



Early Cenozoic magmatism along the İzmir-Ankara-Erzincan suture zone (NE, Turkey): Petrological snapshots of syn-to post-collisional magmatism transition on a remnant mantle wedge.

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İzmir-Ankara-Erzincan suture zone (IAESZ) is the main Tethyan divide in the Anatolian plate and marks the subduction and closure of the so-called northern branch of the Neo-Tethyan Ocean at the end of the Cretaceous. The IAESZ also host the vestiges of the old subduction, accretion and collisional stages which situated as a mantle wedge between Triassic and Cretaceous. At the beginning of the Cenozoic (early to middle Paleocene), collision of Pontides and Kırşehir Massif created a fast uplift and erosion along the IAESZ range. After that period, sporadic adakitic magmatism developed along the proximity of the IAESZ during late Paleocene to early Eocene at final phase of the collisional period. Following that; during the middle Eocene, widespread alkaline to tholeiitic magmatism developed along the northern and southern part of the IAESZ.

Almus (Pontides) and Yıldızeli (Kırşehir Massif) regions situated at the northern and southern part of the IAESZ respectively and host the middle Eocene volcanic units which contain both nepheline and hypersthene normative alkaline to tholeiitic lavas. Alkalinity of the lavas was sustained by the low degree melting of the cpx-hornblendite xenoliths which are rarely detected within the lava series. Generation of the cpx-hornblendite cumulates probably related with metasomatization of the remnant mantle wedge along the IAESZ by the old subduction/accretion processes. P-T calculations from middle Eocene alkaline units show that melt segregation occurred at depths corresponding to spinel-lherzolite field. On the other hand; older late Paleocene to early Eocene adakitic magmatic units generally derived source areas which are seated in garnet peridotite stability field.

Transition of garnet-peridotite to spinel-lherzolite magma source regions along the IAESZ range during the early Cenozoic was controlled by: i) thickening of the lithospheric mantle during the late Paleocene-Early Eocene (which is supported by adakitic magmatism); (ii) shallowing of the MOHO by extensional tectonics either due to delamination and/or lithospheric removal processes. Denudation of the lithospheric mantle gives rise to alkaline/tholeiitic and spinel field sourced middle Eocene magmatism along the both sides of the IAESZ.

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