



## **In search of the 31 March 1761 earthquake and tsunami source**

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Earthquake catalogues for the Iberian Peninsula report several strong magnitude events in the XVIII Century: 27.12.1722, 1.11.1755, 31.03.1761. The three have magnitudes greater than 7 and generated tsunamis that damaged the Portuguese coasts. However, their source areas are controversial due to the lack of detailed and coherent historical descriptions.

The 31 March 1761 earthquake was felt in Lisbon at noon, alarming the inhabitants and throwing down ruins of the past 1st November 1755 earthquake. According to several sources the earthquake was followed by a tsunami that was observed as far as Cornwall (United Kingdom), Cork (Ireland) or Barbados (Caribbean). The Portuguese catalogues locate this event on the Horseshoe Abyssal Plain, south of Gorringe Bank and attributes a magnitude of 7.5. The Caribbean tsunami catalogue, locates the event further north 37°N 10°W and the estimate of the epicentre intensity MMI is IX.

In this study we present a reappraisal of the available historical reports, concerning the 1761 event, a revision of the macro-seismic intensities along Iberia and the tsunami observations along the western Portuguese and Galicia coasts, England, Ireland and West Indies. With this dataset we use backward ray tracing techniques to discuss the location of the event and its integration with one of the major tsunami generation areas in the western Portuguese margin.