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Reply on CC3

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Community comment on "Rill Erosion on Slope of Spoil tips: experimental study of runoff scouring erosion in multiple times" by Yongcai Lou et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-399-CC4>, 2021

I read the work submitted by Gao. I think it is a valuable and meaningful work. Gao answered the almost all quires except for the rill network development by inflow generated by gentle platform. Overall, I can accept this work for publication in HESS before a major revision.

I also investigated many spoil tips in the world, especially in the coal field, the soil erosion is mainly derived from the steep slopes, and the most of soil loss is caused by concentrated flow generated from gentle platform that has a low infiltration due to mechanical crushing. I also agree with your opinion that rainfall inevitably affects the rill development. However, I think, on the steep slopes of spoil tips, the rainfall contributes a limited effect on rill development. Firstly, during the erosion process of steep spoil tips, the concentrated flow would provide the most of erosive force, which is accepted by almost of researchers. Furthermore, the sheet flow between interills has a weak influence on rill development, because the very limited drainage area would not form an effective erosive-force flow. Also, the spoil slopes had a lower bulk density and more macroporosity, implying the higher infiltration rate. So, under natural rainfall, the very limited slope sheet flow occurred that caused a little effect on rill network development. Therefore, the work by a simulated inflow experiment is acceptable, and the study method without rainfall factor can resolve the scientific gaps supported by several objectives in this work.