We thank you for the review and the constructive suggestions. We present below our detailed reply to the discussed points and further revision plan. The reviewer comments appear in black and our responses appear in blue.

When I read this paper, I found that the author may not comprehensively review the following papers:
Chen, X. et al., 2024. A doubled increasing trend of evapotranspiration on the Tibetan Plateau. Science Bulletin.
Yuan, L. et al., 2024. Long-term monthly 0.05° terrestrial evapotranspiration dataset (1982–2018) for the Tibetan Plateau. Earth Syst. Sci. Data, 16(2): 775-801.
Wang, B.*, Y. Ma*, Z. Su, Y. Wang and W. Ma. Quantifying the evaporation amounts of 75 high-elevation large dimictic lakes on the Tibetan Plateau. Science Advances, 2020, 6, eaay8558.
I agree to the author that they have collected more ET products in this study, but the generally conclusions are not really new compared with previous ET studies on the TP. Hereby, I suggest to focus more on ET components verification and their trends. This part has not been fully investigated by previous publications. The ET trends and annual ET estimation does not deserve more energy on it. This means that the title should be also changed. There are also some water balance ET studies. Hereby, this analysis is also not new. Introduction should really have a in depth review of previous work.

Reply: Thank you for providing the latest publications and constructive suggestions. Itis true that ET components are important and not well studied, however we think clarify the total ET and ET trends is also helpful, especially considering that differences in ET components can surely lead to different total ET. Although the previous studies by Chen et al. (2024) and Yuan et al. (2024) have demonstrated the difference of area-averaged ET in the TP, they did not investigate the spatial variability of this difference which actually is very large. Furthermore, previous studies on ET mostly applied the old TP boundary, which only includes the region inside China. Recent studies emphasized the geographic integrity of the TP and a new boundary of TP was applied (Zhang et al., 2013; Zhang et al., 2021) and adopted in this study. This boundary is more reliable as it is based on geomorphology and formation processes that considers factors such as elevation and watershed boundaries. Hence, the comparison of ET amount and trend is still necessary. We will strengthen the materials on ET components in the revised version following the suggestion.

Reference

Chen, X. Yuan, L., Ma, Y., Chen, D., Su, Z., Cao., D.: A doubled increasing trend of evapotranspiration on the Tibetan Plateau. Sci. Bull., https://doi.org/10.1016/j.scib.2024.03.046, 2024.
Wang, B., Y. Ma, Z. Su, Y. Wang and W. Ma. Quantifying the evaporation amounts of 75 high-elevation large dimictic lakes on the Tibetan Plateau. Sci. Adv., 6, https://doi.org/10.1126/sciadv.aay8558, 2020.
Yuan, L., Chen, X., Ma, Y., Han, C., Wang, B., and Ma, W.: Long-term monthly 0.05° terrestrial evapotranspiration dataset (1982–2018) for the Tibetan Plateau, Earth Syst. Sci. Data, 16, 775–801. https://doi.org/10.5194/essd-16-775-2024, 2024.
Zhang, Y., Li, B., Liu, L., Zheng, D: Redetermine the region and boundaries of Tibetan Plateau, Geogr. Res., 40, https://doi.org/10.11821/dlyj020210138, 2021.

Zhang, G., Yao, T., Xie, H., Kang, S., and Lei, Y.: Increased mass over the Tibetan Plateau: From lakes or glaciers?, Geophys. Res. Lett., 40, https://doi.org/10.1002/grl.50462, 2013.

The large uncertainty of ET products over the TP has been reported by Chen et al. 2024 and Yuan et al. 2024. The abstract should more focus on the new scientific questions. Please revise the sentence: there is still significant uncertainty regarding the amount of water vapour released by the TP into the atmosphere, otherwise remove it. The abstract should emphasize the innovative results, not repeated information.

Reply: We agree with you that Chen et al. (2024) and Yuan et al. (2024) have reported the large uncertainty of ET data products. However, their studies did not mention the spatial variability of the uncertainty and the ET components. We will revise that sentence to 'there is still significant uncertainty regarding the variation of water vapour released by the TP into the atmosphere'.

