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**Data**

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## Atlas of Holocene notches and the coral reef terraces of the Philippine Islands (I)

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### Abstract

Holocene paleo-mean sea levels are estimated from the geometry and elevation of emerged marine notches and coral reef terraces along the coastlines of the Philippine Islands. Two hundred forty-six representative sites, scattered almost all around the Philippines, were chosen for profiling. Age control is provided by fifty-six radiocarbon dates and fifty alpha spectrometric <sup>230</sup>Th/<sup>234</sup>U dates. The notches and terraces, with the oldest dating back to approximately 9.19±0.28ky, have elevations ranging from 0.1 to 6.7m above the present mean sea level. Adjacent coastal areas show different paleo-sea level histories in both the level and number of relative stillstands due to local faulting. Discrete double notches suggest the possible occurrence of two emergent stillstands, with the older at a lower elevation. Possible across-site variation in the duration and timing of initiation and termination of these stillstands can be due to differences in regional tectonics and crustal response to hydro-isostasy, or an artifact of sampling.

**Key words:** age, coral reef terraces, Holocene, notches, Philippine

### Introduction

Notches and coral reef terraces formed during the Holocene can be observed along many Philippine coasts. Since 1998 the authors have used these coastal features to reconstruct sea level changes in the Philippine Islands (Figure 1). Age control for the timing of sea level changes consists of fifty-six radiocarbon and fifty <sup>230</sup>Th/<sup>234</sup>U dates.

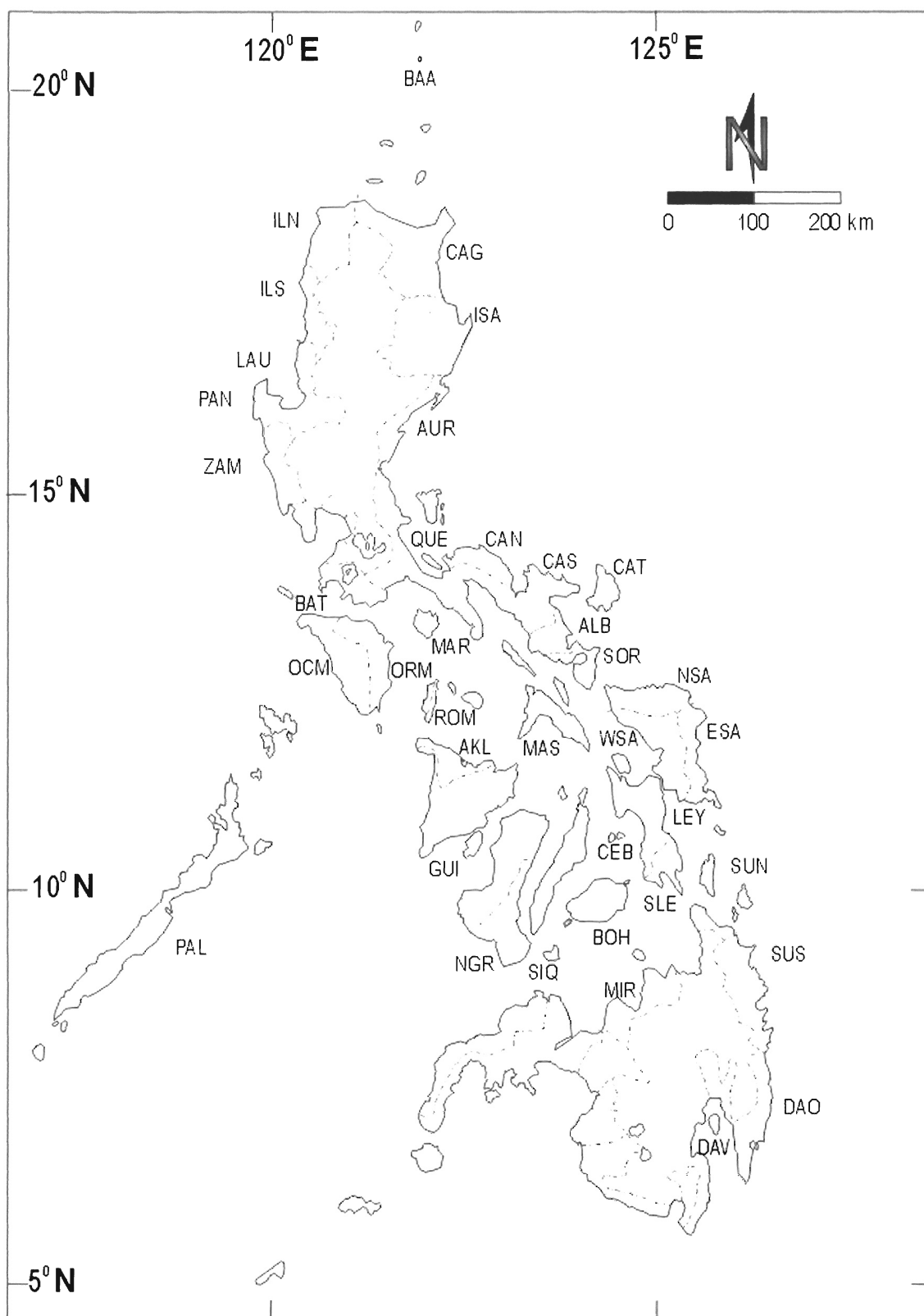
The results of the study have been presented in several conferences and published in scientific journals (e.g. Maeda et al., 1997, 1999a–c, 2001, 2002, 2003; Berdin et al., 2000, 2001, 2003; Siringan et al., 2000). Perhaps, the most significant finding of the study is the documentation of two high stands of sea level in the mid-Holocene. However, much of the data from these studies have not been published due to limitations of

space imposed on publications. These data are valuable to sea level researchers and accordingly we publish them here.

This paper contains the following data concerning notches and coral reef terraces geographical location (Table 1), coastal profiles and relevant photographs (Plates 1–58), sample elevation and radiocarbon and radiochemical isotope ages (Tables 1–4).

### Methods

Notches and coral reef terraces were examined, whenever possible, at low tide. These profiles are established in representative sites using a hand or automatic level and the elevations are adjusted to the present mean sea level based on predicted tide heights from the nearest tide stations. Data for mean sea



**Figure 1.** Provincial boundaries of the Philippines.

AKL—Aklan; ALB—Albay; AUR—Aurora; BAA—Batanes; BAT—Batangas; BOH—Bohol; CAG—Cagayan; CAN—Camarines Norte; CAS—Camarines Sur; CAT—Catanduanes; CEB—Cebu; DAO—Davao Oriental; DAV—Davao; ESA—Eastern Samar; GUI—Guimaras; ILN—Ilocos Norte; ILS—Ilocos Sur; ISA—Isabela; LAU—La Union; LEY—Leyte; MAR—Marinduques; MAS—Masbate; MIR—Misamis Oriental; NGR—Negros; NSA—Northern Samar; OCM—Occidental Mindoro; PAL—Palawan; PAN—Pangasinan; QUE—Quezon; ROM—Romblon; SIQ—Siquijor; SLE—Southern Leyte; SOR—Sorsogon; SUN—Surigao Del Norte; SUS—Surigao Del Sur; WSA—Western Samar; ZAM—Zambales.

levels of the stations used as reference in this paper are presented in Table 2. Comparison of data from multiple surveys and wave conditions indicate errors within  $\pm 0.15\text{m}$ .

Surveyed sites were located on 1:50,000 topographic maps with the aid of a hand-held GPS; Global-Positioning-Satellite.

For age control, coral and oyster shell samples were dated using  $^{14}\text{C}$  at Nagoya University and at the Beta Analytic Laboratory and  $^{230}\text{Th}/^{234}\text{U}$  at Kanazawa University.

Radiocarbon ages were calibrated using the program of Stuiver and Reimer (1993) and t in Stuiver et al. (1998).

