Earth Syst. Sci. Data Discuss., referee comment RC1
https://doi.org/10.5194/essd-2021-331-RC1, 2021

Comment on essd-2021-331

Anonymous Referee #1

Referee comment on "Lake area and volume variation in the endorheic basin of the Tibetan Plateau from 1989 to 2019" by Liuming Wang et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-331-RC1, 2021

The authors completed a census of annual lake volume change for 976 lakes larger than 1 km^2 in the endorheic basin of the Tibetan Plateau (EBTP) during 1989-2019 using Landsat data and DTMs. Comparison with several existing studies indicate that their data are more reliable. Lake volume in the EBTP exhibited a net increase of 193.45 km^3 during the time period with an increasing rate of 6.45 km^3 $year^{-1}$. Lakes with an area less than 10 km^2 have more severe volume change whether decreasing or increasing.

This work is helpful for readers and can be useful for providing a comprehensive and long-term lake volume change data for the region. The topic of this manuscript fits certainly under the scope of "Earth System Science Data". Moreover, it is well written and the figures are of high quality. In my view the paper should definitely be published in "Earth System Science Data" with a moderate revision. However, the following comments should be taken into account before acceptance.

Major comments

The paper requires careful checking and correction of grammar throughout. In some cases the wrong words are used which can confuse the reader. I would like to request the authors to give more deepened discussion about the factors influencing the range of the change rates for different lakes. More references should be added to the discussion section. In addition, some references should also be introduced to provide the statements about the management of Alpine lakes.

Specific comments

The abstract mentions "especially for the lakes with an area less than 10 km^2 which are

the most sensitive to environmental changes", which is not mentioned in the Introduction section.

Introduction: The authors need to highlight any and all novelty in this section. This could be achieved by more clearly identifying a need for the work in the literature review, and highlighting new findings more in the Discussion.

Line 58: some? This is not a clear statement and should be better explained.

Line 176: Please identify the methods used by Otsu et al. (1979).

Line 191: Space between Landsat-8 and parentheses.

Line 193: why 2%? Can you add a reference here?

Line 386-388: There were no new insights. I suggested that this paragraph should be deleted.

Line 400: If you want to use "significantly", you have to give the P value.

Line 458-461: This paragraph is too simple, it needs a detailed statement.

Discussions: This section is relatively weak. I would like to request the authors to give more deepened discussion about the factors influencing the range of the change rates for different lakes. More references should be added to this section.

Line 494: "Besides, some other situations also affect the choice" -> Please try to avoid this vague expression.

Line 510: The range of the change rates for the lakes in 1 - 10 km^2 is larger than that for the lakes in 10 - 50 km^2. I am very glad to see this research. The authors should add the following reference to support your findings.

Luo Shuangxiao, Song Chunqiao, Zhan Pengfei, et al., 2021. Refined estimation of lake water level and storage changes on the Tibetan Plateau from ICESat/ICESat-2. Catena, 200, 105177.

Line 542: Why focus on lake area instead of volume change? Please explain it. In my impression, there are still many studies on volume change.

Conclusions: The authors have to justify their conclusion by using quantitative description.

Table 5: Please keep the same number of decimal places.

Figure 15 & Table 6: Please indicate the meaning of RLV. Generally speaking, readers can understand the meaning of the table or figure by taking it out alone.