Macrobenthic diversity response to the atlantification of the Arctic Ocean (Fram Strait, 79°N)

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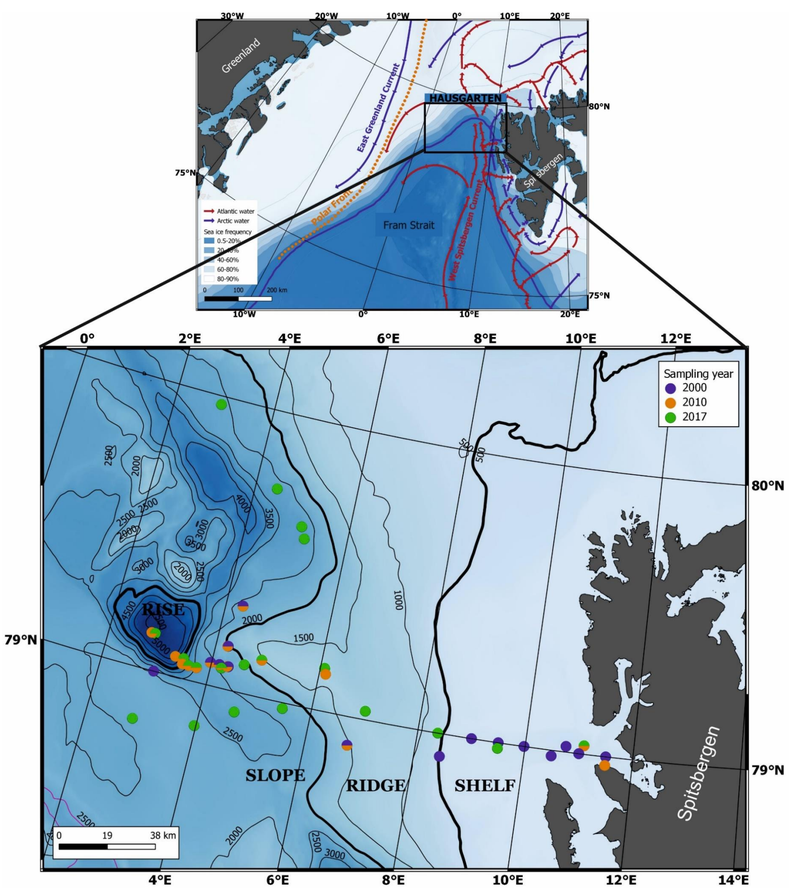
