Responses to Reviewer 2:

[Comments] *The results section is poorly developed. I think the authors should focus more on the new elements this study add to current state of SOM knowledge instead of underlining that the results are comparable to previous studies. Thereby, one might think at comparison of measured SOC and TN contents with values published for other regions (are they rather high/low? and what is the meaning of this in global C and N budget?) Consequently, the take home message is not always clear. I don't like the term "C:N stoichiometry" as this refer to "the calculation of quantitative relationships of the reactants and products in a balanced chemical reaction". I think it is more correct to use C:N ratio in this context (as you didn't look to reactions). If you agree, please change it throughout the entire document. The MS is understandable, but the English (grammar) should be improved. I suggest the authors consult a native speaker. Moreover, I believe that the structure of the paper can be improved by avoiding unneeded repetitions and by moving some parts of the introduction section to the materials and methods section.*

[Responses] Thank you very much for your insightful comments and constructive suggestions! According to your comments, we have strengthened the *Results* section in the revised MS through the following two aspects. Specifically, we added the detailed results of ANOVA analysis (Table R1), and also added the exponential function to fit vertical distributions of both SOC and TN (see details below).

Following your suggestions, we have compared our results with previous observations at both national and global scales. We found that the proportion of SOC in the top 20 cm in alpine grasslands (49%) was larger than that in global ecosystems (42%) (Jobbágy and Jackson, 2000). Also, the proportion of SOC in the top 20 cm in alpine grasslands (49%) was larger than that (38%-41%) in China's ecosystems (Wang et al., 2004; Yang et al., 2007). Likewise, the proportion of TN in the top 20 cm in alpine grasslands (43%) was higher than that in global ecosystems (38%) (Jobbágy and Jackson, 2001).These differences indicated shallower distributions of SOC and TN in the Tibetan alpine grasslands than in other vegetation types worldwide. On the other hand, we also observed that SOC and TN content in alpine grasslands in the upper 1 meter were estimated at 10.24 kg C m^{-2} and 1.27 kg N m^{-2}, respectively. SOC content in alpine grasslands was comparable to global average (10.6 kg C m^{-2} by Post et al., 1982), while TN content was higher than global average level (0.73 kg N m^{-2} by Post et al., 1985). In addition, both SOC and TN content were higher than the average for China's soils (7.8 kg C m^{-2} by Yang et al., 2007a and 0.94 kg N m^{-2} by Tian et al., 2006), perhaps driven by low temperature induced by high elevation on the plateau (Fang et al., 1996). These comparisons imply that Tibetan

soils play an important role in China's terrestrial biogeochemical cycles. We have added these discussions in *Discussion* section of the revised MS.

As you mentioned, the term "stoichiometry" was originally used to indicate quantitative relationship between the reactants and productions during a balanced chemical reactions. However, since Redfield (1958) documented a well-constrained ratio of carbon (C): nitrogen (N): phosphorus (P) (i.e. C_{106}: N_{16}: P_1) in marine plankton, the stoichiometric ratio has been widely used to indicate elemental composition of living organisms (Elser, 2000; Sterner & Elser, 2002; Elser *et al*., 2009). More importantly, ecological stoichiometry, which seeks to understand the balance of the multiple chemical elements required by organisms, has become a new discipline in ecology (Sterner & Elser, 2002). The current stoichiometric research focus on both the C: N: P ratio and the stoichiometric relationship among them (i.e. C-N relationship, C-P relationship, and N-P relationship). Likewise, in this study, the term "C: N stoichiometry" referred to both C: N ratio and the stoichiometric relationship between C and N. Thus, the term "C: N stoichiometry" can not be simply replaced by "C: N ratio". Thanks for your understanding!

In addition, following your suggestions, we have invited a native English speaker (Dr. Rebecaa Sherry) to check the MS. Also, we have deleted the repetitions you pointed out, and moved the descriptions about the Tibetan Plateau from *Introduction* to *Materials and Methods* section. Overall, we feel that our manuscript has been greatly improved according to your insightful comments and constructive suggestions. Thank you so much!

[Comments] *A good abstract but try to focus more on the new aspects of this studies.*
[Responses] Yes, we have deleted the comparison of alpine grasslands with global ecosystems in the *Abstract* section.

