

- Figures 3 and 5: While I can share the authors' frustration with plotting output from different models especially on a polar stereographic grid, I was also confused: I understood that the detection method (depicted also in Figure 1) yields a polynya classification that is interpolated on the EASE grid (4th step of the method). This makes me wonder, why there are plotting artefacts like seen in panel j). Is this from the final plotting or are there already issues in the detection method when interpolating (i.e., 1st step of the method)?

This issue has both a technical and a plotting cause:

- **Yes we interpolate onto the common EASE grid prior to the Unet classification. There is however no perfect interpolation method, and we prefer always choosing one with no extrapolation. Yes, we could have dug deeper into the model description paper to find out which Arakawa grid the model is on, and therefore where the coordinates really are relative to the sea ice concentration, but in the interest of automatisation we instead treated all models equally. This resulted in some models appearing to have a larger data gap around their origin than other, gap over which we chose to not extrapolate;**
- **The final plotting involves sea ice on the native grid: notice for that same panel how the sea ice lines also disappear around the model's origin.**

We assume that what the reviewer really is concerned about is not the visual aspect but whether our assessment of that model's capability is wrong (whether we are "unfair" by omitting several pixels in the Kara Sea). Note that the most visually-affected model, IPSL-CM6A-LR, is already one of the ones with an inaccurately high polynya area on Fig 2. By omitting several pixels, we are in fact doing this model a favour.

In summary, the missing line on some models is the result of the most efficient trade-off between automatisation and each model having their own peculiarities. We acknowledge that as such it is not perfect, but its outcome is less detrimental to the overall result than the alternatives.

We have not modified the text in response to this comment.

For the other artefact, the sea ice "tail": if not possible/too painful to remove I at least suggest to be more precise in the caption "the "tail" of sea ice in the top-left corner of some models is a plotting artefact" and change that to "the "tail" of sea ice (cyan line) in the top-left corner along 180°, seen for some models, is a plotting artefact".

Caption changed as suggested.

- Figure 4 and (revised) discussion about the clustering by sea ice model (lines 265): I appreciate how it is formulated now as I now understand what is meant but for panel 6 (Chukchi sea) I find the stars (LIM model) too scattered to say that they are found together and I am also surprised that there is no significant correlation for this region as it looks quite correlated to me (at least not less correlated than, e.g., panel 3).

We removed the reference to the Chukchi Sea in the text.

Regarding the correlation of that same panel, the p-value is 0.12. There is a correlation, but it is not significant at 95% as the other panels.