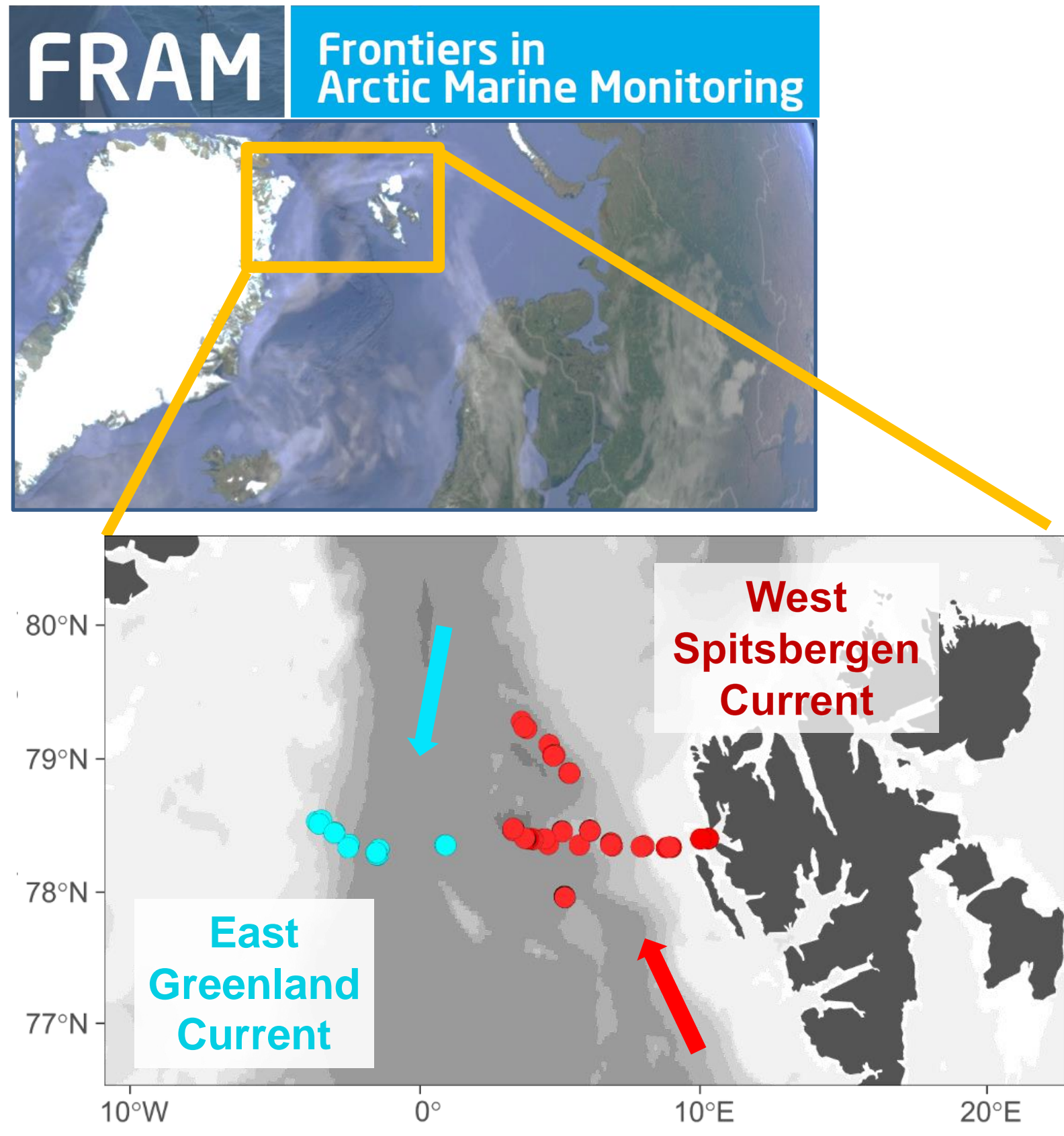


Seasonal, interannual and spatial patterns of bacterial taxonomy and genetic functions in the Arctic Ocean



