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Seismically induced environmental effects in costal areas : the 1783, 1905 and 1908 earthquakes in Calabria and Sicily, (Southern Italy).

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Calabria and Sicily's Coast, particularly in the Messina Strait, is one of the most seismically active areas of the Southern Italy. Since 1783, there have been seven earthquakes with magnitude ranging between 6.0 and 7.2 These earthquakes have produced wide damages on the MCS Intensities scale of X or greater. The high rate of seismic activity in the region is related to the complex geologic setting resulting in a number of different sources of potentially damaging earthquakes.
All these earthquake induced numerous and spectacular coseismic environmental effects overall along the coast where the impact was particularly catastrophic.
These earthquakes caused several changes in elevation, due to tectonic deformations, landslides and settlements (i.e along both sides of the Messina Straits, 1908 event), relevant landslides (the February6, 1783 event triggered in Scilla, along the cliff of the M. Pacì a huge rock avalanche estimate of 5 Mm3 in the areal zone and 3 Mm3 in the submarine zone (Bozzano et al 2006), that fell into the sea generating a disastrous tsunamis), ground fractures (in the Capo Vaticano promontory area, 1905 event; in Messina Reggio C., Villa S. Giovanni, 1908 event); liquefaction phenomena (in the area of Messina, Ganzirri and Reggio Calabria, 1908 event), and catastrophic tsunamis (five induced by the 1783 Calabrian seismic sequence, other two by 1905 and 1908 events, Graziani et al 2006).
The run-up observed ranging from few cm to tens of m: the highest tsunami wave was about 16 m in Scilla (Feb. 6, 1783 tsunami), 13 m in Pellaro (1908 event) and 1,30 m along the Calabrian coast (1905 tsunami) .
Portion of the coast were lost, most of them eroded by the tsunamis with a coastline retreat and flooded the shore for several hundred meters inland depositing a large amount of silt and fish, and in some case killing people (i.e 1500 in Scilla and 28 in Messina during the February 6, 1783 tsunami, Barbano 2008; Porfido et al.,2008).
Finally, it is important to consider the seismically induced effects with the aim to reduce the future risk for the population living along the cost and the potential damage to structures and natural environment, through a more precise estimate of their type, size and distribution.

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