We are very grateful to Reviewer #2 (Dr. Prajwal Khanal) 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.

REVIEWER 2

The article "How much water vapor does the Tibetan Plateau (TP) release into the atmosphere?" by Zheng et al. provides a comparative analysis of evapotranspiration (ET) on the Tibetan Plateau, an essential yet uncertain component of the water cycle. This comprehensive review examines various streams of ET data and compares them with in-situ flux measurements, aiming to address a significant research gap: Can ET estimates derived from satellite and land surface models accurately reflect in-situ ET observations?

While I appreciate the insights offered by this article, particularly its thorough incorporation of diverse data sources, there are concerns regarding the clarity and completeness of the methodology. Consequently, the obtained results lack sufficient substantiation. Therefore, before publication, these concerns need to be addressed thoroughly.

Reply: We thank you for the positive and constructive feedback that will help us to further improve our work.

Major comments:

Regarding the Methodology:

1. The temporal coverage of the analysis is not clearly defined throughout the article. In line 197, it is written 2003 to 2015, in line 221, 2001 to 2018 while in line 312, it is written 2000 to 2020. These discrepancies need clarification to ensure consistency and accuracy in the reporting of the study period. I suggest keeping the results with consistent temporal coverage in the main section while any other information on supplementary information (SI).

Reply: Thank you very much for the suggestion, and we will try to use consistent temporal coverage in the main section. The overlap period difference was caused by differences in the temporal coverage of ET products and *in situ* observations. In section 3.1.1 on the validation of ET products against flux tower measurements, the overlap period for *in situ* eddy covariance observations and high-resolution ET products was in most cases from 2001 to 2018, but there are differences for some sites and products. We will add a table in the supplementary materials to show the temporal coverage of the study for each site and each product for site-scale validation. In section 3.1.2, when the validation of ET products against basin-scale water balance ET_{wb} is presented the temporal coverage was from 2001 to 2015 with some gaps for some catchments and data products. We will also add a table to show the temporal coverage period and integrating the information related to basin-scale validation where necessary. In section 3.2.2, '2000 to 2020' is not the precise temporal coverage of different products. Instead, we determined the median value of ET of all available products for each year between 2000 and 2020 (noted that different year, the different products may be selected). And the median value of ET was further used to obtain the overall trend of ET from 2000 to 2020. We will revise this part to make it clearer.

Furthermore, to avoid unnecessary confusion caused by differences in the temporal coverage, we will try to keep a consistent temporal coverage and add information in each section where necessary. Considering the temporal coverage of all products is from 2003 to 2015, the comparative analysis in Section 2.3.2 and Section 3.2 will be conducted by applying the period 2003~2015, unless gaps in data needs to be taken into account, leading to a different temporal coverage.

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2. Although it appears to be conducted at a monthly scale based on the information provided, it is unclear whether all datasets, such as ETMonitor with daily resolution and MOD16 with 8-daily resolution, were aggregated to a monthly scale for comparison or were based on the native resolution of the dataset. Clarity is needed regarding the aggregation process of these datasets to ensure transparency and understanding of the methodology employed.

Reply: It is true that the validation was carried out using monthly data. All the products were temporally aggregated to the monthly scale from their native temporal resolutions prior to validation and comparison. The data products with a daily resolution were just added up to obtain the monthly ET values. For the data with 8-days resolution, an average ET value was first estimated for the available data in that month, and the monthly ET value was subsequently obtained by multiplying the averaged values by the number of days in the month. We will add this description to clarify how the monthly data were obtained.

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3. In line 135, it is mentioned that months with less than 50% valid daily ET values were excluded from the analysis. However, it remains unclear whether these excluded months were filled to maintain a continuous ET time series or if the comparison was limited to months with more than 50% valid ET values. Clarification on how the missing data was handled and its impact on the analysis is necessary for a comprehensive understanding of the methodology.

Reply: The missing data was not further filled and gaps were excluded to avoid the impact of uncertainty introduced by gap-filling. We will state this in the methodology.

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4. Providing information on the number of valid observations available for each dataset, either in the supplementary information or elsewhere, would be beneficial for assessing the comparability of sample sizes across datasets, especially if they are not analyzed for same temporal coverage.

Reply: Thank you very much. We will add a table in the supplementary materials to include the temporal coverage for site-scale validation and number of valid observations.

