Geophysical Research Abstracts,
Vol. 11, EGU2009-2559, 2009
EGU General Assembly 2009

Predictions of solitary waves off Portugal in the Trioa Peninsula area.

A. Warn-Varnas (1), J. Hawkins (2), S. Piacsek (1), G. Casagrande (3), V. Korabel (4), T. Folegot (5), C. Soares (6), S. Jesus (6), and K. Lamb (7)

(1) Naval Research Laboratory, Code 7322, Stennis Space Center, United States (varnas@nrlssc.navy.mil, 001 228 688-4759), (2) Planning Systems Inc., Slidell, LA 70458, USA, (3) SHOM, 29200 Brest, France, (4) University of New Orleans, New Orleans, LA, USA, (5) NATO NURC 19126 La Spezia, Italy, (6) University of Algrave, 8005-139 Faro, Portugal, (7) University of Waterloo, Ontario, Canada N2L, 3G1

In July of 2007 an experiment entitled " Random Array of Acoustic Receivers" (RADAR) was conducted in the Trioa Peninsula region off Portugal. It encompassed oceanographic and acoustic measurements. On the oceanographic side, data was collected from thermistor chains, ADCP's, CTD casts and Synthetic Aperture Radar observations (SAR). Previous SAR observations indicated the propagation of solitary waves towards shore.
We conduct a local modeling study of the interaction of barotropic tide with topography in the Trioa Peninsula region. Tracks are chosen across and along the shelf. In vertical planes along the tracks, the generation and propagation of solitary waves is predicted with the Lamb (1994) 2.5 D nonhydrostatic model. Model is initialized from CTD casts and forced by tides extracted from a data base. Results indicate that for shelf depths of around 50 m, there are solitary waves of elevation on the shelf and solitary waves of depression off the shelf. For shelf depths of around 100 m, the solitary wave characteristics depend on the shelf break structure. For some shelf break structures, there are solitary waves of depression on the shelf with no solitary waves off the shelf. For some other shelf break structures there are solitary waves of depression off the shelf with few solitary waves of depression on the shelf. For a shelf depth of 100 m, model predictions and thermistor chain measurements exhibit solitary waves of depression.