

## **Data Processing Software For Geophysical Data From Satellite**

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All activities to develop a domestic scientific space system which allows to study many phenomena in Earth's electromagnetic field and Ionosphere, especially seismic-ionosphere effects during the earthquakes, are complete. In the framework of the scientific programs of The Republic of Kazakhstan, necessary mathematical support and software for processing and analysis of scientific geophysical data and planning of the mission of scientific satellites were developed in 2009-2012. The experimental unit of scientific payload for nanosatellite which consists of flux-gate and search-coil magnetometers, as well as instruments for radio occultation measurements were developed in 2012-2015. At the present time, the very first nanosatellite designed to measure the variations of the magnetic field's components at the altitude of approximately 600 km using a highly-precision fluxgate magnetometer installed on a 1m boom in the 0-100 Hz frequency range, is under development.

A software for processing, visualization and cartographic activities of spectral and wave data "DIAS"/"SOS-OMIR" was developed. The main purpose of the software is to provide researchers and scientists with a usable instrument for electromagnetic data analysis from satellites. One of its critically distinctive features is the cartographical binding and visualization of the analyzed data on different maps on regional and global scales, as well the availability of a large set of methods and algorithms for the processing of time series such as different filters, Fourier transform, wavelet etc. Moreover, the software provides users with multi-file processing and transformation of data spectrograms from wave-form data.

The software was developed for the use with Windows OS and does not require any other additional packages to work. The software was successfully tested and optimized on the data from satellites such as "DEMETER" (France) and SWARM (ESA), and is introduced in some scientific organization of Kazakhstan, neighboring countries and beyond. It can be obtained for free on request.