



Electro-magnetic measurements in the West Bohemina seismic swarm region

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Seismic activity in West Bohemia region is definitely the most important seismic phenomenon in the territory of the Czech Republic - this was most recently affirmed by 2008 swarm, the strongest swarm for the last 3 decades. High activity lasted approximately from October 10 to November 5, more than 20.000 events ($M_I > -0.5$) were recorded (automatically identified and localized), the strongest event with magnitude $M_I=3.7$, there were recorded about 100 events with $M_I > 2.0$.

The region is continuously monitored by WEBNET seismic network and the activity is consequently object of intensive studies. In addition to the "classical" geophysical or seismological observations respectively, we made an attempt of registration of electro-magnetic emission possibly excited by the (seismic) activity. Binding of seismic activities and electro-magnetic phenomena is mentioned in the literature for a long time. However this references are either rather uncertain, or only unparalleled (with no repetition), or the observed conditions are not described in full details or the particular phenomenon can be hardly effectively handled in a quantitative way, etc. The description of the effects varies from the lights, flashes, storms to the changes in ionosphere excited by big earthquakes (excitation is supposed to be transferred via Earth's surface vibrated by surface waves). Some laboratory experiments have been also performed. There are also speculations about electromagnetic precursors or connection with material destruction during mechanical rupture in the source.

As soon as the activity of 2008 in West Bohemia region arisen we have decided, in addition to ongoing seismic registration, to install also measurement of electro-magnetic emission. The instrument (consisting of antenna - coil, amplifier and digitizer) was installed in the course of 2008 swarm at the NKC seismic station (station situated directly above hypocentral zone). The frequency range of the instrument was about 0.2 - 10 Hz with sampling rate 25 Hz, continuous registration.

The paper shows electro-magnetic emission bulletin, preliminary results and some possible correlations. The perspectives of the measurement are briefly discussed.

The measurement is unique in following points: (i) such measurement has never been performed in West Bohemia region, (ii) relatively big number of events has been recorded (due to swarm nature of the activity), (iii) the activity is concentrated on relatively small volume, i.e. measurements are among other, very homogeneous, (iv) the investigated events are relatively weak in comparison to world earthquakes which are usually study is another outstanding feature of presented experiment.