

FY20 RSM IPR



SAM, ERDC; BU Opportunities for Wetland Sites Associated with O&M Projects; Mroczko, Godsey, Boyd, Piercy

BLUF: Develop a multi-faceted framework to facilitate beneficial use of dredge material (BUDM) at wetland sites to improve resilience

Challenge/Objectives

- Measure local marsh sediment accumulation rates
- Inform BU placement capacity through marsh process modeling
- Create framework to plan BUDM projects

Approach

- Conduct geochronology to calculate marsh accretion and mass accumulation rates
- Utilize Marsh Equilibrium Model (MEM)
- Develop template workflow to be used in decision support and future planning
- Apply to Blakeley Island CDF (source) and adjacent marshes (sink)



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District/Other USACE PDT Members

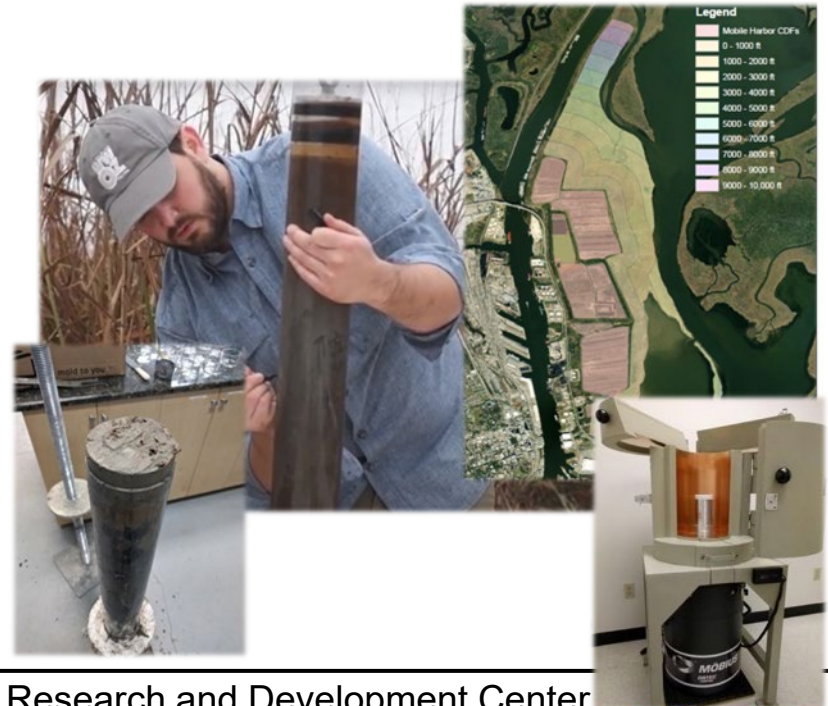
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Elizabeth Godsey, USACE Mobile District
Richard Allen, USACE Mobile District
Herb Bullock, USACE Mobile District
Candice Piercy, USACE ERDC-EL
Brandon Boyd, USACE ERDC-CHL
Kyle Runion, USACE ERDC ORISE Fellow

Stakeholders/Partners

Alabama Port Authority, Alabama Department of Conservation and Natural Resources, Alabama Department of Environmental Management, Environmental Protection Agency, Mobile Bay NEP, National Marine Fisheries Service, United States Fish and Wildlife Service, and Dauphin Island Sea Lab

Leveraging/Collaborative Opportunities

The project is leveraging with existing information and data from the Mobile Harbor Federal Navigation Project. In addition, collaboration with programs and research efforts with the state, U.S. EPA, Mobile Bay NEP, USGS, St Petersburg Coastal and Marine Science Center and NOAAs Ecological Effects of Sea Level Rise Program (EESLR) are ongoing.



