

## **Mineralogy and Geochemistry of Upper Maastrichtian–Middle Eocene Clay - Rich Volcano - Sedimentary Units from South-Eastern of Elazığ Basin (Eastern Turkey)**

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Clay-rich Hazar-Maden volcano-sediments were deposited along the southern branch of the Neotethys Ocean margin during Upper Maastrichtian – Middle Eocene times. Mineralogy and geochemistry of Hatunkoy section from the south - eastern of Elazığ were studied by X-ray powder diffraction (XRD), ICP-AES, ICP-MS. The Upper Jurassic - Lower Cretaceous Guleman Ophiolites, Upper Maastrichtian - Middle Eocene Hazar Group, the Middle Eocene Maden Group, Pliocene-Quaternary alluvial deposits are situated in the study area. The Guleman Ophiolites are composed of dunite, harzburgite with podiform chromite, alternating dunite-wherlite, clinopyroxenite banded gabbro, quartz gabbro/diorite or plagiogranite and volcanites. The Hazar Group consists of limestone and interbedded shale and sandstone. The Maden Group has a complex lithology consisting of limestones, red-green clayey limestones, sandstone, agglomerate, tuffs, reddish mudstone and basaltic-andesitic pillow lavas. Mineralogy and geochemistry of Hazar and Maden Group samples are similar in Hatunkoy section. All samples consist of clay minerals (chlorite, illite), calcite, quartz, and feldspar.  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Fe}_2\text{O}_3$ ,  $\text{K}_2\text{O}$  contents show that samples are convenient with Fe shales and shales. The ratios of  $\text{Zr}/\text{TiO}_2$ ,  $\text{Th}/\text{Sc}$ ,  $\text{Zr}/\text{Sc}$ ,  $\text{Y}/\text{Ni}-\text{Cr}/\text{V}$ ,  $\text{Al}/(\text{Al}+\text{Fe}+\text{Mn})$  show dominance of neutral-basic volcanism in the area. Rare earth elements (REE) concentrations of samples are normalized to chondrite values and it is determined that low light rare earth elements (LREEs) are enriched in comparison to high rare earth elements (HREEs), and the absence of Eu anomalies shows that our samples are generally neutral-basic in composition. REE of samples were compared with North American shale composite (NASC), European shale (ES) and Post-Archean Australian shale (PAAS). Elements are not in concurrence with these compositions.

Key Words: Mineralogy, Geochemistry, Volcano sedimentary Units, Eastern Turkey.