



FORMATION OF A DATABASE OF ECOLOGICAL MAPS USING GEOINFORMATION PROGRAMS

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ABSTRACT

In accordance with the Regulation of the Cabinet of Ministers of the Republic of Uzbekistan No. 29 dated January 15, 2019 “On the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection”, a number of important works are carried out in our country, such as the protection of ecology and the environment and reports on the work carried out in this regard, the collection, processing and formation of a database of statistical data based on observations of the state of ecology and the environment

In accordance with the Regulation of the Cabinet of Ministers of the Republic of Uzbekistan No. 29 dated January 15, 2019 “On the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection”, a number of important works are carried out in our country, such as the protection of ecology and the environment and reports on the work carried out in this regard, the collection, processing and formation of a database of statistical data based on observations of the state of ecology and the environment. Based on the tasks, all work on ecology and the environment in our republic is carried out by the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection (abbreviation - the State Committee for Ecology) [1]. The number of enterprises and organizations operating in the territory of the Republic of Uzbekistan increased by 366,275 from 2001 to 2024 and currently amounts to 485,024. The permanent population is 36,799,800 people by the beginning of 2024. This indicates an increase of 7,676,400. As of January 1, 2024, the number of vehicles owned by individuals is 4,020,744. This is 383,625 more than in 2023[2]. Also, maps of ecological systems are being created, divided into different parts. Although each of the above-mentioned data is included in the statistical database, the demand for electronic maps that show exactly in which regions it has grown and provide ecological maps with a single piece of information is still high [3].

Automated systems are used to obtain the necessary information in the field of geodesy and cartography at high speed and with high accuracy. Such a system should have a large number of graphic and thematic databases, to make quick decisions, to form knowledge about the world for the user, and to provide various spatial data, geographic information systems (GIS) have been created.

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The formation of a database of geographic information systems occurs in the following form and includes the following stages:

- 1) Collect, compile, and analyze geographic information: raster data such as topographic maps, satellite images, and aerial photographs, as well as information in simple tabular form;
- 2) Export all collected information to computer technology;
- 3) Formation of geoinformation layers by processing information on a computer;
- 4) Obtaining digital maps by combining the formed layers.

If we also create the amount of gases emitted into the air from factories, organizations, and enterprises using the electronic maps in this created database, and combine them with vehicles and human factors, we can have the electronic database and ecological map we need.



Figure 3. Map of harmful gases emitted into the atmosphere in 2020

The above pictures are examples of only certain parts of the ecology of the Republic of Uzbekistan. However, we know that the concept and elements of ecology are very broad and require a new approach based on modern requirements. We need to create a single geoinformation database that incorporates the above parts of ecology and implement constant updates.

The ecological maps we want to create should have legends and symbols for cartographic images that provide information about buildings and structures, densely populated areas, areas with high concentrations of harmful gases emitted into the atmosphere, areas with the most traffic, areas with the cleanest air, and many other things, in accordance with state standards and in a way that is easy to understand for ordinary citizens.



The process of collecting ecological data, geodesy and cartography, statistical data and creating all types of maps is regulated and protected by the laws and regulatory legal acts of the Republic of Uzbekistan.

Conclusion. Ecological map databases created in the ArcGIS program guarantee the visibility of the scale, visibility, level of modeling, ease of updating, efficiency, flexibility, compactness and other convenient features of the created map. Also, the ecological map database provides the ability to quickly obtain information about buildings and structures, the ecology of the territories, the number of inhabitants and vehicles, annual indicators of harmful gases emitted into the atmosphere, and the level of environmental pollution. Another unique feature of this database is that it allows you to know in advance in which regions of the Republic of Uzbekistan environmental hazards will occur and take measures to prevent them.

- 1.Regulation of the Cabinet of Ministers of the Republic of Uzbekistan dated January 15, 2019 No. 29 “On the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection”.¹
- 2.Official website of the State Statistics Committee: www.stat.uz
- 3.www.lex.uz
- 4.<https://eco.gov.uz/uz>