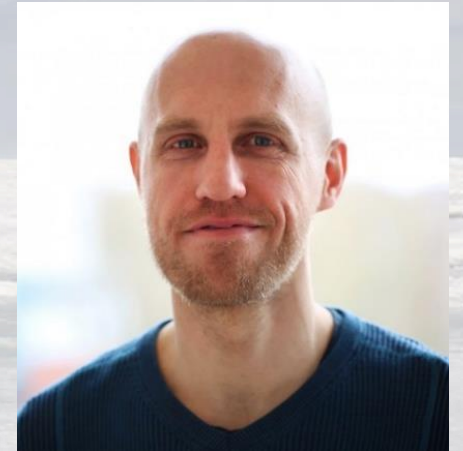


# Seasonality of microbial genetic functions in the Arctic Ocean revealed by autonomous sampling



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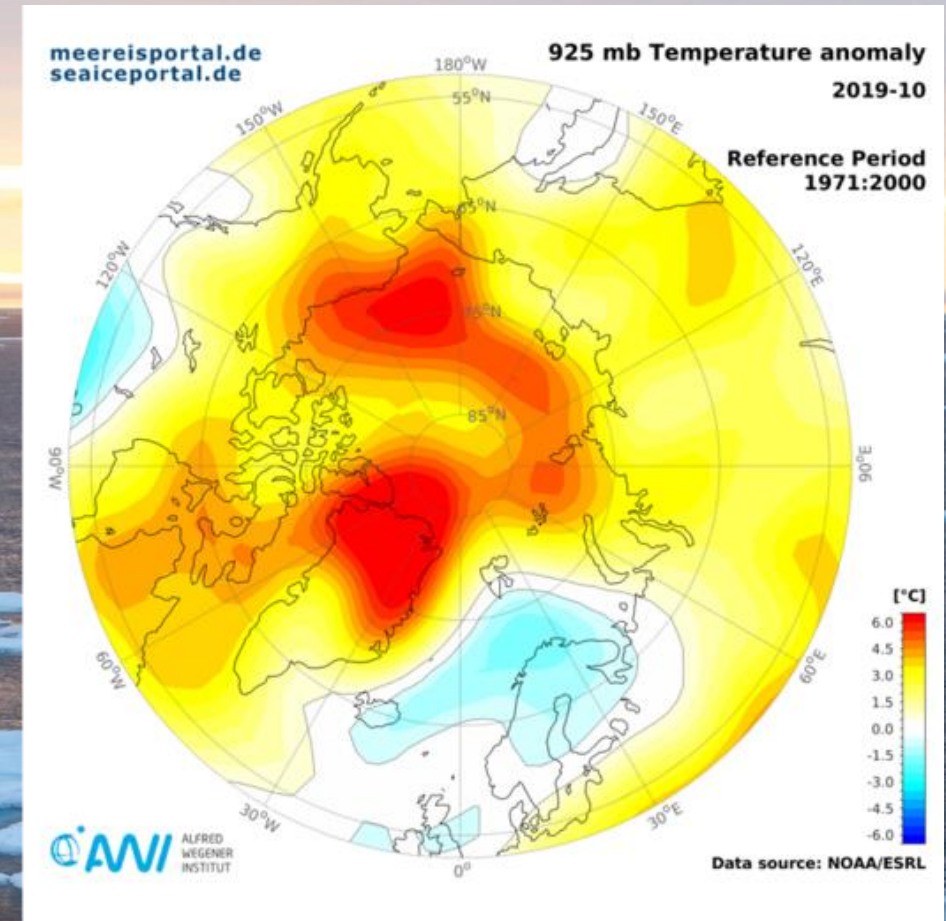
matthias.wietz@awi.de 



