

Discussion letter revision 3 October 2022

- 1) In your first and last sentence of the abstract (and elsewhere in the manuscript as appropriate) replace “OC cycle” by “C cycle” to make the broader relevance of your paper immediately accessible to a broader readership.

Thank you for this comment, we have revised the manuscript accordingly.

- 2) Throughout the text replace the term atmospheric OC by C (as CO₂ is inorganic by definition).

Thank you for this comment, we have revised the manuscript accordingly.

- 3) l. 115 – a “rate” needs to be expressed per unit of time – correct or rephrase

Thank you for this comment, we have corrected this and use “replacement fraction”.

- 4) In l. 124 you state that “Model simulations (Fig. 3) show that NPP decline reduces the efficiency of the sink term”, however, it is clear to me which part of the Figure actually shows this relationship.

We have modified the figure by increasing the visibility of the fine red lines showing the NPP decline more clearly.

- 5) l. 170 – define / spell out “GHG” - for clarity perhaps simply write “the outgassing of non-CO₂ greenhouse gases”

Thank you for this comment, we have revised the manuscript accordingly.

- 6) Fig. 1: In the ‘occluded carbon’ box change position of “Agg Formation” so that there is no overlap of ‘n’ in “Formation” with the dashed blue line. In the ‘NPP Feedback’ box the text “C inputs via litter / roots” is not fully clear, as the term “litter” actually includes both above- and belowground litter. In case “roots” was meant to refer to “root exudates” please reword.

Thank you for this comment, we have revised the manuscript accordingly.

- 7) As far as I understand the x-axis titles of Fig. 3 and 4 both refer to “time since start of

disturbance” or “duration of disturbance”. To avoid any confusion (see also the comment of Reviewer #4) use the same axis title in both cases.

Thank you for this comment, we have revised the manuscript accordingly.

Please note that in order to speed up the process of getting your paper published these final changes will not be checked during any subsequent review process. In case of questions please contact me by e-mail.

Finally, I would like to thank you for submitting this interesting piece to Biogeosciences and hope that the broader perspective you offer will attract the attention it deserves.