Reply on CC1
Anonymous Referee #3

Referee comment on "Toward a general calibration of the Swiss plate geophone system for fractional bedload transport" by Tobias Nicollier et al., Earth Surf. Dynam. Discuss., https://doi.org/10.5194/esurf-2022-7-RC3, 2022

Review of “Toward a general calibration of the Swiss plate geophone system for fractional bedload transport”, by T. Nicollier, G. Antoniazza, L. Ammann, D. Rickenmann, J. W. Kirchner

The manuscript reports on a new method to calibrate the Swiss plate geophone (SPG) which uses a combination of data collected in a laboratory flume and at four different field sites. The SPG has been shown in previous studies to be an excellent indirect method to measure the rate and size of bed load transport in gravel bedded streams and rivers. This study further develops the science of turning impact data into quantitative data of the transport of bedload. The study of bed load transport using impact plates at several field sites has indicated that a general calibration of the SPG has been difficult to develop for a variety of reasons. This study uses a combination of amplitude and frequency to calibrate the SPG in the quest for a general calibration relation to turn impact data into quantitative values of mass and grain size for gravel bed load transport. This manuscript contains much valuable information and should be published, however, suggestions for improvement of the presentation are given below.

Specific comments:
• Lines 246-251: In these lines it is related how all packets were filtered using equation (3) and packets which do not meet this criterion are ignored in further analysis. It is clear to me how and why this was done, however, in Figure 7 there appears to be substantial overlap between real (blue) and apparent (red) peaks measured in the flume experiments. How many real peaks were rejected through the use of this criterion in the flume experiment data? Also, could the authors estimate how many real peaks were rejected from the 4 field data sets considered in the study? I believe text should be added to the manuscript discussing this issue.

• Lines 239-240, and 257-260: In these sentences the lower and upper thresholds for the amplitude-frequency method are described. Is it correct that the lower threshold (V) was based on the minimum grain size of the size fraction and the upper threshold (V Hz) was based on the maximum grain size of the size fraction being considered? The clarity of the text could be improved to make it easier for the reader to interpret this fact.

• Figure 9: This Figure is too small and has too much information contained in it. This renders this Figure very difficult to interpret other than for a general impression of the data trends. Consider simplifying this Figure or possibly presenting this information on two Figures.