This manuscript is a very interesting study about run-off differences under different land uses in a humid tropical montane cloud forest region. In addition to pasture and mature forest, also a secondary forest catchment was studied. This is of high value as hydrologic process studies from secondary forests are underrepresented in the literature. The study was well elaborated and results are clearly presented. I suggest considering this manuscript for publication after minor improvements.

Reply: Thank you for your positive and helpful comments. Please find our replies to your comments and suggestions below.

General comments:

1. Throughout the text averages are given, but it is not said what follows after the +/-: : is that SE or SD?

Reply: SD. We have made this clear throughout the text in the revised ms.

2. The usage of different terms for the same thing makes the reading of the text (and Figs or Tabs) quite difficult. For instance, I suspect that baseflow in Table 4 and Pre-event water in Table 5 present values from the same samples. Or "storm runoff" (P5285, L24) seem to relate to "stream water" in Table 4. Anyway, baseflow is also stream water (see Table 4).

Reply: We think that the reviewer is a bit confused about the information presented in Tables 4 and 5. Table 4 shows the mean and SD values, and the number of samples collected for the different end-members used in the storm hydrograph separation (HS) analysis, as mentioned in the table caption, meanwhile Table 5 presents the results of the HS analysis (pre-event/event water sources) for each of the storms analyzed in the three study catchments. Hence, "baseflow" in Table 4 is an end-member used in the HS technique (please refer to the Methods section 2.4.4), whereas "pre-event water" in Table 5 is the pre-event water contributing source (soil and ground water) to storm runoff as derived from one-tracer (δ2H, δ18O) two-component HS, as explained in the table caption.

On other hand, we agree with the reviewer that "storm runoff" in the text is related to "stream water" in Table 4. To be consistent, we have changed "stream water" in Table 4 for "storm runoff".

3. Table 4 and Figure 4 show the same data for EC and D18O. There is no need to present both.

Reply: Since Table 4 presents the mean and standard deviations of the three tracers (δ2H, δ18O and EC) for the different end-members and Figure 4 shows only the δ18O and EC information, we have decided to not incorporate Figure 4 in the revised ms following the reviewer suggestion. To complete the information provided in Table 4, we have included in the revised ms the min and max values of the three tracers (δ2H, δ18O and EC) for each end-member.

Specific comments:

P5271, L5-7: A decrease in interception and transpiration can modify the water cycle but "soil hydraulic properties" can not. "decreases in soil hydraulic properties" might so, but what would be these decreases? Please clarify.

Reply: We have re-phrased this sentence to specify that decreases in rainfall interception, transpiration and "surface soil hydraulic conductivities" associated with forest disturbance and conversion to pasture or agricultural lands modifies the terrestrial water cycle.

P5273, L12: "<25 ha" that could be anything from 0 to 24.9: : : ha. Please be more precise.

Reply: We have removed "<25 ha" from the text, as Table 1 specifies the area of each study catchment.

P5273, L15-22: In this part catchment and soil characteristics are reported in present tense and thereafter in past tense. The same happens on the following page. Please be consistent.

Reply: The inconsistencies have been corrected in the revised version.

P5274, L24-25: Annual rainfall is derived from which years? Probably it's an average. What would be the SD? Add years, average and SD.

Reply: We have added the following information in the revised version: "Average annual rainfall at this site was 3061 ± 414 (SD) mm over the period 2005–2010."

P5274, L25 and 28: What are high and low intensities? Could you provide figures for these?

Reply: We have rephrased the sentence for clarification.

P5275, L22: Are the data from July 2005 to June 2008 used at all in the manuscript? If so it should be specified here, if not there is no need in reporting that there are data from this period.

Reply: The data from 2005 to June 2008 were not used in the manuscript. It was mentioned in the text with the purpose of providing more information to the reader about when the measurements started at this study site.

P5276, L4-6: The order of the parameters should equal the order below where details of these parameters are presented.

