

General Comments

Manuscript Title: Machine learning based streamflow prediction in a hilly catchment for future scenarios 2 using CMIP6 data

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The Himalayan river system is most susceptible to the climate change and as for as India is concerned, its vast population depends on the waters of the Himalayan rivers for irrigation, hydropower generation, domestic and other uses. Any change in the water availability (increase or decrease) will definitely impact the downstream population and the ecosystem as a whole. Looking into the fragility of the Himalayan ecosystem, an assessing of the impacts of the climate change on the streamflow using the latest ML techniques such as including the Gaussian Linear Regression Model (GLM), Gaussian 30 Generalized Additive Model (GAM), Multivariate Adaptive Regression Splines (MARS), 31 Artificial Neural Network (ANN), and Random Forest (RF) is the techno-socio need of the hour, particularly in the Himalayas. Six CMIP6 models, two SSP scenarios and four rainfall scenarios (this is really interesting-the lagging concept) for future stream flow predictions at different temporal scale is really interesting and will be immensely helpful to the stakeholders of the region.

This assessment made in this study will be useful in developing water resources development and management plans in the downstream of the basin. The techniques, calibration, validation and length of the records is beyond the question and suffice for such a study. The techniques are perfect and the results are well discussed. I was just flowing through the text and the different sections of the paper. The paper is well written, smooth and the readers will find it amicably understandable. The language is perfect.

Therefore, looking into the applicability and technical enrichments of the manuscript, I will recommend for publication of this manuscript in this journal with minor corrections as given here.

Specific Comments

1. The criteria for selection of the GCMs may please be explained at the suitable place in the manuscript.
2. The conclusion part may be written in bullet form for enhanced understanding.

3. A separate section of the future scope of the research will further enrich the need and advancement of such studies.

Some Typos and minor:

238 : These were coefficient of determination (R^2). The eqn for R^2 is missing in the text. ?

248:refers to the standard deviation of observed values. Please correct the STDEVobs?

261: please write the unit of MAE?

457: Thus, the outcomes of the overall study indicate that the RF
