{rokbox title=| Maps of univariate extrapolation :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-characterizing-soft-bottom-guijarro-2026-thumb-et-al.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-characterizing-soft-bottom-guijarro-2026-et-al.jpg{/rokbox}

Jade Millot, Sandrine Vaz, Tarek Hattab, Christopher J. Smith, Carlos Dominguez-Carrió, **Beatriz Guijarro**, Grégoire Certain, Vasilis Gerovasileiou, Vincent Georges, Caterina Stamouli, Michele Casini, Chiara Manfredi, Emanuela Fanelli, Germana Garofalo, Marie-Claire Fabri, Daniela Massi, Angélique Jadaud, Adriana Profeta, Pierluigi Carbonara, Evgenia Lefkaditou, Slavica Petović, Athanasios Evangelopoulos, Nikolaos Kamidis, Ioannis Thasitis, Jurgen Mifsud, Kelly Camilleri, Valentina Lauria, 2026.
Characterizing soft-bottom epibenthic megainvertebrate communities of the Mediterranean continental shelf: a biogeographic approach. Marine Environmental Research. Volume 217. May 2026. 107951. 10.1016/j.marenvres.2026.107951

Abstract:Partitioning of the Mediterranean basin has so far mainly focused on surface waters, relying on biogeochemical and hydrological data while the Mediterranean seafloor has received much less attention. Bioregions are essential units for conservation planning, as they provide a framework for designing representative networks of protected areas. Therefore, seafloor-specific bioregions are needed to support the management and conservation of benthic ecosystems. While benthic habitat mapping is generally based on macrofaunal patterns, we propose the first mesoscale partitioning of the Mediterranean seabed based on epibenthic megainvertebrate communities. Benthic records from the MEDITS programme (International Mediterranean Bottom Trawl Survey) were used to partition the Mediterranean soft bottoms. Using k-means clustering combined with Random Forest modelling, we grouped sites according to similarities in biotic composition and predicted their distribution in relation to environmental variables. The analysis was conducted independently across four sub-basins: the Western Mediterranean, the Central Mediterranean, the Adriatic Sea, and the Aegean Sea. This approach identified 16 distinct bioregions, each characterized by unique epibenthic megainvertebrate communities. The partitioning revealed a pronounced bathymetric gradient, with deep-sea bioregions showing a more homogeneous set of indicator taxa and greater similarity across regions compared to the more distinct communities found on the shelf and slope. These coherent bioregions can serve as spatial units to enhance the representativeness of conservation priority networks and provide a valuable complement to the existing EUNIS seabed habitat classification, which does not explicitly account for vulnerable epibenthic megainvertebrate communities..

Keywords:Bioregionalization, Community structure,Conservation planning,Habitat mapping,K-means,Machine learning,Marine environment,Mediterranean,Megainvertebrates.Epifauna