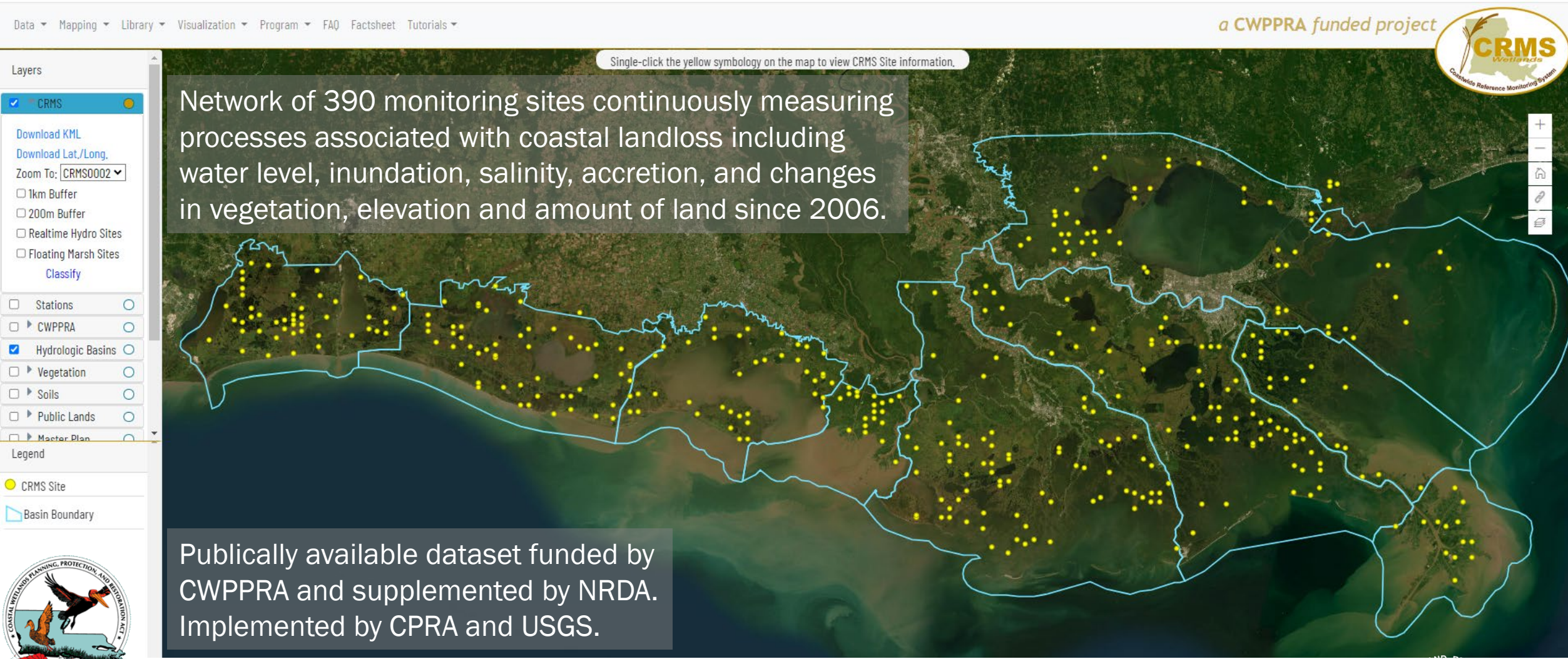


Coastwide Reference Monitoring System (CRMS) Synthesis - Coastwide Trends in Hydrology and Wetlands Surface Elevation (2008-2023)

Louisiana's Coastwide Reference Monitoring System (CRMS)



Published Comprehensive Synthesis of Hydrology and Surface Elevation Trends through 2023

- Report is in CIMS complete with datasets and appendices
 - Collaborative effort across CPRA regional offices and USGS
 - Great starting point for CRMS data users to catch up on recent trends
 - Datasets should be a valuable resource for researchers and coastal planners



Coastal Protection and Restoration Authority

Home Data Resources Viewer Outreach Protection Help

CIMS DOCUMENT DETAIL

Document Name: **CRMS Data Synthesis - Coastwide Trends in Hydrology and Wetland Surface Elevation (2008-2023)**

File(s): To preview individual file click 'Preview' link or to download individual file click 'Download' link.

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COASTWIDE REFERENCE MONITORING SYSTEM (CRMS)

**CRMS DATA SYNTHESIS –
COASTWIDE TRENDS IN
HYDROLOGY AND WETLAND
SURFACE ELEVATION (2008-2023)**

REPORT: VERSION 01
DATE: MAY 2026
PREPARED BY: LEIGH ANNE SHARP, BERNARD WOOD, ADAM CONSTANTIN, MARK MOULEDOUS, MELISSA HYMEL, DANIELLE RICHARDI, AND MARGARET DAIGLE



