

Table S1 - Data compilation

Core	Location	Latitude	Longitude	$\Delta t$ (ka)	Proxy	Researcher
DSDP 607	Northeastern Atlantic	41.0012	-32.9573	2.8	SST - Transfer function	Ruddiman et al., 1989
ODP 846	Eastern Equatorial Pacific	-3.0949	-90.818	2.3	SST - Uk37	Herbert et al., 2010
ODP 982	North Atlantic	57.5165	-15.8667	4.7	SST - Uk37	Lawrence et al., 2009
ODP 1143	Western Equatorial Pacific	9.3619	113.2851	1.9	SST - Uk37	Li et al., 2011
ODP 1082	South Atlantic	-21.0941	11.8205	4.5	SST - Uk37	Etourneau et al., 2009
ODP 1313	North Atlantic	41.0011	-32.9573	1.4	SST - Uk37	Naafs et al., 2012
ODP 722	Arabian Sea	16.6218	59.7953	2.0	SST - Uk37	Herbert et al., 2010
ODP 1146	South China Sea	19.4567	116.2727	1.6	SST - Uk37	Herbert et al., 2010
ODP 846	Eastern Equatorial Pacific	-3.0949	-90.818	1.3	SST - Uk37	Liu and Herbert, 2004
MD97-2140	Western Pacific Warm Pool	2.1792	141.4581	3.9	SST - Mg/Ca	de Garidel-Thoron, 2005
MD06-3018	Tropical Western Pacific	-22.5977	166.8628	5.2	SST - Mg/Ca	Russon et al., 2011
ODP 806	Western Equatorial Pacific	0.319	159.361	2.4	SST - Mg/Ca	Medina-Elizalde and Lea, 2005
DSDP 594	Southwest Pacific	-45.5235	174.948	2.6	SST - Modern analog	Schaefer et al., 2005
V22-174	South Atlantic	-10.0667	-12.8167	4.1	SST - Transfer function	Specmap, 1990
RC13-110	Eastern Equatorial Pacific	0	-96	4.9	SST - Transfer function	Pisias et al., 1997
ODP 659	Eastern Equatorial Atlantic	18.0772	-21.0262	3.6	Dust flux	Tiedemann et al., 1994
ODP 1090	Subantarctic Atlantic	-42.9137	8.8997	0.3	Dust MAR	Martinez-Garcia et al., 2011
ODP 1090	Subantarctic Atlantic	-42.9137	8.8997	0.3	Fe MAR	Martinez-Garcia et al., 2011
CLP	Chinese Loess Plateau			1.0	Grain size	Sun et al., 2005
Lake Baikal	Southern Russia			0.5	Silica %	Williams et al., 1997
PS75-074	Pacific Southern Ocean	-56.4696	-142.9954	0.4	Fe counts	Lamy et al., 2014
PS75-076	Pacific Southern Ocean	-56.4696	-142.9954	0.4	Fe wt. %	Lamy et al., 2014
ODP 663	Eastern Equatorial Atlantic	-1.1978	-11.8785	2.7	Terrestrial %	deMenocal et al., 1993
EPICA Dome C	Antarctica	-75.06	123.21	0.2	Dust	Lambert et al., 2008
ODP 982	North Atlantic	57.5	-15.9	2.5	$\delta^{13}\text{C}$	Venz et al., 1999
ODP 983	North Atlantic	60.4	-23.6	1.0	$\delta^{13}\text{C}$	McIntyre et al., 1999
ODP 984	North Atlantic	61	-24	3.5	$\delta^{13}\text{C}$	Raymo et al., 2004
DSDP 607	North Atlantic	41	-33	4.1	$\delta^{13}\text{C}$	Ruddiman et al., 1989
ODP 658	North Atlantic	20.8	-18.7	1.6	$\delta^{13}\text{C}$	Tiedemann et al., 1994
U 1308	North Atlantic	49.9	-24.2	0.3	$\delta^{13}\text{C}$	Hodell et al., 2008
ODP 980/981	North Atlantic	55.5	-14.7	1.6	$\delta^{13}\text{C}$	Oppo et al., 1998
DSDP 502	Equatorial Atlantic	11.5	-79.4		$\delta^{13}\text{C}$	deMenocal et al. 1992
ODP 664	Equatorial Atlantic	0.1	-23.2	3.2	$\delta^{13}\text{C}$	Raymo et al., 1997
ODP 925	Equatorial Atlantic	4.2	-43.5	4.3	$\delta^{13}\text{C}$	Bickert et al., 1997
ODP 926	Equatorial Atlantic	3.7	-42.9	2.7	$\delta^{13}\text{C}$	Lisiecki et al., 2008
ODP 927	Equatorial Atlantic	5.5	-44.5		$\delta^{13}\text{C}$	Bickert et al., 1997
ODP 929	Equatorial Atlantic	5.5	-44.5	4.9	$\delta^{13}\text{C}$	Bickert et al., 1997
ODP 928	Equatorial Atlantic	5.5	-44.8	2.5	$\delta^{13}\text{C}$	Lisiecki et al., 2008
ODP 1090	South Atlantic	-42.9	8.9	2.8	$\delta^{13}\text{C}$	Venz and Hodell, 2002
GeoB 1032	South Atlantic	-22.9	6	3.7	$\delta^{13}\text{C}$	Bickert and Wefer, 1996
GeoB 1035	South Atlantic	-21.6	5	3.9	$\delta^{13}\text{C}$	Bickert and Wefer, 1996
ODP 1089	South Atlantic	-47.9	9.9	0.4	$\delta^{13}\text{C}$	Hodell et al., 2001
GeoB 1211	South Atlantic	-24.5	7.5	4.9	$\delta^{13}\text{C}$	Bickert and Wefer, 1996
GeoB 1214	South Atlantic	-24.7	7.2	4.5	$\delta^{13}\text{C}$	Bickert and Wefer, 1996
RC13-229	South Atlantic	-25.5	11.3	3.8	$\delta^{13}\text{C}$	Oppo et al., 1990
TN 576	South Atlantic	-42.9	8.9	1.5	$\delta^{13}\text{C}$	Hodell et al., 2000
ODP 1143	Pacific	9.4	-246.7	3.8	$\delta^{13}\text{C}$	Cheng et al., 2004
ODP 677	Pacific	4.2	-83.7	2.8	$\delta^{13}\text{C}$	Shackleton et al., 1990
ODP 846	Pacific	-3.1	-90.8	2.2	$\delta^{13}\text{C}$	Mix et al., 1995
ODP 849	Pacific	0.2	-110.5	3.5	$\delta^{13}\text{C}$	Mix et al., 1995
ODP 1123	Southwest Pacific	-41.7862	-171.499	0.8	Mg/Ca	Elderfield et al., 2012
EPICA Dome C	Antarctica	-75.06	123.21	0.4	CH <sub>4</sub>	Loulergue et al., 2008
EPICA Dome C	Antarctica	-75.06	123.21	0.4	CO <sub>2</sub>	Luthi et al., 2008
EPICA Dome C	Antarctica	-75.06	123.21	3.0	Deuterium	EPICA Community Members, 2004

