



Jurassic to Cenozoic tectonics of the Zagros Orogen in northwestern Iran

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The Zagros Mountains of Iran formed by continental collision from closure of the Neo-Tethyan Ocean. New mapping, radiometric ages and stratigraphic analyses have enabled advances in our understanding of the Jurassic to Cenozoic tectonic history. The northwestern Zagros Orogen consists of three belts: (1) the Zagros Fold and Thrust Belt, divided into the outer Zagros Simply Folded Belt and the inner High Zagros Belt, (2) the Zagros Suture Zone including radiolarite, ophiolite and Bisotun limestone thrust sheets, and (3) the Sanandaj–Sirjan Zone, which contains abundant metamorphic rocks. Major events include early Mesozoic rifting, Jurassic subduction followed by a more cryptic interval of subduction in the Cretaceous, multiple ophiolite emplacement on the Arabian margin in the Late Cretaceous to Eocene and collision of central Iran and the Arabian margin in the Oligocene with final closure of the shallow Tethyan seaway in the mid Miocene. A mid to late Jurassic plutonic belt, the Qorveh–Aligodarz Plutonic Belt, formed a magmatic arc with subdued topography related to a moderately NE-dipping subduction zone under the Sanandaj–Sirjan Zone. An Early Cretaceous unconformity reflects limited uplift followed by widespread marine deposition with intercalated volcanic rocks in the Sanandaj region. Subduction continued with a low-lying arc that underwent trenchward advance. In the Late Cretaceous to Oligocene interval, the Neo-Tethyan Ocean closed with ophiolite obduction over the Arabian Peninsula margin and major shortening affected the Sanandaj–Sirjan Zone with uplift and plutonism. Much of the forearc of the Jurassic to Cretaceous arc system has been lost by tectonic erosion along a low-angle Eocene subduction zone prior to collision. Flattening of the subducting slab in the Late Cretaceous and Paleogene explains the inland retreat of the arc to central Iran. Continental collision initiated in the Oligocene but the Tethyan seaway remained open until the mid-Miocene.

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