

## ***Interactive comment on “Effects of rodent-induced land degradation on ecosystem carbon fluxes in alpine meadow in the Qinghai–Tibet Plateau, China” by F. Peng et al.***

**F. Peng et al.**

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This paper analyze the effects of rodent-induced land degradation on ecosystem carbon fluxes in alpine meadow. This manuscript need to be improved before to be published. The discussion are poor and the statements are not Always supported by data.

[Response] Thanks very much for your comments on the manuscript. We have carefully studied the comments and improved the manuscript accordingly, especially in the Introduction and Discussion section. Some statements that are not supported directly by our data were deleted in the discussion part. We hope the revisions will be satisfactory for the publication in Solid Earth.

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The first part of the introduction is boring to read, there are in my opinion too many %. The second goal of the work is not clear

[Response] Thanks very much for your comment. We have re-written the first paragraph of the introduction. The unnecessary data were removed and the second goal of the study also was adjusted.

Page 3005, line 17 There are two ”

[Response] We have replaced the “” by a comma.

Page 3006 line 14 Delete the coma after E

[Response] Done as suggested.

Page 3006 line 24 Add a reference regard soil taxonomy.

[Response] The soil taxonomy and its feature were referred to Wang et al.'s study and World World Reference Base for Soil Resources 2006 was added.

Page 3007 line 10 change plan with plant

[Response] Sorry for the mistake. “plan” has been replaced by “plant”

Page 3007 change C fluxes with CO<sub>2</sub> fluxes

[Response] Thanks for your suggestion. We replaced “C fluxes” with “CO<sub>2</sub> fluxes” all over the manuscript.

Page 3008 use SOC instead of soil organic C

[Response] Done as suggested

Page 3007 I suggest to reduce the paragraph 2.2.2 using the literature of the main analysis and avoiding to describe the analysis again.

[Response] Thanks for your suggestion! The detailed information about the measuring Rs, ER, NEE were deleted. According to another reviewer's suggestion, a table was

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added to describe the device or procedure, and their feature used to measure all the indices.

Page 3008 "The average soil temperature was  $10.02 \pm 1.70$ ,  $9.64 \pm 2.81$ ,  $12.33 \pm 4.02$ ,  $11.0 \pm 2.78$ ,  $12.40 \pm 3.95$  \_C from D1 to D6" This information is not necessary.

[Response] It was deleted.

Paragraph 3.2 . Use always SOC instead of Soil organic carbon In the discussion, In my opinion you don't have only support with your data previous findings of other researches, (lines 6 and 21 "support the above findings") but explain in the discussion the novelty of your results.

[Response] Thanks much for your suggestion. We used the full name once only when they appear for the first time in the text. We re-wrote and re-organize the discussion section. In the new version, we did not only use our results to support the previous findings but to justify our results and focused on meaning of our result for the land degradation processes.

Discussion : The first paragraph is not clear.

[Response] We have re-written this paragraph. We hope it is satisfactory.

Paragraph 4.2 In order to discuss in the detail the soil respiration you have to consider the microbial activity.

[Response] Thanks very much for your suggestion. We have read some papers about the how the microbial activity affects soil respiration with development of land degradation and added discussion in the revised version.

Page 3013 , change Soil organic carbon with SOC

[Response] Done as suggested.

Check all correlation equations. In the text there is written "Root biomass only positively

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correlated with ER (Fig. 3d)" In this case the R2 is only 0.13 The conclusion are not in line with goals of the work.

[Response] Thanks so much for your suggestion. When conducting the linear fitting between ecosystem CO2 fluxes and soil temperature, root biomass, we neglected the P values and just cared whether the fitting is success or not in the Orgin 8.0 software. Based on the P values in Figure 4a and 4d, we deleted the fitting in these two panels. As a result, some statements in the Result and Discussion section were deleted. The linear fitting in Fig. 4a and 4d showed a P value  $>0.05$  therefore in the new version we deleted the fittings. Given a successfully fitting, if R2 was lower than 1, we should claim that ER only positively correlated with RB instead of claiming that RB only positively correlated with ER since we want to compare whether RB affects all the ecosystem CO2 fluxes.

The conclusion are not in line with goals of the work.

[Response] Thanks for your reminding. We have re-written the conclusion to make it in line with goals of the work.

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/6/C1368/2014/sed-6-C1368-2014-supplement.pdf>

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Interactive comment on Solid Earth Discuss., 6, 3003, 2014.

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