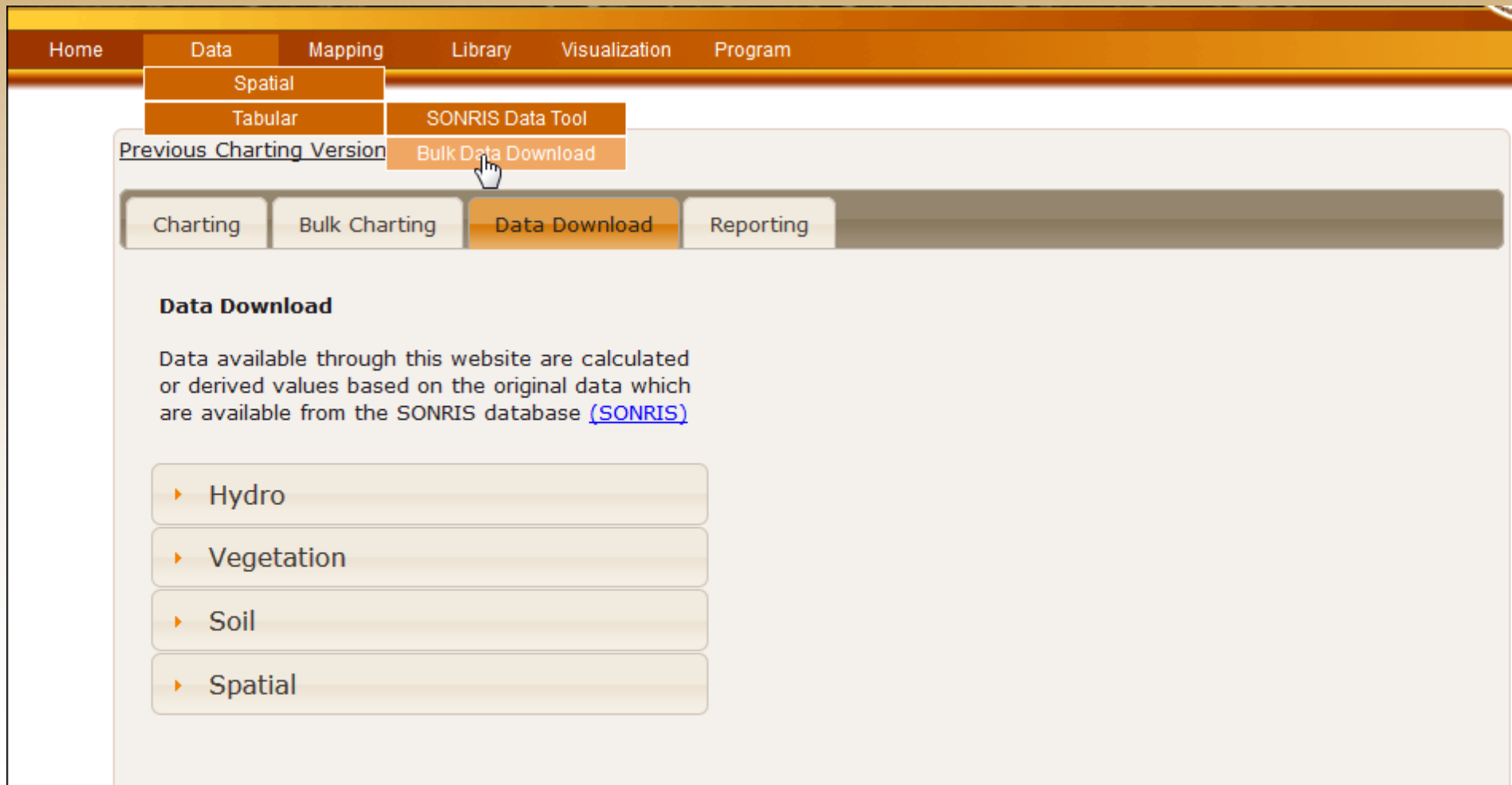




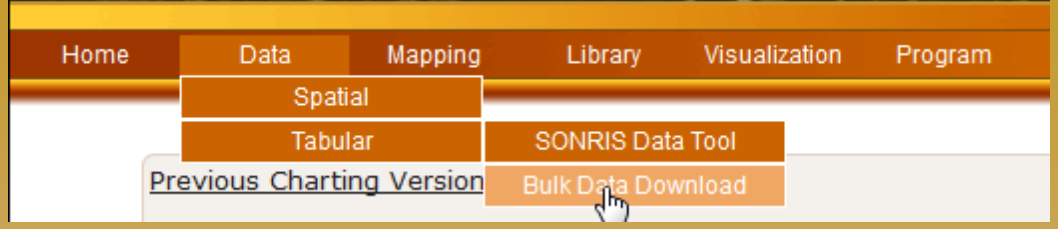


# CRMS Data Download



# Data Download




Previous Charting Version

Charting | Bulk Charting | Data Download | Reporting

**Data Download**

Data available through this website are calculated or derived values based on the original data which are available from the SONRIS database (SONRIS)

- Hydro
  - Hydro Averages
  - Hydro Index
  - Percent Flooded
  - Water Level Range
- Vegetation
- Soil
- Spatial

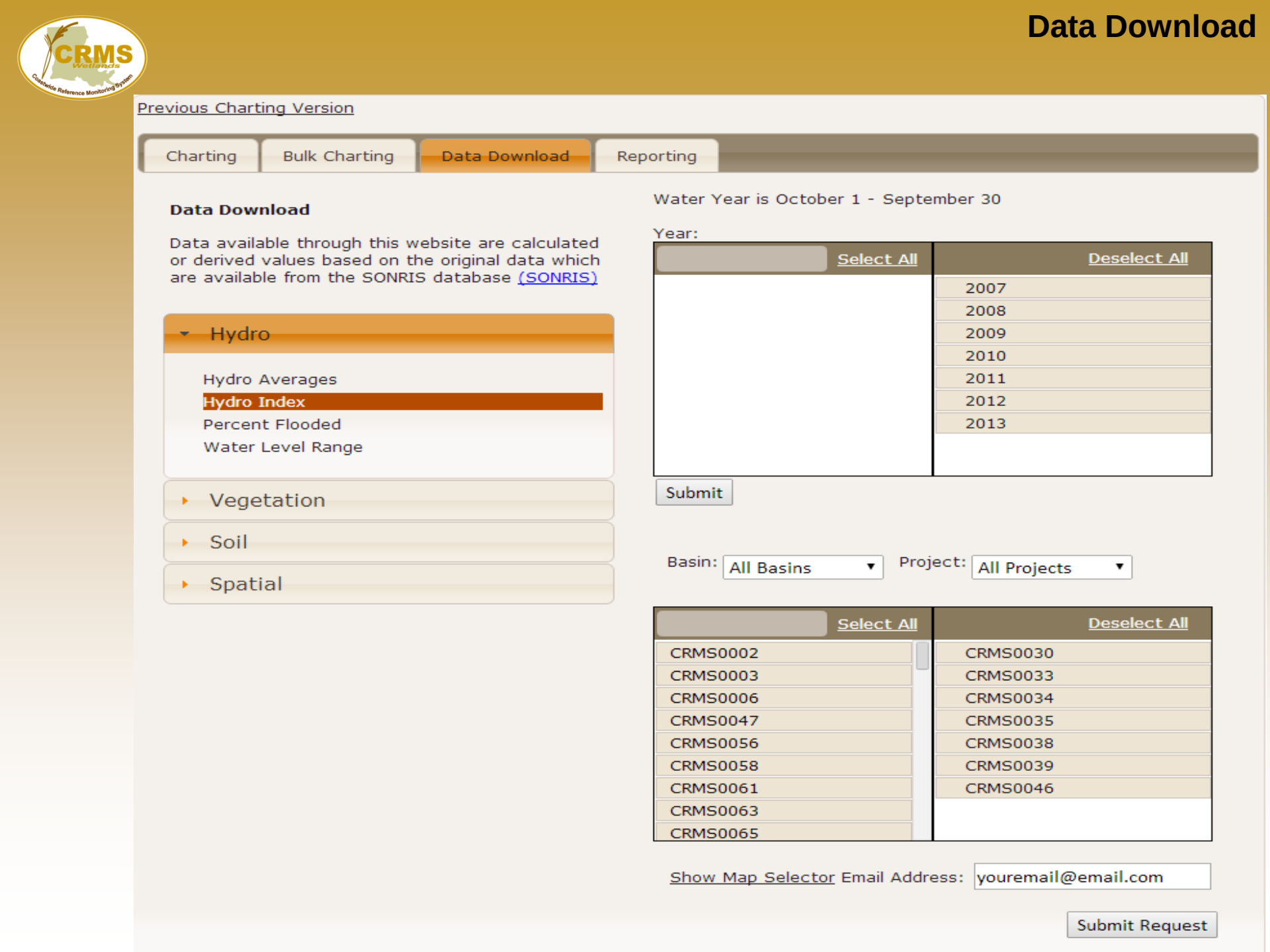
Water Year is October 1 - September 30

Year:

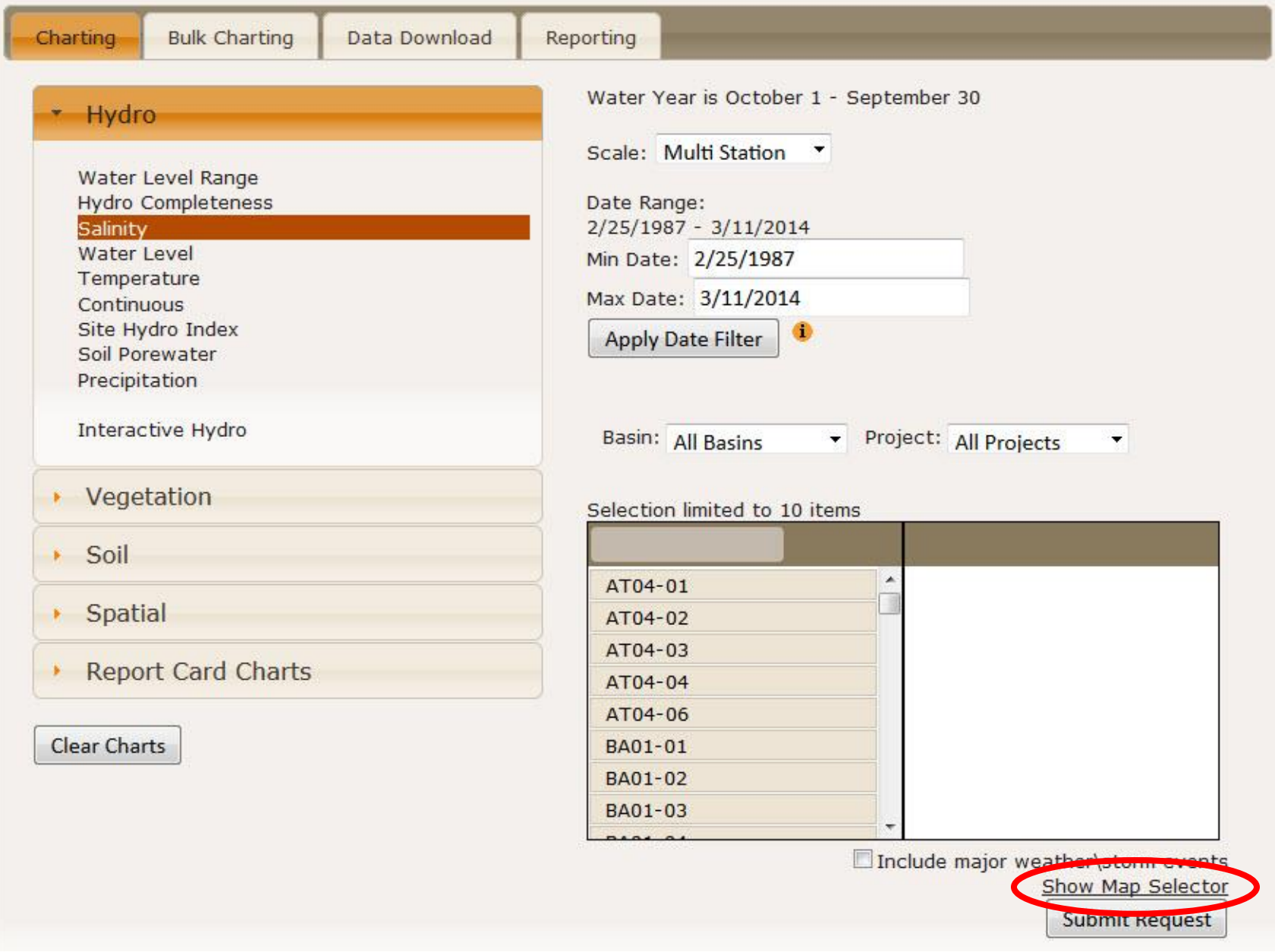
| Select All | Deselect All |
|---|---|
| 2007 | |
| 2008 | |
| 2009 | |
| 2010 | |
| 2011 | |
| 2012 | |
| 2013 | |

Submit

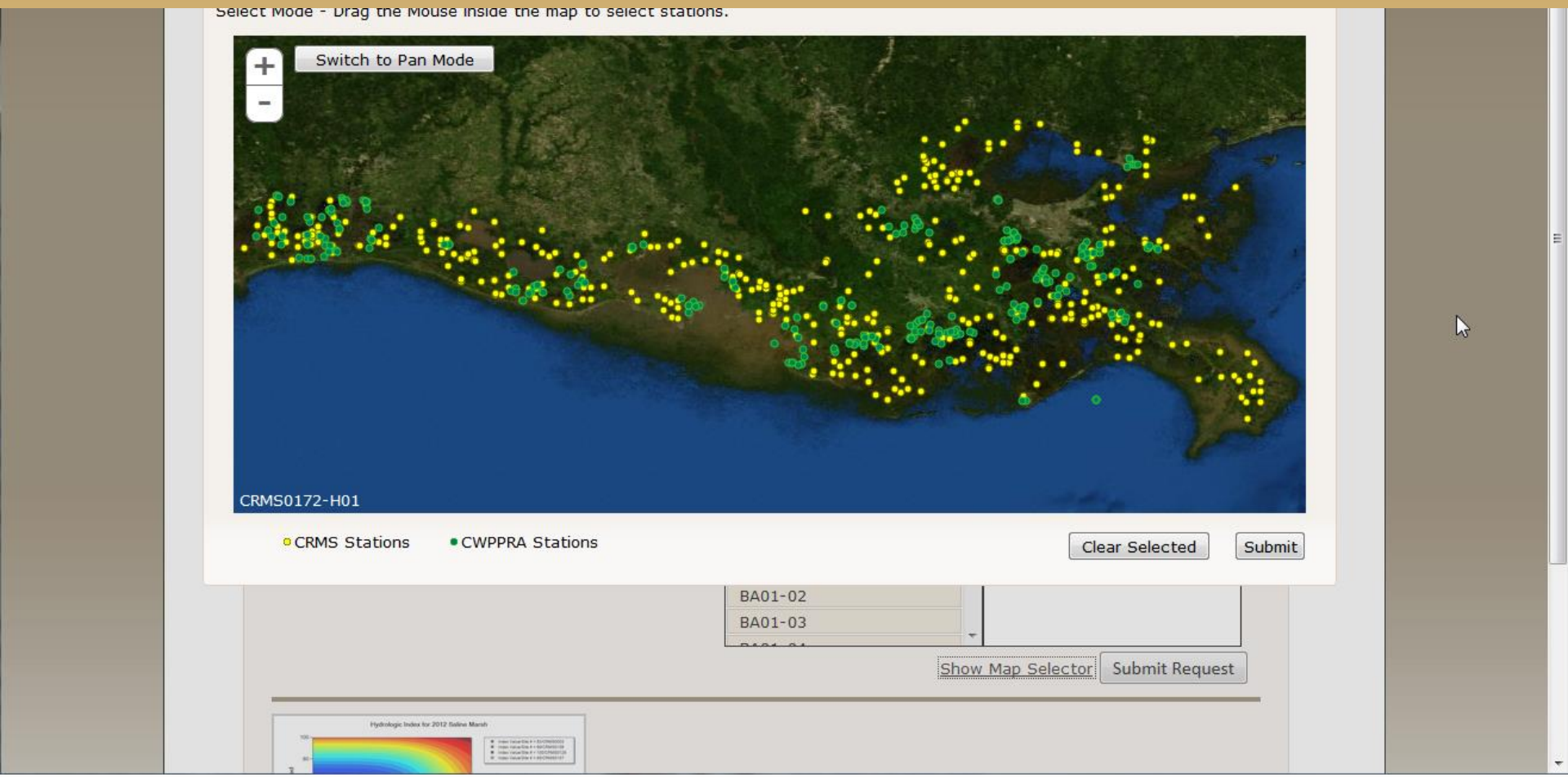
# Data Download



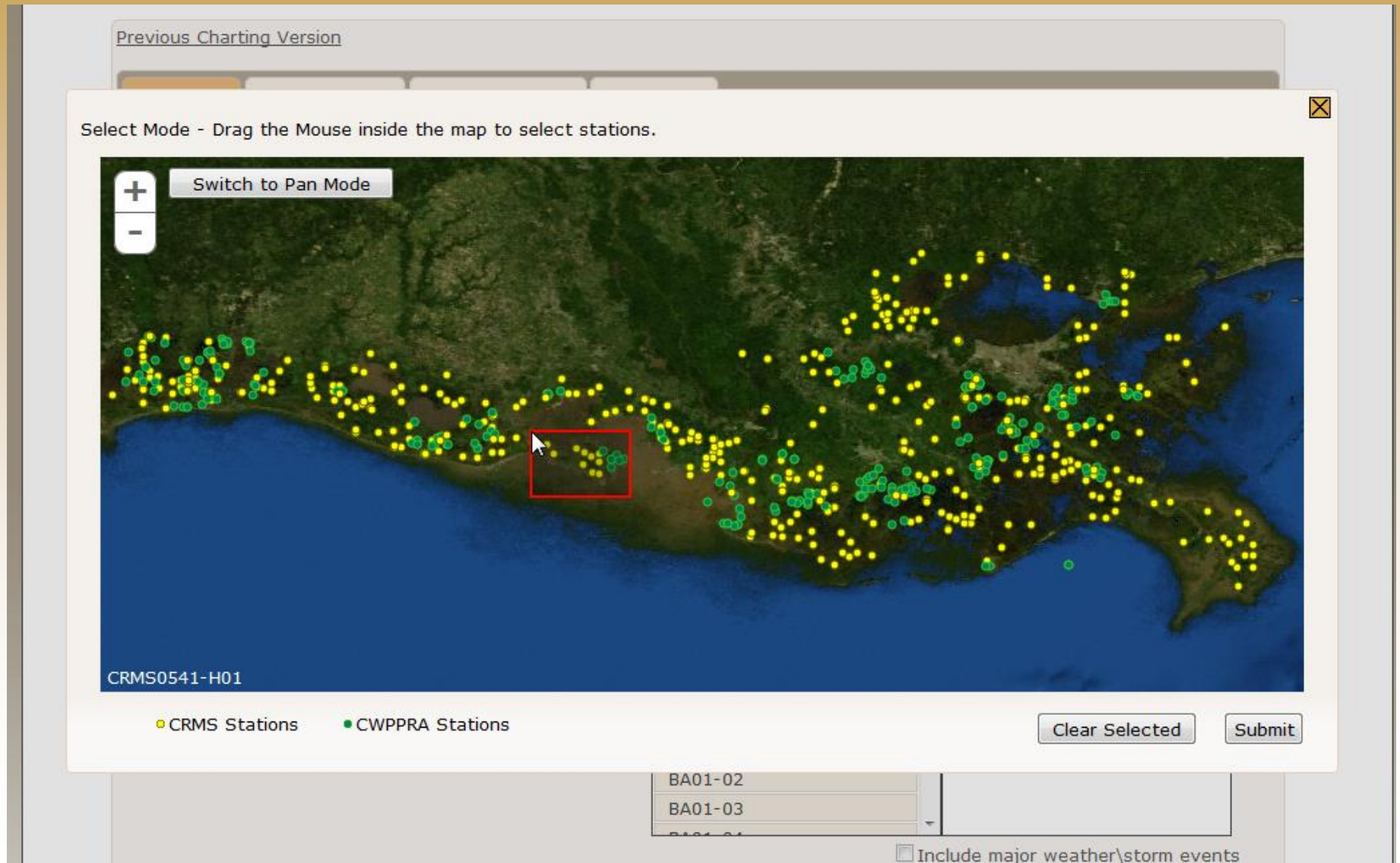
# Spatial selection has been added to Charting



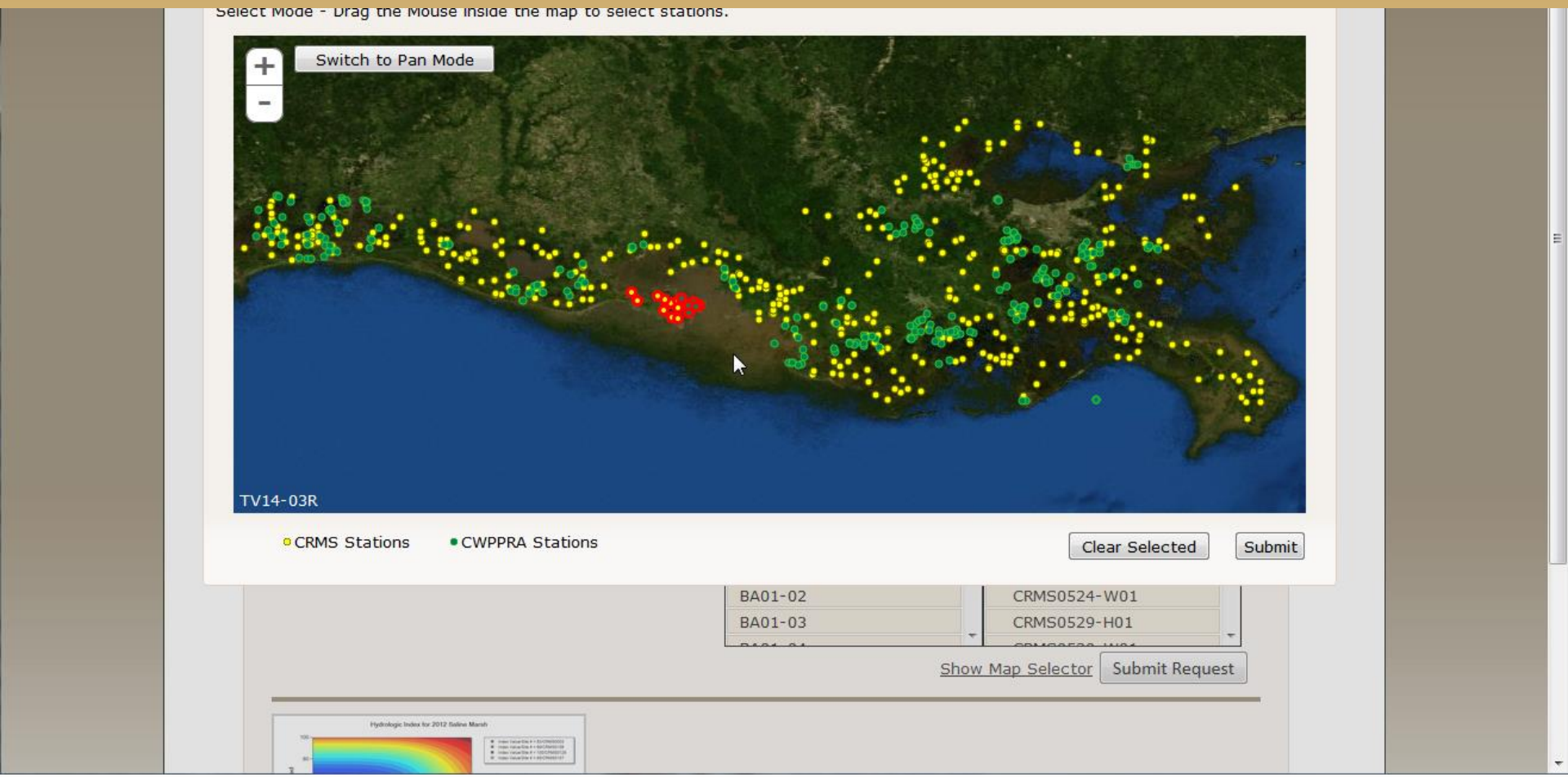
# Spatial selection has been added to Charting



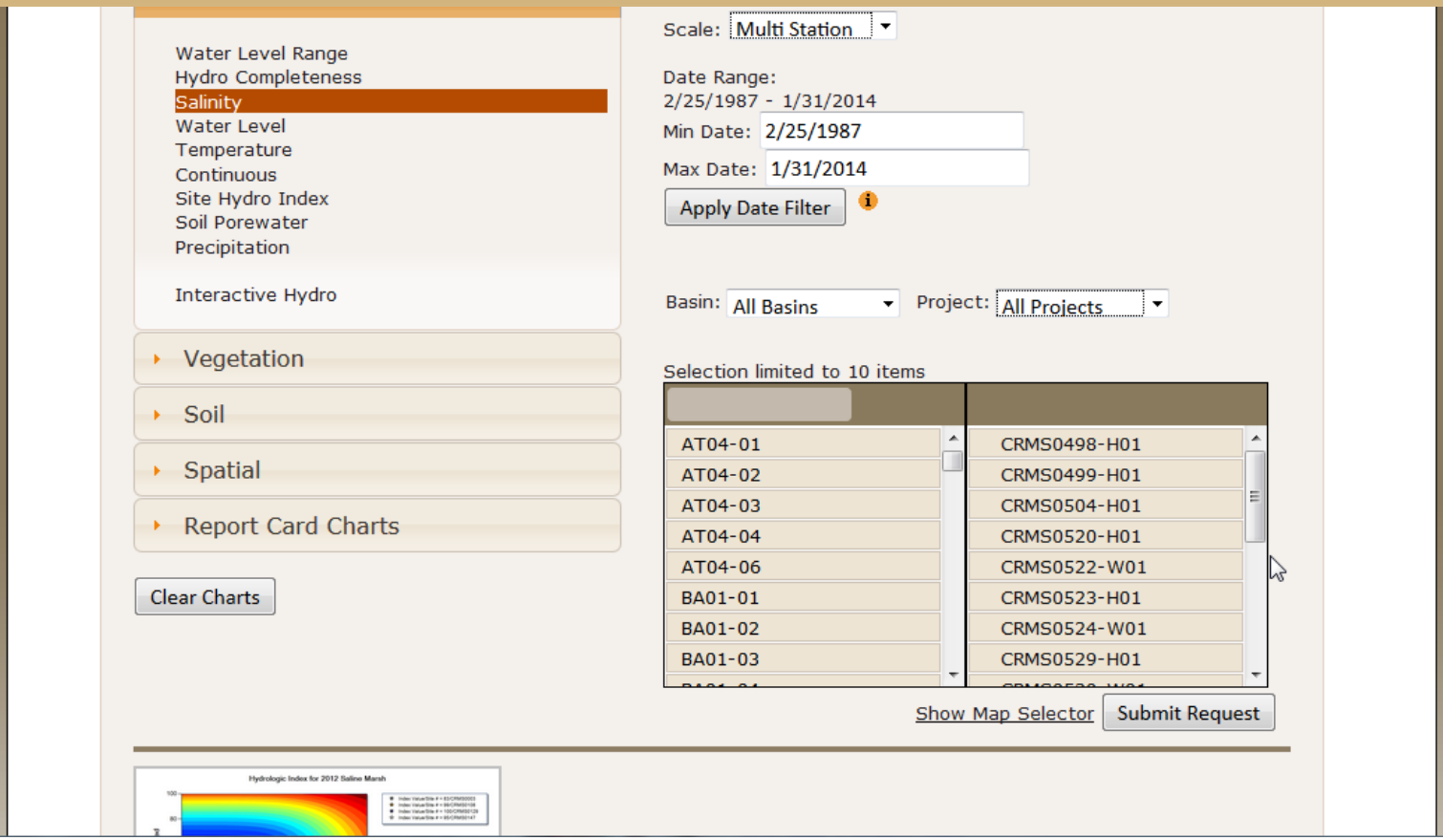
# Spatial selection has been added to Charting



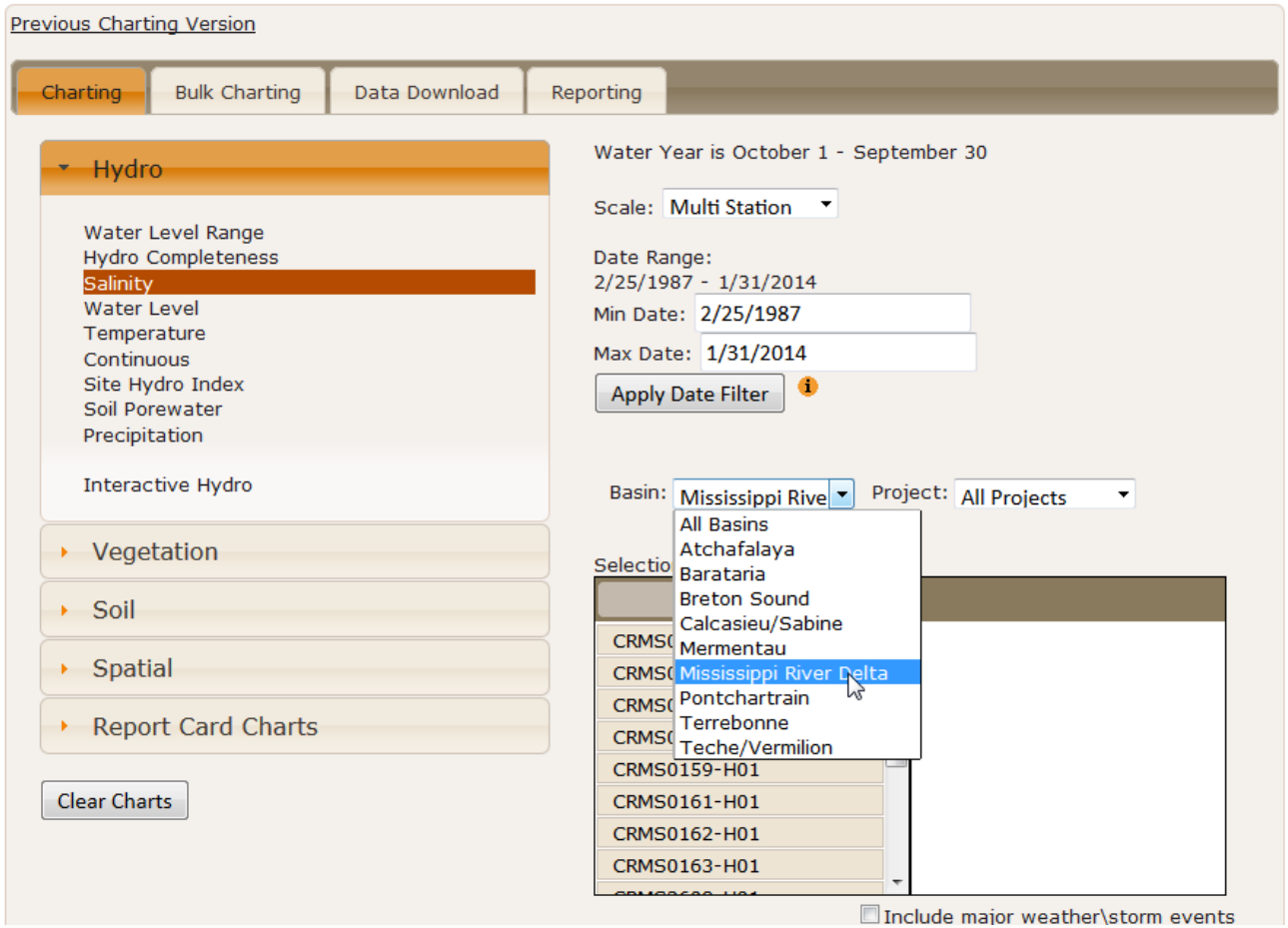
# Spatial selection has been added to Charting



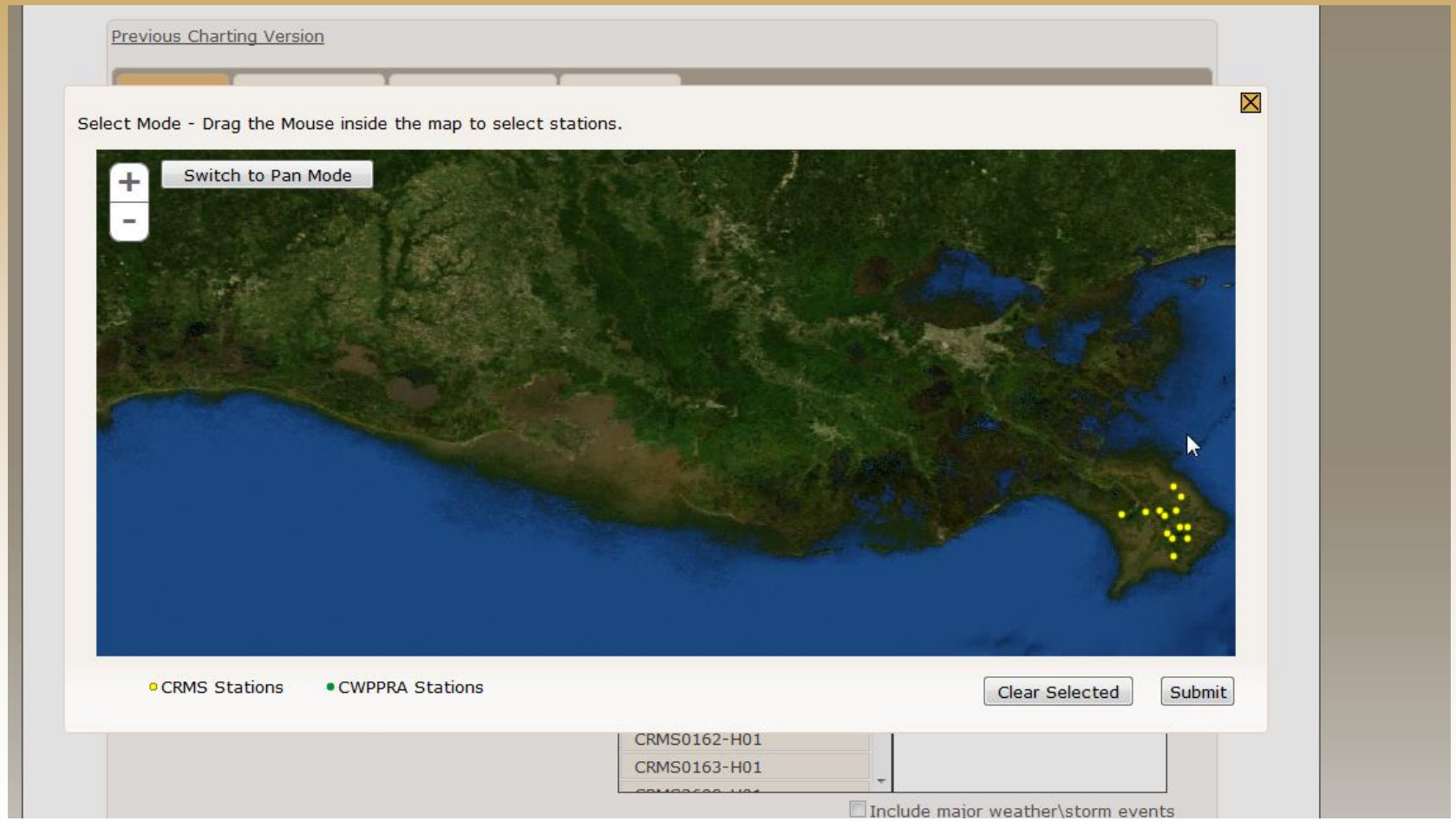
# Spatial selection has been added to Charting



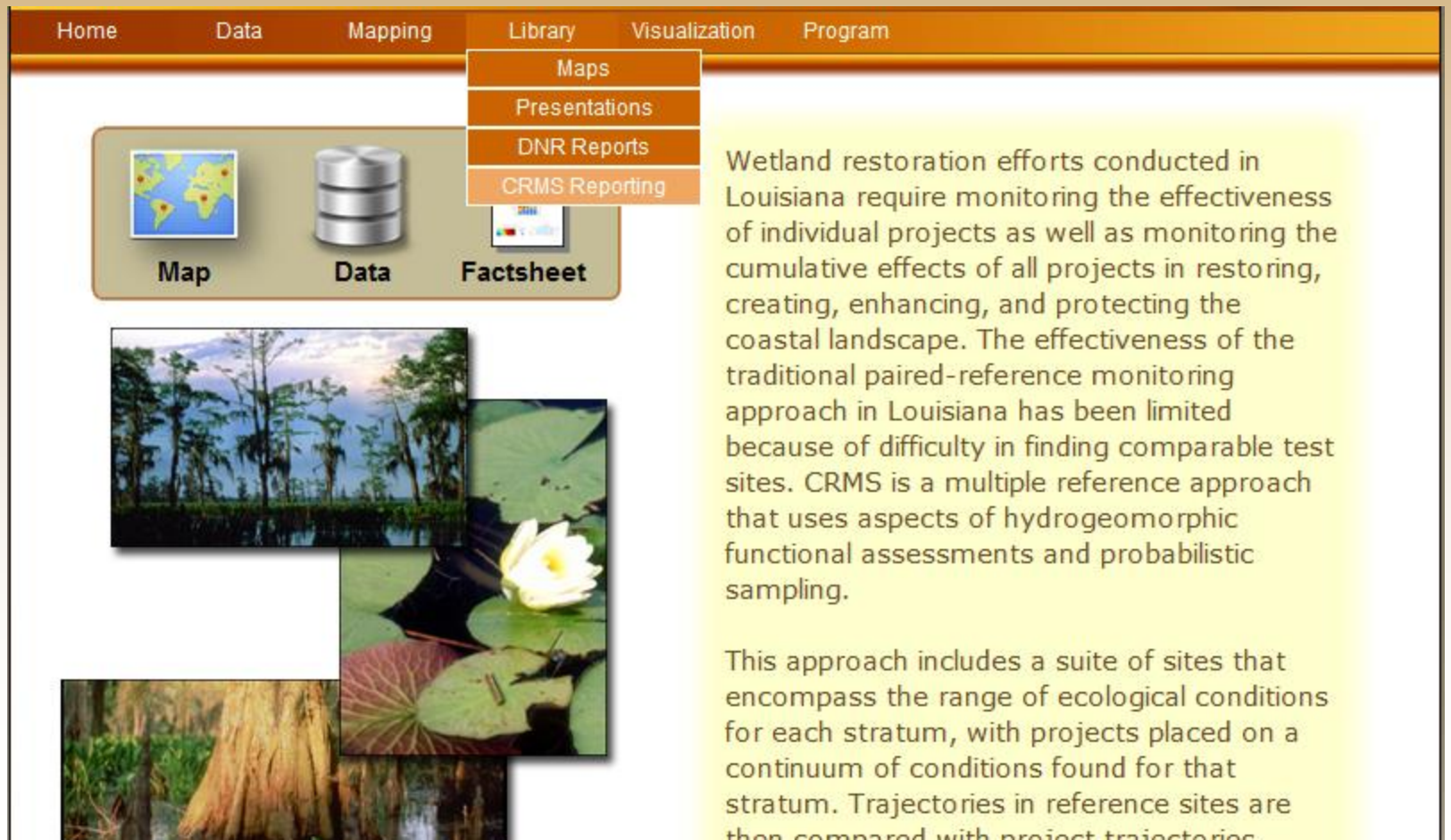
# Spatial selection has been added to Charting



