



Bulgarian Seismological and GPS/GNSS networks-current status and practical implementation

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The scientific information is the latest and one of the best bedrock on which effective policy to combat and cope with natural disasters have to be built. Understanding, monitoring and information for future natural disasters are the way to assist the government and society.

Different types of networks provide reliable information on various natural disasters. For example, one of the main priorities of the networks are directed to study seismicity of the Earth, its physical phenomena and fields - with an emphasis on tectonic movements and related risk processes, global changes, rotation and position of the Earth in space. Therefore seismological network using advanced electronic systems and digital seismographs transmission of signals from seismic stations to the centres and the registration, processing and archiving of information is carried out by a specialized computer system. Thus improve the monitoring and analysis of seismicity in the whole plan. Another type networks as permanent GPS/GNSS networks are associated with processing and data analysis, as well as monitoring of recent movements of the earth crust.

In this study we focus on Seismological and GPS/GNSS networks on the territory in Bulgaria. At present NIGGG-BAS runs both Bulgarian seismological and GPS/GNSS networks.

The Bulgarian seismological network - NOTSSI (National Operative Telemetric System for Seismological Information) was founded at the end of 1980. The network comprises today 15 permanent seismic stations spanning the entire territory of the country and two local net works that are deployed around the town of Provadia and Kozloduy Nuclear Power Plant in Bulgaria. Since 2005-2006, real-time data exchange between Bulgaria and Greece, Romania, Serbia, Macedonia, Slovakia, Slovenia, Austria and other regional and national seismological data centers was implemented. NIGGG, respectively NOTSSI, is responsible for rapid earthquake determination, public information through media, and information of responsible governmental authorities if necessary urgent activities to be undertaken.

The available infrastructure – permanent GNSS stations, spread all over the country allow performing permanent monitoring of the Earth's crust movements on the basis of the obtained velocities of the permanent stations and the time series with their coordinates. Additional information for the current movements is obtained by the processing and analysis of the regular GNSS measurements of geodynamic network. In the GNSS Analysis Center are acquired, processed and analyzed data from more than 70 permanent stations on Bulgarian territory. In the analysis are included also data from permanent stations on the Balkan Peninsula and from the European Permanent Network.

Along with the seismological and geological information, the quantitative assessment of the movements of the Earth's crust is of the substantial importance for monitoring of the active tectonic structures and is the base for the seismic hazard assessment.