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Planktic Foraminifera Record Early Holocene ^{14}C Reservoir Ages in Arctic Gateway

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In three Holocene high-resolution sediment cores from the Nordic Seas, the Barents Sea continental margin and eastern Fram Strait, we established narrow-spaced ^{14}C records of various planktic foraminifera species to reconstruct local variations in the reservoir age of surface and subsurface waters. In the two northern cores *Neogloboquadrina pachyderma* (sin.) (Nps) shows a distinct Early Holocene ^{14}C plateau at 9.3 to 9.1 ^{14}C ka, that we tuned to an atmospheric ^{14}C plateau near 9.0 to 8.7 ^{14}C ka (IntCal 2013) that extends from 10.2 to 9.6 calendar ka. The outlined difference in (average) ^{14}C age suggests a reservoir age of ∼400 years for the subsurface dweller Nps. Different planktic foraminifers that inhabit different water masses document different reservoir ages. In contrast to Nps the near-surface dweller *N. incompta* reveals an average reservoir age of 150 years, however, a further near-surface dweller, *Turborotalita quinqueloba*, a local Early Holocene reservoir age of up to 720 years at the Barents Sea continental margin. The latter age may indicate a local admixture of old and less saline Arctic surface waters from the East Spitsbergen Current. The Early Holocene ^{14}C plateau forms a robust basis for a better correlation of paleoceanographic signals in all three sediment cores. For example, the onset of a maximum in T. quinqueloba that marks the onset of the Early Holocene Thermal Maximum in the Arctic Gateway is now defined near 10.5 cal ka, an event that possibly reflects an enhanced advection of Atlantic surface waters up to the Arctic Ocean.