Regarding the results:

1. It appears that the regional-based formulations of ET, such as MOD16STM and PLMV2 ET Tibet, demonstrated the highest accuracy when compared to in-situ flux towers. However, it is crucial to ensure that the flux stations utilized in this study for comparison were not already included in the calibration of these datasets. If the same flux stations were used for calibration, the greater accuracy of these products may not be fully substantiated. Therefore, it is imperative to verify whether there is any overlap between the flux stations utilized in this study and those used for calibration to accurately assess the reliability of the results.

Reply: The issue you mention is very important, and we agree with you that the validation results are influenced by the calibration. As a summary, there are three high-resolution products (ETMonitor, PMLV2, MOD16STM) clearly list their calibration sites, and some of them were involved in this study, while others do not used flux sites in TP for calibration or their information is not presented in their studies. Although some relative coarse-resolution products (e.g., PMLV2-Tibet) were also reported to use flux sites as calibration, they are not validated based on flux site observation in this study considering the mismatch of spatial representative. In this study, we did not exclude the calibration sites when validation for the following reasons:

- The difficulty in maintaining ground-based observations have resulted in a scarcity of flux towers on the TP. If sites were excluded, the validation sites will be scare, which would raise further concern on the sites' representativeness and relevant uncertainty.
- Different products use different sites for calibration, and some studies did not provide such information. Some products are designed with a clear separation between calibration and validation sites, while others do not (e.g., some separate calibration and validation samples using data of different years from same sites, some do not provide clear information at all). It seems to be not practical to separate them clearly.
- To achieve the high accuracy, model calibration is valid approach that utilized by many models before generating datasets. The purpose of the study is to identify how accurate the current ET products are, which are helpful to achieve an ET product with better accuracy, and those effort on model calibration should be encouraged.

To address this, we will include the information on whether the sites were utilized for each ET product calibration in the supplementary materials Tables S1. Meanwhile, we utilize basin-scale validation as a complementary. As our knowledge, there is no products use basin-scale water balance estimates for calibration, which enable it as an independent validation method.

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2. In Figure 3, it is unclear how the metrics were calculated for the entire Tibetan Plateau (TP). Does the metrics for TP represent averages or medians across the basins or was TP treated as a single basin?

Reply: Sorry for the caused misunderstanding. We intended to use *TP* to represent the area of all the five basins combined, including headwaters of Yellow basin (UYE), headwaters of Yangtze basin (UYA), upper Heihe basin (UH), Inner Tibet Plateau (INTP) and Qaidam (QDM) basins. To avoid the misinterpretation, we will revise it to *5basins* (the area of all the basins combined) in the revised version. A new table will be added to provide additional information in the Supplementary., We simply used all samples (each sample represents a valid group of reference data and to-be-validated ET data from one basin) from all 5 basins to estimate the metrics for the *5basins*.

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3. In Figure 4, the color bar for ET standard deviation (ETsd) differs from the color bars used for other variables. This inconsistency can lead to confusion, particularly since the figures are presented together. Also, if possible, please keep the results in the order of datasets that appears in the Table 1.

Reply: Thank you for the suggestion. We will revise the figure accordingly to avoid the confusion. We will also move the information on the spatial variability of ET in each product to the supplementary materials to make the manuscript more concise.

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4. Regarding Figure 7, it would be beneficial to highlight the trends observed specifically from data with long records to discern the presence of significant trends in ET, because the trend calculated with only some years of data would not add any conclusion to the overall trends in the ET. Additionally, it's essential to clarify how the trends were calculated—whether through linear regression or another method—and whether the significance of these trends was assessed.

Reply: Thank you for the suggestion. We also noticed that the trend could be affected by the temporal coverage of the ET time series, and we also agree that longer records provide more reliable information on trends. We will identify the trends estimated with long records in the revised version. We believe that relatively shorter data records (especially in recent years) remain relevant to document differences across data products, so we kept the results on trends after 2000s.

We choose robust regression method to estimate the trends, rather than using simple linear regression, since the robust regression reduces the impact of outliers. We will add the significance level of the trends in the figure and main text.

On results specific to "Response of the ET to main governing factor."

