

Interactive comment on “Comparison of satellite based evapotranspiration estimates over the Tibetan Plateau” by J. Peng et al.

Anonymous Referee #6

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1 General comments

The paper focuses on the comparison of different models and input data for estimating evapotranspiration (ET) in the Tibetan Plateau. A specific aim is to evaluate the HOLAPS data set, which is estimated based on remote sensing retrievals. The paper is well structured and properly written. The introduction is quite short and does not include a satisfying literature review. The discussion of the results lacks the addressing of reasons for differences in the data sets. A more in depth analysis would increase the information content of the paper tremendously. Instead the authors make the very general statement that differences in the ET products arise from differences in model assumptions and input data. I like the idea to provide a temporal and spatially highly resolved ET data set, which is based on remote sensing retrievals. I consider

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the manuscript as valuable and relevant for HESS, but I recommend to return the paper with major revisions to the authors.

2 Specific comments

Introduction:

- In my opinion different evapotranspiration estimates based on satellite products should be discussed in the introduction - for that I think a more extensive literature review is needed. Strengths and weaknesses of different approaches should be mentioned, especially with reference to the HOLAPS data set, which is very extensively discussed in the introduction. E.g., MODIS-ET (Mu, Qiaozhen et al. 2007, 2011) (8 d temporal and 1 km spatial resolution); among others.
- L56 - L60: Here you mention very detailed results from another study which not necessarily fit into the introduction, rather it belongs to the discussion part. Furthermore, the Loew paper is still under review.

Data and methods:

- L95: briefly introduce the different assumptions and parameterizations
- What is the reasoning for dividing the study domain into the 4 regions chosen - wouldn't a division based on e.g., morphological (e.g., elevation) or climatological (e.g., precipitation) similar regions make more sense?

Results and discussion:

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- Whereas the temporal resolution of the HOLAPS data was aggregated to the temporal resolution of the LandFlux-EVAL data set the spatial resolution was not. This makes the comparison of both data sets very difficult.
- What do the white areas in Figure 2 - HOLAPS depict? Couldn't ET be estimated within this regions, if yes why?
- L161: I don't understand what self-consistency means in that manner. Please elaborate a little bit on that.
- An analysis with regard to flux measurements would be very helpful. Chen, a co-author of this study, seems to have access to such data. A comparison of the ET products with this flux observations in the Tibetan Plateau should be included in this paper already, not like stated in the conclusions in further studies.
- Please discuss the contradiction that SEBS compares well to flux observations (L171), whereas it doesn't fit to LandFlux-EVAL (L173). Potential reasons: scale mismatch between flux observations and ET products, missing processes in satellite retrievals.
- L208: Could the mentioned uncertainty which is partly stemming from the input data be further assessed by comparing/analyzing the input data from different sources (PU and Chen)?
- The different assumptions behind the evapotranspiration estimates should be discussed to get an idea where the differences between the products stem from.
- An analysis of sub-monthly ET would be interesting. Most of the data sets are on daily resolution. Did you have a closer look at this time scale?

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3 Technical corrections

- L25: capture the seasonal variability well
- L34: the land-atmosphere-biosphere
- L81-82: The globally existing ET products like HOLAPS have a great potential for hydrological studies over the TP.
- L157: The Figure → Figure
- L202: The relatively poorer ... - I do not understand this sentence.
- Figure 4: The fontsize in the legend is very small and thus hard to read. Please explain what is shown in the upper and lower graph.
- L230: maximum LE in winter and minimum LE in summer
- Figure 5: The symbols for HOLAPS and PM are hard to distinguish.

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