

The authors would like to thank the editor for taking the effort of processing the manuscript. Following the comments for technical corrections, we have made revisions accordingly. This document records all the revisions we have made, listed below. The original comments are in *light blue italic*, with our reply following each item of the comments. In the marked version of the revised manuscript, the revisions are highlighted with 'REVEditor'.

Editor's comments 20240430

I acknowledge to significant rewrite of the manuscript and thank the authors for their effort.

Minor change:

Throughout ms: Need to be consistent with hyphenation. E.g., "sea-ice cover" (I5) vs "sea ice cover" (I1).

Reply: The author is grateful to the editor for the suggestion. We have checked the whole manuscript for the consistency of hyphenation.

I19: Correct "propagate into the ice edge," to "propagate across the ice edge,"

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "propagate across the ice edge,".

I20: Correct "Consequently, the sea ice cover undergoes" to "This is a region where the sea ice undergoes".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "This is a region where the sea ice undergoes".

I49: Correct "we use" to "we use data from".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "we use data from".

I90: I am unfamiliar with the concept of a "sea ice lead", instead a lead would be open water or very thin ice, as shown in your Fig. 1. Pls clarify.

Reply: The author thanks the editor for identifying the inappropriate description in this sentence. We have added the detailed description of lead as: "lead, which would be an area of open water or very thin ice within an expanse of sea ice".

I148: Correct "we attain 21 collocating track pairs" to "we attain 21 collocated track pairs".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "we attain 21 collocated track pairs".

I148: Reomove "two" from "during the two winters".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as “during the winters”.

I150: Remove "the" to read "On sea ice".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as “On sea ice”.

I181: Correct "the multilooked waveform" to "the multilook waveform".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as “the multilook waveform”.

I226: The date format is unusual in "2015-Feb-17". Pls seek advise from the Editorial Office.

Reply: The author appreciates the editor's comments. We have revised the date format mentioned in the text of the manuscript to the format "17 February 2015" while maintaining the time format as "2015-Feb-17" on tables and figures to ensure consistency with the formatting of other articles in the journal.

Fig 3 caption: Correct "The inlet rose map" to "The inset rose map".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as “The inset rose map”.

Fig 5 (a): Suggest to move the white box with "CS-2" text up (next to the "(a)" label... to avoid covering relevant near-MIZ section of the scene.

Reply: The author is grateful to the editor for the suggestion. We have changed the location of the white box with "CS-2" text.

I279: Correct position of the comma in "50 km ,eliminating".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as “50 km, eliminating”.

I310: Add a space in "indicatingno".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as “indicating no”.

I320: Correct "21 collocating tracks" to "21 collocated tracks".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as “21 collocated tracks”.

Fig 6 caption: Correct "collocating tracks" to "collocated tracks".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as “collocated tracks”.

I331: Add space in "MIZ.CS2".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "MIZ. CS2".

I342: Add space in "Finallyin".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "Finally in".

I347: Remove colon from "are:".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. The colon has been removed.

I348: Remove "examples in ".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. The "examples in " have been removed.

I352: Correct "years ,such" to "years, such".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "years, such".

I355: Correct "the swell's penetration" to "the swell penetration".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "the swell penetration".

I359: Correct "in GSresulting" to "in the GS resulting".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "in the GS resulting".

I368: Check "nonstormy"... should be "non stormy".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "non stormy".

I427: Change "widest MIZ widths" to "largest MIZ widths".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "largest MIZ widths".

I442: Add space in "advanceand".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "advance and".

I469: Correct "strong forcings" to "strong forcing".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "strong forcing".

Note: I have not rechecked the data links/files. Pls apply honesty approach.

Reply: The author appreciates the editor's feedback. We have checked the relevant links and ensured that they can be correctly accessed when mentioned with their latest retrieval time in the article.

I557: Rewrite "is slid" in "The local window is slid with a step size of 10 km" for correct English.

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "The local window slides with a step size of 10 km"

I565: Remove "Besides. "

Reply: The author thanks the editor for identifying the incorrect language in this sentence. "Besides. " has been removed here.

I574-75: Author contributions does NOT explicit show the 4th author.

Reply: The author thanks the editor for identifying the inappropriate introduction of the author's contributions here, we have added the detailed author contributions of the 4th author.

I577: For consistency add name "Dr. Petra Heil" to read "the editor Dr. Petra Heil".

Reply: The author thanks the editor for identifying the inappropriate description in this sentence. We have revised here with "the editor Dr. Petra Heil".

I577: Change "and the other anonymous" to "and one anonymous".

Reply: The author is grateful to the editor for identifying the inappropriate description in this sentence. We have revised here with "and one anonymous".

I577: Suggest to move "The authors would like to sincerely thank the editor, as well as Dr. Guillaume Boutin and the other anonymous editor for the invaluable help which significantly improves the paper." to the end of the Acknowledgements.

Reply: The author thanks the editor for identifying the inappropriate description in this sentence. This sentence has been moved to the end of the Acknowledgements.

Tab 1 caption: Corrected "collocating" to "colocated".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. It has been revised as "collocated".

Tab 2 caption: Remove "the period of".

Reply: The author thanks the editor for identifying the incorrect language in this sentence. The "the period of" has been removed here.