PHOTOSIEVING: SNÍMKOVANIE POMOCOU DRONOV PRE ANALÝZU VEĽKOSTI ZŔN SEDIMENTOV

PHOTOSIEVING: DRONE IMAGING FOR GRAIN SIZE ANALYSIS OF SEDIMENTS

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Abstract

Grain size analysis of river material is crucial for the identification of hydraulic and sedimentological properties of channels. Advances in technological developments enable the combination of photogrammetry and small unmanned aerial systems (sUAS) for non-invasive granulometric analysis. Physical habitat parameters can be extracted from detailed 3D models and the channel bed structure or gravel bars substrate is detectable. This work compares automatic photosieving of sUAS-based orthophotograps with field photographs of sediments processed in the BASEGRAIN programme and laboratory-analysed sediment samples for gravel-bed river Ondava (Western Carpathians, Eastern Slovakia). A predictive model of the relationship between the sUAS image parameters and field samples is proposed and applied for whole high-resolution orthoimages of the study area. The technique showcases the capabilities of high-resolution sUAS images for processing and analysing grain size parameters of the river system. Changes in sediment variation of the river channels are a fundamental prerequisite for proper river management to improve the qualitative and quantitative condition of all water bodies.

Keywords: grain size, photosieving, UAV, lidar, basegrain programme, granulometry

Kľúčové slová: veľkosť zŕn, photosieving, UAV, lidar, program basegrain, granulometria

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