Earth Surf. Dynam. Discuss.,
https://doi.org/10.5194/esurf-2017-66-EC1, 2018

Earth Surface Dynamics Discussions

Interactive comment on "Evidence of, and a Proposed Explanation for, Bimodal Transport States in Alluvial Rivers" *by* Kieran B. J. Dunne and Douglas J. Jerolmack

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Received and published: 8 January 2018

Dear authors,

we have now received three reviews for your manuscript. One is very supportive and has only minor (mainly editorial queries). The other two reviews are closely aligned in their criticism. There are two main points.

First, both reviewers point out that a large body of relevant literature has been overlooked, which should be acknowledged and discussed. I agree with this point. The reviewers have pointed out a number of relevant papers. I add to these the recent work

of Blom et al. (two GRL papers in 2017 and one JGR paper in 2017), who discuss gravel-sand transitions, equilibrium and quasi-equilibrium states and the effects of discharge variability, and of Pfeiffer et al. (PNAS 2017), who investigated the morphology of gravel bed channels in the USA. In addition, the authors may want to look at the literature on steep streams – there has been recent work on the interplay of bed roughness, flow hydraulics and sediment transport that may be informative for some of the discussion. A comprehensive study on flow velocity has been published for example by Rickenmann and Recking (WRR 2011), and on bedload transport for example by Schneider et al. (WRR 2015). There may be other relevant literature that has not been mentioned in the reviews or by me – the newly provided references may be a good starting point for a wider research.

Second, both reviewers fail to see the novelty in the work. I ask you to clearly delimit where the paper is a mere review of published results and where you go beyond what has been done before, in particular in light of the additional literature mentioned above.

There are a large number of other critical points by the reviewers, which I ask you to address in detail. In particular, I would like to highlight the closing comment of reviewer #2. You have worked with data measured and compiled by many other scientists, and these should be duly acknowledged. The least that should be done is the addition of stream and site names, coordinates, and suitable references in the data tables provided in the supplementary material. Otherwise, researchers will have little chance to scrutinize your data and your results in the future.

With best wishes, Jens Turowski

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