

Dear Dr. Thonicke,

Thank you for your comments. We have now addressed your points (standard font) below (in italics our reply):

1. I was wondering why the land-to-atmosphere flux (FLA) which you define "as the difference between carbon uptakethrough NPP and the release of carbon into the atmosphere through Rh" is not named net ecosystem production, or net biome production if you include the fluxes from disturbances. This is an established term which should be used here, while keeping your definition. Or at least refer to the NEP term in line 96ff and keep your notation systems.

Yes that is correct, we have added NEP to line 96 but keep our notation elsewhere.

2. Equ. 1 misses now the definition of G_{atm} . Please add.

We changed our equation based on reviewer #1 suggestions (in handwritten notes) and have added G_{ATM} back into Eq.1.

3. remove 2.3 as heading.

Done.

4. Correct label for soil in Fig. 1 and change to "bare soil" as it describes the fraction covered by bare soil.

Done.

5. Please explain the up-to 100% change in C3 and C4 coverage in Fig. 1B in the text. Can grasses grow below the tree canopy? If so, please add this to the description.

The 100% change is relative to the control land cover, so it represents a doubling in C3 or C4 coverage. We have added a brief explanation in the caption.

6. Please correct the caption for Figure 3, it does not match the panels displayed. In addition, please cross-check the panels are cited correctly throughout the text.

Done.

7. Figure 4, correct label from F_{OCN} to F_{OA} .

Done.