

Morphology and Sedimentary environments of the menorca Canyon head

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Los fondos submarinos de las Islas Baleares constituyen un magnifico ejemplo de plataforma carbonatada de mares templados y latitudes medias. La morfologia submarina esta caracterizada por la presencia de varias terrazas, y extensos campos de dunas submarinas.

Se han diferenciado seis comunidades bentonicas responsables de la alta productividad de carbonatos ($70 \text{ g. CaCO}_3/\text{m}^2/\text{y}^{-1}$) distinguiéndose cinco grandes tipos de sedimentos, que corresponden a otros tantos dominios sedimentarios.

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The maps, block diagrams and seismic lines illustrating this poster, integrate multidisciplinary coastal and submarine data which should serve as a documental basis to better know, use and protect these environmentally fragile areas.

The balearic Islands offer to the scientific community an excellent example for non-tropical carbonate shelves. Seafloor morphology, benthic communities and sediment types are in fact, strongly interdependent. The south Menorca Shelf and upper slope show these interdependences particularly well.

Seafloor morphology is characterized by several submarine terraces. Extensive sand wave fields develop from the lower limit of seagrass communities to 50 m. deep. Two major sand transport directions appear : A) $110^\circ - 140^\circ$ and B) $190^\circ - 205^\circ$; the first being related to the dominant longshore currents, and the second probably due to weaker helical currents issued from the main flow.

A great variety of mass movement processes, ranging from creep-faults to slide lobes and glided blocks, develop around and on the Menorca canyon headwalls ; each mass movements appears to be concentrated at specific areas.

From coastline to upper continental slope, the benthic communities responsible for carbonate production are :

- 1) Photophilic algae (0-5 m.)
- 2) Posidonia Oceanica seagrass meadows (1-30 m.)
- 3) Sandy communities with the algae *Vidalia volubilis* (30-45m.)
- 4) Loose branching calcareous algae "maër!" (35-70 m.)
- 5) Shelfbreak bryozoans (90-120 m.)
- 6) Communities of suspension feeders of the uppermost slope.

Overall mean carbonate production in the photic zone (to 150 m.) is around $70 \text{ g. CaCO}_3/\text{m}^2/\text{y}^{-1}$. Five main sediment types appear in the area of study :

- A) Algal sands
- B) Bioclastic sands
- C) Bryozoans sands
- D) Terrigenous sands
- E) Pelecypod sands

As a result, five sedimentary domains define the South Menorca continental shelf :

- I) Littoral sandy prism (0-5 m.)
- II) Seafloor protected by seagrasses (5-38 m.)
- III) Sand wave field indicative of tractive transport (38-50m.)
- IV) Bypass zone with rough microtopography and submarine terrace development
- V) Canyon head cirque.

Inner, medium and outer continental shelf are thus define in terms of sediment types, seafloor morphology including bedforms and sediment dynamics.