

DEVONIAN TO RECENT EVOLUTION OF THE GREATER CASPIAN BASIN

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This presentation aims to refine previously published tectonic-stratigraphic models of the Greater Caspian region by using recently acquired seismic data from the Kazakh sector of the Caspian Sea and regional aeromagnetic and well data, in addition to basin-scale TELLUS petroleum geological studies of the Central and Western Paratethys regions. These data provide valuable new constraints on the Devonian to Recent evolution of the central parts of the Tethys system. A series of palaeotectonic and palaeogeographic reconstructions will be presented. The main stages of the regional tectonic evolution are shown in Table 1.

The structural history of the region reflects the northward drift of rifted Gondwanan continental blocks and the progressive accretion of these and Tethyan arc fragments against the southern margin of the East European and Kazakh plates. We aim to demonstrate the role of these collisional episodes on the periodic reactivation of pre-existing structures. These episodes have had important implications for the petroleum geology of the Greater Caspian region. We also aim to demonstrate the importance of post-orogenic extensional and strike-slip processes on the tectonic-stratigraphic evolution of the Greater Caspian. Amongst other things, we will also address the notion that the Precaspian, South Caspian and Black Sea Basins had distinct subsidence rates which were controlled, in part, by the existence of oceanic-transitional crustal basement.

Table 1. Summary of key tectonic events.

<i>Epoch or Stage</i>	<i>Description</i>
Middle-Late Devonian	Rifting in the East European Platform.
Early-early Late Carboniferous	Northerly subduction and active margin processes south of the Precaspian Basin.
Early Late Carboniferous (Bashkirian)	Early closure of the Ural Ocean.
Early Permian (Artinskian)	Collision of Mangyshlak Block.
Late Early Permian	Rapid subsidence and salt precipitation in Precaspian Basin.
Late Permian-Triassic	Post-orogenic extension and transtension. Subsidence in salt-related mini-basins in Precaspian Basin.
Latest Triassic-Early Jurassic	Cimmerian collision associated with closure of the Palaeo-Tethys. NW Iran, Armenia and Lut blocks collide with southern margin of Eurasia. Widespread uplift.
Early-Middle Jurassic	Post-Cimmerian rifting on the southern Eurasian margin, associated with retro-arc or post-orogenic processes.
Late Jurassic-Cretaceous	Possible maximum extent of Greater Caucasus Basin beneath the South Caspian. Collision of Lhasa Block with Eurasia to the east (end Jurassic).
Late Cretaceous	Rapid north-south closure of Tethys and associated ophiolite obduction events, uplift and deformation.
Palaeocene-Eocene	Retro-arc rifting in the Eastern Black Sea and South Caspian Basins.
Oligocene-Miocene	Collision of several blocks with the southern margin of Eurasia (e.g. Lut, Arabia, India). Uplift over much of the study area and reactivation of major strike-slip faults. Foreland basin evolution.
Miocene-Pliocene	Rapid subsidence in the South Caspian Basin.