

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1  
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## Comment on hess-2021-79

Anonymous Referee #1

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Referee comment on "Hortonian Overland Flow, Hillslope Morphology and Stream Power I: Spatial Energy Distributions and Steady-state Power Maxima" by Samuel Schroers et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-79-RC1>, 2021

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Traditional analyses of flow rely on the conservation of momentum. In such exchanges, energy is generally lost, and difficult to budget but it is commonly reckoned that losses are larger than energy utilised in runoff and sediment transport.

Here there is no physical analysis of the dissipation terms, and they are deduced only by subtraction of the known terms, although neglecting some energy components, particularly raindrop energy. I do not see any derivations that add to understanding of slope or river processes. Although I am open to the notion of minimising energy dissipation, and recognise that the conventional hydraulic equations do not generally provide closure, this paper does not seem to advance our understanding.

Perhaps I am missing something. Which equation(s) shows the clear benefit of this approach?