

## **How much water vapour does the Tibetan Plateau release into the atmosphere?**

The revised manuscript by Zheng et al. is streamlined and conveys the scientific message more clearly than the previous version. The authors compare different ET products regarding their usability in the Tibetan Plateau and find that high-resolution datasets perform better than others, despite significant discrepancies between models. In addition, models incorporating dynamic vegetation cover and water stress modules to predict ET outperform those without these features. Although land surface temperature-based remote sensing models generally perform worse, they tend to do well in arid regions. Additionally, regional parameterization may be key to improving ET products for specific regional applications. These findings add value to the existing knowledge about the strengths and weaknesses of ET products and their usability in the Tibetan plateau. Nevertheless, the paper is quite lengthy, and I believe it could be made more concise to enhance clarity and readability. I suggest making these revisions before publication and recommend this to the editor.

Please find some of my suggestions here:

- 1) I believe it is necessary to include a land cover map in the supplementary section (omit if already added) and refer to it when justifying certain results, such as in lines 242-244, 282-286, and 291-293. Currently, land cover is introduced in Table 1, which does not align with the descriptions in the justifications, such as "densely" or "sparsely" vegetated, or "arid."
- 2) For Section 3.2.2, "Temporal Variability in ET Across the TP," since a basin-wide analysis is provided, I believe more emphasis should be placed on basin-wide discrepancies. The following key points could be addressed in the text, but are not limited to:
  - a) Please clarify whether the analysis was conducted for every product in each basin or if only the median of the products was analyzed across basins.
  - b) Are there any variations in the profiles between the basins? If so, to what extent?
  - c) How do the basins differ from each other in terms of land cover or other characteristics?
  - d) Do all basins, regardless of land use, exhibit the same level of uncertainty?
- 3) Line 76-79: In my understanding, basin-scale ET estimates represent the net water vapor flux from land to atmosphere (whether positive or negative), as they are derived from the

water balance. Hence, they differ from insitu measurements, which capture both upward and downward water vapor flux. So, sentence needs restructuring.

4) Lines 85-89 and 90-94 convey the same meaning and can be merged for conciseness.

5) Figure 2: Please indicate overlap meaning consistent time frame, 2003-2013, it it's the case.

6) Line 279-280: Cross reference missing.

7) Figure 9: These differences, at least in sublimation, could be due to how snow extent is treated in each model. For instance, it seems that GLEAM considers snow extent differently than ETM, or could this simply be an effect of plotting?

8) Section 4.1 Title The paragraph does not align with the content, as it does not address which vaporization processes are more relevant. Instead, it focuses on the differences between processes captured in in-situ and basin-wide data, and how these differences impact ET comparisons.

9) Line 417-421: I find this quite interesting. Nice finding.

10) Line 437-439: Is not PM also an energy balance model?

11) Section 4.2.3 Title Since this section does not only incorporate ensemble ET products, please consider changing title here.

12) Section 4.3: Page 26: I believe this section could be condensed. While I enjoy reading this, it doesn't seem to align with the focus of the study and could be made concise without writing in such details. Alternatively, for each model used, a supplementary table could be created to detail differences in forcing, model structure, calibration, spatial heterogeneity, and other relevant factors and refer it.

13) Line 582- 588: I believe this resembles the previous version, as the information comes across abruptly to the reader. Since the related section has been removed in the current version, it now lacks the justification behind the statement.

Goodluck!

Prajwal