Engineer Research and Development Center

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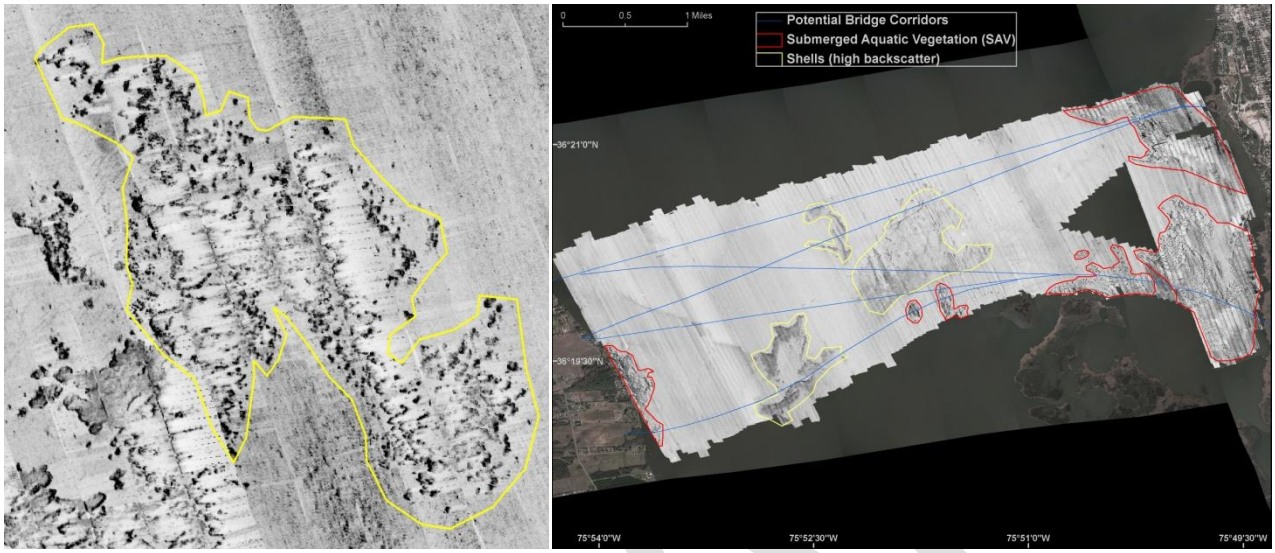
Brown Water - Submerged Aquatic Vegetation Mapping & Analysis

ERDC-CHL's Field Research Facility (FRF) has partnered with both the Wilmington District as well as PB Americas for two submerged aquatic vegetation (SAV) projects located in the Pamlico and Currituck Sounds in North Carolina. Both projects required the accurate mapping of SAV for planning of: 1. dredged sediment placement and 2. proposed bridge corridors.



Acoustic backscatter displaying SAV signature (left) and Mapped SAV and proposed bridge corridor routes (right)

Problem

The location, type, and density of SAV are required for specific Corps dredging projects. Brown water prohibits the use of airborne Lidar sensors due to light attenuation; therefore the FRF has been evaluating technologies for mapping SAV in these environments.

Technology

The team at the FRF used a phase measuring bathymetry system mounted on a shallow draft vessel coupled with real time kinematic GPS. The system measures both bathymetry and seabed acoustic backscatter, providing co-registered depth soundings and side scan sonar information in water depths ranging from 0.5m to 100m. An inertial measurement unit was used to record vessel motion and heading along with a conductivity, temperature and density (CTD) sensor to account for changes in sound speed. A ponar sediment grab was also used to ground truth the acoustic backscatter information. Due to the shallow nature of the estuaries and the hull mounted transducer, the geometries provided a high quality acoustic backscatter highlighting the SAV's unique signature.

Benefit

- Ability to identify SAV in brown water for planning dredge placement
- Identify sediments supporting SAV growth
- Indicator of estuarine health

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