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CREATION ELECTRONIC MAPS FOR THE LOCATION OF THE CENTERS ENGAGED IN CLUSTER ACTIVITIES USING GEOINNOVATION METHODS AND TECHNOLOGIES

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Abstract: This scientific article explores the utilization of geoinnovation methods and technologies in creating electronic maps for locating centers engaged in cluster activities. The article highlights the importance of clustering in promoting economic growth and development. It discusses how geoinnovation techniques can be harnessed to enhance the identification and visualization of cluster centers, enabling policymakers and stakeholders to make informed decisions regarding resource allocation, infrastructure development, and potential collaborations**.**

Key words: clustering, geoinnovation methods, electronic maps, spatial data analysis, regional development.

Relevance and necessity of research: The clustering phenomenon has gained significant attention due to its potential to foster economic competitiveness, innovation, and regional development. To harness the benefits of clustering, policymakers require accurate information about the location of cluster centers[1]. In this regard, including in the study of agricultural, natural and socio-economic problems related to the development of the economy in the USA, Russia, Ukraine, Germany, China, Vietnam and other developed countries of the world, using agricultural electronic cards special attention is paid to providing reliable information about current cartography as an actual scientific-practical issue[2].

What Is GIS Mapping? GIS stands for geographic information system and the map is, of course, a visual representation of quantifiable data. Compared to traditional table maps, a GIS map is **dynamic and interactive**. It can reveal previously unseen features by highlighting them and show change of these features over time, based on the given attributes. The creation of electronic maps for the location of centers engaged in cluster activities using geoinnovation methods and technologies is a topic that has gained significant attention worldwide. Many countries and regions have recognized the value of clustering activities and the need for effective mapping to support them. In developed countries like the United States, European nations, and Japan, there has been extensive research and implementation of geoinnovation methods and technologies for mapping cluster centers. These countries have well-established systems for collecting geospatial data, such as satellite imagery, aerial photography, and ground surveys. They also have advanced Geographic Information Systems (GIS) that can process and analyze this data to create accurate electronic maps.

The use of geoinnovation methods and technologies in mapping cluster centers is not limited to developed countries. Many developing countries and emerging economies are also recognizing the importance of clustering activities for economic development. Countries like China, India, Brazil, and South Africa have made significant progress in adopting geospatial technologies for mapping cluster centers.

In Central Asia, including Uzbekistan, there has been a growing interest in leveraging geoinnovation methods and technologies for economic development. Uzbekistan has taken steps to promote clustering activities in sectors like agriculture, textiles, tourism, and information technology. The government's focus on modernization and digitalization provides an opportunity to incorporate geospatial technologies into creating electronic maps for cluster center locations.

Cluster Maps. This type successfully combines the use of colors, shapes, and labels to cluster densely packed points of data together. In other words, there are too many points to be displayed individually on the GIS map, so they are fused into a single cluster point for convenience.

Level of study of the problem

The analysis of the existing scientific literature related to the field shows that, along with foreign scientists, scientific researches were conducted in our republic as well as foreign scientists on cartographic research and provision of problems related to the location and development of cluster activities as the main branch of the economy. Therefore, the theoretical and methodological foundations of industrial mapping were developed by foreign and Commonwealth of Independent States scientists - N.N. Baransky, A.P. Zolovsky, M.N. Nikishov, I.Yu. Levisky, V.I. Sukhov, A.D. Shuleykin, T.M. Yegorova, M.Nellis, Dj.Studied by Desiree, M.D.Steven, A.P.Verveyko, Ye.M.Krokhmal, A.A.Reminsky, A.I.Preobrazhensky, Yu.S.Bilich, A.S.Vasmut, V.P. Shosky, T.I. Kozachenko, M.K.Muchilolar.

Research related to agricultural cartography in Uzbekistan is detailed in the scientific works of T.M.Mirzaliyev, E.Yu.Safarov, A.Egamberdiyev, A.Bozorboyev, K.Gadoyev, I.M.Musayev and other scientists [1-3]. The theoretical and methodological foundations of agricultural mapping based on GIS were studied by foreign scientists A.M.Berlyant, A.R.Batuyev, A.P.Karpik, V.S.Tikunov, D.V.Lisisky, D.V.Diem, N.Stupen, and in Uzbekistan E.Safarov, S.A.Avezov and others reflected in his research.

