The oxic degradation of sedimentary organic matter 1.4 Ga constrains atmospheric oxygen levels

Supplementary Information

Table S1. Geochemical data and sediment description for outcrop samples.

Depth	Sediment	Org-C	$\delta^{13}C$	Al	Fe	Fe/Al	V	V/Al	Mo	Mo/Al	U	U/Al	HI
m		wt%	‰	wt%	wt%		ppm		ppm		ppm		mg/gTOC
0	black	1.14	-34.1	5.77	5.39	0.93	80	13.9	1.54	0.27	2.6	0.45	138
3.60	green	0.27	-31.7	5.57	3.54	0.64	60	10.8	0.62	0.11	2.0	0.37	111
4.60	gray	0.20	-32.9	6.76	2.95	0.44	74	10.9	0.67	0.10	2.8	0.41	100
6.10	black	2.25		6.90	3.26	0.47	112	16.2	2.2	0.32	3.0	0.43	318
7.60	black	3.32	-33.4	6.95	3.31	0.48	163	23.4	5.28	0.76	4.0	0.58	373
9.10	black	2.65		6.73	3.42	0.51	203	30.2	4.63	0.69	3.8	0.56	353
10.10	gray	2.21	-33.4	6.72	3.27	0.49	126	18.8	3.32	0.49	3.1	0.46	313
11.10	gray	0.09	-33.3	7.80	2.03	0.26	86	11.0	1.06	0.14	2.9	0.38	67
12.10	black	3.37	-32.8	7.57	3.22	0.43	221	29.2	5.48	0.72	4.7	0.63	353
14.10	gray	0.94		4.54	1.95	0.43	44	9.8	1.21	0.27	2.0	0.44	220
14.60	black	3.86	-33.0	9.06	2.28	0.25	239	26.4	3.25	0.36	4.9	0.54	338
15.60	gray	0.23	-32.7	10.10	2.22	0.22	132	13.1	0.83	0.08	4.0	0.40	43
15.80	gray	0.20		10.09	2.57	0.25	109	10.8	0.91	0.09	3.6	0.36	55
17.10	gray	0.26	-32.3	9.49	2.07	0.22	114	12.0	1.29	0.14	4.4	0.46	62
18.60	gray	0.24		9.20	2.95	0.32	89	9.7	1.88	0.20	3.6	0.39	71
20.10	gray	0.18		9.54	2.73	0.29	112	11.7	1.33	0.14	3.4	0.36	72
21.60	black	3.92	-32.4	8.18	4.20	0.51	245	29.9	7.22	0.88	5.0	0.61	319
22.50	gray	0.30	-32.2	9.35	2.62	0.28	106	11.3	1.46	0.16	3.9	0.41	93
22.60	gray	0.15	-31.6	9.07	2.62	0.29	103	11.4	1.83	0.20	3.8	0.42	80
26.10	black	3.53		7.64	4.53	0.59	223	29.2	5.34	0.70	4.6	0.60	310
26.60	gray	0.40	-32.0	8.60	2.73	0.32	108	12.6	2.22	0.26	4.1	0.47	113

