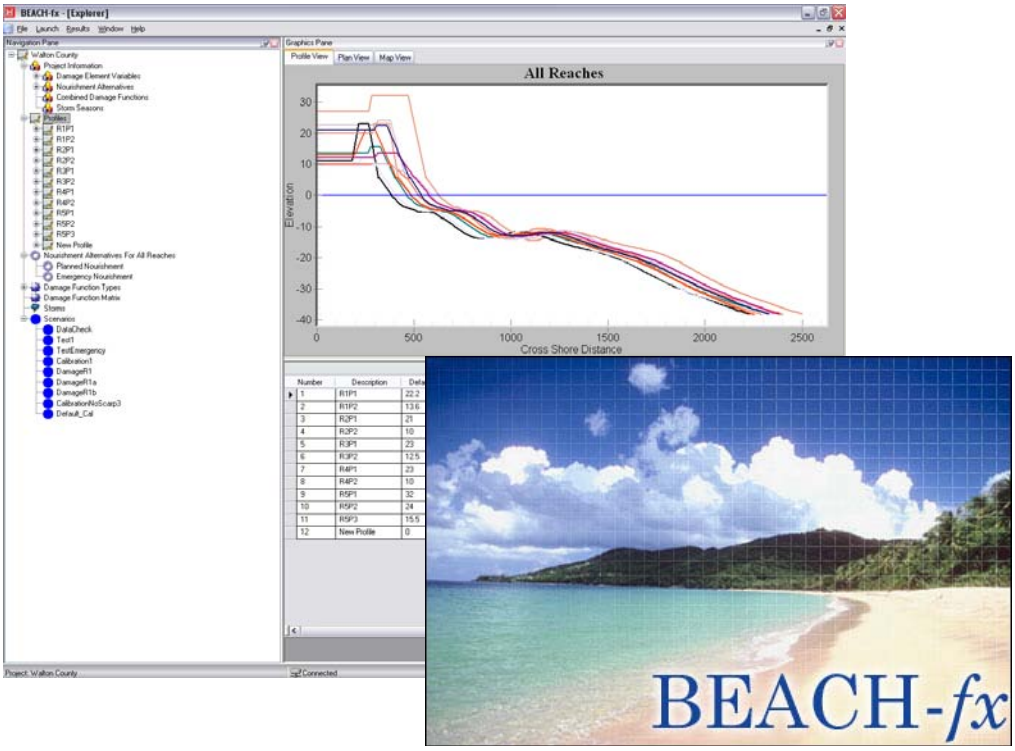
US Army Corps of Engineers®

Flood & Coastal Storm Damage Reduction R&D Program

Beach-*fx*

Description

Beach-*fx* is a Monte Carlo life-cycle simulation model for estimating shore protection project evolution and cost benefit analyses. The model links the predictive capability of coastal evolution models with project area infrastructure information (structure inventory), structural damage functions, and economic valuations to estimate the costs and benefits of alternative project designs. The Beach-*fx* is a new capability being developed at the U.S. Army Engineer Research and Development Center-Coastal and Hydraulics Laboratory (ERDC-CHL) to predict morphology evolution and the associated damages imparted by coastal storm events. The system predicts the costs of shore protection alternatives with risk and uncertainty over multiple project life cycles.



Benefits

Linkages between engineering analysis capabilities (project performance and evolution) and planning functions (alternative analysis and economic justification) with respect to coastal storm damage reduction projects are strengthened within the Corps through the use of Beach-*fx*. Wide application of Beach-*fx* within the Corps will result in more consistent beach nourishment design practice between field offices and eliminate reliance on locally developed models that may or may not incorporate risk and uncertainty. Beach-*fx*, however, fully incorporates risk and uncertainty. Standardized, risk-based economic justification for coastal storm damage reduction projects will promote consistent and defendable economic evaluations of coastal storm protection projects. A thorough and

realistic approach to beach nourishment design is achieved through the life-cycle analyses provided with use of Beach-*fx*.

Status

Beach-*fx* Version 1.0 is currently available for use. Research continues to improve and enhance model capabilities and periodic model upgrades are anticipated. Beach-*fx* was certified as a US Army Corps of Engineers corporate model in April 2009 through the Planning Model Improvement Program (PMIP) led by Headquarters, U.S. Army Corps of Engineers.

Distribution Source(s)

The Beach-*fx* software and User's Guide may be downloaded from the Beach-*fx* Web page at http://hera.pmcl.com/beachfx/.

Available Training

Beach-*fx* training has occurred through a national roll-out workshop and training session and a series of regional training workshops. Additional training can be arranged on a district or regional basis upon request provided resources are available to cover the costs of delivering the training.

Application

Beach- *fx* is currently being applied in the following studies: USACE, Mobile District, General Reevaluation Report, Panama City, FL, Beaches where Beach-*fx* is being used to evaluate the economics of extending the project by an additional mile; USACE, Mobile District, Walton County, FL, Feasibility Study; USACE, Norfolk District, Wiloughby Spit, VA, Feasibility Study; and USACE, Alaska District, Barrow, AK, Feasibility Study.

Point of Contact

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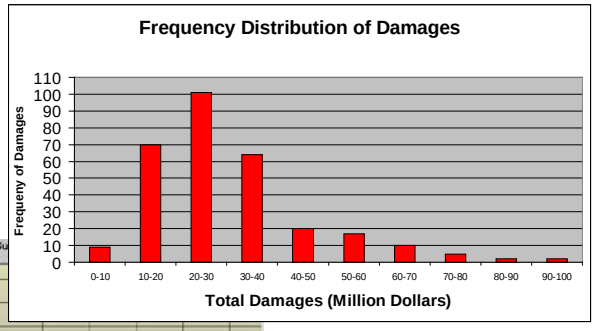
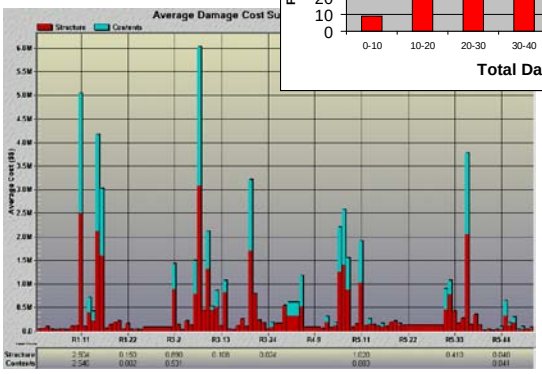
Outputs

- Database
- Graphics
- Animation
- Reports
- Excel-Compatible
- ASCII





Erosion / Land Loss
Storms
Mobilization / Placement Costs
Damages