

Interactive comment on “Divergence of dominant factors on soil microbial communities and functions in forest ecosystems along a climatic gradient” by Zhiwei Xu et al.

Anonymous Referee #1

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Divergence of dominant factors on soil microbial communities and functions in forest ecosystems along a climatic gradient is a investigation paper. Authors chose 12 forests along three climate zones to investigate the variation of soil activities and microbe structures among these forests along three climate zones. The results showed that soil enzyme activities and microbial PLFAs differed with forest types along climatic zones. Both climate and forest type had significant effects on soil enzyme activities and microbial communities. Litter nutrients made an important effect to variations in the soil microbial communities and enzyme activities in temperate zones, while soil micro-climate and nutrients were the main effect factors on the soil microbial community structure and enzymatic activities in warm temperate and subtropical zones. The

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paper has valuable to be published in this journal. However, the following points should be considered to revise: 1, Abstract: line 44-45 "Our results indicate that the main controls on soil microbes and functions vary across forest ecosystems in different climatic zones, and that the effects of soil moisture content, soil temperature, and the soil N/P ratio were considerable." was the results, not indications. Instead, please give a general summary about reasons of the variation. 2, Materials and Method The investigation was conducted in July and August in three climate zones, It is better to illustrate the climate information of the investigation month and detail investigation date in each site. This is because the activities of microbe is very sensitive to the climates, especially the moisture and temperature. 3, Results In the 3.1 section, the activities of four enzymes did not be described carefully. Most informations were ignored, for example, there were not comparison between forest types in the same climate zone. And there were not comparison between different climate zones, for example, the LAP activities of microbes in warm temperate zone were much higher than that in temperate zone. In the 3.2, same as 3.1, no comparison among three climate zones. Although there were difference among forest types in the same zone, authors should compare the similar quality forest such as SCB along three climate zones. If the results of these comparison could be reported, more mechanism of divergences among zones and forest types could be understood very well. In conclusion part, we would like to see the conclusion what changes along the climate zone could be found 4, Discussion 4.1, It is unclear what the response of soil enzyme activities and microbial PLFAs to variation of forest types is. Authors should clearly discuss the variation pattern and formation reason. 4.2, How to compare the common effect and key effect? if there is obvious difference between two effects, could you explain the identification method of two effects.. 5, Conclusion Authors should address the main conclusion of the variation of enzyme activities and microbial community among forest types along the three zones in the suitable part of the paragraph. Minor mistakes 1. line 135. authors should give detail information about collection such as which samples were collected in July? 2. SCB in temperate zone was not same as it in Subtropical forest, it is better abbreviated

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as SCBt SCBs 3. Fig. 2 ABCD was represent different enzyme activities, please check them 4. The format of some references did not fit with the format of this journal such as New Physiologist which did not was abbreviated.

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