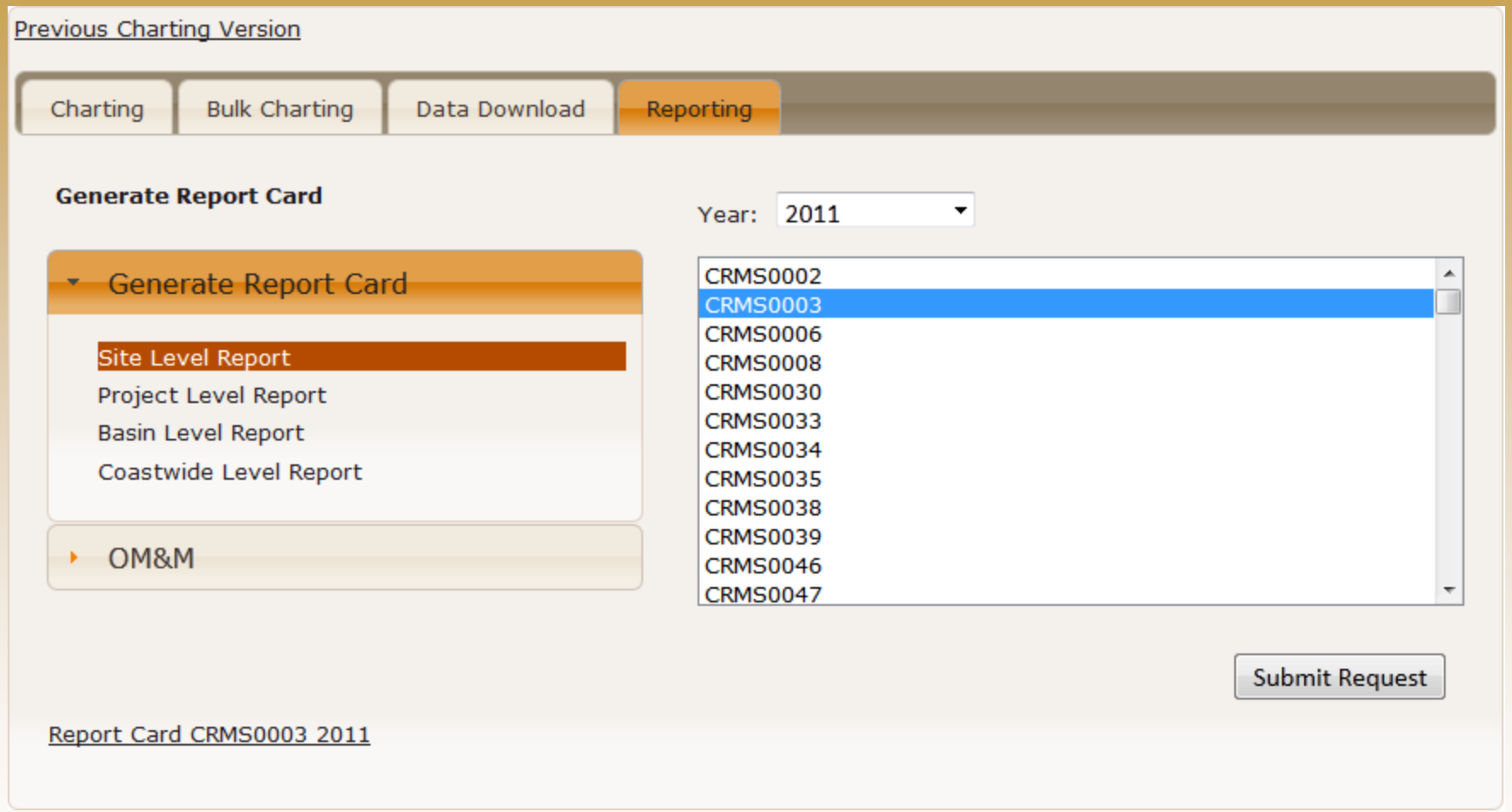
# Spatial selection has been added to Charting



# CRMS Report Card



# Reporting


Previous Charting Version
Charting
Bulk Charting
Data Download
Reporting
Generate Report Card
Year: 2011
Generate Report Card
Site Level Report
Project Level Report
Basin Level Report
Coastwide Level Report
OM&M
CRMS0002
CRMS0003
CRMS0006
CRMS0008
CRMS0030
CRMS0033
CRMS0034
CRMS0035
CRMS0038
CRMS0039
CRMS0046
CRMS0047
Submit Request
Report Card CRMS0003 2011

# Reporting

Coastwide Reference Monitoring System (CRMS)

Site Level Report Card

Site: CRMS0003

Year: 2011

7/16/2012



## Literature Cited

Cahoon, D.R., D.J. Reed, and J.W. Day, Jr. 1995. Estimating shallow subsidence in microtidal salt marshes of the southeastern United States: Kaye and Barghoorn revisited. Marine Geology 128: 1-9.

Couvillion, B.R., Barras, J.A., Steyer, G.D., Sleavin, William, Fischer, Michelle, Beck, Holly, Trahan, Nadine, Griffin, Brad, and Heckman, David, 2011, Land area change in coastal Louisiana from 1932 to 2010: U.S. Geological Survey Scientific Investigations Map 3164, scale 1:265,000, 12 p. pamphlet.

Cretini, K.F., and Steyer, G.D. 2011, Floristic Quality Index -- An assessment tool for restoration projects and monitoring sites in coastal Louisiana: U.S. Geological Survey Fact Sheet 2011-3044, 4 p. http://pubs.usgs.gov/fs/2011/3044/.

Cretini, K.F, Visser, J.M., Krauss, K.W., and Steyer, G.D. 2011. Development and use of a floristic quality index for coastal Louisiana marshes. Environmental Monitoring and Assessment.

IPCC. 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on ClimateChange(IPCC). Solomon, S., Qin, D., Manning, M., Marquis, M., Averyt, K., Tignor, M.M.B., Miller, H.L.Jr., and Chen, Z., editors. Cambridge University Press, UK.

Kulp, M.A. 2000. Holocene stratigraphy, history and subsidence: Mississippi River Delta region, north-central Gulf of Mexico. Ph.D. Dissertation, University of Kentucky. 358p.

NOAA, 2011. Tidal datums. http://tidesandcurrents.noaa.gov/datum_options.html. Accessed 08/01/2011.

Snedden, G.A., and Swenson, E.M., 2012, Hydrologic index development and application to selected Coastwide Reference Monitoring System sites and Coastal Wetlands Planning, Protection and Restoration Act projects: U.S. Geological Survey Open-File Report 2012–1122, 25 p.

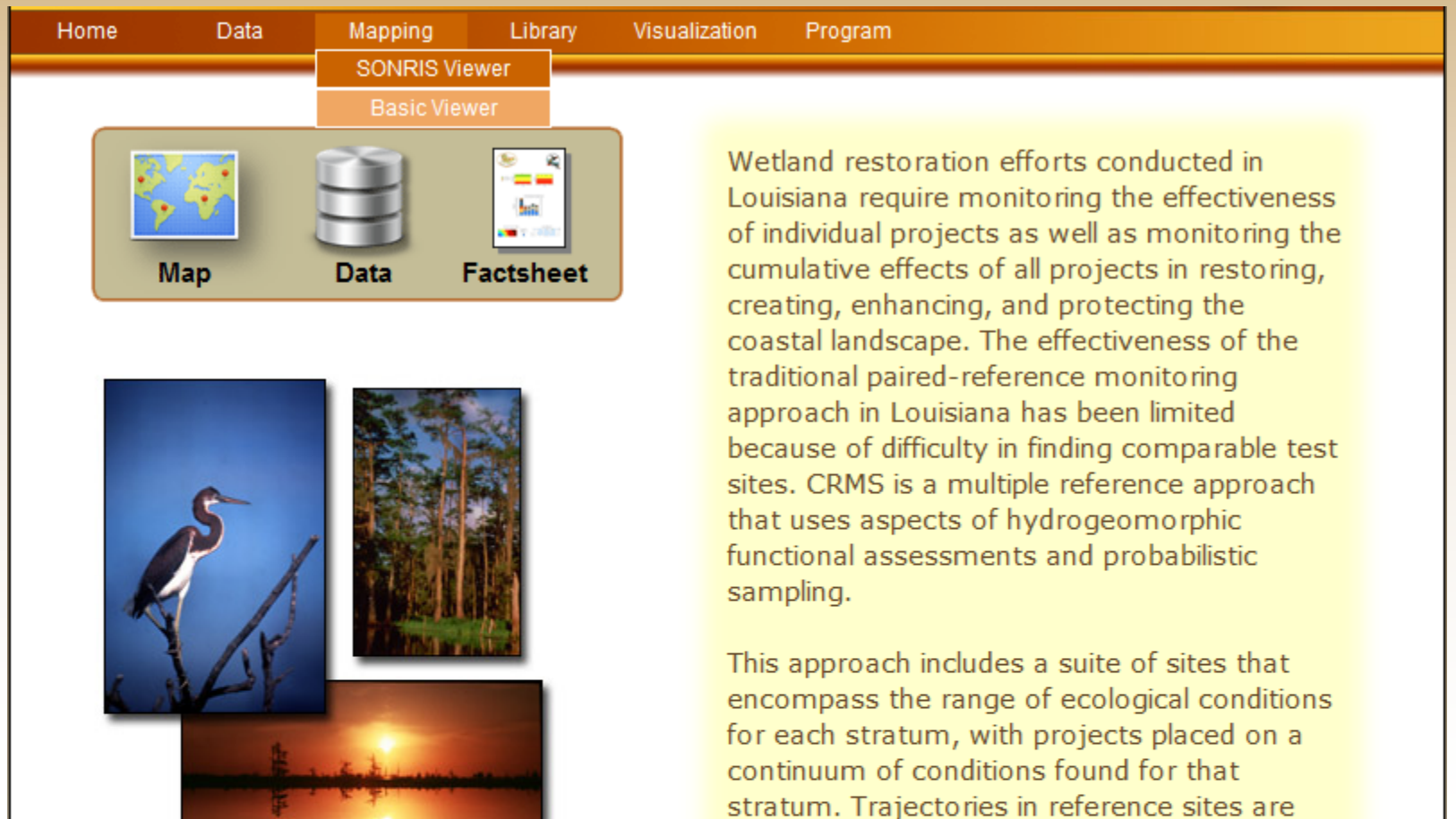
Stagg, C.L., Sharp, L.A., McGinnis, T.E., and Snedden, G.A., 2013, Submergence Vulnerability Index development and application to Coastwide Reference Monitoring System sites and Coastal Wetlands Planning, Protection and Restoration Act projects: U.S. Geological Survey Open-File Report 2013–1163, 13 p.

Steyer, G.D., Sasser, C.E., Visser, J.M., Swensen, E.M., Nyman, J.A., and Raynie, R.C., 2003, A proposed coast-wide reference monitoring system for evaluating wetland restoration trajectories in Louisiana. Environmental Monitoring and Assessment, 81:107-117.

Steyer, G.D., 2010, Coastwide Reference Monitoring System (CRMS): U.S. Geological Survey Fact Sheet 2010-3018, 2 p. (Revised August 2010). http://pubs.usgs.gov/fs/2010/3018/.

Visser, J.M., Steyer, G.D., Shaffer, G.P., Höppner, S.S., Reyes E., Keddy, P., Mendelssohn, I.A., and Swarzenski, C., 2003b, Habitat Switching Module, in Louisiana Coastal Area(LCA), La - Ecosystem Restoration: Comprehensive Coastwide Exosystem.

# *Using the mapping interface*

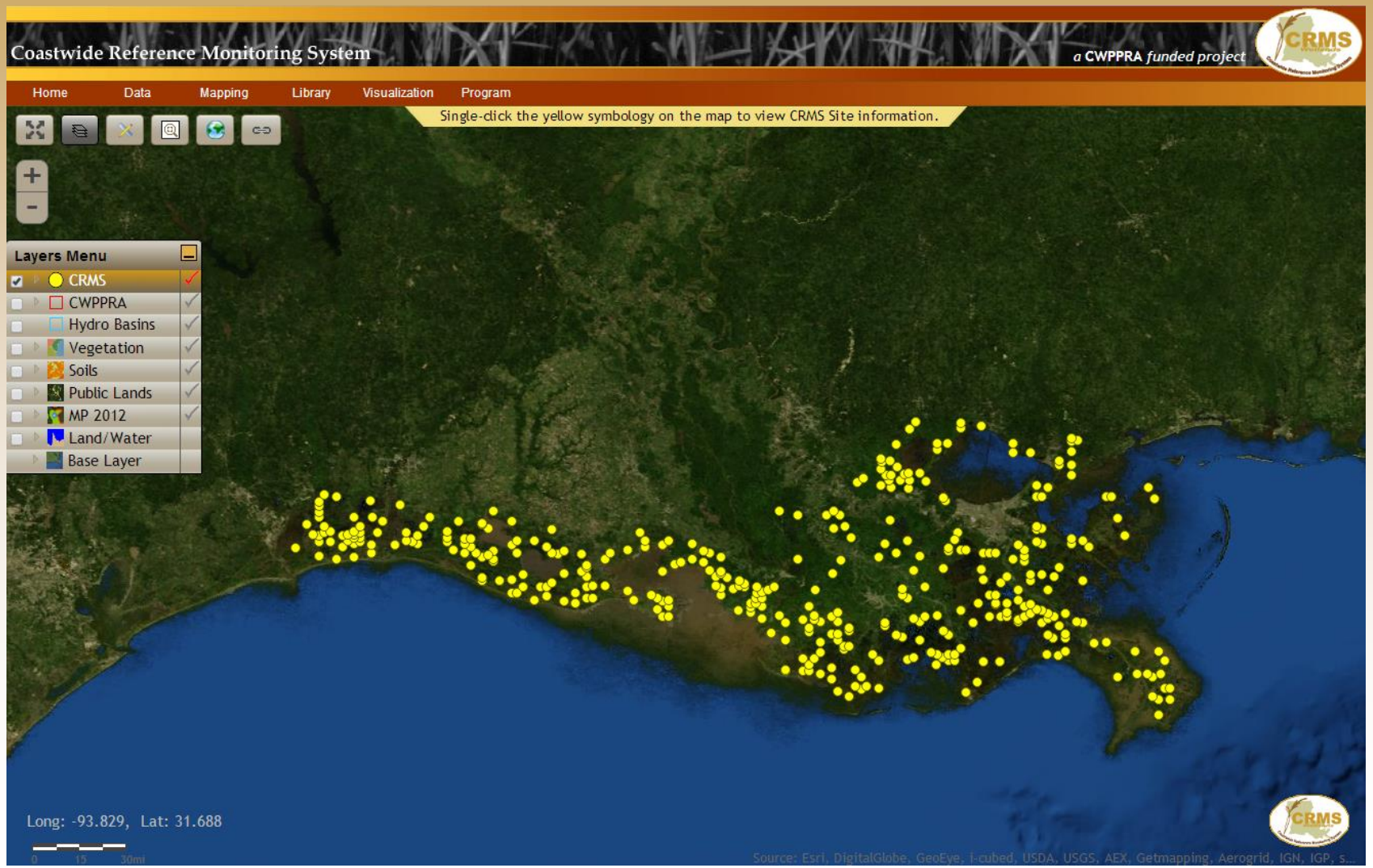



Wetland restoration efforts conducted in Louisiana require monitoring the effectiveness of individual projects as well as monitoring the cumulative effects of all projects in restoring, creating, enhancing, and protecting the coastal landscape. The effectiveness of the traditional paired-reference monitoring approach in Louisiana has been limited because of difficulty in finding comparable test sites. CRMS is a multiple reference approach that uses aspects of hydrogeomorphic functional assessments and probabilistic sampling.

This approach includes a suite of sites that encompass the range of ecological conditions for each stratum, with projects placed on a continuum of conditions found for that stratum. Trajectories in reference sites are

# Map Navigation

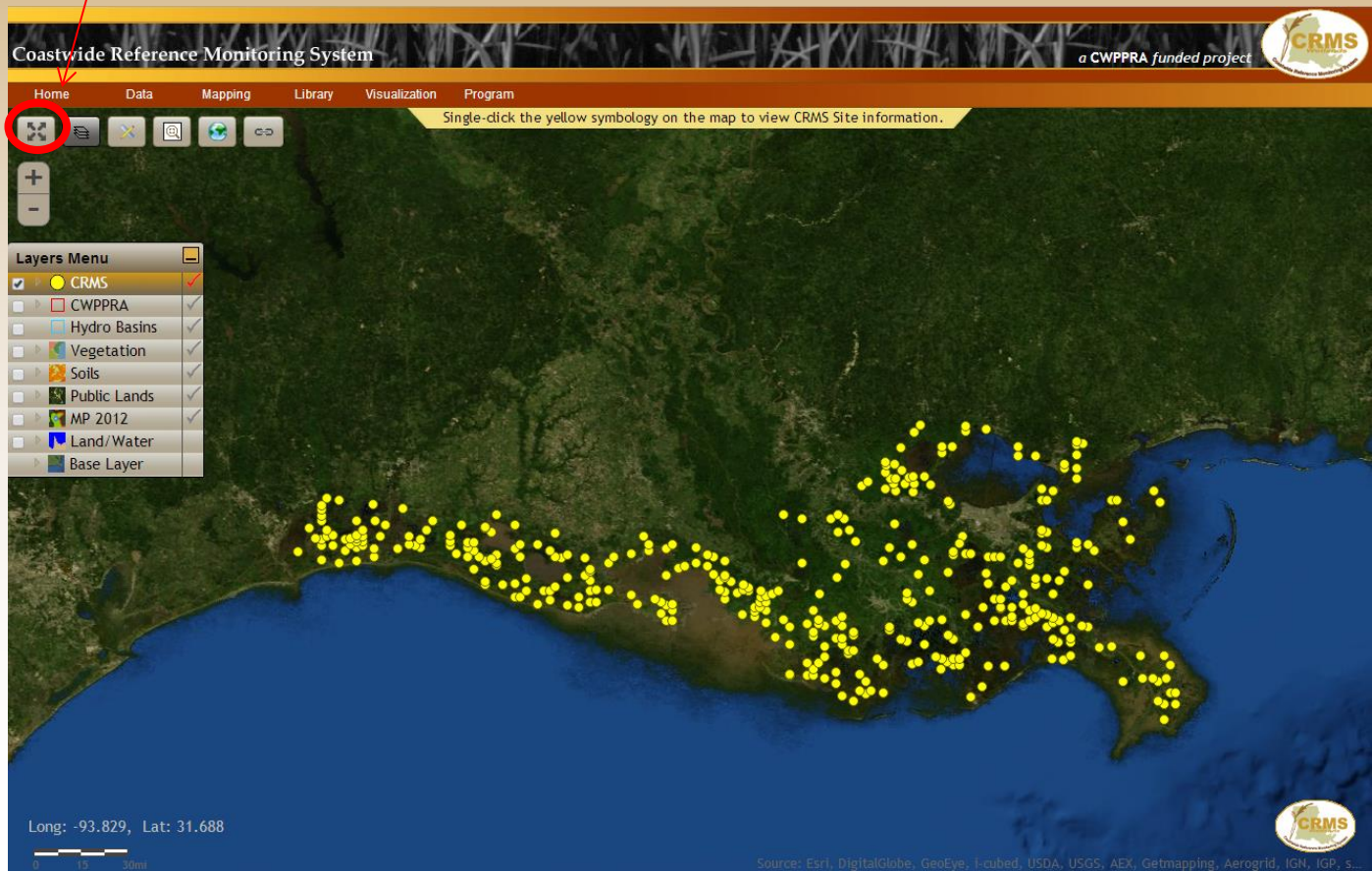
CRMS Viewer now implements ESRI's ArcGIS JavaScript API which allows mouse wheel scrolling to zoom in and out of the map.



# Interface

Full Screen Button hides the top menu.

Full Screen Button changes when the top menu is hidden.



# Interface

Layers Button shows and hides the Layers Menu

Layers Menu Shown:


Layers Menu Hidden:

# Interface

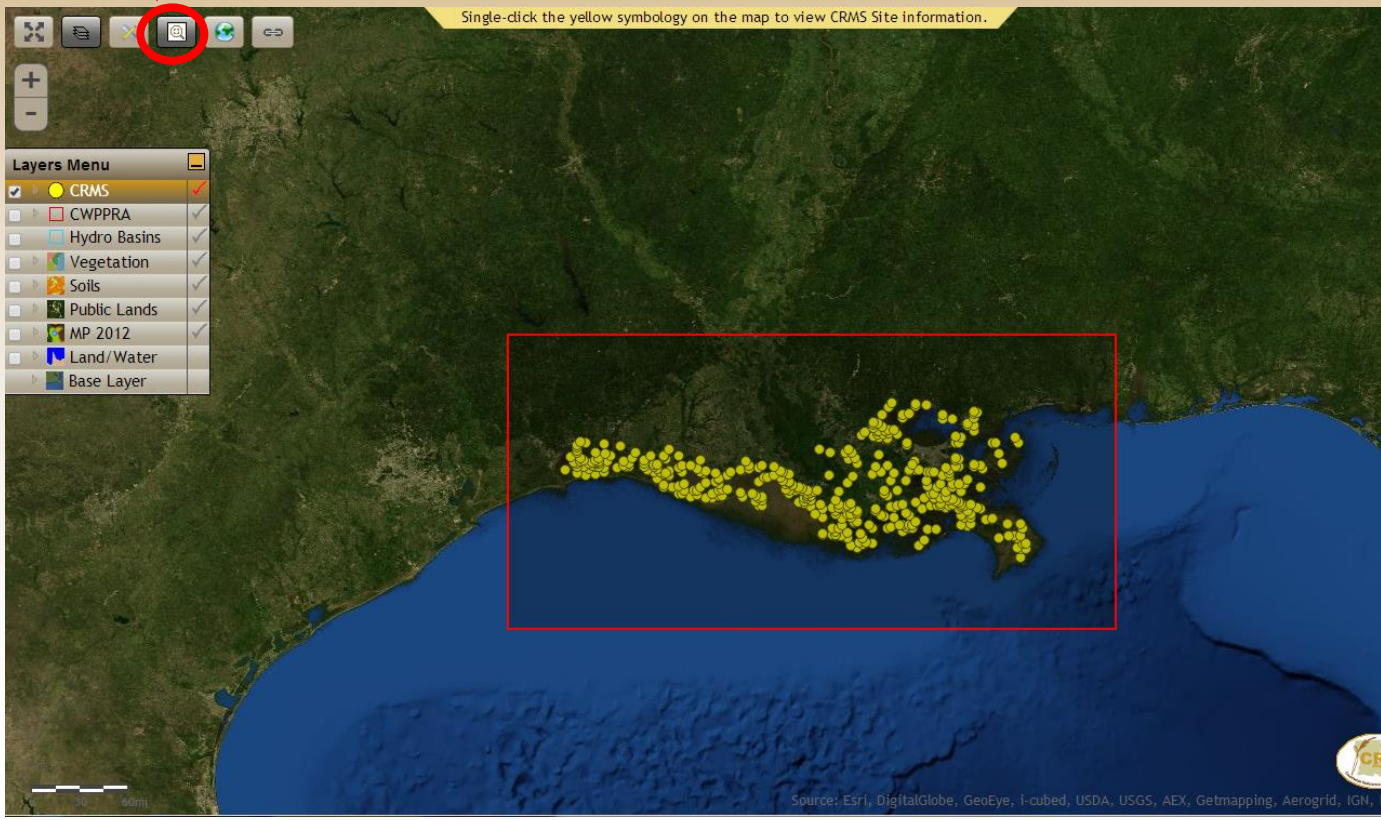
Tools Button darkens when the menu is shown.

Tools Button brings up the Tools Menu.

# Interface

Zoom Button zooms to the rectangle drawn on the map.

The icon darkens when the mouse is in the “zoom” state.

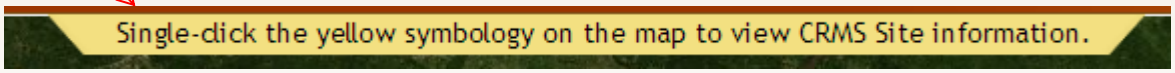



# Interface

Zoom To Full Extent Button resets the map back to the original area and zoom level.

+/- Buttons zoom in and out.

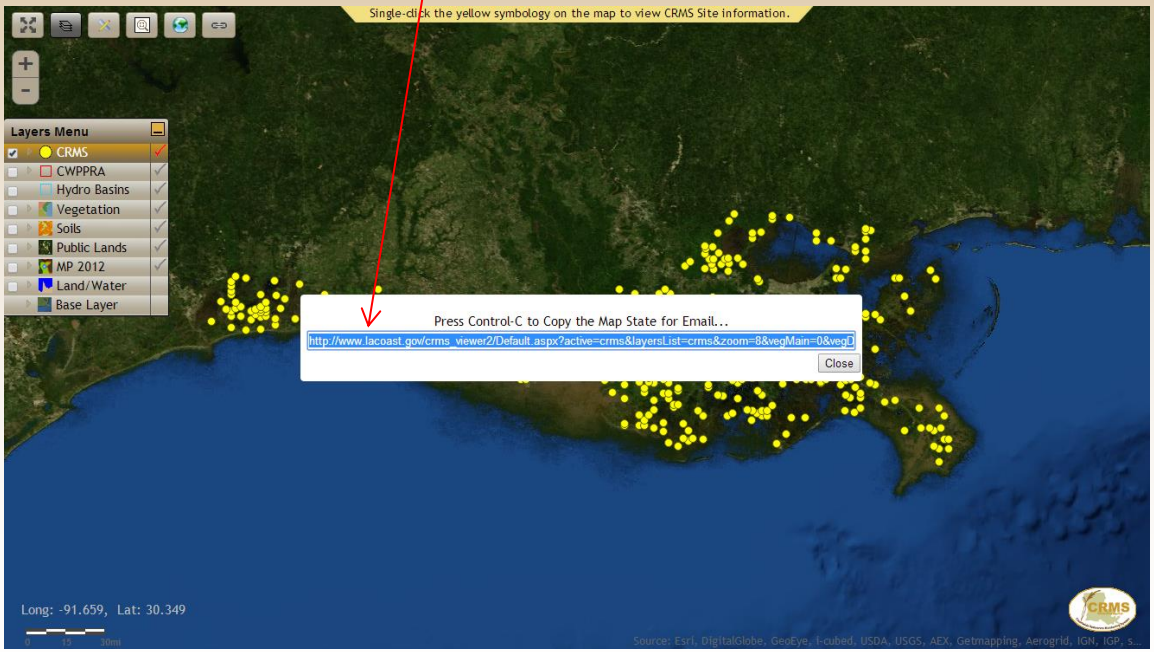
Manila dropdown shows how to interact with the current active layer.



# Interface

Used to create a save state on the map.

Link created to save the current state of the map.

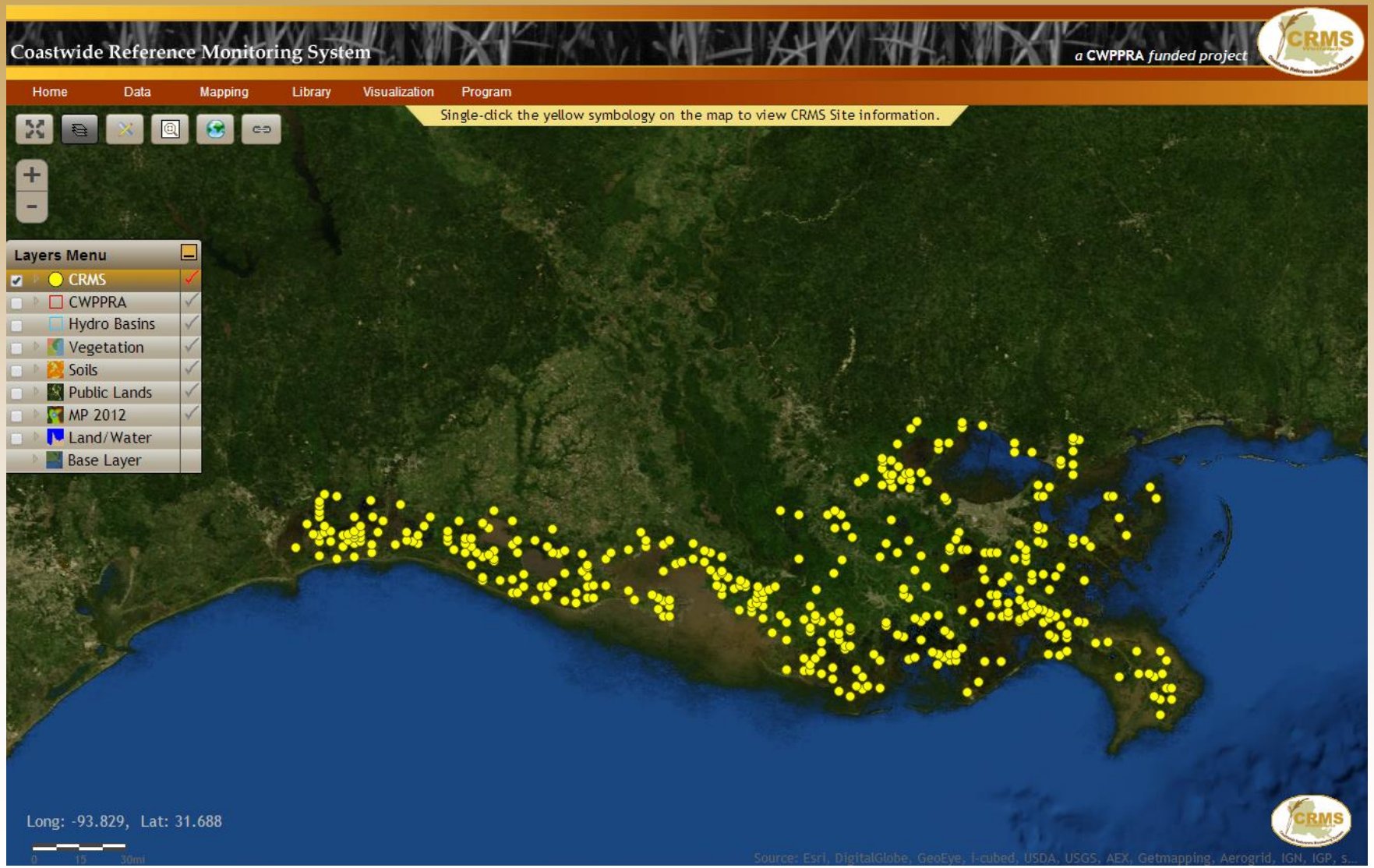


# Interface

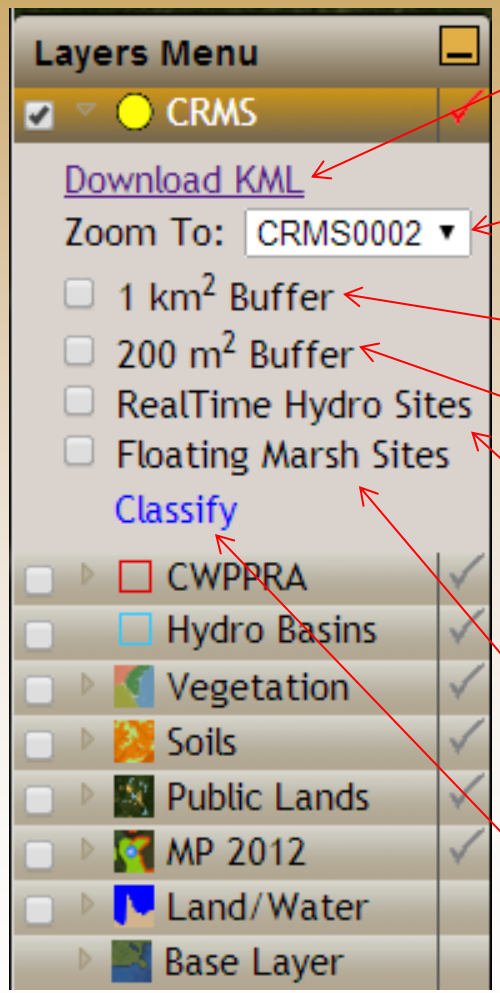
Expand layer to display more layer options.


Make this the current active layer.

# CRMS Active Layer



# CRMS Active Layer




Download a KML file to used in Google Earth.

Zooms to the site and shows the site information bubble.

Checkbox adds/removes the 1 km$^2$ Buffer layer to the map.

Checkbox adds/removes the 200 m$^2$ Buffer layer to the map.

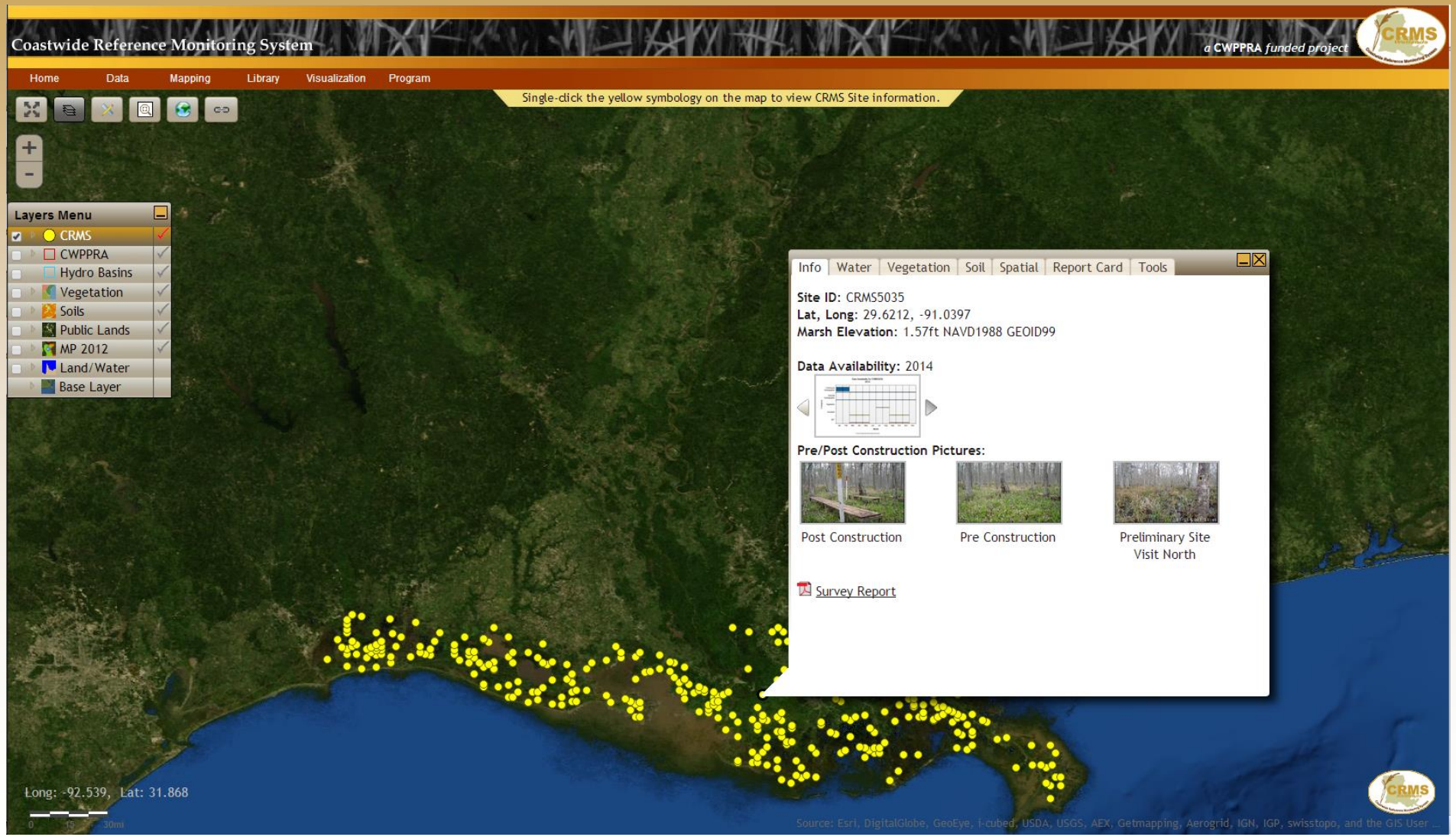
Checkbox adds/removes the Real Time Hydro Sites layer to the map.

