

I thoroughly enjoyed reading this paper; it is very informative and descriptive. I recommend that the editor consider it for publication, subject to addressing some clarification questions and minor corrections. In my view, the paper is somewhat lengthy because several figures present overlapping information, which could be streamlined to make the main text more concise.

1. Other than the requirements mentioned in line 50, which align with the applications of the WaPOR global ETa dataset, I was wondering why a 10-day interval was selected. Since the revisit time of Sentinel-3 instruments is around 2 days at the equator, a finer temporal resolution seems feasible. While the revisit frequency decreases at higher latitudes, the chances of acquiring clear observations, especially during morning overpasses, are already quite low. Therefore, I'm curious why a shorter revisit interval was not targeted. Or is it because of the number of cloud-free images available, as shown in the text? One of the main advantages of using Sentinel-3 over Sentinel-2 for such applications is its more frequent revisit capability. With a 10-day interval, that benefit seems somewhat limited. This is just a question out of curiosity.
2. How are PAR and NIR calculated? The input appears to include only shortwave and long wave downward, ssrd and strd, respectively, from the CAMS dataset. Are the direct and diffuse PAR and NIR components derived from using a radiative transfer model, such as 6S, mentioned in the text? I think this was not quite clear in the text.
3. Is Equation 2.4 correct? I think ϵ (emissivity) should only apply to the outgoing longwave radiation term.
4. On what basis was the climate classification into Tropical, Dry, Continental, and Temperate made? While presenting the data this way makes sense, it would be helpful to clarify the method used. For instance, most papers use either an already existing climate classification, like the Koppen-Greger, or some aridity indices-based classification.
5. In Table 6, I am not sure why topographic correction was not applied to the total precipitation. Since topographic correction was applied to other variables, it seems this could have been done for precipitation as well, as precipitation is also quite influenced by topography. Especially when downscaling from the 0.4-degree original CAMS resolution to the 300 m, this step might also help to include some local orographic effects. Just a thought.
6. In Line 441, it is mentioned that the in-situ flux data are filtered based on a "realistic range." Could you clarify how this range is determined? Is it based on the solar constant or some other criterion? Or is it just visual inspection?
7. The stress factors utilized in the ETLook model for the soil and canopy involve topsoil and root-zone soil moisture, respectively (Equations 13 and 13b). While the topsoil moisture was approximated using a trapezoidal construction (LST-fc), how was the root-zone soil moisture determined to calculate the stress factor?
8. Figure 6: The caption could be more descriptive (applies to all the figures, in my view caption should be self-explanatory). Additionally, it is not clear how the graph was generated. Were all observed and modeled ETa values across all sites combined to compute the statistics, or were the statistics first calculated per station and then aggregated across stations? For instance, the standard deviation on the x-axis for the EC towers—does it include data from all EC towers?

9. In addition to point no. 8 for all Taylor plots, in my opinion, when comparing Taylor plots across different plant-function types (PFTs) and climate types, normalizing the standard deviation with respect to the observation could facilitate the comparison. For example, in Figure 8, the in-situ standard deviations differ across climate types. While this does not change the underlying information, normalizing would likely make it easier for the reader to interpret and compare the results.
10. In my view, there are too many figures presenting overlapping information. While I understand that the author wants to illustrate different aspects in the text from different figures, it affects the paper's brevity. This is just my opinion and can be ignored if you disagree. For example, Figure 7: In particular, the PFT graph does not seem to add significant value to the overall narrative and could be moved to the supplementary material, as much of the information is already conveyed in the tables and the Taylor plots. Figure 12: Since it only shows results for TSEB-PT, it could also be moved to the supplementary material.
11. In TSEB-PT, there is no direct control on evapotranspiration from soil moisture. In that respect, I would have expected ETLook to perform at least as well as TSEB-PT in arid and tropical regions. Could you provide some insight or a hint as to why this is not the case? Probably because stress is only coming from the land surface temperature in the ETLook (already LST being accommodated even in the TSEB-PT), rather than any direct soil moisture observation? Could it be a potential outlook incorporating direct remote sensing-based soil moisture?
12. In line 537, since the paper does not explore the details of any of the reasons mentioned, I would suggest rephrasing "it is obvious" to "the reasons might be," or alternatively, providing a proper citation.
13. Figure 14: In my view, this figure could also be moved to the supplementary material.
14. Figure 16: The first two rows correspond to May, and the middle row to July. Since all of the locations are in the Northern Hemisphere, is there a particular reason why the same month was not chosen to illustrate the differences in spatial coverage of the dataset?
15. In Figure 18, the green line representing green LAI is not clearly visible. Would it be nicer to plot LAI on the top panel and fg in the bottom panel? This would make the figure easier to understand.
16. Additionally, just out of curiosity, could you clarify why the existing CLMS 300 m LAI product was not directly utilized in the model? The intermediate variable LAI produced in this work is also a product, though unpublished at the end, which seems to me like a potentially redundant effort.
17. Figure 23: Does the shaded area represent the spread of the data?
18. At last, I think it would be very helpful to include a flowchart connecting all the steps from input to output, highlighting the process from obtaining TOC reflectance and LST to calculating ET, if possible.

Thank you!

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