



Preliminary Geological and Geochemical Data from the Cangaldag Complex (Kastamonu-Turkey): Implications for the Geodynamic Evolution of the Central Pontides

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The Cangaldag Complex, one of the tectonic units lying in the Central Pontides of the Sakarya Composite Terrane, comprises variably deformed and metamorphosed rocks of mostly magmatic origin. These lithologies include both extrusive and intrusive varieties as well as volcanoclastic types, with a wide range of compositions from felsic to mafic.

Petrographically the complex consists of diverse rock types, including basalt, tuff, diabase, gabbro, andesite, and rhyo-dacite. The mafic lithologies generally appear to be affected by greenschist facies metamorphism with typical assemblage of $ab+act+chl+ep$. A well-developed schistosity is observed in some cases. The dacitic types are generally slightly metamorphic, displaying porphyritic textures with quartz and feldspar phenocrysts embedded in a fine-grained groundmass. Mylonitic varieties of this type are also found.

On the basis of geochemistry, the Cangaldag samples are of sub-alkaline character and represented by both primitive and evolved members. All rock types are variably depleted in Nb compared to LREE, similar to the lavas from subduction-related tectonic settings. In N-MORB normalized plots, the primitive members are separated into 3 groups on the basis of levels of enrichment. The first group display highly depleted characteristics akin to boninitic lavas. The second group is relatively enriched compared to the first group but still depleted than N-MORB. The third group, however, is the most enriched among the three, whose level of enrichment is around N-MORB.

The overall geochemical features suggest that the Cangaldag meta-igneous rocks have been generated in an intra-oceanic system with the involvement of a subduction-modified mantle source. The chemistry of the primitive members further indicate that the melt generation within the Cangaldag Unit probably occurred on both arc and back-arc regions of the Intra-Pontide supra-subduction zone.