GSA Data Repository 2020009

Fujita, K., et al., 2020, Reef-flat and back-reef development in the Great Barrier Reef caused by rapid sea-level fall during the Last Glacial Maximum (30–17 ka): Geology, v. 48, https://doi.org/10.1130/G46792.1

APPENDIX

FIGURE A1. Stratigraphic changes at Holes M0031A (19.6790°S, 150.2396°E, 90.90 mbsl; A) and M0032A (19.6788°S, 150.2397°E, 90.30 mbsl; B). See the caption of Figure 2 for detail. Hole M0031A shows recurrent upward shallowing changes (core 12R–13R), likely due to sediment mixing inferred from foraminiferal ^{14}C-AMS ages.

FIGURE A2. Stratigraphic changes at Hole M0047A (19.7998°S, 150.4789°E, 99.71 mbsl). See the caption of Figure 2 for detail.

TABLE A1. DATASET RELATED TO FIGURES 2, A1 AND A2.

TABLE A2. RADIOCARBON AGES OF FORAMINIFERAL TESTS, AND SEDIMENT ACCUMULATION RATES

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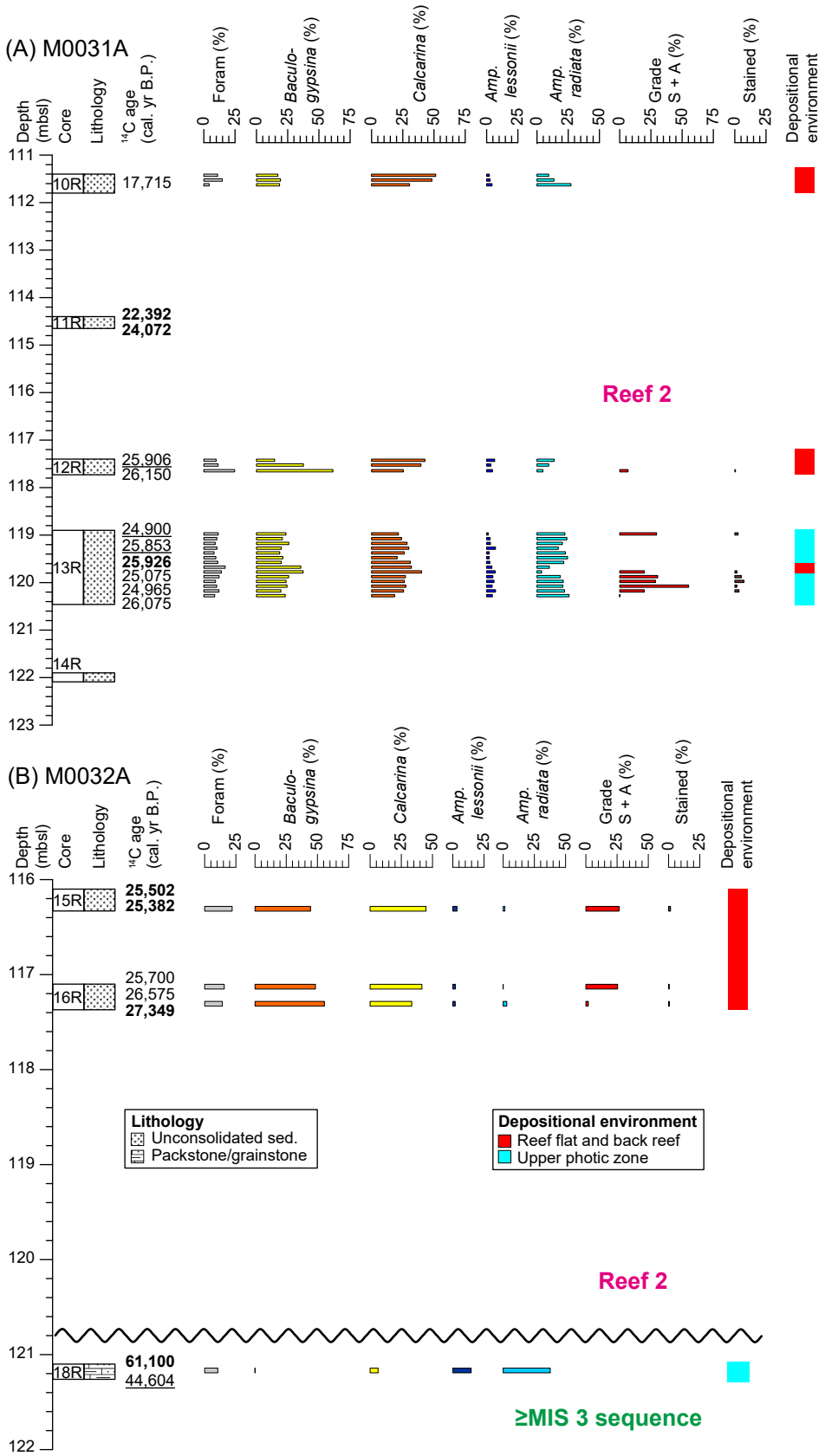
Figure A1
MS#



