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Wave-Coherence Measurements using Synthetic-Aperture Radar

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LONG-TERM GOAL

To develop methods to utilize synthetic-aperture radar (SAR) to characterize wave coherence on scales relevant to the design of mobile off-shore bases (MOB).

OBJECTIVES

There are two basic objectives to this program: (1) to develop the appropriate measures and methods of application, and to validate them against available ground truth data; and (2) to apply the methods to available SAR data sets.

APPROACH

Methodology for determining the crest-length distribution using SAR image data will be developed, including error metrics. This will involve development of software for estimation of expected SAR-imaging effects and classification software which will characterize wave crests. The methodologies developed will be applied to a limited number of data sets, for locations with available ground truth. Following successful completion of the initial stages, the procedures developed will be applied to available SAR data.

WORK COMPLETED

This project was awarded near the close of FY98, and so none of the work has been completed.

RESULTS

None to date.

IMPACT/APPLICATION

The development of approaches to use satellite-based SAR data to determine wave coherence for MOB design will allow the available archive of SAR data to be used to obtain this information. This means that a number of years of data already exist, and area available for analysis. It also may eliminate the need for a costly field-measurement program to obtain this data.

TRANSITIONS

As information is obtained, it will be transitioned to the MOB design community.

RELATED PROJECTS

This project is related to other efforts under the MOB Wave Coherence program. These other efforts focus on developing both improved measures and understanding of nonlinearity and wave coherence.