27.60	black	3.64	-32.7	8.27	3.64	0.44	200	24.2	4.48	0.54	5.6	0.68	336
28.40	gray	0.43		8.65	2.50	0.29	119	13.7	1.94	0.22	4.6	0.53	128
28.50	black	3.91	-32.2	7.76	4.18	0.54	259	33.4	7.72	0.99	6.6	0.85	287
29.00	gray	0.24		8.78	1.90	0.22	105	12.0	1.03	0.12	3.7	0.42	104
29.10	black	3.28		8.15	3.85	0.47	271	33.2	7.04	0.86	6.3	0.78	241
29.50	gray	0.30		9.09	2.15	0.24	112	12.3	1.55	0.17	4.4	0.48	107
29.60	black	2.41		7.81	3.56	0.46	132	16.9	4.36	0.56	5.3	0.67	256
30.10	gray	0.19	-32.8	9.29	1.72	0.19	100	10.8	0.62	0.07	3.4	0.37	89
31.10	black	2.84		8.07	4.19	0.52	169	20.9	4	0.50	5.9	0.72	205
34.10	black	3.02		7.96	3.70	0.47	148	18.6	3.91	0.49	4.3	0.54	343
35.60	gray	0.35	-32.5	8.36	1.49	0.18	110	13.2	1.07	0.13	3.2	0.39	120
36.60	gray	0.53		8.34	1.63	0.20	114	13.7	1.29	0.15	3.4	0.40	160
37.60	black	3.42	-33.0	7.93	2.08	0.26	216	27.2	5.5	0.69	5.2	0.66	430
39.00	gray	0.30	-32.7	8.71	1.84	0.21	122	14.0	0.89	0.10	4.1	0.47	127
39.10	gray	0.19	-31.7	8.37	1.72	0.20	77	9.2	0.66	0.08	3.1	0.37	100
40.60	gray	0.15		8.11	1.93	0.24	80	9.9	0.68	0.08	3.0	0.37	73
42.10	gray	0.26	-32.4	8.14	2.52	0.31	114	14.0	1.33	0.16	4.3	0.53	135
43.70	black	2.51	-33.7	6.70	4.32	0.64	197	29.4	7.93	1.18	4.8	0.71	314
43.75	gray	0.28		7.85	2.33	0.30	101	12.9	1.17	0.15	3.8	0.49	139
43.80	black	3.68	-32.9	7.39	3.71	0.50	189	25.6	5.58	0.75	3.9	0.53	390
43.90	gray	0.31	-31.9	7.55	1.82	0.24	104	13.8	1.07	0.14	4.1	0.54	145
43.94	black	3.10		7.40	2.46	0.33	176	23.8	5.21	0.70	5.3	0.72	342
43.95	gray	0.25		7.30	1.31	0.18	93	12.8	1.06	0.15	3.8	0.52	136
44.00	black	3.17		7.09	4.09	0.58	249	35.1	10	1.41	5.6	0.78	302
44.10	black	3.51	-33.3	7.03	3.21	0.46	246	35.0	7.65	1.09	6.0	0.85	403
44.40	black	3.40	-33.6	7.04	3.56	0.51	238	33.8	7.58	1.08	6.2	0.88	385
44.70	black	2.48	-33.8	6.69	3.53	0.53	178	26.6	6.75	1.01	4.7	0.70	363

