Keynote 3

The Levant Realm: Mesozoic - Cenozoic Evolution

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Summary

No summary available.
Two major tectonic events had controlled the evolution of the Levant Realm, (1) the breakup of the northern margin of Gondwana initiating at the end of the late Paleozoic, and (2) the collision of the Africa-Arabia continent with Anatolia during the late Cenozoic. We aim at reconstructing this complex tectonic evolution from field investigations in the surroundings of the Levant Basin in northern and northwestern Arabian plate, northeastern Africa, Cyprus and Anatolia, and study of subsurface data in the basin.

Basically, the early Mesozoic time is mainly characterized by a regional rifting and opening of the Levant Basin, and the concomitant opening of Mesogea (southern Neo-Tethys branch). The rifting of the Levant Basin probably initiated in the Late Permian in the northern margin of the southern Pangea continent. The rifting developed during the Triassic and early Jurassic times. Extensional basins of similar age developed in northwestern Egypt, and in the stable Arabian platform in the Palmyrides. In this latter area, syndepositional normal faults have been commonly observed in the Triassic-Liassic sequence.

The mid-late Jurassic is a period of tectonic quiescence corresponding to thermal subsidence in the Levant Basin. Thick sequences deposited in the basin and shallow water carbonate in the African-Arabian platforms. The oceanisation of Mesogea, associated with the northern drift of the Anatolian blocks with respect to Gondwana, marks this period.

In the early Cretaceous a main regional extensional tectonic event has been evidenced. It is characterized by E-W oriented normal faults in the surroundings of Levant Basin and Mesogea. This dominant N-trending extension was associated with effusive magmatism in the northwestern Arabian plate. The oceanic accretion possibly resumed in Mesogea during the middle-late Cretaceous times. The late Cretaceous period is characterized in the Levant Realm by opening of NW-oriented rift-basin (e.g. Syrt, Azraq and Euphrated), whereas the Neo-Tethys ophiolites were obducted onto the northern Arabian margin.

During the Paleocene-Eocene, a Mesogean oceanic domain still existed, separating the northern African margin from the Anatolian blocks, avoiding any compressional deformations in the northeastern African plate. During the early-middle Eocene, the N-trending extension impacted the whole Levant Realm, i.e. the northwestern Arabian and northeastern African platforms and margins, as well as Cyprus. No compressional deformation appeared before the Oligocene when the eastern Mesogean oceanic crust had subducted beneath the active south Anatolian margin.

The first evidences of the Arabia-Anatolia collision are the Oligocene detrital deposits of northern Arabia. This frontal collision developed during the Miocene all around the northern Arabian margin associated with the inversion of some Mesozoic basins of the northern Arabian plate (Palmyrides, Sinjar). From the Miocene thick clastic sequences deposited around the uplifted orogenic domain. They are mainly constituted of continental coarse molasses on the northern Arabian plate, and turbiditic marine deposits in the Levant Basin. Finally, during the late Miocene the regional geodynamic context changed with the emergence of large transform faults (Dead Sea, East and North Anatolian faults).