

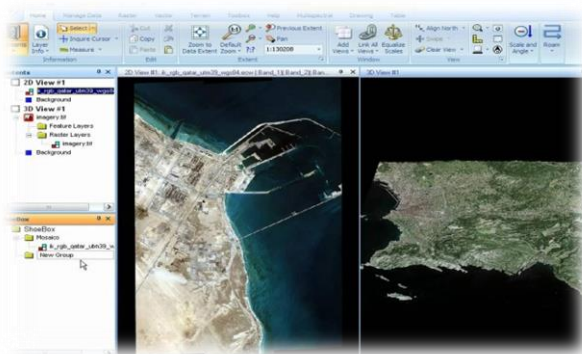
Research internship of masters of the specialty «Space technic and technology»

Masters of the 2nd year of the specialty "Space technic and technology" have completed research internship in three organizations - at Kazakhstan enterprises - JSC "NC "Kazakhstan Garysh Sapary" and JSC National center for space research and technology, as well as at Palac University of Olomouc, Czech Republic

Internship in JSC " NC "Kazakhstan Gharysh Sapary" was held from 16 to 29 September. On the first day of the internship, undergraduates got acquainted with safety. The instructions indicate the emergency exits on the territory of the company and the rules for the use of fire extinguishers. The principles of the automated fire extinguishing system in the building were also explained.

On the second day of the internship the "Geographic Information Data and Service Center (GIDSC) was introduced to the program of thematic processing of remote sensing information "ArcGIS". In general, the programs ArcGIS, ERDAS Imagine, MODIS and SUOMI are used to process remote sensing information at the National Space Center. The necessary information is removed from the spacecraft (SC) Sentinel-2, PlanetScope, Landsat-8.

On the fourth day of the scientific internship practice, each undergraduate was given a separate workplace and a separate assignment. Undergraduates were tasked with visual analysis of space images created on the basis of remote sensing data in the period 2015-2019, mapping the boundaries of forest felling located on the territory of the government forest fund (GFF) of the Republic of Kazakhstan. For this task were allocated 3 working days.



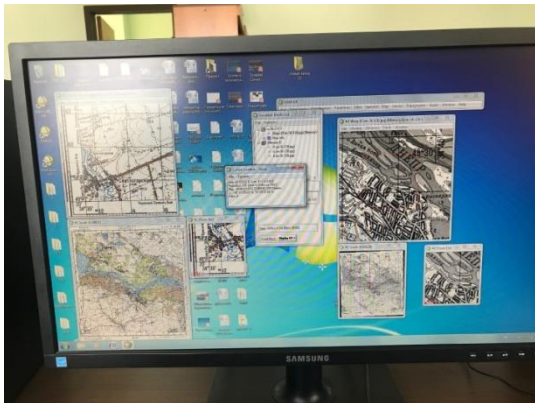
On the other days of the scientific internship were aimed at finding and determining the level of damage suffered from fires in the territory of the government forest fund of Kazakhstan. At the beginning, the undergraduates found an option to transmit qualitative images of forest areas on the territory of the state.

At the end of the internship, the master 's report was handed over and certificates with characteristics were obtained for each master 's degree.



On the first day of the internship in the Space Monitoring Center of Nur-Sultan, JSC "National Center for Space Research and Technology, which took place from 16.09.2019-29.09.2019, the master 's students studied safety training at the Space Monitoring Center according to the plan. We got acquainted with the activities of the center, its main tasks and goals.

In the following days, masters studied Modis data reception and processing (AQVA/TERRA) to Level 0 and Level 1A. The processed data were catalogued and archived using Modis, the interfaces of ScanMagic remote sensing data processing programs were studied, and vector maps were used.



At the Space Monitoring Centre, masters have tried themselves as an operator who can accept, through many programmes, images of remote sensing of the earth, methods of collecting and storing information received, images and materials of remote sensing of the earth and processing them in a dedicated workplace.

The research internship on the territory of the Czech Republic at the University of Palacki Olomouc was held in the period from September 23 to October 4, 2019, at the Faculty of Sciences. A meeting party, prepared for master 's degrees a program of stay and classes. The plan drawn up by the university covered the earth remote sensing system, as well as photogrammetric processing of earth remote sensing data and subsequent image analysis.

The scientific internship included a developed program, which was fully mastered and fixed practically. In the course of studying the internship program, master 's students expanded knowledge in the field of RSS and GIS:

- Foundations of RSS, field of application;
- GIS fundamentals and functionality;
- Bases of photogrammetry and peculiarities of CMP and CMM construction;



- Basics of 3D modeling and 3D printing technology;
- How to publish raster data to Web portals;
- Ability to survey the Earth 's surface with a copter.



At the end of the internship, an exam was held on the passed material and certificates were awarded that the undergraduates passed the course of scientific training.