

## **Submarine slope instability offshore western Calabria, Italy: possible triggering of tsunamigenic landslides by seismic load**

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The Eastern Tyrrhenian margin offshore western Calabria (Italy) has experienced several mass movements involving varying volumes and shapes, as revealed by several geological surveys identifying slide scars and massive deposits. The hypothesis that at least some of these mass movements was tsunamigenic sounds perfectly reasonable.

In this study, we focus on the continental edge offshore the Santa Eufemia Gulf and the Paola Basin, because the area experienced several strong earthquakes ( $M_w$  up to 7), some of them in the last centuries (see, for example, the 1905 earthquake and the late shocks of the 1783 sequence). Our aim is to study the seismic load as the trigger mechanism of mass failures: not all earthquakes generate tsunamis, but the conjunction of definite factors as seafloor shaking and pore water pressure could temporarily reduce soil shear stress, inducing failures and submarine tsunamigenic landslides.

We have selected several sections of the Calabrian margin with different gradients and studied their slope stability by using the Minimum Lithostatic Deviation (MLD) method. We have applied typical Peak Ground Accelerations (PGAs) obtained from local historical earthquakes by means of regression laws, determining the potentially unstable sectors, as well as the volumes of the material that can be set in motion. This in turn can be used as input for future tsunami modelling and hazard assessment.

This work is a contribution to assess local hazard and risk in western Calabrian coast where earthquakes can trigger tsunamigenic submarine mass movements: the impact and the effects of such phenomena could be disastrous for coastal infrastructures and populations without the proper mitigation measures.

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