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Sequence stratigraphy of Tertiary sediments offshore Sarawak (Balingian and Luconia provinces)

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The Oligocene to Recent sediments offshore Central Sarawak comprise a coastal plain/shelf 'wedge' overlying an intensely deformed substratum of Paleogene and older deepwater sediments. Internally, this wedge displays one transgressive/regressive megacycle with smaller scale cyclicity superimposed on this basic pattern.

The transgressive limb of the megacycle consists of Sarawak Cycles I to III, each of which are transgressive in nature and predominantly controlled by regional tectonic processes. In basin marginal settings, these cycles are separated by distinct angular unconformities involving strong rotation of the subcropping strata.

The regressive limb of the megacycle consists of Sarawak Cycles IV to VIII which are largely highstand progradation units capped by, locally distinct, lowstand surfaces of erosion. The cyclicity is in this case interpreted to be predominantly controlled by late Miocene to Recent (glacio-eustatic) sea level changes.

Around the transgressive culmination of the megacycle widespread carbonate deposition, controlled by slight structural elevations of the sea floor, is observed.

Carbonate growth is symmetrically arranged around a zone of maximum regional flooding and affected by proximity to clastic input: landward carbonate deposition starts later and stops

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earlier, basinward carbonate deposition starts earlier and stops later.

Genetic stratigraphic aspects play an important role in the hydrocarbon prospectivity (eg. source rock and reservoir/seal pair are directly related to the development of the transgressive caps of the lower cycles and sealing of the carbonate reservoirs is crucially dependent on the impingement of the regressive tops of the young cycles onto the top carbonate surface).