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Title: Seasonal and interannual relationships in the zooplankton dynamics of the Northeast Atlantic Shelves in relation to latitude and trophic status

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Abstract:

Seasonal and interannual patterns of variability in mesozooplankton (200 μm mesh size nets) density were compared between four coastal sites in the Northeast Atlantic Shelves Province: Bilbao 35 (B35) and Urdaibai 35 (U35) stations, located in the south-eastern Bay of Biscay, L4 station, located off Plymouth in the western English Channel, and Scottish Stonehaven (SH) station, located in the north-western North Sea. The comparison was made for major zooplankton taxa using data from time series (1999-2013). Both holoplankton and meroplankton groups, and dominant copepod and cladoceran genera were considered for analysis. A resemblance Bray-Curtis similarity test was carried out together with a clustering dendrogram to visualize the site-dependent seasonal and interannual relationships among zooplankton taxa. Up to five different groupings of taxa could be identified in the resemblance test for the patterns of seasonal variability. The highest resemblance levels were found in the assemblage constituted by cladocerans, *Evadne*, *Podon*, appendicularians and *Acartia*, which showed a seasonal progression related to latitude, with annual maxima in early spring, in late spring and in summer at U35, L4 and SH, respectively. A clear reduction in the peaking period of holoplankton groups along the year with increasing latitude was also observed. Zooplankton taxa from B35 did not fit very well into this latitudinal progression of the seasonality, likely related to its eutrophic status. For the patterns of interannual variability a dendrogram with a stair-step appearance was obtained from the resemblance test, evidencing the lack of clearly defined groupings or patterns along the time series.

Keywords: interannual variability, latitudinal relationships, seasonal patterns, zooplankton.

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