

Interactive comment on “Variations in soil chemical and physical properties explain basin-wide variations in Amazon forest soil carbon densities” by Carlos Alberto Quesada et al.

Carlos Alberto Quesada et al.

quesada.beto@gmail.com

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We thank the reviewer for her/his comments, which were more related to style and structure of the manuscript. We are incorporating several editorial suggestions made and believe it will help to improve the paper.

Here we respond each comment separately:

General comments: Comments on manuscript length and readability:

Referee 1: “However, it would increase the readability of the article if some texts can be shortened and simplified. The sentences are unusual long, repetitive and complexing

C1

reflecting the authors’ personal writing habit, but not the benefit of paper broad readers”

Response: We have made efforts to make the text more direct (especially in terms of breaking up and shortening sentences in the Results Section) and have also attended the specific points raised by both reviewers. However, we do not agree with the view that short papers are necessarily the best or only way to communicate results. In our view, a detailed and comprehensive analysis, when well supported by data, becomes a definitive reference and thus reaches out to broad audiences. Short papers can be good, but not necessarily are, the opposite also sometimes being the case. As noticed by Reviewer 1, our personal style is somewhat ‘expansive’, which so far has led us to establish a successful publishing record. For instance, previous work published on soils of the Amazon by the lead author in Biogeosciences (Quesada et al. 2010, 2011, 2012) has had an even greater number of final pages published, but this did not stop these papers to receive over 300 citations each. We feel that the points raised by the reviewers have indeed helped to make the paper clearer and we have made changes to break up longer sentences and phrases into smaller units, but hope that there is no need for further shortening of the manuscript just for the sake of it.

Specific comments from Referee 1:

“Line 83- 92: kaolinite contains no -charges; if any, they could be from impurities of 2:1 clays. Under the acidic pHs of the soils, variable charges are positive too. When you discuss soil minerals’ role in chemical interaction, often the coatings of oxidic and hydroxidic components of metals on mineral particles should not be ignored since rarely, pure minerals or “clean” minerals are present in soils.” Response: We accept the comment and have changed the text accordingly.

Figure 4. add “a, b, c etc.” to the title? Response: Done

Line 402-409: use the mean, range of the variables instead of the graphic feature to make the comparisons. Response: Means and ranges are already shown in Figure 4. We would, thus prefer to leave this as is.

C2

Figure 5 and 6: throughout the text and figures the word “association” and “correlation” are exchangeable. “association” may imply the presence of a physical relationship, but “correlation” is a statistical likeness and may not mean a physical relationship at all. It is expected they are used with discretion. Response: We accept the comment and have changed the text accordingly

Line 401: $r^2 = 0.58$ in Fig. 5a. Response: Done

Line 433: [C];Ald should be [C]:Ald or [C] vs. Ald. There are other cases too. Response: all have been changed to the format [C] vs. [A]d (etc.) in this and other cases throughout the text. Table 5: $p > 0.17$; and also $p < 0.0004$: Response: Just because a probability of type II error is greater than $p = 0.05$ does not mean the sign needs to be changed. Nevertheless, we do accept that $p = 0.17$ would be the more appropriate way to represent the lack of significance in this case and have changed the text accordingly. There was indeed an extra ‘0’ in the quoted probability for the equation of Table 5p and we have now fixed this.

Figure 9 (line 469-475): “a, b, c” on the graphics and title? Response: Done

Table 6: use “soil C/N ratio” or the symbol. Response: Done

Line 476-480: soil C/N should not be an index of litter quality though a good correction exists with litter quality. Also, C/N ratio is not quite independent variable in this equation, so a greater correlation is no surprising. C/N ratio is numerically related to C level in a sample. Response: The text states clearly that CN ratio was used as a surrogate for litter quality with support from data on litter lignin concentrations. We have also added an extra paragraph at the end of Section 3.5 to fully reflect this (along with the possible errors in model predictions associated with the inevitable correlation of [C] with CN ratio).

Line 493: If VIF and AIC be used as criteria for evaluation, they should be explained in the Method section. Response: Done

C3

Line 500: Table 6s, not Table 6v; Response: Done, thanks for spotting the mistake.

Line 496, Table 6c? Response: Done, thanks for spotting the mistake.

Line 546: “on the other hand” be deleted. Response: Done

Line 569: it should read “the C+S . . .”. Response: Done

Line 613-615: check your sentence. Response: Done, text has been updated for clarity.

Line 661: “as shown, Response: Done

Line 662: “that’ deleted. Response: Done

Line 664: 0.05-0.89, what is the unit? Response: This is a fraction, varying from 0 to 1. Text has been adjusted to make it clear.

Line 671: “Clay;C” reads “Clay-C or Clay:C or Clay vs. C”. Response: Done, changed throughout the paper.

Line 708: delete “also”, there are a lot of “also” used in these sentences. Response: Done, the sentence was adjusted for clarity.

Line 745: “is”. Response: Done

Line 745-747: do you want to say “low or high”? to clarify, use “P levels” for “these”. Response: Done, text was adjusted for clarity.

Line 781-784: re-edit the sentence, I think you want “As . . . , they . . . ; and this So that MRT of”. Response: Done, text was adjusted for clarity.

Line 824: “hard”? Response: Done, text was adjusted and word “hard” was substituted.

Line 849: re-edit the sentence. It is unnecessarily long. Response: Done, text was adjusted for clarity.

C4

