DEVELOPMENT OF A TECHNOLOGICAL SCHEME FOR COLLECTING AND PROCESSING AERIAL PHOTOGRAPHY DATA USING UNMANNED AIRCRAFT SYSTEMS FOR MODELING GEOSPACES

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The results of the review of domestic and foreign publications allowed us to establish that the geospatial modeling of small territories is most effectively performed using UAS (unmanned aircraft systems) and digital photogrammetric systems. The intensive development of unmanned aviation technologies has made it possible to obtain spatial data for the areas of interest in a shorter period of time. It is shown that the current regulatory and technical documentation does not reflect the requirements for collecting and processing raw data for creating digital models of geospatial objects.

The article formulates the requirements for ensuring the specified quality of building a photogrammetric model from UAS images, depending on the characteristic features of the survey area and the purpose of the geospatial model. It proposes a technological scheme for the collection and joint photogrammetric processing of planned and prospective AF (aerial photography) data using UAS for geospatial modeling.

The article presents the results of experimental work on joint photogrammetric processing of planned and prospective images obtained from UAS, research of its accuracy, and export to GIS. The experimental research used the Agisoft PhotoScan program (Agisoft LLC, Saint Petersburg) and GIS MAP 2011. It is shown that the inclusion of perspective images obtained from UAS in the process of joint processing with planned images increases the reliability of the constructed photogrammetric model. The time costs of importing and exporting the results of photogrammetric processing in GIS are determined.

Key words: aerial photography, unmanned aerial system, photogrammetric image processing, photogrammetric model, dense digital model, digital photogrammetric system, accuracy estimation.

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