{rokbox title=| Location and oceanographic characterization of the seafloor elevations studied along the Mediterranean Outflow Water (MOW) western pathway :: Image: Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-variability-deepsea-megabenthic-puerta-2022-thumb-et-al.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-variability-deepsea-megabenthic-puerta-2022-et-al.jpg{/rokbox}

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Variability of deep-sea megabenthic assemblages along the western pathway of the Mediterranean outflow water.
Deep Sea Research Part I: Oceanographic Research Papers. Volume 185.July 2022.103791.
https://doi.org/10.1016/j.dsr.2022.103791

Abstract:The presence of different water masses in depth may influence the species distribution and community structure in deep-sea benthic ecosystems. In the North Atlantic, the Mediterranean Outflow Water (MOW) represents an important forcing water mass, whose influence on the distribution of cold-water corals in the northern European margins has been particularly investigated. However, the MOW also spreads westwards into the central North Atlantic bathing several seamounts and seafloor elevations, whose deep-sea benthic communities are still poorly known. In this study, we provide a local to large-scale comprehensive description of deep-sea megabenthic assemblages along the western branch of the MOW, from its origin in the western Mediterranean Sea to the Central North Atlantic close to the Azores archipelago. For some of the studied seafloor elevations, such as Ormonde (Gorringe bank, offshore SW Portugal margin) and Formigas seamounts (SE Azores archipelago), this is the first time these assemblages have been characterized and quantified. The results indicate a strong effect of substrate type in the structure and diversity of the assemblages at local scales; but the effect of water masses becomes more relevant when a large bathymetrical gradient is considered. The results also suggest a potential role of the MOW for biodiversity and biogeographic patterns at the North Atlantic basin, suggesting a potential enhancement of the biodiversity of some deep-sea megabenthic assemblages. Understanding water masses as an integrative tool to delineate biodiversity and biogeographic patterns from local to large scale will contribute to identify different megabenthic assemblages, including vulnerable marine ecosystems, as well as potential regions of refugia under future climate change conditions.

Keywords:Deep-sea benthic habitats,Mediterranean outflow water,Biodiversity,Assemblage structure,Water masses,Cold-water corals,Vulnerable marine ecosystems,Biogeography.