



Geology, geochemistry and geodynamic implications of the mafic–ultramafic rocks from the Antalya Complex, SW Turkey

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The Antalya Complex is bounded on the east and the west by the opposing carbonate platforms (the eastern Anamas-Akseki and the western Bey Dağları) forming a north pointing cusp (so-called the Isparta Angle) in SW Turkey, and is made of an assemblage of allochthonous Mesozoic slope-basin deposits and ophiolitic thrust sheets. The allochthonous rock assemblages in the northern part of the Antalya Complex are mainly characterized by slope-basin deposits that are spatially associated with: Upper Triassic volcanic rocks varying in composition from alkali basalt to fractionated trachyandesite; Upper Jurassic–Lower Cretaceous tholeiitic volcanic rocks ranging in composition from basalt to rhyolite; and, MORB-type volcanic rocks, most likely in Cretaceous age, that are spatially associated with olistostromal and subophiolitic tectonic mélanges. Whole rock chemistry of the harzburgitic mantle peridotites (Eğridir Kızıl Dağ peridotites) within the apex region of the Isparta Angle and of the isolated dolerite dykes intruding the peridotites, and the mineral chemistry of the harzburgitic spinels collectively suggest a depleted residual mantle peridotite character that is characteristic of forearc tectonic settings. Also, the Upper Triassic volcanic rocks associated with different basin deposits can be traced to the south within the Isparta Angle area and within the Mamonia Complex (SW Cyprus) in the eastern Mediterranean region. Upper Triassic alkaline volcanic rocks are underlain by rift-related siliciclastic rocks, massive limestones, and are, in turn, locally overlain by small patchy carbonate deposits, indicative of an intra-continental rift basin, which may have evolved in the apex region of the Isparta Angle. In the southern part of the Isparta Angle (in the eastern and western side of the Gulf of Antalya), the Triassic lavas are interbedded with and/or overlain by Upper Triassic pelagic sedimentary rocks. The Upper Triassic lavas of the Mamonia Complex are also locally overlain by the Upper Triassic reefal limestones and pelagic sedimentary rocks. Moreover, the Triassic lavas of the southern part of the Isparta Angle and the Mamonia Complex range compositionally from WPB-type to transitional and MORB-type with small age differences, suggesting rapid rifting and drifting in the southern part of the Antalya ocean. Constrains on the geological and geochemical characteristics of the Mesozoic mafic and ultramafic rocks associated with the allochthonous assemblages between the apex of the Isparta Angle and the Mamonia Complex suggest a continental rifting in the Isparta Angle area that was followed by nearly northward propagated opening and wedge-shaped ocean basin evolution with MORB-type oceanic crust and the evolution of a supra-subduction type ophiolite with forearc affinity within the same ocean basin.