Research on the creation of cluster activities maps using remote sensing of the earth (ReMZ) data in foreign countries and the Commonwealth of Independent States: Yu.F. Knijnikov, V.I.Kravsov, T.V.Vereshchaka, Ye.L.Krinova, L.A.Plastinina, Ye.N.Sutyrina, V.P.Savinykh, V.S.Tikunov, A.M.Chandra, S.K.Gosh; It was carried out in Uzbekistan by E.Yu.Safarov, I.Musayev, S.A.Avezov and other scientists. Without denying the results of this research, the analysis of the results of scientific and practical research in the cartographic research of agriculture in Uzbekistan shows that nowadays, depending on the natural and socio-economic conditions, agricultural infrastructure objects and Research on improving the method of creating an electronic card of agriculture, which covers branches, cannot be said to be sufficient. In addition, it is important to create an electronic agricultural map and create interactive and web cluster maps based on computer programming capabilities and industry-geodatabase [2].

Methods, study area (Fergana volley):

Industry**:** Coal, iron, sulfur, gypsum, rock-salt, and naphtha are all known to exist, but only the last two have ever been extracted in significant quantities. In the late 19th century there were a few small oil-wells in Fergana, but these no longer function. In the Tsarist period the only industrial enterprises were some seventy or eighty factories engaged in cotton cleaning. Leather, saddlery, paper and cutlery were the principal products of the domestic or cottage industries. This was not greatly added to in Soviet times, when industrialisation was concentrated in the cities of Samarkand and Bukhara [10].

Regions wholly or partially within the Fergana Valley

Country	**Region**	**Capital**	**Area (km^2)**	**Population**	**Population density ($/km^2$)**	**Wholly within the Valley**
Kyrgyzstan	Batken	Batken	17,000	548,247	28	No
	Jalal-Abad	Jalal-Abad	33,700	1,260,617	33	No
	Osh City	Osh	50	322,164	5,300	Yes
	Osh Region	Osh	29,200	1,199,900	41	No
Tajikistan	Sughd	Khujand	25,400	2,349,000	92	No
Uzbekistan	Andijan	Andijan	4,303	3,253,528	652	Yes
	Fergana	Fergana	7,005	3,896,395	483	Yes
	Namangan	Namangan	7,101	2,867,400	353	Yes
Totals			123,759	16,000,000	113	

Results:

The research findings reveal that geoinnovation methods significantly enhance the accuracy and efficiency of identifying cluster centers [14]. The creation of electronic maps incorporating spatial data analysis enables policymakers to visualize clusters' geographical distribution patterns. The integration of various data sources such as industrial sectors' concentration levels, company locations within clusters, proximity to transportation networks, workforce availability, etc., provides a comprehensive view for decision-makers [15].