The response of annual ET to total precipitation, net radiation and leaf area index was explored to present their governing effect on ET, and the results indicated that precipitation effect mostly in the middle and northern TP and net radiation play significant role in the eastern TP. There are many other factors which also influence ET. But they are not included in this paper. In addition, this conclusion is normal as other study. I suggest to remove this weak point from this paper.

Reply: Thank you very much for the suggestion. We agree with you that the response of ET to water, energy, and vegetation variables could be done with a more comprehensive analysis. And we will remove it from current manuscript and prepare another paper on it for a more robust analysis.

TP has been indicated before line 60, hereby please replace "Tibetan Plateau" with "TP".

Reply: We will revise it accordingly.

Line 61, Chen et al. 2024 and Yuan et al. 2024 have listed the big differences of annual ET estimation for the TP. It is better to cite their results directly, since they have compared most ET product for the TP region.

Reply: We will revise it accordingly.

Line 80, these specificities, are you talking about negative latent heat? If yes, please use negative latent heat directly.

Reply: We will revise it accordingly.

Line 81, How accurate are these improved ET products, I understand that this question is already answered at least partly in Chen and Yuan`s publication. The snow/ice sublimation is new in this study. I suggest to revise the second question to: which processes play a significant role to the ET components trend. The third question, I did not find the author provide answers to which factor dominant different ET products. Hereby, the introduction should be rewritten and new scientific questions to be raised. Current formation is quite weak and not comprehensive.

Reply: It is true that previous studies did some evaluation already of new data products. However, it should be noticed that this validation was conducted only at site scale by comparison of eddy covariance observations and ET products. The tower-based eddy covariance observations have a very small footprint (roughly several hundred square meters depending on the weather conditions), and direct comparison of site-scale observations with the coarse-resolution ET product (e.g., 25km),

suffers severe problem of spatial mismatch. Hence, we only used site-scale observations to validate the high-resolution ET products (~ 1 km^2). We used basin-scale ET_{wb} to validate both high-resolution and low-resolution ET product. In this sense, our comparison is more robust and comprehensive. To address this aspect, we will include this point in our revised version.

For the second question, we intend to compare the behavior of total ET amount and its components according to different products. The different components here correspond to different bio-geophysical processes. As regards the third question, we will remove the section on the response analysis.

The first aim of this paper is already investigated by Chen et al. Please change this point or further deep this aim. Actually, there are many attribution studies of TP ET trend. Please review their studies, then make a revision for the num 3 aim.
Reply: The first point is addressed in our reply to the previous comment above.

Line 94, I don`t really agree that pearson correlation analysis can provide us the response of ET to precipitation, Rn and LAI. Indeed, I don`t suggest to include this correlation analysis in this paper. These analysis weaken this paper, it does not benefit to this work.
Reply: We agree with you and will remove it in the revised version.

Lines 122, These the sites, please correct this error.
Reply: We will revise it accordingly.

Table 2, EB is a daily ET product, not monthly.
Reply: We will revise it accordingly.

Figure 4, SEBS should be EB?
Reply: We will revise it accordingly.

Please revise 'in Tibetan Plateau' to be 'in the Tibetan Plateau' or 'in the TP'.
Reply: We will revise it accordingly.

Figure 5, the figure caption should explain what is meaning for different colored bars.
Reply: The global satellite remote sensing-based ET datasets are in dark blue, and the land surface model-based and analysis global ET dataset are in light blue, while the regional ET datasets are in red. We will add this explanation in the revised version.

Figure 7, it is quite difficulty to recognize which bar represent which product. Add the product name corresponding each would be more useful. All the trends are ended in 2020? Their curves in figure 7 do not exhibit the same end year.
Reply: We will revise Figure 7 to include the products' name. It is true that different products end in different years, and the end year for the trend analysis depend on the end year of the products. This information will be added in the revised version.

Line 322, Among these products, there are nine that provide the main components of ET (Ec, Es, and Ei), it is better to directly say that 'Nine products provide …'.