Fujita et al.
Figure A2
MS#46792

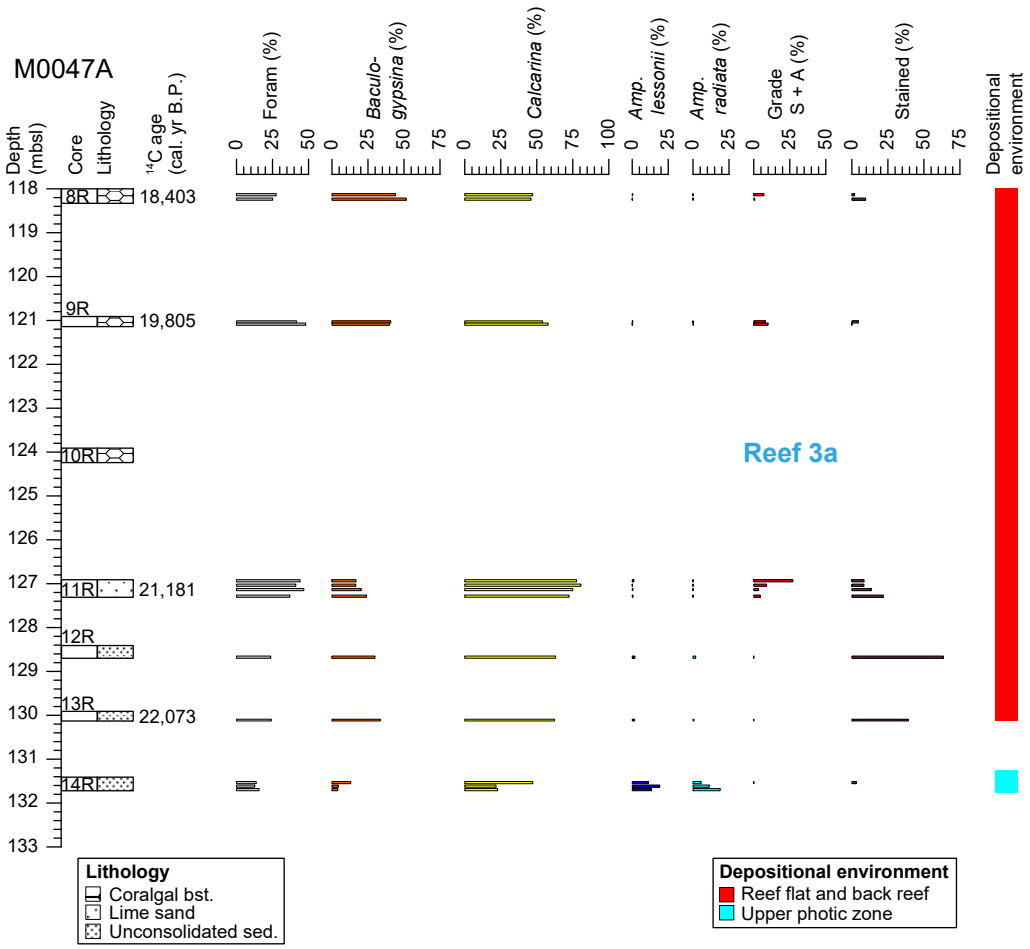


TABLE A1. DATASET RELATED TO FIGURES 2, A1 AND A2.

