

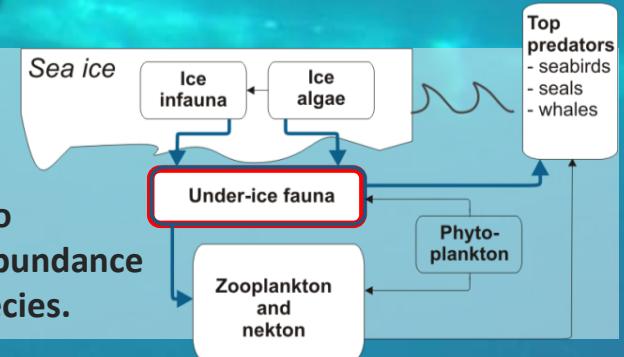
The role of sea ice in supporting the living resources of the polar oceans



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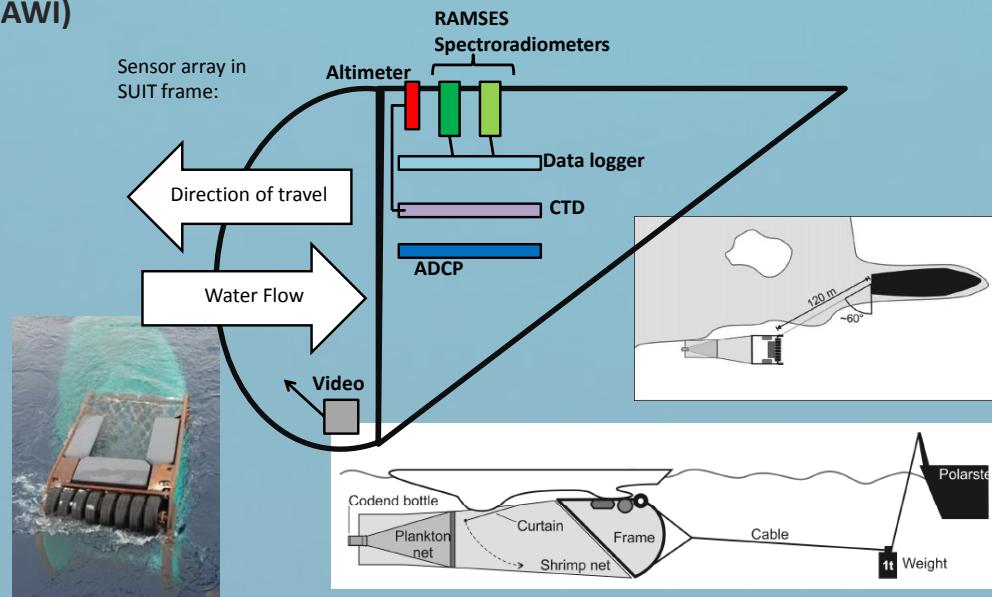
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Microbial communities within sea ice are presumed to be a major carbon source for the pelagic ecosystem covered by ice. Also, the ice-water interface constitutes an important habitat for many organisms, including e.g. Antarctic krill (*Euphausia superba*) as a key species in the South (Flores *et al.*, 2011). IMARES (*Iceflux NL*) in cooperation with HGF Young Investigators Group *Iceflux* (AWI, Bremerhaven) aim to investigate the effect of sea ice on abundance and distribution of marine fauna, and to quantify the trophic carbon flux from sea ice into the under-ice community. Under ice community structure, trophic links and abundance and distribution of Antarctic krill are being investigated. A comparison will be made with the Arctic where polar cod is a key species.



METHODS

Quantitative sampling was done with the Surface and Under Ice Trawl (SUIT, Van Franeker *et al.*, 2009). While sampling, environmental parameters are measured. Zooplankton samples are taken for analysis of caloric value, gut content (IMARES), C/N ratio and stable isotopes (AWI)



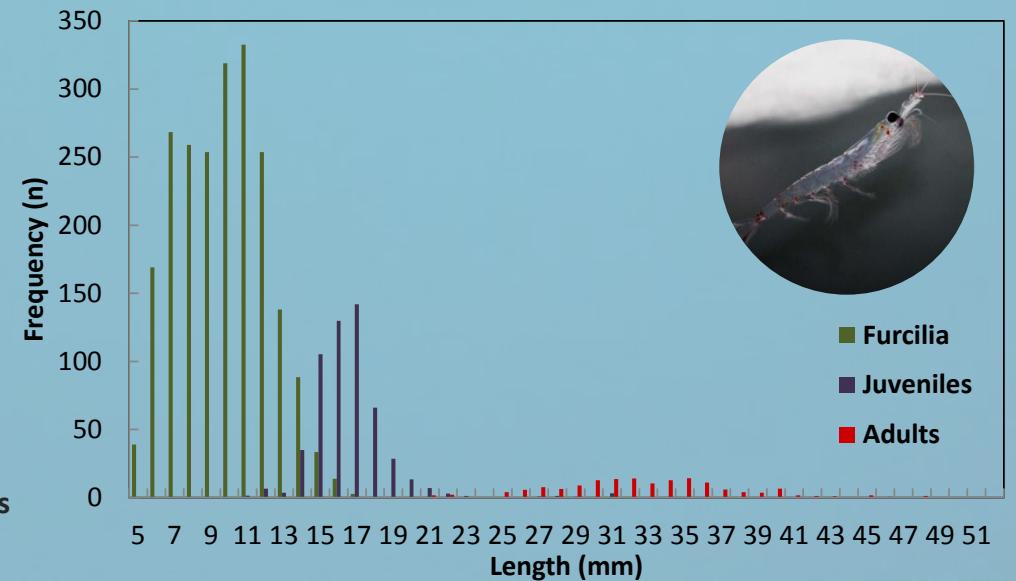
Above: the SUIT net samples the under ice surface water (2m) and is equipped with two parallel nets: a 7 mm half-mesh and a 0.3 mm mesh. Sensors are used to measure e.g. water temperature, depth, water flow and ice thickness.

PRELIMINARY RESULTS

Under ice sampling was conducted on board FS Polarstern (ANTXXIX/7) in the Weddell Sea from August 14th to October 16th 2013 (late winter/early spring).



Above: sampling area (in red). Right: length-frequency distribution of Antarctic krill. Under: examples of other species found in the under ice community (from left to right): *Diphyes antarctica* (Siphonophora), *Clione limacina* (Gastropoda), *Eusirus microps* (Amphipoda).



RELEVANCE

Understanding sea ice food webs, species distribution and the corresponding role of sea ice can help the development of policy for conservation and fishery, considering future changes.

Flores H, Van Franeker JA, Cisewski B, Leach H, Van de Putte AP, Meesters EHWG, Bathmann, U., Wolff, W.J. (2011). Macrofauna under sea ice and in the open surface layer of the Lazarev Sea, Southern Ocean. Deep Sea Research Part II: Topical Studies in Oceanography 58, 1948–1961.
 Van Franeker JA, Flores H, Van Dorssen M (2009). The Surface and Under Ice Trawl (SUIT), in: Flores H. (Ed.), Frozen Desert Alive - The Role of Sea Ice for Pelagic Macrofauna and its Predators. PhD thesis. University of Groningen, pp. 181–188.
 Photo's: J.A. van Franeker