Checkbox adds/removes the Floating Marsh Sites layer to the map.

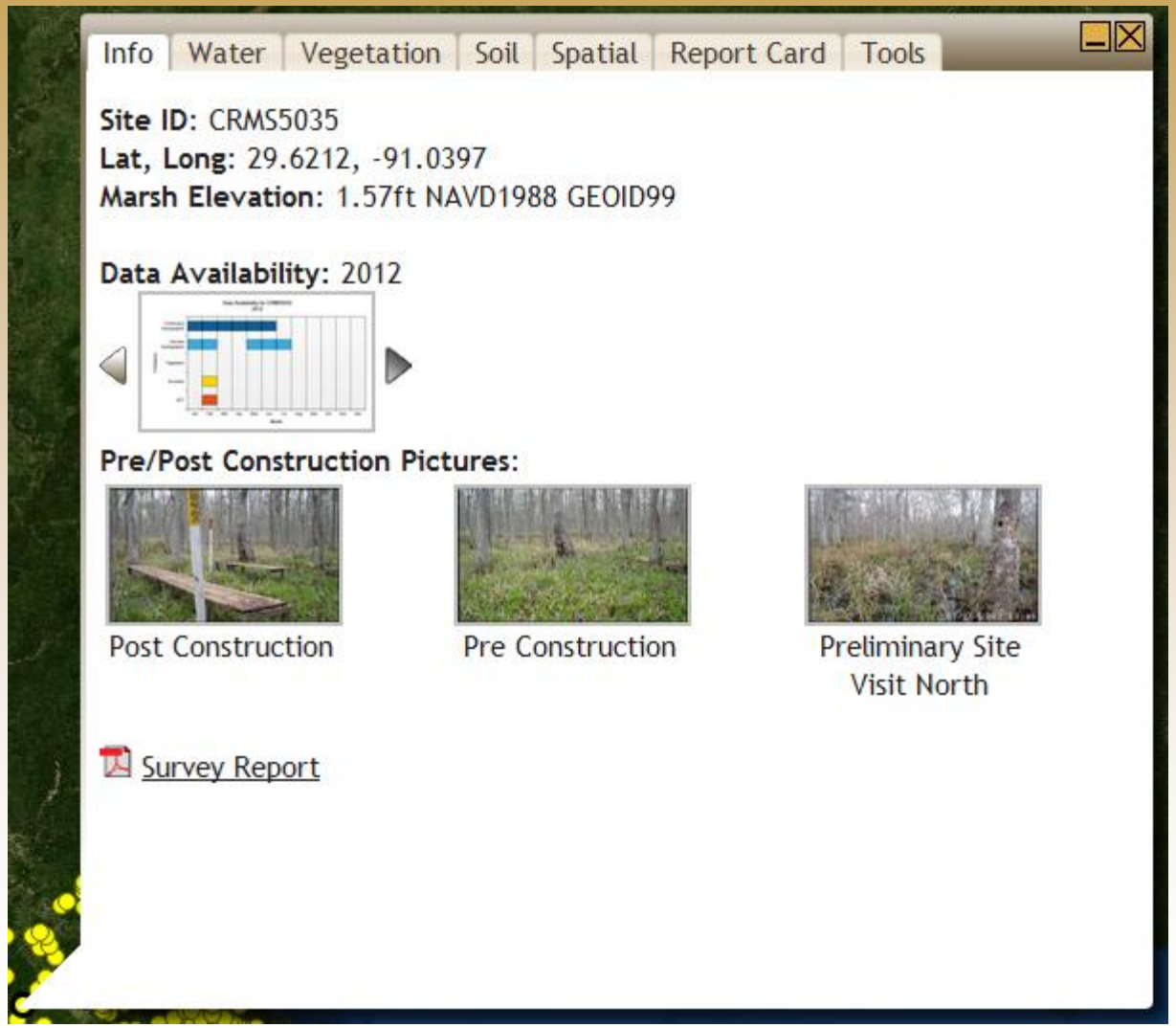
Classify invokes the tools menu with the classification option selected.

# CRMS Active Layer

## Click a point for Information Bubble

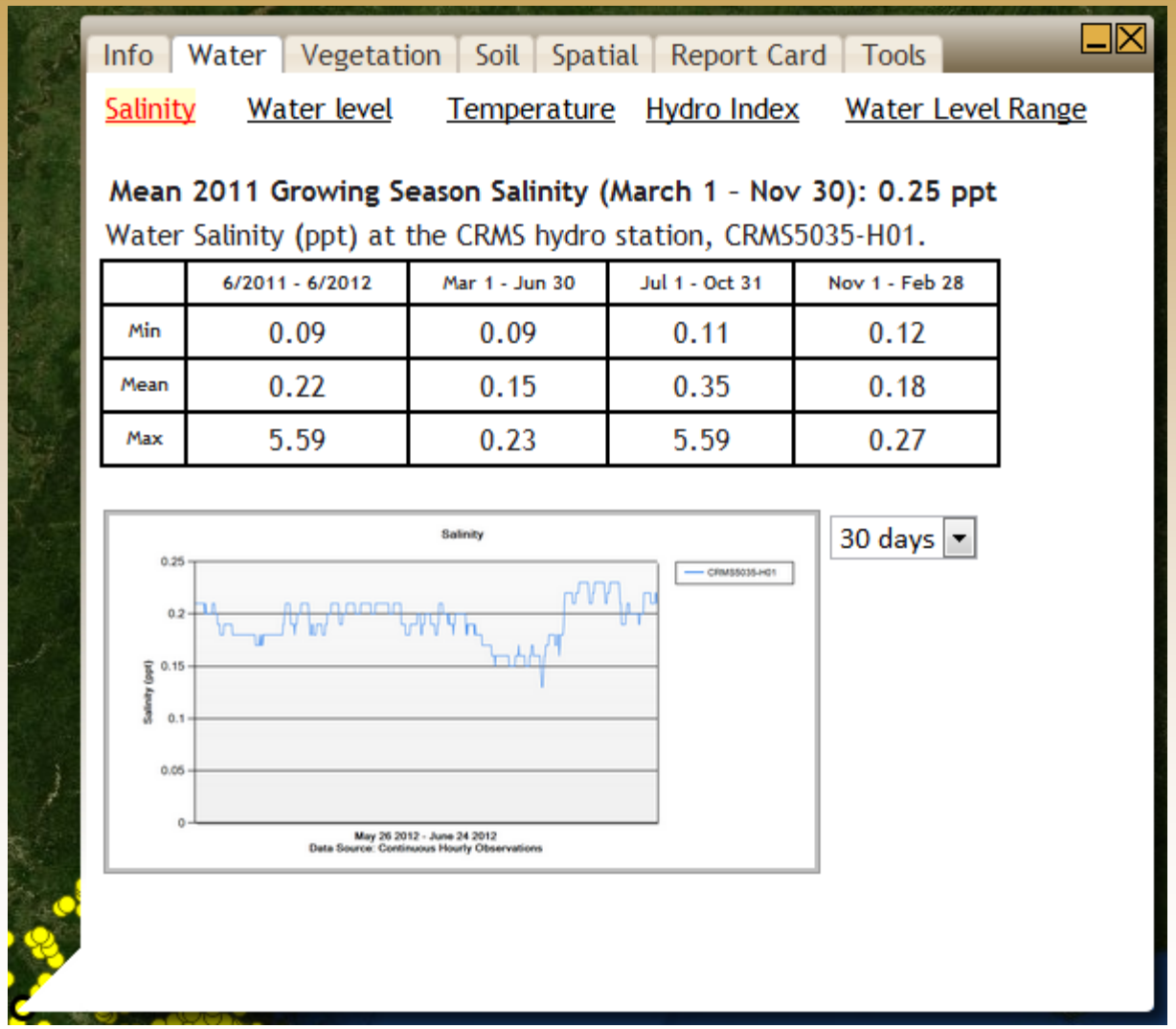


# Information Bubble




The information bubble appears when a CRMS site is clicked. The Site Info tab is automatically chosen when the bubble pops up on the screen.

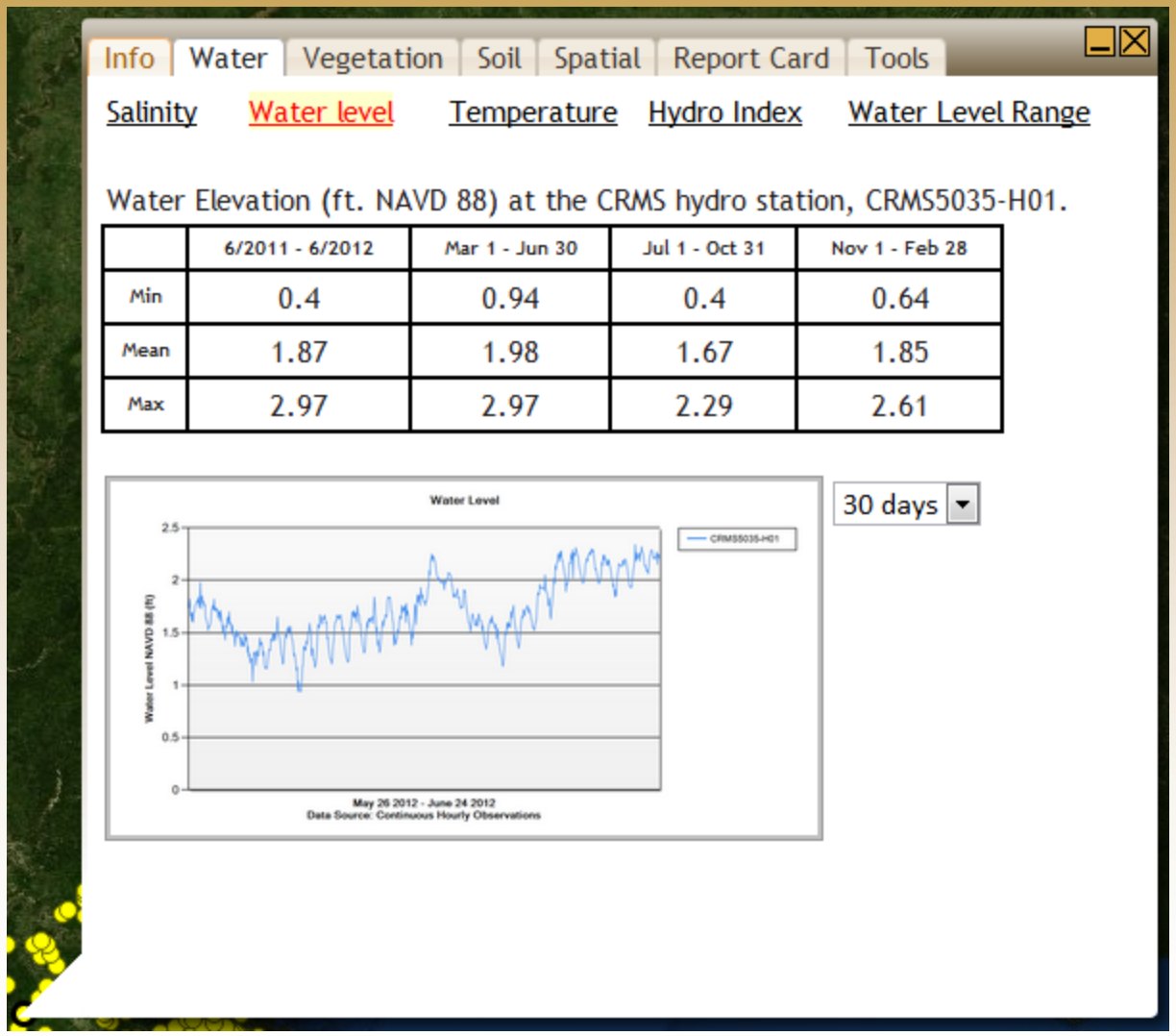
# Information Bubble




The Water tab contains all hydrologic information for the selected site.

Salinity – Brief overview of salinity data for the site. Also charts most recent salinity data for the site.

# Information Bubble

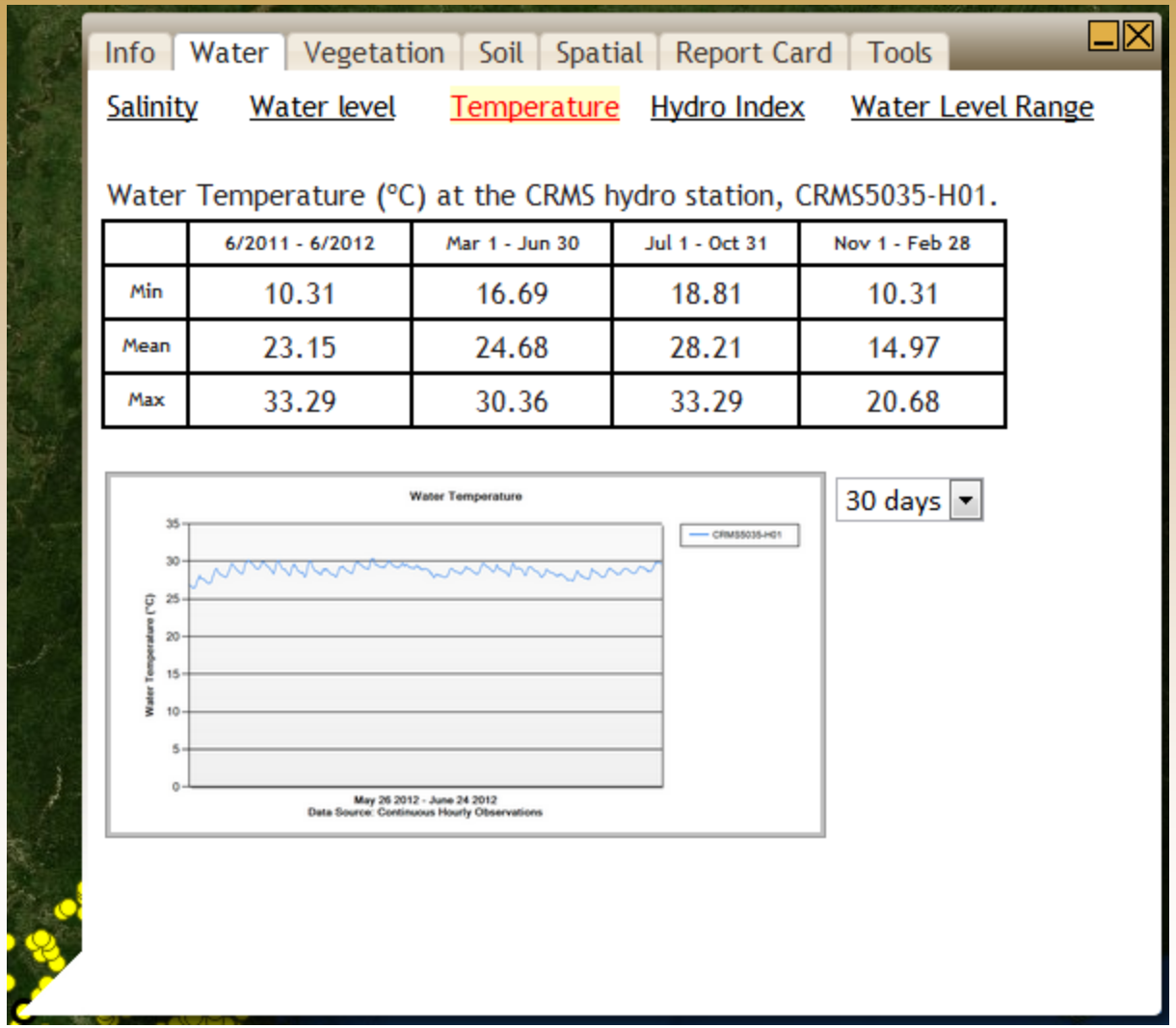



The Water tab contains all hydrologic information for the selected site.

Water Level – Brief overview of water level data for the site. Also charts most recent water level data for the site.

# CRMS Active Layer

## Information Bubble

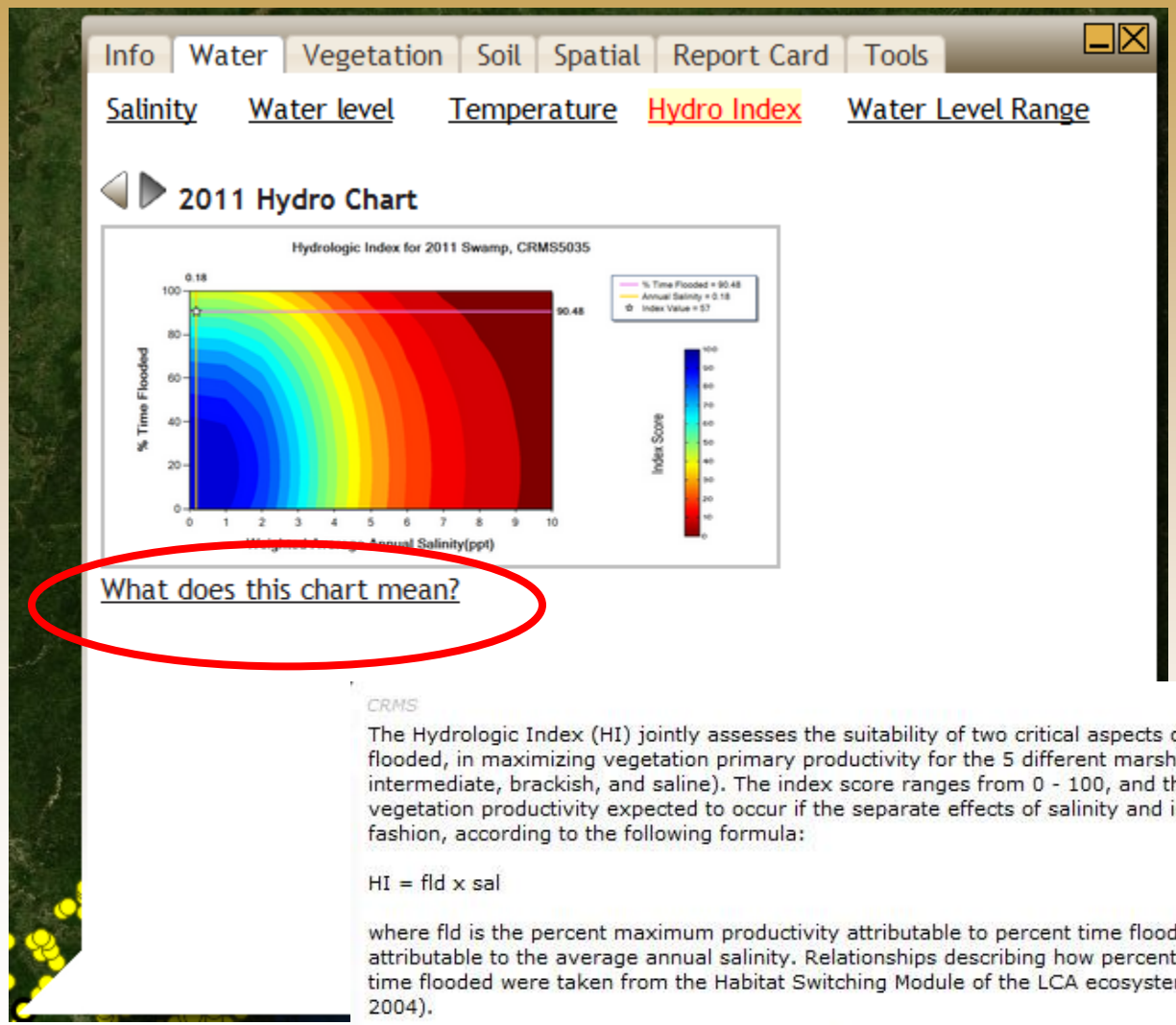



The Water tab contains all hydrologic information for the selected site.

Water Temperature – Brief overview of water temperature data for the site. Also charts most recent temperature data for the site.

# CRMS Active Layer

## Information Bubble

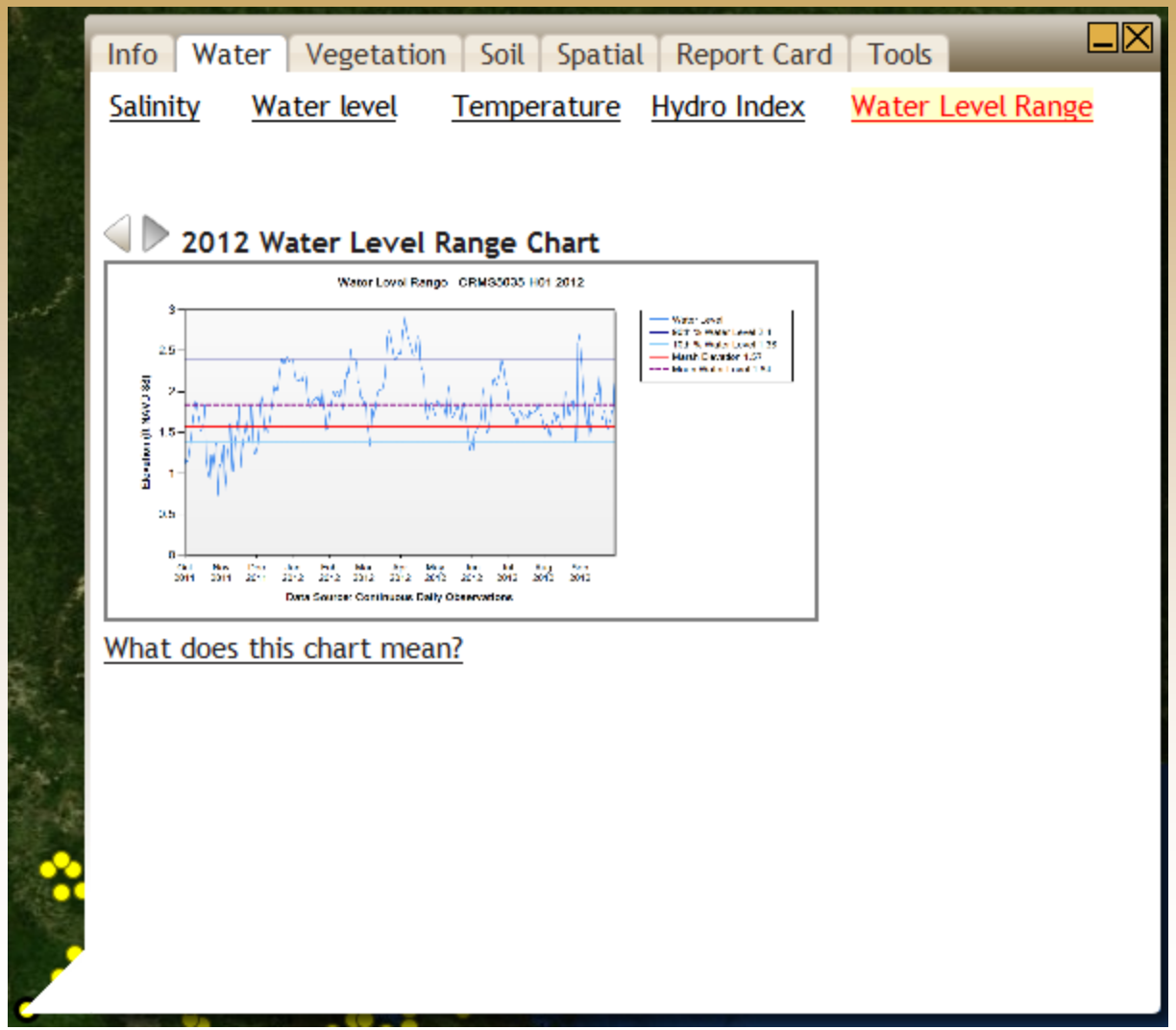



The Water tab contains all hydrologic information for the selected site.

Hydro Index – All Hydro Index charts available for the site.

# CRMS Active Layer

## Information Bubble

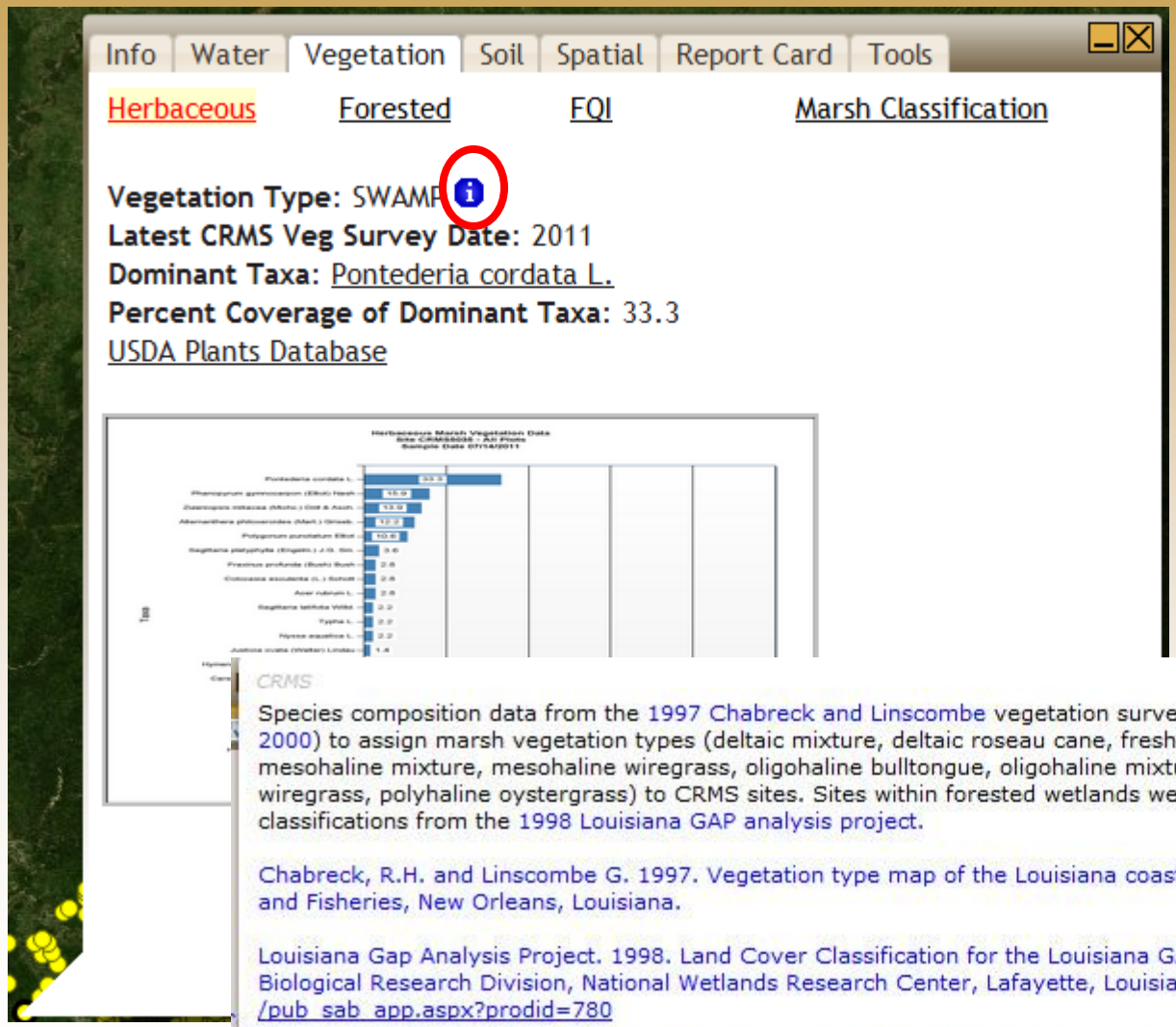



The Water tab contains all hydrologic information for the selected site.

Water Level Range – All water level range charts available for the current site.

# CRMS Active Layer

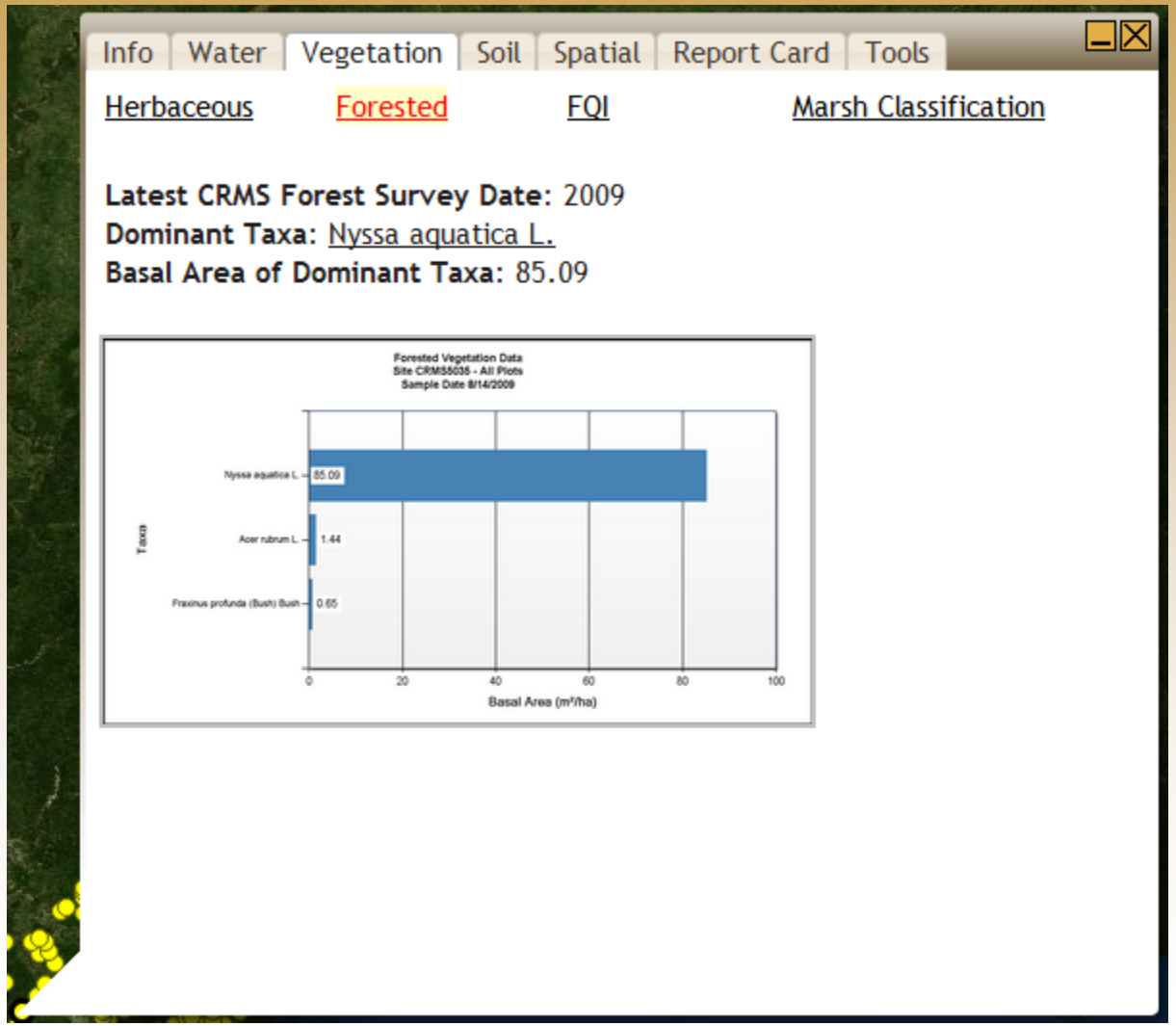
## Information Bubble




The Vegetation tab contains all vegetation information for the selected site.

Herbaceous – Species driven percent cover chart.

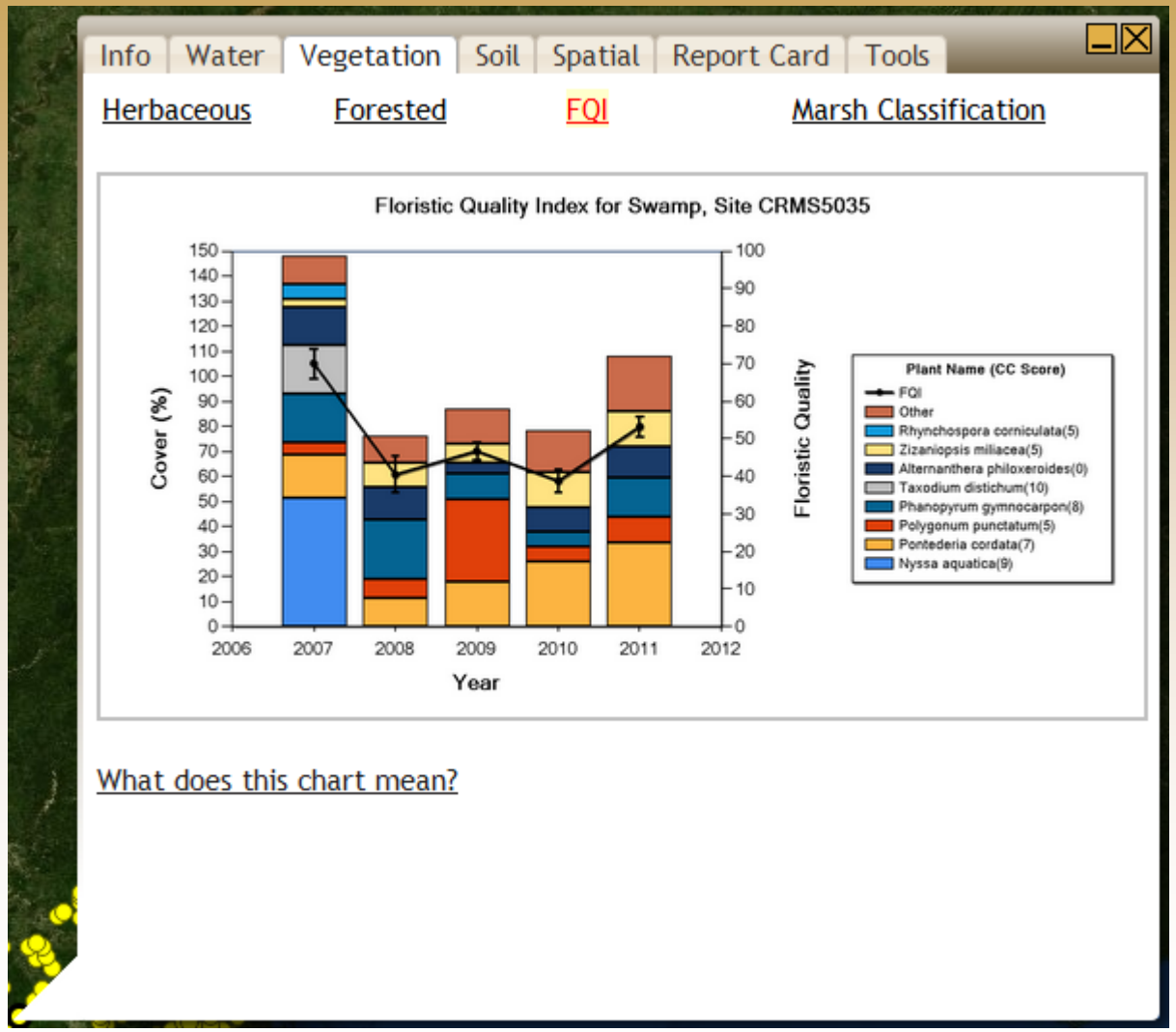
# Information Bubble




The Vegetation tab contains all vegetation information for the selected site.

Forested – Species driven basal area chart.

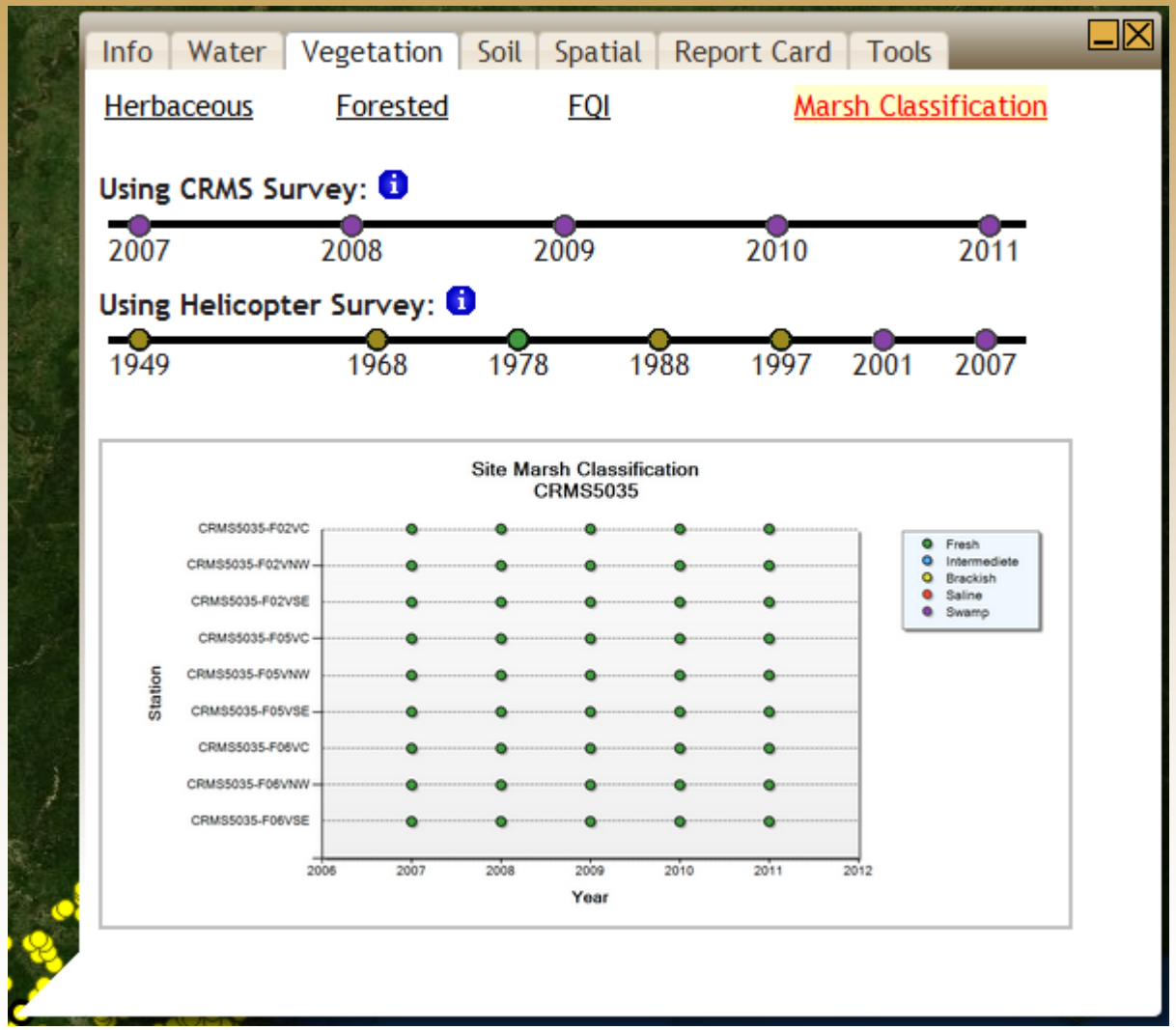
# Information Bubble




The Vegetation tab contains all vegetation information for the selected site.

