

AGE AND GEOCHEMISTRY OF MIDDLE TO LATE CARNIAN BASALTS FROM THE ALAKIRÇAY NAPPE (ANTALYA NAPPES, SW TURKEY): IMPLICATIONS FOR THE EVOLUTION OF THE SOUTHERN BRANCH OF NEOTETHYS

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ABSTRACT

The geochemical features of spilitic basalts and the radiolarian fauna of associated pelagic sediments have been studied from two different sections of the Alakırçay Nappe of the Antalya Nappes, SW Turkey. The first section in Cukurkoy is located in the eastern part of the Antalya Gulf and includes thick spilitic basalts, overlain by an alternation of mudstone, marl and pelagic cherty limestone. Radiolarian data from the cherty limestone in this unit reveals a middle Carnian age for this section.

The second section in Yaylakuzdere is situated in the western part of the Antalya Gulf. In this section, thick pillow basalts are overlain by a succession of limestone/cherty limestone and shale beds. The age of the limestones interlayered with the pillow basalts was assigned to the late Carnian, whereas the basal part of the overlying cherty limestones as latest Carnian/earliest Norian by conodont and radiolarian faunas.

The pillow lavas in the Çukurköy and Yaylakuzdere regions consist of within-plate type alkaline basalts and display multi-element pattern similar to typical oceanic island basalts (OIB). Low La/Yb, Zr/Y and La/Nb < 1 ratios are also indicative for an OIB-like deep mantle source. These alkaline basalts have not suffered interactions with a subducted slab and/or continental crust due to presence of high HFSE abundance, the lack of depletion in Nb and Ta that are characteristics of subduction and/or crustal contamination processes.

Based on this data, it can be concluded that alkaline volcanism in these two regions of the Antalya Nappes have been probably generated by a small OIB-type mantle plume during the middle - late Carnian time interval, in the advanced stages of rifting of the Antalya Nappes successions in the southern branch of Neotethys. This data reveals the generation of a rift basin before middle Carnian for this ocean.