

EGU22-11506

<https://doi.org/10.5194/egusphere-egu22-11506>

EGU General Assembly 2022

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## Submarine active tectonics in the south and northwest Iberian margins

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The Iberian Peninsula is surrounded to the north by the convergence margin between Eurasia and the former Iberian plates (North and Northwest Iberian margin), and to the south by a transform plate boundary between Eurasia and Nubia (Gulf of Cádiz) to a shear-compressive indentation of Nubia northwards in the Alborán Sea. These margins are affected by historic and present-day seismicity, which are linked to active tectonic structures deforming the seafloor of the margins. The main objective is to better understand their development in the framework of the present plate organization and thus evaluate the seismic hazard around Iberia. Therefore, we carried out an extensive geophysical characterization of submarine faults, focusing on those that show seabed morphological expressions, by mapping them with high-resolution swath bathymetry data, high-resolution parametric sub-bottom profiles and multichannel 2D seismic profiles. Their activity and distribution are in good agreement with the geodetic and seismological observations.

Our results show that the present-day active tectonics and its related deformation, including seismicity and tsunami-affected coastal areas, are mainly located in the south Iberian margin, around the boundary between the Eurasian and Nubia tectonic plates. The submarine active faults are represented in this margin by a large strike-slip fault system and fold-thrust systems, in response to the NW-SE convergence between the aforementioned tectonic plates. The different orientation and distribution of submarine faults, and the fault type from focal mechanism of seismic events, led us to identify simple and pure shear zones from the Alborán Sea to the east, to the Gibraltar Arc and Gulf of Cadiz to the west. This suggests a strain partitioning model along the plate boundary in response to the present-day shear stress orientation.

Deformation is also documented in the NW Iberian margin. Thrust fault systems with high seismic activity were identified and mapped along Iberian ocean-continent transition around the Galician and Portuguese margins, reflecting the re-activation of former Cenozoic faults. Deformation in this margin is also derived from the westward motion of the Iberian oceanic domain and the clockwise rotation of the Iberian continental domain with respect to the Eurasian plate.