



Physical modelling of the discharge mechanism of tsunami formation

Petr Denissenko (1), Boris Levin (2), and Efim Pelinovsky (3)

(1) School of Engineering, University of Warwick, United Kingdom (p.denissenko@warwick.ac.uk), (2) Institute of Marine Geology and Geophysics, Yuzhno-Sakhalinsk, Russia (levinbw@mail.ru), (3) Department of Nonlinear Geophysical Processes, Institute of Applied Physics, Nizhny Novgorod, Russia (pelinovsky@gmail.com)

It has been suggested in [1] that tsunami can be generated as a result of water discharge into rapidly opened seismic fractures of the bottom. Physical modelling of the discharge mechanism of tsunami formation has been performed in a channel. Water has been impulsively discharged into a slit aligned perpendicular to the channel length and the occurring one-dimensional wave pattern has been studied. Visualization of the water level with the laser sheet and fluorescent dye has been performed to obtain instantaneous elevation profiles in the vicinity of the sink and capacitance probes were used to continuously monitor the water elevation at several locations further from the sink. Following the discharge, depression of the water level has been observed propagating away from the sink through the channel. While the water level has been returning to the initial value directly above the sink, it has been observed to rise above that level in the far field. Dependence of the maximum elevation on the distance from the slit has been obtained and the results have been compared with theoretical predictions.

[1] B.V. Levin and M.A. Nosov. On the possibility of Tsunami Formation as a Result of Water Discharge into Seismic Bottom Fractures (2008) *Izvestiya Atmospheric and Oceanic Physics* 44(1), pp. 117-120