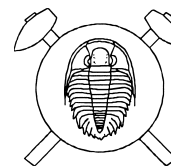


Metabasites from the Polish part of the Andělská Hora Formation (Moravo-Silesian Zone): Geochemistry, metamorphic history and geotectonic meaning

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In vicinity of Pokrzywna village (Opava Mts, Moravo-Silesian Zone) a 2.5 km long belt of metabasites (greenschists) occurs. These volcanics appear as interlayers within the upper part of the Andelska Hora Formation (AH Fm.) built up of dark phyllites, metagreywackes and subordinately metaconglomerates (Sawicki 1959). Přichystal (1981) considered them as a possible northern prolongation of the Šternberk–Horní Benešov volcanic belt.

The AH Fm. makes the oldest sequence of the Variscan flysch (Culm facies) in the Moravo-Silesian Zone but its precise age is not established yet. The AH Fm. was described as: upper Frasnian–Tournaisian (Dvořák 1995) middle Viséan (Kumpera 1983) or the uppermost lower Viséan to the lowermost middle Viséan (Otava et al. 1994, Hartley – Otava 2001).

Metabasites of the AH Fm. lay conformably within metasediments, hence they are mostly of synsedimentary – pyroclastic – origin. They are derived from layered, fine-grained tuffites, coherent, crystal tuffs and partly from lava flows. Only in one locality a few meters thick subvolcanic rock (sill?) with preserved euhedral structure were found.

During Variscan convergence the basic extrusives and surrounding sediments were incorporated into accretionary wedge and metamorphosed under greenschist facies conditions (up to an epidote blastesis in chlorite zone). In all metabasites a strong post-tectonic recrystallization of calcite is observed. The subvolcanic sill rock is impregnated by numerous hydrothermal ankerite blasts. Metamorphism was associated with folding and localized shearing along axial cleavage planes.

In spite of different types of primary rocks all metabasites show similar geochemical signatures of the subalkaline, low-Ti tholeiitic basalts. Most of the investigated samples represent volcanic products derived from the

transitional zone between within-plate (ocean island basalts) and N-MORB sources, comparable with enriched E-MORBs. Only one sample of lava flow shows clearly N-MORB affinities. Above observations point to the conclusion that during sedimentation of the AH Fm. the geotectonic conditions were still extensional and oceanic plateau basalts were generated. It is consistent with opinion of Přichystal (1993) who noticed that character of the volcanic activity in the Šternberk–Horní Benešov belt during Devonian–Lower Carboniferous time span was transitional, i.e. changed from continental, alkaline, rift related to more mature, tholeiitic of the marine basin.

As a final remark, it may be concluded that E-MORB type volcanics of the AH Fm., although enclosed in the “flysch like series” – which should suggest rather orogenic tectonic setting – were actually not influenced by any subductional processes.

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