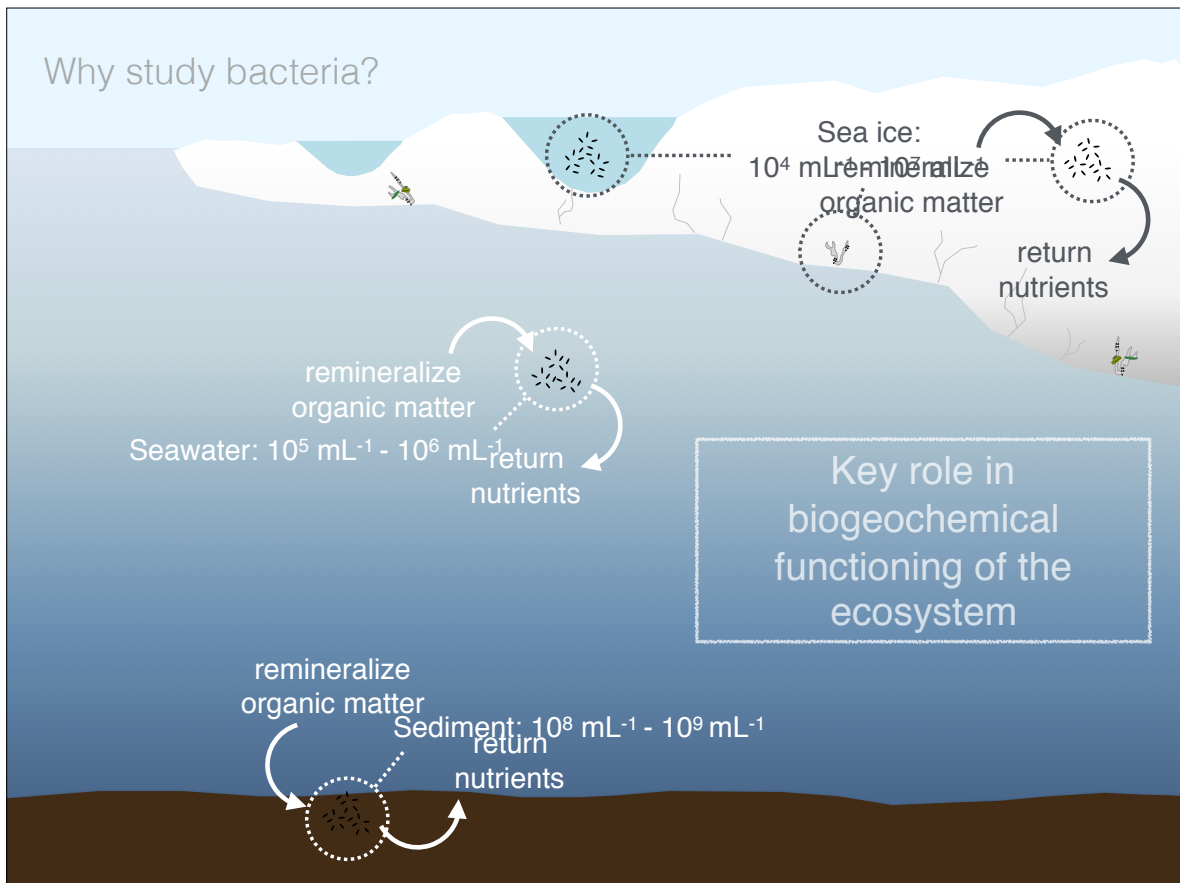
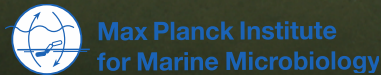


