



## **Monitoring of carbon-dioxide production in the seismoactive area of West Bohemia**

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Geodynamically active area of West Bohemia is interesting not only due to its earthquake swarms occurrence but also due to the massive degassing of CO<sub>2</sub> of magmatic origin occurring in dry mofettes and mineral springs. A continuous monitoring of CO<sub>2</sub> amount has started in 2009 and a well pronounced increase of gas flow was observed in relation to the 2014 seismic sequence, which has been attributed to the fault-valve behavior. At present six monitoring stations with online data transfer are in operation, which combine various methods of gas flow monitoring in order to assure robust and reliable data series. In this paper we show the decreasing trend of gas flow since the 2014 aftershock sequences observed at different stations and compare various approaches for quantification of gas flow.

The reliability of chamber-type and venturi-type gas flow meters depends on ambient temperature conditions, namely during freezing periods, which makes the measurement unstable in time. Accordingly we designed alternative methods to measure CO<sub>2</sub> amount by quantifying the fraction of gas bubbles in water column in stable temperature conditions of borehole or mofette. This is carried out by two different approaches – the first is based on measuring the density of two-phase fluid (water with bubbles) in the well by differential pressure gauge. The second measures electric conductivity of the two-phase fluid.

We analyse the obtained time series in terms of their dependence on ambient conditions (namely the air pressure and temperature), mutual relations of the gas-related quantities (flow, wellhead pressure, bubble fraction in water) relations and interpret the present trend of gas production and its possible relation to seismic activity.