Hole	From (mbsl)	To (mbsl)	Sample ID	Grain size			Bioclast composition								Foraminifera				Taphonomy of *Baculogypsina sphaerulata*				
				Mud (wt%)	Sand (wt%)	Gravel (wt%)	Coral (%)	Mollusk (%)	Foraminifera (%)	Calcareous algae (%)	Echinoderm (%)	Bryozoa (%)	Lithoclast (%)	Unidentified (%)	*Baculogypsina sphaerulata* (%)	*Calcarina* spp. (%)	*Amphistegina lessonii* (%)	*Amphistegina radiata* (%)	Grade S (%)	Grade A (%)	Grade B (%)	Grade C (%)	Stained test (%)
M0031A	111.40	111.45	31_A_10_1_0.0-5.0cm	5.2	81.1	13.7	18.8	39.6	11.0	27.7	2.3	0.0	0.6	0.0	17.1	51.4	2.2	9.4	N.D.*	N.D.	N.D.	N.D.	N.D.
M0031A	111.50	111.55	31_A_10_1_10.0-15.0cm	9.0	70.2	20.8	15.7	49.1	14.8	17.9	2.6	0.0	0.0	0.0	19.2	48.4	2.8	13.6	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	111.60	111.65	31_A_10_1_20.0-25.0cm	6.6	58.7	34.7	19.1	49.8	4.2	26.2	0.8	0.0	0.0	0.0	18.5	30.4	4.3	27.2	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	117.40	117.45	31_A_12_1_0.0-5.0cm	2.5	28.5	69.0	24.8	25.3	9.8	36.1	3.6	0.2	0.2	0.0	14.5	42.7	6.5	13.7	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	117.50	117.55	31_A_12_1_10.0-15.0cm	11.9	43.8	44.2	25.1	34.9	11.5	26.0	2.4	0.1	0.0	0.0	37.6	39.6	3.4	9.4	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	117.62	117.67	31_A_12_2_4.0-9.0cm	38.9	53.3	7.8	10.6	28.3	24.7	30.7	5.7	0.0	0.0	0.0	61.2	25.4	4.7	4.7	0.0	6.7	58.7	34.6	0.6
M0031A	118.95	119.00	31_A_13_1_5.0-10.0cm	0.7	59.0	40.2	14.8	25.7	11.6	44.2	3.4	0.3	0.0	0.0	23.6	21.5	1.3	22.4	1.3	28.2	66.4	4.0	2.7
M0031A	119.05	119.10	31_A_13_1_15.0-20.0cm	0.6	43.2	56.2	16.2	20.7	10.4	48.5	4.2	0.0	0.0	0.0	20.7	24.0	2.8	24.0	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	119.15	119.20	31_A_13_1_25.0-30.0cm	0.7	24.8	74.5	19.5	24.6	9.2	41.2	5.3	0.3	0.0	0.0	25.9	28.4	3.0	20.3	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	119.25	119.30	31_A_13_1_35.0-40.0cm	1.0	36.7	62.3	16.0	21.8	10.5	47.1	4.3	0.2	0.0	0.0	19.9	29.9	7.1	17.1	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	119.35	119.40	31_A_13_1_45.0-50.0cm	0.7	30.2	69.1	17.3	27.3	8.2	42.2	4.6	0.2	0.2	0.0	18.6	26.2	2.1	22.8	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	119.45	119.50	31_A_13_1_55.0-60.0cm	0.5	24.8	74.7	21.1	20.4	9.6	43.2	5.6	0.2	0.0	0.0	21.2	20.5	2.0	24.5	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	119.55	119.60	31_A_13_1_65.0-70.0cm	0.6	22.9	76.5	14.4	26.8	11.2	43.7	3.6	0.2	0.2	0.0	19.9	31.1	2.6	21.4	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	119.65	119.70	31_A_13_1_75.0-80.0cm	0.6	15.4	84.1	13.8	25.2	17.1	40.9	2.9	0.2	0.0	0.0	35.5	31.9	4.3	9.9	N.D.	N.D.	N.D.	N.D.	N.D.
