

Reply to comments of Chris Lenhart

We thank Chris Lenhart for his comments. Our response to the comments is provided in bold (below each comment). In this reply we do not repeat the reviewer's summary of the content of our manuscript.

General comments of Chris Lenhart

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).

This argument applies to the event-basis (cf. Goodrich et al., 1995). However, we worked with accumulated data (2-months period) which showed very little variation in rainfall depths (cf. section 2.2.3).

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.

In section 4.1, we already discussed the implication of changes in interception during secondary forest succession. Following suggestions of reviewer #3 and your comments (see below), we extended the discussion section by adding information on changes of soil permeability during secondary forest succession. Further discussions on water management implications (such as implications for erosion processes) are beyond the scope of this manuscript.

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.

In the original version of our manuscript we already wrote that forests are classified as “semideciduous lowland forest” (Foster and Brokaw, 1996). To our knowledge, there is no more detailed description of forest community type for the forests in our study area. Following your suggestions and comments of reviewer #3, the revised version of our manuscript contains a supplement which provides for each throughfall plot the 5 most abundant species, their share on the total basal area, and information on deciduousness.

Specific comments of Chris Lenhart

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lines 5-10. Is gully formation and/or surface erosion an issue in these watersheds? You mention gullies earlier in 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.

Although of big interest, erosion-related aspects are beyond the scope of our work. We therefore cannot explain the cause of gully formation, nor can we discuss the influence of forest-management practices on erosion in our manuscript.

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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.

To substantiate our claim that the fast change in canopy interception during forest succession clearly predates the recovery of soil permeability we included a new figure (Fig. 5) in the revised version of our manuscript. This figure shows how interception and soil permeability change with forest age.

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

The revised version of Table 2 contains a footnote which refers to section 2.3.2 for an explanation of variables and their abbreviations.

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

Done as suggested, we inserted a small map that shows the location of our research area in Panama.

References

Foster, R. B. and Brokaw, N. V. L.: Structure and History of the Vegetation of Barro Colorado Island, in: The Ecology of a Tropical Forest: Seasonal Rhythms and Long Term Changes, edited by: Leigh, E. G., Rand, S. A., and Windsor, D. M., 2nd Edn., Smithsonian Institution, Washington, D.C., 67–81, 1996.

Goodrich, D. C., Faurès, J. M., Woolhiser, D. A., Lane, L. J., Sorooshian, S.: Measurement and analysis of small-scale convective storm rainfall variability, J. Hydrol., 173, 283-308, 2005.