

Interactive comment on “Climatic and extreme weather variations over Mountainous Jammu and Kashmir, India: Physical explanations based on observations and modelling” by Sumira N. Zaz et al.

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Review comments of the paper “Climatic and extreme weather variations over Mountainous Jammu and Kashmir, India: Physical explanations based on observations and modelling” by Zaz et al

This manuscript focused on climate change over the Jammu and Kashmir region in the western Himalayas. The authors present variabilities and trends of temperature and rainfall at six meteorological stations for a period of 37 years. The observed data are

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compared to simulations using WRF model and are in reasonable agreement. The study also discussed the variations in temperature and precipitation with altitude and local topography. They also discussed one extreme rainfall event occurred in the first week of September 2014 and attributed that to the large-scale flow in terms of Rossby wave breaking over the region. The article is well-written at parts and highlighted the major results from the analysis. Still there are some issues to be addressed and therefore, a major revision is necessary before making it to a publication.

1. First, I am not in favor of the current title of the manuscript because the variations of extreme weather events are not addressed properly.
2. Throughout the manuscript, the authors highlight the data period of 37 years from 1980 to 2016. However, in the analysis they incorporated only from 1980 to 2010 (31 years). I suggest updating the figures and tables with updated results (1980-2016) and thus, the significance levels too. The WRF simulations are also to be updated accordingly. The NAO index is also available to date for your analyses.
3. Figure 1 can be updated with an inset figure of Jammu and Kashmir to properly identify the study region.
4. The geographical settings can be summarized in a table and delete the corresponding explanations. The table should include station name, coordinates, amsl, and remarks about the stations.
5. How the seasons are defined? The cited article did not mention anything about the seasons. Please do the classification of seasons promptly with the standard classification followed by India meteorological department or by any other classical monographs. In addition, the authors classified winter as Dec-Feb. However, in many places they considered the winter from Dec to March. This discrepancy must be corrected throughout the article. Remember, if you select the seasons differently, your interpretations and conclusions will also be affected.

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6. The temporal resolution of ERA-I is missing.
7. The unit of pressure may be replaced with hPa instead of mb
8. The coordinates of second domain with 9 km resolution is not mentioned. Please update.
9. Tables 1 and 2 are not necessary, as the same information can be found in Tables 4 and 5.
10. Table 3 can be rearranged in ascending order of elevation and one more column with changes in rainfall can also be added.
11. I suggest to overly the values of changes at the respective station positions in Figures 2 and 3. The significance levels may be given in the form of a superscript star (or any other appropriate symbol) and can be indicated in the figure captions.
12. In many places, the authors quantified the changes by providing “less than” symbols. It is better to give exact values of the changes and discuss.
13. First statement in section 4.3 can be rephrased to avoid confusion.
14. Figure 4e and f show a prediction line and are in good agreement with the observed line too. Please give the corresponding regression equation for the predicted line of temperature and rainfall. Figure 4 labeling is also not correct.
15. You already discussed the skills of WRF temperature simulations in Figure 5 (please provide the station names in individual panels). In addition, the precipitation simulations can also be compared with observation to assess the performance of WRF, to complete the study.
16. The change point of temperature and rainfall is given as 1995. What is the criterion for this turning point selection? This has to be stated and substantiated with valid reasons.

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17. Throughout the manuscript, the space is missing after full-stop. Also, space is missing between words in many places. Authors need to attend the typos with more care.

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