[Comments] *Pg2 Lines 16-22: This 2 sentences contain many unneeded repetitions e.g. you use 3 times "high-latitude ecosystems". I suggest rewriting and making 1 sentence.*
[Responses] Thanks for your suggestions! Following your suggestions, we have combined them into one sentence as follows: "*Soils in high-altitude ecosystems play an important role in the global terrestrial carbon cycle because of their large carbon stock and potential sensitivity to climate warming (Davidson and Janssens, 2006; Yang et al., 2008; Post et al., 2009).*".

[Comments] *Pg2 Lines 23-24: Change "SOC stock in high latitude/altitude ecosystems" into "SOC stock in these ecosystems" in order to avoid the use of this*

word too much.
[Responses] Yes, we have done.

[Comments] *Pg2 Line 25 & Pg 3 Line 5 & Pg 3 Line 7: please refer to examples of biogeochemical models.*
[Responses] Yes, we have done.

[Comments] *Pg 3 Line 6: what kind of "global change"? global climate change"? or "global environmental change"?*
[Responses] The latter (i.e. global environmental change) is more suitable since vertical distributions of SOC are of potential values in understanding how vegetation change will affect ecosystem processes in terrestrial ecosystems. We have corrected it in the revised MS.

[Comments] *Pg 3 Line 23-24: change "in high altitude ecosystems" into "in these ecosystems"*
[Responses] Yes, we have done.

[Comments] *Pg 4 line 14-20: move to beginning of Materials & Methods section (e.g. 2.1. Study area)*
[Responses] Thanks for your suggestions! Following your suggestions, we have moved these descriptions to *Materials & Methods* section of the revised MS.

[Comments] *Pg 4 line 25: replace "we investigated" by "we aim to investigate"*
[Responses] Yes, we have done.

[Comments] *Pg 4 line 25 – Pg 5 line 5: Research objectives should be clear and short. (e.g. deleting the sentence from Pg 4 line 28 – Pg 5 line 1).*
[Responses] Yes, we have done.

[Comments] *Pg 4 line 26-27: I don't think you should mention here: "using data of 405 soil profiles obtained from a regional soil survey conducted on the plateau during 2001-2004", as it will be mentioned in the Materials and Methods section. Deleting this section should allow you to merge 2 main sentences of the research objectives as follows: "…alpine grasslands, by relating SOC and TN…"*
[Responses] Yes, we have done.

[Comments] *Pg 4 line 27: what kind of "changes" do you mean? Temporal changes?*

I think you should use another word (than changes) to clarify.
[Responses] Sorry for your misunderstanding! Here we refer to how the correlation indexes between SOC/TN content and environmental factors change with soil depth. To avoid such confusion, we have changed the sentence to "*We also aim to examine how associations of SOC and TN with environmental factors change along soil profile.*".

[Comments] *Pg 5 Line 1: Use present to describe research objectives, you can for example rephrase the sentence as follows: "Specifically, in this study, we aim to"*
[Responses] Yes, we have done.

[Comments] *Add description of study area (i.e. replace it from intro to beginning of Materials and Methods section).*
[Responses] Yes, we have done.

[Comments] *I suggest adding a map (Topo - DEM - state borders?) to locate your study area with annotation of sample locations.*
[Responses] Thanks for your suggestions! Following your suggestions, we have added one figure to show spatial location of our sampling sites on the plateau (pls. see Fig. 1 in the revised MS).

[Comments] *Pg 5 Line 14: what do you mean by "a ball mill"? Please explain.*
[Responses] Ball mill is a type of grinder used to grind soil samples into extremely fine powder. In this study, soil samples were ground on a ball mill (NM200, Retsch, Haan, Germany) before chemical analysis. We have made it clear in the revised MS.

[Comments] *Pg 5 Line 15: Is this the Walkley and Black method (1934) or a modified version of it? Did you use a conversion factor to correct for incomplete oxidation own to this method? If yes, mention.*
[Responses] The modified Walkley and Black method (1934) was used in this study, and a conversion factor of 1.33 was used to correct for incomplete oxidation involved in this approach. We have clearly stated this point in the revised MS.