Table S2. Fe speciation results from fresh core material

Depth	TOC	Al	FeT	FeCARB	FeOX	FeMAG	FePy	FePy/FeHR	FeHR/FeT	V	V/Al	method
m	wt%	wt%	wt%	wt%	wt%	wt%	wt%			ppm		
15.00	2.14	8.25	3.72	0.37	0.19	0.24	0.41	0.34	0.33	130	15.8	HCl
15.71	0.21		2.71	0.05	0.16	0.03	0.19	0.44	0.16			HCl
16.66	0.31		4.31	0.19	0.05	0.17	0.51	0.55	0.22			HCl
17.85	0.36		4.13	0.34	0.05	0.10	0.77	0.61	0.30			XRF
18.33	0.31	9.22	3.22	0.22	0.11	0.13	0.50	0.52	0.30	104	11.3	XRF
18.8	0.39		4.71	0.47	0.09	0.23	0.78	0.49	0.33			XRF
19.21	3.55	7.15	2.50	0.35	0.04	0.02	1.50	0.78	0.76	449	62.8	HHXRF
19.75	0.41		4.14	0.47	0.06	0.14	0.72	0.52	0.34			HCl
20.94	0.39		3.61	0.16	0.03	0.06	0.75	0.75	0.28			HCl
21.89	0.53		4.00	0.24	0.03	0.09	0.97	0.73	0.33			Wet
22.13	1.66	7.98	3.82	0.65	0.16	0.24	0.58	0.35	0.43	111	13.9	XRF
22.84	0.38		3.51	0.15	0.03	0.06	0.71	0.74	0.27			HCl
23.79	0.26		3.98	0.41	0.06	0.22	0.36	0.34	0.27			HCl
24.74	0.18		4.62	0.24	0.05	0.26	0.33	0.38	0.19			HCl
24.98	0.51	8.71	2.86	0.15	0.10	0.08	0.60	0.65	0.32	107	12.3	XRF
25.46	3.92	8.07	5.60	1.26	0.15	0.31	1.46	0.46	0.57	29	3.6	HHXRF
25.69	0.27		3.71	0.11	0.05	0.11	0.57	0.67	0.23			HCl
25.93	0.79	11.51	5.65	0.18	0.04	0.15	1.09	0.74	0.26	61	5.3	HHXRF
26.41	0.86	13.29	6.10	0.21	0.04	0.15	0.61	0.60	0.17	221	16.7	HHXRF
26.64	0.29		3.64	0.20	0.05	0.09	0.83	0.71	0.32			HCl
26.88	0.47	10.87	3.75	0.13	0.03	0.12	0.73	0.72	0.27	29	2.7	HHXRF
27.36	0.93	13.37	5.35	0.14	0.04	0.12	0.52	0.64	0.15	187	14.0	HHXRF
27.59	0.45		3.74	0.12	0.04	0.06	0.69	0.76	0.24			HCl
27.83	0.47	9.04	2.88	0.08	0.06	0.03	0.73	0.81	0.31	94	10.3	XRF
28.30	2.91	9.75	3.56	0.18	0.04	0.15	1.43	0.79	0.51	110	11.3	HHXRF

28.54	0.99		3.58	0.17	0.04	0.09	1.08	0.78	0.39			HCl
28.78	1.10	9.79	2.71	0.10	0.04	0.09	0.79	0.77	0.37	133	13.6	HHXRF
29.26	1.02	8.34	3.07	0.23	0.08	0.14	1.23	0.74	0.54	109	13.0	HHXRF
29.49	0.42		3.76	0.18	0.04	0.09	0.97	0.76	0.34			HCl
29.73	0.67	9.38	2.85	0.21	0.05	0.12	0.79	0.68	0.41	72	7.6	HHXRF
29.96	0.47		3.21	0.18	0.04	0.03	0.94	0.79	0.37			HCl
30.21	0.51	9.44	2.68	0.08	0.04	0.09	0.68	0.76	0.34	139	14.7	HHXRF
30.44	0.32		2.97	0.10	0.03	0.04	0.46	0.72	0.21			HCl
30.68	2.52	7.43	3.72	0.70	0.11	0.10	0.63	0.41	0.42	187	25.2	XRF
31.16	3.59	8.08	3.37	0.66	0.14	0.19	0.74	0.43	0.51	131	16.2	HHXRF
31.39	0.43		3.33	0.30	0.04	0.08	0.93	0.69	0.41			HCl
31.63	0.44	8.83	2.57	0.07	0.05	0.05	0.67	0.80	0.33	143	16.2	HHXRF
32.11	1.08	8.99	3.41	0.27	0.05	0.09	1.38	0.77	0.53	100	11.2	HHXRF
32.34	0.34		2.94	0.14	0.04	0.04	0.59	0.74	0.27			HCl
32.58	0.71	9.28	2.84	0.12	0.05	0.05	1.11	0.84	0.47	139	15.0	HHXRF
33.06	0.72	8.99	3.01	0.33	0.06	0.09	0.93	0.66	0.47	110	12.2	HHXRF
33.29	0.87		4.88	0.37	0.05	0.08	2.21	0.82	0.56			HCl
33.53	3.36	6.48	3.20	0.55	0.08	0.03	1.73	0.72	0.75	239	36.9	XRF
34.01	3.41	6.99	3.48	0.46	0.07	0.07	2.03	0.77	0.75	185	26.5	HHXRF
34.48	4.20	7.32	3.50	0.60	0.11	0.08	2.08	0.72	0.82	265	36.2	HHXRF
34.96	3.50	7.37	3.39	0.59	0.09	0.12	1.82	0.69	0.77	280	38.0	HHXRF
35.43	3.16	3.73	3.68	1.76	0.11	0.01	1.29	0.41	0.86	78	20.8	HHXRF
35.91	4.77	7.40	3.06	0.40	0.06	0.04	1.78	0.78	0.74	329	44.5	HHXRF
36.38	4.79	4.95	3.38	1.38	0.08	0.08	0.80	0.34	0.69	209	42.2	XRF
36.86	3.95	7.63	3.04	0.43	0.07	0.04	1.80	0.77	0.77	299	39.2	HHXRF
37.33	4.94	7.56	3.04	0.54	0.07	0.04	1.85	0.74	0.82	309	40.9	HHXRF
37.81	4.01	6.75	3.00	0.40	0.06	0.04	1.80	0.78	0.77	303	44.8	HHXRF
38.28	3.52	7.32	3.20	0.51	0.07	0.04	1.92	0.76	0.79	258	35.2	HHXRF
38.76	3.11	6.15	2.90	0.49	0.07	0.06	1.40	0.69	0.70	166	27.0	HHXRF

