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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.

M. Jochner et al.

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We thank the reviewer for her/his helpful remarks. Below we give a brief reply to the reviewer’s comment on the use of the terms “CPOM” and the suggestion to measure CPOM storage in sediment upstream and aside of log jams.

Reviewer’s comments:

“I found the use of CPOM as confusing at times, as it seemed to imply LWD as well as the more traditional use of CPOM as organic matter greater than 1 mm but smaller than large wood.” “The citation for the definition of CPOM is a bit misleading. Ecologists pioneered the CPOM literature, starting in the 1970s, and the size criterion mentioned

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here should be supported by appropriate ecological citations.” “[. . .] the introduction has a confusing mix of LWD and CPOM. I think it would be more effective to treat CPOM that is finer than the typical LWD definition (1 m long, 10 cm diameter) and then to discuss LWD.”

Response:

We appreciate the reviewer’s advice to clarify some aspects of our nomenclature. We agree that the original citation of Turowski et al. (2013) is not appropriate in this context and should be substituted for Naiman & Sedell (1979) and Bilby & Likens (1980). However, after revisiting size definitions given in literature on CPOM, we found no upper size limit to be mentioned. CPOM is usually defined as pieces larger than 1 mm in diameter (cf. Naiman & Sedell, 1979) and in our opinion includes large wood as its largest fraction. Therefore, our use of the terms LWD and CPOM seems logical.

Reviewer’s suggestion:

“Methods 4) Why not measure the CPOM stored with pebble & finer size sediment upstream from and apart from jams? This can be substantial in some streams, although the photos included in this manuscript suggest that it is not likely to be as important in this very steep and dynamic stream. Even if this storage is not substantial, it would provide the basis for a very interesting comparison with the ecological literature from equally small and steep but more stable streams, such as Hubbard Brook.”

Response:

We thank the reviewer for this suggestion. We agree that it would be interesting to measure the carbon content of sediment wedges in between the log jams, and their size distribution. We will consider and discuss this aspect in the altered version of our manuscript. Unfortunately, for various reasons, it will not be possible to complement our study with additional measurements for the current manuscript. The suggested measurements include measurement techniques and heavy field work not previously

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done by the authors. In addition, both MJ and JMT have left the WSL since completion of the field work, making it necessary to do the work during an expedition and extended field stay. This is not easily organized on short notice. Nevertheless, we think that the measurement of CPOM stored in sediment in the vicinity and between log jams would pose a valuable amendment of our analysis and enable an interesting comparison to other sites of CPOM studies. It would potentially explain the log jams' capability of retaining small sized CPOM. We will aim to organize the necessary field work sometime in the future.

References

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Naiman, R. J., & Sedell, J. R. (1979). Benthic organic-matter as a function of stream order in Oregon. *Archiv für Hydrobiologie*, 87(4), 404-422.

Turowski, J. M., Badoux, A., Bunte, K., Rickli, C., Federspiel, N., and Jochner, M. (2013). The mass distribution of coarse particulate organic matter exported from an alpine headwater stream: *Earth Surface Dynamics*, 1, 1-11.

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