The author's intended message or purpose behind the analysis is not clearly conveyed. It seems to explore the relationship between annual ET and various water, energy, and vegetation variables. I will try to highlight my concerns in points here:

1. In my belief, the analysis of how annual ET responds to different water, energy, and vegetation variables could potentially be a separate study requiring a more comprehensive approach.

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 a topic to be addressed by a more comprehensive analysis. We will remove it from current manuscript and prepare another paper on it for a more robust analysis.

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2. For instance, If Leaf Area Index (LAI) correlates well with both/or net radiation (Rn) and precipitation (P), which I believe will be the case, raises doubts about the conclusions drawn regarding the relative influence of these variables on evapotranspiration (ET). This is true especially when conclusion on influence of these variables on ET is drawn simply from correlation of ET with these variables without controlling for the other confounding factors. To check whether this is the case or not, we can simply correlate LAI with Rn and P, as well as by correlating Rn with P.

Reply: It is true that LAI correlates with both Rn and P, and we will check the correlation between LAI with Rn and P. LAI is a critical variable that correlates with several climatic and environmental factors as it represents the amount of leaf area per unit ground area and characterizes the canopy structure. LAI influences the interception of radiation and the distribution of light within the canopy, which in turn affects the energy balance of the surface, e.g., net radiation (Rn) and latent heat flux (LE). Meanwhile, plant generally growth better in the regions with sufficient water supply (high precipitation) and adequate APAR (highly related to Rn).

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3. Even if one were to accept the current analysis, which I personally disagree with for the reasons outlined in points 2, there remains a crucial need for clarification regarding the rationale behind correlating median ET from all datasets (if I understood it properly) with environmental variables (Figure 10). This need arises primarily from the significant variability observed among different ET datasets in terms of magnitude and hence I believe that the relative importance assessed from the simple correlation of ET with these variables will also vary. Consequently, any conclusions drawn from these correlations may lack robustness.

Reply: We agree that there could be issues with determining the independent effects of these variables on ET if only simple correlations were used. Correlation does not imply causation, and more sophisticated statistical methods need to be used, e.g., multiple regression analysis, to control for confounding factors and to determine the relative influence of Rn and P on ET while considering LAI. This would allow to estimate the unique variance explained by each predictor while holding the others constant.

Furthermore, itis important to consider that the relationships between these variables can be complex and non-linear, and they might be influenced by other factors such as soil moisture, air temperature, humidity, wind speed, and atmospheric pressure. To accurately assess the relationships and the potential for misinterpretation, we will try to employ a multivariate analysis approach to establish the unique contributions of Rn, P, and other factors on ET, while controlling for the potential influence of other relevant factors to form another paper based on a more robust analysis.

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4. Again, in regions where Ec and Ei are the dominant modes of evapotranspiration (Figure 8), it would be valuable to investigate their correlation of ET with LAI compared to Rn and P, after removing the confounding effects.

Reply: It is true that the above-mentioned issue for ET is also applicable for Ec and Ei, and the multivariate analysis can be applied to investigate the response of Ec and Ei to environmental factors.

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5. Nevertheless, I still believe this could be separate research with robust approach.

Reply: Thank you very much for the suggestion again. We will remove this part accordingly and make another draft for a more robust analysis.

Additional technical comments:

1. Before highlighting the monthly RMSE, it would be helpful to provide information on the magnitude of monthly ET observed at different flux stations based on in-situ observations. This would allow for a comparison of the magnitude of observed ET with the error represented by the RMSE.

Reply: Thank you very much for the suggestion again, we will add a table in Supplementary with the mean value of observed ET.

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2. It's advisable to maintain analysis with consistent spatial and temporal coverage in the main section, while keeping analyses involving datasets with inconsistent coverage to the supplementary section. This will enhance clarity of the manuscript.

Reply: Thank you very much for the suggestion again, and we will focus on these products with spatial and temporal continuous for the analysis in the main text to retain the results and analysis within the same spatial and temporal coverages. There are two products (MOD16-STM, PMLV2-Tibet) that can not cover the regions outside China, while there are some products that are spatiotemporally continuous. These will be noted when presented or mentioned.

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3. In Figure 8, it is noted that while the total evapotranspiration (ET) may appear similar across different datasets, the partitioning of ET between datasets is not consistent. This observation is indeed a significant finding. However, the substantial explanation provided does not sufficiently clarify why the datasets differ so much, particularly for GLDAS and MERRA2.

