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## **Improving submarine mass failure characterization: a new database for the Gulf of Cadiz**

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Submarine mass failures are capable of generating deadly tsunamis and damaging seafloor infrastructure. Here we present a detailed database in ArcGIS of more than 430 submarine mass failure deposits and scars in the Gulf of Cadiz. The database follows the morphometric approach to landslide characterization described by Clare et al (2018); however, it also incorporates some practical new additions. These include a layer depicting the source area of each submarine mass failure useful in reconstructing slopes pre-failure for volume estimations, a sedimentation rate map layer useful in estimating landslide ages, a submarine telecommunication cable map layer, and a regional fault map layer that may aid in tsunami modelling. To construct the database, we utilize a relatively robust geophysical and sediment core dataset from more than eight successive oceanographic cruises in the Gulf of Cadiz, including two from 2018: INSIGHT-Leg 1 and the 149th R/V METEOR expedition.

Although this database builds off of previous submarine landslide database work in the Gulf of Cadiz by Urgeles and Camerlinghi (2013) and represents the most detailed catalogue of submarine mass failures in the Gulf of Cadiz to date, it also highlights the continued challenge of ever achieving database “completion”. Our data indicate a clear bias towards Holocene-aged submarine mass failures. Additionally, a statistical analysis of submarine mass failure volumes using the powerRlaw package in R indicates that the database is biased towards larger deposits.