

THE USAGE OF AERO-SPACE SPACECRAFT AND THEIR ADVANTAGES IN MANAGING LAND CADASTRES

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Abstract. *In this article, opportunities for the use of innovative technologies in order to increase the efficiency of the land cadastre work being carried out at present, the consistent implementation of the socio-economic development program in our country, the deepening and development of economic reforms, and the solution of the problems of the implementation of the unified state policy aimed at the effective and targeted use of the republic's land resources issues of creating opportunities and ensuring special attention are highlighted.*

Keywords: *land, aero-space imagery, land cadastre, remote sensing, geodesy, cartography, drones, land monitoring and modern applications.*

Opportunities are being created for the use of innovative technologies in order to improve the efficiency of land cadastre work in our republic. In the provinces and districts, the work of connecting the aero-space photographs taken in recent years to the plan through the state geodetic heights, creating new digital orthophoto plans of various scales is underway.

Determining the administrative-territorial borders using the orthophotoplans created today, the results of decoding in camera and field conditions, the agricultural maps reflecting the current state of the land used by land users and the calculation records of the types of land areas directly related to them according to the contours, as well as the transfer of land areas without loss of pasture and is to carry out geobotanical research in hayfields, to carry out placement and monitoring of agricultural crops and to update the database of the state land cadastre report in electronic form in the geoportal system.

Based on the Decision of the Cabinet of Ministers No. 287 dated August 31, 2016, the Regulation on the procedure for the operation of drones (unmanned aerial vehicles) in the civil and state aviation of the Republic of Uzbekistan was approved.

Also, unmanned aerial vehicles are carried out in accordance with the law on the basis of a special permit. Control of unmanned aerial vehicles is carried out by the State Inspection of Flight Safety Control of the Republic of Uzbekistan. New electronic digital maps are being created based on modern software for creating electronic digital maps, including new technologies that have entered production, including high-resolution aero-space photographs.

An example of this is the Ptero-G1 aircraft-type unmanned aerial vehicle, one of the modern technologies currently used by the state unitary enterprise "Geoinformkadastr". The digital

UltraCamX aerocomplex, renovated and put into operation by the enterprise in 2018, is installed on board the AN-2 aircraft, and aerial photography is being carried out.

In December 2018, the regions of Tashkent and Khorezm regions were created using UltraCamX, Denov, Shorchi and Kyzirik districts of Surkhandarya region were created using Ptero G1, in the territory of the Republic of Karakalpakstan using aero-space photos. As a result, a clear cartographic basis was created for determining the boundaries of the administrative-territorial units of our country, conducting land resources delineation, and conducting geobotanical research in pastures and hayfields. In addition, electronic digital maps of agriculture reflecting the current state of land used by land users in Bostonliq district of Tashkent region and records of land area calculation according to contours have been updated.

Step by step transition to the technology of three-dimensional terrain image use based on the use of the above-mentioned remote sensing materials and modern programs will drastically reduce the field decoding work and create conditions for performing the work in a camera-free manner. One of the main advantages of using aero-space photographs in land cadastre is that it makes it possible to take high-resolution pictures of these areas.

By using orthophotoplanes created on the basis of modern technologies and aero-space photographs, up to 80% of field work can be reduced and it can be carried out in camera mode. In this case, if aero-space photos are taken according to the season, it is possible to separate the photo according to the shade (phototone), and not much time is spent on field work. The use of space photography and aerial photography and their advantages can be seen in the following pictures.



Figure 1. Electronic digital agricultural maps created on the basis of space photographs



Figure 2. Photographs created using space and aerial photographs

Nowadays, the use of innovative technologies in the management of land cadastre in our Republic makes it possible to achieve more results. In particular, modern photogrammetric programs PhotoScan, Px4D, PhotoMOD, Bentley CC are used to create three-dimensional (3D) electronic digital maps, the use of which in the production process helps to further increase the quality of work.

As one of the strategic plans in our republic, during the next years, the updating of land information using the materials of remote sensing of the land, the organization of the activities of the analytical center, and the work of the analytical center will be carried out in a fully automated system based on a mutual technological chain using the blockchain method. In addition, it is planned to introduce an online system of land resources management.

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