**FRAM**

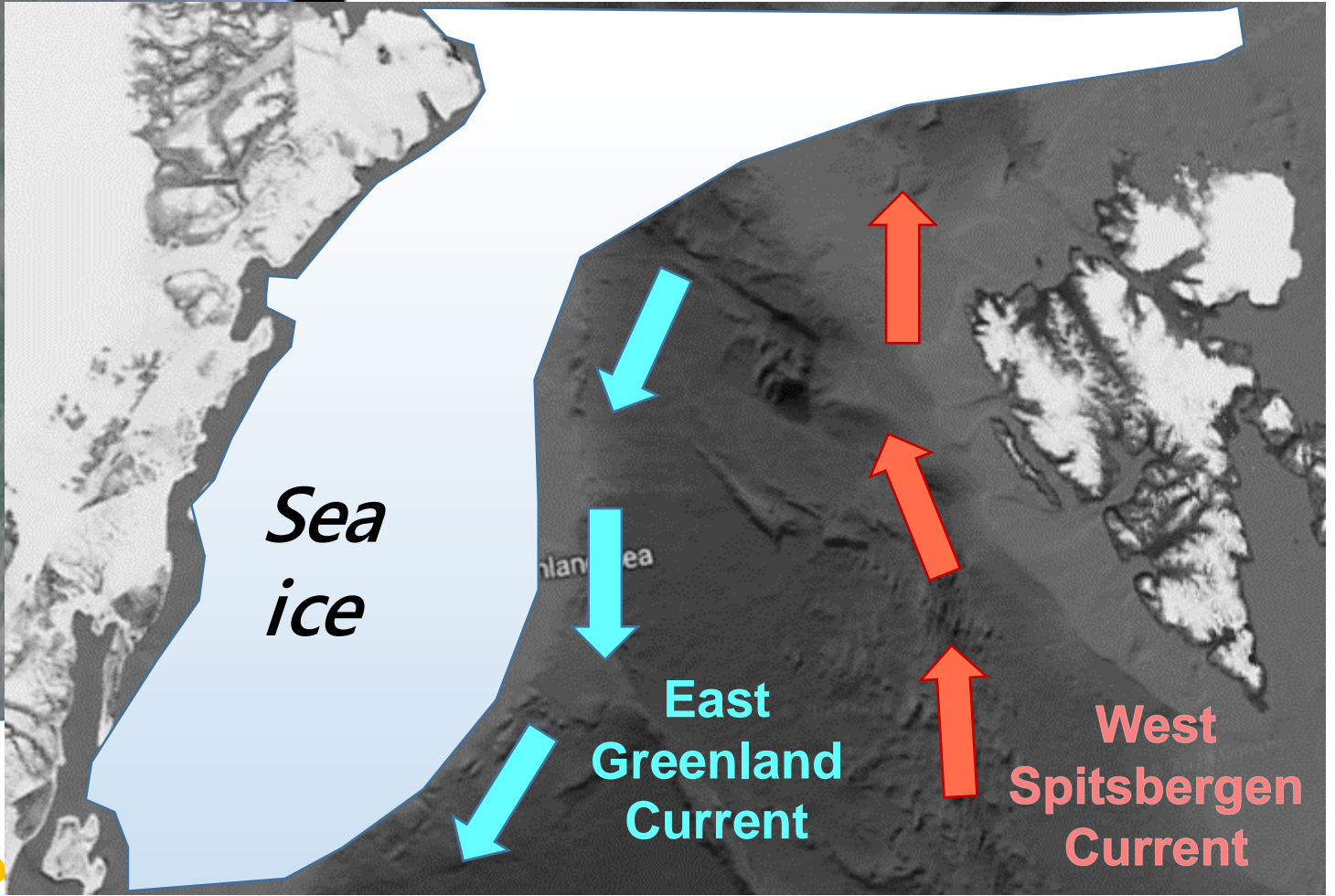
Frontiers in  
Arctic Marine Monitoring

# The Arctic is changing



Long-term observations essential





The AWI  
„Hausgarten“ /  
FRAM LTER

# High-resolution, automated microbial time-series

Amplicon and metagenome sequencing  
Context with nutrients & oceanography



Article | [Open Access](#) | [Published: 11 December 2021](#)

