International Earth Science Colloquium on the Aegean Region, IESCA-2012
1-5 October 2012, Izmir, Turkey

Overview: Inter-relations of continental and carbonate platform units in the Mesozoic-Early Cenozoic construction of the Anatolian continent

Alastair H.F. Robertson[1], Osman Parlak[2], Timur Ustaömer[3]

[1] School of GeoSciences University of Edinburgh, West Mains Road., Edinburgh, EH93JW UK
(E-mail: Alastair.Robertson@ed.ac.uk)
[2] Jeoloji Mühendisliği Bölümü, Çukurova Üniversitesi, 01330 Adana, Turkey
[3] Jeoloji Mühendisliği Bölümü, İstanbul Üniversitesi, 34310 Avcılar, İstanbul, Turkey

Reconstructions of the Anatolian continent for Mesozoic-Early Cenozoic time generally assume the existence of one or more continental units that rifted from North Africa (Gondwana) during Triassic time and drifted across the Mesozoic Tethyan ocean to amalgamate with Eurasia, mainly during latest Cretaceous-Palaeogene time. Current end-member solutions range from one in which the present Tauride-Anatolide area restores as one large continental unit, to another in which a variable number of rifted fragments were surrounded by Mesozoic oceanic crust. Here, the available field-based evidence for the mutual relationships of the different continental blocks and carbonate platforms is evaluated.

Category 1 (very well established): The Southern Neotethys is the best established ocean because it still remains partially non-emplaced beneath the deep Mediterranean Sea adjacent to N Africa (e.g. Herodotus basin). Its existence is supported by the presence of ophiolites (e.g. Troodos, Cyprus), ocean-derived melange (Mamonia complex, Cyprus) and U. Cretaceous arc-type volcanism (Kyrenia Range, N Cyprus; Kannaviou Formation, W Cyprus). The Izmir-Ankara-Erzincan-Sevan-Akera ocean is also very well established in view of its expected features including ophiolites, accretionary melange and related magmatic arc units (e.g. E Pontide arc).

Category 2 (well established). The Berit ocean (new name) between the Malatya-Keban platform and the Bitlis and Pütürge massifs is considered to be well established in view of its associated ophiolites, U. Cretaceous and Eocene arc-type magmatism and U. Cretaceous HP/LT metamorphism. In addition, the Alanya ocean (new name) is also considered to be well established because of the presence of associated rifted margin units, ophiolitic melange and HP/LT metamorphism. The Inner Tauride ocean between the Tauride carbonate platform and the Kırşehir Massif is also well established, based on the presence of ophiolitic rocks (e.g. Pozantı and Mersin ophiolites), magmatic arc rocks (Kırşehir massif) and HP/LT metamorphism of its subducted southern margin (i.e. Afyon zone). The existence of oceanic crust (e.g. Gödene zone) separating continental fragment(s) (e.g. Kemer unit) from the Tauride carbonate platform in the Isparta Angle (Antalya area) is also well supported by several lines of evidence.

Category 3 (unlikely). Potential 'Ayfon', 'Menderes' and 'Munzur' oceans have been suggested in the light of the age relations of associated HP/LT metamorphic rocks, but at present lack much supporting field evidence (e.g. preserved rift/ passive margin units, related arc magmatism, or ophiolitic rocks).

The majority of the continental/platform units can, therefore, be restored as different parts of one large Tauride-Anatolide continent. Several smaller crustal units (e.g. Kırşehir, Pütürge and Bitlis massifs; Alanya crystalline basement-Kyrenia platform) are restored as continental fragments surrounded by oceanic crust. Our interpretations of the various inter-platform relationships form the basis of outline palaeotectonic maps, which in turn, have interesting implications for continental rift and passive margin units, ophiolite genesis and emplacement, and collisional processes (e.g. roles of intra-continental thrusting/subduction).

Keywords: continents; oceans; Mesozoic; Anatolia; reconstructions; Tethys