

Comments to Authors

The submitted manuscript “Intercomparison of bias correction methods for precipitation of multiple GCMs across six continents” which compared different bias correction methods for bias correcting precipitation over six continents from several GCMs presents an interesting research which can have global significance in choosing the best method if bias correction for climate studies in different regions. Manuscript is written well and well organized. However, I have some observations and suggestions for the authors as follows.

Abstract

I suggest authors include some quantitative information based on the performances of the different methods. For example, values based on the weights or some final metric for comparing the methods will give a better context as to how they differ in their performances.

Introduction

L50: What do the authors mean by “which has reduced difference between GCM simulations and observed precipitation? Do the authors mean uncertainty/error in GCMs relative to the observed?”

L57: change “a recent study” to “recent studies” and remove “an”

L70: There is an abrupt deflection from the bias correction discussion to the MCDA in this paragraph disrupting the flow from the previous paragraph. Authors emphasized the need for selecting appropriate bias correction methods in L67 – 69 and abruptly jumped to GCMs performance evaluation and then again to bias correction. I suggest moving paragraph three to paragraph four and paragraph four to three. Authors should also add a brief importance of TOPSIS to the MCDA method and why it was chosen out of the many other MCDA methods. Nothing about the BMA method was also mentioned in any part of the introduction except at the last paragraph that it was used. While this information is always detailed in the methodology section, briefly introducing while they are used in the introduction section gives comprehensiveness to this section.

L79: This line in part shows the justification for this research. I suggest authors put all justification for the study in the second to the last or last paragraph of this section.

L96: change “simulation” to “simulated” or change “simulation precipitation” to “precipitation simulation”

Datasets and methods

General Circulation Model

L121: Considering that there are many GCMs, why did the authors consider just 11 in their study?

L122: mentioning temperature here is not necessary since the study doesn't consider temperature.

L129: In table 1. I think the climate variables and the variant label columns are not necessary since only single ones were used. Mentioning it in the text is sufficient. Authors should consider including the full name of the institutions or any other information.

L136: change “availability” to “purpose”

Quantile mapping

L146 – 148: were the historical GCMs corrected before comparison to the observed? If so, why was this done since many studies usually compare the raw GCMs first with the reference before bias correcting and then comparing the bias corrected with the reference. If otherwise, authors should rephrase the sentence.

L148: why was the “frequency-adaptation technique” further needed?

Evaluation metrics

L187: The authors mentioned 10 metrics and again later mentioned 7 metrics. Table show 10 were used. Authors should correct this in text.

L206: GEV was not mentioned at all in the introduction section. A brief introduction about it and its usage should be introduced in the introduction section.

Result

L291: The first sentence: “This study applied.....” is a repetition. It should be removed.

L292: Authors mentioned that figure 1 show the before and after bias correction of the precipitation. There is no indication of the before and after correction in the figure. The figure seems to be showing either of them. Authors should clarify. Figure also shows there seems to be

no any changes in the performances of some models based on the three BC methods in some regions. For example, in South America where there are no changes based on the BC methods for models between 45 - 90°. What could be the reason for these?

L320: This study.....This is not necessary. I t can be removed.

L339: did authors meant North America here?

Why did the authors present different metrics in the spatial figure for the different continents? I suggest same metrics be presented for all cases for consistency.

In the spatial performances of the different BC methods based on the evaluation metrics, were there any observations in the study of the possible influence of factors such as geographic factors like proximity to ocean which can influence land-sea interaction, mountainous areas or deserts on the performances of the BC methods from region to region?

Check the caption of Figure 7 and correct it.

L439: removed “biased”

L441 – 443: how does this little difference observed for the GEV method compare to the other method in terms of the differences? How does the differences observed in the other methods applied compare to the GEV method?

L506 – 507: Check this sentence and make correction.

L42 – 43: This study developed.....There is no need for this sentence.

L575: What factors could contribute to the lower index observed in these regions?

L615: I think “best” rather than “proper” is more suitable in this context.

Discussion

L653: All three methods showed strong overall performance.....This statement seems contradictory of the finding of the better performance of the EQM than the QDM and the QDM than the DQM. Authors should clarify what is meant here.

L766: In conclusion.....I suggest authors merge this part with the conclusion section since these are some if the conclusions from the study.

Were there any limitations of this study. This should be discussed in a paragraph in this section as it can help guide other researchers interested in similar work in the future.

Conclusion

L794: The previous bullets already talked about the conclusions. Authors can remove “In conclusion” from this line or replace it with “generally”