Carolina Beach Inlet Sediment Budget

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- LRB

US Army Corps of Engineers

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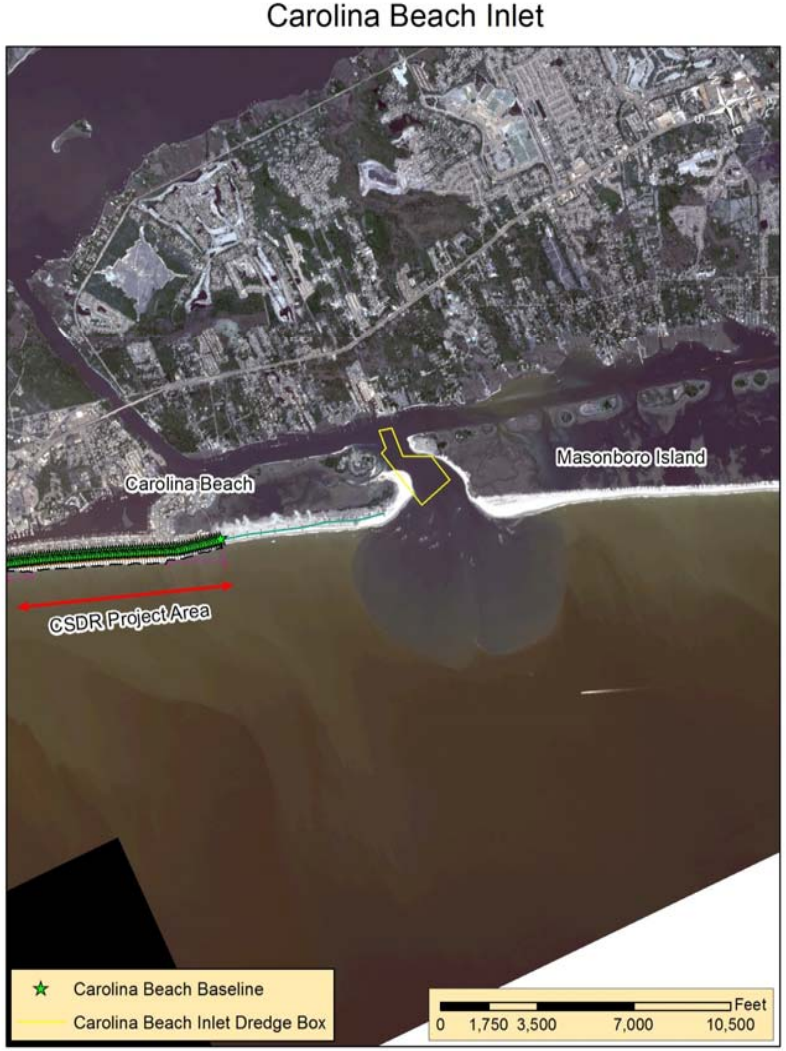
SAW, Carolina Beach Inlet Sediment Budget, POC (Kevin Conner)

Description/Challenges

- Carolina Beach Inlet is a Federal shallow draft inlet.
- A portion of the inlet serves as a borrow source for the adjacent Carolina Beach Coastal Storm Damage Reduction (CSDR).
- Current Shallow Draft dredging practices remove sediment from the channel to an offshore placement area.

Objectives

- Establish sediment budget to address sand bypassing requirements and manage sediment at the inlet and adjacent beaches in an environmentally efficient manner.
- Simulate different dredging and placement operations within the inlet to determine more efficient scenarios of navigation dredged material placement.



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Approach

- Collect available bathymetry, wave, wind and sediment data.
- Collect measured water level and current data.
- Develop Coastal Modeling System (CMS) flow and wave models.
- Calibrate Hydrodynamic and Sediment transport models.

Deliverables

Final Repot September, 2016. Determine flow paths and potential transport when developing FY17 sediment budget.

