From '**BENTHOS-DOMINATED**' to '**ZOOPLANKTON-DOMINATED**' mode biological backgrounds of the **FACE2FACE** project

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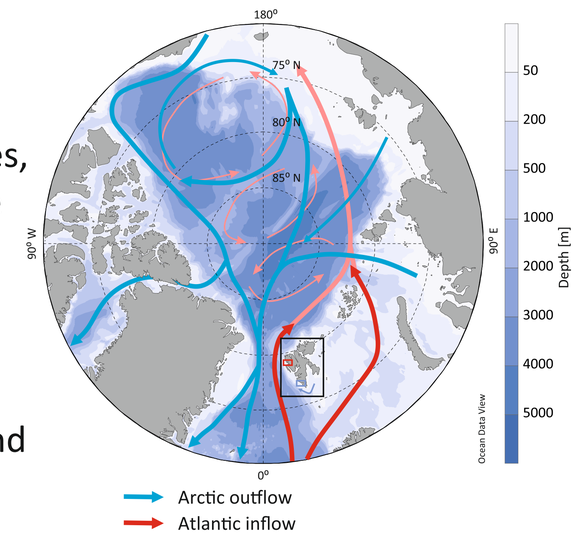
FACE2FACE PROJECT

The aim: to evaluate the response of benthic communities to processes occurring in water column, in the high latitude Spitsbergen fjords with contrasting oceanographic conditions

The hypothesis: In Arctic coastal waters the structure of pelagic assemblages, which are conditioned by inflowing water masses characteristics, determine organic matter flux and export to the seabed, what leads to enhanced benthos abundance and functionality

Research tasks:
1. Investigation of planktonic communities structure (pico-, nano-, micro- and mezoplankton)
2. Investigation of benthic communities structure (bacterial, meio- and macrofauna)
3. Estimation of organic matter fluxes to the seafloor (temporal and long-term)



STUDY AREA

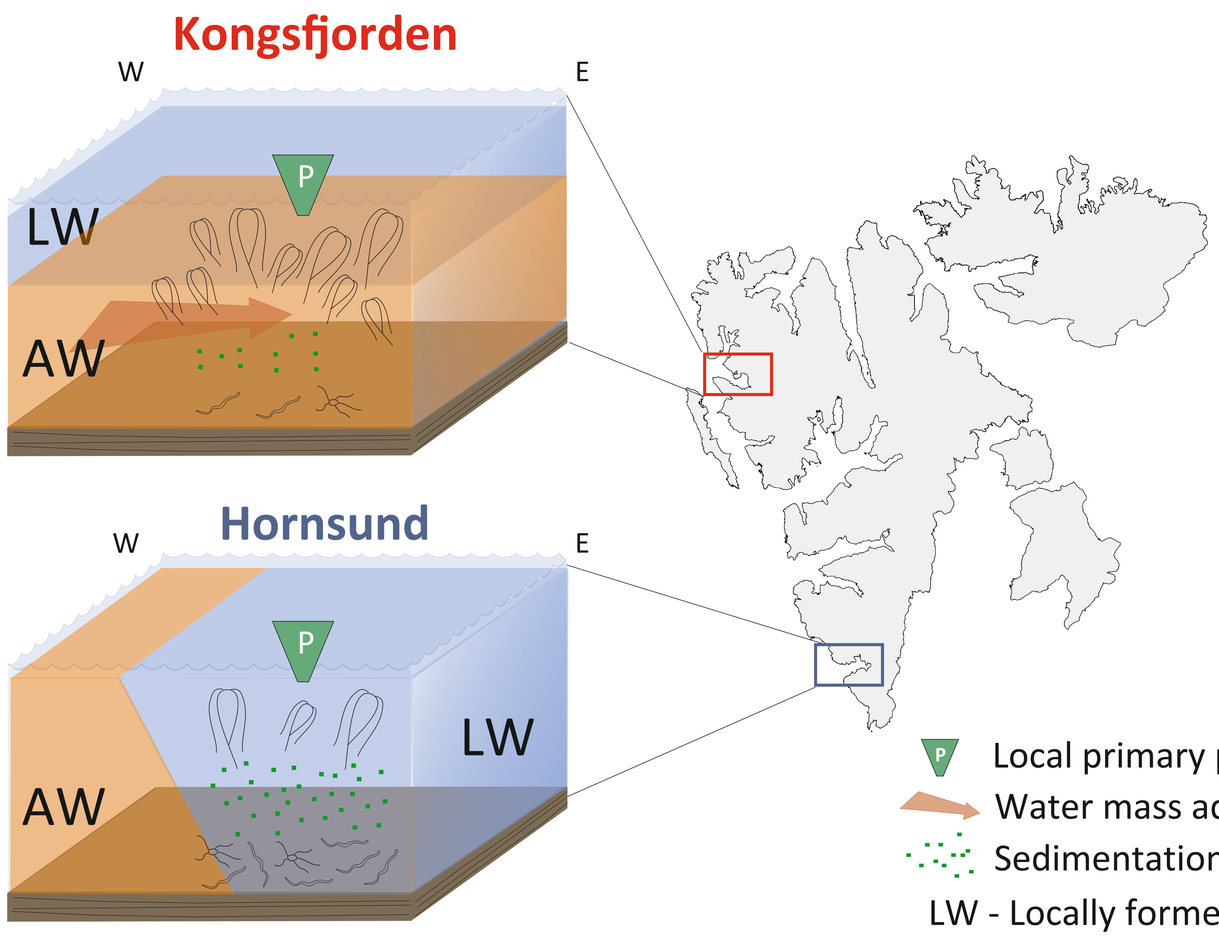
European Arctic - complex combination of Atlantic and Arctic water masses under the Arctic light regime

