

Supplement of

Biosiliceous and geochemical response to biotic and climatic events in the Palaeocene

Cécile Figus et al.

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Biogenic opal determination

The bioSiO_2 flux is obtained via the following calculations:

$$\text{bioSiO}_2 \text{ flux (g/cm}^2\text{/kyr)} = \text{wt\% SiO}_2 \text{ (component weight/bulk sediment weight)} \times \text{DBD} \times \text{LSR}$$

With DBD the sediment dry bulk density in g/cm^3 and LSR the linear sedimentation rate in cm/kyr . The DBD is taken from the original drilling reports and interpolated between samples, while the LSR is calculated from the updated age-depth model.

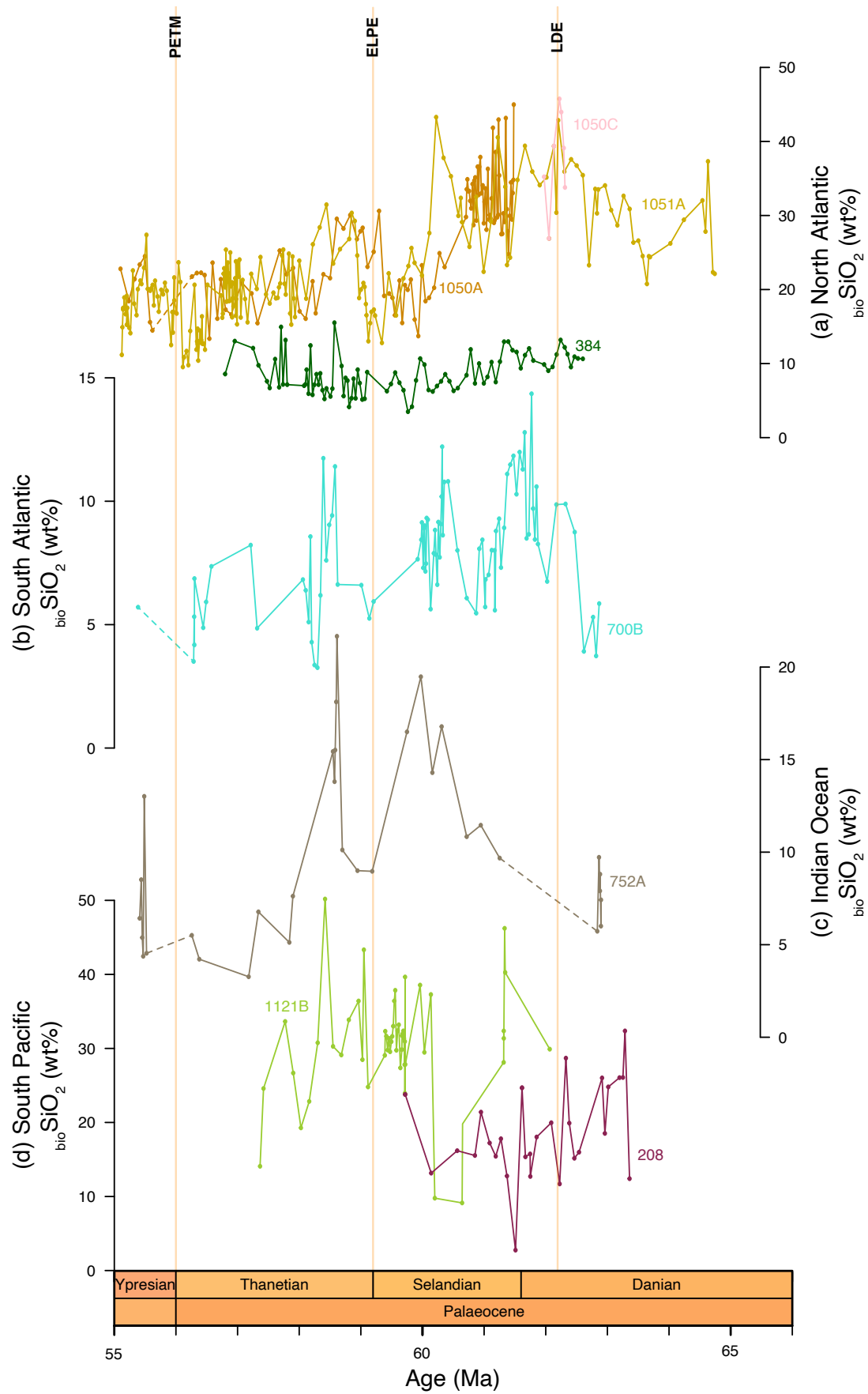


Fig. S1. Percent weight of biogenic silica at study Sites/Holes in the (a) North Atlantic, (b) South Atlantic, (c) Indian Ocean and (d) South Pacific. Results for Holes 1050A, 1050C and 1051A are from Witkowski et al. (2021). PETM: Palaeocene Eocene Thermal Maximum (~56 Ma), ELPE: Early Late Palaeocene Event (~59.2 Ma), LDE: Latest Danian Event (~62.2 Ma).

