Comment on bg-2021-66
Ben Bond-Lamberty (Referee)

Referee comment on "Assessing the representation of the Australian carbon cycle in global vegetation models" by Lina Teckentrup et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2021-66-RC2, 2021

[Dear authors, given the long delay this manuscript has experienced, and our continued difficulty in recruiting a second reviewer, I am providing a review below, and will ask the Biogeosciences staff to close the discussion.]

General comments

This manuscript analyzes how the Australian carbon cycle is simulated by 13 vegetation models that exhibit large differences in their outputs and behavior. It's an interesting and comprehensive analysis, looking at factors such as carbon residence time, land cover differences, and fire.

There are some minor weaknesses. The text is unclear in some spots, and some of the figures could be improved or re-thought. I also agree with R1 about the usefulness of some additional analysis with respect to PFT fraction. Finally, I didn't see anything about data or code availability; this is critical for transparency and reproducibility.

In summary, this is a well-done and interesting analysis that needs moderate revisions in many areas for clarity and concision.
Specific comments

- Lines 18-20: somewhat confusing
- 54 and 465: perhaps start new paragraph
- 80: what is NATT? Not defined yet
- 177-179: unnecessary? Perhaps move to figure caption
- Figure 1: why does panel a show the ensemble mean and spread but other panels show individual models? Perhaps add green mean to panels b-d?
- Not sure how useful figure 7a is
- Figures 8 and 9 are interesting!