VOLCANO-STRATIGRAPHY OF COLLISION-RELATED VOLCANICS ON THE ERZURUM-KARS PLATEAU AND EVOLUTION OF VOLCANISM IN THE LIGHT OF NEW K/Ar AGE DETERMINATIONS, NE ANATOLIA TURKEY

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ABSTRACT.- In north-eastern Anatolia, the area between Erzurum and Kars consists of a plateau which is 2.5 km above sea level. This high land, named the Erzurum-Kars Plateau, has gained its characteristic present-day morphology by means of crustal thickening resulted from collision between the Anatolian and Arabian plates after elimination of the south branch of Neotethys ocean. A great portion of the plateau is covered by lavas and pyroclastic units which are genetically related to collision event. Volcanic activity initiated in the region with basic lavas at around 11 Ma shortly after regional uplift, attained a climax between 5 and 7 Ma and continued until 2.5 Ma, producing volcanic successions that, reach over 1 km in thickness in places. The magma generally reached to the surface via fissures located in areas of local extension in strike-slip fault systems which are the predominant elements of neotectonics of the region. A significant portion of volcanic material generated was deposited in nearby pull-apart basins which were also controlled by these strike-slip fault systems. The period between 6 and 11 Ma was represented by a bimodal volcanism which is composed predominantly of widespread felsic pyroclastics/domes and basic lavas. Intermediate porfiritic lavas which had experienced fractional crystallisation of amphibole as a mafic phase at depth erupted onto the surface producing domes around 5-6 Ma. The period between 2.7 and 5 Ma was dominated by olivine-bearing basic lavas which covered large areas as plateau-forming horizontal lava sheets. New K/Ar dating results revealed that volcanic activity migrated from west to east, becoming more basic during the course of time. This may be resulted from a gradual eastward increase in local extension in strike-slip fault systems.