



Letter

WebGIS for Italian tsunamis: A useful tool for coastal planners

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ABSTRACT

RITMARE is the Italian contribution to a sea research program promoted by the European Commission aiming to create an integrated maritime policy. In this context a geodatabase about tsunami events recorded along the Italian coasts, as reported in recent scientific papers, has been realized. Each scientific paper occurring in the geodatabase is linked to its area of interest by means of a Geographical Information System (GIS). The geodatabase is available on the RITMARE website (www.ritmare.it) through a map server.

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1. Introduction

During the recent years in Italy, as well as in other countries, the increased occurrence of extreme events such as storms and floods enhanced a policy for the monitoring of environmental dynamics. This is particularly true for the coastal zone that has become more and more vulnerable, due to the growing population and productive activities that cluster along the shoreline.

With the publication of the Blue Paper 'An integrated maritime policy for the European Union' (COM 2007/575 of 10 October 2007), the European Commission underlines the need to create a systematic research on the sea by integrating research resources and innovation in the maritime field. In this context Italy has produced RITMARE, the Italian Sea Research program for scientific and technological research on marine and maritime issues. The program is divided into seven sub-projects included in the "Flagship Projects" of the National Research Program of 2010–2012. Furthermore, RITMARE is a partnership between public research authorities, and is coordinated by the National Research Council and the National Maritime Technology Platform (www.cnr.it).

In particular, a reference list of scientific papers concerning tsunami events that occurred along Italian coasts has been realized under the program's sub-project SP3 – Coastal Range > WP3 – Strategies for the observation of events > Action 2 > UO02 – "Deterministic assessment

of tsunami hazard on the coast of Southern Italy". Scientific contributions have been collected from available digital libraries, and they have been arranged according to the area of study and inserted into a geographic database. This geodatabase is managed by a Geographic Information System (GIS) and is available via map server on the site of the RITMARE program (www.ritmare.it).

According to the National Oceanic and Atmospheric Administration/World Data Center (NOAA/WDC), 63% of the recorded tsunami events affected the Pacific Ocean, followed by 21% affecting the Mediterranean Sea, 6% impacting the Indian Ocean and 5% in the Atlantic Ocean (Mastronuzzi et al., 2013). The particular geodynamic context of the Mediterranean basin and the geographic position of Italy make this region prone to tsunamis generated in different areas of the Mediterranean Sea. Despite a certain reluctance of the scientific world to consider tsunamis as a real factor of risk, recent historical and geomorphological studies reconstructed a long list of events that struck Italian coasts. Only in the last two decades historical research (i.e. Guidoboni and Tinti, 1987; Guidoboni and Comastri, 2007) and geophysical models (i.e. Tinti et al., 1997; Piatanesi et al., 1999) were integrated by geomorphological field surveys that allow (i) deposits and landforms produced by the impact of tsunamis to be recognized, and (ii) the reconstruction of past events sequence (Mastronuzzi and Sansò, 2000; Gianfreda et al., 2001; De Martini et al., 2003; 2010). In fact, the impact of a tsunami on the coast produces a number of morphological and sedimentological evidence in function of its magnitude as well as the morphological and litho-structural coastal features. A critical analysis of this evidence may contribute to the assessment of potential future coastal hazard and risk scenarios (Mastronuzzi et al., 2013). So, the proposed WebGIS

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