39.23	2.61	5.74	3.60	0.00	0.03	0.01	2.16	0.98	0.61	251	43.7	XRF
39.71	4.45	7.52	3.20	0.41	0.06	0.04	1.94	0.79	0.76	307	40.8	HHXRF
40.18	4.07	7.12	2.89	0.38	0.05	0.04	1.51	0.76	0.69	287	40.3	HHXRF
40.66	4.03	7.52	3.41	0.42	0.05	0.03	2.38	0.83	0.85	390	51.8	HHXRF
41.13	3.74	7.03	3.48	0.60	0.07	0.04	2.24	0.76	0.85	337	48.0	HHXRF
41.61	4.70	7.62	3.49	0.66	0.08	0.04	2.50	0.76	0.94	358	47.1	HHXRF
42.08	1.68	3.57	1.16	0.11	0.04	0.04	0.11	0.38	0.25	30	8.3	XRF
42.56	2.98	6.22	2.73	0.39	0.03	0.06	1.74	0.78	0.81	332	53.3	HHXRF
43.03	4.40	7.00	3.13	0.47	0.05	0.03	1.97	0.78	0.81	344	49.2	HHXRF
43.51	4.20	6.97	3.28	0.51	0.05	0.03	2.24	0.79	0.86	334	48.0	HHXRF
43.98	3.16	6.58	3.08	0.48	0.02	0.03	1.95	0.79	0.81	291	44.2	HHXRF
44.46	4.83	7.11	3.08	0.53	0.05	0.03	2.19	0.78	0.91	366	51.5	HHXRF
44.93	3.93	5.58	2.39	0.54	0.04	0.01	1.16	0.66	0.73	252	45.2	XRF

Table S3. Parameters used to calculate O_2 exposure time and OC burial efficiencies

