

Interactive comment on “Modelling runoff at the plot scale taking into account rainfall partitioning by vegetation: application to stemflow of banana (*Musa* spp.) plant” by J.-B. Charlier et al.

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General comments

The article investigates the runoff at the plot scale taking into account rainfall partitioning by banana plant. Precipitation and runoff were measured on a banana plot of 3000 m² from 06 December 2001 to 02 April 2002. The runoff was modeled with MHYDAS model for 18 flood events. The stemflow function was included in the model coupled with a production and transfer function. The model was successfully calibrated and validated. It is an interesting study highlighting that the stemflow component could be

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significant (in the contrast to the stemflow of the most forest trees) and therefore should be considered adequately. I am only missing stemflow measurements which could be valuable by model calibration and validation. Anyway I think that the results of the study could be interesting for some readers of HESS and I recommend the manuscript for publication with minor revisions.

The article is well written and structured. There are, however some areas that require minor corrections for further improvement:

1. The original contribution of the study needs to be clear in the Introduction and Conclusions.
2. Some information about banana plants on the plot, such as plant density, plant height, stem diameter, LAI etc. might be useful for further comparisons. Are these characteristics changing with time? If yes, was that considered in the model?
3. I am missing uncertainties of the all reported results (e.g. standard deviations, standard errors) in the text and in the tables. I would also recommend to include model statistics such as the RMSE.

Specific comments

1. Page 4309, lines 18, 19: Definition of interception loss E_i – interception E_i , which is the water stored in the canopy and evaporated mainly before it reaches the soil – should be corrected – that water never reaches the soil, it completely evaporates. Otherwise the water balance equation (equation 1) is not valid.
2. Page 4316, lines 6, 7: I suggest a short explanation of the assumption that soil is all the time close to saturation. Probably because of humid tropical climate as explained later in section 3.
3. Page 4316, line 16: Equation 16 is incorrect. PR/K_s should be more than 1!
4. Page 4317, lines 15, 16: The simulated discharge Q_s is not presented in Figure 3.

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Maybe do you mean Figure 2? Otherwise Figure 3 should be corrected.

5. Page 4322, lines 14, 15: The citation Nash and Sutcliffe (1970) is not in the References.

6. Page 4346, Figure 7: The figure is not clear enough. It is too small. The differences between measured and simulated results are not evident enough.

Technical corrections

1. Page 4310, line 17: Citation is not complete, it should be (Gash et al., 1995).

2. Page 4312, lines 15, 16, 18, 20: Symbols e.g. AR , P_{sf} , ANR etc. should stay after their explanations (e.g. area, fluxes, etc.). That should be corrected throughout the whole document, also in figure captions.

3. Page 4325, line 4 and 29 and page 4327, line 17 and page 4347, figure caption: Units L s⁻¹ should be written as l s⁻¹ (liters per second).

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