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Solid Earth
Discussions

# *Interactive comment on* "Influence of slope aspect on the microbial properties of rhizospheric and non-rhizospheric soil on the Loess Plateau, China" *by* Ze Min Ai et al.

**Anonymous Referee #2**

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This paper is interesting and urgent in sense of microbial soil properties. The authors have investigated effect of slope aspect (south-facing, north-facing, and northeast-facing slopes) on the microbial properties of grassland rhizospheric and non-rhizospheric soils. The subject site was Ansai Research Station on the Loess Plateau in China. The authors have analyzed microbial biomass carbon, basal respiration, substrate-induced respiration, phospholipid fatty acid contents and the rhizospheric effect. Moreover, statistics was used in the research (redundancy analysis and path analysis). The paper has a good organization, but the language is partly insufficient. It should be helpful to get the revision of a native English speaking person. I suggest several comments to improve the manuscript: 1. There is no explanation of the ob-



tained results in the abstract - just briefly, in 1-2 sentences. 2. Please, pay attention to articles using in the text. 3. Line 57: "Solar radiation influences ON (?) ecologically critical factors. . ." 4. Line 61: "which receiVE the more solar radiation. . ." 5. In my opinion, it is worth to include to the introduction part the latest papers devoted to studied topic (2015-2017). 6. Throughout the manuscript: please, don't use the pronoun "We" (for example, lines 114,116,117, 260, 262) – sentences should be impersonal. 7. Why did you investigate only 3 variants - south-facing, north-facing, and northeast-facing slopes? Why didn't you investigate west slopes? Was is the idea? 8. Hypotheses (1 and 2) should be written not in Future tense (would), but in Present. 9. Lines 121-122 – it is unclear – could you rephrase? 10. Line 127: "annual temperature OF the study area is 8.8 °C,. . ." 11. Section 2.1 Study site: Please provide the short review of natural soil and vegetation diversity in the region, close to the study plots, soil classification with references. Please, provide the detailed scheme/map of sampling sites putting sampling plots on it. 12. Line 129: Please, write a little bit more detail about abandoned areas – what happened and why, when it was and so on.. 13. Please, specify distance between sampling plots within sampling site and between them. 14. Are 18 soil samples enough to do the statistics that you have done? 15. Section 2.3 Laboratory analysis: What are units of measure for MBC content, BR, SIR and metabolic content? 16. Line 158: Please, provide a detail formula for calculation a metabolic content (in order to understand units of measure). 17. Lines 156-157: Please, provide more detail description of BR and SIR analysis (like MBC). 18. Lines 177-178: Please, write more detailed how RE was calculated, or give an example of calculation. 19. Lines 187-188: it is unclear - RE in the south-facing slope was highest among the slope aspects – it is not for all studied properties. 20. Line 189: ". . .or SIR in either RS or NRS. . ." – for SIR this statement is not true according to the Fig. 1B. 21. Line 208: ". . .Total PLFA content in the north-facing slope was 50 and 62% higher than those. . ." – I suppose that 50 and 62% are incorrect – according to the Fig. 2B. 22. Line 213: ". . .G+ PLFA content did not differ significantly among the slope aspects (Fig. 2B)." – according to the Fig. 2B, it is not true. 23. Line 216: ". . .which were 49 and 117% higher. . ." – I suppose

that 49 and 117% are incorrect – according to the Fig. 2B. 24. Lines 219-221: these two sentences can be summarized. 25. Lines 173-175: you have measured several characteristics (pH, SAP, WSOC, and so on), but in results section there are no data. Could you, please, include a table or figure with these characteristics? 26. Line 275: "...supporting our hypothesis 2 ..." – could you write it more precisely. 27. Line 278: what do you mean – bioenergetic status – could you explain in your opinion? 28. Line 291: "These different results may BE due to the differences" 29. There is not so much discussion about north-east slopes in the text – could you add it? 30. Lines 318-319: this statement is not correct according to table 3. 31. Line 315-324. If soil moisture is an important environmental factor affecting the composition of microbial communities, I suppose you should add your data of soil moisture to manuscript. 32. Sections 4.2.1 and 4.2.2 – please, analyze data of G+ and G- PLFA contents either in section 4.2.1 or 4.2.2. 33. Line 339-340: "NRS actinomycete PLFA content, however, was lower in the northeast-facing slope than that in the south-facing slope." - but also - than in the north-facing slope, or not? 34. Lines 347-348: "Drier soils tend to be more enriched in G- bacteria and fungi,..." – it is not correct according to fig. 2. 35. Line 408: the surname SCHAEPMANâĂŘSTRUB should be written in lower case. 36. Journal names should be abbreviated according to the ISI Journal Title Abbreviations Index (according to Manuscript preparation guidelines for authors). 37. Please, add DOI to references. 38. The quality of Figures 2 and 3 is very poor. Nothing is clear at the picture. Please make columns larger and readable. Could you explain what different letters above the bars (a, b, ab) mean? And when there are no letters – what does it mean? (fig. 1-3). 39. Figure 4: RQ (respiratory quotient) – what is it? Please, make this figure larger and readable.

Nevertheless, I found this paper of good quality and after correcting it can be publish.

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