



A comprehensive database of submarine mass movements in the SW Iberian Margin

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Submarine landslides and the tsunamis they can generate pose significant geohazards to seafloor infrastructure and coastal populations. However, little is known about landslide preconditioning factors and frequency-magnitude relationships. Here we present a comprehensive ArcGIS catalogue of landslide distribution, morphology and timing, including failure scar, deposit and source area dimensions and attributes for mass movements identified in the Gulf of Cadiz, located at the SW Iberian Margin. The catalogue relies on the interpretation of previously existing and newly acquired high-resolution side-scan sonar and multibeam bathymetry, multichannel seismic and sub-bottom profiles, and sediment cores from successive oceanographic cruises in total covering an area of approximately 500,000 square kilometers. The current version of the database documents more than 100 mass failures and attempts to compile more than 55 attributes relating to each landslide, including information about slope gradient, deposit volume, headwall height, depth, and regional sedimentation rate among others.

The overarching aims of the study are 1) to develop a standardized procedure to portray submarine landslide processes at a marine basin scale, and 2) to enable detailed morphometric and temporal analyses of the landslides in order to better characterize the regional landslide and potential tsunami hazard. We find that most landslides are likely Holocene in age. Several large groupings of landslides occur on the south-southeastern flanks of the Ampere, Coral Patch, Goringe Ridge, and Hirondelle seamounts. We also observe multiple, sizeable mass movement events over time in multichannel seismic profiles taken across the Marques de Pombal and Horseshoe faults. Given their repeat occurrence, size (>100 square km), and location near the SW Iberian coast, it seems reasonable to suggest that future tsunami modelling of these active faults should include the possibility of a large submarine landslide failure.