US Army Corps of Engineers®
Engineer Research and Development Center

Coastal Inlets Research Program

Coastal Modeling System:

Nearshore Processes

Need

The importance of accuracy in modeling nearshore processes is obvious considering that the primary impact of storms occurs in the nearshore arena, and predicting the extent of flooding and nearshore morphology change are fundamental to the USACE mission. Breaking waves are the primary mechanism for sand suspension, and the most striking morphological changes are driven by nearshore hydrodynamics. Despite the obvious importance, the surf zone hydrodynamics and morphology change remain poorly understood and predictive technologies are reliant on sparse data for calibration. During development, nearshore numerical models are tested over selected validation cases, limited by data quality and availability. The objective of the Nearshore Processes Work Unit is to bring the vast data resources and capabilities of the effort is focused on a new data collection campaign, the development of improved nearshore surf and swash algorithms, and rapid evaluation of model alterations with the Coastal Model Test Bed. It is expected that improvements and advances in the CSHORE family of models will follow directly from this comprehensive work.

Approach

- A new FRF field data collection campaign, complementing the existing measurements, is tailored to provide bottom position data for the surf zone.
- Historic and newly collected hydrodynamic data are in use for a comprehensive comparison of measured and model bathymetry changes.
- New capabilities of the Coastal Model Test Bed allow for rapid model evaluation and development.

Technical Advancements

1) New array of bottom-tracking instruments to provide time-series of seafloor elevation that supplement the monthly FRF surveys and hydrodynamic instrumentation

2) Development of new wave and current driven sediment transport algorithms

3) Adding CSHORE family of models to the Coastal Model Test Bed with measured morphology change allows for rapid assessment of nearshore morphology models

Leveraging Opportunities

This work is leveraged with funding Flood & Coastal Systems (F&CS), and Coastal Ocean Data Systems (CODS) Programs.

Point of Contact

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Community of Practice (CoP)

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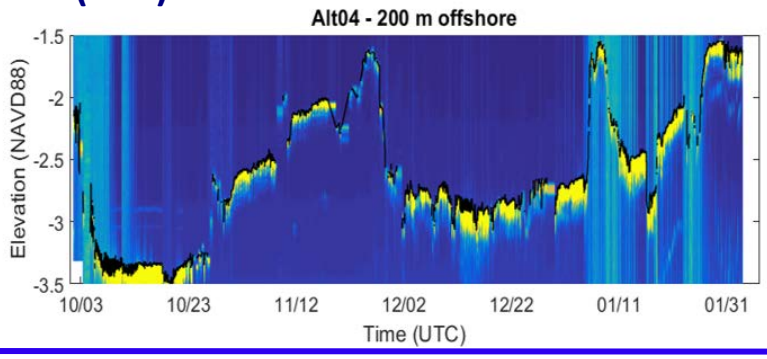

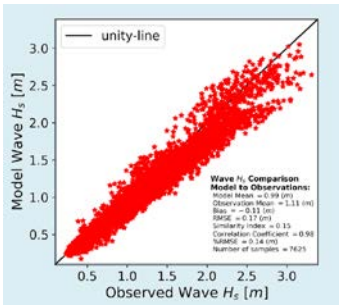

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