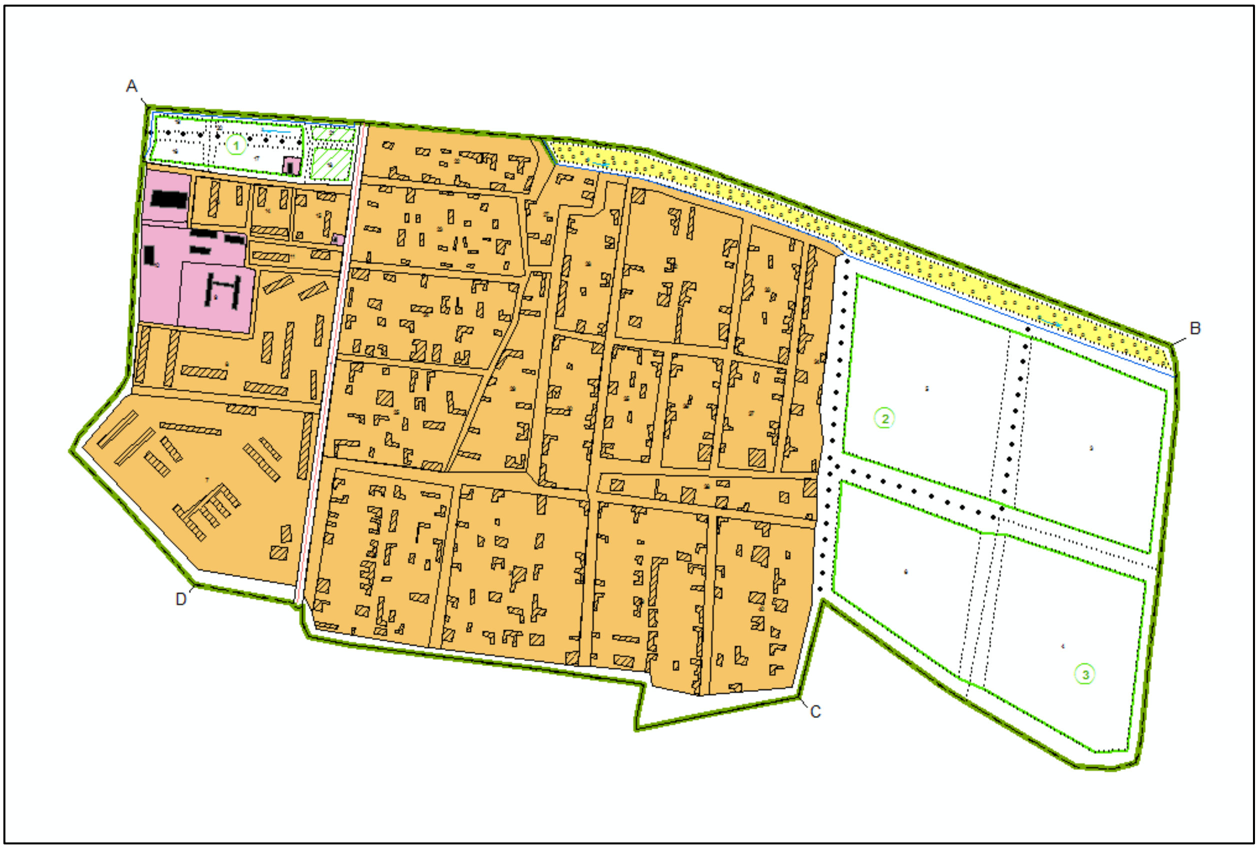
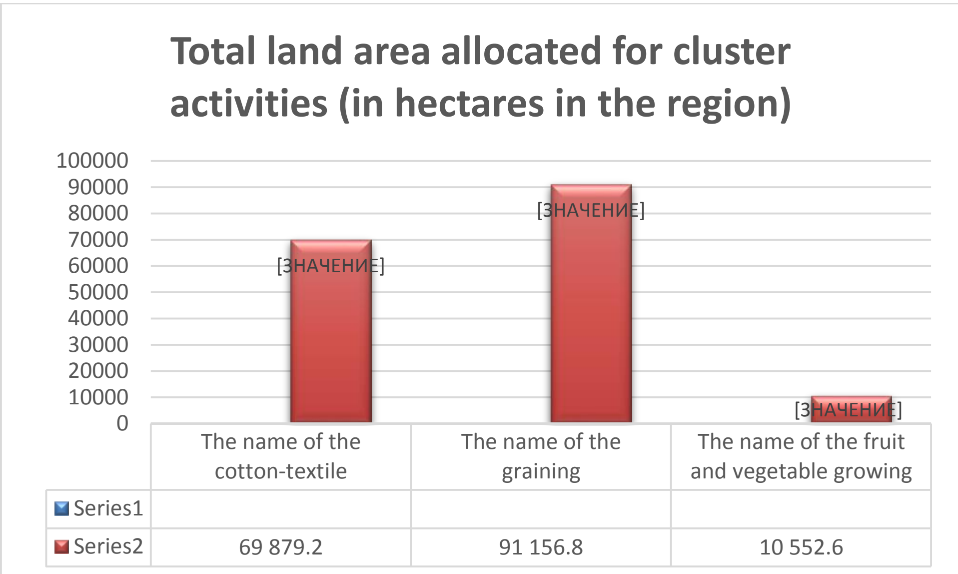


Figure 1. The categories of land occupied by enterprises that have organized cluster activities in the territory of Tinchlik MFY MAP.

