

Solid Earth Discussion

Manuscript Draft

Manuscript Number: se-2010-4

Title: Some possible correlations between electro-magnetic and seismic activity during West Bohemia 2008 earthquake swarm

Reviewer: Wolfram Geissler

## General comments

I think the topic of the manuscript is very interesting for all readers dealing with non-seismic effects of earthquakes. There have been reports on such phenomena related to swarm earthquake activity in W Bohemia already for a quite long time, but it was never instrumentally studied so far. This is, to my knowledge, the first study which could shed some light on the electro-magnetic phenomena. I think the manuscript is quit acceptable for Solid Earth Discussion, but I feel that before publication in Solid Earth the author should make some moderate revisions. This includes some broader introduction into the study area, since not all readers are experts of the W Bohemian region. Also the discussion/conclusion could be extended/broadened.

## Specific comments

### 1 Introduction

#### 1.1

Introduction of the study is presently insufficient. References are not all adequate (e.g., reference to CO<sub>2</sub> degassing studies are missing).

A map with the location in (central) Europe is missing.

#### 1.2

What are the frequency ranges of previous observations mentioned in the text?

References to “laboratory experiments“ are missing.

### 2 EME observations

Maybe there could be a figure of the instrument. At least the measurement point should be clearly indicated in the map.

What is really measured? Can it be called EME data?

### 3 EME data mining (or “processing”?)

“that the strong EME signals are exactly correlated with P and/or S waves arrivals at the station an that the observed abnormalities are only so named “microphone effect” ...”

Is that statement not in disagreement to figure 4?

“Range of summed EME signals dt varied from 5 to 50 s, again only events with  $M_l > 2$  were processed.” – Sentence not fully clear to me.

#### 3.1

Page 149, lines 17-19: Only single events are used? How much the different (single) analysed events are separated in time?

Page 149, lines 21-24: Why not shown in a separate figure?

Page 150, line 10: “bulletin” – reference is missing.

Page 150, line 11: From where you get MW?

3.2

Page 150, line 23: What are the parameters to calculate the LTA/STA ratio?

4 Conclusion (or “discussion”)

Page 151, line 6: Is it a new measurement also in a broader region or only in W Bohemia?

Page 151, line 17: Please give references to laboratory experiments.

The author might discuss the following topics:

- possible role of fluids
- how stress accumulation can change rock properties
- what are the effects of more distant sources
- How the observations are related to changes of the magnetic field etc.?
- What could be other sources of EME signals (especially in the time periods without stronger earthquakes)?

Page 152, line 3: “observation” – or better: “measurement”

Figure 1

The map is not adequate for publication in SE. Only necessary things should be shown on the map (e.g., station names, location of earthquakes). An inset should show the study area in relation to Europe. References are missing (e.g., bulletin).

Figure 2

Please indicate the start of EME measurements. Indicate the years on the x-axis. Please provide also a table with the analysed events.

Figure 3

Which event is used (reference to event table). Do any of the vents overlap with another event in the period  $\pm 10$ h? What are the longer periods signals (broad maxima)?

Maybe you could a figure comparing a seismogram to EME registration.

Figure 4

Subfigure a: Which component is shown?

Subfigure b: Is there any energy before the event? Show original seismogram.

Figure 5

Please indicate the start of the EME measurements.