

**TASHKENT INSTITUTE OF IRRIGATION AND
AGRICULTURAL MECHANIZATION ENGINEERS**

REPORT

*about study (online) at the University of Salzburg in
the frame of the Erasmus+ DSinGIS project*

(February 14 – April 14, 2021)

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Introduction

The definitions of geographic information system (GIS) could be found in a huge number of scientific papers. Although these definitions are slightly different from each other but their meanings are very close. The following definition was given by ESRI: *“A geographic information system (GIS) is a framework for gathering, managing, and analyzing data. Rooted in the science of geography, GIS integrates many types of data. It analyzes spatial location and organizes layers of information into visualizations using maps and 3D scenes”* [1].

Today, importance of Geographic Information System (GIS) and Remote Sensing (RS) technologies in society are improving day by day. GIS and RS technologies are 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 and RS 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.

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.

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 Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Mr. Khudoyberdi Abdivaitov also have studied (online) for two months (February 14 - April 14) as a researcher at the Department of Geoinformatics - Z_GIS, University of Salzburg, Austria under supervision of Dr. Sabine Hennig on



the topic of “Land suitability assessment for cotton by using GIS (a case study of Kumkurgan district, Uzbekistan)”.

Study Plan

Before starting my online study, we planned to write a paper that is based on my PhD topic. Here, below study plan is given:

1. to review the scientific papers and other literature regarding my paper
2. to gather all necessary data related to my paper
3. to explore and learn best practices of methods of GIS and remote sensing and use them in my paper
4. to submit this paper and participate in GISCA 2021
5. to learn how to write a good scientific paper;



Activities and Outputs of the online study

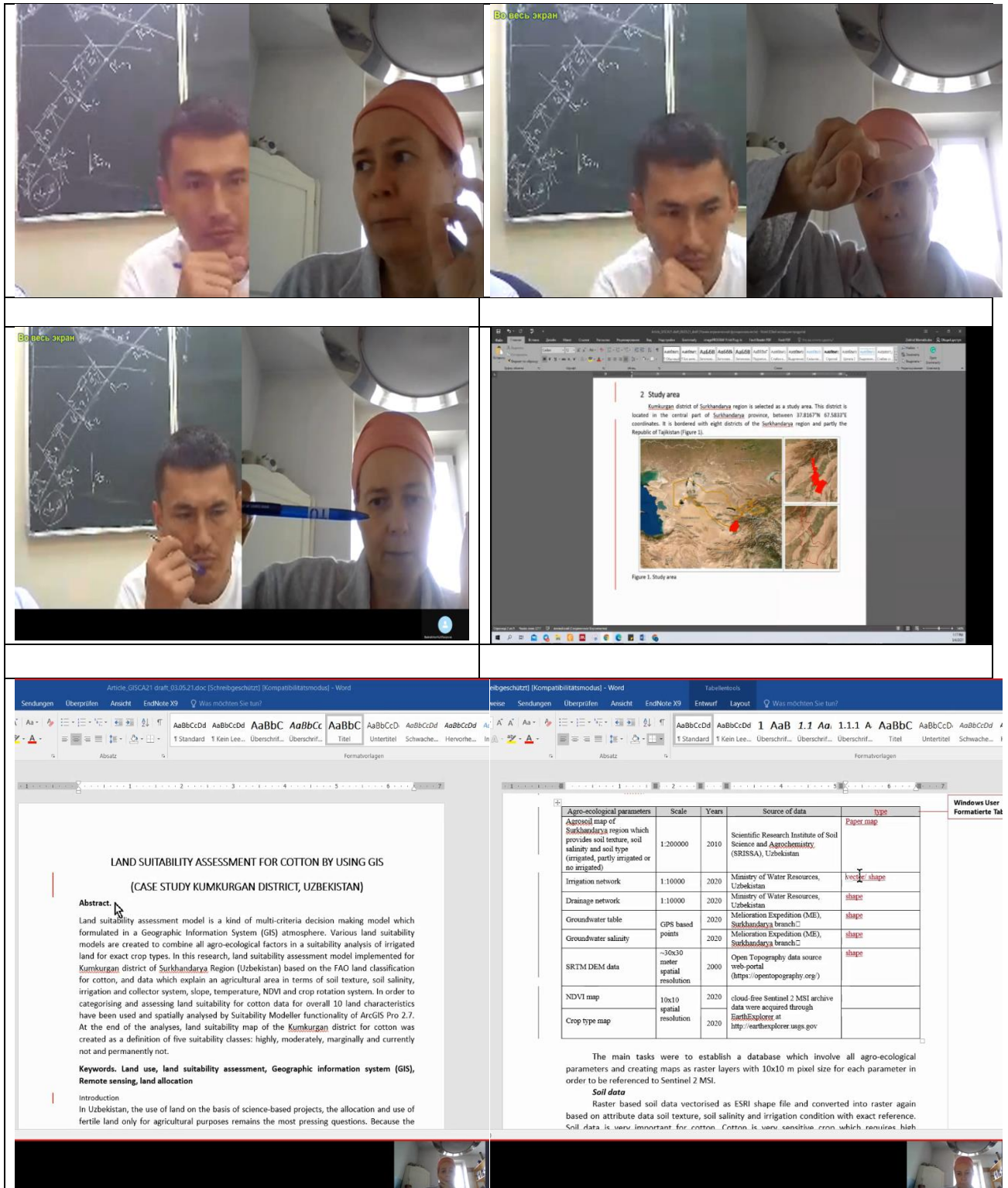
During the two months online study, we discussed several times via Skype how to select a good topic for the paper and all necessary data. After some discussions, I selected the title of the paper as “Land suitability assessment for cotton by using GIS (case study Kumkurgan district, Uzbekistan)”. Because within Uzbek agriculture, cotton has been the key crop, Uzbek cotton holds a major global cotton production and trade position.

