

Hydrol. Earth Syst. Sci. Discuss., referee comment RC3
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Comment on hess-2022-179

Anonymous Referee #2

Referee comment on "Characterizing 4 decades of accelerated glacial mass loss in the west Nyainqentanglha Range of the Tibetan Plateau" by Shuhong Wang et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-179-RC3>, 2022

This study assessed 44 years of glacier area and volume changes in the major West Nyainqentanglha Range (WNT) using comprehensive remote-sensed dataset. The selected study area is a very typical and important glacial region on the TP, bounded by the Nam Co basin to the north and the Lhasa River basin to the south. In addition to the widely-studied climate factors, the effect of local modulators, such as debris cover, slope and aspect, on glacier thickness has also been investigated. Overall, this study is very interesting and would merit publication in HESS.

My comments are as following:

1. I am very interested in the impacts of elevation, slope, and aspect on the retreat rates and thinning rates. The elevation and slope may have correlations, so the contribution of each factor deserves further investigation. For example, one can do the partial correlation analysis or analyze the impact of slope in each elevation band.

Line 401: The following findings are interesting, and reasons need to be explained: "the retreat rate increased with slope while the thinning rate decreased."

2. Figure 1: the extent of the study area should be marked in the map of TP (the upper left small figure).

3. Figure 5 is not easy to read. The legend of elevation changes and the boundaries of glaciers need to be adjusted.

4. It is difficult for me to understand the following sentences:

Line 309: "our results agree within the uncertainties over the whole WNT, and the southeast WNT respectively"

Line 323: "suggesting that the more strongly negative average for the longer 2000 to 2020 period (-0.37 ± 0.12 m w.e. a⁻¹) is the result of particularly strong negative mass balance after 2014"

5. Some grammar and typo errors should be corrected, such as:

Line 101: WNT range mountain range

Line 311: our result. 4.1.2 Glacier mass balance.

Line 364 and 367: I cannot find Figure 3c and Figure 3d