Marine notches are indentations in coastal rocks, a few centimeters to several meters deep, that are formed through dissolution and bioerosion, especially in limestone (Pirazzoli, 1986). Different types are classified according to tidal levels and site exposure, but the most common and the most useful sea-level indicator is the tidal notch, a recumbent V- or U-shape that develops within the intertidal zone along a relatively sheltered coast. Retreat points, the indented parts of notches, form near mean sea level and hence are used to estimate paleo-shorelines in emerged or submerged coasts. The floor and the roof, respectively, approximate the lowest and the highest tidal levels; the vertical distance between the edges of these features defines the height of the notch and thus is used to estimate the mean tidal range while the notch was undergoing formation. In notches with relatively intact roofs, the horizontal distance between retreat points and roof edges, termed the depth of the notch, is used to estimate stillstand duration.

Greater wave action shifts the roof and the retreat point upwards. Where water turbulence increases, organic incrustations may develop on the floor of the notch.

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**Table 1.** List of stations, elevations of retreat point of notches and terraces, and ages.

No.	Locality	Site name	Geographical position		Elevation (m)				Age			Figure	Observation date (Y/M/D)
					Notches		Terraces		Elevation (m) mllw	Material C : Coral S : Shell	<sup>230</sup> Th/ <sup>234</sup> U : ky <sup>14</sup> C : cal BP		
					mllw	msl	mllw	msl					
latitude (N)	longitude (E)												
1	BAA-1	Port Basco	20° 27.933 '	121° 57.975 '	0.7	0.3						1	1999/2/14
2	BAA-2	Port Basco	20° 27.933 '	121° 57.975 '	0.7	0.3						2	1999/2/14
3	BAA-2'	Batan Is.	20° 26.207 '	121° 57.653 '	0.7	0.3						3	1999/2/14
4	CAG-1	Barit Is.	18° 52.344 '	121° 15.202 '	1.2	0.9			0.8	<i>C. Platygyra</i>	6.84 ± 0.14ky	4	1999/5/14
5	CAG-2	Fuga Is.	18° 51.345 '	121° 16.232 '	1.0	0.7						5	1999/5/14
6	ILN-1	Mababoa	18° 37.973 '	120° 51.506 '			2.0	1.7				6	1999/12/4
7	ILN-2	Aggao	18° 37.324 '	120° 52.102 '	0.5	0.2						7	1999/12/4
8	ILN-3	Aggao	18° 36.291 '	120° 52.182 '			0.8	0.5				8	1999/5/14
9	ILN-4	Aggao	18° 36.243 '	120° 52.528 '	1.4	1.1						9	2000/8/7
10	ILN-5	Aggao	18° 36.243 '	120° 52.528 '			2.9	2.6				10	2000/8/7
11	ILN-5	Aggao	18° 36.243 '	120° 52.528 '			1.9	1.6				10	2000/8/7
12	ILN-5	Aggao	18° 36.243 '	120° 52.528 '			1.0	0.7				10	2000/8/7
13	ILN-6	Aggao	18° 36.191 '	120° 52.182 '			2.6	2.3				11	1999/12/4
14	ILN-6	Aggao	18° 36.191 '	120° 52.182 '			1.0	0.7	1.0	<i>C. Diploastr.</i>	3.92 ± 0.09ky	11	1999/12/4
15	ILN-7	Saoit	18° 32.585 '	120° 38.272 '			1.2	0.9				12	2002/11/22
16	ILN-8	Pagali	18° 32.426 '	120° 37.035 '			1.4	1.1				13	2002/11/22
17	ILN-9	Buraon	18° 31.736 '	120° 36.810 '			1.1	0.8	1.1	<i>C. Gardino.</i>	7.00 ± 0.13ky	14	1997/9/3
18	ILN-9	Buraon	18° 31.736 '	120° 36.810 '			1.1	0.8	1.1	<i>C. Gardino.</i>	6.55 ± 0.10ky	14	1997/9/3
19	ILN-10	Bayog	18° 31.074 '	120° 35.368 '			1.1	0.8				15	2002/11/22
20	ILN-11	Bayog	18° 31.074 '	120° 35.368 '			1.2	0.5				15	2002/11/22
21	ILN-12	Bayog	18° 31.022 '	120° 35.743 '			1.5	1.2	1.5	Coral	6515 cal BP	16	2002/11/22
22	ILN-12	Bayog	18° 31.022 '	120° 35.743 '			0.5	0.2				16	2002/11/22
23	ILN-13	Bayog	18° 30.899 '	120° 35.347 '	2.4	2.1						17	2002/11/22
24	ILN-13	Bayog	18° 30.899 '	120° 35.347 '			1.4	1.1	1.4	<i>C. Porites</i>	5710 cal BP	17	2002/11/22
25	ILN-14	Bubon	18° 30.774 '	120° 34.906 '	3.4	3.1						18	2002/11/22
26	ILN-14	Bubon	18° 30.774 '	120° 34.906 '	2.1	1.8						18	2002/11/22
27	ILN-15	Narbaan	18° 26.562 '	120° 34.935 '	3.4	3.1						19	2002/11/22
28	ILN-15	Narbaan	18° 26.562 '	120° 34.935 '	2.4	2.1						19	2002/11/22
29	ILN-15	Narbaan	18° 26.562 '	120° 34.935 '			1.2	0.9	1.2	Coral	6950 cal BP	19	2002/11/22
30	ILN-15	Narbaan	18° 26.562 '	120° 34.935 '			0.6	0.3	0.6	Coral	4150 cal BP	19	2002/11/22
31	ILN-16	Narbaan	18° 26.530 '	120° 34.950 '	3.8	3.5						20	2003/1/19
32	ILN-16	Narbaan	18° 26.530 '	120° 34.950 '	2.4	2.1						20	2003/1/19
33	ILN-16	Narbaan	18° 26.530 '	120° 34.950 '			1.6	1.3				20	2003/1/19
34	ILN-17	Cupuran	18° 23.514 '	120° 35.714 '			1.0	0.7				21	1999/12/5
35	ILN-18	Culili Pt.	18° 05.349 '	120° 28.246 '			5.1	4.8				22	2003/1/18
36	ILN-18	Culili Pt.	18° 05.349 '	120° 28.246 '			3.0	2.7				22	2003/1/18
37	ILN-18	Culili Pt.	18° 05.349 '	120° 28.246 '			2.0	1.7				22	2003/1/18
38	ILN-18	Culili Pt.	18° 05.349 '	120° 28.246 '			1.6	1.3				22	2003/1/18
39	ILN-19	Culili Pt.	18° 05.246 '	120° 28.246 '			3.8	3.5	4.6	<i>C. Goniastrea</i>	6.98 ± 0.12ky	23	2003/1/18
40	ILN-19	Culili Pt.	18° 05.246 '	120° 28.246 '			4.0	3.7	4.0	<i>C. Porites</i>	6.42 ± 0.12ky	23	2003/1/18
41	ILN-19	Culili Pt.	18° 05.246 '	120° 28.246 '			2.0	1.7				23	2003/1/18
42	ILN-20	Currimao	18° 02.249 '	120° 28.255 '			3.3	3.0				24	1999/5/15
43	ILN-20	Currimao	18° 02.249 '	120° 28.255 '	1.8	1.5						24	1999/5/15
44	ILN-20	Currimao	18° 02.249 '	120° 28.255 '	0.7	0.4						24	1999/5/15
45	ILN-21	Currimao	18° 02.156 '	120° 28.197 '			3.4	3.1				25	2000/8/6
46	ILN-21	Currimao	18° 02.156 '	120° 28.197 '	1.6	1.3						25	2000/8/6
47	ILN-21	Currimao	18° 02.156 '	120° 28.197 '	0.7	0.4						25	2000/8/6
48	ILN-21	Currimao	18° 02.156 '	120° 28.197 '			2.1	1.8	1.4	Coral	6170 cal BP	25	2000/8/6
49	ILN-22	Currimao	18° 01.544 '	120° 28.617 '			4.0	3.7	4.0	<i>C. Goniastrea</i>	8.10 ± 0.14ky	26	1997/10/4
50	ILN-22	Currimao	18° 01.544 '	120° 28.617 '	1.5	1.2			1.5	<i>C. Goniastrea</i>	7.14 ± 0.11ky	26	1997/10/4
51	ILN-22	Currimao	18° 01.544 '	120° 28.617 '	0.8	0.5						26	1997/10/4
52	ILN-22	Currimao	18° 01.544 '	120° 28.617 '					0.3	Coral	5745 cal BP	26	1997/10/4
53	ILN-22	Currimao	18° 01.544 '	120° 28.617 '	0.5	0.2						26	1997/10/4
54	ILN-23	Currimao	18° 01.386 '	120° 28.629 '			4.1	3.8				27	1999/12/7
55	ILN-23	Currimao	18° 01.386 '	120° 28.629 '	2.4	2.1						27	1999/12/7
56	ILN-23	Currimao	18° 01.386 '	120° 28.629 '	1.2	0.9						27	1999/12/7
57	ILN-24	Currimao	18° 01.141 '	120° 28.742 '			3.9	3.6				28	1999/12/7
58	ILN-24	Currimao	18° 01.141 '	120° 28.742 '	2.0	1.7						28	1999/12/7
59	ILN-24	Currimao	18° 01.141 '	120° 28.742 '	1.0	0.7						28	1999/12/7
60	ILN-24	Currimao	18° 01.141 '	120° 28.742 '	0.5	0.2						28	1999/12/7
61	ILN-25	Salugan	18° 00.296 '	120° 29.711 '			1.4	1.1				29	2002/11/23
62	ILN-26	Logot Pt.	17° 55.784 '	120° 26.507 '			3.7	3.4				30	2002/11/23
63	ILN-26	Logot Pt.	17° 55.784 '	120° 26.507 '	1.8	1.5						30	2002/11/23
64	ILN-26	Logot Pt.	17° 55.784 '	120° 26.507 '	0.9	0.6						30	2002/11/23
65	ILN-27	Pagsanahan	17° 55.464 '	120° 26.312 '			3.2	2.9				31	2003/1/18
66	ILN-27	Pagsanahan	17° 55.464 '	120° 26.312 '	2.4	2.1						31	2003/1/18
67	ILN-27	Pagsanahan	17° 55.464 '	120° 26.312 '	1.3	1.0						31	2003/1/18

