

Geosci. Model Dev. Discuss., referee comment RC1
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Comment on gmd-2022-74

Anonymous Referee #1

Referee comment on "Assessment of JSBACHv4.30 as a land component of ICON-ESM-V1 in comparison to its predecessor JSBACHv3.2 of MPI-ESM1.2" by Rainer Schneck et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2022-74-RC1>, 2022

The authors evaluate the performance of the new JSBACHv4 biosphere model in comparison with the JSBACHv3 model in the context of the new ESM model developed at MPI Hamburg. In this paper they have a focus on fast (sec to year timescale) processes. In general, the paper is written and structured well and fits into the scope of the journal. Because of the focus on evaluation than on model description the paper lacks mathematical description of the model changes. Perhaps adding some formulae would be beneficial. But I see the constraints due to the length of the paper.

Specific comments:

The model setup has to be described in more detail. The model setup is distributed at different parts in the manuscript (e.g. prescribed ocean SST, prescribed PFT distributions).

NPP has been selected for comparison with observational data. It would be interesting to see above-ground biomass as an additional validation data set.

Due to the prescribed vegetation distribution cover cannot be used as an evaluation. In general it would be interesting to see the performance of the ESM for a dynamic vegetation without prescribed PFTs. But this would be a topic for a separate publication.

The formatting of tables could be improved. The vertical lines in the headers do not correspond. In particular a separator for the two JSBACH versions in the header is missing.

To quantify the bias between simulation and observational data the normalize mean error (NEM) metric might additionally be used (Kelly et al, 2013).