

Table 1S. Data set of core GeoB 3375-1 from the north of Chile used to calculate paleo-pCO₂

Depth (cm)	Age (kyr BP)	U ₃₇ ^K -SST (°C)	δ ¹³ C _{37:2} (‰ PDB)	ε _p (‰)	CO _{2aq} (μM)	p CO ₂ (μatm)	p CO ₂ interpolated (μatm)
3	8.9	19.8	--- a	--- a	--- a	--- a	--- a
8	10.0	20.7	-29.5	15.9	13.2	415.7	415.7
13	11.1	20.6	-27.7	14.0	11.1	348.3	348.3
18	12.1	20.3	-29.5	15.5	12.8	397.3	397.3
23	13.2	20.2	-24.7	10.5	8.6	267.4	267.4
28	14.3	19.5	-20.5	5.7	6.6	200.7	200.7
33	15.4	18.9	-26.9	12.2	9.7	290.6	290.6
38	15.8	17.7	-25.6	11.3	9.1	263.5	263.5
43	16.2	16.7	-26.3	12.1	9.6	270.3	270.3
48	16.6	16.9	-27.0	12.8	10.2	287.6	287.6
53	17.0	19.1	-27.7	13.6	10.8	325.5	325.5
58	17.4	20.3	-25.1	11.3	9.1	284.1	284.1
63	17.8	19.6	-27.2	13.2	10.4	318.0	318.0
68	18.2	19.5	-29.3	15.7	12.9	394.2	394.2
73	18.6	19.3	--- a	--- a	--- a	--- a	381.6
78	19.0	19.3	--- a	--- a	--- a	--- a	391.7
83	19.5	18.4	--- a	--- a	--- a	--- a	368.1
88	20.1	18.8	--- a	--- a	--- a	--- a	366.8
93	20.7	18.9	--- a	--- a	--- a	--- a	378.2
98	21.2	18.5	-29.1	15.1	12.3	364.4	364.4
103	21.8	19.3	-29.1	15.2	12.4	376.5	376.5
108	22.4	18.9	--- a	--- a	--- a	--- a	359.5
113	22.9	17.3	--- a	--- a	--- a	--- a	339.0
118	23.5	18.6	--- a	--- a	--- a	--- a	348.8
123	24.1	18.2	-28.8	14.2	11.3	331.1	331.1
128	24.8	18.0	-23.8	9.4	8.1	235.2	235.2
133	25.4	17.9	--- a	--- a	--- a	--- a	251.5
138	26.1	18.1	--- a	--- a	--- a	--- a	276.9
143	26.7	16.6	-26.7	12.9	10.2	285.3	285.3
148	27.4	18.7	--- a	--- a	--- a	--- a	326.3
153	28.1	18.3	-28.6	14.6	11.8	346.4	346.4
158	28.7	17.8	-27.6	13.5	10.7	311.0	311.0
163	29.4	16.7	--- a	--- a	--- a	--- a	255.3
168	31.7	18.5	-23.7	9.3	8.0	236.6	236.6

a Not available typically because of insufficient (<10 nmol) C_{37:2}-alkenone

Table 2S. Present-day parameters used in this study

Parameter	Present-day value	Reference
SST (°C)	~17	Conkright et al. (2002)
Sea surface <i>p</i> CO ₂ (µatm)	~400	Torres et al. (2002)
Atmospheric CO ₂ (ppmv)	>360	Torres et al. (2002)
<i>G. bulloides</i> abundance (%)	~90	Marchant et al. (2004)
CaCO ₃ flux (mg/m ² /d)	>100	Marchant et al. (2004)
Organic Carbon flux (mg/m ² /d)	>10	Hebbeln et al. (2000)
Biogenic Opal flux (mg/m ² /d)	>50	Hebbeln et al. (2000)
CaCO ₃ /Organic-C ratio	~25	e.g., Mohtadi et al. (2005)