

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1  
<https://doi.org/10.5194/hess-2021-630-RC1>, 2022  
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## Comment on hess-2021-630

Anonymous Referee #1

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Referee comment on "Long-term water clarity patterns of lakes across China using Landsat series imagery from 1985 to 2020" by Xidong Chen et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-630-RC1>, 2022

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This manuscript represents a significant contribution in the form of an **extensive application ready lake clarity data product covering small and large lakes of China over a period of 35 years**. This data product, LAUSD30 (and associated derivations), will be a valuable asset to future endeavours that seek to understand the drivers of lake clarity change in China.

Specific comments:

1. Include the **normalised RMSE** in addition to the RMSE; the normalised RMSE summarises the explanatory power of a model in a manner that is independent of scale, and so enables a ready comparison across modelling efforts.
2. Line 118 : replace 'product' with 'application ready data product'.
3. Lines 147 - 48: it is not clear how 'user' and 'producer' map to the terminology used in Peckel et al 2016. Please clarify or re-word.
4. Line 211: replace 'Following him' with 'Following Chen et al. (2021)', assuming that is what is meant?
5. Line 215: for the convenience of the reader, please briefly describe the constituent BAP criteria and how the BAP was calculated, rather than pointing to Chen et al. 2021 (which then on-refers the reader to White et al. 2014 for further details).

6. Line 227: please replace the word 'proven' with 'demonstrated', here and elsewhere in the document. Likewise, replace 'proves' with 'demonstrates'. 'Proven' and 'proves' should be reserved for contexts where there is little room for interpretation.

7. Line 316: replace 'product' with 'LAWSD30 data set'.

8. Line 339: replace 'researches' with 'studies' (here and elsewhere in the manuscript).

9. Line 348: replace 'Similarly, some studies found the same SD ....' with 'Other studies found the same SD ...'.

10. Line 462: replace 'hydrometeor' with 'weather'. (hydrometeor has a different meaning to that which I assume is intended)

11. Lines 523 - 24: replace 'to reflect the comprehensive conditions in water bodies' with 'of water quality'

12. **Conclusion:** include commentary that alerts the reader to the notion that an informed interpretation of the lake clarity patterns presented in this manuscript will require an understanding of the relative importance of local and regional driving forces; and that such an informed interpretation will be required in order to prioritise management actions.

For example, the work of Yu and Zhai (<https://doi.org/10.1038/s41598-020-71312-3>) demonstrate that compound drought and heat events have impacted China more severely since ca. the year 2000. Have such events led to changes in SD patterns in some lakes, for example by making wind-driven resuspension more or less likely?