



## **Western Mediterranean and North Atlantic tsunamis: inventory and analysis of tide gauge data**

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Available tsunami databases, as well as known historical and recent events, indicate that the Mediterranean Sea and the North-East Atlantic Ocean are potentially prone to tsunami hazard. Although probably less pronounced and frequent than in other basins, the tsunami hazard has been punctually illustrated by extreme events. The French historical database ([www.tsunamis.fr](http://www.tsunamis.fr)) relies on historical reports and witnessings but does not include any sea level data recorded by tide gauges. However, tide gauge records are often the only instrumental observations of tsunamis and provide physical information on the disturbance induced in the harbours.

France owns an invaluable potential of historical data located along French coastlines and ancient colonies since 1846. A systematic search and inventory of tide gauge records related to tsunamigenic events over the past two hundred years has been conducted in the national archive centers for tsunamis that could have affected North-East Atlantic and Western Mediterranean coasts. Digitization of the rescued analogical sea level records containing the tsunami signal has been made at a 1 min sampling rate using Nunieau software. Tsunami characteristics have been extracted from the digitized signals using tide predictions and signal processing tools as high pass filtering, fast Fourier transform and f-t analysis. The main wave characteristics extracted are: arrival time, length, maximal surge amplitude and period, first wave amplitude and period, structure of the wavetrain.

Specific tables for tide gauge observations will be created as a result of this study. They will be made available for the future French tsunami warning system (in the frame of the tsunami early warning and mitigation system in the North Eastern Atlantic, the Mediterranean and connected seas (NEAMTWS)) to validate numerical models and give first wave parameters when a similar event occurs.