site	Depth	O_2 pen.	Sed rate	OrgC	O_2 uptake rate	O_2 exposure time	Burial eff.	ref
	m	cm	cm y^{-1}	wt%	mmol O_2 cm^{-2} y^{-1}	years	%	
Cape lookout Bight	10	0.30	$5.4x10^{0}$	3.0	$2.1x10^{0}$	$5.6x10^{-2}$	83.0	(Canfield, 1989)
Aarhus Bay	16	0.60	$1.7x10^{-1}$	2.0	$6.5x10^{-1}$	$3.6x10^{0}$	25.0	(Jørgensen, 1996; Thamdrup et al., 1994)
Kattegat/Skagerrak Sta 2	25	0.25	$1.3x10^{-1}$	1.5	$6.3x10^{-1}$	$1.9x10^{0}$	16.6	(Jørgensen and Revsbech, 1989)
Young Sound, Greenland	36	1.00	$1.2x10^{-1}$	1.3	$2.4x10^{-1}$	$8.5x10^{0}$	29.6	(Rysgaard et al., 1998)
Katt/Skagerrak Sta 6	43	0.42	$2.6x10^{-1}$	1.4	$3.9x10^{-1}$	$1.6x10^{0}$	37.6	(Jørgensen and Revsbech, 1989)
Katt/Skagerrak Sta 9	65	0.55	$2.6x10^{-1}$	1.7	$4.4x10^{-1}$	$2.1x10^{0}$	39.0	(Jørgensen and Revsbech, 1989)
Katt/Skagerrak Sta 10	73	0.30	$2.6x10^{-1}$	1.8	$8.3x10^{-1}$	$1.2x10^{0}$	27.0	(Jørgensen and Revsbech, 1989)
Svalbard Sta 3	115	0.96	$3.6x10^{-1}$	1.8	$4.8x10^{-1}$	$2.6x10^{0}$	46.7	(Glud et al., 1998; Sagemann et al., 1998)
Svalbard Sta 2	155	0.55	$6.1x10^{-1}$	1.5	$6.0x10^{-1}$	$9.0x10^{-1}$	49.5	(Glud et al., 1998; Sagemann et al., 1998)
Svalbard Sta 5	175	1.10	$1.8x10^{-1}$	2.5	$3.2x10^{-1}$	$6.0x10^{0}$	47.7	(Glud et al., 1998; Sagemann et al., 1998)
Katt/Skagerrak Sta 12	200	0.32	$2.6x10^{-1}$	2.4	$5.0x10^{-1}$	$1.2x10^{0}$	44.4	(Jørgensen and Revsbech, 1989)
California slope Sta K	1000	0.50	$6.2x10^{-3}$	3.9	$4.3x10^{-2}$	$8.0x10^{1}$	26.6	(Reimers et al., 1992)
Chilean coast Sta 40	1015	0.60	$3.1x10^{-2}$	2.0	$2.1x10^{-1}$	$1.9x10^{1}$	16.0	(Thamdrup and Canfield, 1996)
Northeast Atlantic Sta B	1023	1.60	$1.6x10^{-3}$	0.3	$5.4x10^{-2}$	$1.0x10^{3}$	0.6	(Lohse et al., 1998)
California rise Sta D	1440	1.00	$1.0x10^{-3}$	1.7	$3.5x10^{-2}$	$9.6x10^{2}$	3.1	(Reimers et al., 1992)
California rise Sta L	1890	0.90	$3.0x10^{-3}$	1.2	$5.3x10^{-2}$	$3.0x10^{2}$	4.2	(Reimers et al., 1992)
San Clemente Basin	1900	0.80	$2.0\ x10^{-2}$	2.0	$4.5\ x10^{-2}$	$4.1x10^{1}$	36.0	(Bender et al., 1989)
Chilean coast Sta 41	2000	0.60	$3.5x10^{-2}$	2.2	$1.7x10^{-1}$	$1.7x10^{1}$	20.9	(Thamdrup and Canfield, 1996)
Borderland Basins-SCI	2053	0.70	$2.0x10^{-2}$	2.6	$4.0\ x10^{-2}$	$3.6x10^{1}$	45.0	(Berelson et al., 1996; Reimers, 1987)
California rise Sta H	3580	1.50	$3.6x10^{-3}$	2.0	$6.2x10^{-2}$	$4.1x10^{2}$	7.0	(Reimers et al., 1992)
Borderland Basins-PE	3707	2.00	$3.9x10^{-2}$	1.1	$1.4x10^{-2}$	$5.1x10^{2}$	17.0	(Berelson et al., 1996)
Northeast Atlantic Sta III	3719	5.50	$2.1x10^{-3}$	0.4	$5.7x10^{-2}$	$2.6x10^{3}$	0.9	(Lohse et al., 1998)
California rise Sta M	3730	1.60	$1.3\ x10^{-2}$	2.8	$6.4x10^{-2}$	$1.2x10^{2}$	26.7	(Reimers, 1987; Reimers et al., 1992)
Northeast Atlantic Sta E	4486	10.00	$2.3x10^{-3}$	0.4	$3.6x10^{-2}$	$4.3x10^{3}$	1.6	(Lohse et al., 1998)

