TERRANES OF EASTERN BOHEMIAN MASSIF: TECTONOSTRATIGRAPHIC AND LITHOLOGICAL UNITS OF THE MORAVICUM AND MOLDANUBICUM

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Terranes and terrane boundaries were recently defined and reinterpreted by Mísař and Dudek (1993): Moldanubicum (M), Moravosilesicum (MS), Bohemicum (B), Brunovistulicum (BV), Moravosilesian Tectonic Zone (MTZ) – redefined Moldanubian overthrust of F.E.Suess, Brunovistulian Marginal Fault (BMF), South Bohemicum Fault (SBF) – Fig. 1.

The terrane of the MS was overthrusted along the MTZ by the M + B in the time of final Variscan amalgamation (cca 341–335 Ma) and all these terranes were subducted along the BMF by the Brunovistulicum.

Moravicum. Original subdivision of Moravian windows by F.E.Suess (1912) into the Outer and Inner Phyllites separated by the Bíteš gneiss is still generally accepted both by Czech and Austrian geologists even if different names for tectonostratigraphic and lithological units have been used. However, there are still some disagreements as to the place of the Moldanubian overthrust, terrane boundaries and character of contacts between single groups and/or nappes of the Moravicum (e. s. Frasl, 1991, Höck, 1991, Matte et al. 1990, Mísař and Dudek 1993, Schulmann et al. 1991). By our interpretation we propagate a model as presented in the Fig. 1.

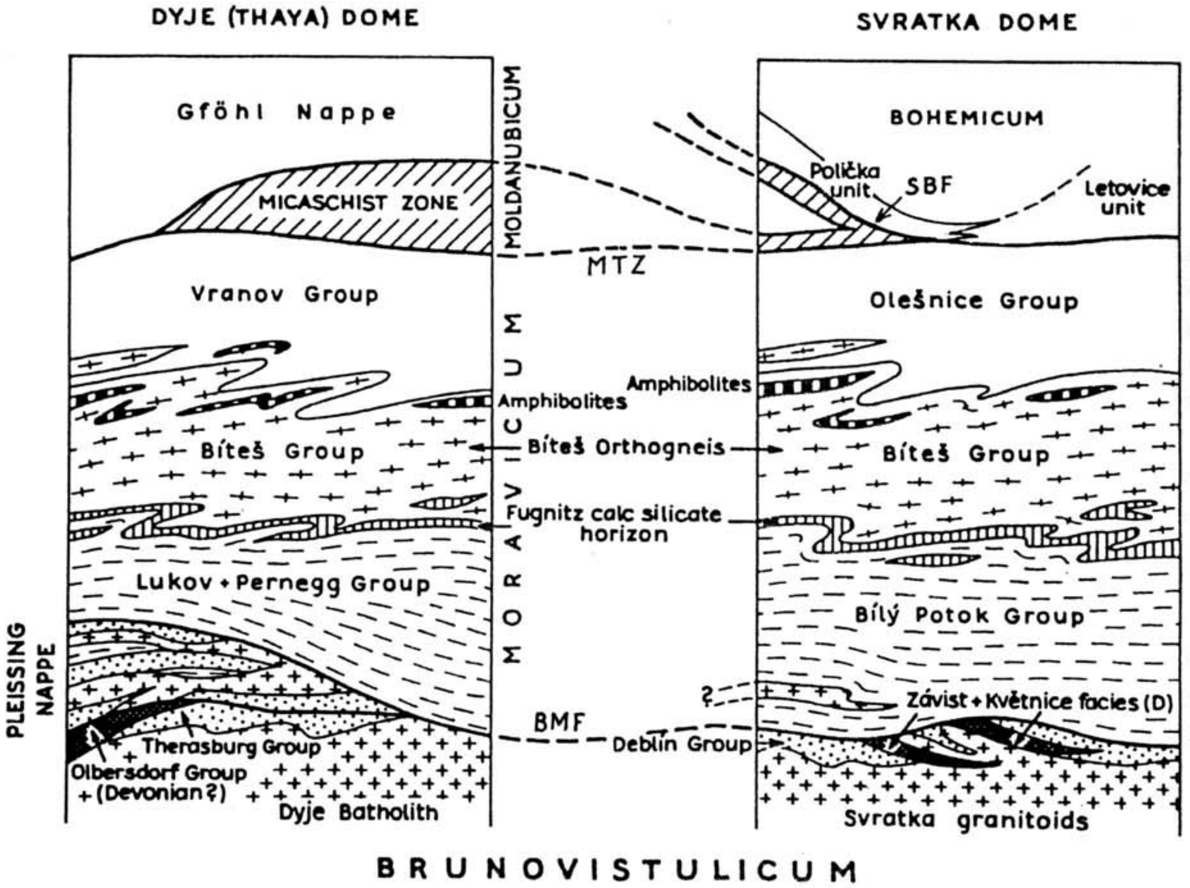

Fig.1. Correlation scheme of tectonostratigraphic and lithological units of the Moravicum. SBF South Bohemicum Fault, MTZ Silesian Tectonic Zone, BMF Brunovistulian Marginal Fault.