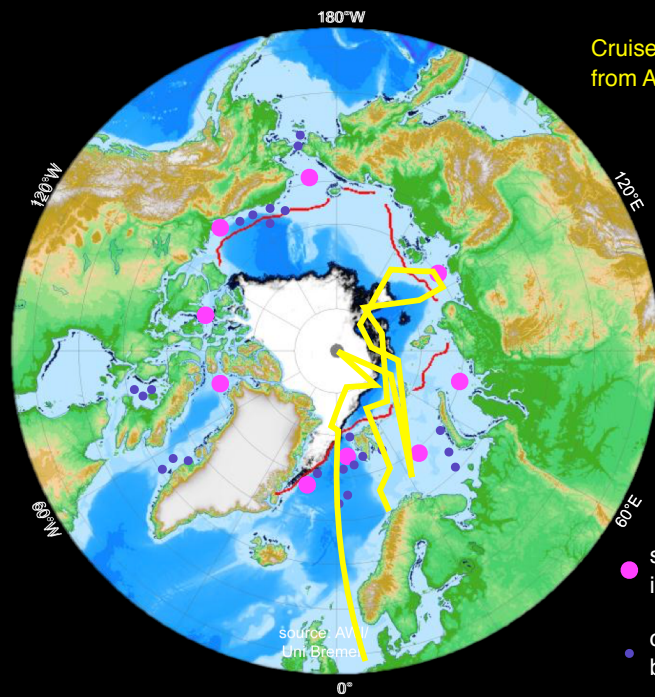
Journey to the deep sea: Do Arctic sea-ice bacteria hitchhike on ice-algal aggregates?

Josephine Z. Rapp, Mar Fernández-Méndez, Christina Bienhold & Antje Boetius

HGF-MPG Joint Research Group for Deep Sea Ecology and Technology
AWI PhD Days Sylt
3rd of June, 2015



Knowledge on Arctic ecosystem functioning



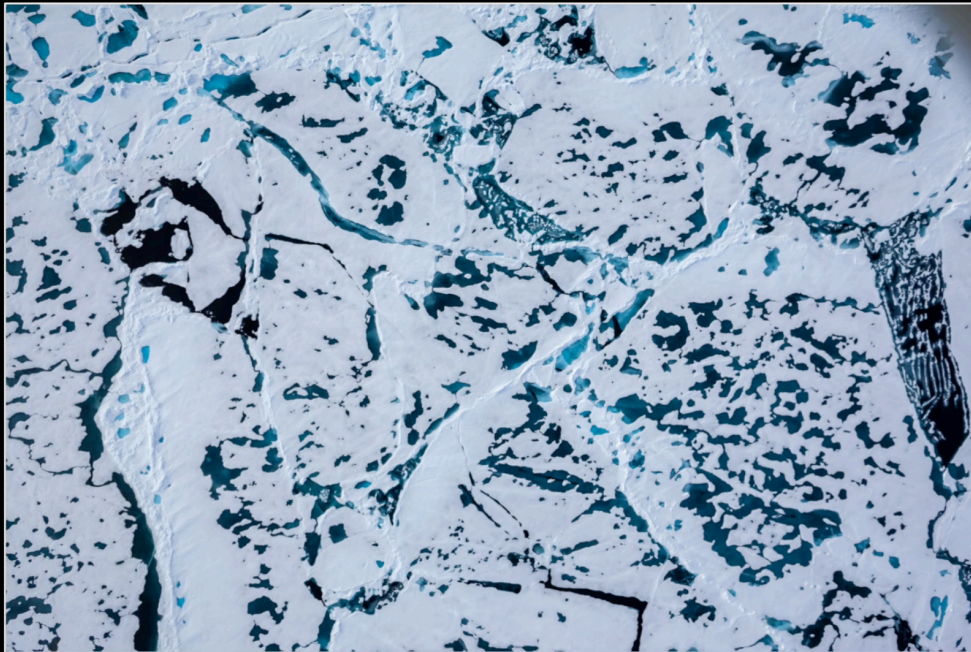
Cruise track of IceArc2012 (ARK-XXVII/3)
from August to October, 2012

