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Software to forecast the tsunami parameters from a database of pre-simulated seismic unit sources

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In this research we have implemented a software to forecast the parameters of a tsunami, such as the arrival time of the first tsunami wave and the maximum wave height in tidal stations of the Peruvian coast, from a database of pre-computed synthetic tsunami waveforms (or Green functions) obtained from numerical simulation of seismic unit sources (dimension: 50×50 km²) for subduction zones from southern Chile to northern Mexico, with a bathymetry resolution of 30 s (927 m). The resulting tsunami waveform is obtained from the superposition of synthetic marigrams corresponding to several seismic unit sources contained in the seismic source geometry. The numerical model was applied to the Chilean tsunami of April 1, 2014 with satisfactory results; in the case of the Arica tidal station an error of 3.5% was obtained.

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