



## **The Dead Sea fault system; when was it initiated?**

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### **ABSTRACT**

The current Red Sea sedimentary section records two stages of structural evolution. The initial rift stage extended from the late Oligocene to the Middle Miocene and is characterized by the formation of a network of extensional basement-related faults trending NW-SE and dipping to the west. The second stage is characterized by a network of NNE trending left-lateral strike-slip faults that overprinted the earlier rift structures and which extends along the Dead Sea trend. The exact timing of the second stage is still unknown.

From outcrops and regional mapping, we observe that the strike slip system is manifested by a 25-kilometer-wide belt of NNE-trending left lateral faults. Our interpretation suggests the deformation started in the east, and rapidly progressed towards the west, focusing the strain where the Gulf of Aqaba opened. A thick Middle Miocene salt layer mechanically decoupled the pre-salt section from the post-salt, impeding the propagation of strike slip deformation to the late Miocene post-salt sediments. This omission of the structural record makes it difficult to determine the exact timing of the strike-slip deformation. The fact that pre-salt sediments of different ages show similar strike-slip deformation, suggesting that the Dead Sea transform boundary initiated after the pre-salt sediments were deposited.