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Novel radiocarbon chronology using archaeal tetraether lipids in the Arctic Ocean sediments

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Recent decrease of sea ice in the Arctic Ocean gives the chance to collect sediment cores by non-icebreaker ship, which means progress of the Arctic paleoceanography study. However, it is not easy to make age model of cores because carbonate fossil such as planktonic foraminifera is very limited for the interglacial periods. In the glacial time, foraminifera is almost barren. Thus, so far the Arctic Ocean environment change between Interglacial and glacial periods is poorly understood. In this study, we try to reconstruct radiocarbon based age model by using molecular markers derived from marine archaea lived in water column instead of carbonate fossil. Glycerol dibiphytanyl glycerol tetraether lipids are derived from archaeal cell memblane lipids. They have also been used for reconstruction of paleo sea surface temperatures (TEX86). We reported here radiocarbon measurements for the GDGTs, bulk-organic carbon, and carbonate fossils (shell, benthic foraminifera) from surface sediments of three sites (MC-01: 998 m, MC-03: 360 m, MC-04: 197 m) on the Northwind Ridge, the western Arctic Ocean.