Maximum carboxylation rate at 25℃ (Vc,max25) is a key parameter determines the carbon sequestration rate through photosynthesis. It changes with leaf age and environmental conditions. On the basis of remote sensing data, this study produced the dataset of Vc,max25 in tropical and subtropical evergreen broadleaved forests. This manuscript is interesting and well-written. After some modifications, it is publishable.

Main concerns

Sections 3.1-3.3: See all the validation/comparison maps, the dissolved Vc,max25 of young leaves performed consistent in tropical Africa and Asia, but differed a bit more across Amazon region. Please explain.

Section 3.4: Regarding the potential climatic drivers of the seasonality of Vc,max25. The authors only compared their seasonal patterns, while they did not establish an effective statistical model to quantify relationship. I would suggest authors adding such analyses.

Finally, authors should clarified the potential limitations and caveat of the data and method used for mapping the Vc,max25 of young leaves in tropical forests. For instance, please add metric for quality control. And, assuming little seasonal variations of Vc,max25 of old leaves may lead to overestimation/underestimation of the seasonal Vc,max25 of young leaves. In addition, the lack of intensive validations across the pantropical forests may be another limitation.

Other minor comments:

1. The manuscript needs substantial review of the English style as there are some language mistakes, which makes the comprehension of the text difficult.
2. Line 21-22, Abstract: The research gap is not only the lack of quantification but also the absence of continuous, gridded data covering a large spatial range.
3. Line 23, Abstract: “neighborhood pixel” may be as “neighborhood pixels”
4. Line 28, Abstract: format R values to two decimal places
5. Line 58-60: Perhaps subordinate clauses can be used
6. Line 100: Leaves are classified as young or mature based on 180 days, but it needs to be clarified which category includes the 180th day.
7. Line 176: The format of Equation (1) may be better like: $GPP_{total} = LAI_Y \times A_{sat\_Y} + LAI_O \times A_{sat\_O}$
8. Line 182: Figure 2. Remove the background color
9. Line 201-203: What constraints including in the nonlinear least squares approach?
10. Line 381: There is a typo “yong” in the figure
11. Lines 163/282/388/409: Change “…the young leaves Vc,max25…”to “…. the Vc,max25 of young leaves…” Please also check other similar mistakes in the manuscript thoroughly.
12. Figure 10: The scale of T_{air} should be appropriately reduced to display seasonal dynamics more effectively.

13. Figure S5, S6: Map of Congo in Jun. in Figure S5 should be smaller and this in Oct. in Figure S6 may be not show complete. Please check all maps in supplementary material.
14. Line 325-326: ‘Keep iterating until there is no change to the centroids. i.e. assignment of data points to clusters isn’t changing’. May rephrase.
15. Line 342: the mean values (V and U)
16. Line 352: the blank between 5.984° and S
17. Greater attention should be devoted to the details of the figures in the manuscript. For example, The bolded font in Fig1 and Fig 3b. The labels of latitude and longitude in Figures 5-9 should be unified. Please standardize the style of all figures throughout the manuscript, particularly ensuring consistency in the map display, including the axes and other elements.