

## Brief information about the project

Name of the project	AP14871372 "Geospatial approach to assessing the risks of climatic disasters (drought and erosion) and their impact on agriculture in the Western region of Kazakhstan"
Relevance	<p>Most of the territory of Kazakhstan is in the arid zone and about 76 per cent of the territory is subjected to desertification and land degradation processes to various degrees. In 1987-1988, when mapping desertification in Kazakhstan, 66 million hectares of desertified lands were identified and 179.9 million hectares of desertified lands were identified in 1998. According to L.Y. Kurochkina's data for 2010, the area of desertified lands is 190.7 million hectares. Scientists of the Institute of Geography and Water Security in 2014 counted 207.6 million hectares of deserted lands. On the territory of Western Kazakhstan, the lands subject to wind erosion are located mostly in Atyrau and Aktobe regions.</p> <p>Thus, climate disaster risk assessment in the region is an important component in developing a geospatial approach to assessing drought and erosion of usable land and its impact on rural livelihoods and agriculture.</p>
Purpose	Identification of conditions and factors of land degradation process in the West Kazakhstan region and development of geoinformation system (GIS) of drought and soil erosion monitoring based on space imagery and long-term meteorological data for sustainable land use.
Objectives	<ul style="list-style-type: none"> <li>- to identify the main physical-geographical features of the study area and characterise the dynamics of physical-geographical processes on the basis of studying the history of physical-geographical studies of desert landscapes of the arid zone;</li> <li>- clarify research methods by applying a systematic approach;</li> <li>- to map areas vulnerable to drought at regional and local levels on the basis of physiographic, soil, geomorphological, hydrographic and soil-geomorphological maps using GIS technologies and Earth remote sensing data;</li> <li>- analyse agrometeorological conditions of vegetation vegetation and climate change trends in the territory over a multi-year period;</li> <li>- determine the extent of wind-induced soil erosion in different parts of the study area and modelling the risk of wind-induced soil erosion;</li> <li>- develop a system for modelling wind and water erosion and combining the results with meteorological data to create a map reflecting the extent of drought and for early drought prevention;</li> <li>- prepare recommendations for the development and implementation of a specialised observation programme to develop drought indicators and complement remote sensing data with ground-based information.</li> </ul>
Expected and achieved results	The research results can be used for science-based planning and targeted support for rational use of pastures and

	<p>rehabilitation of degraded lands both in separate regions of Western Kazakhstan and the country as a whole.</p> <p>The expected socio-economic effect is that identification of conditions and factors of land degradation process in the West Kazakhstan region and development of geoinformation system (GIS) of drought and soil erosion monitoring based on space imagery and long-term meteorological data for sustainable land use will lead to rational use of pastures and hayfields.</p> <p>The result of the project will be assessment of climate disaster risks (drought and erosion) and their impact on agriculture in the Western region of Kazakhstan in order to prevent and improve productivity, degraded lands for rational use of pastures and hayfields for their restoration.</p>
Research team members with their identifiers (Scopus Author ID, Researcher ID, ORCID, if available) and links to relevant profiles	<ol style="list-style-type: none"> <li>1. Tokbergenova A.A., PhD, Associate Professor, Hirsch Index - 3, Scopus Author ID 57202334262, <a href="https://orcid.org/0000-0002-1934-5063">https://orcid.org/0000-0002-1934-5063</a>, <a href="https://www.webofscience.com/wos/author/record/1177081">https://www.webofscience.com/wos/author/record/1177081</a></li> <li>2. Bissenbayeva S., PhD, Hirsch Index - 4 Researcher ID : V-3479-2019; <a href="https://publons.com/researcher/2466150/sanim-bissenbaeva/">https://publons.com/researcher/2466150/sanim-bissenbaeva/</a>; Scopus ID: 572109485336; <a href="https://orcid.org/0000-0002-3770-3143">https://orcid.org/0000-0002-3770-3143</a>, <a href="https://www.webofscience.com/wos/author/record/34243283">https://www.webofscience.com/wos/author/record/34243283</a>.</li> <li>3. Sarybaev E.S., PhD, ResearcherID <a href="https://publons.com/researcher/4873134/edil-sarybaev/">https://publons.com/researcher/4873134/edil-sarybaev/</a> ORCID, <a href="https://orcid.org/0000-0003-4081-13614">https://orcid.org/0000-0003-4081-13614</a> Scopus Author ID 56624451800</li> <li>4. Kaliyeva D.M., PhD Doctoral Student, Hirsch Index - 1, ORCID:<a href="https://orcid.org/0000-0002-5151-2204">https://orcid.org/0000-0002-5151-2204</a>, Scopus ID: 58078073100</li> <li>5. Kiyassova L.Sh., PhD doctoral student, ORCID:<a href="https://orcid.org/0000-0002-5689-0028">https://orcid.org/0000-0002-5689-0028</a>, Scopus ID: 57202332207.</li> <li>6. Duisenbaev S.M. Senior Lecturer, ORCID: <a href="https://orcid.org/0000-0003-3146-1996">https://orcid.org/0000-0003-3146-1996</a>.</li> <li>7. Seytkazy M.M. Master of Science, ResearcherID <a href="https://publons.com/researcher/4363137/moldir-seitkazy/">https://publons.com/researcher/4363137/moldir-seitkazy/</a> ORCID <a href="https://orcid.org/0000-0002-3291-4152">https://orcid.org/0000-0002-3291-4152</a></li> <li>8. Iskalieva G.M., PhD Doctoral student, ORCID <a href="https://orcid.org/0000-0002-3183-728X">https://orcid.org/0000-0002-3183-728X</a> Scopus Author ID 57218437612</li> <li>9. Zhenisova N.K., Master's student, ResearcherID <a href="https://publons.com/researcher/4871078/nazym-jenisova/">https://publons.com/researcher/4871078/nazym-jenisova/</a> ORCID, <a href="https://orcid.org/0000-0003-0618-1204">https://orcid.org/0000-0003-0618-1204</a></li> </ol>
List of publications with links to them	<p>Zulpykharov K. B., Kudaibergenov M. K., Tokbergenova A. A., Taukebaev O. Zh., Nysanbayeva A. S., Duisenbayev S. M., Seitkazy M. M., Kaliyeva D. M. Analysis and selection of satellite images for generating land use data and calculating vegetation indices (on the example of the West Kazakhstan region) [In Kazakh]</p>

	Scientific journals of the West Kazakhstan Agrarian and Technical University named after Zhangir Khan, “Gylym jane Bilim” - 2023. - No3-2(72) - pp. 93-108.
Patents	-