Geophysical Research Abstracts
Vol. 17, EGU2015-1384, 2015
EGU General Assembly 2015

Transformation and run-up of single and periodic waves in the bay of parabolic cross-section

Oleg Didenkulov (1), Ira Didenkulova (1,2), Efim Pelinovsky (1,3)

(1) Nizhny Novgorod State Technical University of R.E.Alexeev, Nizhny Novgorod, Russia, (2) Institute of Cybernetics, Laboratory of Wave Engineering, Tallinn, Estonia (ira@cs.ioc.ee, +372 6204151), (3) Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia

Waves do transform significantly in the coastal zone. The undergoing wave transformation is usually defined by the local bathymetry of the coastal area. However it also depends on the initial shape of the wave. In this work we study the deformation of initial wave shape in the bay of parabolic cross-section. The analysis is performed analytically based on rigorous solutions of the nonlinear shallow water equations. Two different types of wave shapes are discussed in detail: single solitary waves and periodic sinusoidal waves. The special attention is paid to the occurrence of the first wave breaking.