



Analysis of seismic induced changes of groundwater level and carbon dioxide in the region of weak intraplate seismic activity, Bohemian Massif (Central Europe)

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We analyze measurements of carbon dioxide concentrations and groundwater level in two deep wells in the area of the north-eastern margin of the Bohemian Massif, Central Europe, typical by the weak intraplate seismic activity. The aim of our study is to examine the relationships between changes of the observed groundwater parameters and earthquake occurrence. Since April 2005 we detected in one of the wells six step-like water level anomalies with amplitudes of 4 to 15 cm. All these anomalies show relatively clear dependence on local seismic activity and they exhibit both the pre-seismic and post-seismic character. Moreover, the most seismically active period between August and November 2005 was accompanied by distinct drop of CO₂ concentrations.

We further analyze the origin of seismic induced water level anomalies from the point of view of the strain sensitivity of the observed wells. We came to the conclusion that the strain sensitivity is changing with time and it is strongly dependent on structural properties of the observed aquifer.