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River bed deformations in the Yablunka channel under the influence of gravel-pits exploitation

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ABSTRACT

Riverbed deformations are the consequence of complex erosion-accumulation processes. They cause changes in the river flow regime, transformation of the river watercourse and the width of river migration zone. Trends, scales and intensity of fluvial processes are determined by a set of natural and man-made factors. Especially the latter can rapidly change morphological characteristics of the river. The example of the 21km long mountain Yablunka River has been presented in the paper. The river itself remains in a close to nature regime, however gravel factories located in the channels of the Yablunka and Dniester (its recipient) are suspected to sway the hydraulic balance of the Yablunka channel. The investigations were conducted to characterize the intensity of erosion within the bed of the Yablunka River. The analysis of hydrology, cross-sections, longitudinal profiling, valley shape and bed granulometry measurements for the downcutting part of the Yablunka River were performed in the paper. The two factors responsible for bed stability: critical shear stresses and unit stream power were used for the analysis. The effects of these natural forces were compared with the measured effect of bed material exploitation.