

Reviewer #1

This manuscript reports some estimates of throughfall kinetic energy at the soil surface. The motivation for the report is that very high kinetic energies were measured at a selected location where there was concentrated drip from a tree. The experiment tests a trivial hypothesis L85 L162. We already know that throughfall energy is greater when and where there is more throughfall and when and where drops are larger. The effect of leaf status is more interesting.

I do not think this sampling effort is sufficient for the data to be reliable. L113 one drip point and 6 non-drip points, measured in 10 rainfall events is a very small sample size, given that spatial variability of throughfall is usually very high. Also, measurements at the single concentrated throughfall point failed in all but three events. It appears (L144) that there was even some pseudoreplication in the ANCOVAs because regression was used to obtain throughfall estimates in four events (L122). Finally, the gap-filled data were all in the leafed period, and the conclusion is that the unit kinetic energy during the gap-filled events was about half or less than the one measured event (Table 1)—this is an example of how poorly constrained the estimates are.

All estimates of the magnitude of energy concentrated at drip points depend on overinterpretation of data. With one, non-randomly-placed, drip-point sampler, we do not know how widespread these points are nor how variable they are, so there is no way to make any estimate of the importance of drip points at any scale.

We want to thank reviewer # 1 for these critical comments. We agree with the reviewer's opinion on high spatial variation in TKE and that the dataset presented here in this short communication would not be sufficient to describe the entire splash phenomenon in our study area. To be precise, we measured TKE at 36 locations to evaluate spatial variation in TKE in the same forest and this dataset will be used to describe variability of general splash locations according to tree traits.

However, our objective in the present study is to evaluate the possible maximum level of TKE under the forest, which is defined by concentrated drip points. This phenomenon has been ignored so far and high TKE values were mostly excluded from datasets as outliers in all studies we are aware of. Therefore, it has never been reported in previous studies and no specific numbers of the maximum kinetic energy have been published (please indicate if otherwise). From a soil erosion researchers' perspective, we believe it is of great interest to obtain a better description of the phenomenon before measuring more precisely with higher technical and financial effort. Therefore, and after discussing with other researchers from the same field, we decided to report the intensity of a concentrated impact location compared to general locations to bring the focus on this drip point phenomenon under tree

canopies as a short communication. We apologize if our intention did not become clear from the manuscript draft.

As the reviewer suggested, it is very important to know how widespread and variable these impact locations are. Also, we agree that leaf status is very important and even less investigated. We have to answer this question as a next step and will conduct further research on that. In this context, we must point out that finding suitable measurement locations and precisely place splash cups under concentrated drip in the forest is anything but trivial. Therefore, a fully randomized sampling design, as we typically use it in our splash studies so far, might not be suitable. We have been somehow fortunate to find and reliably maintain a suitable measurement point over a longer period in the presented study.

Finally, we agree that this statistical analysis is less powerful with limited data, but we do not consider it inaccurate. Precipitation and TKE at the impact and general locations were used for the ANCOVA. We estimated precipitation at the impact location at one sampling period using freefall precipitation outside the forest which was not included in the ANCOVA. Thus, we do not believe that the analysis is pseudoreplicated.

Minor comments

Fig 2 I think the right-hand panel is a blowup of the left but there are no labels to support this guess. It would be much easier to read this figure if there were labels instead of text to describe the symbols.

Response

As the reviewer suggested, the left-hand graph was zoomed from the right-hand graph. We will improve the Figure by inserting lines between the panels and adding a legend with labels.

L153-154 but the branch height for the concentrated drip point was the same as the others and leaves were not measured by location, so the experiment did not address these questions.

Response

As the reviewer suggested, the description was inaccurate. The sentence will be removed.

L164-171 the points about terminal velocity do not lead to the conclusion L169.

Response

We are sorry for the poor explanation in the previous manuscript. We will add the explanation that raindrop could not reach terminal velocity and branch height was one of the factors determining TKE in the present study, but the higher TKE at the impact location was not induced by the branch height

because of the comparable branch height at the impact location with other general locations.

L181 what is risk exactly, and how can it be lower at the drip point than elsewhere?

Response

We are sorry for the inaccurate description. We will replace “general locations” with leafed season.

Table 1 column headers say “Impact locations” but there was only one.

Response

We are sorry for the mistake. We will remove “s”.

L207 there are no drop-size distribution data presented. I think the inference is correct but the wording must careful not to imply this research supports the statement directly.

Response

We really appreciate the valuable comment. We will revise it carefully.

Th English could be improved substantially. Some problems: L46 punctual is not the right word; L50 grazing (although grazing is probably too specific of a word and “feeding” would probably be better); L71 differs; L73 “is different”; L83 occurred with splash cups? L103 sentence makes no sense; L104 weighed dry; L118 “failed” instead of “missed”; “was,” not “were”; L140 ANCOVA does not only examine significant differences; L149 considerably; L159 “The It”; L167 do not reach terminal; L178 than that at; L183 widely?

Response

Thank you for the comment. The current manuscript will be edited by a professional English editor.