Reply: Thank you for appreciating our findings. The partitioning of ET into its components, such as evaporation from the soil (Es) and transpiration from plants (Ec), can vary significantly between different datasets. This discrepancy in the ET partitioning among different datasets cannot be explained by a single factor, and it is difficult to tell which one plays a dominant role as they all contribute in some way to the uncertainty in modeling ET and may even compensate for each other. Generally, it mainly stems from factors including differences in the forcing data, model structure and parameterizations, spatial and temporal resolution of the products, and assumptions used in each dataset.

- Difference in the forcing data. The forcing data could lead to difference in both the total ET and its components. This forcing data difference cause the different ET partition results by GLEAMv35a and GLEAMv35b, since they are based on exactly the same algorithm. ETMonitor uses GLASS-MODIS data (LAI, FVC, and albedo), PMLV2 use the MODIS datasets (LAI, albedo, and emissivity) provided by NASA. A study has shown that GLASS LAI is more accurate than MODIS LAI, and a much lower LAI was found in the eastern TP in the MODIS LAI than in the GLASS LAI dataset (Li et al., 2018), which partly explain relative lower Ec values by PMLV2 than ETMonitor (higher LAI). Moreover, they use different meteorological datasets. GLDAS-CLSM uses ERA5 data, and GLDAS-Noah and GLDAS-VIC use GLDAS-2.1 meteorological forcing data as input. A recent study shows GLDAS-2.1 highly overestimates relative humidity during spring and winter time (Xu et al., 2024), which possibly lead to lower Es.
- Model structure and parameterization. As a most intuitive example, GLDAS-VIC and GLDAS-Noah share same driving factors, but their partition results differ significantly. GLDAS-VIC presents much higher Ec/ET and lower Es/ET, consistently with a previous study, which is most likely due to issues with the weaker soil moisture-ET coupling caused by the physical schemes (Feng et al., 2023). The extreme high Ec/ET ratio is mainly attributed to the "big leaf" vegetation scheme assuming 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). Itis also reported that the VIC model sets FVC to 1 as default value and will substantially overestimate Ec and suppress Es in sparse vegetation types with a real FVC between 0.1 and 0.5 (Schaperow et al., 2021). In contrast, GLDAS-CLSM tends to underestimate Ec/ET ratio and overestimate Es/ET, possibly due to the problems related to the parameterization of 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). CLSM

estimated ET is adjusted by varying the relative fractions of subregions (saturated region, transpiration region, and wilting region where transpiration is shut off), which is different from the continuous soil water stress function used in other models. Some other factors, e.g., the lack of irrigation, the data assimilation, etc., could also impact the ET portioning results in GLDAS models (Li et al, 2022).

- Calibration of model parameters. These ET products algorithms may have been calibrated and validated against different observations, which can lead to variations in the model performance and, consequently, the partitioning of ET. The global ET datasets use default parameters assigned according to generic land surface characteristics, which may be inappropriate for TP and certainly contribute to the difference of ET partitioning. Many studies have also highlighted the importance of parameter optimization to reflect the local vegetation and soil properties on ET processes modeling (Xu et al., 2019, Zheng et al., 2022).
- Impact of spatial heterogeneity and resolution. Higher spatial resolution datasets may capture local variations in land surface characteristics and water flux more accurately in heterogeneous areas (Chen et al., 2019), leading to differences in ET estimates compared to coarser resolution datasets.

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.

Chen, Q., Jia, L., Menenti, M., Hutjes, R., Hu, G., Zheng, C., and Wang, K.: A numerical analysis of aggregation error in evapotranspiration estimates due to heterogeneity of soil moisture and leaf area index, Agric. For. Meteorol., 269–270, 335–350, https://doi.org/10.1016/j.agrformet.2019.02.017, 2019.

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.

Li X, Lu H, Yu L, Yang K.: Comparison of the Spatial Characteristics of Four Remotely Sensed Leaf Area Index Products over China: Direct Validation and Relative Uncertainties. Remote Sensing. 10(1),148, https://doi.org/10.3390/rs10010148, 2018.

Li, C., Liu, Z., Tu, Z., Shen, J., He, Y., Yang., H.: Assessment of global gridded transpiration products using the extended instrumental variable technique (EIVD). J. Hydrol., 623, https://doi.org/10.1016/j.jhydrol.2023.129880, 2023.

