



Supplementary Figure 1 | Combined records of bulk parameters, foraminiferal, stable oxygen isotope, and sea ice proxy from core KV02. From left to right: Concentrations of grains >0.5 mm, percentage of sand (>63 μm), percentage of *Elphidium clavatum*, percentage of *Cibicides lobatulus*, benthic foraminiferal $\delta^{18}\text{O}$, and IP₂₅ concentrations. Light blue shading indicates a redeposited layer. Symbols next to the left and right y-axes indicate AMS ¹⁴C dates.