Floristic Quality Index

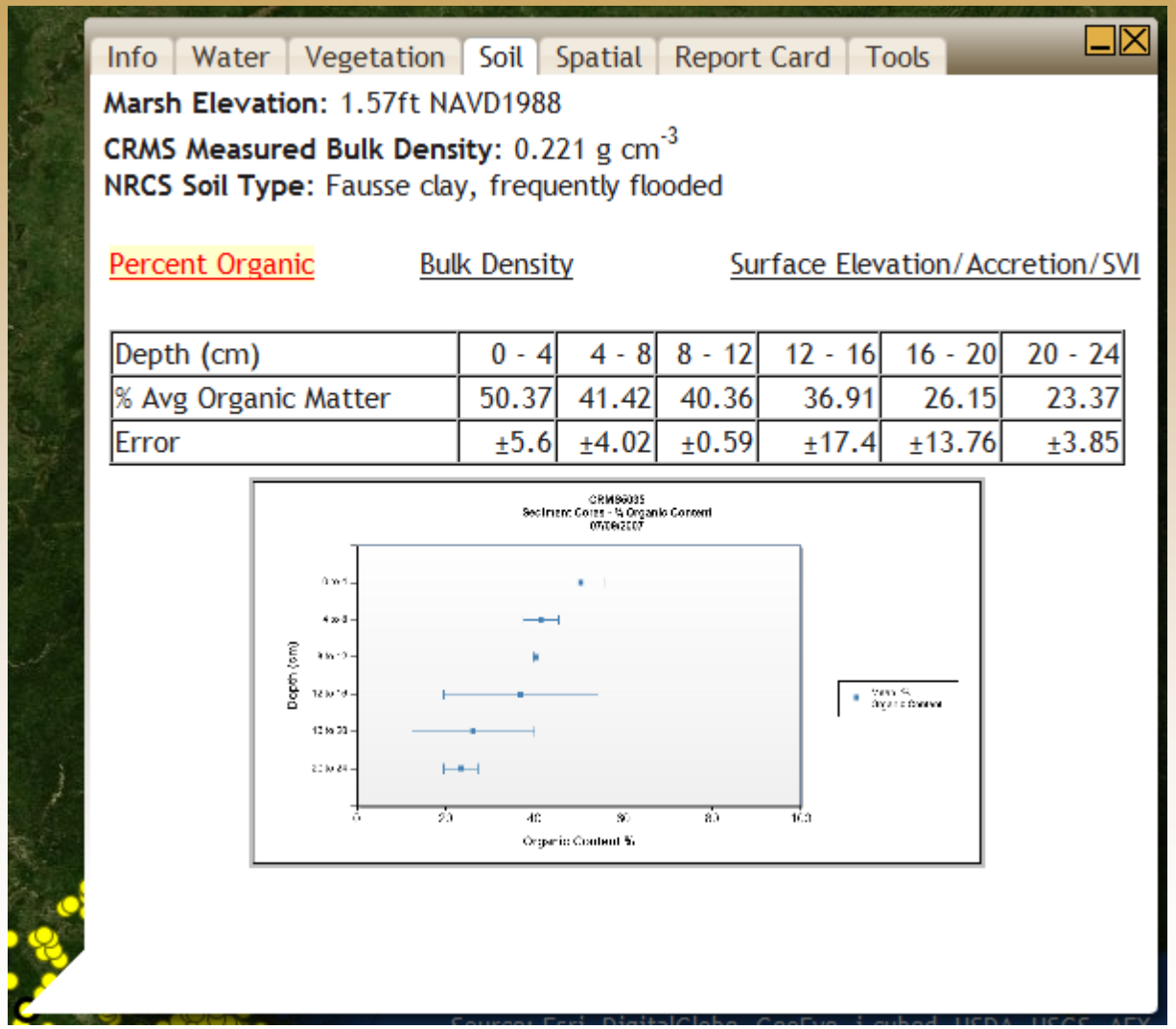
# Information Bubble




The Vegetation tab contains all vegetation information for the selected site.

Marsh Classification – The chart displays marsh class by station over time, the top bar is marsh class at the site level, and the bottom line is marsh class at the site level using the helicopter survey data.

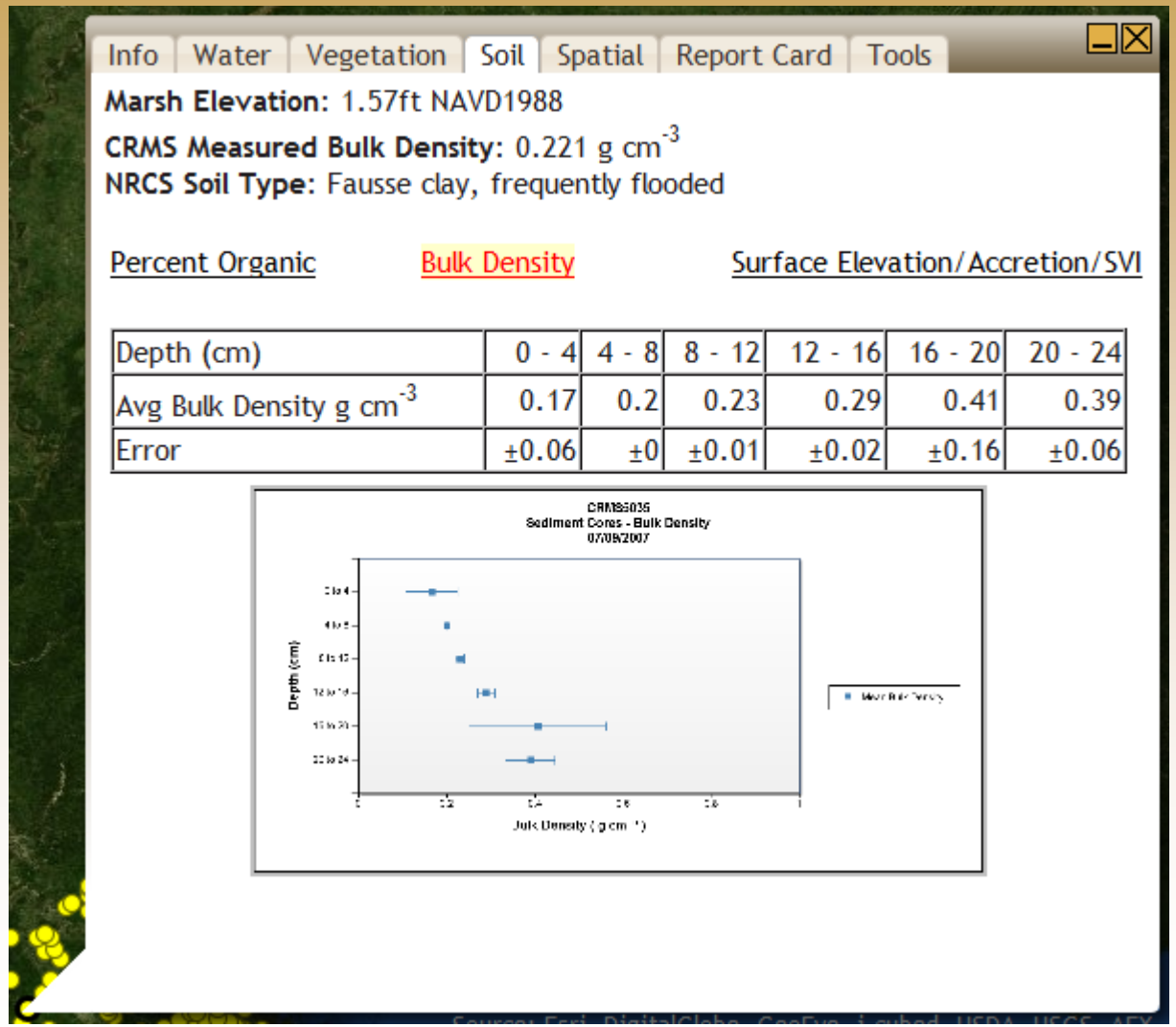
# Information Bubble




The Soil tab contains all soil information for the selected site.

Percent Organic – Soil profiles taken at site establishment.

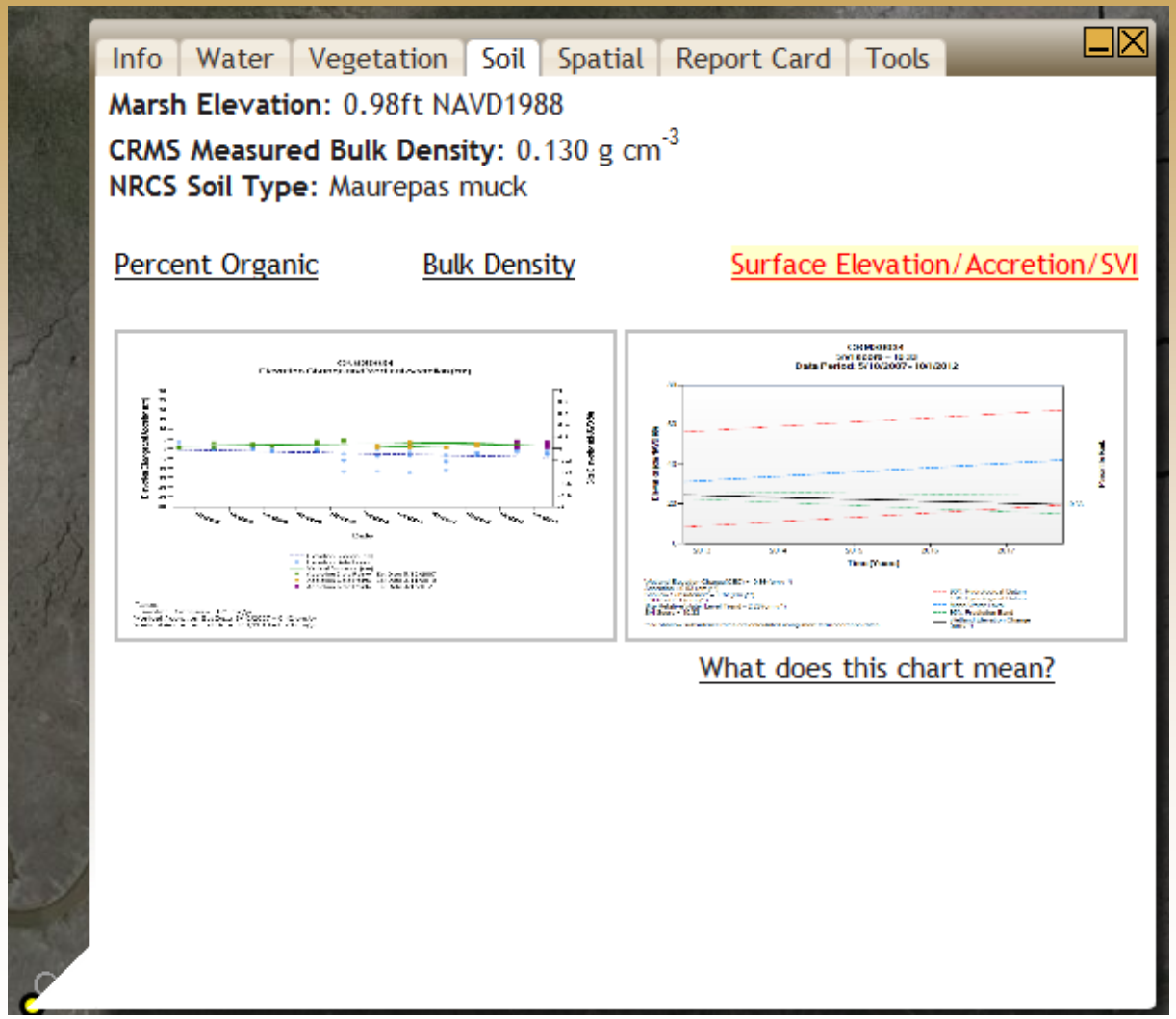
# Information Bubble




The Soil tab contains all soil information for the selected site.

Bulk Density - Soil profiles taken at site establishment.

# Information Bubble

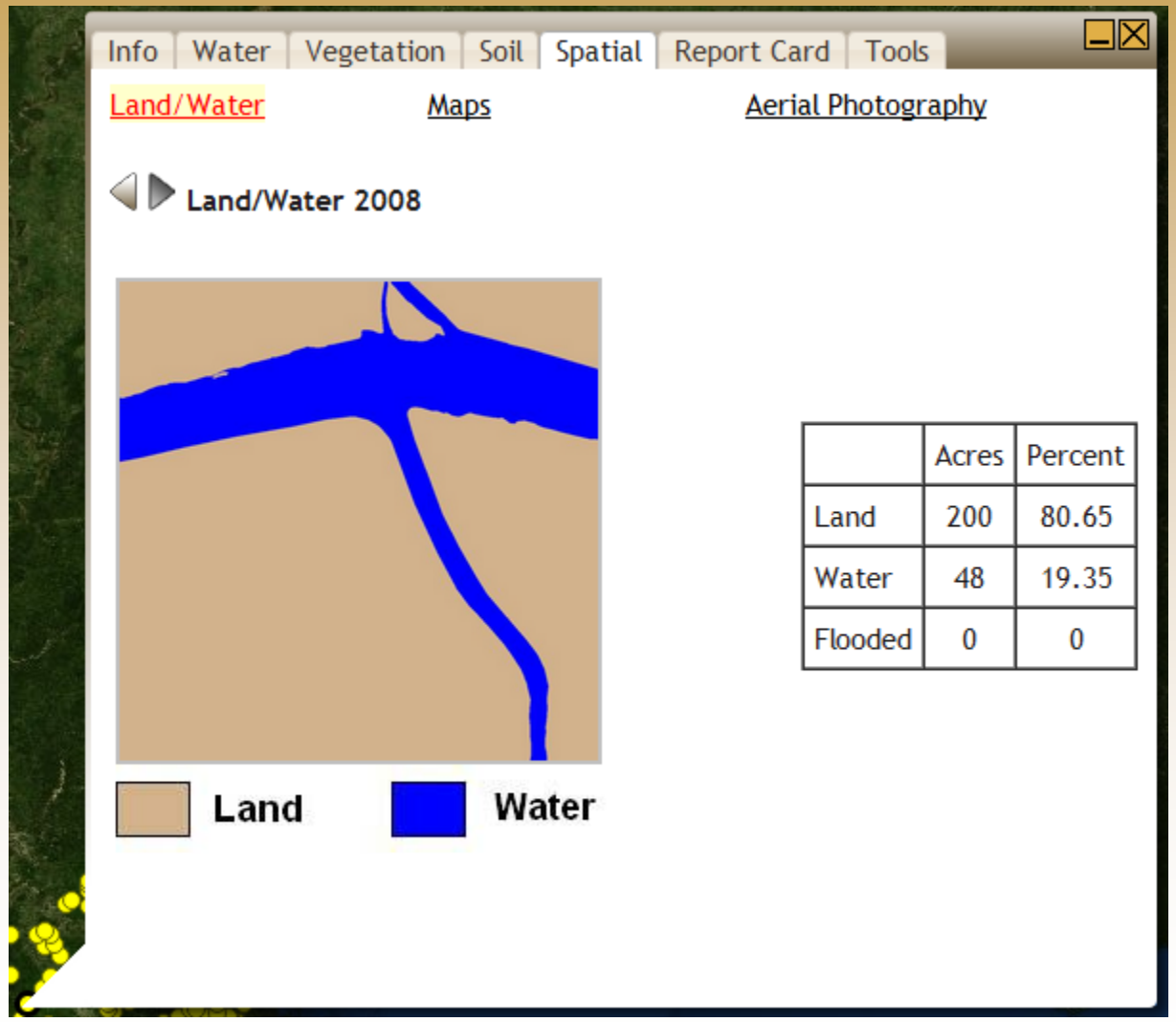



The Soil tab contains all soil information for the selected site.

Surface Elevation/Accretion – currently displays site level elevation change and accretion and gives rates for shallow subsidence.

# CRMS Active Layer

## Information Bubble



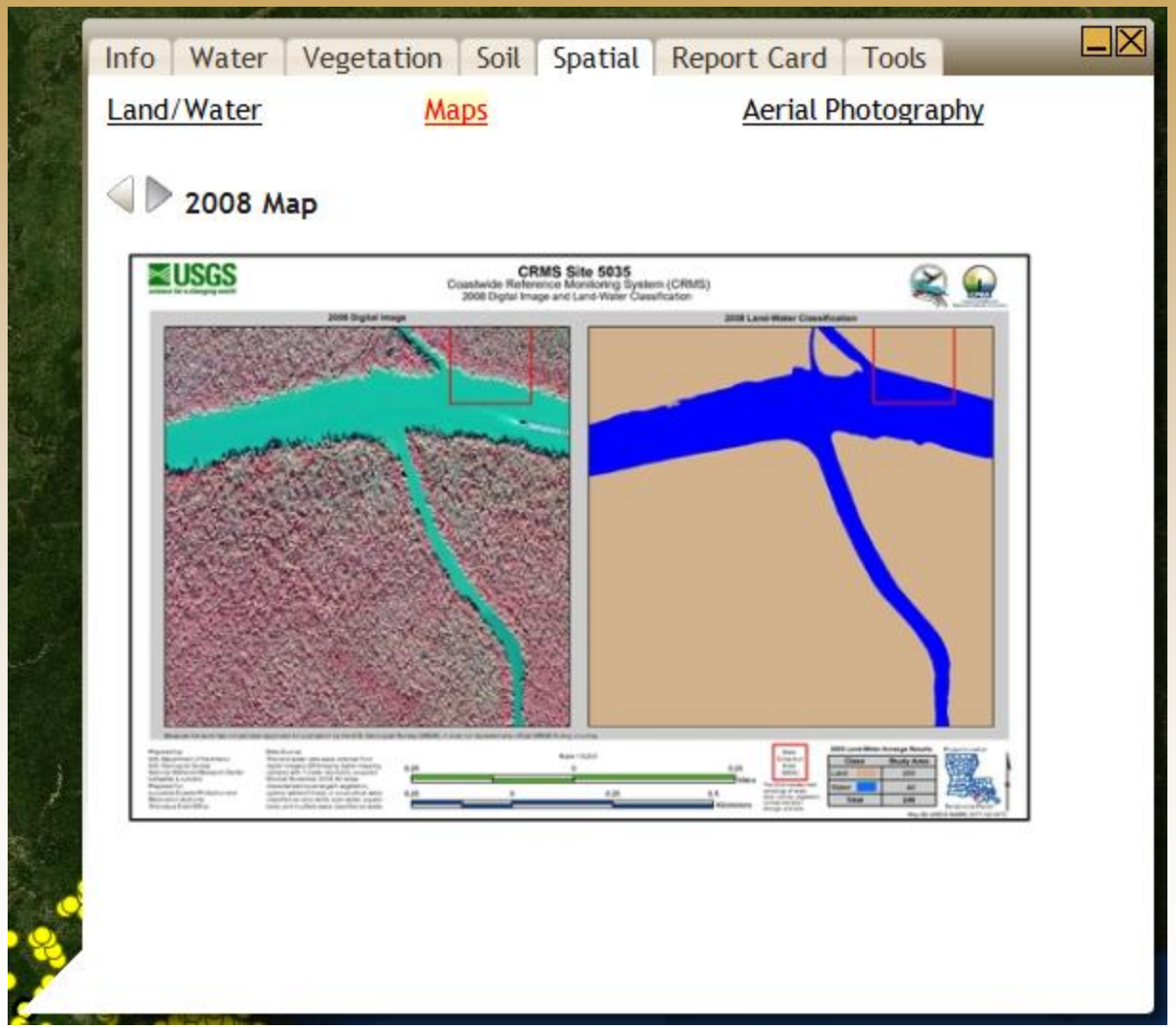

| | Acres | Percent |
|---|---|---|
| Land | 200 | 80.65 |
| Water | 48 | 19.35 |
| Flooded | 0 | 0 |

The Spatial tab contains all spatial information for the selected site.

Land/Water with acre breakdowns

# CRMS Active Layer

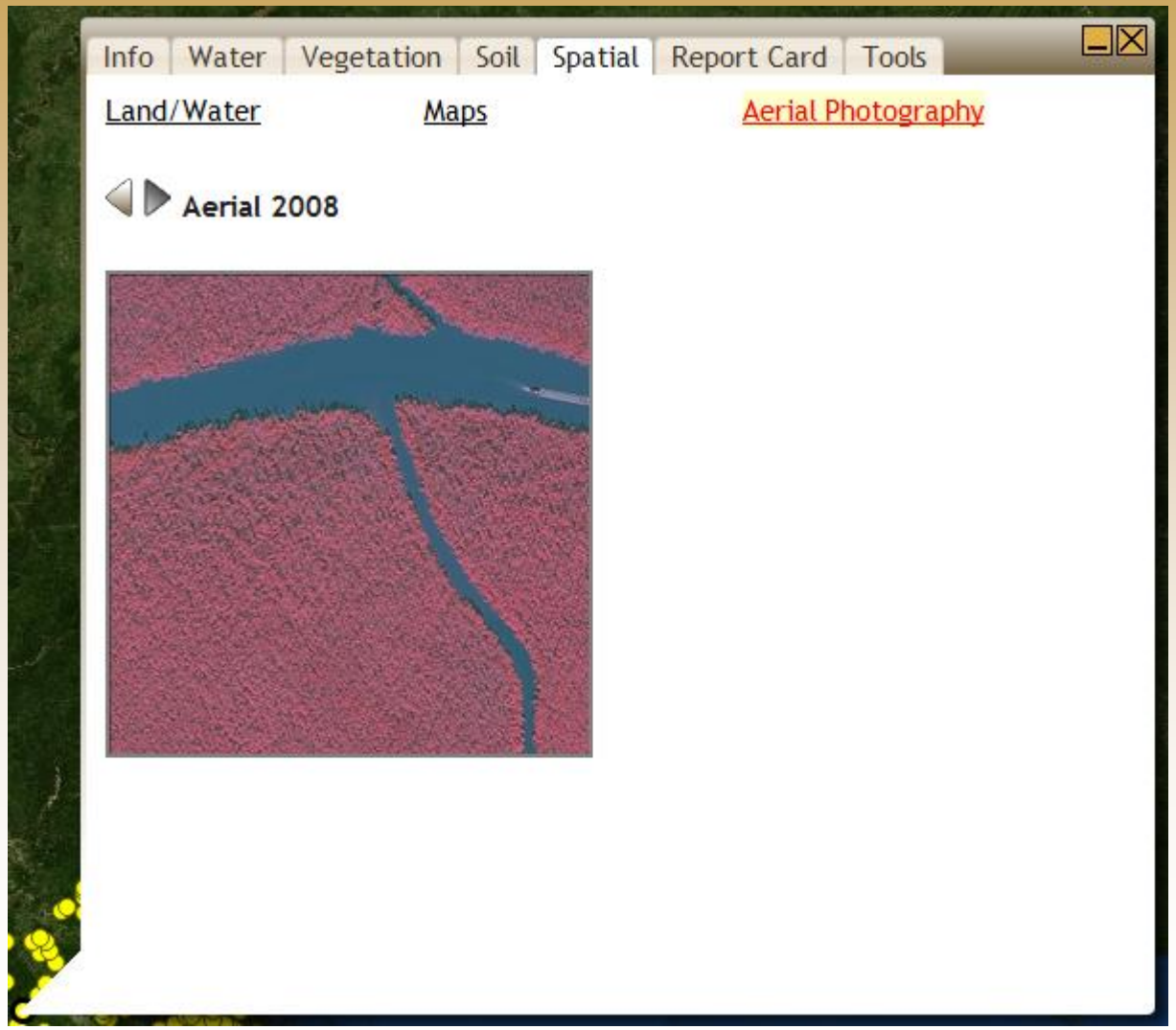
## Information Bubble




The Spatial tab contains all spatial information for the selected site.

Site Specific maps at the 1km$^2$ scale.

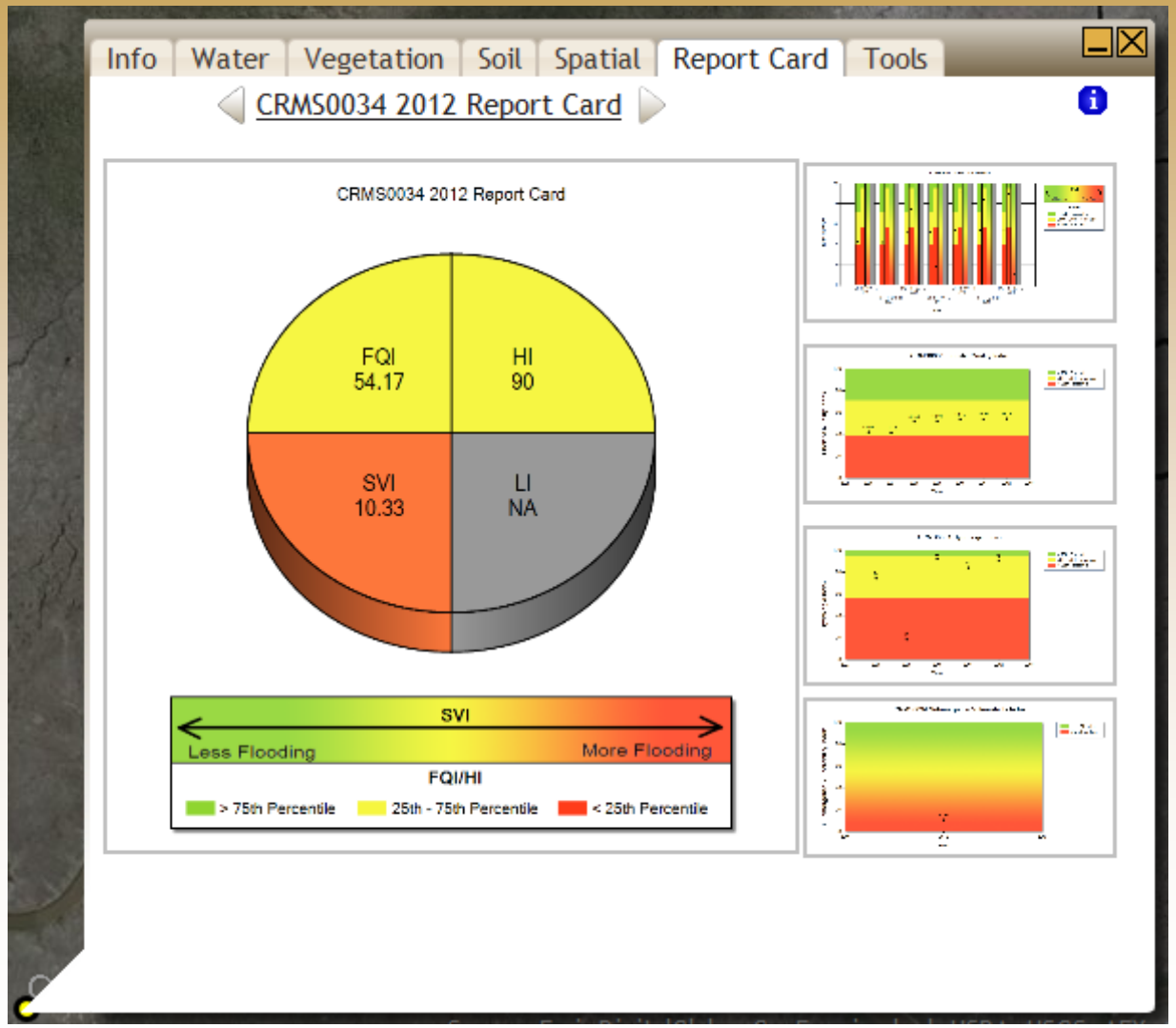
# Information Bubble




The Spatial tab contains all spatial information for the selected site.

Aerial Photography

# Information Bubble

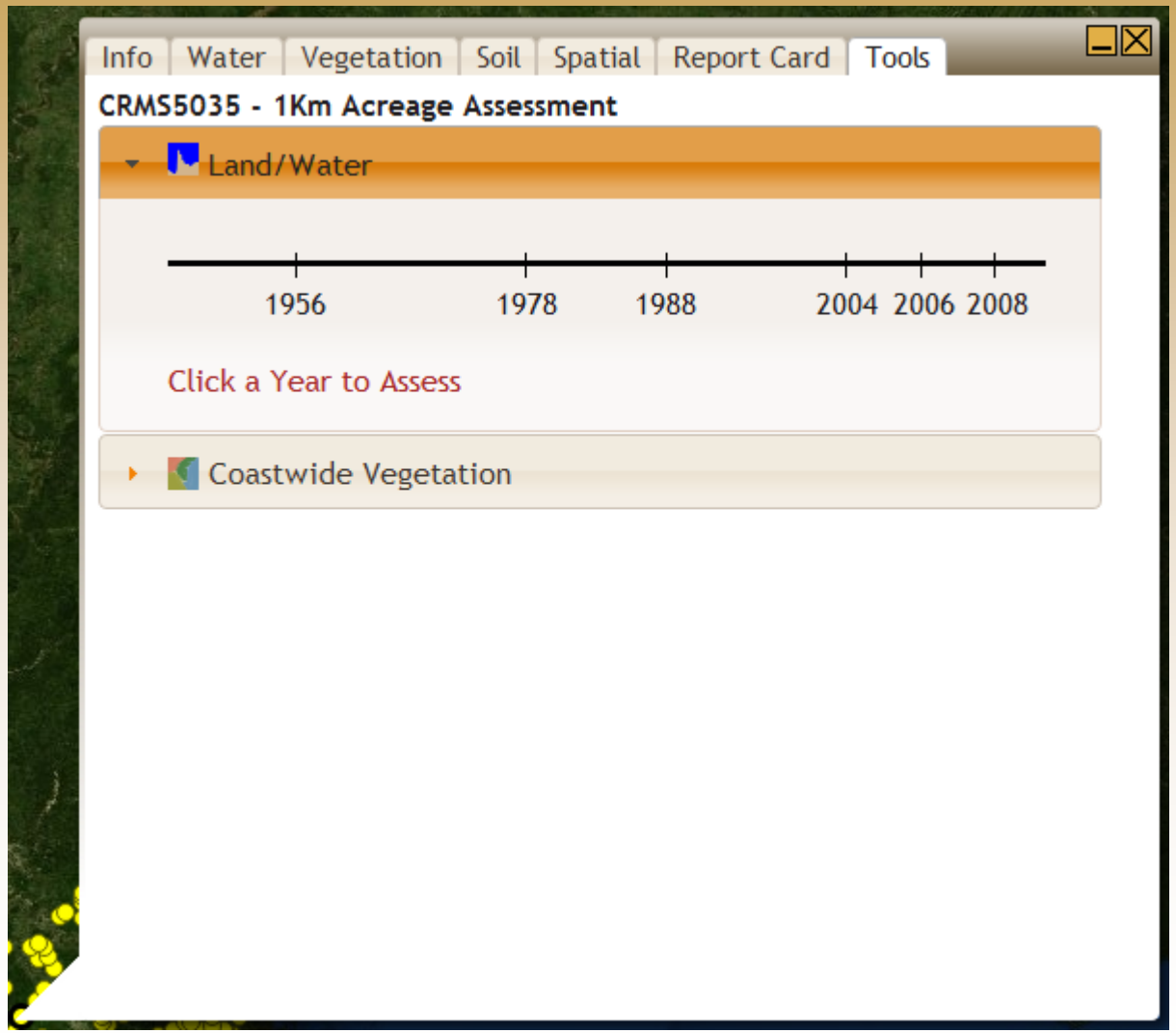



The Report Card tab contains all report card information for the selected site.

Report Card

# CRMS Active Layer

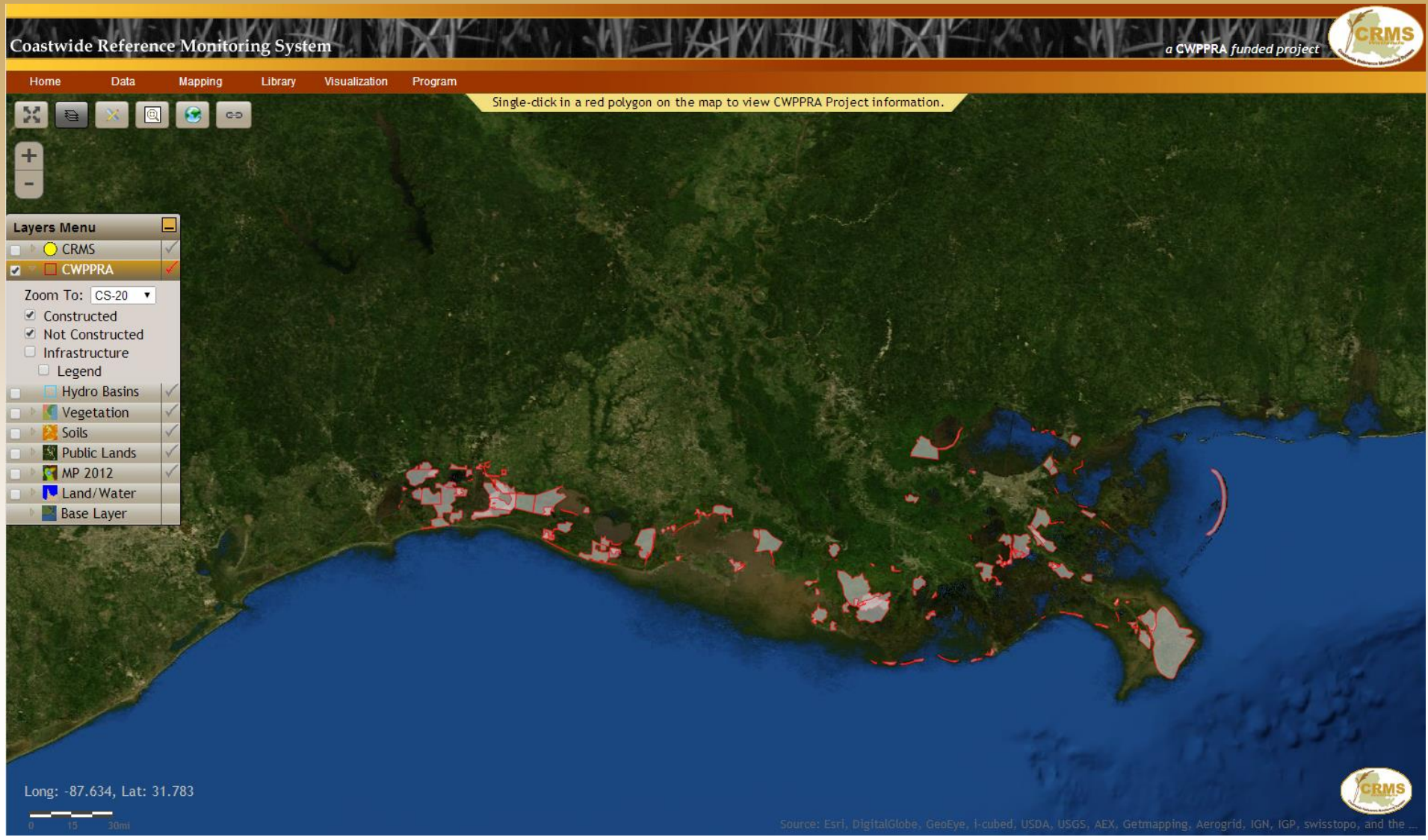
## Information Bubble



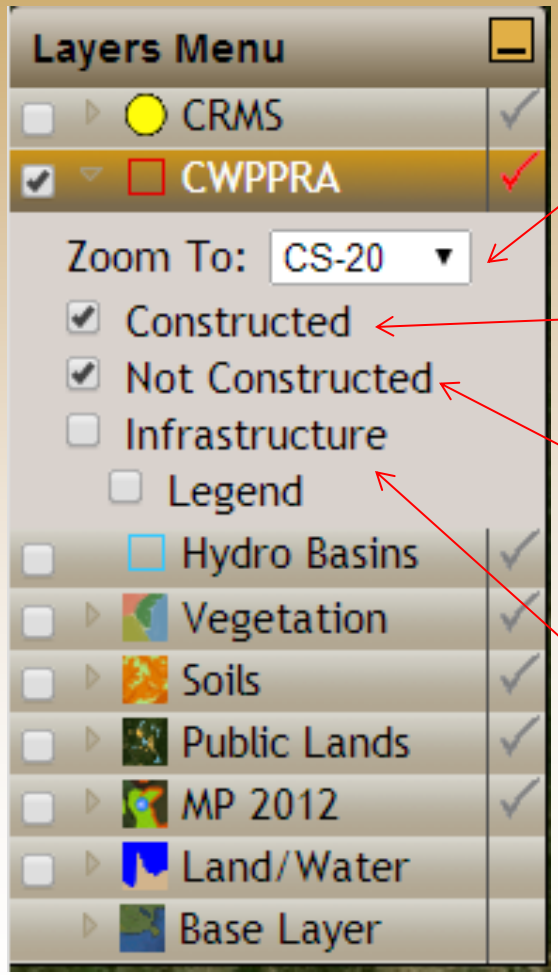

The Tools tab lets you do an Acreage Assessment on the selected site.

