

Interactive comment on “Model resolution influence on simulated sea ice decline” by J. O. Sewall

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This paper offers a compelling, but not entirely convincing argument on the impact of resolution on sea ice models on their output. The comments below are aimed at helping the author make the arguments more convincing. The overall goal is to reduce the readers uncertainty by better identifying what is controlled for in terms of resolution and variables. Identifying the level of significance of the differing ice input variables utilized in the various models is crucial. This can be done by a table of correlations. As is I am left wondering if the different handling of the ice variables is significantly influencing the correlation between resolution of the horizontal ocean heat flux and forecast sea ice extent.

761 8-9: This is true models have underestimated sea ice loss. Spend additional time

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on this as improving the model accuracies is key. You have looked to the future and compared forecasts with resolution. What about model errors in hindsight? A figure or a table could illustrate the specific models and their under representation of sea ice loss to date. This can then be compared to your results of forecasting future loss. Are the same models that have the least sea ice loss in the past, also forecasting the least future sea ice loss.

761 13: Save the conclusion for later in the paper.

Section 2.1 How do you address the various atmospheric resolutions and their potential impact or does that matter?

Section 2.2 Should lead to a separate figure comparing results just of the resolution change. For the two models. The figure would be added later in the paper.

763 2-4: Very important sentence. Prove this point to us with a table of correlations for specific ice variables used by the various models and identified in Table 1.

763 14: Does this indicate ocean modelling was left at the same resolution when the ice modelling resolution changed or is it constant?

763 24: Reference or data to support this argument.

Conclusion: Does your analysis suggest that the inadequate ocean horizontal heat flux resolution is part of the reason for sea ice models underestimating sea ice loss to date?

Interactive comment on The Cryosphere Discuss., 2, 759, 2008.

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