

# ***Interactive comment on “Densified multi-mission observations by developed optical water levels show marked increases in lake water storage and overflow floods on the Tibetan Plateau” by Xingdong Li et al.***

**Yuyue xu**

xuyy@nju.edu.cn

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In this manuscript, the authors generated a dense (monthly and even higher such as 10 days on average) continuous 18-year data set of changes in lake water level and storage for 52 large lakes on the Tibetan Plateau by combining multisource optical and altimetric information. Uncertainty in the optical water levels was evaluated by field experiments and rigorous uncertainty analysis, which is important to the generated data sets. The UAV imaging of lake shorelines for evaluating Landsat-based lake shoreline detection and the derivation of the mathematic expression of the uncertainty in the op-

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tical water levels look really interesting and solid. The magnitude of the uncertainty was found to be around 0.1 m, suggesting that the optical water levels are often more efficient and less noisy than altimetry data when the altimeter footprints on the lake surface are insufficient, especially for small lakes.

I strongly believe that the data set is extremely valuable for the long-term and short-term monitoring of lake water level and storage changes on the Tibetan Plateau, and are also useful for lake water level and storage studies in other areas. Many studies on this aspect present long-term trends in these lake water storage. But the authors of this study have additionally explored the potential of these multiple remote sensing data sets in monitoring short-term variability in lake water storage and lake overflow floods that are really new and look fantastic to me.

Some suggestions are given as follows:

Pg. 6, Line 8: "the systematic biases between different altimetry data were removed by either comparing the mean water level of the overlap period or comparing the two water level time series with changes in lake shoreline, depending on the length of the overlap period" would be discussed in more detail.

Pg. 28, Lines 7-8: "where optical water levels can provide a near real-time monitoring of changes in lake water level and storage that are crucial to flood early warning and risk management." However, I have not seen the results.

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