

Supplementary Dataset 1: Biomarker, foraminiferal abundance, stable isotope and trace element data from sediment cores JM11-FI-19PC and LINK16. Sheet (1) includes brassicasterol (24-methylcholesta-5, 22E-dien-3 β -ol), IP25 (a C25 Isoprenoid Lipid), sea ice index P(B)IP25, benthic foraminiferal assemblages, and foraminiferal stable isotope data from sediment core LINK16. Sheet (2) contains brassicasterol, IP25 and planktic foraminiferal Na/Ca and Ba/Ca from sediment core JM11-FI-19PC. Sheet (3) includes the age model tie points of the two sediment cores. Abbreviations: ka, thousands of years before present; *N. pachyderma* d18O, oxygen isotope values measured in *Neogloboquadrina pachyderma*, unit permille (‰); *M. barleeanus* d13C, carbon isotope values measured in *Melonis barleeanus*; %*M. barleeanus*, percentage of *Melonis barleeanus* of the total benthic foraminifera; %*C. neoteretis*: percentage of *Cassidulina neoteretis* of the total benthic foraminifera; and %*C. reniforme*: percentage of *Cassidulina reniforme* of the total benthic foraminifera.