Geophysical Research Abstracts, Vol. 8, 03891, 2006
SRef-ID: 1607-7962/gra/EGU06-A-03891
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Late Pleistocene glacial-interglacial dynamic along the Northeastern Australian margin. Micropaleontological and geochemical evidence from ODP Leg 194 (Site 1198, Marion Plateau)

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Because many proxies have similar environmental significance but are controlled by different parameters, a multi-proxy approach is the best procedure to have independent control of environmental parameters. We present here an example of this approach obtained by coupling micropaleontological investigations on calcareous nannoplankton, and planktonic foraminifera, with geochemical studies on phosphorous and carbonates to obtain a more complete and multi-proxy paleoceanographic scenario.

The selected area for this study is the northeastern Australian margin where the Ocean Drilling Program Leg 194 drilled a sedimentary section particularly suitable for high-resolution studies (Site 1198).

The bulk carbonate record obtained on board Leg 194 indicates that the upper 15 meters of the sedimentary sequence at Site 1198 span the glacial-interglacial cycles from Marine Isotope Stage 12 (approximately 460 kyr) to MIS1 (Page, 2004).

The first occurrence of *E. huxleyi* in sample 194-1198A-2H-2, 12-14 cm marks Zones NN20/NN21 boundary of Martini (1971). The *E. huxleyi* acme Zone of Gartner (1977) is identified in the interval from sample 194-1198A-1H-1, 6-8 cm up to the end of the section. In tropical regions, its base is equated to about 85 kyr (e.g., Thierstein et al.,

1977).

One of our more significant results reveals that detrital phosphorus, which is a good indicator of detrital input, peaks in correspondence to glacial cycle MIS6. We record high abundances of *Globigerinoides ruber* (up to 25%) in MIS6, as also previously observed by e.g., Reiss and Hottinger (1984), and lower abundances in MIS5. This species of planktonic foraminifera is dependent on salinity, as it can tolerate variations in the range of 22 to 49 %*o*. Detrital phosphorus depends either on eolian or fluvial input, during periods of intense precipitation. Fluvial input would imply also variation in sea-water salinity, that may link faunal assemblages and climate. Detrital input from the continent could have boosted productivity in surface waters as indicated by relative abundances of *Globigerina bulloides* (foraminifera), and created nutrient-poorer and optimal conditions for *F. profunda* (calcareous nannoplankton) in the lower photic zone.

The Swiss National Found Grant N. 200021-103482 provided funds for this research.

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