

likely reflect its shallow-dipping deep crustal thrusting over the Monotonous unit. This boundary is affected by subsequent steep folding, the intensity of which increases towards the W. It is possible that this late shortening event is related to buttressing stage of welding of the Gföhl–Monotonous units. (ii) Latest brittle-ductile to brittle faulting is connected to transtensional regime and overprints all previous fabrics. This array of shear zones was developed already on cooled crust and is connected with shallow-level intrusion of the Jihlava syenite. (iii) Internal structures of

the Jihlava intrusion as well as the AMS fabric are kinematically linked to transtensional shear regime, which enhanced pull-apart magma emplacement mechanisms in extensional jog. The sub-solidus and late mylonitic zones cross-cutting the syenitic magmatic fabrics are geometrically and kinematically consistent with brittle-ductile D_3 shear zones affecting the host rock. In conclusion, the Jihlava syenite was emplaced after thrust-related welding and subsequent refolding of the Gföhl and Monotonous units and after their significant cooling.

Paleontological and Sedimentological Evidence of NW–SE-Striking Faults in the Northern Vicinity of Brno

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Summary

Cretaceous, Otnangian, Karpatian and Lower Badenian sediments were studied during the geological survey on map sheets Tišnov and Blansko in the NE and N vicinity of Brno. Interpretation of paleontological, sedimentological and mineralogical analyses brought important conclusions on the influence of NW–SE-striking faults on the SE margin of the Bohemian Massif during the Mesozoic and Tertiary.

Cretaceous

Sediments of presumably Cretaceous, probably Cenomanian, age were found in paleokarst fillings in the Králova Cave near Tišnov and at the top of Čebínka Hill. Coarse sands were deposited in Devonian limestones at altitudes of around 430 m a.s.l. Both localities lie on a line in continuation of the Železné hory Fault and the Cretaceous sediments of Dlouhá mez. The most probable explanation of the origin and preservation of Cretaceous sediments is the analogy with northerly situated grabens running parallel to one another from the crystalline complexes to Paleozoic rocks (Blansko, Valchov, Vražné, Roveň and other grabens). The post-Cenomanian uplift of the Bohemian Massif induced erosion of sediments with only small relics being left in the paleokarst cavities of Květnice and Čebínka hills. Nevertheless, with some exaggeration, we may speak about the Tišnov Graben due to the tectonic importance of the phenomenon.

It is necessary to say a few words to support the stratigraphic determination of the above described cave sands. Translucent heavy mineral assemblage dominated by tourmaline, kyanite, rutile and staurolite, and the absence of garnet and apatite have been long considered very typical for the beginning of Cretaceous sedimentation in the region. This characteristic assemblage probably formed due to paleoclimatic conditions when tropical weathering sorted the original detritus in a specific way. Comparison of the cave sands with Badenian sands from their vicinity proved substantial differences in the heavy mineral assemblages.

Tertiary

Otnangian samples were relatively poor in fossils: only redeposited Cretaceous foraminifers and clasts of corroded sponge spicules were found. These sediments are mostly represented by fluvial and lacustrine sand with intercalations of fine gravels. Some non-calcareous (sandy) clay was found at several localities. The sediments are most widespread in the Boskovice Graben between the villages of Čebín and Chudčice and in valley-shaped depressions west of Březina and between Maršov and Lažánky.

Two Karpatian samples contain relatively rich shallow-marine fauna with euryoxybiont taxa (for example, *Uvigerina graciliformis* Papp & Turn., *Pappina breviformis* (Papp & Turn.), *Ammonia beccarii* (L.) etc.). They were collected and described from two small localities of sandy clay near Moravské Knínice and Svinošice (Lipůvka).

Lower Badenian sediments are represented by typical “Tegel” (grey-green calcareous clay) with very rich and well developed marine microfauna of *Lenticulina echinata* zone *sensu* Cicha et al. (1975) with local rich planktonic species. Planktonic foraminifers such as *Orbulina suturalis* Brön., *Praeorbulina* ex gr. *glomerosa* etc. indicate deposition in an embayment with good communication with open sea. The assemblages of foraminifers also indicate shallow water.

Conclusions

Remnants of Cretaceous sediments in the “Tišnov Graben” were found along a NW–SE line between Tišnov and Čebín. They are considered a continuation of the Cretaceous sediments of Dlouhá mez, and the fault line is considered a continuation of the Železné hory Fault.

Stratigraphic change between the Otnangian and Lower Badenian occurs along the line Dolní Loučky–Tišnov (WNW–ESE) and Tišnov–Čebín (NW–SE). Similar change can be observed along the line Adamov–Lipůvka (NW–SE).

