

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

Anonymous Referee #3

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General comments

I read with interest the paper by Eder et al because they address a difficult topic that has been struggling hydrologists and geomorphologists for ages: sediment deposition a re-suspension processes within the river channel. These processes are very important because they explain i) the inconsistency of soil erosion rates measured at different spatial scales and ii) the weak relationship between peak discharge and suspended sediment concentration, especially at the small catchment scale. I was impressed by the experimental set up – I believe it was a lot of work. And I was very happy to read through a clear, very well written and well structured manuscript. The three questions addressed in the Introduction are answered in the Conclusion section.

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I only have a couple of questions related to section “5.2-Comparison with natural events”. In your experiment you do not consider the water coming from slopes (eg, as overlandflow). Don't you think the first peak observed in some sedigraphs of your natural events might be explained by the contribution of sediment deposited in the lower part of the slopes, close to the outlet? Or to the contribution of a small tributary? Not all the floods show this first peak – I would not expect them to occurred after a large flood event which has “cleaned” the channel. Can you say something about this? I think it will be good to give more details about the catchment sediment sources. Also, to analyze the sediment response (ie, sedigraphs) of successive flood events in order to identify exhaustion processes. Have you seen sediment deposits within the river channel and changes between flood events?

Specific comments

P12086, lines 17-19. “Especially for short duration storms. . .”. Can you give data on floods duration?

P12087, lines 18-21. Could it be also because the total sediment load increases (enlargement of sediment contributing areas) and the source of the first peak is constant? -consider the first peak is related to the contribution of a tributary.

P12087, line 28. Re-suspension occurs later during the event –I think I missed that.

Technical comments

No reference in the text to Fig 7 and 8

Consider whether fig 3 and 8 are necessary. Fig 8 repeats information of figs 6 and 7.

Fig 5. Discharge is recorded at which measurement site?

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