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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Re-suspension of bed sediment in a small stream – results from two flushing experiments" *by* A. Eder et al.

Anonymous Referee #1

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General comments

This paper describes interesting experiments which bridge the gap between repeatable, controlled laboratory experiments, which may be a poor representation of the real hydrological world, and field experiments, which are subject to the inherent natural variability of the real world. By creating artificial storm events by pumping water into a natural stream, these experiments have removed some of the factors which influence sediment deposition and re-suspension and created more repeatability than is generally possible in catchment experiments. The paper addresses the issue of in-stream processing of sediment and is therefore relevant to both sediment transport and movement of particle-bound contaminants. It is well-written, with a clear and informative abstract, and clear aims stated in the form of science questions. The results

adequately support the conclusions and interpretation.

Specific comments

I was surprised by the very large percentage loss in flow down the stream (loss of 33%) and was not convinced that all this loss could be explained by storage in dead zones or exchanges with (i.e. losses to) the hyporheic zone. How accurate are the rating curves to generate flows from the water levels measured by the pressure transducers? How accurate are the pressure transducers – in Figure 5, there is a large diurnal variation (100% change) in the discharge ($\sim$0.5 – 1 ls-1) – what is the explanation for this? Were the pressure transducers vented to allow for atmospheric pressure and temperature compensation?

Turbidity-sediment relationships are notoriously site-specific and were sensibly calibrated for each site, but how consistent were the relationships throughout an event? It might be useful to show the turbidity against sampled sediment concentration to indicate the uncertainty in the calibration of turbidity.

The site is described as agricultural – it would be useful to add into study site section whether this is pasture or arable. This would also help a reader to understand where the deposited bed sediment had come from.

Figures 7 and 8 are not mentioned in the text.

Technical corrections

P12079, l23 Kronvag should be Kronvang

P12080, Include study site land use – pasture or arable?

P12087, l25, Kronvag should be Kronvang

Figure 1 – suggest overlaying hydrograph and sedigraph. Increase size of text?

Figure 4 – width of stream is not clear – suggest use white text and increase text size