Reply on RC2
Sebastian Doetterl et al.

Author comment on "Organic matter cycling along geochemical, geomorphic, and disturbance gradients in forest and cropland of the African Tropics – project TropSOC database version 1.0" by Sebastian Doetterl et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-73-AC2, 2021

Dear Dr Rose Abramoff,

We would like to give a brief answer the questions and comments you raised and also how we intend to modify the manuscript and database in response. Besides the revised manuscript, we will also prepare an update on our database (v.1.1) based on the reviewer suggestions and corrections.

General Assessment

"This ESSD manuscript provides a complete description of the TropSOC V1.0 database, which is to my knowledge the most detailed collection of measurements focusing on tropical central Africa. Measurement methods are well described and cited, and the database structure is also clearly explained. Many of these measurements would be directly useful to researchers working in the region, or who would conduct larger-scale synthesis or modeling studies. The data files are well structured with good meta-data and therefore I would recommend ESSD to publish this manuscript."

Our response: Many thanks for the review and we are happy to see that we could satisfy your expectations for the quality of the submitted manuscript and data and are thankful for acknowledging the potential of our database. We are delighted to hear that you think that our data is useful for large scale modeling or synthesis efforts since this was one of our core intentions with the publication of this data.

"If I had one recommendation for future versions of TropSOC, it would be that elemental analysis of plant tissues would be useful to modelers as a complement to the growth and biomass measurements, such as the %C and N of litter and root biomass, for example. The elemental analysis of soil and parent material is impressive, and I understand that soils are the main focus of the current study."

Our response: Thank you very much for this comment. We are actually working to complete CN data from vegetation samples right now. Due to the large volume and workload related to this (our litter data was collected every two weeks, root data seasonally) we have not completed this task yet and are delayed due to Covid-19 related
restrictions on the ground in our partner institutions, but also in our own laboratories. Once the situation improved, we will create an updated version of our database where we will add this data as 2 new files “224_VegetationCN.csv” and “334_VegetationCN.csv” to the database in the GFZ repository. In these files we will report averaged values (at the plot and sample ID level) for litter and fine root samples (which drive the C input in soils), aggregated to a seasonal time resolution. Note that for forest sites, CN values from sampled fresh canopy leaves are already available in files “213_fresh_leaves.csv” and “214_fresh_leaves_agg.csv” in the current version.

Specific comments

L121-122: Seemed like you meant to say “a decrease in biomass productivity”. The second half of this sentence is a little hard to understand – negative like lower activity?

Our response: We amended the sentence in the following way: “plants leading to a decrease in biomass productivity (Veldkamp et al. 2020) and degraded tropical forests, lowering also microbial activity in soils (Sahani & Behera, 2001).”

L159-163: This sentence is a bit unwieldy – can it be condensed or broken into two sentences?

Our response: We amended the sentence in the following way: “Improving our process understanding on the coupling between soil biogeochemistry and plant responses in the context of tropical land use changes will help to better constrain plant-soil interactions in ecosystem and land surface models. Furthermore, insights in plant- soil interactions can help to better inform policy makers and stakeholders in improving land management practices.”

L280: Typo “Overview of plots”

Our response: Corrected, thanks!

L496: Typo “were used for yet more detailed”

Our response: Corrected, thanks!

Typo in PDF of “252_microbiology.pdf” (the .csv is all good): plot_ID and sample_ID should be plotID and sampleID

Our response: Corrected, thanks!

We hope we could address all comments to your satisfaction.

Yours sincerely,

the authors.