

MODELLING OF BED LOAD TRANSPORT IN THE MORÁVKA RIVER BASIN (MORAVSKOSLEZSKÉ BESKYDY MTS, CZECH REPUBLIC)

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Abstract

This paper summarizes the results of bed load transport research conducted with the use of BAGS (Bedload Assessment for Gravel-bed Streams) spreadsheet-based program. The program extension calculates the potential of bed load transport using six equations developed specially for a gravel-bed river. The Parker (1990) surface-based bed load equation was used for the study case due to lack of subsurface grain-size data. Several channel cross-sections in the Morávka River and the Mohelnice River were used in order to perform bed load transport models. Selected channel cross-sections include preserved gravel-bed reaches with anabranching development as well as transformed reaches with accelerated deep erosion and occurrence of a single bedrock channel. Discharge data were provided by the Czech Hydrometeorological Institute. Presented results show a potential rate of bed load transport because sediment inputs and barriers were not included in the model. The modelling shows bed load transport trends in relation to the water depth of the channel cross-section height. Trends in a potential bed load transport rate represent a good instrument of the identification of disconnected sediment transport reaches along the longitudinal profile. The modelling on cross-sections with a high rate of fluvial erosion shows the increase in potential bed load transport. The propagation of erosion is caused by the absence of sediment load (hungry water effect). Moreover, determination of exact amounts of transported material during flood events requires the calibration of the model on local conditions. Unfortunately, suitable bed load transport data are not currently available for Czech gravel-bed streams. The research was supported by the Student Grant Competition Project of the University of Ostrava. Parker, G. (1990): Surface-based bedload transport relation for gravel rivers. *Journal of Hydraulic Research*, 28. pp. 417-436.

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