distinguishing local rotations from the regional ones. The mean direction values from nearby volcanics were also used in the compilation for an additional test. A major point of attention for this study was the establishment of reliable inclination values, which would reflect the latitudinal variations, if important tiltings could be discarded. Thus, we scrutinized all palaeomagnetic results, by a closer examination at the site level and in comparison with the numerous available radiometric, geothermometry and geobarometry data. Finally, an attempt was made to quantify cooling rates in the area and make precise correlations with the big dataset of laboratory blocking temperatures.

The quality of the magnetic signature was, in general, satisfactory and the obtained directions (mostly clockwise) could be interpreted in the regional kinematic frame. The information provided by the paleomagnetic and rock magnetic studies has been used in various ways to assess the history of the plutons: (1) Dominance of magnetite, hematite or maghemite with estimation of grain size entails information on cooling rates and mineralogical transformations. The medium to coarse-grain granodiorites and monzonites of Elatia and Vrondou yielded the less reliable results of this study. (2) Laboratory blocking temperatures range from 350-600°C. For a slow cooling of 3°C/Ma this gives a range of natural Tb of 150-400°C which could be compared to detailed radiometric data in Sithonia and Symvolo, enabling us to accurately date the magnetic components. (3) Demagnetization diagrams and stereographic projections suggest minor or no tilt for some of the plutons (Symvolo, Xanthi) and possible tilting during emplacement for Sithonia. (4) The anisotropy of magnetic susceptibility was studied to assess the possible deflections of the palaeomagnetic vectors; in most cases AMS was relatively low while in plutons with higher anisotropy no systematic correlation was observed between irregular directions and increased AMS. The potential field data, where available, gave additional constraints to the above results. For instance, the Xanthi pluton has proved to have a 6-7km lower depth and a shape of a truncated pyramid. Assuming world-wide standard batholith burial depths versus critical isotherms we can estimate that the whole body has cooled ~above 13.5 km, which converges with the Curie isotherm for the area and crystallization depth calculated from geothermobarometry.

Acid Miocene volcanism in the Eastern Slovakia, variable sources and magma forming processes: constraints from petrology and geochemistry

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Young Middle Miocene (Badenian to Sarmatian) highly silicic volcanism is evolved in the region of the East Slovakia Depression (ESD). Four areal regions were sampled: 1) extrusions outcropping on the north of the ESD (Merník and Beňatina), 2) few bodies on the northern part of the ESD around Lesné, 3) small bodies on the south in the region of Zemplin and 4) bodies near southern continuation of the Slanské vrchy mts (Byšta). Variability in mineralogy reflects magma composition and stages of magma evolution. Highly siliceous rocks (70.7-77.3 wt. % SiO_2) occupy rhyolite field in TAS diagram. Rhyolite mineralogy is in part regionally dependent. The most striking feature is presence of almandine garnet ($Alm_{76}Pyr_{9.6}Gross_{6.9}Spess_{5.2}$) in extrusions at Merník, Beňatina and Lesné. Almandine phenocrysts with fairly homogeneous composition across the grain and with inclusions of zircon and apatite are presumed to be of magmatic origin. Presence of highly to moderately corroded garnet is suggestive of its instability at low pressure during ascent. High pressure garnet fractionation is recorded by intensive whole rock HREE depletion and steep REE profiles. Suppressed plagioclase fractionation indicated by absence of Eu negative anomaly and low Rb/Sr = 0.66 and corroded quartz phenocrysts is consistent with quick magma evacuation without essential low pressure fractionation/assimilation in the upper crustal magma chamber(s). Rhyolites from Byšta can be recognized by presence of orthopyroxene. Plagioclase, biotite, K-feldspar and ±quartz are surrounded by fully crystallized matrix (feldspars and quartz) with only minor glass abundance. Complex plagioclase zonality