Table S1. Results of biogenic opal determination and stable isotope analyses.

Site/ Hole	Core	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Revised age (Ma)	wt% SiO ₂	bioSiO ₂ flux (g/ cm ² /kyr)	Norm. $\delta^{13}\text{C}$ (‰ VPDB mean)	Norm. $\delta^{18}\text{O}$ (‰ VPDB mean)
208	29	4	15	16	544.13	59.72	23.80 %	0.1353		
208	29	5	15	16	545.63	60.14	13.16 %	0.0748		
208	29	6	15	16	547.13	60.56	16.19 %	0.0920		
208	30	1	15	16	548.15	60.85	15.54 %	0.0884		
208	30	1	50	51	548.5	60.95	21.40 %	0.1216		
208	30	1	100	101	549	61.09	17.23 %	0.0979		
208	30	1	135	136	549.35	61.19	15.44 %	0.0878		
208	30	2	15	16	549.65	61.27	17.80 %	0.1012		
208	30	2	50	51	550	61.37	12.77 %	0.0726		
208	30	2	99	100	550.49	61.51	2.76 %	0.0157		
208	30	3	15	16	551.15	61.61	24.68 %	0.2497		
208	30	3	50	51	551.5	61.67	15.36 %	0.1553		
208	30	3	98	100	551.98	61.74	15.75 %	0.1593		
208	30	3	100	101	552	61.75	12.71 %	0.1286		
208	30	4	15	16	552.65	61.85	18.04 %	0.1824		
208	30	5	15	16	554.15	62.09	19.96 %	0.2019		
208	30	5	101	102	555.01	62.22	11.70 %	0.1184		
208	30	6	15	16	555.65	62.32	28.69 %	0.2902		
208	30	6	50	51	556	62.38	19.91 %	0.2014		
208	30	6	102	103	556.52	62.46	15.17 %	0.1534		
208	30	CC			557	62.54	15.99 %	0.1617		
208	31	1	136	137	559.36	62.91	26.02 %	0.2632		
208	31	2	15	16	559.65	62.96	18.52 %	0.1874		
208	31	2	50	51	560	63.01	24.80 %	0.2509		
208	31	3	15	16	561.15	63.19	26.05 %	0.2635		
208	31	3	50	51	561.5	63.25	26.08 %	0.3878		
208	31	3	81	82	561.81	63.28	32.36 %	0.4813		
208	31	CC			562.5	63.36	12.41 %	0.1846		
384	6	1	52	53	99.12	56.80	8.59 %	0.0168		
384	6	1	81	82	99.41	56.95	13.03 %	0.0255		
384	6	2	1	2	100.11	57.25	12.08 %	0.0421		
384	6	2	50	51	100.6	57.34	9.77 %	0.0363		
384	6	2	127	128	101.37	57.48	7.61 %	0.0295		
384	6	3	1	2	101.61	57.52	6.71 %	0.0274		
384	6	3	50	51	102.1	57.61	10.60 %	0.0450		

Site/ Hole	Core	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Revised age (Ma)	wt% SiO ₂	bioSiO ₂ flux (g/ cm ² /kyr)	Norm. δ ¹³ C (‰ VPDB mean)	Norm. δ ¹⁸ O (‰ VPDB mean)
384	6	3	102	103	102.62	57.67	6.80 %	0.0756		
384	6	4	1	2	103.11	57.70	14.94 %	0.1641		
384	6	4	50	51	103.6	57.74	7.18 %	0.0838		
384	6	4	113	114	104.23	57.78	13.17 %	0.1513		
384	6	CC	5	6	104.65	57.80	7.16 %	0.0836		
384	7	1	89	90	108.89	58.08	7.02 %	0.0819		
384	7	1	120	121	109.20	58.10	7.18 %	0.0859		
384	7	2	2	2	109.52	58.12	9.17 %	0.1123		
384	7	2	50	51	110.00	58.15	5.94 %	0.0753		
384	7	2	100	101	110.50	58.18	12.44 %	0.1571		
384	7	3	1	2	111.01	58.21	5.78 %	0.0727		
384	7	3	47	48	111.47	58.24	7.14 %	0.0894		
384	7	3	100	101	112.00	58.28	8.56 %	0.1065		
384	7	4	1	2	112.51	58.31	7.16 %	0.0885		
384	7	4	46	47	112.96	58.34	8.67 %	0.1067		
384	7	4	100	101	113.50	58.38	6.40 %	0.0804		
384	7	5	1	2	114.01	58.41	5.23 %	0.0669		
384	7	5	50	51	114.50	58.44	6.64 %	0.0864		
384	7	6	1	2	115.51	58.51	5.56 %	0.0723		
384	7	6	50	51	116.00	58.54	6.62 %	0.0859		
384	7	6	100	101	116.50	58.57	15.52 %	0.1978		
384	8	1	100	101	118.30	58.69	9.68 %	0.1150		
384	8	2	1	2	118.81	58.72	5.62 %	0.0680		
384	8	2	50	51	119.30	58.75	8.06 %	0.0993		
384	8	2	100	101	119.80	58.78	7.70 %	0.0965		
384	8	2	138	139	120.18	58.81	4.15 %	0.0527		
384	8	3	50	51	120.80	58.85	5.32 %	0.0687		
384	8	3	100	101	121.30	58.88	7.95 %	0.1049		
384	8	4	1	2	121.81	58.91	5.31 %	0.0715		
384	8	4	55	56	122.35	58.95	9.17 %	0.1261		
384	8	4	100	101	122.80	58.98	7.36 %	0.0791		
384	8	5	1	2	123.31	59.02	5.15 %	0.0533		
384	8	5	50	51	123.80	59.06	5.25 %	0.0524		
384	8	5	100	101	124.30	59.10	8.84 %	0.0885		
384	9	1	1	2	127.36	59.42	6.28 %	0.0377		
384	9	1	50	51	127.85	59.49	7.24 %	0.0436		