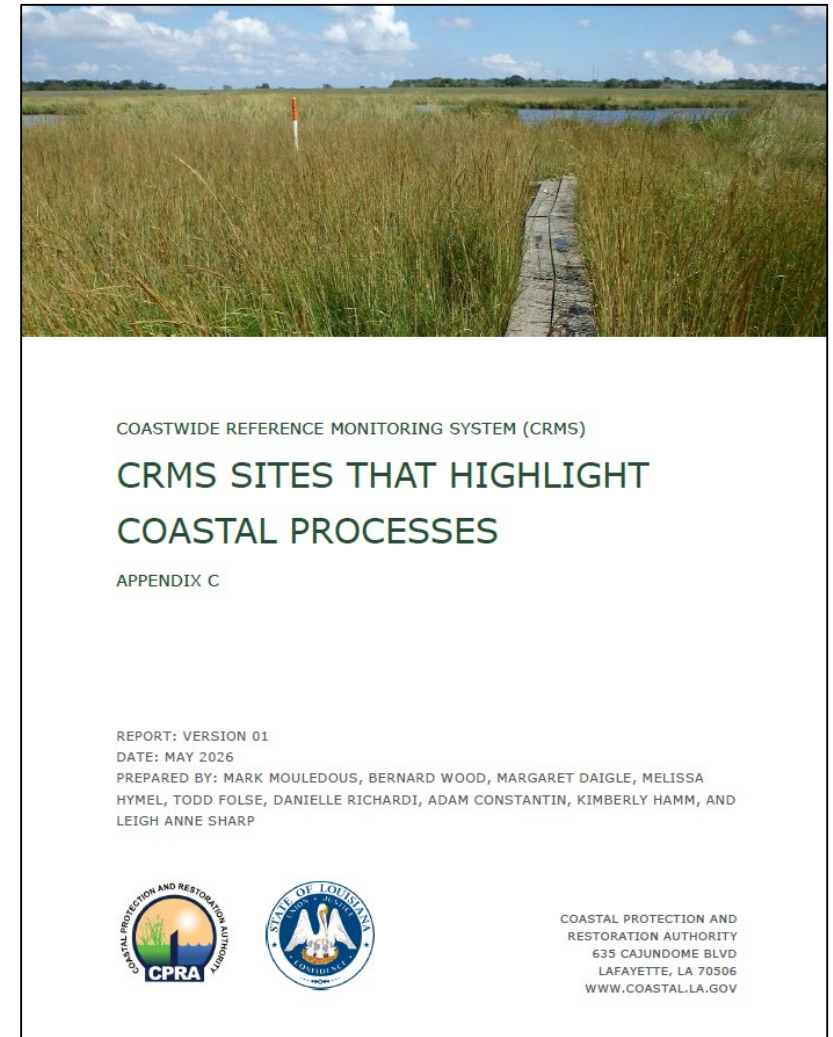
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Appendix C: CRMS Sites that Highlight Coastal Processes

- CPRA Scientists from all three regional offices contributed to report featuring 18 CRMS sites that help illuminate coast shaping processes.

1 - Crevasse Influence at Mardi Gras Pass (CRMS0148 and CRMS0119).....	8
2 - Crevasse Influence at Neptune Pass (CRMS0118).....	13
3 - Delta Building at Fort Saint Philip (CRMS0139).....	16
4 - Transition from marsh to swamp in the Davis Pond Freshwater Diversion ponding area (CRMS3169).....	22
5 - Elevation loss due to water management on Bayou Sauvage NWR (CRMS4107).....	27
6 - Drought and High Salinity (100 ppt at CRMS0589).....	32
7 - Destabilization of Saline Impoundment - East Mud Lake (CS-20) Project Area (CRMS0672).....	33
8 - Cameron Creole Watershed Management (CS-04 & CS-87).....	36
9 - Tropical Cyclone Impacts to Coastal Marshes.....	40
10 - Edge erosion in the Terrebonne basin (CRMS0315).....	44
11 - Rapid elevation gain in deltas (CRMS2627).....	46
12 - Storm surge deposition maintains surface elevation (CRMS0225 and CRMS0600).....	48
13 - Marsh Creation and Nourishment in the Pontchartrain Basin (CRMS3667).....	50
14 - Land Loss from Water Hyacinth Rafting in the Delta (CRMS0161).....	52
15 - Shallow Expansion in the Mermentau Basin (CRMS1100).....	54
16 - Elevation loss due to Hurricane Isaac in mid-Barataria (CRMS0258 & CRMS0260).....	57
17 - Settling of Hurricane Katrina and Gustav Deposits in Breton Sound (CRMS0131).....	62
18 - Elevation loss due to herbivory and flood stress (CRMS0635 & CRMS0553).....	64

