

This is the second round of review for egusphere-2024-1126 by Feenstra et al.

A major remark common to all 3 reviewers was about the overall scope of the manuscript. The reviewers felt that either a simulation reintroducing PI conditions was not in the scope of the manuscript or that it should have an equivalent 1-way simulation to follow a pattern similar to the comparison between the 2 4CO<sub>2</sub> simulations. The authors have justified their reasons for not running more simulations and made changes throughout the manuscript (including the title) to better reflect the common theme between the two parts.

The authors have also responded to the reviewers' minor comments and incorporated them in the revised manuscript. They have also paid particular attention to specific remarks about the wording and sentences connections to improve the clarity of the manuscript.

I only have a few minors comments but I suggest that the authors simply take a look at them before sending the manuscript to copy editing as these don't require another round of review.

### **Minor comments**

p1 - L10-12: We also attribute part of the overestimation of mass loss in the 1-way coupled simulation to an overestimation of melt in the ablation area, caused by the use of a uniform temperature lapse rate ***to describe elevation changes***.

The last part of the sentence was added as a response to reviewer 2 requesting to specify that the temperature lapse rate was the one used to downscale temperature from the atmospheric grid to the ice sheet grid. It is true that it reflects elevation changes but the way you wrote it sounds a bit weird.

I suggest to change it to ***caused by the use of a uniform temperature lapse rate used to reflect the elevation differences between the atmospheric and ice sheet grids***.

p2 - L50: I think ***in which this temperature threshold is surpassed*** is more grammatically correct than where. I'm not entirely sure so please double check

p2 - L52: ***higher*** temperatures instead of ***larger***

p5 - L131-132: as you've introduced a sentence explaining the SMB is computed on elevation classes just before, I would replace ***the sum of the downscaled SMB*** by something along the lines of ***the sum of the SMB downscaled from the elevation classes*** so readers that are unfamiliar with the use of elevation classes models can make the link with line 125

p5 - L145: communicated ***to***

p 22 - L 416: Blocking projections should ***therefore*** be treated with caution