

Response Letter

CEDAR-GPP: spatiotemporally upscaled estimates of gross primary productivity incorporating CO₂ fertilization

Dear editor,

Thank you very much for the opportunity to revise our manuscript further. We have incorporated changes to the figures according to Referee #1's excellent suggestions. We're grateful for all four reviewers' feedback throughout the review process, which has significantly enhanced the manuscript's quality.

Sincerely,
Yanghui Kang
On behalf of all co-authors

Referee #1

Thanks to the authors for their great efforts.

Dear reviewer,

Thank you very much again for your thorough review and thoughtful feedback. We have revised the figures following your suggestions. Please find our point-to-point responses below.

I just have two minor suggestions.

1 Please combine Fig.S17 into the Fig. 10(a) in the main text. Also, you could put the Fig. S18(a) into the Fig 11(a) in the main text. Thus, we could have a clear overview of how the annual GPP varying among different GPP products.

Response: Thank you! Following your suggestions, we have combined the former Fig. S17 with Fig. 10. Given the increased number of maps, we have split the updated figure into two: Fig. 10 now presents the trend evaluation for 2001 – 2018), while Fig. 11 presents the trend evaluation for 1982 – 2018.

We have also incorporated the contents from the former Fig. S18 into the former Fig 11. However, for Fig 11a, we found that adding more datasets (i.e. time series lines) significantly reduced readability due to overlapping lines. Therefore, we retained Fig. S18 and instead modified Fig. 11 (old) for better clarity. Specifically, we have split it to two separate figures: Fig. 12 and Fig. 13, showing the annual time series and overall trends comparison respectively. BESS was included in the long-term time series in Fig. 12b. Fig. 12a still shows the original datasets, but references Fig. S18 (now Fig. S16) for comparison with BESS, BEPS, and PML. In Fig. 13, global trends from BESS, BEPS, and PML were shown along with all other datasets.

2 I think the new Fig.S20 is very clear according to my comment#4 at the last round of revision. I highly recommend the authors use Fig. S20 instead of Fig. 12 in the main text. Maybe you could just show the NT or DT series in Fig.S20 for a clear presentation.

Response: Thank you for the suggestion. We have moved the former Fig. S20 to the main text (now Fig. 15), retaining Fig. 12 (now Fig. 14) as it shows additional context on uncertainty distribution across climate zones. Fig. 15 includes the NT datasets only, and DT results were now provided in Fig. S19.