

Interactive comment on “Preferential water flow through decayed root channels enhances soil water infiltration: Evaluation in distinct vegetation types under semi-arid conditions” by Gao-Lin Wu et al.

Gao-Lin Wu et al.

gaolinwu@gmail.com

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We thank the reviewers for arranging time to read and review our paper and providing suggestions and comments, which will help us improve the manuscript. We will try our best to modify and improve the manuscript following the reviewer’s suggestions/comment.

Comment #1:

Revealing the soil water infiltration semi-arid areas from the aspect of alive and de-

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cayed root could better understand the hydrological processes where dried soil layers have a considerable effect on water circulation in soil-plant-atmosphere continuum. Taking the three main types of the vegetation as case study, this manuscript analyzed the initial and steady infiltration and their relationship with the geometry of root path. The experiments were well designed and data was reasonably interpreted. This issue could attract the readers in the scope of this journal. The specific comments and suggestions are listed as follows:

Response: Thank you for your suggestion. Your suggestions were very helpful in making a better manuscript. We will try our best to modify and improve the manuscript following the reviewer's suggestions/comment.

Line 30: Please delete “–when the plants decompose after death–”

Response: Thank you for your suggestion. I am sorry for my carelessness. We will modify the text following the reviewer's suggestion.

Line 33-34: Please delete “using data from a previous study”

Response: Thank you for your suggestion. We will modify the text following the reviewer's suggestion.

Line 35: Please use “allowed us” instead of “was used”

Response: Thank you for your suggestion. We will modify the text following the reviewer's suggestion.

Line 33-34: Please delete “Regarding root geometry”

Response: Thank you for your suggestion. We will modify the text following the reviewer's suggestion.

Line 40: Please delete “and”

Response: Thank you for your suggestion. I am sorry for my carelessness. We will

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modify the text following the reviewer's suggestion.

Line 42: Please use "information" instead of "knowledge base"

Response: Thank you for your suggestion. We will modify the text following the reviewer's suggestion.

Line 58: Please use "occupies" instead of "represents"

Response: Thank you for your suggestion. We will modify the text following the reviewer's suggestion.

Line 75: Please delete "and"

Response: Thank you for your suggestion. We will modify the text following the reviewer's suggestion.

Line 81-82: Please delete "-"

Response: Thank you for your suggestion. I am sorry for my carelessness. We will modify the text following the reviewer's suggestion.

Line 93-95: What is the goal?

Response: Thank you for your suggestion. The goal is to better understand the effects of root channels of different degraded vegetation types on soil moisture and infiltrability, which are conducive to provide knowledge base in the research of hydrological processes in degraded soils in water-scarce regions. We will add the required information in the revised version of the manuscript.

Line 100-101: The range of the altitude is for experimental site or for Ningxia region?

Response: Thank you for your suggestion. The range of the altitude is for experimental site. We will modify the text following the reviewer's suggestion.

Line 103: total rainfall depth or precipitation?

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Response: Thank you for your suggestion. I am sorry for my carelessness. We will use “precipitation” instead of “total rainfall depth”.

Line 118: Could you present the reason for the plant death?

Response: Thank you for your suggestion. Large-scale vegetation construction could aggravate soil water consumption and gradually lead to soil desiccation in arid and semi-arid regions. In addition to woodland, some shrubs and artificial grasslands resulted in soil desiccation. However, water scarcity is the key limiting factor for the growth of vegetation in semi-arid regions. Therefore, long-term lack of water in the soil may be a factor leading to the death of vegetation. In addition, anthropogenic logging is also a factor leading to the death of vegetation.

Line 130-132: Please make this sentence clear.

Response: Thank you for your suggestion. The manuscript will be carefully revised to convey clear meaning.

Line 133: Please move Fig. 2 to the result section and give a clear description.

Response: Thank you for your suggestion. I am sorry for my carelessness. We will modify the text following the reviewer’s suggestion. And, we will move Figure 2 to the result section and carefully modify the text to convey clear meaning.

Line 169-171: Please check this description based on the Table 1.

Response: Thank you for your suggestion. I am sorry for my carelessness. We will modify the text following the reviewer’s suggestion.

Line 13: Please add the note of the letters.

Response: Thank you for your suggestion. We will add the required information in the revised version of the manuscript.

Line 191: Please add the note of the fitted line, e.g., Y1 for decayed root, Y2 for alive

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root?

Response: Thank you for your suggestion. We will add the required information in the revised version of the manuscript.

Line 226: Could you present a group of real scenario photos taken after infiltration?

Response: Thank you for your suggestion. We will add a group of real scenario photos taken after infiltration in the revised manuscript

Line 244: Please change “or” to “and”.

Response: Thank you for your suggestion. We will modify the text following the reviewer’s suggestion.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-266>, 2020.

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