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Interactive comment on "Soil organic carbon in the Sanjiang Plain of China: storage, distribution and controlling factors" *by* D. Mao et al.

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Responses to the Prof. Ding's comments (bgd-11-C6414-2014)

Dear editor, We have received the comments on our manuscript entitled "Soil organic carbon in the Sanjiang Plain of China: storage, distribution and controlling factors" (bgd-11-14765-2014). We are very grateful for having the opportunity to revise our paper. We like to thank the reviewers for their constructive comments and advices, which have improved the quality of this manuscript. We have tried our best to address these comments. Our responses to the reviewer's comments are attached. We hope you would be satisïňĄed with the revised manuscript. If you have any questions about this paper, please feel free to contact us.

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Interactive Discussion
Discussion Paper

Responses to the comments from Reviewer Detailed comment 1: “This paper reported the storage of SOC in the Sanjiang Plain of Northeast China by averaging the data of 419 soil proïňĄles. This study should be interesting for some readers. What I concern is how authors evaluate the inïňĆuence of fertilization on SOC. In the section of Materials and methods, authors did not show detailed information. I guess that authors just compare the data of SOC with the application rate of fertilizer on the county scale. This may miss lead because the history of cropland also signiïňĄcantly affected the level of SOC. How authors excluded such effects?” Response: We thank the reviewer’s comment. Generally, fertilization increase the SOC storage by enhancing the carbon input from plant productivity and crop biomass (Ren et al., 2012, Zhao et al., 2013). But, increasing fertilization may have a negative net effect on carbon sequestration because organic carbon mineralization neutralizes the carbon input (Russell et al., 2005). Influences of fertilization on SOC are complicated, and can be related to the history of cropland, vegetation types, as well as soil types and texture. As mentioned by this reviewer, we just compared the data of SOC with the application rate of fertilizer at the county scale in our manuscript. Following the suggestion by this reviewer, we have described the method about comparing the fertilization amount with SOC at the county scale in section 2.7 (Statistical analysis). In addition, new sentences have been added to discuss this comparison for the 24 counties in the revised manuscript.

Detailed comment 2: “English grammar is poor and English native speaker should be invited to improve the text. Also please write in concise sentences.” Response: Thanks for this suggestion. We have called for an English language editing service from Elsevier WebShop. The revised manuscript has been improved in English grammar, punctuation and diction.

Detailed comment 3: “In the section of Abstract, authors should give some data to support the ïňĄndings.” Response: We agree this positive advice. We have added major data in the section of Abstract to support the findings.

Detailed comment 4: “P14767, L9,"to be 70.31 Pg C (1 Pg = 1015 g)". This value is

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too low, please cite data from GCB paper (Xie et al., 2007)." Response: Thanks for this comment. The SOC storage value for China reported in Xie et al. (2007) has been cited.

Detailed comment 5: "P14767, L20-23, add references". Response: We thank this positive advice. A reference has been added in the revised manuscript to support this sentence.

Detailed comment 6: "P14773, L5, "for the three depths (30, 60, and 100 cm) were". These are wrong, should be 0-30, 0-60, 0-100 cm." Response: We thank this reviewer's comment. We have replaced "30, 60, and 100 cm" with "0-30, 0-60, 0-100 cm" in the revised manuscript.

Detailed comment 7: "P14772, L5,"The SOC content at a given depth is calculated from the soil organic matter in individual layers and by use of the Bemmelen index (0.58). Ti is the thickness of the ith soil layer." I cannot understand this sentence because authors measure the SOC rather than SOM. So authors do not need ïňĄrst converse "SOC" into "SOM" and then converse "SOM" into "SOC". Please delete it." Response: Thanks for the positive advice. We accept this comment and have deleted the sentence "The SOC content at a . . . the Bemmelen index (0.58)" in the revised manuscript.

Detailed comment 8: "P14775, L12-15, this paragraph should be moved to the section of Discussion." Response: Thanks for this kind suggestion. We accept this comment. These sentences have been moved to the section of Discussion (section 4.5) in the revised manuscript.

Detailed comment 9: "P14776, L5-, these sentences are necessary here?" Response: We agree. This sentence has been deleted.

Detailed comment 10: "P14781, L7-9, please discuss about the inïňĆuence of fertilizer on SOC more detailedly." Response: Thanks for the constructive comment. The influence of fertilizer on SOC has been discussed more detailedly in the revised manuscript.

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Please also note the supplement to this comment:
http://www.biogeosciences-discuss.net/11/C6510/2014/bgd-11-C6510-2014-supplement.pdf

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