[Comments] *Pg 6 Line 1: please, mention the units of the "(amount per volume)" e.g. g C cm-3.*
[Responses] Yes, we have done.

[Comments] *Pg 6 Line 1-2: The exponential relationship is the most used function to*

describe SOC distribution with depth. So I believe that you should refer to other studies using this relationship, either than saying that you established this relationship.

[Responses] Following your suggestions, we have cited the corresponding references to illustrate the widely used exponential relationship between SOC and soil depth in the revised MS (e.g. Jobbágy and Jackson, 2000).

[Comments] *Pg 6 Line 3: Please explain why you refer to equation 3 (to calculate SOC mass by surface unit for specific depth increment?)*

[Responses] Yes, you are right! In this study, the equation 3 was used to calculate SOC content (amount per area, kg C m^{-2}) for five depth intervals (i.e. 0-20, 20-40, 40-60, 60-80, and 80-100 cm). We have clearly explained this point in the revised MS.

[Comments] *Pg 6 Line 5: Not clear to me what you mean by "effect of total SOC content on the vertical distribution". Please clarify or reformulate.*

[Responses] Sorry about that! We have rewritten this sentence as follows: "*to make comparisons among different grassland types and with the global-scale analysis by Jobbágy and Jackson (2000), the relative SOC content for each depth interval (i.e. SOC content for each depth interval was divided by total SOC content in the top 100 cm) was calculated to express its vertical distribution across various soil depths*.".

[Comments] *Pg 6 Line 11: Change "In such analyses" into "In these analyses"*

[Responses] Yes, we have done.

[Comments] *Pg 6 Line 17: It seems to me somewhat strange to use "h" as symbol for depth and Ch for volume % of > 2mm fragments (as C is quite often used to refer to carbon). I suggest using "d" and "Cd".*

[Responses] Sorry about that! We have corrected them according to your suggestions.

[Comments] *Pg 6 Line 18: replace "organic carbon (g kg-1)" into "organic carbon concentration (g C kg-1)"*

Pg 6 Line 19: replace "(g cm-3)" by "(g C cm-3)"

Pg 6 Line 20-21: Change "organic carbon content for each profile (g C cm-2)" into "organic carbon mass by surface unit for specific depth increment of the profile (g Ccm-2)"

[Responses] Yes, we have done.

[Comments] *Pg 6 Line 25 – Pg 7 Line 1: How are they interpolated/what kind of interpolation technique was used?*

[Responses] Based on Kriging approach, the climatic data were spatially interpolated to $0.1^{o} \times 0.1^{o}$ from the records of 43 meterological stations located above 3000 meter across the plateau (Piao et al., 2003). We have clearly stated this point in the revised MS.

[Comments] *Pg 7 Line 5 - 11: This section can be eventually moved to "2.1. Study area"*

[Responses] Yes, we have done.

[Comments] *Pg 7 Line 13: ANOVA is mentioned here in the text but in fig 1 & 2 you mention Tukey test. Nevertheless, I believe that ANOVA can be used to test effect of interactions of input variables or to test the effects on different depth increments. Moreover you should mention in the Material and Method section (and explain or refer to statistical handbook which explains) all the statistical test/analysis, so as well the Tukey test.*

[Responses] Sorry for your misunderstanding! In fact, during ANOVA analysis, Tukey test is widely used to examine whether the effects are statistically significant (Sokal and Rohlf, 1994). We have clearly stated this point in the revised MS, and also cited the statistical handbook (i.e., Sokal and Rohlf, 1994) in the revised MS.

[Comments] *Pg 7 Line 14-15: Why did you use 'reduced major axis' as regression method?*

[Responses] In general, ordinary least squares (OLS, type I regression) aims to predict one variable from the other variable, while reduced major axis (RMA, type II regression) aims to examine the linearity of the relationship between two variables. During C-N scaling analysis, it is very interesting to know whether N scales isometrically with respect to C (i.e. the scaling slope of the relationship between N and C is not statistically different from 1.0), while not predict N from C. That's why reduced major axis is dominantly used in N-C scaling analysis (e.g. McGroddy et al., 2004; Niklas and Cobb, 2005; Kerkhoff et al., 2006; Cleveland and Liptzin, 2007; Elser et al., 2010).

