Hydrology and Earth System Sciences Discussions

Interactive
Comment

Interactive comment on "Experimental analysis of drainage and water storage of litter layers" *by* A. Guevara-Escobar et al.

Anonymous Referee #1

Received and published: 8 August 2007

GENERAL COMMENTS: The authors present a very interesting topic about litter layers. They carried out a laboratory experiment to investigate the effects of layer thickness, rainfall intensity and the underlying soil matrix on the storage dynamics of three types of litter i.e., poplar leaves, fresh grass and woodchips. Since less is known about the role of litter layers in a forest, this paper is a good extension of the current state of knowledge in hydrology and therefore I think it certainly fits within the scope of HESS. However, I find the overall impression of the paper sloppy with units, numbers and figures and lacks from a clear scope and is sometimes difficult to follow. In the following sections this is explained.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

EGU

SPECIFIC COMMENTS:

1. The authors state in their abstract, introduction and outlook, that this study is mainly important for soil erosion control. Although, I do not contradict this importance, I personally think this study has at the moment a much higher value for interception studies. Focusing on interception has a direct and first order relation with the experiments, while the effect on slope stability is an indirect relation. Furthermore, this paper does not answer the question if smoothing translates into greater stability (page 1769, line 11: "The smoothing of precipitation intensities by the leaf layer *may* translate into overall greater stability of hillslopes . . .".), hence I would not focus on soil stability.

2. In the introduction the authors refer to several comparable studies. Since it is important to know if experiments are carried out in the field or in a laboratory, I suggest that the authors also mention this, when citing comparable studies.

3. The structure of the first paragraph of page 1769 is not fluent and clear. Especially, the meaning of the sentence ("Also, transpiration . . ." line 3) is unclear. Consider leaving out this sentence or rewriting the structure of this paragraph.

4. The connection between paragraph line 5 to 7 (page 1770) and the next paragraph is not logical. Consider rewriting.

5. In the Material and Methods Section, it would be much clearer, if a schematic drawing and a photo of the set up is provided. A drawing of the container of test 2 would also be helpful.

6. Explain why these three tests are carried out, by adding the objective to each test description. This would improve the understandability and structure of the paper.

7. Why are only poplar leaves used in test 2? And why is sewage sludge used? As mentioned by the authors the texture of sewage sludge allows a constant

infiltration of water, but why is this necessary? Why not use soil collected from the field?

8. Why do the authors want to estimate model parameters and why did they choose for the Rutter model? Elaborate on this.

9. In the Results and Discussion Section the observations are only described and not explained. It would be valuable if the authors give at least possible reasons for their findings, since it is also a discussion section.

10. How are the water storage capacities of poplar leaves and grass calculated on page 1777, line 4? And how is it possible that these are lower than found by comparable studies?

11. What could be the reason for the high deviation between modelled and simulated drainage rate of wood chips and grass?

TECHNICAL COMMENTS:

1. entire paper: change per mile symbols into percent symbols!

2. p.1768; l.12: add units to storage capacity.

3. p.1769; l.19: I would replace 'reaching the ground' with 'infiltrating'.

4. p.1771; l.12 & 13: change 'stoped' into 'stopped'.

5. p.1771; l.22: " ... at the bottom of *the* container.".

6. p.1773; l.06: add that the 0.2 mm is (probably) the D50.

7. p.1774; l.13: change dC/dt into dC/dt (Equation 1).

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

EGU

8. p.1775; l.6: change dC/dt into dC/dt (Equation 2).

9. p.1775; l.6: replace parameter name fg to f_g, otherwise possible confusion with $f * g$.

10. p.1775; l.21: add "Evaporation was considered negligible during the experiment, ...".

11. p.1777; l.12 & 28: is the rainfall intensity of 9.2 mm/h correct? I think this must be 9.8 mm/h.

12. p.1778; l.12 & 14: is the rainfall intensity of 9.2 mm/h correct? I think this must be 9.8 mm/h.

13. p.1780; l.13: remove second citation to Pitman, 1989 (redundant).

14. p.1783; l.10: is the rainfall intensity of 9.2 mm/h correct? I think this must be 9.8 mm/h.

15. p.1788; fig 1: add legend into figure; Increase size of figure.

16. p.1789; fig 2: add legend into figure; I guess that the order of the subplots is not in the correct order according to the caption (also change references to these subplots in text); Increase size of figure.

17. p.1790; fig 3: add legend into figure; I guess that the order of the subplots is not in the correct order according to the caption (also change references to these subplots in text); Increase size of figure; Add in the caption "... and an underlying soil matrix (circles).".

18. p.1791; fig 4: add legend into figure.

19. p.1792; fig 5: change in x-axis label 'meassuring' into 'measuring'.

20. p.1793; fig 6: increase size of figure; Add litter type also in the figure.

21. p.1794; fig 7: add legend.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 1767, 2007.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

EGU