Acreage Assessment – Use the acreage assessment tool to determine acreage breakdowns of the available coastwide vegetation surveys or land/water data.

# CWPPRA Active Layer



# CWPPRA Active Layer




Zoom to function zooms to the project and shows the information bubble for it.

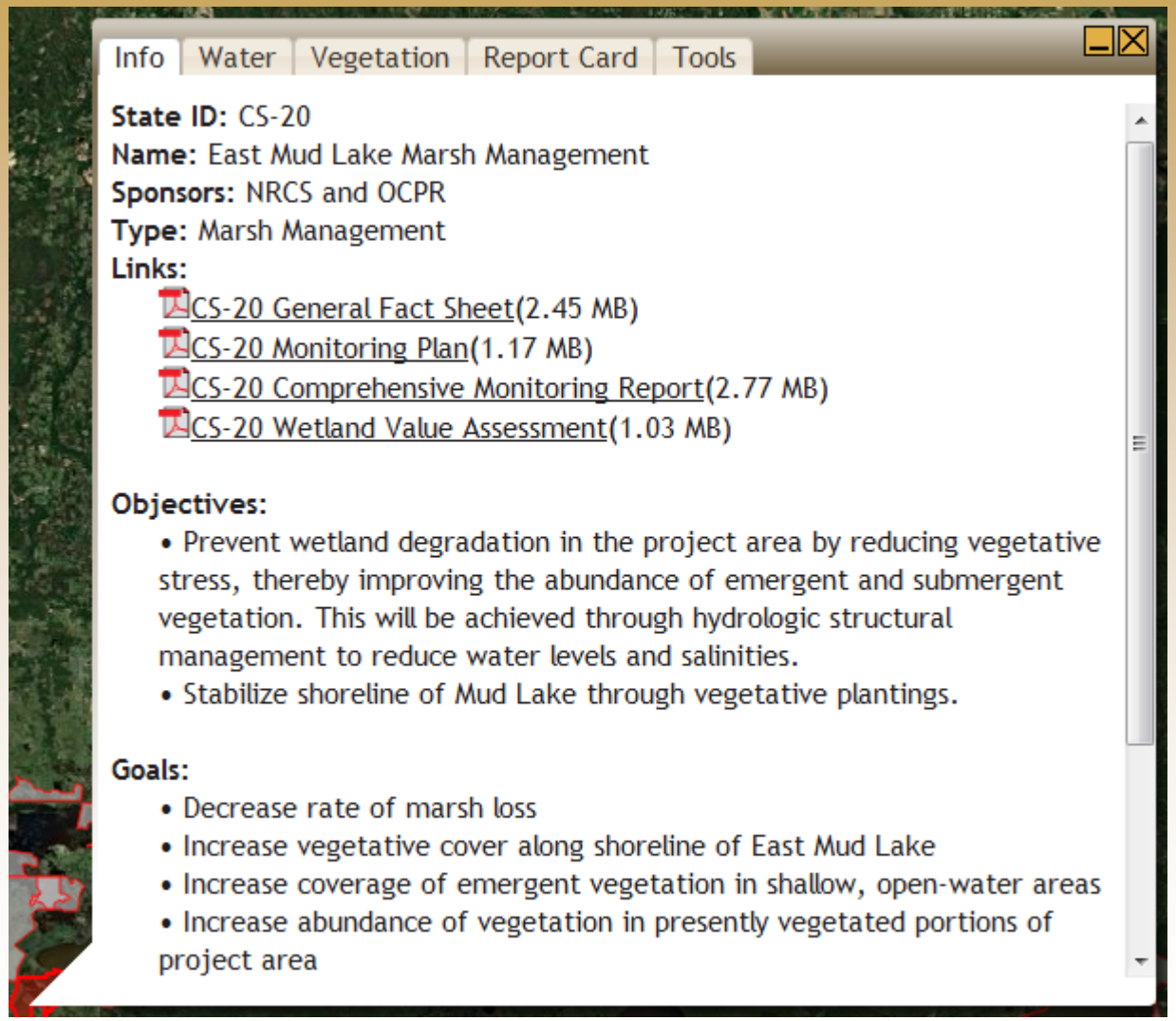
Checkbox adds/removes the Constructed projects layer to the map.

Checkbox adds/removes the Not Constructed projects layer to the map.

Checkbox adds/removes the Project Infrastructure layer to the map and shows the legend.

# CWPPRA Active Layer

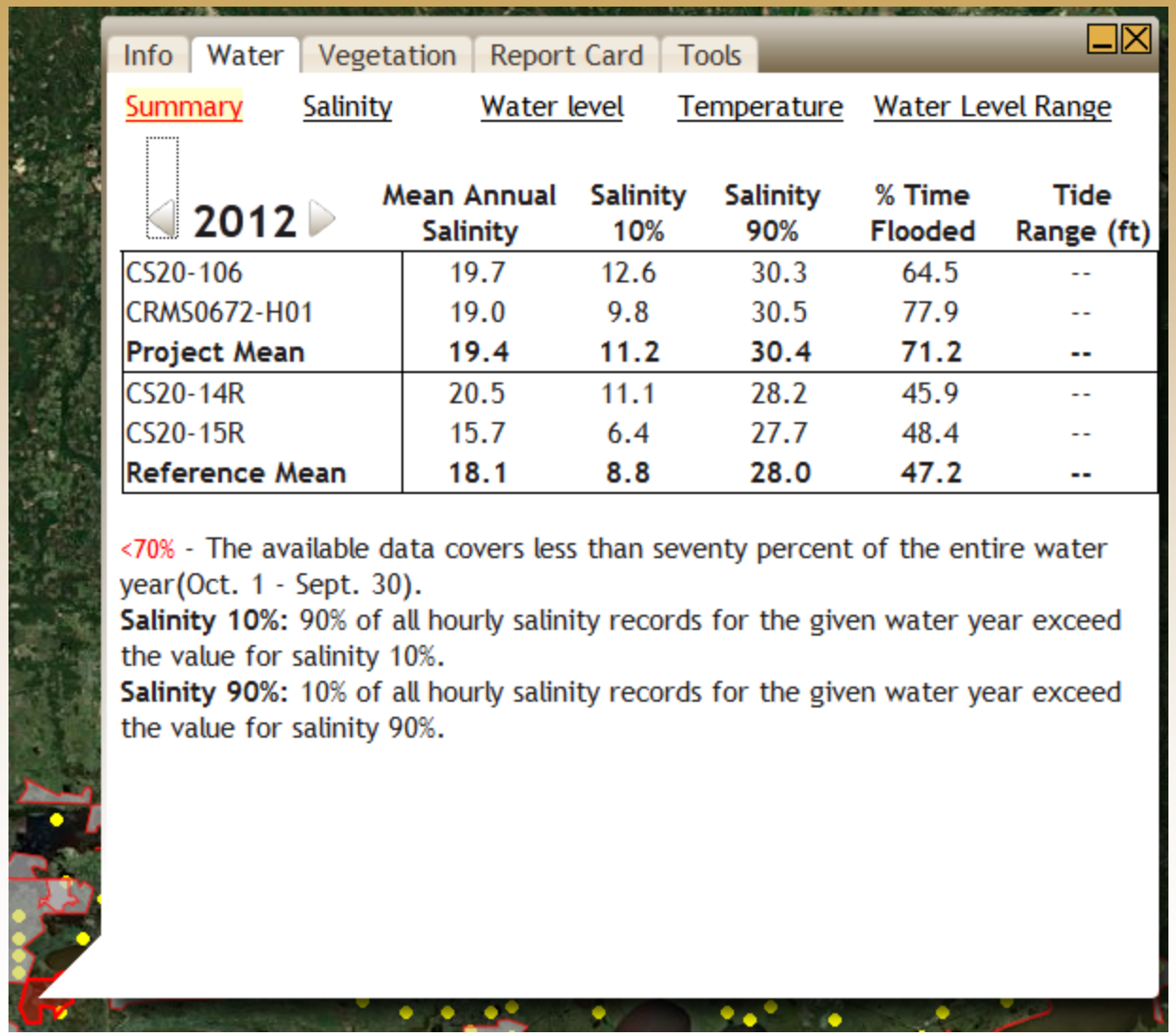
## Information Bubble




The information bubble appears when a CWPPRA project is clicked. The Project Info tab is automatically chosen when the bubble pops up on the screen.

# CWPPRA Active Layer

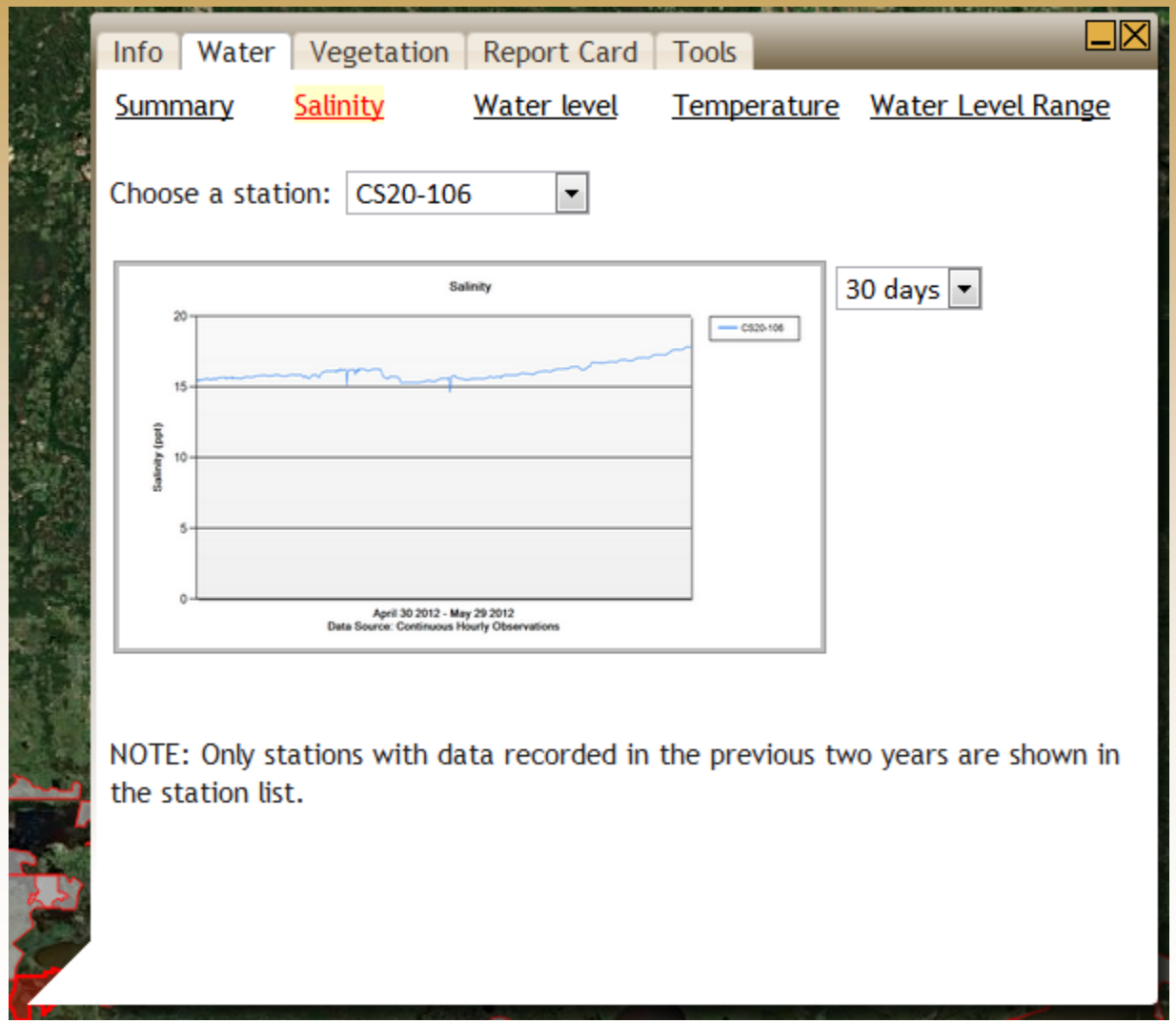
## Information Bubble




The Water tab contains all hydrologic information for the selected project.

Summary – Gives a brief overview of the hydro data available for the project.

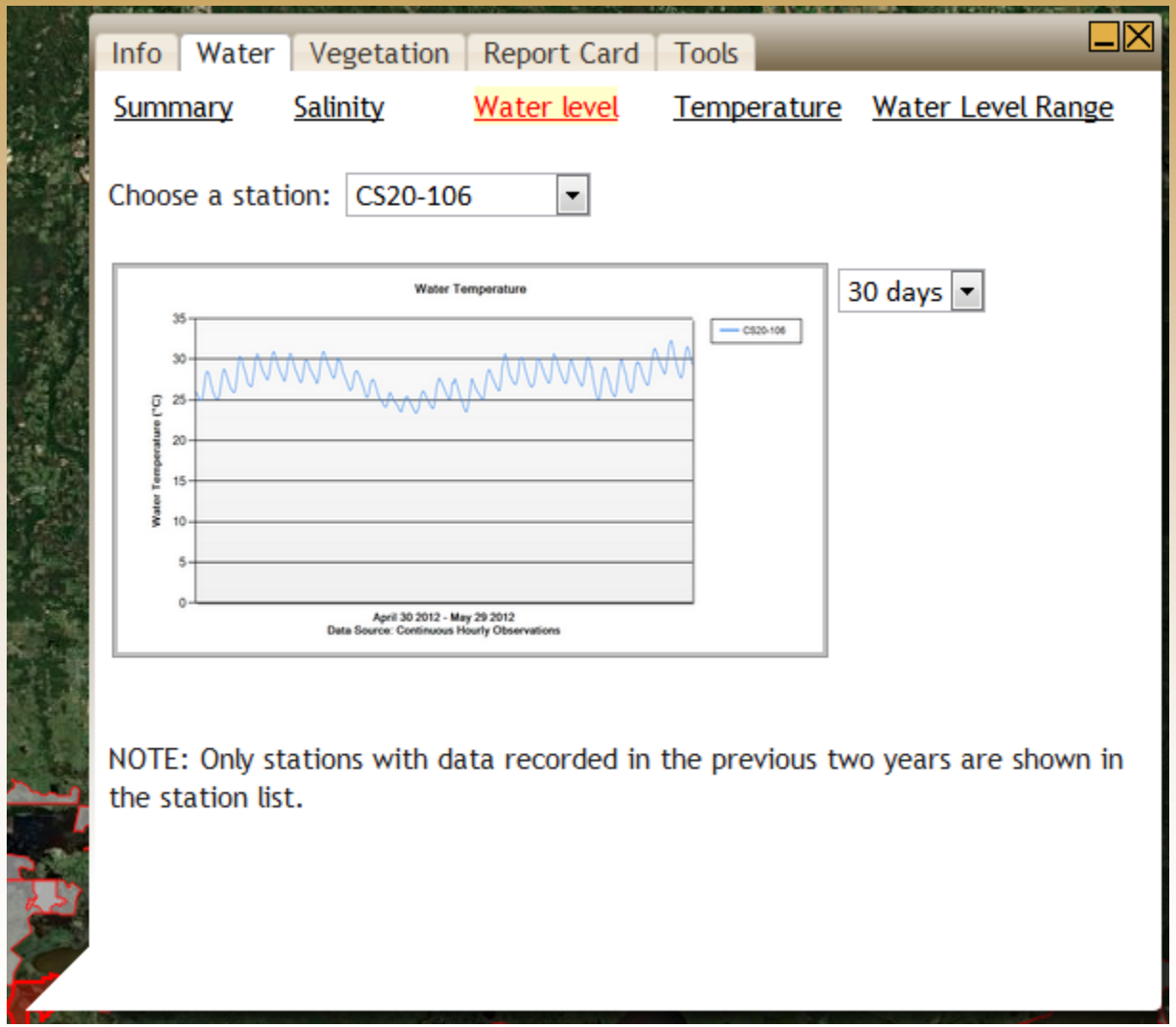
# Information Bubble




The Water tab contains all hydrologic information for the selected project.

Salinity – Charts most recent data for hydro stations located within the project.

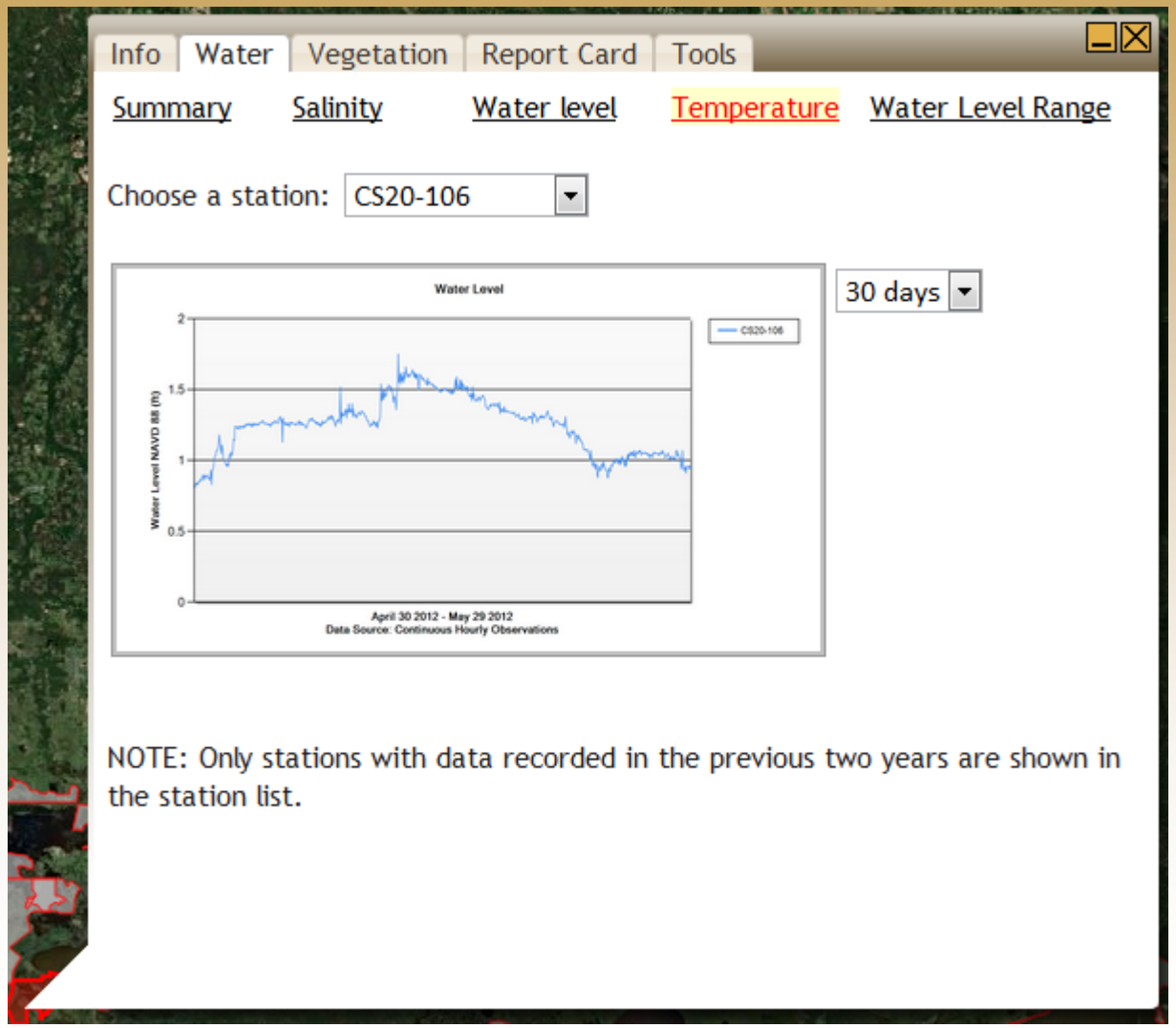
# Information Bubble




The Water tab contains all hydrologic information for the selected project.

Water Level – Charts most recent data for hydro stations located within the project.

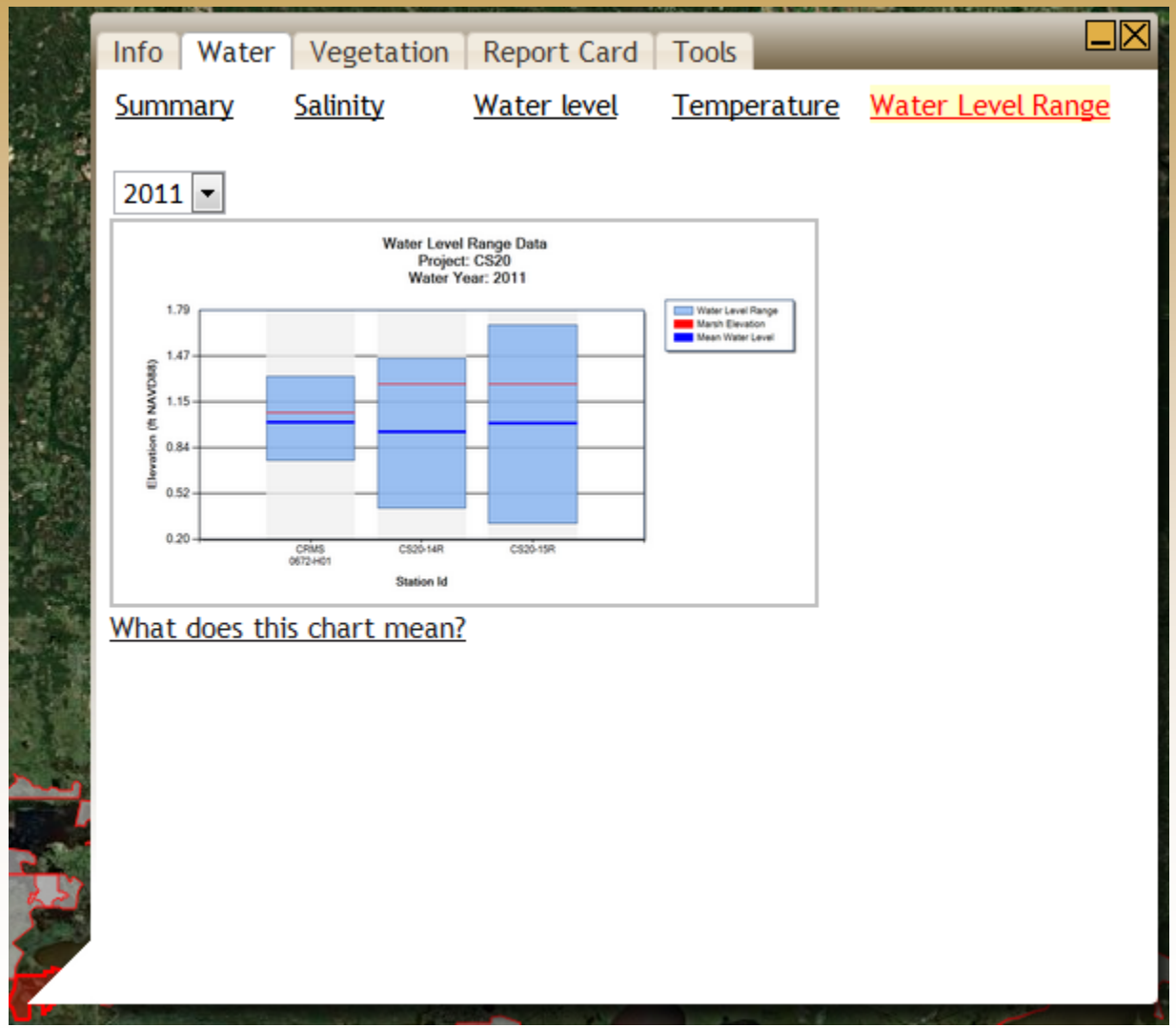
# Information Bubble




The Water tab contains all hydrologic information for the selected project.

Water Temperature – Charts most recent data for hydro stations located within the project.

# Information Bubble

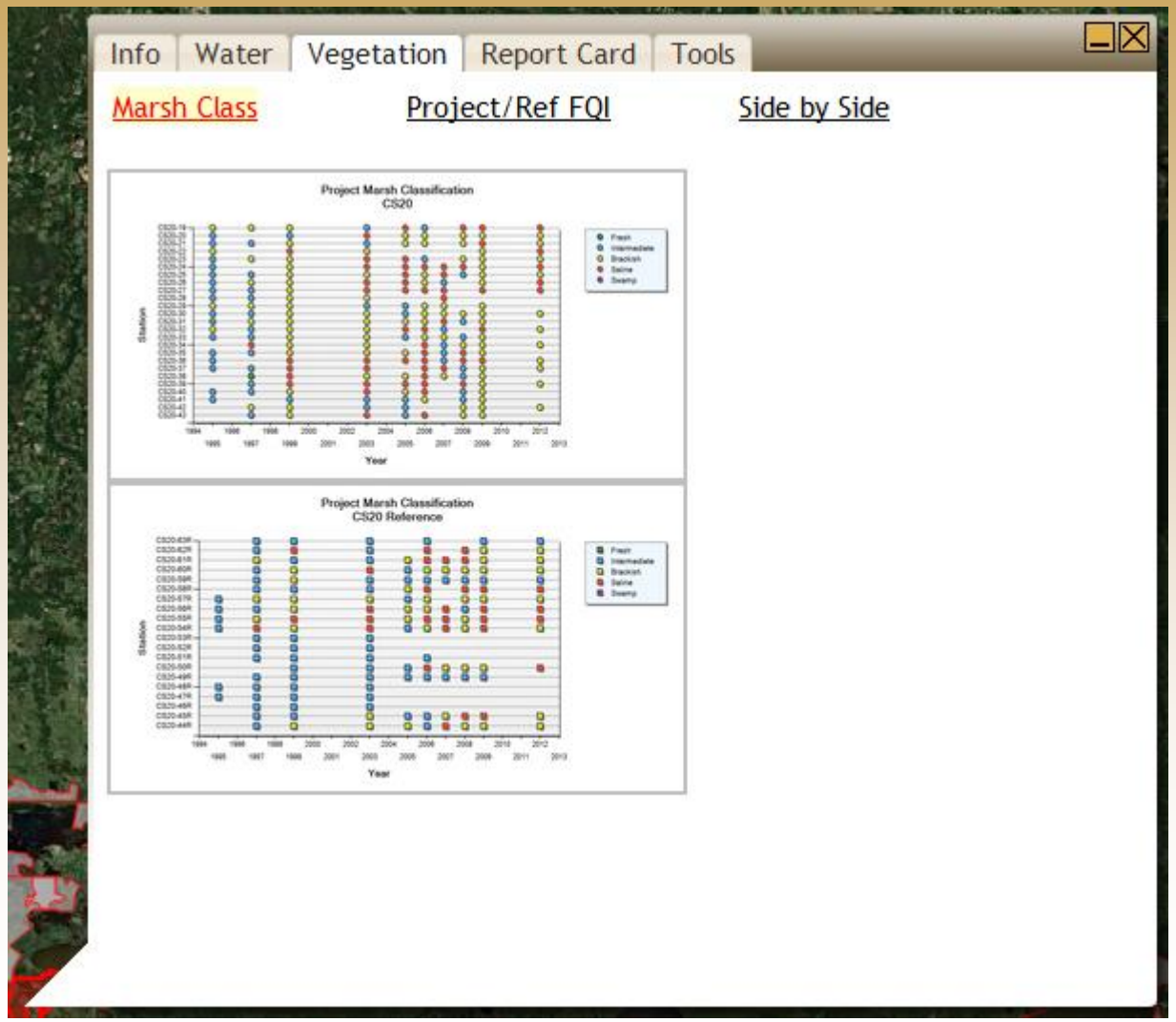



The Water tab contains all hydrologic information for the selected project.

Water Level Range – Charts water level range data for hydro stations located within the project.

# CWPPRA Active Layer

## Information Bubble




The Vegetation tab contains all vegetation information for the selected project.

Marsh Class – Charts project and project reference Marsh Classification over multiple years.

# CWPPRA Active Layer

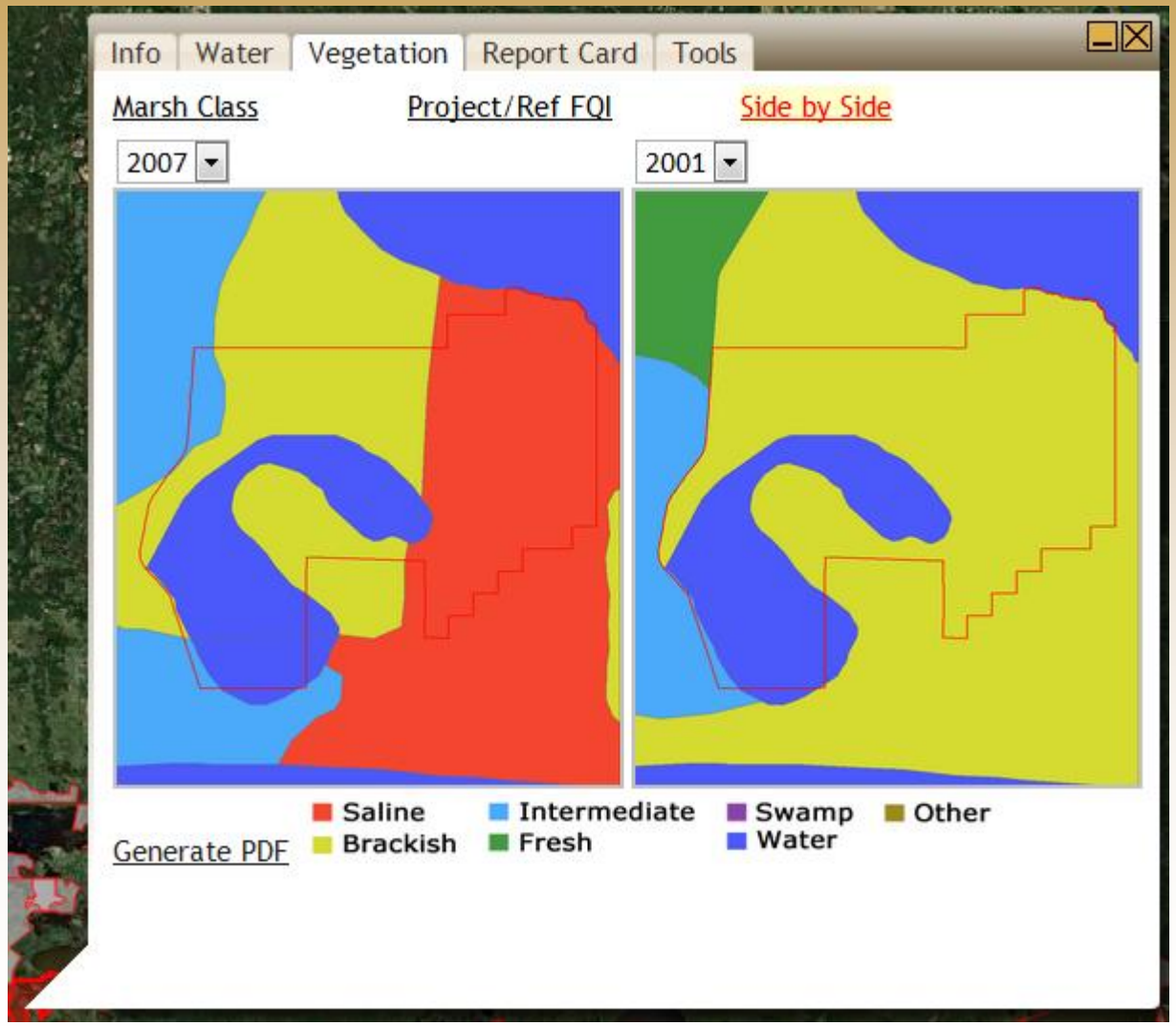
## Information Bubble


The Vegetation tab contains all vegetation information for the selected project.

Project/Ref FQI – Project Scale Floristic Quality Index Chart.

# CWPPRA Active Layer

## Information Bubble

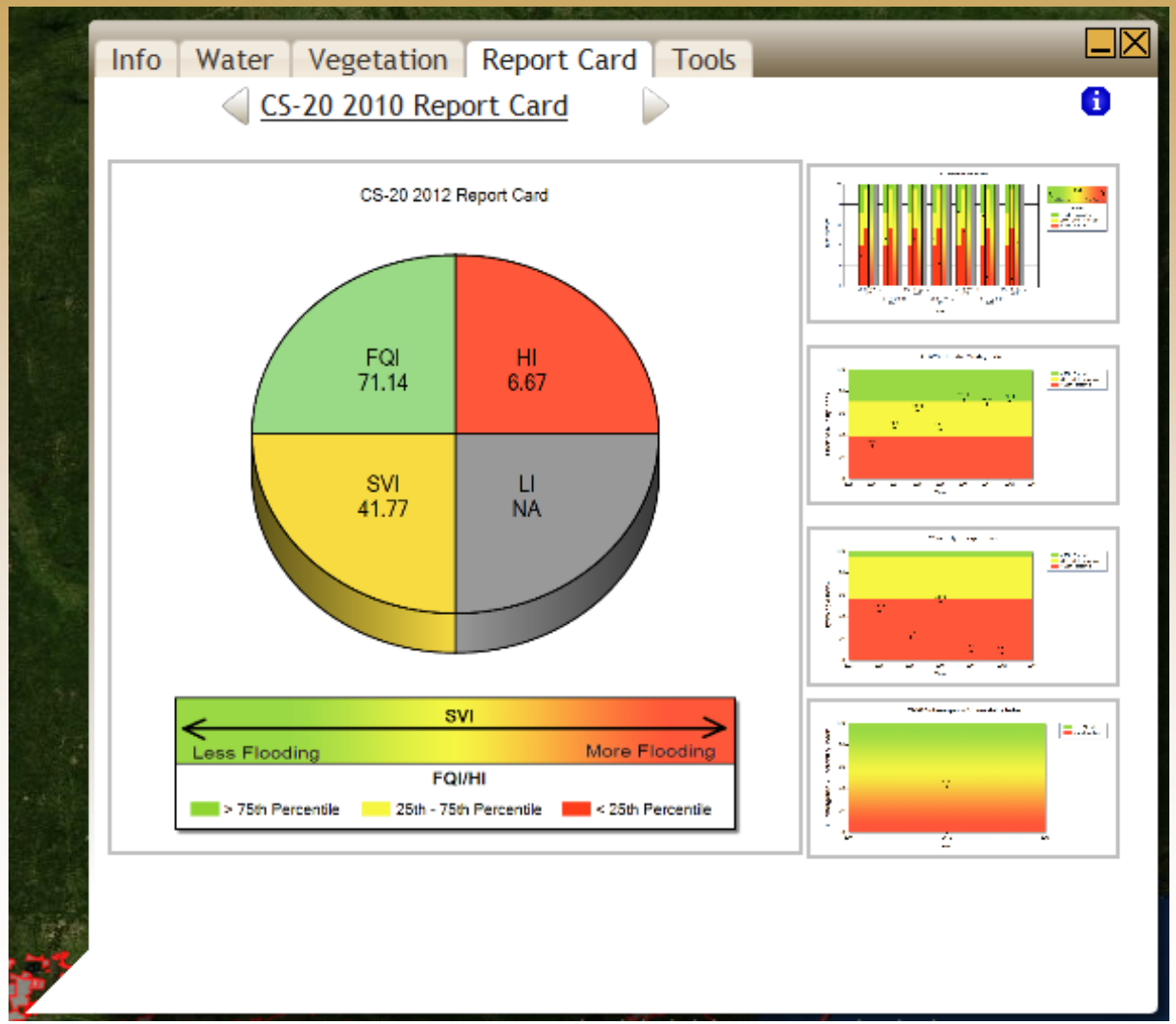



The Vegetation tab contains all vegetation information for the selected project.

Side by Side – Side by side comparison of Marsh Class using the raster image created from helicopter surveys.

