

Deglacial/Transgressive Fining/Deepening Upward Sequences on the Papua New Guinea Shelf edge and Upper Slope of the Great Barrier Reef: A Comparison between two Similar Mixed Siliciclastic Carbonate Sedimentary Systems

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A series of uppermost Pleistocene Last Glacial Maximum lowstand and early deglacial/transgressive drowned corallgal reefs along the southeast Papua New Guinea shelf edge were seismically imaged and determined to be up to 80 m thick and partially buried beneath a wedge of Holocene siliciclastic mud. A 14 m core MD-45 recovered (at 93 m of water depth) a sequence of mostly siliciclastic Holocene mud overlying the cored upper portion of these Pleistocene reefs. Retrieved at the base of the core (107 m below present sea-level) was a surprisingly large coral colony in living position that was dated at 19 ka.

The corallgal reefs established themselves on an unconformity along a regressive/lowstand shelf edge prograding delta. The reefs grew as sea-level rose during the late glacial and the early deglaciation/transgression. At some point the reefs drowned due to rapid sea-level rise or increased turbidity from siliciclastic input. Subsequently, siliciclastic mud accumulated over the reefs during the Holocene deglaciation following the cooling interval (modest sea-level fall) of the Younger Dryas. The sediments recovered in MD-45 exhibit a classic fining upward sequence triggered by the deepening water column during the 120 m sea level transgression since LGM (~ 23-20 ka).

Coral and bioclast fragments from MD-45 will be identified and radiocarbon dated. Foraminifera in the fine sediments will be used to produce an oxygen isotope record to give paleoclimate and sea-level context to the mud accumulation and allow for better comparison with the upper portion of core 58A recovered during IODP Expedition 325.