Site/ Hole	Core	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Revised age (Ma)	wt% SiO ₂	bioSiO ₂ flux (g/ cm ² /kyr)	Norm. δ ¹³ C (‰ VPDB mean)	Norm. δ ¹⁸ O (‰ VPDB mean)
384	9	1	100	101	128.35	59.56	8.78 %	0.0547		
384	9	2	1	2	128.86	59.62	7.41 %	0.0478		
384	9	2	50	51	129.35	59.69	6.40 %	0.0426		
384	9	2	103	104	129.88	59.76	3.50 %	0.0241		
384	9	3	1	2	130.36	59.83	4.17 %	0.0272		
384	9	3	50	51	130.85	59.89	7.73 %	0.0477		
384	9	3	100	101	131.35	59.96	10.67 %	0.0652		
384	9	4	1	2	131.86	60.03	9.86 %	0.0596		
384	9	4	50	51	132.35	60.10	6.44 %	0.0386		
384	9	4	100	101	132.85	60.16	6.23 %	0.0376		
384	9	5	1	2	133.36	60.23	6.97 %	0.0423		
384	9	5	50	51	133.85	60.30	7.60 %	0.0465		
384	9	5	100	101	134.35	60.37	8.55 %	0.0528		
384	9	6	1	2	134.86	60.44	7.62 %	0.0475		
384	9	6	50	51	135.35	60.50	6.32 %	0.0398		
384	9	6	100	101	135.85	60.57	6.69 %	0.0412		
384	10	1	50	51	136.9	60.71	8.43 %	0.0496		
384	10	1	100	101	137.40	60.78	11.91 %	0.0707		
384	10	2	1	2	137.91	60.85	7.32 %	0.0439		
384	10	2	50	51	138.40	60.92	10.00 %	0.0605		
384	10	2	107	108	138.97	60.99	7.33 %	0.0448		
384	10	3	1	2	139.41	61.05	8.20 %	0.0497		
384	10	3	50	51	139.9	61.12	10.19 %	0.0611		
384	10	3	100	101	140.40	61.19	7.51 %	0.0446		
384	10	4	1	2	140.91	61.26	10.26 %	0.0603		
384	10	4	50	51	141.4	61.32	12.95 %	0.0754		
384	10	4	100	101	141.90	61.39	12.97 %	0.0760		
384	10	5	1	2	142.41	61.46	11.80 %	0.0696		
384	10	5	50	51	142.9	61.53	11.56 %	0.0686		
384	10	5	100	101	143.40	61.59	9.37 %	0.0559		
384	10	6	1	2	143.91	61.66	11.13 %	0.0668		
384	10	6	50	51	144.4	61.73	12.04 %	0.0726		
384	10	6	100	101	144.90	61.80	10.41 %	0.0628		
384	11	1	50	51	146.2	61.97	9.88 %	0.0596		
384	11	1	100	101	146.70	62.04	9.04 %	0.0535		
384	11	2	1	2	147.21	62.11	9.56 %	0.0556		