[Comments] *Pg 7 Line 16-18: this is evidence. Did you use specific analysis? If yes mention this otherwise I suggest deleting it.*

[Responses] Following your suggestions, we have deleted this sentence in the revised MS.

[Comments] *The results are poorly developed. Please give (and interpret) the results of (table of) ANOVA. Moreover, you mentioned in Materials and Methods section that you applied exponential model to describe the vertical heterogeneity of the studied soil properties. So you should give parameter values (with 95% confidence limits) and I believe you can integrate these curves in Fig 1 and 2.*

[Responses] Thanks for your suggestions! Following your suggestions, we have listed the results of ANOVA in Table R1. Given that few items included in Table R1, we described these statistical parameters in *Results* section of the revised MS. Also, we added the exponential models to fit vertical distribution of both SOC and TN content in Fig. 2 and Fig. 3 of the revised MS, and listed the corresponding parameters as well as their 95% confidence intervals in Table R2 and Table R3.

Table R1 Summary of ANOVA analysis for the effects of grassland type on vertical distributions of SOC and TN.

Item	*df*	*F*	*P* value
SOC			
Grassland type	1	23.6	< 0.001
TN			
Grassland type	1	10.4	< 0.01

[Comments] *Pg 7 Line 25: You mention that this difference is significant @P<0.05, but I don't agree as on the figure it seems that SD = 10, so we have 95% confidence limits (2SD) of [26– 66] which contains 38 and so the difference is not significant. Or did you use other statistical test to examine (sig.) difference of SOC and TN between these classes? Please explain and show results (in tables/graphs).*

[Responses] In this study, ANOVA analysis was conducted to examine the effects of grassland type on vertical distributions of SOC and TN. According to your comments, we double-checked our results, and again obtained the significant difference between alpine steppe and meadow. We listed the detailed statistical results of ANOVA analysis in the revised MS (Table R1).

On the other hand, it should be noted that 95% confidence intervals should be calculated as mean±1.96SE, not mean±1.96SD (Sokal and Rohlf, 1994). Then, we re-calculated 95% confidence interval of the proportion of TN in the upper 20 cm in

alpine meadow as 0.43-0.50. We compared the calculated 95% confidence interval with the corresponding range given by the software package R (R Development Core Team, 2007), and got the similar results (0.43-0.50). Here you can find that it did not cover the average value (0.38) in alpine steppe.

Table R2. Parameters of the exponential curve used to describe vertical distributions of SOC in alpine grasslands. Numbers in parentheses indicate 95% confidence intervals of the corresponding parameter value. The exponential function can be expressed as $y = a\exp^{bx}$, where x is soil depth (cm), y is absolute or relative SOC content (kg C m^{-2} or %), a and b are statistical parameters.

Grassland type	Absolute SOC content				Relative SOC content			
	a	*b*	r^2	*P*	*a*	*b*	r^2	*P*
Alpine steppe	3.6 (3.34,3.92)	-0.022 (-0.024, -0.020)	0.99	<0.001	0.50 (0.45,0.95)	-0.022 (-0.024, -0.020)	0.99	<0.001
Alpine meadow	7.41 (5.32,10.3)	-0.028 (-0.034, -0.023)	0.99	<0.001	0.67 (0.47,0.97)	-0.0331 (-0.039, -0.027)	0.99	<0.001
Total	5.75 (4.42,7.49)	-0.026 (-0.031, -0.022)	0.99	<0.001	0.59 (0.45,0.78)	-0.028 (-0.033, -0.023)	0.99	<0.001

Table R3. Parameters of the exponential curve used to describe vertical distributions of TN in alpine grasslands. Numbers in parentheses indicate 95% confidence intervals of the corresponding parameter value. The exponential function can be expressed as $y = a\exp^{bx}$, where x is soil depth (cm), y is absolute or relative TN content (kg N m^{-2} or %), a and b are statistical parameters.

