

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on essd-2022-141

Anonymous Referee #1

Referee comment on "A new global dataset of mountain glacier centerlines and lengths"
by Dahong Zhang et al., Earth Syst. Sci. Data Discuss.,
<https://doi.org/10.5194/essd-2022-141-RC1>, 2022

General Comments:

Based on the glacier axis concept, Zhang et al. produced the global mountain glacier centerlines using the latest global glacier inventory and the digital elevation model data of corresponding glaciers. This research is challenging and heavy workload. The authors used the automatic checking algorithm to identify 10,764 glaciers with flawed outlines and mark the location of the defects. The centerline and related data of 198,137 worldwide mountain glaciers were automatically obtained by the compiled extraction tool, which is very important parameters for glacier research. The published datasets include not only the result data such as glacier centerline and maximum length, but also the key data such as DEM of glacier-covered and its buffer region and the glaciers of flawed outlines. The dataset has high quality, and the manuscript is generally well organized and written. The manuscript can be accepted after addressing my following comments.

Specific comments:

- The manuscript mentioned that the automatic extraction tool does not support ice caps, nominal glaciers and some glaciers of flawed outlines, which accounts for 8.48% of the total number of worldwide mountain glaciers. I think it is necessary to add more details to the manuscript, including providing data users with possible approaches calculated the centerlines of these glaciers.

- L243-L263: 100 random results for accurate evaluation in each region. Did you decide it yourself or refer to others? The number of glaciers in each region is different. Can a certain proportion be used to select centerlines, and the assessment results are possibly more convincing?

- It is suggested to move the notes in Figure 1 after the caption of Figure 1.

- L267-L271: Overall success rate or average success rate? How is it calculated?

- L305-L315: Is it necessary to list a table to better understand?

Technical corrections:

L37 Add a space after 'changes'.

L77 '; the' -> ', their'.

L124 'However' -> 'Nevertheless'.

L195 'was' -> 'are'.

L225 'a glacier' -> 'glaciers'

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2022-141/essd-2022-141-RC1-supplement.pdf>