M0031A	119.75	119.80	31_A_13_1_85.0-90.0cm	1.5	61.5	37.0	8.2	35.4	14.1	39.8	1.8	0.5	0.2	0.0	37.4	40.0	6.8	3.7	2.4	17.4	79.0	1.2	1.8
M0031A	119.85	119.90	31_A_13_1_95.0-100.0cm	0.6	57.3	42.1	15.2	21.2	12.3	46.9	4.2	0.0	0.2	0.0	25.7	27.1	5.0	18.6	2.6	27.8	66.1	3.5	5.2
M0031A	119.95	120.00	31_A_13_1_105.0-110.0cm	0.9	50.4	48.7	15.1	26.6	9.4	44.2	4.5	0.0	0.2	0.0	23.7	26.3	5.9	21.1	2.8	25.9	69.4	1.9	7.4
M0031A	120.05	120.10	31_A_13_1_115.0-120.0cm	2.9	63.3	33.7	17.8	26.5	10.3	41.8	2.6	0.6	0.4	0.0	24.4	27.4	4.4	20.7	6.4	48.8	40.8	4.0	1.6
M0031A	120.15	120.20	31_A_13_1_125.0-130.0cm	0.9	58.6	40.5	16.1	28.6	12.1	38.5	4.7	0.0	0.0	0.0	19.5	25.6	7.2	22.1	3.4	16.2	78.6	1.7	3.4
M0031A	120.25	120.30	31_A_13_1_135.0-140.0cm	0.9	39.9	59.2	20.1	19.1	8.7	48.7	2.7	0.0	0.8	0.0	23.0	18.4	4.6	25.7	N.D.	N.D.	N.D.	N.D.	N.D.
M0032A	116.28	116.33	32_A_15_2_8.0-13.0cm	23.5	56.5	20.1	15.9	23.3	22.0	32.7	6.1	0.0	0.0	0.0	44.4	44.8	3.4	1.3	0.8	25.8	50.8	22.7	1.6
M0032A	117.10	117.15	32_A_16_1_0.0-5.0cm	6.3	49.7	44.0	12.1	27.4	15.7	41.4	3.2	0.0	0.0	0.2	48.4	41.5	2.1	0.0	0.6	24.9	57.8	16.8	0.6
M0032A	117.28	117.33	32_A_16_2_0.0-5.0cm	32.8	54.8	12.4	18.6	27.8	14.2	32.9	6.6	0.0	0.0	0.0	55.6	33.3	1.9	2.9	0.0	2.0	66.1	31.9	0.7
M0032A	121.14	121.19	32_A_18_cc_0.0-5.0cm	13.0	49.1	37.9	13.5	37.0	10.5	37.5	1.3	0.2	0.0	0.0	0.0	6.4	14.7	37.7	N.D.	N.D.	N.D.	N.D.	N.D.
M0032A	123.22	123.27	32_A_19_1_12.0-17.0cm	24.1	48.4	27.5	14.7	41.3	12.6	29.8	1.1	0.2	0.2	0.0	1.5	13.8	23.8	22.3	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	117.60	117.63	33_A_20_1_30.0-33.0cm	45.8	44.3	9.9	48.2	11.4	16.6	22.2	1.3	0.0	0.0	0.4	50.6	43.5	0.4	1.3	0.0	22.9	63.6	13.6	2.5
M0033A	118.80	118.85	33_A_21_1_0.0-5.0cm	14.6	42.7	42.6	46.9	15.9	17.6	18.1	0.6	0.5	0.0	0.3	12.3	44.1	15.4	4.0	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	118.90	118.95	33_A_21_1_10.0-15.0cm	22.8	37.9	39.2	66.7	8.2	9.5	13.8	1.4	0.3	0.0	0.0	23.4	44.2	10.4	5.2	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	119.00	119.05	33_A_21_1_20.0-25.0cm	29.4	49.4	21.3	60.6	14.1	12.7	11.1	1.0	0.3	0.0	0.3	11.2	48.1	18.7	4.9	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	119.10	119.15	33_A_21_1_30.0-35.0cm	19.2	48.4	32.3	70.7	5.8	13.9	8.2	1.3	0.1	0.0	0.0	5.9	40.4	24.6	16.3	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	119.20	119.25	