Li, C., Yang, H., Yang, W., Liu, Z., Jia, Y., Li, S., Yang, D.: Error characterization of global land evapotranspiration products: collocation-based approach. J. Hydrol. 612, 128102 https://doi.org/10.1016/j.jhydrol.2022.128102. 2022.

Schaperow, J.R., Li, D., Margulis, S.A., Lettenmaier, D.P.: A near-global, high resolution land surface parameter dataset for the variable infiltration capacity model. Sci. Data, 8 (1), 216. https://doi.org/10.1038/s41597-021-00999-4. 2021.

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.

Xu, C., Wang, W., Hu, Y., Liu. Y.: Evaluation of ERA5, ERA5-Land, GLDAS-2.1, and GLEAM potential evapotranspiration data over mainland China. Journal of Hydrology: Regional Studies, 51, https://doi.org/10.1016/j.ejrh.2023.101651, 2024.

Xu, T., Guo, Z., Xia, Y., Ferreira, V.G., Liu, S., Wang, K., Yao, Y., Zhang, X., Zhao, C.: Evaluation of twelve evapotranspiration products from machine learning, remote sensing and land surface models over conterminous United States. J. Hydrol., 578, 124105, https://doi.org/10.1016/j.jhydrol.2019.124105. 2019.

Zheng, C., Jia, L., and Hu, G.: Global land surface evapotranspiration monitoring by ETMonitor model driven by multi-source satellite earth observations, J. Hydrol., 613, 128444, https://doi.org/10.1016/j.jhydrol.2022.128444, 2022.

Other comments:

Overall, there are numerous instances in the text which exhibits repetition and with typos, with numerous lines conveying similar information and occasionally out of context. Therefore, significant restructuring of the article's text is necessary.

Reply: We apologize for the repetition and typos, and will go through the manuscript again to improve it.

For instances:

1. The passage from lines 60-65 highlights the significant uncertainty surrounding evapotranspiration (ET) estimation on the Tibetan Plateau (TP). However, the paragraph falls short in effectively conveying how the present research differs from existing literature. It is evident that this study introduces novelty to the field, particularly through its comprehensive comparison of various ET products with in-situ observations in TP. This contribution warrants greater emphasis in the introduction section.

Reply: Thank you. We will emphasize the novelty of this introduction section in the revised version. Previous validations were generally based on either in-situ measurement by the eddy covariance system or the basin-scale ET estimated by water balance method, which represent the surface net water flux at different scales, while these ET products mainly focus on the upward water vapour flux. Recently, Chen et al. (2024) validated several ET products by comparing with eddy covariance systems observations at site scale. It is important to note that the tower-based eddy covariance systems observations have a very small footprint (approximately several hundred meters depending on the weather conditions). Consequently, any direct comparison of site-scale observations with the coarse-resolution ET products (e.g., 25km) is problematic due to the severe problem of spatial mismatch. A more comprehensive validation combining both the in-situ observations and basin-scale measurements was suggested by (Liu et al., 2023), as done in this study.

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.

Liu, H, Xin, X, Su, Z., Zeng, Y., Lian, T., Li, L., Shanshan S.: Hailong Zhang Intercomparison and evaluation of ten global ET products at site and basin scales. J. Hydrol., 617, 128887, https://doi.org/10.1016/j.jhydrol.2022.128887, 2023.

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2. The final three paragraphs in the introduction section needs to be rephrased for coherence, eliminating redundancy to convey the message clearly. For example, lines 81-86 present the research questions effectively. However, the same information is reiterated in the following paragraph (lines 88-91) within the main objectives, which essentially duplicates the content. This and other redundancy should be streamlined for clarity.

Reply: The questions presented in lines 81-86 serve to identify the scientific problems after the literature review. The last paragraph is intended to clarify the research objectives. To avoid the duplicates, we will revise the introduction to ensure that these issues are addressed in a clear and concise manner.

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3. The classifications in the discussion sections (ET based on PM model, LST-based model, data-driven, and LSM type) seem abrupt as they haven't been introduced earlier in the text. Section 4.1 should be emphasized when analyzing the results, as much of the content there appears redundant in the manuscript, despite its scientific validity. This caveat should be highlighted without unnecessary repetition

Reply: We will move the classifications in the discussion sections to the Section 2.2.2 ET Products when they are first introduced. We will also revise the results section to emphasize the discussions relevant to Section 4.1.