Site/ Hole	Core	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Revised age (Ma)	wt% SiO ₂	bioSiO ₂ flux (g/ cm ² /kyr)	Norm. δ ¹³ C (‰ VPDB mean)	Norm. δ ¹⁸ O (‰ VPDB mean)
384	11	2	50	51	147.7	62.17	11.23 %	0.0642		
384	11	2	100	101	148.20	62.24	13.18 %	0.0989		
384	11	3	10	11	148.80	62.31	12.19 %	0.1002		
384	11	3	50	51	149.2	62.35	11.27 %	0.0981		
384	11	3	100	101	149.70	62.41	9.53 %	0.0843		
384	11	4	1	2	150.21	62.46	10.93 %	0.0585		
384	11	4	50	51	150.7	62.52	10.69 %	0.0575		
384	11	4	100	101	151.20	62.60	10.64 %	0.0694		
700B	25	1	38	39	228.88	55.38	5.71 %	0.1389	2.4534	-0.5405
700B	26	1	36	37	238.36	56.29	3.51 %	0.0730	3.0325	-0.3440
700B	26	1	46	47	238.46	56.29	5.32 %	0.1106	3.0187	-0.5340
700B	26	1	49	50	238.49	56.30	4.18 %	0.0868	3.0995	-0.4626
700B	26	1	50	51	238.5	56.30	6.87 %	0.1426	3.12	-0.4800
700B	26	2	50	51	240	56.44	4.87 %	0.0985	3.2	-0.6400
700B	26	2	100	101	240.5	56.49	5.92 %	0.1185	3.2961	-0.4891
700B	26	3	40	41	241.4	56.57	7.36 %	0.1488	3.4	-0.3400
700B	27	1	60	61	248.1	57.21	8.22 %	0.1799	3.3600	-0.2600
700B	27	2	20	21	249.2	57.32	4.85 %	0.1048	3.4371	-0.1975
700B	28	1	1	2	257.01	58.06	6.82 %	0.1246	4.1172	-0.0229
700B	28	1	50	51	257.5	58.10	6.39 %	0.1154	4.1	-0.4200
700B	28	1	100	101	258	58.15	5.10 %	0.0911	4.1800	-0.1300
700B	28	1	130	131	258.3	58.18	8.57 %	0.1534	4.4	-0.2500
700B	28	2	1	2	258.51	58.20	4.29 %	0.0783	3.9900	-0.4100
700B	28	2	50	51	259	58.25	3.36 %	0.0642	4.1702	-0.1171
700B	28	2	100	101	259.5	58.29	3.26 %	0.0649	3.0000	-0.5500
700B	28	3	1	2	260.01	58.34	6.19 %	0.0852	4.1	-0.1600
700B	28	3	50	51	260.5	58.39	11.74 %	0.1054	3.6141	-0.2153
700B	28	3	100	101	261	58.44	7.61 %	0.0731	3.4	-0.3000
700B	28	4	1	2	261.51	58.49	9.04 %	0.0927	3.6700	-0.0300
700B	28	4	50	51	262	58.53	9.42 %	0.1024	3.4181	0.0972
700B	28	4	100	101	262.5	58.58	11.41 %	0.1311	3.5700	-0.1100
700B	28	4	145	146	262.95	58.62	6.63 %	0.0801	3.6100	-0.1200
700B	29	1	50	51	267	59.01	6.60 %	0.1135	3.4111	-0.1389
700B	29	2	30	31	268.3	59.14	5.25 %	0.0891	3.4300	-0.0500
700B	29	2	100	101	269	59.21	5.94 %	0.1013	3.1	-0.0200
700B	30	1	11	12	276.11	59.92	7.65 %	0.1280	3.0201	-0.1191

Site/ Hole	Core	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Revised age (Ma)	wt% SiO ₂	bioSiO ₂ flux (g/ cm ² /kyr)	Norm. δ ¹³ C (‰ VPDB mean)	Norm. δ ¹⁸ O (‰ VPDB mean)
700B	30	1	68	69	276.68	59.98	8.44 %	0.1410	2.9500	-0.1400
700B	30	1	79	80	276.79	59.99	9.14 %	0.1521	2.9300	-0.3500
700B	30	1	100	101	277	60.01	7.30 %	0.1215	3.1221	0.0456
700B	30	1	111	112	277.11	60.02	8.91 %	0.1482	3.0327	-0.1074
700B	30	1	121	122	277.21	60.03	9.01 %	0.1498	3.0925	0.0255
700B	30	1	135	136	277.35	60.05	7.16 %	0.1190	3.1311	0.0873
700B	30	1	145	146	277.45	60.06	7.47 %	0.1242	3.0437	0.0781
700B	30	2	5	6	277.55	60.07	9.32 %	0.1549	3.0847	0.0652
700B	30	2	25	26	277.75	60.09	9.26 %	0.1537	3.0481	0.0238
700B	30	2	69	70	278.19	60.13	5.63 %	0.0934	2.9505	-0.4100
700B	30	2	120	121	278.7	60.18	7.89 %	0.1304	3.0645	-0.1491
700B	30	2	140	141	278.9	60.20	8.83 %	0.1453	3.0261	-0.0953
700B	30	3	5	6	279.05	60.22	7.83 %	0.1285	3.7	-0.3187
700B	30	3	26	27	279.26	60.24	6.62 %	0.1082	2.9837	-0.3951
700B	30	3	43	44	279.43	60.26	9.16 %	0.1491	3.0311	-0.3473
700B	30	3	65	66	279.65	60.28	7.73 %	0.1253	3.0237	-0.2731
700B	30	3	83	84	279.83	60.30	9.07 %	0.1466	3.1225	-0.2831
700B	30	3	95	96	279.95	60.31	10.19 %	0.1642	3.1321	-0.1274
700B	30	3	105	106	280.05	60.32	12.21 %	0.1967	3.0747	-0.1451
700B	30	3	115	116	280.15	60.33	8.62 %	0.1399	3.0457	-0.1520
700B	30	3	139	140	280.39	60.35	10.78 %	0.1776	3.0441	-0.1320
700B	30	4	50	51	281	60.41	10.80 %	0.1850	3.0725	-0.3733
700B	30	5	50	51	282.5	60.56	8.01 %	0.1338	2.8437	-0.6818
700B	30	6	50	51	284	60.72	6.07 %	0.0999	2.8480	-0.6390
700B	31	1	1	2	285.51	60.87	5.46 %	0.0931	3.0327	-0.2691
700B	31	1	50	51	286	60.92	8.08 %	0.1391	2.8580	-0.2262
700B	31	1	100	101	286.5	60.97	8.44 %	0.1486	3.0031	-0.2897
700B	31	1	145	146	286.95	61.02	5.72 %	0.1035	2.9414	-0.4234
700B	31	2	1	2	287.01	61.02	6.83 %	0.1241	2.9337	-0.5211
700B	31	2	50	51	287.5	61.07	7.02 %	0.1313	2.9701	-0.3245
700B	31	2	100	101	288	61.12	8.02 %	0.1543	2.9044	-0.5930
700B	31	2	145	146	288.45	61.17	8.01 %	0.1498	2.9924	-0.4899
700B	31	3	1	2	288.51	61.17	5.58 %	0.1040	2.9100	-0.4498
700B	31	3	19	20	288.69	61.19	8.79 %	0.1615	2.8564	-0.4745
700B	31	3	70	71	289.2	61.24	9.29 %	0.1641	2.8214	-0.5271
700B	31	3	100	101	289.5	61.27	7.31 %	0.1262	2.9330	-0.3493

