Coastal Wetland Elevation Monitoring Annual Report

Swanquarter NWR, Site SWQ000

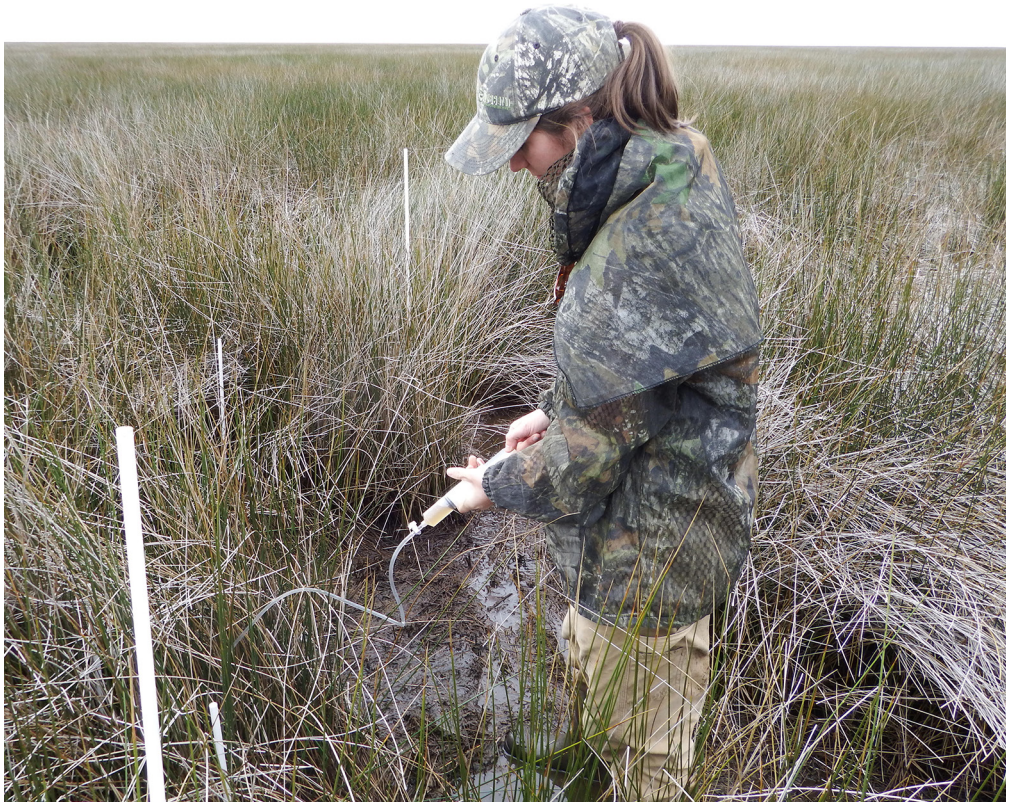
The Coastal Wetland Elevation Monitoring Project (ServCat Link: https://ecos.fws.gov/ServCat/Reference/Profile/34452) is a network of monitoring sites designed to assess how wetland habitats in coastal National Wildlife Refuges are changing in response to sea level rise along the Atlantic and Gulf coasts. These changes can lead to wetland loss, habitat conversion, saltwater intrusion, and inland migration of marsh and forested ecosystems. Long-term monitoring of rod surface elevation tables (rSETs), marker horizon plots, and porewater salinity is needed to answer the following questions:

1. What is the overall rate of vertical accretion and elevation change?
2. Is the rate of elevation change less than or equal to local sea level rise?
3. Is the rate of elevation change the same as the rate of surface accretion?
4. Is the rate of accretion or elevation change the same across different Refuges?
5. Is the relationship between elevation change and surface accretion the same across different Refuges?

Data is being collected with common protocols and archived in a national database which will allow us to analyze changes at both the Refuge and regional scale. Ultimately the project will identify what different management options are available to enhance a wetland's sustainability in the face of sea level rise.

CWEM Monitoring

On July 9, 2012, one site was established on Swanquarter NWR in irregularly-flooded (wind-driven), high salt marsh dominated by black needlerush, *Juncus roemerianus*.



