



Analysis of coastal sea-level station records and implications for tsunami monitoring in the Adriatic Apulia region, southern Italy

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The region of Apulia, southern Italy, was theater of one of the largest tsunami disaster in Italian history (the 30 July 1627 event) and is considered to be exposed to tsunami hazard coming from local Italian sources as well as from sources on the eastern side of the Adriatic and from the Ionian sea, including the Hellenic Arc earthquakes. Scientific interest for tsunami studies and monitoring in the region is only recent and this theme was specifically addressed by the international project OTRIONS, coordinated by the University of Bari. In the frame of this project the University of Bologna contributed to the analysis of the tsunami hazard and to the evaluation of the regional tide-gauge network with the scope of assessing its adequacy for tsunami monitoring. This latter is the main topic of the present work.

In eastern Apulia, facing the Adriatic sea, the sea-level data network is sufficiently dense being formed of stations of the Italian tide-gauge network (Rete Mareografica Nazionale, RMN), of four additional stations operated by the Apulia Port Authority (in Brindisi, Ischitella, Manfredonia and Porto Cesareo) and of two more stations that were installed in the harbours of Barletta and Monopoli in the frame of the project OTRIONS with real-time data transmission and 1-sec sampling period.

Pre-processing of the sea-level data of these stations included quality check and spectral analysis. Where the sampling rate was adequate, the records were also examined by means of the specific tools provided by the TEDA package. This is a Tsunami Early Detection Algorithm, developed by the Tsunami Research Team of the University of Bologna, that allows one to characterize the sea-level background signal in the typical tsunami frequency window (from 1 to several minutes) and consequently to optimize TEDA parameters for an efficient tsunami detection. The results of the analysis show stability of the spectral content and seasonal variations.