

**KARAKALPAK STATE UNIVERSITY NAMED AFTER
BERDAKH**

REPORT

*on study visit to Obuda University of Hungary in the frame of
the Erasmus+ DSinGIS project
(February 1– May 11, 2020)*

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Introduction

Geoinformation Science (GISc) is a new science, however, has its roots thousands of years. It integrates three traditional geosciences (firstly, geodesy as the science of precise spatial data acquisition; secondly, geography as the science of studying human and physical aspects; finally, cartography as the science of making maps. The integration of these sciences is based on the rapidly evolving computer science[1].

Today, importance of Geographic Information System (GIS) technologies in society is improving day by day. GIS technologies is being looked as an important tool for key spheres and directions of Uzbekistan: water and land resources management, agriculture, cartography, geology, ecology and in other sciences, essential in decision making for sustainable development.

Numerous of young researchers and doctoral students of Uzbekistan have been thinking about applying of GIS technologies in their research topics and field of studies. For implementation of those, mainly advanced knowledge of using software devices and computer technologies as well as theoretical and practical knowledge in the field of study are vital [2].

In this case, support of highly ranked foreign Higher Educational Institutions and qualification of their well-qualified teachers play crucial role. Erasmus+ “DSinGIS –Doctoral study in Geoinformatics” project has been giving good opportunity for doctoral students and young researchers of Uzbekistan in case of organizing 2 months scientific and practical training courses to improve their knowledge and skills in Geoinformatics [7].

So far, several researchers and doctoral students from partner HEIs of Uzbekistan have been improved their skills and qualification in their research topic and field of studies at European partner universities. Among them, me, the second year PhD student of the Karakalpak State University, Mr. Oteuliev Medetbay also have visited for two months (February 1 – April 1) as a researcher to Alba Regia Technical Faculty of Obuda University, Szekesfehervar, Hungary under supervision of Dr.Andrea Pődör on the topic of “Territorial differences of quality life of the population (on the example of the Republic of Karakalpakstan)”.



Study Plan

Before the study visit to Obuda University of Hungary, Study plan had been applied with requested documents. Here, below study plan is given:

1. Introducing my Supervisor from Host Institute
2. Taking tasks and assignments from my Host Institute Supervisor;
3. Reviewing the scientific papers and articles, which are related to:
 - a. Territorial differences of quality of life of the population;
 - b. GIS methods for creating nosogeographic map.
4. Learning new GIS programs.
5. Going to library and learning new scientific books which are regarding to my field of study;
6. Learning how to write scientific papers in my research;
7. Participating to International scientific conferences or Workshops (if applicable)

Activities and Outputs of the stay

During the study visit to Obuda University, I have strengthened my scientific and practical knowledge on GIS program. Firstly, basic concept of GIS, data collection, ArcGIS software were taught by Dr Andrea Podor.

Moreover, under supervision of Dr. Andrea Podor important methods and tasks such as: statistical, cartographic, comparative geography, extrapolation, epidemiological and other research methods were used in scientific and applied research.

(Figure 1).