(hybrid cores resulted from mixing of two contrasting magmas, events of drastic corrosion, development of more basic in composition thick rims with numerous melt pockets entrapped), presence of large relic clinopyroxene (presumed to be a remnant after fractionation from more basic magma), disintegrated intergrowths of biotite-plagioclase-ilmenite cumulates indicate evolution of magma likely via AFC in shallow magma chamber which developed in the upper crust. Rhyolites from Zemplin area are compositionally heterogeneous, but neither contains garnet or orthopyroxene. Almandine garnet is common in banded metapelitic rocks trapped as xenolits. Inclusions of quartz, ilmenite, Mg-chlorite, graphite, biotite and typically spessartine enriched margin of host garnet are evidence of its metamorphic origin. Most of extrusions or dykes are autometamorphosed. Matrix is replaced by K-feldspar, quartz and clay minerals; Fe released from mafic biotite fills cavities or armor phenocrysts. Rhyolite bodies have variable mineral proportions, crystallinity of the matrix and phenocrysts that is unique for each body. Peraluminous rhyolites from Eastern Slovakia are characterized by low content of Nb (10-19 ppm), Rb (120-159 ppm) and Y (5-37 ppm). Position on tectonic discrimination diagram corresponds to felsic magmatites evolved on the volcanic arc. Negative Nb, P, Ti anomalies and Pb peak on multi-element diagram indicate evolution with contribution of continental crust. Almost identical shape as for rhyolites from Central Chilean Andes suggests their origin in subduction regime with volcanic arc developed on thin continental crust. Rhyolites were analysed for Nd and Sr isotopic ratios ($^{143}Nd/^{144}Nd$ 0.51223- 0.512484 and $^{87}Sr/^{86}Sr$ 0.708163-0.715491). Variations in isotopic ratios are compatible with crustal component involved in petrogenesis of rhyolites. Three domains can be identified: 1) more $^{143}Nd/^{144}Nd$ and less radiogenic $^{87}Sr/^{86}Sr$ rhyolites from Merník (δNd -3.0, δSr 52), 2) lower $^{143}Nd/^{144}Nd$ and higher $^{87}Sr/^{86}Sr$ ratios from Beňatina and Byšta (δNd -7,5, δSr 92,9), 3) $^{143}Nd/^{144}Nd$ as with 2-nd domain but more radiogenic $^{87}Sr/^{86}Sr$ from Zemplin area (δNd -7,5, δSr 156). Position on the δNd vs δSr diagram scatters along trajectory from MORB to upper crust. Merník with the least crustal influence overlaps with fields of A-type and I-type granites; Beňatina and Byšta cluster in the intersection of I-type and S-type granites and Zemplin area is in the field of S-type granites. Dependence of variations in Nd-Sr isotopic ratios on areal distribution is attributed to different source composition and/or type and intensity of interaction with country rock during formation of partial melts.

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Paleovolcanological reconstruction of the Vepor andesite stratovolcano (Central Slovakia)

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In the region of the Hercynian crystalline massive of the Veporic unit (East of the Central Slovakia Volcanic Field, CSVF) denudation remnants of the intrusive-extrusive bodies and volcanoclastic rocks of supposed Neogene age have already been identified in the past. Paleovolcanological reconstruction has been done of former extensive andesite volcano, later removed by intensive erosion, on the basis of the recent mapping (in the scale 1:3 000 – 1: 10 000), petrological and radiometric data.

The region of central volcanic zone is exposed by deep denudation cut around the Magnetový vrch hill. The subvolcanic multi-stage diorite intrusion-pluton of cedar shape (K-Ar age:12.08 ±0.47 and 12.28 ±0.42 Ma, respectively) in its lower part in the valley at the level of the Rimavica river (500 m altitude) steeply intrudes into the complex of the Hercynian granite and metamorphic rocks. On the western margin the intrusion transforms into several sub-horizontal apophyses emplaced in form of the sills along the lithological boundary between Hercynian granite and Middle Triassic limestone and dolomite and higher within the Mesozoic complex (Magnetový vrch hill, 960 m altitude). Zones of magnetite scarns are evolved at the contact of carbonates with the diorite intrusion. The intrusion is later