

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

D. Mao

maodehua@iga.ac.cn

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Response to comments of Referee 1 (bgd-11-C6485-2014)

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 referees 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 referees's comments are attached. We hope you would be satisfied with the revised manuscript. If you have any questions about this paper, please feel free to contact us.

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Our responses to the comments from anonymous referee 1 are as follows:

Overview of comment: “The MS deals with an interesting issue for soil organic carbon change at the Sanjiang Plain of China. I think this article has the potential to be an interesting addition to the literature. But still needs improve huge.” Response: We appreciate the endorsement and detailed comments from anonymous referee 1 about our manuscript. The manuscript was revised carefully following the comments and detailed responses were concluded as follows:

Detailed comment 1. “I think most readers do not know the site of “Sanjiang Plain”. I suggest you added some sentences to explain of it in introduction. For example, the Sanjiang Plain includes the Amur River (also known as the Heilong, or literally, “Black Dragon” or River), Songhua and Ussuri (also known as the Wusuli) rivers and covers 23 counties in Heilongjiang Province, China encompassing about 109,000 km². The area has extensive wetlands (Wang et al. 2003). (1) Wang A., Zhang S., and Zhang B. A study on the change of spatial pattern of wetland in the Sanjiang Plain. *Acta Ecologica Sinica* 2003, 23(2): 237-243.” Response: Thanks for this positive comment. New sentences have been added to introduce the Sanjiang Plain. In addition, a reference also has been added to support these introductions.

Detailed comment 2. “Land SOC change is a global environmental problem with important political and socioeconomic ramifications. These ramifications result from complex combinations of several factors, including natural factors such as ecological and climatic variations, and anthropogenic factors such as human activities and restoration policies that lead to changes in vegetation cover (Cao et al., 2011, 2014). Given these complexities, finding solutions that are both equitable and ecologically effective is even more challenging (Wang et al. 2011)”. I believe your topic is interest. However, you should make the readers to know the significance of your research. Please download the follow references and improve your introduction and discussion.” (2) Shixiong Cao, Hua Ma, Wenping Yuan, Xin Wang. Interaction of ecological and social factors affects vegetation recovery in China. *Biological Conservation* 2014, DOI:

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10.1016/j.biocon.2014.10.009. (3) Shixiong Cao, Tao Tian, Li Chen, Xiaobin Dong, Xinxiao Yu, Guosheng Wang. Damage caused to the environment by reforestation policy in arid and semi-arid areas of China. *Ambio* 2010, 39(4), 279-283. (4) Yafeng-Wang, Shixiong Cao. Carbon Sequestration may have Negative Impacts on Ecosystem Health. *Environmental Science and Technology* 2011, 45, 1759-1760. (5) Shixiong Cao, Ge Sun, Zhiqiang Zhang, Liding Chen, Qi Feng, Bojie Fu, Steve McNulty, David Shankman, Jianwu Tang, Yanhui Wang, Xiaohua Wei. Greening China Naturally. *Ambio* 2011, 40, 828–831. (6) Shixiong Cao. Impact of China's large-scale ecological restoration program on the environment and society: achievements, problems, synthesis, and applications. *Critical Reviews in Environmental Science and Technology* 2011, 41, 317–335. (7) Lixin Guan, Ge Sun, Shixiong Cao. China's bureaucracy hinders environmental recovery. *Ambio* 2011, 40, 96–99. (8) Shixiong Cao. Socioeconomic road in ecological restoration in China. *Environmental Science and technology*, 2010, 44(14), 5328–5329. Response: We agree and thank this referee's comment. Each recommended reference by referee has been downloaded and readed carefully. New sentences have been added to highlight the significance of our research. And some sentences were refrased to improve the introduction and discussion. In addition, three references recommened by the referee have been cited in the revised manuscript.

Detailed comment 3. In my opinion, the discussion structure should different from results section and focus on the mechanism (the relation between your data and why you find different result from others'). Therefore, there are some work wait you do again. And some policy suggestion seems should be give. Response: Thanks for this kind suggestion. These sentences in section Discussion have been refrased. More sentences focusing on the mechanism have been added to improve this manuscript. In addition, Some policy suggestions have been given, such as the more powers are needed to protect wetlands and effective agricultural managements need to be contributed to reduce the emmisions of greenhouse gases.

Please also note the supplement to this comment:

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<http://www.biogeosciences-discuss.net/11/C6614/2014/bgd-11-C6614-2014-supplement.pdf>

Interactive comment on Biogeosciences Discuss., 11, 14765, 2014.