

Response to Editor's comments:

(*Italic* indicates the manuscript text, *red* indicates revisions)

Comments E1:

Thank you for considering all reviewers' and my suggestions!

I have just a few minor comments on the current version:

- in header of Table 1: If I understand correctly, $1 \text{ hm}^2 = 1 \text{ ha}$. Maybe use here ' t ha^{-1} ' as unit.

Response:

Thanks for your helpful comments, and it was revised as ' t ha^{-1} '.

Comments E2:

- Table 3: Please change the unit of LAI to ' $\text{m}^2 \text{ m}^{-2}$ ' to be consistent throughout the manuscript.

Response:

Thanks for your helpful comments, and it was revised as ' $\text{m}^2 \text{ m}^{-2}$ '.

Comments E3:

- line 232: Please clarify what you mean with 'peak NPP age'. I guess it should be the age of the forest at its maximum NPP following the derived functions.

Response:

Thanks for your helpful comments, and it was revised.

"The age of the forest at its maximum NPP (referred to as the peak NPP age), a critical indicator of the NPP–age relationship, "

Comments E4:

- lines 263-264: Please clarify, if the 'final forest NPP–age curves' somehow differ from the curves described in section 3.1 and Figure 3.

Response:

Thanks for your helpful comments, and it was revised.

"The final species-specific forest NPP–age curves were selected from the built curves using all field NPP samples (green lines in Fig. 3), and their coefficients were provided in Table 4. To facilitate a comparative characterization of forest NPP–age relationships among different forest species, these curves were normalized and jointly displayed in Fig. 5."

Comments E5:

- lines 333-334: If you compare the simulated AGBs between the different curves, how do you know that one 'outperforms' the other? How do you know that the newly estimated AGBs are better? Please mention here again your validation data.

Response:

Thanks for your helpful comments, and it was revised.

“The built species-specific NPP–age curves were incorporated into the InTEC model for forest biomass modeling. But due to the lack of field soil carbon data for validation, we primarily focused on validating the modeled forest AGB. We compared the simulated AGB obtained by using the newly constructed species-specific NPP–age curves with that obtained by using the previously built nationwide NPP–age curves (Fig. 7). Accuracy was evaluated with R^2 and RMSE against the calculated field AGB from a randomly withheld 20 % of the forest field samples, and higher R^2 and lower RMSE indicate better performance. Overall, the species-specific NPP–age curves significantly outperformed the nationwide curves in simulating AGB accuracy.”