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700B	31	4	1	2	290.01	61.32	8.92 %	0.1516	2.7527	-0.6739
700B	31	4	50	51	290.5	61.37	11.10 %	0.1860	2.6954	-0.2771
700B	31	4	100	101	291	61.42	11.48 %	0.1903	2.5400	-0.2858
700B	31	5	1	2	291.51	61.47	11.84 %	0.1957	2.2400	-0.7300
700B	31	5	50	51	292	61.52	10.28 %	0.1697	2.2800	-0.6700
700B	31	5	100	101	292.5	61.57	11.99 %	0.1974	2.2379	-0.7504
700B	31	6	1	2	293.01	61.62	11.29 %	0.1981	2.3600	-0.6300
700B	31	6	33	34	293.33	61.66	12.79 %	0.2313	2.4500	-1.1200
700B	31	6	63,5	64,5	293.635	61.69	8.50 %	0.1581	2.4570	-0.7808
700B	31	6	100	101	294	61.72	8.66 %	0.1665	2.2900	-0.7500
700B	31	6	145	146	294.45	61.77	14.36 %	0.2642	2.2200	-0.7900
700B	31	7	20	21	294.7	61.79	9.70 %	0.1741	2.2149	-0.6925
700B	31	7	50	51	295	61.82	8.45 %	0.1496	2.9	-0.9600
700B	31	8	13	14	295.26	61.85	10.59 %	0.1867	2.2300	-1.2200
700B	32	1	50	51	295.5	61.87	8.27 %	0.1451	2.1469	-0.8423
700B	32	2	50	51	297	62.02	6.75 %	0.1226	2.2900	-0.5700
700B	32	3	50	51	298.5	62.17	9.86 %	0.1816	2.2200	-0.8300
700B	32	4	50	51	300	62.32	9.89 %	0.1792	2.6020	-0.5120
700B	32	5	50	51	301.5	62.47	8.75 %	0.1677	2.3500	-0.4400
700B	32	6	50	51	303	62.62	3.92 %	0.1917	2.6400	-0.3100
700B	33	1	1	2	304.51	62.77	5.30 %	0.0998	3.0081	-0.3612
700B	33	1	50	51	305	62.82	3.73 %	0.1630	2.5700	-0.4286
700B	33	1	100	101	305.5	62.86	5.85 %	0.1080	2.6690	-0.8076
700B	34	1	75	76	314.75	63.78	9.78 %	0.0695	2.1909	-1.5646
700B	34	1	119	120	315.19	63.83	9.10 %	0.1686	2.12	-1.5700
700B	34	2	19	20	315.69	63.88	8.22 %	0.1595	1.9300	-1.5300
700B	34	2	100	101	316.5	63.96	8.39 %	0.1737	2.4270	-0.9812
700B	34	3	15	16	317.15	64.02	7.53 %	0.1586	2.3400	-1.2300
700B	34	3	100	101	318	64.11	7.00 %	0.1508	2.4700	-1.1800
752A	14	3	63	65	126.24	51.02	6.04 %	0.0966	0.5327	-0.9846
752A	15	1	121	122	133.51	51.60	12.36 %	0.1978	0.5200	-1.0400
752A	15	4	62	64	137.43	51.92	6.27 %	0.1079	0.9077	-0.8417
752A	16	2	120	121	144.7	52.50	15.67 %	0.2567	0.2700	-1.2400
752A	16	5	25	27	149.76	52.90	3.95 %	0.0673	0.9577	-0.8953
752A	17	2	120	122	154.41	53.28	6.89 %	0.1161	1.1108	-0.9776
752A	18	2	10	12	163.01	53.97	5.29 %	0.0861	1.3265	-0.9041