# CWPPRA Active Layer

## Information Bubble

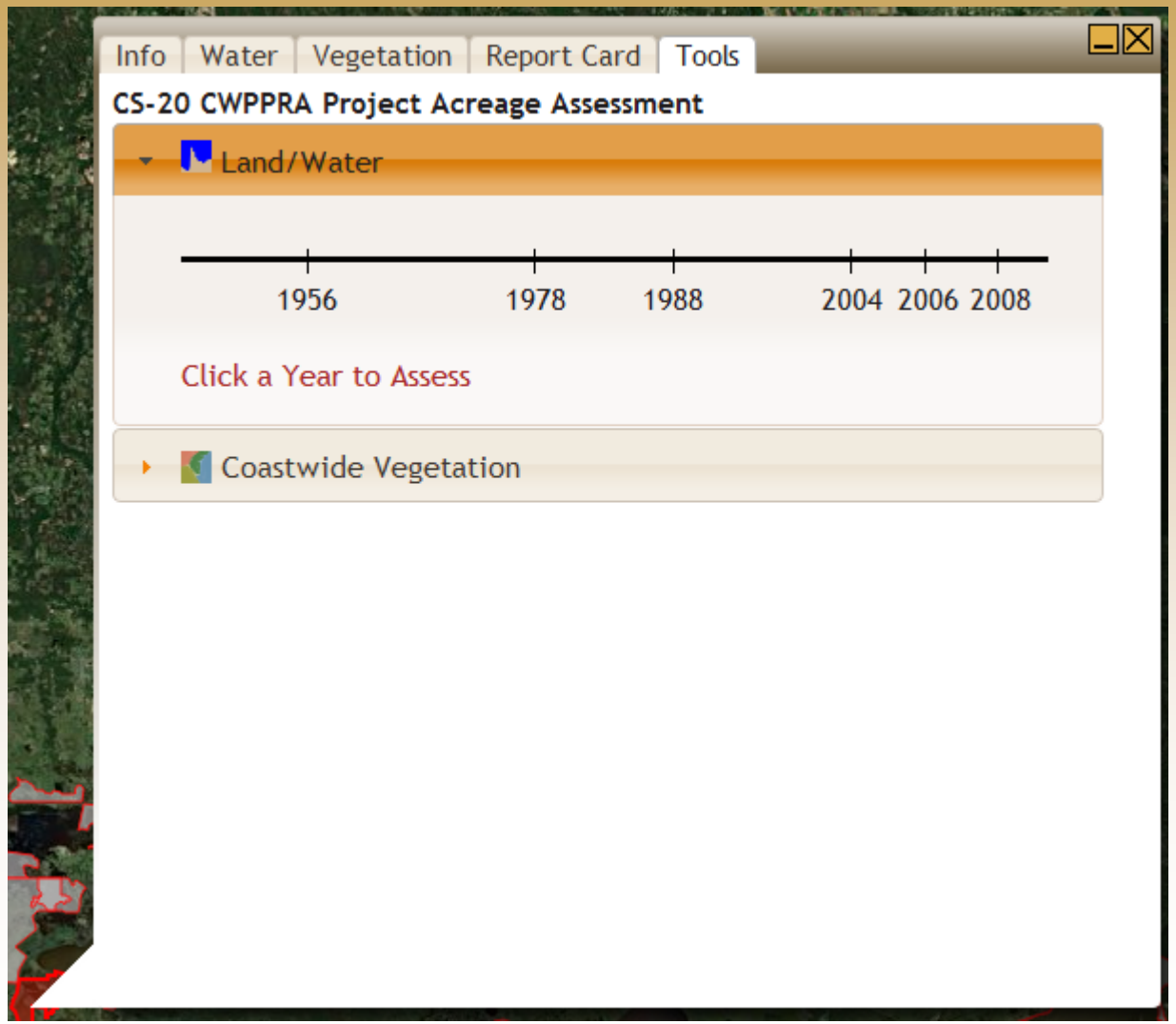



The Report Card tab contains all report card information for the selected project.

Report Card-Summary of project scale information compiled into a report card.

# CWPPRA Active Layer

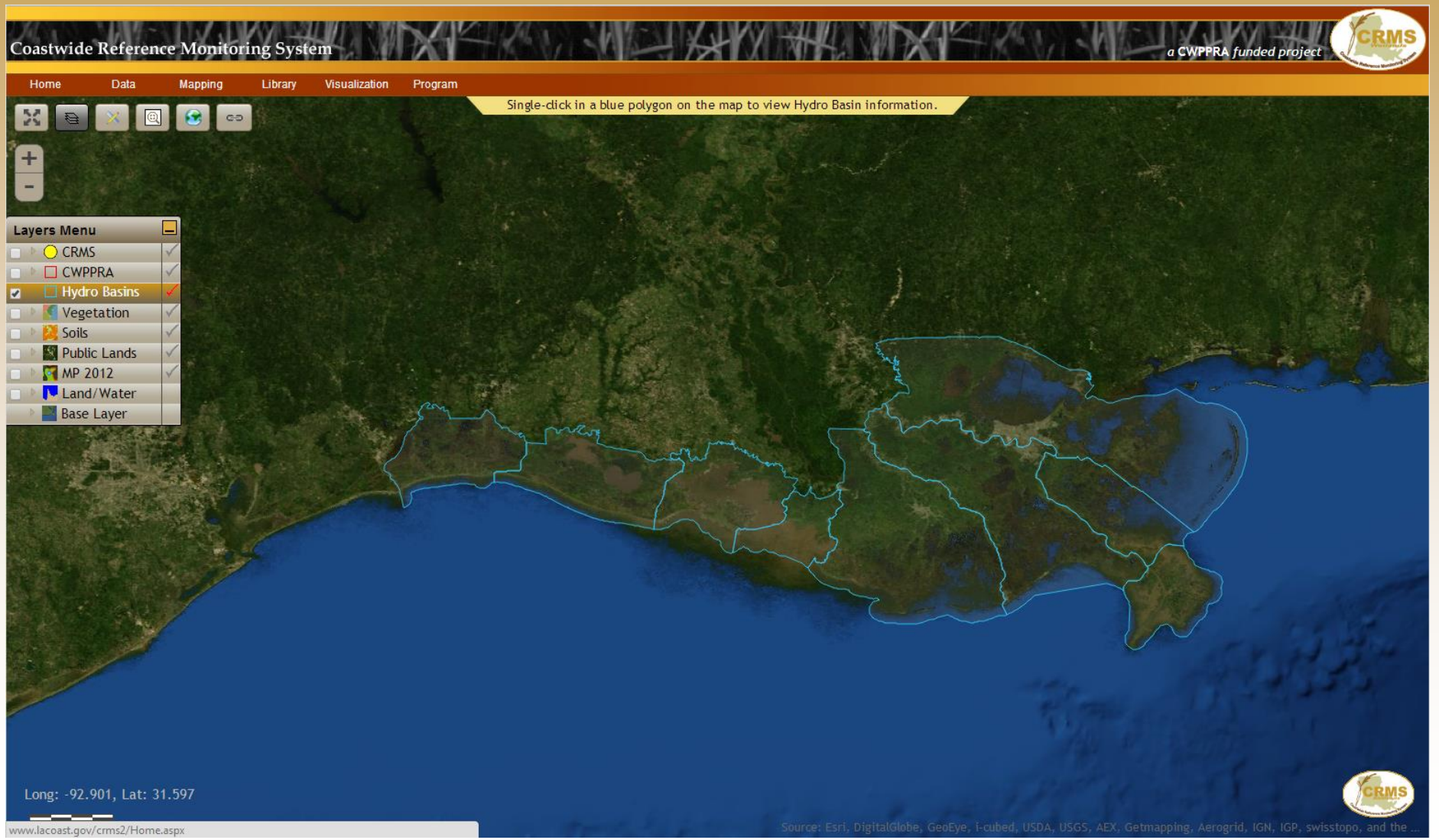
## Information Bubble




The Tools tab lets you do an Acreage Assessment on the selected project.

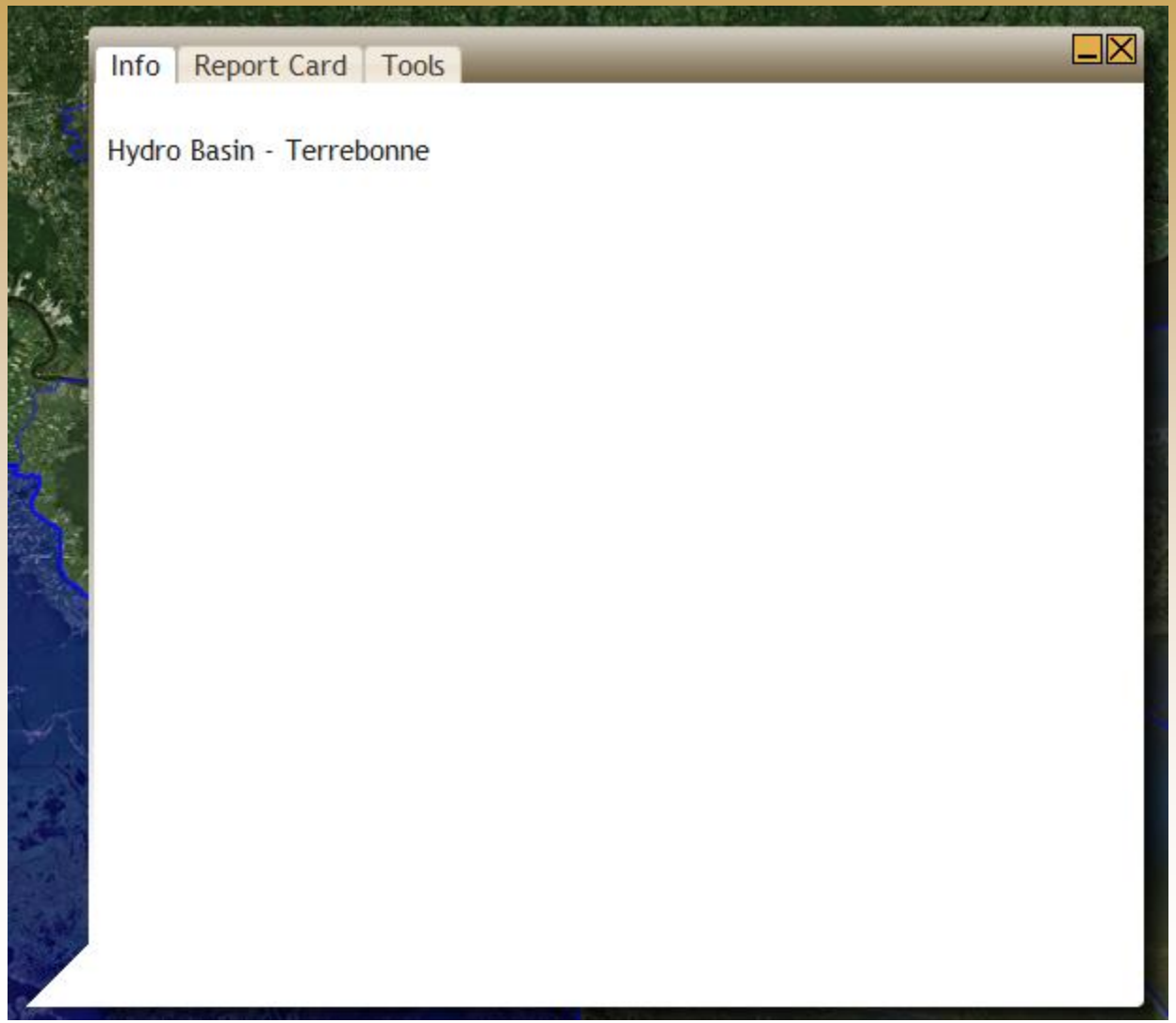
Acreage Assessment – Use the acreage assessment tool to determine acreage breakdowns of the available coastwide vegetation surveys or Land/Water data.

# Hydro Basins Active Layer



# Hydro Basins Active Layer

## Information Bubble

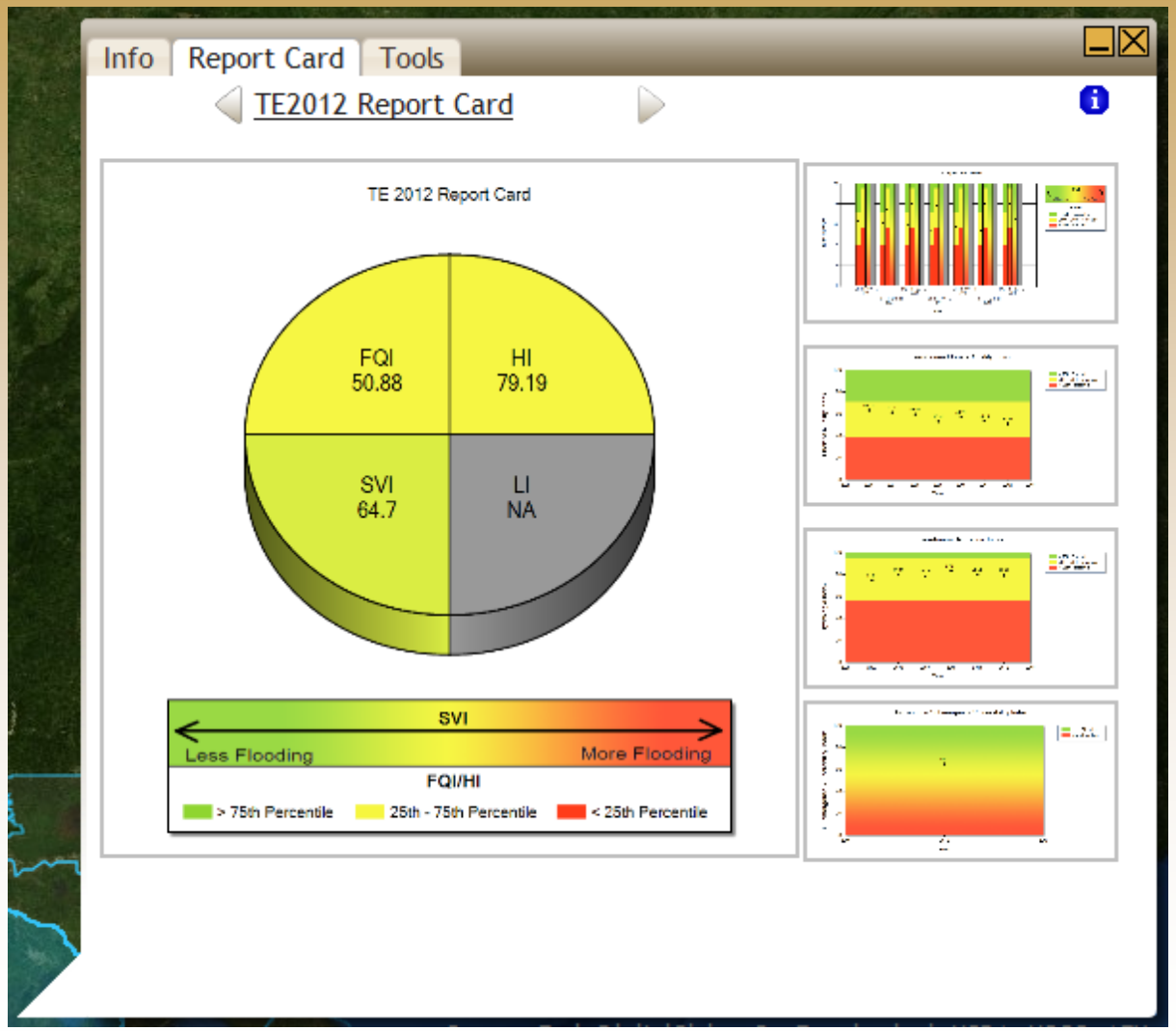



The information bubble appears when a Hydro Basin is clicked. The Basin Info tab is automatically chosen when the bubble pops up on the screen.

More basin level descriptive information will be posted soon….

# Hydro Basins Active Layer

## Information Bubble

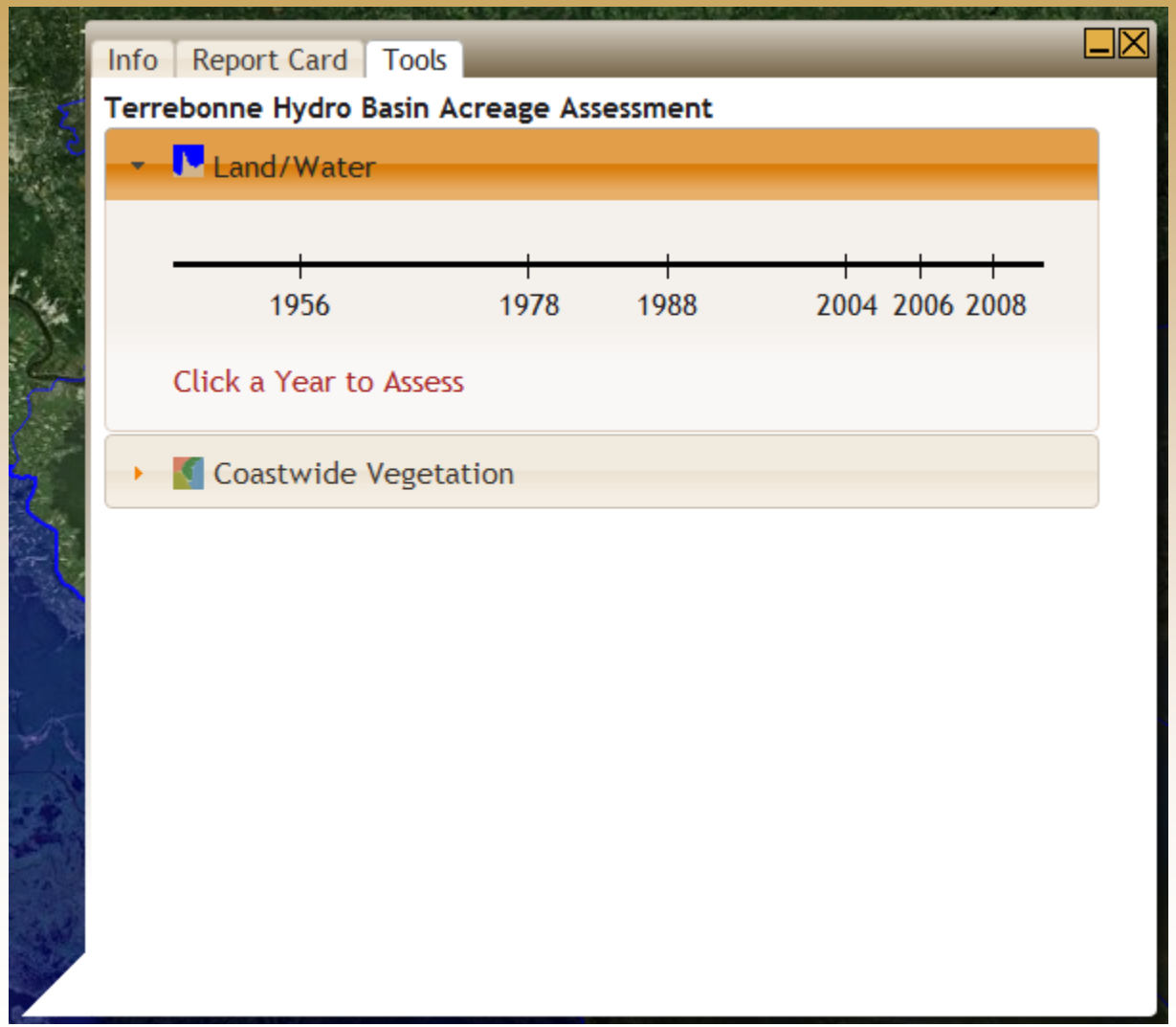



The Report Card tab contains all report card information for the selected basin.

Report Card – Summary of basin scale information compiled into a report card.

# Hydro Basins Active Layer

## Information Bubble

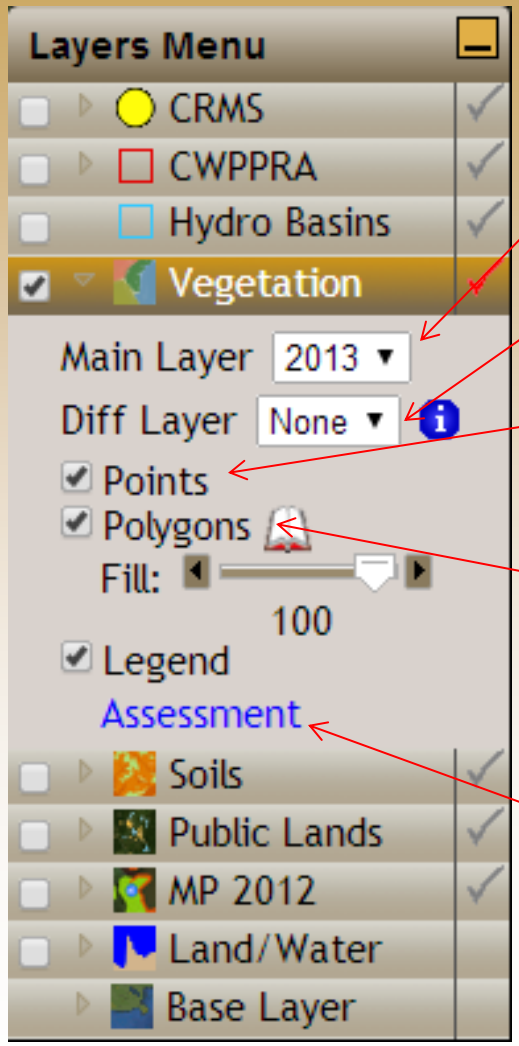



The Tools tab lets you do an Acreage Assessment on the selected basin.

Acreage Assessment – Use the acreage assessment tool to determine acreage breakdowns of the available coastwide vegetation surveys or Land/Water data.

# Vegetation Active Layer

# Vegetation Active Layer




Main Year selects the primary polygon layer on the map.

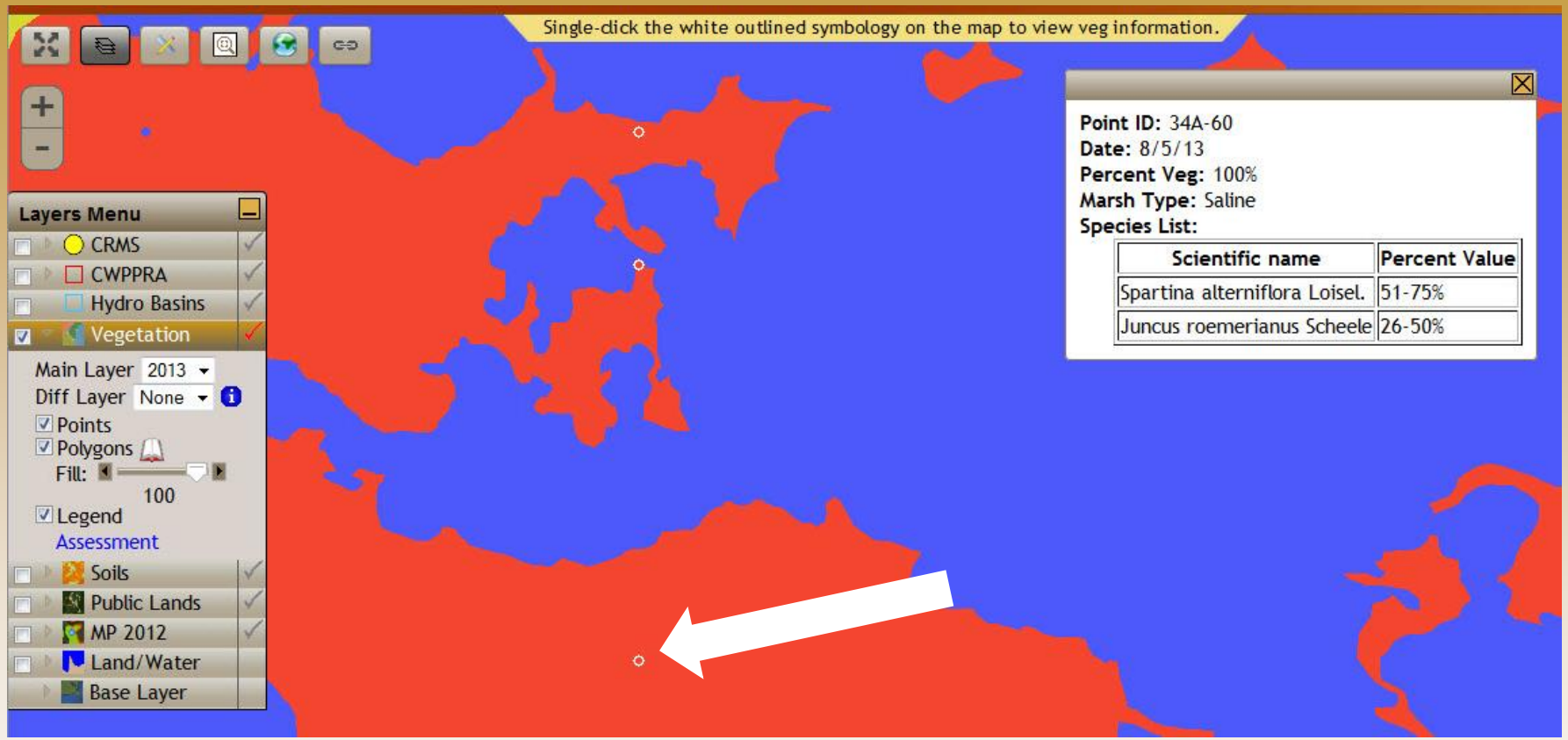
Diff Year selects the secondary polygon layer on the map.

Points checkbox adds/removes the Vegetation data points.

Checkbox adds/removes the Vegetation Polygons layer. The slider changes the transparency of the layer.

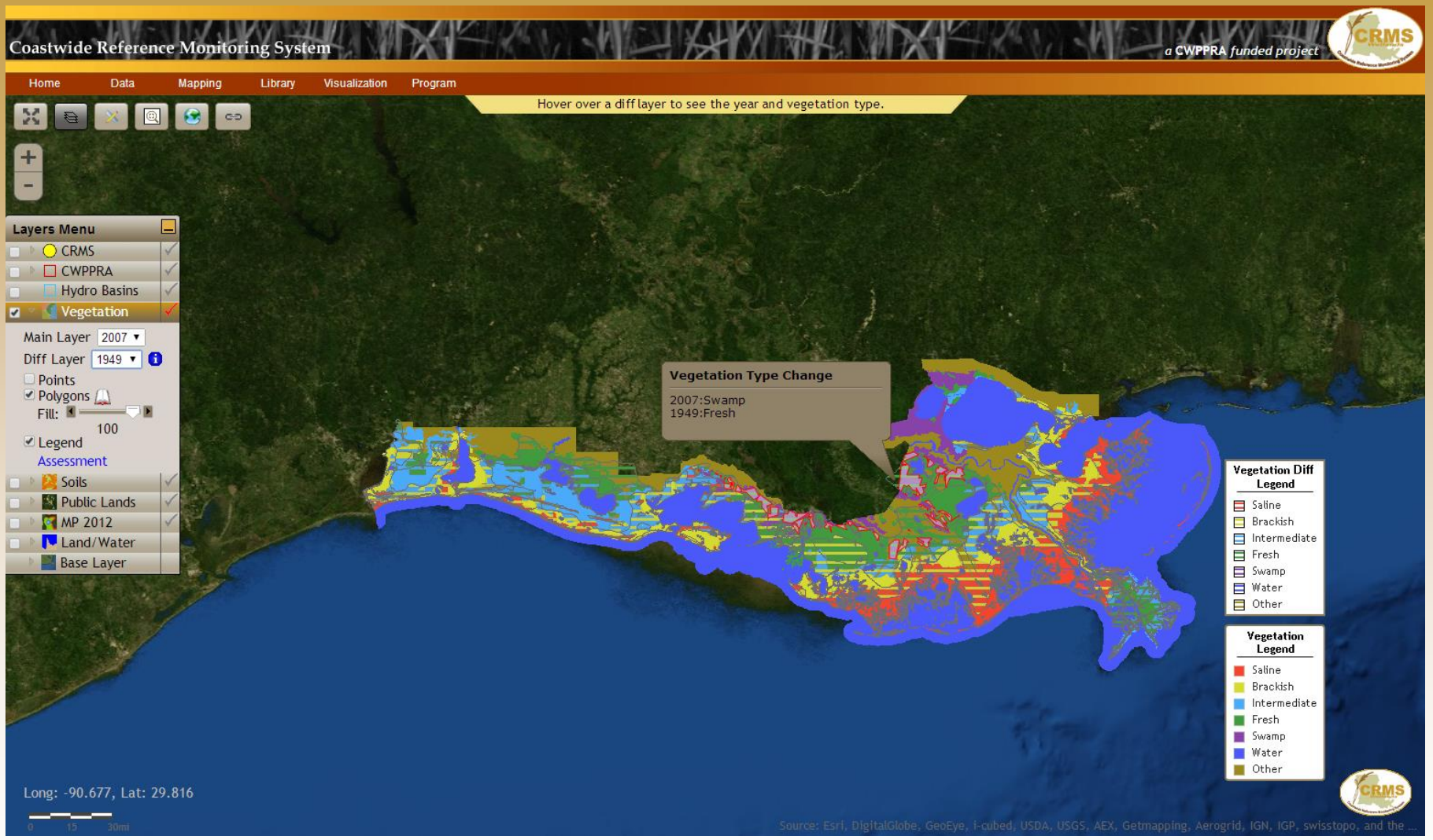
Assessment link invokes the acreage assessment tool menu for the currently selected year.

# Vegetation Active Layer



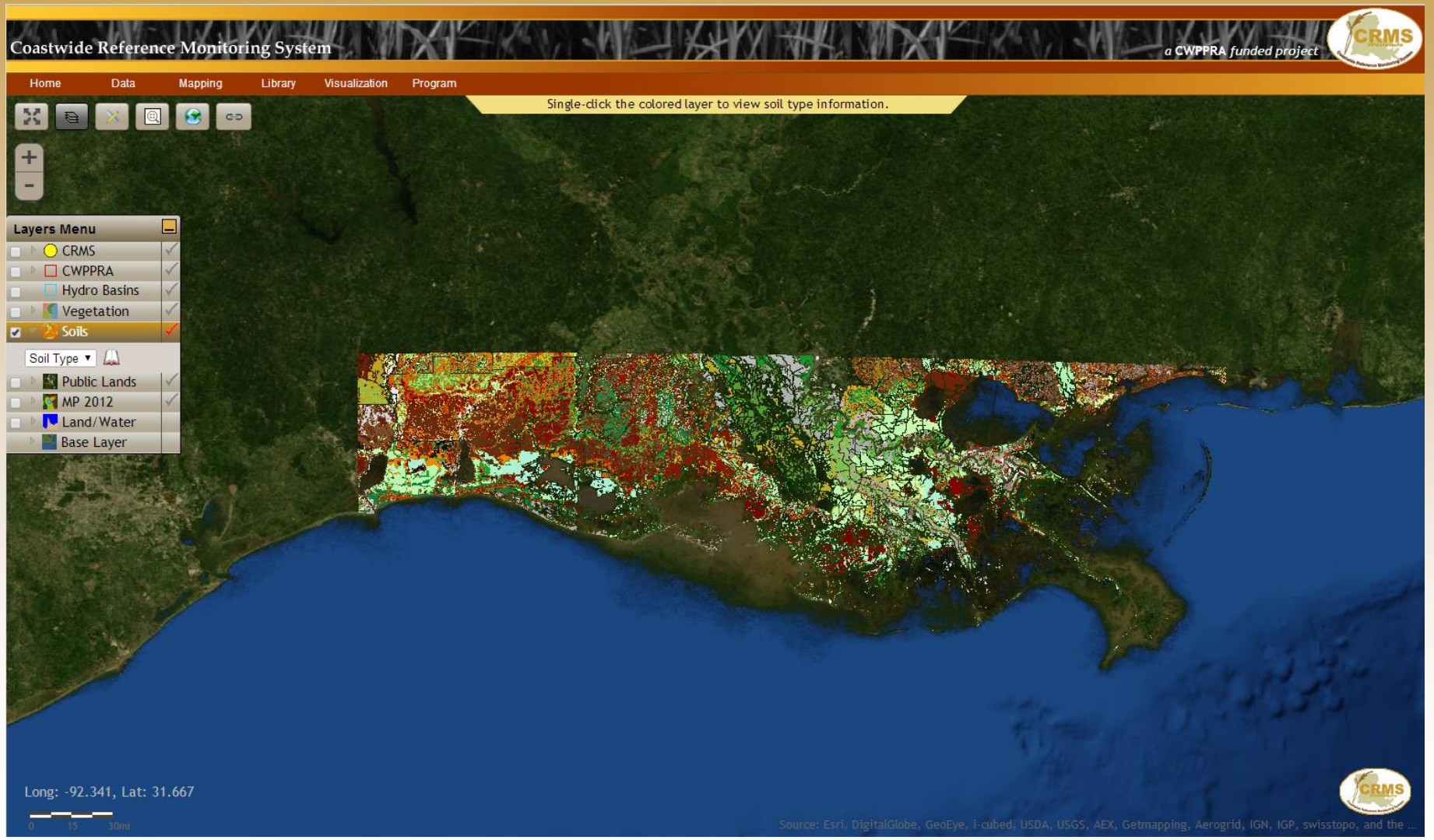

If Points is checked, the site specific vegetation data is shown when clicked.

# Vegetation Active Layer

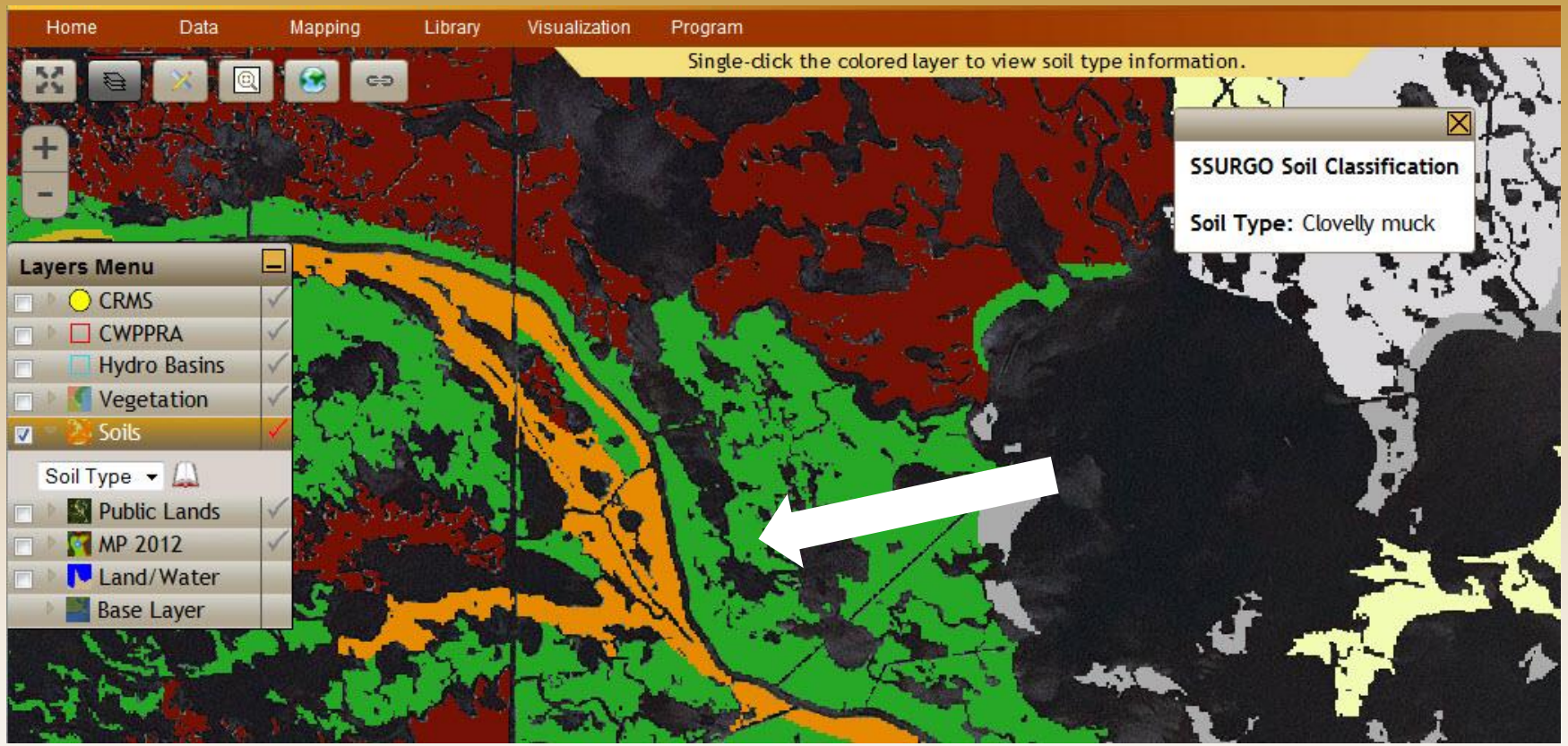



The Vegetation Type Change is shown when two different years are chosen for the Main Layer and Diff Layer.

# Soils Active Layer

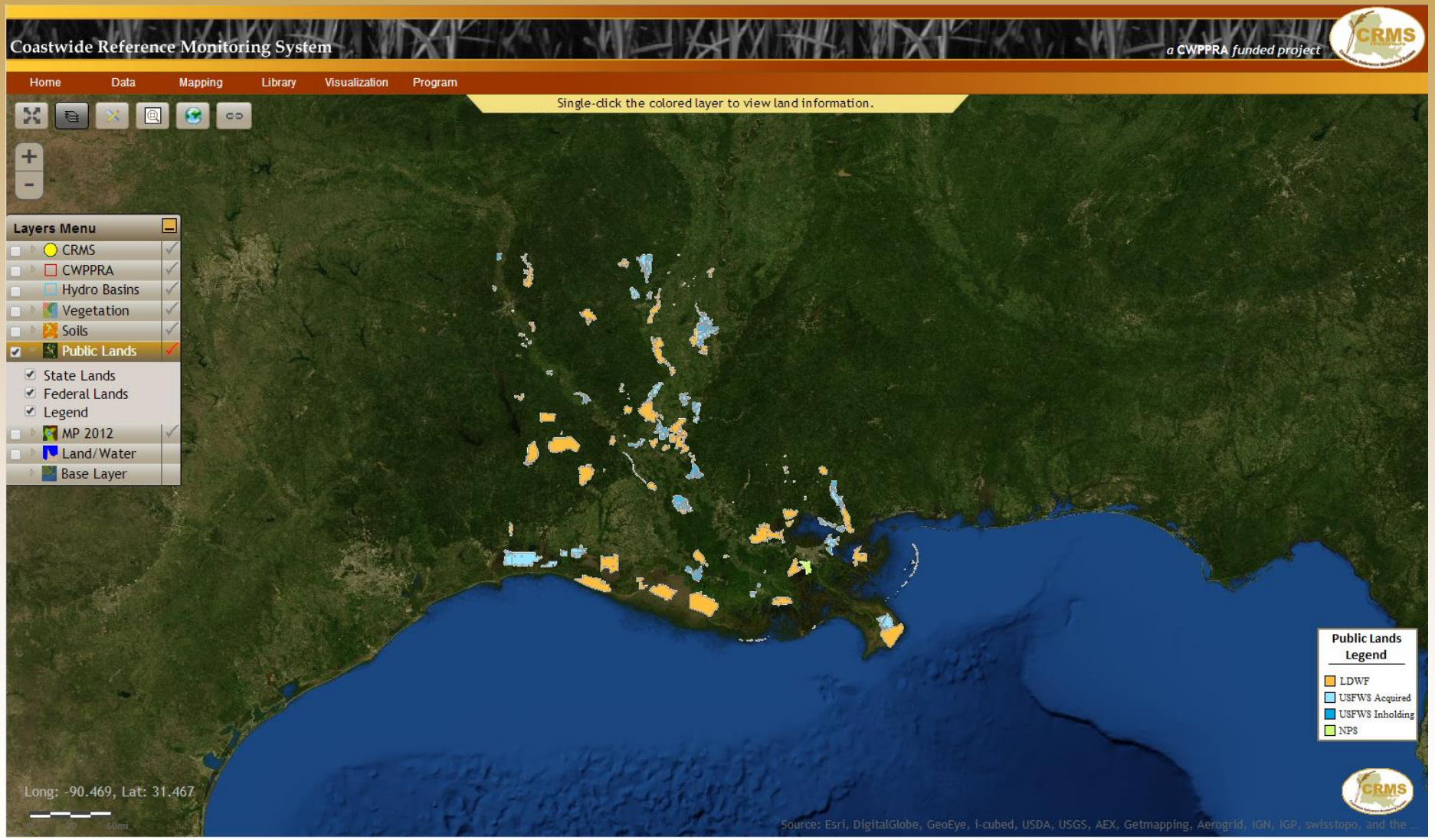


# Soils Active Layer




The Soil Type information window pops up when a soil area is clicked.