On the introduction section, it appears:

These validations were generally based on either in-situ measurement by the eddy covariance system or the basin-scale ET estimated by water balance method, which represent the surface net water flux that integrates different processes (e.g., plant transpiration for the dense vegetation regions, snow sublimation for the dry snow cover periods for the eddy covariance system observations, even condensation when negative latent heat flux occurs),while these ET products mainly focus on the ET (positive upward latent heat flux), which attributes to the validation uncertainty.

While in the section 4.1.1, it appears:

The eddy covariance system observation represents the net water flux integrated across different processes (e.g., plant transpiration in the dense vegetation regions, snow sublimation during the dry snow cover periods, evaporation of canopy-intercepted water when the canopy is wet due to intercepted rainfall). The vaporization process observed by the eddy covariance system depends on the land surface condition, which may vary seasonally and yearly due to factors such as snow/ice, intercepted water, and vegetation. Meanwhile, eddy covariance system observation includes condensation when negative latent heat flux occurs. Remote sensing-based ET products mainly focus on positive ET (positive upward latent heat flux) and omit processes such as condensation.

These two instances basically convey same information. I do agree this is important point to make reader aware about the validation. However, I think the author could be concise about it and avoid unnecessary repetitions.

Reply: In the introduction, we intended to introduce generically the uncertainty caused by the validation method, while in the discussion we focused on the processes captured by tower-based observations, as documented by our findings. To avoid the repetitions, we will revise the introduction and discussions accordingly.

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4. In line 100, it might be more appropriate to adhere to existing climatic regime classifications, such as those based on AI or other established frameworks. Because the term rather "monsoon" is kept here in between arid and humid climate types. So, how "different" is "monsoon" from the humid in these classifications? Or what does that monsoon mean when compared with "arid" and "humid"?

Reply: We agree with you that it is more appropriate to use the existing climatic regime classification and monsoon is not a standard climate type. According to the Köppen classification, there are dry, subtropical, temperate, subpolar and polar climate types in the TP. These climate types are influenced by both westerlies and the Asian monsoon, which is also enhanced by the thermal forcing of the TP (Zhou et al., 2009; Wu et al., 2012; Yang et al., 2014). The aridity index (P/PET) or Budyko dryness ratio (PET/P) are also widely utilized to characterize the aridity level. A recent study has shown that the dryness ratio has a large spatial variability in the TP, from humid climate with dryness ratio less than 0.3 to hyper-arid climate with dryness ratio larger than 3 (Feng et al., 2024). For simplification, we will revise it according to the dryness ratio to avoid any ambiguity.

Reference:

Feng, Y.,·Du, S.,·Fraedrich, K., ·Zhang, X., ·Du, M., ·Cheng, W.: Local climate regionalization of the Tibetan Plateau: A data-driven scale-dependent analysis. Theor. Appl. Climatol., https://doi.org/10.1007/s00704-024-04916-8, 2024.

Wu, G., Liu, Y., He, B., Bao, Q., Duan, A., Jin, F.F.: Thermal controls on the Asian summer monsoon. Sci. Rep., 2. http://dx.doi.org/10.1038/srep00404, 2012.

Yang, K., Wu, H., Qin, J., Lin, C., Tang, W., and Chen, Y.: Recent climate changes over the Tibetan Plateau and their impacts on energy and water cycle: A review, Glob. Planet. Change, 112, https://doi.org/10.1016/j.gloplacha.2013.12.001, 2014.

Zhou, X., Zhao, P., Chen, J., Chen, L., Li, W.: Impacts of thermodynamic processes over the Tibetan Plateau on the Northern Hemispheric climate. Sci. China Ser. D Earth Sci. 52, 1679–169,. https://doi.org/10.1007/s11430-009-0194-9, 2009.

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5. Figure 1: It's not clear what does hashing represent. And for some "red" labels, they are not clear like names around "XG".

Reply: We will redraw Figure1 to improve clarity.

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6. Equation (1), please write equations of all metrics or skip even KGE. Please make it coherent.

Reply: We will write equations of all metrics.