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Study of "best-fit-okada" tsunami sources for three events The 25.11.1941 Atlantic tsunami, 6 February 2013 and 8 December 2016 Solomon Islands events

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In this study, the "best-okada" tsunami source is the initial sea surface elevation computed with the set of seismic parameters that best matches the tsunami data. We investigate the match between those two sets of parameters to assess the use of this approach to measure the size of earthquake induced tsunamis.
The computation of the source of earthquake-induced tsunamis assumes that the initial sea surface elevation mimics the co-seismic deformation of the ocean bottom described by a simple Okada type source with - (rectangular fault with constant slip in a homogeneous elastic half space domain). With this assumption, and a given set of tsunami waveforms recorded by deep sea pressure sensors and (or) coastal tide stations it is possible to select the set of parameters to compute the Okada solution that best fits the sea level observations.
To do this, we build a "space of possible tsunami sources-solution space". Each solution consists of a combination of nine parameters: earthquake magnitude, length, width, slip, and angles - strike, rake, and dip. However, direct tsunami modeling is a time-consuming process for the whole solution space. To overcome this problem, we use a precomputed database of Empirical Green Functions to compute the tsunami waveforms resulting from unit water sources propagation and search which one best matches the observations.
In this study, we focus on three test cases: the 25 November 1941 Gloria Fault tsunami in the Atlantic, and the Solomon Islands events of 6 February 2013 and 8 December 2016.The "best Okada" source is the solution that best matches the tsunami recorded at the tide gages for the Atlantic event and the Dart stations for the Pacific event.
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