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Tsunami Modeling in the Upper Adriatic Sea Domain

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Whether the tsunami phenomenon is mainly detected in oceanic domain, it can exist also in smaller basins as the Adriatic Sea. The presence of great waves has been recorded few times in the past centuries on Adriatic shorelines; therefore this suggests the idea to evaluate which could be the maximum amplitude reached by a possible future tsunami event.

In this framework we calculate several synthetic mareograms extending, to shallow water basin case, both the theory of modal summation proposed by Panza et al. (2000) and the theory of Green's functions proposed by Yanovskaya et al. (2003) for the case of tsunamis generated by oceanic and continental seismic sources, respectively.

We calculate a number of synthetic waveforms in order to investigate the maximum amplitudes that could be reached after a strong event in the Adriatic Sea area. We consider two main cases: a source located in the open sea and a source located inland. These kind of tsunamigenic events have both already occurred in the Adriatic domain, as is witnessed in many catalogues (Caputo and Faita, 1984; Bedosti and Caputo, 1986; Tinti et al., 2004). Therefore, in our modeling, we consider two realistic source locations. The first source is located offshore in the central Adriatic where many historical events occurred, and is treated by the modal approach. The second source, on account of the 1511 event, is located inland, close to the Trieste shoreline, and it is treated by the Green's functions approach. We calculate the synthetics adopting the magnitude and focal depth values corresponding to the Maximum Credible Earthquakes in the region, in order to define the upper values of the tsunami amplitude in the Northern part of the Adriatic basin for such scenarios.

The results of our calculations suggest that a tsunami, with maximum amplitude up to several meters, can be expected also in the Upper Adriatic Sea, in agreement with a

number of historical events reported in the catalogues.

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