

Earth Surf. Dynam. Discuss., referee comment RC1
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Comment on esurf-2021-16

Chenge An (Referee)

Referee comment on "The transport of sediment mixtures examined with a birth-death model for grain-size fractions" by Shawn M. Chartrand and David Jon Furbish, Earth Surf. Dynam. Discuss., <https://doi.org/10.5194/esurf-2021-16-RC1>, 2021

In this paper, the authors study the bedload transport of sediment mixtures in gravel-bed rivers, with a focus on the contribution of collective particle entrainment. A Fourier analysis is implemented on several series of experimental sediment flux, together with the application of an expanded birth-death Markov model. Results show that the effect of collective entrainment on bedload transport is size-dependent, with larger influence on smaller grain sizes, and this could explain the different transport behaviors among different grain sizes as observed in the experiments. The topic is interesting and the authors present good analysis. The contents are generally well organized. Therefore, I think that this paper could be published on Esurf after moderate revision. Detailed comments are in the attached pdf.

Please also note the supplement to this comment:

<https://esurf.copernicus.org/preprints/esurf-2021-16/esurf-2021-16-RC1-supplement.pdf>