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Model Development

Discussions

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Interactive

comment

Interactive comment on "Overview of the Global Monsoons Model Inter-comparison Project (GMMIP)" *by* Tianjun Zhou et al.

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Dear referee,

Thank you for your constructive comments. For reading easily, we copied your comments in italic.

(1) page 2, line 7: The East Asian monsoon is controlled by zonal temperature and pressure gradient. Therefore, "meridional temperature and pressure gradients" should be replaced with "temperature and pressure gradients" without "meridional".

Response:
Done **(P2, L7)**.

(2) page 4: Four primary scientific questions are raised here, but how predictability of

monsoons can be solved by GMMIP is unclear. Delete this question or include one sub-section regarding this in Section 5.

Response:
The term "predictability" is replaced with "reproducibility" in the revision **(P4, L16)**. The interannual variability of monsoons simulated by stand-alone AGCMs will be compared to the results of fully coupled models. The impact of air-sea interaction in the reproducibility of interannual monsoon variation will be addressed.

(3) page 5, line 8: regional climate information is not a part of WCRP Grand Challenges (unfortunately).

Response:
We deleted this part. In the draft version of WCRP grand challenge documentation, the regional climate information was among the list.

(4) page 8, Section (5): How is CORDEX data planned to use?

Response:
This has been clarified in the revision **(P9, L7-11)**.

(5) page 9, line 29: A maximum width of the Meiyu/Baiu rain band is about 200 km in a climatological time averaging, but it consists of meso-scale cloud clusters. This is why high-resolution modeling is needed.

Response:
Thanks. We have revised the statement as suggested **(P10, L17-18)**.

(6) page 11: In the pacemaker experiments, SST is restored to daily climatological SST. On the other hand, in the AMIP experiment, the Taylor-corrected monthly mean SST is used after interpolation into daily values. Therefore temporal behavior of SST is different between the AMIP and the pacemaker experiments. Doesn't this matter?

Response:

In the pacemaker experiments, the SST is restored to a constructed SST which is climatological model SST plus observed anomalies to reduce model drift. We suggest using the same SST data as in AMIP experiments to calculate the observational anomalies. So variability at all time scales is the same between these two types of experiments **(P12, Appendix I)**.