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# *Interactive comment on* "Phytoplankton community structure in the Lena Delta (Siberia, Russia) in relation to hydrography" *by* A. C. Kraberg et al.

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The publication draft 'Phytoplankton community structure in the Lena Delta' by A. C. Kraberg et al. reports the results from summer samplings of hydrographical, chemical and biological parameters on research cruises in the Siberian Lena Delta and the adjacent Laptev Sea. This area is of great scientific interest since the Delta discharges huge amounts of freshwater, nutrients and organic substances including methane into the Laptev Sea and furthermore, into the Arctic Ocean. The authors state correctly that the ongoing climate change and the related increase of the permafrost thaw will also increase the discharge of nutrients and organic matter, by this possibly affecting the



phytoplankton and zooplankton composition in the Delta and the Laptev Sea.

Thus, the draft represents a first approach of establishing a baseline for the current phytoplankton community structure in the Lena Delta region and adjacent seas. From the biological point of view, this has been well done, especially with regard to the changes in the plankton composition during the transition from the freshwater regime to the marine system. The sampling strategy has been sound and the methodology for the analysis of phytoplankton, chlorophyll and nutrients as well as for the determination of the hydrographical parameters has been described and carried out well. The statistical analyses have been conducted with standard methods and the results have been described in an appropriate way.

The complex hydrographical situation in the Laptev Sea is documented in a transparent and comprehensible way. This includes the presentation of the interesting stratification patterns. With regard to figure 1, it is somewhat difficult to identify the detailed course of the described transects 1 through 4. For that reason, the respective station marks could be connected by straight lines, either in Fig. 1 or in Fig. 2. Furthermore, on page 4, lines 21 to 25, 'Additional samples were also collected from the major river channels. . .', a reference to figure 1 showing the respective Delta stations should be made. And there is no figure showing the exact locations of the different river channels.

Regarding the fact that apart from silicate no significant correlations between inorganic nutrients and phytoplankton species have been found, it should shortly be discussed that this probably had been due to the summer situation. In addition, it should be mentioned that analysis of further parameters such as total organic C, N and P as well as the particulate fraction could enhance the scientific output of the surveys and maybe will be conducted during follow-up cruises.

Within the abstract as well as in the introduction, the importance of the discharge of methane and DOC is mentioned. Apparently, no respective measurements have been carried out during the campaign in 2010. This should be justified somewhere in the

text. Maybe there is an outlook of having these analyses in the near future? If not, then the impact of the increase of these parameters should also be shortly discussed within the results section by citing respective literature. Within this context, the possible changes in the plankton community structures should be put into a greater context, for example with respect to carbon fluxes in the oceans.

Furthermore, it would be very helpful, if the authors gave a very short summary of the major biological findings at the end of the publication.

Although the paper is written in a rather descriptive way, this seems to be an appropriate form for a first inventory of the current phytoplankton regime in the Lena Delta region. At current stage, it will not make sense to carry out more extensive analyses on the data, since the described summer survey has only been a snapshot of the ecological situation and should be supplemented by further measurements in the future if possible. This should be stated more clearly within the document. And if there were further surveys to be conducted in the Lena region in the near future, this should also be mentioned.

To conclude and taking into account also the scientific meaning of the Arctic seas with regard to climate change and carbon fluxes via plankton dynamics, I will recommend to accept the proposed publication after minor changes have been applied.

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