

The Cryosphere Discuss., referee comment RC2
<https://doi.org/10.5194/tc-2021-97-RC2>, 2021
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Comment on tc-2021-97

Anonymous Referee #2

Referee comment on "Understanding monsoon controls on the energy and mass balance of glaciers in the Central and Eastern Himalaya" by Stefan Fugger et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2021-97-RC2>, 2021

This is an interesting concept and topic of research and a number of new analyses are presented in this manuscript. But I find that I am overwhelmed by the lack of synthesis in the analysis and the writing. It is difficult to tie the in situ weather station and modeling results with the actual conclusions stated. This is partly because the paragraphs seem to jump from one flux to another or from one variable to another from sentence to sentence. I am left wondering if these conclusions are actual supported by the work in the manuscript or are rather just assertions? They might be but the figures, analysis and writing do not clearly support the conclusions in the discussion/ conclusions section.

Most of the figures themselves are overwhelmingly complex and the main points are not supported by them. Perhaps the manuscript can be more logically structured and extensive work can be done to give the reader a thread to follow.

To this point I found that the most compelling explanation of the role of differences in local climate came from the ERA-5 output and figure 3. But I must ask: What do the in situ station data tell us that the ERA-5 output do not already inform us about? There is quite a lot of scatter between the in situ site data (the data is from different years, elevations, surfaces, and aspects) unlike the patterns shown in the ERA-5 output. Perhaps the figures and text can more clearly show the take homes from the station data and support the more general take homes?

My sense is that this could be an interesting, valuable study for TC but as it stands I am not sure if the analyses actually support the conclusions and if using in situ station data is better suited for this question than atmospheric reanalysis output.

More specific comments:

Line 30-32 dates on Mölg should be 2012,2014 and the references should be in order of date in line 33 with the oldest first. Should be corrected throughout.

Line 99. too many uses of 'extensive' in this paragraph.

Figure 1. I cannot see the RGI glaciers in panel A. Please change the color of the glaciers. The arrows in panel A seem a bit inaccurate considering that the Indian summer monsoon certainty affects eastern Nepal and too the west as well.

Tables 5 and 6. Perhaps these should be in the supplement? They are rather overwhelming to try to pull anything away from them.

Section 5.1.1 Here many of these points are expected and reproduced by other studies. It seems to me those other studies should be cited here.