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Reply on RC1

Jens A. Hölemann et al.

Author comment on "The impact of the freeze–melt cycle of land-fast ice on the distribution of dissolved organic matter in the Laptev and East Siberian seas (Siberian Arctic)" by Jens A. Hölemann et al., Biogeosciences Discuss.,
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We would like to thank Piotr Kowalczyk for reviewing our paper and for his helpful and constructive comments and remarks. In the revised version of the paper, we will address the mentioned criticisms. We will add to the revised version a more detailed discussion of the changes in the composition of the DOM/CDOM locked in the ice. Since the fast ice in the southeastern Laptev Sea forms in the tDOM-rich Lena River plume, not only the formation of the brines is important, but also the chemical changes in the structure and degradation of the DOM in the ice are important processes that should be discussed in more detail. We are also perhaps too brief on the description of the DOM in the only ice core of signs sympagic algae. This ice core is from thinner fast ice (see paper) from the northern edge of the fast ice and was taken only a few 100 m from the polynya adjacent to the north. We will describe this ice core, which is fundamentally different from the other ice cores in its DOM properties, in more detail. However, this description is not essential for the core thesis of our paper. We would like to reiterate that in this study we sampled the mostly 2 m thick and snow-covered (~10 - 20 cm) fast ice and not the drifting pack ice. Due to the range of MI-8 helicopters, which is about 500 km when loaded (one way), the pack ice cannot be reached from land. Landing on the young ice north of the flaw lead in the Laptev Sea is impossible. At the same time, the entire marine area is closed to navigation in spring. Therefore, direct sampling of the drifting sea ice in the Laptev Sea in spring was not possible and could therefore only be discussed based on previous studies. However, our study suggests that the possibly DOM-rich meltwater of the young drifting pack ice probably plays no role in the processes we describe. At least not in the Laptev Sea.

In the revised version of our paper we will also add to the abstract and give more precise figures for the flux input.