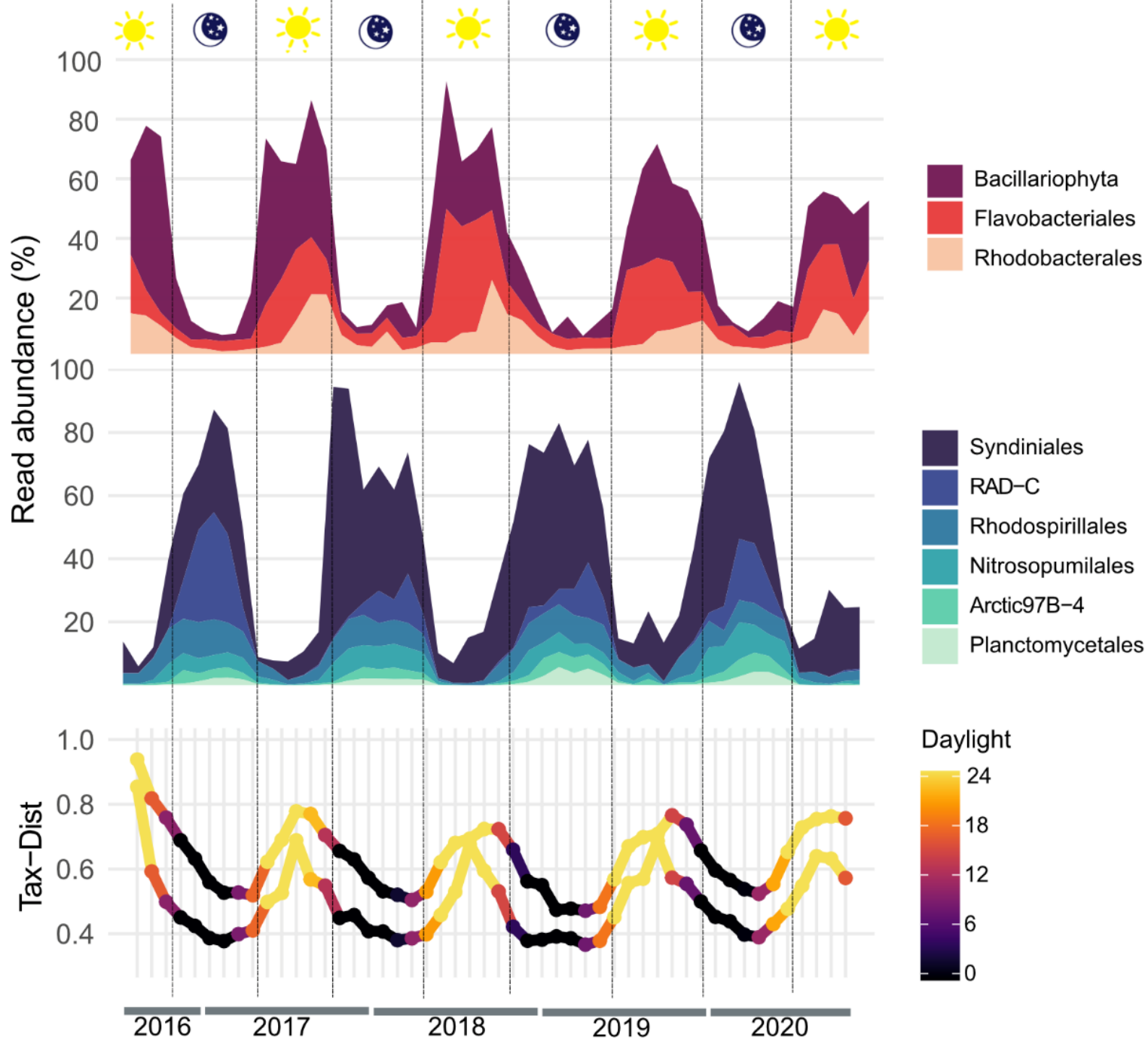
## The polar night shift: seasonal dynamics and drivers of Arctic Ocean microbiomes revealed by autonomous sampling

[Matthias Wietz](#) , [Christina Bienhold](#), [Katja Metfies](#), [Sinhué Torres-Valdés](#), [Wilken-Jon von Appen](#), [Ian Salter](#) & [Antje Boetius](#) 

