

Will Arctic Ocean zooplankton DWARF as water temperature increases?

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Temperature is one of the main environmental factors influencing life at different organization levels. At present, global surface temperature increases at fastest rate in the records of climate change, with the temperature in the Arctic growing three times faster than elsewhere.

In the frame of DWARF Polish-Norwegian Research Programme, we aimed at discovering relationships between size related characteristics of marine zooplankton and ambient temperature. Zooplankton are important elements of global biogeochemical cycles as main grazers in ocean food webs. Their structure and variability affects ocean trophodynamics and the biological carbon pump. We conducted our investigations at locations representing natural temperature gradient, from temperate Raunefjord (60 °N), through subarctic Ulsfjorden and Balsfjorden (69 °N), along the West Spitsbergen Shelf in Hornsund (77 °N) and Kongsfjorden (79 °N), up to the high arctic Rijpfjorden (80 °N). At each location we carried out measurements of environmental variables (temperature, salinity, chlorophyll *a* concentration) and of zooplankton size structure with Laser Optical Plankton Counter, along with sampling of zooplankton with nets (60 µm and 180 µm mesh size). We expect that comparison of the characteristics of zooplankton from the study locations, including zooplankton Normalized Biomass Size Spectra, taxonomic composition or size distribution of key zooplankters, supported by data on environmental factors, will allow us to verify the hypothesis that zooplankton becomes smaller with temperature increase. If this hypothesis will be confirmed, one can envisage dwarfing of zooplankton community in the Arctic Ocean with progressing global warming.