**Diachronous Initiation of Post-Collisional Magmatism in the Arabia-Eurasia Collision Zone**

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Abstract

The continental collision between Arabia and Eurasia gave rise to the Caucasus-Iran-Anatolia (CIA) volcanic province that provides a unique opportunity for understanding collisional zone magmatism. This study reports a comprehensive dataset of ages and geochemical compositions of volcanic rocks that occurred as the initial phase of post-collisional magmatism in the CIA province. The age data indicate a diachronous volcanic initiation, starting 17 Ma in SE Anatolia and propagating since 11 to 9 Ma toward NE Anatolia and NW Iran. These Miocene rocks show a bimodal feature, dominantly of basic (SiO2= 48-52 wt.%) and acidic (SiO2= 59-71 wt.%) compositions, coupled with marked isotopic variations (∊Nd= +6 to -5), suggesting a shared mechanism of the magma initiation that we attribute to migrating onset of post-collisional extension regimes in the volcanic province. This involves two principal magma source regions, a juvenile mantle-derived component and an older continental crust. In comparison, changes are observed in subsequent volcanism that began erupting from 6 Ma in the entire province and produced a wide spectrum of calc-alkaline rocks from basic to acidic compositions. Their overall geochemical features are similar to those of Cenozoic magmatic rocks in the peri-Arabian region and indicate the involvement of Tethyan subduction-metasomatized lithospheric mantle and associated crustal processes in the petrogenesis. From 2 Ma, volcanism ceased in the western CIA province and started propagating southeastward to SE Iran along the Urumieh-Dokhtar magmatic belt, in consistency with the notion of oblique continental collision between Arabia and Eurasia.

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