- structure and function of food webs is adequately known and published
- climate change impacts on marine biota have been reported

re-drawn from Wassmann et al. 2010 and Wassmann 2011

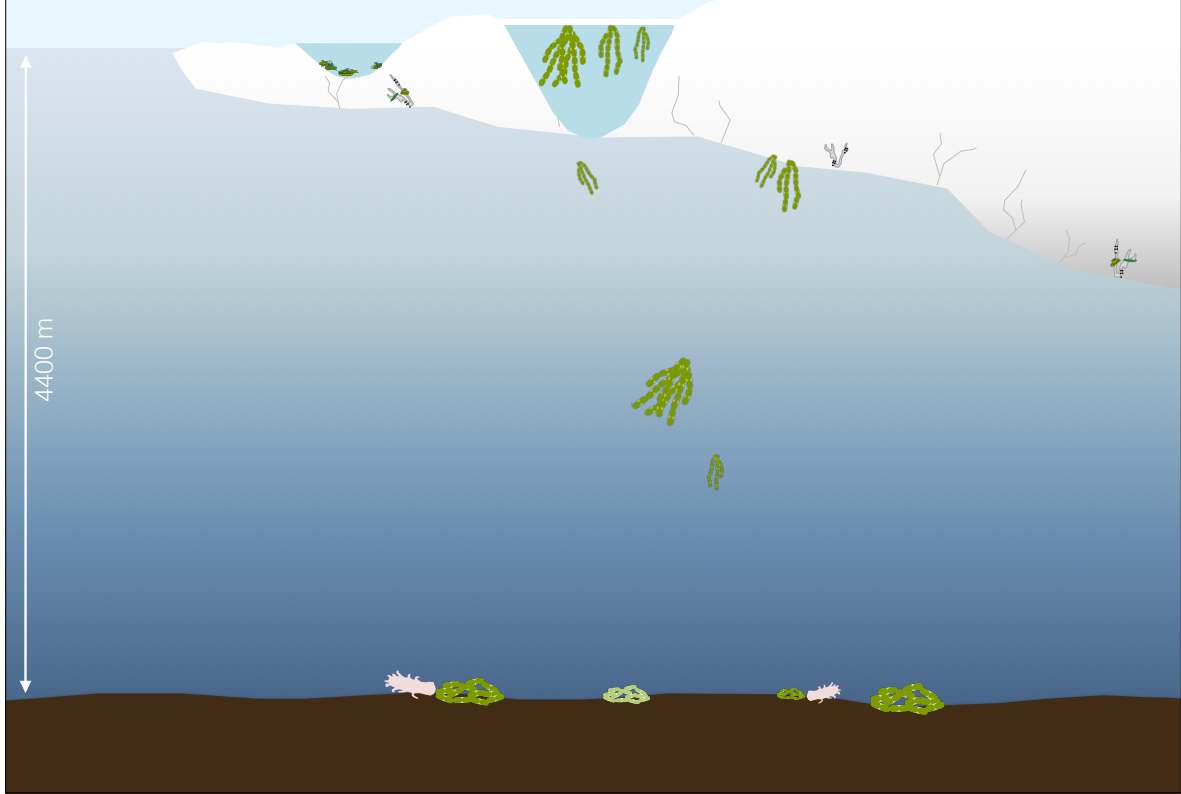
3

Central Arctic in 2012

