

Hydrol. Earth Syst. Sci. Discuss., author comment AC2
<https://doi.org/10.5194/hess-2021-479-AC2>, 2021
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Reply on RC1

Samuel Schroers et al.

Author comment on "Morphological controls on Hortonian surface runoff: An interpretation of steady-state energy patterns, maximum power states and dissipation regimes within a thermodynamic framework" by Samuel Schroers et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-479-AC2>, 2021

We would like to thank KB again for his comment on the D_f term (dissipation) and wanted to use this discussion as an opportunity to present a possible extension of the energy scheme which is presented in the current manuscript.

Attached we outline how sediment transport affects the D_f term and we distinguish four dissipation regimes, depending on whether sediment is eroded or deposited. If sediment is eroded some energy of the flow will be used for the additionally transported mass, and similarly if sediment is deposited some of the energy of the sediment-water mix becomes available.

This concept could be incorporated as a clarification of the D_f term and also be part of the discussion of a revised manuscript.

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2021-479/hess-2021-479-AC2-supplement.pdf>