



Experimental study of wave impact on the nearshore structures during extreme coastal floods

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We study the dynamics of strongly nonlinear waves in the coastal zone and their impact on coasts during flash floods and tsunamis. For this we use analytical theory of strongly nonlinear wave propagation along the slope and compare it with the data of experiments carried out in shallow water flume of IIT Madras (72 m long, 2 m wide and up to 2 m deep). Different kinds of waves like elongated solitons, N-waves are simulated and its run-up and impact force on the idealized structure on the slope are evaluated. Different numerical models (CLAWPACK, pseudospectral code for solving nonlinear evolutionary equations and FNPT model) are used to describe strongly nonlinear waves along the slope. Results of numerical simulations are compared with predictions of analytical theory and with the data of experiments. The results presented here are the preliminary results obtained within DST - RFBR joint project "Impact of waterborne debris on the nearshore structures during extreme coastal floods".