mllw: mean low low water (m); msl: mean sea level (m)

Table 1. List of stations, elevations of retreat point of notches and terraces, and ages (continued).

No.	Locality	Site name	Geographical position		Elevation (m)				Age			Figure	Observation date (Y/M/D)
					Notches		Terraces		Elevation (m) mllw	Material C : Coral S : Shell	<sup>230</sup> Th/ <sup>234</sup> U : ky <sup>14</sup> C : cal BP		
					mllw	msl	mllw	msl					
latitude (N)	longitude (E)												
68	ILN-28	Island Resort	17° 55.082 ' N	120° 25.574 ' E			3.7	3.4				32	2002/11/23
69	ILN-28	Island Resort	17° 55.082 ' N	120° 25.574 ' E	1.8	1.5						32	2002/11/23
70	ILN-28	Island Resort	17° 55.082 ' N	120° 25.574 ' E	1.0	0.7						32	2002/11/23
71	ILN-28	Island Resort	17° 55.082 ' N	120° 25.574 ' E			0.8	0.5	0.8	Coral	6.41 ± 0.24ky	32	2002/11/23
72	ILN-28	Island Resort	17° 55.082 ' N	120° 25.574 ' E			0.5	0.2	0.5	Coral	6.40 ± 0.24ky	32	2002/11/23
73	ILN-28	Island Resort	17° 55.082 ' N	120° 25.574 ' E			0.3		0.3	Coral	5.93 ± 0.20ky	32	2002/11/23
74	ILN-29	Badoc Id.	17° 55.000 ' N	120° 24.602 ' E			4.8	4.5				33	2000/7/13
75	ILN-29	Badoc Id.	17° 55.000 ' N	120° 24.602 ' E	3.5	3.2						33	2000/7/13
76	ILN-29	Badoc Id.	17° 55.000 ' N	120° 24.602 ' E	2.3	2.0						33	2000/7/13
77	ILN-29	Badoc Id.	17° 55.000 ' N	120° 24.602 ' E	1.0	0.7						33	2000/7/13
78	ILS-1	Dadalaquiten	17° 53.320 ' N	120° 26.696 ' E			3.8	3.5				34	2002/11/23
79	ILS-1	Dadalaquiten	17° 53.320 ' N	120° 26.696 ' E	2.9	2.6						34	2002/11/23
80	ILS-1	Dadalaquiten	17° 53.320 ' N	120° 26.696 ' E	1.9	1.6						34	2002/11/23
81	ILS-1	Dadalaquiten	17° 53.320 ' N	120° 26.696 ' E	1.0	0.7						34	2002/11/23
82	ILS-2	Santa Cruze	17° 28.216 ' N	120° 25.501 ' E			6.5	6.2				35	1997/9/2
83	ILS-3	Santa Cruze	17° 28.216 ' N	120° 25.501 ' E			5.5	5.2	3.2	C. Favia	5.50 ± 0.11ky	36	2001/6/25
84	ILS-4	Santa Cruze	17° 27.865 ' N	120° 15.875 ' E			1.9	1.5				37	1999/12/8
85	ILS-5	Solvec Pt.	17° 27.444 ' N	120° 25.998 ' E			3.9	3.5				38	2002/11/21
86	ILS-5	Solvec Pt.	17° 27.444 ' N	120° 25.998 ' E	2.3	1.9						38	2002/11/21
87	ILS-5	Solvec Pt.	17° 27.444 ' N	120° 25.998 ' E	1.3	0.9						38	2002/11/21
88	ILS-6	Solvec Pt.	17° 26.852 ' N	120° 26.067 ' E			2.7	2.3	2.7	Coral	7269 cal BP	39	1996/11/15
89	ILS-7	Solvec Pt.	17° 26.819 ' N	120° 26.088 ' E			1.4	1.0	1.4		5073 cal BP	40	2002/11/21
90	ILS-8	Solvec Pt.	17° 26.736 ' N	120° 26.134 ' E			3.7	3.3				41	2002/11/21
91	ILS-8	Solvec Pt.	17° 26.736 ' N	120° 26.134 ' E	2.6	2.2						41	2002/11/21
92	ILS-9	Suso Pt.	17° 21.280 ' N	120° 26.927 ' E			2.4	2.0				42	2002/11/21
93	ILS-10	San Pablo	17° 20.826 ' N	120° 26.623 ' E			2.6	2.2	1.5	Coral	3719 cal BP	43	1996/12/22
94	ILS-11	San Pablo	17° 20.734 ' N	120° 26.760 ' E			2.4	2.0	2.2	Coral	2457 cal BP	44	2002/11/21
95	ILS-12	Apatot	17° 19.992 ' N	120° 25.761 ' E			4.6	4.2				45	2002/11/21
96	ILS-12	Apatot	17° 19.992 ' N	120° 25.761 ' E	2.1	1.7						45	2002/11/21
97	ILS-12	Apatot	17° 19.992 ' N	120° 25.761 ' E	1.1	0.7						45	2002/11/21
98	ILS-13	Patot Liang	17° 19.429 ' N	120° 25.562 ' E			4.0	3.6				46	2000/12/7
99	ILS-13	Patot Liang	17° 19.429 ' N	120° 25.562 ' E	3.3	2.9						46	2000/12/7
100	ILS-13	Patot Liang	17° 19.429 ' N	120° 25.562 ' E	1.5	1.1						46	2000/12/7
101	ILS-14	Ambucac	17° 18.354 ' N	120° 25.366 ' E	1.9	1.5						47	2002/11/20
