

data set. In a first attempt, data of granitoids of the South Bohemian Pluton were used to check possible correlations.

## **TWO DIMENSIONAL INTERPRETATION OF THE GRAVITY FIELD OF THE SOUTHERN BOHEMIAN MASSIF**

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The results of gravity map stripping performed for gravity effect estimation of well known crustal structures (crust-mantle boundary, Molasse sediments) and density deconvolution indicate the existence of a high density upper crust beginning at the eastern margin of the South Bohemian pluton. In order to develop a first view to the upper crustal structures two dimensional modelling is performed. Four profiles covering the main tectonic units of the Bohemian Massif and running more or less across the strike of the main gravity anomalies are selected. The Bouguer gravity calculated assuming variable reduction density and corrected regarding the gravity effect of the crust-mantle boundary is used as reference signal. Therefore, all models can be restricted to upper crustal structures as long as no further information is available about the crust-mantle discontinuity and density inhomogeneities within the lower crust. Important geometrical parameters like boundaries of causative bodies at the surface or the Molasse basement structure are controlled by geological maps and the depth distribution of the Molasse basement determined by refraction or reflection seismics and drilling.

Different model conceptions are presented. A common feature of all sections is a high density crustal block which begins at the eastern margin of the South Bohemian granite intrusion and extends far towards the East. It may be interpreted as deep reaching continuation of high density metamorphic rocks. In addition to the results of gravity map stripping mentioned above the analysis of rock samples obtained by drilling achieving the Molasse basement at different locations on both sides of the Mailberg fault supports this model conception. An alternative model partly explains the general positive anomaly pattern by the Brunovistulicum superimposed by Moldanubian and Moravian units.

The gravity high between Retz and Hollabrunn can be interpreted by the lateral density contrast between the metamorphic crust and the Thaya pluton ( $0.15 \text{ gcm}^{-3}$ ) or Molasse sediments ( $0.3 - 0.4 \text{ gcm}^{-3}$ ) respectively, which is shaped like a horst structure in this area and contains a deep reaching zone of slightly higher densities. The sources of magnetic anomalies are supposed to be seated at its eastern flank. The local gravity high near Hollabrunn cannot be interpreted exclusively by an upwelling basement structure as detected by refraction seismics. Its amplitude can only be explained by an additional high density source close to the surface, which

probably also causes the local magnetic anomaly. The Thaya batholite increases with regard to both horizontal and vertical dimensions from South to North. Its eastern part is covered by shallow Molasse sediments. The eastward extension into the Molasse zone increases from 2 - 4 km in the South to about 10 km in the North.

The South Bohemian granite intrusion causes the regional gravity low in the centre region of the investigated area. Assuming a density contrast corresponding to the results of surface rock density investigations the intrusion extends down to a depth of about 10 km which also agrees well with the results of density deconvolution. The upper crust west of the South Bohemian granite intrusion is characterized by nearly mean crustal density. The general gravity decrease from North to South observed in that area can be explained neither by the steeply sloping Moho discontinuity nor by increasing thickness of the Molasse sediments alone. It is probably caused by a large subsurface structure with high density contrast:

## **GEOCHEMISTRY OF MOLDANUBIAN AMPHIBOLITES FROM THE WALDVIERTEL (AUSTRIA)**

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Three units can be distinguished in the Moldanubicum: the Ostrong unit including the "Monotone Serie" with its cordierite gneisses, a few orthogneisses and calc-silicate-schists. The Drosendorf unit, separated from the Ostrong unit by a narrow granulitic layer, consists of orthogneisses at the bottom and of the "Bunte Serie"- a succession of paragneisses, amphibolites, quartzites, calc-silicate-schists and graphite bearing marbles in its upper parts. The Gföhl unit finally is marked by the Gföhl Gneiss, granulites, ultramafites, amphibolites and metamorphic anorthosites.

Only two, the Drosendorf unit and the Gföhl unit contain significant amounts of amphibolite. To which tectonic unit an individual amphibolite might be ascribed is disputable. However, all occurrences were summarized under the term "Rehberg amphibolite". In fact, apart from several smaller layers in the metasediments of the "Bunte Serie" three main amphibolite bodies can be recognized. The first, east of the Gföhl Gneiss is the only one which should be named Rehberg amphibolite s. str., the second west of it is named Buschhandlwand layer. A third larger occurrence can be traced along the base of the Gföhl Gneiss north of the Danube as well as south in the Dunkelstein Forest.

Especially in the first unit careful fieldwork indicates that in many amphibolite bodies, despite their medium- to highgrade metamorphism, relicts of old magmatic textures are recognizable. An interlayering of coarse-grained and fine grained