

High-resolution bathymetry of the Blanes Canyon (NW Mediterranean)

Ruth Durán^{1,2}, Pere Puig², Meri Bilan³, Jordi Grinyó^{2,4}, Cecilia Cabrera², Claudio Lo Iacono², Araceli Muñoz⁵,
Veerle Huvenne⁶, Marie-Claire Fabri⁷, Charline Guerin⁷, ABRIC Cruise team

INCISE2021



¹ University of Malta, ² Institut de Ciències del Mar (ICM-CSIC), ³ University of Salento, ⁴ Royal Netherlands Institute for Sea Research (NIOZ), ⁵ Tragsa for General Secretariat of Fisheries, ⁶ National Oceanography Centre (NOC), ⁷ Institut français de recherche pour l'exploitation de la mer (Ifremer)

Submarine canyons are complex geomorphological features that have been identified as potential hotspots of biodiversity, which has led to many canyons being mapped and studied at high resolution (tens of meters).

Here, we present the first complete very-high resolution mapping of the Blanes submarine canyon in the Catalan margin (NW Mediterranean). The map is based on a compilation of swath bathymetry data acquired during 6 oceanographic cruises, spanning between 2011 and 2021, and complemented with the bathymetric compilation of the Catalano-Balearic margin (Farrán, 2005).

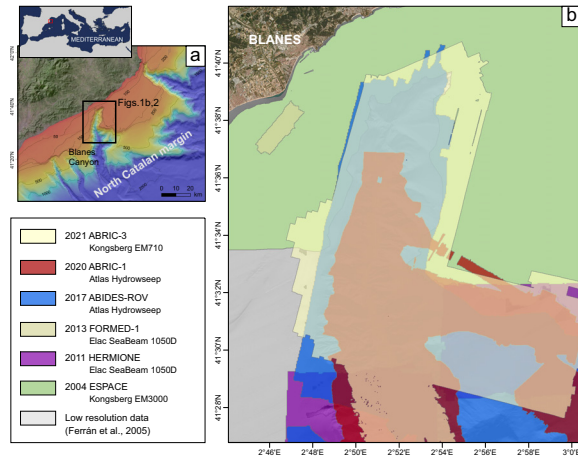


Figure 1. (a) Location and (b) map of the Blanes Canyon showing the multibeam data sets used in the bathymetry compilation.

The grid spacing of the compilation map varies from 4 m for the canyon rim and adjacent shelf, 10 m for the head and upper canyon region and 20 m for the middle and lower canyon region.

Farrán, M., 2005. Catalano-Balearic Sea (NW Mediterranean) – Bathymetric Chart and Toponyms. Available at: <http://gma.icm.csic.es/sites/default/files/geowebs/MCB/CBSmaps.htm>

The Blanes Canyon deeply incises the continental shelf, showing an orientation parallel to the coastline at its head (Fig. 2). Down-canyon, it displays a meandering course with a strong structural control, showing rectilinear canyon portions characterized by a flat-floored axis and steep terrains (>50°) on both canyon flanks, with the presence of networks of gullies and sub-horizontal layered walls.

