Abstract

The main focus of the thesis is the reconstruction of 3D models and digital elevation models of five abandoned splash dams in Roklanský brook catchment using UAV photogrammetry methods. The aim of this work is to compare accuracy of the models with available conventional data sources and historical sources. Parallel topic is the research of accuracy of the models created through UAV methods and application of retention potential of small water reservoirs, in headwater areas. The images were taken with a drone-mounted camera. Modelling was done by processing images in software Agisoft PhotoScan through a workflow process, dense point cloud classification and subsequent DEM interpolation. Subsequent delineation of reservoirs retention space, altimetry correction and bathymetric analysis was performed in ArcMap over the interpolated DEM. The results and discussion point to the benefits and limitations of UAV methods, especially to altimetric accuracy of the resulting models relative to conventional DMR5G data and bathymetric characteristics derived from the models.

Keywords: UAV; DEM; retention; GIS; model; pond