

Interactive comment on “Quantifying the changes of soil surface microroughness due to rainfall-induced erosion on a smooth surface” by Benjamin K. B. Abban et al.

Anonymous Referee #3

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In this manuscript, the authors address the effect of rainfall velocity on soil-air roughness quantified via the random roughness (RR) parameter. They showed that as rainfall velocity increased from 30 to 75 mm/hr the random roughness index increased as well, which is in contrast to those reported in the literature. Although more experimental data on support are required to have a more conclusive conclusion, the manuscript is well written and well organized and suitable for publication in the journal. However, some moderate revisions are required before publication.

Minor comments: P3L23: Could the authors address/discuss on how changes in median diameter would affect air-soil roughness?

P4L2: The authors should clearly state that with such a low resolution some rough

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features with scale less than 0.5 mm have not been captured via their laser scanner. As the title indicates the authors address soil surface microroughness, while the resolution of the laser scanner is 0.5 mm. How is it possible to capture microroughness with a scanner of resolution of millimeters?

Did the authors measure infiltration rate or even saturated hydraulic conductivity of the tested soil? If so, what is the infiltration rate?

P8L4-8: The authors stated that, “Analysis of soil surface roughness in the region where raindrop detachment dominates and under initial smooth surface preconditions for three rainfall intensities shows a consistent increase in the RR index and crossover length, which are confirmed as reliable descriptors of microroughness. This increase contrasts the findings of most available literature . . .” Please provide a few references from the literature for the last statement.

Did the authors measure soil aggregate- or particle-size distribution? What is the range of particle sizes in mm?

Interactive comment on Nonlin. Processes Geophys. Discuss., doi:10.5194/npg-2016-76, 2017.

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