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Nonlinear internal wave generation by barotropic tide in the Arctic basin

O. Poloukhina(1,2), **N. Poloukhin**(1,2), T. Talipova(2), K. Lamb(3)

(1) State Technical University, Nizhny Novgorod, Russia; (2) Institute of Applied Physics, Nizhny Novgorod, Russia; (3) University of Waterloo, Canada (poloukhin@hydro.appl.sci-nnov.ru)

Numerical simulation of the internal wave generation by the barotropic tide is performed in the framework of 2D equations of the inviscid incompressible continuously stratified fluid. The influence of the nonlinearity and Earth rotation (Coriolis parameter) is studied for the model with piecewise-linear bottom profile. In particular, there are no short-scale large-amplitude soliton-like waves in a basin with exponential stratification (constant buoyancy frequency), and this corresponds to the theoretical conclusion that the sine wave is the exact solution of the hydrodynamic equations for flat bottom. Detail computing of the internal wave characteristics is made for conditions of the Franz-Victoria Trough in the Artic Basin.