Moldanubicum. The main tectonostratigraphic and lithological units of Austrian part of eastern Moldanubicun are marked on the Fig. 2 of Steyer and Finger (in this volume). The most questionable are eg. the correlation of the Dobra gneiss ($^{207}Pb/^{206}Pb$ age of 1380 Ma according to Gebauer and Friedl

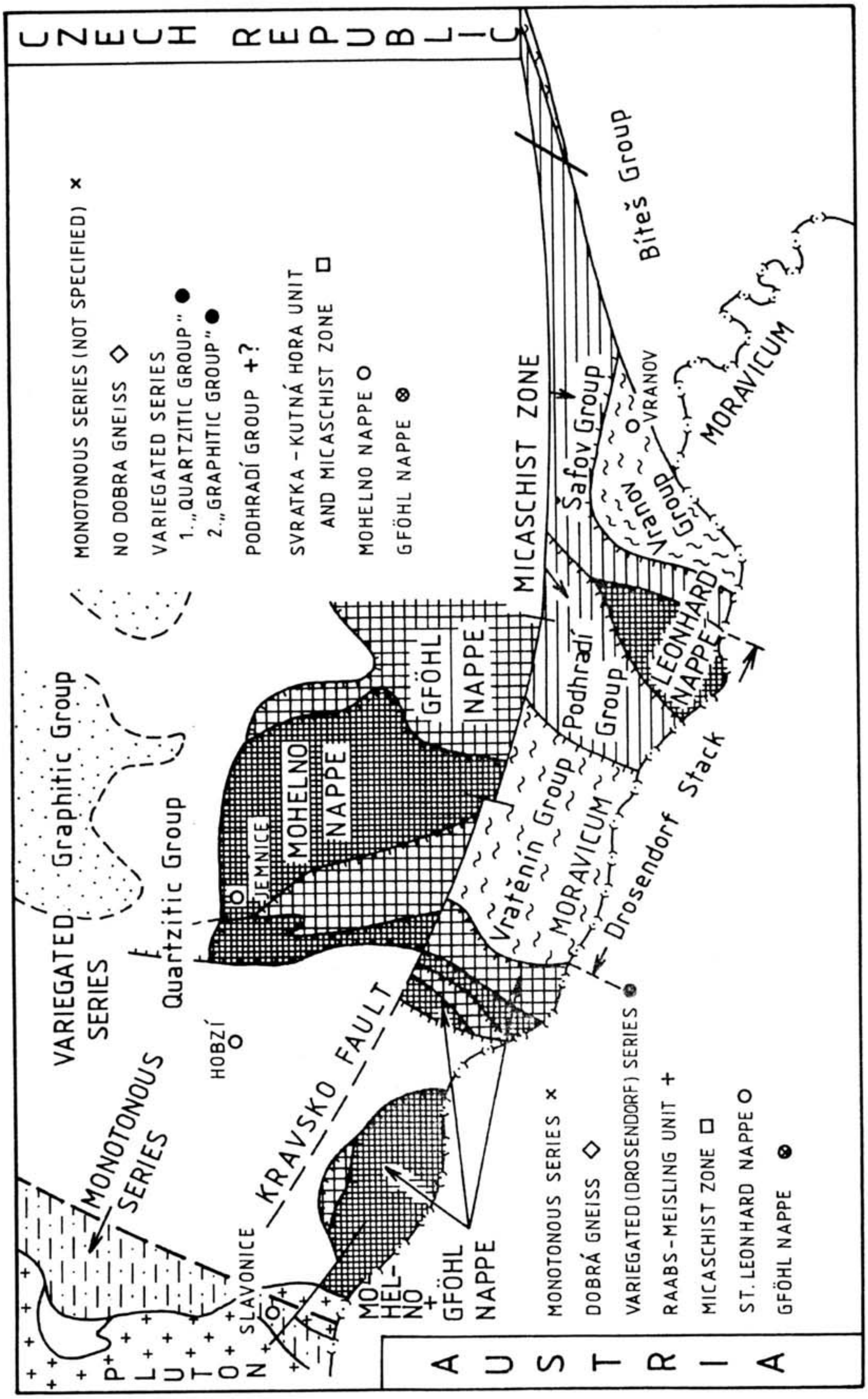

Fig.2. Correlation scheme of the Moldanubian Units (Czech and Austrian parts). The limits of technostratigraphic units according to geological maps 1:50,000 scale of Geological Survey and Faculty of Science, Charles University of Prague were modified by author.

