Comment on essd-2021-227

Anonymous Referee #1

Referee comment on "Water clarity annual dynamics (1984–2018) dataset across China derived from Landsat images in Google Earth Engine" by Hui Tao et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-227-RC1, 2021

In this study, the authors developed / provided a valuable water clarity data set across China during 1984-2018 from Landsat images by GEE platform. This data set was validated, and spatio-temporal patterns of water clarity were also analyzed. Overall, this manuscript is written well and suitable to publish in ESSD. I recommend a minor revision based on the comments below to improve the quality of this manuscript / data set before publication.

Major comments:

- The structure of Abstract is not clear. From beginning of data set development, validation, to spatio-temporal pattern… could be better.
- The authors mapped the spatiotemporal variation of SDD in lakes (>1 ha) across China from 1984 to 2018. How the lakes are mapped properly and accurately in this study? I think GEE has limitation in conducting this. As the cloud and shadow effects on lake boundaries, an automatic / semi-automatic method is not possible to map lakes accurately. In addition, in the middle and lower reaches of Yangtze River regions, the lake boundaries are very difficultly differentiated from other water /non-water classifications. How the authors do these? The lake boundaries were examined with origin Landsat images? How the seasonal inconsistency for data selection was considered? How the rivers and reservoirs are excluded from water bodies? The authors compared the results of mapped lakes with existing lake data set in China? This is necessary for validation the accuracy of lake mapping for this study. The very small size lakes are included. The land contamination to lake water was considered?
- The Landsat images used by GEE have a large range from 1984 to 2018. How about the uncertainties of trends / values for SDD analysis?
- Causes of the regional differences and trends of water clarity, related with lake size, volume and volume changes can be added for discussion.

Specific comments:

- change the unit of ha to km2

- "More than 26,000 lakes (with area >1 ha) and 78,000 reservoirs are distributed across China (Song et al., 2018)" How the 26,000 lakes (with area >1 ha) are mapped?

- "(Duan et al., 2009; Feng et al., 2019a; Kloiber et al., 2002; McCullough et al., 2012; Olmanson et al., 2011a; Pi et al., 2020; Shen et al., 2020; Song et al., 2020)." Please cite less than 5 papers at one place each time.

- "Regionally, lakes distribution is as follows…" Which lake data set was used? Please state here.

- 1,301pairs, need a space

- the 5% significance level to at the 5% significance level

- Xinjiang province to Xinjiang Uygur Autonomous Region