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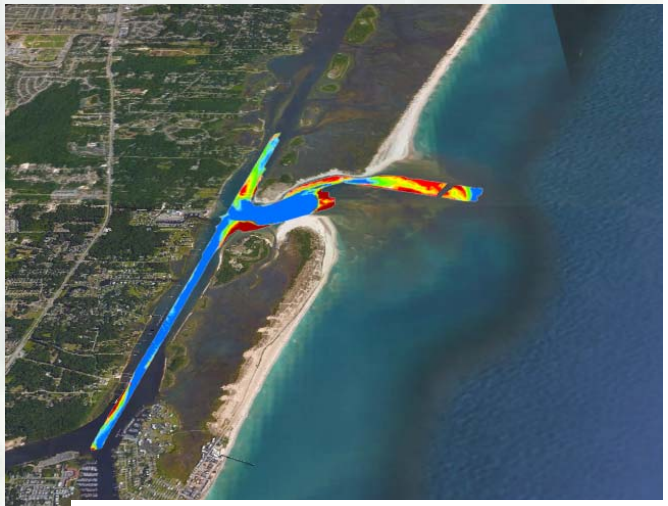
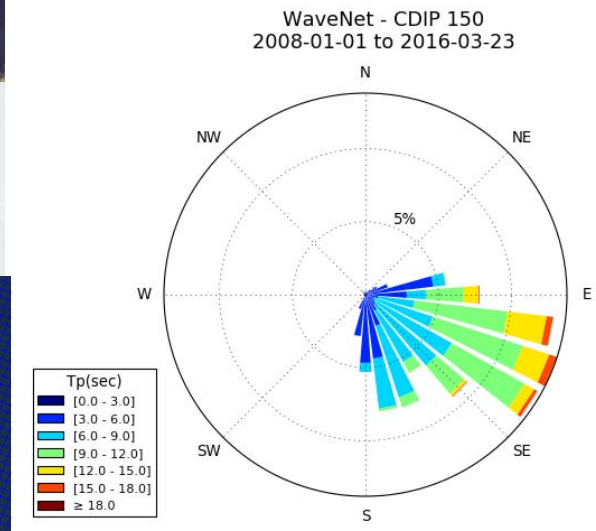
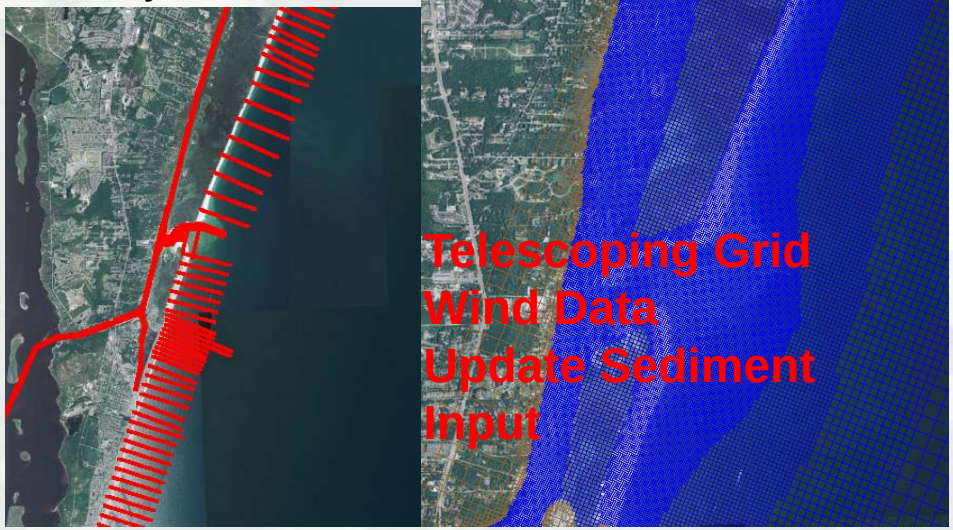
Accomplishments/Benefits/Lessons Learned/Actions-construction

- Obtained available 2015-2016 surveys.
- Scheduled Acoustic Doppler Current Profiler (ADCP) measurements at the inlet throat.
- Used WAVNET to prepare model wave input data.
- Developed preliminary CMS flow grid. Applied tidal constituent forcing at the ocean boundary.
- Developed preliminary CMS wave grid. Forced with wave spectra every three hours at the offshore grid boundary.







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District/Other USACE PDT Members

SAW: Kevin Conner, Layla Kashlan

ERDC-FRF: Dr. Jesse McNinch, Jason Pipes

Stakeholders and Partners

New Hanover County, NC

Leveraging/Collaborative Opportunities

Coordinate FRF proposed measured data collection date with dredging activity in the inlet. Water level and current measurements were moved to May due to dredging activities in the area.

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Value to the Nation

- Cost savings by reducing haul time while benefiting the Coastal Storm Damage Reduction borrow source by placing navigation material in the borrow source area.
- Improve sediment resource management. Sediment is simply bypassed to Carolina Beach without consideration of backpassing to Masonboro Island.
- Environmental benefits of retaining more sediment within the system at a lower cost.
- Improved partnerships, happy stakeholders. New Hanover County would like to make the inlet more navigable ,reduce haul distance and get more dredging for the $.