Credit USFWS

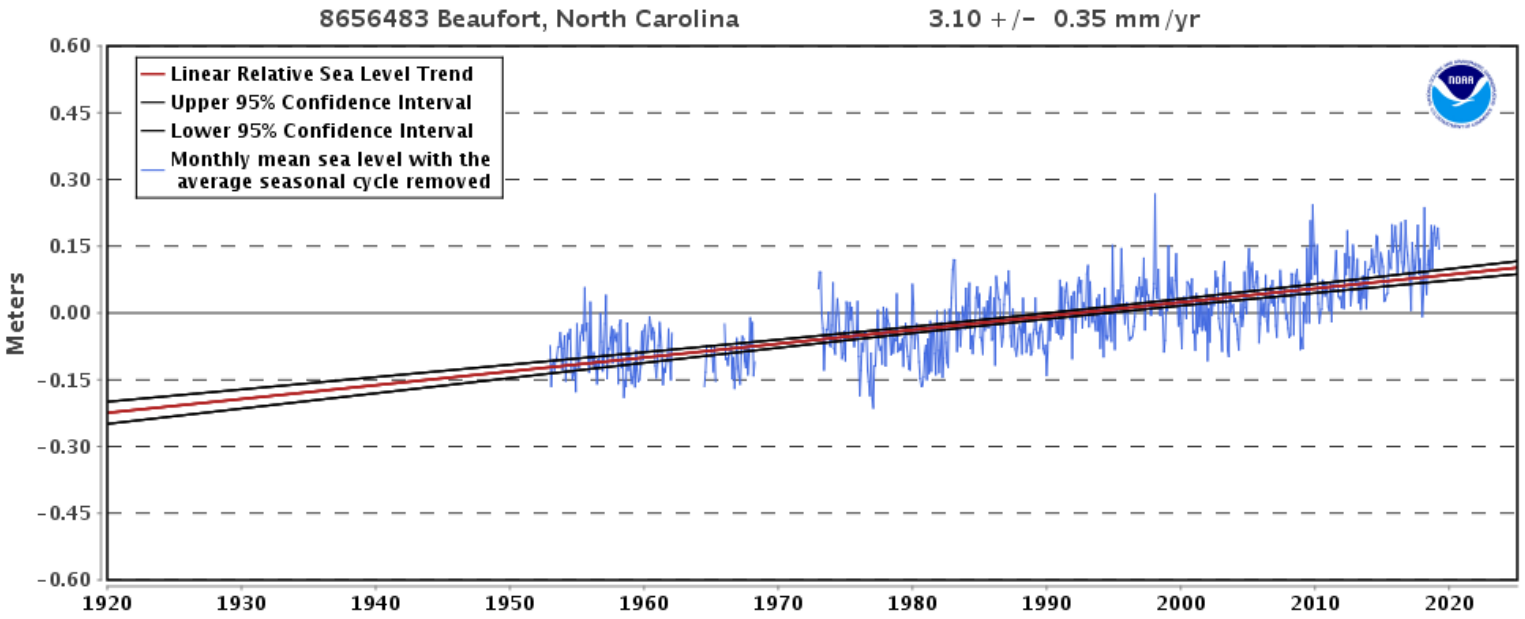
Latitude, Longitude, and Elevation of Stations on Swanquarter NWR, SWQ000

Name	Latitude	Longitude	Established	Elevation, m
SWQ000A	35.358462	-76.265777	7/9/2012	0.299
SWQ000B	35.358668	-76.26587	7/9/2012	0.317
SWQ000C	35.358931	-76.265972	7/10/2012	0.290

History of Measurements on Swanquarter NWR, SWQ000

Year	SET Pin Readings	Marker Horizon Obs.	Soil Porewater Salinity	Vegetation
2012	1		1	
2013	2	1	1	1
2014	1	3	1	
2015	1		1	
2016				1
2017	3	1	1	
2019	1		1	

U.S. Fish & Wildlife Service



The closest NOAA water level station reporting a sea level rise trend to Swanquarter NWR is Station 8656483, Beaufort, NC. This station is ~ 50 miles from Swanquarter NWR, Site SWQ000. The relative sea level trend is increasing at 3.1 millimeters/year with a 95% confidence interval of +/- 0.35 mm/yr based on monthly mean sea level data from 1953 to 2018. This is equivalent to a change of 1.02 feet in 100 years. The plotted values are relative to the most recent Mean Sea Level datum.

Location of SET stations on Swanquarter NWR

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