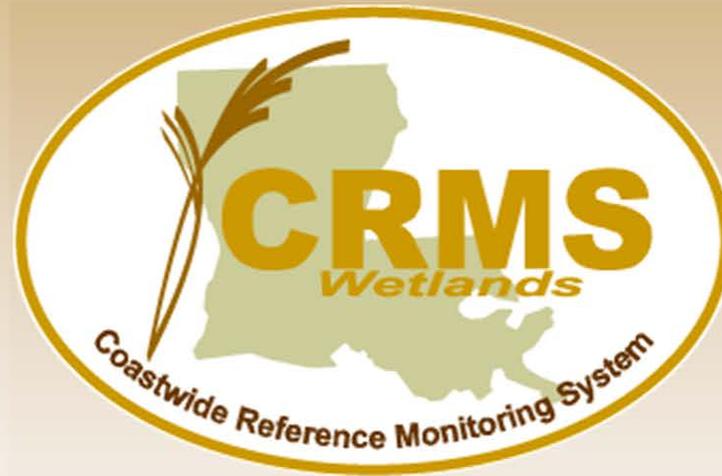




CRMS Website Training

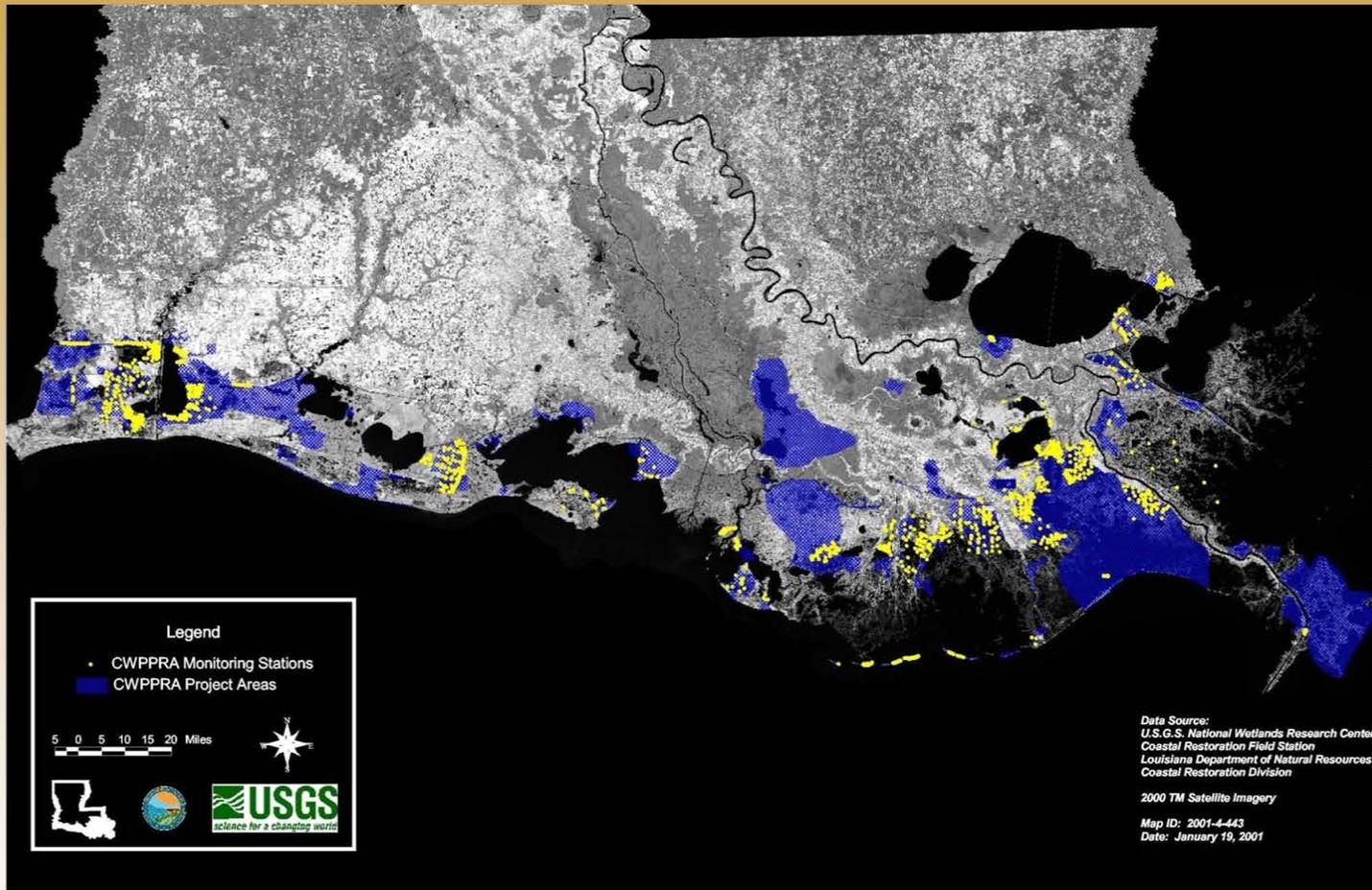


September 2013

<http://www.lacoast.gov/crms>



Coastwide Reference Monitoring System - *Wetlands* CWPPRA Restoration Projects

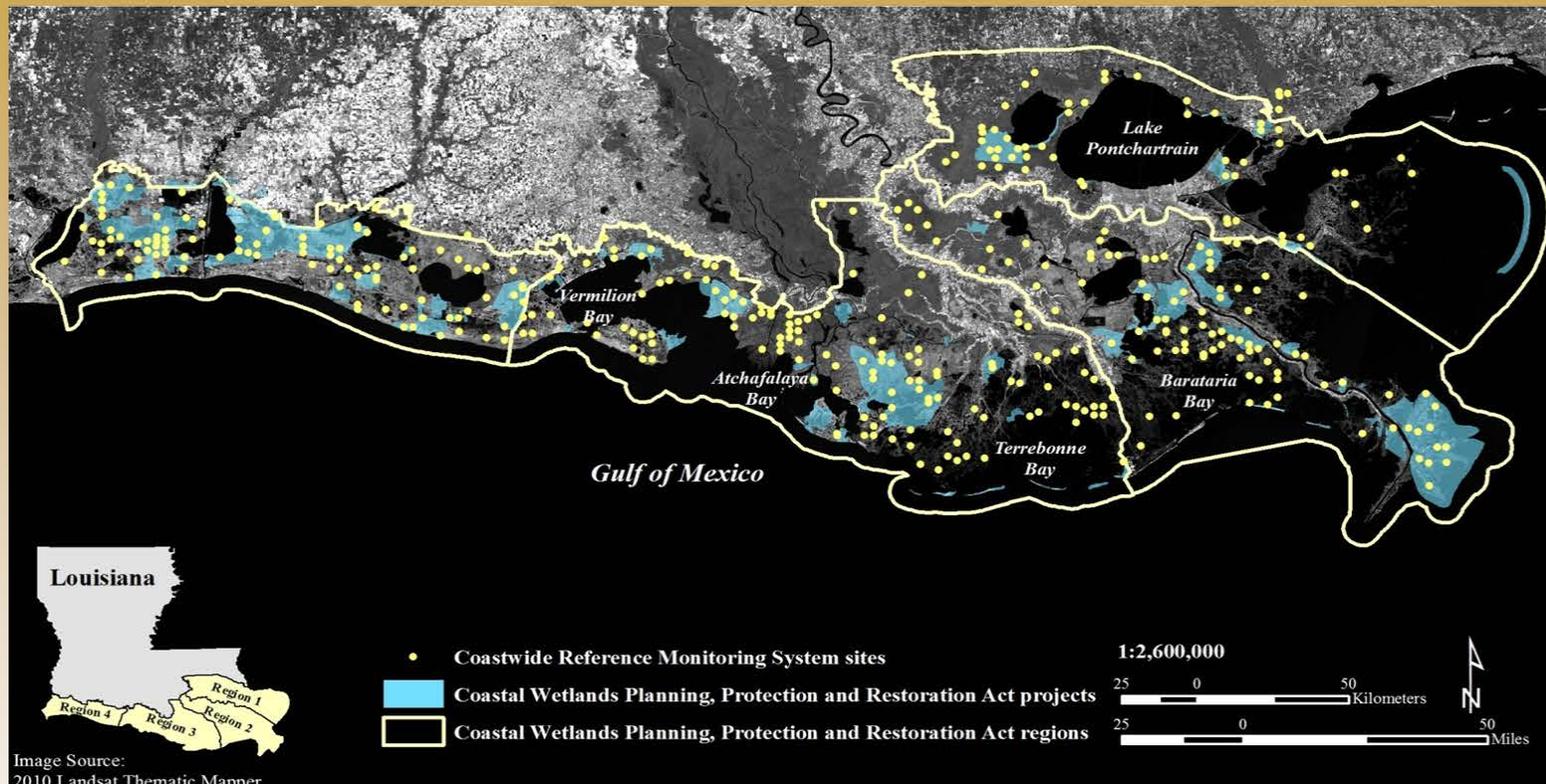


- Congressionally funded in 1990
- Multiple restoration techniques
- Inconsistent monitoring variables and frequencies
- Short data records

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



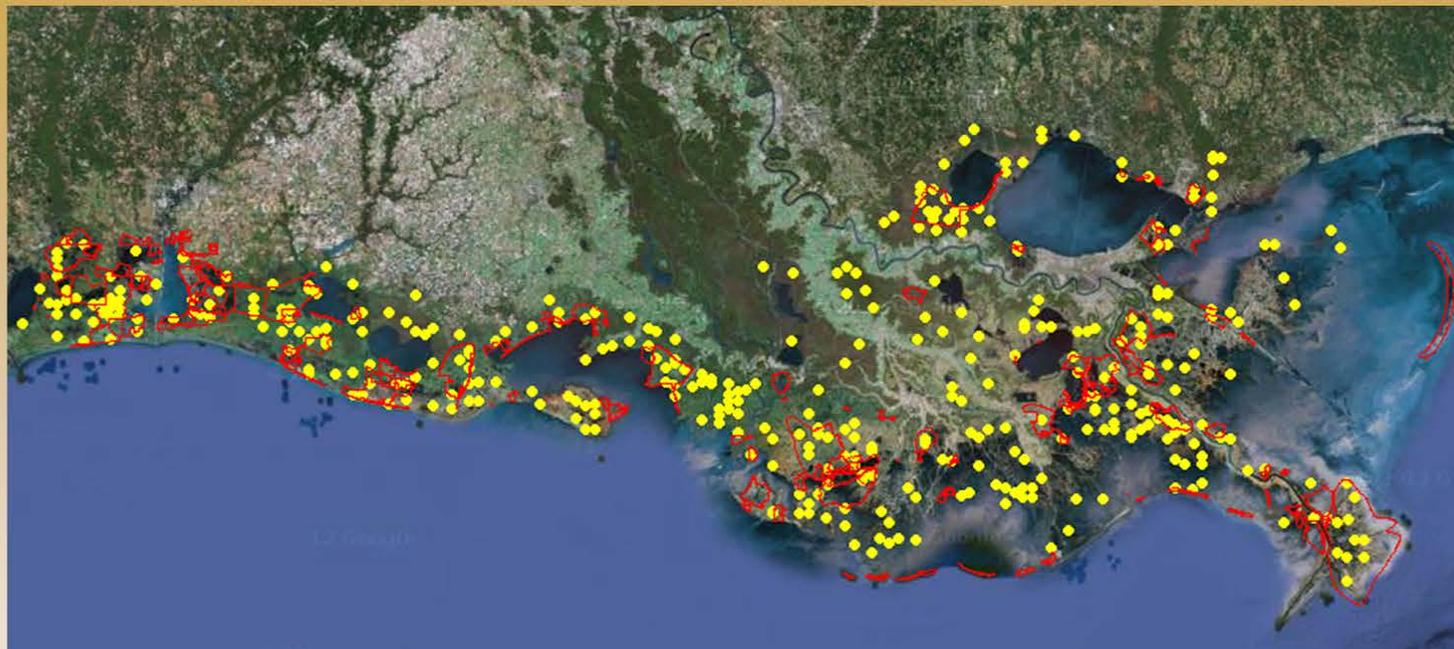
Coastwide Reference Monitoring System - *Wetlands* Purpose



- 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 plan for Louisiana (Coast 2050, LCA, Louisiana Master Plan) is effective in recreating a sustainable coastal ecosystem.



Coastwide Reference Monitoring System - *Wetlands* CRMS Design and Assessment



- **Funded by CWPPRA in 2003**

- **390 CRMS sites**

- **Sites inside & outside of CWPPRA projects**

- **Sites in swamp, fresh, intermediate, brackish, and salt marsh**

- **Allows for multi-scale assessments**

Questions to address through CRMS:

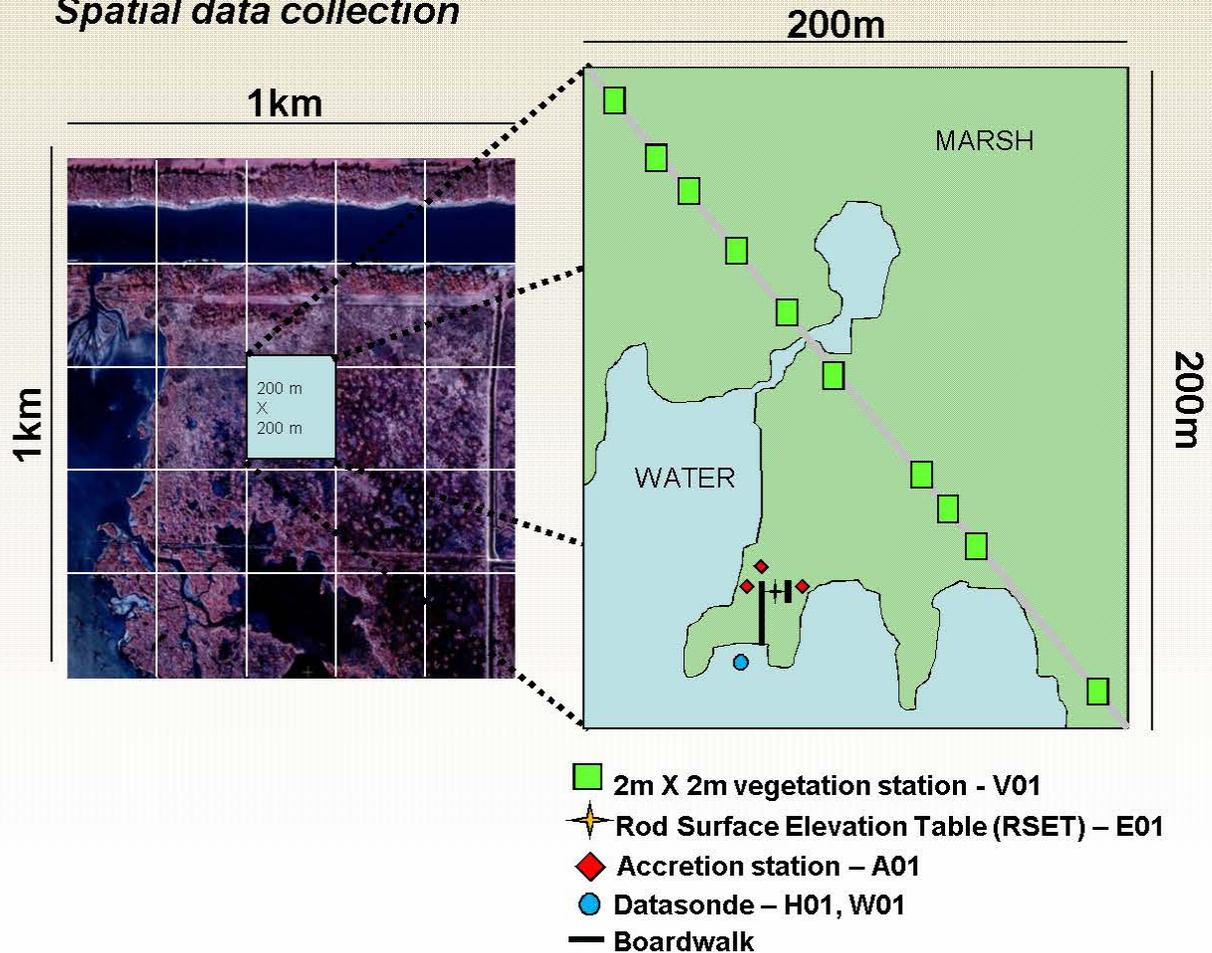
- (1) Did the restoration program reduce coastal wetland loss?
- (2) Did the restoration program sustain a diversity of vegetation types within basins?
- (3) Is the restoration program effective in reducing major stressors on wetlands (i.e., flooding regime, salinity, elevation change)?
- (4) Which project types are the most effective in creating, restoring, protecting and enhancing wetlands?



Coastwide Reference Monitoring System - Wetlands Site Design

Non-spatial data collection

Spatial data collection



Typical Marsh Site



Typical Swamp Site

CRMS Site vs. CRMS Station



Coastwide Reference Monitoring System - *Wetlands* Site Design



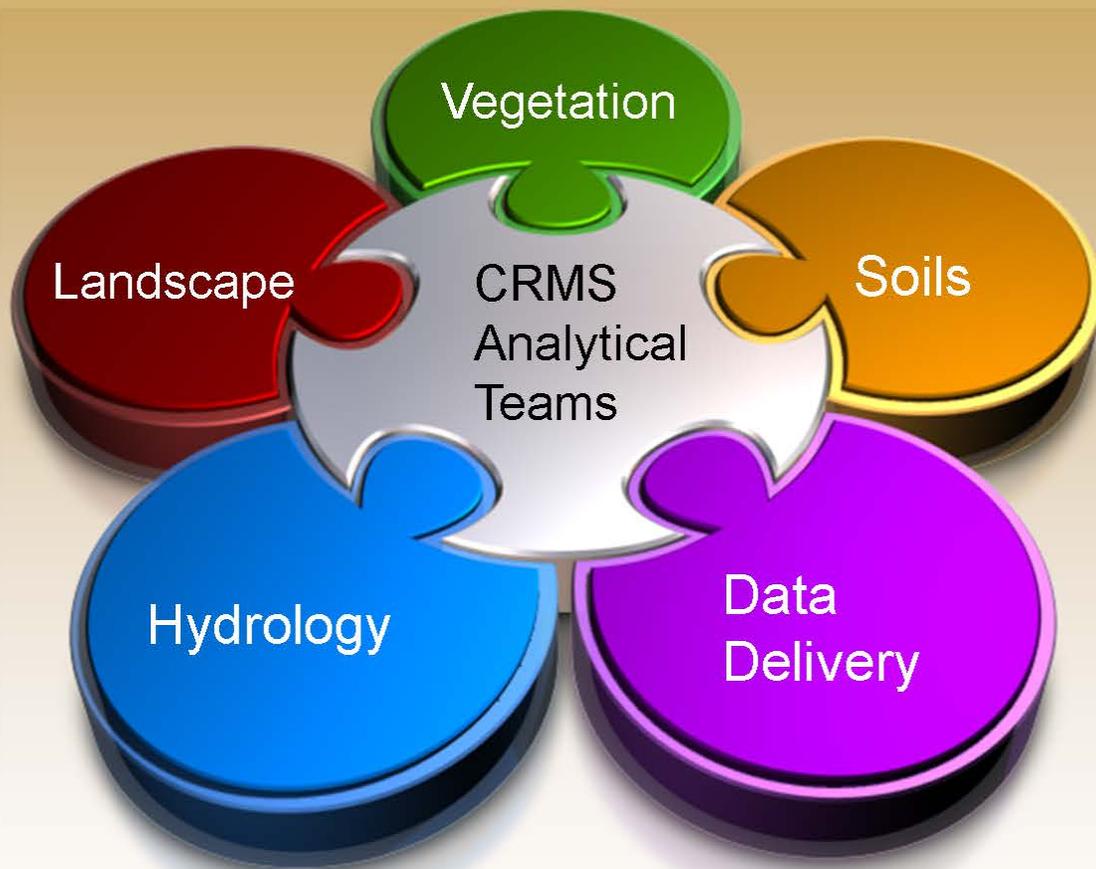


Coastwide Reference Monitoring System - *Wetlands* Site Data Collection

Parameter	Method	Scale	Frequency
Land to Water Ratio	Satellite Imagery	Hydrologic Basin	3 years
Land to Water Ratio	Digital Aerial Photography	CRMS Site (1 Km²)	3 years
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
Vertical Accretion	Feldspar Plots/Cryogenic Cores	3 plots per site	Bi-annually
Marsh Elevation Change	Rod Surface Elevation Table (RSET)	4 directions per site	Bi-annually
Porewater Salinity	10 and 30 cm syringe sippers	3 samples per depth per site and at vegetation plots	Monthly Annually
Surface Water Salinity, Temp and Water Level	Submersible Data Logger	in available water within 200 m of CRMS Site or in a well	Hourly
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



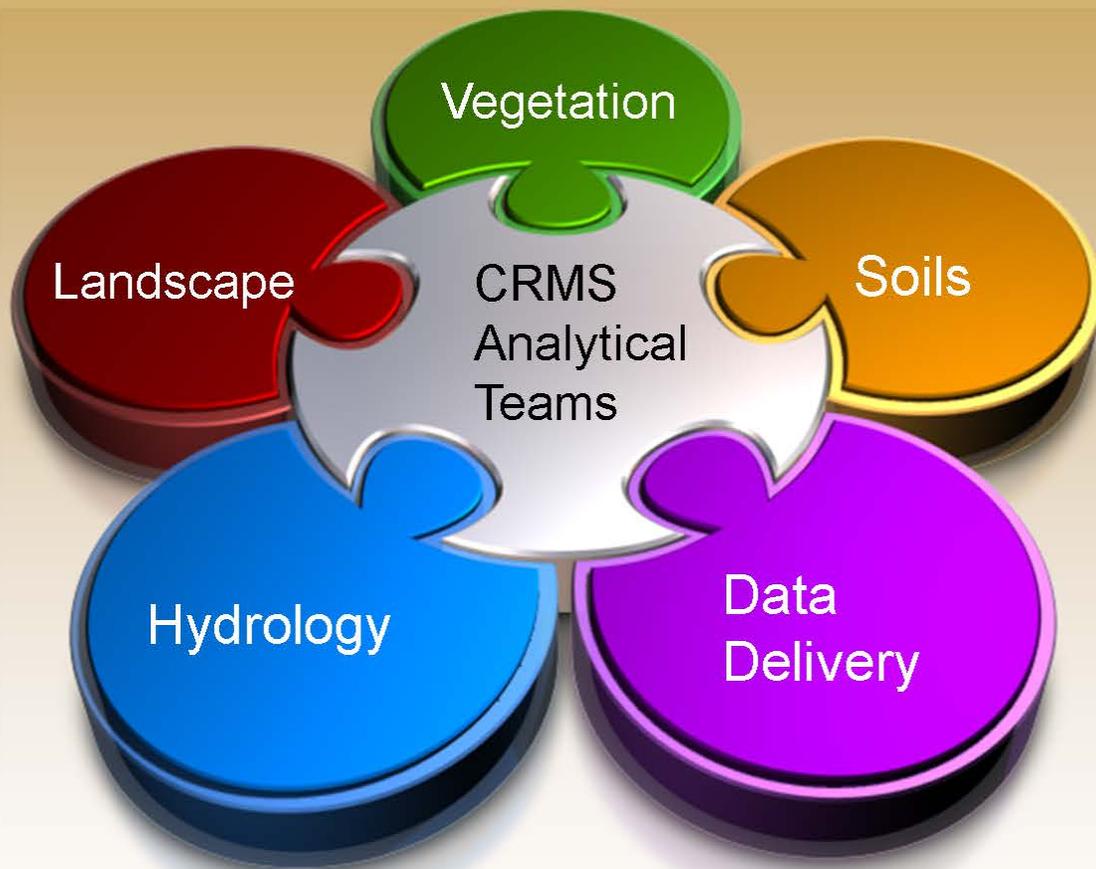
Coastwide Reference Monitoring System - *Wetlands* CRMS Analytical Teams



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



Coastwide Reference Monitoring System - *Wetlands* CRMS Analytical Teams



- 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



Coastwide Reference Monitoring System - Wetlands

CRMS Website

a CWPRA funded project

Coastwide Reference Monitoring System



Home Data Mapping Library Visualization Program



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 then compared with project trajectories through time. The approach could serve as a model for evaluating wetland ecosystems.



www.lacoast.gov/crms



Site Overview – Main Menu

- **Program**
 - **Administrative links, Data Citation, and Data Descriptions**
- **Data**
 - **Spatial Data / Tabular SONRIS Data Tool / Tabular CRMS Bulk Download**
- **Library**
 - **Maps / Presentations / SONRIS Reports / CRMS Reports**
- **Visualizations**
 - **Charting / Bulk Charting**
- **Mapping**
 - **SONRIS / Basic Map Viewer**



a CWPRA funded project

Coastwide Reference Monitoring System



Home Data Mapping Library Visualization **Program**

CRMS Support Documentation

Administration	Support Docs
Contacts	Privacy
Data Descriptions	Accessibility
	FOIA
	Disclaimer
	Data Citation

