

The spatial variability of qualitative and quantitative structure of planktonic protist communities in the North Atlantic Current (the Nordic Seas)



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Material and methods

samples collected during summer cruises of r/v Oceania (IO PAN)

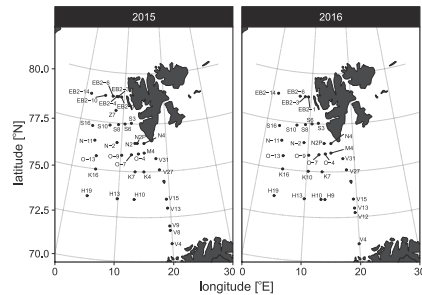
material sampled at 35 stations in 2015 and 31 stations in 2016

samples collected using Niskin bottles from depths 5 m, 15 m, 25 m, 35 m, 50 m and integrated to represent the community structure under square metre

samples fixed with Lugol's solution and, after 24 h, with glutaraldehyde

sub-samples analysed under an inverted microscope using protocols described by Utermöhl (Utermöhl, 1958)

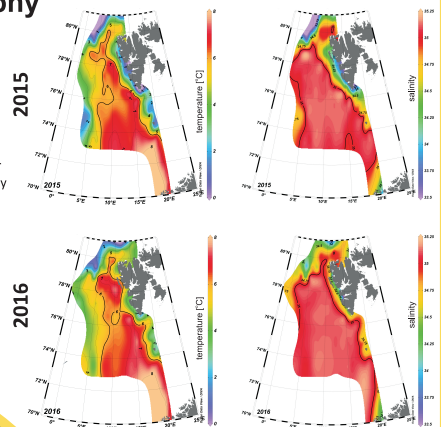
the total abundance size and trophic structures presented in the average cubic metre of 50 m-deep water column



Hydrography

comparable oceanographic conditions in both investigated summers

slightly higher seawater temperature and salinity along the Western Spitsbergen in 2016, likely resulted from the weaker on-shelf advection of cold and relatively fresh waters from the Barents Sea



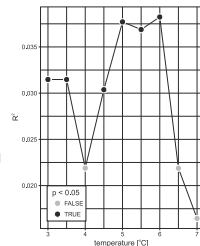
the highest temperatures recorded in the area of the main inflow of Atlantic water to the Arctic

in both years, the maximum seawater temperature (>7.50°C) was recorded in the northern Norway waters (station V4), while the minimum (1.21°C in 2015 and 3.00°C in 2016) in waters south of Spitsbergen (station V27)

Community structure

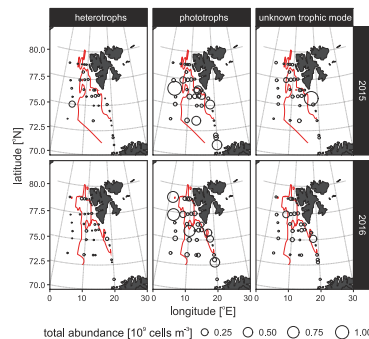
the lack of significant differences in inter-annual protist communities composition in the aspect of latitude

PERMANOVA revealed the highest intergroup variance to the intra-group variance at 6°C



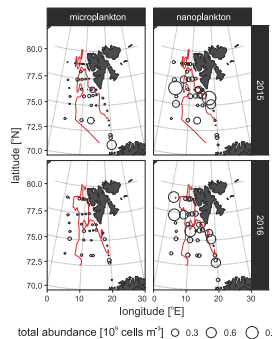
the highest abundances were observed at the interface between the water masses with different thermal properties

in 2015, the highest protist abundances ($1.13-1.14 \times 10^6$ cells m^{-3}) were observed in waters south of Spitsbergen (station V31) and in the eastern part of the area (station N-11), while in 2016 only in the eastern site (station S16; 8.25×10^6 cells m^{-3})



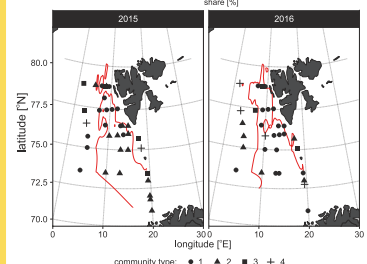
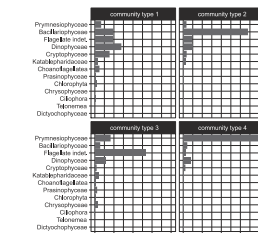
in both years, the most numerous components of the communities were nanoplanktonic phototrophs, especially Prymnesiophyceae (*Phaeocystis* sp.) and indetermined flagellates (3-7 μm in size) of unknown trophic mode

among microplankton, the most numerous were Bacillariophyceae (primarily *Pseudo-nitzschia*, *Thalassiosira*, *Eucampia*, *Chaetoceros*)



Community types

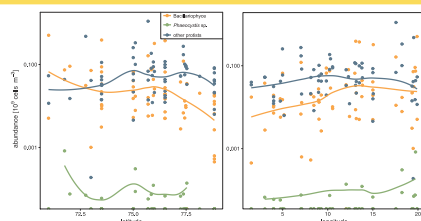
four types of protist communities were distinguished based on two-year data



Bacillariophyceae & *Phaeocystis* sp.

the most important contributors to the total abundance

the highest abundances of the taxa recorded in the southern and western part of the studied area an increase in the protists abundance at 70-72°N and 74-76°N



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