

ORGANIC SUBSTANCES IN SEDIMENT CORES FROM
LÜTZOW-HOLM BAY IN ANTARCTICA (ABSTRACT)

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Total organic carbon (TOC), total nitrogen (TN), hydrocarbons and fatty acids in two recent marine sediment core samples from near the Langhovde Glacier (648 m deep; Core-B, 117 cm long) and from about 40 km east of Core-B (778 m deep; Core-A, 73 cm long) in Lützow-Holm Bay, Antarctica were studied to characterize the sources of organic substances and to elucidate the geochemical history of the studied sites. The sediment cores were composed mainly of glacial clay. The TOC contents of the sediment cores were considerably low, less than 2.1 mgC/g of dry base. Unusually branched-C_{25:2} alkene was found as the most prominent hydrocarbon in both sediment cores, and it decreased largely with depth, reflecting probably unstable nature of this alkene for microbial degradation. This alkene is much likely to have been derived from ice algae. Normal saturated fatty acids ranging in carbon chain length from C₁₀ to C₃₂ were found in the samples, in addition to unsaturated and branched (*iso*- and *anteiso*-) components. The sources of these fatty acids are mainly plankton including ice algae and bacteria. Generally the contents of unsaturated fatty acids decrease with depth as in the case of the C_{25:2} alkene. The abundance of branched fatty acids in the Core-A sample reveals that bacterial contribution to this sample is considerably greater than that to the Core-B sample. Vertical profiles of the TOC, TN and fatty acids in the Core-B sample suggest that rework by glacial movements has taken place.

(Received February 26, 1987)