

Interactive comment on “Dynamics of large wood during a flash flood in two mountain catchments” by A. Lucía et al.

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We wish to thank Prof. Andrés Iroumé for his helpful comments. Below our responses are reported after each comment.

1) I agree with the authors that large wood dynamics has been less studied, and dynamics during extreme or flash floods even lesser. The authors have prepared a manuscript that fits with the journal and represents an important contribution. I recommend it for publication after some minor revisions.

Thanks !

2) Phrase between lines 11 and 16 in page 1644 should be rewritten. I suggest com-

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pleting the idea in the first phrase about the channel widening but relate this process to floodplain erosions, and then continue with LW recruitment.

Also reviewer 2 suggested a change of this sentence. The main factor leading to such response (highly erodible material forming the slopes adjacent the fluvial corridor) will be added in the revised ms

3) At the end of line 15 in page 1644, the authors mention “hillslopes processes”. In other paragraphs of their document they also refer to colluvial processes (see line 8 on page 1645, line 15 on page 1646 and others); I suggest maintaining the reference to hillslopes processes along the text.

As also requested by Reviewer 2, we will refer to hillslope processes in the entire ms

4) Study area (pages 1647 and on) refers to the Gravegnola and Pogliaschina creeks as study streams. However, later on their manuscript the authors refer to the Radarena, Ginepro, Redovego and Sottano creeks and others on page 1652 and Table 3. Please clarify.

We will change the term “study streams” into “study basins” to make more clear that we have studied the Gravegnola and Pogliaschina catchments, including the main channel and also their tributaries. However, at the end of the study area, the sentence “Several channels were analyzed in the two basins (Fig. 2)” and the figure 2 itself describe well that studied channels were several

5) On lines 20 to 25, page 1651, the authors define how they calculated stream power and stream power index. But then from line 25 they write “Variables related to channel width, e.g., unit stream power or unit stream power index (Rigon et al., 2012), were not taken into account for the analysis”. Please explain.

We did not take into account for the analysis the variables which include channel width because this latter varied tremendously during the event in most reaches, and also because the measurements of the pre-event channel width were subject to some un-

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certainties due to the overhanging vegetation. Therefore only “gross” variables (at the cross-sectional scale) were used in this paper given the similar, narrow pre-event width of all the channels studied. The text on channel width and on related variables will be moved to the discussion, where it fits better in our opinion.

6) My main observation reading the Results, Discussion and Conclusions chapters is that the authors have not fully convinced me that their observations about LW recruitment, dynamics and deposition are related to a normal peak flow or to a flash extreme flood. Which are the differences about LW dynamics between a normal peak flow and a flash extreme flood? What the authors are adding to the knowledge of LW dynamics during flash floods that was already known for normal peak flows???

We assume the commenter by "normal" means "around bankfull", "annual flood" peaks. Indeed, such level of peak flows in the studied channels – as is typical of narrow, stable mountain stream – do not transport considerable LW volumes, essentially for two reasons: i) the supply is limited (no recruitment from banks or slopes); ii) transport is hampered by the too narrow sections blocking possible large trunks. Only small-sized woody elements already present in the channel can be transported, which do not cause any problem to bridges or natural sections. What is the object of the ms is an extreme events during which the river morphology and geometry was totally modified, with large supply of wood from the floodplain and from the hillslopes. Most channels became much wider, permitting the transport of the freshly recruited large LW elements. Transported LW volumes were huge and damages very relevant. Whereas studies on the monitoring of LW (mostly already in the channel) transport during annual floods do exist, investigations on LW budget during similar large floods are very scarce, as reported in the introduction.

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