

Interactive comment on “The fate of land evaporation – A global dataset” by Andreas Link et al.

Anonymous Referee #2

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The manuscript "The fate of land evaporation - A global dataset" introduces a new dataset that can be used for computing exchanges of atmospheric moisture among different types of source-receptor pairs, including grid cells, major basins, and countries. This dataset comes from the output from a water tracking model, the WAM-2layers, and the ERA-Interim reanalysis. The authors present a list of potential applications for this new dataset, along with some simple examples of results, in the form of maps (of evaporationsheds) and tables (source-receptor matrices). The manuscript is well written and the presentation of the material is clear. The authors have done a good job both at producing the new dataset and at summarizing the current general applications of water tracking studies and the particular potential applications of the new dataset. I think this manuscript can be improved to a final form by taking into account the following

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comments:

General comments:

1. The dataset was built using ERA-Interim data as input. Even when ERA-Interim had one of the best representations of different aspects of the hydrological cycle (now improved in ERA5), it also had some biases in representing variables like evaporation and precipitation. It would be helpful if the authors discuss the potential implications of these biases on the accuracy/applicability of their new dataset. For example, the authors could add maps of biases of evaporation and/or precipitation, at least for some regions. This would give the reader an idea about where the new dataset could have the largest uncertainties. A discussion about the biases in the input evaporation and precipitation could also help on the comparison with the QIBT estimates.

2. The current presentation of the comparison with estimates from the QIBT leaves the impression that there is little in common between both datasets, and no indication as to which dataset could be closer to a ground-truth. Given the accumulation of uncertainties, due to input reanalysis data and details of the water tracking methods, it is no surprise to have differences. However, not only there is kind of a systematic difference (where QIBT yields larger values than WAM-2layers, as discussed by the authors), but not even the rankings of the countries coincide between tables. Maybe, in order to look for information in both datasets that could be robust to the differences on input data and water tracking method, the authors could include an example of the ranking of sources for a given country, and check the consistency or lack of consistency (now in terms of ranks, not original fractions) between both datasets. This would provide the reader with a better sense on what information is the most robust in the new dataset.

Technical comments:

a. In Table 1, please add description of the "25680" and "8684" values, to help the reader to more easily understand the type of sources and receptors included in this table, without need to refer to distant parts of the paper (these specific values are

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described well above (Lines 104-108), and then well below (Table 2)).

b. I tried the link for the visualization of the evaporationsheds (<http://wf-tools.see.tu-berlin.de/wf-tools/evaporationshed/#/>), but it did not work (on April 26, 2020). Please check.

c. Individual files (e.g. http://hs.pangaea.de/model/WAM-2layers/Link-etal_2019/Inter-annual/2018.zip) as in "LinkA-etal_2019_inter-annual.tab" are very large (19GB). It would be helpful to have smaller examples also available for download, for example for just one country or basin, in order to test the rest of tools available with this dataset (as in http://hs.pangaea.de/model/WAM-2layers/Link-etal_2019/readme.pdf). I think that having the possibility for this kind of simple tests would help the readers and encourage the potential users to actually download and work with this dataset.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2019-246>, 2020.