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THEORETICAL FOUNDATIONS OF THE USE OF MODERN GIS TECHNOLOGIES IN THE CREATION OF NATURAL MAPS.

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Annotation: this article examines the theoretical basis for the use of modern Geographic Information Systems (GIS) technologies in the creation of natural maps. The study analyzes the role and importance of GIS technologies in natural resource management, environmental monitoring and territorial planning. As methodological approaches, the components of GIS technologies, their integration and methods of data analysis were studied.
Keywords: GIS technologies, natural maps, environmental monitoring, natural resource management, territorial planning, data visualization.

Introduction.

Natural maps play an important role in identifying environmental issues, managing natural resources, and territorial planning. Modern Geographic Information Systems (GIS) technologies open up new opportunities in creating natural maps. This article will look at the theoretical foundations of the use of GIS technologies, their components and their role in the process of creating natural maps.

Preparatory work for the purpose of creating thematic maps includes:

1. Getting an order to draw up a map.
2. Assembling a map development team
3. Collecting and taxing resources.
4. Writing the program of the map, development of taxing instructions.
5. Development of the geographical basis of the map.

The work of drawing up a map begins with the receipt of an order. In the order, the requirements are determined depending on the purpose of the map and the degree of study of the territory of the customer. After the order is received, a team is assembled, sources are collected and studied to draw up a map.

Map creation-begins with the development of its initial (first, sketchy) program. In the process of writing the program, many auxiliary maps are drawn, experimental work is carried out if serial maps are being compiled. Writing a map program can be long, time-consuming. therefore, at this time, the author or team of authors conducts the work of preparing the geographical basis of the map.

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therefore, at this time, the author or team of authors conducts the work of preparing the geographical basis of the map.

Methodology

This study followed the following methodological approaches:

Literature analysis: scientific literature has been analyzed about the theoretical foundations of GIS technologies in the creation of natural maps.

Component analysis: key components of GIS technologies have been studied, including data collection, analysis and visualization methods.

Case studies: existing case studies on the creation of natural maps using GIS technologies have been analyzed.

Results

Data collection: data collection through GIS Technologies is carried out in high accuracy. They are based on data obtained using satellite images, terrestrial sensors and drones.

Analysis: data collected through GIS Technologies is analyzed. This process requires the use of statistical and mathematical models. GIS applications provide the ability to analyze this data quickly and efficiently.

Visualization: GIS technologies are of great help in visualizing data. When creating natural maps, GIS applications allow for the creation of colorful, multi-layered maps that provide users with accurate and understandable information.

Discussion

The results of the study show that GIS technologies provide high accuracy and efficiency in creating natural maps. GIS technologies are widely used in natural resource management, environmental monitoring and territorial planning. However, in the application of GIS technologies, the accuracy, technical aspects of the data and the competence of the users are important. At the same time, it is necessary to study the possibility of further development and wider application of GIS technologies.

Cartographic bases. Most often, it is developed on the basis of all-geographic or scientific-reference maps. If such maps are not available, a special cartographic basis is prepared. The bases may correspond to the scale of the future map, or be on a larger scale. Currently, two types of cartographic foundations are being prepared: for author's work (working foundations); for cartographic elaboration (typological foundations). In addition, special bases for the map can be prepared also, for example, there are additional elements corresponding to the content of the map bases (bases for tectonic maps in which the geological content is given), etc. Today, the authors use foundations of different content:

1. Basics that are the same as the content of the map.
2. Content simplified grounds.
3. Extremely complex meaningful foundations.

The basis of the first type has a number of amenities: they are given all the necessary elements. The basis of the second type is used in the construction of simple, elementary maps. Maps compiled using such bases need to be redesigned. The bases in the third variant are used in mapping maps whose content is moderately complex, involving different sources in mapping, linking them to each other, interpreting types of natural dependencies. For the author's original, in most cases, extremely complex meaningful foundations are used [6-10].

Today, work is underway to preserve endangered species of plants, bring them to future generations, ensure their protection and map the areas in which they live. It assumes the

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performance of tasks arising from this on the basis of clear and scientifically based data. It is now possible to effectively use the achievements of Informational Technologies in cartography, as in all areas. Current issues are the application of World-Class models, their complete, accurate and high-level organization, making the most of the computer programs being used to process, store, transfer data sets. Below we bring some ideas and suggestions on GIS and its composition, important features and the main directions of its use in agriculture.

