

Supplementary Table 2: Tie-points defined in the studied cores for the period 142-100 ka, with associated 1 $\sigma$  dating uncertainties<sup>a</sup>.

Depth of tie-point (cm)	Age of tie- point (ka)	Mean resolution (ka)	Matching error (ka)	Age uncertainty of reference record (ka)	AICC2012 age uncertainty (ka)	<b>Combined age uncertainty<sup>a</sup> (ka)</b>
A. core GeoB7920-2 (20.8°N)						
1524.7	106.5	0.4	0.6	0.5	1.5	<b>1.8</b>
1607.3	115.3	0.5	0.8	0.6	1.7	<b>2.0</b>
B. core GeoB7925-1 (20.3°N)						
754.3	102.0	0.3	0.4	0.5	1.5	<b>1.7</b>
821.1	105.7	0.3	0.6	0.5	1.5	<b>1.7</b>
922.2	116.5	0.6	0.8	0.6	1.7	<b>2.1</b>
992.7	128.3	1.7	0.6	0.5	1.7	<b>2.6</b>
997.2	134.0	1.8	0.8	0.8	2.5	<b>3.3</b>
1012.8	137.3	0.5	0.8	0.8	2.5	<b>2.9</b>
C. core GeoB9506-1 (15.6°N)						
830.6	105.8	0.8	0.6	0.5	1.5	<b>2.0</b>
875.3	116.5	1.0	0.6	0.6	1.7	<b>2.1</b>
915.4	128.1	0.9	0.4	0.5	1.7	<b>2.2</b>
945.2	134.0	0.8	0.8	0.8	2.5	<b>2.9</b>
D. core GeoB9516-5 (13.7°N)						
568.6	105.9	1.2	0.4	0.5	1.5	<b>2.1</b>
603.5	119.4	1.4	0.4	0.5	1.7	<b>2.4</b>
629.1	129.2	0.9	0.4	0.5	1.7	<b>2.1</b>
736.4	140.7	0.5	0.8	0.9	2.5	<b>2.9</b>
E. core GeoB9528-3 (9.2°N)						
636.4	101.9	0.6	0.4	0.5	1.5	<b>1.6</b>
675.7	111.3	0.8	0.4	0.6	1.6	<b>1.8</b>
705.5	129.1	0.9	0.4	0.5	1.7	<b>1.8</b>
716.8	132.2	0.7	0.6	0.5	1.7	<b>1.8</b>
772.7	140.7	0.5	0.8	0.9	2.5	<b>2.7</b>
F. core GeoB4901-8 (2.7°N)						
1152.6	105.8	0.6	0.4	0.5	1.5	<b>1.7</b>
1205.3	116.4	0.8	0.6	0.6	1.7	<b>2.1</b>

1265.8	129.2	0.6	0.4	0.5	1.7	<b>1.9</b>
1312.5	134.0	0.6	0.8	0.8	2.5	<b>2.9</b>
G. core GeoB1008-3 (6.5°S)						
744.0	107.2	1.2	0.8	0.5	1.5	<b>2.2</b>
789.7	116.5	0.7	0.8	0.6	1.7	<b>2.1</b>
833.6	129.2	0.7	0.8	0.5	1.7	<b>2.1</b>
851.9	134.1	1.0	0.8	0.8	2.5	<b>3.0</b>
882.1	141.0	0.9	0.8	0.9	2.5	<b>2.9</b>
H. core GeoB1016-3 (11.8°S)						
545.3	105.8	0.7	0.8	0.5	1.5	<b>1.9</b>
591.4	116.5	0.8	0.6	0.6	1.7	<b>2.1</b>
613.5	129.1	0.7	0.6	0.5	1.7	<b>2.0</b>
633.4	134.0	0.9	0.8	0.8	2.5	<b>3.0</b>
660.1	140.6	1.4	0.8	0.9	2.5	<b>3.1</b>
I. core GeoB1028-5 (20.1°S)						
354.4	105.7	0.9	0.6	0.5	1.5	<b>1.9</b>
380.7	116.5	1.6	0.6	0.6	1.7	<b>2.5</b>
408.3	128.0	0.9	0.6	0.5	1.7	<b>2.2</b>
445.4	134.0	0.9	0.8	0.8	2.5	<b>3.0</b>

<sup>a</sup> Combined dating uncertainties (last column in bold), which we use as input in the Monte-Carlo analysis, integrate (1) the mean resolution of benthic isotopic records (for an interval of  $\pm 2$  ka around the tie-point), (2) a graphical matching error (0.8 ka for benthic  $\delta^{18}\text{O}$  synchronisation, 0.6 or 0.4 ka if Cibicides  $\delta^{13}\text{C}$  data were available and improved the synchronisation) that accounts, despite the synchronisation, for slight misalignments of benthic records between tie-points, (3) the age uncertainty of MD95-2042 reference record and (4) the absolute dating uncertainty of reference time scales: AICC2012 time scale [Bazin *et al.*, 2013] between 100 and 130 ka and LR04 [Lisiecki and Raymo, 2005] between 130 and 142 ka.