PRESENTER
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Sea-level rise is outpacing surface elevation gains in natural coastal wetlands on National Wildlife Refuges across the South Atlantic

Background

Uncertainty over the future of our coastal wetlands, particularly when considering static sea-level rise (SLR) inundation models, has motivated the US Fish and Wildlife Service National Wildlife Refuge (NWR) System to undertake systematic monitoring of coastal wetlands on NWRs across the country to determine their potential resilience to sea-level rise. Understanding rates of wetland elevation change and relative sea-level rise will help refuge managers use decision-making frameworks for climate planning, identify opportunities for adaptation or mitigation efforts, and respond to climate change impacts in these ecological communities.

Methods

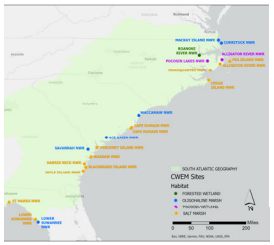
Surface elevation, accretion, and porewater salinity have been measured at 22 NWRs across the South Atlantic

Rates of surface elevation table (SET) change were computed at each site and compared to local rates of SLR

Rates of accretion were computed from available marker horizon data

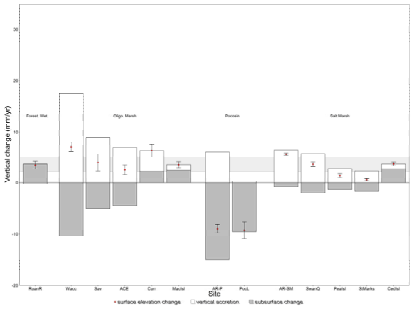
Rates of subsidence were estimated by subtracting delta SET from delta accretion

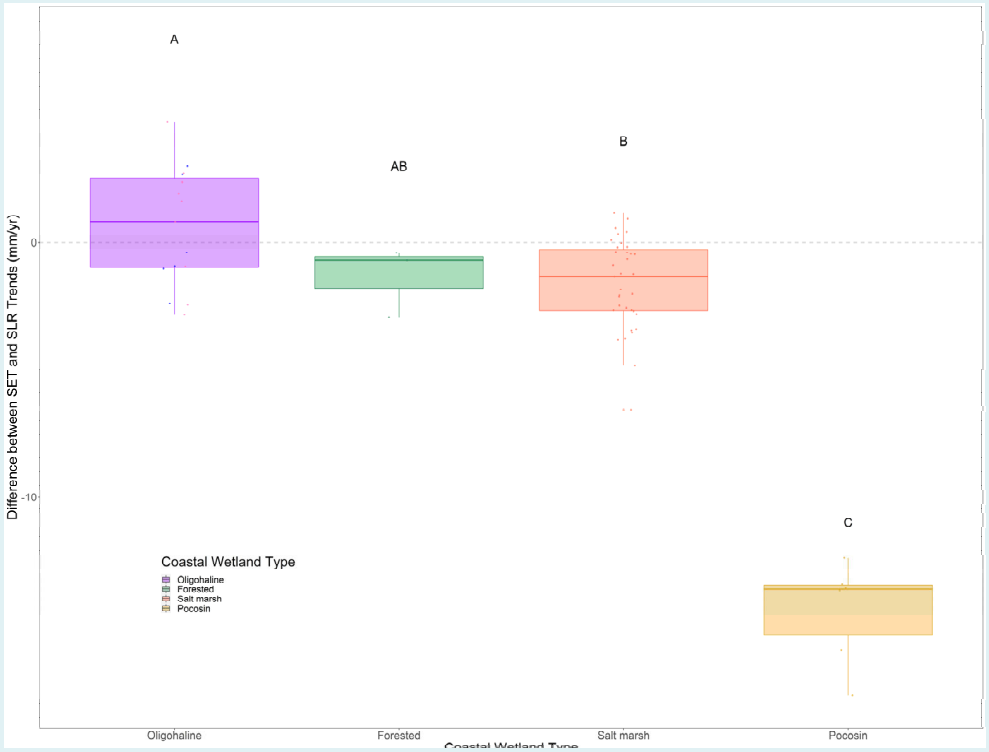
Differences in the relationship between SET to SLR elevation change among coastal wetland types were tested using a generalized mixed-effects linear model



Extra results

The causes of surface elevation change varied by wetland type with subsidence and accretion playing key roles in freshwater marshes and pocosin habitats. Estimated subsidence was reduced in marshes where prescribed fire was applied suggesting that prescribed fire could increase belowground biomass.





Report and Data

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