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Quaternary Bimodal Volcanism in Acigol area, Cappadocia – Turkiye

H. E. Cubukcu, E. Aydar, E. Sen, and H. Bayhan

Hacettepe University, Dept. of Geological Engineering, 06800 Beytepe, Ankara, Turkiye (ecubukcu@hacettepe.edu.tr)

Cappadocia is famous with its splendid ignimbritic landscape which occurred during Miocene. The volcanic activity continued during Pliocene and Quaternary. Quaternary volcanism in Acigöl sector is represented by bimodal basaltic and rhyolitic products with a lack of intermediate compositions. Basaltic volcanic products (∼47% SiO2) are characterized by diffuse monogenetic scoria cones and associated lava flows. Moreover, fissural basaltic activity is observed along N-S trending crack network. Preliminary petrographical studies indicate that basaltic products are hypocrystalline-porphyritic olivine basalts. Quaternary rhyolitic volcanism is represented by domes, dome complexes, associated lava flows and phreatomagmatic eruption centers. Besides, occurrences of spherulite bearing vitric rhyolitic intrusions are present along the probable boundary of a Miocene caldera, which is thought to be the source region for the Cappadocian ignimbrites. Rhyolitic lavas (74 -77% SiO2) are dominantly aphyric with slight transition from meta/peraluminous towards peralkaline whole rock compositions (Agpaitic Index: 0,91 - 0,96). However, Agpaitic Indices on volcanic glass are usually greater than unity. Occurrence of Quaternary bimodal basaltic – slightly peralkaline rhyolitic volcanism as well as N-S extensional tectonic features would be the result of possible intraplate rifting processes.