102	ILS-15	Ambucac	17° 18.273 ' N	120° 25.192 ' E	2.4	2.0			2.3	C. Alveopora	4.58 ± 0.10ky	48	1999/12/8
103	ILS-16	Santiago	17° 17.264 ' N	120° 25.393 ' E			2.5	2.1				49	2002/11/20
104	ILS-17	Guinabang	17° 16.793 ' N	120° 25.197 ' E			2.6	2.2				50	2000/12/7
105	ILS-17	Guinabang	17° 16.793 ' N	120° 25.197 ' E	1.2	0.8						50	2000/12/7
106	ILS-18	San Rogue	17° 16.440 ' N	120° 25.169 ' E			2.7	2.3				51	2002/11/20
107	ILS-19	Gabao	17° 15.000 ' N	120° 25.109 ' E			1.2	0.8				52	2002/11/20
108	ILS-20	Tamurong Pt.	17° 12.428 ' N	120° 24.099 ' E			1.6	1.2				53	2000/12/7
109	LAU-1	Nalvo Sur	16° 50.757 ' N	120° 20.449 ' E			2.0	1.7	1.3	C. Porites	5.69 ± 0.11ky	54	2001/11/22
110	LAU-1	Nalvo Sur	16° 50.757 ' N	120° 20.449 ' E			2.0	1.7	1.3	C. Porites	5.38 ± 0.16ky	54	2001/11/22
111	LAU-2	Paraair	16° 48.124 ' N	120° 19.284 ' E			0.8	0.5		C. Porites	1.47 ± 0.08ky	55	2001/11/22
112	LAU-2	Paraair	16° 48.124 ' N	120° 19.284 ' E			0.8	0.5		C. Acropora	1.51 ± 0.10ky	56	2002/8/13
113	LAU-2	Paraair	16° 48.124 ' N	120° 19.284 ' E			0.8	0.5		C. Porites	1.55 ± 0.10ky	55	2002/8/10
114	LAU-2	Paraair	16° 48.124 ' N	120° 19.284 ' E			1.0	0.7		C. Acropora	4.49 ± 0.18ky	56	2002/8/13
115	LAU-2	Paraair	16° 48.124 ' N	120° 19.284 ' E			0.8	0.5		C. Acropora	4.65 ± 0.18ky	56	2002/8/13
116	LAU-2	Paraair	16° 48.124 ' N	120° 19.284 ' E			1.0	0.7		C. Goniastrea	3.09 ± 0.16ky	55	2002/8/13
117	LAU-2	Paraair	16° 48.124 ' N	120° 19.284 ' E			2.7	2.4		C. Goniastrea	4.31 ± 0.18ky	57	2002/8/11
118	LAU-2	Paraair	16° 48.124 ' N	120° 19.284 ' E			2.6	2.3		C. Hydronoph.	4.60 ± 0.18ky	57	2002/8/11
119	LAU-3	N. Quirimo	16° 46.361 ' N	120° 19.485 ' E			2.8	2.5				58	1999/5/16
120	LAU-3	N. Quirimo	16° 46.361 ' N	120° 19.485 ' E	1.9	1.6						58	1999/5/16
121	LAU-4	Quirimo	16° 46.243 ' N	120° 19.888 ' E			3.0	2.7	2.7	C. Acropora	7.36 ± 0.12ky	59	1997/9/2
122	LAU-4	Quirimo	16° 46.243 ' N	120° 19.888 ' E			1.5	1.2				59	1997/9/2
123	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			2.2	1.9		C. Porites	6.60 ± 0.18ky	60	2001/11/22
124	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			4.3	4.0		C. Acropora	7.28 ± 0.26ky	60, 61	2000/8/5
125	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			4.3	4.0		C. Acropora	7.73 ± 0.23ky	61	2000/8/5
126	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			5.3	5.0		C. Porites	8.10 ± 0.26ky	60, 61	2001/11/22
127	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			2.2	1.9		C. Porites	7.41 ± 0.24ky	60	2001/11/21
128	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			2.2	1.9		C. Porites	7.88 ± 0.24ky	60	2001/11/21
129	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			2.0	1.7		C. Acropora	7.80 ± 0.24ky	60, 61	2000/8/5
130	LAU-5	Bacnotan	16° 45.000 ' N	120° 19.953 ' E			1.0	0.7		C. Platygyra	7.96 ± 0.26ky	60, 61	2000/8/5
131	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			1.0	0.7		C. Platygyra	7.96 ± 0.26ky	60, 61	2000/8/5
132	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			0.6	0.3		C. Cyphastrea	9.19 ± 0.28ky	no	2000/8/5
133	LAU-5	Bacnotan	16° 44.864 ' N	120° 19.953 ' E			0.8	0.5		scleospogiae	8.73 ± 0.64ky	no	2001/11/22
134	LAU-6	Carlatan	16° 38.182 ' N	120° 18.538 ' E			0.8	0.5				62	1997/10/5
135	LAU-7	Poro	16° 37.367 ' N	120° 16.980 ' E			1.1	0.8				63	2000/11/7

