



## **Morphogenetic meso-scale analysis of the northeastern Iberian continental margin**

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A morphological and sedimentological meso-scale analysis based on multibeam bathymetry allows to divide the Northeast Iberian continental margin, western Mediterranean Sea, in three main margin segments: North Catalan, South Catalan and Ebro. In the North Catalan margin (NCM), the structural framework and presence of buried Messinian evaporites in the outer margin exert a strong control on its morphodynamics. On the contrary, the morphology of the South Catalan (SCM) and Ebro margins (EM) is primarily controlled by the margin growth style. Our morphogenetic study is mainly focused on these two latter segments off northeast Iberia.

The SCM has an equilibrated areal distribution of their physiographic units (continental shelf, slope and rise). The continental shelf is up to 18 km wide and its bathymetric profile displays a gentle sigmoid trend, with mean continental slope gradients less than 4°. This margin is characterised by few but well developed canyon-channel systems. On the other hand, the EM has a wide, up to 70 km, continental shelf and a very steep slope (gradients are often higher than 10°) with a bathymetric profile following an exponential trend. The canyons on the EM are less incised, they evolve into depositional channel-levee systems downslope, and they are also more numerous than in the SCM. There is also a shift in backscatter strength when moving from the EM to the SCM,

with the later showing slightly lower mean values. Such a shift might be related with the size and nature of the sediment supply in the source area, and most probably reflects an overall decrease in grain-size. The size and fluviodynamic characteristics of the onshore catchment basins draining into these margins are also compared.

Differences on sediment composition and fabrics, and the long-term sediment flux to the margin are, presumably, the main control mechanisms on the morphological variability between the SCM and EM. The conclusions derived from a refined and systematic description of the sea-floor morphology of the Northeast Iberian continental margin, later on complemented with sub-seafloor data, could provide the inputs for the development of novel conceptual and numerical seascape evolution models from mid-latitude areas.