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ABSTRACT BOOK

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CURATORI DEL VOLUME

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Intraplate magmatism along the Malatya-Ovacik and Kizilirmak strike slip faults in a post-collisional setting (Central-Eastern Anatolia, Turkey)

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Central-Eastern Anatolia volcanic activity records a long-term geochemical history linked to its geodynamic evolution. The associated magmatism follows the Late Cretaceous to recent compression, due to the convergence and subsequent middle Miocene collision of African and Arabian Plates with Eurasia ones along the Hellenic and Cyprus Arcs to the west, and the Bitlis-Zagros suture to the east. After abundant orogenic magmatism, scattered basaltic volcanism mainly developed in association with the main strike-slip faults of the region namely North Anatolian Fault Zone, East Anatolian Fault Zone and Central Anatolian Fault Zone, in a transtensional tectonic context.

In more detail, in the study area, a middle Miocene volcanic activity was recognized in the Yamadag Volcanic Complex north-west of Malatya, and in the Kepez Dag Volcanic Complex, west of Malatya. Here, the volcanic products, emplaced mainly as lava domes and less numerous lava flows, have calc-alkaline affinity showing the common geochemical and isotopic characters of subduction-related rocks with marked LILE enrichments, very strong Nb-Ta fractionations, high $^{87}Sr/^{86}Sr$ (0.7039-0.7063) and low $^{143}Nd/^{144}Nd$ (0.51260-0.51276).

Both tholeiitic and Na-alkaline basaltic products outcrop in the Sarkisla, Kangal and Arguvan areas, postdating calc-alkaline rocks. In Sarkisla, basalts and basanites were emplaced as lava flows during the middle-Miocene (13.9-15.7 Ma) along the Kizilirmak strike slips fault, in the southwestern part of the Sivas Basin. Further to the south, in the NNE and SSE sectors of the Kangal Basin, younger basaltic to trachybasaltic volcanism reached its peak during the Pliocene time (4.8-5.1 Ma). In the Arguvan region, just south of the Yamadag volcanic complex, mostly tholeiitic and rare alkaline lava flows were emplaced during the Pliocene along the Malatya-Ovacik strike slip fault.

Tholeiitic and Na-alkaline rocks of Sarkisla and Kangal are MgO and TiO_2 rich (5.5-13.3-and 1.5-2.2%, respectively), showing small throughs at Nb-Ta, lower LILE contents with respect to calc-alkaline rocks, but a wide range of Sr-Nd isotopic compositions (0.7041-0.7055 and 0.51261-0.51282). Arguvan tholeiitic rocks, on the contrary, are characterized by Th-U peaks, Nb-Ta-Pb throughs, low $^{87}Sr/^{86}Sr$ (0.7035-0.7038) and high $^{143}Nd/^{144}Nd$ (0.51285-0.51291).

The late-middle Miocene magmas of Yamadag and Kepez Dag complexes, clearly emplaced in a convergent setting, indicate a derivation from a mantle source modified by subduction components. Tholeiitic and Na-alkaline magmas, on the contrary, mark the change from compressional to strike slip tectonic regime at the beginning of the late Miocene. The development of late Miocene Kizilirmak fault and, subsequently, the Pliocene Malatya-Ovacik fault zone favored the passive upwelling of asthenospheric mantle, and the onset of tholeiitic and Na-Alkaline basaltic activity.