Biogeosciences Discussions

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Comment on bg-2021-103

Anonymous Referee #1

Referee comment on "The biogeographic pattern of microbial communities inhabiting terrestrial mud volcanoes across the Eurasian continent" by Tzu-Hsuan Tu et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2021-103-RC1, 2021

General comments:

Tu et al. characterized microbial communities of 15 terrestrial MVs of the Eurasian continent to test the validity of distance control and physiochemical factors in explaining biogeographic patterns. Central to this manuscript is the claim that stochastic process determines the spatial variations in microbial communities inhabiting terrestrial mud volcanoes across the Eurasian continent. The experimental design is reasonable. Unfortunately, the study suffers many shortcomings:

- The analysis of the article is not sufficient to support the conclusion drawn by the author. The authors emphasized stochastic process in the title, but they told nothing related to stochastic processes in either introduction or result or M&M section. How will readers know stochasticity and determinism if you do not mention it in the introduction? The author only analyzed the influence of environmental factors on microbial diversity and the distance attenuation relationship. How can you link these analyses to community assembly mechanisms? So, I don't know how the author concluded that random factors dominated the variation of microbial community.
- The article lacks clear goals and scientific issues, which prevents readers to understanding the article quickly.
- The author should check the article carefully before submitting it. There are many confusing descriptions and mistakes across the article.

Specific comments:

Lines 70-75: Clear goals and scientific issues are lacked.

Lines 80: There are 17 samples in Fig.S1, but 16 are written in the material.

Lines 105: Clarify the number of ASVs.

Lines 110: Why not consider pH, which is generally believed to be the most important factor affecting the microbial community.

Lines 115: How to distinguish between stochastic and deterministic.

Lines 160: There is no information about bacteria orders in Fig.2b.

Lines 170: How did the 136 samples come from? The x-axis in Fig.3 seems to be only 15.

Lines 200: The author calculated shannon, chao1 and richness earlier, but why only shannon is studied here.

Lines 210: Why is geographic distance not included in the CCA analysis. I would suggest authors to consider both physicochemical and geographical factors to reveal the contribution of environmental and spatial factors to community variation. Based on this, you may state stochastic and deterministic processes in this paper.

Lines 220: Which graph has a slope of 0.210, I can't find it.

Fig.5b: One missing point in the formula.