Geophysical Research Abstracts
Vol. 19, EGU2017-11065, 2017
EGU General Assembly 2017
© Author(s) 2017. CC Attribution 3.0 License.

Momentum transfer during landslide tsunami wave generation

Ryan Mulligan and Andy Take
Queen's University, Civil Enginering, Kingston, Ontario, Canada (andy.take@civil.queensu.ca)

Advanced simulation techniques and high performance computing now permit coupled models to simulate momentum transfer during the complex process of landslide tsunami wave generation. Parallel advances in physical model observations and theoretical equations for the maximum amplitude of the near field waves generated in simple test cases are now needed to evaluate the performance these new models. Based on laboratory observations of long and thin granular landslides accelerating down a 2.1 m wide and 6.7 m long 30° slope into a 33.0 m long horizontal wave flume captured using high speed imaging, idealised theoretical relationships for the maximum wave amplitude in the near-field zone are proposed by considering the simplified limiting cases. These equations are then tested against the near field amplitude of landslide generated waves observed in the large scale flume and reported in the literature, with discussion of the possibility of additional limiting conditions on the amplitude of waves generated by large landslides into relatively shallow water. This work highlights the challenges involved in the physical and numerical modelling of these events, with the purpose of stimulating discussion on the research needs for information exchange between the physical and numerical modelling communities.