Editorial

Foreword to the special volume on "New Approaches to Study of the Structure and Magmatism in the Eger Graben"

The Eger (or Ohře) Graben (or Rift) represents a prominent tectonic, magmatic and sedimentary feature of the post-Variscan Bohemian Massif. Even though the rocks and geological phenomena therein have been studied for over two centuries, many aspects of origin and evolution of this structure remain enigmatic. Fortunately, the methods and interpretations advanced during past few decades and the Eger Graben hosted several interesting scientific projects and detailed geological mapping. This was our motivation to invite experts to present their results in this thematic issue of the *Journal of Geosciences*.

The issue begins with contribution by **Babuška and Plomerová**, whose paper summarizes current knowledge on structure of Upper Mantle beneath the western Bohemia, where three principal Variscan units – Saxothuringian, Moldanubian and Teplá–Barrandian – all meet in a "triple point". The crust in western Bohemia remains seismically active and the area hosts the youngest (Late Pleistocene) volcanoes of the Bohemian Massif. There is evidence that the Eger Graben follows the contact of mantle lithosphere domains. The Variscan mantle boundaries played an important role in magma ascent of both Late Variscan and Cenozoic magmatic phases.

In the following paper, **Novotný et al.** present interpretation of deeper geological setting based on geophysical data from the S04 seismic profile crossing the Eger Graben near Teplice. Their geological model is also supported by gravity and aeromagnetic data. The subsurface extent of granitic and ultrabasic bodies was constrained using the geophysical data. Possible magmatic centres for Altenberg–Teplice Caldera and Cenozoic volcanic complexes are also outlined.

Detailed image of the tectonic setting in the western part of the České středohoří Mts. is presented by **Cajz and Valečka**. This paper, forming a "bridge" between known tectonic settings of the Most Basin and the central part of the České středohoří Volcanic Complex, underlines the true complexity of the tectonic network. The faults are described and classified in terms of their relative age, which is useful for further discussions on evolution of the regional stress field influencing the development of Eger Graben.

The largest at least partly preserved volcano in the Bohemian Massif is situated within the Eger Graben and its immediate neighbourhood. The geometry of the Czech part of this Late Carboniferous Altenberg–Teplice Caldera was reconstructed by **Mlčoch and Skácelová**. The model shows more prominent subsidence in the eastern part and maximum thickness of the rhyolitic ignimbrite, which fills up the caldera, in the southeastern part.

The Cenozoic magmatism and volcanism did not occur solely inside the graben. Significant volume of alkaline magmas erupted on its shoulders. The basaltic rocks on the German side of the Erzgebirge Mts. (Saxothuringian Unit) attracted **Rönick and Renno** for detailed study dealing with clinopyroxene phenocrysts. Two distinct volcanic suites (Ti-rich and Ti-poor) host seven different types of clinopyroxene phenocrysts, some of them displaying signs of magma mixing.

The presence of subvolcanic rocks in the central part of the Doupovské hory Volcanic Complex is known for over a century, but nobody has brought a detailed description of this suite yet. **Holub et al.** present petrological, geochemical and geochronological data giving the general overview of this small, but multifarious intrusive body built by two distinct suites. More alkaline, "dry" suite includes ijolitic rocks, urtite and sodalite-phyric phonolite, whereas the less alkaline, "wet" suite consists mainly of essexites, foid monzonites and foid syenites. The entire intrusive body was emplaced at *c.* 29 Ma ago.

The follow-up manuscript by **Haloda et al.** deals more in detail with crystallization history of the most primitive intrusive rocks found at Doupov. The composition of olivine cores in melteigite is in equilibrium with bulk rock chemistry at conditions near to liquidus – and thus no olivine was added as a cumulate. The development of the melteigitic magma started as equilibrium crystallization at *c.* 4 kbar, later followed by Rayleigh-type fractionation crystallization near the surface. The slightly more evolved magma of Ol-free ijolite experienced a LP fractional crystallization.

The number of maar volcanoes in the Eger Graben became reduced since the times of Kopecký, mostly due to modified interpretation. Geometry and structure of two selected maar volcanoes in northern Bohemia were studied by **Skácelová et al.** Combination of magnetic, gravity and electric conductivity measurements detected the extents of diatremes and geometry of their feeder dyke systems. Different country-rock setting (hard crystalline units *vs.* soft Cretaceous marine sediments) resulted in different geometry of the two diatremes†.

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[Guest Editors]

† Due to page limitations, this paper will appear in following issue (*Journal of Geosciences,* vol. 55, no. 4). Even though not printed here, the contribution represents an integral part of the thematic set.