Coastal Wetland Functional Assessment Modeling

Dredging Operations Environmental Research (DOER) Program

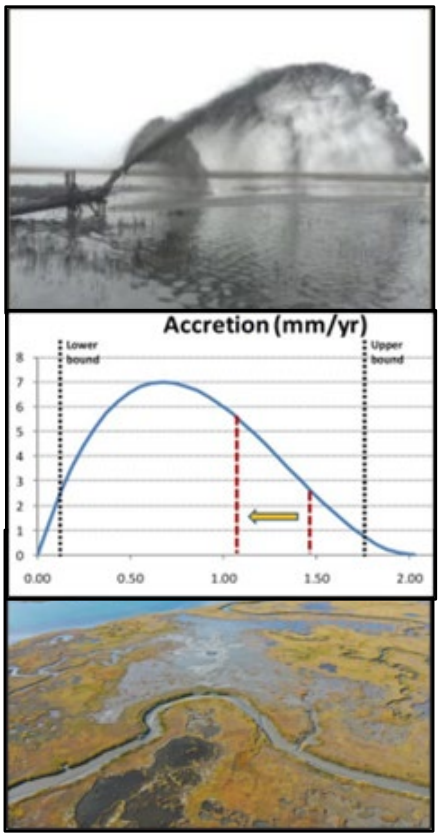
U.S. ARMY CORPS OF ENGINEERS BUILDING STRONG®

Focus Area

Environmental Resource Management

Problem

The USACE goal of achieving 70% beneficial use by 2030 requires the careful assessment of potential beneficial use (BU) sites, similar to the assessment of conventional placement sites. In coastal areas, wetland BU sites may require repeated sediment placement activities to achieve and maintain wetland function under rising sea levels and continued disturbances, such as wave attack, development pressure, and increased coastal storms. Research is needed to better predict the effect of sediment application on wetland function, anticipate future sediment application needs, and reduce the uncertainty of long-term benefits.



Study Description

Wetland functional assessments provide a methodology to identify the functional conditions of wetlands, even in cases where differences in structural metrics may not be evident. This project will demonstrate how ecogeomorphic modeling of coastal wetlands can be used to predict the effects of sediment placement on coastal wetland function and determine future sediment needs. Project results will serve a dual purpose to 1) develop recovery trajectories on BU wetland sites, and 2) more easily incorporate repeated BU placements at wetland sites into management plans by providing tools to predict future sediment needs.

Products

Outcomes of this work unit will include the development of recovery trajectories on BU wetland sites via an open-source wetland ecogeomorphic model that incorporates the calculation of wetland functional metrics and can simulate the effects of beneficial use sediment placement. Software developed from this work will more easily incorporate repeated BU placements at wetland sites into Dredged Material Management Plans by providing tools to predict future sediment needs.

Summary

Research is needed to better predict the effect of sediment application on wetland function, anticipate future sediment application needs, and reduce the uncertainty of long-term benefits. This project evaluates the usage of modeling outputs informed by wetland functional assessment metrics to plan wetland sediment placement recovery and trajectory. Methodologies and tools will be developed to enable Districts to better communicate and quantify expected benefits and draw backs of BU projects to resource agencies and stakeholders.

Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.

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Research Products

Product Type	Product Title

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