

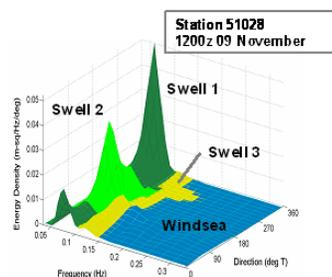


**US Army Corps
of Engineers®**
Engineer Research and
Development Center

Coastal Field Data Collection Program Wave Information Studies (WIS)

Problem Knowledge of the climatology of the atmosphere and coastal waters is required for planning, design, construction, and maintenance of Army Corps of Engineers (USACE) projects in the coastal zone. Such information is scarce due to the lack of measurements at coastal locations over time periods long enough to be statistically significant. This lack of information is a critical problem for USACE operations and projects near the coast. There exists a broad need in the USACE for a data base of directional information sufficient to define the environmental climate in the coastal zone.

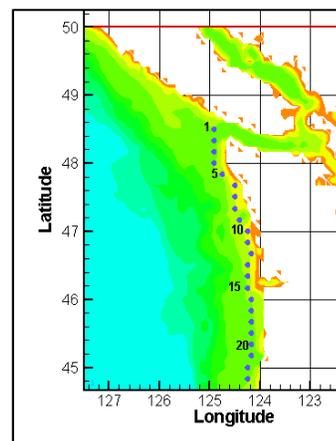
Research Approach WIS uses proven numerical wave hindcast models with the best available input wind fields to produce output wave parameters and wave spectra for stations near the US coast, the Great Lakes and territories for periods of 20 years or more. Hindcast results are verified through comparison to all available measured data. New techniques of spectral comparisons have been developed to determine the accuracy of hindcasted directional wave spectra. WIS is utilizing a multi-grid third generation (3G) wave hindcast model for the Pacific regional hindcast. This model can handle multiple grid resolutions in a single run and allows energy to propagate in and out of each of the grid boundaries. It uses parallel computing techniques for efficient computations and a spectral partitioning technique developed at ERDC.



Spectral Partitioning

Labs/others involved Oceanweather, Inc.; NOAA's National Center for Environmental Prediction & Great Lakes Environmental Research Laboratory

Final Products WIS website is available for transfer of wave parameter information for a dense network of U.S. virtual coastal stations and deep water stations. Atlantic, Gulf of Mexico, Pacific and Great Lakes hindcasted wave information is available in databases of 20 years and above. The website includes descriptions of information, and a user can download, plot or analyze information with summary tables or rose diagrams. New products related to storm climates and station visualization are being added to enhance the website. Documentation, references and papers related to the WIS hindcasts are also available online at <http://frf.usace.army.mil/cgi-bin/wis>. Wave spectra are also available.



Pacific Regional Grid Section

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