



Large boulder accumulations by tsunami waves along the south-eastern coast of Sicily

C. Monaco (1), G. Scicchitano (1), L. Tortorici (1)

(1) Dipartimento di Scienze Geologiche, Corso Italia, 55, 95129 Catania, Italy
(cmonaco@unict.it)

The Ionian coast of south-eastern Sicily is characterized by the occurrence of anomalous calcareous boulders incompatible with the storm wave regime of this area. They are mostly scattered along the Maddalena Peninsula near Siracusa on a large terrace located 5 m above sea level, gently sloping towards the sea. Boulders are up to 150 t in weight and are arranged either in isolated elements or small groups composed of a few imbricated elements. The surface of the boulders is usually covered by biogenic encrustation (*serpulids*, *balanids*, *litophaga*) which suggests that they were detached from the mid or sublittoral zone. Direct observations were made on each boulder regarding distance from the shoreline (m), volume (m³) and weight (ton), useful to operate hydrodynamic estimations. These suggest that tsunami would be responsible for the detachment and transport of the largest boulders. Radiocarbon age determinations on marine organisms suggest that tsunami have washed over the area at least three times in the last 1000 years.

Collected data, compared to historical catalogues, suggest that three tsunamis with local sources struck the Ionian coast of south-eastern Sicily. The first two were probably triggered by the earthquakes of February 4, 1169 and January 11, 1693 which destroyed south-eastern Sicily. According to geological data (Bianca et al., 1999; Argnani and Bonazzi, 2005) and numerical modelling (Tinti and Armigliato, 2003), the seismogenic source could be located in the Ionian off-shore between Catania and Siracusa. The third tsunami was generated by the strong earthquake which took place in the Strait of Messina on December 28, 1908.