



Active processes shaping two segments of the south-Iberian margin (NW margins of the Balearic-Algerian basin)

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In the northwestern margin of the Balearic-Algerian basin, two near perpendicular segments of the South-Iberian margin -the Palomares and Cartagena margins- were studied using sonographs and seismic profiles. Results indicate that margin morphologies are mainly from the aftermath of tectonic and sedimentary processes.

Sedimentary processes, erosion, mass transport and accumulation, in the Palomares Margin are derived from two morphodynamic systems (Gata and Alias-Almanzora turbidite-canyon Systems) that begin in a narrow and gullied continental shelf and develop till the base of the slope through meandering channels. Volcanic seamounts in the slope control channels paths given way basin wards to a complex relief. Both systems feed small deep sea fans at the basin rise. Erosion affects mainly Plio-Quaternary sequences, and locally attains late Messinian sediments. All these features indicate that sediment source-to-sink processes dominated for shaping the Palomares Margin seafloor.

The upper slope of the Cartagena Margin corresponds to the steep Mazarron Escarpment, which denotes strong erosion resulting in numerous gullies, discrete canyons and sediment bypassing areas, leading to exposures of the acoustic basement. Scar-slumps structures and slides are widespread in the slope and base of the slope at the Cartagena Margin. A major slide, the Cartagena Slide, trending parallel to the Mazarron Escarpment, extends from the middle slope to the basin floor covering an area of more than 415 km². Post-depositional erosion processes are evidenced by channel incisions on the slide top. Images of the slide basal detachment suggest that the sediments involved are older than late Pliocene-Pleistocene. All these features in-

dicates that erosion and mass wasting processes dominated for shaping the Cartagena Margin seafloor.

At the foot of both margins, the basin plain morphology is characterized by bulges, furrows and discrete troughs originated by Messinian-salt diapiric processes leading to pierced diapirs that occasionally reach the sea-floor.

Tectonic processes and active tectonics are also major factors controlling the architecture observed in the South-Iberian margin segments of Palomares and Cartagena. Seismic lines from the Palomares margin indicate that canyons and channel pathways are tailored by faults with normal or reverse slip, and strike-slip components paralleling or associated to the Palomares Fault Zone. The Mazarron Escarpment corresponds to the Cartagena Fault, which in seismic profiles is imaged as stacked high-angle faults with normal to reverse slip, shaping the entire steep slope. Salt tectonics is the main processes deforming the Plio-Quaternary sequences in the lower slope and deep basin off the margins.

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