

Interactive
Comment

Interactive comment on “The role of log jams and exceptional flood events in mobilizing coarse particulate organic matter in a steep headwater stream” by M. Jochner et al.

Anonymous Referee #1

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General comments

The paper entitled “The role of log jams and exceptional flood events in mobilizing coarse particulate organic matter in a steep headwater stream” by Jochner et al. presents an interesting field study of transport and storage of coarse woody debris in the Erlenbach, a small mountain stream in Switzerland already known for its unique long-term bedload transport monitoring program. The authors put emphasis on the effect of log jams on wood trapping and release. This topic was addressed by means of a 5-months field experiment using RFID tracking of LWD and tree-ring cross-dating of key pieces of wood in log jams to estimate mean residence time. These field observations were used to propose a sound conceptual model of wood dynamics in steep

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headwaters.

Specific comments

My main concern is about the insufficient credit paid to previous works dedicated to LWD dynamics in steep mountain streams, which already proposed some conceptual models not so different from the one proposed in this paper. See for example May and Gresswell 2003 (ESPL) work in the Oregon Coast Range,

In the presentation of the study site, it would have been interesting to provide summary information about the CPOM export rates presented in Turowski et al 2013a (monitoring period? annual export rate?). A brief description of channel morphology of the investigated reach should also be provided. The mean bankfull width, which is known to control the mobility of LWD, must be indicated.

Some specifications are missing in the method section. The main technical features of the RFID tags (dimensions, shape, and emission frequency) must be provided. The presentation of the deployment strategy of tracer logs in the field is not very clear. It is said in the text that tracer logs were deployed in June 2012, but in Fig. 3, four periods of deployment are indicated. The location of the deployment sites must be shown in Fig. 1 and 4.

In the presentation of the results from wood tracing, the recovery rates of the tracer logs as well as the percentages of mobile tracers for each survey should be provided. Figure 4 is not easy to read, and it may have been better to propose a diagram of tracer density as a function of distance along the talweg, with the position of log jams and deployment sites.

Technical corrections P174 L13: larger “than” 1 mm P174 L23: replace “facilitate” by “create” P176 L6: “grass-“ should be “grass” P176 L23: one reference is needed for the characteristic dry wood density of *Picea abies*. P178 L12: “bankfull”

Caption of Table 1: replace “Erlenbach catchment” by “Erlenbach stream” Table 1: the

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period over which mean annual precipitation and temperature are computed should be specified in the caption

Caption of Table 2: “elevated discharge events” should be “flow events”. Q_{max} and Q_{eff} must be defined in the caption.

Table 3: mean age of logs and mean residence time, replace “a” by “yr”

Figure 3: Okt 2012 should be Oct 2012

Figure 6: a log scale for transport distances would have been more appropriate

Kraft et al 2011 missing in the reference list

REF May, C.L., Gresswell, R.E., 2003. Processes and rates of sediment and wood accumulation in headwater streams of the Oregon Coast Range, USA. *Earth Surface Processes and Landforms* 28, 409-424.

Interactive comment on *Earth Surf. Dynam. Discuss.*, 3, 173, 2015.

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