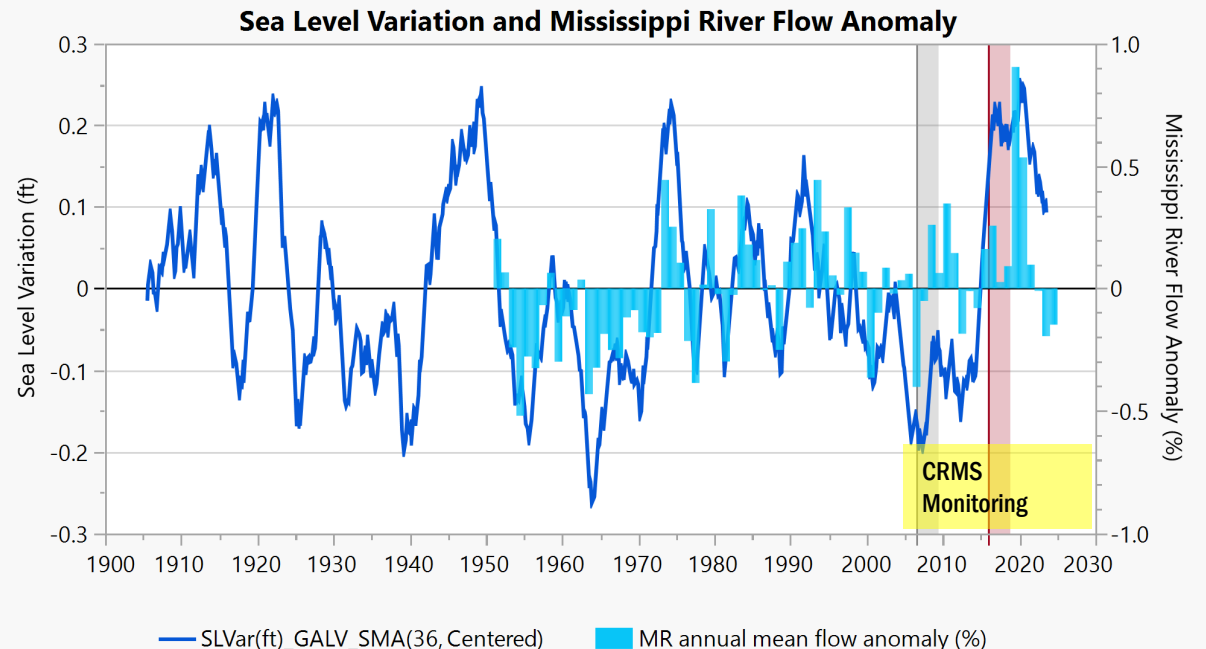
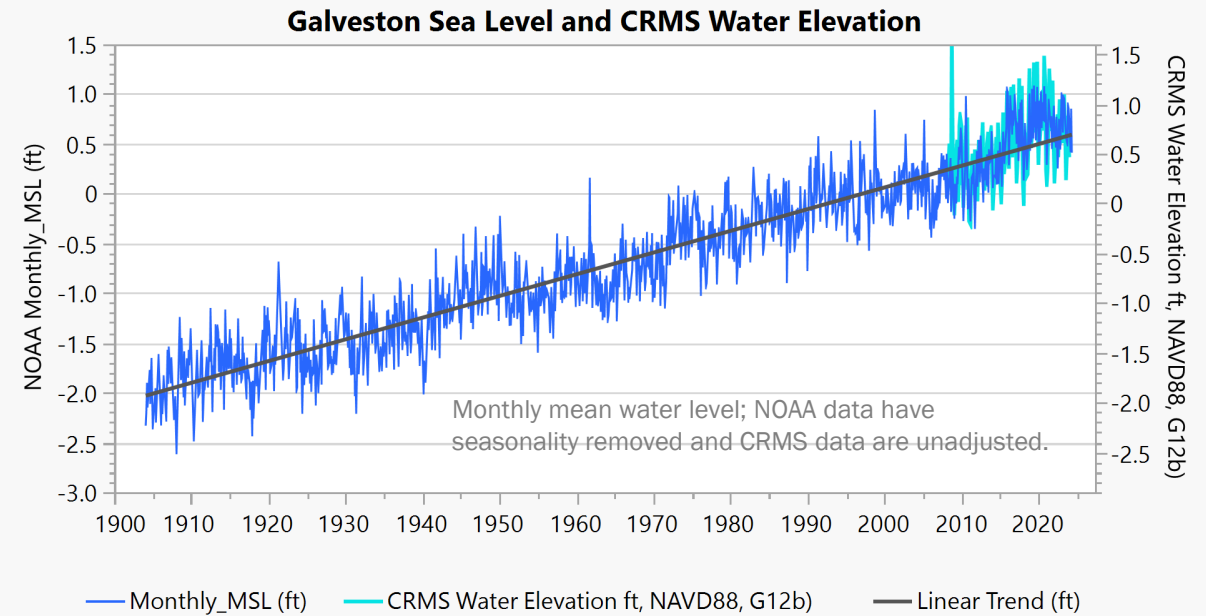
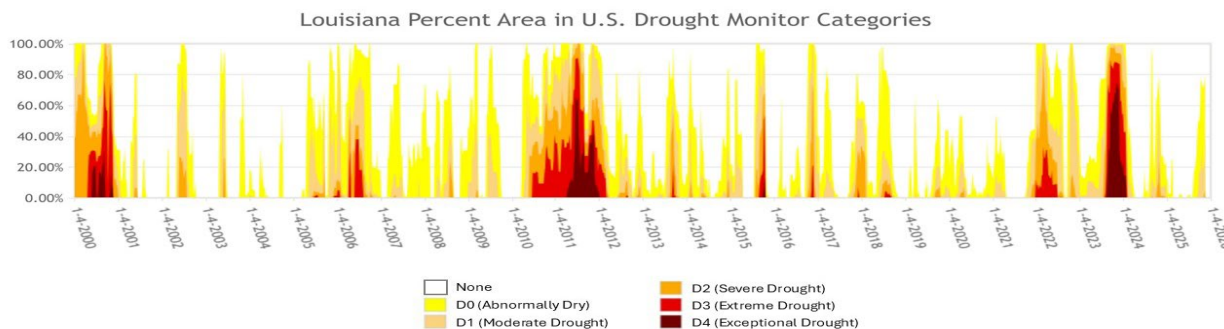


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CRMS Sites Mirror Gulf Sea Level Trends

Sea level is rising while going through cycles of flood and drought that align with the 18.6 year Lunar Nodal Cycle.

- Water was relatively low (below the rising trend) from the early 1990's to 2015 when it rose suddenly.
- The CRMS monitoring timeframe captures transition from drought to flood back to drought. *Trends in flooding, salinity, elevation and vegetation reflect these cycles.*



Executive Summary

Chenier Plain and Deltaic Plain wetlands are distinctly different ecosystems with unique restoration challenges and solutions.

