Dear Editor and two Reviewers,

We have submitted a revised version of our manuscript “Interactive comment on “Potential faster Arctic sea ice retreat triggered by snowflakes’ greenhouse effect” for *The Cryosphere*, based on the reviewers’ comments and suggestions.

We thank both reviewers for their insightful comments and clear, detailed analysis of our paper. We have attached a redlined draft that shows the changes along with a point-by-point response to each reviewer.

We have added analysis of the simulated thickness in CESM1-CAM5 to address reviewer 1’s questions, and substantial text and extra references throughout to address reviewer 2’s input. Reviewer 2 is correct that the faster retreat in CMIP5 models that include falling ice radiative effects could be explained by other inter-model differences. We have endeavoured to emphasise this much more strongly in the new version. However, our added CESM1-CAM5 analysis is further evidence for our proposal that falling ice radiative effects tend to result in a thinner initial pack whose retreat is more easily triggered in this model.

We have also added more statistical detail and extra Supplementary Information that shows that several assumptions of our trend analysis are not rejected according to standard tests. We also show that the conclusions are the same when using a nonparametric trend estimator and refer to this in the main text, meaning that we believe our conclusions are robust to various statistical choices. We also refer to published CESM1 Large Ensemble results to further support our conclusions of having detected a process-driven change in Arctic sea ice retreat.

Finally, we have also corrected minor bugs which slightly change the CMIP5 analysis but do not affect our conclusions. Overall, thanks to the input of the reviewers, we believe that our new draft more strongly supports our primary argument but is also better explains the limitations of how widely our conclusions apply.

On behalf of all authors,

Jui-Lin F. Li