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Imaging submarine canyons whose heads are close to coast: The case of western Mediterranean and Fauces project

Belen Alonso (1), David Casas (2), and Fauces Team (3)

(1) Instituto de Ciencias del Mar-CSIC, Barcelona 08003, Spain (belen@icm.csic.es), (2) Instituto Geológico y Minero de España, Tres Cantos, Madrid, 28760, Spain (d.casas@igme.es), (3) FAUCES Project Team

The FAUCES project addresses the study of marine geological hazards, with special emphasis on slope stability, associated with three submarine canyons located on the Mediterranean continental margins of southern Iberia. The working hypothesis of FAUCES project is that the Almanzora-Alías-Garrucha canyon head on the continental margin of Palomares, and the La Linea and Guadiaro canyon heads on the Alboran margin, represent a potential threat, because of their shallow locations and active morphosedimantary configurations.

To achieve the project FAUCES a multi-disciplinary approach is running and integrates geological and geotechnical data of the three study areas through the acquisition of different data sets (acoustic, seismic, sedimentological, geotechnical and in-situ measurements). This data allowed to determine the geomorphology and geological evolution and to analyze the slope-stability of the canyon heads.
During the recent oceanographic cruises performed, we described a great variety of features such as bedforms, mass-movement deposits (isolated blocks, slides, mass flow deposits and hummocky topographies/debris avalanche deposits), erosive surfaces, fluid dynamic features and contourites.

The preliminary results point to canyons show different geomorphological activity and sediment transport, and their canyon heads unequally interact with coastal and fluvio-marine processes, the action of bottom currents, or seismicity related to tectonic features. Likewise, a closer examination of the morphology of the Garrucha canyonhead lead us to point that it represents a potential hazard for the Garrucha habour, located just above it, where numerous erosive features are being been mapped.