• Program menu contains links to:

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



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

Home Data Mapping Library Visualization Program

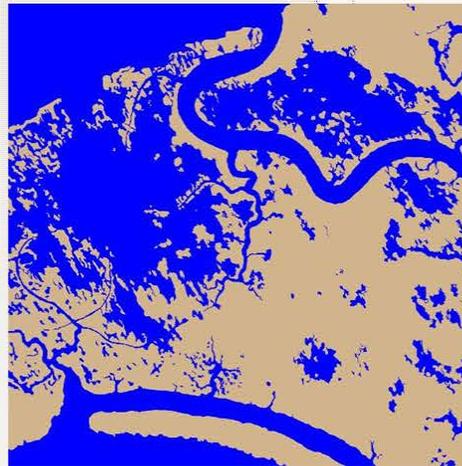
Spatial Aerial Photography Land/Water Analysis

Hydro Basin: -- ALL -- Site: CRMS -- ALL -- Year: -- ALL --

Total Results: 413

CRMS 0002
2005 Digital Image
Pontchartrain Hydro Basin

CRMS 0003
CRMS0003 2005 Digital Image
Pontchartrain Hydro Basin



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



• **CRMS bulk data download tools**
All values for selected years, for selected stations
(queue processes first come first serve)

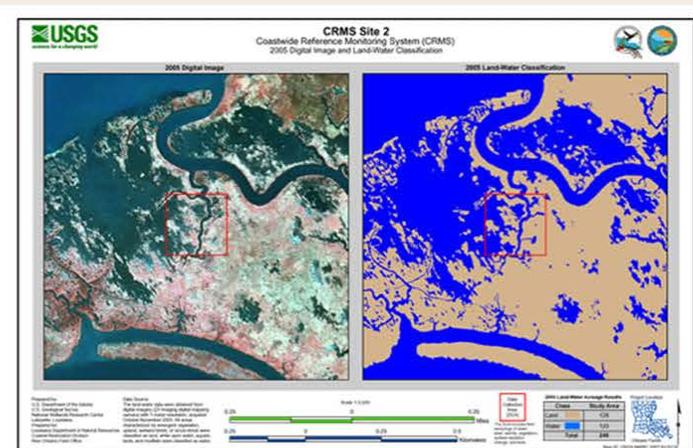
- Hydro
 - Hydro Averages
 - Hydro Index
 - Percent Flooded
 - Water Level Range
- Vegetation
 - Basal Area
 - Floristic Quality Index
 - Marsh Class
 - Veg Percent Cover
- Spatial
 - Percent Land

The screenshot shows the CRMS Data Download tool interface. At the top, there is a navigation bar with tabs for Home, Data, Mapping, Library, Visualization, and Program. The 'Data' tab is selected, and a dropdown menu is open, showing options for Spatial, Tabular, and SONRIS Data Tool. The 'SONRIS Data Tool' option is selected, and a sub-menu is open, showing 'Bulk Data Download' as the active option. Below the navigation bar, there are four buttons: Charting, Bulk Charting, Data Download (highlighted), and Reporting. The 'Data Download' section is active, showing a 'Data Download' header and a description: 'Data available through this website are calculated or derived values based on the original data which are available from the SONRIS database (SONRIS)'. Below this, there is a 'Data Download' sidebar with a tree view showing 'Hydro' (selected), 'Vegetation', and 'Spatial'. The 'Hydro' section is expanded, showing 'Hydro Averages' (selected), 'Hydro Index', 'Percent Flooded', and 'Water Level Range'. To the right of the sidebar, there are dropdown menus for 'Water Year is October 1 - September 30', 'Yearly', and 'Calendar Year'. Below these, there is a 'Year:' label and a table with two columns: 'Select All' and 'Deselect All'. The table lists years from 1987 to 2010, with 2008, 2009, and 2010 selected. Below the table is a 'Submit' button. At the bottom, there are dropdown menus for 'Basin: All Basins' and 'Project: All Projects', and an 'Email Address:' field with a 'Submit Request' button.



• 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:
 - Basic Map Viewer
 - SONRIS Viewer

Coastwide Reference Monitoring System a CWPBRA funded project 

Home Data Mapping Library Visualization Program

Single-click the yellow symbology on the map to view CRMS Site information.



The map interface displays a satellite view of the Gulf of Mexico coastline. Numerous yellow circular markers are scattered across the landmass, representing CRMS sites. A "Layers Menu" is open on the left side of the map, listing various data layers with checkboxes and expand/collapse icons. The "CRMS" layer is checked and highlighted in yellow. Other layers include CWPBRA, Hydro Basins, Vegetation, Soils, Public Lands, Land/Water, and Base Layer. At the bottom left, the coordinates "Long: -88.349, Lat: 29.176" are displayed, along with a scale bar showing 0, 15, and 30 miles. A small CRMS logo is located in the bottom right corner of the map area.

Layer	Checked	Expanded
CRMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CWPBRA	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydro Basins	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vegetation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public Lands	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Land/Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Base Layer	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Long: -88.349, Lat: 29.176

0 15 30mi

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, I...



• Visualization menu contains links to:

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

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

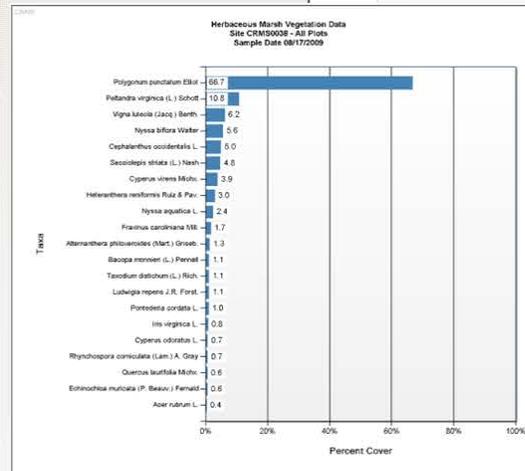
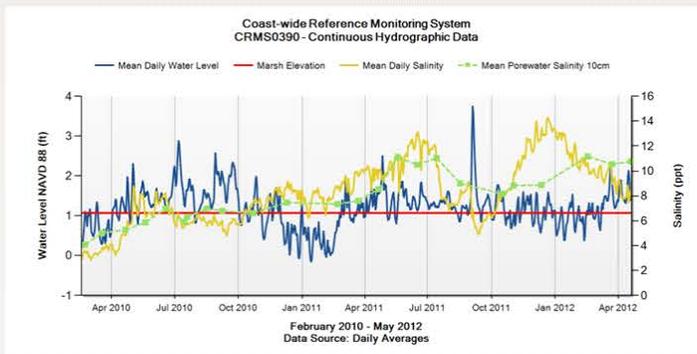
Vegetation

Soil

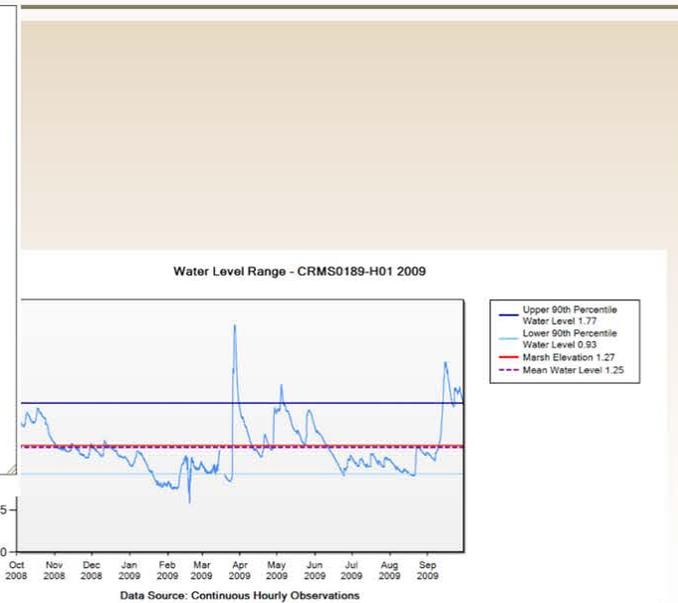
Spatial

Report Card Charts

Clear Charts



Data Download



Data Download

- Major change to interface to facilitate multi-station and multi-scale charting



Using the charting interface

The screenshot shows a web application interface with a navigation bar at the top containing the following tabs: Home, Data, Mapping, Library, Visualization, and Program. The 'Visualization' tab is active, and a dropdown menu is open, listing three options: 'Charting', 'Bulk Charting', and 'Conceptual Models'. Below the navigation bar, there are three main content areas: a 'Map' icon (a world map), a 'Data' icon (a database cylinder), and a 'Factsheet' icon (a document with a bar chart). Below these icons are three photographs: a blue heron perched on a branch, a dense forest of tall trees, and a sunset over a landscape.

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



Charting Usage

Previous Charting Version

Charting | Bulk Charting | Data Download | Reporting

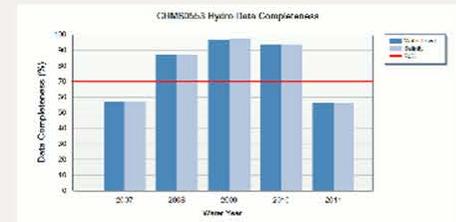
- Hydro
 - Water Level Range
 - Hydro Completeness
 - Salinity
 - Water Level
 - Temperature
 - Continuous
 - Site Hydro Index
 - Soil Porewater
 - Precipitation
- Vegetation
- Soil
- Spatial
- Report Card Charts

Clear Charts

Previous Charting Version

Charting | Bulk Charting | Data Download | Reporting

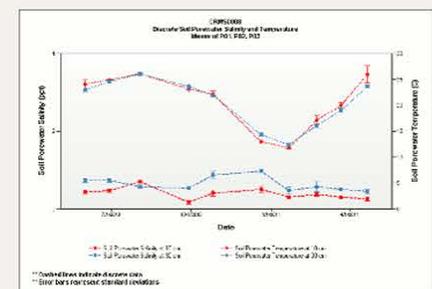
- Hydro
 - Water Level Range
 - Hydro Completeness
 - Salinity
 - Water Level
 - Temperature
 - Continuous
 - Site Hydro Index
 - Soil Porewater
 - Precipitation
- Vegetation



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





1. Pick a Data Category

1. Hydro

2. Pick a Parameter

1. Salinity

[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

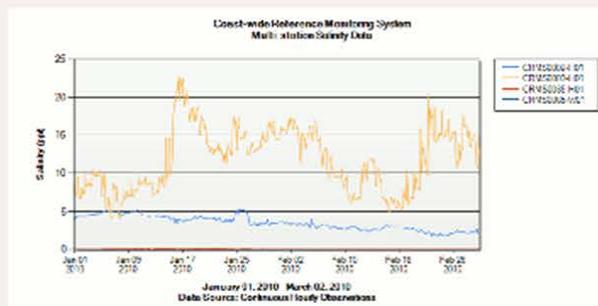
▶ Vegetation

▶ Soil

▶ Spatial

▶ Report Card Charts

Clear Charts





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

[Previous Charting Version](#)

Charting | Bulk Charting | Data Download | Reporting

Water Year is October 1 - September 30

Scale: Site

Date Range: 2/17/2006 - 5/31/2012

Min Date: 1/1/2011

Max Date: 12/31/2011

Apply Date: Dec 2011

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Clear Charts



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

Previous Charting Version

Charting Bulk Charting Data Download Reporting

Water Year is October 1 - September 30

Scale:

Date Range: 2/17/2006 - 5/31/2012

Min Date:

Max Date:

Hydro

- Water Level Range
- Hydro Completeness
- Salinity**
- Water Level
- Temperature
- Continuous
- Site Hydro Index
- Soil Porewater
- Precipitation

Vegetation

Soil

Spatial

Report Card Charts

- CRMS0154-H01
- CRMS0156-H01**
- CRMS0157-H01
- CRMS0159-H01
- CRMS0161-H01
- CRMS0162-H01
- CRMS0163-H01
- CRMS0164-H01
- CRMS0171-H01
- CRMS0172-H01
- CRMS0173-H01
- CRMS0174-H01

S



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

Previous Charting Version

Charting Bulk Charting Data Download Reporting

Water Year is October 1 - September 30

Scale: Site

Date Range: 2/17/2006 - 5/31/2012

Min Date: 1/1/2011

Max Date: 12/31/2011

Apply Date Filter

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

CRMS0129-H01

CRMS0131-H01

CRMS0132-H01

CRMS0135-H01

CRMS0136-H01

CRMS0139-H01

CRMS0146-H01

CRMS0147-H01

CRMS0148-H01

CRMS0153-H01

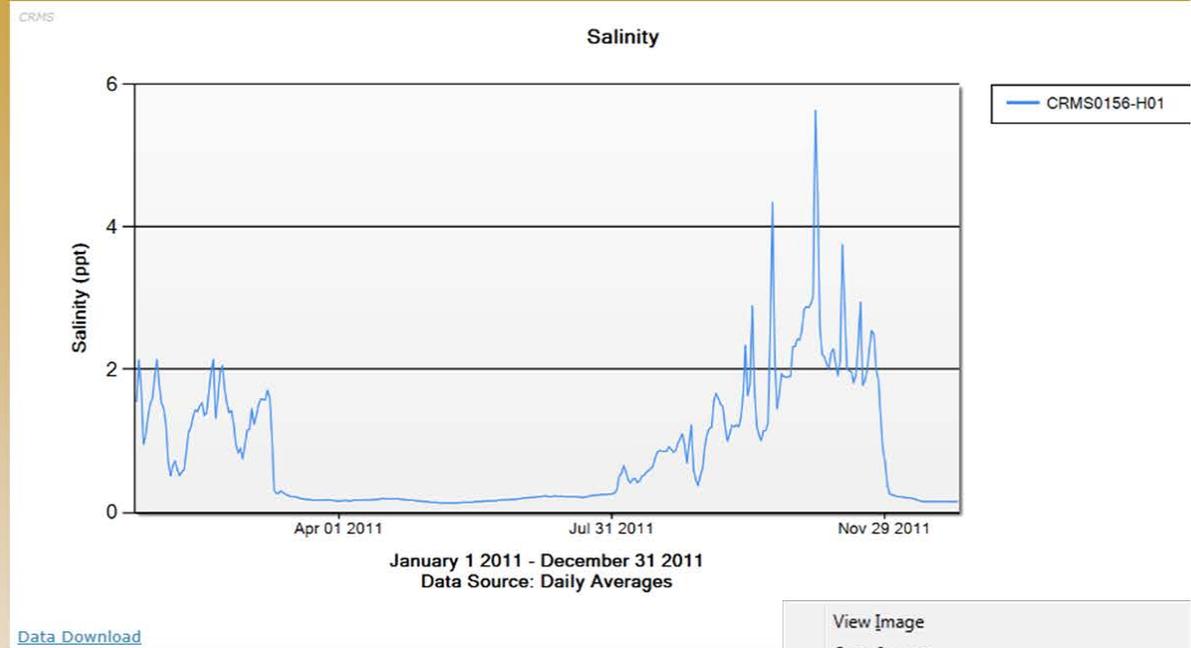
CRMS0154-H01

CRMS0156-H01

Submit Request



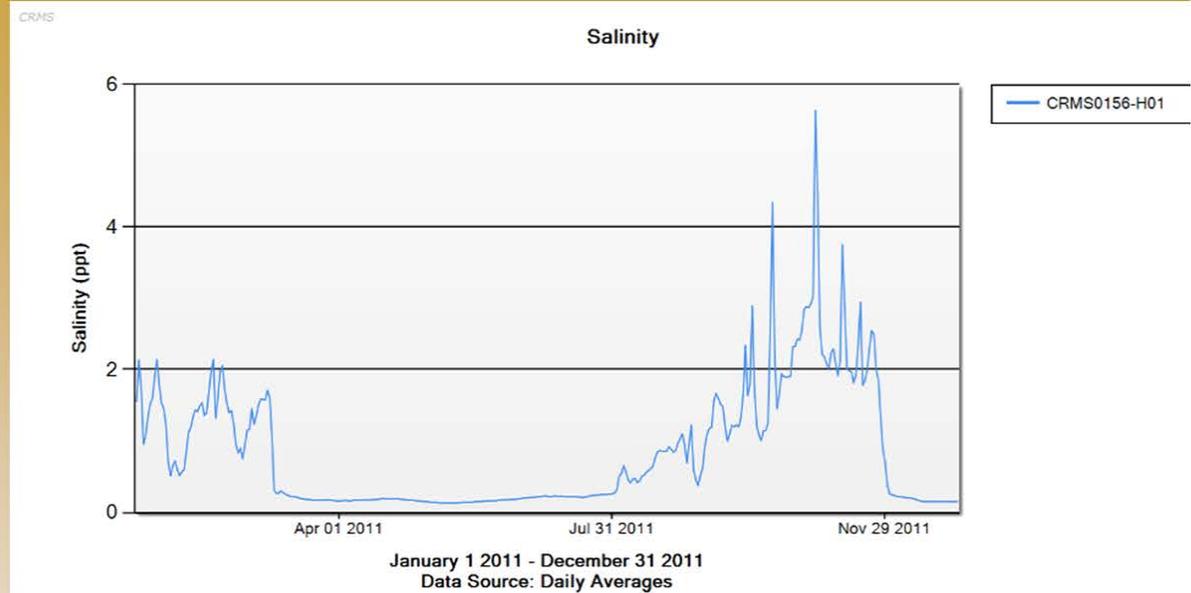
1. Pick a Data Category
 1. Hydro
2. Pick a Parameter
 1. Salinity
3. Pick a Scale
 1. Site
4. Enter Start / End Dates
 1. 1/1/2001
 2. 12/31/2011
 3. Apply Date Filter
5. Pick Site
6. View Chart
7. Save Chart Image
8. Download Data (optional)



- View Image
- Copy Image
- Copy Image Location
- Save Image As...
- Send Image...
- Set As Desktop Background...
- View Image Info
- Copy
- Search Google for "Home Data Mappi..."
- View Selection Source
- Convert Selection to Adobe PDF
- Append Selection to Existing PDF
- Inspect Element with Firebug
- Adblock Plus: Block image...



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)



Data Download

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

Previous Charting Version

Charting Bulk Charting Data Download Reporting

Water Year is October 1 - September 30

Scale: Multi Station

Date Range: 2/25/1987 - 6/6/2012

Min Date: 1/1/2001

Max Date: 12/31/2005

Apply Date Filter

Basin: Calcasieu/Sabin Project: All Projects

Selection limited to 10 items.

CS20-	
CS20-14R	CS20-03
CS20-15R	CS20-07
	CS20-09
	CS20-106
	CS20-17

Clear Charts

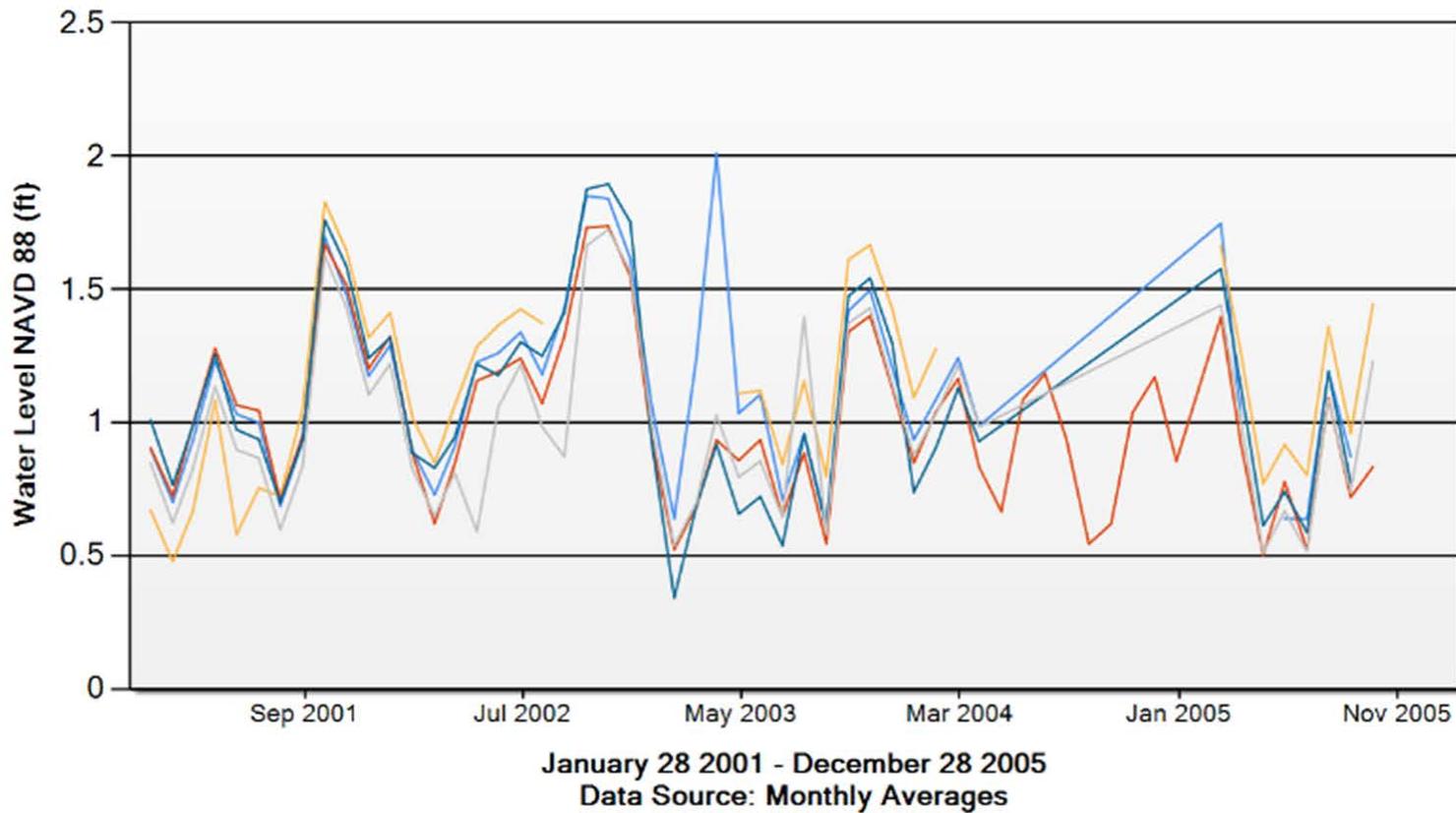
Submit Request



Multi-Station Charting

CRMS

Water Level



- CS20-03
- CS20-07
- CS20-09
- CS20-106
- CS20-17

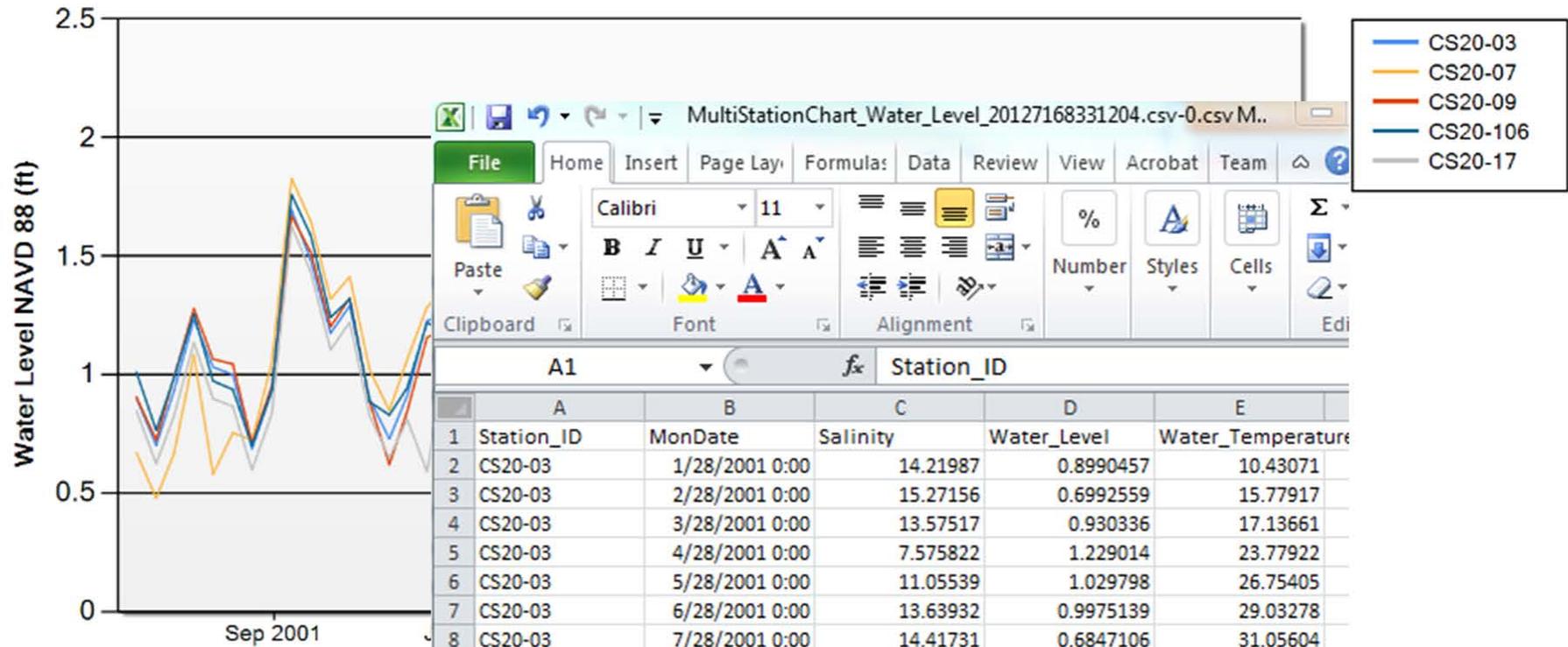
- View Image
- Copy Image
- Copy Image Location
- Save Image As...
- Send Image...
- Set As Desktop Background...
- View Image Info
- Copy
- Search Google for "Home Data Me
- View Selection Source
- Convert Selection to Adobe PDF
- Append Selection to Existing PDF
- Inspect Element with Firebug
- Adblock Plus: Block image...

