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Discussions

Interactive comment on "Annual canopy interception at artificial lowland tropical forest" *by* A. B. Azinoor-Azida and L. Minjiao

Anonymous Referee #3

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The manuscript investigates the annual intercepted precipitation at the plot scale taking into account rainfall portioning by an artificial tropical forest. Gross precipitation, throughfall and stemflow were measured on two plots of 400 m2 from 11 April 2012 to 24 April 2013 at a daily scale. Authors applied three models, namely original Gash, revised Gash and interception model with temporal resolution.

First of all, measurements of throughfall are questionable since the construction of the collectors does not prevent water evaporation (Fig. 2) which may be significant since measurements are made at a daily scale. Furthermore, some methods are incorrect and poorly described which leads to incorrect results. For example, throughfall coefficient should represent the proportion of gross rainfall that passes through the canopy without touching it and It should be estimated as the slope of the regression between

gross rainfall and throughfall for storms that are too small to fill the canopy storage capacity S and which is assumed for that evaporation losses during these storms are negligible. In the present study the obtained p value is even higher than 1 (more than 100%) which is impossible. Moreover, canopy cover fraction c should be equal to 1-p-pt and that is not the case in the study. Authors should use and cite original methods and equations. The interception model with temporal resolution analysis is not sufficiently described. For example, there is no description of f(d), m, n. Furthermore, it is not known where some values or relationships come from (i.e. m = 0.08, n = 0.45).

Also the structure of the article is poor and needs substantial revision. For example, it should be clear from the abstract which variables were measured and which were estimated (calculated) as interception loss was not measured (it was calculated with the use of simple water balance equation). In the discussion section the estimated values of the parameters should be discussed and compared with the values of other studies in tropical forests.

Some information about the forests on both plots, such as forest density, mean tree height, mean stem diameter, LAI etc. might be useful for further comparisons. Are these characteristics changing with time? If yes, was that considered in the model?

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. The number of decimal places by some parameters is unreasonable since the measurements are on a daily scale.

The original contribution of the study needs to be clear in the Introduction and Conclusions

The manuscript has abundant English errors. Phrasing and grammar are quite poor and some sentences or even sections are not clear.

For all those reasons, I suggest to reject the manuscript.