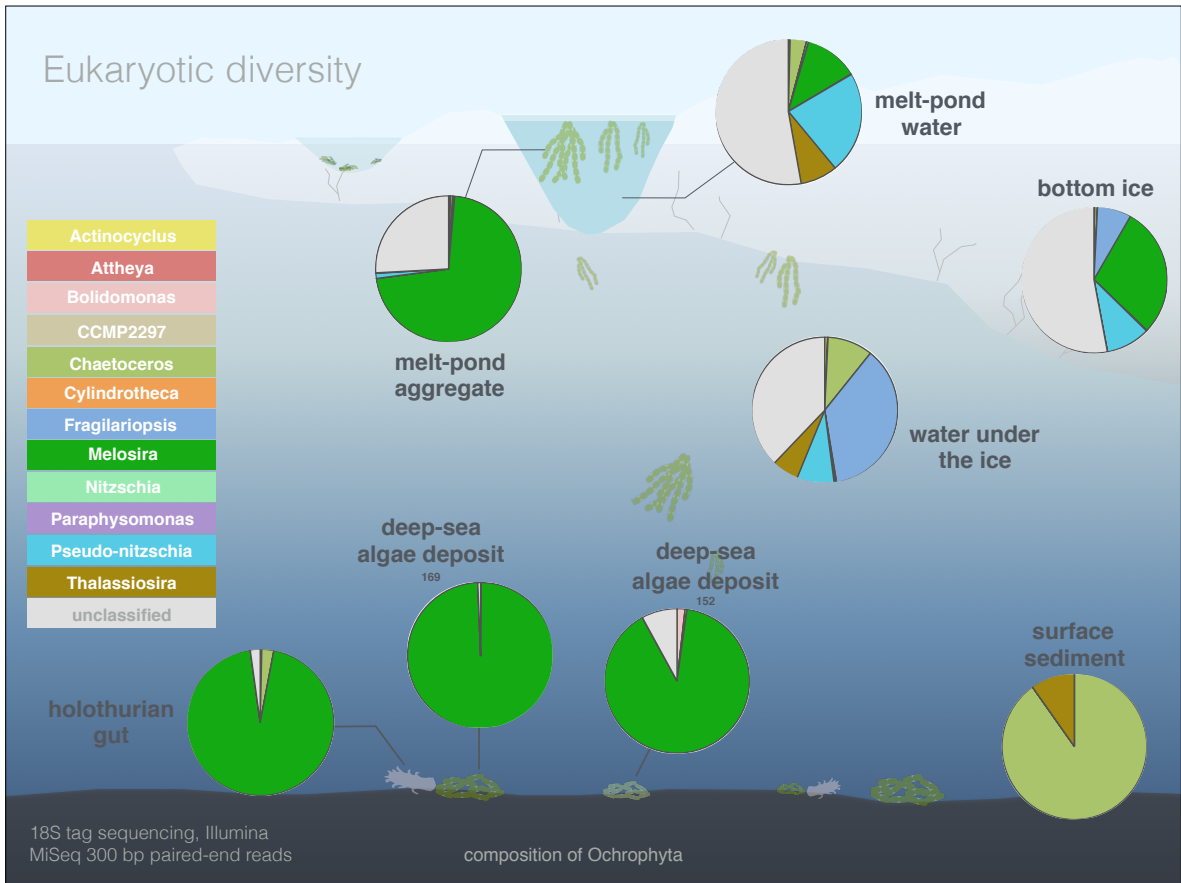


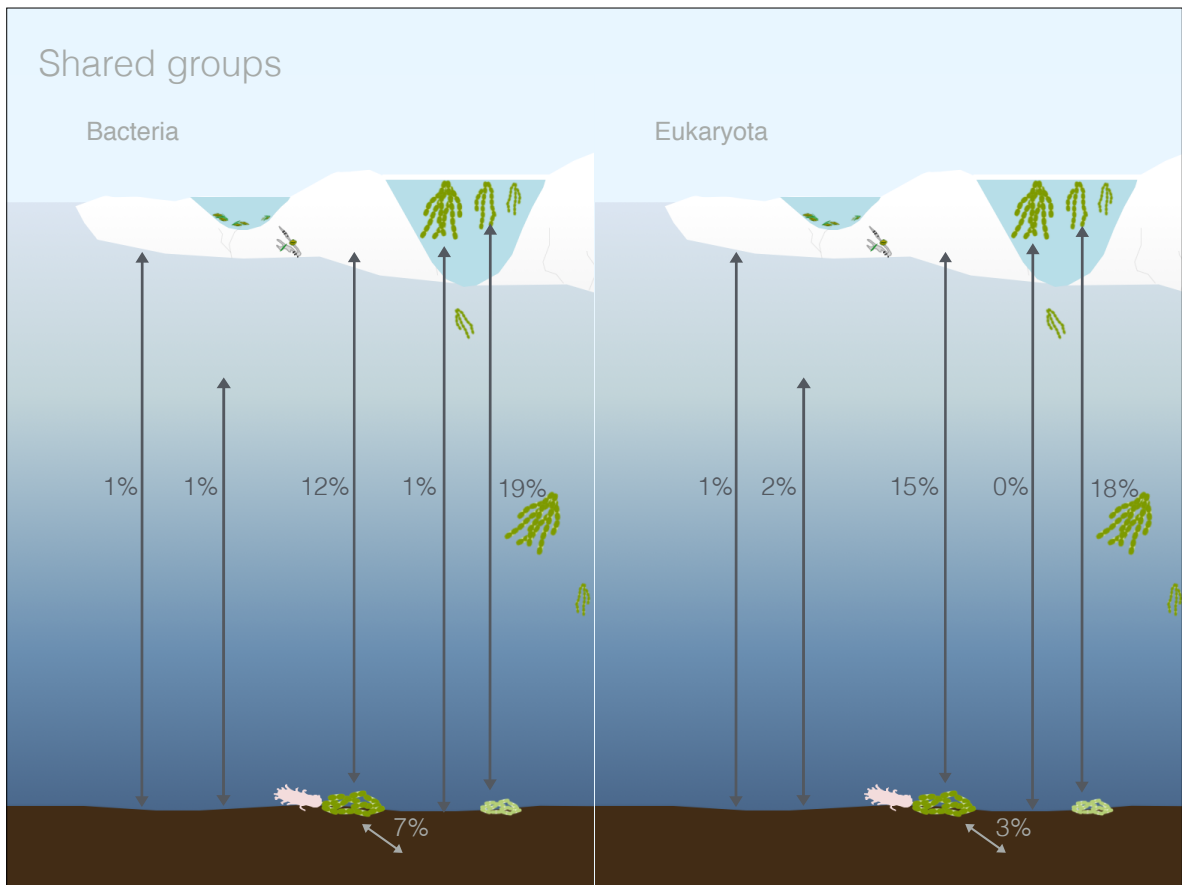
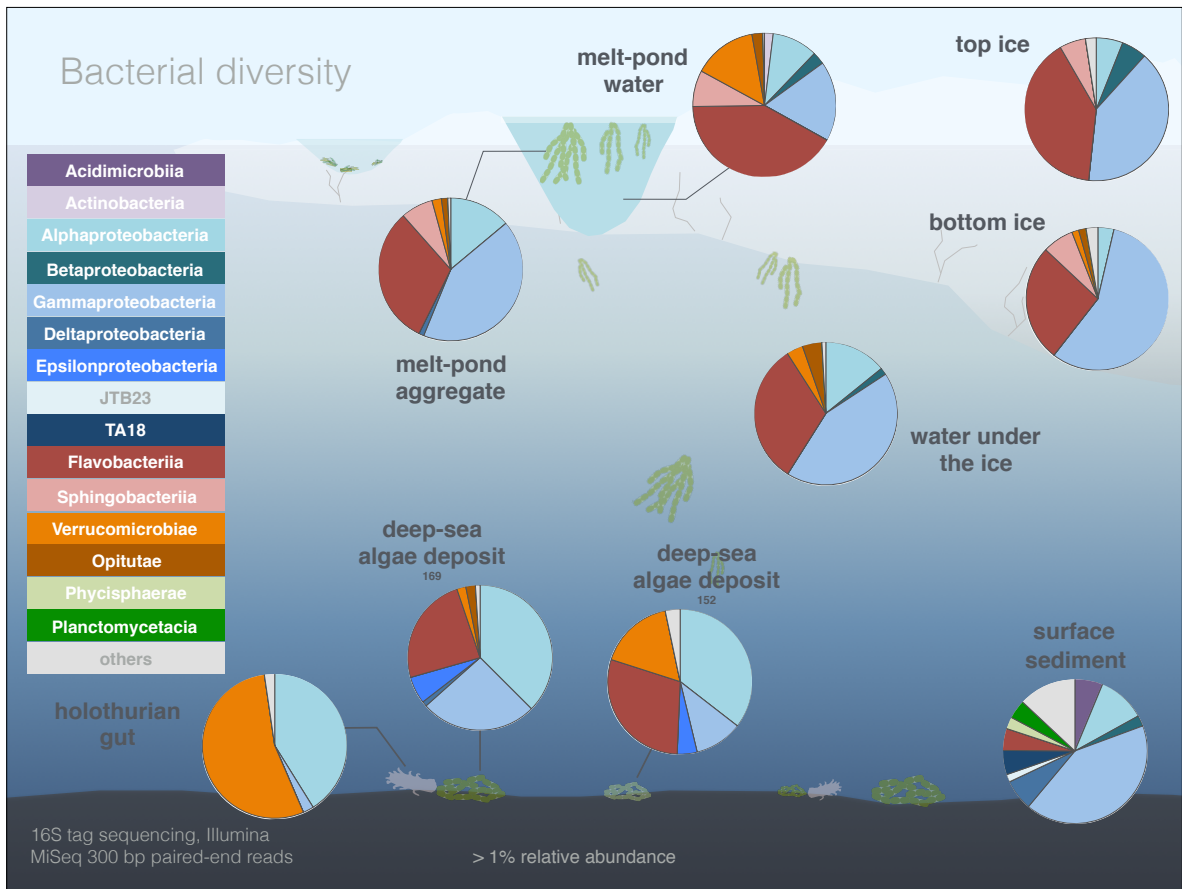
4

