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Research Article

UPDATING LAND USE CARDS USING AEROSPACE DATA AND GIS-TECHNOLOGIES

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ABSTRACT

Today, the World Land Fund has an area of 13.4 bn, of which 1.5 bn (about 10% of land) is ploughed and farmed. In the agricultural history of mankind, about 2 billion of fertile land was lost due to water suppression, salinity, desertification, construction work. Today, 6-7 million of fertile land per year in the world is coming out of agricultural production. The most valuable important part of land resources in the Central Asian region are the categories of Land Trust. According to official figures, there are around 271,432 million irriGISed land worldwide and 6.8 million irriGISed land in the Central Asian region. This article focuses on the current state of irriGISed land, the important scientific and practical importance of effective use and protection by maintaining, increasing its productivity and preventing the neGISive processes taking place in it.

KEYWORDS

Aerospace data, GIS-technologies, Deshifrovka, inventory, irriGISed land, GIS-Technologies, Aerospace, land categories, irriGISion networks.

INTRODUCTION

To date, it has become difficult to imagine the life of the sphere, from primary education to higher higher education, and in other areas, where informatization and the electronic system on its basis are not included. The penetration of geographic information systems i.e. GIS into all

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Earth Sciences is the basis for the emergence of new terms. These are Geoinformatics and geographic information systems. In this, the word" geographical " does not mean territoriality and integrity, but complexity (complexity) and systemality in GIS. The rapid development of GIS has caused Earth Science, in particular geography, to become a highly technologically advanced science.

The main part

GIS was originally created in Canada and the USA, and now in developed countries many GISs are effectively used in economy, politics, ecology, resource management and nature protection, cadastral service, science, education, culture and other fields. Global, regional, national, local, local GIS covers a wide range of information about our mother planet Earth in all fields: for example, cartography, remote sensing, statistics, cadastre, hydrometeorology, field expedition observation, borehole and underwater sensing. in checking and others. A number of international organizations (UN, UNEP, FAO, etc.) participate in the creation of GISs. Large organizations of individual countries, ministries and agencies, cartographic, geological and land services, private firms, scientific research institutes and universities are allocating a lot of financial resources to the development of GIS. It can be observed that industry organizations have established geoinformatics infrastructures covering large areas with their small telecommunication networks. Before computers were created, the idea of stacking several thematic cards and combining them to solve geography problems appeared. During the construction of this system, a lot of research was carried out and a lot of money was spent on the technical side. The cost of the research was very high, costs exceeded the original budget, and in 1970 a number of problems appeared, the main of which was that the expected result was not achieved. Only in the mid-1970s, a database was established and the preparation of the necessary product was started.

Geoinformation mapping can be considered a new direction in cartography. It is based on completely automated information cartographic modeling, natural and socio-economic geosystems, GIS and geographical (geological, ecological and other) knowledge base.

Also for graphical representation of data. today's small-scale maps of actual land use are also needed.

They should indicate the structure of the land, its purpose, forms of land use, etc.

The main tasks of mapping land resources:

- reflecting the natural features and current state of the land;
- reflecting the land structure and reclamation condition;
- manifestation of negative anthropogenic, including man-made, factors influencing the state of the earth;
- increase the accuracy of determining land boundaries and calculating their area;
- transition to new technologies and methods of land surveying and mapping;

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- provide detailed information in order to ensure rational use and protection of land, increase the efficiency of land management.

Development of land use maps based on GIS technologies provides some convenience. We can see it in the picture below. Complex legend for land categories on maps.

