

## ***Interactive comment on “Evaluating the spatial heterogeneity of soil loss tolerance and its effects on erosion risk in the carbonate areas of South China” by Yue Li et al.***

**Yue Li et al.**

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We are very pleased to learn from your letter about revision for our manuscript which entitled “Evaluating the spatial heterogeneity of soil loss tolerance and its effects on erosion risk in the carbonate areas of South China”. We greatly appreciate your suggestion concerning improvement to this paper, and it is our honor to get your help to improve us. Thank you for your patience and the reviewers for their valuable comments and advices. We have revised the manuscript according to the every single comment which made by the referees and the editors. Moreover, we have made some correction so that we hope meet with your approval. We are sending the revised manuscript according to the comments of the reviewers. We have marked the major changes in red in

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this revised version.(See the manuscript) Thank you for your consideration. Sincerely yours, \*Corresponding Author: Xiaoyong Bai P.S.

Response to editor and Reviewer Comments for se-2016-151

Comments#1: In order to let readers understand the study and progress of soil erosion and soil loss tolerance in foreign and domestic, author should add a bit of references. In addition, there are some mistakes in the reference, such as line 352-253, I suggest author modify it and check the citation format for other documents carefully.

Response:Valuable suggestions! Thank you for your comments. According to your suggestion, we revised the manuscript carefully. Details are in following paragraph and MS.

We added references as follows: [1]Tian, Y., Wang, S., Bai, X., Luo, G., & Xu, Y. (2016). Trade-offs among ecosystem services in a typical karst watershed, sw china. *Science of the Total Environment*, 566, 1297–1308. [2]Li, Y. B., Li, Q. Y., Luo, G. J., Bai, X. Y., Wang, Y. Y., & Jie Wang, S., et al. (2016). Discussing the genesis of karst rocky desertification research based on the correlations between cropland and settlements in typical peak-cluster depressions. *Solid Earth Discussions*, 7(3), 741-750. [3]Luo, G. J., Jie Wang, S., Bai, X. Y., Liu, X. M., & Cheng, A. Y. (2016). Delineating small karst watersheds based on digital elevation model and eco-hydrogeological principles. *Solid Earth Discussions*, 7, 1-28. [4]Bai, X. Y., Wang, S. J., & Xiong, K. N. (2013). Assessing spatial-temporal evolution processes of karst rocky desertification land: indications for restoration strategies. *Land Degradation & Development*, 24(1), 47–56. [5]Bai, X., Zhang, X., Long, Y., Liu, X., & Zhang, S. (2013). Use of 137 cs and 210 pb ex, measurements on deposits in a karst depression to study the erosional response of a small karst catchment in southwest china to land-use change. *Hydrological Processes*, 27(6), 822–829.

Revised of the line 352-353: Li,Y.B., Wang,S.J., Wei,C.F., & Long,J. (2006). The spatial distribution of soil loss tolerance in carbonate area in guizhou province. *Earth &*

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Environment, 34(4), 36-40. (line 357-358)

Comment #2 When researchers were evaluating the harm of soil and water loss in karst area, if only from the perspective of soil erosion modulus, there would be appear a trend that with the increasing harm of soil erosion, soil erosion modulus from low to high, and then from high to low, that is soil erosion to the degree of "soilless can flow", but in fact, the erosion modulus decreases, and at this time rocky desertification area is actually in the expanding stage. So, I suggest that the author can try to evaluate the damage of soil and water loss in karst area in two stages: Under the premise of soil coverage, using soil erosion modulus to evaluate the harm of water and soil loss; When soil erosion is serious and many bare rocks on the hillside, that is rock exposed rate is very high, you can evaluated the harm of water and soil loss by the increase of rocky desertification area. In general, I think the author should describe some ideas for the future research, it can bring some inspires to some researchers who are engaged in studying soil erosions

Response:We greatly appreciate your valuable suggestion concerning improvement to this paper. We entirely agree with your comments! In the later work, we will adopt your suggestions that under the premise of soil coverage, using soil erosion modulus to evaluate the harm of water and soil loss,when soil erosion is serious and many bare rocks on the hillside, that is rock exposed rate is very high, evaluated the harm of water and soil loss by the increase of rocky desertification area. I think it is very helpful to improve the quality of our paper.

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/se-2016-151/se-2016-151-AC1-supplement.pdf>

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Interactive comment on Solid Earth Discuss., doi:10.5194/se-2016-151, 2016.