

Review of “Description of historical and future projection simulations by the global coupled E3SMv1.0 model as used in CMIP6” by Zheng et al., submitted to GMD

Major comments:

The authors documented some future climate characteristics of E3SMv1.0 at the highest emission scenario, with a focus on regional responses. Moreover, the impact of anthropogenic aerosols on the warming was emphasized by comparing the SSP5-8.5 and SSP5-8.5-GHG simulations. This manuscript aims to describe the experiments and present the most notable features revealed in these experiments. It is found that the results are generally well presented. However, there is a lack of statistical significance when presenting the changes in future projections and the comparisons between SSP5-8.5 and SSP5-8.5-GHG. Therefore, I request minor revisions of the manuscript.

Minor comments:

Line 118–120: “CMIP6 models project an overall higher warming with a larger intermodal spread ... compared to the corresponded CMIP5 future climate projects.” Please cite related works.

Line 127: “E3SMv1.0 simulated global mean Tair anomalies” → “The simulated global mean Tair anomalies in E3SMv1.0”; “demonstrates” → “demonstrate”

Fig 3: It seems that there is an evident double-ITCZ problem in E3SMv1.0. Can you discuss a little about the impact of such bias on the projection?

Line 204: Please explain why January-February-March are used for boreal winter and July-August-September are used for boreal summer?