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Title: *Patterns of vertical distribution of deep-sea meiofauna in Arctic continental margin sediments (HAUSGARTEN area) shaped by depth and food supply.*

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Compared to terrestrial and coastal marine systems the deep-sea floor is the largest ecosystem on this planet, but knowledge of its structure and function remains incomplete. Nowadays, when climate changes occur, investigations of these deep-sea ecosystems, especial in polar regions, seem to be of major importance. Our study was focused on the impact of changes in depth and food supply, on the smallest sized bottom fauna - meiobenthos, in the region which is highly exposed to environmental changes - the Marginal Ice Zone of the Fram Strait. We aimed to explore the patterns of vertical distribution of meiofauna in sediments along the bathymetric gradient from 1200m to 5569m. The samples of meiofauna (upper 5cm sediment, cut into 1cm layers) were collected from 2005 to 2009 within the scope of Hausgarten monitoring. Large inflow of organic matter to the sea floor (in comparison to other polar regions) translates into relatively high meiofaunal densities in this region. Differences in meiofaunal distribution among the sediment layers (vertical profile) were stronger than among stations (bathymetric gradient). At all stations highest meiofaunal density and highest number of taxa were observed in the surface sediment layer (0-1cm) and decrease with increasing sediment depth. However, the shape of the decline pattern differed among stations. At stations 1200-2000m (continental slope) and 5500m (Molloy Deep depression) the fauna was more evenly distributed among sediment layers than at the other stations, where even up to 75% of all meiofauna was concentrated in surface layer. Based on meiofaunal community structure investigated stations can be divided into three other groups: first group consist of 'shallow' stations (1200-2000m water depth), second group form mid-water depth stations (2500-3500m), and third group is formed by the deepest located stations. At all sediment layers nematodes were the most abundant organisms (60-98%). Environmental factors best correlated to vertical patterns of meiofaunal community were Chlorophyll a and Chloroplastic Pigment Equivalents. Summing up, the results of the study showed that the patterns of meiofauna vertical distribution in sediment are shaped by the water depth related differences in food supply.