



Comment on soil-2021-14

Anonymous Referee #2

Referee comment on "Whole-soil warming decreases abundance and modifies the community structure of microorganisms in the subsoil but not in surface soil" by Cyril U. Zosso et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-14-RC2>, 2021

The article entitled "Whole soil warming decreases abundance and modifies community structure of microorganisms in subsoil but not in surface soil", address the impact of soil warning in the soil microbial community. The article fits the scope of the journal and it will be of great interest for the journal readers.

The introduction summarized the previous knowledge in the topic in clear and concise way with clear and funded hypothesis.

The material and methods described in detail the laboratory analysis, but the description of the experimental setup is very brief. How was the temperature increase in the soil profile done? The articles you cited would probably describe it in detail and if a reader is interested can go and check those articles; but a short description here (no need to go in deep detail) would help to understand the setup of your experiment.

In the result section, the soils depths shown in your tables and figures is not clear. At some point, looks like you sample the 0-5 cm soil surface, and then you sampled in intervals of 10 cm until 85 cm depth, but that is not what I stated in the material and methods. Maybe including the sampling intervals instead of the middle point of it will be clearer. Secondly, when you describe the results in the section 3.1, 3.2, 3.3 and 3.4 the numbers do not match with the respective tables. Are those numbers an average on control and warm soils? If so, this need to be clarify in the text. Regarding the MBC, this data have been used for another paper that has been resubmitted, in my opinion you could discuss about it but not include as a result.

Finally, in the discussion section, you mentioned the difference in the heating temperature between the topsoil and the sub-soil in the section 4.2. This should discussed a bit further, since the differences you observed could be easily related to this temperature difference.

Below some specific comments

- Line 21: Gram should start with capital letter
- Line 31: "representative concentration pathway 8.5" this is part of a global model simulation, right? It needs some clarification on the text.

- Line 39: The reference "Fierer et al., 2003b", it should be a Fierer et al., 2003a before in the text. You need to reorganize the references of this author.
- Line 73-77: You introduce the use of the PLFAs with several examples. You should do the same with the brGDGTs.
- Line 83-93: The hypothesis are clear, but I would suggest rewriting a bit this paragraph. Stating at the beginning that you have two main hypothesis and described them, and then add all the text to back them up.
- Line 103: Why was the soil heated at different temperatures along the soil profile? A short explanation should be added.
- Line 118: Why do you skip some soil depths? I.e. 20-30; 40-50; 60-70; 70-80? A short explanation of why these depths were excluded from the analysis should be added.
- Line 145: This reference is not in the reference list.
- Line 190: Reference of unpublished articles should not be included.
- Line 365-367: This paragraph is hanging loose, try to connect to with the previous one.
- Line 582-584: Please add the DOI number.
- Line 602-603: Please add the DOI number.