

Seismicity of the Western Bohemia - Period 1990-1997

Alena BOUŠKOVÁ¹, František HAMPL¹, Josef HORÁLEK¹, Tomáš FISCHER¹ and Milan BROŽ²

¹ IG CAS, Boční II/1401, 141 31 Praha, Czech Republic

² IRSM CAS, V Holešovičkách 41, 182 09 Praha, Czech Republic

This seismic swarm region includes a western part of the Czech Republic and adjacent areas of Germany. It is located at the contact of two regional geological units, the Moldanubian and the Saxothuringian (Dudek 1987), (Fig.1). Historical

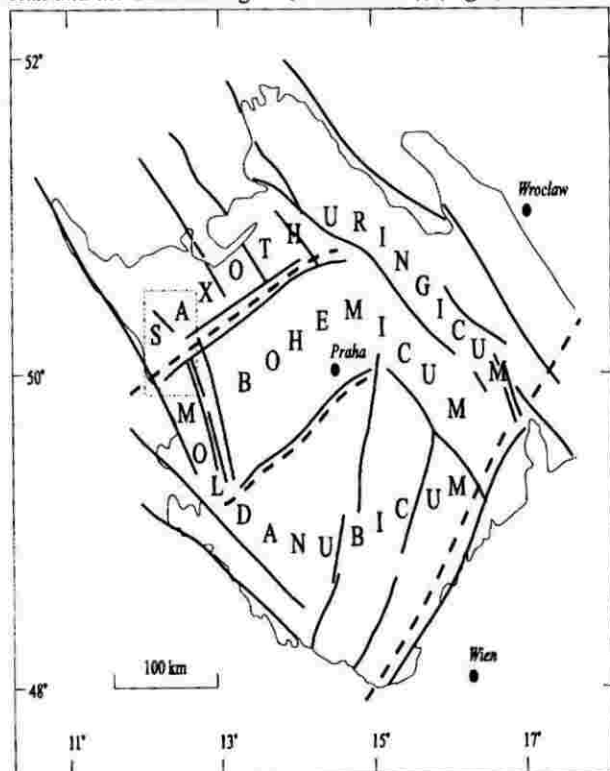


Fig. 1. Position of the investigated area in the Saxothuringian and Moldanubian units.

earthquakes in this region were reported since 1552. The largest known seismic activity was in a period 1896-1909 (Grünthal 1989). After the last intensive swarm (December 1985-January 1986), the first permanent local digital three-component station in our territory near its epicentral area in Nový Kostel (Horálek et al. 1987) was established. The seismic networks KRASLICE (Skácelová et al. 1995) and WEBNET (Hampl et al. 1995) have been operating in West Bohemia recently in co-operation with the German station VIEL and VOGTLAND (Neunhöffer and Güth 1989) and the KTB networks (Dahlheim et al. 1993). This paper presents a summary of seismic energy release in this area since 1990 based on observations from all these permanent and temporal seismic stations (Fig. 2).

One of the most significant phenomena in this region is the swarm nature of seismic energy release. Based on number of micro-earthquakes recorded since 1986 we can show that the micro-earthquake activity mostly of a swarm-like character persists in the intervals between macroseismically observed swarms. The micro-earthquake swarms last for a few days, and several tens to hundreds of micro-earthquakes, mostly with magnitudes $M_L < 2$, are generated in the course of them. The foci of most of the micro-earthquakes cluster in several

main focal zones (Horálek et al. 1996). These zones differ in size, seismic activity, depth of foci and focal mechanism. A dominant position in the seismicity of the whole region has Nový Kostel focal zone, where about 80 % of local tectonic events occurred.

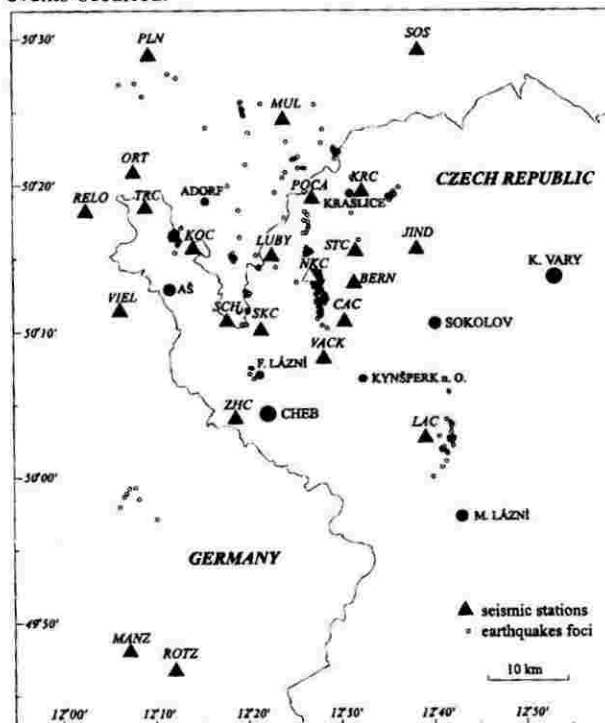


Fig. 2. Digital seismic stations in the West Bohemian seismic swarm region.

References

- DAHLHEIM H. A., GEBRANDE H., SCHMEDES E. and SOFFEL H. 1993. The KTB Seismological Network. *KTB Report*, 92-93.
- DUDEK A. 1987. Geology and Tectonic Pattern of the Western Bohemia Seismic Area. In PROCHÁZKOVÁ D. (ed.): *Earthquake Swarm 1985/86 in Western Bohemia*, 34-37, IG CSAS, Praha.
- GRÜNTAL G. 1989. About the History of Earthquake Activity in the Focal Region Vogtland/Western Bohemia. In BORMANN P. (ed.): *Monitoring and Analysis of the Earthquake Swarm 1985/86 in the Region Vogtland/Western Bohemia*, 30-34. Akad. der Wissensch. der DDR, Potsdam.
- HAMPL F., FISCHER T., HORÁLEK J., JÍRA T. and BROŽ M. 1995. Local West Bohemian Seismological Network WEBNET. Extended Abstract. In *Proceedings and Activity Report 1992-1994*, 789-794, XXIV General Assembly ESC, University of Athens.
- HORÁLEK J., VAVRYČUK V., PLEŠINGER A., PŠENČÍK I., JEDLIČKA P. and SOUKUP J. 1987. Refined Localization of Selected Jan.5 - Feb.6, 1986 Events of the West-Bohemian Earthquake Swarm. In PROCHÁZKOVÁ

