

## **Studies on High-Resolution Sequence Stratigraphy in Yinggehai Basin**

By

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Main sequence surfaces and interruption of sedimentation of Neogene strata were identified in Yinggehai Basin of South China Sea by using various types of data, including high-resolution seismic profiles, well logs, geographic processing results, paleontology, components of organic inclusions, results of stable isotopes testing, etc. Five second-order or composite sequences are identified on the basis of basin-scale unconformities. Fourteen constituent third-order sequences are defined by unconformities along the basin margin and correlative conformities within the central basin. Fourth- or fifth-order sequences are also analyzed in 7 wells combined with seismic data. Sedimentary systems identified in the basin include incised valley, lowstand wedges, fan delta, coarse-grained delta, turbidites, and fine-grained sediments of shelf/neritic systems. Lowstand and transgressive-highstand systems tracts are separated by initial flooding surfaces. Lowstand systems tracts are prevalent in each sequence stratigraphic unit, especially in S40-S31 Sequence, composed of incised valley, lowstand wedges, slope fan, and basin floor fan. Four genetic styles of sequences, consisting of different depositional systems, formed in the basin in different tectonic settings: (1) sequences associated with bend breaks, (2) sequences associated with propagating normal faults, (3) sequences developed on shelves and (4) sequences formed on ramps. Tectonism appears to have been the major control on the sequence development. Fault evolution and its associated structure coupled with sea-level fluctuation controlled third-order sequence boundary and inner components.