

**PRE-FAILURE STRESS-STATE OF AN EARTHQUAKE TRIGGERED
SUBMARINE LANDSLIDE:
THE MARQUES THE POMBAL LANDSLIDE, OFFSHORE PORTUGAL**

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The Marques de Pombal landslide deposit, with its estimated volume of 1.3 km³, is located in the Alentejo Basin, the Northern section of the Gulf of Cadiz (SW Iberian Margin). Gravity core analyses sampled in the Marques de Pombal depositional area reveal that multiple landslide and turbidity events contributed to the deposit formation^{1, 2}. Considering the moderate-to-large-magnitude seismic activity of the area, earthquakes are the main triggering candidate for the mass wasting events. The Great Lisbon catastrophic earthquake of 1755 may also have contributed to the landslide's deposit. This work reconstructs the sedimentary, stratigraphic and geotechnical conditions of the area of interest before the 1755 earthquake and aims to evaluate the development of excess pore pressure in order to balance pre-conditioning factors vs triggering mechanisms in onset of slope failure. We build a stratigraphic model of the slope failure area using seismic profiles, swath bathymetry deep-towed side-scan sonar mosaics and well and log data from the IODP 339 expedition. Gravity core samples are used to understand development of permeability, compressibility and strength with burial depth. These data are used to build a numerical finite elements model, which aims to determine the relationship between continental margin development and its hydrogeological evolution.

References

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