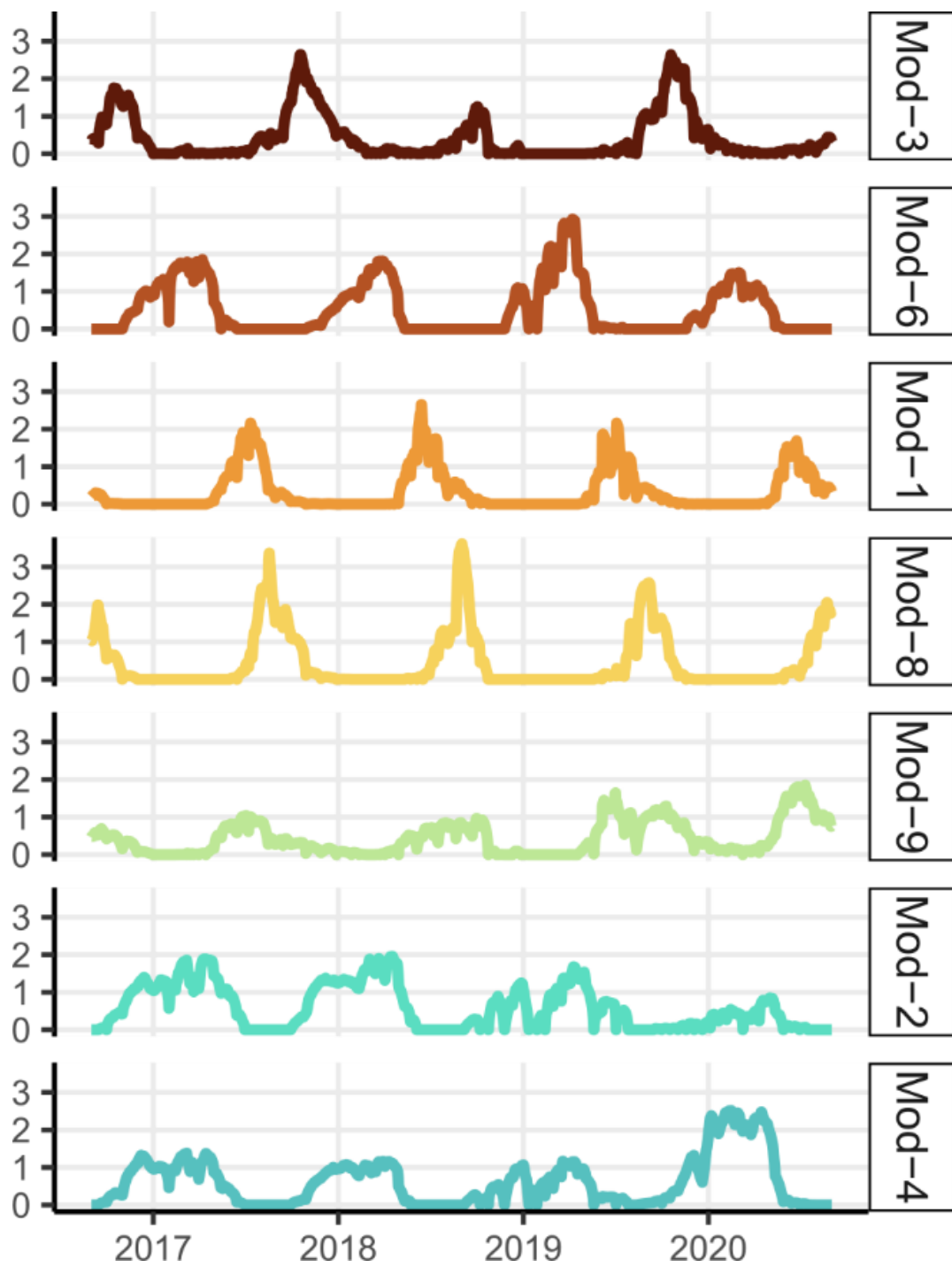
[ISME Communications](#) **1**, Article number: 76 (2021) | [Cite this article](#)

