

Anonymous Referee #1

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The paper estimates indirectly precipitation by discharge, glacier mass balance and actual evapotranspiration for the Upper Indus Basin. Considering the absence of stations at high altitudes, this work is very interesting. The conclusion is that the current precipitation estimates (with land stations and remote sensing) are strongly underestimated.

Thank you.

Although the topic is of prime importance, I have many perplexity that the paper could be published without:

i) re-writing completely the method section. Currently it is too much hermetic. I am not be able to follow exactly what has been done. I have more doubts than answers. Please provide more details in particularly connected with the uncertainty of data. Please separate sections for precipitation, evapotranspiration, mass balance, equations. . . Please provide supplement information file.

We will further elaborate on the method section and provide more details in the revised manuscript. We will pay particular attention to explaining our uncertainty analysis in more detail.

ii) re-writing completely the results and discussion section. Even results and discussion are too much condensated. In general I would like to be more convinced by authors about the findings. I strongly suggest to present detailed tables and/or graphs in which the terms of the water balance are presented as estimation and uncertainty. If it was possible this new analysis should be subdivided for main elevation bands and regions. Furthermore previous estimations (by many other authors) need to be presented and discussed (the authors know well the literature) In general it needs to be clear and convincing how/why the present work overcomes the previous ones. In conclusion I suggest an in-depth analysis of the glacier mass storage that is less convincing than the other analysis.

We will include a water balance analysis and we will also add Turc-Budyko plots to the manuscript as suggested by Dr Andréassian in the open discussion. We propose to do this by either the three three zones we consider (Himalaya, Hindu-Kush and Karakoram) or by larger sub-basins. We will also place our findings better in the context of previous studies published by our group and others.