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Title: *Scales of biological patchiness in surface waters of Fram Strait marginal ice zone in summer*

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The marginal ice zone (MIZ) in Fram Strait is an unique frontal system between ice-free and ice-covered sea, formed as a result of confluence of both Arctic and Atlantic waters. Hydrological heterogeneity of highly dynamic areas has considerable impact on composition and distribution of pelagic biota and typically supports higher biological productivity. Based on intensive interdisciplinary sampling we intend to reveal biological spatial heterogeneity in the dynamic Fram Strait MIZ with focus on zooplankton and to understand the role of environmental factors in its formation and maintaining.

Zooplankton was sampled with WP-2 type net from the surface layer (50-0 m) on 14 stations positioned along 60nm transect (06°E 79,8°N – 8,8°E 80,5°N) in summer 2011. Additionally, zooplankton size class distribution from the upper 40-m layer was determined by towing Laser Optical Plankton Counter (LOPC) in an undulating manner between the net sampling stations. The sampling platform was also equipped with fluorometer and CTD sensors to collect simultaneous environmental data on hydrology and chlorophyll *a* concentration.

Our comprehensive study enabled to observe the co-existence of two dynamic oceanographic regimes and how this shapes the distribution of plankton. Preliminary results indicate close relationship in distribution of water masses, chlorophyll *a* and different size fractions of plankton. The presence of melt water seems to play an important role in creating biological production spots. Understanding the relationships between the distribution of environmental factors and plankton is of great importance for assessing the role of frontal zones in maintaining high biological production. The study from Fram Strait MIZ frontal system is also of great value because of possible diminishing of such productive areas in the era of climate warming.