

The Age and Geodynamic Evolution of the Metamorphic sole rocks from İzmir-Ankara-Erzincan suture zone (Northern-Turkey)

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The İzmir-Ankara-Erzincan suture zone in northern Turkey is one of the major tectonic zones separating the Pontides to the North from the Anatolide-Tauride block and K1 rşehir Massif to the South. The accretionary complex of the İzmir-Ankara-Erzincan suture zone, near Artova, is composed mainly of peridotites with varying degree serpentinization, metamorphic rocks, basalt, sandstones, pelagic and neritic limestones. The metamorphic rocks are represented by amphibolite, garnet micaschist, calc-schist and marble.

The metamorphic rocks were interpreted as the metamorphic sole rocks. Because; (i) They are tectonically located beneath the serpentinized peridotites. (ii) Foliation planes of both the amphibolites and mantle tectonites are parallel to each other. (iii) The metamorphic rocks are crosscut by non-metamorphic dolerite dikes which exhibit Nb and Ta depletion relative to Th enrichment on the N-MORB normalized multi-element spider diagram. The dolerite dikes display flat REE patterns ($La_N/Yb_N=0.85-1.24$). These geochemical signatures of the dolerite dikes are indicative of subduction component during their occurrences.

Geochemical observations of the amphibolites suggest E-MORB- and OIB-like signatures ($La_N/Sm_N= 1.39-3.14$) and their protoliths are represented by basalt and alkali basaltic rocks. Amphiboles from the amphibolites are represented by calcic amphiboles (magnesian-hornblende, tchermakite and tremolite) and they yielded $^{40}Ar-^{39}Ar$ ages between 157.8 ± 3.6 Ma and 139 ± 11 Ma. These cooling ages were interpreted to be the intra-oceanic subduction/thrusting time of the İzmir-Ankara-Erzincan oceanic domain.

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