STRUCTURAL EVOLUTION OF THE EASTERN SOUTH YELLOW SEA BASIN INTERPRETED FROM CROSS-SECTION RESTORATION

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ABSTRACT

Depth-converted interpretations of three regional seismic profiles across the eastern South Yellow Sea Basin were balanced and restored using GeoSec® to understand the structural evolution of the basin. Restoration reveals that the overall brittle extension since the Late Cretaceous was 11-15% in a NE-SW direction and 21% in a NW-SE direction and the periods of maximum extension were different in different parts of the basin. The extension and subsidence was punctuated by regional inversion in the Late Eocene, the Late Oligocene, and the late Early Miocene. Each inversion was followed by extensive erosion that completely flattened the graben-and-horst topography. Upheavals and doming also occurred locally in the basin. Since the Middle Miocene, subsidence has prevailed in the area with no active faulting.

The overall structural style of the South Yellow Sea Basin suggests that the basin opening was related to an extensional duplex at a releasing bend at a right lateral, right-stepping fault which may comprise a secondary fault system oblique to the Tan-Lu Fault in the west.