

Interactive comment on “Tracking the impacts of the Aru glacier collapses on downstream lakes” by Yanbin Lei et al.

Anonymous Referee #1

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The study investigates the consequences of the Aru, Tibet, glacier collapses of 2016 on the lake level, lake shore and lake surface temperatures of two nearby lakes. The study provides a number of interesting results that make it certainly worth of being published. In its present form the paper lacks however clarity in language, structure and explanations, which make it difficult to follow the findings presented. The purpose of the study should be explained better and the results presented accordingly. As now, for some of the results it is unclear how they tie into the investigation of the collapse consequences.

I recommend that at least the senior co-authors carefully revise the manuscript to make it clearer. This recommendation refers not only to language editing, but more important to the explanations given, precise language usage, and logical structure of presentation

C1

of results. At the present state I hesitate to make large amounts of detail comments as I believe those senior co-authors should be able to see the deficiencies. Instead I give only some examples.

The paper lacks a discussion section and some discussions seem to be part of the results section. The authors should clearly separate results and their discussion/interpretation. Uncertainties in the results are hardly mentioned.

The abstract and intro most urgently need revision of language. As an example (line 39), not the Aru glaciers are giant, but their collapses! Professional language editing will likely not capture such errors. Another example, the authors say the shoreline was pushed. Did the avalanche really move the shoreline? Or did the shoreline change due to deposition of sediments? Or (line 340), does “rapid lake expansion of 0.8m/yr” refer to the lake level increase or lateral expansion of lake area? Another example for lack of clarity: in line 48 the authors talk about lake increase due to glacier melt. A few lines later (53) they write about drastic precipitation changes as cause behind lake growth.

Section 3.4: To my best knowledge, the most extensive study on lake volume changes in Tibet is Treichler et al. 2018 (<https://tc.copernicus.org/articles/13/2977/2019/>). The authors could compare their findings for Memar Co to the regional aggregations by Treichler et al.

Section 3.5: Any uncertainties behind the MODIS temperatures? For instance bias from undetected clouds, or lake ice?

At line 161 the lake seasonality after 2016 is presented, but it would be important to relate that to seasonality before the collapses. This is then touched upon much later.

At several occasions the authors classify the changes as “drastic” or “dramatic”, for instance the 2-week lake surface cooling by 2-4 deg (line 289). Why is such change, or the other changes dramatic?

Fig 3: what is the meaning of the colored areas in panels b and c?

C2

The lines in Figs 7 and 8 are difficult to compare. Better have the lines for each year combined in one plot per area? I.e. not separate plots per year but per area.

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2020-117>, 2020.