

MARINE PLAIN – A REVIEW

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Marine Plain is unique in the Antarctic as an *in situ* Pliocene sequence (Sørsdal Formation) allowing reconstruction of many aspects of the marine palaeoenvironment at 4.0-4.1 million years ago through analysis of sediments and the contained biota. The primary source of information on age and environment comes from study of diatoms that are, in many parts of the sequence, the dominant component of the rock. The fauna includes the dolphin genus *Australodelphis* with two species (*A. mirus* and another as yet undescribed species to 8.5 m long), a recently described mollusc fauna of gastropods and bivalves, a palinurid crustacean representing a family now extinct in the Antarctic, a small foraminiferal fauna including the extinct Antarctic genus *Ammoelphidiella*, and a few other poorly preserved and undescribed invertebrates. There is no palynological evidence for any terrestrial vegetation at the time and such residues are dominated by large numbers of simple, spherical leiospheres that may be the spores of red algae. Several fossils are members of groups that are now extinct or have moved north to sub-Antarctic environments.

It seems that, until near the end of deposition of the sediments, there was little or no sea-ice cover and that the sediments accumulated in a bay with water depths shallower than 25 metres in an environment warmer than nearby today.

The landscape of Marine Plain is influenced by basement features and earlier erosion forms, and the current configuration of the sediment prism also contains evidence of post-depositional glaciotectionism which has produced unusual structures, in particular rotated blocks of sandstone that are now vertical and mimic sandstone dykes, because of northward migration of the margin of the Sørsdal Glacier. The landscape has been modified by erosion since the Last Glacial Maximum and shows clear evidence of a fluvial phase in its Holocene past.