



## **The November 1st, 1755 tsunami in Morocco- uncertainties in Historical reports and consequences for the future TWS in the area**

Omira Rachid (1), Baptista Maria Ana (), Mellas Samira (), and Leone Frederique ()

(1) Instituto Dom Luiz, Lisboa, Portugal (mavbaptista@gmail.com), (2) Instituto Superior de Engenharia de Lisboa, Portugal, (3) University Chouaïb Doukkali, El Jadida, Morocco, (4) Laboratoire GESTER Université Paul Valéry-Montpellier III, France

Coastal communities in the Atlantic marine limit of Morocco risk of inundation by regional and local tsunamis generated in the SW Iberia zone. Tsunami catalogs indicate that this area was the place of several tsunami events since historical time. Among them, the 1755 tsunami remains the largest eye witnessed historical event in the North East Atlantic area. Historical documents described, in some details, the generated waves along the coasts of Portugal, Spain and Morocco. They mentioned that the tsunami run-up has reached 15 m and the wave amplitude was as height as 26 m in some locations. However, these values of wave heights, run-up and inundated areas may were overestimated as it was revealed in the recent published critical studies of historical documents focused on the Gulf of Cadiz area. One of the coastal segments where the reported historical data, related to the 1755 event, are uncertain is the city of Mazagão, actually El-Jadida, located at the SW of Moroccan Atlantic coast.

The present study seeks to numerically evaluate the tsunami impact along the El-Jadida coastal segment in order to clarify the uncertainties of the historical reports. A detailed numerical modeling of the tsunami waves evolution onshore and offshore El- Jadida site has been conducted. The digital terrain model (DTM) considered in this study is a reconstruction of the paleo-DTM of El-Jadida site in the 1750s, that we have computed from the paleo-bathymetric/topographic carts available before 1755. Earthquake scenarios of magnitude  $\sim 8.5$  have been considered to represent a 1755-like event. Results in term of wave heights, maximum run-ups, high resolution inundation maps and flow limits for the study area have been presented for each candidate scenarios. Reliability of historical reports has been discussed in light of the comparison of these reports with the worst tsunami impact in El-Jadida obtained from numerical modeling. The results will be incorporated in the future tsunami warning system in the North East Atlantic area.

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