**Table 1.** List of stations, elevations of retreat point of notches and terraces, and ages (continued).

No.	Locality	Site name	Geographical position		Elevation (m)				Age			Figure	Observation date (Y/M/D)
					Notches		Terraces		Elevation (m) mlw	Material C : Coral S : Shell	<sup>230</sup> Th/ <sup>234</sup> U : ky <sup>14</sup> C : cal BP		
			latitude (N)	longitude (E)	mlw	msl	mlw	msl					
136	LAU-8	Poro	16° 37.364 ′	120° 16.974 ′	1.2	0.9						64	2000/11/7
137	PAN-1	Hundred Is.	16° 13.383 ′	120° 02.383 ′	1.0	0.7						65	1997/12/9
138	PAN-2	Silaqui Is.	16° 26.600 ′	119° 55.450 ′	1.0	0.6			1.0	Coral	5.66±0.10	66	1997/12/11
139	PAN-3	Pisalayan Is.	16° 25.633 ′	119° 56.133 ′	1.1	0.7						67	1997/12/11
140	PAN-4	near Santiago	16° 25.583 ′	119° 56.850 ′	0.7	0.3						68	1997/12/11
141	PAN-5	Bolinao	16° 23.036 ′	119° 52.152 ′	1.6	1.2						69	2000/6/16
142	PAN-6	Poropanaen	16° 22.400 ′	119° 55.750 ′	1.2	0.8						70	1997/12/11
143	PAN-6	Poropanaen	16° 22.400 ′	119° 55.750 ′	0.7	0.3						70	1997/12/11
144	PAN-7	Patar	16° 19.538 ′	119° 47.011 ′	1.3	0.9						71	1997/6/14
145	PAN-8	Piedra	16° 18.505 ′	119° 46.732 ′	2.3	1.9						72	2000/6/15
146	PAN-8	Piedra	16° 18.505 ′	119° 46.732 ′	1.2	0.8						72	2000/6/15
147	PAN-9	Surip	16° 15.435 ′	119° 46.369 ′	2.5	2.1						73	1997/6/15
148	PAN-9	Surip	16° 15.435 ′	119° 46.369 ′	1.2	0.8						73	1997/6/15
149	PAN-10	Agno	16° 07.989 ′	119° 46.536 ′	2.1	1.7						74	1997/12/10
150	PAN-10	Agno	16° 07.989 ′	119° 46.536 ′					0.6	C. Porites	3.94±0.08ky	74	1997/12/10
151	PAN-10	Agno	16° 07.989 ′	119° 46.536 ′					0.4	C. Platygyra	6.54±0.10ky	74	1997/12/10
152	PAN-11	Cabungan	15° 59.459 ′	119° 45.335 ′	2.0	1.5						75	2001/1/25
153	PAN-11	Cabungan	15° 59.459 ′	119° 45.335 ′	1.4	0.9						75	2001/1/25
154	ZAM-1	Hermana Me.	15° 44.045 ′	119° 49.065 ′			2.2	1.7				76	2001/1/25
155	ZAM-1	Hermana Me.	15° 44.045 ′	119° 49.065 ′	1.2	0.7						76	2001/1/25
156	CAG-3	Gonzaga	18° 17.045 ′	121° 57.857 ′	1.4	0.8						77	1997/9/6
157	CAG-4	Gonzaga	18° 16.772 ′	121° 58.428 ′	1.5	0.9						78	1997/9/4
158	CAG-5	Bimapor Ro.	18° 31.413 ′	122° 10.909 ′	2.5	1.9						79	1997/9/4
159	CAG-5	Bimapor Ro.	18° 31.413 ′	122° 10.909 ′	2.0	1.4						79	1997/9/4
160	CAG-5	Bimapor Ro.	18° 31.413 ′	122° 10.909 ′	1.2	0.6						79	1997/9/4
161	CAG-6	Siniguian Pt.	18° 31.287 ′	122° 13.258 ′	2.0	1.4						80	2001/7/3
162	CAG-6	Siniguian Pt.	18° 31.287 ′	122° 13.258 ′	1.2	0.6						80	2001/7/3
163	CAG-7	Sinaga	18° 22.103 ′	122° 13.204 ′	2.6	2.0						81	2001/7/2
164	CAG-7	Sinaga	18° 22.103 ′	122° 19.204 ′	2.0	1.4						81	2001/7/2
165	CAG-8	Sinaga	18° 22.103 ′	122° 19.204 ′	0.7	0.1						82	2001/7/2
166	CAG-9	Sinaga	18° 22.051 ′	122° 19.101 ′	1.5	0.9						83	2001/7/2
167	CAG-9	Sinaga	18° 22.051 ′	122° 19.101 ′			1.0	0.4	1.0	Coral	2890 cal BP	83	2001/7/2
168	CAG-9	Sinaga	18° 22.051 ′	122° 19.101 ′			1.2	0.6	1.2	Coral	1350 cal BP	83	2001/7/2
169	ISA-1	Dismangit	17° 02.200 ′	122° 30.300 ′	1.5	0.7						84	1998/3/11
170	ISA-2	Diviuisa	16° 47.420 ′	122° 25.433 ′	2.4	1.6						85	2001/3/8
171	ISA-3	Diviuisa	16° 47.960 ′	122° 25.787 ′	2.5	1.7						86	1998/2/4
172	AUR-1	Dibuhobong	16° 06.630 ′	122° 03.792 ′	1.7	0.9			1.7	Coral	2280cal BP	87	2001/7/7
173	AUR-2	Baler	14° 39.545 ′	121° 36.168 ′			1.7	0.8	0.3	C. Cyphastrea	4.02±0.20ky	88	1997/7/6
174	QUE-1	Polillo Is.	14° 43.204 ′	122° 01.589 ′	1.5	0.6			0.6	Coral	4810 cal BP	89	2001/8/2
175	QUE-2	Lemon Bay	14° 17.455 ′	121° 43.738 ′	2.5	1.6						90	2001/8/4
176	QUE-3	Baliscan Is.	14° 14.376 ′	121° 54.061 ′	2.2	1.3						91	2001/8/4
177	CAS-1	Bikal	13° 48.506 ′	123° 52.818 ′	1.2	0.5						92	1998/6/26
178	CAT-1	Virac	13° 31.126 ′	124° 12.243 ′	1.3	0.6						93	1997/5/22
179	CAT-2	Lacot Bay	13° 33.722 ′	124° 19.855 ′	1.6	0.9						94	2003/4/30
180	CAT-3	Badoc Bay	14° 04.669 ′	124° 13.113 ′	0.9	0.2						95	2003/5/1
181	CAT-4	Badoc Bay	14° 04.608 ′	124° 13.063 ′			1.9	1.2				96	2003/5/1
182	CAT-5	Codon Pt.	13° 40.312 ′	124° 02.586 ′	1.6	0.9						97	2003/5/2
183	CAT-6	Bislig Pt.	13° 38.158 ′	124° 02.436 ′	1.6	0.9						98	2003/5/2
184	SOR-1	Ferry	13° 04.488 ′	124° 08.675 ′	2.8	2.1						99	2003/3/19
185	SOR-1	Ferry	13° 04.488 ′	124° 08.675 ′	1.5	0.8						99	2003/3/19
186	SOR-2	Sawanga	13° 04.271 ′	124° 07.751 ′	2.9	2.2						100	2003/3/19
187	SOR-2	Sawanga	13° 04.271 ′	124° 07.751 ′	1.5	0.8						100	2003/3/19
189	SOR-2	Sawanga	13° 04.271 ′	124° 07.751 ′	0.9	0.2			0.9	C. Leptoastrea	7.39±0.14	100	2003/3/19
190	BAT-1	Malimatok	13° 42.223 ′	120° 55.129 ′	1.6	1.0						101	2003/3/22
191	BAT-2	Pagkilatan	13° 30.000 ′	121° 02.639 ′	2.2	1.6						102	1997/12/17
192	BAT-2	Pagkilatan	13° 38.000 ′	121° 02.639 ′	1.4	0.8						102	1997/12/17
193	BAT-3	Malicaban	13° 37.790 ′	120° 56.118 ′	1.8	1.2						103	2003/3/22
194	BAT-4	Malicaban	13° 37.790 ′	120° 56.118 ′			0.8	0.2				104	2003/3/22
195	QUE-4	Lipata	13° 54.191 ′	121° 47.491 ′	1.0	0.2						105	2001/10/7
196	QUE-5	Magasawan	13° 54.020 ′	121° 48.390 ′	1.4	0.6						106	2001/10/7
197	QUE-6	Mulanay	13° 31.800 ′	122° 22.900 ′	0.9	0.1						107	1998/3/5
198	QUA-7	Cqnowep	13° 28.298 ′	122° 25.191 ′	1.1	0.3						108	2001/10/6
199	QUA-7	Cqnowep	13° 28.298 ′	122° 25.191 ′	2.1	1.3						108	2001/10/6
200	QUA-8	San Narciso	13° 34.620 ′	122° 34.330 ′	1.0	0.2						109	1997/6/9
201	QUA-9	San Narciso	13° 34.429 ′	122° 34.369 ′	1.1	0.3						110	1998/3/5
202	MAR-1	Maniuyan	13° 32.008 ′	122° 06.533 ′	0.9	0.1						111	1999/2/2
203	MAR-2	Mompong	13° 30.235 ′	122° 10.672 ′	0.9	0.1						112	1999/2/3
204	ALB-1	Tagbac	13° 39.225 ′	122° 48.377 ′	1.4	0.6						113	1998/6/24

Table 1. List of stations, elevations of retreat point of notches and terraces, and ages (continued).