W**est Spitsbergen fjords** - dynamic interactions between water masses of local and regional origin

Two fjords - different hydrological regime:
Kongsfjorden -influenced by Atlantic West Spitsbergen Current

Hornsund - dominated by the Arctic Sorkapp Current

FACE2FACE SCENARIO

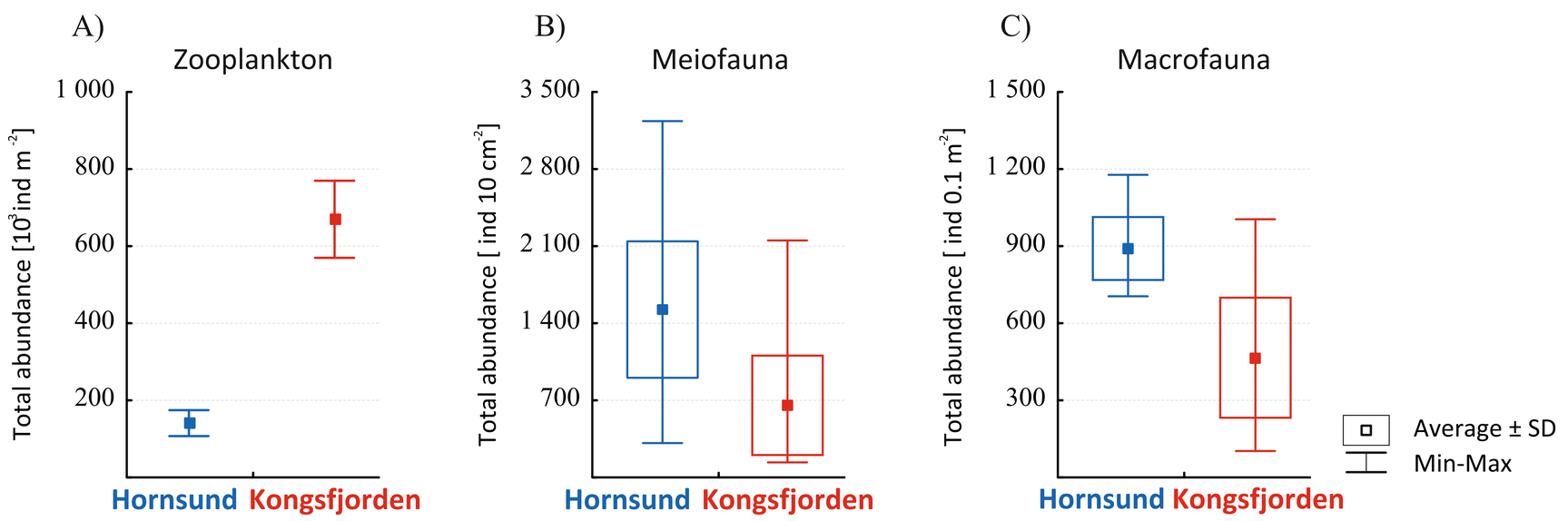


- Two model fjords with contrasting oceanographic conditions - two different modes of ecosystem functioning
- „WARM" Kongsfjorden and „COLD" Hornsund - natural experimental setup
- **Kongsfjorden today may simulate Hornsund tomorrow**
- Hornsund - cold arctic waters, enhanced pelago-benthic coupling, typical for Arctic ecosystems 'Benthos-dominated' mode
- Kongsfjorden - atlantic waters, advected highly abundant zooplankton communities, reduced vertical flux of organic particles, 'Zooplankton-dominated' mode
- upon warming ecosystem will shift from a 'benthos-dominated' to a 'zooplankton-dominated' mode

BACKGROUND OF THE PROJECT

The concept is based on previous observations from different years and fjords basins (published and unpublished data)

- 2-3 times higher total zooplankton abundance (A) in Atlantic influenced Kongsfjorden in comparison to Arctic Hornsund (Gluchowska et al., in prep)
- significantly lower meiofauna (B) and soft-bottom macrozoobenthos (C) abundances in Kongsfjorden compared with Hornsund (Kotwicki et al. 2004; Wlodarska-Kowalczuk et al., 2005; Wlodarska-Kowalczuk and Weslawski, 2006; Grzelak and Kotwicki 2011)



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