

Interactive comment on “Statistical bias correction for climate change impact on the basin scale precipitation in Sri Lanka, Philippines, Japan and Tunisia” by C. T. Nyunt et al.

Anonymous Referee #1

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Nyunt et al. introduced a new approach of correcting biases from GCM outputs, mainly precipitation, to study basin-scale climate change impact. While their 3-step bias correction approach accounting for biases in extreme events and wet-day frequency is interesting, there are a few scopes for improvement which should be addressed.

Specific comments:

1. The method of selecting GCM adopted in this study is not convincing. Addressing the uncertainties as reflected by the disagreements among the model simulations is a topic of extensive research. The authors tend to oversimplify this issue by selecting GCMs based on their “scores” used in this study. I understand that some criteria might be needed to narrow down the list of data sets to be analyzed. However, those criteria

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should not appear as the main focus of this study. The way the approach of selecting GCMs was emphasized in abstract and in the first paragraph of introduction (from line 23 on page 1 to line 4 on page 2), readers might find it as one of the main objectives of this study.

2. The method of selecting GCMs prior to bias correction is, I think, contradictory to the core idea of this study. Since authors introduce a new approach to correct the model biases, to examine its efficiency, the best approach would be selecting a pool of GCMs with worse performance or larger uncertainties. Selecting only the better models somehow undermine the efficiency of the bias correction method.

3. Figs. 16-19 are useful, since spatial plots are often more telling in climate study. However, in addition to presenting the observation and bias-corrected model simulation, another plot representing the raw GCM mean precipitation before bias correction would be interesting. Also I am not sure why authors used different color scale for each of those spatial plots. A uniform color scale would be more informative. Figs. 16-19 can be combined into one single spatial plot where first, second and third column represent observation, raw GCM mean and bias-corrected GCM mean respectively, with each row representing a different river basin.

4. Since correcting biases of extreme precipitation is one of the major highlights of this study, a similar spatial plot comparing raw and bias-corrected GCM simulations with observed extreme precipitation over different river basins would be an interesting addition.

Technical Comment:

The introduction part should be more organized. Especially, in the third paragraph of introduction (line 19-35 on page 2), authors tend to go back and forth among three distinct points – 1) main focus/features of this study, 2) brief descriptions of methods, and 3) limitations of the approach. This seems to interrupt the flow of the manuscript.

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