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Stratigraphic Architecture of the East China Sea Continental Margin: A Case Study of Eustacy and Sediment Supply

The East China Sea (ECS) continental margin is a shallow and broad shelf dominated by high sediment supply via the Yangtze and Yellow Rivers and relatively high energy from currents and frequent storms. Due to the shallow nature of the margin, sea level fluctuations throughout the Quaternary subaerially exposed and submerged extensive portions of it. The interaction of eustacy and a high sedimentation rate created a distinct sequence stratigraphic architecture that is observable throughout a grid of over 11,500 km of high-resolution, 2D seismic data collected in the region.

Lowstand systems tracts (LST) vary from surfaces that incise >20 m over extensive areas to complex, amalgamated fluvial systems that have remarkable continuity along strike (500 km) and are vertically extensive (30 m). The transgressive systems tracts (TST) appear as either sand ridges, most likely reworked in a tidally dominated regime, or are thin veneers of sand not resolvable in the data. The highstand systems tracts (HST) consists of high frequency, moderate to high-amplitude, laterally continuous, parallel reflections that offlap and downlap basinward. In some instances these clinoforms prograde over the paleo shelf-slope break into the Okinawa Trough. All three systems tracts are preserved on the outer shelf producing a relatively complete stratigraphic record, whereas vertical amalgamation of LST deposits dominates the stratigraphy of the shallow inner shelf.