

## Petrogenetic and age constraints on the post-collisional alkaline magmatism in Central-Eastern Anatolia

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We present new geochemical and age data on alkaline rock associations from Hasancelebi, Keban, Isahocali and Bayindir regions in central-eastern Anatolia. These associations are direct consequences of the subduction of southern branch of NeoTethyan ocean beneath the Eurasian plate in the Latest Cretaceous time.

All the alkaline associations share similar trace element characteristics. The trace element patterns displayed by the central-eastern Anatolia alkaline magmatics suggest a metasomatized lithospheric mantle source modified by the Late Cretaceous subduction event producing magmatic rocks with more metasomatized mantle and within plate arrays. Regional extensional tectonics resulted in extensive alkaline magmatism facilitated by asthenospheric upwelling and associated thermal perturbation in response to a slab roll-back producing the Latest Cretaceous magmatic associations in Keban, Bayindir, and Hasancelebi.

U-Pb and <sup>40</sup>Ar/<sup>39</sup>Ar age data quote the timing of alkaline magmatism as 76.84±0.67 to 69.72±0.38 Ma. These ages also mark the onset of change in the subduction geometry due to roll-back or hinge retreat mechanism along the Bitlis-Zagros subduction.

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## Mio-Pliocene post-collisional calc-alkaline volcanism in Central Anatolia: Tepekoy Volcanic Complex (Nigde)

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We present new geochemical data for the Mio-Pliocene Tepekoy Volcanic Complex (TVC) within the Central Anatolia. The calc-alkaline lava flows range from basaltic andesite to dacite, but andesitic composition dominates. They are generally plagioclase+augite+enstatite+hornblende±olivine±sanidine±quartz-phyric. Nearly all phases show disequilibrium textures indicative of magma mixing.

Low Mg#, negative trends in Fe<sub>2</sub>O<sub>3</sub>, MgO, TiO<sub>2</sub>, CaO, and P<sub>2</sub>O<sub>5</sub> with increasing SiO<sub>2</sub> can be attributed to fractionation of various mineral phases within the TVC.

Chondrite-normalized [1] REE diagrams show a general LREE enrichment, and (La/Yb)<sub>N</sub> ranges between 7.36-14.01. Tepekoy volcanics are enriched in LILE, display negative Nb-Ta and positive Pb anomalies, and P and Ti depletions on primitive mantle-normalized [2] diagrams, indicating the role of subduction or continental crust in their genesis [1, 3]. Th/Y vs. Nb/Y and Th/Yb vs. Ta/Yb ratio plots, on the other hand, imply a within plate signature for the TVC.

Our data for the TVC provide an insight into the petrogenesis of these rocks, and display an interplay of partial melting, fractional crystallization, crustal assimilation, and magma mixing processes as can be expected in a collisional setting.

[1] McDonough & Sun (1989) *Chem. Geol.* **120**, 223-253.

[2] Taylor & McLennan (1985) *The continental crust, its composition and evolution*. [3] Pearce (1982) *Andesites, Orogenic andesites and related rocks*.