

Interactive comment on “Interrill erosion, runoff and sediment size distribution as affected by slope steepness and antecedent moisture content” by M. B. Defersha et al.

Anonymous Referee #5

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General comments:

This study conducted the rainfall simulation experiment for three types of soil in Ethiopia and investigated the effect of slope angle and antecedent moisture on interrill erosion processes. This manuscript includes experimental data seemed to be of good quality and useful, to interpret the interrill erosion processes and evaluate the previous models. However, it was really too hard for the reviewer to understand the manuscript, because of poorly organized manuscript, too many tables and unsuitable figures.

Throughout the manuscript, there are many grammatical errors in English, prolonged

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sentences, and repeated descriptions of same explanation. In the methodology section, too many sections and poor description also made the reviewer in confusion and hard to understand what the authors want to do. In addition, the “Results and discussion” had also too many sections and was poorly organized and prolonged.

The evaluation of previous models was based on the statistical analysis, but the description of basic information and data setting for statistical analysis were not sufficient. Some parts of “results and discussion” stated only results, and needs description based on the data and comparison to the literature with critical and scientific discussion. In the “conclusion”, also prolonged, the contents include something like discussion and did not summarize and conclude this study.

The authors should be strongly recommended to re-organize the manuscript, especially the methodology section, to divide the “results and discussion” section into the different sections of “results” and “discussion”, and to make the conclusion more concisely. The reviewer strongly recommends the re-organized manuscript to be proofread by native English researcher, before acceptance for publication.

Specific comments:

[Introduction]

1) The authors should be strongly recommended to simplify and re-organize the description, especially about the model description, which could be stated in the methodology and/or discussion sections. This prolonged introduction could make the readers in confuse and hard to understand.

[Methodology]

2) The methodology has too many sections to be understood. The material and methods should be organized well. This section would be better to be composed of 3 parts, which are the site description, experimental design and analysis. The section of “2.2 Experimental design” has too many parts. They should be divided into the two parts of

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experiment and analysis, and should be stated concisely.

3) 2.1 Description of the study area: In this section, more detail description had better to be added, such the location and characters of the study site (or, sample collection site) as latitude, longitude, geomorphology, geology and landuse.

4) The sections of 2.2.1 and 2.2.3 can be compiled as the description of rainfall simulation equipment.

5) P6454L2: The company, type, city and country of the company should be expressed in the sentence which introduced the rotating disc type rainfall simulator.

6) 2.2.1 and 2.2.3: Figure of Rainfall simulator and soil pan would be needed to let the reader understand the design of experiment equipment and sampling collection. Figures 3 and 4 are hard to be understood.

7) 2.2.3: Though the authors indicated the problem associated with edge and size effects of plot scale experiment, but did not refer the reason why the design of Bradford and Foster (1996) had been applied in this study. Furthermore, as the design of soil erosion pan was not indicated in the figure, the reader cannot understand where the splash-detached sediment comes from, target area or buffer zone, and what the soil buffer of the pan is for. If the design of soil erosion pan is indicated in the figure, it can help the readers to understand the experiment and following results and discussion.

8) 2.2.4: The experimental design and setting are pretty hard to be understood. Why the authors conducted the rainfall simulation in two sequences? The reviewer could not understand the experimental design of rainfall simulation, sequences and the timing of sample collection, mainly due to the grammatical error and lack of adequate explanation of Mayer (1981) to be cited. The authors should be strongly recommended to explain the experimental design and its objective clearly and concisely. The use of table would help the authors to make clear explanation.

9) 2.2.5: Did the authors measure the splash detachment only in the first sequence,

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or both? These 5 minutes-interval samples seemed to be evaluated and could not be found in "results and discussion". How did the authors treat them in the analysis?

10) 2.2.7: More detail information is needed about the measurement of shear strength and erodibility.

11) 2.2.8: What is two replications? If the authors conducted the measurement of each experiment setting with two replications, the description should be stated in the explanation of experimental design. The reviewer could not find which data and how many samples were used for the statistical analysis.

12) 2.2.8 and 2.2.9 can be compiled in the section of "analysis" and stated more concisely.

[Results and discussion]

13) 3.1: P6458L27: How did the authors evaluate the state and degree of "aggregated"? The description about the definition of the aggregate degree and stability in this study would be needed.

14) 3.1: P6459L7-18: In this paragraph, the description based on the data seemed to be not adequate.

15) 3.1: P6459L23-28 "increased resistance by 20.81%": How was the resistance to aggregate breakdown evaluated, or calculated? What data was based on? It should be stated in the methodology section.

16) 3.1: P6460L18-P6461L9: The description of results was hard to be understood. Furthermore, the results were neither compared to literature nor discussed here scientifically.

17) 3.2: P6461L12: Why did the authors evaluate only the last three 15-min sampling periods for runoff rate?

18) 3.3: P6463L5-12: Where should the reader find the data described in this part?

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Please state the referred table or figure.

19) 3.3: P6463L14: "Soil B at 25%" -> "Soil B at 45%" is correct?

20) 3.3: P6463L21: In Table 7, what does each column of the upper line indicate? Explanation is necessary for upper lines to be understood.

21) 3.3: P6463L23: "decreased erodibility of Soil A by 48.6%" How is the erodibility and its decrease evaluated?

22) 3.3: P6463L29-P6464L3: What does the "percentage of splash transported in overland flow" mean? Can the reviewer find the results somewhere in the figure or table?

23) 3.3: Table 10 is not conspicuous. This type of results is usually stated in the matrix of correlation coefficient with asterisks denoting significance level between parameters.

24) 3.3: P6467L5-9: The reviewer wonders if only the results from the statistical analysis can attribute the limiting process or not. Scientific discussion is necessary for this.

25) 3.4: P6467L24: What is "the availability of these particles in the original soil materials"?

26) 3.4: P6468L8-17: The explanation and Table 9 were hard to be understood. The figure would be more useful to explain what the authors want to explain.

27) 3.5: P6469L13-14: The grammar of this sentence is wrong. Table 2 maybe better to be referred?

28) 3.5: P6469L15: What is the "effect"?

29) 3.6 and 3.7: What were the findings the authors want to show? No scientific discussion was found in these sections.

[Conclusion]

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30)4.: P6472L12-P6473L17: The conclusion of this manuscript was not sufficiently summarized and concluded and hard to be understood. The contents stated in the "Conclusion" of present manuscript like a general discussion. The authors should be recommended to rewrite the conclusion concisely.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 6447, 2010.

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