

## ***Interactive comment on “Towards quantifying the increase of rainfall interception during secondary forest succession” by B. Zimmermann et al.***

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HESS article: Increase of rainfall interception during secondary forest succession by Zimmerman et al.

General comments

There is a need to understand how interception changes during forest succession to better understand impacts on the water budget, particularly surface water runoff that may lead to erosion issues. The authors used a Bayesian statistical model to determine which forest parameters have the greatest influence on interception. They found that a simple linear regression proved the most useful, which is a valuable piece of information for researchers and forest managers. They found that interception increases

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rapidly during the first 10 years of regrowth following logging. Overall this paper provides valuable information on interception rates in tropical forests that is difficult to obtain. The large sample size and distribution across age classes helped to provide solid data on the changes in interception through time in secondary forests.

It would be helpful if the authors mentioned the highly variable nature of rainfall in the introduction to provide the reader context and further explanation for the high variation in the throughfall (Goodrich et al. 1995).

It would also be helpful if the authors could expand upon the potential water management implications of their findings. What potential problems might arise from decreased interception and ET following forest cutting? Increased soil erosion seems like a likely issue, but I am not familiar with the region.

What types of forests were you studying? There is no mention of forest community type or tree species only structural traits. This would be valuable information for other researchers to facilitate comparison between studies.

Specific Comments Page 8014, lines 5-10. Is gully formation and/or surface erosion an issue in these watersheds? You mention gullies earlier the text on page 8004; perhaps you could explain the causes of gully formation and extent of this problem in the study area in relation to forest management practices.

Page 8016, lines 5-6 “The fast change in canopy interception during forest succession clearly predates the recovery of soil permeability.” – I’m not sure where this statement comes from, since little information is provided on soil permeability in the paper previously. It seems like a critical issue that deserves more attention in the paper.

Page 8023, Table 2. Abbreviations should be spelled out in the table footnotes for non-specialists

Page 8026. Figure 1. It would be helpful to show the location within Panama or Central America more generally.

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References Goodrich, D. C., Faurès, J. M., Woolhiser, D. A., Lane, L. J., Sorooshian, S. (1995). Measurement and analysis of small-scale convective storm rainfall variability. *Journal of Hydrology*, 173(1), 283-308.

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