



## Updating the post 15th century record of tsunami in the Azores archipelago (Portugal)

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The Azores archipelago straddles the mid-ocean ridge of the North Atlantic, a basin that contributes with 2% to the worldwide total of tsunami. The islands display high tsunamigenic potential as a consequence of two features: their location, making them vulnerable to far-sourced events, and the plate-tectonic setting, that produces a variety of potential tsunami triggers, such as earthquakes, volcanism, lahars, submarine slides and aerial slope mass movements. According to the existing documentary compilation, at least 23 tsunami have struck the Azorean coastal zones since the settling of the islands in the 15th century, most of which related with seismic sources, both distal and local, and two intense near-field events have been probably triggered by aseismic submarine slides. Almost all events are described as including 3 destructive waves and the highest recorded run-up was 15 m at Terceira Island, the 1st November 1755, corresponding to an intensity VII-VIII on the Papadopolous-Imamura scale. Recent archival work suggests that the afore-mentioned total should be updated to 27, in order to include: a) the Flores island tsunami of 9 July 1847 and 22 May 1980, near-field events both triggered by a huge slope mass movement that changed the coastal morphology of that island, and b) two other events, in 25 September 1940 and 29 January 1990, which generated benign floods and may fall in the category of air-coupled events, a peculiar kind of disturbance that has not been previously described in this area of the ocean, though the unequivocal assignment of an atmospheric origin requires further work. Our results also suggest that the lack of historical destructive

tsunami in the existing compilation and related to both volcanism and aerial slope mass movements may be a consequence of the large return interval characterizing the displacement of very large volumes of lava, piroclasts or debris, required to produced noticeable flooding of the coast.