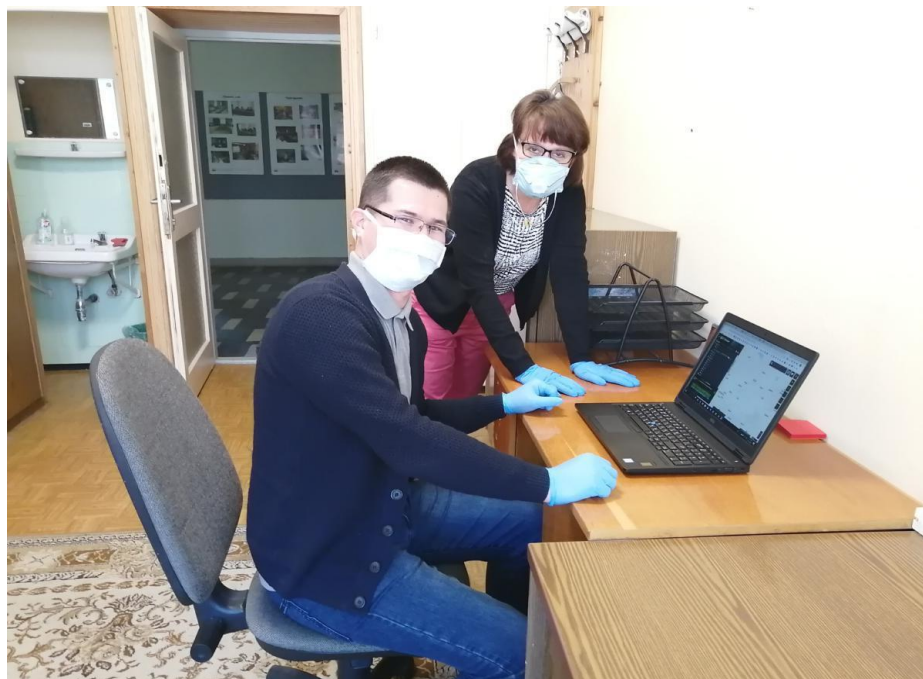


Fig. 1. Scientific research with Dr. Wojtaszek

Problems of environmental impact on population health in the world and in Uzbekistan are widely covered in the scientific literature. Most publications are concerned with the state of the environment and the problems of environmental pollution [3,4].

Many works on medical geography are known, and are widely used not only descriptive but also by statistical, cartographic, and historical methods [5,6].

Some authors connect medical geography to the development of new territories, migration of large groups to new areas, and migration. Other scientists



connect medical geography to the level of economic development and economic growth rates of the country. Some researchers say the essence of the disease is not an external factor but also that the body, which is the basis of the mechanism of the disease, lies in its reaction to its emergence [8].

It is known that in recent years, environmental pollution, ecological safety of the population and territories have become one of the most important problems in the world. According to the World Health Organization (WHO), about 24% of the world's population and 23% of deaths are caused by the detrimental effects of preventable ecological factors [9]. Therefore, the scientific study of the territorial differences in the morbidity rate of the population of the Republic of Karakalpakstan and its geographical features is one of the most important issues at present. Moreover, the connection between population morbidity and harmful ecological factors in the region should be determined from the medical and geographic perspective. It is preferable to use Geographic Information Systems (GIS) software for the development of serial nosogeographic maps reflecting the medical and geographical situation in the administrative units of the Republic.

In our opinion, when conducting medical and geographical studies, it is important to take into account that nosogeography and nosoecology, the variability of space and time, environmental factors that cause health hazards and diseases, can be affected in different combinations.

The methodological issues of using GIS technology in the development of medical conditions map that reflect the medical and geographical position of the Republic of Karakalpakstan. In the process of doing research, the territorial differentiation of morbidity of the population of the Republic of Karakalpakstan was identified and the geographical features of their distribution were highlighted. Differences in the northern and southern regions of the Republic of Karakalpakstan are mentioned, and the reasons for this discrepancy are given. All data had been collected from the Ministry of Health care and Department of Statistics of the Republic of Karakalpakstan. The infant mortality rates and population are calculated separately by districts, and these data are compared across the country.

The process of creating nosogeographic maps involves several steps. In the first step, the data collection process is carried out, which collects mostly

statistical, cartographic, environmental, extrapolation and epidemiological data. In the second step, the data is loaded into ArcGIS and the data is processed as well as the data is analyzed for years. In the third step, the data is visualized, where cartographic imaging methods are selected for imaging and the corresponding mapping method is used. In the next step, the data is visualized, where cartographic imaging methods are selected for imaging and a suitable cartographic imaging method is used. Then the layout process is done, and in the final step, the map is prepared for publication and published (Figure 2).

