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Calculation of Effective Indicators of Relief Section Height

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Abstract: This article discusses differential dimensions of the height of the relief section are established using the primary informative and geoindicator characteristics of the distribution of the ends of the local relief heights, and on the basis of these, the morphometric properties of the distinguishing features of the relief surface are taken into account.

Keywords: Geographic Information Systems, SLC, land management, LIS

Introduction. The nation's efficient use processes are intrinsically related to the nation's land management processes. This calls for accurate and current data on the health of the land fund and the dynamics of its growth.

Because there are so many items and themes related to land relations, the country's current system of land use is defined by a lot of information. Therefore, automated systems are the only ones capable of storing, analyzing, and disseminating this complex, multidimensional information.

Geographic information systems (GIS) and land information systems (LIS), which differ in terms of legal support, tasks, principles, content, and categorization features, are the two main areas into which these systems fall.

Various issues in the area of land relations are resolved at all administrative and territorial levels by the State Land Cadastre (SLC), a sophisticated land information system (country, region, territory, region, municipality). Only current computer systems and information technologies are capable of processing the enormous volumes of data related to each land cadastral plot, contour of land, economic and administrative unit, and their dynamics. [2]

Geoinformation systems. Each year, a person's information needs impact all new facets of his activity. Practically all contemporary fields of knowledge have amassed a lot of experience using knowledge obtained from many sources. The main informative and geoindicator characteristics of the distribution of the ends of the local relief heights are used as the basis for determining the differential dimensions of the height of the relief section, and based on them, the morphometric characteristics of the distinctive features of the relief surface are taken into consideration. The basic idea behind the method is to base the effective heights of the relief sections on plots of the differentiated structures of the designated morphometric area of the relief, which consists of three separately separated from most of the real heights of the ends of the relief of the given location. In this case, the morphometric field of terrain elevations constitutes a closed surface of the topographic order and is opened only at certain nodes distributed with random values on the field. As a consequence of the methodical construction of the symptom structure, the structure parameter in this case may have a closed character, which may operate as a natural and suitable feature of the distribution of the relief symptom.

The incorporation of information-capacity and the primary geoindicator features was regarded as thoroughly considered and practically beneficial in the division of the region into distinct portions by the morphometric area comparable to the trend surface. These distinctive relief height indicators, relief height modal value, and relief height amplitude fluctuation are computed, and they accurately depict the spatial-statistical laws relating to relief morphometry. They have the following characteristics, which are derived from their spatial-statistical essence and theoretical-practical purpose: separation of geoindicators, functional connection with the primary morphometric symptoms of the relief, high information capacity and the expression of genetic characteristics, as well as the validity of the laws of symptom distribution.

The foundation for the differentiation of the height of the relief section, in which the height of the ends of the relief surface in question is separated into absolute quantities and total modal quantities, is the geometric partition of the height of the morphometric field into distinct structural components.

The key distinction is the division of the anticipated height of the relief section into the number of three base levels: the second level - the amount of section height is the portion of the area split below the modal height; the third level - the amount of section height is greater than the modal height. The head level is the height of the modal section that is spatially specified. The relief height is then geometrized by modal, sub-modal, and super-modal variables, and the section height is separated into three primary optimum dimensions. The height of the relief is derived from the absolute amount and their fluctuation in space, where the modal height acts as a natural structural node parameter of the relief and manifests as a general spatial-statistical criterion in the division of the morphometric field into separate structural parts. The relief morphometric field's three differentiation sections, which it establishes, are structural objects that define the relief section's three differentiated height values.

The symptom mode is chosen for contour differentiation based on the characteristics unique to the morphometric region of the relief as the primary geoindicator characteristic. The height of the relief might range from 60 to 70% of the entire distribution of the majority of points, and the mode is thought to be the most relevant number for the relief sign. The study's findings show that the distribution of relief heights is significantly asymmetrical radial in type and has a visual and probabilistic-structural distribution despite its diverse complexity.

Despite their great number, the modal values of the relief height, according to calculations based on the data, fall between 42 and 60%. A mode is errorless, resistant to strong selects, detectable in some uncertainties, and keeps its invariance even when the random variables are switched. The values of the primary frequencies, which influence the character of the symptom distribution, are gathered around this junction of distinct linear structures.

