



Record of Cenozoic sedimentation from the Amanos Mountains, Southern Turkey: implications for the inception and evolution of the Arabia-Eurasia continental collision

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The sedimentary succession of the southern Amanos Mountains, bordering the eastern margin of the Karasu Rift in south central Turkey, provides a record of environmental change from the Eocene (Lutetian) to the Upper Miocene (Tortonian) charting the final evolution of the northern Arabian plate margin prior to, and during, continental collision. Eocene shallow-marine carbonates (Hacıdağı Formation) are interpreted as the youngest unit of the Arabian passive margin succession deposited on a northwards facing carbonate ramp. Subsequent deformation and uplift took place during the Oligocene represented by folding of the Eocene and older strata. Unconformably overlying the Eocene limestone are Lower Miocene conglomerates, sandstones and palaeosols up to 150 m thick (Kıç Formation). These were deposited in a range of marginal marine settings consisting of alluvial fan, flood plain and shallow marine/lower shoreface environments interpreted as a 'fan-delta' prograding from the uplifted proto-Amanos into a marine embayment. Subsequently, during the Middle Miocene, local patch reefs developed in restricted areas (Kepez Formation) followed by Upper Miocene sediments (Gökdere Formation) composed of deeper water marine marl, with clastic interbeds, which represents a transgression during this period. The Upper Miocene becomes sandier upwards, this records the regression from the relatively deep water facies to coastal sediments. Water depth gradually became shallower until during the Pliocene the area became continental. By the Quaternary rifting had resulted in the development of the Karasu Rift with active alluvial fans along the margins and braided rivers depositing coarse conglomerates in the axial zone. These conglomerates are interbedded with basaltic lava flows that resulted from the regional extension across the area. This research shows that initial continental collision occurred in this area after the Lutetian (40.4 Ma) and before the Aquitanian (23.03 Ma), represented by deformation and a sedimentary hiatus during this period. This supports the hypothesis that the southern Neotethys Ocean closed during the Late Eocene to Oligocene. This was a time of climatic change including the onset of southern hemisphere glaciation, in which the closure of the southern Neotethys may have had played an important role.