

Earth Syst. Sci. Data Discuss., referee comment RC1  
<https://doi.org/10.5194/essd-2020-323-RC1>, 2021  
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## Comment on **essd-2020-323**

Anonymous Referee #1

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Referee comment on "Long-term variations in actual evapotranspiration over the Tibetan Plateau" by Cunbo Han et al., Earth Syst. Sci. Data Discuss.,  
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Comments on the ms "Long term variations of actual evapotranspiration over the Tibetan Plateau" by Han Et al.

General comments

The authors did an interesting and challenging research, as it is known that the ET is essential to water and energy cycle on the TP. The authors estimated the ET from 2001 to 2018 by using SEBS model, which has contribution to understand the water cycle on the TP, while the MODIS products should be used carefully over the TP for its complicated weather and underlying surface. The authors, please, add more information in detail of the MODIS data used in this study.

And, in this investigation, the estimated ETa by using the SEBS model were validated with six flux tower data from EC observation. It could show the estimated ETa was reasonable used over the whole TP, however, the results are not fully convinced, and the Rn , air temperature and velocity should be evaluated by using the observation data at 6 sites, and then extend to analyze the variations of ET in the western TP ,Eastern TP and the whole TP.

In general, I would like to recommend accept this manuscript after minor revision and publish it in this journal.

Specific comments

P2: line 37-38," The domain mean of annual ETa on the TP decreased slightly ..."should give a reference.

P3: line 57-58, the sentence does not make sense, please make it clearly.

P4:line 78, ET and its variations have been drawing more attention worldwide.

P5: line 95-102, the authors listed three studies, how does their results performance? Do the authors compare the results (Ma, 2019) with the 6 flux tower observations? It is not

clear why the authors conducted this research, just like the authors mentioned, Ma, et al, 2019 they got the Eta from 1982-2012. We know the two methods are both used to estimate ETa at regional and global scale.

P7: line148-149, the "the", in the net radiation flux, the latent heat flux, the sensible heat flux, the ground heat flux, should be removed.

P7 and P8, line 169-196, whether the parameter,  $d_0$ ,  $C_p$  and  $U^*$  are also from CMFA?

P11, line 272- 273, the specific data should be used to show how does the SEBS performance well at the two sites.

P25/P27: The length-width ratio of Figure 1 and other Figures is different.