

# Geochemistry and evolution of the volcanism in the Eastern Pontides, NE-Turkey

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The basement rocks of the Trabzon-Bayburt region located in the Pontide tectonic unit consist of Paleozoic metamorphics and intruded granitoids. A variety of rocks at different composition and ages lie over this basement. Four different periods of volcanic activity are distinguished in the region as Liassic-Dogger, Upper Cretaceous, Middle Eocene and Miocene-Pliocene. The volcanic rocks of Liassic-Dogger age are both alkaline and subalkaline, those of Upper Cretaceous subalkaline, those of Middle Eocene alkaline around Trabzon and Tonya, whereas subalkaline in south of Gmhane and those of Miocene-Pliocene both subalkaline and alkaline in composition. The MORB-normalized geochemical patterns of trace elements including REE indicate LREE and LIL element enrichments involving a subduction component and crustal contamination. All these volcanics

were possibly derived from tholeiitic to primitive MORB source. Fractional crystallization played a major role in the formation of Liassic-Dogger and Upper Cretaceous volcanic rocks. The Middle Eocene rocks around Trabzon have higher LREE concentrations compared to those around Tonya. The reason for this may be the varying degrees of partial melting of a common source. Although the MORB-normalized REE patterns of samples from Gümühane area are similar to those of samples from Tonya, they are nepheline- and olivine-free in the norm. Gümühane volcanics may be the most differentiated products of the melts that form the Tonya and Trabzon volcanics. Miocene-Pliocene volcanics show similar geochemical patterns as Tonya volcanics. The overall geochemical patterns together with geologic data indicate an island arc setting for the volcanic rocks in the Eastern Pontides.