

## ***Interactive comment on “Damage costs due to bedload transport processes in Switzerland” by A. Badoux et al.***

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This is a very interesting manuscript, first ever to my knowledge describing the costs of damage related to bedload processes. Such analyses have not yet been undertaken; they demonstrate the very considerable damage costs involved specifically with bedload, whereas the literature (e.g., Osterkamp – see ref list) refers to the cost of sediment at large, inclusive of suspended sediment. Interestingly, in many lowland areas bedload constitutes a small fraction of the total sediment load. This is not necessarily so in either mountainous, semiarid or arid regions.

Following are comments requiring attention by the authors. An appended file includes a variety of editorial suggestions inclusive of figures. I have enjoyed reading this paper.

C1406

Jonathan B. Laronne

4182, line 2: Is the term 'bedload erosion' to be used? Best use bedload as a process that transmits sedimentary particles from sources (river banks, slides and debris flows) and at times from the stream bed (e.g., mobilized bars) downstream, generating and leaving behind what is often a long term equilibrium channel profile. The authors are obviously aware of this terminology, so suggesting to rephrase.

4183, lines 5-9: Suggest rephrasing because overbank deposition is a 'normal' process leading to the enrichment of floodplains with sediment and nutrients. The damage caused by overbank deposition occurs when settlements or individual homes and roads are located too close to riverbanks. Farmland may be affected by overbank deposition, though on the long run this process is not only natural but beneficial.

4183, lines 24-27: Relevantly, it serves to be additional to the European Flood Directive in delimiting areas of activity in the vicinity of rivers and river banks. This is particularly relevant when zoning and planning are concerned.

4186, line 23: Although this is a recent contribution and as such welcome, surely the authors are ware of considerable antecedent contributions demonstrating this principle

4187, lines 25-28: This makes sense, however the reader of this journal may not be sufficiently aware of bedload processes. Here or better in the introduction with a similar posted comment, it is very worthy to stress that bedload fluxes may be very high without undue damage, as long as the relevant fluvial landform remains unchanged. I.e., as long as the quantity of bedload entering is equal to that exiting. Interesting but likely too fluvial geomorphological for this journal, there are instances when sediment (also bedload) discharge is very high, there is average balance in input and output, but some parts of a reach are eroded and others undergo deposition.

4202, lines 25-26: Here the authors over-emphasize bedload prediction per se, instead of gearing it to be useful for construction, zoning, planning. This is particularly relevant

C1407

to the readers of this journal.

4203, line 9: This and other publications of Recking are both worthy and relevant, but 'satisfactory' is ostensibly not the appropriate term for any equation that has an error of half a magnitude in both directions. Consider deleting reference to a 'reliable' estimate.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 4181, 2013.

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