Geophysical Research Abstracts, Vol. 9, 01346, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-01346

Estimations of large-amplitude internal waves in the Arctic Seas

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Large-amplitude short-scale internal waves are generated by the transformation of the barotropic tide on the underwater slopes and hills. This mechanism is studied in the framework of two-dimensional Euler equations of ideal incompressible stratified fluid. Data of hydrology (vertical density profile and barotropic current) and bathymetry for typical arctic conditions (shelf of the Barents Sea) are used. The characteristics of the internal wave field (amplitudes, periods, group structure, wave shapes) and calculated numerically. It is shown that internal waves of soliton-like shape can reach big amplitudes.