No.	Locality	Site name	Geographical position		Elevation (m)				Age			Figure	Observation date (Y/M/D)
					Notches		Terraces		Elevation (m) mlw	Material C : Coral S : Shell	<sup>230</sup> Th/ <sup>234</sup> U : ky <sup>14</sup> C : cal BP		
			latitude (N)	longitude (E)	mlw	msl	mlw	msl					
205	ROM-1	Look	12° 15.521	121° 58.485	2.5	1.7						114	2001/10/2
206	ROM-2	Alad	12° 36.596	121° 15.183	1.9	1.1						115	2001/10/1
207	ROM-3	Agasao	12° 29.008	122° 27.190			1.6	0.8	1.1	Coral	4080 cal BP	116	2001/9/30
208	MAS-1	Deagan Is.	12° 20.219	123° 46.420	1.3	0.5						117	2001/9/28
209	AKL-1	Caticlan pt.	14° 39.018	121° 04.044	1.5	0.7						118	1999/4/30
210	GUI-1	Bondulan pt.	10° 39.519	122° 34.093	1.3	0.5						119	1999/5/1
211	GUI-2	Pangasinan	10° 35.229	122° 30.802	1.5	0.7						120	2003/1/22
212	GUI-3	Abe Maria Is.	10° 32.690	122° 31.187	1.2	0.4						121	2003/1/22
213	ORM-1	Paniguian	13° 31.815	120° 57.042	1.1	0.5						122	2003/3/21
214	ORM-2	Balatero	13° 30.684	120° 55.743	1.1	0.5						123	2003/3/20
215	ORM-3	Saiin	13° 31.796	121° 04.469	1.0	0.4						124	2003/3/21
216	OCM-1	Sablayan	12° 51.573	120° 45.092	2.5	2.0						125	1999/3/1
217	OCM-1	Sablayan	12° 51.573	120° 45.092	2.3	1.8						126	1999/3/1
218	OCM-2	Sta. Teresa	12° 14.489	121° 07.537	0.9	0.4						127	1999/3/2
219	CEB-1	Mactan Is.	10° 19.018	124° 01.229	1.2	0.5						128	1997/5/28
220	CEB-2	Mactan Is.	10° 18.409	124° 01.364	1.3	0.6						129	1997/5/29
221	CEB-3	Olongo Is.	10° 16.773	124° 03.136	1.5	0.8						130	1997/5/29
222	CEB-4	Dongan	10° 07.433	123° 41.143	1.3	0.7						131	1999/5/4
223	CEB-5	Sumilon Is.	09° 26.111	123° 23.201	1.3	0.7						132	1999/5/3
224	CEB-6	Manite	09° 25.496	123° 21.206	1.6	1.0						133	1998/9/16
225	NGR-1	Dondon pt.	09° 25.496	123° 07.006	1.2	0.6						134	1999/5/4
226	NGR-2	Salag pt.	09° 02.667	123° 00.255	1.0	0.4						135	1998/9/18
227	SIQ-1	Siquijor Port	09° 13.086	123° 30.501	0.7	0.1						136	2001/11/19
228	SIQ-2	Salagdoong	09° 12.495	123° 40.461	1.7	1.1						137	2001/11/19
229	BOH-1	Pangangan Is.	09° 54.598	123° 48.416	1.9	1.3						138	1998/6/21
230	BOH-2	Pangangan Is.	09° 54.590	123° 48.644			1.0	0.4	0.5	C. Porites	4.87 ± 0.10ky	138	2002/8/7
231	BOH-3	Cabilao Is.	09° 53.440	123° 47.059	3.0	2.4						139	2002/8/7
232	BOH-3	Cabilao Is.	09° 53.440	123° 47.059	1.3	0.7						139	2002/8/7
233	BOH-4	Sandingan Is.	09° 50.961	123° 47.119	1.4	0.8						140	1998/1/21
234	BOH-5	Cruz Pt.	09° 44.050	123° 47.221	1.2	0.6						141	1999/6/30
235	BOH-6	Baclayon	09° 37.033	123° 55.667	1.2	0.6						142	1999/6/29
236	BOH-7	Tutolan	09° 38.549	123° 50.650	1.8	1.2						143	1998/6/21
237	BOH-8	Tangnan	09° 37.029	123° 46.147	0.7	0.1						144	1998/6/20
238	BOH-9	Bil-isan	09° 36.575	123° 46.047	1.2	0.6						145	2000/7/31
239	BOH-10	Lo-oc	09° 36.086	123° 45.181	1.6	1.0						146	2000/7/31
240	BOH-11	Lo-oc	09° 35.560	123° 43.274	1.0	0.4						147	1998/7/20
241	BOH-12	Doljo Pt.	09° 35.380	123° 42.630	1.2	0.6						148	1997/4/29
242	BOH-13	San Isidro	09° 36.050	123° 50.283	0.8	0.2						149	1998/8/5
243	BOH-14	Gak-Ang Is.	09° 32.524	123° 43.292	0.4	-0.2						150	2000/8/1
244	BOH-15	Pamilakan Is.	09° 29.747	123° 55.153	1.7	1.1						151	2002/8/6
245	LEY-1	Tringon	10° 52.061	124° 28.282	2.1	1.3			1.5	Coral	3885 cal BP	152	1999/5/5
246	LEY-1	Tringon	10° 52.061	124° 28.282			1.0	0.2				152	1999/5/5
247	LEY-2	Namanoc	10° 55.437	124° 35.547	3.5	2.7						153	1999/7/4
248	LEY-2	Namanoc	10° 55.437	124° 35.547	1.4	0.6						153	1999/7/4
249	LEY-3	Villaba	11° 12.187	124° 23.012	2.5	1.7						154	2003/6/17
250	SLE-1	Panaon	10° 07.345	125° 12.394	1.1	0.6						155	1999/5/5
251	SLE-2	Burgos	10° 00.398	125° 01.750	5.2	4.4						156	2003/6/12
252	SLE-2	Burgos	10° 00.398	125° 01.750			4.6	3.8				156	2003/6/12
253	SLE-2	Burgos	10° 00.398	125° 01.750			2.8	2.0				156	2003/6/12
254	SLE-2	Burgos	10° 00.398	125° 01.750	4.8	4.0						157	2003/6/13
255	SLE-2	Burgos	10° 00.398	125° 01.750			3.9	3.1				157	2003/6/12
256	SLE-2	Burgos	10° 00.398	125° 01.750			2.4	1.6				157	2003/6/12
257	SLE-2	Burgos	10° 00.398	125° 01.750	4.9	4.1						158	2003/6/13
258	SLE-2	Burgos	10° 00.398	125° 01.750	2.3	1.5						158	2003/6/13
259	SLE-3	Brugos	10° 00.472	125° 01.736	5.0	4.2						159	2003/6/12
260	SLE-3	Brugos	10° 00.472	125° 01.736			4.3	3.5				159	2003/6/12
261	SLE-3	Brugos	10° 00.472	125° 01.736			2.4	1.6				159	2003/6/12
262	ALB-2	Cagraray Is.	13° 13.857	123° 52.683	1.0	0.3						160	2003/6/19
263	ALB-3	Cagraray Is.	13° 14.095	123° 53.909	0.9	0.2						161	2003/6/19
264	NSA-1	Sajoton Pt.	12° 18.836	124° 20.343	1.4	0.9						162	2002/9/25
265	NSA-2	Sajoton Pt.	12° 18.836	124° 20.343	1.3	0.8			0.2	Coral	7139 cal BP	163	2002/3/30
266	NSA-3	Alegria	12° 23.826	124° 19.561			0.6	0.1				164	2002/6/21
267	NSA-4	San Jose	12° 31.954	124° 29.713			1.0	0.7				165	2002/6/21
268	NSA-5	Paninirongan	12° 34.417	124° 52.558			1.8	1.0				166	2002/9/21
269	NSA-6	Cahayagan	12° 31.979	125° 01.727	2.5	1.7			0.5	Coral	6668 cal BP	167	2002/3/30
270	NSA-7	Boyoyo-on	12° 40.932	125° 02.227	1.7	0.9						168	2003/4/28
271	NSA-8	Boyoyo-on	12° 40.932	125° 02.227	1.7	0.9						169	2003/4/28
272	NSA-9	Pinatau	12° 38.805	125° 04.366	4.7	3.9						170	2002/9/21

Table 1. List of stations, elevations of retreat point of notches and terraces, and ages (continued).

