Brief information about the project

Name of the project	AP19579264 «Territorial analysis of the territories of the Semipalatinsk test site for the creation of an adaptive-landscape system of agriculture»
Relevance	The anthropogenic load on the soil cover, agrolandscape and the biosphere as a whole, which has increased over the past century, largely undermined normal conditions for their sustainable functioning. He provoked a number of regional and global nature management crises. One of the most dangerous are the regional agroecological problems of mass land degradation, the deterioration of their ecological state and functional capabilities. In some cases, they have already reached the level of anthropogenic desertification or sharp narrowing of the soil-agrolandscape base of sustainable functioning and the development of local communities and entire agricultural regions. One of these areas can be attributed to the territory of SIP. The territories where nuclear explosions were carried out will not be used at all, since their pollution level is very high. In this regard, the sections returned under the conservation program of SIP requires a detailed territorial analysis to create an adaptive-landscape farming system (ALFS) using GIS and remote sensing. Scientific results may well be used for such work in other regions of Kazakhstan as a methodological foundation.
Purpose	Territorial analysis of the territory of the Semipalatinsk test site (STS) for the creation of an adaptive-landscape system of agriculture when returning the territory of the test site to economic activity under the conservation program using GIS and remote sensing.
Objectives	*The task of 2023 is:* the scientific basis of agriculture systems; Search and preparation and digital cartographic materials: the creation of a digital basis of the geoinformation system (GIS) of the object of research and the formation of a geodata base; analysis and selection of space shots for landscape mapping; Analysis of the landscape structure of the territory. *The task of 2024 is:* the study of the methodology of conducting a territorial analysis of the territory for the introduction of the ALFS; Morphometric relief analysis; compilation of the soil and geomorphological map of the object of research; compilation of surface waters and irrigation systems of the object of research; Compilation of a map of the vegetation cover of territories; Drawing up a landscape map of the studied territory. *The task of 2025* is landscape-ecological planning of the studied territory; development of the foundations for the creation and design of the ALFS; Development of the main direction of the development of sustainable land use based on the ALFS.

Expected and achieved results	*2023:* foreign works of agricultural landscape research for the creation and design of ALFS will be studied; a geodata database of the research object will be developed based on topographic maps and satellite images; an analysis and selection of remote sensing data will be carried out; the landscape structure of the territory with a description of the NTC will be studied. *2024:* foreign methods of conducting territorial analysis for the introduction of ALFS will be studied; a geomorphological study will be conducted with the study of quantitative characteristics of landforms; a number of thematic maps of the object of study will be compiled: soil, geomorphological, surface waters and irrigation systems, vegetation cover based on satellite images and landscape. *2025:* in the process of implementing the task, a territorial analysis of the territory will be given for the purposes of creating the ALFS; the main directions for the development of sustainable land use based on the ALFS will be developed
Research team members with their identifiers (Scopus Author ID, Researcher ID, ORCID, if available) and links to relevant profiles	1. Assylbekova Aizhan, PhD, associate professor. *h*-index -3, Orcid ID 0000-0002-8609-3855, Scopus Author ID 56584674300. 2. Temirbayeva Kamshat, PhD, *h*-index - 2; Scopus ID: 56538627900, Orcid ID: 0000-0001-6810-5042 3. Valeev Adilet, *h*-index - 2; Scopus ID: 57190758844, Web of Science Researcherid: AGG-7018-2022, Orcid ID: 0000-0002-9380-351x. 4. Kudaibergenov Muratbek, PhD doctoral student, Orcid ID: 0000-0001-8316-8949 5. Zhenissova Nazym, *h*-index – 1, Orcid ID: 0000-0003-0618-1204 6. Khamit Nurzhan, Scopus ID: 59425473500, PhD doctoral student
Использование	The research results have the potential to be used as a methodological basis for conducting similar studies in various regions of Kazakhstan.
Приоритет в сравнении с реальными аналогами	Conducting a territorial analysis for the development of an adaptive landscape farming system (ALFS) using GIS and remote sensing.
List of publications with links to them	A. Valeyev, A.Assylbekova, O.Taukebayev, M. Kudaibergenov, N. Zhengissova, Y. Zhanatbekov, T. Imandosov. Assessment of the morphometric conditions of the modern relief of the Semipalatinsk nuclear test site. Л.Н. Гумилев атындағы Еуразия ұлттық университетінің хабаршысы. Химия. География. Экология сериясы, 2025, 150(1). https://doi.org/10.32523/2616-6771-2025-150-1-111-128
Patents	1. Copyright certificate No. 48314 dated 07 November, 2024. A series of maps of the morphometric conditions of the relief of STS; 2. Assylbekova A. Act of introducing research into the educational process. "8D07302-Geoinformatics" (4 lectures, 6 sem.) dated 27 September, 2024;

	3. Valeev A.G. Act of introducing research into the educational process. 6B07302 "Geoinformatics" (4 lectures, 8 sem.) dated 27 September, 2024.
!!! Along with the completed form, please attach to email relevant photographs and video materials that can be used to visualize and present the project on the web page.	

