

DESCRIPTION FOR THE GENERAL PUBLIC

The main goal of this project is to find out how the environmental factors impact zooplankton community structure in two high Arctic fjords of Svalbard: Kongsfjorden and Rijpfjorden, using the sediment traps deployed on moorings during three years (2014–2017). Sediment traps are not designed to sample zooplankton community, but they are ideal to monitor zooplankton in regions, where it is difficult to use standard sampling methods such as plankton nets, like from ice covered areas.

Zooplankton, transferring energy from the primary producers to higher trophic levels, is probably the most important group for the functioning of the Arctic marine ecosystem. In spite of its importance, information on the seasonal zooplankton development in the high Arctic is still scarce. Inter-annual observations of zooplankton provide better understanding of ecological processes in pelagic waters of the Arctic, which are still not well known, especially in ice covered regions and during polar night.

Species from the high latitude regions are very sensitive to change of water parameters, so even a small difference in natural habitat can disrupt the proper functioning of zooplankton community, hence the whole ecosystem. It is a well-known fact that the Arctic is now experiencing a rapid climate change and there has been a great deal of attention paid to the decrease of sea ice cover, due to global warming. The warming predicted for the central Arctic is about 3 – 4 °C in the next 50 years. This may cause significant changes in the ecosystems, like penetration of Atlantic species into the Arctic. On the other hand, the increase of water temperature may lead to local extinction of species and invasions of more thermophilic organisms.

During this project we plan to study zooplankton community structure (species composition, domination structure, functional groups, abundance, diversity) and sedimentation rates from 3 seasons (2014–2017) using traditional, morphological methods. The dominant species of Pteropoda will be examined to define their population structure, importance and contribution to the general zooplankton community. Additionally, inter-annual variability will be examined and compared between the fjords. The next phase of this project will be to determine the relationship between abiotic (temperature, salinity, pressure, light intensity) and biotic factors, which shape the ecological properties of high Arctic zooplankton community. The results will help to predict the future of the Arctic zooplankton community under the climate warming conditions.