



Investigation of some recently discovered magnetic anomalies in the Bavarian zone of the Bohemian massive

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In 2007 the German Federal Institute for Geosciences and Natural Resources (BGR) conducted an airborne geophysical survey on behalf of the Bavarian Environment Agency. Over an area of 312 km² on the southern border of the Bohemian massive in eastern Bavaria electromagnetic, radiometric, and magnetic measurements were carried out. The profile length was 22 km, profile spacing 200 m. The mean flight altitude of the helicopter was 115 m above ground (mean sensor height 75 m).

To our surprise, the magnetic survey revealed a number of magnetic anomalies in the area of the Danube fault hitherto unknown. The most prominent of these structures were further investigated by detailed ground-based magnetic surveys and accompanying rock magnetic sampling. The anomalies as measured on the ground reached amplitudes (peak to trough) of up to 1400 nT.

As a next step we undertook 2- and 3-dimensional model calculations using ModelVision Pro 8.0. The modelling process revealed a sequence of magnetized bodies dipping to the south.

According to field geological studies and the tectonic setting of the area, on the southern border of the Bohemian massive, the existence of intrusive bodies as possible sources of the anomalies is not very likely. We therefore propose gneisses with locally high concentrations of magnetite as sources for the observed anomalies. Measurements of rock susceptibility in outcrops and on collected rock samples in the laboratory seem to confirm this interpretation.