belong the pelagic oceanic sediments from the crystalline complexes of the Malé Karpaty Mts. Strážovské vrchy Mts. and southern part of the Považský Inovec Mts. (Pernek Group in all Mts.).

(3) The Passive Continental Margin Source Area (PCMSA).

The chemical composition of PCMSA indicates extensive chemical weathering by high values of CIA and PIA indexes. Th/U, Eu/Eu*, Th/Sc, La_N/Yb_N, Th/Yb vs. Ta/Yb ratios indicate a material derived from the Ancient Upper Continental Crust (AUCC). Trends in Th/Sc vs. Zr/Sc and La/Th vs. Hf ratios are typical for recycled sedimentary rocks (RSR) and older MSR. Mutual relations in La-Th-Sc and Th-Sc-Zr/10 resemble a sedimentary basin in the passive continental margin (PCM) setting. Protolith of this group of MSR was characterized by intercalation of mineralogically mature quartzous sands and chemically mature clays. Lower Unit in the Západné and Vysoké Tatry Mts. crystalline complexes can serve as examples. Also micaschists and quartzous gneisses of the northern part of the Považský Inovec Mts. and micaschists of the Tribeč Mts. could be classified in this group.

Three main types of the source areas of the protolith of metamorphosed sedimentary rocks of crystalline basement of the Tatric Superunit of the Western Carpathians suggest differences in: (a) source areas (ACM, DOBR, PCM), (b) source rocks (YDA, YUA, RSR+AUCC), (c) protoliths of the various types MSR, (d) sedimentary environments, (e) geotectonic setting of the sedimentary basins and (f) probably in the age as well. Its present-day position is achievement of the Variscan (partly probably older) and Alpine tectono-thermal evolutionary history and younger erosion of crystalline basement of the Tatric Superunit.

Acknowledgements: This work was supported by the VEGA agency grants No. 1/0555/13.

Two monazite ages from the accretionary prism mélange of the Meliata Ocean (Bôrka Nappe, Meliatic Superunit, Western Carpathians)

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In the West Carpathian orogen, the Meliatic Superunit is typical by occurrences of Mesozoic pelagic metasediments and metabasalts, which are considered as part of dismembered Mesozoic ophiolites. The Bôrka Nappe represents a relic of metamorphosed accretionary wedge of the subducted Triassic-Jurassic Meliata Ocean.

Six formations were distinguished in the Bôrka Nappe: (1) Nižná Slaná, (2) Jasov, (3) Bučina, (4) Hačava, (5) Kobeliarovo and (6) Steinberg Formation. A common feature of these Early Paleozoic (?) to Mesozoic formations is that they underwent HP/LT metamorphism. This metamorphism was directly related to the subduction and its age was estimated to 160-150 Ma (Faryad and Henjes-Kunst, 1997, Dallmeyer et al. 2008). The subsequent exhumation of the Bôrka Nappe and its transformation to a system of partial nappes was accompanied by retrogressive metamorphism under the greenschist facies conditions.

The Hačava Formation (Fm.) prevails in the eastern part of the Bôrka Nappe. Mélange of this formation forms a sedimentary matrix in which olistolites of pelagic metasediments, metacarbonates and metabasalts are emplaced. The pelagic sediments of the Hačava Fm. are represented by metasilstones, albitic phyllites, chloritoid schists, radiolarites with glaucophane, metasilicites with phosphates, metasilicites with basaltic volcanogenic admixture and metacarbonates. In sericitic phyllites of the Hačava Fm. mélange matrix, relics of older paragonite in younger muscovite/sericite are often preserved. In these phyllites, presence of numerous post-tectonic idiomorphic porphyroblasts of monazites was revealed (30-500 µm in size), possessing typical oscillation zonation.

The oscillation zonation is reflected in their chemical composition by relatively lower contents of Ce_2O_3 (27 % wt. %) and higher contents of Nd_2O_3 (19.2 wt. %), Sm_2O_3 (3.7 wt. %) and ThO_2 (4.8 wt.

%) in the cores of the monazite crystals. On the other hand, there were lower values of Nd_2O_3 (16 wt. %) Sm_2O_3 (0.7 wt. %) and ThO_2 (0.1 wt. %) and increased values of Ce_2O_3 (36.6 wt. %) at the crystal rims.

The monazite dating indicates two resulting ages (1) 147±17 Ma. and (2) 89±18 Ma (ages calculated by statistical method of Montel et. al., 1996). According to these results two Alpine tectono-metamorphic events could be discerned: (1) the older age indicates exhumation following subduction of the Meliata Ocean; 2) the younger one records collision and the main phase of the Western Carpathian nappe stacking.

Acknowledgements: This work was supported by the Slovak Research and Development Agency under the contracts No. APVV-0571-06, APVV-0212-12, SK-AT-0002-12 and the VEGA agency grants No. 1/0193/13. and No. 2/0195/12.

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Geochemistry of pelagic sediments (Albian – Cenomanian, Pieniny Klippen Belt, Slovakia)

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Formations of spotted and variegated clay-bearing marly-siliceous sediments with horizons of black shales are characteristic for the Upper Albian – Cenomanian Strata in the Pieniny Klippen Belt (PKB). Along whole course of the Slovak part of the PKB these formations are known as the Tissalo and Lalinok Formations (Haško & Samuel, 1977) or in the Polish part of the PKB as members in Kapuśnica and Jaworki Fms. (Rudina and Brynczkowa Mb., Birkenmajer, 1977).

Light creamy or gray, bioturbated marls of the Tissalo Fm. and variegated marls of the Lalinok Fm. were sampled for biostratigraphy, paleoecology and geochemistry from an abandoned quarry near Kamienka village.

Dominant microfossils in both formations are planktonic foraminifera and radiolaria. Planktonic foraminifera yielded evidence for Late Albian and Cenomanian zones (*Rotalipora ticinensis, Rotalipora appenninica, Rotalipora globotruncanoides, Rotalipora reicheli and Rotalipora cushmani)*. Minority of the microfossil association is represented by calcareous benthic foraminifera and less common aglutinated foraminifera and ostracods.

Frequently bioturbated marls of the Tissalo Fm. indicate well oxygenated environmental conditions, in contrast to more dysoxic conditions with seldom bioturbations of the sediment in lower part of the Lalinok Fm. However horizons of black shales can be found in both formations. Both formations represent pure pelagic sediments deposited above CCD with only scarce terigenous admixture.

Contents of the major elements (ME) in the pelagic sediments of the Tissalo and Lalinok formations show trend which is typical by increasing SiO_2 contents (15-50 wt %), increasing Al_2O_3 contents (3-11 wt %), with simultaneous decreasing of CaO contents (45-15 wt %). Such trend is typical for mixing of three principal components in the pelagic sediments: (1) organogenic SiO_2 (radiolarians), (2) chemogenic/organogenic $CaCO_3$ and (3) siliciclastic material (clay). The siliciclastic admixture is