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Geoscientific Model Development Discussions

Interactive comment on "The Brazilian Earth System Model version 2.5: Evaluation of its CMIP5 historical simulation" *by* Sandro F. Veiga et al.

Anonymous Referee #1

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The manuscript is a document about Brazilian Earth System Model version 2.5, which is designed for the coming CMIP6 coordinated experiments. Authors comprehensively evaluated the major climatology and climate variabilities through CMIP5 simulation configurations. Considering the importance of the model document, I think the manuscript should be eventually accepted.However, I have to nonetheless point out there is still much room for improvement. My comments are put as below.

1. The model BESM-OA2.5 is an Earth System Model. However, there is no evaluation of model about cloud-aerosol-chemistry or dynamic carbon cycle processes. The unique characters highly related with Earth System Model should been introduced, and some results should been also evaluated.

2. The bias of the double ITCZ is taken as the long standing problems from CMIP3 to

CMIP5. As for CMIP6, some model groups illustrated the encouraging progresses to mitigation these biases. How about BESM-OA2.5? Annual mean SST and precipitation should be also given.

3. As a documentation of BESM-OA2.5, the behaviors of the subseaonal variability (e.g. MJO) and diurnal cycle are highly suggested to be given.

4. Fig5: there are some uncertainty raised from the observation/reanalysis products, therefore, CMAP or the last global precipitation datasets of stations should be added to present the differences.

5. The plans of BESM-OA2.5 for CMIP6 participation are also highly expected.

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