

NEW HARDWARE AND SOFTWARE COMPLEX FOR MONITORING AND ANALYSIS OF THE EARTH'S MAGNETIC ENVIRONMENT

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Continuous and stable operation of modern complex technological systems is noticeably affected by electromagnetic processes originated from the interaction between the solar wind and the Earth's magnetosphere which form the phenomena of "space weather". Russian geomagnetic observatories and the low orbiting satellites of the SWARM mission carrying the high-precision magnetometers provide complex monitoring of geomagnetic environment and detection of anomalous events of various nature. Analysis of observatory and satellite data allows modeling the structure of the internal and external parts of the Earth's magnetic field. This report presents a new modern hardware and software complex developed for the efficient retrieval, storage, processing, and analysis of geomagnetic data with automatization of the majority of data management processes. The developed complex includes software modules for automated filtering of observatory data from technological noise and data verification with compliance with the INTERMAGNET standards, which enables production of quasi-definitive data. The complex also provides a sophisticated classification of the extreme geomagnetic phenomena and detecting extreme geomagnetic conditions, which may be hazardous for technological infrastructure and economic activity within the regions of Russia. The developed complex provides the online access to geomagnetic data (both, the initial and processed ones), information on extreme events and modeling results along with visualization on a video board and spherical screen.

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