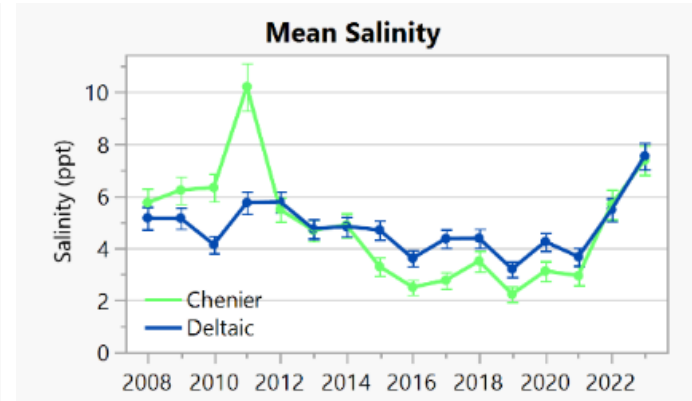
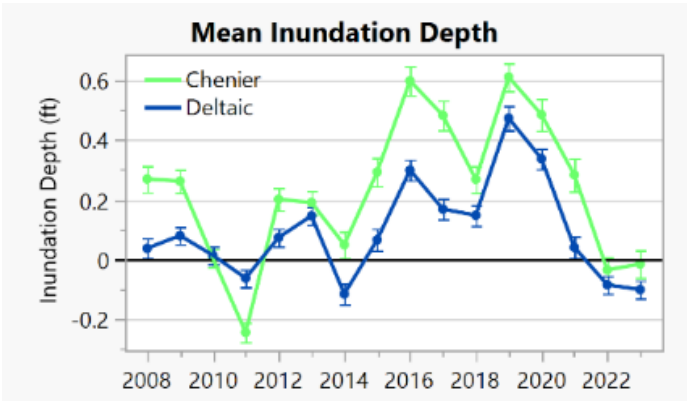
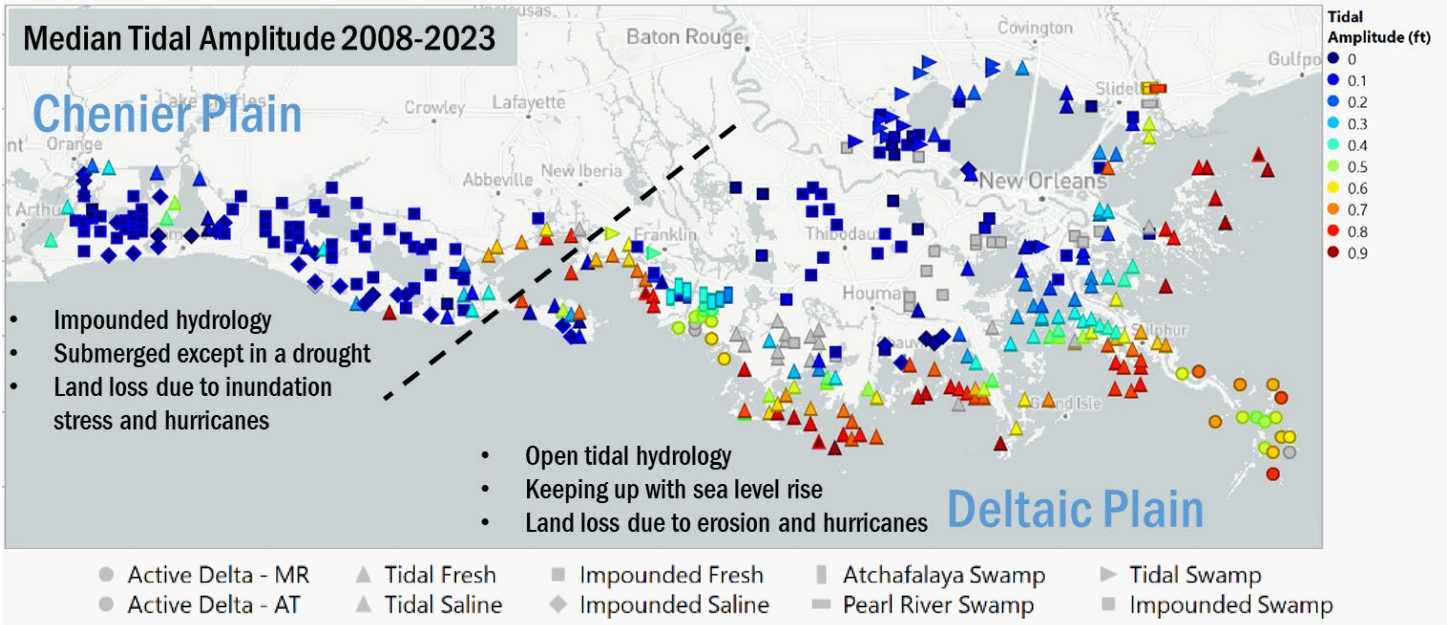
COASTWIDE TRENDS - HYDROLOGY

Land loss continued driven by ongoing tidal erosion on the lower Deltaic Plain, hurricane impacts coastwide, and inundation stress on the Chenier Plain.

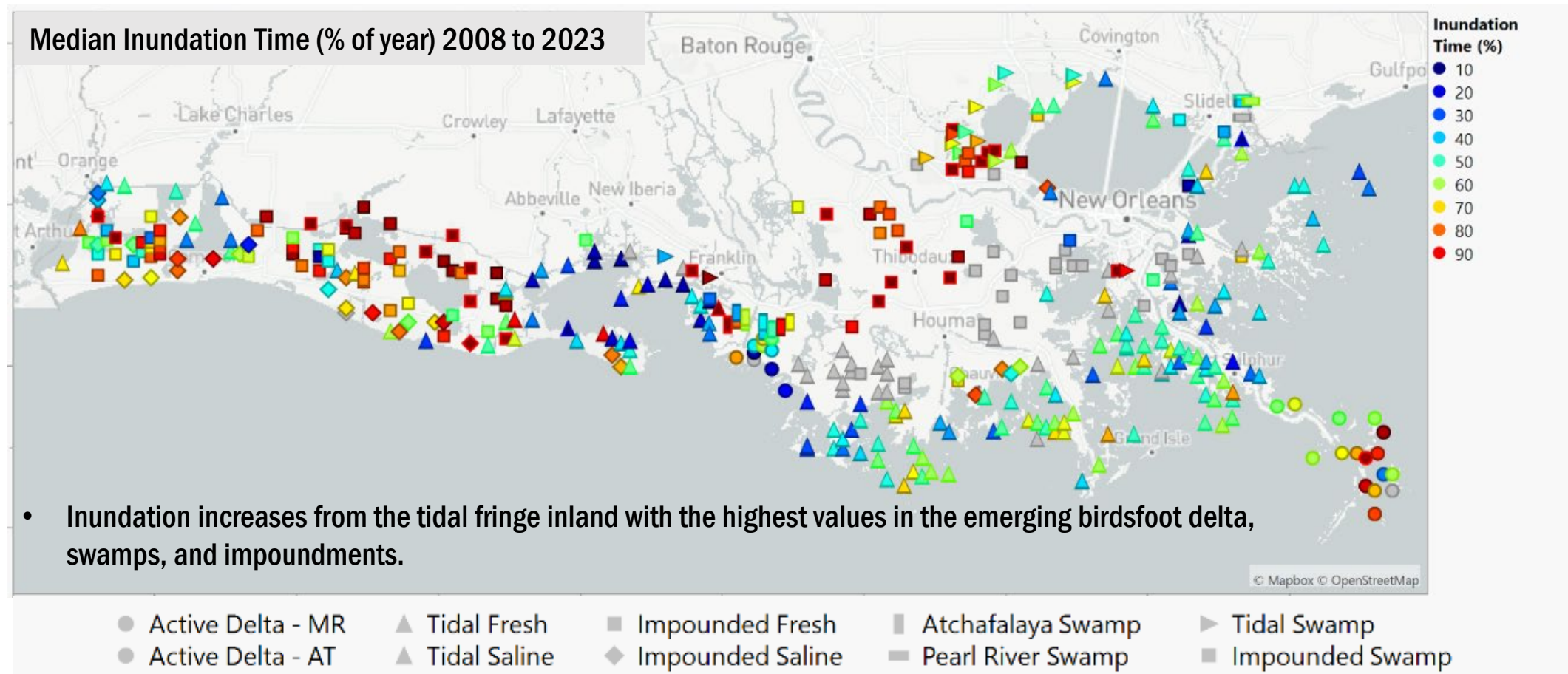
Land gain was observed in active deltas, recovering wetlands, and in marsh creation areas.

