



Propagation of uncertainties for an evaluation of the Azores-Gibraltar Fracture Zone tsunamigenic potential

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The aim of this study is to assess evaluation the tsunamigenic potential of the Azores-Gibraltar Fracture Zone (AGFZ). This work is part of the French project TANDEM (Tsunamis in the Atlantic and English ChanNnel: Definition of the Effects through numerical Modeling; www-tandem.cea.fr), special attention is paid to French Atlantic coasts. Structurally, the AGFZ region is complex and not well understood. However, a lot of its faults produce earthquakes with significant vertical slip, of a type that can result in tsunami. We use the major tsunami event of the AGFZ on purpose to have a regional estimation of the tsunamigenic potential of this zone. The major reported event for this zone is the 1755 Lisbon event. There are large uncertainties concerning source location and focal mechanism of this earthquake. Hence, simple deterministic approach is not sufficient to cover on the one side the whole AGFZ with its geological complexity and on the other side the lack of information concerning the 1755 Lisbon tsunami. A parametric modeling environment Prometh e (promethee.irsn.org/doku.php) was coupled to tsunami simulation software based on shallow water equations with the aim of propagation of uncertainties. Such a statistic point of view allows us to work with multiple hypotheses simultaneously. In our work we introduce the seismic source parameters in a form of distributions, thus giving a data base of thousands of tsunami scenarios and tsunami wave height distributions.

Exploring our tsunami scenarios data base we present preliminary results for France. Tsunami wave heights (within one standard deviation of the mean) can be about 0.5 m - 1 m for the Atlantic coast and approaching 0.3 m for the English Channel.