[Data Download](#)



CRMS

Water Level



MultiStationChart_Water_Level_20127168331204.csv-0.csv M..

File Home Insert Page Lay Formula Data Review View Acrobat Team

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

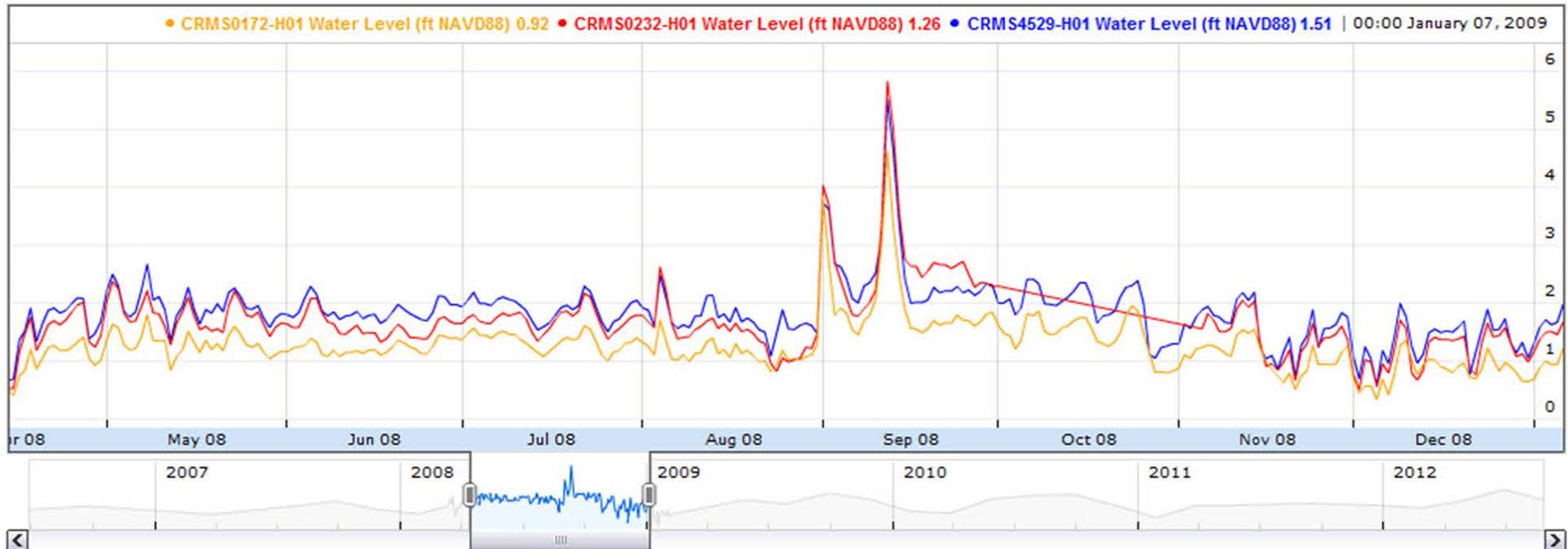
Coastwide Reference Monitoring System

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 ▾
<input type="button" value="Submit"/>		





Interactive Hydro Chart

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 ▾
<input type="button" value="Submit"/>		





Bulk charting- User defined chart selections applied to multiple charts creating a batch of charts with consistent formatting.

Home Data Mapping Library Visualization Program

Charting
Bulk Charting
Conceptual Models

Map Data Factsheet

Wetlands 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

Three photographs are displayed in a collage. The top left shows a bird perched on a branch against a blue sky. The top right shows a dense forest of tall trees. The bottom center shows a sunset over a body of water with trees in the foreground.



[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

Date Range:

2/25/1987 - 6/6/2012

Min Date: 1/1/2001

Max Date: 12/31/2005

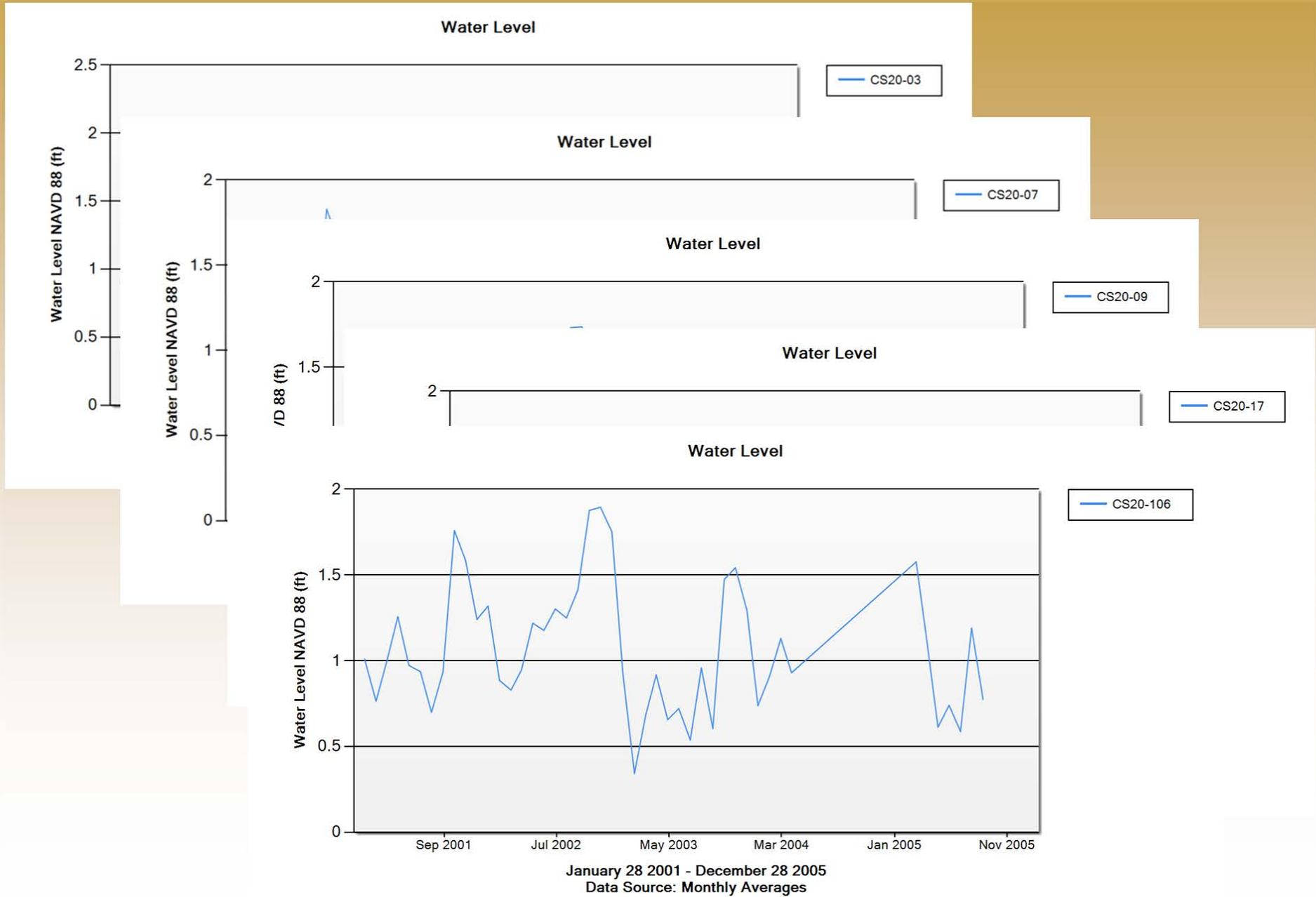
Apply Date Filter

Basin: All Basins

Project: CS-20

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

Submit Request





Previous Charting Version

- Charting
- Bulk Charting**
- Data Download
- Reporting

Bulk Charting

- ▶ Hydro
- ▼ **Vegetation**
 - Forested
 - Herbaceous
 - Site Floristic Quality Index**
 - Project/Reference FQI
 - Marsh Class
- ▶ Soil
- ▶ Spatial
- ▶ Report Card Charts

Basin: All Basins Project: All Projects

Select All	Deselect All
CRMS0002	CRMS0647
CRMS0003	CRMS0655
CRMS0006	CRMS0672
CRMS0008	
CRMS0030	
CRMS0033	
CRMS0034	
CRMS0035	
CRMS0036	

Choose Colors Cancel

- Spartina patens
- Typha latifolia
- Phragmites australis
- Distichlis spicata
- Schoenoplectus robustus
- Paspalum vaginatum
- Amaranthus bigelovii
- Paspalum distichum
- Symphyotrichum subulatum
- Other

User defined color ramp for each species will be carried throughout the bulk charting request.

piazzas@usgs.gov

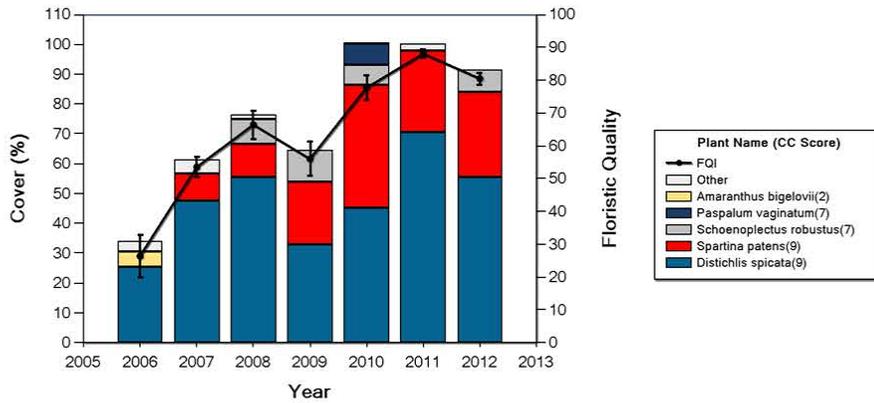
Submit Request



Previous Charting Version

Charting Bulk Charting Data Download Reporting

Floristic Quality Index for Saline Marsh, Site CRMS0655



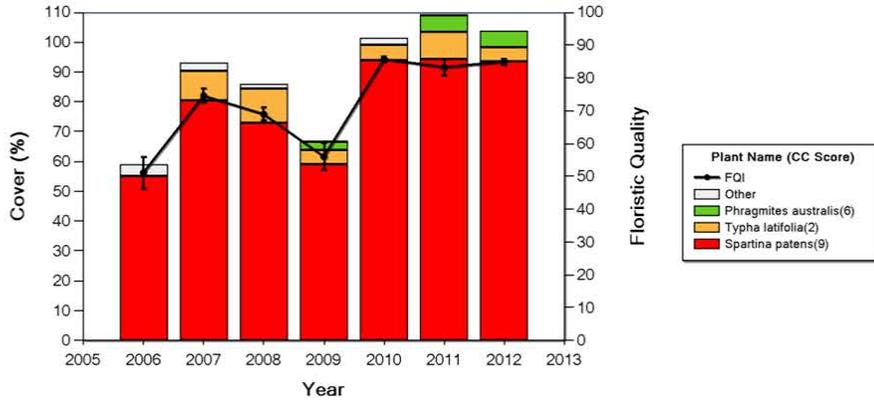
Basin: All Basins Project: All Projects

Select All	Deselect All
CRMS0002	CRMS0647
CRMS0003	CRMS0655
CRMS0006	CRMS0672
CRMS0008	
CRMS0030	
CRMS0033	
CRMS0034	
CRMS0035	

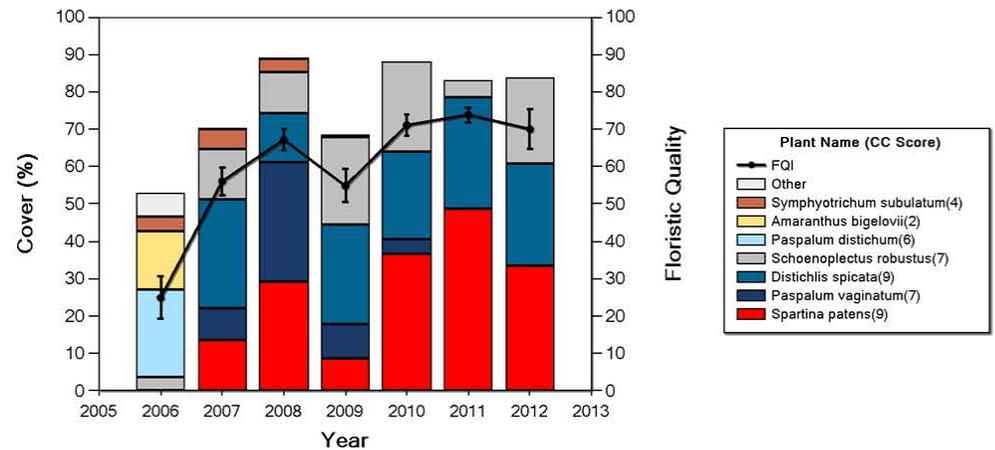
Choose Colors Cancel

- Spartina patens
- Typha latifolia

Floristic Quality Index for Intermediate Marsh, Site CRMS0647



Floristic Quality Index for Brackish Marsh, Site CRMS0672





CRMS Data Download – Retrieve user defined datasets for multiple dates or for multiple sites/stations.

Home Data Mapping Library Visualization Program

Spatial

Tabular SONRIS Data Tool

[Previous Charting Version](#) Bulk Data Download

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
- ▶ Vegetation
- ▶ Spatial



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

▶ Spatial

Water Year is October 1 - September 30

Year:

	Select All	Deselect All
2007		
2008		
2009		
2010		
2011		
2012		

Submit



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

Spatial

Water Year is October 1 - September 30

Year:

Select All	Deselect All
	2007
	2008
	2009
	2010
	2011
	2012

Submit

Basin: All Basins

Project: All Projects

Select All	Deselect All
CRMS0002	CRMS0030
CRMS0003	CRMS0033
CRMS0006	CRMS0034
CRMS0047	CRMS0035
CRMS0056	CRMS0038
CRMS0061	CRMS0039
CRMS0063	CRMS0046
CRMS0086	

Email Address:

Submit Request



CRMS Report Card

Home Data Mapping Library Visualization Program

Maps
Presentations
DNR Reports
CRMS Reporting

Map Data Factsheet

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 then compared with project trajectories



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



Coastwide Reference Monitoring System (CRMS)

Site Level Report Card

Site: CRMS003
Year: 2011



7/16/2012

Site Scale Assessment

The following graphics present an assessment of the site relative to other sites within the system.

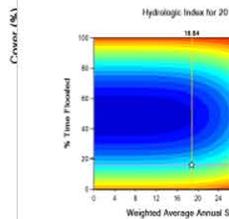


Figure 6. Hydrologic index score (HI) plot showing the combined influences of average annual flood duration (horizontal axis) and % time flooded (vertical axis).

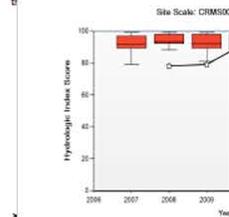


Figure 8. A time series of HI scores (HI) plot showing the scores for all the sites within the CRMS system from 2004 to 2009.

Jr. 1995. Estimating shallow subsidence in microtidal salt marshes of the marsh revisited. *Marine Geology* 128: 1-9.

D., Sleavin, William, Fischer, Michelle, Beck, Holly, Trahan, Nadine, Griffin, area change in coastal Louisiana from 1932 to 2010: U.S. Geological Survey Fact Sheet 2011-3044, 12 p. pamphlet.

Floristic Quality Index – An assessment tool for restoration projects and wetland monitoring. U.S. Geological Survey Fact Sheet 2011-3044, 4 p.

and Steyer, G.D. 2011. Development and use of a floristic quality index for wetland monitoring and assessment. *Wetlands* 31(1): 1-11.

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

Wetland history and subsidence: Mississippi River Delta region, north-central Gulf of Mexico. U.S. Geological Survey Fact Sheet 2011-3044, 4 p.

http://www.ndbc.noaa.gov/datum_options.html. Accessed 08/01/2011.

2. Hydrologic index development and application to selected Coastal Wetlands Planning, Protection and Restoration Act projects: U.S. Geological Survey Open-File Report 2011-1122, 25 p.

and Snedden, G.A., 2013. Submergence Vulnerability Index development and application to selected Coastal Wetlands Planning, Protection and Restoration Act sites and Coastal Wetlands Planning, Protection and Restoration Act Survey Open-File Report 2013-1163, 13 p.

Swensen, E.M., Nyman, J.A., and Raynie, R.C., 2003. A proposed index for evaluating wetland restoration trajectories in Louisiana. *Environmental Monitoring and Assessment* 87: 1-12.

Coastwide Reference Monitoring System (CRMS): U.S. Geological Survey Fact Sheet 2010-3018. <http://pubs.usgs.gov/fs/2010/3018/>.

Höppner, S.S., Reyes E., Keddy, P., Mendelsohn, I.A., and Swarzenski, J. 2008. Louisiana Coastal Area (LCA), La - Ecosystem Restoration: Comprehensive Assessment Report. U.S. Geological Survey Fact Sheet 2010-3018, 10 p.



Using the mapping interface

a CWPRA funded project



Coastwide Reference Monitoring System

Home Data Mapping Library Visualization Program

SONRIS Viewer
Basic Viewer (Current)
Basic Viewer (First Gen)

 Map  Data  Factsheet



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



Map Navigation

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

A screenshot of the CRMS Viewer web application. The interface includes a header with the title "Coastwide Reference Monitoring System" and a sub-header "a CWPBRA funded project". A navigation menu contains "Home", "Data", "Mapping", "Library", "Visualization", and "Program". Below the menu is a toolbar with icons for home, layers, search, and refresh. A central map displays a satellite view of the Gulf of Mexico coastline with numerous yellow circular markers representing CRMS sites. A "Layers Menu" is open on the left, showing a list of layers: CRMS (checked), CWPBRA, Hydro Basins, Vegetation, Soils, Public Lands, Land/Water, and Base Layer. A yellow tooltip above the map reads "Single-click the yellow symbology on the map to view CRMS Site information." At the bottom left, the coordinates "Long: -88.349, Lat: 29.176" and a scale bar (0 to 30 miles) are visible. The CRMS logo is in the bottom right corner. Source text at the bottom reads: "Source: Esri, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, L.L."/>

Coastwide Reference Monitoring System

a CWPBRA funded project

Home Data Mapping Library Visualization Program

Single-click the yellow symbology on the map to view CRMS Site information.

Layers Menu

- CRMS
- CWPBRA
- Hydro Basins
- Vegetation
- Soils
- Public Lands
- Land/Water
- Base Layer

Long: -88.349, Lat: 29.176

0 15 30mi

Source: Esri, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, L.L.



Interface

Full Screen Button hides the top menu.



Full Screen Button changes when the top menu is hidden.

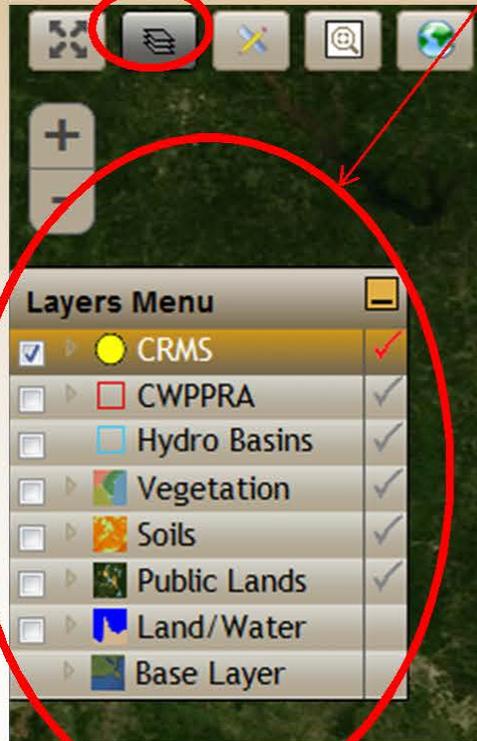




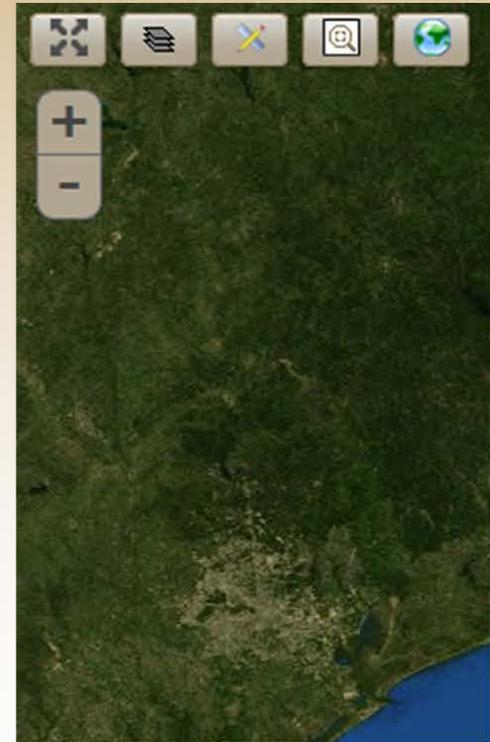
Interface

Layers Button shows and hides the Layers Menu

Layers Menu Shown:



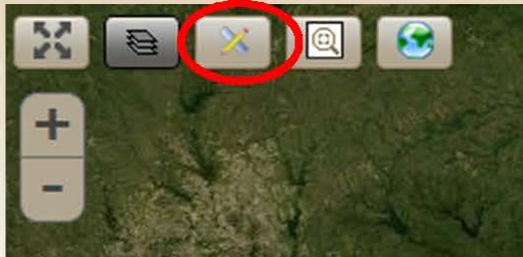
Layers Menu Hidden:



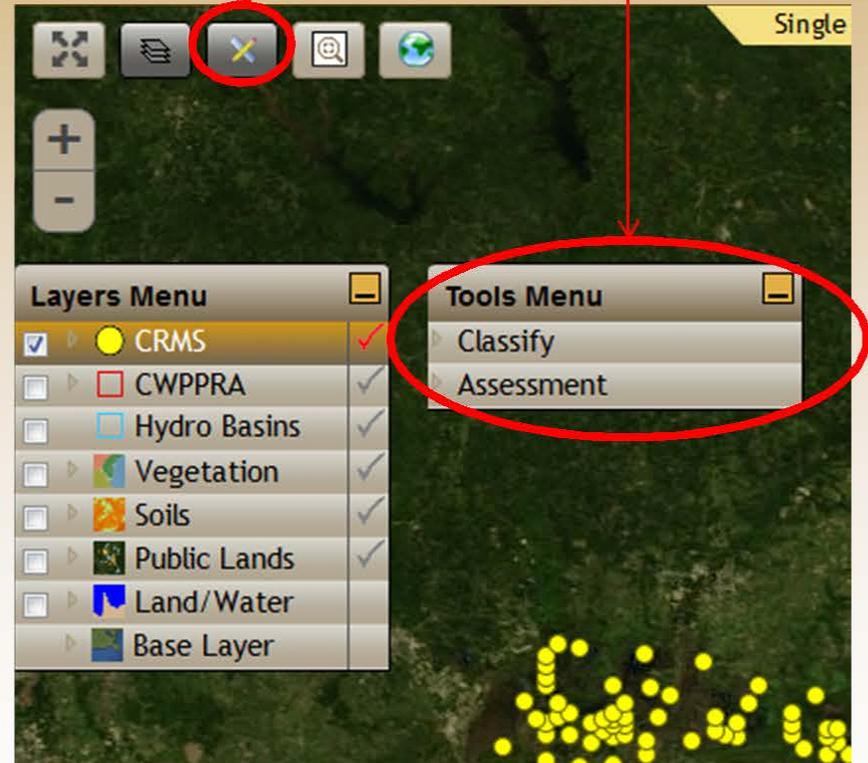


Interface

Tools Button brings up the Tools Menu.



Tools Button darkens when the menu is shown.





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.