Central Arctic in 2012



Eukaryotic diversity



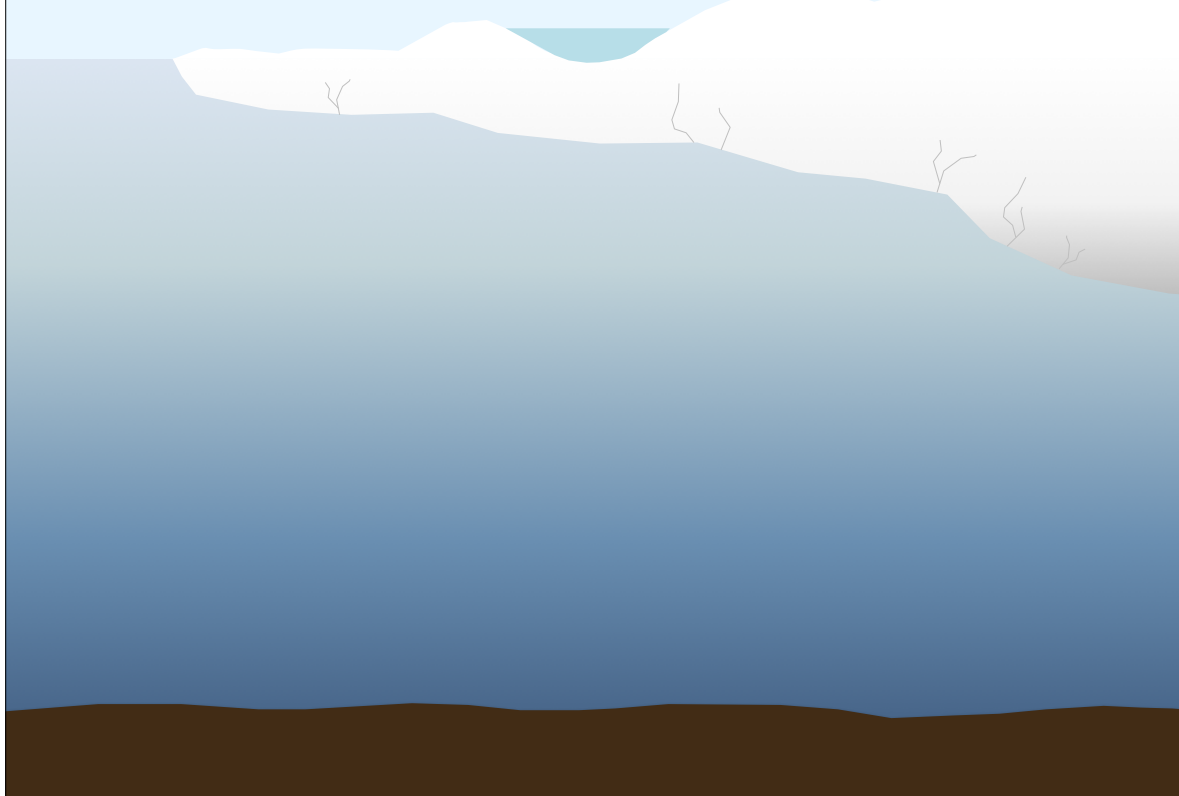


Summary

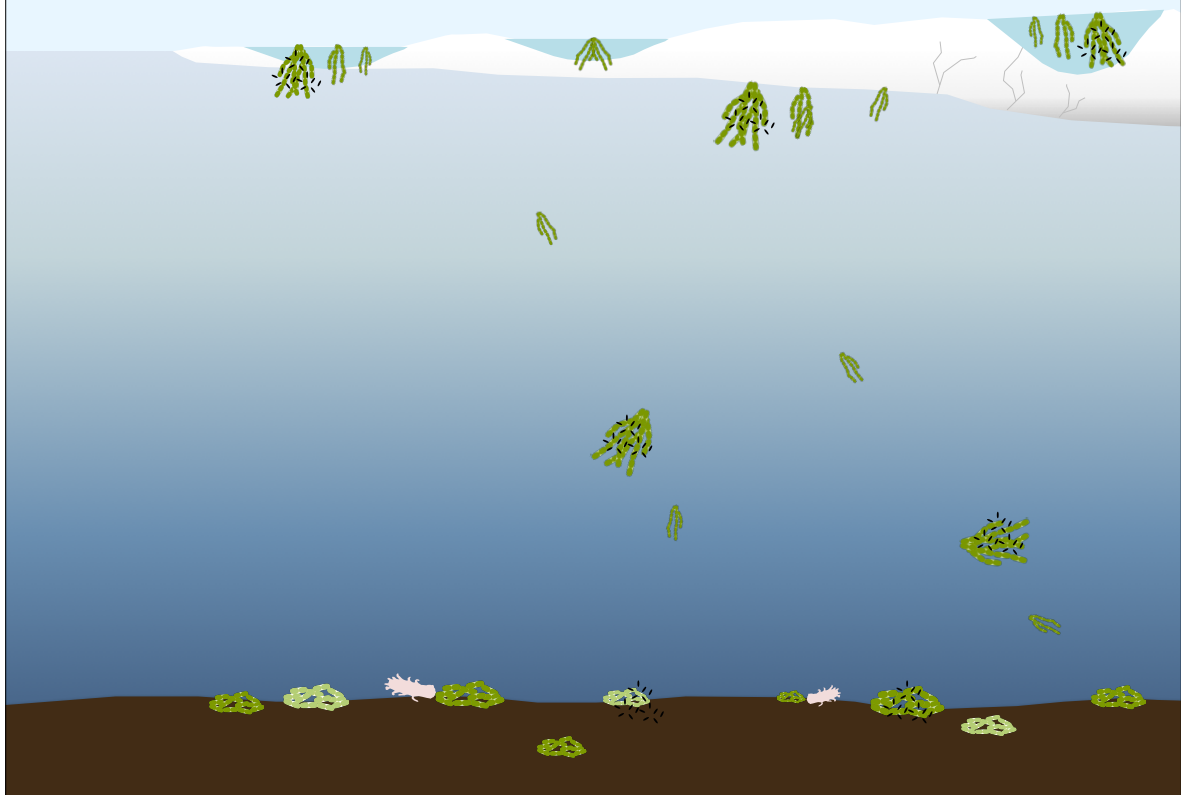
- Central Arctic sea ice, melt ponds, seawater, sediment and algal aggregates host distinct bacterial communities
- Strongest differences in bacterial community structure and composition between surface and deep-sea environments
- Contribution of surface-derived bacterial cells to community composition in aggregate deposits in the deep sea
- Aggregates constitute link between surface and bottom bacterial communities
- Transport occurs via large aggregates, sediments without aggregates have (almost) no contribution of surface cells

9

Central Arctic in the future?