Reply: In the revised ms, the order of the parameters has been changed to match with the explanation of them given in the following section.

P5278, L10: The "weighted sum" was weighted by what exactly?

Reply: A sum of daily precipitation amounts for the 7 days prior to the rainfall event was weighted by a recession constant (k=0.95, 0.96 and 0.94 for the MAT, SEC and PAS; see Section 3.2). We have re-phrased the sentence for clarification.

P5281, Sec. 3.1: For the reader it would be helpful to get to know whether there were precipitation differences between these two years, as some of the analysis were done only on data from the second year.

Reply: We have added the following information in the text: "Annual P was 3476 mm in 2008/2009 and 3095 mm in 2009/2010 (average across all sites)."

P5282, L27: “FI indexes” as I understand this would read “Flashiness Index index”. Please correct.

Reply: “FI indexes” has been changed to “Flashiness Indexes” in the revised ms.

P5285, L11-12: “Peakflow discharge” are these mean hourly values or discharge peaks for shorter periods?

Reply: Peakflows were calculated using hourly values of discharge (mm hr^{-1}) (see also Methods).

P5285, L25-27: Isotope ratios from forest runoff were similar to what? “variation” or “range”? I don’t understand what was compared.

Reply: We have clarified this in the text: “The isotope ratios in samples of storm runoff from the forests had very similar average and range (p…), but were significantly more depleted (p …) and more variable in the PAS.”

P5290, L10-11: Even though their have not been a lot of studies, some work was done since the work from Bruijnzeel (2004). I suggest to cite and discuss the following references:

- Schrumpf, M., Axmacher, J. C., Zech, W. and Lyaruu, H. V. M. (2011), Net precipitation and soil water dynamics in clearings, old secondary and old-growth forests in the montane rain forest belt of Mount Kilimanjaro, Tanzania. Hydrol. Process., 25: 418–428. doi: 10.1002/hyp.7798
- Hassler, S. K., B. Zimmermann, et al. (2011). "Recovery of saturated hydraulic conductivity under secondary succession on former pasture in the humid tropics." Forest Ecology and Management 261(10): 1634-1642.
- Zimmermann, B., A. Papritz, et al. (2010). "Asymmetric response to disturbance and recovery: Changes of soil permeability under forest–pasture–forest transitions." Geoderma 159(1–2): 209-215.

Reply: We appreciate the suggestion. We have inserted a paragraph in which the effects of forest regeneration on soil hydrologic properties are discussed, citing some of the references provided by the reviewer:
"However, some work has been carried out at the plot scale to investigate the effects of forest regeneration on soil hydrologic properties. For example, the work of Hassler et al. (2011) in central Panama and Zimmermann et al. (2010) in Rondonia, Brazil both showed that soil saturated hydraulic conductivities can be recovered to pre-disturbance conditions during forest regeneration from pasture, but this process may take more than 8 years."

P5291, L13 and P5293, L8: Have the authors read these articles? These studies were done in different catchments in very different places in Brazil! Please correct.
Reply: The text has been corrected. The Moraes et al. (2006) citation has been removed from the text.

P5291, L11-20: I think it would be worth to discuss the influence of catchment size on runoff behavior. For instance, the studied catchments by Germer et al. (2010) are much smaller than the ones studied in here. And as one of the manuscript authors stated in one of his previous papers, catchment size can be inversely related to event water contribution:
Brown, V. A., J. J. McDonnell, et al. (1999). "The role of event water, a rapid shallow flow component, and catchment size in summer stormflow." Journal of Hydrology 217(3–4): 171-190.
Reply: We appreciate the suggestion. We have inserted a sentence where the influence of catchment size is discussed, with a reference to the work of Brown et al. (1999).

