

This study presents a new dataset that observes variables related to meteorological conditions, as well as water, energy, and carbon fluxes at the Tibetan Plateau. The 16 measurement stations are distributed across a broad gradient of climate and landscape types. The authors present the temporal dynamics of key measured variables and analyze the relationship between energy fluxes and environmental variables.

The efforts in collecting the data and making it public are appreciated. However, the manuscript needs revision to be clearer and more informative, as outlined below:

General comments:

1. The introduction to this topic is currently very general. It would be beneficial if the authors could suggest more specific topics to highlight the niche of this dataset. What knowledge can be gained using this dataset, particularly distributed at the TP? What are the potential research gaps in understanding the fluxes across the observed land cover types? What is the motivation for measuring fluxes at these sites? The potential contribution to the scientific community from this dataset needs to be more clearly elaborated.
2. The inconsistency in result presentation makes the structure of the paper not very straightforward. For instance, the analysis between energy fluxes and climate variables across dry and wet stations provides interesting results. However, it might be beneficial to clarify why this analysis is particularly necessary for energy fluxes instead of carbon fluxes, and why different temporal resolutions (diurnal, daily, monthly) are shown for different variables as main figures.

Specific comments:

1. L108-116: These results are very specific, even presented with numbers. Are these results specific to TP? There are many land surface models calibrated with the EC flux measurements. Is there a particular reason to highlight this PML-V2 model here? And why is the predictability of ET particularly introduced here, instead of, for instance, GPP?
2. L128: In addition to the spatial patterns, temporal variations can also be highlighted.
3. L142-152: These sentences seem to belong to the introduction section.
4. L172: Are the turbulent fluxes measured on the same 20 m PBL tower? How would the tall tower affect the EC measurements?
5. L179: Does the “CO₂ exchange” have the same meaning as “carbon source/sink dynamics”?
6. What are the precise vegetation types? What is the forest species at the Medog site? It's helpful to provide detailed information for further research.
7. Sometimes, it is difficult to capture information from the text descriptions. For instance, the paragraph L184-196 can be more informative if summarized into a table.
8. L239-242: Are most of the data gaps related to precipitation?

9. How to define “abnormal values” (L246)? What do you mean by “carefully checked and removed” (L249)? And how is the gap-filling performed (L261)? Please provide clear data processing guidelines.
10. Why is NEE calculated, not measured?
11. L325: Isn't precipitation also one of the meteorological variables in section 3.1?
12. Figure 4: why are the data aggregated at monthly values? It can be informative to show the data for each day of year as well (e.g., Figure 2 in Paulus et al., 2022)
13. L409-414: Can you give info about which reason(s) applies for which site(s)?
14. L435: How is ΔT and ΔE calculated? Why is ΔT analysed only with SH instead of LE?
15. Figure 5: Are these correlation coefficients all statistically significant?
16. L456: Why is it doubled? This sentence is misleading.
17. L526-530: It is not clear what exactly leads the site Medog to be a carbon source. Is it contributed by disturbances or climate extremes? What causes the strong seasonal variation of GPP at this site (Figure 6)?

Technical comments:

1. L137: Incomplete sentence: “...are introduced...”
2. L229: analyze -> analyzing;
3. L231: analyzing -> analyze
4. L369: Do you mean energy flux?

References:

Paulus, S. J., El-Madany, T. S., Orth, R., Hildebrandt, A., Wutzler, T., Carrara, A., Moreno, G., Perez-Priego, O., Kolle, O., Reichstein, M., and Migliavacca, M.: Resolving seasonal and diel dynamics of non-rainfall water inputs in a Mediterranean ecosystem using lysimeters, *Hydrol. Earth Syst. Sci.*, 26, 6263–6287, <https://doi.org/10.5194/hess-26-6263-2022>, 2022.