



Comment on soil-2021-12

Anonymous Referee #2

Referee comment on "Effects of environmental factors and soil properties on soil organic carbon stock in a natural dry tropical area of Cameroon" by Désiré Tsozué et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-12-RC3>, 2021

General comments

Tsozué et al. present their work on quantifying soil organic carbon stocks in the Sudano-Sahelian area of Cameroon this manuscript. The manuscript is generally well-written, but my main concerns with the manuscript are a lack of appropriate discussion and presentation of the data and absence of broader implications of the study.

I have made some specific comments and suggested a number of minor technical changes. There were a fair amount of grammatical errors, but these generally did not detract from my understanding of the manuscript. See comments below.

Specific comments

Lines 28-30: I think it's a bit confusing to switch between "T-SOCs" and "SOCS" here, I would just get rid of the term "T-SOCS" altogether and just use SOCS.

Line 40: I think this might be a better opportunity to define SOM here than to just vaguely mention it.

Lines 48-52: I think removing "organic C" and replacing it with SOC in each case might make this passage less confusing and wordy.

Line 67: I think you need to insert specify why we care about these natural factors, you should specify that these are natural factors that contribute to SOC degradation/loss.

Lines 69 – 75: This entire passage should be revised. This can easily be shortened and you need to refer to soils (or soils in dry areas specifically) instead of using "their".

Lines 185-191: In this section I would suggest not stating that SOC values are either high or low, and simply report the values here.

Lines 199-202: There are some interpretations here that should be moved to the discussion section.

Line 202: I assume the word "globally" is used to refer to your entire dataset? Please

remove this word and replace it with "overall," or something similar as it is confusing.

Lines 208-210: I'd suggest just stating that clay content increased with depth instead of referring to the surface/base of the profiles.

Line 244-246: Suggesting that SOM is not homogenous is a given, I suggest this sentence be removed.

Line 250-254: Again I think you can just state that SOC was highest in the top 25 cm, I don't think this needs to be substantiated by citations as it is usually the case.

Line 304-311: Is the latitudinal gradient in the study area great enough to exert an effect on SOC?

Lines 331-336: This should be changed from "high" to "higher latitude," but I would recommend removing the discussion on latitude entirely. Instead, the authors can explain regionally how precipitation/temperature/vegetation/elevation vary, and then discuss how this relates to regional SOC storage.

Line 346-349: What led to this idea regarding parent material? Why does this contradict previous findings on dryland ecosystems?

Section 4.1: This section (and the discussion overall) is lacking any references to values, tables, figures, etc. as there is not a single instance of this. As it stands the discussion simply states soil properties were high, low etc. I think the authors could help the flow of the manuscript by reporting values in the text and re-orienting the readers on where they can find the relevant data.

Section 5: I wonder if the data supports some of the assertions in this section. Are data from four soils enough to conclude that climate is controlling SOC storage in the region? I also think the section ends abruptly and is lacking in highlighting the study's importance – what are the broader implications of this work?

Figs. 3&4: Why haven't you included uncertainties here? Instead of using linear regression you might consider box and whisker plots.

Table 1: I think the list of dominant plant species here makes the table too cluttered and should be moved to the supplement if possible.

Table 2: I think these descriptions can be summarized in the text and this table can also go in the supplement.

Technical comments

Line 14: Suggest using the word "region" in place of "part" here.

Lines 19-21: Shorten this to simply state "Three replicates were collected at each site..."

Line 20: Remove "the."

Line 35: "Represents"

Line 26: Remove "their" here.

Line 41: I think you should specify that it is a CO₂ (or simply C) sink.

Lines 41-43: This sentence seems a little out of place here and I suggest you remove it.

Line 44: Do you mean 50% by weight? Is this even necessary to mention?

Line 47: Remove "their"

Lines 52-54: I wouldn't recommend beginning a sentence with but or using the word "nowadays."

Line 63: Remove "the" and just say "SOC content."

Lines 64-67: I think these two sentences can easily be merged together.

Line 79: The authors switched back to using carbon instead of C here.

Line 81: Again, use "studies" or something similar in lieu of "ones."

Line 95: Use commas or scientific notation when reporting the extent of the study area.

Line 169: We need some more context here – what are these averages?

Lines 177-178: This is an interpretation of C:N values and should be moved to the discussion.

Line 187: I would remove the term "zigzag."

Line 191: Using "this content" is vague, just say "SOC content" or just SOC.

Line 230: Why mention this here?

Lines 234-237: This should be moved to the introduction.

Line 268-271: Odd word choices here "parental" and "departure," please revise.

Lines 354-355: I don't think it's important to mention the soil taxonomy here.

Lines 361-362: This sentence should be revised for clarity.