Table S2 - Variance tests

Data Set	Variable	Period	Variance <sup>a</sup>	F-test <sup>b</sup>
SST_PC1	SST	Post-MBT	8.9681	Reject
SST_PC1	SST	Pre-MBT	6.5399	
SST_PC2	SST	Post-MBT	1.8564	
SST_PC2	SST	Pre-MBT	1.2808	
EDC CO <sub>2</sub>	CO <sub>2</sub>	Post-MBT	619.6373	Reject
EDC CO <sub>2</sub>	CO <sub>2</sub>	Pre-MBT	467.1198	
$\delta^{13}\text{C}$ Atlantic PC1	$\delta^{13}\text{C}$	Post-MBT	0.9950	Reject
$\delta^{13}\text{C}$ Atlantic PC1	$\delta^{13}\text{C}$	Pre-MBT	1.9414	
$\delta^{13}\text{C}$ Atlantic PC1 no MIS 13	$\delta^{13}\text{C}$	Post-MBT	0.9950	Reject
$\delta^{13}\text{C}$ Atlantic PC1 no MIS 13	$\delta^{13}\text{C}$	Pre-MBT	1.9414	
$\delta^{13}\text{C}$ Atlantic PC2	$\delta^{13}\text{C}$	Post-MBT	0.2365	Reject
$\delta^{13}\text{C}$ Atlantic PC2	$\delta^{13}\text{C}$	Pre-MBT	0.3378	
$\delta^{13}\text{C}$ Pacific PC1	$\delta^{13}\text{C}$	Post-MBT	0.2283	Reject
$\delta^{13}\text{C}$ Pacific PC1	$\delta^{13}\text{C}$	Pre-MBT	0.4317	
$\delta^{13}\text{C}$ Global	$\delta^{13}\text{C}$	Post-MBT	1.1744	Reject
$\delta^{13}\text{C}$ Global	$\delta^{13}\text{C}$	Pre-MBT	2.1739	
$\delta^{13}\text{C}$ Global	$\delta^{13}\text{C}$	Post-MBT	1.1744	Reject
$\delta^{13}\text{C}$ Global	$\delta^{13}\text{C}$	Pre-MBT	2.1739	
LR04 $\delta^{18}\text{O}$	$\delta^{18}\text{O}$	Post-MBT	0.1965	Reject
LR04 $\delta^{18}\text{O}$	$\delta^{18}\text{O}$	Pre-MBT	0.1572	
Dust Global	Dust	Post-MBT	4.5498	Reject
Dust Global	Dust	Pre-MBT	2.6819	
EDC CH <sub>4</sub>	CH <sub>4</sub>	Post-MBT	5432.4	
EDC CH <sub>4</sub>	CH <sub>4</sub>	Pre-MBT	6012.4	
EDC Temperature	Deuterium	Post-MBT	270.1	Reject
EDC Temperature	Deuterium	Pre-MBT	116.3	
Bottom water temp.	Mg/Ca	Post-MBT	0.0105	Reject
Bottom water temp.	Mg/Ca	Pre-MBT	0.0069	

