We thank the anonymous referee for his/her time and effort in reviewing this paper. We have seriously considered his/her constructive comments. The point-to-point responses have been listed in the following context. Revisions will be made accordingly in the revised version.

Comment 1:

For example, authors often used the expression "SOC in soils". This is wrong. That is to say "soil organic carbon in soils".

Response:

We have corrected those redundant expressions in the revised version.

Comment 2:

Another is that authors mixed "organic matter" with "organic materials". They should replace "matter" on L10 of P1871 and L7 of P1881 with "material".

Response: Done.

Comment 3:

Special concern is the method for measuring soil pH. Authors measured soil pH using $CaCl_2$ solution. This is not a good chance for acid soils because exchange Al and others will be extracted by it, resulting in the reduction of soil pH. Thus, authors should not measure soil pH with $CaCl_2$ solutions (please see the method). I think if they measure using different extraction solution, they will get different results and explanations.

Response:

We have considered the potential impacts of different soil pH measurement methods, and used both $CaCl_2$ and double distilled water as extracting solutions in the experiment. We found a very strong linear relationship between pH_{CaCl_2} and pH_{water} (R^2>0.9, please see Fig.1). This suggests that either method will result in the same conclusions and explanations. Since $CaCl_2$ extractions give better repeatable or consistent measurements (Brady and Weil, 2002), we decided to use pH_{CaCl_2} in the model.

We added following sentences in the "Materials and methods" section:

Soil pH was determined in both 0.01 M $CaCl_2$ and double distilled water potentiometrically. Results from these two methods showed very strong linear relationship. Since using $CaCl_2$ solution gives better repeatable results (Brady and Weil, 2002), the pH data from $CaCl_2$ solution were used in the model.

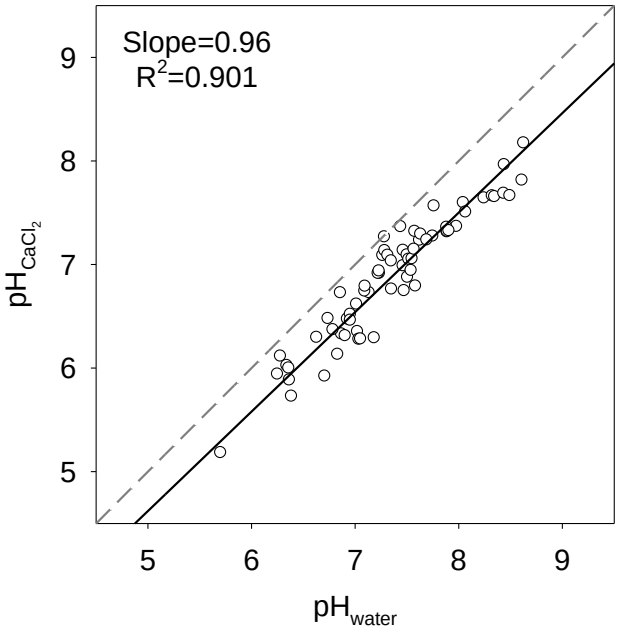

Fig.1 The linear relationship between pH values measured with two different extracting solutions

Comment 4:

I also concern how authors build up the relationship between plant types with SOC (how to transform plant types into figures). Please show it in the part of Materials and methods.

Response:

Thanks for this comment. This may be indeed a little confusing. CART (classification and regression tree) analysis can deal with both categorical and continuous variables simultaneously (Qian, 2009). Hence, we did not need to transform vegetation type to figures.

We revised corresponding sentences in the "Materials and methods" section as follow:

We conducted classification and regression tree (CART) analyses, which can deal with both categorical and continuous variables simultaneously (Qian, 2009), to detect important variables influencing the patterns of SIC, SOC and SIC/STC.

Comment 5

P1882, "This pattern can be explained by two reasons. Firstly, acidification inhibits soil microbial activities and thus the SOC decomposition rate (Francis, 1986). Secondly, N deposition, a major cause of acidification, will lead to a decrease in microbial biomass and oxidase activity (Dalmonech *et al.*, 2010; Fisk and Fahey, 2001; Zak *et al.*, 2008) and to an increase of SOC inputs through increasing vegetation productivity (Neff *et al.*, 2002)". To my

knowledge, N input could also stimulate the growth of microbes and oxidase activity. I think N input mainly stimulate the plant growth and release more organic C into soils thereafter.

Response:

Numerous field and laboratory studies have been conducted to investigate the impact of nitrogen addition to soil organic carbon. Although positive, negative, and neutral effects of added N on rates of decomposition are all observed, the majority of studies suggested that N deposition often seems to impede soil carbon decomposition and decrease microbial biomass (Janssens et al., 2010;Treseder, 2008;Knorr et al., 2005). Of course, it is more clear and definite that N deposition could simulate plant growth and litter input. Thus, we revised this part as following:

Secondly, N deposition, a major cause of acidification, will lead to an increase of SOC inputs through increasing vegetation productivity (Neff *et al.*, 2002), and may induce a decrease in microbial biomass and oxidase activity (Dalmonech *et al.*, 2010; Fisk and Fahey, 2001; Zak *et al.*, 2008).

Comment 6

L7 of P1888, please delete "R".

Response:

This citation is in accordance with http://www.r-project.org/. The author is "R Development Core Team", the title is "R: a language and environment for statistical computing" and the publisher is "R Foundation for Statistical Computing". Thus we think this citation is OK.

References:

Brady, N. C., and Weil, R. R.: The nature and properties of soils, 13th edition., Prentice Hall, New Jersey, 2002.

Janssens, I., Dieleman, W., Luyssaert, S., Subke, J., Reichstein, M., Ceulemans, R., Ciais, P., Dolman, A., Grace, J., and Matteucci, G.: Reduction of forest soil respiration in response to nitrogen deposition, Nat Geosci, 3, 315-322, 2010.

Knorr, M., Frey, S., and Curtis, P.: Nitrogen additions and litter decomposition: A meta-analysis, Ecology, 86, 3252-3257, 2005.

Qian, S. S.: Environmental and ecological statistics with r, Chapman & Hall, 2009.

Treseder, K. K.: Nitrogen additions and microbial biomass: A meta-analysis of ecosystem studies, Ecol Lett, 11, 1111-1120, 2008.