

Review comment on “The Importance of Initial Conditions in Seasonal Predictions of Antarctic Sea Ice” Round 2

Major comment:

In the first round of review, I questioned whether the comparison between ACCESS-1 and ACCESS-2 is suitable to demonstrate the importance of sea-ice initial conditions for seasonal prediction, given that the two systems differ in many aspects, including the oceanic and sea-ice initial states as well as the ensemble generation procedure.

In the revised manuscript, the author attempt to address this concern by showing that the variance of the RMSE within ACCESS-1 and ACCESS-2 is indistinguishable, arguing that ensemble spread is therefore not responsible for the differences in sea-ice prediction performance. However, this only partially addresses my concern, as the use of a logarithmic scale in Figure A15 masks the actual differences between ACCESS-1 and ACCESS-2. In addition, the impact of differences in oceanic initial conditions remains unclear. The authors state in the revised manuscript that “we believe there are reasons to consider that the effect would be of second-order importance.” I do not find this statement sufficiently rigorous to support the conclusion regarding the role of initial conditions in seasonal prediction of Antarctic sea ice. A more quantitative or evidence-based assessment would be necessary to substantiate this claim.

Minor comments:

P2 Line 54, Please clarify what is meant by “observed sea ice initial condition”

P2 Line 54, typo asimilatonand

P8 Line 193, This statement could be made more rigorous. Once the oceanic and atmospheric states are altered, such changes will inevitably influence the sea-ice state, even if the magnitude of the impact is small.

P12 Line 219, double Figure.

Figures: Several figures contain a large number of subplots, which makes it difficult to identify the key messages. I recommend simplifying the figures and retaining only the panels that convey the essential information.