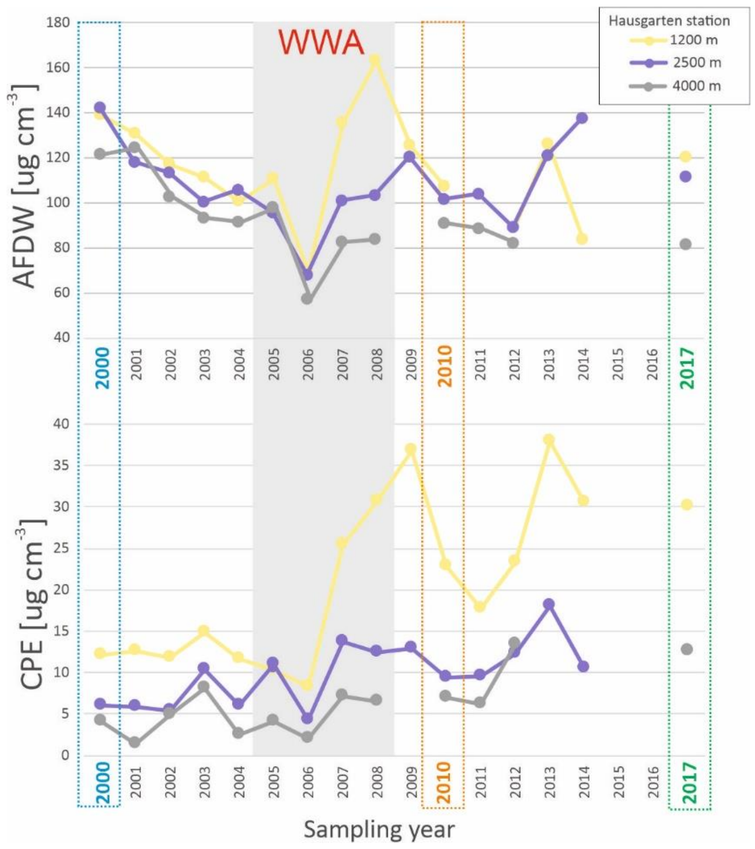
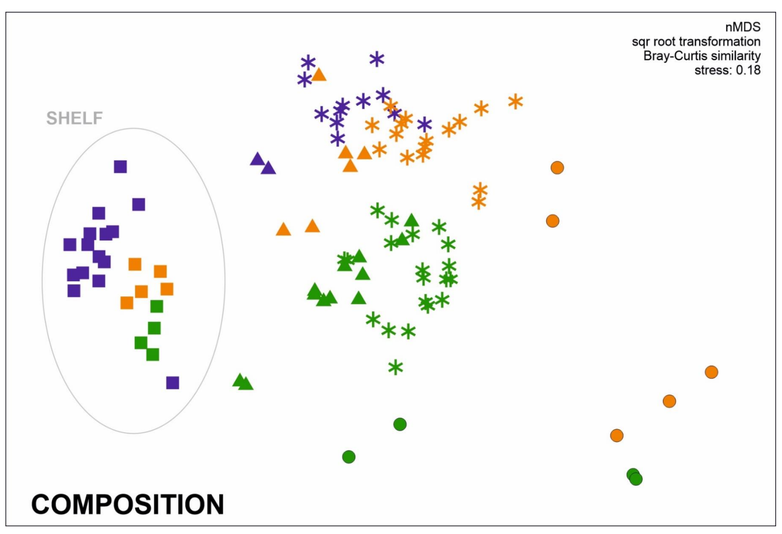
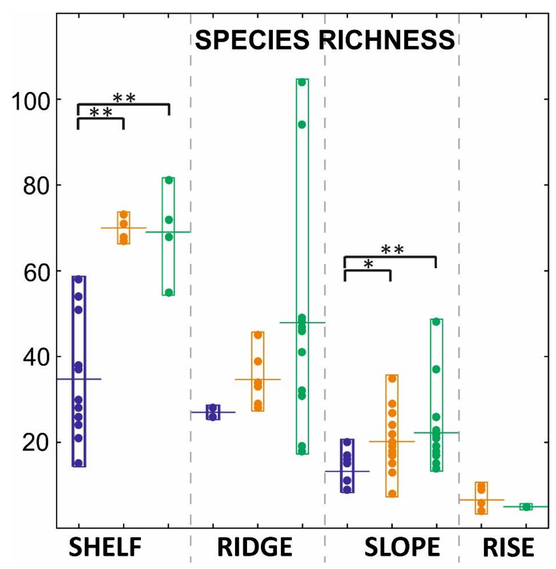
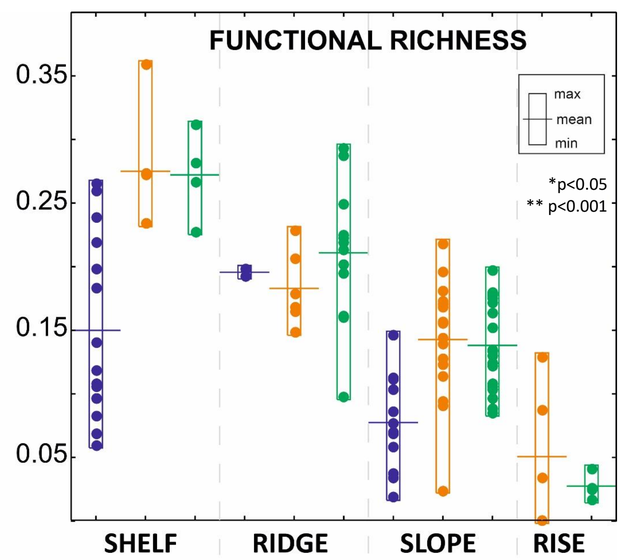


