Geophysical Research Abstracts
Vol. 16, EGU2014-3482, 2014
EGU General Assembly 2014

The calibration of the Tsunami Early Detection Algorithm TEDA for the coastal tide-gauge of Siracusa, Sicily.

Lidia Bressan (1), Stefano Tinti (1,2), and Gianluca Pagnoni (2)

(1) Building and Construction Interdepartmental Center for Industrial Research (CIRI-EC), University of Bologna, Bologna, Italy (lidia.bressan@unibo.it), (2) Sector of Geophysics, Department of Physics and Astronomy (DIFA), University of Bologna, Bologna, Italy

In the frame of the FP-7 European project ASTARTE, which aims to improve the knowledge on the tsunami risk and to enhance the tsunami resilience for the European, North Atlantic and Mediterranean coasts, one of the tasks of the University of Bologna focuses on the study of the tsunami hazard, risk, impact and impact mitigation for the test site of Siracusa, in Sicily. This study includes the study for the calibration of a tsunami early detection algorithm (TEDA), developed by the University of Bologna, for the coastal tide-gauge station of Siracusa, Targia. The tide-gauge of Siracusa, together with the stations of Catania and Tremestieri (Messina), is part of the TSUNET network, which is a set of monitoring stations installed in order to measure and detect tsunamis in eastern Sicily.
The calibration is a process that combines the study of the performance of the algorithm with the study of the background signal, which is considered the normal sea-level signal without tsunami or hazardous long-period waves, and of the possible tsunami signals that might hit the station: in this case the tsunami signals are taken by synthetic tsunami simulations from a tsunami hazard study for the town of Siracusa. The main purpose of the calibration is to optimize the efficiency of TEDA to detect tsunamis by selecting the most appropriate parameter configuration. Different tests of TEDA are carried out with different parameter settings both against the background signal and against tsunami signals. The best setting is the one that leads to the best performance, i.e. detects the highest number of tsunami events in the shortest time, and that avoids false detection in normal conditions.
The results for the calibration of Siracusa are evaluated and compared with those of Catania and Tremestieri (Messina). As expected, the background sea-level presents stability over a year time period, with seasonal variability, and TEDA functions for Siracusa present similar statistical characteristics as for Catania and Messina Tremestieri.