

Pliocene boundary and the early Pliocene highstand). These deposits are unusual in being largely unconsolidated and amenable to sedimentologic characterization; providing an ideal outcrop analog for tropical mixed system deposition on the shelf margin.

The resultant sequence "ground truthing" will be used to refine a depositional model for tropical mixed skeletal and mud-sourced deposition. The data generated from this section can be used to forward model the development of potential reservoir beds in a conventional (vuggy carbonates) and unconventional (mud rich) framework.

SCOPE OF WORK

During the first phase of this project we measured a 178 m thick section, with some additional outcrop still remaining above our top level, but below the upper sequence boundary. Lithologic and biostratigraphic samples were collected at ~1 m intervals with a small gasoline-powered rock drill. The drill enabled rapid collection of fresh material away from the weathered outcrop surface. These samples will be used for mineralogy (XRD), total organic carbon analysis, bulk stable isotopic composition (P.K. Swart, SIL), determination of benthic and planktic foraminifera (B. Lutz, Shell), calcareous nannofossil stratigraphy (R. da Gamma, Shell), and grain size and compositional analysis. In addition, we will collect the key coral fauna in the transect for two purposes: water depth and possible aragonite samples for radiometric age dating (U/Pb, J. Woodhead, U. Melbourne). The benthic and planktic foraminifera provide integrated water depth, upwelling, and age constraints for the section.

SIGNIFICANCE

The expected results of this research will provide a calibrated lithofacies section that penetrates the thickest part of the margin sigmoid, and will resemble data that might be recovered in a core or borehole log. Regionally, this calibration will provide a new, additional record of the nature of carbonate and siliciclastic mixing in a mud-rich, tropical shelf margin. Globally, this section records the magnitude of the Zanclean transgression. This global transgression is recorded in seismic profiles and cores from several locations around the world (Gulf of Papua shelf margin, Belize shelf, isolated platforms in the South China Sea, and the Great Barrier Reef in Northern Australia) and will be further refined (Tcherepanov, 2008).

REFERENCES

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- Tcherepanov, E.N., Droxler, A.W., Lapointe, P., and Mohn, K., 2008, Carbonate Seismic Stratigraphy of the Gulf of Papua Mixed Depositional System: Neogene Stratigraphic Signature and Eustatic Control, *Basin Research*, v. 20, p. 185-209.