

Interactive comment on “Seasonal transition dates can reveal biases in Arctic sea ice simulations” by Abigail Smith et al.

Abigail Smith et al.

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We thank the referee very much for their help and constructive comments. Responses to the minor comments and technical corrections are below.

Minor Comments

1. L 205-206: I'm not sure exactly what you mean by the model spread shifting “earlier toward the satellite data”. Can you please expand or rephrase this in the text?

Yes, we will rephrase this sentence to clarify that the model data becomes more similar to the satellite data in terms of the median melt onset dates when excluding the CNRM models.

C1

2. L 206: Inflow regions are not specifically defined anywhere in the paper. It would be worth it to state where these are (e.g., Bering Strait, etc.).

Thank you for this suggestion. We will define “inflow regions” in the manuscript.

3. L 249: It would be beneficial to expand a bit on the ice concentration metric used by Markus et al. (2009) when the algorithm does not detect a clear freeze onset signal from the brightness temperatures. Specifically, that the threshold used by Markus is 80% SIC, which in theory makes some unknown quantity of the satellite freeze onset dates more comparable to the closing dates, than freeze-up dates. This is likely contributing to the instances where the freeze transition dates are out of order (e.g. as you state in lines 247-248).

We agree that expanding on the Markus et al. (2009) algorithm in this section would be beneficial. We will add text to the manuscript explaining the 80% SIC threshold and how this likely contributes to the fall transition dates that occur out of the expected order.

4. Figures 3-8: Since Jan – Mar are repeated twice in the color scale, it would be easier for readers to see that the repeated dates in the blue colors are for the following year if this was denoted on the scale markings somehow.

We agree and will adjust Figures 3-8 to clearly denote that the second January, February and March on the color bar occur in the following year.

Technical Corrections

1. L 30: Typo – Melt ponds decrease the albedo of the surface

We will correct this typo.

2. L 328: Typo – the former through the formation of...

We will correct this typo.

C2