No.	Locality	Site name	Geographical position		Elevation (m)				Age			Figure	Observation date (Y/M/D)
					Notches		Terraces		Elevation (m) mllw	Material C : Coral S : Shell	<sup>230</sup> Th/ <sup>234</sup> U : ky <sup>14</sup> C : cal BP		
			latitude (N)	longitude (E)	mllw	msl	mllw	msl					
273	NSA-9	Pinatau	12° 38.805'	125° 04.366'			2.0	1.2				170	2002/9/21
274	NSA-10	Kabatuan	12° 31.867'	125° 12.745'			2.4	1.8	2.4	Coral	5063 cal BP	171	2002/9/22
275	NSA-11	Mapanus	12° 28.629'	125° 16.431'	5.6	4.8						172	2002/9/22
276	NSA-11	Mapanus	12° 28.629'	125° 16.431'	2.3	1.5						172	2002/9/22
277	NSA-11	Mapanus	12° 28.629'	125° 16.431'			1.8	1.0	1.5	Coral	7169 cal BP	172	2002/9/22
278	NSA-12	Mapanus	12° 28.690'	125° 16.386'	2.3	1.5						173	2002/3/22
279	NSA-12	Mapanus	12° 28.690'	125° 16.386'			0.5	-0.3	0.5	Coral	6884 cal BP	173	2002/3/22
280	NSA-13	Gamay	12° 22.951'	125° 19.060'	2.6	1.8						174	2002/6/22
281	ESA-1	Apitan Is.	12° 10.076'	125° 31.568'	2.6	1.8						175	2002/3/27
282	ESA-1	Apitan Is.	12° 10.076'	125° 31.568'			1.2	0.4	1.1	Coral	7279 cal BP	175	2002/3/27
283	ESA-2	Tubabao Is.	12° 06.082'	125° 34.146'	4.6	3.8						176	2002/6/23
284	ESA-2	Tubabao Is.	12° 06.082'	125° 34.146'	3.4	2.6						176	2002/6/23
285	ESA-3	Catalaban	11° 50.968'	125° 28.517'	4.7	3.9						177	2002/6/25
286	ESA-3	Catalaban	11° 50.968'	125° 28.517'	3.7	2.9						177	2002/6/25
287	ESA-4	San Julian	11° 45.403'	125° 27.758'	4.5	3.7						178	2002/3/27
288	ESA-4	San Julian	11° 45.403'	125° 27.758'	2.8	2.0						178	2002/3/27
289	ESA-5	San Julian	11° 45.600'	125° 27.506'	2.8	2.0						179	1998/2/15
290	ESA-6	Divinubo Is.	12° 06.097'	125° 29.846'	5.0	4.2						180	2002/9/24
291	ESA-6	Divinubo Is.	12° 06.097'	125° 29.846'	3.4	2.6						180	2002/9/24
292	ESA-6	Divinubo Is.	12° 06.097'	125° 29.846'	2.2	1.4						180	2002/9/24
293	ESA-7	Divinubo Is.	11° 35.597'	125° 30.242'	4.6	3.8						181	2002/3/26
294	ESA-7	Divinubo Is.	11° 35.597'	125° 30.242'	2.0	1.2						181	2002/3/26
295	ESA-7	Divinubo Is.	11° 35.597'	125° 30.242'			1.0	0.2	1.0	Coral	4840 cal BP	181	2002/3/26
296	ESA-8	Divinubo Is.	11° 35.516'	125° 30.015'	4.6	3.8						182	2002/3/26
297	ESA-9	Maydolong	11° 29.373'	125° 30.907'	2.5	1.7						183	2002/3/26
298	ESA-10	Maydolong	11° 29.204'	125° 30.770'			1.5	0.7	0.7	Coral	6563 cal BP	184	2002/3/26
299	ESA-10	Maydolong	11° 29.204'	125° 30.770'			1.4	0.6	0.6	Coral	6215 cal BP	184	2002/3/26
300	ESA-10	Maydolong	11° 29.204'	125° 30.770'			1.3	0.5	0.5	Coral	6096 cal BP	184	2002/3/26
301	ESA-10	Maydolong	11° 29.204'	125° 30.770'			1.6	0.8	0.8	Coral	7412 cal BP	184	2002/3/26
302	ESA-11	Liorente	11° 24.412'	125° 33.790'	4.6	3.8						185	2002/6/28
303	ESA-11	Liorente	11° 24.412'	125° 33.790'	2.7	1.9						185	2002/6/28
304	ESA-11	Liorente	11° 24.412'	125° 33.790'			1.8	0.9				185	2002/6/28
305	ESA-12	Baiang	11° 18.081'	125° 36.143'	2.9	2.1			1.0	Coral	6194 cal BP	186	1999/7/5
306	ESA-13	Garawon	11° 17.458'	125° 35.793'	3.4	2.6						187	2002/6/27
307	ESA-13	Garawon	11° 17.458'	125° 35.793'	2.1	1.3						187	2002/6/27
308	ESA-14	Buyayawon	11° 06.609'	125° 41.942'	3.4	3.1						188	2003/6/15
309	ESA-14	Buyayawon	11° 06.609'	125° 41.942'	1.6	1.3						188	2003/6/15
310	ESA-14	Buyayawon	11° 06.609'	125° 41.942'	3.3	3.0						189	2003/6/16
311	ESA-14	Buyayawon	11° 06.609'	125° 41.942'			2.1	1.8				189	2003/6/16
312	ESA-15	Buyayawon	11° 06.562'	125° 41.889'	3.4	3.1			3.4	S.oyster	4350 cal BP	190	2002/3/25
313	ESA-15	Buyayawon	11° 06.562'	125° 41.889'					1.1	Coral	7336 cal BP	190	2002/3/25
314	ESA-16	Pagdamiton	11° 01.873'	125° 45.923'	3.0	2.7						191	2003/6/16
315	ESA-16	Pagdamiton	11° 01.873'	125° 45.923'			1.5	1.2				191	2003/6/13
316	ESA-17	Sarog	10° 58.165'	125° 49.560'	1.4	1.1						192	2002/3/22
317	ESA-18	Barahon	10° 56.421'	125° 49.664'	1.6	1.3						193	2002/3/22
318	ESA-19	Leleboan	10° 56.057'	125° 49.755'			1.7	1.4				194	2002/3/22
319	ESA-20	Sungi Pt.	10° 54.839'	125° 50.301'	2.4	2.1						195	2002/7/27
320	WSA-1	Osmena	11° 11.710'	125° 10.849'	3.4	3.1						196	2002/3/24
321	WSA-1	Osmena	11° 11.710'	125° 10.849'	1.6	1.3						196	2002/3/24
322	WSA-2	Tinabanan	11° 12.013'	125° 10.764'	2.9	2.6			2.9	S.oyster	5120 cal BP	197	2002/6/29
323	WSA-2	Tinabanan	11° 12.013'	125° 10.764'	1.4	1.1						197	2002/6/29
324	WSA-2	Tinabanan	11° 12.013'	125° 10.764'			1.0	0.7	1.0	Coral	7255 cal BP	197	2002/6/22
325	WSA-2	Tinabanan	11° 12.013'	125° 10.764'			0.7	0.4	0.7	Coral	7196 cal BP	197	2002/6/22
326	WSA-2	Tinabanan	11° 12.013'	125° 10.764'	3.2	2.9			2.9	S.oyster	5120 cal BP	198	2002/6/22
327	WSA-3	Tinabanan	11° 12.059'	125° 10.421'	3.2	2.9			2.9	S.oyster	5449 cal BP	199	1999/5/6
328	WSA-3	Tinabanan	11° 12.059'	125° 10.421'	3.2	2.9			2.9	S.oyster	4180 cal BP	199	1999/5/6
329	WSA-3	Tinabanan	11° 12.059'	125° 10.421'	3.1	2.8			2.8	S.oyster	4702 cal BP	199	1999/5/6
330	WSA-4	Calowayan	11° 12.935'	125° 10.577'	3.1	2.8						200	1996/4/5
331	WSA-4	Calowayan	11° 12.935'	125° 10.577'	1.1	0.8						200	1996/4/5
332	WSA-5	Cabugao	11° 14.468'	125° 10.385'	3.2	2.9						201	2002/3/23
333	WSA-5	Cabugao	11° 14.468'	125° 10.385'	1.3	1.0						201	2002/3/23
334	WSA-6	Guimtin Is.	11° 33.304'	124° 51.508'	2.2	1.5			2.2	S.oyster	2160 cal BP	202	2002/9/24
335	WSA-6	Guimtin Is.	11° 33.304'	124° 51.508'	1.0	0.3						202	2002/9/24
336	WSA-7	Guimtin Is.	11° 33.312'	124° 51.511'	1.9	1.2			2.2	S.oyster	2160 cal BP	203	2003/6/13
337	WSA-7	Guimtin Is.	11° 33.312'	124° 51.511'	2.0	1.3						204	2003/6/13
338	WSA-8	Guimtin Is.	11° 32.799'	124° 51.539'	0.7							205	2002/9/24
339	WSA-9	Bunuanan	11° 45.140'	124° 53.606'	2.6	1.9						206	2002/7/1
340	WSA-9	Bunuanan	11° 45.140'	124° 53.606'	0.8	0.1						206	2002/7/1

Table 1. List of stations, elevations of retreat point of notches and terraces, and ages (continued).

