

THE LATE QUATERNARY HISTORY OF THE GULF OF CARPENTARIA

1HOLT, S., 1GARCIA, A., 1REEVES, J.M., 1COUPEL, M., 1CHIVAS, A.R.,
2DEDECKKER, P., 3VAN DER KAARS, S. 1Uni. Of Wollongong, Australia;
2Australian National Uni.; 3Monash Uni., Australia.

The Gulf of Carpentaria is an epicontinental sea (maximum depth 70m) between Australia and New Guinea, bordered to the east by Torres Strait (currently 12m deep) and to the west by the Arafura Sill (53m below present sea level). Throughout the Quaternary, during times of low sea-level, the Gulf has been separated from the open waters of the Indian and Pacific Oceans, forming Lake Carpentaria, perched above contemporaneous sea-level with outlet channels to the Arafura Sea. A 4444-km ship-borne seismic survey of the Gulf of Carpentaria was performed by the U.S. Geological Survey, in 1994. At least ten basin-wide transgressive/regressive cycles and episodes of subaerial exposure and erosion have been identified. In 1997 a coring expedition used a giant piston-corer deployed from the Marion Dufresne, in a joint Australian/American/French operation, largely funded by the Australian Research Council and as part of the International Marine Global Changes Study (IMAGES) program. Six sediment cores were collected to depths of between 4.2 and 14.9m below sea floor. The recovered material suggests up to three marine/lacustrine cycles, the uppermost transition dated to around 10ka. Iron-mottled horizons and calcrete nodules indicate episodes of subaerial exposure at basin margins, whilst in the deepest part of the Gulf, the marine/lacustrine transitions are defined by facies changes. Detailed work in progress including sedimentary analysis, micropalaeontological (foraminifer, ostracod, nannofossil, diatom, charophyte) and palynological assemblages, together with geochemical studies, will better define the nature of these transitions.