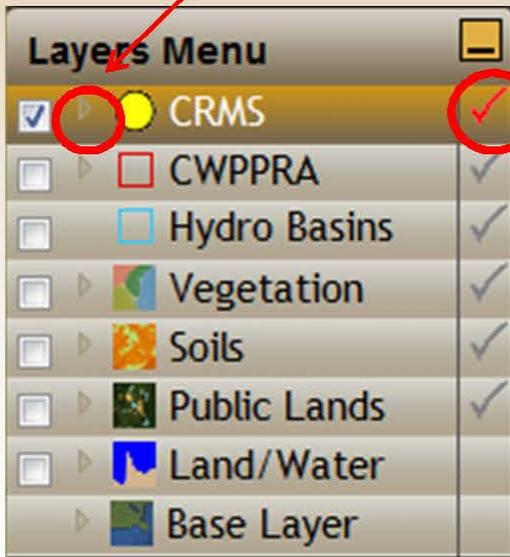
Manila dropdown shows how to interact with the current active layer.

Single-click the yellow symbology on the map to view CRMS Site information.



Interface

Expand layer to display more layer options.



Make this the current active layer.



CRMS Active Layer

Coastwide Reference Monitoring System a CWPPRA funded project 

Home Data Mapping Library Visualization Program

Single-click the yellow symbology on the map to view CRMS Site information.



Layers Menu

-  CRMS
-  CWPPRA
-  Hydro Basins
-  Vegetation
-  Soils
-  Public Lands
-  Land/Water
-  Base Layer

Long: -88.349, Lat: 29.176

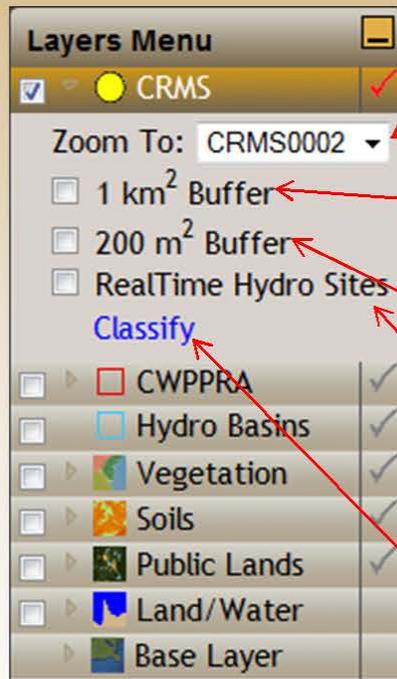
0 15 30mi

Source: Esri, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, I...





CRMS Active Layer



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

1 Km² buffer checkbox adds/removes the 1 Km² symbology to the map.

200m² buffer checkbox adds/removes the 200m² symbology to the map.

RealTime hydro sites checkbox changes the symbology of the RealTime hydro sites on the map.

Classify invokes the tools menu with the classification option selected.



CRMS Active Layer

Click a point for Site Information Bubble

Coastwide Reference Monitoring System a CWPBRA funded project 

Home Data Mapping Library Visualization Program

Single-click the yellow symbology on the map to view CRMS Site information.

Layers Menu

- CRMS
- CWPBRA
- Hydro Basins
- Vegetation
- Soils
- Public Lands
- Land/Water
- Base Layer

Info Water Vegetation Soil Spatial Report Card Tools

Site ID: CRMS5035
Lat, Long: 29.6212, -91.0397
Marsh Elevation: 1.57ft NAVD1988 GEOID99

Data Availability: 2013



Pre/Post Construction Pictures:

-  Post Construction
-  Pre Construction
-  Preliminary Site Visit North

[Survey Report](#)

Long: -87.443, Lat: 30.451

Source: Esri, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





CRMS Active Layer

Site Information Bubble

Info | Water | Vegetation | Soil | Spatial | Report Card | Tools

Site ID: CRMS5035
Lat, Long: 29.6212, -91.0397
Marsh Elevation: 1.57ft NAVD1988 GEOID99

Data Availability: 2012

Pre/Post Construction Pictures:

Post Construction Pre Construction Preliminary Site Visit North

[Survey Report](#)

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.



CRMS Active Layer

Site Information Bubble

Info | Water | Vegetation | Soil | Spatial | Report Card | Tools

Salinity | Water level | Temperature | Hydro Index | Water Level Range

Mean 2011 Growing Season Salinity (March 1 - Nov 30): 0.25 ppt
Water Salinity (ppt) at the CRMS hydro station, CRMS5035-H01.

	6/2011 - 6/2012	Mar 1 - Jun 30	Jul 1 - Oct 31	Nov 1 - Feb 28
Min	0.09	0.09	0.11	0.12
Mean	0.22	0.15	0.35	0.18
Max	5.59	0.23	5.59	0.27

Salinity

30 days

May 26 2012 - June 24 2012
Data Source: Continuous Hourly Observations

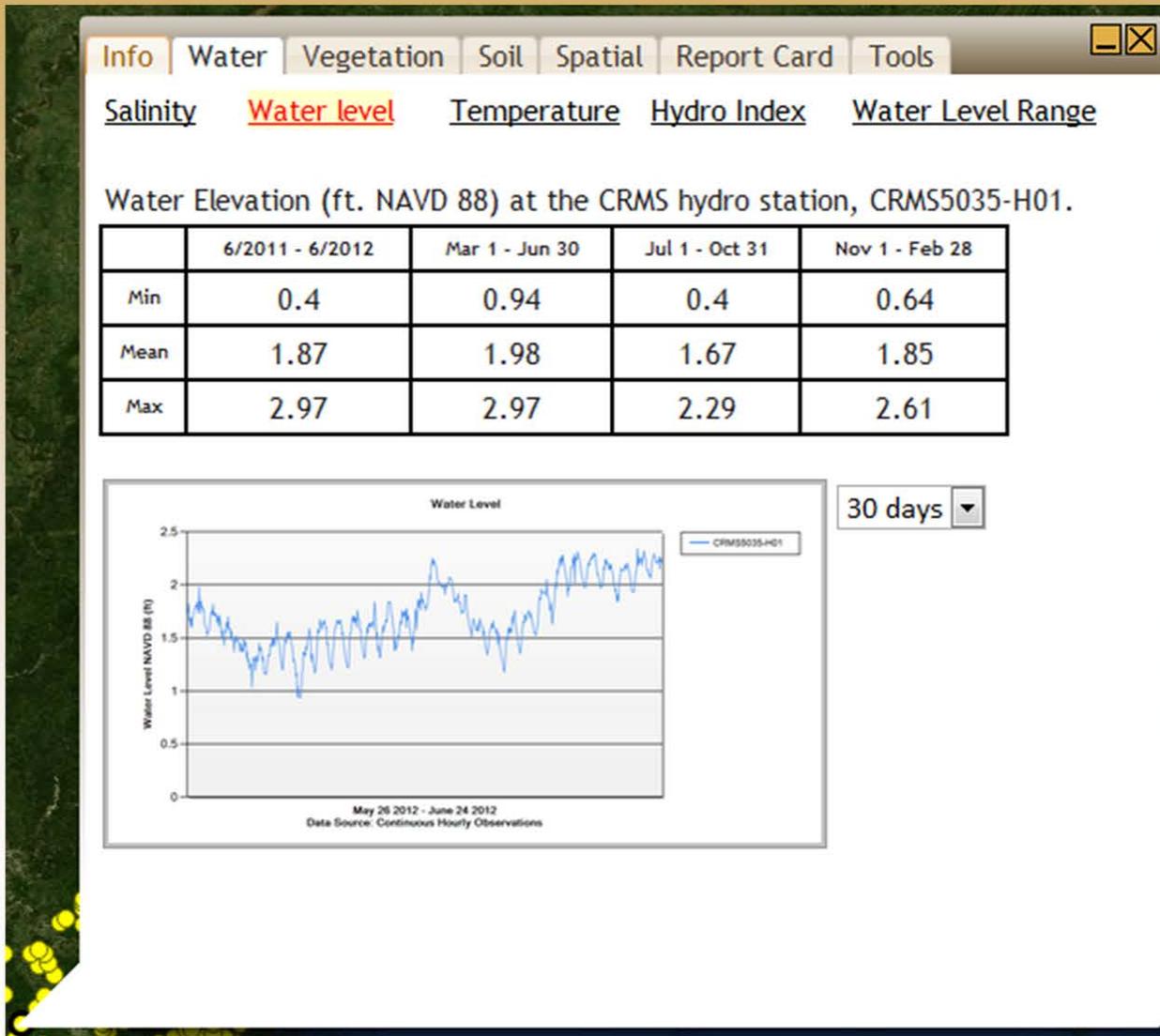
The Water tab contains all hydrologic information for the selected site.

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



CRMS Active Layer

Site Information Bubble



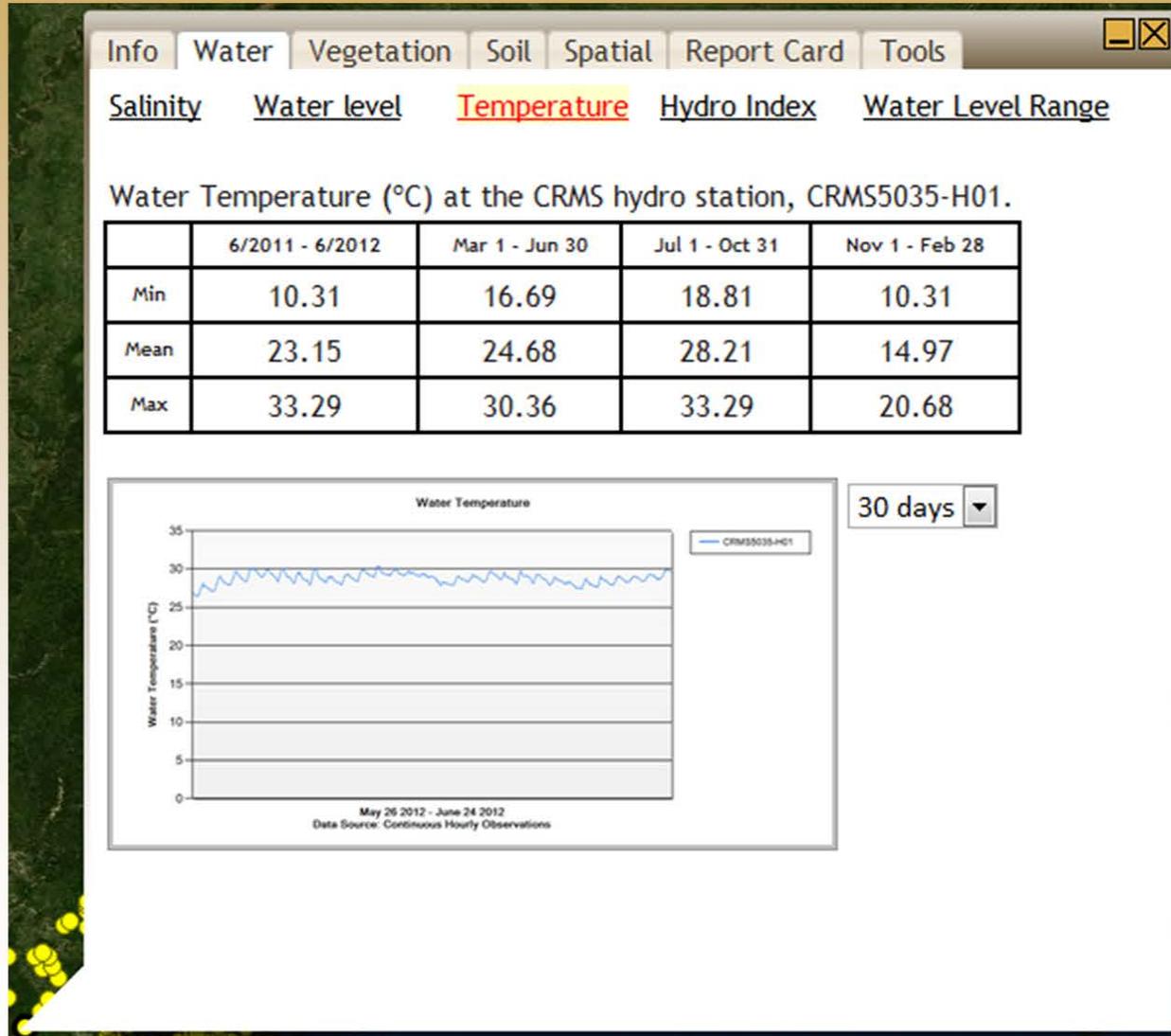
The Water tab contains all hydrologic information for the selected site.

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



CRMS Active Layer

Site 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.

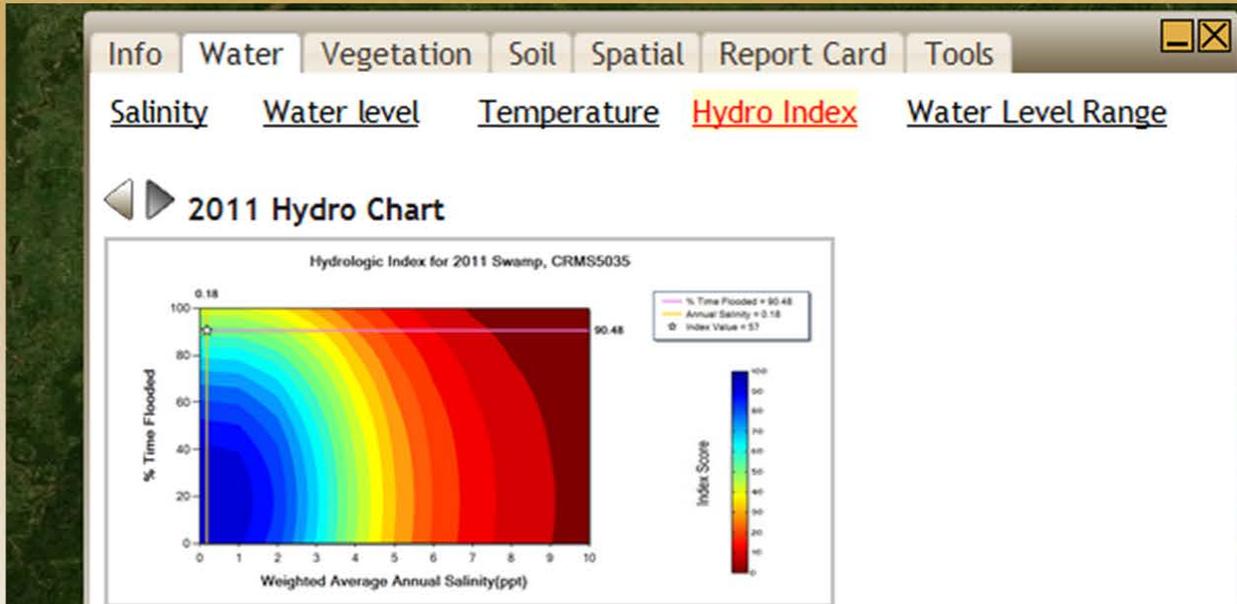


CRMS Active Layer

Site Information Bubble

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

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



What does this chart mean?



CRMS

MOVE CLOSE

The Hydrologic Index (HI) jointly assesses the suitability of two critical aspects of wetland hydrology, average salinity and percent time flooded, in maximizing vegetation primary productivity for the 5 different marsh classifications in coastal Louisiana (swamp, fresh, intermediate, brackish, and saline). The index score ranges from 0 - 100, and the score corresponds to the percent of maximum vegetation productivity expected to occur if the separate effects of salinity and inundation on productivity interact in a multiplicative fashion, according to the following formula:

$$HI = fld \times sal$$

where fld is the percent maximum productivity attributable to percent time flooded, and sal is the percent maximum productivity attributable to the average annual salinity. Relationships describing how percent maximum productivity varies with salinity and percent time flooded were taken from the Habitat Switching Module of the LCA ecosystem restoration study (U.S. Army Corps of Engineers 2004).

The HI is calculated for a given water year, which begins October 1 and ends the following September 30.





CRMS Active Layer

Site Information Bubble

Info Water Vegetation Soil Spatial Report Card Tools

Salinity Water level Temperature Hydro Index **Water Level Range**

◀ ▶ 2012 Water Level Range Chart

Water Level Range CRMS035 F01 2012

Y-axis: Meters above MSL (0 to 3)

X-axis: Months (Jan 2011 to Dec 2012)

Legend:

- Water Level
- 10% Q
- 50% Q
- 90% Q
- Mean Channel TWT
- Mean Water Level TWT

Data Source: Continuous, Daily Observations

What does this chart mean?

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

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



Site Information Bubble

Info Water **Vegetation** Soil Spatial Report Card Tools

Herbaceous Forested FQI Marsh Classification

Vegetation Type: SWAMP ⓘ
Latest CRMS Veg Survey Date: 2011
Dominant Taxa: Pontederia cordata L.
Percent Coverage of Dominant Taxa: 33.3
USDA Plants Database

Herbaceous Marsh Vegetation Data
Site: C00000000 - All Sites
Sample Date: 07/18/2011

Species	Percent Cover
Pontederia cordata L.	33.3
Phragmites communis (L.) Trin.	11.1
Peltandra setacea (Michx.) C. D. C. & A. Sch.	11.1
Alternanthera philoxeroides (Lam.) J. Gray	11.1
Polygonum punctatum Willd.	11.1
Najas polypodiifolia (Wiegand) J. D. S. S.	2.8
Phragmites profunda (Rostk) Schum.	2.8
Distichlis spicata (L.) Nees	2.8
Aster tataricus L.	2.8
Sagittaria latifolia (L.) Rostk	2.2
Sagittaria L.	2.2
Najas israelense L.	2.2
Juncus acrota (L.) Rostk	1.4
Hypochaeris scabra (L.) Hieron.	0.6
Carex stricta (L.) Kunze	0.6
Wolffia globosa (L.) Rostk	0.6
Hydrocotyle umbellata L.	0.6
Trapa natans (L.) Rostk	0.6
Yarrowia stipitata (L.) Rostk	0.6
Hydrocotyle reniformis (L.) Rostk	0.6

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

Herbaceous – Species driven percent cover chart.



CRMS Active Layer

Site Information Bubble

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

Info Water **Vegetation** Soil Spatial Report Card Tools

Herbaceous Forested FQI Marsh Classification

Vegetation Type: SWAMP 

Latest CRMS Veg Survey Date: 2011

Dominant Taxa: Pontederia cordata L.

Percent Coverage of Dominant Taxa: 33.3

USDA Plants Database

CRMS MOVE CLOSE

Species composition data from the 1997 [Chabreck and Linscombe](#) vegetation survey were used by Visser et al. (1998, 1999, 2000) to assign marsh vegetation types (deltaic mixture, deltaic roseau cane, fresh bulltongue, fresh maidencane, fresh spikerush, mesohaline mixture, mesohaline wiregrass, oligohaline bulltongue, oligohaline mixture, oligohaline spikerush, oligohaline wiregrass, polyhaline oystergrass) to CRMS sites. Sites within forested wetlands were assigned as swamp based on swamp classifications from the 1998 [Louisiana GAP analysis project](#).

[Chabreck, R.H. and Linscombe G. 1997. Vegetation type map of the Louisiana coastal marshes. Louisiana Department of Wildlife and Fisheries, New Orleans, Louisiana.](#)

[Louisiana Gap Analysis Project. 1998. Land Cover Classification for the Louisiana GAP Analysis Project. U.S. Geological Survey, Biological Research Division, National Wetlands Research Center, Lafayette, Louisiana. \[http://sabdata.cr.usgs.gov/sabnet_pub/pub_sab_app.aspx?prodid=780\]\(http://sabdata.cr.usgs.gov/sabnet_pub/pub_sab_app.aspx?prodid=780\)](#)

[Visser, J.M., Sasser, C.E., Chabreck, R.H., Linscombe, R.G. 1998. Marsh vegetation types of the Mississippi River deltaic plain. Estuaries 21: 818-828.](#)

[Visser, J.M., Sasser, C.E., Chabreck, R.H., Linscombe, R.G. 1999. Long-term vegetation change in Louisiana tidal marshes, 1968-1992. Wetlands 19 \(1\): 168-175.](#)

[Visser, J.M., Sasser, C.E., Chabreck, R.H., Linscombe, R.G. 2000. Marsh vegetation types of the Chenier plain, Louisiana, USA. Estuaries 23: 318-327.](#)



CRMS Active Layer

Site Information Bubble

The screenshot shows a web interface with several tabs: Info, Water, Vegetation, Soil, Spatial, Report Card, and Tools. The 'Vegetation' tab is selected. Below the tabs, there are four sub-tabs: Herbaceous, **Forested**, FQI, and Marsh Classification. The 'Forested' sub-tab is highlighted in red. Below these are the following details:

- Latest CRMS Forest Survey Date: 2009
- Dominant Taxa: Nyssa aquatica L.
- Basal Area of Dominant Taxa: 85.09

Below the text is a horizontal bar chart titled 'Forested Vegetation Data Site CRM50035 - All Plots Sample Date 8/14/2009'. The y-axis is labeled 'Taxa' and the x-axis is labeled 'Basal Area (m²/ha)'. The chart shows three bars:

Taxa	Basal Area (m ² /ha)
Nyssa aquatica L.	85.09
Acer rubrum L.	1.44
Fraxinus profunda (Bush) Bush	0.65

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

Forested – Species driven basal area chart.

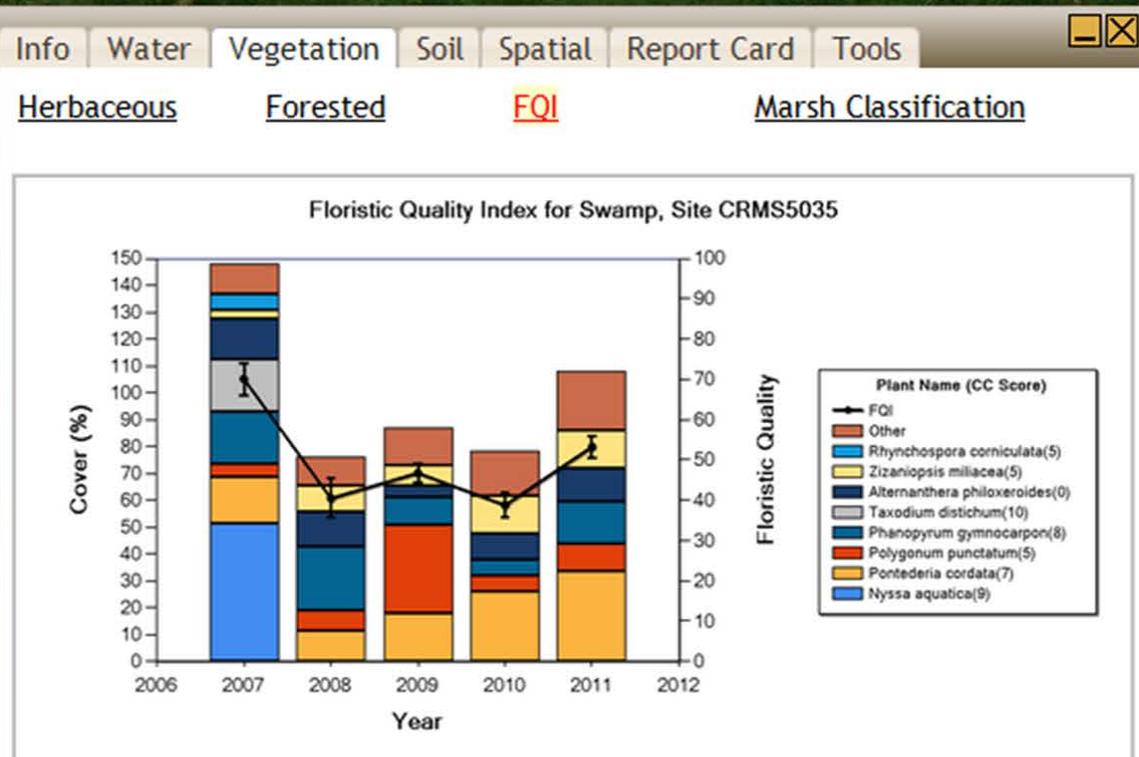


CRMS Active Layer

Site Information Bubble

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

Floristic Quality Index



What does this chart mean?



CRMS Active Layer

Site Information Bubble

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

Percent Organic – Soil profiles taken at site establishment.

