



Holocene sea-level changes in Bunger Oasis, East Antarctica, as inferred by diatom assemblages in sediment cores from marine and freshwater basins, and coastal geomorphological evidences

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Information on postglacial relative sea-level changes in Bunger Oasis was obtained by study of sea bays and freshwater lakes bottom sediments, and coastal geomorphologic evidences.

The Bunger Oasis, the coastal ice-free area in East Antarctica, is surrounded by ice masses from all sides. It comprises terrestrial landscapes and marine bays. The latter, filling deep tectonic depressions in the oasis bedrock relief, are connected with each other and with the open ocean beneath the Shackleton Ice Shelf and partly floating outlet glaciers. The bathymetries of the basins and the amount of ocean-water penetration, relative to the fresh-water supply, strongly depend on relative sea-level changes. Four sediment sequences, sampled in three basins of different modern environments, were radiocarbon dated and analyzed for their diatom assemblages, since diatoms are particularly sensitive to fluctuations in the ecology of the basins.

Holocene maximum sea-level rise data received from diatom complexes of the freshwater Lake Figurnoye bottom sediments, reflecting the periods of sea water invasions to the basin.

The morphology features of marine terraces and beaches of the Bunger oasis sea shores presented information about the past sea-level parameters. The chronology of these sea-level changes was restored by using age determinations of fossil shells in the marine sediments.

The comparative analysis of all mentioned paleogeographical evidences allowed reconstructing the Holocene relative sea-level curve in the Bunger oasis region. The sea level reached its maximum between 8 and 5 ka BP, achieving 11-12 m height above present sea level.

The following sea-level decrease during the deglaciation and isostatic uplift of oasis territory was, probably, interrupted by short-time rise in during period 2 - 1 ka BP.