



Geochemical Characteristics of Quaternary Rhyolitic Volcanism in Acigöl area, Cappadocia – Türkiye

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Two of the oldest known Cappadocian ignimbrites (Kavak and Zelve ignimbrites, ~ 9 Ma) are thought to have been originated from a caldera located in the vicinity of Acigöl (Nevşehir) area. During Upper Miocene, volcanism of the region is characterized by andesitic/adakitic lavas and domes, whereas Quaternary volcanism is represented by bimodal basaltic and rhyolitic products. Quaternary rhyolitic volcanism is represented by domes, dome complexes, associated lava flows, phreatomagmatic eruption centers and ignimbrite flows with fall deposits. Quaternary rhyolitic products are mostly aphyric with minute plagioclase + orthopyroxene + magnetite \pm amphibole microphe-nocrystic assemblage with apatite and zircon as accessory phases. They exhibit a marked geochemical evolution towards more differentiated compositions through time. Rhyolites older than 75 ka (74 -75% SiO₂) have higher Al₂O₃, Fe₂O₃, CaO content than their younger counterparts. Moreover, younger rhyolites are strongly depleted in Ba and Sr, have lower LREE and higher HREE contents with a sharp negative Eu anomaly. Chondrite normalized REE and primordial mantle normalized patterns of both compatible and incompatible elements suggest the crystal fractionation of a plagioclase dominant assemblage with scarce orthopyroxene and amphibole would yield the youngest rhyolitic compositions. Besides, evident temporal transition from meta/peraluminous towards mildly peralkaline whole rock compositions (Agpaitic Index: 0,91 - 0,96) of Quaternary rhyolites would be linked to the intraplate rifting of the Central Anatolia.