



Tsunami flooding along Tagus estuary, Portugal, the 1531 event

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The city of Lisbon one of the main towns in Europe between the XVI and XVIII centuries was severely damaged by two strong earthquakes: 1531-01-26 and 1755-11-01 and the companion tsunamis. In this study we present a re-evaluation of the data available for this event.

The 26 January 1531 earthquake occurred between 4 and 5 am and was felt mainly in Lisbon and surroundings dwellings along the Tagus river estuary.

The shock heavily destroyed Lisbon downtown causing approximately 1000 casualties Two foreshocks preceded the event: on the 2nd and the 7th January 1531, respectively. The maximum MSK intensity is IX, making it one of the most disastrous earthquakes in the recent history of Portugal.

The historical descriptions clearly describe the observation of high waves and the ships touching the riverbed. Although, the difference between tsunamis and storms is sometimes unclear in some historical documents, in this case, the occurrence of the of the earthquake definitively states clearly excludes the hypothesis of a storm. Moreover, the king's chronicle clearly states the observation of high waves and the lack of wind.

Other reports consistent with the occurrence of a tsunami are the observation of strong fluxes and refluxes in the river the division of islands into smaller ones and the observation of the riverbed.

In this study we present a re-appraisal of the historical information available, a new isoseismal map and the relocation of the epicentre. Finally, we present a tsunami simulation and propagation along a section of 70 km along Tagus estuary compatible with the earthquake data and the historical accounts.