

Hardware and software components of complex geophysical monitoring network for short-term earthquake prediction

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We present the next step in the development and practical realization of empirical scheme of short-term earthquake prediction (Doda et al., 2013) and seismotectogenesis concept (Doda et al., 2011). We are integrating additional geophysical data with independent processing and interpretation methods into the technological scheme of seismotectogenesis concept. The idea is to perform joint monitoring and analysis of proton migration and gravity gradient measurements.

So, monitoring network has several instrumentation stations consisting of equipment for monitoring proton migration through the shells of the Earth (developed by D.A. Kuznetsov) and special gravimetric measurements (developed by O.V. Martynov).

Proton migration monitoring is performed using multi-electrode systems of compact electrodes buried into shallow pits where potential differences between different electrode pairs are measured. Special gravimetric measurements are performed using instrumentation systems based on the asymmetric horizontal torsion balance.

We present hardware and software components developed for such special geophysical monitoring network and discuss network organization and operation. Structure and capabilities of specialized desktop geographical information system developed for data analysis are shown.

Monitoring hardware is deployed at several monitoring sites in central part of Russia. Signals registered at the network stations before strong seismic events of 2016 year are analyzed.

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