Grassland type	Absolute TN content				Relative TN content			
	a	*b*	r^2	*P*	*a*	*b*	r^2	*P*
Alpine steppe	0.38 (0.34,0.44)	-0.017 (-0.019, -0.014)	0.99	<0.001	0.45 (0.39,0.51)	-0.019 (-0.021, -0.017)	0.99	<0.001
Alpine meadow	0.75 (0.59,0.96)	-0.022 (-0.027, -0.018)	0.99	<0.001	0.56 (0.45,0.70)	-0.026 (-0.030, -0.022)	0.99	<0.001
Alpine grasslands	0.59 (0.49,0.73)	-0.020 (-0.024, -0.017)	0.99	<0.001	0.51 (0.41,0.61)	-0.023 (-0.026, -0.019)	0.99	<0.001

[Comments] *Pg 8 Line 2-3: OK, not significant but there is some trend (please mention this as well in the MS, as you will come back on it later in the Discussion section)*

[Responses] Yes, we have described this point as follows: "*soil C: N ratio in alpine grasslands did not exhibit significant change along soil profile, but tended to decline with soil depth*".

[Comments] *Pg 8 Line 16-17: Please use more references and values to state this.*

[Responses] Thanks for your suggestions! Following your suggestions, we have compared our results with previous observations at both national and global scales. We found that the proportion of SOC in the top 20 cm in alpine grasslands (49%) was larger than that in global ecosystems (42%) (Jobbágy and Jackson, 2000). Also, the proportion of SOC in the top 20 cm in alpine grasslands (49%) was larger than that (38%-41%) in China's ecosystems (Wang et al., 2004; Yang et al., 2007). Likewise, the proportion of TN in the top 20 cm in alpine grasslands (43%) was higher than that in global ecosystems (38%) (Jobbágy and Jackson, 2001).These differences indicated shallower distributions of SOC and TN in the Tibetan alpine grasslands than in other vegetation types worldwide. On the other hand, we also observed that SOC and TN content in alpine grasslands in the upper 1 meter were estimated at 10.24 kg C m^{-2} and 1.27 kg N m^{-2}, respectively. SOC content in alpine grasslands was comparable to global average (10.6 kg C m^{-2} by Post et al., 1982), while TN content was higher than global average level (0.73 kg N m^{-2} by Post et al., 1985). In addition, both SOC and TN content were higher than the average for China's soils (7.8 kg C m^{-2} by Yang et al., 2007a and 0.94 kg N m^{-2} by Tian et al., 2006), perhaps driven by low temperature induced by high elevation on the plateau (Fang et al., 1996). These comparisons imply that Tibetan soils play an important role in China's terrestrial biogeochemical cycles. We have added these discussions in *Discussion* section of the revised MS.

[Comments] *Pg 8 Line 22-24: Please explain why.*

[Responses] The shallower root distribution in high-altitude ecosystems may be due to physical barriers inhibiting root growth in cold regions, such as permafrost and water-logging (Jackson et al., 1996).

[Comments] *Pg 9 Line 3-11: I believe you can make this section more clearly by shortening it.*

[Responses] Sorry about that! We have made this section more clearly in the revised MS.

[Comments] *Pg 9 Line 23: Is figure 2 the right figure to refer to? (Should it not be fig 3?)*
[Responses] Sorry about that! It should be Fig. 3. We have corrected it in the revised MS.

[Comments] *Pg 9 Line 24-29. These 2 sentences contain more or less the same information. Please delete overlap and merge them.*
[Responses] Yes, we have done.

[Comments] *Pg 10 Lines 3-12: This analysis is carried out regardless land use (vegetation cover).I believe you should do it land use depended to make comparison with other studies possible. (Maybe ANOVA can be useful statistical tool in this context)*
[Responses] To understand whether vegetation types potentially affect the pattern, we examined the associations of SOC/TN and environmental factors at different depth intervals for alpine steppe and meadow, respectively. Our results showed that, the associations of SOC/TN and environmental factors decreased with soil depth in both alpine steppe and meadow, suggesting that such pattern is irrespective of ecosystem types (Fig. R1,2). Considering that too many figures have been contained in current MS, we do not incorporate Fig. R1,2 into current MS since they do not provide two much new information. Thanks for your understanding!

[Comments] *Pg 10 Line 18: Please explain what you mean by: "may exhibit divergent dynamics along environmental gradients"*
[Responses] The labile and recalcitrant carbon may exhibit different dynamics along environmental gradients. For instance, labile carbon may be more sensitive to fluctuations in environmental conditions than recalcitrant carbon. We have clearly stated this point in the revised MS.