Wetland inundation increased coastwide from late 2015 until 2021. Most coastal areas freshened until the 2022/2023 drought reversed the trend.

Shallow expansion or floating marsh type behavior was observed in every marsh type during the high inundation time frame which demonstrates a type of ecogeomorphic feedback that prevents drowning in place.

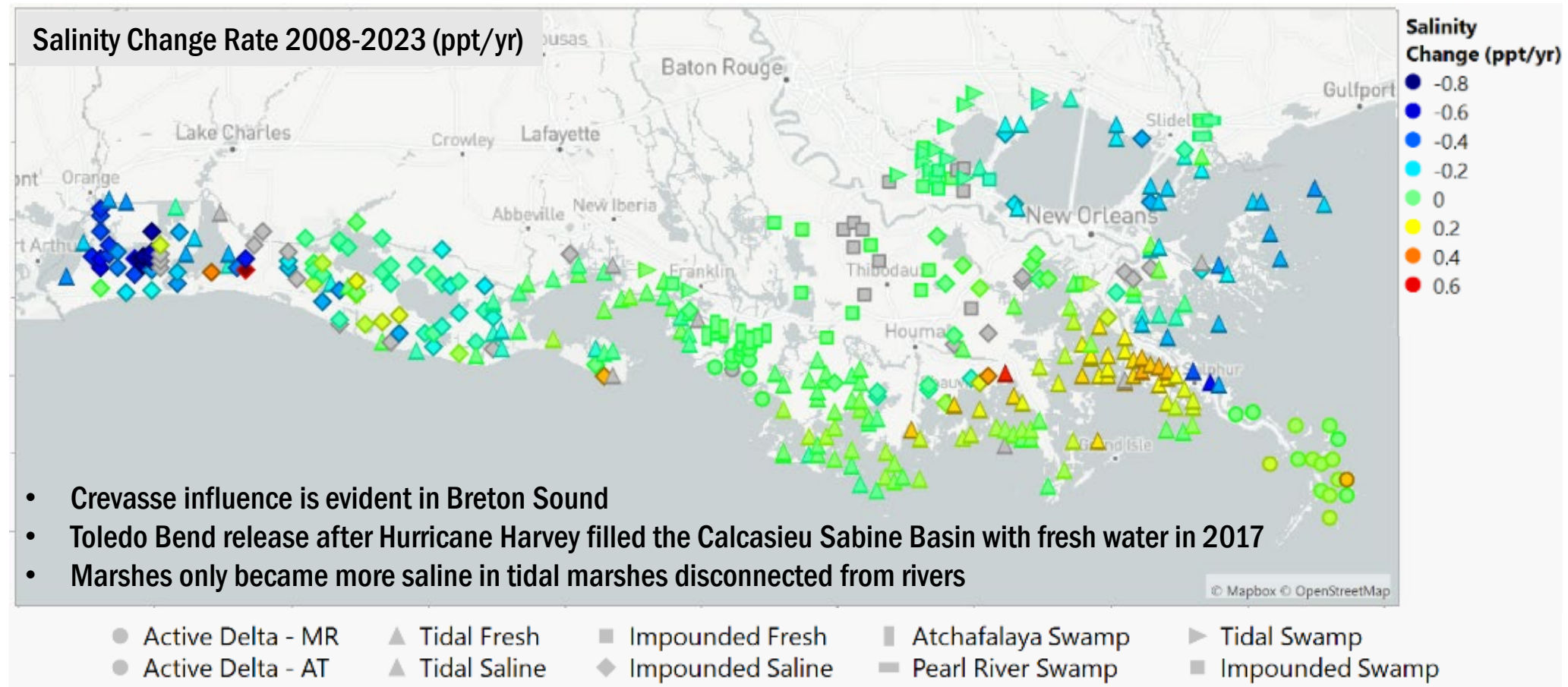


Inundation Time (% year flooded)

