ABSTRACT

Master's thesis: 99 p., 22 Fig., 6 tables, 1 addition, 30 sources.

Relevance. Various morphometric parameters of relief are widely used in areas where it is necessary to quantify the properties of the earth's surface. Both in applied and theoretical studies, they remain indispensable when the contribution of relief to the differentiation and organization of geographical space is determined. It is the physical surface of the Earth in the field of gravitational and insolation processes that contributes to the transformation of inter-component geographical interactions into a territorial organization. In the projections of multi-level structures of the earth's surface relief can be traced and polystructural landscape pattern.

The relevance of the theme of the thesis is due to the need for geographical research in the use of relief data in digital form in connection with the increasing role of geoinformation technologies in solving various problems, the need to improve the quality and efficiency of methods for creating and using digital elevation models (DEM), ensuring the reliability of the created models.

The aim of the study is to study the principles of terrain mapping for ground navigation using SRTM data and comparison of data interpolation methods.

To achieve the goal you need to perform the following tasks:

1. Consider the main ways to build digital terrain models;

2. Consider the principles of construction of maps for land navigation;

3. Consider the use of SRTM data for the construction of maps of land navigation;

4. Build elevation maps for ground navigation using selected interpolation methods and compare the results.

Relationship of work with scientific programs, plans, themes. The work was carried out at the Department of Automated Systems for Information Processing and Management of the National Technical University of Ukraine " Igor Sikorsky Kyiv Polytechnic Institute" within the theme "Methods of construction of local relief maps for land navigation" (№ DR 0117U0009100).

The object of study – the process of constructing maps of land navigation.

The subject of research-interpolation methods in the construction of digital terrain models.

Research methods used in this work are based on the methods of machine learning, analysis, interpolation.

The scientific novelty of the results is that for the first time the selected interpolation methods are compared in the construction of local maps of the relief.

Publications. Materials of the work are published in the international scientific journal "Science Rise" - "Principles of construction of topography maps for ground navigation", the scientific journal "Computer-integrated technologies: education, science, production" - "Comparison of interpolation methods for building relief maps for ground navigation", in the international scientific conference "Modern problems of mathematical modeling, computational methods and information technologies" – "Optimization of algorithms for building relief maps for ground navigation", at the all-Ukrainian scientific and practical conference of young scientists and students "Information systems and management technologies" - "Principles of building a relief map", at the international scientific conference "Intelligent decision-making and computing intelligence systems" - "Optimization of algorithms for building relief maps for ground navigation".

INTERPOLATION, PLOTTING, NAVIGATION, DIGITAL ELEVATION MODEL, ANALYSIS, MAP.