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REMOTE SENSING OF AGRICULTURAL LANDS APPLICATION OF TECHNOLOGIES THROUGH MODERN PROGRAMS

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ABSTRACT

In the article, remote sensing is currently carried out using spatial methods using aircraft and satellites. Also, in remote sensing, not only photographic films, but also digital cameras, scanners, videos, radar and thermal sensors are used. In the past, remote sensing was limited to the use of the visible part of the electromagnetic spectrum, the part of the spectrum that is not visible to the human eye can be used today with the help of spectral filters, photo films and other types of sensors.

Keywords: MapInfo, remote sensing, LIDAR, agricultural maps, GIS.

INTRODUCTION

For the further prosperity and development of our republic, we must strive to improve our living conditions and improve the effective use of scientific and technical achievements and modern methods. We know that new technologies are introduced every year. One of these is remote sensing technology. It really has a wide range of possibilities. Recent years have been characterized by the rapid development and spread of Earth Remote Sensing (ERS) and geoinformation technologies.

Space images are used in various spheres of activity: cartography, urban management, forestry and agriculture, water management, inventory and monitoring of objects of oil and gas production and transportation infrastructure, environmental assessment problems. is actively used as a source of information for decision making. Exploration and prediction of mineral deposits and hakozas. Geographic information systems (GIS) and geoportals are used to analyze data for the purpose of making administrative decisions.

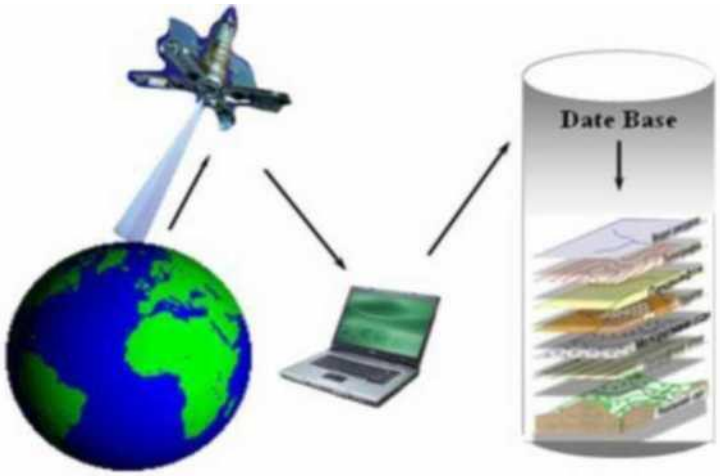

Figure 1. Electronic card using remote sensing data

functional process of creation.

Remote sensing is the study or collection of information from a distance. Such surveillance may occur with ground-based devices (eg, cameras) and sensors or cameras based on ships, aircraft, satellites, or other space-based devices. Today's data is usually stored and processed by computers. The most common software used in remote sensing are ERDAS Imagine, ESRI, MapInfo and ERMapper. Remote sensing is the data obtained by analyzing the information obtained with the help of equipment that is not in direct contact with the object, field or phenomenon under investigation. In the world of geospatial science, remote sensing is also known as "earth observation", which means observing the earth using sensors at a high distance from the earth's surface. Sensors are similar to ordinary cameras, except that they do not use visible light, but use other ranges of the electromagnetic spectrum, namely infrared, microwave and ultraviolet ranges. Sensors are becoming very advanced, with the help of which it is possible to take pictures of very large areas.

A number of the main topographic and thematic maps available in our republic were published several decades ago, and the information on them is outdated and has lost its meaning. When creating cadastral cards that meet the requirements of the new era, we used photo plans based on remote sensing data. The advantages of the newly created electronic and digital card are that correcting some errors made during the card creation process does not cause any problems and does not take much time. Currently, remote sensing is carried out using aerial methods using aircraft and satellites. Also, in remote sensing, not only photographic films, but also digital cameras, scanners, videos, radar and thermal sensors are used. In the past, remote sensing was limited to the use of the visible part of the electromagnetic spectrum, the part of the spectrum that is not visible to the human eye can be used today with the help of spectral filters, photo films and other types of sensors. Also, the view of the earth was applied to practice and to solve vital problems, for example, we can cite air reconnaissance during World War II.