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Accomplishments/Deliverables

Lessons Learned

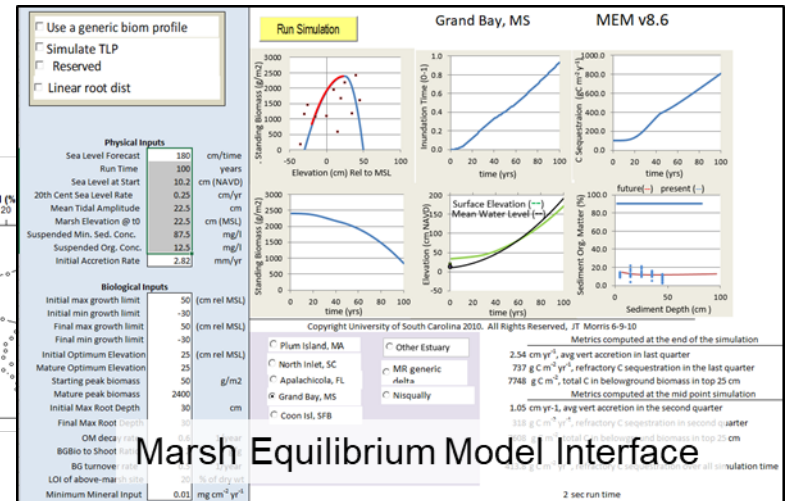
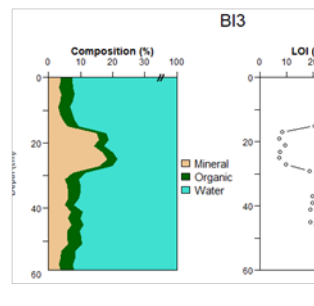
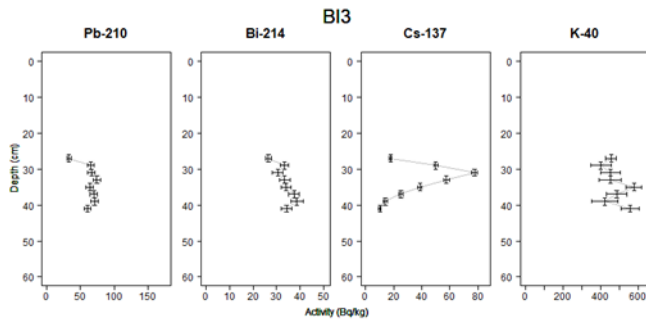
- Sediment accumulation rates and BUDM recommendations for the Blakeley Island site in Mobile Bay
- Doc on how to conduct geochronology and marsh elevation modeling
- Framework on how to optimize frequency, volume, and locations of BUDM informed my marsh trajectory and response to placement
- SAM PAO Article and video



News Stories

USACE ERDC, Mobile District RSM Team Begin Sediment Study

By Chuck Walker / US ARMY CORPS OF ENGINEERS - MOBILE DISTRICT



Radionuclide and soil comp data for marsh site

Marsh Equilibrium Model Interface

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What challenges did you face to get your project to implementation and how did you move past them? If not yet implemented, what is your path forward to construction?

- Lab capacity: Gamma spectroscopy – specialized analysis with significant time investment. ERDC can provide technical assistance directly or recommend local labs for determining accretion and accumulation rates.
- Modeling capabilities: As a 1-D model, MEM can be tedious to model landscapes. MEM may be developed for more capable computing environments, e.g. ArcGIS.
- COVID Pandemic: We were lucky to finish the field campaign before impacts hit. However, lab analysis was impacted. We had to shift to modeling early in the process, but this shift kept us on task with initializing the model and caused minimal project delays.

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How is this project benefiting the USACE and Nation?

- **Capability:**
 - District ability to assess feasibility and promote BUDM projects
- **Cost savings:**
 - Local placement of dredged material rather than transport
 - Extended life of confined disposal facilities
- **Protection:**
 - Marshes can aid in flood control by protecting infrastructure and also provide long-term environmental benefit through carbon sequestration
- **Habitat:**
 - Wetlands benefit biodiversity by providing habitat for waterfowl, fish, and other plants and animals