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# Influence of topography on the seismic waveforms associated to eruptive events at Stromboli volcano

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The steep topography, which characterizes certain volcanic areas, may strongly influence the displacement field associated to seismic signals. As a consequence, the interpretation of seismic data for the inversion of the seismic source and the crustal structure properties should carefully take into account these effects. We propose a set of numerical simulations for seismic wave propagation in a 3-D homogeneous model of Stromboli volcano, Italy, based on the application of a pseudospectral technique. The model assumes a topography with a discretization of 100 m on the horizontal directions, and 1 m on the vertical direction, while bathymetry is not yet included. We estimate the surface displacement field for different seismic sources, reproducing possible phenomena occurring during an eruptive process. These include purely isotropic sources, the realistic inclusion of an additional deviatoric CLVD component, which may take into account the effects of explosive events in presence of conduits and the final fall-out of material at the volcanic surface. Different durations of the source time function are tested in order to compare the effects of topography for seismic radiations with a variable range of frequency content. The comparison of results highlights the effects, which are strictly related to the presence of a steep topography.