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TITLE: Temporal changes (1989?1999) in deep-sea metazoan meiofaunal assemblages on the Porcupine Abyssal Plain, NE Atlantic

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ABSTRACT:

Trends among major metazoan meiofaunal taxa were investigated based on 56 deployments of a multicorer at 10 time points over a period of 11 years (1989?1999) at the Porcupine Abyssal Plain Sustained Observatory site (PAP-SO: 48°50?N 16°30?W, 4850 m depth). This area is characterised by a strong seasonality in the deposition of organic matter to the seafloor and by the massive increase in the density of holothurian species since 1996, the so-called ?Amperima event?. Total meiofaunal densities ranged from 346 to 1074 ind.×10 cm?2 and showed a significant increase with time when time was represented by cruises, years and the ?Amperima period? (1996?1999) vs. the pre-Amperima period (1989?1994). This pattern was driven mainly by the nematodes, which were the dominant taxon (?90% of total abundance). The third most abundant group, the polychaetes, also increased significantly in abundance over the time series, while the ostracods showed a significant decrease. Most other taxa, including the second-ranked group, the copepods (harpacticoids and nauplii), did not exhibit significant temporal changes in abundance. Ordination of taxon composition showed a shift from the pre-Amperima to the Amperima periods, a trend supported by the significant correlation between the x-ordinate and time. The majority (52?75%) of meiofaunal animals inhabited the top 2 cm of the 5 cm sediment cores analysed. There were significant increases in the proportion of total meiofauna, nematodes and copepods (but not polychaetes) inhabiting the 0?1 cm layer over time (represented by cruises) and between the pre-Amperima and Amperima periods in the case of copepods and polychaetes. During the intensively sampled period (1996?1997), there were indications of seasonal changes in the vertical distribution patterns of total meiofauna and nematodes within the sediment. We discuss the potential link between temporal variations in organic matter flux to the seafloor and meiofaunal populations, considering both qualitative and quantitative changes in fluxes and how they may be linked to climate variations.

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