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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Modelling canopy and litter interception in commercial forest plantations in South Africa" *by* H. H. Bulcock and G. P. W. Jewitt

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Review on Modelling canopy and litter interception in commercial forest plantations in South Africa by H.H. Bulcock and G.P. Jewitt

General comments

Generally this paper gives a clear overview of the two model parts which are used to model both canopy and litter interception. The description of the data collection to validate the model is clear as well. Although most of the values of the variables in the model are derived from literature and the proper references are given, I think that the

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description of the model would be clearer when an overview is added of the variables and their values used for the “variable storage Gash model”.
The “variable storage Gash model” presented in this paper shows good results for modelling canopy and litter interception. However, I am pretty curious how the original Gash model would have performed, can the authors comment on that?

Overall the paper is well-structured. However, the introduction contains a lot of formulas and descriptions of models which are repeated in chapter 2 of the article. I think it would make the introduction easier to read when the different models are described less extensive.
In addition, section 2.3 and 2.4 show some overlap in the introduction of variables. In these sections a lot of variables are introduced and explained, which are closely related. Maybe it is an option to combine these two sections, in order to give a more clear explanation about the relation between the variables.
According to the presentation of the results: the amount of tables is large, but they are all pretty small. Combining some of them might make it easier to compare different results. In addition to that, the captions of most of the tables and figures are a bit short and therefore, not always comprehensive without the explanation in the article itself.

Finally, for someone who is not working on interception daily, the terms used are a bit confusing. Especially the different terms used for rainfall rate and gross precipitation (see specific comments for examples). Also the differences between stocks and fluxes are not always very clear. Using the same terms for the same processes would make the paper easier to read.

Specific comments
8295: L7-9: the other symbols are explained in a sentence. It would be more consistent to do that for this explanation as well, instead of an explanation as an

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enumeration
8295: L23: In Valente et al. (1997) the P in the first equation is a R, this makes more sense, as the symbol P is not explained in the text
8296: L1: in equation 3 S_f is presented as a stock and not as a flux; however, the explanation stemflow seems to indicate that it actually represents a flux
8298: L9: canopy storage capacity (instead of canopy capacity)
8298: L17: a reference to the original Beer-Lambert equation might be usefull
8299: L26: I think it is good to write down the full name of CSIR the first time it is used
8300: L18: placing 'but introduces an additional assumption i.e. that,' on a new line, makes the enumeration easier to read
8300: L20: to be concise: gross rainfall intensities instead of rainfall intensities
8301: L10: the first 'and' should be replaced by a comma
8301: L12-13: It seems to me that this sentence is better located in the introduction
8301: L17: I would place a reference here to the original equation
8301: L18: this formula would be more clear when the nominator and denominator of the fractions are placed above each other instead of next to each other
8301: L20-21: This sentences is not correctly formulated
8302: L25: t in St should be subscript
8304: L3: why free throughfall coefficient? In the introduction it is throughfall coefficient
8304: L7-8: this sentence might need some reformulation
8304: L15: parameterised in the model by the drop retention number (q) (reverse the description and the symbol)
8305: L20: R = gross rainfall rate or intensity (instead of R – rainfall rate or intensity)
8305: L21-22: this sentence might need some reformulation
8306: L14: gross rainfall intensity (R) instead of mean rainfall rate
8307: L20: maybe not all the decimals in these formulas have real value
8308: L14-16: this sentence might need some reformulation
8309: L1-2: does not the mosquito net create a sort of new layer of litter interception?
8309: L3-7: these sentences might need some reformulation

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8309: L20: I think that the reference should be to table 3 and 5 and not to fig. 3 and 5
8310: L3-5: this sentence might need some reformulation
8310: L6: a comma before summarized and after 3 makes this sentence easier to read
8310: L26: I think it is better to use or gross precipitation or gross rainfall in the entire paper
8311: L10-12: this sentence might need some reformulation
8314: L2: It might be clearer if a time period is mentioned with these percentages: probably they are values for the total modelled period
8319: For the overview of the complexity of the different models, it might be usefull to also add the parameters used for each model in this table
8330/8332/8333: there is almost no difference between the two lines in these figures when printed in black and white

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 8293, 2012.