Info
Water
Vegetation
Soil
Spatial
Report Card
Tools

Marsh Elevation: 1.57ft NAVD1988
CRMS Measured Bulk Density: 0.221 g cm⁻³
NRCS Soil Type: Fausse clay, frequently flooded

Percent Organic Bulk Density Surface Elevation/Accretion/SVI

Depth (cm)	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24
% Avg Organic Matter	50.37	41.42	40.36	36.91	26.15	23.37
Error	±5.6	±4.02	±0.59	±17.4	±13.76	±3.85

CRMS0035
Soil In situ Co/25 - % Organic Content
07/06/2007



CRMS Active Layer

Site Information Bubble

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

Info Water Vegetation **Soil** Spatial Report Card Tools

Marsh Elevation: 1.57ft NAVD1988
CRMS Measured Bulk Density: 0.221 g cm⁻³
NRCS Soil Type: Fausse clay, frequently flooded

Percent Organic **Bulk Density** Surface Elevation/Accretion/SVI

Depth (cm)	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24
Avg Bulk Density g cm ⁻³	0.17	0.2	0.23	0.29	0.41	0.39
Error	±0.06	±0	±0.01	±0.02	±0.16	±0.06

CRMS036
Sediment Cores - Bulk Density
07/08/2007

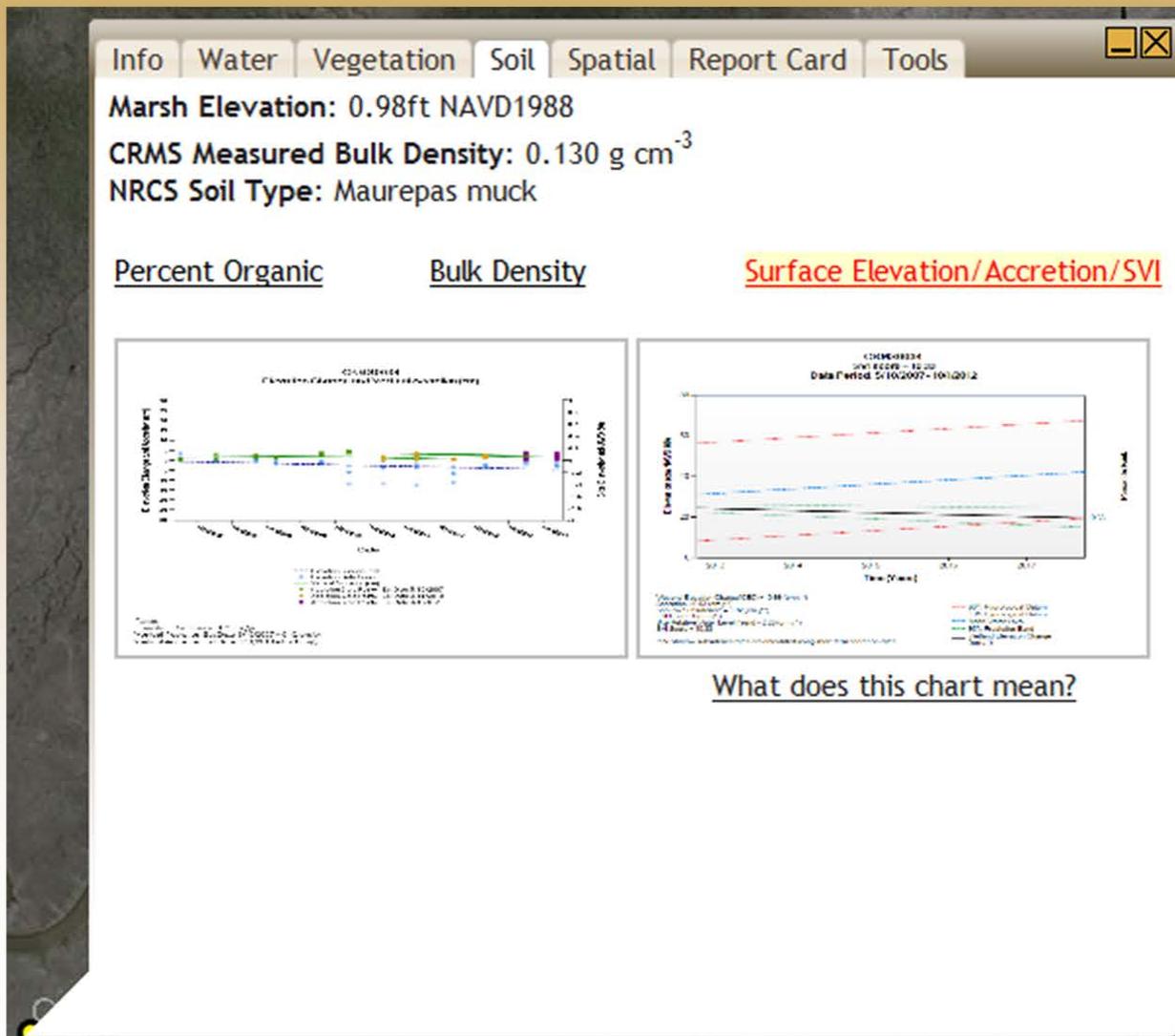
Bulk Density - Soil profiles taken at site establishment.



CRMS Active Layer

Site Information Bubble

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



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

Submergence Vulnerability Index



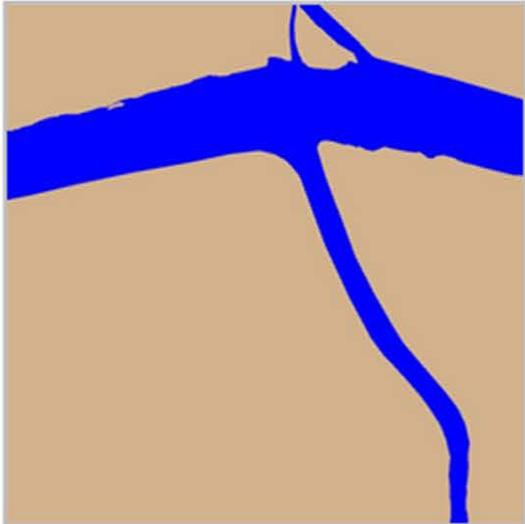
CRMS Active Layer

Site Information Bubble

Info | Water | Vegetation | Soil | Spatial | Report Card | Tools

Land/Water | Maps | Aerial Photography

◀ ▶ Land/Water 2008



Legend: Land Water

	Acres	Percent
Land	200	80.65
Water	48	19.35
Flooded	0	0

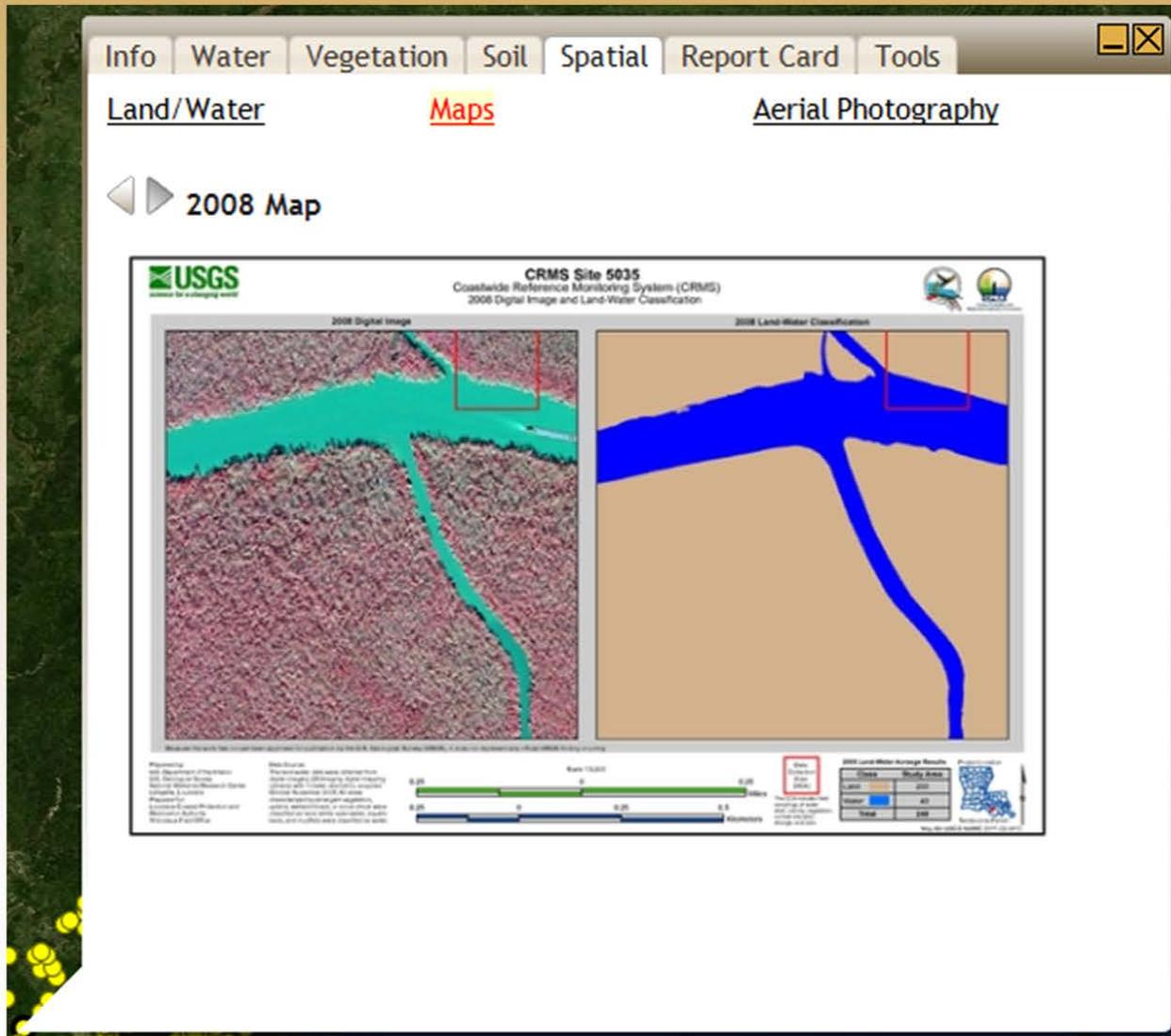
The Spatial tab contains all spatial information for the selected site.

Land/Water with acre breakdowns



CRMS Active Layer

Site Information Bubble



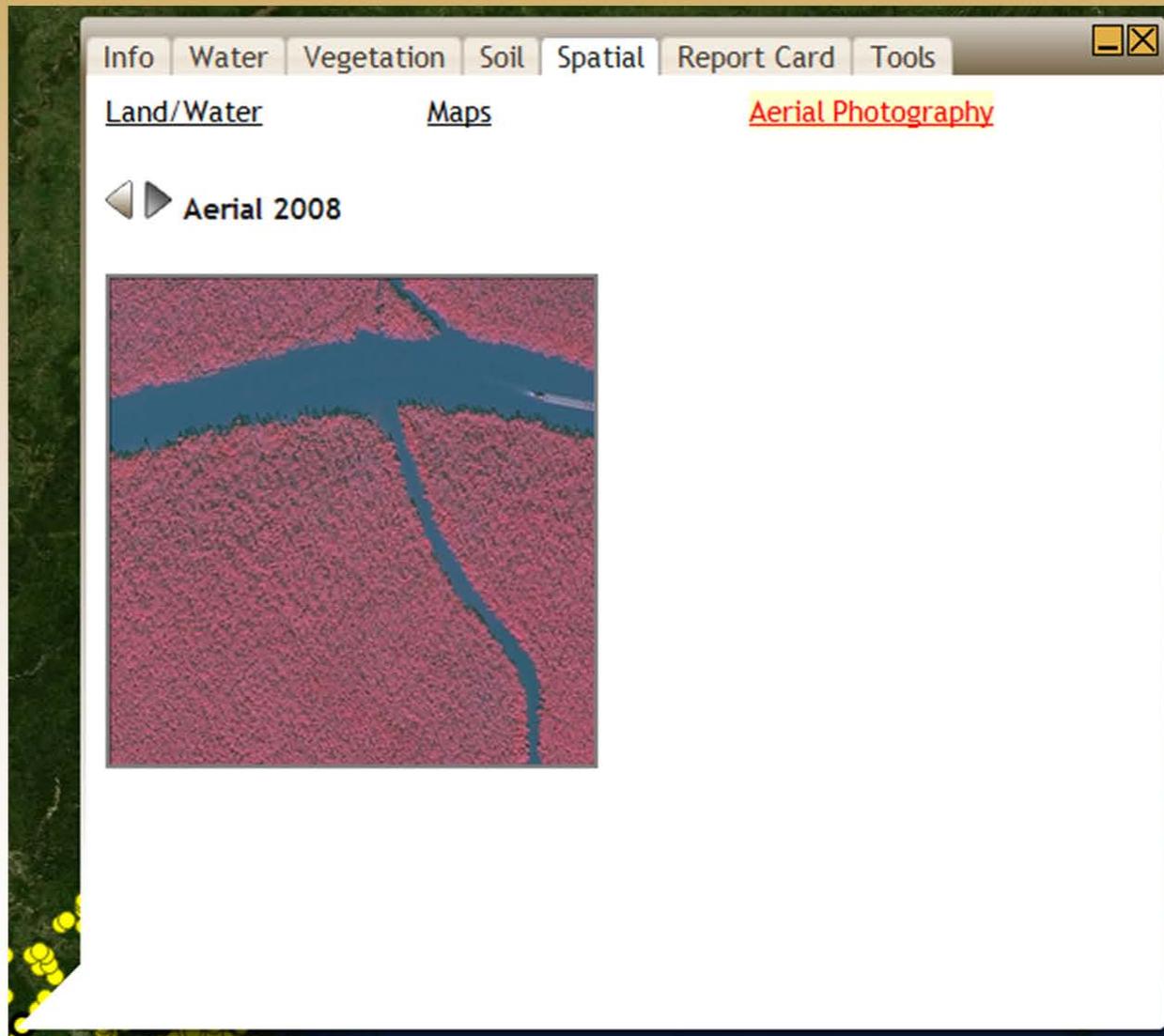
The Spatial tab contains all spatial information for the selected site.

Site Specific maps at the 1km scale.



CRMS Active Layer

Site Information Bubble



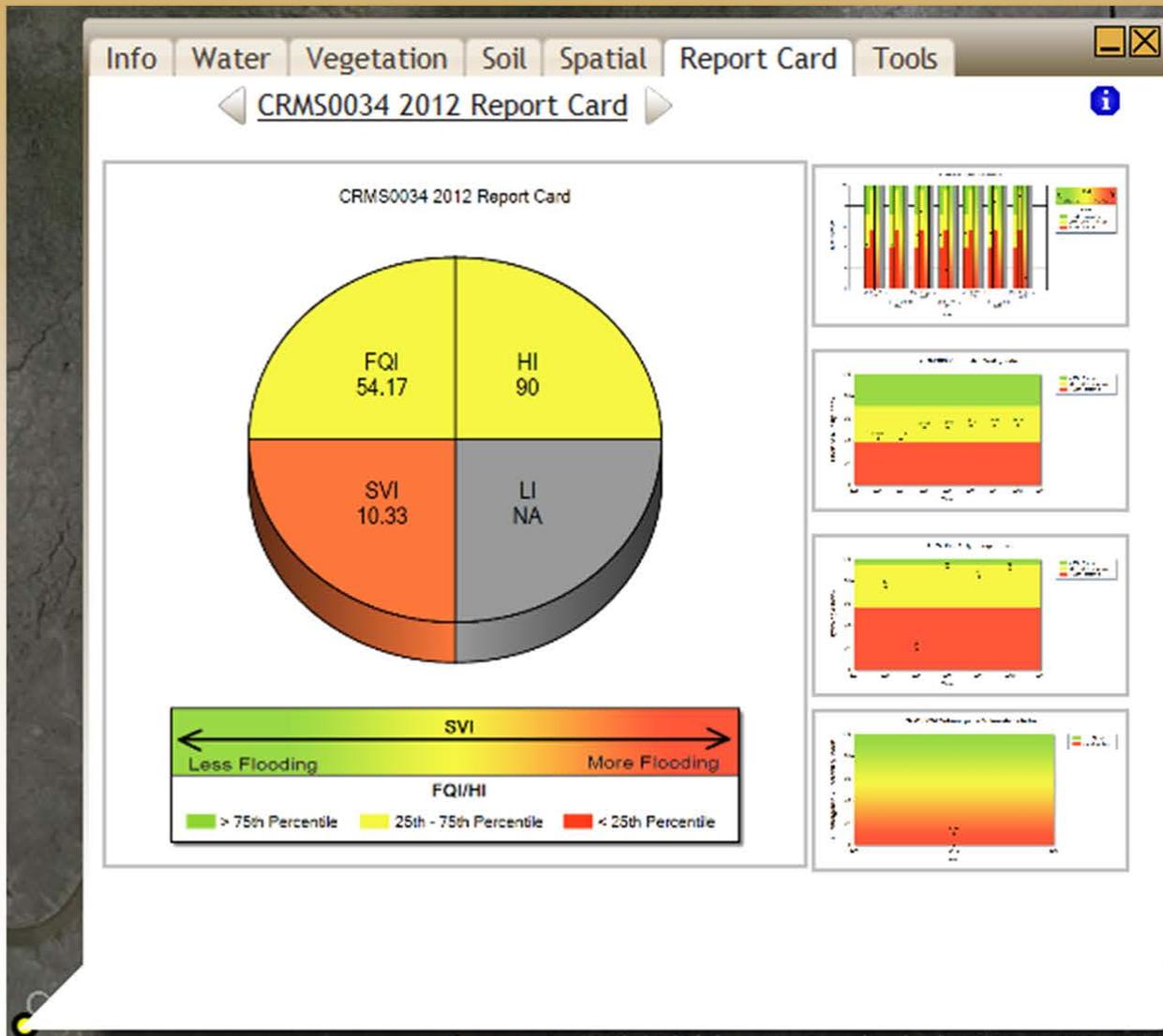
The Spatial tab contains all spatial information for the selected site.

Aerial Photography



CRMS Active Layer

Site Information Bubble



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

Additionally, report card graphics are available in charting section.



CRMS Active Layer

Site Information Bubble

Info Water Vegetation Soil Spatial Report Card Tools

CRMS5035 - 1Km Acreage Assessment

Land/Water

1956 1978 1988 2004 2006 2008

Click a Year to Assess

Coastwide Vegetation

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.

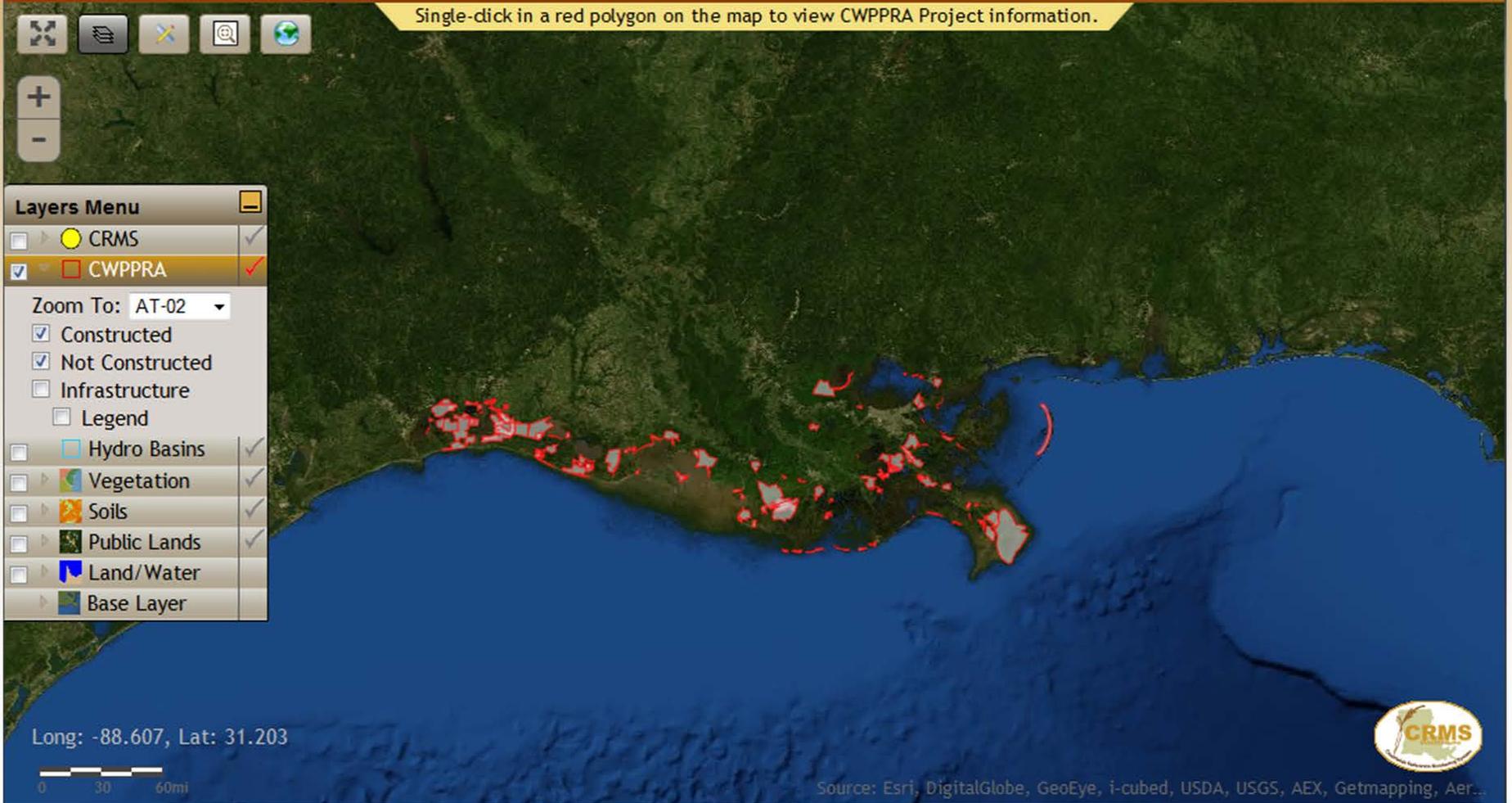


CWPPRA Active Layer

Coastwide Reference Monitoring System a CWPPRA funded project 

Home Data Mapping Library Visualization Program

Single-click in a red polygon on the map to view CWPPRA Project information.



Layers Menu

- CRMS
- CWPPRA
- Zoom To: AT-02
- Constructed
- Not Constructed
- Infrastructure
- Legend
- Hydro Basins
- Vegetation
- Soils
- Public Lands
- Land/Water
- Base Layer

Long: -88.607, Lat: 31.203

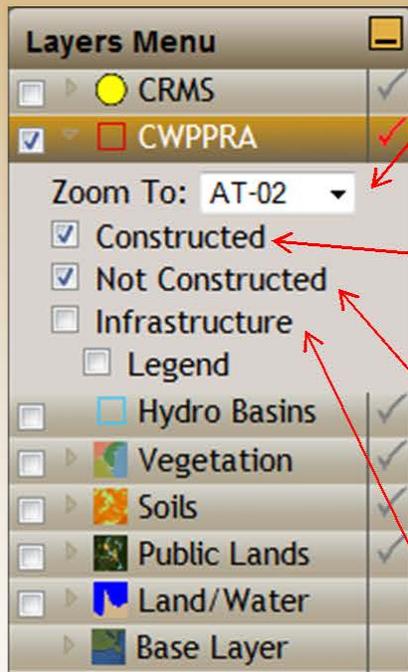
0 30 60mi

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aer...





CWPPRA Active Layer



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

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

Not Constructed checkbox adds/removes the Not Constructed projects layer to the map

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



Project Information Bubble

A screenshot of a web-based information bubble window. The window has a title bar with a close button and a maximize button. Below the title bar are four tabs: 'Info', 'Water', 'Vegetation', 'Report Card', and 'Tools'. The 'Info' tab is selected. The main content area displays the following information:

State ID: CS-20
Name: East Mud Lake Marsh Management
Sponsors: NRCS and OCPR
Type: Marsh Management
Links:
[CS-20 General Fact Sheet\(2.45 MB\)](#)
[CS-20 Monitoring Plan\(1.17 MB\)](#)
[CS-20 Comprehensive Monitoring Report\(2.77 MB\)](#)
[CS-20 Wetland Value Assessment\(1.03 MB\)](#)

Objectives:

- Prevent wetland degradation in the project area by reducing vegetative stress, thereby improving the abundance of emergent and submergent vegetation. This will be achieved through hydrologic structural management to reduce water levels and salinities.
- Stabilize shoreline of Mud Lake through vegetative plantings.

Goals:

- Decrease rate of marsh loss
- Increase vegetative cover along shoreline of East Mud Lake
- Increase coverage of emergent vegetation in shallow, open-water areas
- Increase abundance of vegetation in presently vegetated portions of project area

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.



Project Information Bubble

	Mean Annual Salinity	Salinity 10%	Salinity 90%	% Time Flooded	Tide Range (ft)
CS20-106	19.7	12.6	30.3	64.5	--
CRMS0672-H01	19.0	9.8	30.5	77.9	--
Project Mean	19.4	11.2	30.4	71.2	--
CS20-14R	20.5	11.1	28.2	45.9	--
CS20-15R	15.7	6.4	27.7	48.4	--
Reference Mean	18.1	8.8	28.0	47.2	--

<70% - The available data covers less than seventy percent of the entire water year (Oct. 1 - Sept. 30).
Salinity 10%: 90% of all hourly salinity records for the given water year exceed the value for salinity 10%.
Salinity 90%: 10% of all hourly salinity records for the given water year exceed the value for salinity 90%.

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

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



Project Information Bubble

Info | Water | Vegetation | Report Card | Tools

Summary | **Salinity** | Water level | Temperature | Water Level Range

Choose a station: CS20-106

Salinity

30 days

Salinity (ppt)

April 30 2012 - May 29 2012
Data Source: Continuous Hourly Observations

NOTE: Only stations with data recorded in the previous two years are shown in the station list.

