

## ***Interactive comment on “Ecohydrological effectiveness of litter crusts in sandy ecosystem” by Yu Liu et al.***

**Yu Liu et al.**

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Dear Referee, Thank you for reviewing the manuscript and providing your short comments. We are glad to response all the comments, which would help to improve the message and the quality of our manuscript. The following is point-to-point responses to your comments.

The effect of Litter crusts on hydrological process in dry sandy ecosystem in China has not been well illustrated till now. This manuscript suggested that litter crusts had a significant effect on soil water holding capacity, water interception capacity, and infiltration through changing soil organic matter, soil porosity and bulk density. The importance of litter crusts is confirmed in this study. The experiments were well designed and data

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was thorough analyzed and interpreted.

Response: Thanks for the reviewer's positive comment.

The specific comments and suggestions are listed as follows: Line 14-15: Please keep the decimal number in one form.

Response: Thanks for your suggestion, we have revised the sentence and keep one decimal places.

Line 36-41: Please add more restoration techniques including afforestation that could result biocrusts in this paragraph.

Response: Thanks for your suggestion, we have added some measurements in this paragraph. “With the increasing harm of desertification, many measurements have been implemented to prevent and combat desertification, such as afforestation, establishment of sand barriers, or spraying reinforcing agents. One widely popular restoration technique establishes straw checkerboards on mobile sand dunes and eroded land.”

Line 49-53: Please change the sentences as” Afforestation can not only produce biocrusts, but litter crusts, which form by the litter : : :” I think this may be easy to follow the logic.

Response: Thanks for your suggestion, we have revised the sentence as “In addition to biocrusts, afforestation also produces litter crusts, which form from the accumulation of litter that resulting from the common influences of wind and water (Jia et al., 2018)”.

Line 78-79: Please use the same expression to describe the study area, i.e., arid areas, dry sandy, or wind-water crisscross erosion region. If use different expression, please give a clear explanation.

Response: Thanks for your suggestion, we have revised the sentence as “Consequently, the environmental conditions have improved and are suitable for the develop-

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ment and growth of biocrusts and litter crusts in the arid areas”.

Line 114-116: Please move the definition to the place firstly used in the Introduction section.

Response: Thanks for your suggestion, we have moved the sentence to Introduction section.

Line 239-240: The phrases of “all these properties” and “all the changes” were not appropriate here. Please change them.

Response: Thanks for your suggestion, we have revised the sentence as “To our knowledge, few previous studies have reported how soil properties change in the litter crusts or how litter crust influences the hydrological processes in sandy lands (Jia et al., 2018)”.

Line 298: what about other plant litter in the literatures, such as locust and pine? If possible, more information related to litter crusts could be discussed here.

Response: Thanks for your suggestion, the effects of the leaves of the pagodatree and the leaves of the pine needles on the water is not studied in this article, and the effects of the broadleaf forest is mainly discussed here.

Line 315: what is the relationship between percolate flux and rainfall intensity? Please make it clear.

Response: Thanks for your suggestion, following other reviewer’s comments, we have deleted the sentence.

Table 1: Please add the difference note among different depth.

Response: Thanks for your suggestion, we have added the difference among different depth by different uppercase letters.

Table 2: Please give a clear description of crust types and amount of water supply in

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the caption or as notes.

Response: Thanks for your suggestion, we have added the crust types and amount of water supply in Table 2 caption.

Figure 1: Please provide the location in figure caption.

Response: Thanks for your suggestion, we have added the location in figure caption, “Figure 1. The vertical soil profiles in bare sandy land and different crusts in the southern Mu Us Desert”.

Figure 4: What is the meaning of the ns in Figure A and B? It seemed that the dashed lines represent the average values or the changing pattern.

Response: Thanks for your suggestion, we have added the notes in the caption.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-579>, 2018.

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