# Public Lands Active Layer

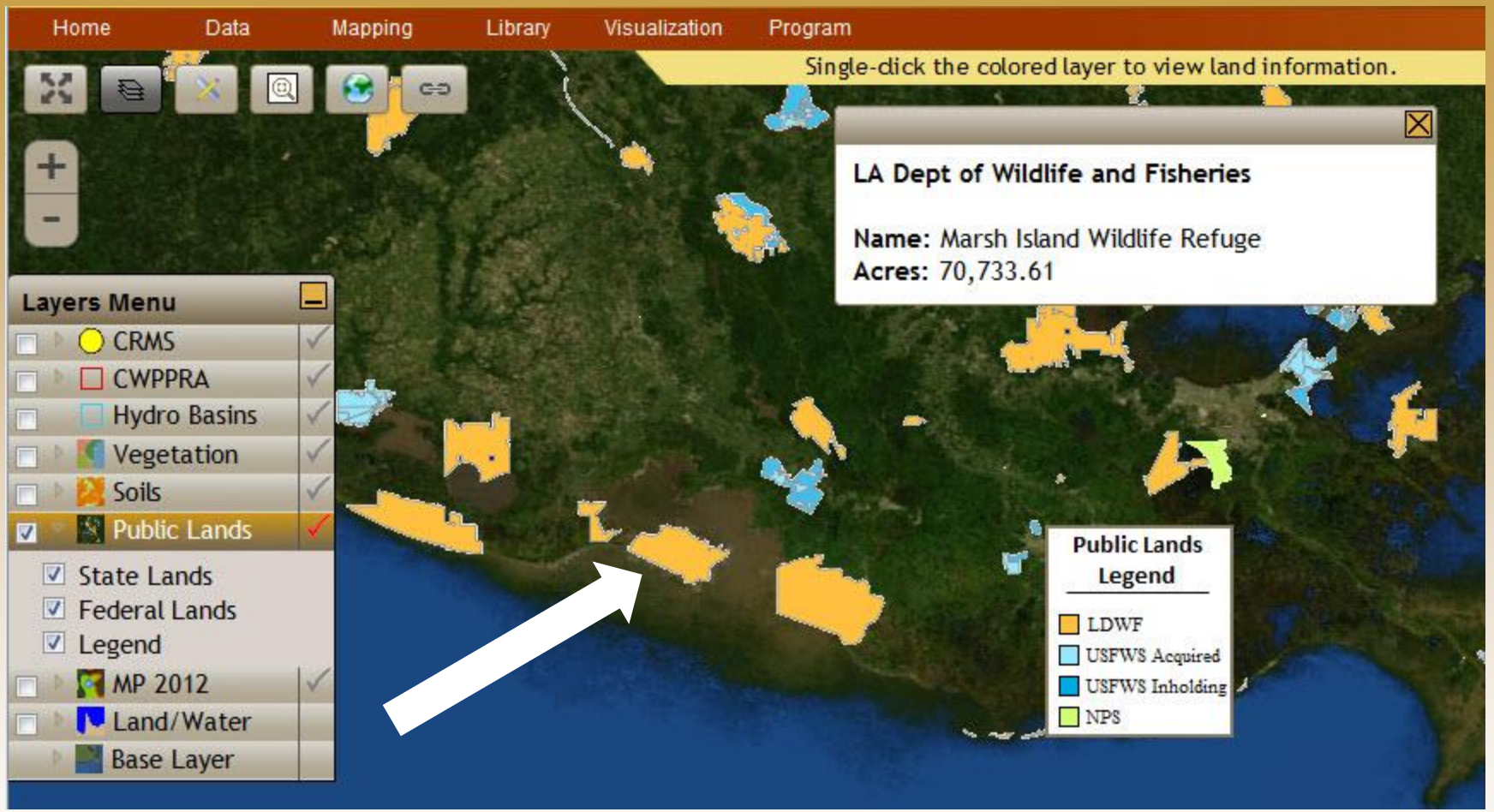


# Public Lands Active Layer


State Lands checkbox adds/removes LA Department of Wildlife and Fisheries layer.

Federal Lands checkbox adds/removes National Park Service and US Fish and Wildlife Service.

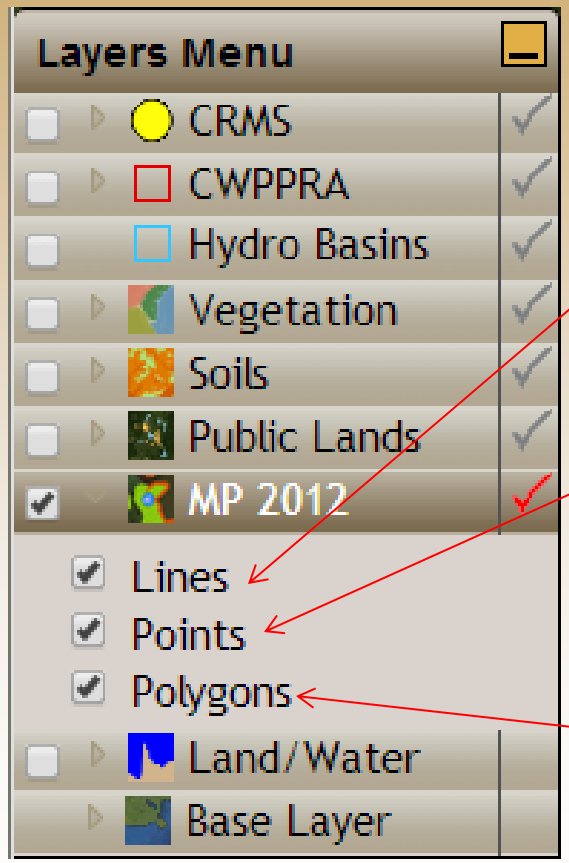
# Public Lands Active Layer




The Public Lands information window pops up when a Public Lands polygon is clicked.

# Master Plan 2012

# Master Plan 2012

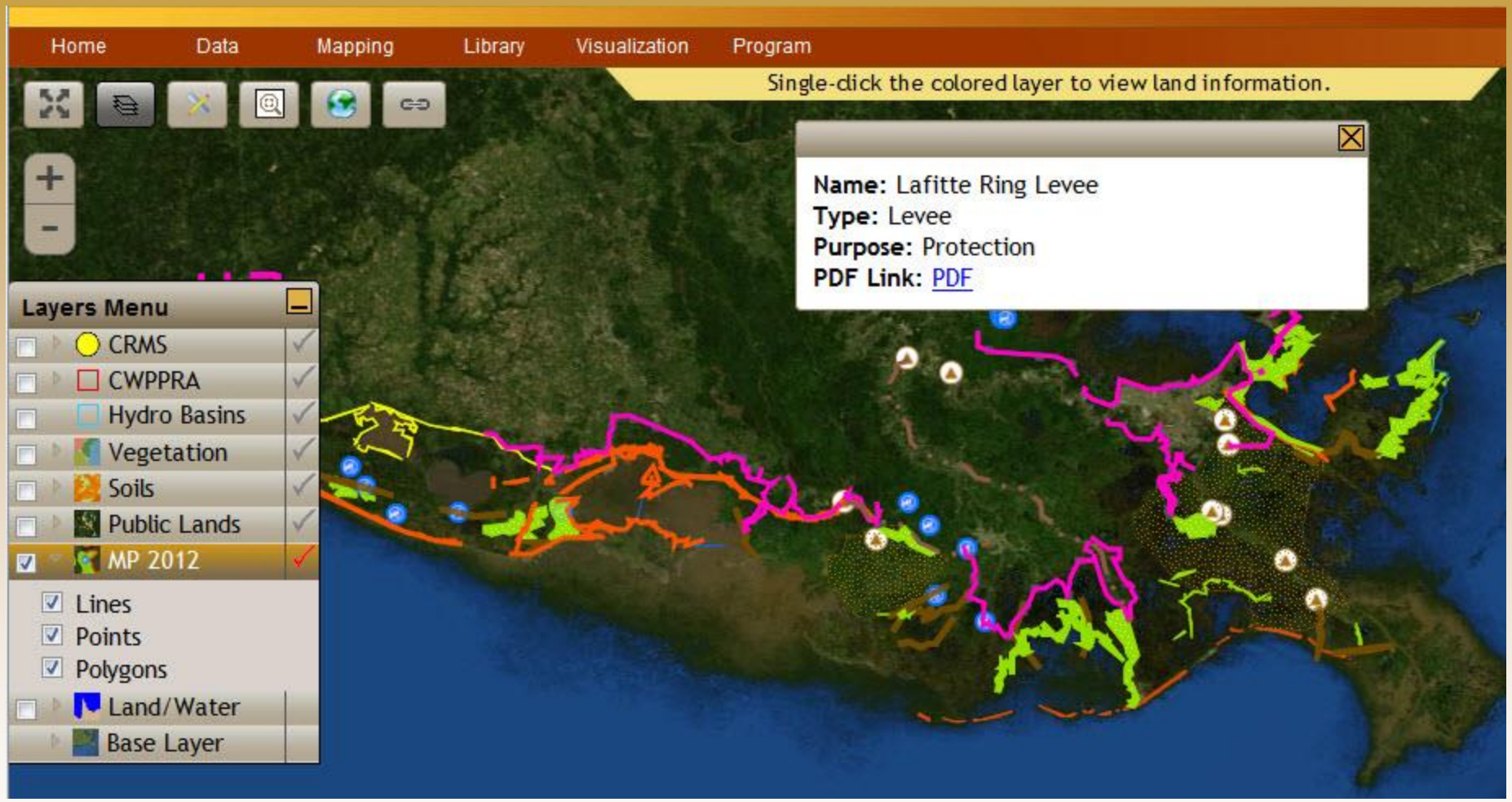



Checkbox to put the lines of the Master Plan 2012 on the map

Checkbox to put the points of the Master Plan 2012 on the map

Checkbox to put the polygons of the Master Plan 2012 on the map

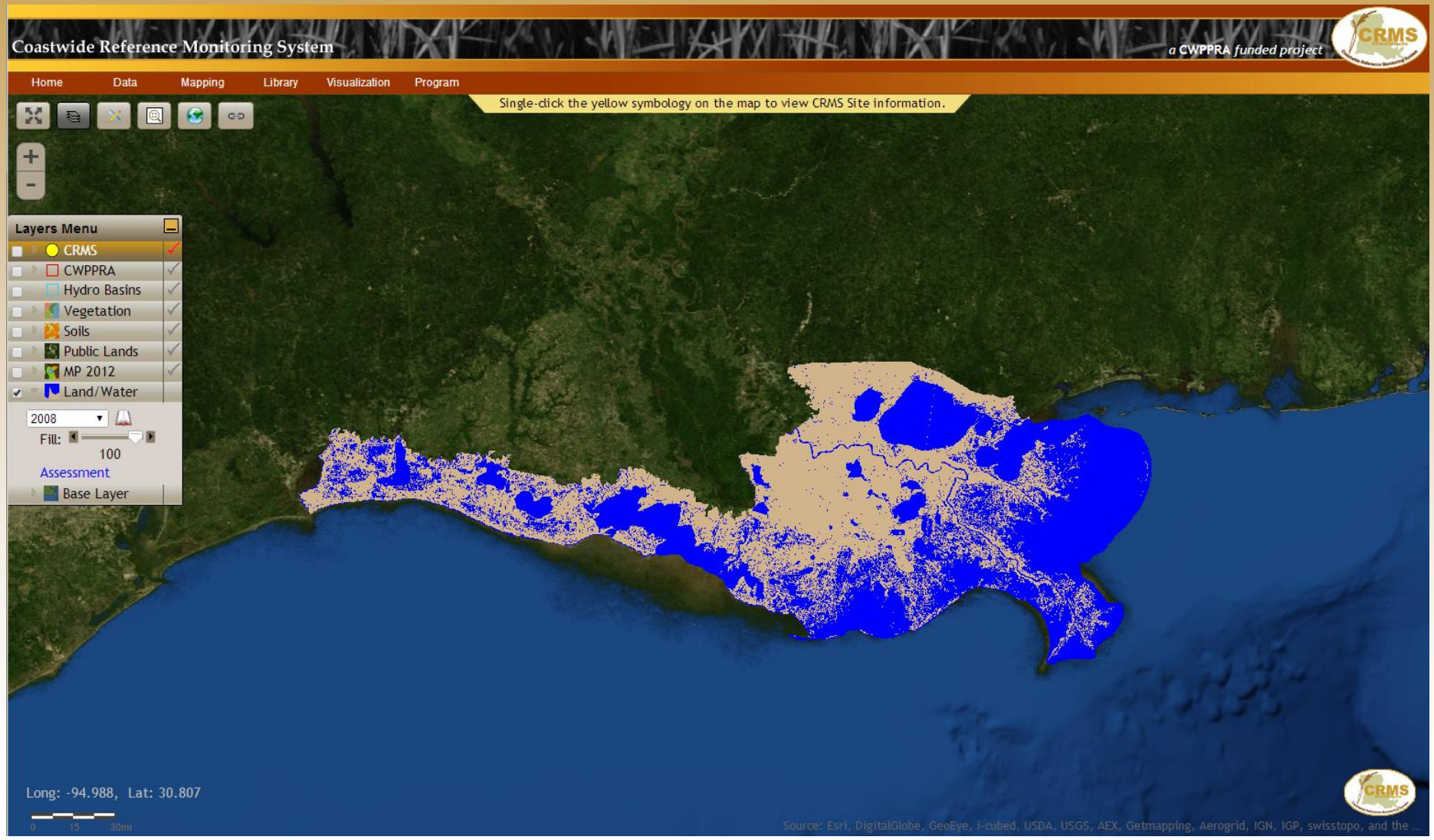
# Master Plan 2012



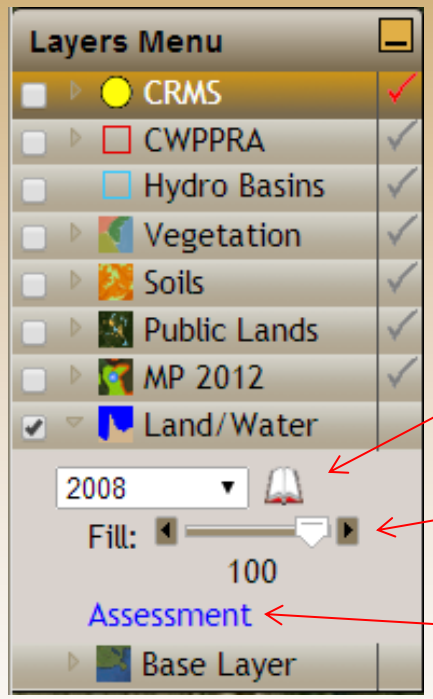

The Master Plan information window pops up when a Master Plan polygon is clicked.

# Other Layers

## Land/Water



# Land/Water



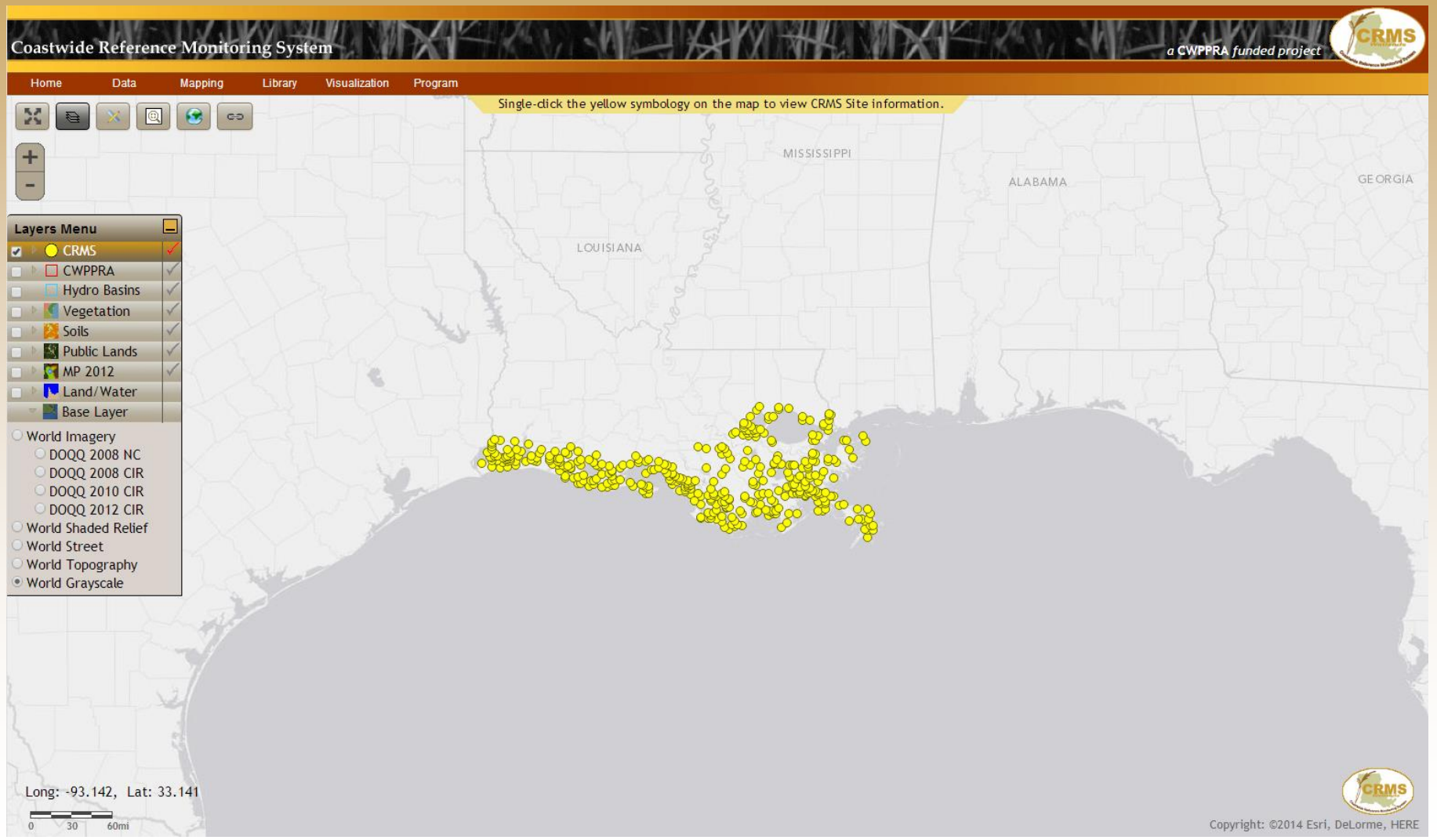

Changes the Land/Water layer's year.

Slider changes the transparency of the layer.

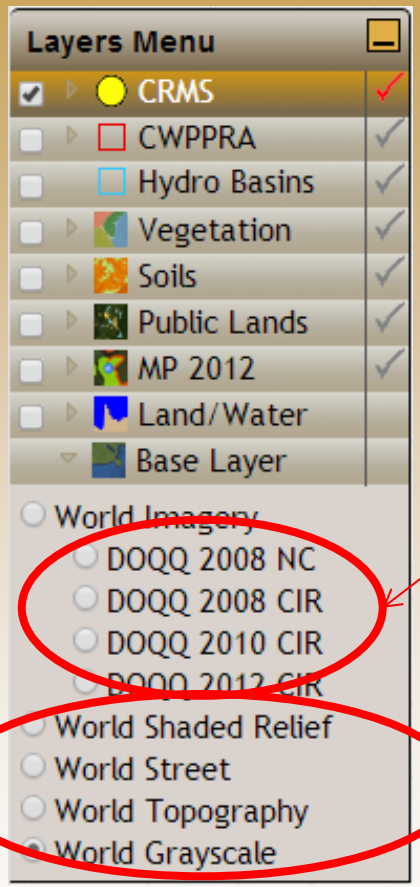
Assessment link invokes the acreage assessment tool menu for the currently selected year.

# Other Layers

## Base Layers



# Base Layers




DOQQ radio buttons add the selected DOQQ layer to the map.

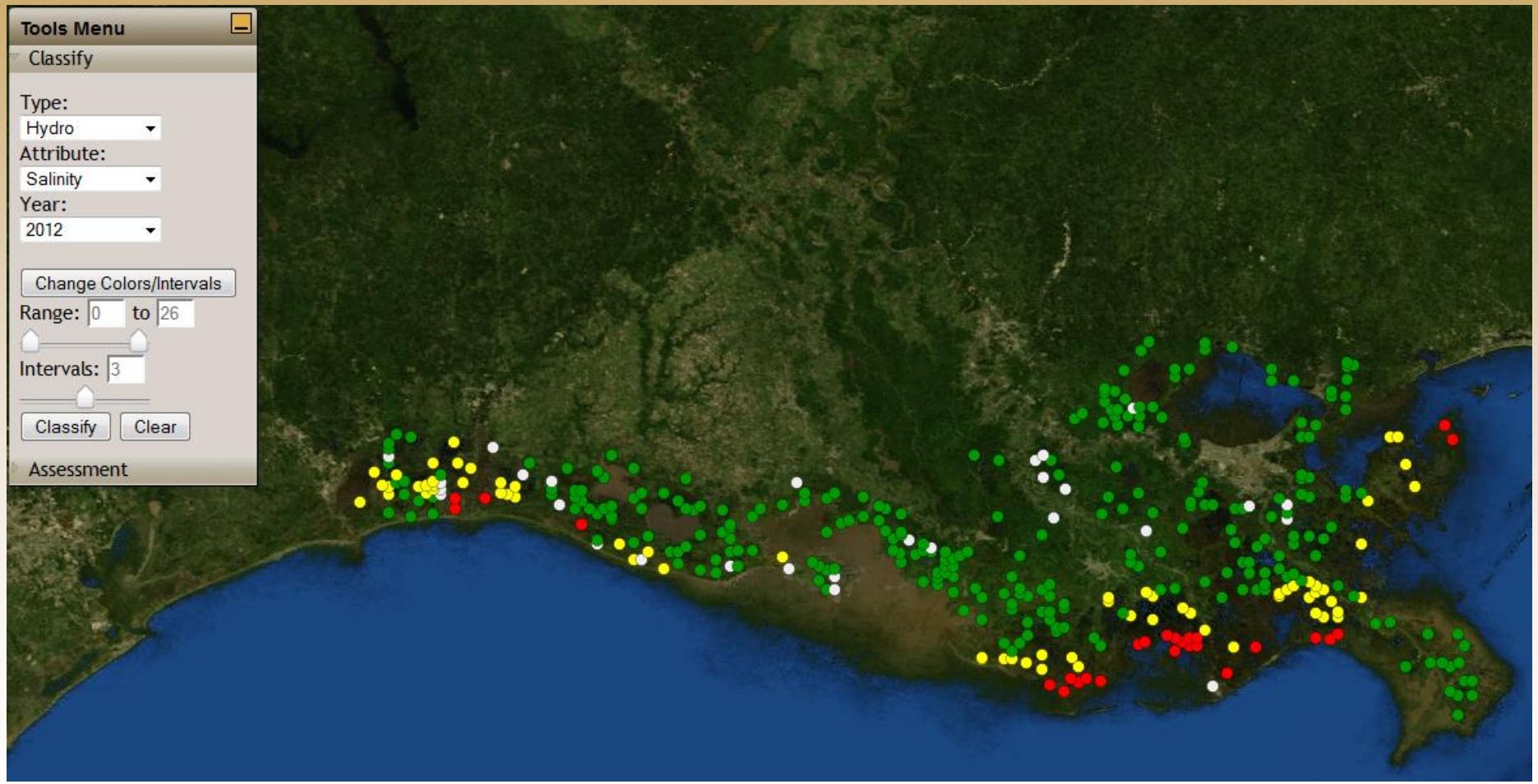
Other radio buttons change the base/background layer of the map.

# Classify Tool

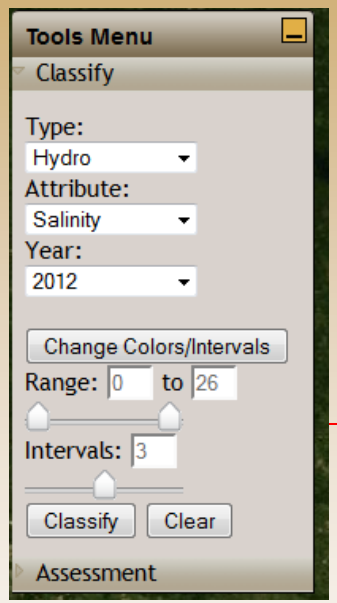

A Type, Attribute, and Year must be chosen to Classify the CRMS sites. All of the Attributes except for the Marsh Classification have a color chooser option.

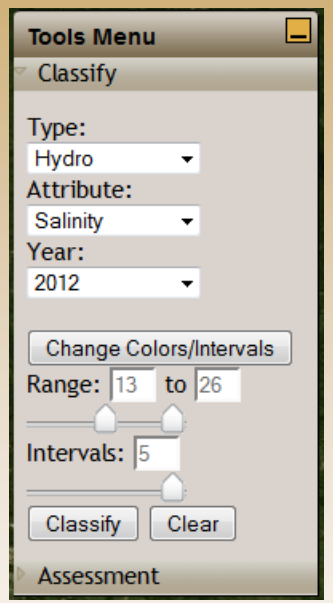
- Vegetation
  - FQI
  - Marsh Classification
- Hydro
  - Hydro Index
  - Salinity
  - Water Level
- Soil
  - Calculated Elevation Change (CEC)
  - Submergence Vulnerability Index (SVI)

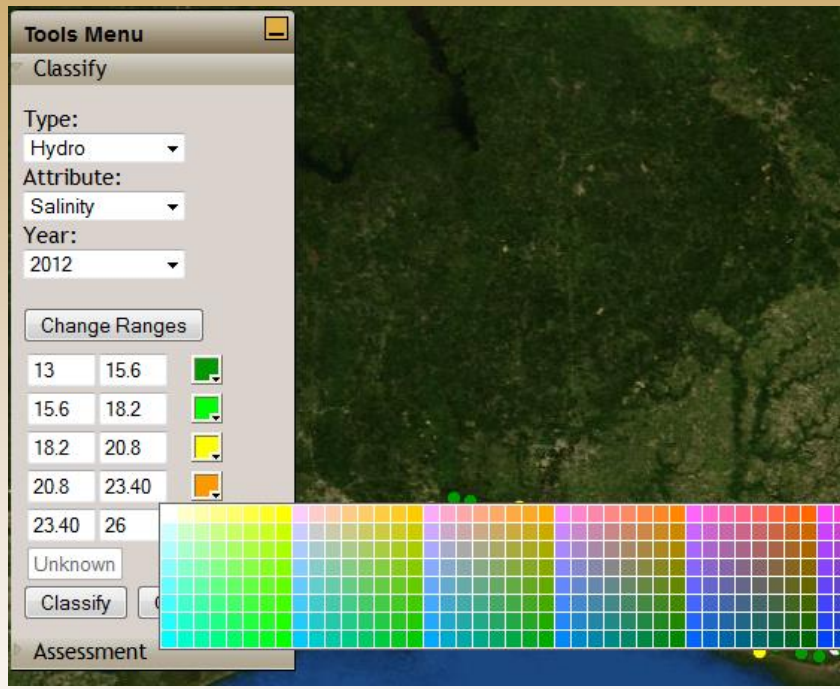
# Classify Tool



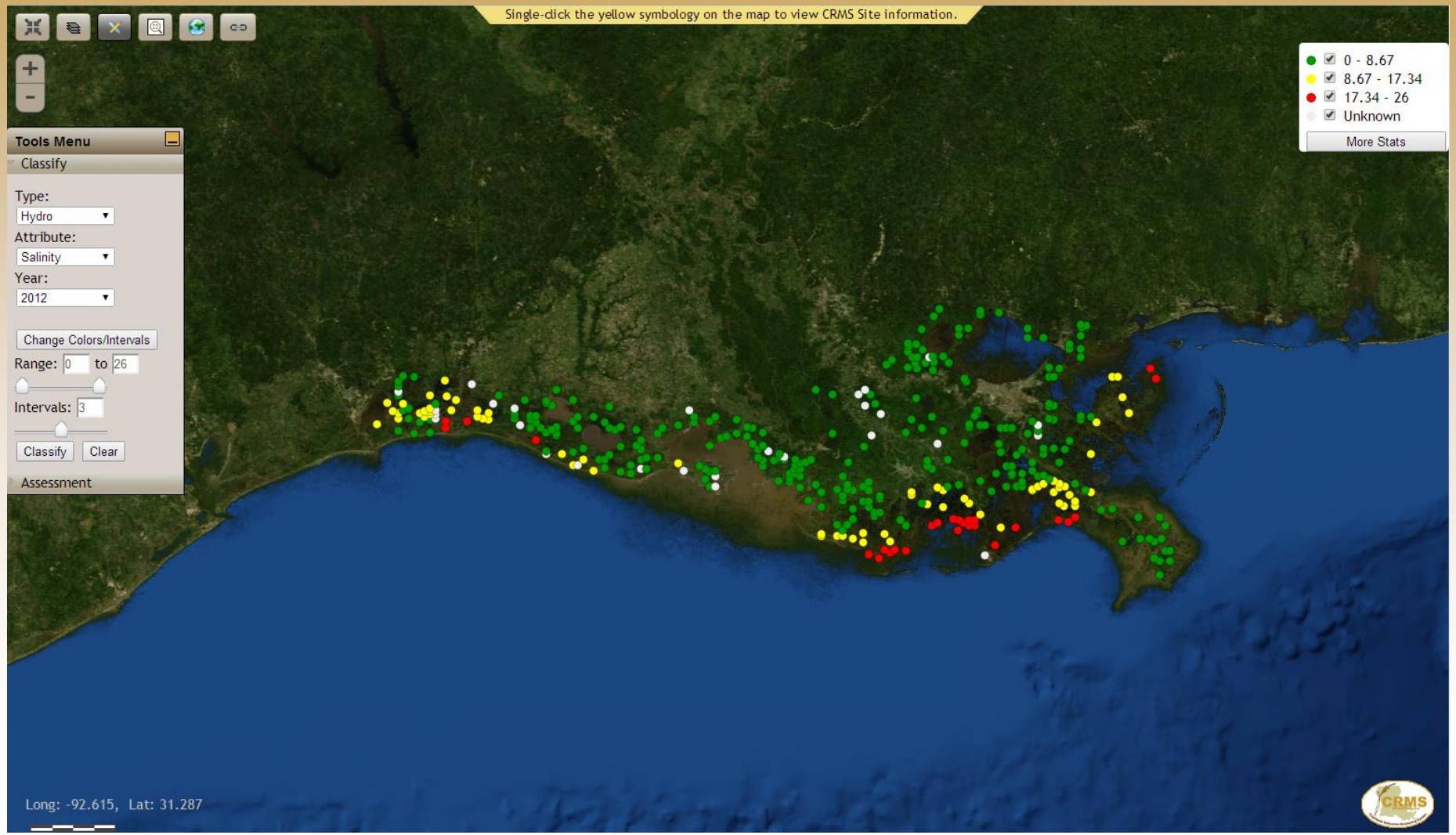
# Classify Tool



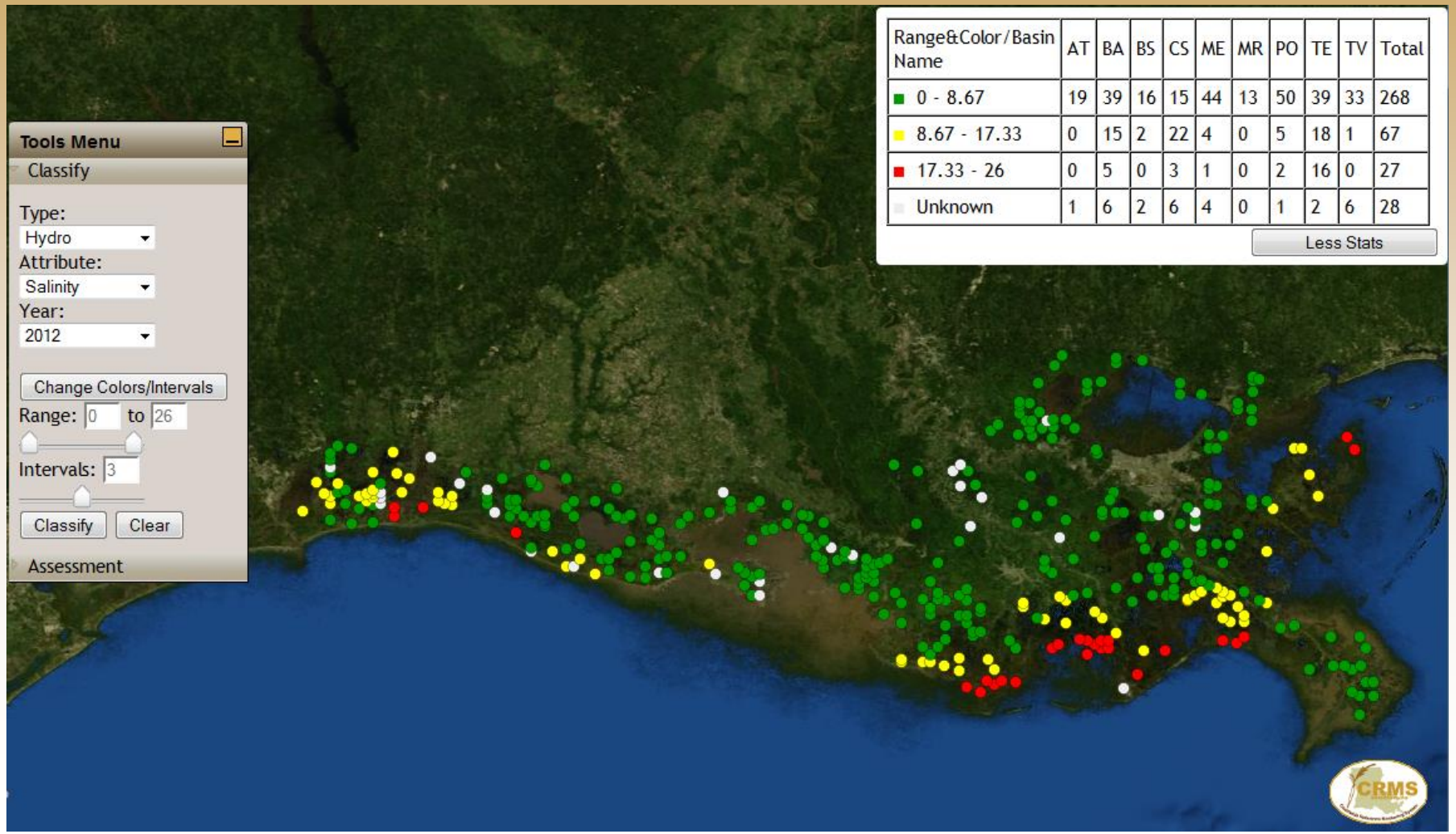



# Classify Tool



# Classify Tool



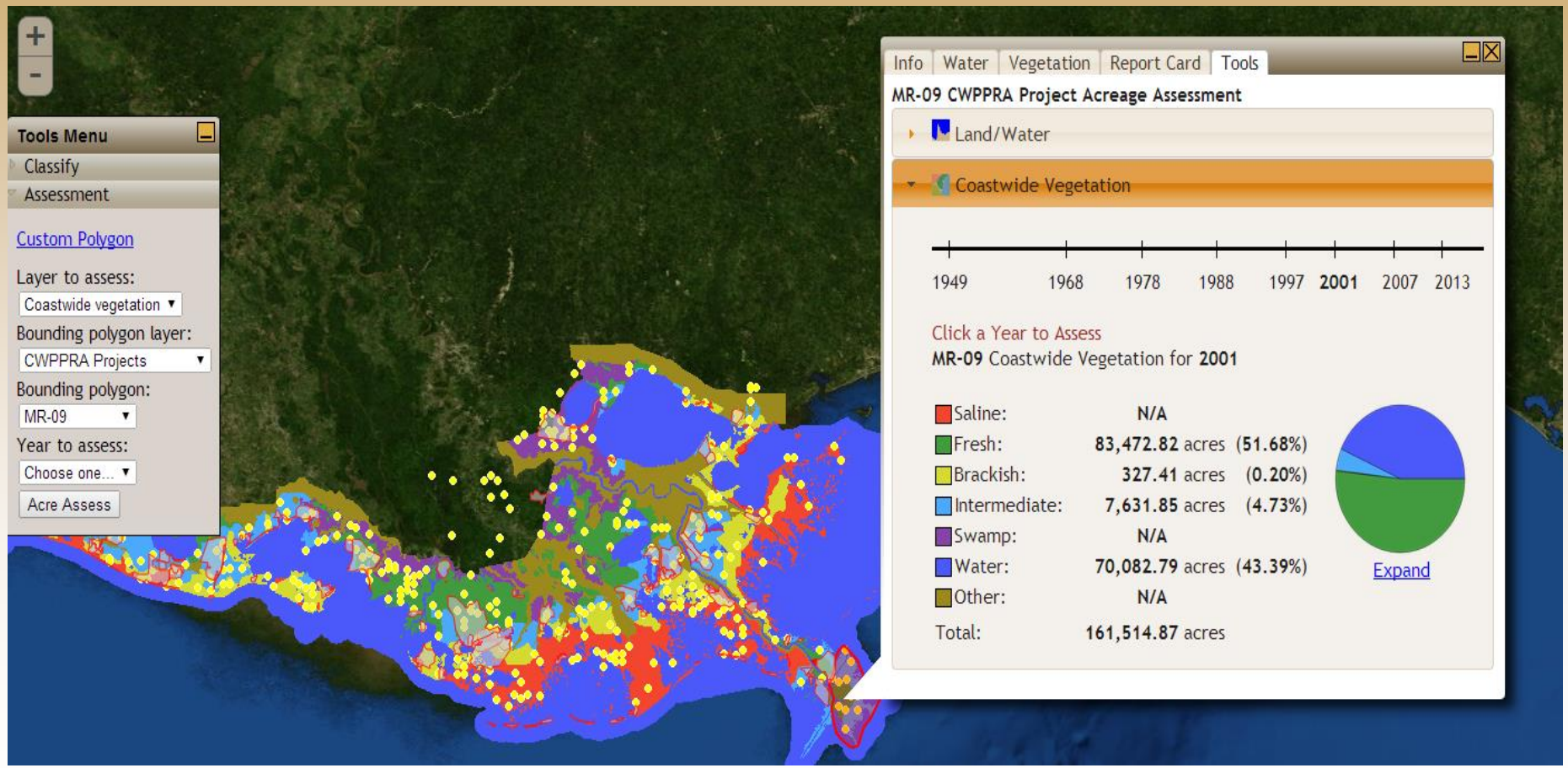

| Range&Color / Basin Name | AT | BA | BS | CS | ME | MR | PO | TE | TV | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 - 8.67 | 19 | 39 | 16 | 15 | 44 | 13 | 50 | 39 | 33 | 268 |
| 8.67 - 17.33 | 0 | 15 | 2 | 22 | 4 | 0 | 5 | 18 | 1 | 67 |
| 17.33 - 26 | 0 | 5 | 0 | 3 | 1 | 0 | 2 | 16 | 0 | 27 |
| Unknown | 1 | 6 | 2 | 6 | 4 | 0 | 1 | 2 | 6 | 28 |

