

Zooplankton distribution and community structure in the North-Western  
Mediterranean sea during the Deep Water formation Experiment (DEWEX,  
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The North-Western Mediterranean Sea (NWMS) is characterized by a deep water convection process in winter, usually followed by a large phytoplankton bloom in late winter and spring. In this context, the DEWEX program aimed to understand how deep convection affects the organization of the pelagic ecosystem. This program was a multi-disciplinary study, covering the physical processes and exploring the relationships between physical structures, stoichiometry and biological communities. Two cruises were conducted to map the deep water formation area, in contrasting seasons February and April 2013. Zooplankton samples were collected using a Bongo net (120µm mesh size) in the upper 250 m, in 13 stations over the whole area. Samples were kept for dry weight measurements, binocular and Zooscan treatments, and delivered biomass, taxonomic composition and size spectra. In addition, UVP casts (more than 75 per cruise) were used to deliver an index of zooplankton distribution. Zooplankton biomass and abundance over the whole NWMS showed a clear seasonal difference between the two sampling periods with a similar increase rate (x5.5). However, this increase was not homogeneous over the whole NWMS but linked to sub-regions related to dynamics of the water column. In terms of community structure, the top ten dominant species were unchanged for the both seasons showing that the spring zooplanktonic populations were built on winter stocks responding to the bloom. The changes in zooplankton structure (abundance, biomass, and size spectra, and UVP-derived abundances) were interpreted in relation to environmental conditions, using multivariate and cluster analyses.

Keywords: Zooplankton, community structure, size spectra, North Western Mediterranean

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