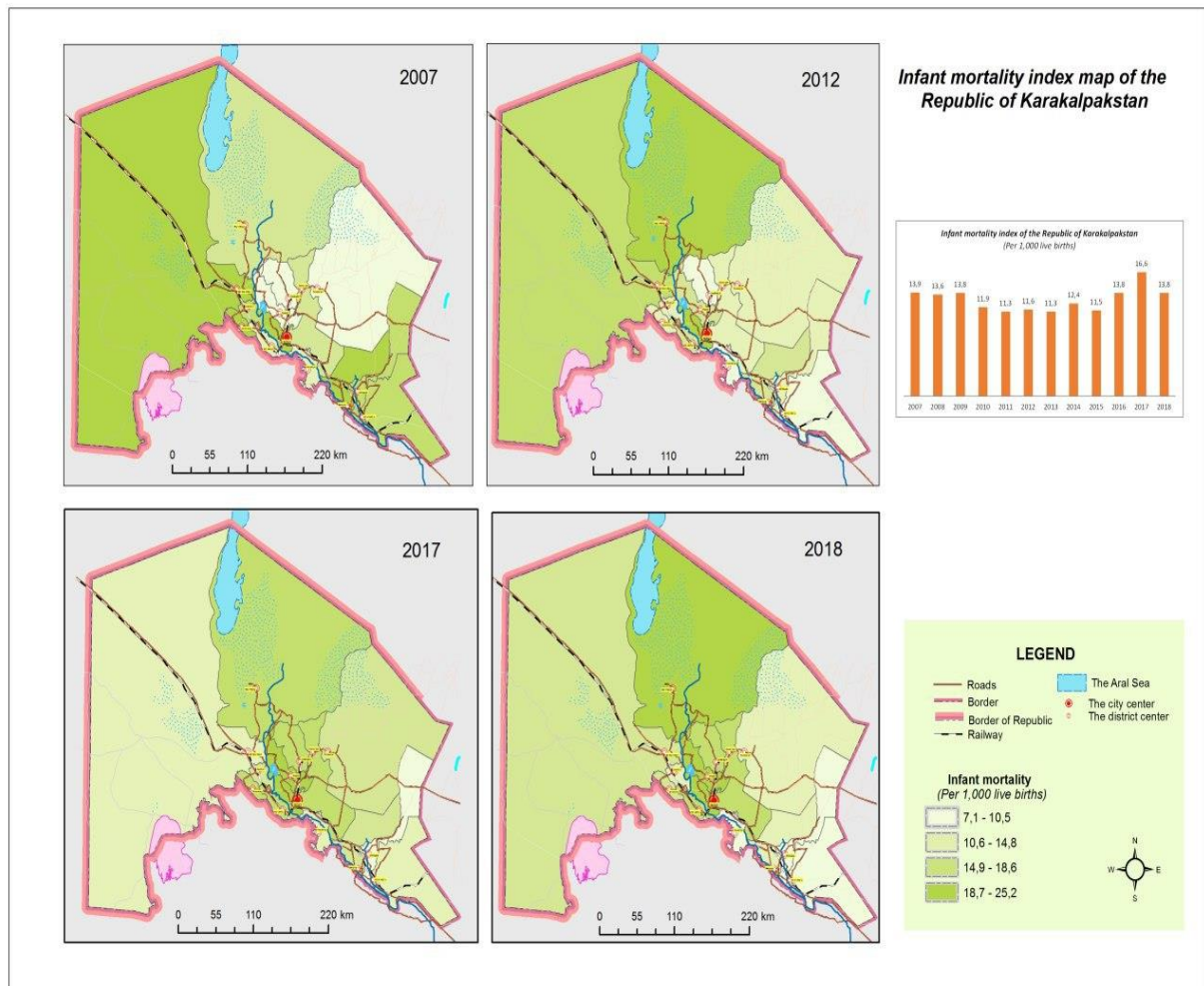


Fig.2. Nosogeographic map

In addition, during the quarantine period I have learned some new software's for implementing GIS tasks of SuperMap and iDesktop software's/Cloud GIS server's opportunities and have done some analyses with them on classifying population. Then I have awarded completion of certificate (fig. 3).



SuperMap focuses on providing innovative GIS platform software and solutions for various industries, such as smart city, land management, real estate, urban planning, pipeline management, public service, etc. This software is developed by SuperMap Software Co., Ltd. It is a complete package of GIS platform software, including Desktop GIS, Service GIS, Component GIS and Mobile GIS platforms and spatial data production, processing and management tools.