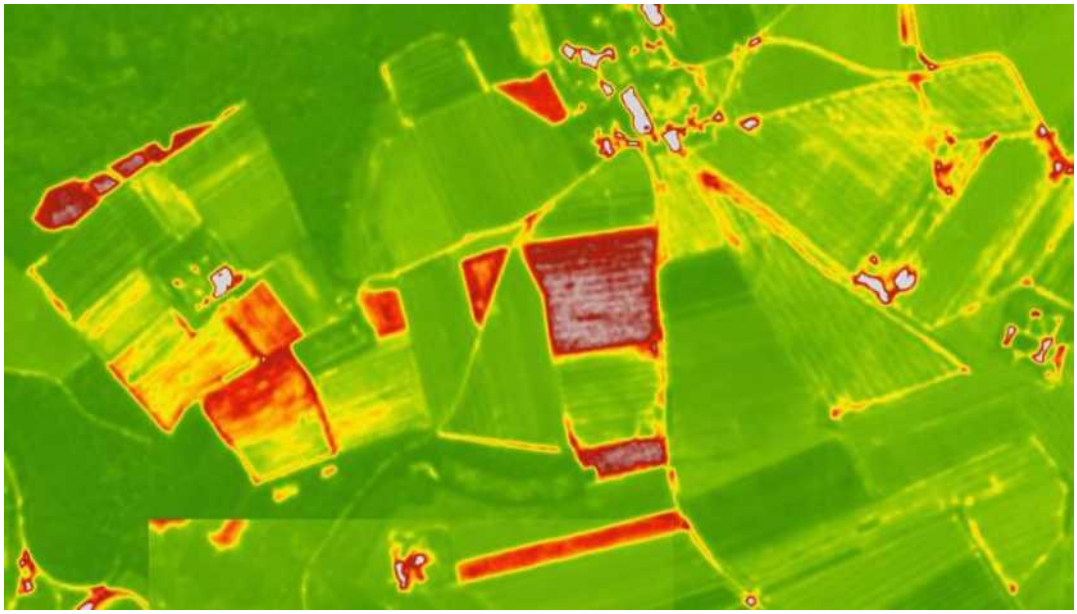

Figure 2. Rural satellite imagery and remote sensing data application for farm cards.

Aerial photographs provided an opportunity to observe the location of the enemy's army quickly and more safely than observation from the ground. Aerial photographs made it possible to quickly and relatively accurately update military maps and information about strategic locations. Nowadays, remote sensing is widely used in environmental management, a field that requires fast, accurate and new data collection. Satellite technologies and the creation of multi-spectral sensors have further expanded the possibilities, with the help of these technologies it is possible to obtain information about the environment from very large areas of the earth that are not visible to the human eye [1].

One of the most common methods of remote sensing of the Earth is to image the Earth's surface using different spectral intervals using different methods. Identifying only situations and objects using multispectral images

not limited to, but there will be an opportunity to evaluate them quantitatively. In the process of thematic analysis of images, various sources are often used, for example, digital topographic and thematic maps, graphs, city plans, external databases. The size of multispectral images is characterized by the degree of possibility to determine the characteristics of the smallest object in the image. Depending on the problem, low-level (more than 100 m), medium-level (10-100 m) and high-level (less than 10 m) images are used. Survey images consist of low-level planar images, but can simultaneously cover a large area, up to an entire hemisphere. Such information is widely used in the field of meteorology. Today, mid-plane imagery is the best source of data for environmental monitoring. Due to the fact that high-resolution plane images allow for high-resolution analysis, they have been widely used in recent years for military purposes, as well as for creating agricultural maps [2].

The demand for using remote sensing in map development is increasing day by day, and it is used to perform the following tasks: stereo coverage, frequent imaging, timely data delivery, large area coverage, global coverage, for future map updates. storage in digital format and adaptation with modern GAT technologies.

Users of the cards include forestry, mining and oil companies, service engineering organizations, utilities and infrastructure development organizations (pipelines, telecommunications, transportation and power services), government mapping organizations and defense systems. From defense systems to commercial applications, information and its scale and accuracy are increasing the demand for the use of card products.

The currently created versions of GAT technologies fully cover the previous ones and are somewhat improved. This made it possible to effectively use digital cards created in previous electronic versions.

In general, the creation of a new topographic map, the creation of a database of various topics, including communication objects, the creation of cadastral maps, and their connection to topocoordinate systems were all performed on the basis of computer technology. Geographic information system GAT technology is used as the most optimal software system that can provide sufficient information about the land in solving issues such as gathering, processing, and distributing information.

We have considered the creation of maps and plans, their processing and data integration as one of the main tasks of GAT technology. Today, data collection and the creation of a corresponding database are carried out on the basis of ArcGis, Panorama, GeoDraw, GeoGraph, Atlas Gis, Win Gis, ArcInfo and other programs [6]. In the first stage, the following activities are carried out during preparatory work. Card design usually refers to the placement of information in the card [5]. One of the main goals of the design is a clear and understandable representation of the planned card for users.

The main result of the design of the card is its program, which is considered the main document of the card. Additional technical and economic indicators and others are shown in the program. The card program includes the following sections:

- purpose of the card;
- mathematical basis;
- the contents of the card;
- database, resources and ways to use them; includes.

Later, when conducting field work, the work of connecting to the coordinates, filling in the field research journal and comparing the objects with photos is carried out.

The types of remote sensing data vary, but each plays an important role in a particular remote sensing capability. The first method of remote sensing data collection is through radar. Its most important tools are for monitoring air traffic and spotting hurricanes or other potential disasters. In addition, Doppler radar is a common type of radar used to detect meteorological data and is also used by law enforcement agencies to monitor traffic speed. Other types of radar are also used to create digital models. Another type of remote sensing data is obtained from lasers. They are often used in conjunction with radar altimeters on satellites to measure wind speed and direction and ocean currents. These altimeters are also useful in sea level mapping because they are able to measure gravity and water currents caused by different seafloor topographies. These same ocean heights are then measured and analyzed to create sea level maps.

Also widely used in remote sensing is LIDAR - Light Detection and Ranging. It is most famously used for weapons, but can also be used to measure atmospheric chemicals and the height of objects on the ground.

There are 3 main methods of mapping in remote sensing and area monitoring:

1. Field images - taking measurements using geodetic measuring instruments, observation and data collection using location maps.
2. Aerial photography - taking digital pictures of the earth's surface with the help of equipment specially installed on flying machines (planes, helicopters, etc.).
3. Spatial imaging - taking pictures of the earth's surface with the help of special equipment installed on space apparatus (sputnik).

SUMMARY

This method of creating cards on various topics not only speeds up the work process, but also increases the quality of work. Cards created on the basis of GAT technologies will be published as necessary, and if not necessary, they will be made available in electronic form.

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