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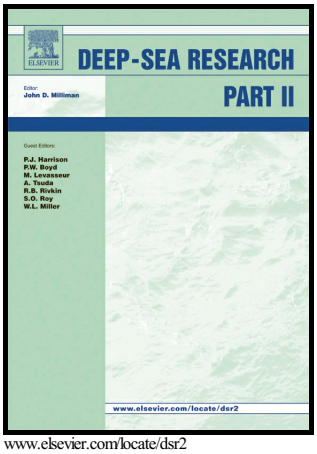

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Meiofauna abundance and community patterns along a transatlantic transect in the Vema Fracture Zone and in the hadal zone of the Puerto Rico trench

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Abstract

Despite the increasing sampling effort that occurred in the deep-sea environment during the last decades, knowledge about meiofauna ecology in trenches and Fracture Zones is still scarce. Based on the lack of this information, a longitudinal transect across the Vema Fracture Zone in the North Atlantic was sampled to test whether meiofauna abundances differ between Northeast and Northwest Atlantic basins, separated by the Mid-Atlantic Ridge. Also, for examination of meiofauna depth pattern, the Puerto Rico trench floor, its upper trench slope and the Western North Atlantic abyssal were investigated.

In this study, meiofauna communities were dominated by Nematoda (93%) and Copepoda (4%). The highest total abundance of meiofauna was found in the Puerto Rico trench and the lowest in the Western basin. We found significant differences between the Eastern and Western Atlantic basins, which were potentially caused by differences in current regimes. Stronger currents observed in the Western basin possibly led to the coarser sediment grain size observed in this region, and consequently to the lower abundances of the major groups found there. Besides grain size, the total abundance of meiofauna was significantly correlated with total nitrogen, total organic carbon, and water depth. Moreover, our study reveals a trend