Site/ Hole	Core	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Revised age (Ma)	wt% SiO ₂	bioSiO ₂ flux (g/ cm ² /kyr)	Norm. δ ¹³ C (‰ VPDB mean)	Norm. δ ¹⁸ O (‰ VPDB mean)
752A	19	1	120	122	172.26	54.71	11.62 %	0.1745	1.5679	-0.8582
752A	19	2	62	64	173.23	54.79	14.92 %	0.2167	1.5363	-0.9755
752A	19	cc	28	29	177.08	55.10	14.45 %	0.1993	2.0593	-0.8936
752A	20	1	30	31	181	55.41	6.43 %	0.1083	2.2477	-0.7935
752A	20	1	61	62	181.31	55.43	8.51 %	0.1437	2.1531	-1.0255
752A	20	1	81	82	181.51	55.45	5.38 %	0.0910	2.4224	-0.9742
752A	20	1	101	102	181.71	55.47	4.37 %	0.0740	2.4043	-0.9334
752A	20	1	121	122	181.91	55.48	13.01 %	0.2206	2.6436	-0.6927
752A	20	cc	17	18	182.37	55.52	4.54 %	0.0771	3.0663	-0.8797
752A	21	1	101	102	191.41	56.26	5.51 %	0.0965	2.5491	-0.7511
752A	21	2	100	102	192.91	56.38	4.22 %	0.0641	2.9040	-0.9951
752A	22	2	119	120	202.79	57.18	3.27 %	0.0636	3.2721	-0.7788
752A	22	4	16	17	204.76	57.34	6.77 %	0.1307	3.5900	-0.6500
752A	23	1	118	120	210.99	57.84	5.13 %	0.0954	3.3935	-0.2706
752A	23	cc	10	11	211.7	57.90	7.62 %	0.1412	3.6504	-0.7181
752A	24	1	15	16	219.65	58.55	15.44 %	0.3336	3.3025	-0.5807
752A	24	1	47	48	219.97	58.57	13.81 %	0.2848	3.3255	-0.6397
752A	24	1	60	61	220.10	58.58	15.51 %	0.3076	3.3305	-0.6442
752A	24	1	80	81	220.30	58.60	18.12 %	0.3369	3.3175	-0.7116
752A	24	1	99	101	220.49	58.61	21.66 %	0.5233	3.2202	-0.9525
752A	24	2	97	99	221.98	58.70	10.12 %	0.1655	3.2005	-0.8480
752A	25	2	54	56	226.15	58.94	9.00 %	0.1548	3.1867	-0.7285
752A	25	1	122	123	230.32	59.18	8.97 %	0.1895	3.2692	-0.7474
752A	26	2	124	125	241.54	59.75	16.50 %	0.3476	2.6517	-0.8240
752A	26	5	120	121	246	59.97	19.48 %	0.4218	2.5926	-0.6815
752A	27	1	129	130	249.69	60.16	14.30 %	0.3382	2.7080	-0.8876
752A	27	3	128	130	252.68	60.31	16.78 %	0.4265	2.6412	-0.6114
752A	28	2	116	117	260.76	60.72	10.84 %	0.2817	2.7093	-0.9615
752A	28	5	117	118	265.27	60.94	11.45 %	0.3080	2.9325	-0.6795
752A	29	3	61	63	271.32	61.25	9.68 %	0.2452	2.8500	-0.8036
752A	33	3	115	116	302.55	62.83	5.73 %	0.3482	2.0816	-1.0539
752A	33	4	20	21	303.10	62.86	9.72 %	0.5973	2.1043	-0.9561
752A	33	4	50	51	303.40	62.88	7.91 %	0.4887	2.1626	-1.0926
752A	33	4	54	55	303.44	62.88	8.81 %	0.5448	2.1673	-1.1040
752A	33	CC	8	9	303.72	62.89	6.00 %	0.3734	2.2064	-0.9621
752A	33	CC	10	11	303.74	62.89	7.42 %	0.4617	2.2174	-1.0196