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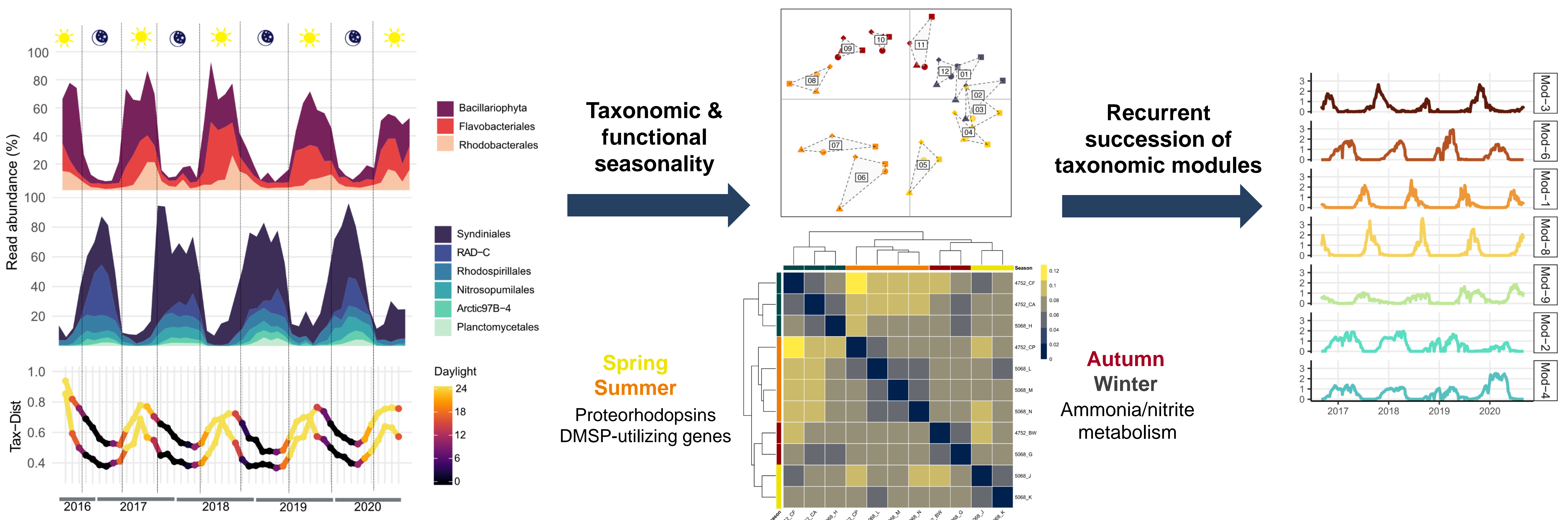
BACKGROUND & APPROACH

- The HAUSGARTEN / FRAM Observatory is a long-term ecological research site in Fram Strait, the central gateway between the Atlantic and Arctic Oceans. Since 1999, we study primary productivity, benthopelagic coupling and deep-sea fauna.
- Microbial diversity and genetic functions across time and space in the Arctic Ocean, including the Polar Night, remain virtually unknown.
- Since 2015, the FRAM Molecular Observatory studies microbial composition and function in ice-covered and ice-free regions.
- Major focus: autonomous sampling using moored instruments; including RAS water samplers. DNA sequenced for both 16S and 18S amplicons, plus PacBio long-read metagenomes.

