Nat. Hazards Earth Syst. Sci. Discuss., 1, C139–C140, 2013
www.nat-hazards-earth-syst-sci-discuss.net/1/C139/2013/

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Reduction of maximum tsunami run-up due to the interaction with beachfront development – application of single sinusoidal waves" *by* N. Goseberg

Anonymous Referee #2

Received and published: 22 April 2013

The main remark is the following: in the present form the manuscript looks more like a technical report on the work done than like a scientific article. Author presented a lot of interesting experimental material, but the manuscript contains many data that could be removed, in the same time essential details are missing.

1. Picture 1 does not match with the experiment. In the picture spatially periodic sine wave with a wave length significantly less than length of the slope is shown. In the experiment, the wavelength is more than the size of the experimental flume (18 m). It is indicated that water depth H_0=0.32 m, it means that velocity of shallow water wave is 1.78m/s and for wave period T=60 s wavelength is 107 m. 2. For waves in shallow

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water there exists correlation between free surface displacement and velocity of water: velocity of water = (velocity of wave)*(displacement of free surface)/ H_0. How to show that this correlation is valid for experimental conditions? In other words how to show that pomp excites waves arriving from the open see and tsunami is simulated in the experiment? 3. It is not clear why the various dimensionless parameters are introduced (formula 1, 2), because they are not used at all later. Similarity is achieved in geometric parameters only. 4. In paragraph 2.2 various analytical formulas for run-up are presented. These formulas show different dependencies of run-up on wave amplitude. The relation of the formulas with data analysis is unclear. For example, formula (7) is valid for breaking waves, but only non breaking waves are studied experimentally. 5. Does run-up depend on angle of block rotation? It is difficult to understand from the manuscript, since dependencies for different angles are given in different places. The impression is that run-up weakly depend on angle. If it is right, it must be emphasized. 6. It should be discussed in more details how one can use the obtained data in practical applications. It seems that in the near-shore coastal zone, the macro-roughness elements hardly be approximated by regular rows of cubes, as is done in the manuscript. Macro roughness in this area more close to a random or quasi-random distribution of blocks or another objects. It is difficult to imagine how to use nomograms for real conditions. 7. The paper is aimed to investigation of reduction of maximum wave run-up due to macro-roughness elements. In Figure 16 the opposite case is shown. Run-up in the presence macro-roughness elements is much larger than for smooth plate. There is no any discussion of this remarkable result.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 1119, 2013.