Site/ Hole	Core	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Revised age (Ma)	wt% SiO ₂	^{bio} SiO ₂ flux (g/ cm ² /kyr)	Norm. δ ¹³ C (‰ VPDB mean)	Norm. δ ¹⁸ O (‰ VPDB mean)
1121B	6	1	85	86	33.55	57.36	14.10 %	0.1615	3.2645	0.6108
1121B	6	2	70	71	34.9	57.42	24.60 %	0.2744		
1121B	7	1	100	101	43.3	57.77	33.65 %	0.2850	3.2497	0.3778
1121B	7	3	116	117	46.46	57.90	26.69 %	0.2611	3.3478	0.4800
1121B	7	5	120	121	49.5	58.03	19.28 %	0.2180	3.1337	0.3927
1121B	8	1	86	87	52.86	58.16	22.86 %	0.2488	3.0495	0.3644
1121B	8	3	116	117	56.16	58.30	30.78 %	0.2676	3.0485	0.4074
1121B	8	5	94	95	58.94	58.42	50.19 %	0.4092		
1121B	9	1	66	67	62.26	58.55	30.29 %	0.3359	3.2700	0.4510
1121B	9	3	91	93	65.51	58.68	29.13 %	0.2749	3.2207	0.4075
1121B	9	5	83	84	68.43	58.80	33.87 %	0.3356	2.9497	0.4036
1121B	10	1	107	108	72.27	58.96	36.42 %	0.3420	3.3188	0.3877
1121B	10	2	110	111	73.8	59.02	28.49 %	0.2433	3.3308	0.5633
1121B	10	3	115	116	74.35	59.05	43.34 %	0.3881		
1121B	10	4	50	51	75.99	59.11	24.81 %	0.2283	2.9205	0.6049
1121B	11	1	135	136	82.25	59.39	29.08 %	0.1795	3.2535	0.2775
1121B	11	1	145	146	82.35	59.39	32.33 %	0.2007	3.2595	0.2259
1121B	11	2	21	22	82.61	59.41	31.67 %	0.1853	3.2497	0.2210
1121B	11	2	52	53	82.92	59.43	29.79 %	0.1656	3.1885	0.1693
1121B	11	2	80	81	83.2	59.45	31.38 %	0.1807		
1121B	11	2	110	111	83.5	59.47	29.57 %	0.1711	3.1615	0.3697
1121B	11	2	140	141	83.8	59.49	30.93 %	0.1863	3.2715	0.3549
1121B	11	3	11	12	84.01	59.51	31.65 %	0.1995	3.2355	0.4114
1121B	11	3	35	36	84.25	59.52	33.02 %	0.2066	3.2595	0.4372
1121B	11	3	59	60	84.49	59.54	36.43 %	0.2176	3.2325	0.3886
1121B	11	3	83	84	84.73	59.56	37.86 %	0.2234	3.2275	0.3648
1121B	11	3	110	111	85.0	59.57	29.77 %	0.1751	3.1805	0.3455
1121B	11	3	140	141	85.3	59.60	32.41 %	0.1884	3.2605	0.2874
1121B	11	4	18	19	85.58	59.61	33.21 %	0.1952	3.2435	0.2328
1121B	11	4	55	56	85.95	59.64	27.39 %	0.1715	3.2017	0.1803
1121B	11	4	90	91	86.3	59.66	29.85 %	0.1886	3.2005	0.0969
1121B	11	4	94	95	86.34	59.67	31.73 %	0.2011	3.2215	0.3539
1121B	11	4	110	111	86.5	59.68	32.01 %	0.2003	3.2938	0.2825
1121B	11	4	125	126	86.65	59.69	32.38 %	0.2068	3.2327	0.0950
1121B	11	4	140	141	86.8	59.70	31.37 %	0.2022	3.2275	0.2503
1121B	11	5	5	6	86.95	59.71	27.82 %	0.1804	3.2217	0.2984

Site/ Hole	Core	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Revised age (Ma)	wt% SiO ₂	bioSiO ₂ flux (g/ cm ² /kyr)	Norm. δ ¹³ C (‰ VPDB mean)	Norm. δ ¹⁸ O (‰ VPDB mean)
1121B	11	5	10	11	87	59.71	30.95 %	0.2012	3.2817	0.3014
1121B	11	5	10	11	87.0	59.71	23.96 %	0.1557	3.1997	0.2865
1121B	11	5	15	16	87.05	59.72	39.66 %	0.2583	3.2848	0.2528
1121B	11	5	20	21	87.1	59.72	27.85 %	0.1818	3.2797	0.2805
1121B	12	1	10	11	90.51	59.96	38.57 %	0.2871	2.9667	0.1913
1121B	12	1	100	101	91.5	60.03	29.49 %	0.2273	3.0275	0.1991
1121B	12	2	100	101	93.0	60.13	37.30 %	0.3025	2.9045	0.0195
1121B	12	3	40	41	93.9	60.20	9.79 %	0.0818	2.9057	0.1863
1121B	13	CC	10	11	100.2	60.64	9.15 %	0.0919	2.8544	0.2830
1121B	13	CC	20	22	100.3	60.65	19.82 %	0.1997	2.8507	0.2627
1121B	14	CC	8	10	109.78	61.32	28.13 %	0.3550	2.8067	0.2051
1121B	14	CC	10	11	109.8	61.32	32.37 %	0.4087	2.8464	0.1118
1121B	14	CC	11	13	109.81	61.32	31.38 %	0.3962	2.6477	0.0553
1121B	14	CC	30	32	110	61.33	46.23 %	0.5862	2.6624	0.3906
1121B	14	CC	43	45	110.13	61.34	40.28 %	0.5121	2.6364	0.4184
1121B	15	1	100	101	120.4	62.06	29.91 %	0.4628	2.8444	-0.1412

Table S2. Microfossil content pre-, mid- and post-silica extraction for 10 selected samples.

