

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

### **Anonymous Referee #2**

Received and published: 9 December 2013

#### General comments

Very interesting paper, describing unique experiment, which contributes to understanding the process of sediment transport and sediment origin during pluvial floods. The experiment was done at small catchment, where previous measurements could be used for comparison and analyses. Exceptionally good is identical initial conditions concerning of moisture, characterized by identical natural rainfall event occurrence several days before both of experiments, what makes results really representative. Therefore results are clearly and correctly generalized, with several surprising facts, which can be justified by further research. Very interesting is repeated recording of higher wave celerity, compared to transport velocity, approved by comparison of tracer and suspended solids concentrations. Quantification of rate of sediment resuspended in

C6524

stream channel to total sediment volume (transported by surface runoff from the fields) is very worthy. Recorded results by the experiment are of great potential for further analyses of discharges, flood wave retention and transformation, . . . within next papers. A bit more precise characteristics of the site and experiment itself would be good to better evaluate results and to make them easier transferable.

#### Specific comments

There are few minor questions, more or less to improve description and explanation of the experiment, to make the results better transferable for readers:

Pg.2, row 27 – authors can support this statement by their own previous publications, addressed to relation between discharges and SS concentrations

Fig.1 – The turbidity starts to rise earlier, than discharge, can you explain it somehow? According to our experience it can be caused by resuspension of fine sediment, deposited directly in H-flume, by big raindrops, but I would appreciate opinion of authors.

Experimental site and the experiment itself shall be better described:

-There are soil characteristics of agricultural fields mentioned, but characteristics of stream bed, banks and floodplain material would also be interesting

-Approximate size of the stream channel (width, depth, bank slopes) in individual sections should be mentioned. Dimensions in Fig.4 are very shady and hard to read.

-Capacity of the channel shall also be mentioned, to have an idea, if and how much water was flowing through the floodplain during the experiment

-Artificial floods shall be compared to natural recorded ones concerning of discharge and volume, to give an impression about recurrence time of modeled events

Pg.4, row 31 – how many pumps were used? (Three, with equivalent rate ?)

Pg 5, row 4 – How much lower?

Pg 5, row 26, 27 – it is not seen at Fig. 5

Pg 7, row 20–27 – soil material of banks is different from bed? What was the situation of floodplain during the experiment? (canopy/ground cover ?)

Fig.10 – There is not clear for me, if in Fig. 10b only data from profile MW have been used for “averaging”, or data from all three profiles. If I understand well, standard measurements are done only at profile MW, therefore, for comparison, experimental data from profile MW are relevant. Is this correct?

Technical corrections

Pg.2, row 31, Pg. 10, row 8 – Kronwag instead of Kronwang

On several places: revise format of upper index “-1” at l.s-1. . . .

Figures 7 and 8 are not mentioned and explained in the text

Fig. 7 – revise mistyping in title of figure

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 12077, 2013.