Fig. R1. Correlations of SOC (a-d) and TN (e-h) in alpine meadow with environmental factors at different soil depth intervals. (a, e): mean annual temperature, (b, f): mean annual precipitation, (c, g): clay content, (d, h): sand content. ***: $P < 0.001$, **: $P < 0.01$, *: $P < 0.05$.

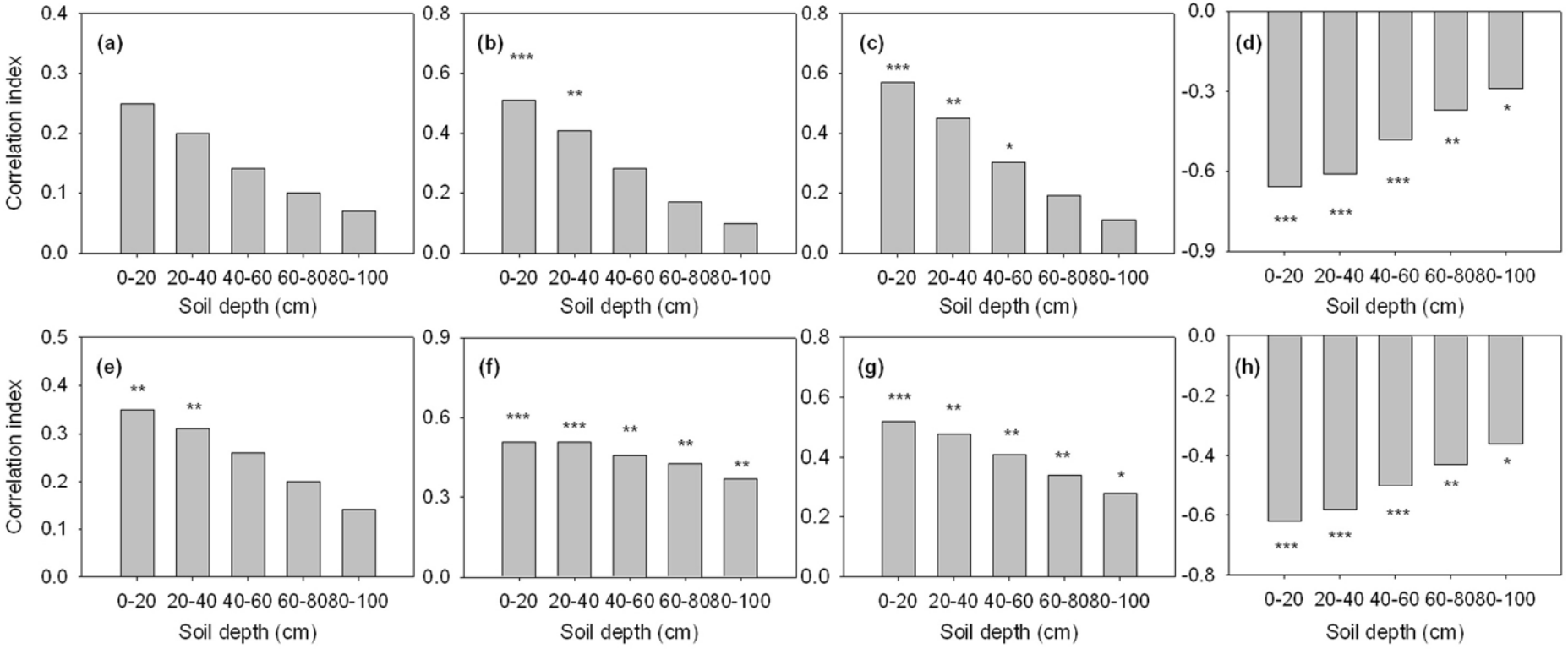
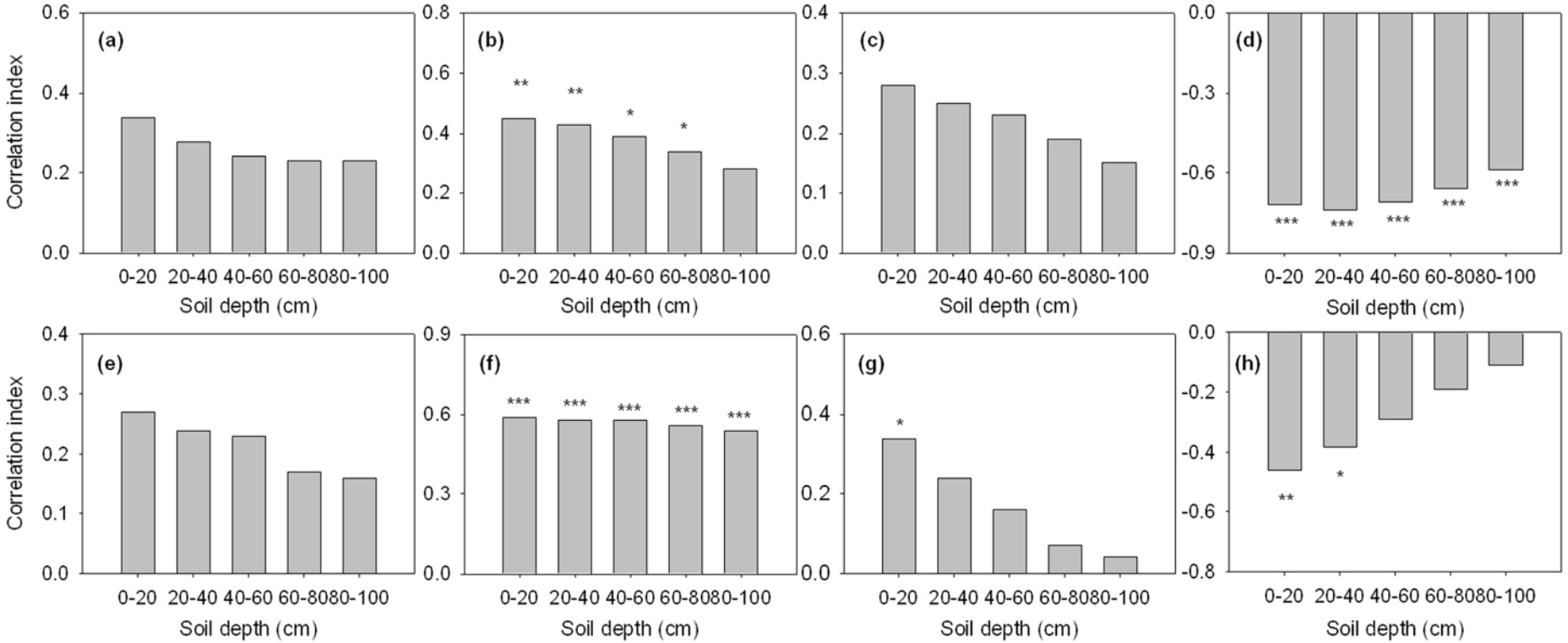


