

AP09

Tectonic Controls on Late Cretaceous to Eocene Zagros Deposition in Iran, Iraq & SE Turkey

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SUMMARY

During late Palaeozoic and Mesozoic times northern and eastern Arabia lay on the western passive margin of Tethys, and accumulated several kilometres of platform carbonates with interbedded shales and evaporites. Regional geodynamics changed in Upper Cretaceous times with the onset of predominantly compressional tectonics, indicated by widespread ophiolite emplacement that occurred along the margin of the Arabian plate in SE Turkey, the Kurdistan Region of Iraq, Iran, and Oman.

A number of factors contribute to the along-strike and across-strike heterogeneity and complexity of late Cretaceous and Paleogene Zagros geology. Firstly, contractional structures that developed during AP9 and AP10 times were superimposed upon a heterogeneous margin marked by a major pre-existing structural fabric that developed during Proterozoic, Hercynian, and multiple Tethyan tectonic events. Late Cretaceous shortening reactivated at least some pre-existing structures, causing fault inversion, incipient growth of anticlines, and emergence of Upper Cretaceous shelf carbonates leading to local karst development.

Secondly, ophiolite obduction resulted in a complex interplay between crustal shortening (causing contractional structures with local loss of accommodation space) and flexural loading of the crust leading to regional subsidence and widespread flysch deposits, represented by the Lower & Upper Germav Fms. in Turkey, Shiranish, Tanjero, Kolosh in Kurdistan, Gurpi and Pabdeh in Iran).

Thirdly, the direction of plate motion during ophiolite obduction was oblique to the Tethyan margin, leading to structurally complex transpressional deformation, and reactivation of a regional right-lateral fault array including Khanaqin, Izeh, Kazerun, Kareh Bas, Sarvestan and others through the Zagros. These structures are of major geodynamic significance, and had a strong influence on deposition before, during and after AP9-10 times.

Finally, much of the evidence for the interplay between tectonics and deposition during AP9 and AP10 times was overprinted by the intense Miocene contractional deformation, which gave rise to the high amplitude to wavelength ratios that typify many Zagros folds, and to major thrusting in the High Zagros.

No extended abstract available