{rokbox title=|Samples in the study area by depth strata and year (1983–2015) :: Image: Authors|
thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-tracking-effect-temperature-marine-demersal-fish-communities-punzon-et-al-2021-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-tracking-effect-temperature-marine-demersal-fish-communities-punzon-et-al-2021.jpg{/rokbox}

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, Alberto Serrano, Elena Tel, Raquel Somavilla, Julia Polo, Marian Blanco, Susana Ruiz-Pico, Olaya Fernández-Zapico, Francisco Velasco,
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Tracking the effect of temperature in marine demersal fish communities.
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Abstract: Under current levels of global warming most demersal species in the Northeast Atlantic are experiencing tropicalization, meridionalization or borealization of their distributions, leading to profound changes in demersal communities. We explore these changes using the Community Weighted Mean Temperature (CWMT), an index to link the thermal preference of demersal fish communities and temperature. The CWMT is calculated as the summation of the mean temperature of each fish species distribution weighted by its relative abundance in the community. The relative abundance is based on the community composition data obtained by the International Bottom Trawl Surveys (IBTS) in the Southern Bay of Biscay between 1983 and 2015. Our analyses show that the CWMT responds to the actual temperature of the water column reproducing its space–time trends in the study area: (i) an increase from SW to NE, towards the inner Bay of Biscay, (ii) a decrease with depth, except in the SW area characterized by an intense upwelling, (iii) a general increase along the time series. Applying a k-means classification to the CWMT data we identified warm-, temperate- and cold-communities over the shelf and slope and their spatial changes in the last decades. The area occupied by warm communities has expanded 268.4 km2/yr since the 80 s, while the cold communities have retracted at a speed of −155.4 km2/yr. The CWMT was able to capture the community dynamics in relation to environmental temperature at different temporal and spatial scales, highlighting the potential of this index to explore and anticipate the effects of climate change in demersal communities under different scenarios of global warming.

Keywords: Community Weighted Mean Temperature, Temperature, Climate change, Demersal fish community, Temperate ecosystem, Thermal niche, Northeast Atlantic