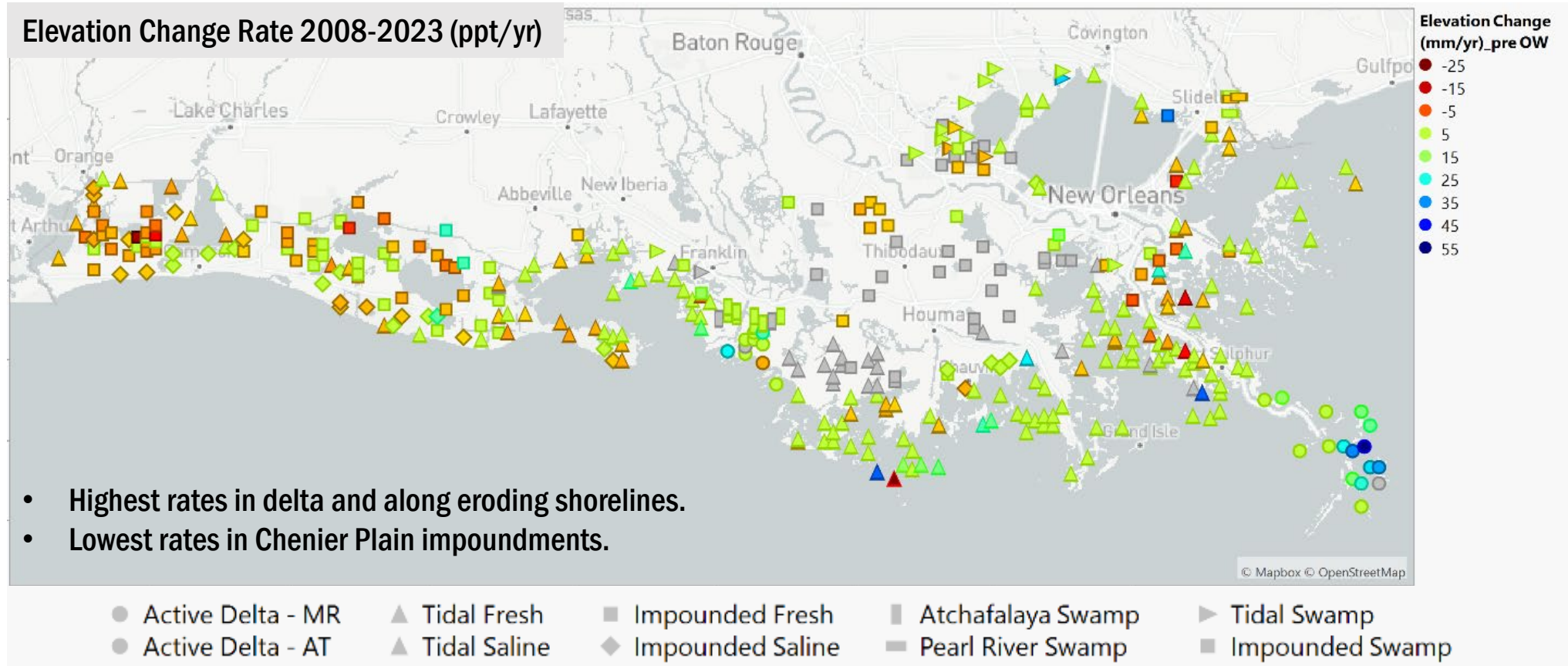


Prolonged inundation is associated with land loss in saline impoundments and causes habitat switching in freshwater areas like the interior Mermentau Basin. Deltaic Plain tidal marshes are relatively high in the tidal frame and are not drowning in place.

