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Inclusion of landslide tsunamis generation into a depth integrated wave model

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Abstract. A numerical model based on the mild slope equation, suitable to reproduce the propagation of small amplitude tsunamis in the far field, is extended to reproduce the generation and the propagation of waves generated by landslides. The wave generation is modeled through a forcing term included in the field equation, which reproduces the effects of the movement of a submerged landslide on the fluid. The measurements of three dimensional laboratory experiments, which simulate tsunamis generated by landslide sliding along the flank of a conical island, are compared with the theoretical calculation results. The present approach is also compared with the similar method of Tinti et al. (2006) used for the generation of these waves in depth integrated model, and the different behavior when using frequency-dispersive and non-dispersive equations is highlighted.

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