Today the importance of agriculture still plays on food security, and main income source for rural area population in Uzbekistan. This means that one should use more efficiently of irrigated agricultural land. But why is it hard to find applied spatial evaluation techniques including remote sensing and GIS for land suitability evaluation for agricultural crops in irrigated agricultural lands of the country for the time being? What kind of positive changes will be achieved on using irrigated agricultural lands after solving these issues?

Land suitability is a term that can be defined by the fitness of a particular land parcel for a specific purpose in a region [4]. Land suitability model could be expressed as the ability of a specific land parcels to tolerate the production of crops [5]. The land suitability evaluation is used to define which types of soil can be more suitable or unsuitable for specific crops. Thus the properly land-use types are extremely important [6]. Production could be provided by regularly implementing soil surveys, evaluating its possibilities for a different of land use choices and preparing land use plans which are economically, socially and environmentally [7]. Today for evaluating biophysical parameters and indices as well as analysis of cropping system are done by widely using remote sensing data [8, 9].

Remote sensing data can provide with land use, crop rotation and specific indices for crop suitability information. Of course to improve data reliability on land parcel integrating with in suite data especially on soil and climatic condition. Thus, many scientists highly recommended that soil map of areas should be generated by soil survey data and it helps to manage most reliability crop suitability analysis [10]. That is why this work focused

on to estimate crop suitability assessment and to prepare soil maps for land users and government authorities by using RS and GIS technologies.



Some pictures from the online study



Conclusions and future plans

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 and remote sensing.

So far, several young researchers and doctoral students from partner HEIs of Uzbekistan have been and improved their skills and qualification in their research topic and field of studies at European partner universities. Among them, I had a great chance to study at University of Salzburg, Austria.

I had achieved very important and crucial knowledge on my dissertation topic during two months. In the future, I will more develop my knowledge on application of RS and GIS in agriculture.

An addition, I am planning to share knowledge, opinions, and projects with scientists, experts, researchers, public and private sector representatives active in my field. (participating international conferences, online webinars (seminars), etc.)

In the future I have a plan to publish papers regarding my PhD topic in high-level international journals and to work increasing my h index in Scopus, Google scholar, and other web search engines.

Besides that, from 2021-2022 academic year I am planning to move to Salzburg for studying at the Geoinformatics PhD programme.

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