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

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



Project Information Bubble

The screenshot shows a web application interface with the following elements:

- Navigation tabs: Info, Water, Vegetation, Report Card, Tools
- Sub-tabs: Summary, Salinity, **Water level**, Temperature, Water Level Range
- Station selection: Choose a station: CS20-106
- Chart: Water Temperature (30 days view) for station CS20-106. The y-axis is Water Temperature (°C) from 0 to 35. The x-axis is April 30 2012 - May 29 2012. The data source is Continuous Hourly Observations.
- Legend: CS20-106

NOTE: Only stations with data recorded in the previous two years are shown in the station list.

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

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



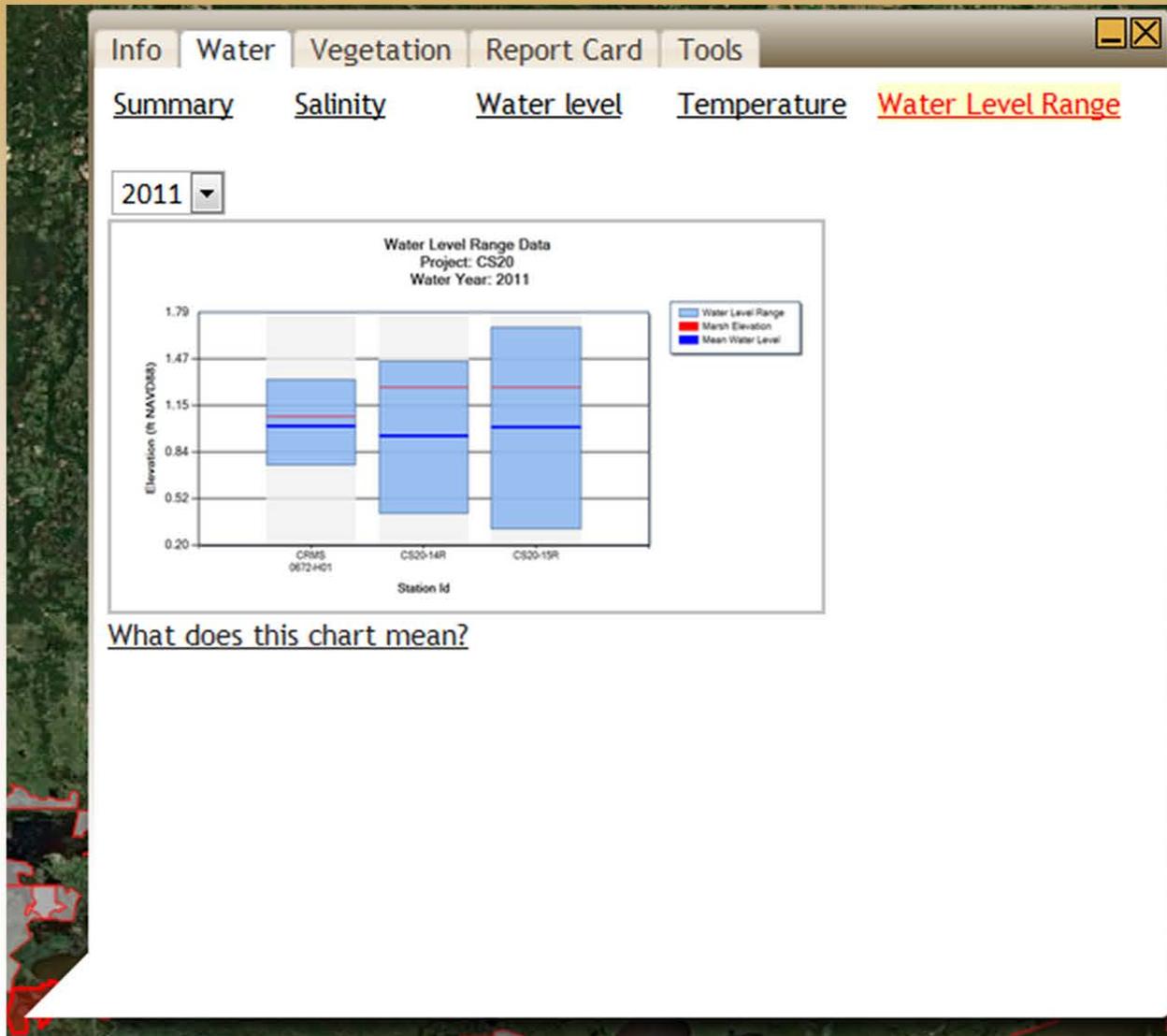
Project Information Bubble

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

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



Project Information Bubble



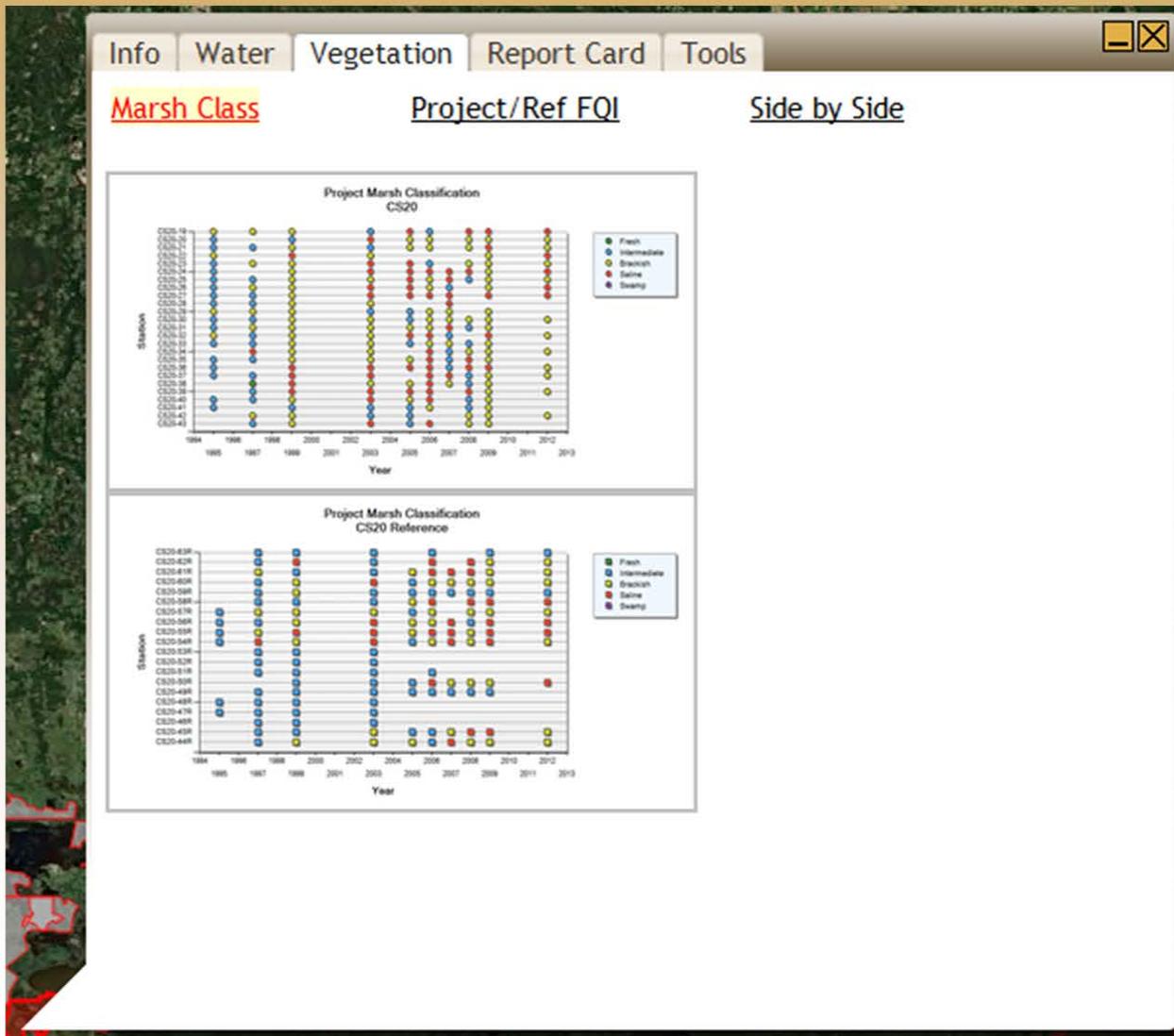
What does this chart mean?

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.



Project Information Bubble

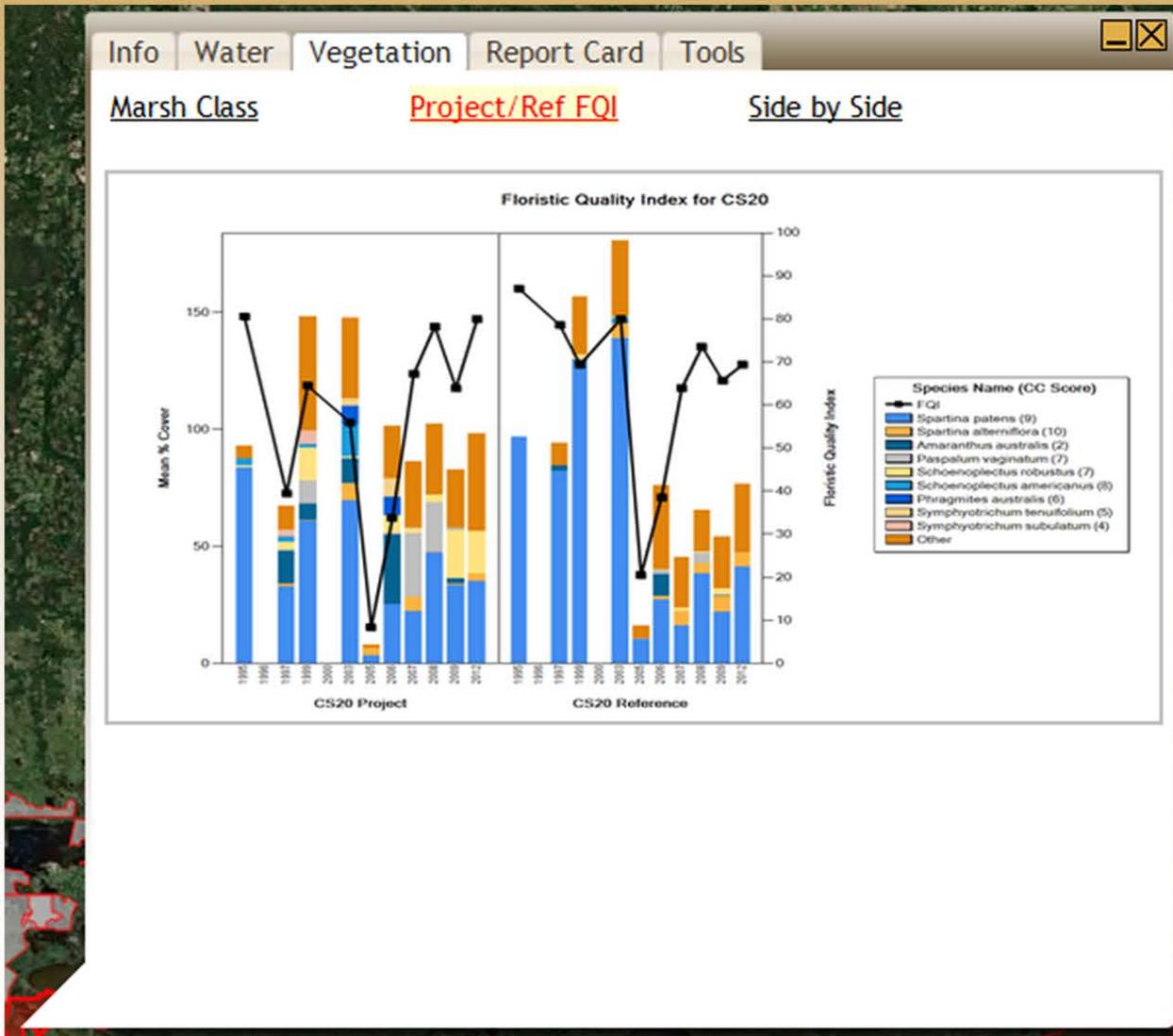


The Vegetation tab contains all vegetation information for the selected project.

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



Project Information Bubble



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

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



Project Information Bubble

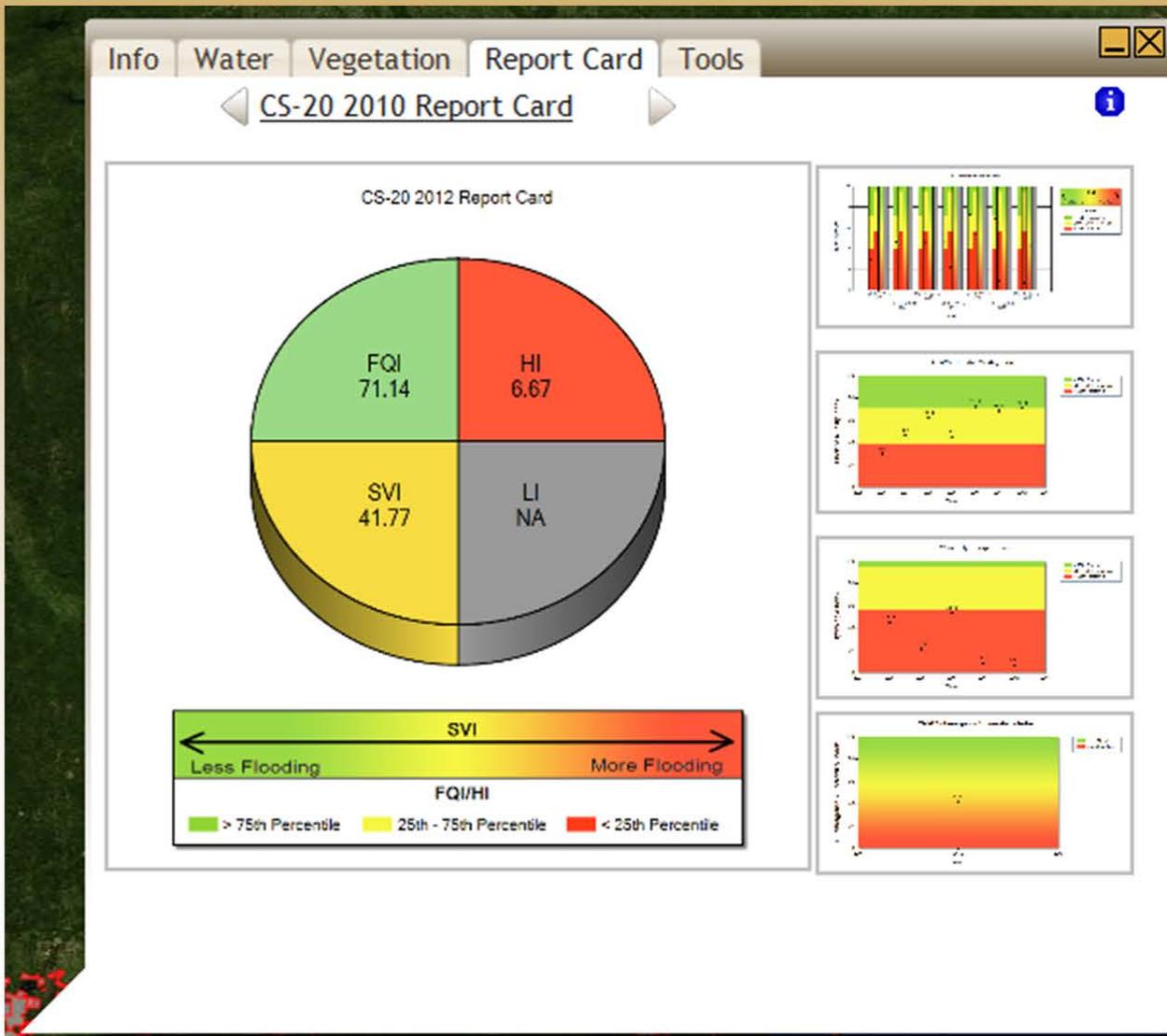


The Vegetation tab contains all vegetation information for the selected project.

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



Project 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

Project Information Bubble

A screenshot of a web-based application window titled "CS-20 CWPPRA Project Acreage Assessment". The window has a tabbed interface with "Info", "Water", "Vegetation", "Report Card", and "Tools" tabs. The "Tools" tab is active. Below the tabs, there is a dropdown menu currently set to "Land/Water". Underneath the dropdown is a horizontal timeline with tick marks for the years 1956, 1978, 1988, 2004, 2006, and 2008. Below the timeline, the text "Click a Year to Assess" is displayed in red. At the bottom of the window, there is another dropdown menu set to "Coastwide Vegetation". The background of the window shows a satellite-style map of a coastal area with red and green overlays.

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

Coastwide Reference Monitoring System

a CWPRA funded project



Home Data Mapping Library Visualization Program

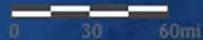
Single-click in a blue polygon on the map to view Hydro Basin information.



Layers Menu

<input type="checkbox"/>	<input checked="" type="checkbox"/>	CRMS	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	CWPRA	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Hydro Basins	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Vegetation	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Soils	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Public Lands	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Land/Water	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Base Layer	<input checked="" type="checkbox"/>

Long: -85.465, Lat: 29.983

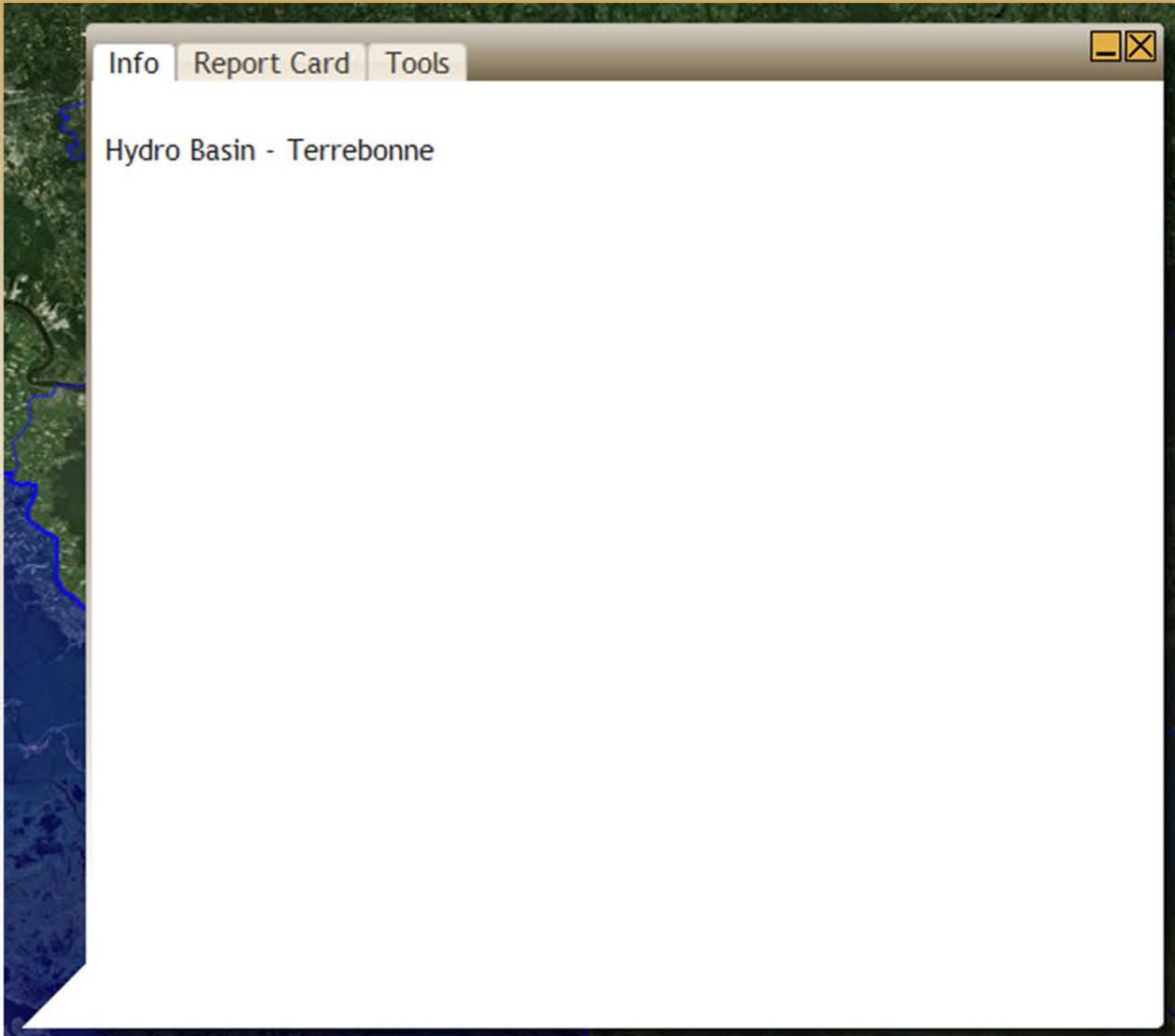


Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aer...



Hydro Basins Active Layer

Information Bubble



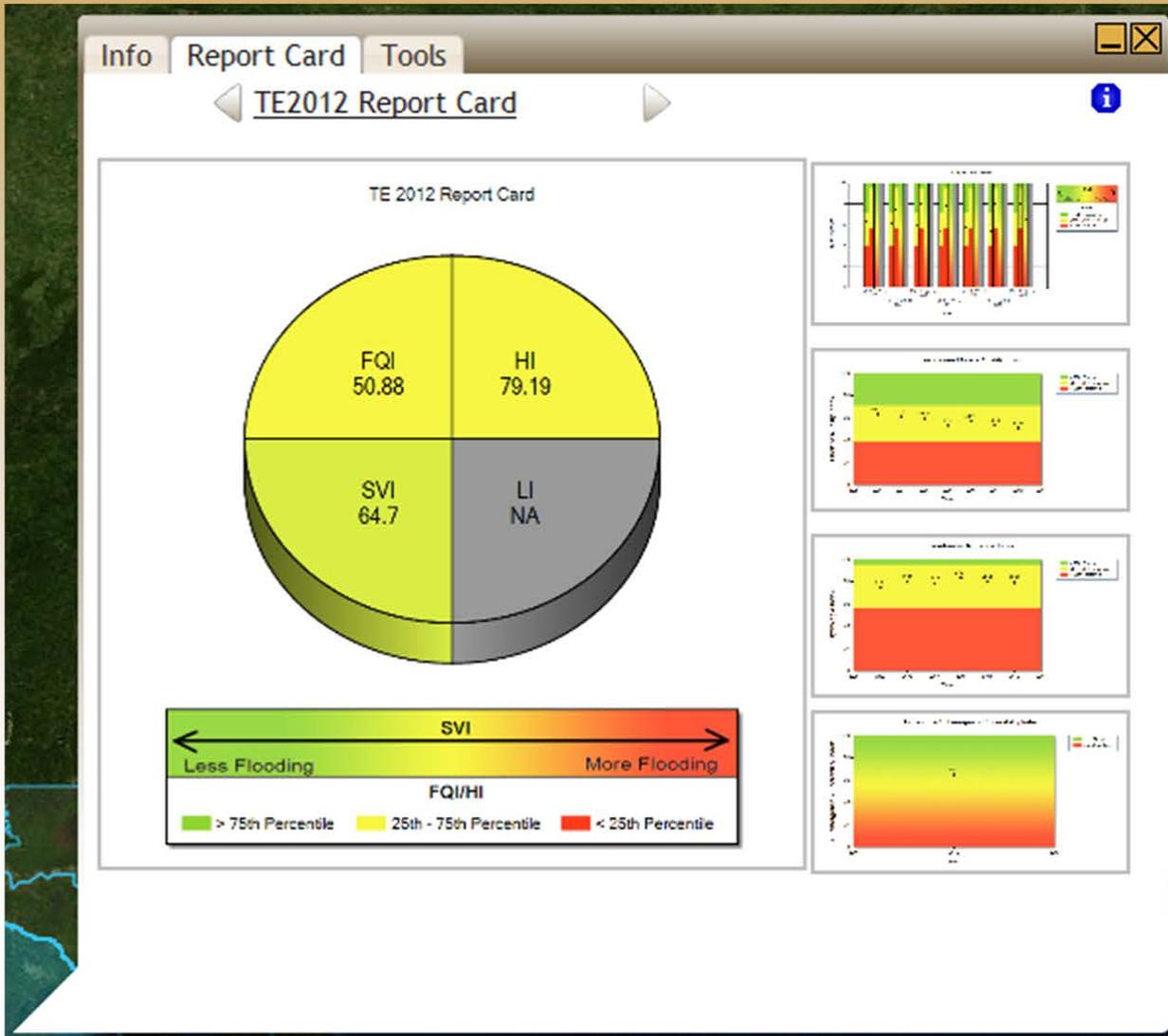
The information bubble appears when a Hydro Basin is clicked. The Basin Info tab is automatically chosen when the bubble pops up on the screen.

More basin level descriptive information will be posted soon....



