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Comment on esurf-2021-28

Anonymous Referee #2

Referee comment on "Genesis and propagation of exogenous sediment pulses in mountain channels: insights from flume experiments with seismic monitoring" by Marco Piantini et al., Earth Surf. Dynam. Discuss., <https://doi.org/10.5194/esurf-2021-28-RC2>, 2021

The paper presented by M. Piantini and colleagues deals with the sedimentary pulses that occur in mountain streams. The authors deal with the phenomenology of these pulses as well as their possible mode of study by acoustic and seismic methods. The main technique used by the authors is the simulation of the phenomenon in an artificial channel equipped with an original sediment supply system and sound sensors installed throughout the canal. This paper lacks an important discussion which concerns the transposition of experimental results to nature. It seems necessary to demonstrate that the processes which are observed in the experiment are conceivable in nature and vice versa. Downscaling, for example, is not discussed anywhere in the paper. Likewise, what is the significance of the upstream sediment supply system of the experimental apparatus? The authors describe natural systems in which cliffs bring sediment to streams (Line page). The protocol used seems to be quite different. On the other hand, there is no discussion of the time and space scales of the phenomenon in nature. For example, does the particle size distribution used in the simulations have any significance for the natural examples? In order to be published this paper should clearly address these issues.

In addition, the authors propose a technical study (itself not dimensioned) which could be applied to study transport phenomena. This approach is interesting but makes the discourse complex. It seems to me preferable that the authors concentrate on a single problem (sedimentary pulse or analysis of sound produced by sediments in a channel) and reserve the other for another article.