Publications-Hamiltonian Approach to Modeling of Geophysical Waves and Currents with Impact on Natural Hazards: April, May and June, 2017 at Erwin Schrödinger Institute for Mathematical Physics in Vienna

(1) A. Compelli, R. I. Ivanov, and C. I. Martin. *Surface waves over currents and uneven bottom*. **Deep Sea Research Part II: Topical Studies in Oceanography**. 160 (2019), 25-31.

Obtained Results

We studied **surface waves interacting with currents and a variable bottom**. This accounts for the physical situation when the wind generates currents in the top layer of the ocean. The bottom topography significantly influences the local wave and current pattern. A specific scaling of the variables has yielded **approximations of Boussinesq and KdV type**. The arising KdV equation with variable coefficients, dependent on the bottom topography, was studied numerically with an initial condition of the form of one soliton solution for the initial depth. **The emergence of new solitons** was observed as a result of the wave interaction with the uneven bottom.