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## SEASONAL VARIABILITY IN HIGH ARCTIC FJORD BENTHIC FOOD WEB – STABLE ISOTOPE CASE STUDY

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In Arctic shelves, strong seasonality and food availability affect faunal diets and its trophic relationships. During winter season, the lack of primary production is expected to lead to changes in the feeding preferences of species and thus, trophic relations between species and food web structure. Further, currently observed temperature increase, sea ice reduction and increased advection of warmer Atlantic waters into European Arctic, accelerating with global warming, will lead to possible changes in the seasonality of primary production, and thus, trophic interactions. Therefore, knowledge of seasonal changes in species assemblages, food-web structure and trophic relationships of marine organisms is especially important for understanding polar ecosystems and predicting possible responses to ongoing climate change.
The aim of this study was to examine seasonal changes in benthic food-web structure in an high Arctic fjord. We used stable isotope analysis of carbon $\delta^{13}C$ and nitrogen $\delta^{15}N$ in order to determine food sources and trophic levels in benthic infauna. Samples were collected in Kongsfjorden, Svalbard, at three stations (80 to 270 m) along the fjord axis, representing a gradient from the glacier to the open ocean in spring, summer and autumn 2012, and winter 2014. Altogether, $\delta^{13}C$ and $\delta^{15}N$ signatures were determined for over 180 samples of benthic organisms' tissues representing about 50 taxa. Moreover, $\delta^{13}C$ and $\delta^{15}N$ signatures and C/N ratios were measured for both particular organic matter (POM) and organic matter in the sediment in order to determine the potential food sources and their quality. Preliminary results show that if the POM stable isotopes composition varies between seasons, this is not reflected on the benthic organisms in term of $\delta^{13}C$ composition. This study is a contribution to ECOTAB (http://www-iuem.univ-brest.fr/ecotab) and Marine Night (http://www.marinenight.mare-incognitum.no/) projects.