Remineralization rates and benthic communities under contrasting sea–ice conditions in the deep Arctic Ocean

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Thinning sea ice and shrinking sea–ice coverage is currently changing production regimes in the pelagic and sympagic Arctic Ocean. It usually remains unknown, how these changes affect export fluxes and hence, benthic communities and remineralization rates in the Arctic deep sea. To tackle this question, we took sediment samples from two bathymetric transects in the Arctic Fram Strait – East Greenland continental slope and West Spitsbergen continental slope (*i.e.* HAUSGARTEN observatory) – characterized by annual high and low sea–ice coverage, respectively. We measured benthic oxygen consumption rates along with various biogenic parameters and characterized macro– and meiofauna communities. A comparison of the two bathymetric transects suggest that low sea–ice coverage may lead to increased food availability for deep–sea benthic communities and enhanced remineralization rates down to a depth of 2000 m. Below 2000 m depth, food availability and remineralization rates are less or even not affected by sea–ice coverage. Furthermore, our data indicate that from high to low sea–ice covered areas macrofauna abundances shifts from polychaete–dominated to nematode–dominated. Such a shift has not been found for macrofauna biomass and meiofauna abundance. This comparative study provides insights into deep sea benthic activities and community structure in a region strongly influenced by global change. It could help to assess the fate of Arctic benthic ecosystems under future climate scenarios.