Date of resubmission: September 11, 2017

Editor: Denise Akob
Editor
Biogeosciences

Dear Dr. Akob,

Herewith, I would like to submit a revised version of our manuscript entitled '**Effects of temperature on the composition and diversity of bacterial communities in bamboo soils at different elevations**' (bg-2017-116), to be considered for publication in *Biogeosciences*.

We have thoroughly revised the manuscript according to your suggestions. We would like to gratefully acknowledge the insightful perspectives and suggestions that helped us in improving the manuscript. We hope we have adequately addressed them and that our manuscript is now ready for publication. Please find below our point-by-point responses.

Once again, we would like to thank you for your prompt management and constructive comments on our manuscript, and we are looking forward to hearing from you.

Kind regards,

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Responses to the Editor's comments

BG-2018-116-RC1

Comments: Currently, the discussion is highly microbial/soil focused and it would be nice to discuss the implications for plant interactions. Also, link back to management of the former plantations--how will changes in soil respiration/activity affect these legacy sites? or further management of them?

Response: We have added some paragraphs in the Discussion to link our findings to plant interactions and management practices:

"In d0 samples, which represent the original composition of the bamboo soils, the bacterial diversity was higher in the 1,800 m soils, followed by the 600 and 1,200 m soils. Communities with higher diversity are reportedly more resistant to environmental changes (Loreau and de Mazancourt 2013). In a study by Ren et al (2015) in rice paddies, the diverse soil communities were more resistant to elevated CO_2 and temperature than the less diverse foliar bacterial communities. The increasing concentration of recalcitrant C with increasing elevation (Wang et al., 2016) could be helpful in providing more carbon resources to the community at high elevation. Together, these findings indicate that bamboo soil bacterial communities with higher diversity could be more capable to maintain soil community and function when exposed to climatic changes and subjected to management at high elevation (1,800 m)." (p. 11, line15 to line 26)

"*Bradyrhizobium* of α-*Proteobacteria* at 1,800 m increased at all three incubation temperatures. This genus includes species capable of nitrogen fixation and may significantly contribute to soil function (Yarwood et al., 2009). The increase in their abundance might explain the elevated SON. Moreover, these bacteria are plant growth-promoting bacteria, stimulating plant growth by fixing N_2, increasing the availability of nutrients in the rhizosphere, positively influencing root growth and morphology, and promoting other beneficial plant–microbe symbioses (Vessey, 2003). Their response to incubation temperatures indicates their potential roles in bamboo growth and responses to application of fertilizers under climatic

change." (p. 14, lines 2–11)

"Within β-*Proteobacteria*, the abundant genus *Burkholderia* is nutritionally versatile and is commonly found in rhizosphere soils. Their functional diversity, including nitrogen fixation and plant growth promotion (Coenye and Vandamme, 2003), could help maintain soil community stability." (p. 14, lines 15–19)

"Actinobacteria are involved in the organic matter degradation. Under climatic changes, managements of bamboo forests need to consider the responses of *Actinobacteria* to temperature, especially that in N fertilizers, since the abundance of this phylum was positive affected by N fertilization treatments (Zhou et al., 2015)." (p. 14, lines 22 to line 26)

Comments: pg. 4, l. 9: correct spelling to oligotrophs

Response: The word has been corrected (p. 4, line 10).

Comments: pg. 4, l. 6-9: language is a bit awkward and pluralization is missing.

Response: This section has been rephrased as "Soil bacterial communities include different phylotypes that likely represent different functional groups, and their relative abundances are affected by carbon (C) availability. For example, some members of *Proteobacteria* are considered copiotrophs, and their relative abundances appear to be higher in C-rich environments." (p. 4, lines 6–10).

Comments: pg. 6: please release the sequences prior to resubmission.

Response: The sequences (accession number: SRS1923345) have been released.

Comments: pg. 8, l. 4: define day/time notation, e.g., "d28", here to make it clear to the reader for the rest of the paper.

Response: We would like to kindly point out that we had defined this notation at first use in the previous revision. To further improve clarity, we have rephrased it as "(after day 28 [d28])" in the current manuscript (p. 8, line 2).

Comments: pg. 8, l. 17: OTU's formed is not the correct word choice. Please change to an based on an OTU cutoff of ≤ 0.03

Response: We have corrected this accordingly (p. 8, line 15).

Comments: pg. 13, l. 15: correct to "life strategies as an oligotroph or copiotroph."

Response: We have corrected this accordingly (p. 15, line 11).

Comments: Fig. 3: optional--change to a 3 part single column graph

Response: Fig. 3 was changed to a 3-part single-column graph.

Comments: Fig. 4: please check to see if this is readable for those that are color-blind. As is, the slight variations in darkness of the reds could be difficult to distinguish.

Response: In agreement with the editor's apt consideration, we have presented the data originally depicted in Fig. 4 in the newly added Table 1.