

Interactive comment on “Worldwide lake level trends and responses to background climate variation” by Benjamin M. Kraemer et al.

Anonymous Referee #1

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This study reveals the influence of background climate oscillations such as the El Niño Southern Oscillation, and the North Atlantic Oscillation on worldwide lake level changes (117 large lakes). The authors compared the lake level trends before and after removing of background climate variation. The idea of this study is novel. However, this manuscript still needs improve its quality for publications.

In addition, I am a remote sensing hydrology scientist, but not a hydroclimatology scientist. The most content of this manuscript is about climatic effects on lake level changes. I suggest to add a review from hydroclimatology science for objective evaluation of this manuscript, and for some comments to improve the quality of this study.

My very limited comments are as follows:

1) The method of this study can be displayed by a tree-structure such as Figure 3a in <http://dx.doi.org/10.1002/2015GL066235> ?

2) Figures 1 and 2 can be combined together, as Figure 1 shows the lake level characters and Figure 2 shows the corresponding p-value?

3) Figure color: it is usually a warm color (red) for water loss and cold color (blue) for water gain. In addition, a title in head of each figure could be removed? You can use such as “a) PCENSO” for Figure 4a in upper left, and others are similar.

4) L20: “The water level of a lake is an integrative indicator of local and regional hydrology.” Two related citations are suggested here: <http://dx.doi.org/10.1016/j.rse.2011.03.005>; <http://dx.doi.org/10.1007/s10712-016-9362-6>

5) L25: 1 meter to 1 m.

6) L30: “On average, water levels in the world’s large lakes are increasing but are highly variable from lake to lake.” This conclusion is not consistent with a recent paper “Recent global decline in endorheic basin water storages” in Nature, <https://doi.org/10.1038/s41561-018-0265-7>. Could you explain which is right and reason?

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Discussion paper