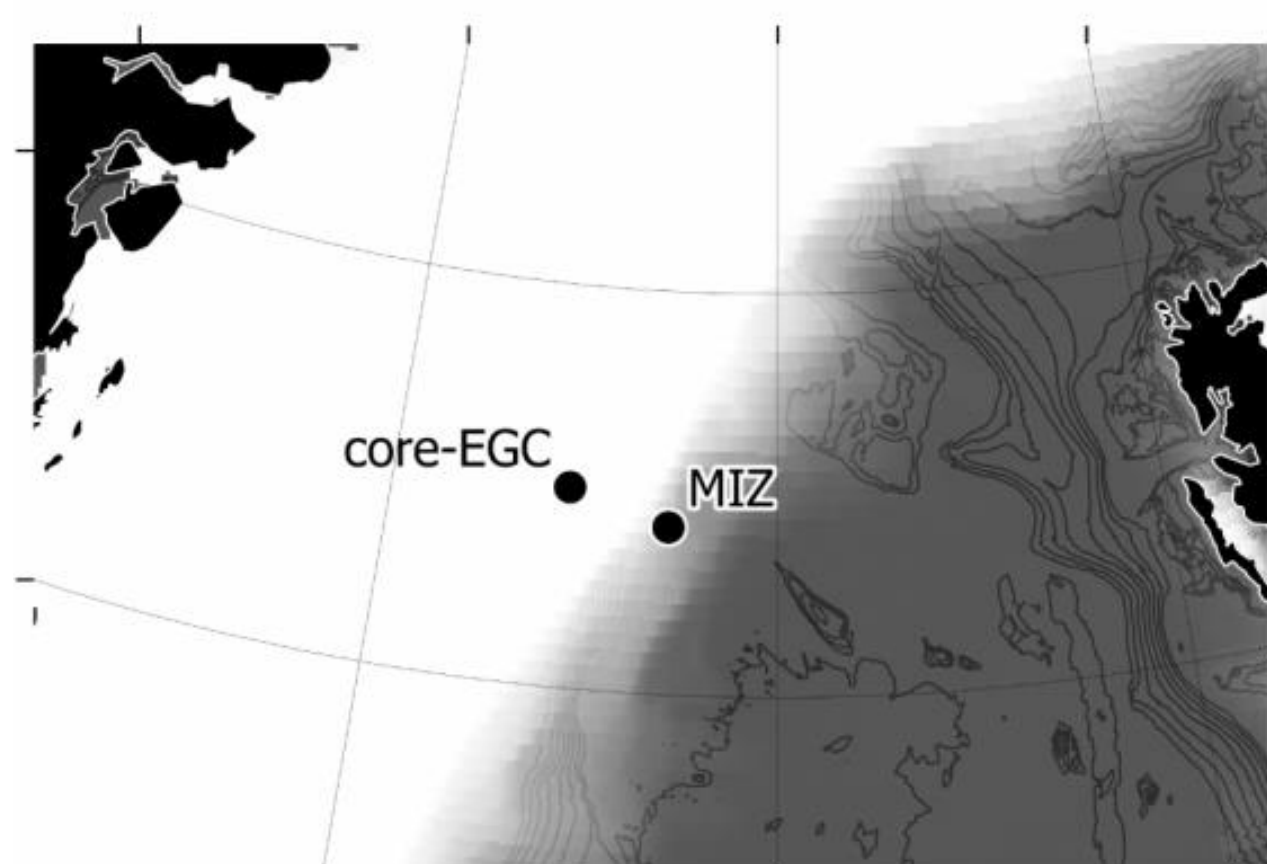


Remote Access Sampler (RAS; McLane)

