



Geomorphologic domains of the Gulf of Cadiz from swath multibeam bathymetry

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The SWIM bathymetric dataset covers an area of approximately 180.000km², was obtained after compilation of 19 multibeam bathymetry surveys. Terrain analysis and detailed morphological interpretation of this dataset on a 100m cell-size map allowed the identification of a diversity of morphological domains that result from the combined or individual action of oceanographic, sedimentological and tectonic processes. The available multi-channel seismic reflection profiles, high resolution profiles and the multibeam probe backscatter images were also used to establish the different domains and their borders as well as the structural and tectonic control of the buried structures on the present day morphology.

After thorough seafloor mapping the following domains were characterized: submarine mountains, abyssal plains, abyssal hills, axial areas of submarine canyons and gullies associated with steep walls, plateaus, contourites and other sedimentary and erosional structures associated with the Mediterranean Outflow Water (MOW), the Gulf of Cadiz accretionary wedge with its mud volcanoes, salt domes and sub-circular basins, continental shelf, diapiric ridges, basement outcrops, submarine deep scours and volcanic edifices.

The Central longitudinal part of the Gulf of Cadiz shows three different morphologies, the Horseshoe Abyssal Plain, the mouth of the South Portugal canyons and the accretionary wedge. In the East the interaction of the MOW with the seafloor creates

erosional and depositional features that extend as contourites bodies along the South and Southwestern Portuguese slope. The Northern part exhibits the Portuguese shelf, the deeply incised continental slope and the MOW contourites depositional system, . Scattered structures of mass wasting deposits exist the Gulf of Cadiz, generally associated with active fault scarps.