INVESTIGATIONS ON GEOCHEMISTRY AND GEOCHRONOLOGY OF METABASIC ROCKS FROM CHALDORAN OPHIOLITIC COMPLEX NW IRAN

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ABSTRACT

Metamorphic rocks associated with the Chaldoran ophiolite complex in NW Iran, are mostly composed of mafic rocks. Chaldoran ophiolite is a part of the NW Iranian ophiolite complexes, spatially situated between Eastern Turkey ophiolites at the west, Southern Armenian Block at the north and Khoy ophiolite at the south. Studied metamorphic rocks include metagabbro to metagabbro-diorite, which are metamorphosed under greenschist to lower amphibolite facies conditions. Geochemistry of these rock show tholeiitic to slightly calc-alkaline characteristics. Nearly flat REE patterns with parallel to slightly depleted HFSE relative to N-MORB, high LILE/HFSE ratios and negative Ta–Nb anomalies (and Ti in some samples) demonstrate a composition intermediate between MORB and island-arc basalts (IAB). These features indicate the influence of both deep and shallow subduction components in depleted mantle source on the studied metabasites. These features are representative for supra-subduction zone ophiolites.

The U-Pb zircon dating of Chaldoran metabasic rocks yielded a weighted mean age of 107.5±1.3 Ma. This age is in contrast with Precambrian age of the Khoy ophiolitic complex amphibolites, but is in accordance with Maastrichtian-Paleocene age of the sedimentary cover of the Chaldoran ophiolitic complex. Considering field, geochemical and geochronological data, Chaldoran ophiolitic complex belongs to the Neotethys ocean realm. Late Cretaceous age and more pronounced island arc affinity of Choldoran metabasic rocks make them similar to the Late Cretaceous supra-subduction zone ophiolites, emplaced along the Izmir–Ankara–Erzincan suture zone.

Keywords: *Metabasite, Chaldoran ophiolite, Late Cretaceous, supra-subduction zone, NW Iran*