



US Army Corps  
of Engineers®

Engineer Research and  
Development Center

# Coastal Inlets Research Program

## Advanced Wave Modeling for Inlets and Navigation

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**Problem** Prediction capability is lacking for waves at inlets and navigation channels, and in the vicinity of structures involving diffraction, wave-current interaction, reflection, transmission, and wave-wave interaction.

**Research Approach** Develop suite of advanced numerical models that can accurately predict complex non-linear wave transformation processes at inlets, navigation channels, and harbors, provide design wave parameters for navigation structures, and wave runup and overtopping on coastal structures.

**Labs/others involved** CHL: All coastal Districts and their consulting companies in testing software.

**Final Products** Boussinesq and Extended Mild-Slope Equation modeling suite of phase-resolving models, time- and frequency-domain, pre- and post-processing data analyses capabilities, and supporting 1-D analysis toolboxes for engineering design estimates of infra-gravity waves and wave runup and overtopping.

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