



Coastal Inlets Research Program

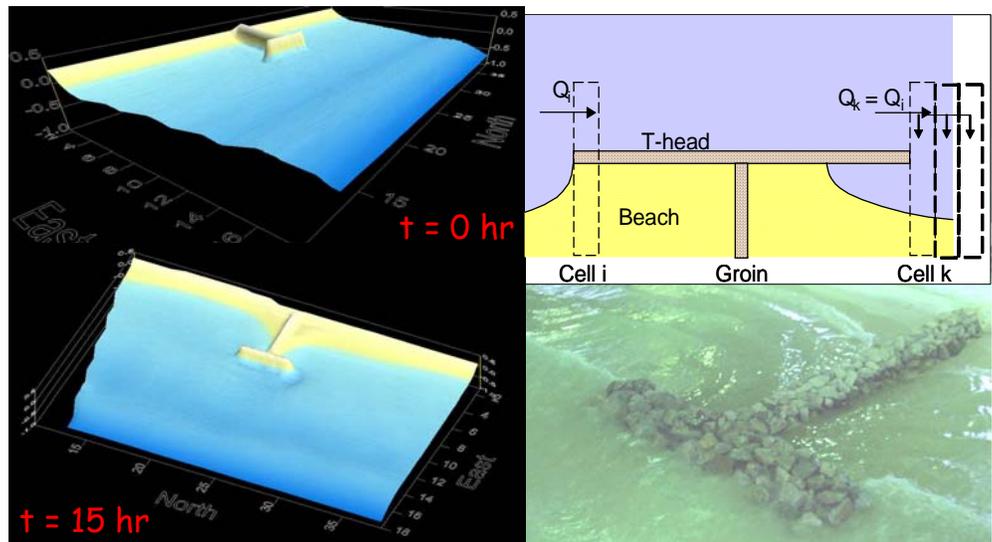
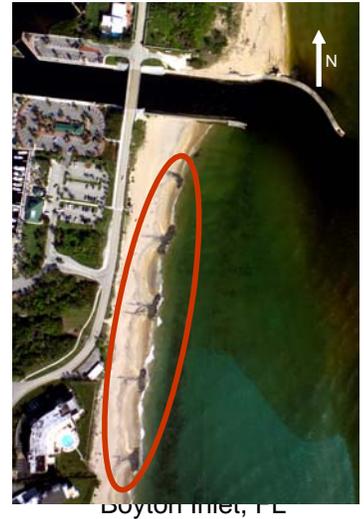
Validation of Predictive Technology at Coastal Inlets

Description

This research work unit is directed towards (1) validating technology applicable to coastal inlets and adjacent beaches, (2) developing solutions to reduce Operational and Maintenance (O&M) costs that have broad relevance to the Corps, and (3) transferring knowledge through a series of “how-to” notes for feasibility-, reconnaissance, and design-level applications.

Issue

The Corps spends more than \$800 Million annually on dredging coastal inlets and inland channels, with this amount expected to increase as more channels are deepened and widened in the future to accommodate larger vessels. Many coastal navigation structures are more than a century old, have degraded, and no longer perform as designed. The navigation structures may have altered the waves, currents, and bathymetry to such a degree that the inlet system has an entirely new morphology as compared to when the structures were built.



Physical modeling conducted to improve GENESIS-T and modeling of T-groins
(courtesy Mark Gravens, CHL)

The Corps' has a wealth of experience available in 100+ years of maintaining and improving inlet navigation channels, and safeguarding the integrity of adjacent beaches. This knowledge base includes the history of O&M improvements to the inlet system, coastal and inlet process information, and the resulting inlet navigation channel and adjacent beach response to these advancements. Understanding what improvements have reduced shoaling rates, alleviated scour at navigation structures, and improved inlet and

adjacent beach stability -- and why these activities have worked (or haven't) – will greatly benefit future O&M practices at Federal inlets.

Products 1. Inlet modeling technology will be validated and applications documented at four sites; 2. GENESIS-T, a model with the capability to simulate sediment transport and shoreline change in response to waves and tidal currents, and form tombolos at detached breakwaters and T-groins, will be completed and documented; and 3. “How-to” technical notes will document what tools can be applied at various levels of project evaluation and design.

Supporting Technology SMS, ADCIRC, M2D, M3D, GENESIS and GENESIS-T.

Benefits District offices will gain experience and examples in applying emerging models and tools. O&M problems with wide relevance will be targeted and guidance provided for solving these problems.

Sponsors O&M Program, HQ USACE.

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Partners District engineers, scientists, and planners.