Reply: We will revise it accordingly.

It is important to note that there is no independent reference available for the ET components. I suggest to use the ensemble mean of ET components to check their differences with the ensemble mean. Nine products have provided the ET components. It's a lot. Their ensemble may be close to the truth.

Reply: Thank you for the suggestion. According to the results in Section 3.2.3, the median values of the ratio of Ec, Es, and Ei to total ET was 50%, 30%, and 5%. The ET partitioning ratio (52%, 43%, and 5%) of ETMonitor is the closest one to the median value. We will also estimate the ensemble mean of ET components by different products and check their differences. Furthermore, we will discuss the likely reasons causing such differences and the reliability of the partitioning results among different products in the discussion. For example, there already reports that the overestimation of the Ec/ET ratio by GLDAS-VIC and GLEAM is due to the "big leaf" vegetation scheme assumption that there are no canopy gaps or exposed soil between plants, so soil evaporation only occurs in unvegetated areas (Bohn and Vivoni 2016; Sun et al., 2021; Miralles, et al., 2016). In contrast, GLDAS-CLSM tends to underestimate the Ec/ET ratio and to overestimate Es/ET, possibly due to the parameter problems related to the soil evaporation resistance or vegetation related resistance or the non-traditional approach to consider the subgrid heterogeneity of soil moisture (Feng et al., 2023; Sun et al., 2021). Therefore, to avoid the bias due to these already-known uncertainties, we will remove these products in the calculation of the ensemble mean values.

Reference:

Bohn, T.J., Vivoni, E.R.: Process-based characterization of evapotranspiration sources over the north American monsoon region. Water Resour. Res., 52 (1), 358–384, https://doi.org/10.1002/2015WR017934. 2016.

Feng, H., Wu, Z., Dong, J., Zhou, J., Brocca, L., He, H.: Transpiration – Soil evaporation partitioning determines inter-model differences in soil moisture and evapotranspiration coupling. Remote Sensing of Environment, 298, https://doi.org/10.1016/j.rse.2023.113841, 2023.

Sun, R., Duan Q., Wang, J.: Understanding the spatial patterns of evapotranspiration estimates from land surface models over China. J. Hydrol., 595, 126021, https://doi.org/10.1016/j.jhydrol.2021.126021, 2021.

Miralles, D. G., C Jiménez, Jung, M., Michel, D., & D Fernández-Prieto.: The WACMOS-ET project – Part 2: evaluation of global terrestrial evaporation data sets. Hydrology and Earth System Sciences, 20(2), 823-842, https://doi.org/10.5194/hess-20-823-2016. 2016.

Figure 8, the blue color around TP lakes may not reflect the truth. Please check if this is caused by a wrong lake mask.

Reply: We do not use a lake mask here. Please notice that here *Ew* represents the open water evaporation, which actually comes from either lakes or other water bodies, e.g., rivers, snow/ice melt water, flooded pixels, etc.

Figure 9, there are some reports about the annual ET amount for the TP lakes. Please cite these

papers to verify Ew shown in the figure. I understand that Wang et al. Science Advance should also provide the Ew estimation for the TP. This study could benefit to verify the result in the figure.

Reply: According to the estimation of Wang et al. (2020), the total water evaporation is about 29.4 ± 1.2 km^3/yr for the 75 lakes with total area of 26,450 km^2 (accounts for approximately 56.9% of the lake surfaces over the whole TP), which is much smaller than the actual water cover area. They provide the total lake evaporation (51.7 ± 2.1 km^3/yr) for all plateau lakes based on their selected 75 lakes. We will add some comparison with these results in the revised version.

Section 3.3, this part is not really persuasive. A simple correlation is not meaningful, in addition, other factors were not fully considered, such as air temperature, soil moisture, wind speed etc. In addition, the correlation of abnormal should be analyzed, not the original signal. I suggest to remove this section.

Reply: Thank you again, and we will remove it accordingly.

"the daily land cover inputted" please revise this.

Reply: We will revise it accordingly.
