



Coastal wetland resilience to sea level rise: Importance of local measurements from regional networks

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Significance

Coastal wetland ecosystems provide important ecosystem services including habitat for diverse species, storm surge protection, erosion control, and water quality management. Although coastal wetlands are extremely valuable, they are vulnerable to sea level rise. By using surface elevation tables (SET) to elevation change in these ecosystems, we are able to measure the potential resilience of coastal wetlands to sea level rise. SET trends over time tell us if wetlands are keeping up with sea level rise. The US Fish and Wildlife Service manages coastal wetlands as part of the National Wildlife Refuge (NWR) System across the Southeast region that are currently being negatively affected by sea level rise. Twenty-two of these NWRs in the South Atlantic geography contain wetland ecosystems that are being monitored with SETs. The objective of this project was to provide site specific reports to each refuge visualizing results from their SET, marker horizon, porewater salinity, and sea level rise data to inform management decisions.

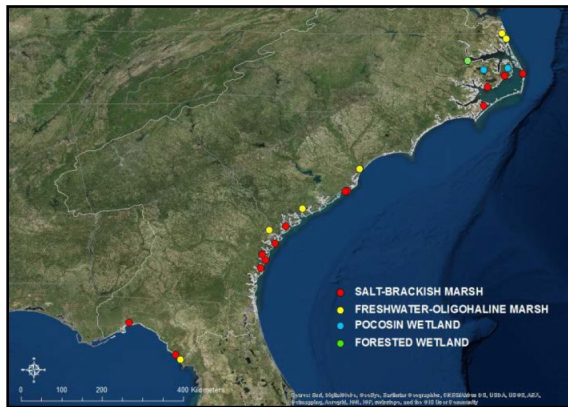
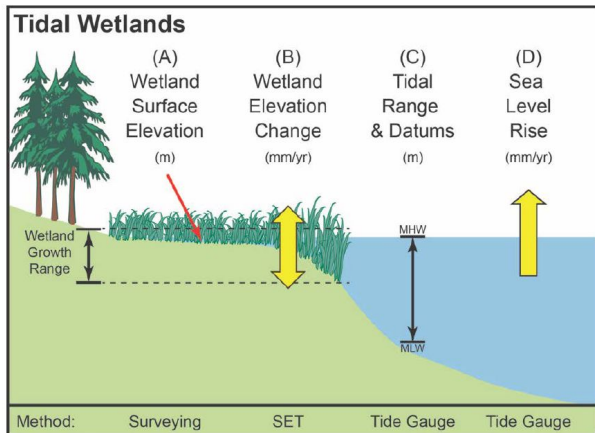


Figure 2. Distribution of the South Atlantic CWEM sites within coastal North Carolina, South Carolina, Georgia, and Florida NWRs.

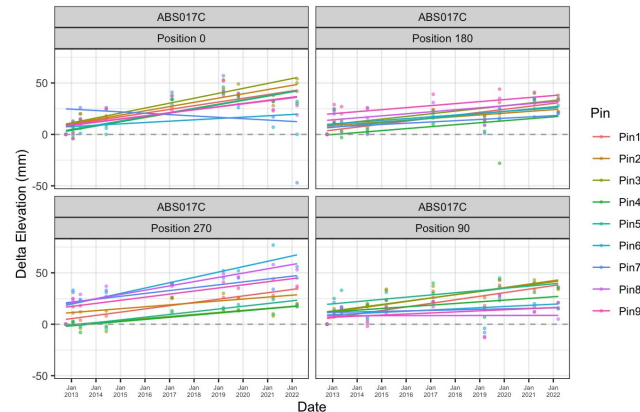


Photos: Installing a rod surface elevation table benchmark at Blackbeard Island NWR (credit: Dave O'Loughlin/Atkins); establishing accretion plots within tidal smooth cordgrass zone on Wolf Island NWR (credit: Nicole Rankin/USFWS); measuring surface elevation from rod surface elevation table benchmark installed in pocosin wetlands at Pocosin Lakes NWR (credit: Nicole Rankin/USFWS).

Objective

These site specific reports provide a synthesis of available station and site-specific data from the National Wildlife Refuge surface elevation table (SET) database. They were created to visualize site-specific data that contain crucial information concerning the health of coastal wetland ecosystems at each refuge in the Southeast region. Providing site-specific reports to each refuge gives USFWS an opportunity to further evaluate and understand the health of their protected ecosystems. Figures shown give a glimpse into what the final report analyzes.

Ernest F. Hollings Ace Basin NWR: SET



Acknowledgements

The author acknowledges KIETS Climate Leaders Program, North Carolina State University, and contributors to this project: Michelle Moorman, EmmaLi Tsai, Zach Ladin, and Marcelo Ardón.

References

Rankin, N. M., & Boyle, M. F. (n.d.). *Monitoring of Coastal Wetland Elevation and Vegetation Community Dynamics in the South Atlantic Geography*. 31.

