Biogeosciences Discuss.,
https://doi.org/10.5194/bg-2020-361-RC2, 2020
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Biogeosciences Discussions
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Interactive comment on "Key drivers of pyrogenic carbon redistribution during a simulated rainfall event" *by* Severin-Luca Bellè et al.

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Received and published: 21 November 2020

Dear authors,

After reading your manuscript on the "Key drivers of pyrogenic carbon redistribution during a simulated rainfall event", I could evaluate this work as solid and rigorous. The amount of simulations performed was substantial, statistically robust and the conclusions are in line with the observations. However, I believe there are a couple of aspects you can still address in the manuscript that could clarify the reader: 1. The amount of comparisons that you do difficult the reading of the manuscript. I understand you are making use of the collected data, but keeping track of your observations it's a great effort for the reader. Therefore, I would suggest a budget scheme (example figure 1

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attached). This scheme could help us readers keeping track of the distribution and still give the relative importance to the values you are providing. 2. The relative comparisons could be simplified somehow. For example, in Line 270 you say “it was on average 1.5 times less”. This didn’t help me visualize the value, you could have said 37% less. Another example is in line 317, where you say “was more or less 300 times less”, I believe the usage of 300 is appropriate but I would simplify by saying it “was approximately 300 times more” by switching the soil order. My point is if you simplify these terms fewer difficulties the readers will have to follow the text.

I do also have a methodological issue, that cannot be solved since the data is already is collected but can be addressed on 4.4 where you address some of the limitations of this work, and in the M&M. Its about the splash and the runoff generation. If I understood it well, and please clarify me if I am making a wrong assumption, the runoff generation is not entirely separated from the splash prosses, since the splash occurs in a 360° direction, whereas runoff occurs in a single direction, the slope direction. For that, I’ve uploaded another figure (fig 2). With your runoff transport, you will have a part of the splash component. Transported particles by splash will achieve further distances with the direction of the slope because gravity favors this matter, and when the runoff is generated both fractions are combined and distribute particles over midslope and downslope soil tray. Having that said, I would like to ask if you could address these limitations, by identifying early in the MS that your splash component is underestimated, but is the best estimation you could get, and how this limitation propagates error along with your results.

Despite the identified issues, I believe the work is solid and makes good use of laboratory experiments. Works as these ones are very important to identify key-processes that are under the influence of many variables in the field.

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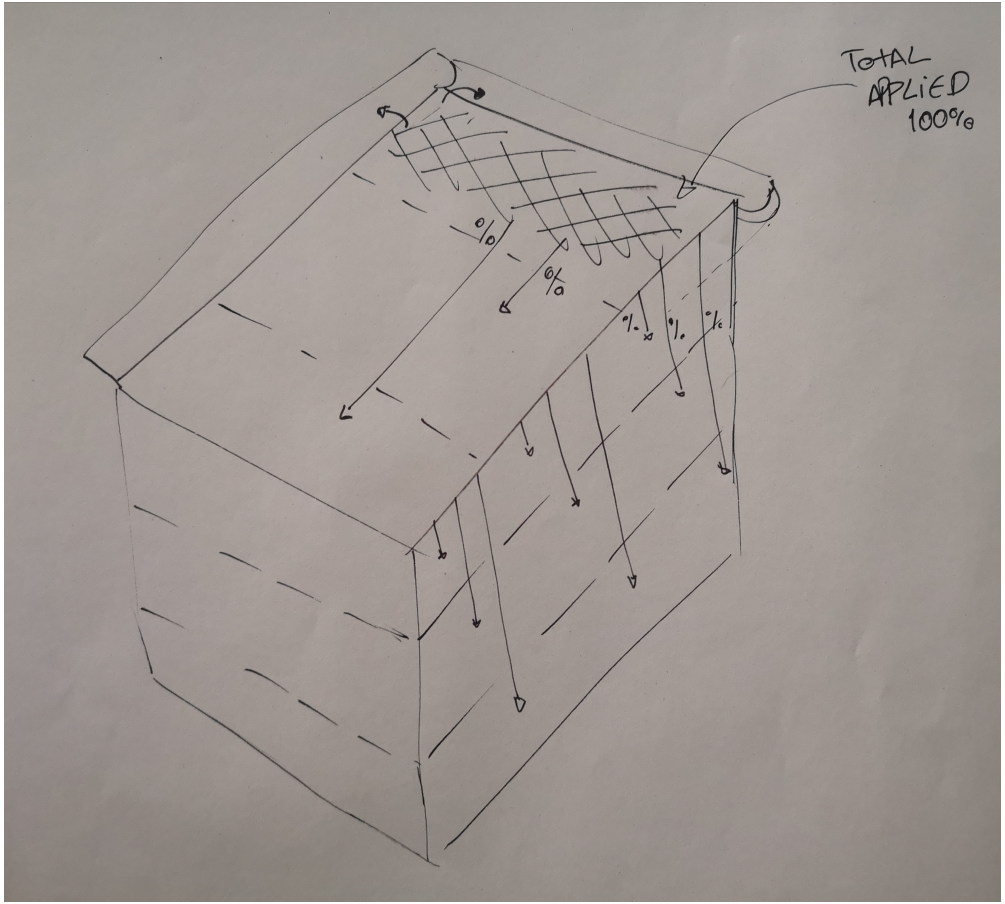

Fig. 1.

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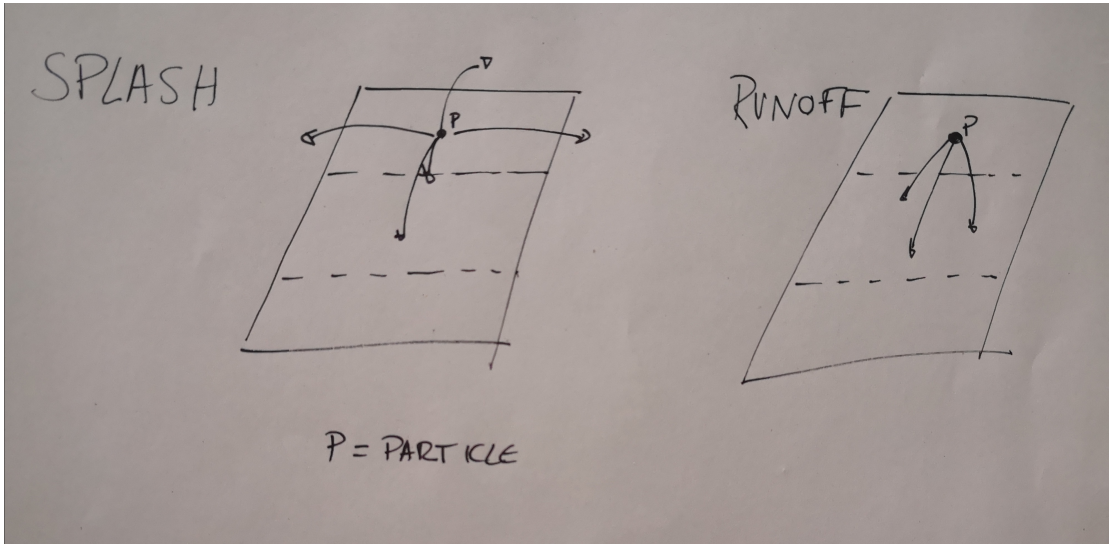

Fig. 2.

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