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TITLE: Living foraminiferal assemblages in two submarine canyons (Polcevera and Bisagno) of the Ligurian basin (Mediterranean Sea)

AUTHOR: ['Letizia Di Bella', 'Anna Sabbatini', 'Laura Carugati', 'Marco Lo Martire', 'Gian Marco Luna', 'Martina Pierdomenico', 'Roberto Danovaro', 'Alessandra Negri']

ABSTRACT:

Living (Rose-Bengal stained) benthic foraminifera were investigated in eleven stations sampled along transects following a depth gradient from Polcevera and Bisagno canyons and the adjacent open slope (Ligurian Sea), in a depth interval ranging from 200 to 2000 m. In order to understand which environmental factors influence the abundance and taxonomical composition of the foraminiferal assemblages in these two domains (canyon and open slope), qualitative and quantitative foraminiferal data were correlated to the sediment biochemical composition (in terms of phytopigments, proteins, lipids, carbohydrates and biopolymeric carbon), grain size and the main hydrological characteristics (salinity, temperature, dissolved oxygen). The Cluster Analysis and Canonical Correspondence Analysis allowed us to detect two sectors (coastal and offshore) characterized by contrasting trophic conditions. The coastal sector reflects spread meso-eutrophic conditions in both physiographic domains being possibly more impacted by the river inputs and sediment transport processes from land. In fact, the narrow continental shelf of the Ligurian Sea favors the deposition of sediment transported by riverine processes on the immediately adjacent coastal areas. As a result homogenization of sea-bottom conditions occurs, leading to an unclear differentiation between open slope and canyon foraminiferal assemblages. Conversely, the offshore sector is less affected by physical disturbance due to the sedimentary flows decreasing in relation to the larger distance from the coastline. Consequently, the lower organic matter content and lower food quality (expressed in terms of contribution of the primary material to the biopolymeric carbon pool) lead to a more oligotrophic condition, which favors the development of peculiar assemblages dominated by *Glomospira charoides*, *Ammolagena clavata* and epifaunal taxa. The first finding ever of a warm tropical species (*Amphistegina lessonii*) in the Ligurian Sea sediments at 500-m depth can be considered the first evidence of upward expansion of tropical species to the Northern portion of the Mediterranean Sea, which is experiencing an evident water warming linked to the ongoing global climate change.

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