ages and display exclusively Mediterranean affinities (Elicki & Debrenne, 1993). The Cadomian development of that crustal segment terminated with the intrusion of granodiorites and diorites. In the intrusive complex of Pretzsch–Prettin they are dated at approx. 540 and 500 My respectively Rb–Sr whole rock analyses (Kampe, 1990).

Within the synclinal zone Lower Carboniferous coal bearing sequences are overlying unconformably. The anthracitic state of the coals points to a Variscian thermal overprint. In the Southern Phyllitic Zone the Neoproterozoic is covered unconformably by Rotliegend molasses which evidence Variscan uplift and erosion of the Cadomian succession.

The Cadomian development took place along active plate margins not reaching a continent-continent collisional state. Global syntheses place this type of Cadomian processes onto the African exterior margin of a Neoproterozoic supercontinent -> Protogondwana (Murphy & Nance, 1991; Murphy et al., 1991). Both the geotectonic features of the Cadomian Rothstein Formation and the Mediterranean faunal affinities of the overstepping Cambrian point to such a setting. From the Early Paleozoic breakup of Protogondwana until their welding into the Varscides such crustal segments retained a plate–marginal character. Therefore they are particularly prospective in the search for terrane boundaries and sutures within the Variscides. The strike–parallel occurence of the presented Neoproterozoic to Cambrian successions towards the Mid German Rise adds further evidence to the sutural nature of this Variscian element.

The Neoproterozoic Rothstein Formation displays striking lithological similarities to the Cadomian Blovice Group of the Teplá–Barrandian. Results of comparisional field works in the Blovice Group will be presented.

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FACIES AND PALEOGEOGRAPHIC RELATIONSHIPS IN DEVONIAN OF THE BOHEMIAN MASSIF

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Devonian sedimentary rocks of the Bohemian Massif belong to:

1) Shelf facies (Centralbohemicum with the Barrandian, the Moravo–Silesian Platform Development) which well reflect global transgressive–regressive trends and event–stratigraphic turnovers, and
2) basinal facies which indicate mobile zones with volcanism and subsequent Variscan crustal shortening and subduction (active plate margins: Saxothuringicum, Lugicum, parts of Moravia-Silesia).

Devonian sedimentary sequences of the Bohemian Massif clearly document the wide distribution of anoxic facies in the Lochkovian, the sea level fall close to the Lochkovian – Pragian boundary, and the transgressive trend which started during the Pragian and culminated in the Daleje Event near the lower–upper Emsian (Zlíchovian – Dalejan) boundary.

The anoxic Kačák Event close below the upper Eifelian boundary and the Kellwasser Event in the Frasnian–Famennian boundary interval had generally a greater influence on the facies development than the event near the Devonian–Carboniferous boundary. The Givetian–Frasnian transgression is accompanied by markedly widened distribution of the carbonate coral–stromatoporoid facies which is traceble in areas with different pre–Givetian development.

Paleoclimatic indicators point to the position of the Bohemian Massif within the tropical zone, probably around 10° S.

Biogeographic relationships of faunas indicate wide migration possibilities evidenced not only by planktonic but also by some benthic fossil qroups (trilobites, brachipods etc.). Migrations took place both in equatorial and polar directions of the Devonian paleogeography. Most conspicuous are relationships to the northern shelves of Gondwana to which the Bohemian Massif belonged, expressed in faunal affinities to Carnic Alps, NW Africa, S China and even SE Australia. However, significant were also relationships to shelves of Laurussia documented by faunal affinities to the Rhenohercynicum, Urals and Arctic regions.

The presumption of a vast Rheic Ocean and Ligerian Cordillera as migration barriers is vague for the Devonian time. Sequences of the Bohemian Massif show no support for "Late Caledonian" orogenic processes during the latest Silurian and the early Devonian. In contrary, early Variscan processes starting in Givetian to Frasnian times are clearly evidenced in stratigraphic sequences of several terranes (Centralbohemicum, Saxothuringicum, Lugicum inparticular). The main accretion of terranes in the peripheral parts of the Bohemian Massif belongs to later Variscan movements of mostly Visean age.

MAGMATIC VS. METAMORPHIC DERIVATION OF RARE-ELEMENT GRANITIC PEGMATITES

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Granitic pegmatites of the rare-element class typically occur in terrains of the low-pressure amphibolite facies of metamorphism, within the Abukuma metamorphic facies series of relatively steep geothermal gradients. Geobarometry and geothermometry indicate emplacement and consolidation at 4–2 kbar and ~750–650 to ~500–400 °C. Bulk compositions correspond to the thermal minima and eutectics in the Ab+Or+Qtz+H_2O system for the geochemically primitive types, and in the Ab+Ecr+Qtz+H_2O system for the Li-enriched varieties. Modifications of the bulk composition of tourmaline-, phosphate- and lepidolite(±topaz)-rich pegmatites correspond to those experimentally established for the minima in B-, P- and F-bearing systems. Crystallization of even the most complex rare element pegmatites from highly hydrous magmas is also verified by experiments simulating the typical internal structure and mineral assemblages of zoned bodies.

The magmatic nature of the parent medium, from which the rare-element pegmatites solidify in an essentially closed system, is well established and generally accepted, in contrast to diverse aqueous hypotheses that are only of historical interest today. However, the derivation of pegmatite-generating melts is still disputed by some researchers who advocate metamorphic derivation rather than igneous differentiation.

Numerous field- and laboratory-based lines of evidence were established in a multitude of rare-element pegmatite populations that link the pegmatites with late stages of consolidation of specialized fertile (leuco)granites: (1) rare-element pegmatites form facial pods within parent plutons, or transect margins of plutons into their metamorphic envelopes; (2) the pegmatitic rocks constitute cupolas of the fertile granites, or (3) zoned aureoles surrounding the plutons, with the pegmatites progressively differentiated from the interior through the marginal into the extreme exterior dikes; (4) late-crystallizing pegmatite pods trapped within parent granites are locally exact duplicates of exterior pegmatites in the metamorphic roofs of these granites; (5) continuous textural, mineralogical and geochemical evolution links the parent granites and their pegmatite progeny, the geochemical trends being analogous to those known from highly fractionated rhyolite suites; (6) the above-mentioned P–T conditions of consolidation and the bulk compositions fit the tail-end of fractionation expectable in highly evolved granitic intrusions.

Metamorphic models claiming direct anatectic origin of rare-element pegmatite melts (or hydrothermal influx of rare elements into magmatic but barren pegmatites) are based on the absence of outcropping granitic parents, or speculations unsupported by physical evidence. The hypotheses range from low-percentage melting of lithologies pre-enriched in the "pegmatitic" rare elements to hydrothermal influx of these elements into barren pegmatite-generating magmas.

All these hypotheses are burdened by numerous problems: (1) Lithologies that may serve as protoliths extraordinarily enriched in rare elernents (such as evaporites) are scarce in high-grade metamorphic terrains, particularly in Archean terranes; they do not cover the full spectrum of elements represented in complex pegmatites, and they would be prone to devolatization and dispersion