Hydro Basins Active Layer

Information Bubble



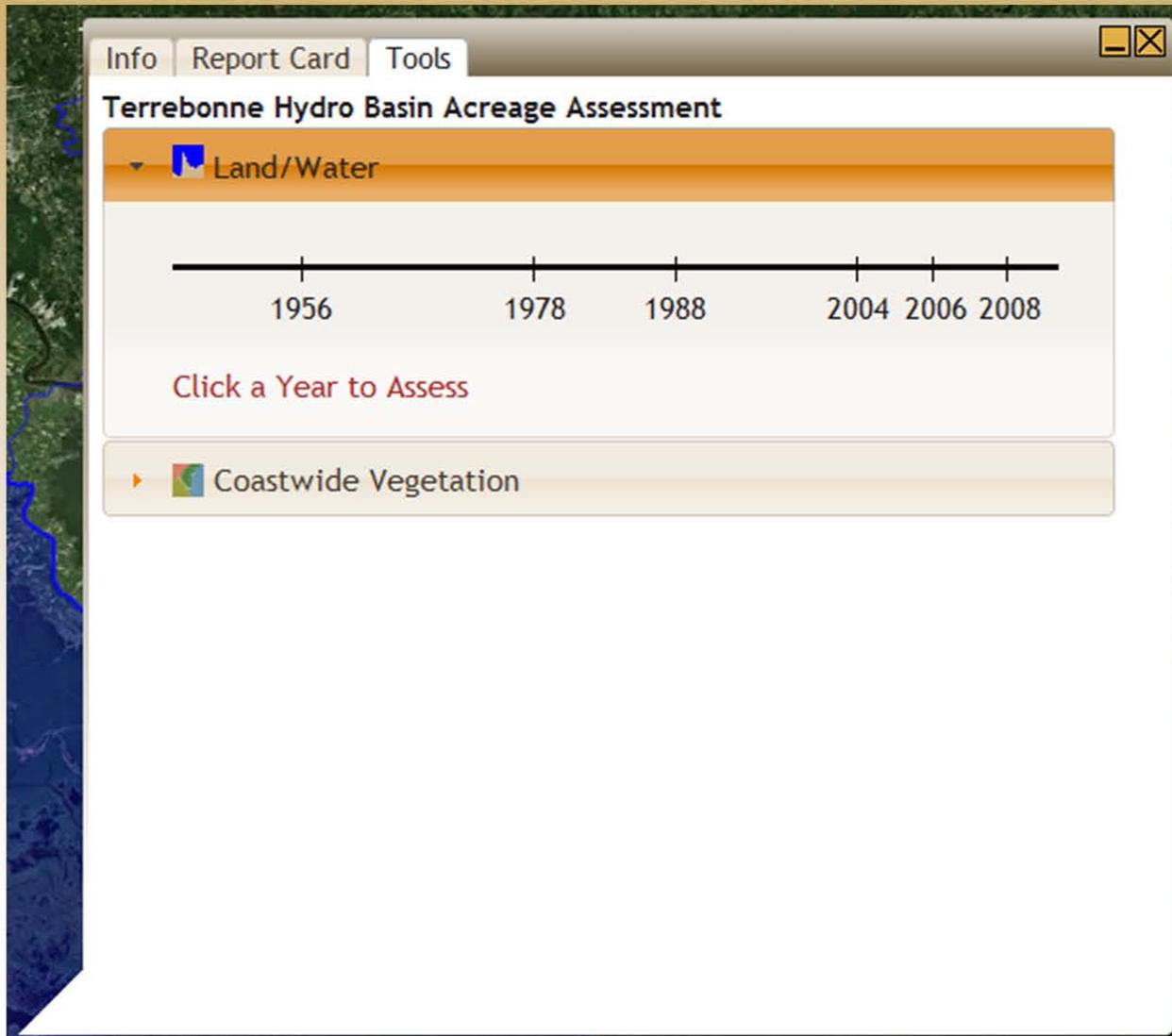
The Report Card tab contains all report card information for the selected basin.

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

Coastwide Reference Monitoring System a CWPRA funded project

Home Data Mapping Library Visualization Program

Single-click the white outlined symbology on the map to view veg information.

Layers Menu

- CRMS
- CWPRA
- Hydro Basins
- Vegetation

Main Layer: 2007
Diff Layer: None

Points
 Polygons

Fill: 100

Legend

Assessment

- Soils
- Public Lands
- Land/Water
- Base Layer

Vegetation Legend

- Saline
- Brackish
- Intermediate
- Fresh
- Swamp
- Water
- Other

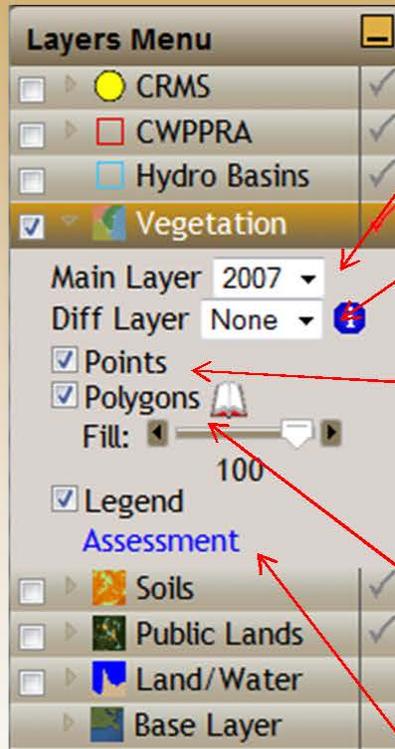
Long: -88.256, Lat: 27.605

0 30 60mi

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aer...



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

Polygons 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

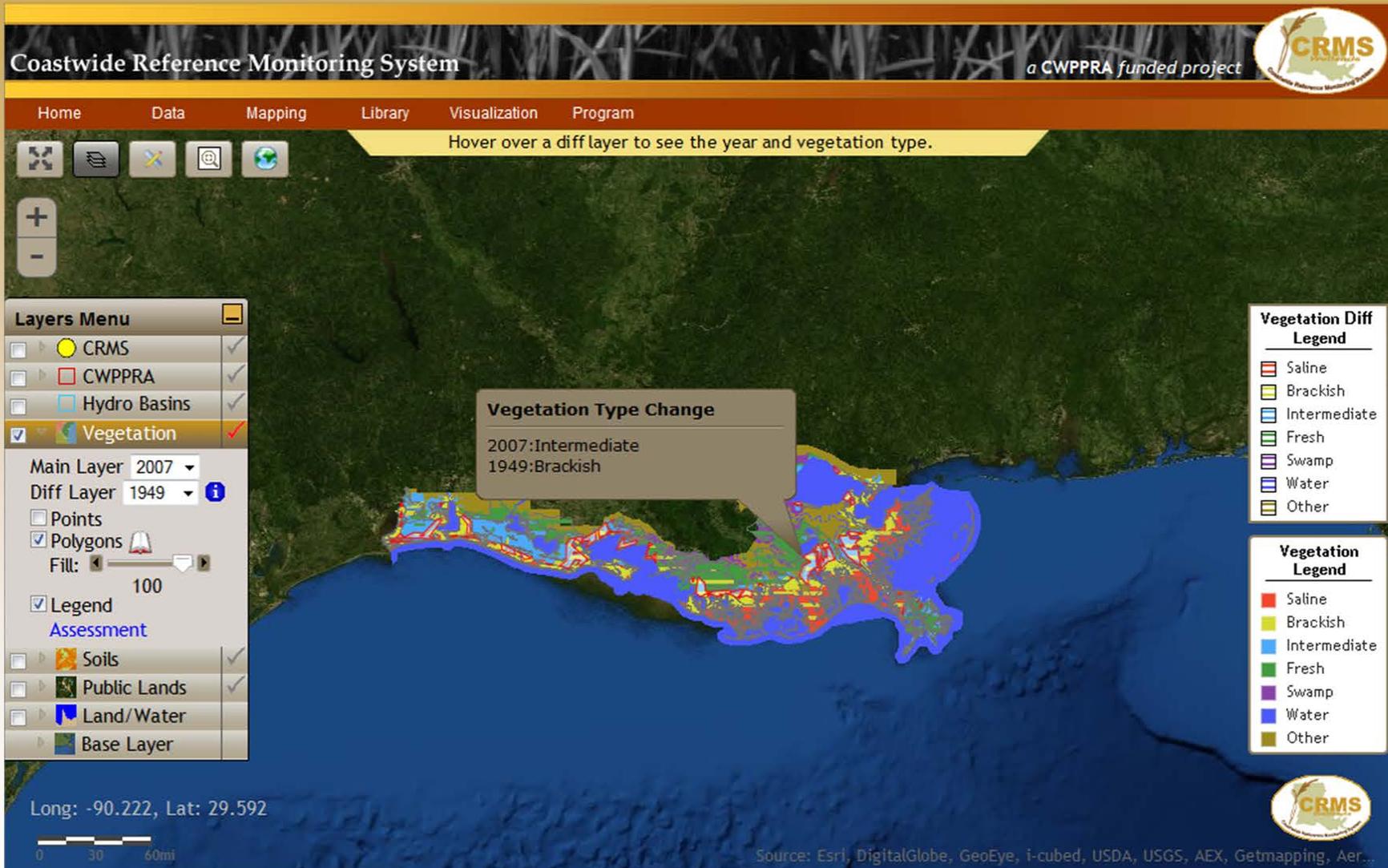
Point ID: 27A-98
Date: 8/30/2007
Percent Veg: 100%
Marsh Type: Fresh
Species List:

Scientific name	Percent Value
<i>Panicum hemitomon</i> J.A. Schultes	51-75%
<i>Morella cerifera</i> (L.) Small	26-50%
<i>Kosteletzkya virginica</i> (L.) K. Presl ex	< 5%
<i>Decodon verticillatus</i> (L.) Ell.	5-25%
<i>Sagittaria latifolia</i> Willd.	< 5%
<i>Solidago sempervirens</i> L.	< 5%

If Points is checked, the information on a Vegetation data point 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. Data from 2013 survey will be added in July 2014 to the seven dates that are currently available.



Soils Active Layer

Coastwide Reference Monitoring System

a CWPPRA funded project



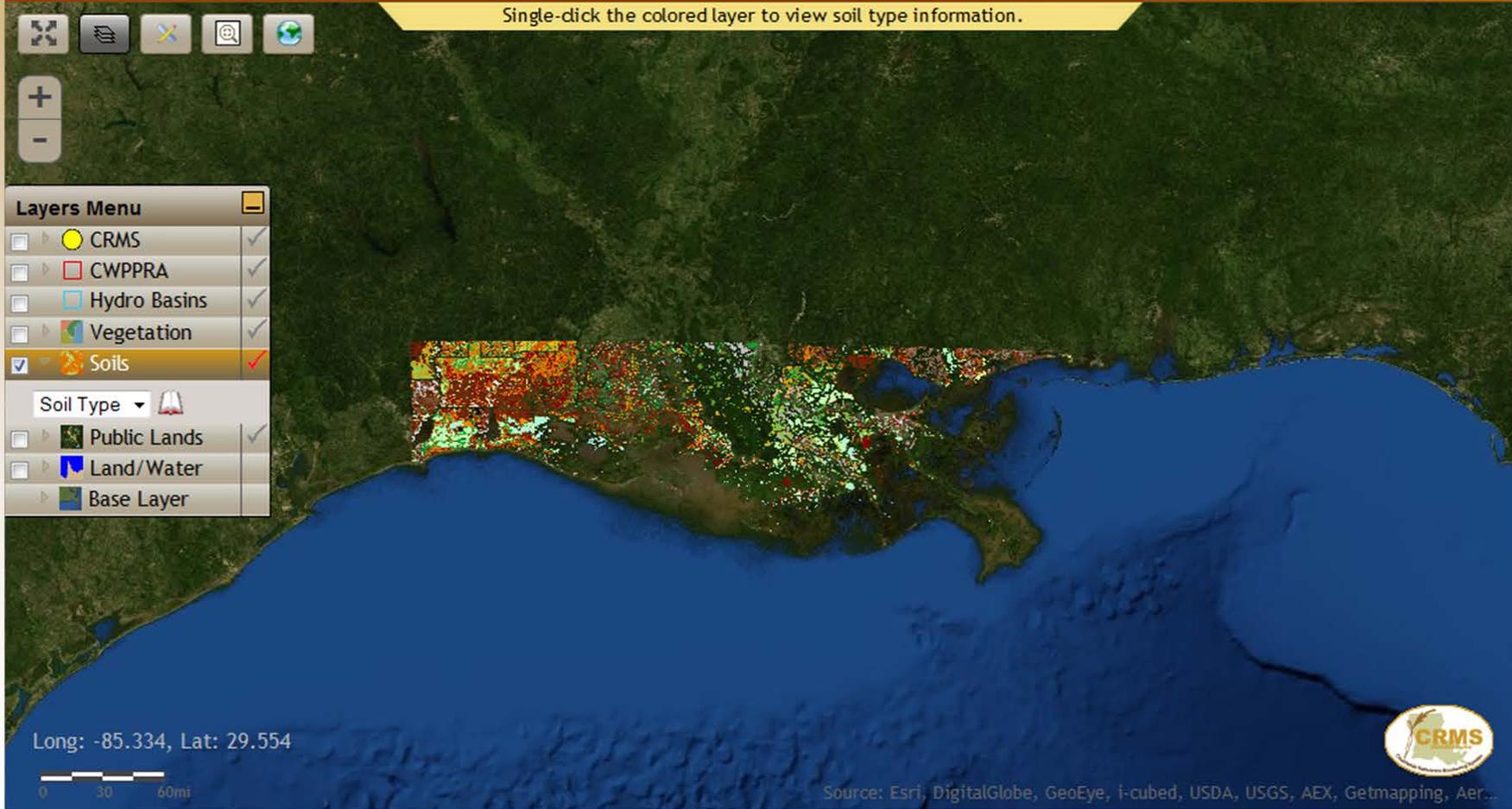
Home Data Mapping Library Visualization Program

Single-click the colored layer to view soil type information.



Layers Menu

- CRMS
- CWPPRA
- Hydro Basins
- Vegetation
- Soils
- Soil Type
- Public Lands
- Land/Water
- Base Layer



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aer...



Soils Active Layer



Search

Soils
Enter Keywords

Soil Survey

› Back to Soil Survey

Soil Geography

- › CRA
- › Federal Geographic Data Committee (FGDC)
- › FGDC Soils Subcommittee
- › Geospatial Data Gateway
- › MLRA
- › National Map Atlas
- › National Resources Inventory (NRI)
- › Soil Data Mart
- › Soil Geography Hierarchy Diagrams
- › SSURGO
- › gSSURGO
- › STATSGO2

› Find a Service Center

› States and Regions

› Centers and Institutes

Description of Soil Survey Geographic (SSURGO) Database

The SSURGO database contains information about soil as collected by the National Cooperative Soil Survey over the course of a century. The information can be displayed in tables or as maps and is available for most areas in the United States and the Territories, Commonwealths, and Island Nations served by the USDA-NRCS. The information was gathered by walking over the land and observing the soil. Many soil samples were analyzed in laboratories. The maps outline areas called map units. The map units describe soils and other components that have unique properties, interpretations, and productivity. The information was collected at scales ranging from 1:12,000 to 1:63,360. More details were gathered at a scale of 1:12,000 than at a scale of 1:63,360. The mapping is intended for natural resource planning and management by landowners, townships, and counties. Some knowledge of soils data and map scale is necessary to avoid misunderstandings.

The maps are linked in the database to information about the component soils and their properties for each map unit. Each map unit may contain one to three major components and some minor components. The map units are typically named for the major components. Examples of information available from the database include available water capacity, soil reaction, electrical conductivity, and frequency of flooding; yields for cropland, woodland, rangeland, and pastureland; and limitations affecting recreational development, building site development, and other engineering uses.

SSURGO datasets consist of map data, tabular data, and information about how the maps and tables were created. The extent of a SSURGO dataset is a soil survey area, which may consist of a single county, multiple counties, or parts of multiple counties. SSURGO map data can be viewed in the Web Soil Survey or downloaded in ESRI® Shapefile format. The coordinate systems are Geographic. Attribute data can be downloaded in text format that can be imported into a Microsoft® Access® database.

This map requires Acrobat Reader.

[Status Map of Soil Surveys Available from the Soil Data Mart \(revised daily\)](#) (PDF; 1.25 MB)

Metadata

[SSURGO/STATSGO2 Structural Metadata and Documentation](#)

Recommended Data Citation

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for [Survey Area, State]. Available online at <http://soildatamart.nrcs.usda.gov>. Accessed [month/day/year].

Technical Information

To obtain technical information about the use of soil data, please contact the [NRCS State Soil Scientist](#) in your state, or:

[Soils Hotline Staff](#)

Telephone: (402) 437-5378 (Steve Speidel) or (402) 437-5379 (Tammy Cheever)



Soils Active Layer



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

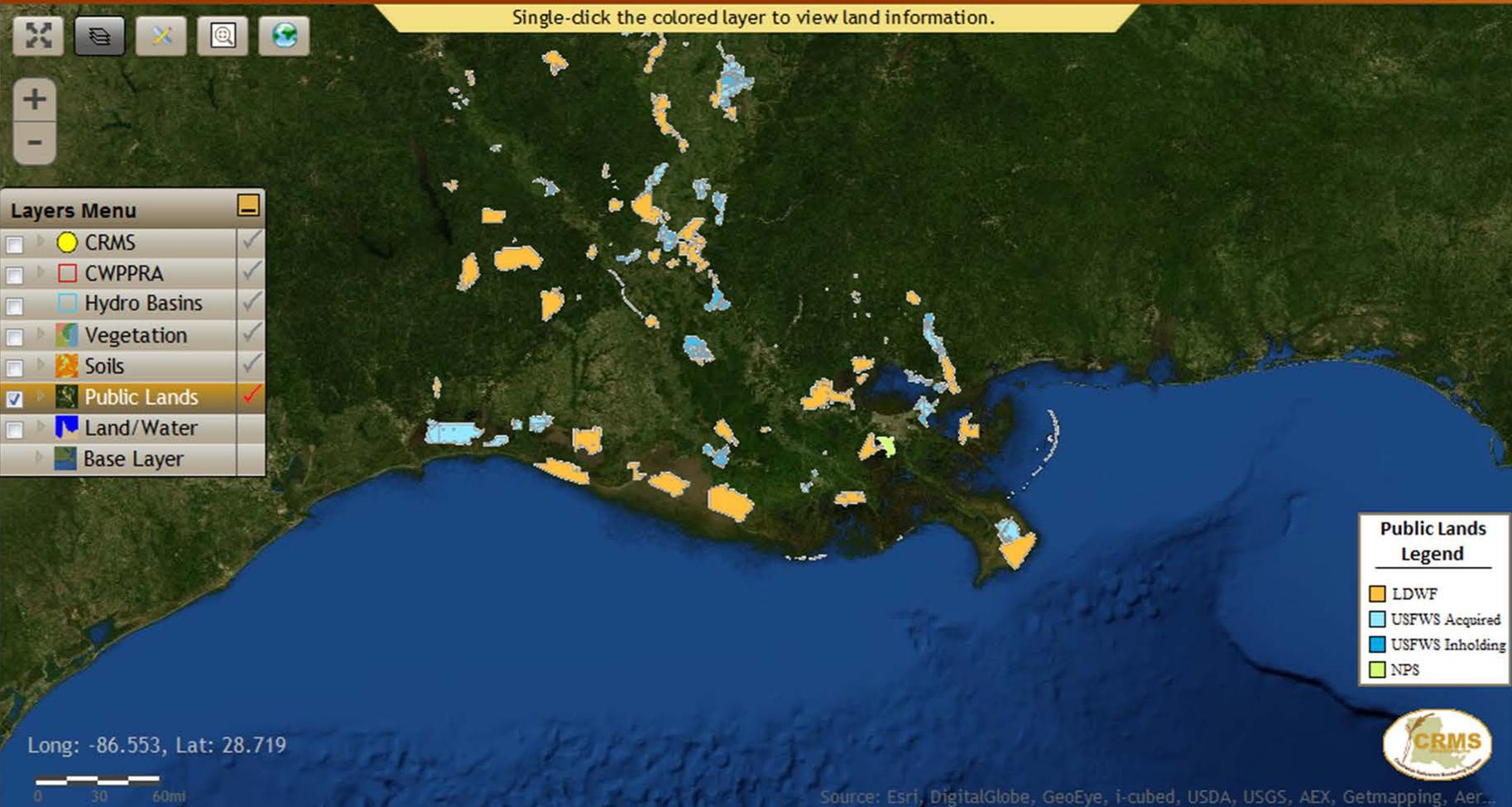


Public Lands Active Layer

Coastwide Reference Monitoring System a CWPRA funded project 

Home Data Mapping Library Visualization Program

Single-click the colored layer to view land information.



Layers Menu

- CRMS
- CWPRA
- Hydro Basins
- Vegetation
- Soils
- Public Lands**
- Land/Water
- Base Layer

Public Lands Legend

- LDWF
- USFWS Acquired
- USFWS Inholding
- NPS

Long: -86.553, Lat: 28.719

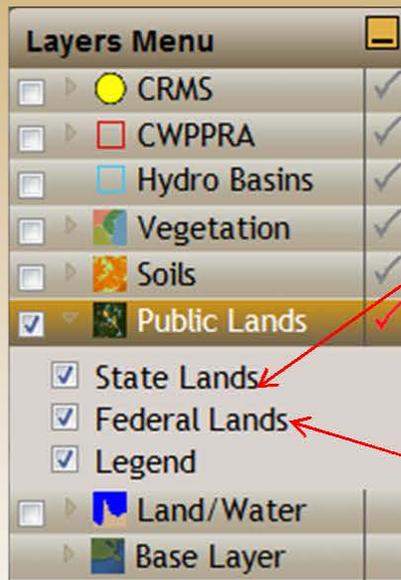
0 30 60mi

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aer...





Public Lands Active Layer

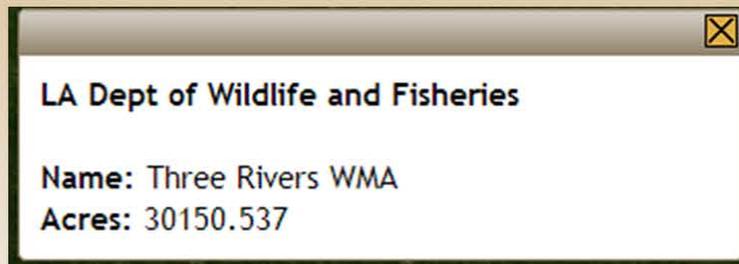


State Lands checkbox adds/removes LA Department of Wildlife and Fisheries layer.

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.



Other Layers

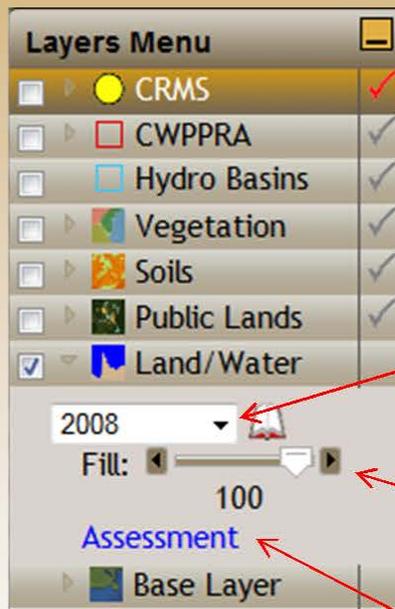
Land/Water

A screenshot of the CRMS web application interface. The top navigation bar includes "Home", "Data", "Mapping", "Library", "Visualization", and "Program". Below the navigation bar is a toolbar with icons for navigation and map controls. The main map area displays a satellite-style image of a coastal region with a blue and white overlay representing the "Land/Water" layer. A "Layers Menu" is open on the left side of the map, listing various data layers: CRMS, CWPPRA, Hydro Basins, Vegetation, Soils, Public Lands, Land/Water (checked), 2008, Fill (set to 100), Assessment, and Base Layer. The "2008" layer is selected, and the "Fill" value is set to 100. The "Assessment" layer is also visible. At the bottom left, the coordinates "Long: -94.793, Lat: 31.137" are displayed, along with a scale bar from 0 to 60 miles. The CRMS logo is visible in the bottom right corner of the map area. The source information at the bottom reads: "Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aer..."



Other Layers

Land/Water



Year selector 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

Coastwide Reference Monitoring System a CWPPRA funded project 

Home Data Mapping Library Visualization Program

Single-click the yellow symbology on the map to view CRMS Site information.

