



Integration of historical and geological data to identify tsunami deposits in eastern Sicily

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Eastern Sicily has been affected in historical time by the largest earthquakes (M_{aw} up to 7.4) ever occurred in Italy, but the knowledge of the occurrence rate of these large events is still unconstrained and expected to be of ca 1000 years. The Messina Straits contains the epicentral area of the well-known 1908 earthquake, and perhaps of a potential predecessor dated around the 4th century AD. Moreover, south-eastern Sicily was largely destroyed by the 1169 and 1693 earthquakes, although the identification of their sources, either offshore or inland, is a matter of debate so far. All these earthquakes were followed by devastating tsunamis, as described in the historical reports. In order to improve the knowledge of the seismic cycle in this area and better define the seismic hazard of the region, a multi-disciplinary study has been undertaken for searching geological evidence of paleotsunami deposits. Starting from a detailed analysis of coeval accounts, we have compiled a database storing information on the effects of known tsunamis (hit localities, maximum *run-up*, inundation areas, etc.). These data have been used to recognize, by a paleomorphological approach that takes into account also changes of the coast line occurred during the past centuries, coastal areas potentially exposed to tsunami waves. Several undisturbed sites such as coastal lakes (Ganzirri, Gornalunga, etc.) and marshes (Fiumefreddo, Simeto, Priolo and Vendicari oases), potentially suitable for preserving tsunami deposits, have been selected and some test gouge cores investigated to look for sedimentary evidence of paleotsunamis. Paleontological analyses of marine shells fragments found in the coarser portion of potential paleotsunami sand layers and radiocarbon dating are in progress.