

Earthquakes in Slovakia

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Abstract: The monitoring of seismic activity of the territory of Slovakia is one of the main tasks of the Geophysical Institute of the Slovak Academy of Sciences. The Department of Seismology operates the National Network of Seismic Stations that consists of 12 seismic stations with real-time data transmission to the data center in Bratislava. Data are processed in two steps – an automatic processing with real-time first localizations, and a detailed manual interpretation on daily basis. In addition to data from the national network, the center also collects data from the Virtual Network of Seismic Stations comprising seismic stations of the cooperating institutions from the Central and East-Western Europe.

The Department of Astronomy, Physics of the Earth and Meteorology of the Faculty of Mathematics, Physics and Informatics, Comenius University operates the Local Seismic Network of Eastern Slovakia. The local network consists of 6 seismic stations with real-time data transmission to the data center. Data processing and analysis is similar to that in the national network. There is a close cooperation between both research institutions.

The Department of Seismology of the Slovak Academy of Sciences also cooperates with the Progseis company that operates the local networks of seismic stations deployed around nuclear power plants Mochovece and Jaslovské Bohunice. These data are particularly useful for studying the Dobrá Voda source zone.

During the period 2009-2010 9 earthquakes with macroseismic effects observed on the territory of Slovakia occurred. Except one earthquake in the Central Slovakia and one earthquake with the epicenter in Austria, the epicenters were in the eastern part of Slovakia. The highest reported macroseismic intensity

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was 4° EMS-98 for the April 4, 2010 Eastern Slovakia earthquake. Using seismic data from the National Network of Seismic Stations and the Local Seismic Network of Eastern Slovakia about 172 earthquakes with epicenters on the territory of Slovakia and it's border areas were localized in the period 2009 - 2010. Although earthquakes occurred in all known Slovak seismic source zones, the most active during the reported period 2009-2010 seems to be the Eastern part of Slovakia. The Local Seismic Network of Eastern Slovakia contributed to the knowledge of this activity considerably. For instance, in the beginning of 2009 (in the span of 3 weeks) a sequence of approximately 30 earthquakes with epicenters in Slovak-Ukraine border area occurred – 3 of them with reported macroseismic observations.

Key words: seismic stations, monitoring, earthquakes in Slovakia