<sup>a</sup>Variance values for the intervals "Pre-MBT" (450-800 ka) and "Post-MBT" (0-350 ka)

<sup>b</sup>F-tests of the null hypothesis that variance in the Pre- and Post-MBT time intervals are the same

Table S3 - EOF Results

Core	EOF-1	EOF-2
<i>Sea-surface temperature</i>		
DSDP 607	2.4611	-1.4678
ODP 846	0.6214	0.1373
ODP 982	0.9055	0.1431
ODP 1143	0.5791	0.0256
ODP 1082	1.2605	-0.0162
ODP 1313	1.5653	-0.0557
ODP 722	0.6955	-0.0637
ODP 1146	0.6955	-0.0637
ODP 846	0.6214	0.1373
MD97-2140	0.3085	0.0024
MD06-3018	0.3711	0.1174
ODP 806	0.6318	0.0738
DSDP 594	1.6780	2.1688
V22-174	0.4994	-0.0700
RC13-110	0.6403	-0.2426
<i>Dust</i>		
ODP 659	0.356	0.646
ODP 1090	0.9004	-0.2768
ODP 1090	0.8957	-0.2884
CLP	-0.5902	-0.4107
PS75-074	0.8153	-0.107
PS75-076	0.8914	-0.0061
ODP 663	0.4237	0.6842
EPICA Dome C	0.8729	-0.1856
<i>Global <math>\delta^{13}C</math></i>		
ODP 982	0.0473	-0.1403
ODP 983	0.1598	-0.1581
ODP 984	0.1412	-0.4831
DSDP 607	0.4186	0.0256
U 1308	0.3688	0.0163
DSDP 502	0.0674	-0.098
ODP 980/981	0.2748	-0.1104
ODP 664	0.3818	0.0776
ODP 925	0.3548	0.027
ODP 926	0.3949	0.0174
ODP 927	0.3886	0.0161
ODP 929	0.4186	0.0256
ODP 928	0.4069	0.0414
ODP 1090	0.3774	0.1325
ODP 1143	0.1641	-0.0143
ODP 677	0.185	-0.0199
ODP 846	0.1795	-0.0169
ODP 849	0.1901	-0.003
<i>Atlantic <math>\delta^{13}C</math></i>		
ODP 982	0.0459	0.1404
ODP 983	0.1567	0.1579
ODP 984	0.1373	0.4838
DSDP 607	0.423	-0.0194
U 1308	0.3683	-0.0141
ODP 980/981	0.2733	0.112
DSDP 502	0.0674	0.0989
ODP 664	0.3805	-0.0756
ODP 925	0.3555	-0.0242
ODP 926	0.3964	-0.0136
ODP 927	0.39	-0.0129
ODP 929	0.423	-0.0194
ODP 928	0.408	-0.0379
ODP 1090	0.3728	-0.134
<i>Pacific <math>\delta^{13}C</math></i>		
ODP 1143	0.5066	-0.1312
ODP 677	0.113	0.0389
ODP 846	0.1482	0.1219
ODP 849	0.2123	0.2073