

# Reconciling Contiguous Permian-Jurassic Deep and Shallow Water Facies, East Timor

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The islands of the Outer Banda Arc, South East Asia, contain fragments of sedimentary basins that formed the northeastern Gondwana margin during the Permian to Jurassic. A complex arrangement of depositional environments located in rift basins and on structural highs typified the margin during this period. Understanding the facies relationships within this setting will play an important part in future petroleum exploration of the region. Here we present findings on the facies relationships in the East Timor region of the margin.

Data was gathered during numerous river and road transects throughout East Timor. Coherent stratigraphic sections were logged and sampled. Facies and facies associations were interpreted from these logs along with petrographic and biostratigraphic analyses of samples. Using high-definition biostratigraphy facies associations were correlated to the geological timescale and for selected time-slices depositional models were interpreted.

Throughout the Permian several shallow-water carbonate facies were deposited alongside deltaic siliciclastic facies. In some sections these facies are interbedded highlighting the close spatial relationship and indicating overlapping of facies boundaries. The Triassic saw similar relationships with shallow-water oolitic facies deposited alongside outer-neritic siliciclastic and hemipelagic carbonate facies with facies boundaries overlapping. Uniform, outer-neritic pelagic carbonate facies dominate the Lower to Middle Jurassic stratigraphy of East Timor.

Permian to Jurassic sedimentation in the East Timor region occurred in intracratonic rift-basin settings with highly variable environmental factors e.g. bathymetry, salinity, dissolved oxygen and energy levels. Levels of terrigenous organic and lithogenic detrital matter were also variable throughout this period and largely controlled by local relative sea-level fluctuations.