The ratio of modes to the mean, which is a crucial parametric test defining a specific empirical sample, shows the evolution of the geometry of the amount of asymmetry and the likely frequency of the symptom.

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The appearance of the distribution curve is mode, polymode, or asymmetry, and the placement of the modal parameter is predetermined. Mode point distribution can be incorporated in structural nodes as a change of points in essence, where the trend change of the function happens. Functionally, the key characteristics of average amplitude fluctuation, median, asymmetry, and excesses are connected to the distribution of all variables.

The following form represents the region of differentiation of the height of the relief section in the spatial morphometric field:

$$\begin{cases} h_1 \in Q_{(h_{mo})}, S_1 = h_{mo} \\ h_2 \in Q_{(h_i<h_{mo})}, S_2 = \sum_{h_{min}}^{h_{mo}} h_2^i \\ h_3 \in Q_{(h_i>h_{mo})}, S_3 = \sum_{h_{mo}}^{h_{max}} h_3^i \end{cases}$$

Here h_{mo}, h_{min}, h_{max} - modal, minimum, and maximum amounts of relief height peaks; h_1, h_2, h_3 – the expected effective amount of the relief height section, determined differentially by three separable parts of the morphometric area of the terrain relief; $Q_{(h_{mo})}$, $Q_{(h_i<h_{mo})}$, $Q_{(h_i>h_{mo})}$ - respectively $h_i = h_{mo}$, $h_i < h_{mo}$, $h_i > h_{mo}$ geometric areas where the height of the relief ends is distributed; S_1, S_2, S_3 - respectively, the sum of the absolute values of the height peaks in three separate parts of the relief morphometric area.

h_{mo}, h_i, $h_{\tilde{a}}$ conditions set for the nature of changes in amounts:

- A location's relief is categorized into basic flat shapes, such as flat, step-shaped, wavy, overturned (ploughed), and tiny ridged relief $h_i - h_{mo} \approx h_{\tilde{a}} < h_{mo}$;

- The relief of a region with hills of varying heights and relief with big, medium, and tiny ridges, all of which are arranged in a straightforward shape. -$h_i - h_{mo} < 0$, $h_{\tilde{a}} - h_{mo} > 0$;

- High-mountainous, medium-mountainous, and low-mountainous types of relief make up the region's mountainous relief - $h_i - h_{mo} < 0$, $h_{\tilde{a}} - h_{mo} > 0$;

If the relief's height is typical of the symmetric form of the empirical distribution's normal type, it is $h_{mo} \approx h_{\tilde{n}\eth}$; nevertheless, the empirical distribution of the relief's height is asymmetrical, measuring $h_{mo} < h_{\tilde{n}\eth}$. The height of the modal ends of the relief components is included in the analytical assessment of the suggested technique for estimating the height of the relief section, which is provided in the form of a system of assessments.

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$$\varphi(h) = f(h_{mo}, h_i, h_{\hat{a}}), \begin{cases} h_0 = h_{mo} \\ h_i = h_{mo} - \gamma_i \left(\frac{M}{1000}\right) \\ h_{\hat{a}} = h_{mo} + \gamma_{\hat{a}} \left(\frac{M}{1000}\right) \end{cases}$$

Here, h_{mo}- modal amount of relief height ends*;* $\gamma_i, \gamma_{\hat{a}}$- is a coefficient that takes into account the fluctuation of the cross-section height in two parts, the amount of height ends is lower or higher than the modal amount, in unit part*; M*- numeric scaling denominator.

In this case, the height of the relief ends is understood as the height of the relief points above the horizontal plane of the lower dendusion level.*;* h_i - the absolute amount of the section height sought for morphometric field plots where the relief height does not exceed the modal height $h_i < h_{mo}$; h_b^i – relief height is the absolute amount of relief section height for sections that exceed the modal height $h_i > h_{mo}$.

Modal amounts are easily and quickly determined. On a different surface, using a histogram and the same procedure, or by examining the peculiarities of the relief height distribution. The empirical quantity of the modal is determined using the histogram or variational series using the following formula [27] when there is enough information.

$$X_0 = X_{0_{i.\tilde{a}}} + \Delta X \frac{\ddot{I}_{\tilde{u}} - \ddot{I}_{\tilde{u}-1}}{(\ddot{I}_{\tilde{u}} - \ddot{I}_{\tilde{u}-1}) + (\ddot{I}_{\tilde{u}} - \ddot{I}_{\tilde{u}+1})}$$

Here $\tilde{O}_{i_{i.\tilde{a}}}$ - low frequency of the modal interval*;* $\ddot{I}_{\tilde{u}}$- frequency of the modal interval*;* $\ddot{I}_{\tilde{u}-1}$ - interval frequency preceding the modal*;* $\ddot{I}_{\tilde{u}+1}$ - post-modal interval frequency*;* $\Delta\tilde{O} = h$ - interval difference.

