Carbonate Sedimentation and Reefs on Australia's Western Margin

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The continental shelves of Australia's western margin are narrow and wave-dominated in the south, and are wide ramps influenced by tides and cyclonic storms in the north. Though less continuously developed than in eastern Australia, coral reefs are present in fringing to deep ramp settings from latitudes 12 to 30 degrees S, providing a spectrum of responses to sea-level and subsidence changes. A biotic transition zone, characterised by overlap of temperate and tropical assemblages, occurs between the latitudes of 26 and 30 degrees S. The margin is strongly influenced by the poleward-flowing, warm nutrient-poor Leeuwin Current , which promotes overall downwelling, and strong summer equatorward-blowing winds, which generate local seasonal upwelling.

Whilst the more southerly shelves are dominated by bryozoans and coralline red algae, similar to the vast cool water southern margin, the warm water ramp which comprises the Northwest Shelf is tropical in character, with a mixture of sediments of relict, stranded and Holocene origins. Ooids and peloids are conspicuous but stranded particles which formed during initial stages of post-Last Glacial maximum sea-level rise, but were terminated by less saline Leeuwin Current flow, so that subsequent Holocene sedimentation is biofragmental to planktic.

As the physical, oceanographic and sea-level processes generating these modern shelf systems are evaluated more fully they are likely to assist further in the evaluation of similar ancient facies on carbonate platforms with reservoir potential.