



Tsunamigenic potential of a sizable submarine landslide in the Sicily Channel offshore Gela

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Geophysical surveys in the Gela Basin escarpment (Sicily Channel, Central Mediterranean) contributed to identify numerous episodes of mass transport, with scars and deposits of different dimensions. The two most noticeable events are relatively recent and were mapped and reconstructed in details (Minisini et al., 2007; Kuhlmann et al., 2017): they are known as Twin Slides, and probably occurred almost simultaneously at about 200 m sea depth, with volumes estimated to be less than half km³ each.

In this work, the tsunamigenic potential of the Northern Twin Slide (NTS) is evaluated numerically by using codes for the landslide motion and for the tsunami generation and propagation. Consistently, the source of the tsunami are the impulses due to the sea bottom topography changes caused by the slide motion. The initial geometry of the NTS is reconstructed on the basis of morphological considerations. The landslide simulation code UBO-BLOCK1 is calibrated by using the observed deposit size and position as a constraint. The propagation of the tsunami is calculated by means of the code UBO-TSUF, solving non-linear shallow water equations over a regular high-resolution grid, extending on land to account for inundation.

The results describe the impact of an NTS-like event on the coasts around Gela and in general of Southern Sicily. As expected, tsunamis produced by this kind of events affect coastal stretches shorter than the ones generated by submarine earthquakes, but have higher impact on a local scale. The geomorphological description of the Gela Basin slope will be presented in session GM11.1/OS4.12/SSP3.24. "Submarine geomorphology".

References

Kuhlmann J., Asioli A., Trincardi F., Klügel A. and Huhn K. (2017), Landslide frequency and failure mechanisms at NE Gela Basin (Strait of Sicily). *Journal of Geophysical Research: Earth Surface*, 122, <https://doi.org/10.1002/2017JF004251>.

Minisini D., Trincardi F., Asioli A., Canu M. and Fogliini F., (2007), Morphologic variability of exposed mass-transport deposits on the eastern slope of Gela Basin (Sicily channel), *Basin Research* (2007) 19, 217–240, doi: 10.1111/j.1365-2117.2007.00324.x.