



## **Sources of Sumatra-type tsunamis in the Mediterranean Sea**

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The active subduction process of the African Plate along the Hellenic Arc and Trench (HA-T) system is similar to that of Indonesian Arc and Trench (IA-T) from many points of view, seismological and volcanological. The difference is that the dimensions of the HA-T as well as the maximum size of earthquakes it produces are about one order of magnitude smaller than those of the IA-T. Large tsunami waves with basin-wide propagation have been produced in the HA-T and documented from paleotsunami sediment deposits, archaeological evidence and reliable documentary sources. The tsunami produced by the caldera-forming, Late Bronze or Minoan ( $\sim 17^{th}$  century BC) eruption of Thera (Santorini) volcano, documented from palaeotsunami and archaeological field evidence, has been studied from many points of view by several authors. The Thera volcanic centre is considered as being quite similar with the volcano of Krakatau in Sunda Strait, Sumatra. In addition, the caldera-forming 1888 Krakatau eruption was of similar features with that of the Minoan eruption, although the latter was one or two units of magnitude larger than the former. Numerical simulations of the Minoan tsunami based on two independent generation mechanisms (caldera collapse and pyroclastic flows) have been performed. Both eruptions generated large tsunamis with comparable wave heights at least in the near-field domain. Lengthy compilations of historical sources indicate beyond doubt that on AD 21.07.365 and 08.08.1303 great earthquakes ruptured the western and eastern segments of HA-T, respectively, with re-estimated magnitudes of an order of magnitude less than the magnitude of the great 26.12.2004 Sumatra earthquake. Large, destructive tsunamis that affected a very wide

region of the eastern Mediterranean Sea were generated. Generation mechanism similar to that of the 2004 Sumatra earthquake may account for the 365 and 1303 tsunami generation. Similar earthquake/tsunami events may repeat with negative consequences not only for Southern Greece but also for more remote places of the Mediterranean basin. Therefore, multidimensional studies as regards the possible generation and effects of such great events should be undertaken as soon as possible. This is a contribution to the EU research project TRANSFER, contract n. 037058, FP6-2005-Global-4, Reduction of Tsunami Risks.