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Comment on hess-2020-652

Anonymous Referee #2

Referee comment on "Evaluation of Asian summer precipitation in different configurations of a high-resolution general circulation model in a range of decision-relevant spatial scales" by Mark R. Muetzelfeldt et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2020-652-RC2, 2021

The manuscript deals with an important issue -- i.e., the influence of different configuration schemes of convective parameterization of a high-resolution GCM in simulating the Asian monsoon rainfall. The study finds all the configuration produces substantial bais at the very fine resolution but increases its efficiency for the larger basis with fewer precipitation biases. I have some comments on the manuscript, which authors should address during their revision:

(a) The manuscript structure at present is very difficult to follow. I had to go back and forth with the figures to understand what especially authors has to say. This comment applies to both the main manuscript and supplementary figures.

(b) The authors should substantially change the conclusion part. They are just repeating the already mentioned aspects from the results section. I did not get what the authors have to conclude from the work.

(c) The usual challenges faced by the policymakers are the information at the fine spatial resolution. The analysis conducted by the authors seems that there is significant bias -- specifically over the indo-china peninsula, at a very fine resolution for all the configurations. As the author mentions in their paper that it is computationally difficult to perform such analysis, researchers, therefore, tend to use some of the other techniques such as statistical downscaling (See Kulkarni et al., 2014 for example). There should be some discussion about this in the revised manuscript.

References:

Shashikanth, K., Madhusoodhanan, C. G., Ghosh, S., Eldho, T. I., Rajendran, K., & Murtugudde, R. (2014). Comparing statistically downscaled simulations of Indian monsoon at different spatial resolutions. Journal of Hydrology, 519, 3163-3177.