Site/ Hole	Sample	Pre-silica extraction content	Mid-silica extraction content	Post-silica extraction content
208	21-208-30R-5 -101_102	Dominance of diatoms with <i>S. turris</i> complex, Hemiauloids and pennates. Numerous sponge spicules, common radiolarians and few silicoflagellates	/	/
208	21-208-30R-6 -15_16	Dominance of radiolarians. Diatoms are mainly <i>S. turris</i> complex, Hemiauloids, pennates and tripolar forms. Few sponge spicules and rare silicoflagellates	/	/
384	43-384-11R-2 -100_101	Numerous fragments of radiolarians and silicoflagellates. Few sponge spicules	/	/
384	43-384-8R-5- 100_101	Dominance of radiolarians, silicoflagellates and sponge spicules. Few diatoms	/	/
700B	114-700B-32 R-3-50_51	Dominance of radiolarian fragments	/	/
700B	114-700B-29 R-1-50_51	Few diatoms, radiolarians and silicoflagellates	/	/
752A	121-752A-24 X-1-99_100	Dominance of diatoms with centric and tripolar forms. Few sponge spicules, radiolarians and silicoflagellates	/	/
752A	121-752A-25 X-1-122_123	Dominance of radiolarians. Large specimens of radiolarians and diatoms. Rare sponge spicules	/	/
1121B	181-1121B-10 R-3-115_116	Dominance of sponge spicules and diatoms. Few radiolarians and silicoflagellates	/	/

1121B 181-1121B-11 Dominance of diatoms with centric and tripolar forms. Abundant /
R-1-135_136 sponge spicules and numerous radiolarians /

Table S3. Cross-correlation of bioSiO_2 flux ($\text{g/cm}^2/\text{kyr}$) records between 57 and 60 Ma.

Site/Hole 1	Site/Hole 2	Pearson coefficient	Best lag	Best lag (in Ma)	Value (best lag)	95% confidence limit
384	700B	-0.270	-10	-0.1	-0.465	0.119
384	752A	0.028	-13	-0.13	-0.175	0.119
384	1050A	0.179	-5	-0.05	0.231	0.119
384	1051A	0.304	21	0.21	0.498	0.119
384	1121B	0.424	16	0.16	0.620	0.122
700B	752A	-0.078	-18	-0.18	-0.163	0.118
700B	1050A	-0.171	-16	-0.16	-0.422	0.118
700B	1051A	-0.327	21	0.21	-0.378	0.118
700B	1121B	-0.352	-13	-0.13	-0.520	0.122
752A	1050A	0.052	-21	-0.21	0.243	0.117
752A	1051A	0.085	-21	-0.21	0.211	0.117
752A	1121B	-0.127	21	0.21	-0.336	0.122
1050A	1051A	-0.292	-21	-0.21	-0.412	0.115
1050A	1121B	0.079	21	0.21	0.468	0.122
1051A	1121B	0.641	-13	-0.13	0.817	0.122

Table S4. Cross-correlation of bioSiO_2 flux ($\text{g/cm}^2/\text{kyr}$) records between 62 and 63 Ma.

Site/Hole 1	Site/Hole 2	Pearson coefficient	Best lag	Best lag (in Ma)	Value (best lag)	95% confidence limit
208	384	0.550	4	0.04	0.736	0.272
208	700B	-0.441	0	0	-0.441	0.222
208	1050C	-0.937	0	0	-0.937	0.409
208	1051A	-0.348	1	0.01	-0.349	0.210
384	700B	0.514	4	0.04	0.594	0.260
384	1050C	-0.159	8	0.08	0.645	0.377
384	1051A	0.217	-14	-0.14	-0.612	0.260
700B	1050C	0.444	-11	-0.11	-0.636	0.377
700B	1051A	0.446	6	0.06	0.710	0.214
1050C	1051A	0.433	6	0.06	-0.480	0.377

Table S5. Cross-correlation between bioSiO_2 flux and $\%\text{CaCO}_3$ at each site between 57 and 60 Ma.

Site/Hole	Pearson coefficient	Best lag	Best lag (in Ma)	Value (best lag)	95% confidence limit
384	0.462	3	0.03	0.468	0.119
700B	-0.086	-13	-0.13	0.547	0.193
752A	-0.646	-6	-0.06	-0.661	0.120
1050A	-0.712	-6	-0.06	-0.802	0.115
1051A	0.047	21	0.21	0.324	0.117
1121B	-0.297	20	0.2	0.373	0.133