Table S4. O_2 penetration depths, bottom water O_2 levels and sediment O_2 uptake rates for modern sediments.

site	Water depth (m)	O_2 pen. (cm)	BW O_2 (μM)	O_2 uptake mmol cm^{-2} y^{-1}	reference
Cape lookout Bight	10	0.30	250	2.050	(Chanton et al., 1987)
Western Pac sta I	4765	60.00	250	0.005	(Murray and Grundmanis, 1980)
Western Pac Sta J	5361	60.00	250	0.005	(Murray and Grundmanis, 1980)
Western Pac StaK	5469	20.00	250	0.008	(Murray and Grundmanis, 1980)
Kattegat/Skagerrak Sta3	15	0.20	250	0.800	(Jørgensen and Revsbech, 1989)
Kattegat/Skagerrak Sta 8	17	0.45	250	0.550	(Jørgensen and Revsbech, 1989)
Kattegat/Skagerrak Sta 2	25	0.25	250	0.630	(Jørgensen and Revsbech, 1989)
Kattegat/Skagerrak Sta 6	43	0.42	250	0.390	(Jørgensen and Revsbech, 1989)
Kattegat/Skagerrak Sta 9	65	0.55	250	0.440	(Jørgensen and Revsbech, 1989)
Kattegat/Skagerrak Sta 10	73	0.30	250	0.830	(Jørgensen and Revsbech, 1989)
Kattegat/Skagerrak Sta 12	200	0.32	250	0.500	(Jørgensen and Revsbech, 1989)
Central Calif slope-rise	791	0.40	250	0.037	(Reimers et al., 1992)
Skagerrak S4	190	0.70	250	0.580	(Canfield et al., 1993)
Skagerrak S9	695	1.60	250	0.400	(Canfield et al., 1993)
Chile sta 40	1015	0.60	250	0.210	(Thamdrup and Canfield, 1996)
Chile sta 41	2000	0.60	250	0.170	(Thamdrup and Canfield, 1996)
Svalbard Sta 3	115	0.96	250	0.480	(Glud et al., 1998)
Svalbard sta 4	138	0.93	250	0.440	(Glud et al., 1998)
Svalbard sta 5	175	1.10	250	0.320	(Glud et al., 1998)
Svalbard Sta 2	155	0.55	250	0.600	(Glud et al., 1998)
S. Atlantic Geob 1713	604	0.40	250	0.340	(Glud et al., 1994)
S. Atlantic Geob 1719	1015	1.20	250	0.410	(Glud et al., 1994)
S. Atlantic Geob 1703	1747	1.10	250	0.566	(Glud et al., 1994)
S. Atlantic Geob 1711	1947	2.50	250	0.110	(Glud et al., 1994)
S. Atlantic Geob 1721	3095	4.10	250	0.153	(Glud et al., 1994)
S. Atlantic Geob 1702	3107	3.50	250	0.066	(Glud et al., 1994)

