

Interactive comment on “Behavior analysis by model slope experiment of artificial rainfall” by M. C. Park

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Anonymous Referee #2

This paper is an interesting work, attempting to propose a warning of rainfall-induced slope failure, based on a real-time monitoring system of pore water pressure or matric suction. The comparison between the model slope experiment with rainfall seepage with the unsaturated slope stability analysis method is an interesting way to validate the results presented. However, the reviewer finds that the significance of this study not clearly presented and discussed in a Discussion part. The paper, in its actual form, presents well the experiments realized, but not enough the results obtained from it. I then suggest to add a Discussion part on the paper to improve its significance and

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impact.

Moreover, I have some specific comments (see below): 1) Concerning the “Material and Methods” part (pages 4163 to 4166): I suggest to cut this part in two sub-sections. The first one can presents the experimental model, and the second one can presents the tools used to analyze the model. Grouping everything as actual is confusing for the reader.

- Answer : If it is possible to divide “Material and Methods” part into experimental and numerical analysis part, I will modify it in order for readers to understand better.

2) Concerning the “results and discussion” part (pages 4166 to 4169): Again, I suggest to cut this part to make it more clear. The discussion part had to be separated and completed. Finally, I suggest to do some technical corrections, listed bellow:

- Answer : I will rewrite “Results and Discussion” part more clearly and complete it by separating “Discussion” part.

3) p 4163-l.3: I suggest to use the word “unstable” and not “unsteady”, which is less commonly used.

- Answer : Since the word ‘unsteady’ in the text means ‘unsteady flow’, ‘unsteady’ is probably more accurate.

4) p 4163.: I can’t find the call for the Figure 1 in the text. You have to add it.

- Answer : Thank you for a good point. I’ll add Figure 1 to the text.

5) p 4163. L24: What is SW?

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- Answer : It is the SW in the unified soil classification system and means 'The classification of the Soil'.

6) p 4163-4164: I can't find neither call for the Table 1, and the Figure 2.

- Answer : I will specify Figure 2 and Table 1 in the text.

7) p 4165. L16: The graph of the Figure 3b is not presented.

- Answer : Fig. 3b is an information[contents] on the hydraulic conductivity function and I'll add it to the text.

8) p 4165. L20: It seems that the model of the numerical analysis is in 2D, and the experiment is in 3D. Is there an influence coming from this difference ?

- Answer : These effects can be seen to be minimized because the slope of the model was homogeneously composed in an experiment. Also, the characteristics of the ground is cross-anisotropic ($k_x=k_y \neq k_z$), so its effect is not large.

9) p 4166. L 4-5: "which the design standards have presented" : what does that means ?

- Answer : It means that standards and procedures about the limit equilibrium analysis in the design criteria are presented.

10) p 4166. Equation 1: I suggest to give another name to the base length variable (lbase). This is really confusing in Italic. It seems like a divide sign.

- Answer : Readers might be confused on that. I will change lbase into the capital letter

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11) p 4166 Equation 2.: Please remind the meaning of the different variables of the equation.

- Answer : I will specify the meaning of each variables in the equation 2.

12) p 4166. L16: I'm not sure that it is really the Figure 5 and the Table 3 which are showing the results that you are presenting in this paragraph. It seems to me that the results, state in this paragraph, are presented from the Figure 5, and the results of the Table 3 are presented from the line 20.

- Answer : Figure 5 presents the change in a volumetric water content according to the time. Since the time that volumetric water content is changed and its change amount by rainfall seepage according to the position of the sensor and the time taken until the slope failure after volumetric water content is changed by rainfall seepage are important. Please refer to Table 3 about this.

13) p 4167.L12: Here again, in this paragraph, you don't present the results of the both Figure 6 and Table 4.

- Answer : "Ditto above" answer. Figure 6 and Table 4 shows the measurement results of matric suction.

14) p 4170: Please, remove "Summary and". It's only the Conclusion part.

- Answer : I will delete "Summary and".

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