The Geographic Information System (GIS) is a fast data acquisition system that is growing rapidly, concentrating knowledge related to several disciplines. This technology can serve as a scientific basis in finding solutions to natural resource management, demographic status studies, health, emergency events and other similar territorial issues and spatial problems. The application of GIS-Technologies is a complex process, consisting in obtaining, processing, analyzing and describing information with the help of computer programs and specialists. To do this, it takes a lot of time and work to analyze the spatial data that is considered the primary source of this technology, collect the attributes (specific characters, characteristics) that apply to them, and create layers of the GIS-technology database. Spatial data imaging and analysis includes one or more operations, measurements, and data query of GIS-technology data base layers. Based on this system, it is possible to make various graphs that are interconnected by analyzing geographical events and phenomena.

Cartography and GIS-technology are areas of knowledge that have been intertwining in recent years. Today, cartographers are engaged in GIS-technology and create cartographic models.

In the design and construction of natural maps, the stages of work performed in this technology can be described as follows: collecting preliminary data, entering data into computer memory and storing it in “External” Tools, processing data, selecting conditional characters and creating them, marking, or creating them, building a character bank, forming layers of thematic maps and placing them, conducting editorial work on structured maps.

GIS-technology is a hardware-software automated complex that consists of the collection, processing, transmission and storage of spatial data, which changes over a period of time and a period of time, providing analysis and description of mutual territorial connections or discrepancies between several components.

The effective use of these programs, which are very quickly entering our country, makes it possible to collect data related to the display of dispersal areals of animal species, to process them with speed, to effectively analyze the result [11-15].

The factors that perform in GIS-technology carry out a single process that has a special relevance for each region. It is a spatial model of an event and event for a given project, generated in accordance with the requirements. The processes managed in it are therefore also unique to the project. Consequently, the geographic information system is understood as a process that is performed, collected, analyzed and describes spatial data and their attributes based on computer support. The true meaning of this concept is spatial data analysis, which is the technical ability of GIS-technology. Analysis is based on geographic location, which is a GIS - technology distribution in computer-aided mapping and database management . Geographic information systems are a set of functions that are important in this way, since it opens up new ways of doing manipulations (complex and subtle actions in manual work) and establishing geographic information, and also dramatically increases the efficiency of spatial data analysis, which is carried out in a traditional way.

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With the rapid growth of development, geographic information systems combine knowledge related to geography, Geodesy, cartography, computer computing systems, mathematics, statistics and many disciplines. Recently, the number of users of microcomputers has also been increasing as a result of increased power and the expansion of the possibility of using GIS-technology programs.

Such information has the following characteristics: geographical location, legal address, territorial unit, completeness, continuity, visibility, accuracy, etc.k.

When organizing a database, the necessary resources are entered into the computer memory. If the sources are of different scales, the work of bringing to one scale is carried out at the stage of photogrammetric transformation of the GIS-technology system [16-20].

The work of reading and analyzing Aero and space images can also be carried out in the photogrammetric process. At such a time, attention is paid to indicators developed for such natural conditions as the relief, waters, soil composition of the lands on which the farm is located.

Animal life, formed on the basis of changes in the colorful landscapes of the territory, degradation of its lands, migration of erosion and desertification, dynamic and territorial changes in a number of processes such as salinity of agricultural lands, and their interrelationships, was studied on the basis of modern methods. The issues of drawing up their maps, processing their geographical basis through drawings and dividing the distribution areas of animals, species of plants were solved on the basis of aerospace methods.

Remote sensing is a highly technical area that can detect terrestrial structure without direct contact with an object. In other words, remote sensing consists of knowing the information about the object, area or event being studied and the phenomena through the analysis of the data obtained using sensitive instruments (sensors) without directly contacting them and researching their geographical characteristics.

There are several ways to reflect geographical features. In field conditions, remote sensing is the determination of the dimensions of landscape features at a certain distance, which can be viewed as a landscape-sensor relationship. An example of this is the measurement of atmofera air temperature through a radiozond [21-26].

Conclusion.

In conclusion, the use of modern GIS technologies in the creation of Natural Maps creates the necessary conditions for environmental sustainability and territorial development. GIS technologies are an important tool in natural resource management and environmental monitoring, providing high accuracy, data visualization, and efficient management capabilities. Through the further development of GIS technologies, it is possible to optimize the process of creating natural maps and effectively solve environmental problems. Also covered by the area's natural landscapes and anthropogenic landscapes (settlements, gardens and cultivated lands, farmlands), and from this various haunts spread. So it is advisable to study them separately, taking into account the fact that in natural landscapes there are other types of animals, anthropogenic landscape-other types of animals.

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