Salinity Trend 2008-2023



Surface Elevation Trend 2008-2023



Executive Summary

COASTWIDE TRENDS - ELEVATION

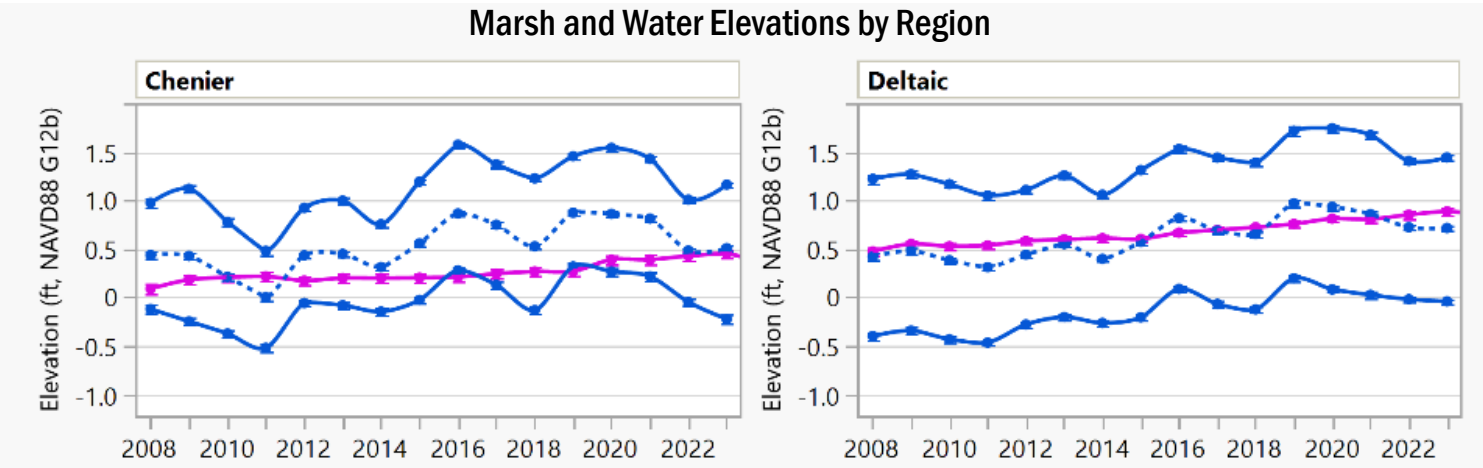
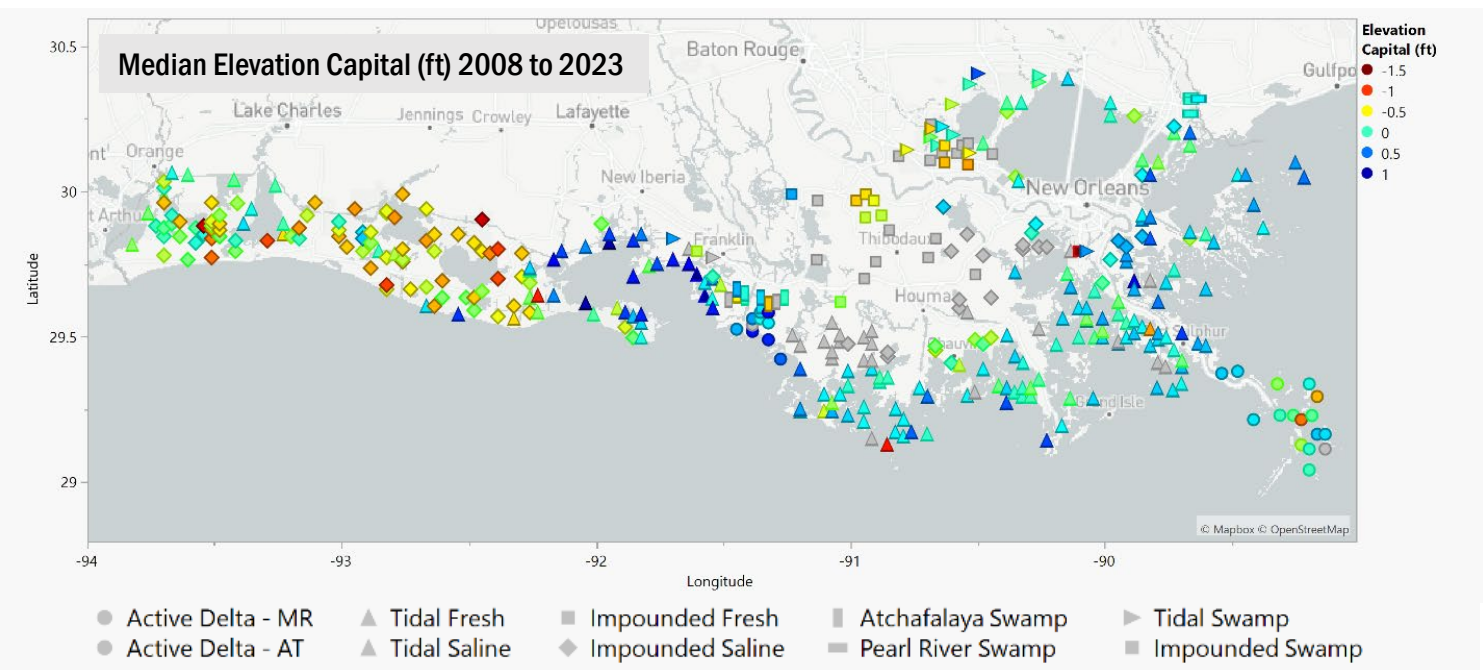
Sites on the tidal fringe are gaining elevation and losing land due to lateral erosion.

