Comment on tc-2021-312

Anonymous Referee #1

Referee comment on "Strong acceleration of glacier area loss in the Greater Caucasus between 2000 and 2020" by Levan G. Tielidze et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2021-312-RC1, 2021

The research article ‚Strong acceleration of glacier area loss in the Greater Caucasus over the past two decades' presents two new glacier inventories dating from 2000 and 2020 based on optical remote sensing data as well as topographic properties derived from ASTER GDEM dating from 2011. The data contributes to the global GLIMS data base. As the area of investigation is important from the perspective of socioeconomic of even political indications of glacier loss as well as for the long time series which exist there, I consider this study as an important contribution of glacier change assessment.

General comments

The study is clearly structured and presented with a detailed error analysis. What is bit confusing is that the tables and Figures illustrating both inventories are placed in the section '5.1 Glacier Inventory 2000, and that The histogram of the glacier area distribution displays two lines referring to the elevation distribution within the outlines in 2000 and 2020 which seem to be based on just one DEM. The first issue could be solved by shifting graphs and tables to 5.2, for the histograms I am not sure how realistic this type of area distribution on a fixed altitude is.

Detailed comments

Line 318: Presenting the Russian Paper of 1911 is a great thing – I would really like to have the inventories a bit better presented. Currently, we only find the number on annual area change rate- but are the older inventories covering the exactly same area and

glaciers as the one presented in the study? Could you add total areas?

Figure 11: I would like to have error bars/ uncertainties in this Figure

Figure 12 and captions: I do not get the meaning of the different types of circles – what are nominal glaciers?

Line 377: I think I know what you mean by accumulated loss, but maby cumulated would be clearer?

419: Would be great to have a map or extent of previous inventories replicated if existing and possible due to copyright reasons.