Geophysical Research Abstracts
Vol. 19, EGU2017-13177, 2017
EGU General Assembly 2017

Damage assessment of the Sicily and Calabria coasts evaluated on the 1783 Scilla landslide-tsunami scenario

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In 1783 a series of destructive waves generated by the collapse of a coastal cliff close to the town of Scilla (Calabria, southern Italy), hit the main beach of the city and caused about 1500 casualties. The slide was triggered during the night by an earthquake, which was only of medium size and less than the five strongest shocks of the three-month long sequence affecting the Calabria region in that period.
The local devastating effects are very well described in the coeval reports, surprisingly detailed in the reconstruction of the sliding mass and of the effects of the tsunami. Apart from Scilla itself, tens of kilometers of the Tyrrhenian Calabria and northern Sicily coasts were reported to suffer the effects of the tsunami.
In the northernmost point of Sicily, named Capo Peloro, the inundation involved hundreds of meters inland, causing severe damage to properties and fatalities. Also in the harbor of Messina, about 15 km SW of the source, evidence of tsunami was reported.
We have simulated the 1783 landslide by means of the code UBO-BLOCK1 and tsunami on a 10-m resolution grid by means of the tsunami simulation code UBO-TSUFD allowing to compute coastal inundation. In the area where the numerical inundation resulted to be most severe, which fits with historical accounts, we have evaluated damage and losses considering the today's level of population and built environment.
This exercise shows that if an episode like the 1783 Scilla landslide would occur today the effects could be even more dramatic since the vulnerability of the coast has increased very much in terms of population and of buildings, and this even if the Scilla tsunami is known to be among the ones causing the highest number of fatalities in the Italian tsunami history.
Though the repetition of the Scilla tsunamigenic landslide with same volume and same position can be considered unlikely, the occurrence of a similar slide detaching from the nearby mountainous coast triggered by an earthquake cannot be ruled out. This issue deserves special attention and specific future analyses.