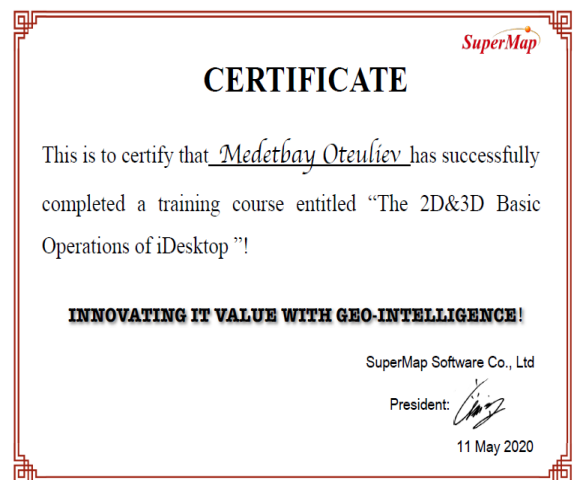
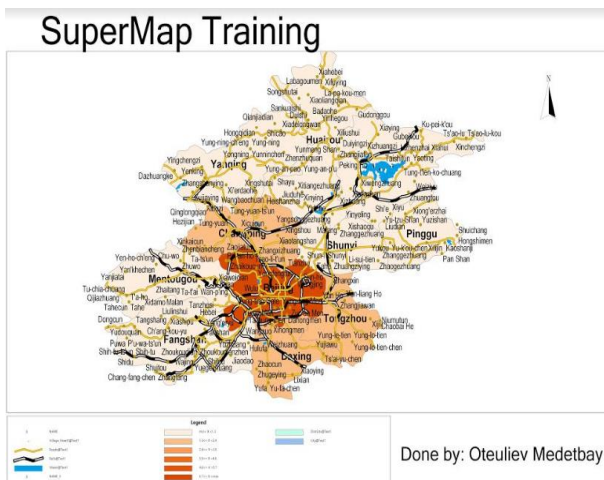
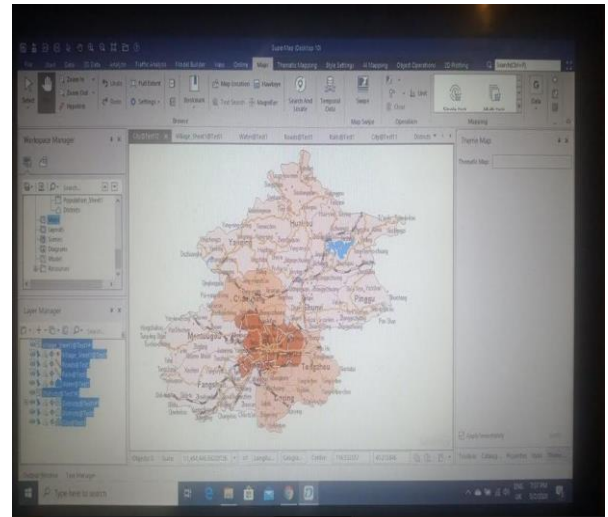
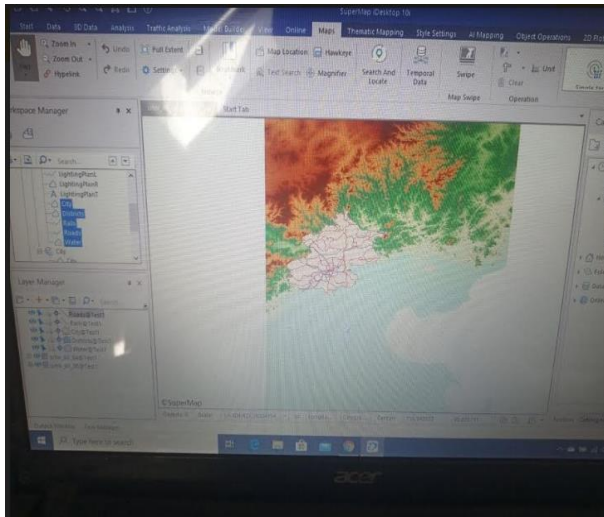


Fig. 3. Photos taken during the training and then obtained certificate

During quarantine period, I have participated webinars, read many sphere based literatures and analyzed lots of article sources related to my dissertation topic at the apartment in Szekesfehervar (fig. 4).



Fig. 4. Certificate of participation in the Webinar during the quarantine period

Conclusions and future plans

Erasmus+ “DSinGIS –Doctoral study in Geoinformatics” project and the Alba Regia Technical Faculty of the University of Obuda have given me so many opportunities for my research. As an example, during my stay in Szekesfehervar, I wrote and published articles for two conferences and two international journals, one of them was a scopus-based journal.

During the 2 month and the quarantine period, we were supported by Prof. Markus Bela, Dr. Lorant Foldvary, Dr. Andrea Podor, Dr. Wojtaszek Malgorzata and Dr. Balazsik Valeria. I am very happy to live and study in Szekesfehervar. Historical buildings, friendly population, delicious meals and warm weather are breathtaking.

I think I have gained a lot of knowledge and experience on my dissertation theme during two months. In the future, I will work harder on myself, gain experience and gain in-depth knowledge of GIS.

Acknowledgments

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Malgorzata, and vice-rector of KSU Dr. Izimbet Turdimambetov for moral and technical support before and during my study visit in Szekesfehervar, Hungary.

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