

## Response to editor comments

Thanks for the edits. Can you also look at the Conclusion in the same context? For example, I am not convinced that the sentence below is supported, especially when we consider how the AR6 has incorporated the outputs of the CMIP MME into its probabilistic projections.

“Probabilistic projections constrained with several ranges of climate indicators, including CO2 and other forcing factors and observed warming trends over recent decades, suggest that complex climate models generally overestimate climate sensitivity”

Clearly there are some higher sensitivity models in the ensemble, which (as I understand it) mostly appear to be producing more unrealistic outputs than the more moderate sensitivity models. But there still exist moderate sensitivity models in the ensemble, so I’m not convinced that “generally overestimate” is a robust statement. In addition, a small biased ensemble is of little value for probabilistic projection, because we do not trust it to be reliable. For this reason, I would personally prefer to start with an ensemble that I believe to be a bit on the wide side.

Thank you so much for your kind suggestion. I have revised the Conclusion and Abstract to more focus on a methodology aspect rather than the differences between the two ensembles. I also took into account the timing of WG1 AR6 publication.

In terms of the ensemble coverage, I agree with the editor’s thought. In fact, the MCE method starts with a wide range of model parameters, where CMIP models’ diversity is reflected as much as possible, and constrains them to match given indicator ranges if needed. I think this concept is quite natural, and the present method has some advantages to do so, as described in the paper.