

Response to Reviewer Comments (Reviewer #2)

We sincerely thank the Editor and the Reviewers for their careful evaluation of our revised manuscript and for the detailed comments. We have revised the manuscript accordingly.

Comment: This is my second review of the manuscript. I thank the authors for thoughtfully considering my comments and for their meticulous responses. I am happy to see that the manuscript has been greatly improved, especially with the addition of the discussion section and rewriting conclusions. I can recommend the manuscript to be published after some minor technical corrections that are detailed below. I refer to the line numbers of the revised manuscript without tracked changes.

Response: [We thank the review for reading the manuscript and offering comments.](#)

Comment: Title: As pointed out already in my previous review, only the first word should be capitalized according to the journal guidelines. Rest of the nouns are not proper nouns.

Fig. 1 caption: since the Weddell Sea ice stations were all in July, why not mention that directly? Between June and August 2013 -> in July 2013. What is the data source for the ice cover data shown in grey shading?

L111: electromagnetic (EM) induction sounding system

L113: add manufacturer information (Geonics Ltd.) to match with GEM-2. Also, Itkin et al. 2023 handles MOSAiC, not N-ICE, so it cannot be referred as the source here

L114: the EM instrument can

Response: [Corrected.](#)

Comment: L116,120,189,196,289,535,538: The citations are neither in alphabetical nor in chronological order like elsewhere. Is there a special order based on relevance?

L137: add “each” to avoid a misconception that Nloop and Sloop were within the same 400 m x 400 m area

Response: [Corrected. These citations are now in chronological order.](#)

Comment: L155: I strongly recommend using SI base units and the exponential notation as required by the journal guidelines, i.e. m s^{-1} . Does the weather data here (or with N-ICE) bring some extra information relevant to the study? Most other in situ datasets are not accompanied by weather data during sampling. With this example you should summarize the weather conditions on MOSAiC, too.

Response: [We have removed the description of the weather information for Resolute Bay and N-ICE datasets because it does not provide additional information relevant to this study.](#)

Comment: L202: hydrostatic balance is not related to (median) zero freeboard but to the absence of outside forces and stresses. An ice floe can have a non-zero freeboard and be in hydrostatic equilibrium.

Fig. 6 caption: color -> colour

Fig. 7: Panels a) and b) depict the same data points with the same axes, yet the panels are different shape. Please unify shape and axes limits to ease the comparison between panels at glance.

L313: split infinitive, “To capture the levels of deformation better”

L330: please use exponential notation as required by the journal guidelines, i.e. m s^{-1}

L339&348: new paragraphs missing an indent

L363: space missing before citation

L375: extra space in parentheses

L386ff & Fig. S5: no citation given for the MOSAiC ALS data paper nor product

Fig. 12 caption: remove plusminuses

Fig. 13 caption: wrong citation format

L520: TLS not defined

L562: perhaps the other way around? “. . . freeboard measurements must be combined with SND information.”

L743: Hendricks et al., capitalize Alfred, Center -> Centre

L779ff: Kolberg et al. + Kurtz et al. + Kwok et al., page range or article number missing

L830ff: Nicolaus et al. + Petrich et al., page range or article number missing

L844ff: Rösel et al. 2016a + 2016b, who is Institute, N. P.? Please correct the institutes name to the author list (double curly braces in latex).

Response: [All corrected.](#)

The authors again thank the reviewer for constructive comments, which have greatly improved the manuscript.