



## **A preliminary study of tsunami vulnerability in the Gulf of Naples based on scenarios of tsunamigenic landslide occurrences in the island of Ischia.**

Filippo Zaniboni (1), Stefano Tinti (1), Gianluca Pagnoni (1), Enrica Marotta (2), Giovanni Orsi (2), Marta Della Seta (3), and Paola Fredi (3)

(1) University of Bologna, Italy, Department of Physics, Sector of Geophysics, Bologna, Italy (filippo.zaniboni@unibo.it, +39 051 2095058), (2) Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Vesuviano, Naples, Italy, (3) Sapienza - Università di Roma, Dipartimento di Scienze della Terra, Rome, Italy

The island of Ischia represents the westernmost element of a volcanic complex (including also the island of Procida and the Phlegrean Fields area) bordering northerly the Gulf of Naples, South Italy. The main long-term volcanic process characterising Ischia is the resurgence of Mt. Epomeo, the highest relief of Ischia island. Here slope steepening associated with seismic shaking is the chief cause of gravitational instabilities along the flanks, that can be recognised not only from the present morphology of the emerged part of Ischia, but also from the many submarine deposits found in recent bathymetric surveys all around the island.

This study follows tsunami hazard analyses that have been performed in past works by our research team in collaboration with others, mainly focussed on the reconstruction of the most catastrophic scenario, the Mount Epomeo slide (around 3 km<sup>3</sup>, called IDA – Ischia Debris Avalanche, occurred probably in historic time and involving the southern flank), and on mass failures with lower volume, more recent, that took place along the northern and western slopes of the island (see Zaniboni et al., 2007). In the simulations of the IDA induced tsunami, all the coasts of the Gulf of Naples have been found to be affected by relevant waves (see Tinti et al., 2010), while tsunamis due to small scale events were found to involve only the coasts of Ischia island (Zaniboni et al., 2007).

Since the Gulf of Naples has a really high population density, especially in the coastal belt, and, since, moreover, touristic industry is able to attract very many tourists especially in the summer season, it is very important to study the vulnerability of its coasts to tsunami events.

In this preliminary work we restrict our attention to the above mentioned scenarios, though we are aware that there are other relevant sources of tsunami potentially affecting the Gulf, namely tsunamis associated with Vesuvius and Phlegrean Fields activity (local sources) and tsunamis produced by mass instabilities in the Aeolian islands, such as Stromboli (remote sources). The aim of our work is to evaluate which coastal stretches in the islands of Ischia, Capri, Procida and more in general in the Gulf of Naples could suffer more the consequences of tsunami impact in terms of building and infrastructure damage as well as population loss.

The methodology adopted here as concerns building damage estimation has been developed in the EU funded project SCHEMA and was applied by our group to the area of Catania.

### References:

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