

Response to the Topical Editor's comments

Dear Topical Editor:

We thank you for pointing out these final editing issues that have escaped our attention before. We have addressed them all as suggested. Please see in detail below.

We would like to thank you also for the work and the attention given to this manuscript.

Meanwhile, we would also like to request you to replace the “Responses to Reviewers” in the interactive discussion page. The ones currently in the open discussion were updated with the details from the last submitted version of the manuscript, and do not fully reflect the final changes in the revised manuscript. The “Author Responses” files were also part of the previous submission of revision, or we can gladly upload/send the latest version given your kind response.

With our best regards,
Naixin Fan and Nuno Carvalhais, on behalf of the co-authors

Notation:

Sentences in bold black color are the original comments from the Topical Editor and our responses are marked in blue color; the specific changes made in the manuscript, where appropriate, are transcribed after our answers (in italic) and the line numbers are indicated. LR stands for the Line number in the revised version of the manuscript:

- 1. ESSD strongly opposes registration barriers. Please justify! These seem especially in violation of German open data principles and in contrast to other European data repositories.**

Response: Even though the data is located inside the registration barrier, it is still publicly available to everyone interested in using it for research. We have the registration process for the purpose of keeping the list of contacts of users of the data. This list is available only to the contact person within the department and is used solely to notify all the users when there are unforeseen changes in the data (say, correcting for format, fixes in bugs, etc.), even though such changes are rare. Note that the list is not shared with other groups or institutions, nor it is used for any promotional activities, which is in line with the European data privacy policies. Finally, we would like to note that the BGC data portal, with similar registration process, has been extensively used to publicly distribute and update several datasets that have been produced by the department (for example, the large ensemble of FLUXCOM at <http://fluxcom.org>, and several products from the EU-funded H2020 BACI project at <http://baci-h2020.eu/index.php/Projects/Projects>

2. Some text missing or confused at lines 344, 345?

Response: We double checked and there are no missing texts in the referred lines. However, we found the sentence is confusing which may lead to misunderstanding. We thus revise the previous sentence to: “*Different from the spatial distribution of soil carbon, most vegetation carbon is stored in the tropics whereas much less carbon resides in the higher latitudes. In fact, the C_{veg} in the circumpolar region is only 10% of that in the non-circumpolar region (Table 2).*” LR344-346

3. Something missing at lines 433, 434?

Response: We double checked and there are no missing texts in the referred lines. But we found an unnecessary reference to the Methods section remained due to editorial mistake, which is indeed confusing. The corrected sentence now is: “*Additional discrepancies may also be associated with the differences in climatic and other input covariates used in the upscaling which may yield a different estimation of C_{soil} (see Section 2.1).*” LR434-434

4. Line 440: SOC (soil organic carbon) acronym introduced here without prior definition?

Response: That is correct. Thank you for pointing it out. We now introduce the meaning of the acronym in LR440: “*...for more robust predictions of soil organic carbon (SOC) with depth...*”.