Effect of Magma Mixing on the evolution of the intermediate members of Süphan Volcanics: Eastern Turkey.

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The Süphan stratovolcano, representing one of the major eruption centers of the post-collisional volcanism in eastern Anatolia, Turkey, consists of lava flows, domes and pyroclastics ranging in composition from basalts to rhyolites. Geochemical data reveal transitional mildly alkaline to calc-alkaline character for the eruptive products. Ar-Ar age data and published K-Ar data from different levels of the volcanostratigrafic succession yield a range of 0.76-0.06 Ma. Mineral chemistry and textures indicate that magma mixing played an important role on the chemical diversity of Süphan volcanics [1]. Intermediate members of the volcanism show a wide range of mineral compositions, for pyroxenes, olivine and plagioclase, that are intermediate between those of basalts and rhyolites. Mineral thermometry of these rocks also yields a wide range of temperatures intermediate between rhyolite (~750 °C) and basalt (~1100 °C). Geochemical modeling [2] of major element compositions suggests that relatively mafic (SiO2 ≤ 55wt %) and SiO_2 rich (SiO2>~65 wt %) members of the Süphan volcanics evolved at moderately hydrated (H2O=1 wt %) and QFM (quartz-fayalite-magnetite) conditions at 2-4 kbar pressure. On the other hand, most of the lavas with SiO_2 contents between ~ 57 - ~65 wt % are products of isobaric-isenthalpic mixing of 70% basaltic trachyandesitic magma (at 1100 0C) and 30 % rhyolitic magma (at 900 0C) at a crustal pressure of 0.5 kbar.

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Trace Elements in the Environment at the Site of probable Underground Building in the Nizhnekansky Rock Massif (Siberian Craton)

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Trace elements were investigated along with geological exploration of the rock massif for underground isolation of radioactive wastes. Perspective site of rock massif is mainly formed by archaean gneisses with dykes of gabbros or dolerites. Exploration methods included well boring up to 700 m in depth, hydrogeological pumping, geophysical and environmental surface researches etc. Bedrocks (205 samples), soil (50) , subsoil (50), bottom sediments (25), and natural taiga's vegetation (15) were sampled for environmental analysis. The samples were tested by atomic absorption spectroscopy (AAS), ICP MS and partially chemical methods.

Searching correlations between different environmental systems and spatial distribution we defined two main types of trace elements, that differ on its' origin. The first type named as *autochtonous* originated from parent bedrock. The second type named as *allochtonous* derived to industrial emissions. In turn, both types are subdivided into some groups that are characterized by different conditions of migration and concentration.

Inert elements (Be, Ga, Mo) have approximately equal concentrations in all searched systems. Cerium and lithium form a group named *immobile in bedrock*, both two elements were detected only in bedrock. A more widespread group, *passive migrating to soil*, is characterized by largest concentrations in rocks. Ba, Co, Cu, La, Pb, Sc, Sn, Ti, Y, Yb, Zn form this group.

The group of elements *active migrating to soil* has two sources of its origin: autochtonous and allochtonous. These elements have the largest concentrations in soils. Autochtonous elements derivated from bedrocks are Ag, B, Cr, Ge, Nb, Ni, V, Zr. The source of Mn, Sr, and P is a fly ash, emitted by power and heating plants of the Krasnoyarsk, situated about 60-80 km to southwest.

Only one element, cadmium, is *accumulated in surface landscapes*. It was found in vegetation and bottom sediments but never in bedrock and soils. It may be also the result of industrial emission.

DOI:10.1180/minmag.2013.077.5.15