Bartonian), Obuhov Formation (Priabonian), Mezhigor Formation (Rupelian) and Bereka Formation (?Chattian).

We compared results of palynofacial analysis (i.e., composition of organic remains of marine and terrestrial origin) and taxonomical diversity of aquatic palynomorphs representing both marine and freshwater taxa. Our palynological analysis revealed variable sedimentological settings of these deposits reflecting various palaeoenvironments.

The oldest investigated strata (the Kanev Formation) contain high ratio of marine dinoflagellate cysts (occasionally up to 90%) pointing to marine environment optimal for development of rich and diversified dinoflagellate flora during the Early Eocene (Ypresian). Younger strata (the Buchak Formation) contain already palunofacies that could be interpreted as indicative to deposition in more proximal setting than Kanev Formation. It contains higher ratio of terrestrial plant remains, whereas dinoflagellate cysts are dominated by near-shore species *Homotryblium tenuispinosum*.

Bartonian strata (the Kiev Formation) yieldrich and diversified dinoflagellate cysts assemblages, which are indicative for marine environments. Taxonomical richness and occurrence of an oceanic genus *Impagidinium* suggests offshore sedimentary setting during Bartonian. A gradual sea withdraw can be interpreted as Priabonian: diversified assemblages in basal part of the Obuhov Formation, become relatively impoverished in the upper part of this unit where representatives of the genus *Deflandrea* and Prasinophyta algae (*Pterospermella*, *Tasmanites*) occur. Land-influences are markedly evident in Lower Oligocene Miezhigor Formation: palynofacies is dominated by sporomorphs and land plant tissue remains. Moreover, freshwater algae also frequently occurs.

Preliminary comparison of our data with palynology of coeval strata from Polish part of epicontinental sea and Carpathian basins suggests that these basins were presumably connected during the Middle and Late Eocene. This is based on general taxonomical composition similarity of our assemblages to those known from Middle and Upper Eocene strata of the Flysch Carpathians (e.g., the Variegated Shale, the Hieroglyphic Beds). Throughout Early Oligocene, however, epicontinental basins were rather separated from Carpathian ones. Dinoflagellate cysts from the Miezhigor Formation are relatively diversified, whereas the ones from coeval Menilite facies of the Carpathian basins are almost absent.

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Revisiting the source characteristics of Quaternary monogenetic basalts in Central Anatolian Volcanic Province: asthenospheric or lithospheric melts?

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The Neogene-Quaternary Central Anatolian Volcanic Province (CAVP) is characterized by widespread polygenetic and monogenetic volcanism. About 800 monogenetic volcanoes were identified within the CAVP and these mainly include scoria cones and related flows (basaltic and andesitic), with subordinate maars (of both basaltic and rhyolitic composition), and domes (generally rhyolitic in composition).

Despite the occurrence of q-normative, ol-hy-normative, and ne-normative basalts, CAVP monogenetic basalts (*s.l.*) have been generally considered as alkaline. Based on this fact, they are recently evaluated as tholeiitic, transitional, and mildly alkaline (<5% normative ne), respectively. Similar patterns and HFS anomalies of monogenetic basalts on mantle-normalized diagrams to CAVP calc-alkaline lava flows from the polygenetic volcanoes were also noted. These andesitic-dacitic lava flows from the CAVP stratovolcanoes display orogenic trace element fingerprint, reflecting enrichment of their source regions by subduction-related fluids. So, this brings about the need for revisiting the source characteristics of CAVP monogenetic basalts. Compilation and re-evaluation of all available

geochemical data from previous studies, and interpretation of our own data from monogenetic volcanoes enabled us reviewing source characteristics of monogenetic basalts in CAVP.

CAVP monogenetic samples are transitional to calc-alkaline according to their Zr and Y contents. All CAVP monogenetic basalts display similar variably enriched LIL/HFS patterns and HFS anomalies on mantle-normalized diagrams. They all have incompatible element ratios intermediate between orogenic andesites and within-plate basalts. High La/Nb (>1.6), Al_2O_3/TiO_2 (10-17) and low Sm/Yb ratios (<2.5) imply that the melts must have been derived from shallow depths (<80 km), that is within the lithospheric mantle, just like the calc-alkaline volcanics of CAVP. There is also evidence which might account for crustal contamination such as highly variable range in HFS and other incompatible element ratios Zr/Nb, Y/Nb, La/Yb, and presence of slight negative Ba anomaly on multielement diagrams. Presence of U peaks on mantle-normalized multielement diagrams for most monogenetic CAVP basalts, and variation in $^{87}Sr/^{86}Sr$ ratios reported for monogenetic volcanoes in the western part of CAVP imply crustal contribution as well.

The driving mechanism for generation and ascent of Neogene-Quaternary volcanism in the CAVP is the transtensional and rotational tectonics in central Anatolia from Miocene onwards. This is evidenced by exposure and vent distribution of the central Anatolian volcanics confined to two major fault zones namely, the Central Anatolian Fault Zone (or Ecemis Fault Zone) and the Tuz Gölü Fault Zone. In a wider regional context, CAVP monogenetic basalts are comparable to Apuseni Mountains (Romania) and Big Pine (Basin and Range) volcanics, except CAVP basalts have depleted Ba contents. There is a need for systematic petrological study to expand the database and have a better picture of monogenetic volcanism within the CAVP.

Eocene post-collisional volcanism in the Central Anatolian Crystalline Complex, Turkey: Petrology and geodynamic significance

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In the Central Anatolian Crystalline Complex (CACC) the Late Cretaceous post-collisional granitic magmatism is followed by Eocene extension, resulting in formation of roughly E-W trending transtensional basins. The volcanic rocks, mainly submarine lava flows and subareal domes are concentrated along these Middle Eocene (Bartonian) basins. The volcanic rocks are basic to intermediate and are classified as basalt, basaltic andesite and rarely alkali basalt and trachy-andesite. Petrographically they are generally plagioclase + pyroxene ± olivine ± hornblende ± biotite pyhric, indicating a shallow crystallization level. They are characterized by several disequilibrium textures, which may suggest role of magma mixing/mingling process during their evolution. Eocene volcanic rocks are characterized by high phenocryst contents, low but variable MgO concentrations (0.54- 9.30 wt %), low Mg numbers (19.57- 55.57) and low compatible trace element concentrations (Ni 5-166 ppm; Co 7-32 ppm), which provide strong evidence for the mafic mineral fractionation. Their relatively high Zr and Y contents provide strong evidence for their transitional to mildly alkaline nature and also point out their within-plate characters. All studied samples are strongly and variably LREE enriched relative to chondrite with the (La/Sm) N ratio of 2.26- to 6.17 and show small negative Eu anomalies (Eu/Eu*=0.65-1.00), suggesting plagioclase fractionation. The REE patterns of the studied rocks are consistent with the derivation from a shallow depth (e.g. spinel lherzolitic source). They have negative Nb-Ta and Ti anomalies in the primitive mantle normalized diagram and are characterized by low Nb/La (0.21 to 0.62), Ce/Pb (3.70-34.90) and Nb/U ratios (1.11-30), which may indicate an interaction with the Late Cretaceous granitic host rocks in the course of their ascent.

The volcanic rocks display similar but variable ranges of Sr, Nd and Pb isotope ratios. εNd values range from 0.12 to 4.06, which is indicative of an isotopically depleted mantle source. They have relatively high and variable LILE/HFSE, LILE/LREE ratios (e.g. Ba/Nb