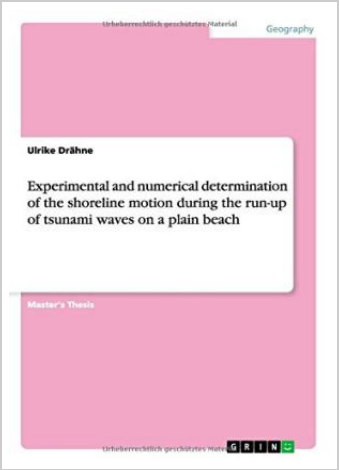

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Experimental and numerical determination of the shoreline motion during the run-up of tsunami waves on a plain beach

By Ulrike Drähne

GRIN Verlag Gmbh Okt 2014, 2014. Taschenbuch. Book Condition: Neu. 211x149x8 mm. Neuware - Master's Thesis from the year 2014 in the subject Geography / Earth Science - Oceanography, grade: 1.7, University of Hamburg (Institute of Oceanography Hamburg), course: Physical Oceanography, language: English, abstract: Within this master thesis the behaviour of long periodic waves during their run-up on a plain beach was investigated via physical and numerical modelling. In the experimental part, for seven leading depression, non-breaking sine waves with surf similarity parameters between 3.1 and 15.6 the wave velocity, wave height and run-up on a plain beach were determined. In addition, the motion of the initially still shoreline, i.e. run-up/ run-down process, run-up/ run-down velocity, wave acceleration, maximum run-up and maximum run-up velocity, was determined via two high-speed cameras. Comparison of the aforementioned characteristics with the theory revealed good agreement; deviations can mostly be attributed to experimental performance. For wave generation a new volume driven wave generator was used. Long waves are generated by a pair of high capacity pumps under control of a proportional-integral-derivative controller (PID-controller). While rotating clockwise or counterclockwise water is pumped into the propagation section or extracted from it. Thereby, waves of arbitrary length can...

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