ALABAMA
LOUISIANA

Layers Menu

-  CRMS
-  CWPPRA
-  Hydro Basins
-  Vegetation
-  Soils
-  Public Lands
-  Land/Water
-  Base Layer

World Imagery

- DOQQ 2008 NC
- DOQQ 2008 CIR
- DOQQ 2010 CIR
- DOQQ 2012 CIR

World Shaded Relief

World Street

World Topography

World Grayscale

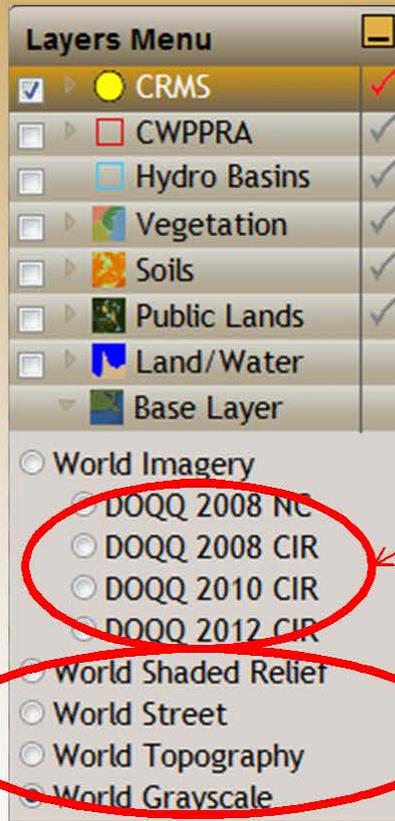
Long: -91.612, Lat: 29.993

0 30 60mi


Copyright: ©2013 Esri, DeLorme, NAVTEQ



Base Layers



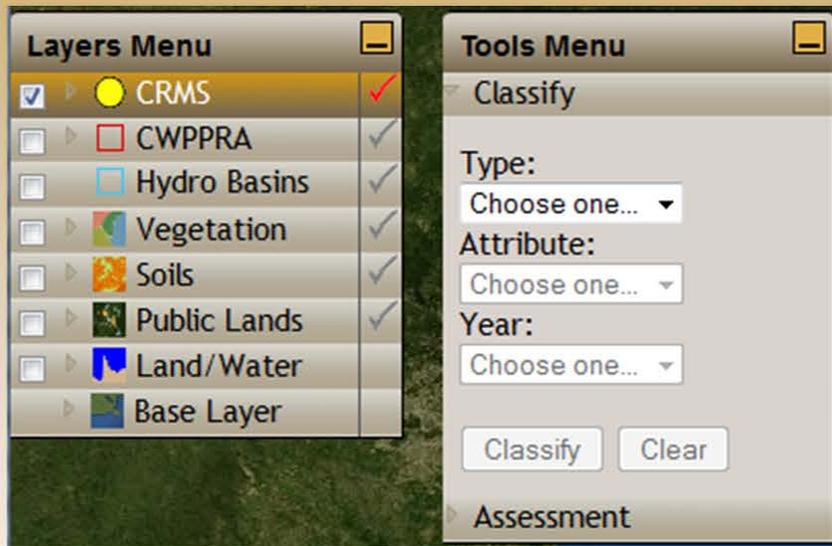
DOQQ radio buttons add the selected DOQQ layer to the map.

Just released 2012 DOQQ!!!!

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



Classify Tool

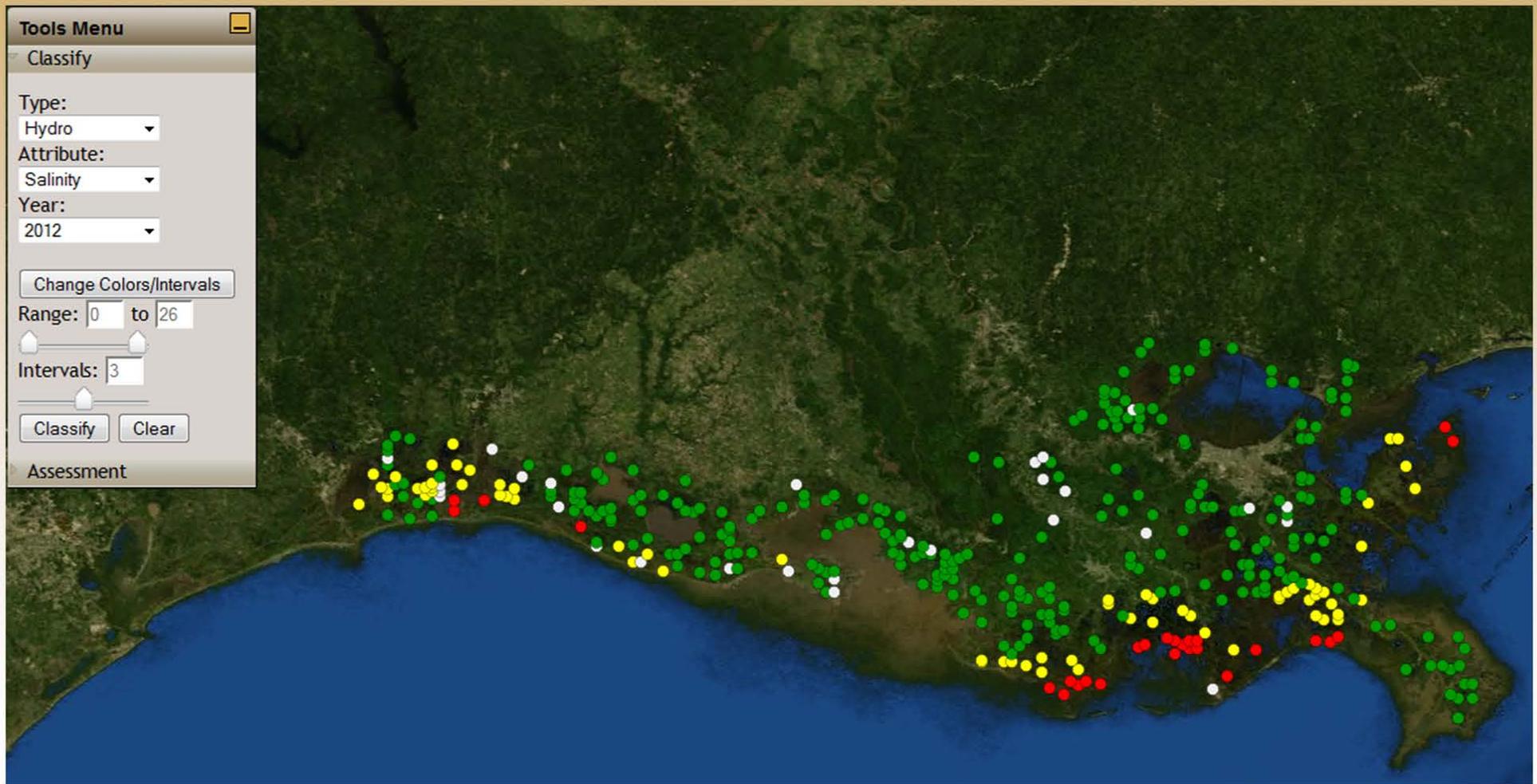


A Type, Attribute, and Year must be chosen to Classify the CRMS sites. All of the Attributes except for the Marsh Classification have a color chooser option.

- Vegetation
 - FQI
 - Marsh Classification
- Hydro
 - Hydro Index
 - Salinity
 - Water Level



Classify Tool





Classify Tool

Tools Menu

Classify

Type: Hydro

Attribute: Salinity

Year: 2012

Change Colors/Intervals

Range: 0 to 26

Intervals: 3

Classify Clear

Assessment

Tools Menu

Classify

Type: Hydro

Attribute: Salinity

Year: 2012

Change Colors/Intervals

Range: 13 to 26

Intervals: 5

Classify Clear

Assessment

Tools Menu

Classify

Type: Hydro

Attribute: Salinity

Year: 2012

Change Ranges

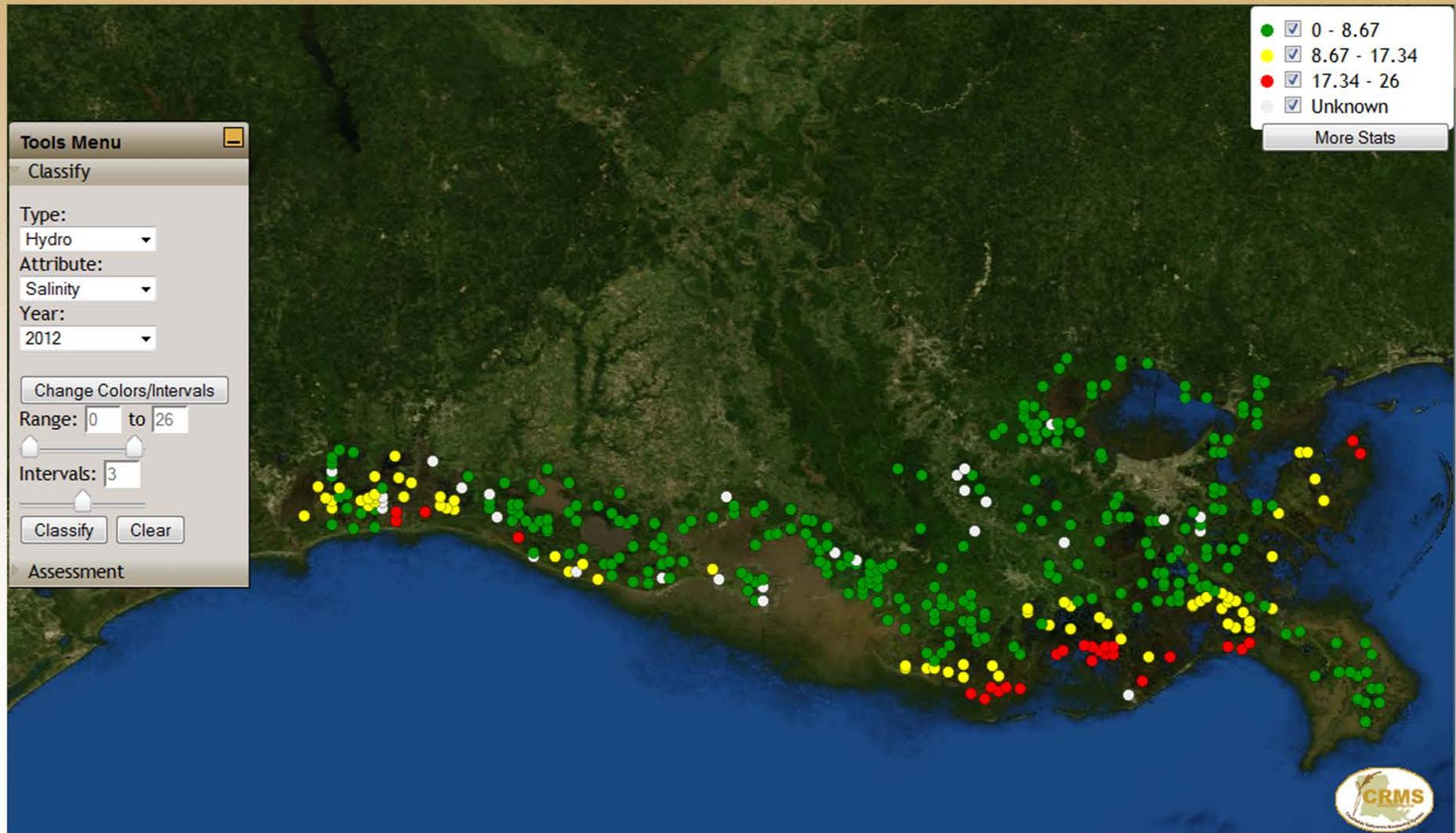
13	15.6	
15.6	18.2	
18.2	20.8	
20.8	23.40	
23.40	26	
Unknown		

Classify

Assessment

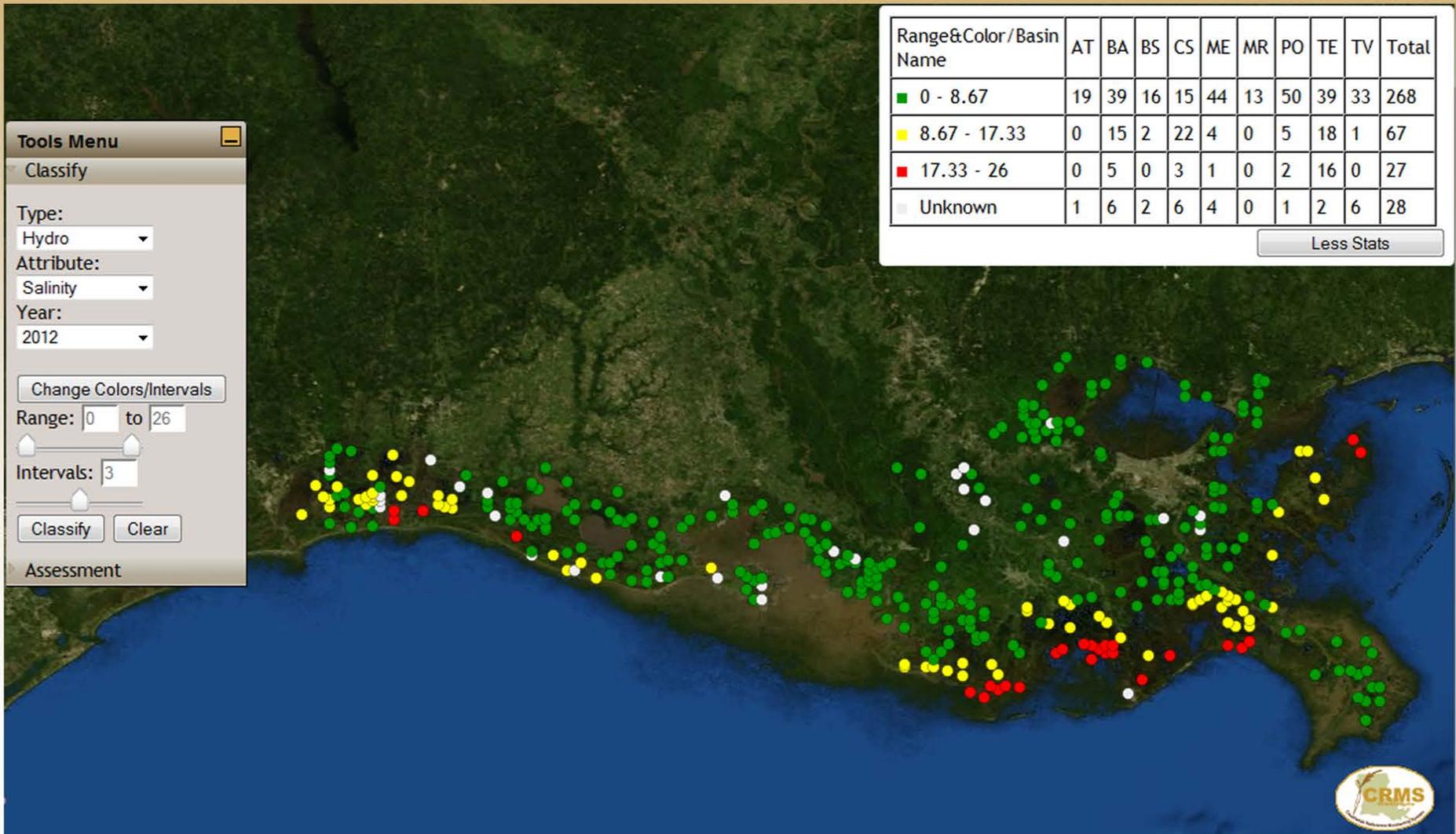


Classify Tool



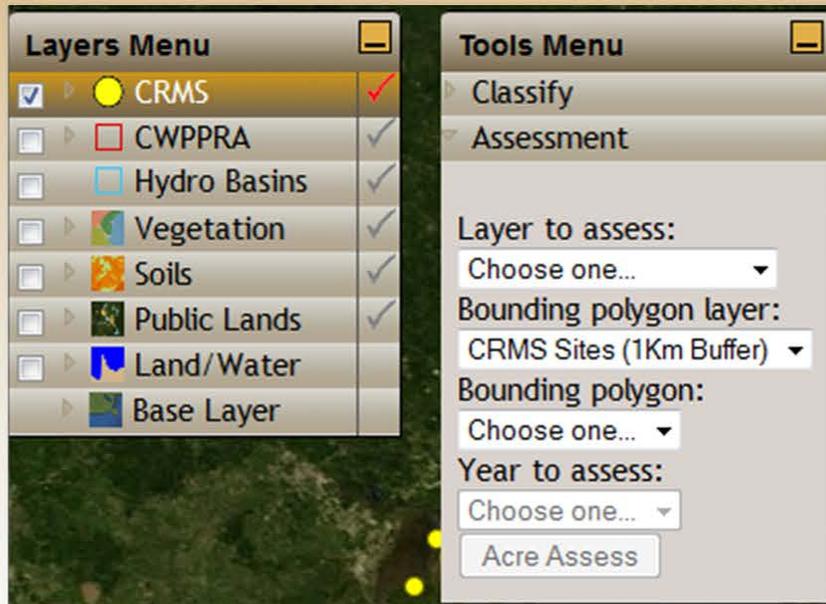


Classify Tool





Acreage Assessment 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.



Acreage Assessment Tool

Tools Menu

- Classify
- Assessment

Layer to assess:
Coastwide vegetation

Bounding polygon layer:
CWPPRA Projects

Bounding polygon:
MR-09

Year to assess:
2001

Acre Assess

MR-09 CWPPRA Project Acreage Assessment

Land/Water

Coastwide Vegetation

1949 1968 1978 1988 1997 2001 2007

Click a Year to Assess

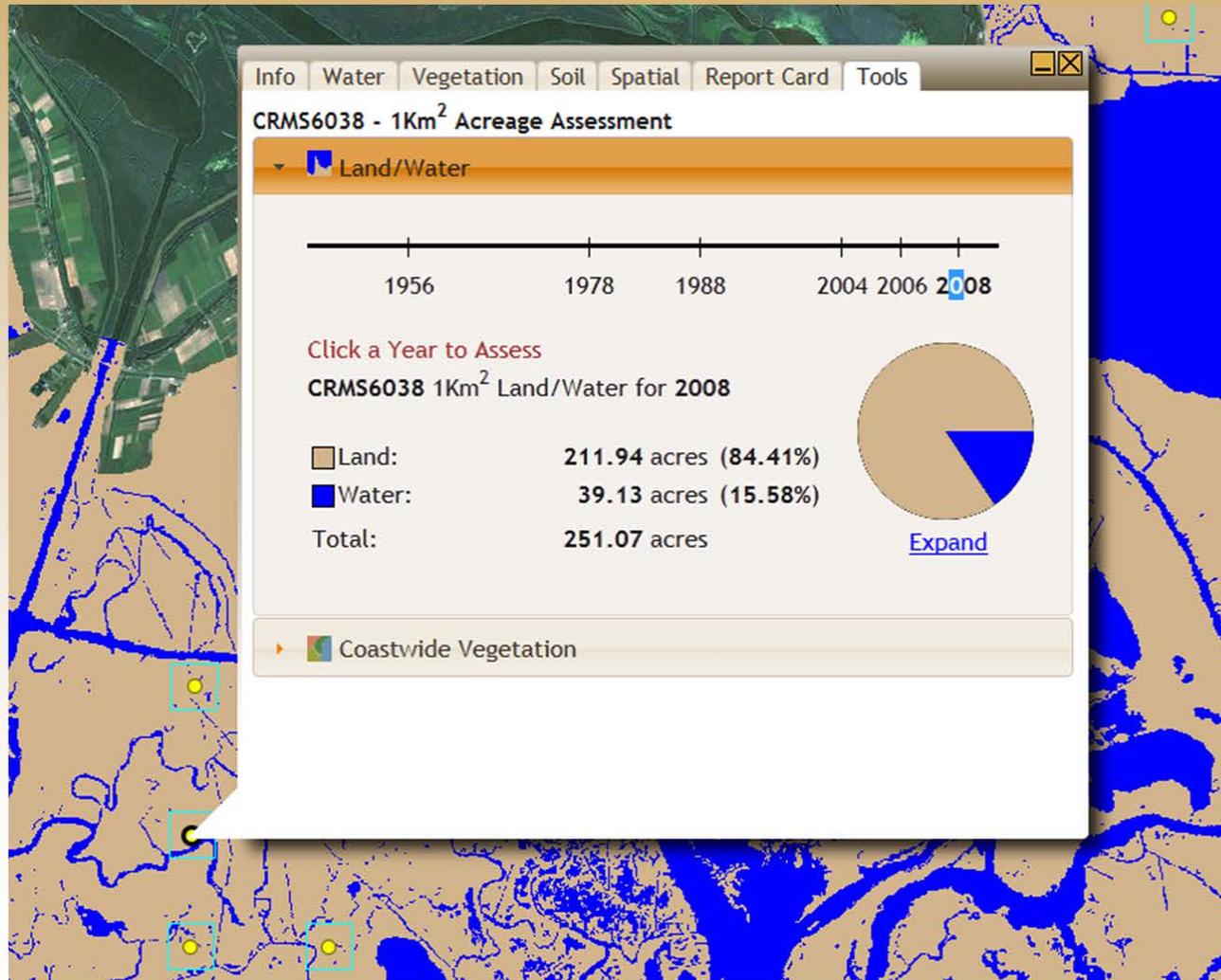
MR-09 Coastwide Vegetation for 2001

Saline:	N/A
Fresh:	83,472.82 acres (51.68%)
Brackish:	327.41 acres (0.20%)
Intermediate:	7,631.85 acres (4.73%)
Swamp:	N/A
Water:	70,082.79 acres (43.39%)
Other:	N/A
Total:	161,514.87 acres

[Expand](#)

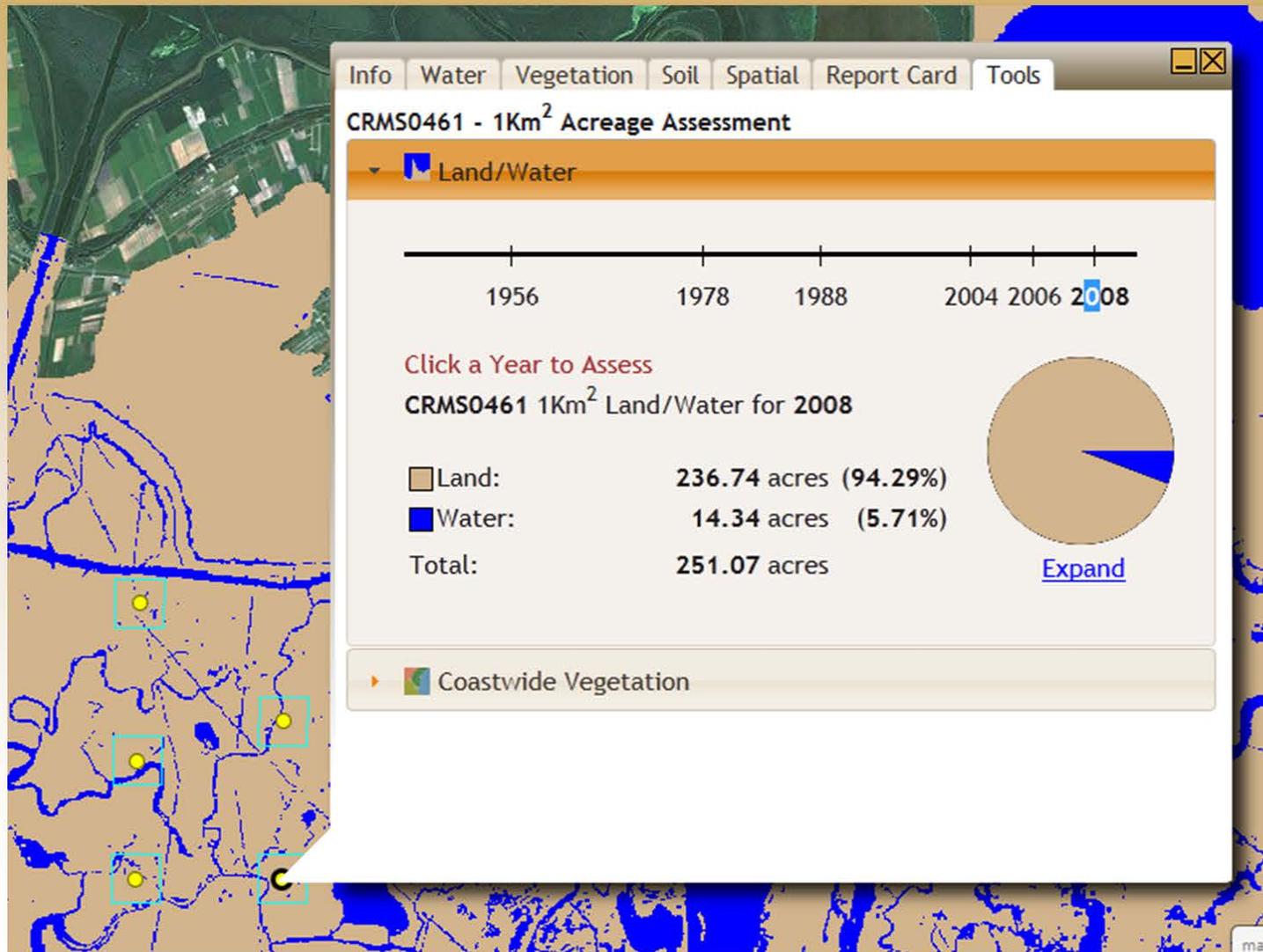


Tools Tab Persistence





Tools Tab Persistence





Questions?

Web Site: <http://www.lacoast.gov/crms>

**Sarai Piazza
piazzas@usgs.gov**