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ASSESSMENT OF THE INFLUENCE OF UAV IMAGE QUALITY ON THE ORTHOPHOTO PRODUCTION

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Abstract. Over the past years a noticeable increase of interest in using Unmanned Aerial Vehicles (UAV) for acquiring low altitude images has been observed. This method creates new possibilities of using geodata captured from low altitudes to generate large scale orthophotos. Because of comparatively low costs, UAV aerial surveying systems find many applications in photogrammetry and remote sensing. One of the most significant problems with automation of processing of image data acquired with this method is its low accuracy. This paper presents the following stages of acquisition and processing of images collected in various weather and lighting conditions: aerotriangulation, generating of Digital Terrain Models (DTMs), orthorectification and mosaicking. In the research a compact, non-metric camera, mounted on a fuselage powered by an electric motor was used. The tested area covered flat, agricultural and woodland terrains.

Aerotriangulation and point cloud accuracy as well as generated digital terrain model and mosaic exactness were examined. Dense multiple image matching was used as a benchmark. The processing and analysis were carried out with INPHO UASMaster programme. Based on performed accuracy analysis it was stated that images acquired in poor weather conditions (cloudy, precipitation) degrade the final quality and accuracy of a photogrammetric product by an average of 25%.

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