Deep-sea living benthic foraminifera and ostracoda from the European Arctic margin and the Yermak Plateau during the spring phytoplankton blooms in the Arctic Ocean: distribution, abundance, and standing stocks

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INTRODUCTION

- The Arctic Ocean is experiencing rapid environmental changes
- Shifts in sea ice extent, thickness, and seasonal dynamics
- Changes in timing of phytoplankton blooming and primary production
- Far-reaching implications for benthic-pelagic coupling processes and benthic ecosystems

AIM

Fill a knowledge gap in **springtime Arctic benthic faunal data** by investigating benthic foraminifera and ostracoda communities.

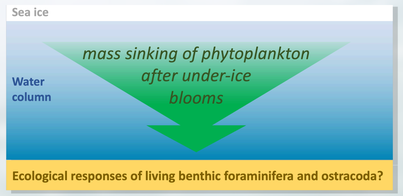

Fig. 1. *Schematic representation of the research question.*

METHODS

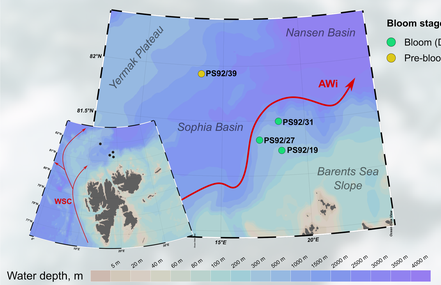

Fig. 2. *Bathymetric map with sediments sample stations collected with a video-equipped multicorer during the Polarstern expedition PS92 (19 May - 28 June 2015). West Spitsbergen current (WSC) outline was retrieved from Tessin et al. (2020). Atlantic Water inflow (AWi) outline was retrieved from Ehrlich et al. (2020). Bloom stage information was obtained from Dybwad et al. (2021).*

Fig. 3. *Sampling process of sediment cores. The greenish "carpet" represents phytodetritus that has accumulated following under-ice blooms. The volume of the collected samples is approximately 78.5 cm³.*

The samples were preserved in Rose Bengal-ethanol mixture (2 g L^{-1}), washed through a 63 µm mesh, dried, and picked for microfauna.

RESULTS

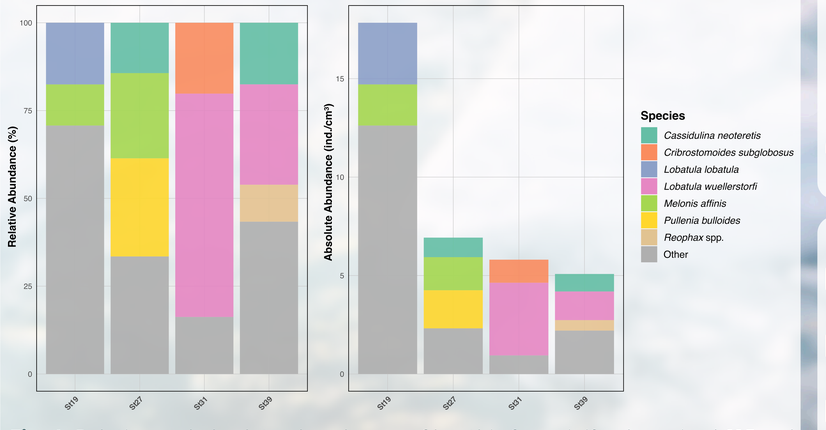

Fig. 4. *Relative and absolute abundances of benthic foraminiferal species (>125 µm) across all stations.* ***Lobatula wuellerstorfi*** and ***Melonis affinis*** are the most abundant species overall. Station 19 exhibits the highest total absolute abundance, while site 39 displays the lowest.

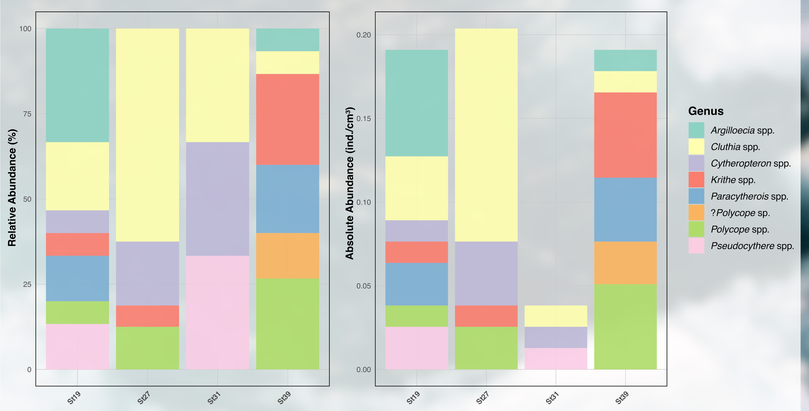

Fig. 5. *Relative and absolute abundances of ostracod genera (>125 µm) across all stations.* ***Cluthia* genus** is the most abundant. Station 27 exhibits the highest relative abundance values, while station 31 shows the lowest.

TAKE-HOME MESSAGE

- Benthic foraminifera and ostracod communities vary notably across the sites
- Stations 19 and 27: moderate to higher organic matter input
- Stations 31 and 39: lower organic matter availability
- Water depth appears to have an influence on the abundances of both foraminifera and ostracoda

FUTURE STUDIES

- Conduct **detailed taxonomic analyses,** including species-level identification
- Incorporate the **>63 µm sediment fraction analysis**, which will uncover additional diversity
- Expand **spatial coverage** by including additional sampling stations to capture community variability

ACKNOWLEDGEMENTS

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