

## Answers Reviewer

Overall, I am happy with the revisions made by the authors and I believe the manuscript is almost ready for publication. I only have a number of smaller comments that I think should be addressed before publication:

Thank you for this positive assessment of our revision! Below, we answer any remaining concerns in blue font.

Abstract: L1-5 There is a lot of “assume” and “often” in the first few sentences. I suggest to rework these first few sentences and try avoiding unnecessary repetitions.

Thanks, we agree and rephrased the abstract slightly.

L8: Why do you not give the full range but instead write “less than 0%”?

We do now.

L12: introduce abbreviation “GMT” at first mention

Thank you, we fixed it.

L15: Please mention at least one of the “key regions”. Could be done with by adding “such as...”

Thank you, we clarify it now.

L37-38: I think it would be appropriate to add at least one citation of an earlier effort to include dynamic ice sheets into ESMs (not EMICS). For example Mikolajewicz et al. 2007, GRL, doi: 10.1029/2007GL031173 or Vizcaíno et al. 2008, Clim Dyn., doi: 10.1007/s00382-008-0369-7

Thank you, we include these references now.

L39-40: I am a bit biased, but I suggest to change “make it currently virtually impossible” to “currently challenging” or similar. As our group’s paper shows, simulations of the entire last deglaciation (26,000 years) are certainly feasible now (see doi.org/10.5194/cp-2024-55).

We rephrased the sentence.

L74: change “not necessarily true” to “unlikely to be true”

We rephrased the sentence accordingly.

L92: I did find the last section of the sentence confusing and hence suggest to delete it. If the authors would like to keep the sentence, then I suggest at least that they add that these numbers refer to the radiative forcing and that the numbers following the hyphen indicate the increase in watts per meter squared.

We agree and deleted the last part of the sentence.

L94 Are “tas” and “pr” really needed? It is not used anywhere else right?

We included these variables to allow for better reproducibility since the nomenclature of variables in the CMIP6 ensemble is not very clear. Therefore, we decided to leave it like it is.

L140: parentheses missing around Zeitz et al. (2021).

Thank you, we fixed it.

L161: “We spin up” instead of “We spinup”

Thank you, we fixed it.

L211-212: I do not understand why you need to normalise the ice volume? Do your simulations not start from the same initial state anyway?

We agree that it is not necessary in this case, especially since we do not give any prognostic sea-level estimates. We barely followed the methods from other papers to give a better picture of the expected sea-level contribution since our initial states have of course not the same ice volume as the observed volume of the GrIS. Since this decision to normalize the ice volume does not have any impact on the results, we decided to leave it as it is.

L264-L265 “almost the entire Greenland Ice Sheet shows...”

Fixed.

L276: Here and throughout, change “similar pictures arise” to “similar patterns are observed” or similar.

Thank you for this suggestion. We changed it accordingly.

L287: “magnitudes of the temperatures”

Fixed.

L307 “has a moderate correlation”

Thank you, we rephrased it accordingly.

L341-343 Do you mean in comparison to the historical period? Because all of the emission scenarios should be the same for the historical period, right?

Unfortunately, it is not clear to us what you refer to. We give the precipitation sensitivity for each emission scenario over the respective time period. That is, for the future emission scenarios for the 21<sup>st</sup> century and for the historical scenario for the historical period (1850-present). We put the sensitivity for the historical period first now to make it more consistent with the temporal order of the scenarios.

L431: Delete “Little surprisingly”

Fixed.

Section 4: I think it is worth adding a few sentences/paragraphs that spatially varying precip. sensitivities (exp iii) do not seem to matter in your simulations.

We agree and added two sentences.

L604: Again, I think this is too strong a statement. Such simulations exist, see comment above. My suggestion would be something like: “remain rare” or similar.

We rephrased the sentence.

Figures:

Fig.4 Second -y-axis. I find the term “sea-level rise” not precise enough. I think something like “Ice volume [m of sea-level equivalent]” would be more appropriate.

We changed it throughout all relevant figures.

Fig. 3 caption: Please add that the contour is white and make the contour thicker and maybe even label the contour like you do in Fig. 2

We changed the caption and figure accordingly.

Fig. 5: Can you increase the legend fontsize?

Done.

Fig. 6 caption: Please add somewhere that dashed-dotted lines are on top of the dashed lines to the caption

Thanks for this suggestion, we changed the caption accordingly.