33_A_21_1_40.0-45.0cm	39.2	42.4	18.4	61.3	10.6	10.6	15.9	1.4	0.2	0.2	0.0	0.0	34.2	25.5	21.7	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	119.30	119.35	33_A_21_1_50.0-55.0cm	40.0	44.9	15.1	52.0	12.3	11.4	23.0	1.2	0.2	0.0	0.0	3.0	38.0	23.0	14.5	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	119.40	119.45	33_A_21_1_60.0-65.0cm	44.3	41.5	14.3	53.2	13.9	15.7	14.6	1.6	0.5	0.0	0.5	3.6	42.6	23.1	13.6	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	119.52	119.57	33_A_21_2_0.0-5.0cm	42.0	45.0	13.1	69.3	9.6	7.9	12.9	0.2	0.2	0.0	0.0	1.2	41.8	15.8	18.8	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	120.40	120.45	33_A_22_1_10.0-15.0cm	36.6	46.4	16.9	29.8	16.3	21.1	31.3	0.9	0.4	0.0	0.2	0.0	35.6	22.6	14.1	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	120.50	120.55	33_A_22_1_20.0-25.0cm	28.9	38.2	32.9	34.2	19.3	16.2	27.6	1.0	1.0	0.5	0.2	0.5	30.7	23.1	14.6	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	120.60	120.65	33_A_22_1_30.0-35.0cm	35.8	50.5	13.7	52.8	19.1	11.7	15.7	0.4	0.2	0.0	0.2	0.0	30.4	24.8	14.9	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	120.70	120.75	33_A_22_1_40.0-45.0cm	36.2	53.5	10.3	23.4	23.0	26.6	25.6	0.9	0.5	0.0	0.0	0.0	46.2	14.6	12.3	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	120.80	120.85	33_A_22_1_50.0-55.0cm	34.0	55.5	10.5	29.5	15.3	43.0	11.8	0.2	0.2	0.0	0.2	0.0	28.3	22.7	12.1	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	120.90	120.95	33_A_22_1_60.0-65.0cm	38.7	50.1	11.1	38.4	23.3	19.2	17.9	1.2	0.0	0.0	0.0	0.0	14.9	22.8	22.8	N.D.	N.D.	N.D.	N.D.	N.D.
M0033A	121.00	121.05	33_A_22_1_70.0-75.0cm	43.8	43.2	13.0	71.6	14.5	4.7	9.2	0.0	0.0	0.0	0.0	0.0	16.8	23.8	30.3	N.D.	N.D.	N.D.	N.D.	N.D.
M0043A	128.64	128.69	43_A_16_1_16.0-21.0cm	30.8	38.9	30.3	46.2	11.0	33.5	7.6	0.9	0.2	0.0	0.6	41.3	52.7	0.0	0.0	0.0	19.4	70.6	10.0	0.5
M0043A	128.79	128.84	43_A_16_cc_9.0-14.0cm	45.9	47.6	6.4	73.6	4.6	16.2	4.6	0.5	0.0	0.0	0.5	33.0	62.5	0.4	0.0	0.0	2.4	64.7	32.9	2.4
M0043A	131.49	131.52	43_A_18_1_1.0-4.0cm	4.3	34.0	61.7	16.7	30.2	39.3	7.4	2.0	1.9	0.0	2.5	22.7	69.2	1.7	0.0	2.1	49.3	44.4	4.2	6.3
M0043A	131.58	131.63	43_A_18_1_10.0-15.0cm	15.3	58.3	26.4	19.2	29.7	38.1	9.8	0.5	1.5	0.0	1.2	21.5	73.7	0.9	0.0	0.0	47.2	50.7	2.1	9.7
M0043A	131.75	131.80	43_A_18_cc_5.0-10.0cm	22.5	43.8	33.7	60.2	16.3	15.6	6.0	1.3	0.5	0.0	0.2	16.3	81.3	0.5	0.5	0.0	18.9	72.0	9.1	21.2
M0043A	134.48	134.53	43_A_20_1_0.0-5.0cm	4.6	40.0	55.4	32.8	24.0	25.6	11.8	3.9	1.5	0.0	0.3	17.4	77.1	1.4	0.0	1.2	25.5	69.6	3.7	31.7
