This paper explores the projections of sea-level rise (SLR) from the Antarctic Ice Sheet using the Parallel Ice Sheet Model (PISM), driven by Surface Mass Balance (SMB) forcing derived from four distinct Regional Climate Models (RCMs). Specifically, the study assesses the impact of these RCMs on SLR projections under the global Climate Model HadGEM2-ES. The research reveals that the choice of RCM reference forcing introduces uncertainties in future sea-level rise predictions, comparable to influential factors like ice sheet model parameterization and global climate model choices. Notably, the study emphasizes that the selection of the RCM can influence the timing of the West Antarctic Ice Sheet (WAIS) grounding line retreat under RCP8.5. A parallel investigation examines the present-day forcing from ERA 5 on the 30ka long-term stability for the four different RCMs.

While the paper holds promise for publication, there is room for improvement in synthesizing the results, particularly regarding the equilibrium experiments. Further clarification is sought for the 2100 and 2300 experiments, with a specific focus on the rationale behind the SLR projection calculations and whether the numbers are subtracted by control runs.

Equilibriums runs:

While the same parameters tuned to RACMO yield different results for the other RCMs, I understand that it might be computationally prohibitive to conduct a spin-up for every RCM and parameterization. However, my concern lies in whether the obtained results convey physical insights. Typically, a glacial spin-up is undertaken to mitigate model shock, ensuring that projections are grounded in physical processes rather than numerical artifacts. Given this, I find it surprising that RACMO still exhibits considerable model shock.

Could you clarify whether there was a change in resolution from the glacial spin-up to the equilibrium run? If not, kindly include the 16km resolution in your experimental design details. Additionally, I am curious about the parameters utilized for the glacial spin-up.

I am grappling with the interpretation of the results, uncertain about their physical significance versus numerical artifacts. It would be immensely helpful if you could articulate your key take-home messages from the equilibrium experiments for the reader's clarity. Notably, you mentioned that differences between RCM forcings are four times smaller than the overall model bias. In your opinion, can uncertainty be adequately captured by selecting just one RCM with an ensemble of ice sheet model parameters? The similarities between COSMO, RACMO, and HIRHAM raise questions about whether a recommendation for the future could be to choose MAR and one of the three RCMs to encompass uncertainty. Additionally, would you advocate for a separate glacial spin-up for MAR? These considerations could potentially enhance the abstract of your study.

In Figure 4 I cannot see the purple line.

Centennial Projections:

Regarding Figure 6: Could you confirm whether all Sea-Level Rise (SLR) contributions are subtracted by the control run? I might have overlooked this detail, and it would be helpful if you could explicitly state whether such subtraction has been performed. Notably, Seroussi et al. subtracted all the runs by control runs. Additionally, consider showcasing only the HadGEM2-ES results from Seroussi's work or, alternatively, emphasize the PISM run(s) for comparison.

On page 12, line 321, you mention calculating the maximum SLR contribution in a specific manner. I am curious about the choice of not subtracting the control run in this calculation. Considering that the glacial spin-up involved a single RACMO forcing and parameter set, wouldn't it be necessary to subtract the control run for each member individually? Especially after the results obtained from the equilibrium runs show so different behaviour for each RCM. This consideration becomes especially relevant when examining projected SLR uncertainties. Could you conduct this subtraction and provide insights into how it influences the projected uncertainties? Based on Figure D1, it appears that the control runs might not align with the values from 2005, particularly noticeable in the year 2300. Further clarification on this aspect would be appreciated.

Figure 7,9: which Year are you showing? I cannot see a purple line either.

Figure 9: Is there maybe a number to quantify this change? Mean thickness deviation for each RCM or something similar. This way we can see more easily if these difference arise more for the RCPs or RCMs.