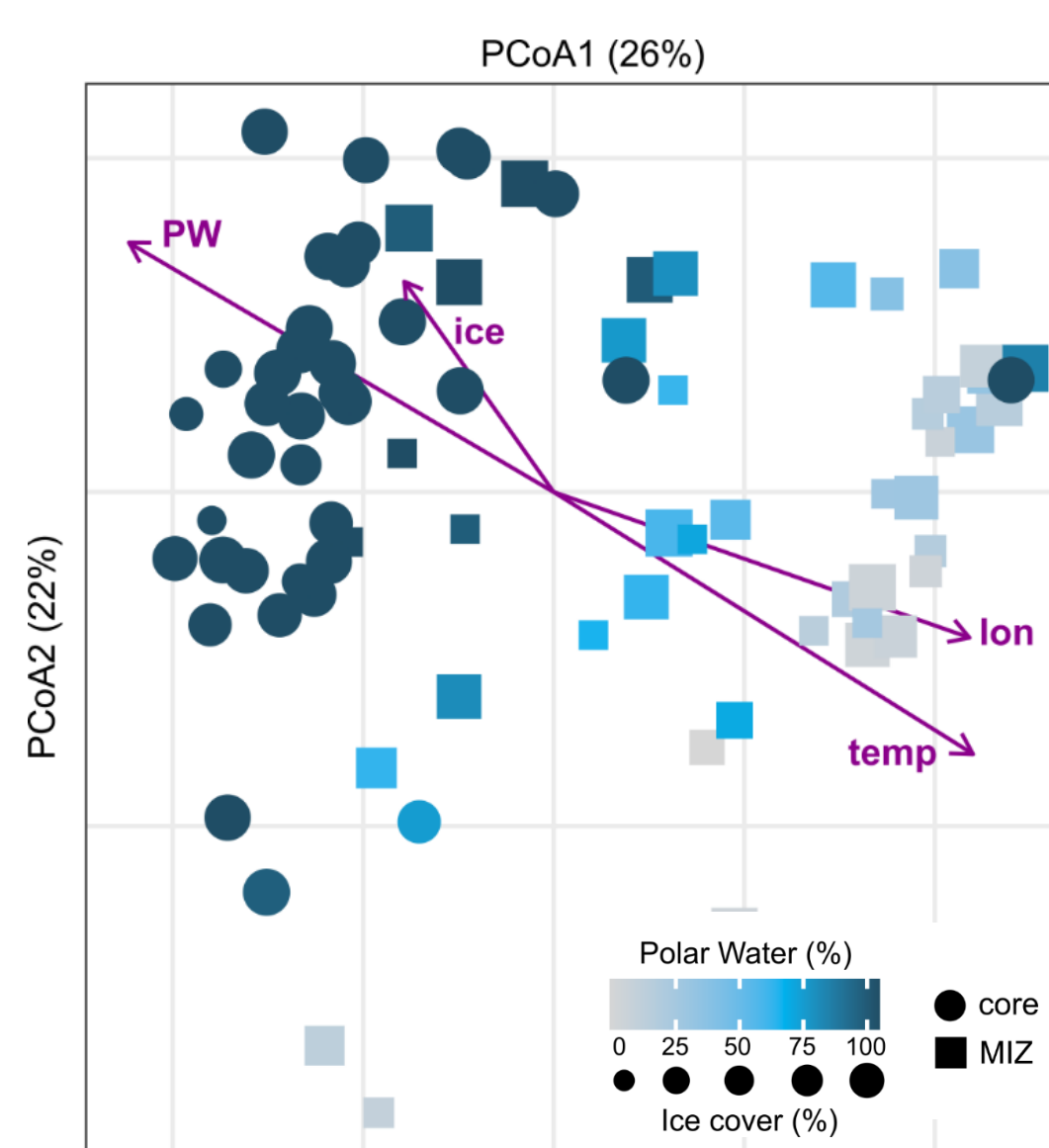
RECURRENT MICROBIAL SEASONALITY IN THE ICE-FREE WEST SPITSBERGEN CURRENT



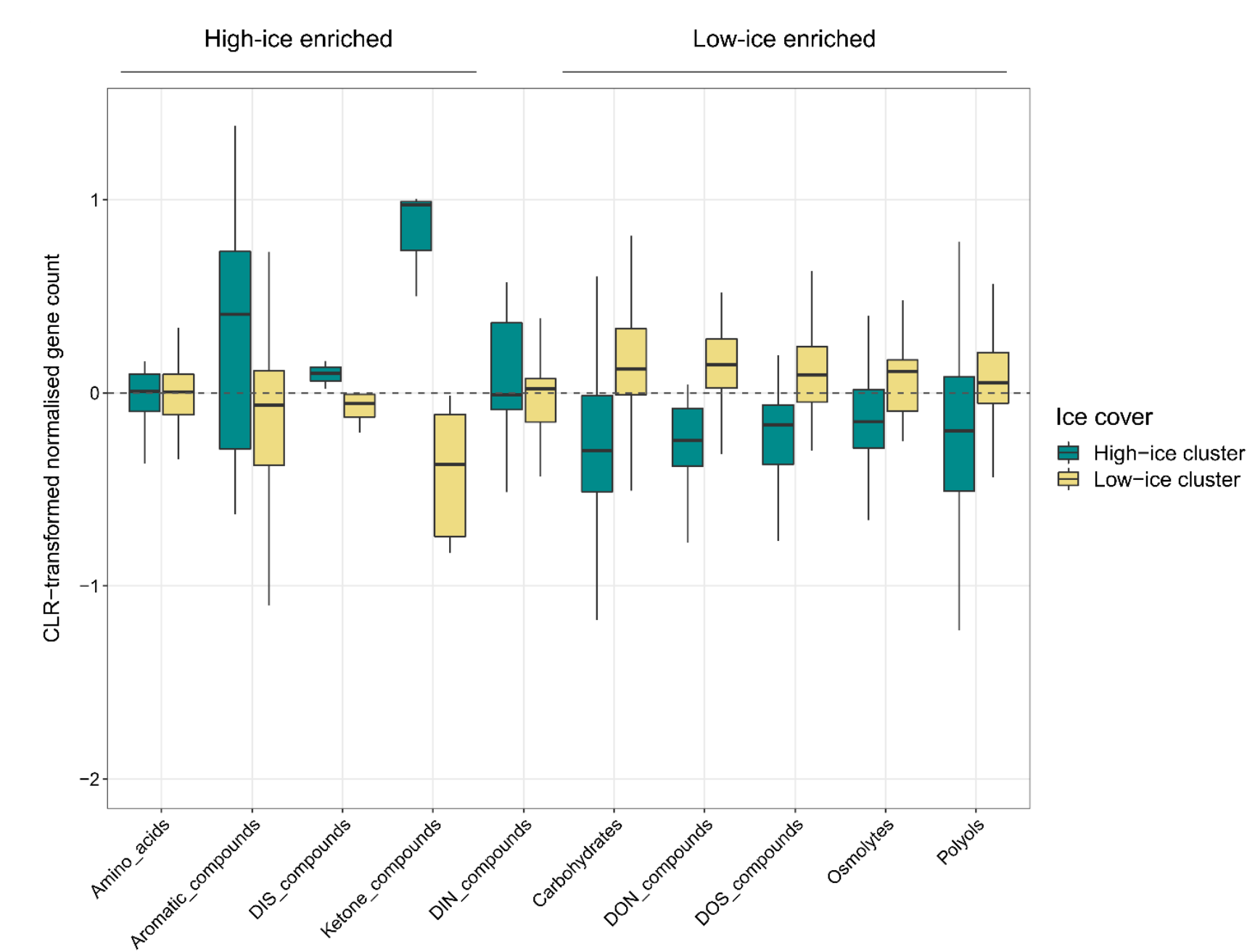
ICE COVER AND ATLANTIFICATION IN THE EAST GREENLAND CURRENT



Community varies with ice cover & Atlantic Water influx

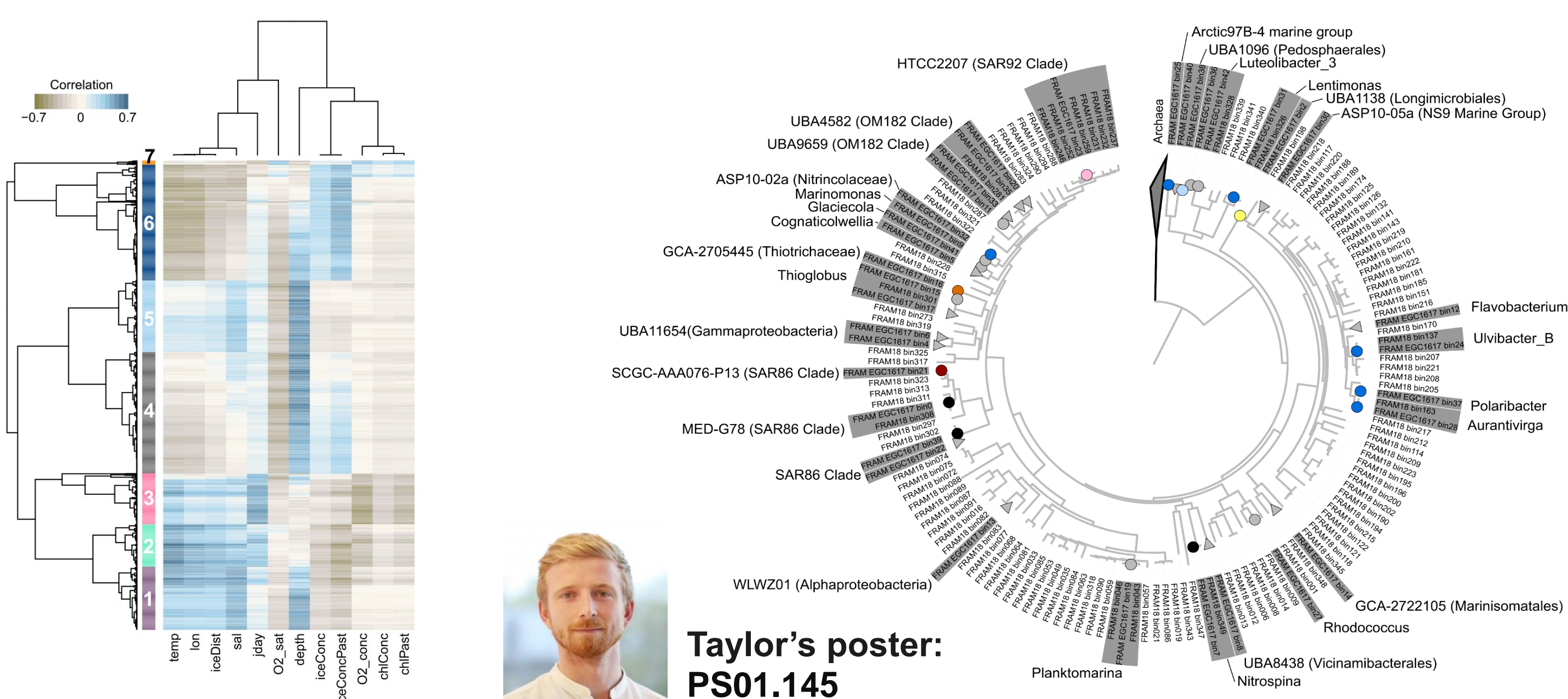


Major functional shifts between high- and low-ice



Phototrophy vs heterotrophy:
CHO, MeSH & DMSP (low-ice)
NO₃ reductase & peptidases (high-ice)

SIGNATURE POPULATIONS FOR ECOSYSTEM STATES



SYNOPSIS

Seasonal and interannual bacterial patterns in Fram Strait: fundament baseline to understand ecological and biogeochemical processes in a marine region severely affected by climate change.

Context with phytoplankton and benthos: ecosystem-scale insights across trophic levels, and the drivers of primary production, the microbial loop and benthopelagic coupling.

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