# Acreage Assessment Tool

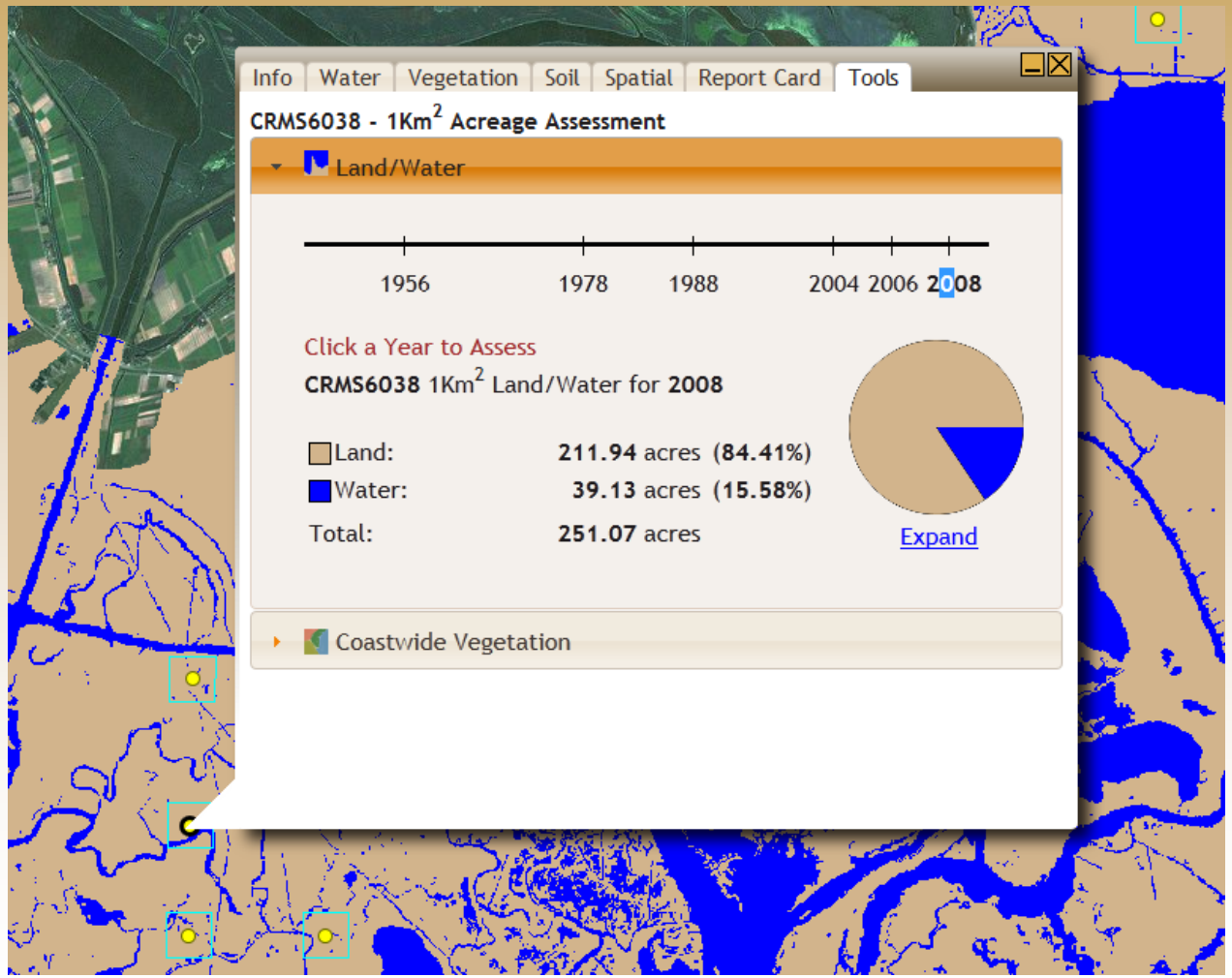

A custom polygon can be drawn on the map to assess the area of the polygon drawn.

A Type, Attribute, and Year must be chosen to classify the CRMS sites. All of the attributes except for the Marsh Classification have a color chooser option.

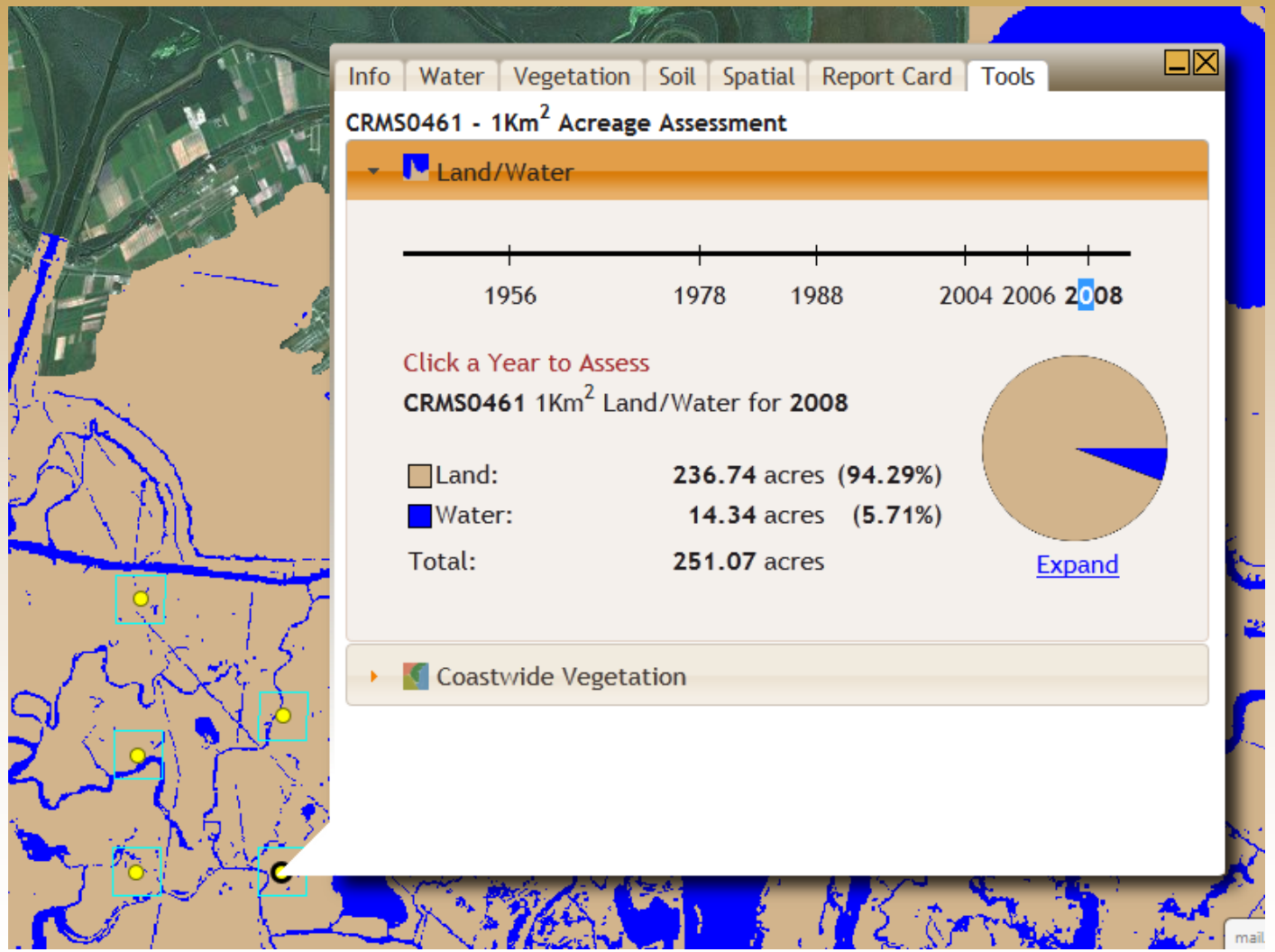
# Acreage Assessment Tool



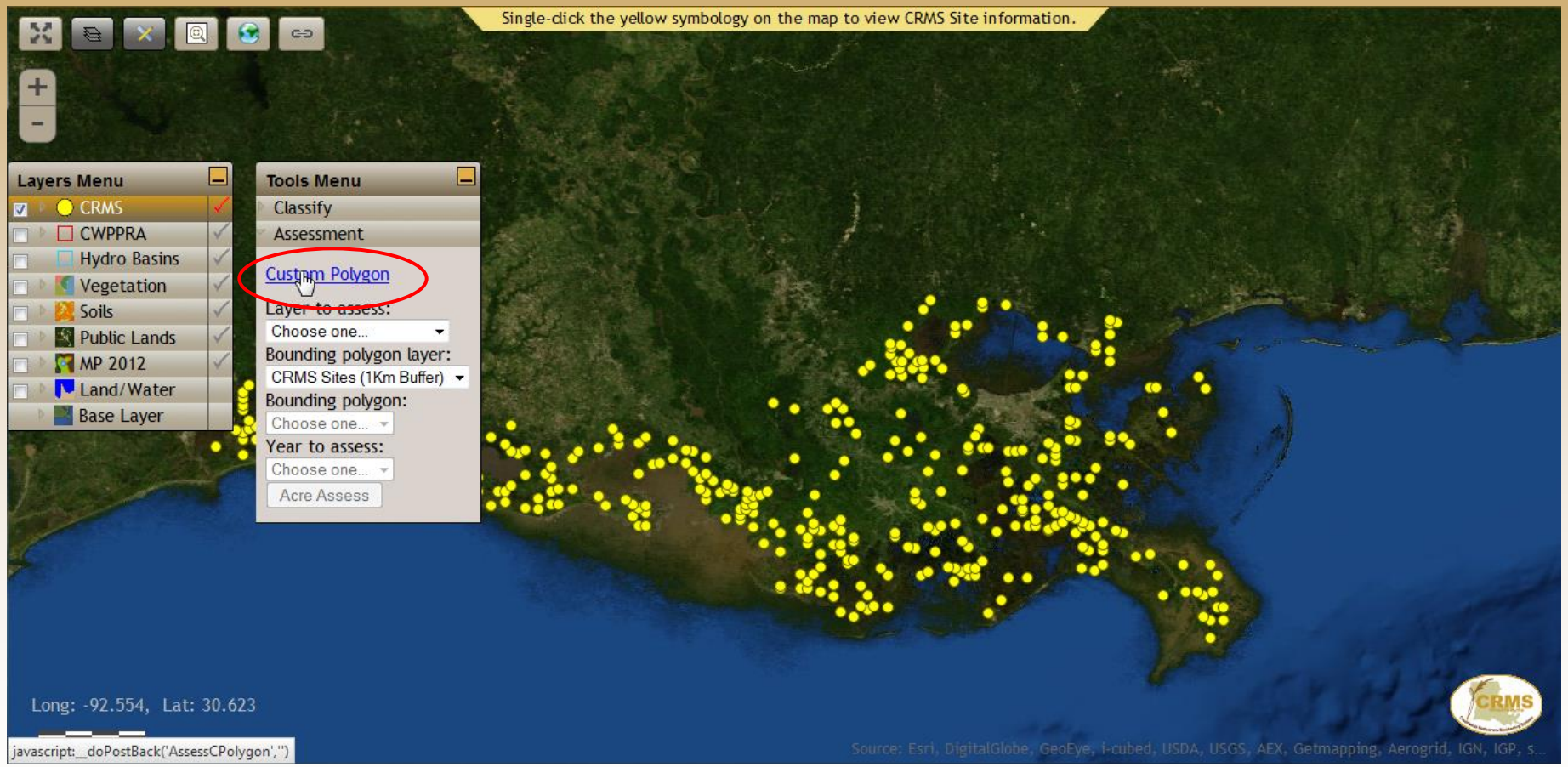
# Tools Tab Persistence



# Tools Tab Persistence

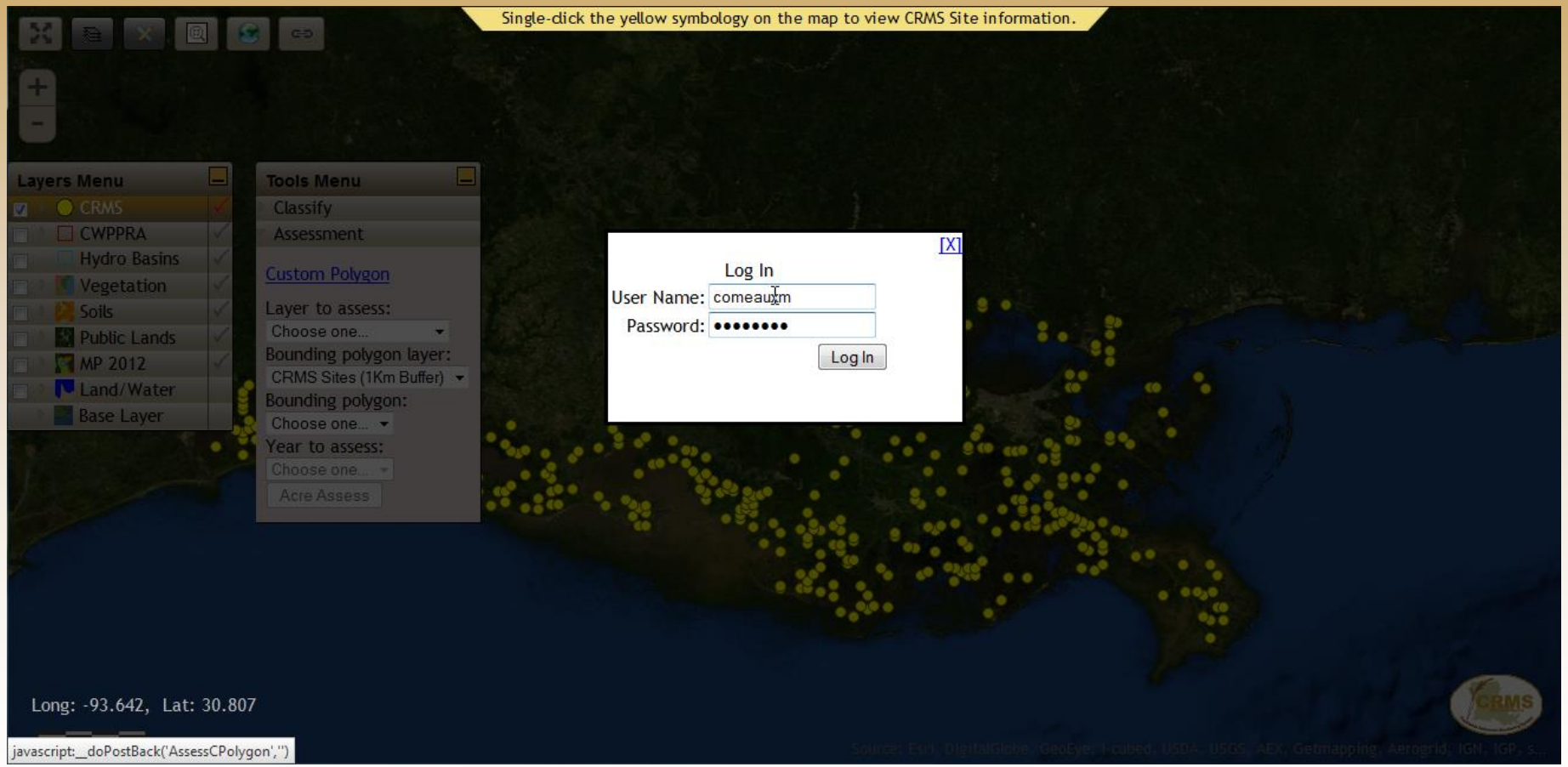


# Custom Acreage Assessment

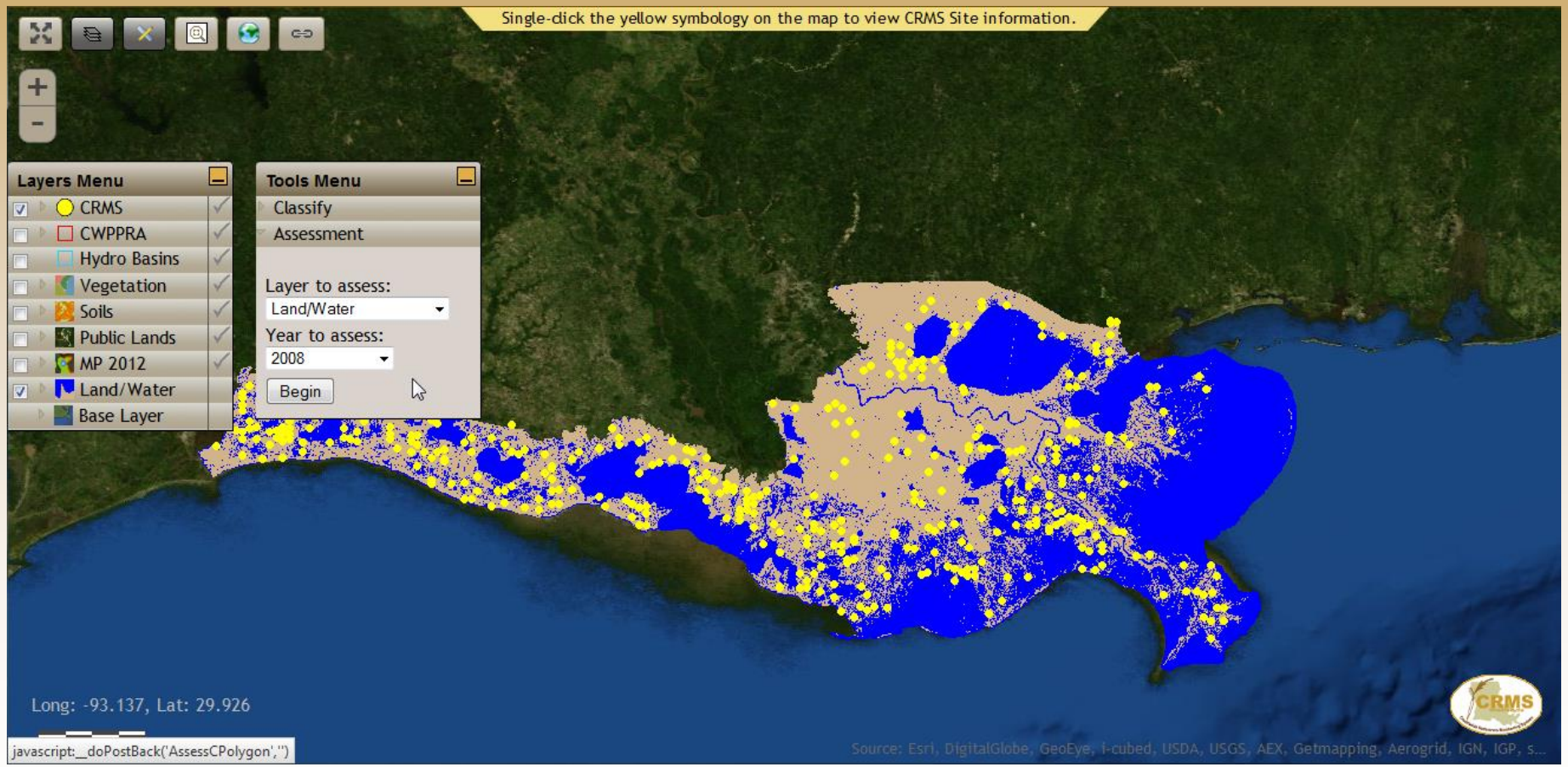


# Custom Acreage Assessment

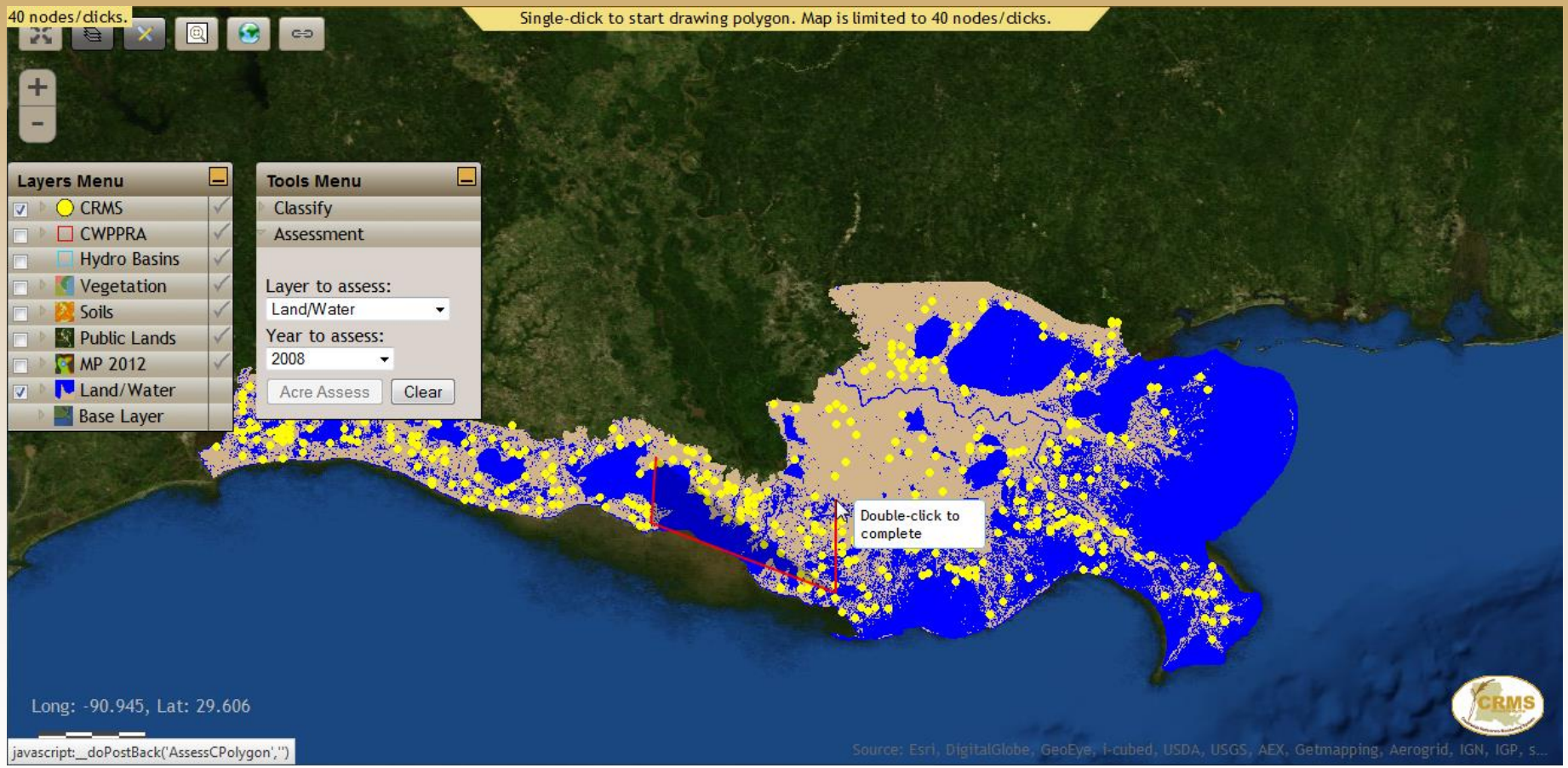
Request Password:
E-mail: comeauxm@usgs.gov



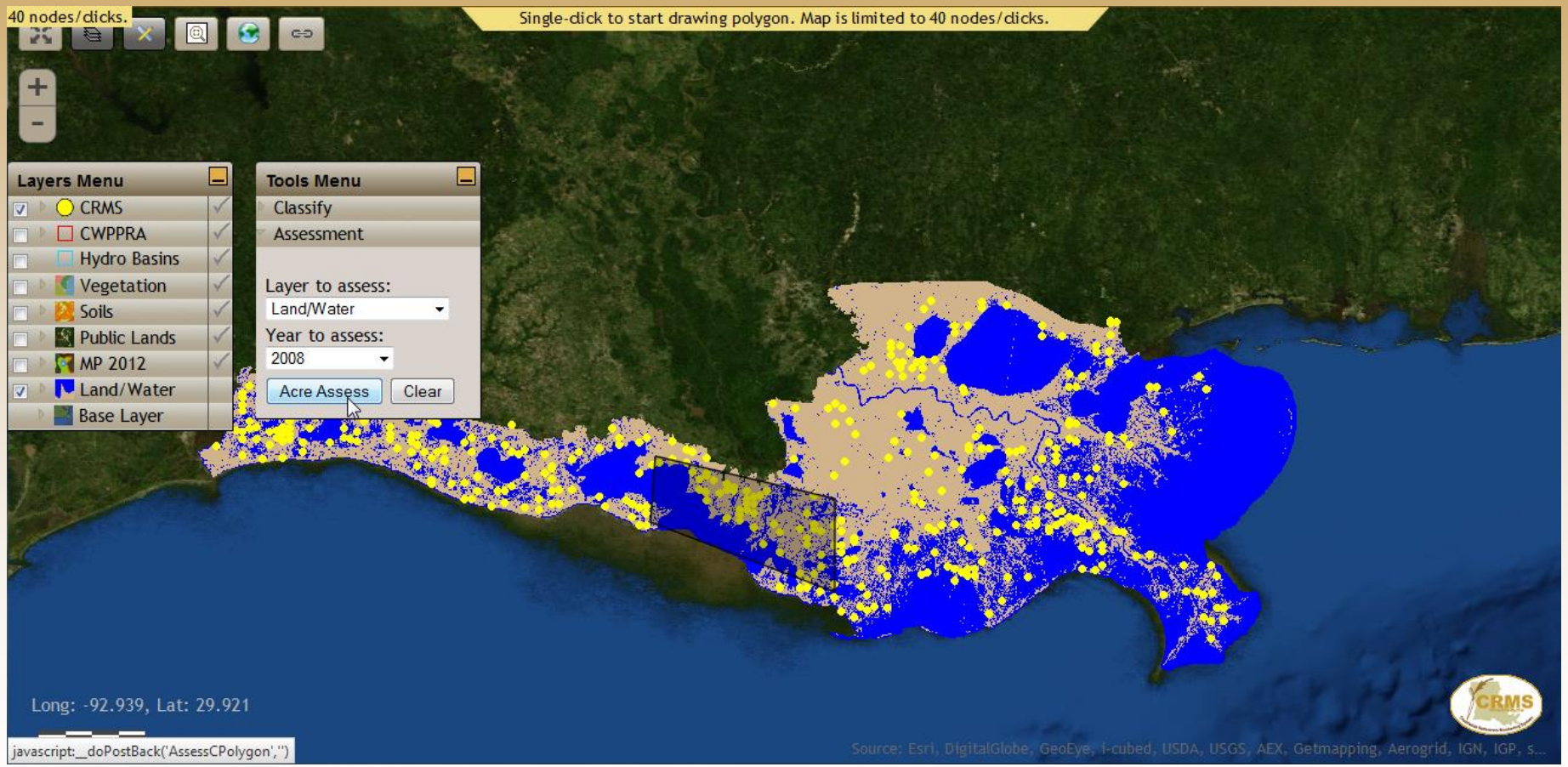
# Custom Acreage Assessment



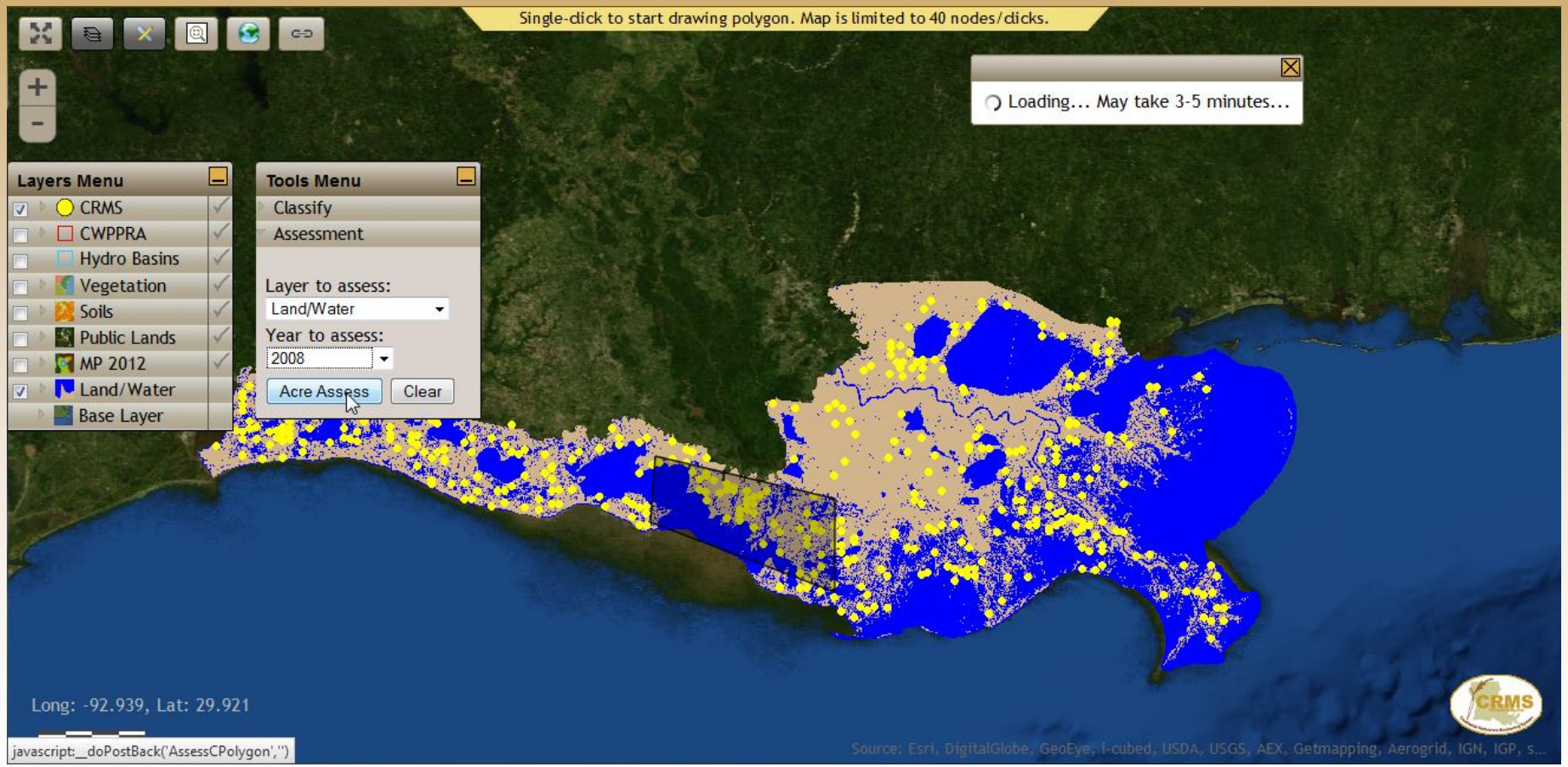
# Custom Acreage Assessment



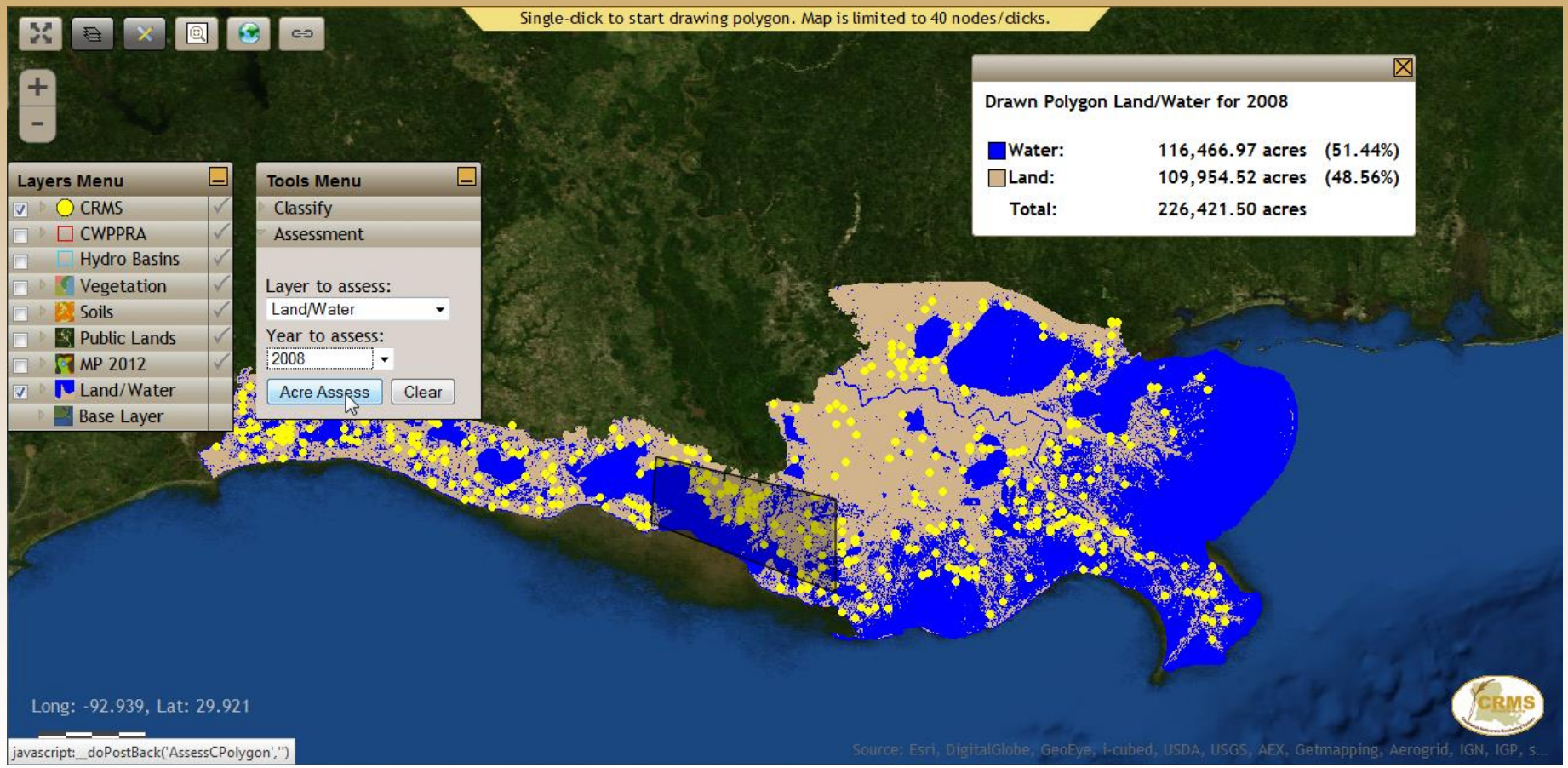
# Custom Acreage Assessment



# Custom Acreage Assessment



# Custom Acreage Assessment



# Questions?

**http://www.lacoast.gov/crms**

**piazzas@usgs.gov**
**comeauxm@usgs.gov**