Fig. R2. Correlations of SOC (a-d) and TN (e-h) in alpine steppe with environmental factors at different soil depth intervals. (a, e): mean annual temperature, (b, f): mean annual precipitation, (c, g): clay content, (d, h): sand content. ***: $P < 0.001$, **: $P < 0.01$, *: $P < 0.05$.



[Comments] *Pg 10 Line 20-22: I agree for climate variability, but not for soil type. Moreover you should not mention "(personal communication with Prof. Pete Smith)" but use reference to article(s) or formulate it just in a hypothetical way.*
[Responses] Thanks for your comments! Following your comments, we have deleted the previous description about "soil buffering capacity", and rewritten this sentence in a hypothetical way as follows: "*the decreasing variability in environmental factors along soil profile may contribute to such pattern*".

[Comments] *Pg 10 Line 22-25: Reformulate this section in order to avoid unneeded repetition.*
[Responses] Yes, we have reformulated this section as follows: "*Compared with surface soil, the effects of external environmental factors are becoming less important in deep soils due to soil buffering capacity. For instance, a recent analysis by Luo et al. (2009) demonstrated that temperature and moisture content in deep soils in the Tibetan alpine grasslands vary much less than those in surface soils.*".

[Comments] *Pg 11 Line 4: I suggest replacing "(0-20 vs. 20-80 cm. 0.39-11.20 and 0.02-4.52 kg m-2)" by "(i.e. 0.39-11.20 and 0.02-4.52 kg C m-2 for 0-20 and 20-80 cm, respectively)"*
[Responses] Yes, we have done.

[Comments] *Pg 11 Line 13: Replace "As a result," by "The results show that".*
[Responses] Yes, we have done.

[Comments] *Pg 11 Line 17: What is an "isometric relationship"? What do you mean by this term? I believe it's better to use the term "linear relationship" in this context.*
[Responses] The isometric N-C scaling relationship indicates the slope of the log-log relationship between carbon and nitrogen is not statistically different from 1.0 (McGroddy et al., 2004; Niklas and Cobb, 2005; Kerkhoff et al., 2006; Cleveland and Liptzin, 2007; Elser et al., 2010). We have clearly defined "isometric relationship" in the *Introduction* section of the revised MS.

[Comments] *Pg 12 Line 3: Insert "that" between "indicates" and "carbon".*
[Responses] Yes, we have done.

[Comments] *Pg 12 Line 10-13: How and why?*
[Responses] Good questions! Carbon-nitrogen interactions are of great concerns in current global change research due to potential nitrogen regulation on future carbon

sequestration in terrestrial ecosystems (Hungate et al. 2003, Luo et al. 2004, Reich et al. 2006). It has been suggested that terrestrial N accretion may be insufficient for additional carbon sequestration in land ecosystems (Hungate et al. 2003). Therefore, our understanding of carbon-nitrogen interactions is necessary to realistically predict future carbon sequestration in forest ecosystems (Luo et al. 2006a, Reich et al. 2006a, Gruber and Galloway 2008, Reay et al. 2008, Janssens and Luyssaert 2009). Our results indicated that carbon and nitrogen was closely coupled in soil at different depths. The close soil carbon-nitrogen coupling observed in this study, together with those from the successional gradient (e.g. Vitousek, 2004), suggest that natural ecosystems may have intrinsic capacity to accrue nitrogen to sustain carbon sequestration over the long-term scale (Luo et al. 2006a), and thus should be considered when projecting carbon sequestration in terrestrial ecosystems under future global change scenarios (Schimel et al., 1997; Luo et al., 2006b). Specifically, the stable soil carbon: nitrogen ratio, together with the log-log linear function between nitrogen and carbon should be incorporated into land surface models to predict future carbon dynamics in alpine grasslands on the Tibetan Plateau. We have added these discussions in the revised MS.

[Comments] *Fig. 1: I believe you can add the fit of the exponential model in these graphs, eventually with 95% confidence model error bounds. The later will be useful to show difference between measurement and model uncertainty (=how good you catch the trend).*
[Responses] Thanks for your suggestions! Following your suggestions, we have added the exponential function to fit the decreasing trends of both SOC and TN along soil depth in the revised MS (Fig. 2, 3). Also, we listed the model parameters and their 95% confidence intervals in the revised MS (Table R2, 3).

[Comments] *Please mention as well in the Material and Method section that the Tukey test was used and explain/refer to statistical handbook which explains this test.*
[Responses] Yes, we have done. During ANOVA analysis, Tukey test was widely used to examine whether the effects were statistically significant (Sokal and Rohlf, 1994). We have clearly stated this point in the revised MS, and also cited the classical statistical book in the revised MS.

[Comments] *Change units in label of vertical axis into "(kg C m-2)".*
[Responses] Yes, we have done.

[Comments] *Fig 3: Change units in label of vertical axis into "(kg N m-2)".*
[Responses] Yes, we have done.

[Comments] *Fig 4: Why are sub-plates (d) and (h) upside down given? I think this should be a lay-out mistake, so please correct.*
[Responses] It should be noted that both SOC and TN contents were negatively correlated with sand content (Fig. 4d,h), in contrast with positive correlations with other environmental factors (i.e. MAT, MAP, and clay content). Moreover, the negative association tended to be weaker along soil profile. Thus, it is normal that these two sub-panels are upside-down shown.

[Comments] *Fig 5: Please mention units of axis (i.e. horizontal axis = "kg N m-2"and vertical axis = "kg C m-2"?)*
[Responses] Yes, we have done.

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