Modal va o'rta arifmetik 11($\bar{X}$), mediana 22(Me), tebranish kengligi 33(d) va dispersiya 44(σ^2) orasidagi bog'lanishni hisoblash formulalari aniq

There are simple formulas to determine how the modal mean and arithmetic mean *($\bar{X}$)*, (Me), fluctuation width (d), and variance (σ^2) relate to one another.

$$\begin{cases} A = \dfrac{x - MO}{\sigma} \\ X_0 = \dfrac{S(S+1)}{[(S-1)^2 - \sigma S|\bar{x}|]} \end{cases}$$

Here $\bar{x}$ - mean arithmetic value*; A*- asymmetry*; S*- sum of observations.

Pearson made the following relation.

$$X_0 = \bar{X} - 3(\bar{X} - Me)$$

Mathematical formulas for determining the modal were derived from a number of theoretical distributions of probabilities.

- in a normal distribution, the mode is equal to the mean

$$-X_{mo} = \bar{X}$$

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- in lognormal distribution

$$-X_{mo} = \frac{1}{n}\sum log\, X10^{-\frac{\sigma^2}{m}}$$

- in the gamma distribution

$$X_{mo} = \alpha \cdot \beta \frac{\sigma_x^2}{(\alpha + 1)}$$

Here $\alpha = \left(\frac{M_x}{\sigma_x}\right)^2 - 1;$ $\beta = \frac{\sigma_x^2}{M_x};$ $M_x = \beta(\alpha + 1),$ *here* α, β- theoretical parameters of the gamma distribution*;* M_x- average value.

VM Gudkov A formula for the overall variation, which is given by the sum of the squares of the initial differences, is suggested by the index of ore and rock strata at a distance of L.

Based on the available data from the observation locations, it accurately depicts the nature of the vibration amplitude while analyzing various forms of vibrations (image). The amplitude of oscillations that are opened on the relief region is evaluated as the absolute sum of the first successive discrepancies, and as the quantity rises, the linear law holds.

Scale has a specific role in topographic maps and plans as a controlled parameter that directly affects the evaluation of the degree of base and location complexity in the development of plan and height surveying difficulties. It's kept quiet. According to the scale, the height of the relief section and other significant natural, technological, economic, and other elements associated to it are defined in the context of the local environment. Current regulations regulate and clarify topographic planning and map scales.

These scale size standards are more reasonable in nature, as demonstrated by practice and applications, and the choice of scales for topographic surveys and graphic goods has a fundamental character. It is comprehended in light of the methodical, informative, and integrative character of the development and use of scales. There is a desire to select a scale appropriate for the peculiarities of tiny land plots as the necessity for an average local scale grows. Complexity, relief contours and blurriness, completeness and richness of their portrayal, variety of location indications, plot area mistakes, amount of information, purpose, and level of accuracy and clarity necessary, as well as drawings and plans, are some examples of these aspects. the kind and scope of the construction-related areas, their size, related economic factors, etc.

Conclusion: It is progressive and acceptable to use the idea of the modal characteristic of the relief height (X_{mo}) and the location of the amplitude change (γ) as the primary spatial-statistical parameters for developing a logical compositional modal assessment structure for figuring out the height of the relief section.

References

1. Хромых В.В., Хромых О.В. Цифровые модели рельефа: учебное пособие. Томск: ТМЛ-Пресс, 2007. -178 с.
2. Симонов Ю.Г. Морфометрический анализ рельефа: - Смоленск: Изд-во Смоленского ун-та, 1998. – 273 с.

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3. Симонов Ю.Г. Объяснительная морфометрия рельефа. М.: ГЕОС, 1999. - 263 с
4. Ласточкин А.Н. Общая геоморфология. Учение о Морфологии рельефа. СПб: Изд-во СПбГУ, 1991. -105 с.