Erosion is depositional at first and then elevation loss occurs after vegetation has been removed and the shoreline has rolled back.

Hurricane deposition provides a significant sediment source that helps keep tidal marshes relatively high in the tidal frame.

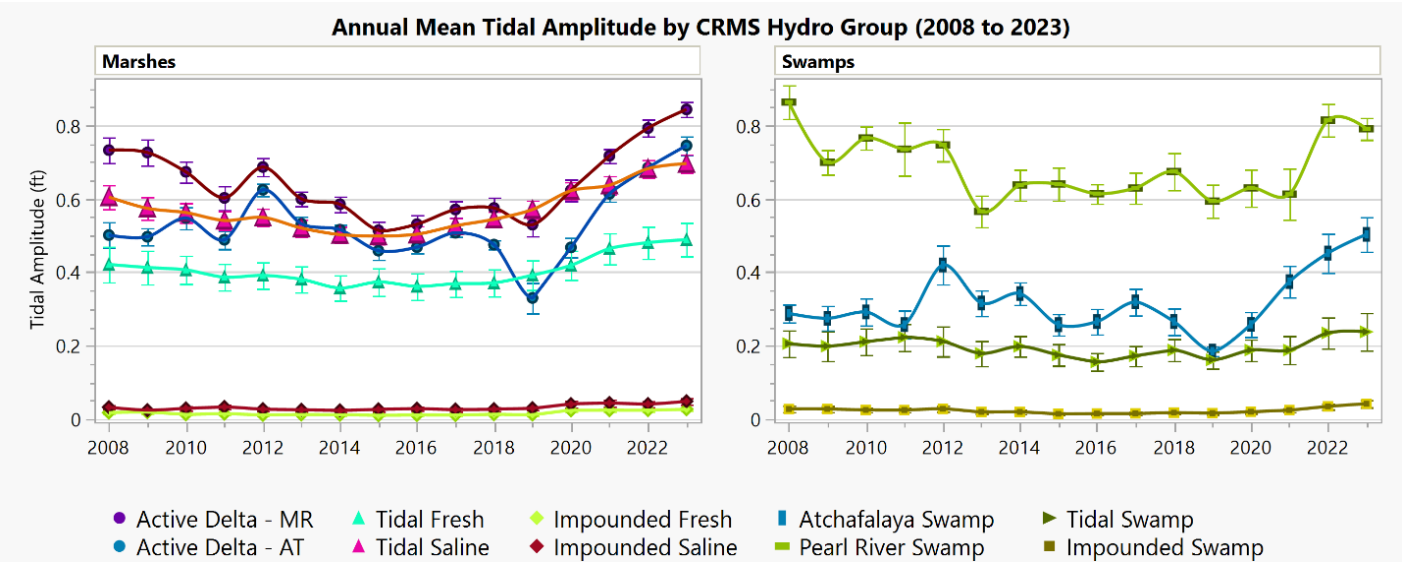
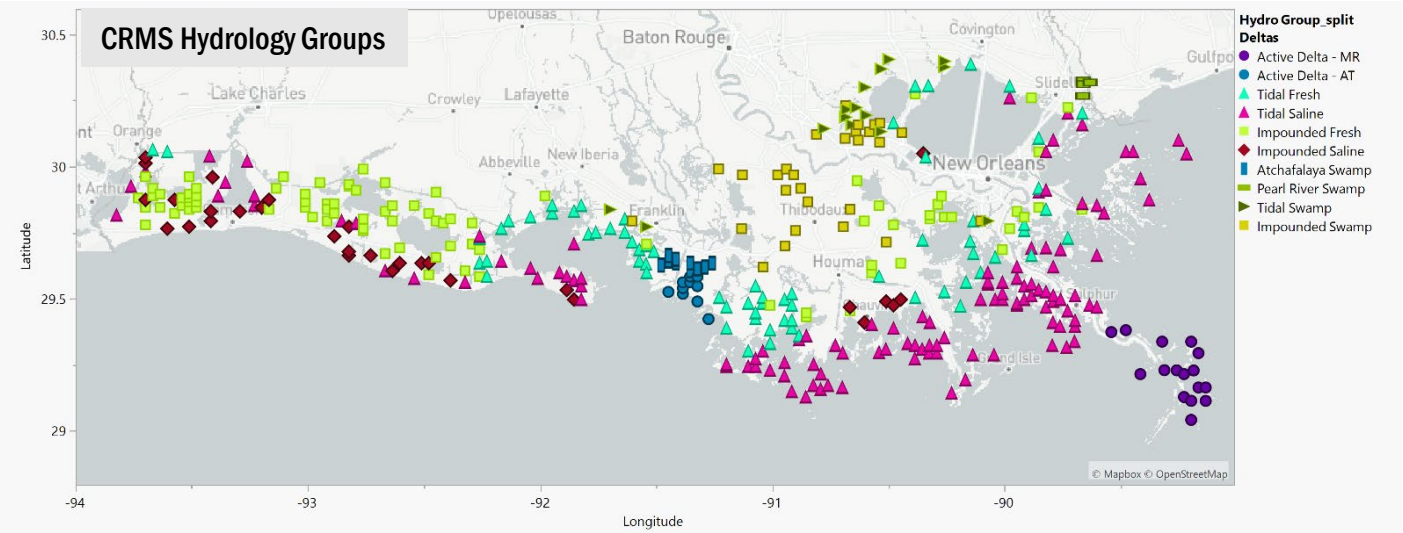
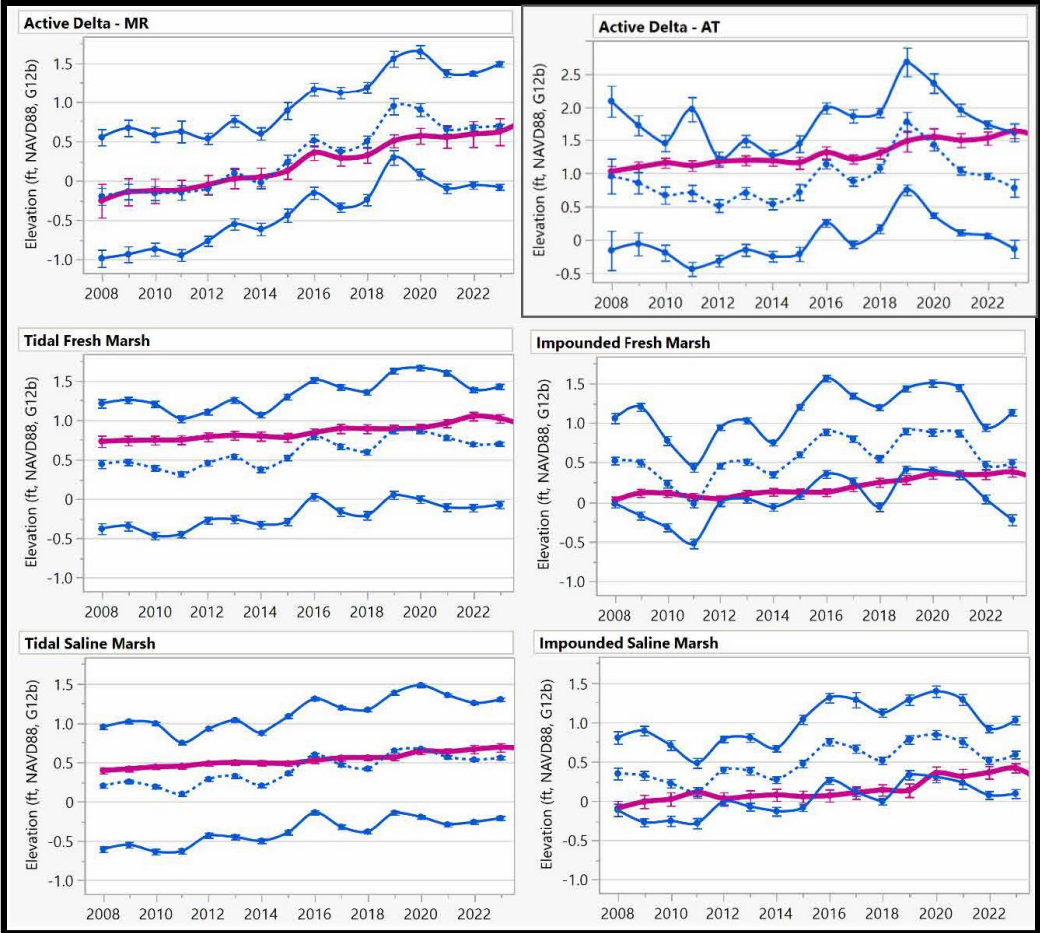
Vertical accretion and elevation gain are much lower in Chenier Plain impoundments and sites gain elevation from shallow expansion when persistently flooded.

In general, Deltaic Plain tidal wetland surfaces are found at or above mean water elevation while Chenier Plain impoundments are effectively submerged.



Hydrology Groups

Within the synthesis report readers will find hydrology and elevation trends broken down at finer scales that contrast tidal and non-tidal wetlands by vegetation type.



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