



Fractional bedload transport at the Erlenbach stream determined by the impact plate geophone system

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Since the implementation of an automated basket sampler system in 2009, more than 100 bedload samples have been obtained at the steep Erlenbach stream in Switzerland. The Swiss plate geophone system, a bed load surrogate monitoring technique, has been calibrated with the direct bedload samples collected in the large metal baskets. The samples included masses up to about 250 kg and discharges up to about 1.5 m³/s. The amplitude of the signal recorded by the Swiss plate geophone system contains information about the grain-size distribution of the transported bedload. Recently, a re-analysis of the so-called amplitude histogram method proposed by Wyss et al. (2016) was made using the basket sampler data. This allowed to improve the conversion of the geophone signal to estimate the bedload flux for different grain size classes at the Erlenbach. Using this new processing method, we analyze six years of continuous geophone measurements at the Erlenbach. This measurement period includes entire flood events, with total event bedload masses up to 49,000 kg and peak discharges up to 4.8 m³/s. We estimate bedload characteristics for the six year period based on the amplitude histogram method, and compare them with bedload mass measurements from regular volume surveys of the deposits in the retention basin and with measurements of grain size distributions of the deposits.