

Dear Editor,

Thank you for your positive assessment of the revised paper.

We have addressed your comments, response see below. As suggested, we went through the paper and found a few more issues, mostly typos; a list of all changes is also given below. Your comments in black, our response as well as the list of all changes in blue. Line numbers refer to the no-track changes version uploaded in May of this year. Post-processed model data are now uploaded to a public repository with a permanent identifier, and this information has been added to the data availability statement.

Kind regards,

Miriam Sinnhuber for all authors

The authors have responded appropriately to the reviewer's comments. The paper is now better organized and clearer. In going over the paper, I noticed a couple of minor typos (Line 160 - should be with upper and lower ...; Line 294 - add a space after NO).

Line 160: x-ray was changed to X-ray. This was changed throughout the manuscript, see list of all changes below.

Line 294: done.

I also noticed that there were several places where January 2009 is stated as the start of the model runs (Line 209 in the definition of the Long experiment; Line 100 of the supplement). I suspect these are also typos, but there is also mention of an initialization period in the paper. I suspect this is necessary since the Snapshot date is very close to January 2010 should that be the start of the run. Before publication, please clarify the dates of the model runs and describe the nature of the initialization period.

That's correct; most models did one year of spinup-time, but at least one model branched off from a multi-year experiment. Line 209: Changed "January 1, 2009" to "January 1, 2010" and added ", with at least one year of spinup-time before January 2010".

Line 100 in Supplementary Material: This was a typo, thanks for pointing this out. Changed to "January 9, 2010".

Thanks for an interesting paper.

Thank you!

List of all Changes made:

Changed x-ray to X-ray: lines 21, 32, 33, 160, 224, and line 32 of the Supplementary Material

Line 80: changed full stop after "MIPAS observations" to "as"

Lines 109, 130: changed “600 km” to “500 km”, as this is the top altitude in the WACCM-X data-set of January 9, 2010.

Line 270: erased “in their common altitude range” as both models cover the altitude range shown.

Line 274: Changed “Up to 140 km” to “Above about 100 km”

Data availability statement:

Added “Ap and F10.7 used in Figure 1 are from the CMIP6 solar forcing data available at <https://solarisheppa.kit.edu>”.

Last sentence changed to “Post-processed model results as used in the Figures of the main text and supplements are published on the repository Radar4KIT with a CC-BY-4 license and persistent identifier 10.35097/8b6tm3xvtxvgjtvb (<https://radar.kit.edu/radar/en/dataset/8b6tm3xvtxvgjtvb>).”

Supplementary material:

Figures have been renamed S1, S2 etc, and all references in the main text and Supplementary material have been changed accordingly.