Hydrology and Earth System Sciences Discussions

Interactive Comment

Interactive comment on "Throughfall and temporal trends of rainfall redistribution in an open tropical rainforest, south-western Amazonia (Rondônia, Brazil)" by S. Germer et al.

Anonymous Referee #1

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This article will be helpful in understanding a process for the hydrology in a tropical rainforest in that it investigated the influence of not only the characteristic vegetation but also the rainfall variable. However, there is a little poor point in analysis and expression on the whole and therefore it is desirable to improve the following points

2.2 Experimental design and data analysis

It is essential to mention the dimension of experimental plot in where throuhfall and stemflow were measured, and additionally, I think it is significant to mention afterward the proportion of the total area of throughfall collector to the experimental plot for more reliable data.

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2.2.1 Gross rainfall

A trough-type collector should be presented as 'wideŒlength'; for example 15cmŒ100cm (wideŒlength) if it was the type I image. Why are events separated by two hours without rain? Is there an appropriate reason referring to some literatures?

2.2.2 Throughfall

It would be better if you illustrate the placement of throughfall collectors. As for P2712 L20, what is the value of 24% calculated from? Why was throughfall not normally distributed for 24% of the events? Along with the reason that the median was used in this study, it would better discuss whether there is a deflection or not by comparing the median with the mean or by the illustration of some outliers.

2.2.3 Stemflow

If parameter pt is used in the revised Gash model, a more detailed procedure should be expressed here instead of the reference.

2.3　The revised Gash model

2.3.1 Model description

The paragraph P2714 L23-L26 is regarded as the results, therefore, it should be described in 2.3.2 Forest parameters or 3. Results and discussion. Can the author show the scatter diagram for reference?

2.3.2 Forest parameters

As for the equation (4), there was not the description of parameter pt and moreover I think the value determined in P2715 L4-L19 would mean not the canopy capacity per unit cover area Sc but the canopy capacity S. If the method accurately derives the value of Sc, it would need to discuss the difference. The method derived the free throughfall is appreciated in the point that it can bring a lot of measurement results at ease, however, the author ought to report the date taken pictures considering the

conclusion that the palm is important for high redistribution of rainfall and the temporal pattern is controlled by palms and their leaf growth. Why the equation (5) is expressed here again? There is little explanation for this equation and, as a result, it is likely to cause the confusion with the equation (3). Please explain the equation (5) in detail.

3.1 Gross rainfall

Did the result that the month of August and of April was far too wet and dry influence the temporal trend of throughfall? Showing the histogram of gross rainfall is helpful to understand the following all figures. It is hard to understand the description of 'Maximum 10-min and 60-min'; I think it is not common. Does they mean the maximum values of rainfall intensity were 100.6 mm/h and 57.9 mm/h for 10 minutes and 60 minutes, respectively? It should improve the description if possible.

3.2 Throughfall

In Table 2, the author need to define not only in Table 2 but also in the text that n expresses the number of collectors, and moreover to explain why were there the values of n under 20. It means the loss of data or the data not distributed for 24% of the events as described above? In the case of negative values for interception loss, the author needs to make the difference of 'event' (P2717 L3) and 'case' (P2717 L5) clear, and additionally, to report with some discussions which of cases did occur more frequently in November: one was the event more than 100% of PG, the other was the throughfall plus the proportional stemflow exceeded rainfall. Referring to the consequence described in P2719 L2-L5, it may be beneficial to emphasize the characteristic of this site with high density of young palms.

3.3 The revised Gash model

In P2719 L20, why did the references, Lloyd et al., 1988 and Ubarana, 1996, be written here? Were not these values obtained in this study? As for Fig.4, interception loss for Gash model is 'modeled' in text, whereas it is 'expected' in figure. The adjective should

be corrected by either or should substitute 'calculated' for 'observed' or 'modeled' for 'estimated'. As for Fig.5, the notation of I10max should be explained in text and figure. It needs to be presented that the components of interception loss estimated by Gash model.

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