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CHANGES IN ARCTIC BENTHOS – DEMAND FOR A “FUNCTIONAL ATLAS”

Renate Degen (*Alfred Wegener Institute Helmholtz Center for Polar and Marine Research (AWI), Germany*)

Tom Brey (*Alfred Wegener Institute Helmholtz Center for Polar and Marine Research (AWI), Germany*)

Antje Boetius (*Alfred Wegener Institute Helmholtz Center for Polar and Marine Research (AWI), Germany*)

Dieter Piepenburg (*Alfred Wegener Institute Helmholtz Center for Polar and Marine Research (AWI), Germany*)

renate.degen@awi.de

The shift towards a seasonally ice-free Arctic Ocean raises many questions related to the future of productivity and function of Arctic ecosystems. The highly productive marginal ice zone is dragged closer towards the center of the Arctic, and the ongoing thinning of sea ice and increased light penetration to the surface ocean may change spatio-temporal patterns of under-ice productivity. As under-ice processes are hard to monitor we study the dynamics on (and in) the Arctic seafloor, particularly the macrobenthos, as a proxy for pelagic change. We use biological trait analysis (BTA) to study the benthic functions and responses as this method links species, environment and ecosystem processes (Bremner 2005). Although benthos data from the Arctic and especially from the Arctic deep sea are scarce, international cooperation enables us to compile a dataset ranging over the past twenty years up to today. Based on this dataset we show that benthic functional traits like secondary production are correlated to Arctic sea ice and its associated dynamics. We give a regional example where benthic community functions have changed already over the last twenty years and highlight the areas of the Arctic Ocean that are most prone to these effects. Finally we want to stress the importance of international cooperation in the process of integrating existing data and knowledge to build up a spatially explicit Arctic trait database. Such a database would provide the scientific base to classify the Arctic into clearly defined “eco-function” regions. This functional atlas can then be used by the scientific community to correlate observed environmental trends and predict upcoming changes in ecosystem functioning accordingly.