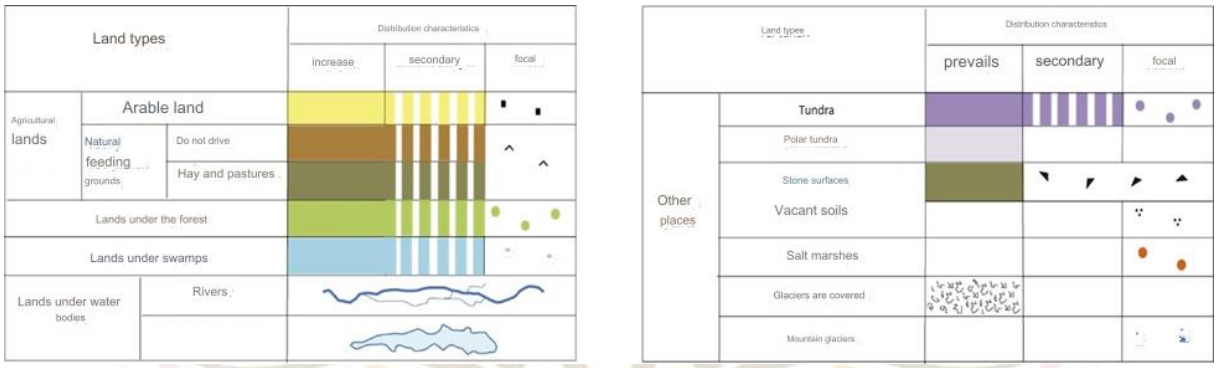

Figure 1. Complex legend for land categories on maps

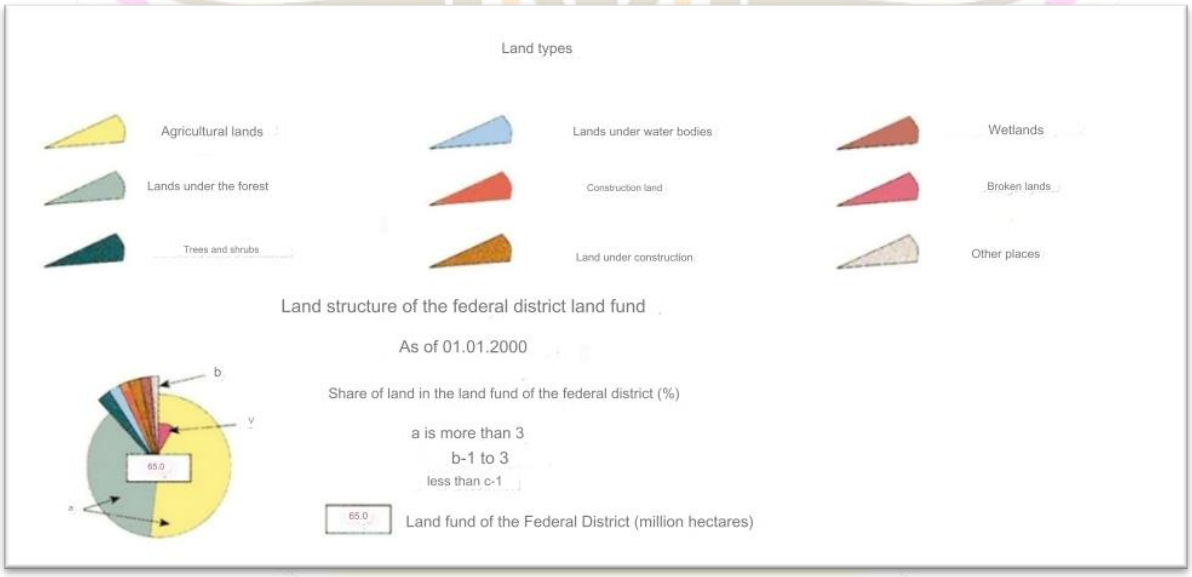

Figure 2. Complexity of cartographic diagrams, various modifications of pie and column diagrams.

The complexity of cartographic diagrams, various modifications of circular and column diagrams allow to provide additional characteristics in the display of land resources.

RESULT

Research on updating and maintaining land use maps using aerospace data and GIS-technologies was carried out in the following priority areas:

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assessment of agricultural land and crops based on remote sensing materials and land surveying using unmanned aerial vehicles (drones). monitoring; maintaining and improving the monitoring system based on innovative digital technologies. The land use system and methodology using aerospace data and GIS-technologies serves as a scientific-practical and methodological guide in monitoring the irrigated lands of the republic, regulating land relations, and using them effectively and rationally. Also, the technology for monitoring agricultural lands has been developed; large-scale system maps were created based on modern methods and technologies of the environmental and amelioration status of irrigated lands and irrigation networks of Fergana region as an object of mapping; created a method and map for conducting monitoring of land categories with the help of aerospace and unmanned devices; an ecological-ameliorative database was developed using modern GIS technologies; Based on the cartographic method, scientific and practical proposals were developed for improving the ecological and meliorational condition of the irrigated lands and irrigation networks of Fergana region. They are given below.

- In the case of Fergana region, the dynamics of quantitative changes in land use were determined and monitoring was improved on the basis of modern digital technologies;
- methods of simultaneous decoding and inventory of agricultural lands using modern technical tools were optimized;
- In the case of Fergana region, the methodology of land use planning projects and land use cards was improved;
- Updated the content of land use maps using aerospace data and GIS technologies.

CONCLUSION

The results of the conducted research made it possible to draw the following conclusions, develop recommendations and suggestions.

1. Collecting, storing, digitizing, analyzing, processing, recording, evaluating and forecasting information about irrigated lands and irrigation networks using modern mapping methods a complex of works on modeling and visualization based on spatial data was carried out. As a result, it was proposed to use GIS technologies in all activities related to reclamation of land use by expanding data in the form of maps, plans, and graphics with the help of ArcGIS and QGIS software.

2. In the case of Fergana region, aerial monitoring of irrigated lands and irrigation networks was carried out based on remote images taken at different times, and it was found that the land areas have been overgrown over the years and the working condition of irrigation networks is at an unsatisfactory level. As a result, the technology of managing irrigated lands and irrigation networks in the region and their rational use was created.

3. Based on modern methods and technologies, the methods of carrying out cartographic

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monitoring of mapping the ecological and meliorational state of irrigated lands and irrigation networks and determining their functional state have been improved. As a result, in order to improve land use, land reclamation of the region and develop a set of measures on a scientific basis, reclamation monitoring cards on a scale of 1:750,000 were created and their use is proposed. During the research, the possibilities of shooting with unmanned aerial vehicles (drones) were established. In this case, agricultural irrigation is carried out from unmanned aerial vehicles.

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