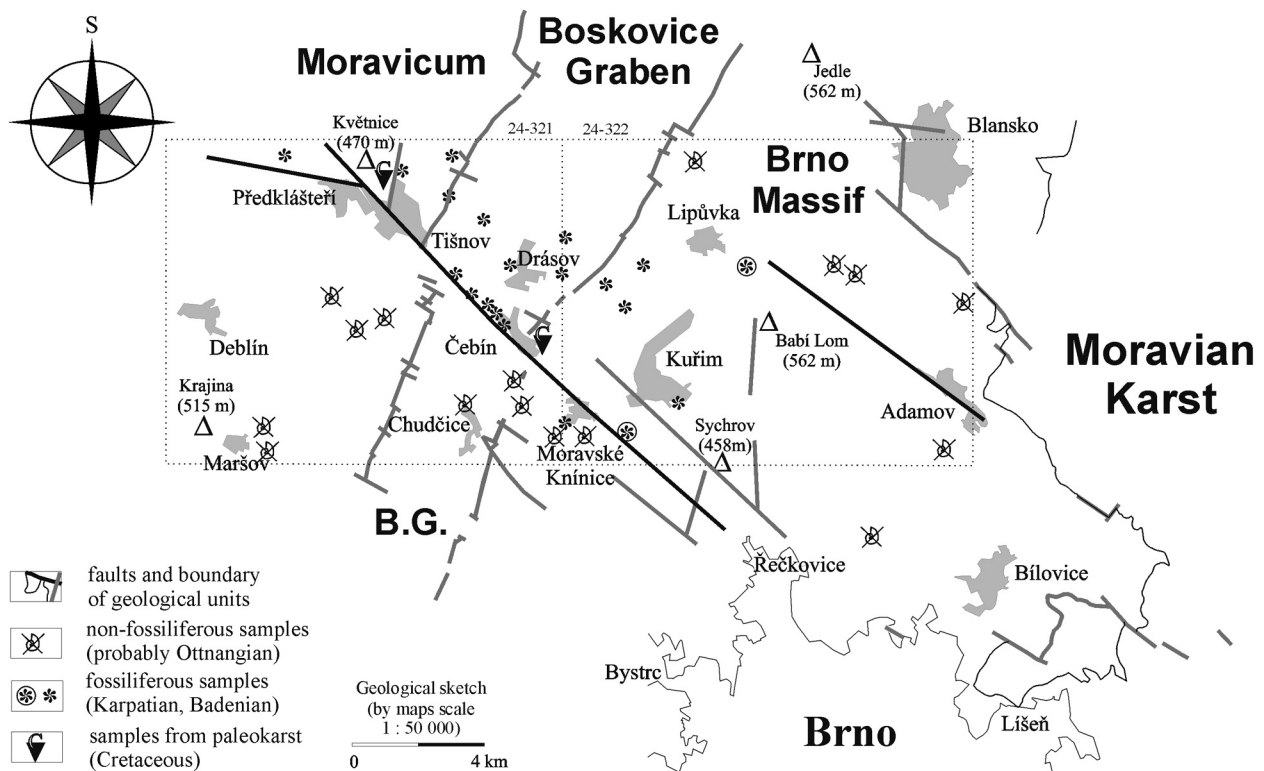


Fig. 1. A sketch-map of the area studied.

Generally, the occurrence of the Karpatian sediments suggests a minimum of the Karpatian transgression. An important fact is also the occurrence of these sediments in close vicinity of the boundary between Ottnangian and Lower Badenian sediments.

The two lines with occurrences of Karpatian sediments, running generally NW–SE, divide the area into three tectonic blocks. The southern and northern blocks are uplifted, while the central block probably dips to the NW.

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“Gilbert Type Delta” versus “Accumulation Terraces” Models and Their Application to Middle Turonian-Early Coniacian Sedimentary Setting in the Intrasudetic Basin: a Discussion

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In 1986, in the first paper presenting the results of structural sedimentological analysis, the environmental schemes of the Intrasudetic Basin and the Nysa Trough during the Turonian and Coniacian were suggested (Jerzykiewicz, Wojewoda, 1986; Wojewoda, 1986). Just there, the term accumulation terraces, as related to hypothetical paleobedforms of the Cretaceous sea floor, was introduced. Somewhat later, my thorough field investigations as well as facial-pelogeographical analyses enabled to reconstruct those mega-bedforms in detail and to present the first

paleoenvironmental model, based on geological facts. In this model, the syndepositionally rejuvenated topography of the sea floor caused by fault tectonics was suggested, which implied specific sedimentary scheme for the Intrasudetic Basin. This model was additionally enhanced in later studies (Wojewoda, 1997; Rotnicka, 2001).

In the late 90s new models were proposed. However, they did not consider all the previously documented facts. One of the models is definitely worth discussing (Ulicny, 2001). It bas-