

Interactive comment on “Shallow water table effects on water, sediment and pesticide transport in vegetative filter strips: Part A. non-uniform infiltration and soil water redistribution” by Rafael Muñoz-Carpena et al.

S. Reichenberger (Referee)

stefan.reichenberger@gmx.net

Received and published: 26 September 2017

Dear authors,

I think this paper is of high relevance and good quality. It constitutes a significant contribution to modelling infiltration in grassed buffer strips.

I don't have too much to add to the comments made by Marnik Vanclooster. Find a few specific comments below that should be addressed in a minor revision.

C1

Introduction:

(1) p. 2, l. 48: The citation “Ohlingerlow and Schulza” seems misspelled, and the reference does not appear in the reference list. Maybe it should read “Ohliger and Schulz”? (2) p. 2, l. 49 and following occasions: The term “bottomland” is not known to me. It seems to be a U.S. expression. Is it synonymous to “floodplain”? (3) p. 2, l. 57: “hydric soils”: hydromorphic soils? waterlogged soils? (4) p. 3, l. 92: “soil depth (z) above the WT”: In fact, z is just the vertical coordinate, isn't it? Fig. 1 a) and eq. 1 suggest that z is positive downward, but for sake of clarity, it should be stated explicitly whether z is defined as positive downward or positive upward. (5) p. 3, l. 95: “L is depth to the WT (i.e. the distance from the surface”: Maybe this could be rephrased more clearly? The phrase is slightly confusing because L is also used as an integration boundary. Maybe “L is the depth of the permanent water table below the soil surface (z = 0)” (6) p. 3, l. 97: “Bouwer (1969) expression”: I guess it should read “Bouwer's”? (7) p. 4, l. 115 and other occasions of “et al.”: “Vachaud et al., (1974)”: should be “Vachaud et al. (1974)” without the comma

Section 2 (Proposed Algorithm)

(8) p. 6, l. 157: “w and b are the width and length of the VFS surface area”: Given that VFS length and width are often confused, it should be clearly stated which is the flow direction: Maybe “w and b are the width (VFS dimension perpendicular to the flow) and length (VFS dimension in flow direction) of the VFS surface area”? (9) p. 7, l. 176-178: Can you explain more clearly why the shift time t_0 is needed? And what would be the physical interpretation of t_0 ?

Section 3 (Testing and applications)

(10) p. 10, l. 255: “predicative”: predictive?

Figures:

(11) Figure 6: “Comparison of the simplified and RE results against Vachaud et al. . . .”:

C2

I can see no results of simulations solving the Richards equation in this graph. There are two curves, but I suppose they belong to two SWINGO calculations with different conductivity functions?

(12) Figure 8: In the lateral drainage case (panels e-h) there is no infiltration at all in region I. That means that that lateral drainage was zero, doesn't it? Can you give the settings of S_0 , K_{sh} and b in the figure caption?

Best regards,

Stefan Reichenberger

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-405>, 2017.