

Dear editor,

Thank you very much for your constructive comments. We have addressed all of them and we hope that our modifications are to your satisfaction.

Below we have copied out your comments in black and inserted our response in blue type.

Regards,

Einar (on behalf of the authors)

We expect you mean for us to change to "0.1 m as thin ice". However, cm is an SI unit and using cm in this case infers a sense of scale; using cm indicates that the physical properties considered are on the range of centimetres, not metres or kilometres. Indeed, the resolution of the model and observations is quoted in kilometres, not metres, for this very reason. We have, therefore, not changed this.

Comments to the Author:

I thank the author for their rewrite of this manuscript which resulted in a much approved version. Before final acceptance, pls provide an updated version with view of the technical issues identified below.

General:

- * I abbreviate "manuscript" with "ms".
- * Throughout the ms, pls correct "e.g." to "e.g.,".

Done

- * Ensure use of SI units throughout the ms, e.g., 136 "10 cm" -> "0.1m".

We have changed this, seeing you insist on it. However, cm is an SI unit and using cm in this case infers a sense of scale; using cm shows that the physical properties considered are on the range of centimetres, not metres.

- * With advise from the TC Editorial Team, pls apply correct reference style for figure and table calls. I.e., 225 "(figure 4b)" does not look correct.

We have changed all references to figures to read "Fig.", instead of "figure". The example on line 225 then reads "(Fig. 4b)".

Specific comments:

67: Change "give us" to "provide".

Done

68: Corret "solids as sea ice" to "solids such as sea ice".

Done

70: Change "which in turn triggers more deformation nearby" to "which in turn may give rise to further ice deformation nearby".

Done

72: Capitalize "Earth".

Done

73: Correct "smaller quakes more distributed in the vicinity" to "smaller quakes occurring in the wider vicinity".

Done

75: Change "using observations and the neXtSIM model" to "using both, observations and the neXtSIM model".

Done

76: Correct "we present briefly" to "we briefly present".

Done

77: Correct "In section 3" to "In Section 3".

Done

80: Change "— which is done in section 4" to "(Section 4)".

Done

81: Correct "section 5" to "Section 5".

Done

82: Correct "depends" to "depend".

Done

82: Correct "section 6" to "Section 6".

Done

84: Correct "Arctic basin." to "Arctic Basin."

Done

91: Correct "thermodynamics model" to "thermodynamic model".

Done

94: Remove "a category of".

Done

122: Suggest to replace "to degrade significantly" with "to diverge significantly".

Done

136: Pls use SI units.

Done

145: Clarify the exact mathematical procedure when "combine all the daily means", i.e., explain "combine".

The pdf is calculated from all daily means in within the relevant regions during the period JFM, 2007. We've rephrased the sentence to read "The PDFs shown in this paper are calculated from all the daily means for JFM, 2007, within the regions outlined below (Section 3), for both the lead fraction and heat flux magnitudes."

182: Pls use SI units.

Done

194: Rewrite "the PDF for the observations flattens out" to improve English.

We've rewritten this sentence to read "For values smaller than about 40%, the slope of the PDF of the observations changes to approach zero for very small values."

Caption Fig. 5 right: I cannot see a line for "linear ... fit".

The caption was incorrectly formulated. We've changed it to read "... Right pane: The resulting structure function and a quadratic fit. The error bars are the uncertainty of the least-squares fit for the moments (left pane)."

Caption Fig. 5: Correct "topp" to "top".

Done

267: Correct "12 km" to "12.5 km".

Done

327: Correct "in at" in "smaller effect in at the time scales".

Done

376: Correct "this data" to "these data".

Done

376: Correct "The source code to neXtSIM" to "The neXtSIM source code".

Done

Acknowledgement: Suggest to change "an anonymous reviewer" to "an anonymous 2nd reviewer".

Done