

## **Short-lived late Cretaceous arc magmatism in SE Turkey: Temporal geochemical variations and tectonic implications**

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Neotethyan ophiolites that crop out in the northern margin of Arabia, from SE Turkey to Iran and Oman, have a short “life span” of <20 myr from their birth to death. While this ophiolite belt is widely believed as forming in the forearc environment related to intra-oceanic subduction initiation, the arc magmatic product is rarely observed in this belt. Here we report for the first time zircon U-Pb ages and Hf isotopes, and whole-rock geochemical and Sr-Nd-Hf isotopic data of late Cretaceous (83-73 Ma) magmatic rocks from the areas around Elazığ, SE Turkey, which we argue to be part of the missing arc product subsequent to the formation of the ophiolites. The Elazığ magmatics that occurred within a short period (~10 myr) are characterized by significant geochemical variations over time, varying from low-K tholeiitic to calc-alkaline and then shoshonitic, with associated enrichments in LREE and LILE, and progressive changes in isotopic compositions. Zircon and whole-rock  $\epsilon\text{Hf}(T)$  values, for example, vary from +20 to -3. The temporal variations are interpreted as involving two main components in the magma generation, i.e., a depleted mantle source that prevails in the formation of the Neotethyan ophiolites and an old continental crust that resembles the Bitlis-Puturğе massif in SE Turkey. Moreover, the variations are indicative of changing source regions of the Elazığ magmatism that we attribute to the collision and following continental subduction of Arabian crust, thus resulting in the HP-LT metamorphism of the Bitlis-Puturğе massif during 79-74 Ma. To sum up, the Elazığ magmatism, short-lived in the late Cretaceous while showing significant geochemical variations, suggests a rapid switching of tectonic setting from intra-oceanic subduction to continental collision, a common feature in the Arabia-Eurasia collision zone marked with the “Turkic-type” orogeny.