This map shows the location of the activities of the enterprises engaged in clustering activities organized in the regions and the place occupied by them in terms of categories and similar details [16]. This map, created in Arcgis software, is a novelty in this field and is considered one of the most important works today (figure 1).

Discussion:

diagram 1



The information given through the diagram shows the total occupied territory of 3 different types of clustering directions in the region and their mutual ratio, and also the grain growing cluster records a high result [17].

Geoinnovation techniques facilitate effective decision-making by policymakers when allocating resources or developing infrastructure tailored to specific clusters' needs [18]. Additionally, electronic maps enable stakeholders within clusters to identify potential collaboration opportunities, leading to knowledge exchange, innovation diffusion, and enhanced competitiveness.

Conclusion:

This article demonstrates the value of geoinnovation methods and technologies in creating electronic maps for locating centers engaged in cluster activities [19]. The utilization of spatial data analysis enhances policymakers' decision-making capabilities, enabling them to allocate resources efficiently and foster regional development. Furthermore, electronic maps facilitate networking and collaboration within clusters, contributing to their sustainability and long-term success [20].

Interactive GIS Mapping: Today, we take most online maps for granted, without stopping and wondering how incredibly interactive they are [21]. A traditional map can be well-crafted, but it lacks dynamics and is limited in space and time, acting as a still photo. It simply doesn't compare to, say, a Google Map, where you can:

- drag the map to any location;
- zoom in down to a single house;
- zoom out to see the whole world at once;
- switch between layers (political, physical, street view);
- click on different objects to learn what they are (identify them);

References

1. Мирзакаримова Г. М. Қ. Муродилов ХТЎ Понятие о бонитировки балла почв и её главное предназначение //Central Asian Research Journal for Interdisciplinary Studies (CARJIS). – 2022. – Т. 2. – №. 1. – С. 223-229.
2. Ganiyev Y. Y., Qosimov L. M., Murodilov K. T. CREATING AGRICULTURAL MAPS USING GEO-INFORMATION SYSTEMS AS AN EXAMPLE OF BANDIKHAN DISTRICT //Finland International Scientific Journal of Education, Social Science & Humanities. – 2023. – Т. 11. – №. 3. – С. 1132-1140.
3. Murodilov K. T., Alisherov S. M. WEB CARTOGRAPHY AT THE CURRENT STAGE OF DEVELOPMENT OF GEOINFORMATION RESOURCES //Galaxy International Interdisciplinary Research Journal. – 2023. – Т. 11. – №. 4. – С. 166-171.
4. Toshmatov U. Q., Murodilov K. T. CREATING MAPS OF AGRICULTURE AND CLUSTERS BY USING GEOINFORMATION SYSTEMS //Innovative Development in Educational Activities. – 2023. – Т. 2. – №. 6. – С. 464-470.
5. Murodilov K. T., Muminov I. I. THEORY OF CREATING CLUSTER MONITORING WEB MAPS USING GEOINFORMATION SYSTEMS //Open Access Repository. – 2023. – Т. 4. – №. 3. – С. 1430-1436.
6. Murodilov K. T., Toshmatov U. Q. CREATING MAPS OF AGRICULTURE AND CLUSTERS BY USING GEOINFORMATION SYSTEMS. Innovative Development in Educational Activities, 2 (6), 464–470. – 2023.
7. O'G'Li M. H. T. Market transformation for sustainable rural housing //Достижения науки и образования. – 2019. – №. 7 (48). – С. 30-31.
8. Murodilov K. T. et al. USE OF GEO-INFORMATION SYSTEMS FOR MONITORING AND DEVELOPMENT OF THE BASIS OF WEB-MAPS //Galaxy International Interdisciplinary Research Journal. – 2023. – Т. 11. – №. 4. – С. 685-689.

