

Edward

Zaron

Portland State University

Poster

The sea-surface expression of internal tides is spatially-variable, reaching a maximum of about 10cm near generation sites associated with submarine topography. Model results indicate that the internal tide wave field in the open ocean is a complex superposition of waves generated at multiple sites. Long time series obtained from exact-repeat missions (Topex, Jason-1, Jason-2, GFO, ERS) resolve the low-mode internal tide field at the scale of the inter-track separation. Here we attempt to make improved, higher-resolution, maps by combining exact-repeat and non-repeat altimetry. The approach involves combining sea-surface height from exact-repeat missions and sea-surface slope from non-repeat missions (geodetic missions and long-repeat orbit missions) in order to reduce the impact of different error characteristics in the two data sources. The tides are modeled as a tensor product of spatial thin-plate splines and harmonic time dependence. Current results utilize exact-repeat data from the Topex/Poseidon and Jason-1 missions, and non-repeat data from the Geosat geodetic mission, the Jason-1 geodetic mission, and Cryosat. The answer to the question, "Can Geodetic-Mission Altimetry be used for High-Resolution Mapping of the Internal Tides?", is shown to depend on which and how much geodetic mission data is used, and the properties of the tidal fields to be estimated.

OSTS session

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