The Last Glacial Maximum lacustrine phase in the Gulf of Carpentaria, Australia

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A detailed micropalaeontological study including palynology, and the abundances of Foraminifera, Ostracoda and Charales, supplemented by physical data such as magnetic susceptibility, density and p-wave velocity of the enclosing sediments, is used to derive a palaeoenvironmental record of the Gulf of Carpentaria. Six cores that penetrated from 4.2 to 14.8 metres of sediments in water depths of 59 to 70 m, reveal a sequence of marine muds that overlie more restricted and terrestrial (lacustrine) sediments. The uppermost non-marine sediments are C-14 dated to around 10.5 ka.

Two cores in the north-west part of the Gulf, show the change from yellowish clays (below) to greenish grey marine muds (above) at 25 and 65 cm depth. The microfossils in the lower section are indicative of a mixed environment with shallow water (*Ammonia* spp., *Elphidium* sp.). The palynology indicates a surrounding open swampy area. In the other cores, further to the south-east, nearer the depocentre of the Gulf, the transition occurs at 60-70 cm depth, from dark grey "crumbly" clays (below) to marine sediments at the top. In the lower section, the microfossils indicate a fresh to saline "palaeolake" with *Ammonia* sp., *Cyprideis* sp., *Ilyocypris* sp., *Cyprinotus* sp., *Ilyodromus* sp. And *Chara* sp. The pollen indicate an open swampy area with few trees. The marine sediments at the top are similar in all cores and show a higher diversity of Foraminifera and Ostracoda, while the pollen indicates an increase in woodland and mangrove vegetation type with New Guinean taxa.