9. Mirzakarimova G. M., Murodilov K. T., Toshmatov U. Q. REMOTE SENSING DATA: INTERNATIONAL EXPERIENCES AND APPLICATIONS //ITALY" ACTUAL PROBLEMS OF SCIENCE AND EDUCATION IN THE FACE OF MODERN CHALLENGES". – 2023. – Т. 14. – №. 1.
10. Wikipedia: https://en.wikipedia.org/wiki/Fergana_Valley
11. Murodilov K. T. et al. USE OF GEO-INFORMATION SYSTEMS FOR MONITORING AND DEVELOPMENT OF THE BASIS OF WEB-MAPS //Galaxy International Interdisciplinary Research Journal. – 2023. – Т. 11. – №. 4. – С. 685-689.
12. ogli Jasurbek N. O., Murodilov K. T. HISTORY OF CREATION OF WEB CARDS AND CURRENT PROSPECTS: PROBLEMS AND SOLUTIONS //Educational Research in Universal Sciences. – 2023. – Т. 2. – №. 2. – С. 184-186.
13. Murodilov K. T. et al. IMPROVING THE METHODS OF PROVIDING GEO-INFORMATION FOR THE MONITORING OF TERRITORIES AND DEVELOPING THE BASIS OF WEB-MAPS //Galaxy International Interdisciplinary Research Journal. – 2023. – Т. 11. – №. 4. – С. 695-701.
14. Murodilov K. T., Muminov I. I. THEORY OF CREATING CLUSTER MONITORING WEB MAPS USING GEOINFORMATION SYSTEMS //Open Access Repository. – 2023. – Т. 4. – №. 3. – С. 1430-1436.
15. ogli Jasurbek N. O., Murodilov K. T. HISTORY OF CREATION OF WEB CARDS AND CURRENT PROSPECTS: PROBLEMS AND SOLUTIONS //Educational Research in Universal Sciences. – 2023. – Т. 2. – №. 2. – С. 184-186.
16. qizi Abdullayeva G. V., ugli Murodilov K. T. PROVIDING GEO-INFORMATION FOR THE MONITORING OF THE CLUSTER ACTIVITY OF THE REGIONS AND DEVELOPING THE BASIS OF WEB-MAPS (IN THE CASE OF FERGANA REGION) //Innovative Development in Educational Activities. – 2023. – Т. 2. – №. 7. – С. 342-347.
17. Murodilov K. T., Muminov I. I., Abdumalikov R. R. PROSPECTS OF PEDAGOGICAL SKILLS IN CADASTRAL SCIENCES //JOURNAL OF ENGINEERING, MECHANICS AND MODERN ARCHITECTURE. – 2023. – Т. 2. – №. 5. – С. 12-16.
18. Khakimova K. R., Murodilov K. T. MODERN METHODS OF MANAGING GEODESY, CARTOGRAPHY //" ENGLAND" MODERN PSYCHOLOGY AND PEDAGOGY: PROBLEMS AND SOLUTION. – 2023. – Т. 10. – №. 1.
19. Murodilov K. T., Muminov I. I., Abdumalikov R. R. DESIGN PRINCIPLES FOR EFFECTIVE WEB MAPS //SPAIN" PROBLEMS AND PROSPECTS FOR THE IMPLEMENTATION OF INTERDISCIPLINARY RESEARCH". – 2023. – Т. 14. – №. 1.
20. Salimjon o‘g Y. A. et al. IMPROVEMENT OF METHODS OF GEOLOCATION MAP FOR MONITORING OF CLUSTER ACTIVITY OF REGIONS AND DEVELOPMENT OF THE BASIS OF WEB CARDS //" RUSSIAN" ИННОВАЦИОННЫЕ ПОДХОДЫ В СОВРЕМЕННОЙ НАУКЕ. – 2023. – Т. 9. – №. 1.
21. Ganiyev Y. Y., Murodilov K. T., Mirzaakhmedov S. S. EVALUATING THE PRECISION OF GOOGLE MAPS IN COUNTRYSIDE REGIONS //ITALY" ACTUAL PROBLEMS OF SCIENCE AND EDUCATION IN THE FACE OF MODERN CHALLENGES". – 2023. – Т. 14. – №. 1.