Aarhus Bay	16	0.60	250	0.650	(Thamdrup et al., 1994)
Arctic ocean-19/050	170	0.50	250	0.409	(Hulth et al., 1994)
Arctic ocean-19/143	188	0.60	250	0.143	(Hulth et al., 1994)
Arctic ocean-19/134	273	3.80	250	0.117	(Hulth et al., 1994)
Arctic ocean-19/070	318	0.50	250	0.335	(Hulth et al., 1994)
Arctic ocean-19/082	326	0.80	250	0.340	(Hulth et al., 1994)
Arctic ocean-19/119	486	2.50	250	0.092	(Hulth et al., 1994)
Arctic ocean-19/101	530	3.00	250	0.104	(Hulth et al., 1994)
Arctic ocean-19/086	550	1.70	250	0.210	(Hulth et al., 1994)
Arctic ocean-19/100	867	1.70	250	0.149	(Hulth et al., 1994)
Arctic ocean-19/112	1010	3.70	250	0.067	(Hulth et al., 1994)
Arctic ocean-19/078	2010	1.70	250	0.134	(Hulth et al., 1994)
Arctic ocean-19/108	2490	6.00	250	0.110	(Hulth et al., 1994)
Arctic ocean-19/098	2577	5.00	250	0.097	(Hulth et al., 1994)
Amazon shelf RMT-1	9	0.15	250	0.440	(Aller et al., 1996)
Amazon shelf OST-1	15	0.50	250	0.400	(Aller et al., 1996)
Amazon shelf RMT-2	18	0.15	250	0.580	(Aller et al., 1996)
Amazon shelf OST-2	20	0.50	250	0.390	(Aller et al., 1996)
Amazon shelf OST-3	40	0.15	250	0.470	(Aller et al., 1996)
Amazon shelf RMT-3	44	0.45	250	0.580	(Aller et al., 1996)
Patton Escarpment, E.N. PAC	3750	3.00	250	0.065	(Reimers et al., 1986; Reimers and Suess, 1983)
Young Sound, Greenland	36	1.00	250	0.235	(Rysgaard et al., 1998)
JGOFS 02S	4300	5.00	250	0.020	(Hammond et al., 1996)
JGOFS 02N	4400	6.00	250	0.019	(Hammond et al., 1996)
JGOFS 05N	4500	10.00	250	0.011	(Hammond et al., 1996)
JGOFS 00		6.00	250	0.018	(Hammond et al., 1996)
Northeast Atlantic StaI	668	0.80	250	0.086	(Lohse et al., 1998)
Northeast Atlantic StaB	1023	1.60	250	0.054	(Lohse et al., 1998)
Northeast Atlantic StaII	1442	2.50	250	0.065	(Lohse et al., 1998)
Northeast Atlantic StaC	1989	3.50	250	0.039	(Lohse et al., 1998)

Northeast Atlantic Sta III	3719	5.50	250	0.057	(Lohse et al., 1998)
Northeast Atlantic StaE	4486	10.00	250	0.036	(Lohse et al., 1998)
Borderland Basins-PE	3707	2.00	131	0.014	(Berelson et al., 1996)
Central Calif Sta M	3730	1.60	129	0.064	(Reimers et al., 1992)
East N. Pac NH14	114	0.40	127	0.670	(Devol and Christensen, 1993)
Central Calif Sta H	3580	1.50	125	0.062	(Reimers et al., 1992)
East N. Pac NH 18	146	0.30	106	0.530	(Devol and Christensen, 1993)
Central Calif Sta F	2000	1.10	75	0.056	(Reimers et al., 1992)
Central Calif Sta L	1890	0.90	72	0.053	(Reimers et al., 1992)
San Clemente Basin	1900	0.80	58	0.045	(Bender et al., 1989)
Borderland Basins-SCI	2053	0.70	58	0.040	(Berelson et al., 1996)
Central Calif Sta E	1570	0.80	50	0.048	(Reimers et al., 1992)
Central Calif Sta D	1440	1.00	33	0.035	(Reimers et al., 1992)
Central Calif Sta C	1200	0.40	26	0.048	(Reimers et al., 1992)
Central Calif Sta K	1000	0.50	20	0.043	(Reimers et al., 1992)
Central Calif Sta A	585	0.30	17	0.050	(Reimers et al., 1992)

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