



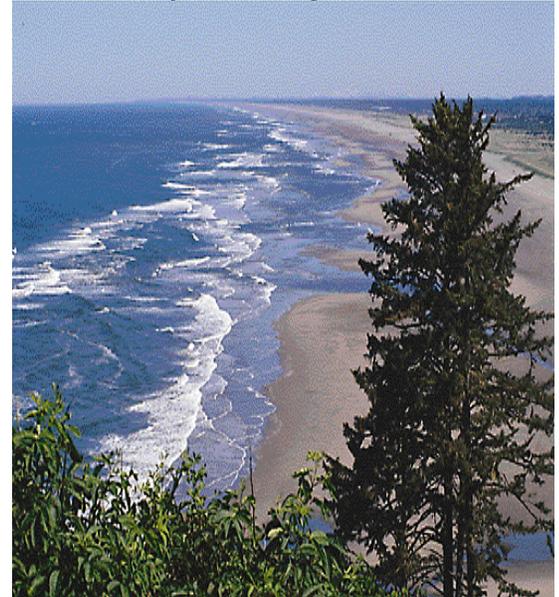
**US Army Corps
of Engineers®**

Engineer Research and
Development Center

Transformation-Scale Waves

Description Enhance the accuracy, range of applicability, and efficiency of the Corps' workhorse wave transformation technology, STWAVE.

Issue Near the coast, waves transform due to complex interactions with the bottom. Refraction, shoaling, local wave growth, wave-current interaction, and breaking modify the critical design parameters of wave height, period, and direction. Longshore and cross-shore variations in wave parameters are required for design and maintenance of beach, inlet, harbor, and channel projects. Nearshore waves provide the primary driving force for sediment transport, which is sensitive to breaking wave angles and energy dissipation. Accurate and efficient tools are required to estimate nearshore waves.



Users Corps Districts Offices, other Government Agencies, Universities, and Private Consultants.

Products STWAVE model efficiency has been increased by approximately 50 percent, allowing larger spatial coverage and higher resolution solutions. An advanced grid nesting technique has been developed for more efficient simulations. Formulations for wave-current interaction and wave breaking have been developed. STWAVE has also been extended from a half-plane model to a full-plane model (including propagation and generation from all directions). Additionally, STWAVE support software and documentation have been made available online. Periodic workshops have been given to transfer the technology to field users. The next workshop is scheduled for August 2005 in San Francisco, California.

Benefits The numerical wave technology offers simulation of the waves that drive nearshore processes for Corps navigation and coastal flooding projects, allowing the Corps to choose the most cost-effective alternatives.

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