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## Structural Evolution of the Black Sea Basin Using 2D Sectioned and 3D Computational Models

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Recent hydrocarbon discoveries in the Black Sea Basin (BSB) rekindled debate on whether the basin rifted open as one east-west oriented basin, or as two separate basins named Eastern and Western Black Sea Basins. Supporting the two-basin idea is the semi-parallel ridge and depression geometry of the BSB with NW-SE orientation in the eastern portion of the Black Sea Basin, and W-E orientation in the western portion of the Black Sea Basin. On the other hand, interpretations for a single basin configuration are supported by the regional structure of the BSB being consistent with geodynamic models of rifting of the basin by slab roll-back about a hinge point located on the eastern edge of the basin.

To help resolve the tectonic uncertainty, we built a new structural framework for the BSB by reinterpreting 24 long-offset 2D seismic lines acquired by GWL in 2011. This in turn allowed us to develop two sectioned 2D computational models representing the western and eastern parts of the BSB to model the variation in the kinematics of the basin formation. Our interpretations of continuous normal, inverted, and strike slip fault systems that define the ridge and depression geometry lead us to support a model in which the BSB opened as a single basin. The 2D sectioned models were extended to 3D to test whether the rifting occurred with increasing velocities towards west. We compare our findings with the structural elements that we interpreted on the seismic sections such as strike slip fault systems that have been active throughout the basin formation and the tectonic inversion of the Late Eocene era. Ultimately, this provides better insight of the timing of all the tectonic events of the BSB during the extensional and subsequent compressional stages of the basin's evolution.