



Hydrogeological Effects of Earthquakes in Seismoactive Areas of the Bohemian Massif

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Bohemian Massif - one of the most prominent Central European variscan structures – belongs to areas with relatively low seismicity. Magnitudes of the strongest events in this intraplate region doesn't exceed the value of local magnitude $M_L = 5$. Two most important seismoactive areas are situated in marginal parts of the Bohemian Massif. The first one, known as the West Bohemian seismoactive region, is situated on the NW margin of the Bohemian Massif, in the area of crossing of two major fault zones – the Eger rift and the Marianske Lazne fault zone (MLFZ). This area is characterized by occurrence of seismic swarms, which usually include several thousands of events. The second one prominent seismoactive region is situated on the NE margin of the Bohemian Massif - along the Hronov–Porici fault zone (HPFZ). For this area are typical relatively strong earthquakes. Occurrence of seismic swarms wasn't observed.

Monitoring of groundwater levels in wells is aimed on observing of anomalies induced by changes of stress – strain conditions in the earthquake preparatory phase, during the earthquake or after it. Measurements are carried out using automatic groundwater level sensors with accuracy in order of mm. The data are recorded with sampling period 10 minutes. In the West Bohemian seismoactive region the monitoring was launched in June 2000 and hence we were able to record anomalies, originated during the strongest phases of the August – December 2000 swarm, which consisted of several thousands of microearthquakes in the magnitude range $M_L = 0.0 - 3.3$. These anomalies had a character of repeated oscillations reaching several mm and lasting several minutes. They were recorded before and during the two strong clusters of seismic events. Results of groundwater level monitoring in the West Bohemian seis-

moactive region show that the seismic induced anomalies are better pronounced in wells tapping confined aquifers than in wells tapping unconfined ones. This fact was taken into account, when selecting new groundwater observing objects in the area of Hronov–Porici fault zone, where the monitoring of three deep wells (depth $h > 100$ m) was started in the first half of 2005 year. In addition to the groundwater level monitoring were started measurements of temperature and carbon-dioxide concentration in mineral water spring.