

Interactive comment on “The MOSAiC ice floe: sediment-laden survivor from the Siberian shelf” by Thomas Krumpfen et al.

Thomas Krumpfen et al.

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Dear Reviewer 2,

thank you very much for your helpful comments and suggestions. Your feedback is very much appreciated.

We agree with the fact that the method description is sometimes a little short. This has also been noted by the second reviewer as well. We will go into more detail at the points you mentioned.

With respect to your general comments made:

1. Validation of the Lagrangian technique

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These concerns were also addressed by Reviewer 1. We agree that the revised manuscript should include a discussion about uncertainties of the various motion products, both, in summer and in winter. Moreover, we will include a comparison of real buoys with IceTrack trajectories to outline the performance of the Lagrangian approach and number uncertainties related to the identification of the source areas. Furthermore, we will better describe the visual identification of features on high resolution data used to validate back trajectories. The trajectories showing the origin of the ice floe will also include a color scale showing where the ice was at what time.

With respect to your specific comments made:

We will address all minor comments made. Below a brief reply to some of your specific comments which are more critical:

1. Line 109: Why 40%, rather than 20% threshold:

The idea of using a higher threshold was to better represent the influence of areas of ice production like polynyas on the trajectories. However, the trajectories do not differ, no matter if 40% or 20% is used.

2. Oceanic processes affecting sea ice retreat in summer:

We will add a short discussion about the impact of the ocean on sea ice retreat.

3. Closeness of the ARK-12 cruise data: We will either better describe location or, if possible, include positions in one of the maps.

Thank you very much. We will take all minor comments into account. Imprecise Language will be revised where it's necessary (“few”, “multiple”, etc)

Once again many thanks for the careful revision of the manuscript and valuable feedback.

With best regards on behalf of all co-authors Thomas Krumpfen

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