

Dear Reviewer,

We would sincerely like to thank you for your thorough review and apologize for some shortcomings in the previous round. We have compared old and previous more carefully this time using latexdiff. Please note we were not able to figure out how to show the mark-ups in the references, but you can check that in the revised version they have been corrected. However, we were not able to show the volume number as requested, although this information is in our .bib file. After checking other papers in the Cryosphere, we don't see volume numbers (though of course it was not a complete search), hence we are not sure if this is something in the Copernicus.bst file.

Below we list our response to each comment

21 modified to Guemas et al. (2016)

Figure 3 – this figure has been revised so the arrow goes from the weights box in one iteration to the weights box in the next iteration, which was the piece you pointed out that was very helpful. We also changed the legend to be more consistent with terminology in the text. Although this figure was updated for the previous revision, the path to the figure was not correct and therefore it did not show up in the revised version. Sorry about the confusion.

189 “to which are model forecasts are” – we removed the first “are”

189 “are compared are” – changed to “are compared to”

197 changed to Section 2.2

226 changed to “and if not, the prediction”

342/351/355 We also used past tense in the previous paragraph

366 corrected “bnary” to “binary”

368 changed to “Fig 13 shows”

Figure 13 Moved the (a) and made the legend bigger. Removed the excessive full stop in the caption, and added one between “methods” and “Binary”.

374 Changed to a mathfont for FN and FP

377-378 Changed to “Fig 14 shows....”

371-371 – Changed to the use of days instead of points

391 Changed to “Basic and Augmented models”

396 Changed to “When ice starts to form, this”

406-410 Added hyphens so it is “30-day” and “60-day” consistently

430 Changed to “to the median”

430 Revised this sentence

431-433 Removed discussion of endpoints and interior points to focus on conclusion

435 Added information that HadISST2 is an observational dataset. Yes, this was used as a reference dataset in Dirkson.

444 Changed to “Climate Normal”

447 Changed to “shows that the Augmented model”

447 Changed to “capable of”

449 Changed to “models show substantial improvement”

438 Changed to “for freeze-up than for break-up”

456 Changed to “dependencies”

463 Changed to singular

466 Changed to “The spatial resolution used here is similar to that used in studies that carry out seasonal forecasting using a dynamic ice-ocean model (or similar) where a sea ice state vector is predicted as a function of time (Sigmond et al., 2016, Askenov et al. 2017). Hence, in terms of spatial resolution, the ML approach proposed in this study is not coarser than other commonly used approaches, some of which target marine transportation.”

Code availability – added information that was there previously about the data availability and changed heading to “Code and data availability” also added ice chart and ice atlas information.

We also obtained a digital object identifier for the code and added this to the “Code and data availability” section.

References: made changes, but volume numbers are still not displaying as noted in the beginning of this reply.