

*Thank you for addressing the specific comments from both reviewers. I am happy to accept this manuscript for publication in GMD. I would only ask that you provide a short sentence in the manuscript summarizing your response to Reviewer 2's point 4, explaining why LW nudging was not done. This comment might be useful for others trying to reproduce or build on this work in the future.*

We have added the following paragraph to the results section:

Downwelling and surface net longwave radiation play an important role in determining the surface energy balance and boundary-layer state in Arctic winter (Stramler et al., 2011; Pithan et al., 2014). During the period studied here, downwelling longwave radiation fluctuates on short time scales in both models and observations, which we attribute to subtle changes in cloud properties that are not constrained by the large-scale nudging (not shown). Longwave radiation could still be evaluated using process-based metrics (Pithan et al., 2014), but not with a one-to-one comparison of hourly averages as shown for the shortwave fluxes.