Significant change in environmental conditions in HAUSGARTEN area (Greenland Sea, Fram Strait) occurred in 2004-2008 (**W**arm **W**ater **A**nomaly, Beszczynska-Möller et al., 2012). The material for our study was collected before (in 2000) and after the WWA (in 2010 and 2017) at station depths ranging from 203 m to 5561 m. We explored the influence of environmental changes on the structure (species composition and diversity) and functioning (functional trait composition and diversity) of macrofauna communities.



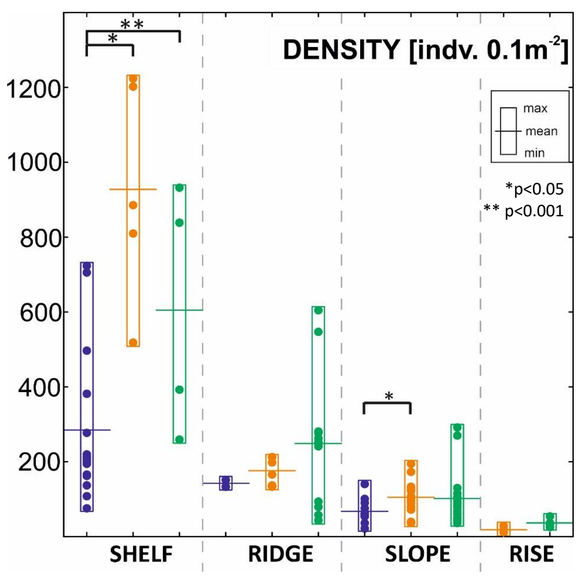






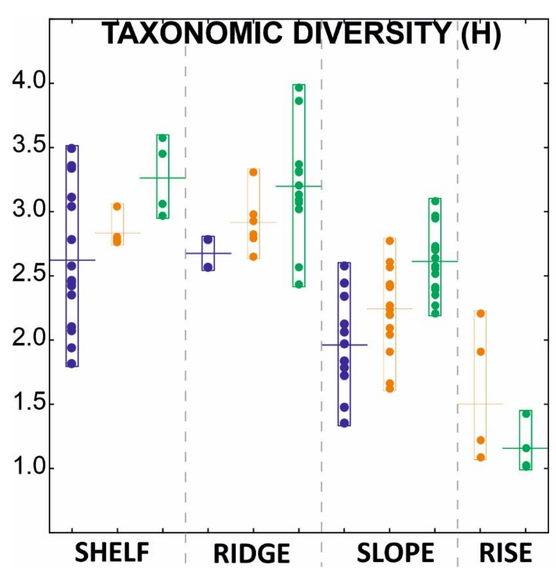
After the **WWA**:

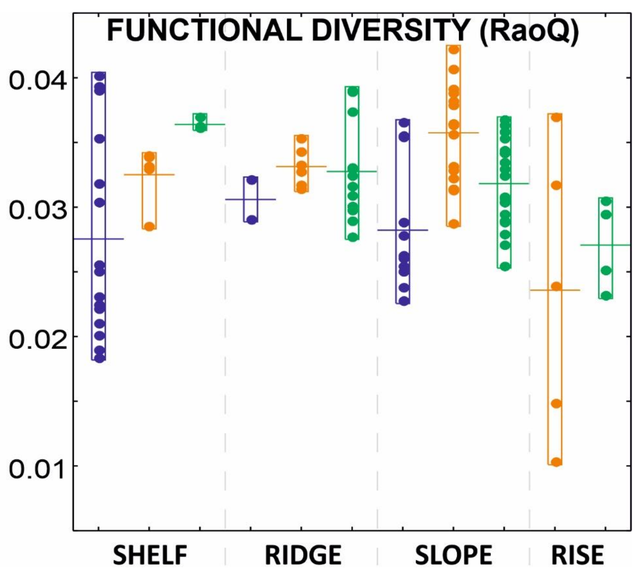
- macrofauna species composition significantly changed
- macrofauna density increased at all water depths



After the **WWA**:

- at SHELF and SLOPE species richness and functional richness increased
- macrofauna taxonomic and functional diveristy increased





Despite changes in the taxonomic composition, macrofauna communities at the shallowest stations showed high functional redundancy, i.e., trait composition remained unchanged after the WWA.
At water depths below 1500 m, where functional redundancy was significantly lower, functional trait composition changed significantly after the WWA.

Our results suggest that macrofauna communities on the shelves are more resistant to environmental changes compared to deep-sea assemblages in the eastern Fram Strait.

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