



Campanian agglutinated foraminifera from the Lomonosov Ridge, IODP Leg 302 (ACEX): implications for Arctic Late Cretaceous paleogeography

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The biotic history of the Eurasian side of the early Arctic Ocean is known from precious few localities, and these are mainly boreholes drilled along the Arctic margins by the petroleum industry. Most of our knowledge on the foraminiferal record of the Late Cretaceous Arctic Ocean comes from studies of the Canadian and North American Arctic margins in the Mackenzie Delta region. In the Eurasian Arctic region, the Upper Cretaceous is represented by a major hiatus in Spitsbergen and the Northern and Eastern Barents Sea.

We document the occurrence of agglutinated foraminifera in Upper Cretaceous (Campanian) sediments recovered during the Arctic Coring Expedition (ACEX), IODP Leg 302. One of the primary drilling objectives of Expedition 302 was to penetrate the post-rift sedimentary cover of the Lomonosov Ridge to determine the age of the break-up unconformity observed in seismic sections. This goal was achieved in Hole M0004A, which recovered two cores of Cretaceous sediments beneath the unconformity.

Foraminiferal assemblages consist entirely of agglutinated taxa with 29 taxa including three new species. The agglutinated assemblage from the Lomonosov Ridge represents a shallow, probably restricted, brackish environment, and displays some taxonomic affinity to Late Cretaceous assemblages described from the Beaufort-Mackenzie basin. Comparison of the Lomonosov Ridge assemblages with coeval faunas from the southwestern Barents Sea and Western Siberia reveals that there are no species in common with coeval assemblages described from the southwestern Barents Sea or Western Siberia, and only several cosmopolitan species are in common between the later two regions. Therefore, we suggest that the Arctic Ocean was probably isolated from the North Atlantic faunal province during the Late Cretaceous, with very limited or no marine connections between the Arctic, North Atlantic and Western Siberia over the Barents Shelf. In our opinion the Late Cretaceous paleogeographical reconstructions of the Barents Sea area depict marine connections that may not have existed at all or were extremely restricted.