doi: 10.1101/2021.04.08.436999

# Recurrent microbial oscillations



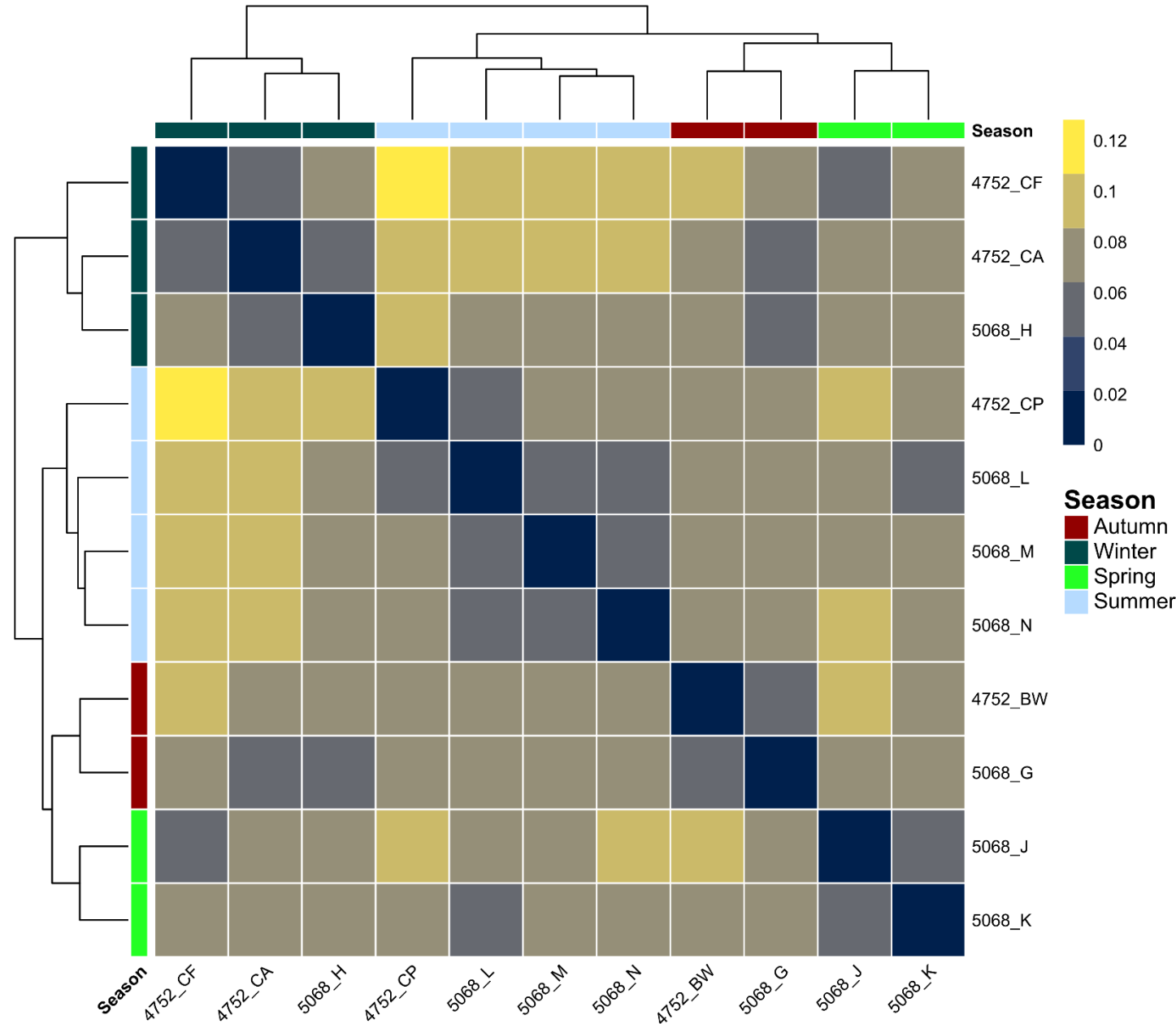
# Timely controlled microbial modules



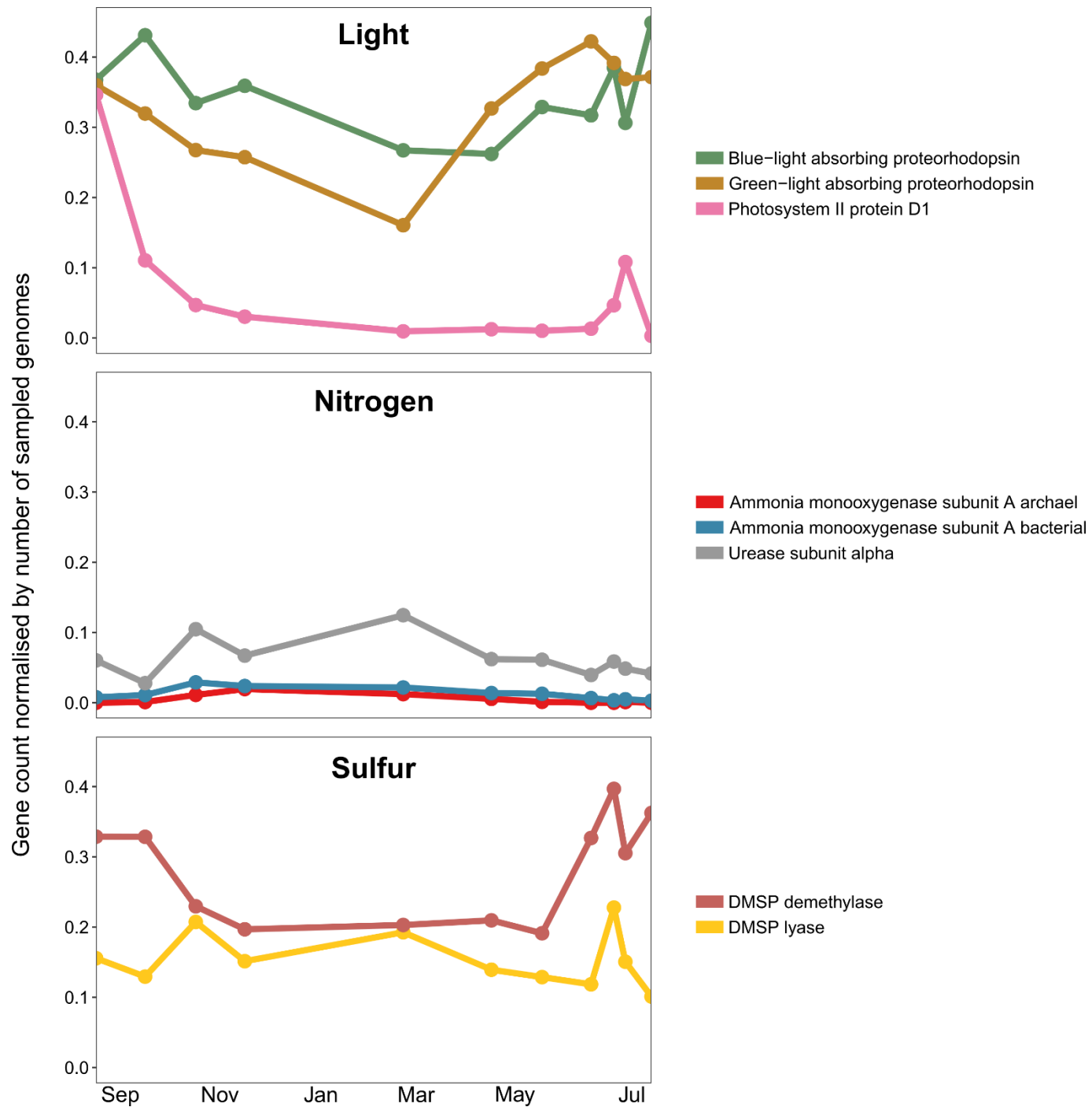
# Taxonomic = functional seasonality?

Eleven PacBio HiFi  
metagenomes

Some of the first long-read  
contigs from the Arctic  
(5 kB average)

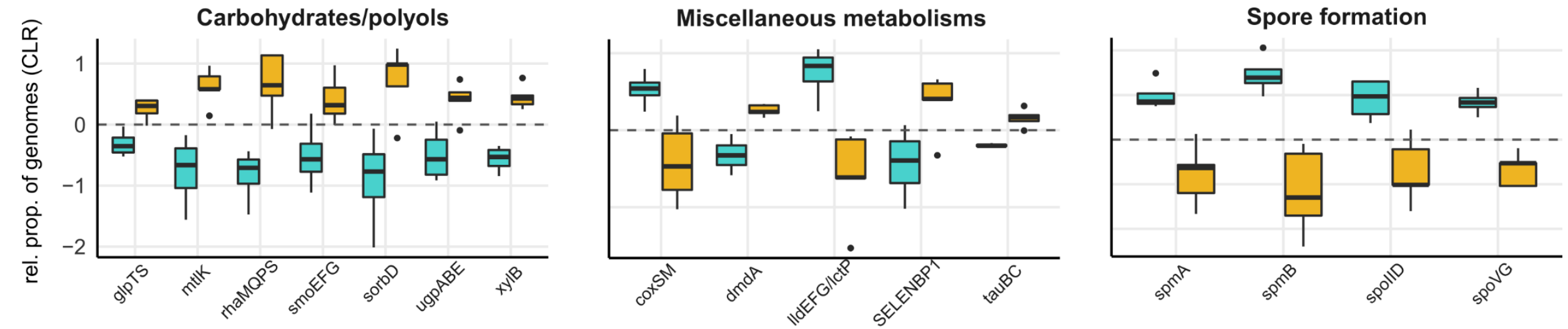


# Temporal dynamics in key metabolic pathways





# East Greenland Current: functional variability corresponds to ice cover



# Perspectives

- Towards a system-level understanding of (temporal) ecosystem structuring
- Functional capacities in context of the Biological Carbon Pump
- Define community indicators for specific times and conditions
- Baseline for modelling the future Arctic Ocean microbiome

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