M0043A	136.05	136.10	43_A_21_1_7.0-12.0cm	34.6	48.4	17.0	22.8	17.5	21.7	33.2	1.4	2.1	0.0	1.3	0.4	58.9	9.1	3.2	N.D.	N.D.	N.D.	N.D.	N.D.
M0043A	136.11	136.16	43_A_21_cc_0.0-5.0cm	31.6	54.7	13.7	23.3	13.4	20.3	37.9	1.7	1.3	0.0	2.1	1.3	40.2	13.2	4.7	N.D.	N.D.	N.D.	N.D.	N.D.
M0043A	136.19	136.24	43_A_21_cc_8.0-13.0cm	41.9	49.0	9.1	20.1	15.2	24.9	34.6	2.1	1.2	0.0	1.9	0.4	44.5	18.0	5.9	N.D.	N.D.	N.D.	N.D.	N.D.
M0043A	139.03	139.08	43_A_23_cc_5.0-10.0cm	47.1	49.6	3.3	13.8	21.2	56.5	6.6	1.1	0.4	0.0	0.4	20.1	14.3	23.6	0.6	0.0	5.0	72.1	22.9	62.5
M0046A	138.17	138.22	46_A_13_cc_5.0-10.0cm	43.1	51.9	5.0	15.8	18.6	56.6	5.0	4.1	0.0	0.0	0.0	42.3	54.6	0.0	0.3	0.0	1.5	34.3	64.2	5.1
M0047A	118.11	118.16	47_A_8_1_20.0-25.0cm	18.1	41.2	40.8	22.9	19.9	27.6	26.2	3.5	0.0	0.0	0.0	44.1	47.1	0.4	0.0	0.0	7.1	57.5	35.4	1.8
M0047A	118.21	118.26	47_A_8_cc_3.0-8.0cm	34.0	46.4	19.6	24.5	27.9	25.1	21.4	1.0	0.2	0.0	0.0	51.5	46.0	0.0	0.0	0.0	0.7	39.5	59.9	9.5
M0047A	121.01	121.06	47_A_9_1_10.0-15.0cm	42.4	46.6	10.9	16.1	26.0	41.6	14.1	1.7	0.3	0.0	0.2	40.8	54.0	0.4	0.0	0.0	8.1	48.6	43.2	4.5
M0047A	121.06	121.11	47_A_9_cc_0.0-5.0cm	19.0	44.6	36.3	16.8	21.8	48.1	9.6	3.7	0.0	0.0	0.0	39.9	57.9	0.0	0.4	0.9	9.1	36.4	53.6	0.0
M0047A	126.91	126.96	47_A_11_1_0.0-5.0cm	24.3	48.4	27.4	8.9	30.2	44.2	14.5	1.9	0.3	0.0	0.0	16.7	77.6	1.1	0.0	1.7	25.4	66.9	5.9	8.5
M0047A	127.01	127.06	47_A_11_1_10.0-15.0cm	3.2	82.9	13.8	10.8	29.1	41.2	14.6	4.0	0.2	0.0	0.2	16.6	80.7	0.0	0.0	0.6	8.4	79.9	11.2	8.4
M0047A	127.11	127.16	47_A_11_1_20.0-25.0cm	9.2	71.2	19.6	8.1	26.6	46.7	14.5	3.0	1.2	0.0	0.0	20.2	75.0	0.5	0.0	0.0	3.4	65.8	30.9	13.4
M0047A	127.26	127.31	47_A_11_cc_7.0-12.0cm	21.4	67.7	10.9	15.4	28.1	37.0	15.0	4.4	0.0	0.0	0.0	23.9	72.4	0.6	0.0	0.0	4.5	57.9	37.6	21.8
M0047A	128.65	128.70	47_A_12_cc_10.0-15.0cm	23.1	56.4	20.5	28.9	32.5	23.7	11.4	3.1	0.2	0.0	0.2	29.9	63.0	1.9	1.9	0.0	0.0	66.2	33.8	63.5
M0047A	130.09	130.13	47_A_13_cc_5.0-9.0cm	28.9	53.9	17.2	27.7	27.7	24.2	17.4	2.9	0.0	0.0	0.2	33.7	62.3	1.7	0.7	0.0	0.0	73.5	26.5	39.2
M0047A	131.51	131.56	47_A_14_1_10.0-15.0cm	30.5	52.0	17.5	23.9	25.5	13.7	33.6	3.0	0.3	0.0	0.0	13.0	47.2	11.2	5.6	N.D.	N.D.	N.D.	N.D.	3.0
M0047A	131.59	131.64	47_A_14_cc_0.0-5.0cm	13.8	49.4	36.9	13.0	25.2	12.7	45.8	3.1	0.2	0.0	0.0	4.3	21.7	19.1	11.3	N.D.	N.D.	N.D.	N.D.	N.D.
M0047A	131.67	131.72	47_A_14_cc_8.0-13.0cm	25.9	63.2	10.9	29.9	18.8	15.6	32.2	3.4	0.0	0.0	0.0	4.0	22.8	13.4	18.8	N.D.	N.D.	N.D.	N.D.	N.D.

