



## **Application and comparison of tsunami vulnerability models in the gulf of Siracusa, Sicily**

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Siracusa is one of the most important cities of the eastern coast of Sicily, that according to historical records and to the present knowledge of the tectonic setting is exposed to tsunamis generated by landslides on the Hyblean-Malta escarpment and by local and remote (Eastern Hellenic Arc) earthquakes.

For this reason the area of Siracusa and Augusta has been selected as one of the test sites where to conduct specific studies within the European FP7 project ASTARTE. In this context, this work focuses on the tsunami vulnerability of buildings that are found in the coastal zone subject to inundation in the Gulf of Siracusa.

The classification of buildings is carried out following two different schemes, namely the SCHEMA and PTVA (Papathoma Tsunami Vulnerability Assessment) method. The former was developed in the frame of the EU project SCHEMA and applied to a number of sites, including the city of Catania which is located along the same coast of Sicily, to the north of the area under study here. The latter was proposed by Papathoma (2003) and applied in the original form in the city of Heraklion, Crete, and in subsequent refined versions in Stromboli, Tyrrhenian sea, and in other regions of the world (United States, Australia and Indian Ocean).

In our study, the classification of buildings in the potentially flooded areas starts from digital databases (e.g. CTR and CTN) produced by the region of Sicily, which provides building size and location and some other few parameters. In a second step, use is made of satellite imagery which allows a better classification, usually sufficient for the SCHEMA method but not for the PTVA approach. The next step consists in a field survey in the most exposed areas to determine the attributes necessary for the PTVA method and also to confirm the data obtained in the second step.

This study highlights similarities and differences of the two vulnerability models, also posing attention to the resources that each classification requires.