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Some possible correlations between electro magnetic emission and seismic activity during West Bohemia 2008 earthquake swarm

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There are long lasting speculations about electro-magnetic phenomena (hereafter EME) connected with seismic activity. In the present contribution we study such relation in West Bohemia region (hereafter W.B.) during 2008 earthquake swarm. Seismic activity in W.B. region is the most important seismic phenomenon in Czech Republic. It is characterized by occurrence of seismic swarms (it was most recently confirmed by 2008 swarm, the strongest one for the last 3 decades. High activity lasted approximately from October 10 to November 5, more than 20.000 events (Ml > -0.5), about 100 events with Ml > 2.0, the strongest event with Ml=3.7). In addition to ongoing standard seismic measurement performed by WEBNET seismic network, we recorded experimentally also electro-magnetic emission (detected by an antenna and digitized, we observed in range cca 0.1-10 Hz with sampling 25 Hz, continuous registration practically in the epicentrum of the swarm).

Analysis of the data showed, that in the region there is no direct link between EME signal and seismic events neither for individual events nor statistically. However statistical analysis indicates that it could be some increase of EME activity in time 60 to 30 minutes before an event on periods 17-14 minutes, some gap in EME activity approximately 2 hours after the event and a maximum 4 hours after the events (only events with Ml > 1.8 were considered in the analysis). We practically excluded possibility that the effect could be caused by particular timing of prevent(s) and/or after event(s) – i.e. there is no correlation between observed extremes in EME signal and swarm energy flux or standard seismic signal.

Also global decrease of EME activity with the decay of the swarm activity was observed. However due to incomplete EME data and short time of observation these results must be understand rather as indication of possible correlation rather than reliable relation.

Further EME observations in the region are intended.