Nearshore Nourishment Challenges (FY20)

Background: The strategic placement of dredged sediment in the nearshore is an increasingly utilized practice to beneficially use dredged sediment. However, there is still a need to better understand the sediment transport volumes and direction of transport based on the hydrodynamic characteristics of the project area. It is important to ensure that nearby resources are not adversely affected by the placement, which is often a concern of resource agencies and stakeholders. Additionally, shoreline impacts due to nearshore placement geometry, as well as the behavior of heterogeneous sediment associated with nearshore placements, is not well understood. Performance metrics to define successful nearshore placement projects have not been defined. There is a need for clear documentation about the benefits of nearshore placement projects to improve the understanding and gain the support of stakeholders and the public. An improved understanding of the dynamics of sediment placed in the nearshore may help to quantify benefits gained from these types of projects.
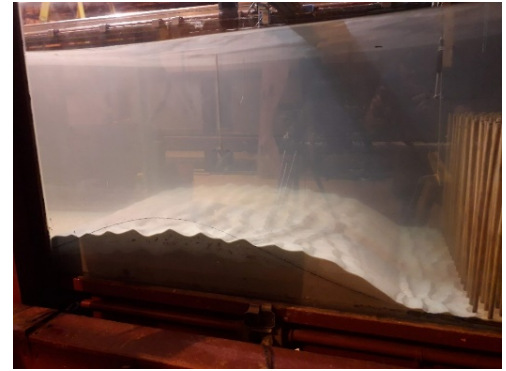
Approach: This work intends to further the state of the science in nearshore placement of dredged material through public outreach, physical and numerical modeling, rapid tool development, and field monitoring of projects.

Technical Advancements:

- Update, improve, and expand the Sediment Mobility Tool for scoping level predictions of nearshore nourishment mobility
- Analyze the influence of nearshore placement shape on sediment transport and hydrodynamic characteristics
- Compile data about previous nearshore placement projects, particularly near coastal structures
- Improve the understanding of nearshore berm migration near wetlands
- Implement methodology to estimate grain size on a national scale from citizen scientist imagery

Payoff: This project incorporates a multi-faceted RD&T effort to support District planners and engineers and encourage the beneficial use of dredged sediment through nearshore placement. Improved predictive capabilities for nearshore nourishment projects has the potential to facilitate additional opportunities for the beneficial use of dredged sediment and improve coastal resilience following the goals of Engineering with Nature (EWN) and Regional Sediment Management (RSM) principles.

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