*N.D. = not determined

TABLE A2. RADIOCARBON AGES OF FORAMINIFERAL TESTS, AND SEDIMENT ACCUMULATION RATES

Sample ID	Foraminiferal genus	Top depth (mbsl)	Lab code	^{14}C age (yr BP)	$\delta^{13}C$ (‰)	Calibrated ^{14}C age Mean ± 2σ (Cal yr BP)	Sediment accumulation rate[#] (mm yr^{-1})
31_A_06_1_0.0-5.0cm	*Calcarina*	99.50	YAUT-005117	12118 ± 57	-2.11 ± 3.72	13557 ± 163	2.86
31_A_10_1_0.0-5.0cm	*Calcarina*	111.40	YAUT-029528	14940 ± 52	-1.65 ± 2.26	17715 ± 195	0.74
31_A_12_2_4.0-9.0cm	*Baculogypsina*	117.62	YAUT-029529	22347 ± 73	-5.63 ± 1.06	26150 ± 220	N.D.[†]
31_A_13_1_85.0-90.0cm	*Calcarina*	119.75	YAUT-029531	21207 ± 64	-2.85 ± 0.98	25075 ± 325	0.30
31_A_13_1_115.0-120.0cm	*Baculogypsina*	120.05	YAUT-005118	22277 ± 87	-2.80 ± 3.68	26075 ± 210	N.D.
31_A_13_1_115.0-120.0cm	*Calcarina*	120.05	YAUT-005122	21137 ± 83	-1.12 ± 3.89	24965 ± 348	N.D.
32_A_16_1_0.0-5.0cm	*Baculogypsina*	117.10	YAUT-029532	21782 ± 75	2.98 ± 2.05	25700 ± 180	N.D.
32_A_16_1_0.0-5.0cm	*Calcarina*	117.10	YAUT-029537	22711 ± 74	6.49 ± 1.93	26575 ± 375	N.D.
33_A_20_1_30.0-33.0cm	*Baculogypsina*	117.60	YAUT-005112	22494 ± 90	-4.50 ± 4.06	26286 ± 263	0.77
33_A_20_1_30.0-33.0cm	*Calcarina*	117.60	YAUT-005113	22745 ± 95	-6.98 ± 4.59	26604 ± 378	0.94
33_A_21_1_20.0-25.0cm	*Calcarina*	119.00	YAUT-029533	24473 ± 82	-2.34 ± 1.46	28100 ± 300	N.D.
39_A_21_1_15.0-20.0cm	*Calcarina*	134.53	YAUT-005034	17689 ± 63	1.72 ± 2.13	20829 ± 217	N.D.
43_A_16_1_16.0-21.0cm	*Baculogypsina*	128.64	YAUT-047123	16666 ± 43	-2.40 ± 0.50	19623 ± 180	5.28
43_A_18_1_10.0-15.0cm	*Baculogypsina*	131.58	YAUT-047124	17147 ± 46	-2.10 ± 0.90	20180 ± 190	4.43
43_A_20_1_0.0-5.0cm	*Calcarina*	134.48	YAUT-005124	17693 ± 63	-4.45 ± 2.50	20834 ± 217	0.61
43_A_21_1_7.0-12.0cm	*Calcarina*	136.05	YAUT-005125	19856 ± 72	2.50 ± 3.14	23402 ± 277	N.D.
46_A_13_cc_5.0-10.0cm	*Calcarina*	138.17	YAUT-047125	16185 ± 43	0.80 ± 0.90	19013 ± 139	N.D.
46_A_13_cc_5.0-10.0cm	*Baculogypsina*	138.17	YAUT-047126	15823 ± 41	-0.60 ± 0.50	18677 ± 111	N.D.
47_A_08_1_20.0-25.0cm	*Baculogypsina*	118.11	YAUT-047128	15555 ± 41	-1.40 ± 0.50	18403 ± 157	2.10
47_A_09_cc_0.0-5.0cm	*Baculogypsina*	121.06	YAUT-029536	16827 ± 60	7.41 ± 2.76	19805 ± 215	4.32
47_A_11_1_10.0-15.0cm	*Baculogypsina*	127.01	YAUT-047129	17951 ± 48	-1.90 ± 0.70	21181 ± 224	3.45
47_A_13_2_5.0-9.0cm	*Calcarina*	130.09	YAUT-005131	18623 ± 83	6.42 ± 5.82	22073 ± 243	N.D.

[#]Calculated from a core-depth interval divided by a difference in foraminiferal calibrated mean ages between the nearest two samples.
[†]N.D. = not determined.