– in this volume) with the Bíteš gneiss (Rb/Sr whole rock age of 480±50 Ma after Van Breemen and al. 1932) and the idea of some Austrian geologists on the identity of the Moravosilesian terrane with the Variegated Series of the Moldanubicum. Also recently reestablished the Raabs (Fritz – in this volume) or Raabs–Meisling unit of Steyer and Finger – in this volume), when it is proposed as relics of oceanic suture, does not clarify sufficiently the geotectonic history of this region of the Czech Moldanubicum at least.

However, a complete agreement exists as the Gföhl tectonic unit of the Moldanubicum is concerned. Schematic correlation model for Austrian and Czech parts is presented in the Fig. 2.

The Gföhl tectonic unit divided now into St. Leonhard Mohelno nappe (granulite, HT–peridotite, garnet amphibolites) and Gföhl nappe (Gföhl orthogneiss, migmatites, amphibolites, retrogressed granulite, peridotite + eclogite) overlies clearly all other lithological units of the Moldanubicum and the western margin of the Moravicum. Granulite and amhibolite of the Gföhl nappe form also a small tectonic wedge at the contact between the Kutná hora – Svratka unit and the Bohemicum to the NE of Vír.

The Variegated Series in sense of classical nomenclature may be divided in the Czech Moldanubicum into lower "Quartzitic" Group and upper "Graphitic" Group. Horizontal facies replacement can be supposed to some extend.

Monotonous Series along the eastern contact of Central Moldanubian Pluton as mentioned by Steyer and Finger (in this volume) is not specified in the Czech region. It still contains few intercalations of calcsilicate rocks and amphibolites. The Monotonous Series occurs together with tectonicaly infaulted members of the Gföhl nappe in imbricated structures eg. along the Přibyslav Mylonite Zone, in zones of deep faults and in reduced limbs of large scale folds of the Gföhl nappe region near the contact of the Kutná hora–Svratka Unit with the Bohemicum.

MAIN GENETIC FEATURES OF THE BASE METAL DEPOSITS IN THE JESENÍKY MTS. (A REVIEW)

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The stratabound Fe–Pb–Zn–Cu–Au–Ba deposits at the Jeseníky Mts. area analogously to the sulfide deposits of the Iberian Pyrite Belt, Meggen and Rammelsberg, seem to have been formed in the similar geotectonic environment with dominance of crustal extension and increased heat flow. The deposits (Zlaté Hory, Horní Benešov, Horní Město, Oskava) are mostly bound to the products of the Devonian acid volcanism, often pyroclastics, and less to sedimentary rocks. Disseminated, streaky and irregularly banded ores are composed of prevailing pyrite, sphalerite and less abundant galena. Pyrrhotite and chalcopyrite are more common in the Zlaté Hory ore district only. Barite often forms separate lenses in the vicinity of stratabound sulfide bodies. The Variscan polyphase deformation, metamorphism and subsequent remobilization caused changes in the fabric and morphology of the ore bodies, resulting in folds, boudinage, fracture and the development of vein systems.

Fluid inclusion studies showed a great influence of metamorphism and only secondary inclusions were observed. At Horní Benešov (low greenschist facies) temperature of homogenization in water–rich inclusions in sphalerite ranges up to 170 °C and salinity up to 7 wt.% NaCl eq. while in barite the total Th reaching 210–250 °C was documented in H_2O–CO_2+HHC inclusions (higher hydrocarbons) (Dobeš, Mixa 1993). Late metamorphic quartz veins with chalcopyrite and pyrite from Zlaté Hory district (garnet zone) originated at T 220–280 °C (Ďurišová 1990).

The Variscan metamorphism and deformation had insignificant influence on isotopic composition of sulphur. The most $\delta^{34}S$ values of base metal sulfides lie between 0 and –12 0‰ with maximum in the range of –2 to –8‰ (Hladíková et al. 1990). The $\delta^{34}S$ values of barites from Silesian stratabound deposits range from 18 to 26‰ and are consistent with the $\delta^{34}S$ of the European Devonian evaporites. The wide scatter (over 50‰) of $\delta^{34}S$ values of both ore and in host rock disseminated sulfides indicates that these sulfides cannot be generated from only one source of sulfur. Sulfur derived from the marine sulfate and sulfur mobilized by hydrothermal solutions from the surrounding sedimentary rocks played a major role during the formation of the stratabound deposits. Analysis of sulfur isotope composition proved a polygenic character of the Jeseníky Mts. deposits (Hladíková et al. 1990).