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Jurassic and Lower Cretaceous Sedimentation Patterns in the Dezful Embayment and Fars Area, SW Iran

The Jurassic and lower Cretaceous rocks in the Fars province and the Khuzestan, which are currently an objective for gas exploration, are the subject of this presentation. Based on 3 outcrop sections, and about 60 wireline logs and paleologs, a sequence stratigraphic framework is presented, predictive geological models are proposed (geometries and facies distribution), and the geodynamical basin evolution (paleogeographical and isopach maps) is analysed. Generally speaking, the Fars stayed most of the time a low subsident platform that rimmed the Qatar Arch paleohigh, while the southern Khuzestan was a transition zone where major facies and thickness changes occurred. Five tectono/sedimentary phases are distinguished based on changes in the depocenter location, the nature of the depositional system and the nature of the tectonic control. Phase I, of early Jurassic age (Neyriz, lower Surmeh), is characterised by attached ramp systems, with some local platform shoals; during phase II, of middle to late Jurassic age (Surmeh), vast normal marine lagoonal platforms existed in Fars, while the Dezful and Lurestan areas were emergent; phase III, of latest Jurassic age (Gotnia, Hith, upper Surmeh), is characterised by rimmed hypersaline platforms and adjacent salina basins; phase IV, of earliest Cretaceous age (Garau), is characterised by narrow radiolarian-rich sea-ways that cut the emerged Zagros platform area; phase V, of early Cretaceous age (Garau, Fahliyan, Gadvan), rimmed carbonate platforms were regionally deposited that evolved in a mixed carbonate-siliciclastic ramp system. The dominant controlling factor on the sedimentation pattern, was the tectonic control, which defined changing mosaic of subsiding domains and paleohighs.