Geophysical Research Abstracts
Vol. 18, EGU2016-7490-1, 2016
EGU General Assembly 2016

Major and Trace Element Concentrations of Kula Volcanics and Investigation of Source Composition

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Kula alkaline volcanics, western Anatolia, occur in an E-W trending graben system that was resulted from the Aegean extensional regime. Kula alkali lavas are distinguished in three different sequences, namely Burgaz, Elekçitepe and Divlittepe. The Kula basalts with SiO_2 <50% belong to silica undersaturated alkaline suite. Burgaz and Elekçitepe samples are basanite and tephrite in composition while the Divlittepe volcanics are phonotephrite. In MORB and PM (primitive mantle) normalized diagrams, Kula lavas with high LILE and light REE patterns show enrichment in incompatible elements. However incompatible trace element patterns exhibit almost similar trends in many respects to OIB except in Sr, Rb, Ba, Th, Nb, U and K. The enrichment level of these elements for Kula lavas is considerably higher than for OIB. This indicates that enriched mantle source (EM, HIMU) or partly contamination by continental crust contributed to generation of Kula volcanics. However primitive mantle normalized trace element concentration patterns clearly rule out continental crustal contamination due to lack of Nb, Ta and Ti anomalies. It is concluded that geochemical composition of Kula lavas indicates derivation from OIB-like asthenospheric mantle and contribution of enriched mantle source.

Keywords: Kula alkaline volcanics, major and trace element concentrations.
Acknowledgement: This study has been supported by TUBITAK (Project No. 112Y366)