

## ***Interactive comment on “Seasonal and interannual dynamics of soil microbial biomass and available nitrogen in an alpine meadow in the eastern part of Qinghai-Tibet Plateau, China” by Bo Xu et al.***

### **Anonymous Referee #2**

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The paper deals with the seasonal and interannual dynamics of soil microbial biomass and available nitrogen in an alpine meadow in China. The subject is interesting but the poor English sometimes let the comprehension of the text very difficult. I suggest some changes but I strongly recommend to check the English language through the assistance of a mother tongue. Moreover the paper lacks of some information such as the measurement of the snowpack depth, the estimation of the depth of the active layer and the criteria that have been used to determine the growing season length. Some specific points are listed below: Pag 1: lines 14/15: Did you collect topsoil samples? Please specify better line 16: add in (MBN) after and N Pag 2: line 12: With the term frozen soils do you mean permafrost soils? Pag 3: line 6: When you

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mention alpine ecosystems do you mean seasonally snow cover ecosystems? Pag 4: Lines 6: again, do you refer here to subnival microbial activity during winter? Line 9: correct seasonal into seasonal Pag 5: Line 4: When you mention frost-free periods, do you refer to air temperature? What is the mean snow depth in the area? Lines 9-10: Please add also the soil classification according to the Soil Taxonomy Lines 12-13: Do you work in a catena of soils? What do you mean with the terms top, middle and bottom? Line 14: Does this soil horizon is a A horizon? Pag 6: Line 1: In winter did you collect the soil samples under the snowpack? Lines 12-14: here you mention the chloroform fumigation technique. Why did you describe this method later at pag 7 (lines 7-15)? Pag 8: Lines 1-4: Did you fumigate also some soil samples for the determination of extractable DOC in the measurement of the microbial C? Lines 10-11: What is the definition of growing season? Did you consider the air temperature to define this period? Did you consider the soil temperature? Lines 12-13: Sorry I don't understand this sentence Pag 9: Line 2: Add respectively after 2012-2013 Lines 2-3: how do you define a freeze/thaw cycle event? Pag 10: Line 18: What do you mean from one another? Pag 11: Lines 3-4: I don't understand this sentence, in particular "but that significantly lower. . . ." Pag 12: Line 11: Do you think is it necessary to specify "the beginning of the early non-growing season"? It's not possible to mention also the beginning of the early non-growing season? Pag 13: Lines 16: Do you mean the plant community? Please specify better this concept. Pag 14: Line 15: season change into season Lines 17-18: Sorry but this sentence is not clear. What do you mean with "increasing process of NH<sub>4</sub>-N"? Pag 15: Lines 2-3: change thawing with melting. Moreover, do you have data about snow chemistry in the area? Lines 4: Preferred in comparison to what? NO<sub>3</sub>? Line 9: During the middle growing season do you expect a high plant uptake which cause the reduction of soil inorganic N? Lines 10-11: Late in the growing season you observed a reduction in the soil inorganic N. But with the reduction of plant uptake you did not expect an opposite trend? Pag 16: Lines 7-8: Warmer and drier than 2012-2013? Moreover also a greater number of freeze/thaw cycles than 2012-2013? Is the greater number of freeze/thaw cycles recorded in the

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drier season 2011-2012 related also to a thinner snowpack with a little insulation effect?

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