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ENVIRONMENTAL CHANGE ON THE VICTORIA LAND COAST THROUGH OLIGOCENE AND EARLY MIOCENE TIMES FROM MARINE PALYNOMORPHS IN CAPE ROBERTS CORE.

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The Cape Roberts Project cored through 1500 m of Oligocene and early Miocene glacimarine strata from which marine palynomorph assemblages with over 50 taxa were recovered. The assemblages comprise prasinophyte algae and acritarchs, as well as both reworked and contemporaneous fossil dinoflagellates. Modern Antarctic assemblages are very different, but similar assemblages occur around the Arctic Ocean, and provide the basis for interpreting the CRP record.

The Cape Roberts sequence can be divided into 3 zones, each separated by broad transitions, based on non-dinoflagellate marine palynomorphs:

MP-1 extends from the top of the 500-m-thick basal barren interval in CRP-3 to the lower part of CRP-2A, and is ~600 m thick. It is early Oligocene in age and is dominated by Cymatiosphera and the fusiform acritarch Leiofusa. This represents the warmest environment of the sequence, with high Cimatiosphera numbers reflecting fresh-water runoff and a stratified water column.

MP-2 extends a further 250 m up into the lower part of CRP-1 and is late Oligocene and earliest Miocene in age. This assemblage is dominated by leiospheres, with Cymatiosphera much reduced and Leiofusa absent. It represents a cooler climate with high leiosphere numbers reflecting the presence of a shelf ice margin.

MP-3 extends ~50 m to the top of the early Miocene strata in CRP-1. The zone is dominated by an unknown spherical acritarch and a reduction in leiospheres, and represents further climatic deterioration, with acanthomorph acritarchs representing extensive sea ice. This long record is mirrored by similar trends in terrestrial palynomorphs, clays and the sediments themselves.