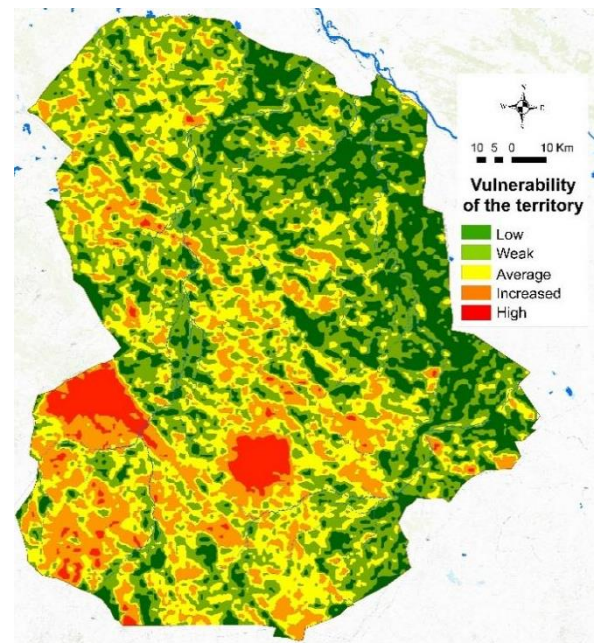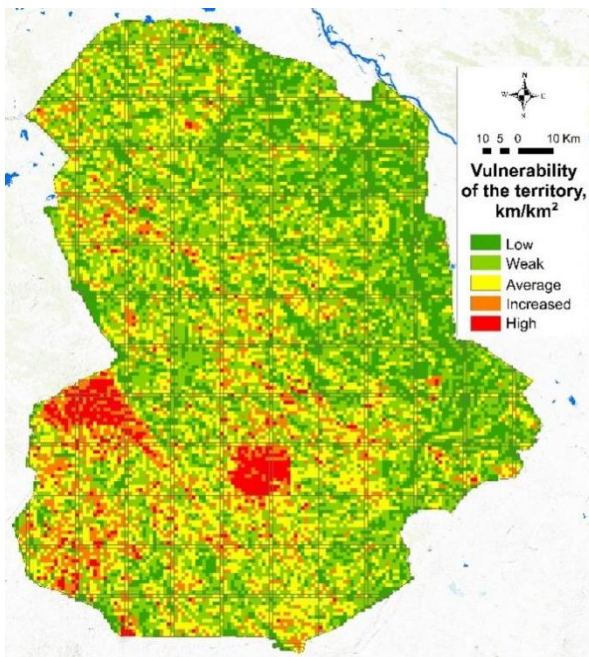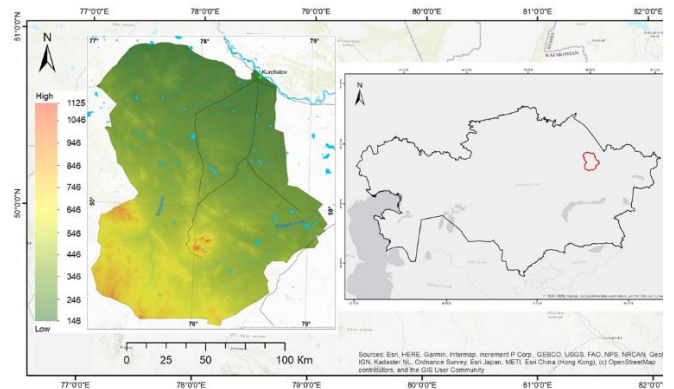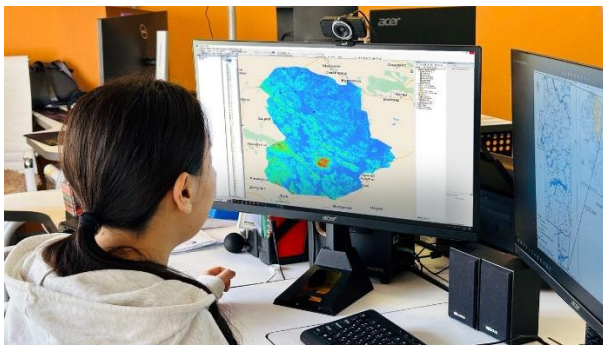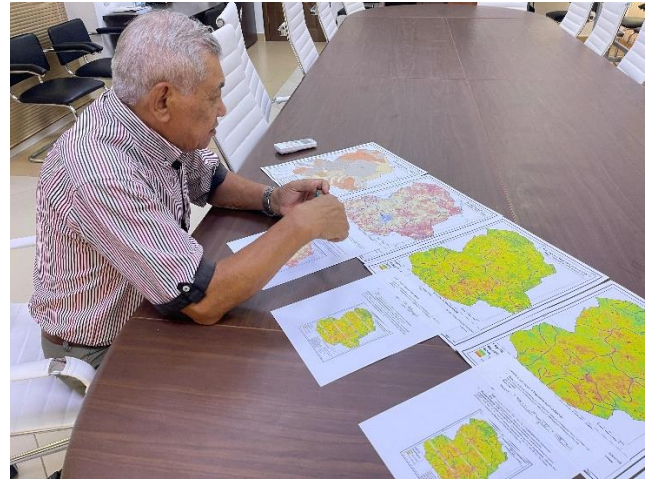**Figure 1. Working moments of field research in the study area**

Figure 2. Office processing of field research and remote sensing data