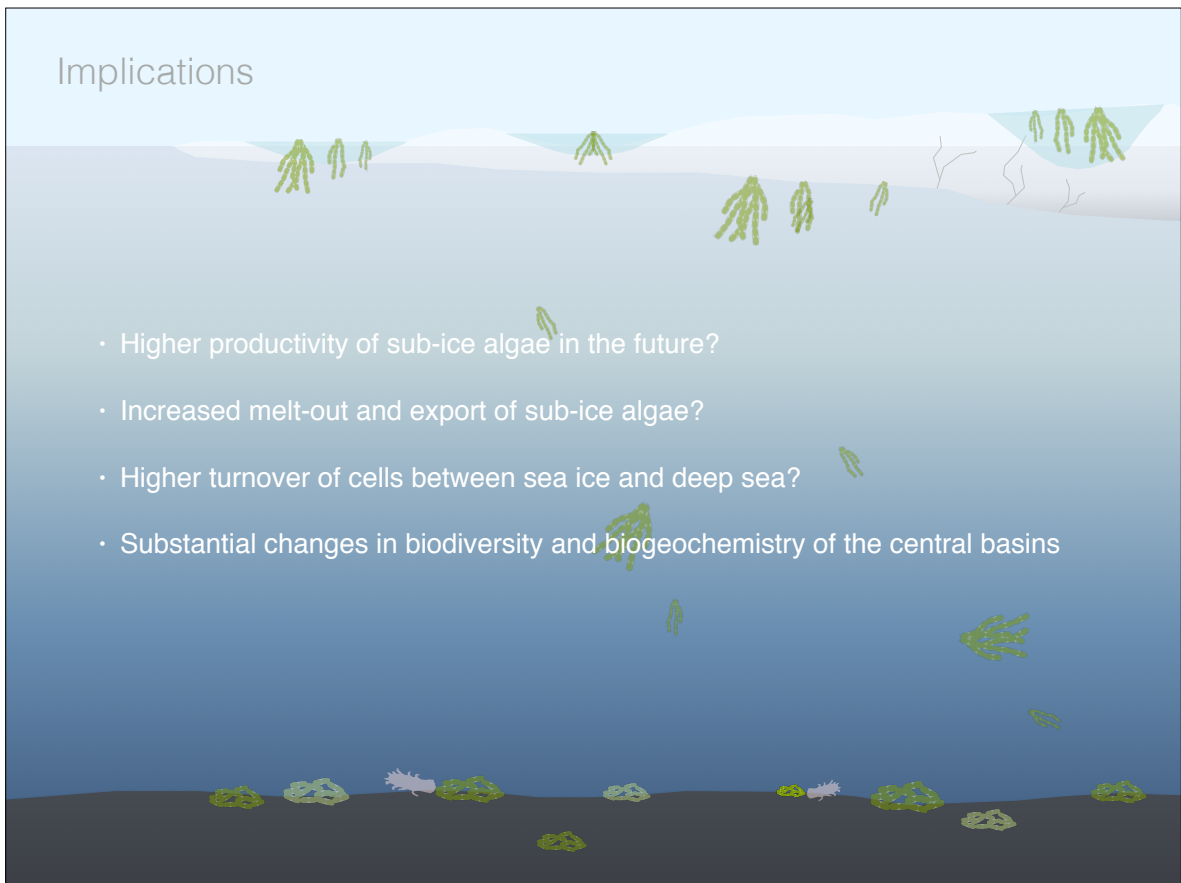


Central Arctic in the future?



Implications

- Higher productivity of sub-ice algae in the future?
- Increased melt-out and export of sub-ice algae?
- Higher turnover of cells between sea ice and deep sea?
- Substantial changes in biodiversity and biogeochemistry of the central basins



Thanks to ...



Captain, crew and scientists
of RV Polarstern expedition
ARK-XXVII/3



ERC Abyss to
Antje Boetius

& you

Questions?



contact: josephine.rapp@awi.de