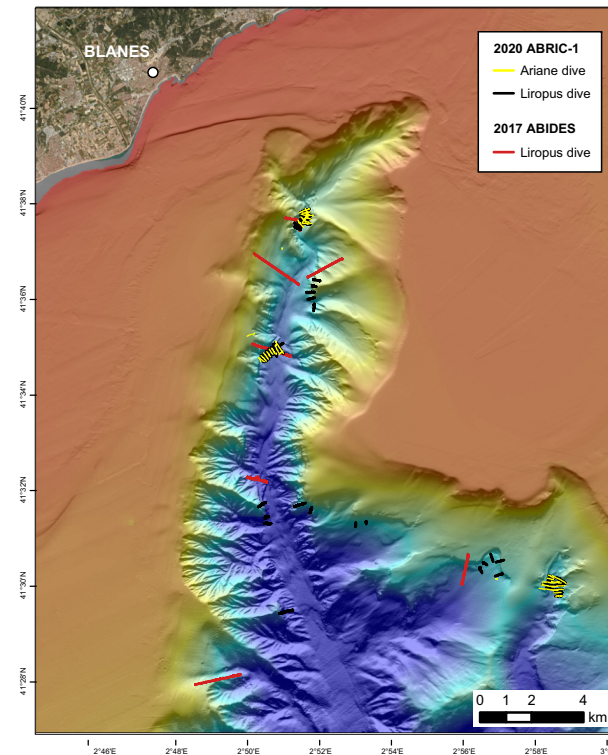


Figure 2. High resolution bathymetry of the Blanes Canyon showing the location of ROV dives during ABIDES and ABRIC-1 surveys.

The high resolution map allowed to identify potential areas along the canyon flanks that might provide suitable environmental conditions for hosting benthic ecosystems, particularly cold-water corals (CWCs). These sites were recently explored during the ABRIC Spanish National Project using the hybrid remotely operated vehicle (H-ROV) Ariane and the inspection-class ROV *Liropus*, complementing the previous ROV data set acquired during the ABIDES Project (Fig. 2).

Collected data allowed for the compilation of an inventory of the most relevant benthic species and communities observed within the canyon (Fig. 3).

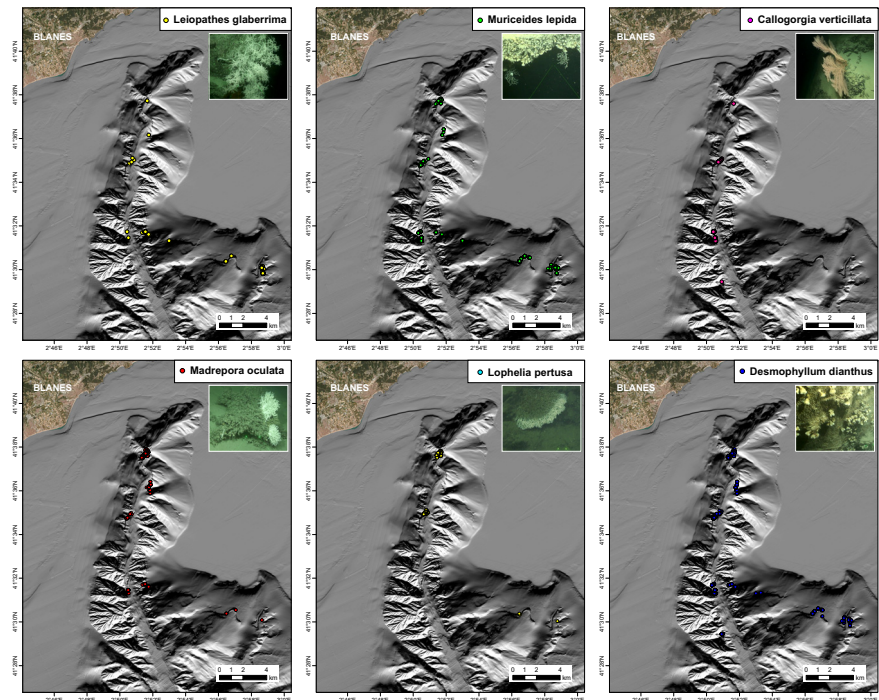


Figure 3. Maps showing the distribution of six of the most representative species: *Leiopathes glaberrima*, *Muriceides lepida*, *Callogorgia verticillata*, *Madrepora oculata*, *Lophelia pertusa* and *Desmophyllum dianthus*.

The final map with the location of the most representative and relevant species will be shared with the Blanes fishermen's guild in the framework of an outreach project funded by the Fisheries Local Action Groups (GALP), to provide awareness of the presence and abundance of such vulnerable marine ecosystems in the Blanes Canyon, and to expand the spatial information provided by the ROV surveys by adding the local fishermen knowledge.



Grant Agreement ID: 867471