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Cold-water coral carbonate mounds and associated habitats of the Chella Seamount (Alboran Sea - SW Mediterranean)

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This study focuses on the characterization of cold-water carbonate mounds and of the associated habitats detected and mapped in the Chella Seamount, off the Almeria Margin, along the eastern Alboran Sea (SW Mediterranean). The study has been carried out by means of an integrated geophysical dataset, comprising large-scale sidescan sonar (TOBI), high resolution swath-bathymetry, TOPAS and Sparker high-resolution seismics. The acoustic dataset has been ground-truthed by images from an ROV and a deep-towed video-camera.
Carbonate mounds range from 10 to 60 m in height and from 150 to 250 m in width, typically displaying a sub-circular shape. They are found within a depth range of 80-400 m and generally occur along the structural ridges of the Chella Seamount. Some of the mounds are distributed NW-SE and N-S, coinciding with the orientation of the active fault lineations observed North and West of the study area. On the other hand, the orientation of some other mounds suggests that the presence of strong bottom currents and reduced sedimentary fluxes are environmental factors suitable for their development. The images obtained from video inspections have been key for the characterization of the benthic communities and abundance of the species identified along the mounds. Video stills suggest that most of the mounds are in a “sub-fossil” stage and are mainly composed of patchy distributed Madrepora oculata and Lophelia pertusa. Additionally, other environments have been detected, in which sponges, boulders, coarse sands and bedforms prevail. Wide and dense patches of gorgonian (Callogorgia verticillata) have been observed along the top of the Chella Seamount.
The integration of different marine geophysical methods supported by ground-truthing calibrations, allowed to recognize in detail the structural, sedimentary and hydrodynamic constrains suitable for the development of cold-water coral carbonate mounds in the Chella Seamount and to recognize and map some of the habitats associated to them. We acknowledge funding from the Spanish National Project EVENT (CGL2006-12861-C02-02).