P5292, L7-10: If the reason would be lower rainfall infiltration in pasture compared to forest, then this it might be possible to verify by calculating the seasonal water budgets, as lower infiltration results in increased stormflow.
Reply: Indeed, our results seem to verify this. Firstly, the mean monthly flow during the wet season was higher in the pasture as compared to the forests. Further, flow duration curve (FDC) analysis showed that the greatest variability in hydrological regime occurred

in the pasture, showing both the highest and lowest discharge above the Q5. In agreement with the FDC analysis, mean annual high flows (MAHF) were higher in the pasture as compared to the forests (see Section 3.2). Finally, during the second half of the wetting-up period, the pasture showed higher storm runoff event ratios (0.42 ± 0.14; Qt/Pev) than the forests (0.30 ± 0.13 and 0.39 ± 0.12 for the MAT and SEC, respectively); also, mean peak discharge and variance were higher for the pasture as compared to the forests (see Section 3.3.1).

P5293, L3-6: Why doesn't it suggest saturation excess overland flow? As long as only infiltration or Ksat (?) was measured at one depth (or soil surface?) no discussion is possible about whether it is rather infiltration or saturation excess overland flow. Bythe-way, as Ksat methods further details were only published within a thesis, I think some more details should be reported in this manuscript.

Reply: The reviewer is right about that we cannot say whether it is infiltration or saturation overland flow. Hence, we simply suggest that "overland flow" did occur. Further, more information about the Ksat methods have been provided in the Study site section, as suggested. The text now reads: "Field saturated hydraulic conductivities (Kfs) measured at various depths along 1.5 m soil profiles using a constant-head permeameter show decreases…"

Figures:

- Put "-1" as superscript and indices as subscripts

Reply: We have made this correction in the figures.

Fig. 1

- It is not explained in the caption what is meant by: TG1, VPtg, VPco, BS1, BP1, SECP

Reply: These names correspond to site locations of rainfall gauges and weather stations. We did not explain them in the figure caption because they were explained in the text (see Section 2.2).

- It should be indicated that numbers in the right plot are heights (above what?).

Reply: We have inserted in the figure "m a.s.l." to indicate that numbers correspond to elevation heights relative to sea level.

Fig. 3

- Caption: "hourly values" should be "hourly depth"

Reply: We have made this change.

- P and Q are not on the x-axis! The authors could change the text to e.g. Hourly depths of rainfall, P (grey bars): : :

Reply: We have made the appropriate corrections in the figure caption.

- Last line of caption: : : :period studied. Please indicate what was studied.

Reply: The study period is now indicated in the text.

- It is not possible to read the year on left hand plots.

Reply: In the original file, the years on both left and right hand plots are readable. We think that during the journal formatting process, they inserted the figure caption too close to the figure, thereby deleting accidentally part of the x-axis label.

Fig. 4

- In the figure it is "soil-lysimeter water" and on other figures/tables and the text it is just soil water. Please be consistent.

Reply: Although Figure 4 has been removed in the revised version, we have corrected the inconsistencies in the text, figures and tables.

- Explain what the whiskers of the box-plots represent, as there is no standard usage. Why are there no whiskers for the rainfall and baseflow?

Reply: Figure 4 will not be included in the revised ms.

Fig. 6

- In the caption change as in text (e.g. P5286, L6): (D18O) to (D2H, D18O)

Reply: Please note that Figure 6 shows only the results of the HS analysis obtained using $\delta^{18}O$ (i.e. for just one of the two tracers used in the two-component HS analysis).

- Different scale according to what? Add "to storm 1 and 3"

Reply: We have inserted this information in the captions of Figures 6 and 7.

Fig. 7

- In the caption change as in text (e.g. P5286, L26): (D18O and EC) to (D2H, D18O and EC)

Reply: The same explanation provided for Figure 6 applies here. Figure 7 shows the HS results obtained using $\delta^{18}O$ and EC as tracers.

- Use the same signatures as in Fig. 6 (e.g. grey bars for rainfall)

Reply: We have made this change in the figure.