



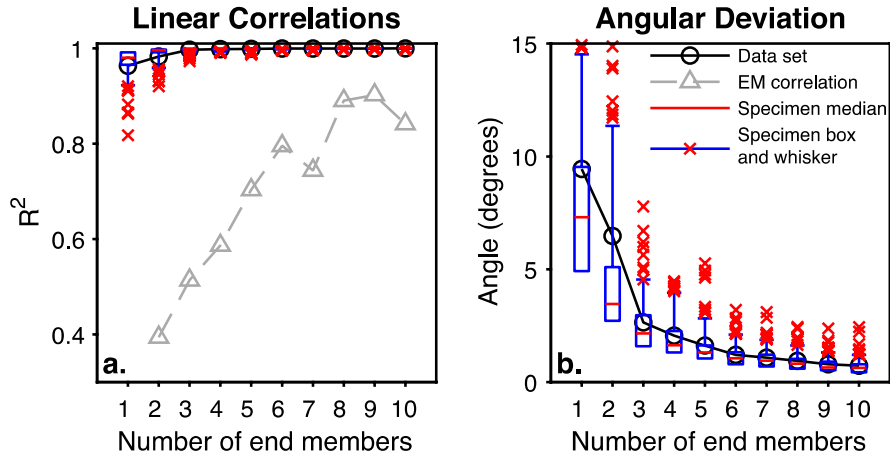
Supplement of

**Reorganization of Atlantic Waters at sub-polar latitudes
linked to deep-water overflow in both glacial and
interglacial climate states**

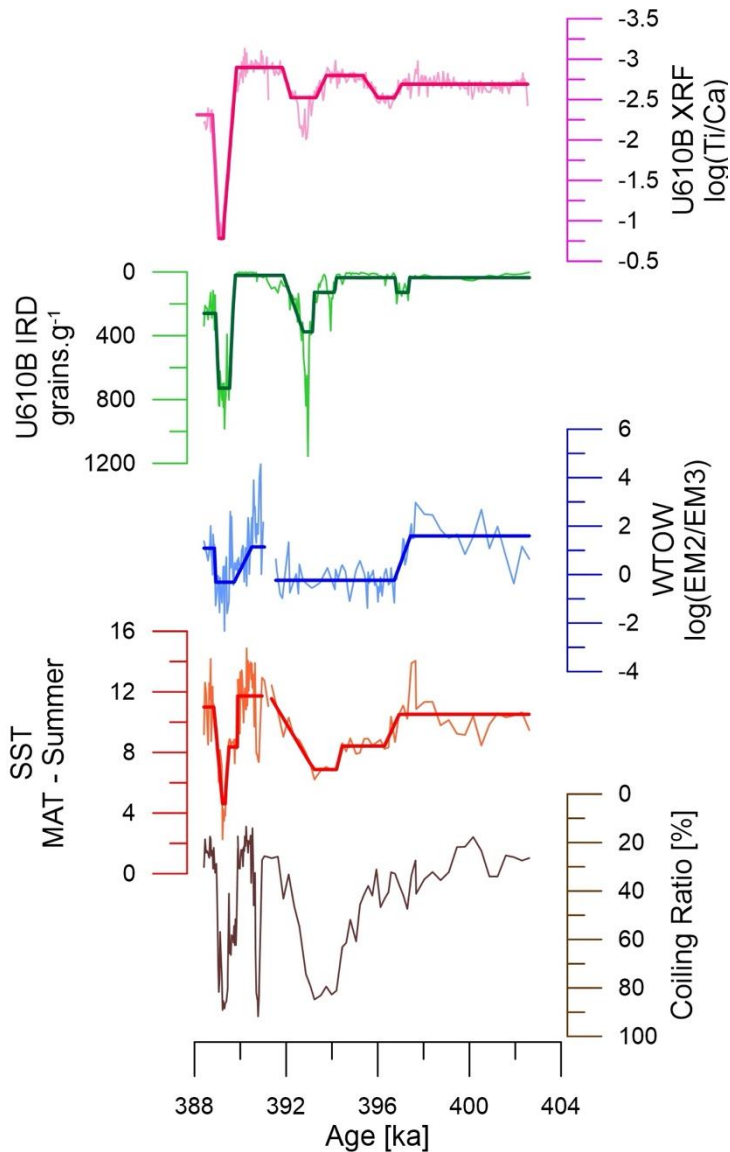
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Supplement Figure S1 | Goodness-of-fit assessment for non-parametric EMA. a) R^2 and b) angular deviation (θ) parameters as a function of the number of fitted end members. Both indicate that three end members are sufficient to describe this data set.



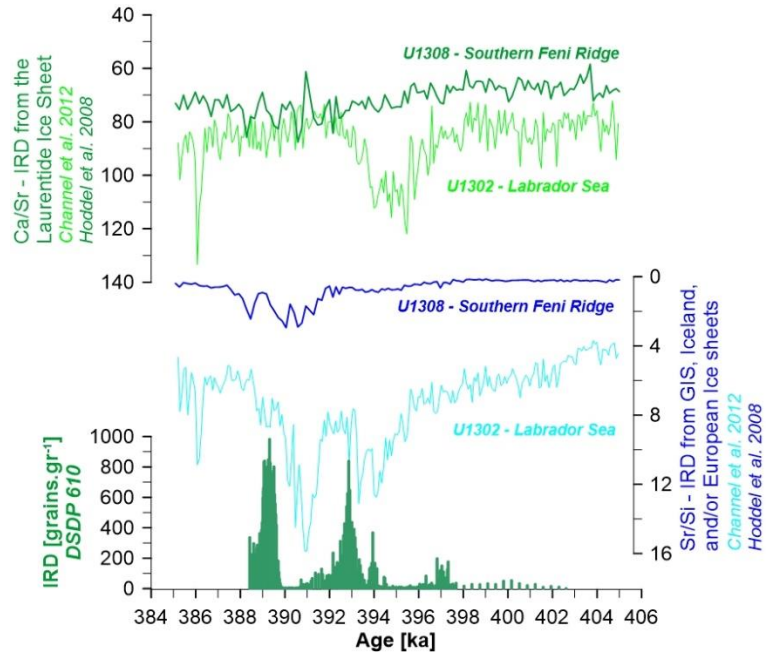
Supplement Figure S2 | Ramp function fit (heavy line) to DSDP 610B time series (Supplement Table A1). Time series (from top to bottom) DSDP 610B XRF Ti/Ca (pink); IRD (green); WTOW proxy (blue); SST (red); and the coiling ratio of *N. pachyderma* to *N. incompta* (brown).

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Supplement Table S1 | Analyzed time series. Time units refer to thousand years before present. V is the coefficient of variation of the time spacing (i.e., the standard deviation divided by the average).

Name	Description	Time interval	n	V
DSDP 610B	SST	[388.421 ka; 402.612-ka]	129	1.05
DSDP 610B	WTOW	[388.420-ka; 402.610-ka]	143	1.12
DSDP 610B	IRD	[388.421-ka; 402.612-ka]	211	1.19
DSDP 610B	XRF	[388.421-ka; 402.612-ka]	375	0.27

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Supplement Figure S3 | Assessment of IRD provenance. X-ray fluorescent datasets from IODP 303-U1308 and IODP 303-U1308 are used next to IRD counts from DSDP 610B to evaluate the source of IRD for the glacial inception from MIS 11c into 11b. The strong evidence for the presence of detrital silicates (Sr/Si) in the western Atlantic Basin (IODP 303-U1302) support the hypothesis for a northern or western source of IRD as opposed to an eastern origin from the British-Irish Ice sheet.

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