

Visioni et al. proposed a new GeoMIP experiment for the Solar Radiation Management experiment that to be run with CMIP6 Earth system models (ESMs). Their specific design considers the potential application in the future CMIP7 as well. All the details of the new experiment were clearly described, discussed, for example, Target metric, underlying emission scenario, goal, start date, end date, and forcing strategy. Two ESMs were tested with the new experiment to show the impacts of SIC on surface air temperature and mean precipitation. Overall, I think the manuscript is well written, and the new experiment is carefully and clearly described. It is suitable to be published in Geoscientific Model Development. The only major comment I have is that more discussion of the results (e.g., Fig. 3) are needed. Currently, Fig.3 is only discussed in a few lines. In addition, Fig. 2 was not referred in the main text. I suggest more work for the results section for the revision.

We thank the reviewer for their comments. We apologize for the confusion, but we clarified now in the text that most of the results were already discussed in depth in Zhang et al. (2023) (now accepted and close to final publication) for CESM2, and for some strategies in Henry et al. (2023) in UKESM1. Therefore, we see no necessity here to revisit in depth the results. However, we hope to have clarified this much better now.

Specific comments

Line 147: Please give the full name of PI.

Done!

Figure 2 was not referred in the main text.

Thank you, we fixed this now.

Line 203 – Line 205: how were these results estimated? Please specify the method of estimating those GMP numbers.

We added some more specifications right after.