No.	Locality	Site name	Geographical position		Elevation (m)				Age			Figure	Observation date (Y/M/D)
					Notches		Terraces		Elevation (m) mllw	Material C : Coral S : Shell	<sup>230</sup> Th/ <sup>234</sup> U : ky <sup>14</sup> C : cal BP		
			latitude (N)	longitude (E)	mllw	msl	mllw	msl					
341	WSA-10	Malopalo	12° 06.309	124° 28.961	1.5	0.9						207	2002/6/21
342	WSA-11	Cagnipa	12° 10.888	124° 24.856	1.6	1.1						208	2002/6/21
343	WSA-12	Darama Is.	11° 37.595	124° 45.168	3.5	2.8						209	2003/6/13
344	WSA-12	Darama Is.	11° 37.595	124° 45.168	2.2	1.5						209	2003/6/13
345	WSA-13	Darama Is.	11° 37.754	124° 45.381	2.0	1.3						210	2003/6/13
346	PAL-1	El Nido town	11° 11.318	119° 23.532	2.2	1.7						211	1998/5/3
347	PAL-1	El Nido town	11° 11.318	119° 23.532	1.0	0.5	0.8	0.3	0.3	Coral	3575 cal BP	211	1998/5/3
348	PAL-2	Miniloc	11° 08.916	119° 19.178	0.9	0.4						212	1998/10/14
349	PAL-2	Miniloc	11° 08.916	119° 19.178			0.4	-0.1	0.4	<i>C. Goniastrea</i>	5.96±0.22ky	212	1998/10/14
350	PAL-2	Miniloc	11° 08.916	119° 19.178			0.4	-0.1	0.4	Coral	5758 cal BP	212	1998/10/14
351	PAL-2	Miniloc	11° 08.916	119° 19.178					0.3	Coral	5466 cal BP	212	1998/10/14
352	PAL-2	Miniloc	11° 08.916	119° 19.178					0.3	<i>C. Goniastrea</i>	5.67±0.22ky	212	1998/10/14
353	PAL-3	Binanlaoguan	11° 08.337	119° 19.137	1.0	0.5						213	1998/10/16
354	PAL-4	Lagen Is.	11° 05.168	119° 24.335	1.8	1.3						214	1998/10/15
355	PAL-4	Lagen Is.	11° 05.168	119° 24.335	1.3	0.8						214	1998/10/15
356	PAL-4	Lagen Is.	11° 05.168	119° 24.335					1.7	S.oyster	3026 cal BP	214	1998/10/15
357	PAL-4	Lagen Is.	11° 05.168	119° 24.335					1.5	S.oyster	2594 cal BP	214	1998/10/15
358	PAL-5	Lagen Is.	11° 04.979	119° 24.585	0.8	0.3						215	1998/10/15
359	PAL-5	Lagen Is.	11° 04.979	119° 24.585					0.2	Coral	6775 cal BP	215	1998/10/15
360	PAL-6	San Vicente	10° 32.864	119° 14.312			1.3	0.8				216	1998/5/6
361	PAL-6	San Vicente	10° 32.864	119° 14.312			0.9	0.4	0.9	<i>C. Platygyra</i>	6.70±0.27ky	216	1998/5/6
362	PAL-7	Underground	10° 12.135	118° 55.546	2.4	1.9						217	1998/5/12
363	PAL-8	Underground	10° 12.135	118° 55.383	2.1	1.6						218	1996/5/1
364	PAL-8	Underground	10° 12.135	118° 55.383	1.6	1.1						218	1996/5/1
365	PAL-9	Tuturinguen	10° 12.135	118° 55.164	1.7	1.2						219	1997/6/27
366	PAL-10	Manlipien	10° 12.081	118° 54.590			0.8	0.3	0.8	<i>C. Platygyra</i>	6.19±0.18ky	220	1998/5/1
367	PAL-11	Nagtabon	09° 56.413	118° 38.599			0.8	0.3	0.8	<i>C. Platygyra</i>	6.43±0.24ky	221	1998/5/10
368	PAL-12	Devel peak	09° 18.241	118° 04.418	1.9	1.4						222	2003/5/19
369	PAL-12	Devel peak	09° 18.241	118° 04.418	1.4	0.9						222	2003/5/19
370	PAL-13	Lasiap Pt.	09° 18.225	118° 04.205	1.6	1.0						223	1999/4/17
371	PAL-14	Quezon	09° 17.333	117° 58.800	1.5	1.0						224	1997/8/1
372	PAL-14	Quezon	09° 17.333	117° 58.800			1.1	0.6	0.7	<i>C. Goniastrea</i>	5.94±0.11ky	224	1997/8/1
373	PAL-14	Quezon	09° 17.333	117° 58.800	1.7	1.2						224	1997/8/1
374	PAL-14	Quezon	09° 17.333	117° 58.800	1.7	1.2						225	2003/5/18
375	PAL-15	Lipuun Pt.	09° 16.821	117° 58.868	2.0	1.5						226	2003/5/18
376	PAL-15	Lipuun Pt.	09° 16.821	117° 58.868	2.0	1.5						227	2003/5/18
377	PAL-15	Lipuun Pt.	09° 16.821	117° 58.868	1.0	0.5						227	2003/5/18
378	PAL-16	Apulit Is.	10° 57.227	119° 36.497	3.5	3.0						228	1997/3/15
379	PAL-16	Apulit Is.	10° 57.227	119° 36.497	1.2	0.7						228	1997/3/15
380	PAL-17	Pawikan	10° 01.433	119° 06.716	2.0	1.5						229	2003/11/11
381	PAL-18	Puerto Princ.	09° 43.900	118° 44.000	1.8	1.2						230	1997/6/25
382	PAL-18	Puerto Princ.	09° 43.900	118° 44.000	1.9	1.3						231	1997/6/27
383	PAL-19	Magsaysay	09° 23.031	118° 32.219	1.3	0.7						232	1999/4/18
384	PAL-20	Pulaw Talam	09° 09.558	118° 09.268	2.0	1.4						233	1999/4/16
385	PAL-21	Rio Tuba	08° 29.490	117° 25.552	1.6	1.0						234	1999/4/15
386	PAL-22	Buliluyan	08° 20.269	117° 12.382	1.2	0.6						235	1999/4/14
387	PAL-23	Ameviel Is.	08° 26.192	117° 25.485	1.7	1.1						236	1999/6/14
388	PAL-24	Ramos Is.	08° 06.818	117° 03.136	1.1	0.5						237	1997/7/31
389	PAL-25	Balabac	08° 02.238	117° 04.424	0.9	0.3						238	1999/6/15
390	SUN-1	Tagana-an	09° 41.216	125° 35.864	1.7	1.2						239	1998/2/18
391	SUS-1	Lawigana	08° 14.182	120° 25.773	2.7	1.9						240	1998/2/19
392	DVA-1	Malipana	07° 00.700	125° 43.250	4.2	3.4						241	1998/4/15
393	DAV-1	Malipana	07° 00.700	125° 43.250	1.6	0.8						241	1998/4/15
394	DVA-2	Malipana	07° 00.650	125° 43.250	4.0	3.2						242	1998/4/15
395	DVA-2	Malipana	07° 00.650	125° 43.250	1.6	0.8						242	1998/4/15
396	DVA-3	Tabang	07° 00.272	125° 43.497	4.5	3.7						243	1997/8/23
397	DVA-3	Tabang	07° 00.272	125° 43.497	1.6	0.8						243	1997/8/23
398	DVA-4	Limaao	07° 04.648	125° 40.164	4.5	3.7						244	1998/4/15
399	MIR-1	Lobajon	08° 37.500	124° 29.000	0.9	0.3						245	1998/4/21
400	PLA-4	Lagen Is.	11° 05.168	119° 24.335	1.7	1.2			1.7	S.oyster	3080 cal BP	214	1998/4/21
401	PLA-4	Lagen Is.	11° 05.168	119° 24.335	1.7	1.2			1.7	S.oyster	3330 cal BP	214	1998/10/15
412	ESA-9	Maydolong	11° 29.373	135° 30.907			1.7	0.9	1.7	<i>C. Porites</i>	7171 cal BP	246	1999/7/5
413	ESA-9	Maydolong	11° 29.373	135° 30.907			1.7	0.9	0.9	<i>C. Porites</i>	6617 cal BP	246	1999/7/5

**Table 2.** Reference station mean sea (tide) levels (NAMRIA, 2003).

Tide Station	Geographic position		Study area	Mean sea (tide) levels (m)	Mean tidal range (m)
Virac	13° 35' N	124° 14' E	Catanduanes, Camarines	0.70	1.1
Tagbilaran	09° 39' N	123° 51' E	Bohol	0.56	0.83
Tacloban	11° 15' N	125° 00' E	Leyte, Samar	0.29	0.47
Surigao	09° 45' N	125° 30' E	Surigao Del Norte	0.49	0.82
Subic Bay	14° 49' N	120° 17' E	Zambales	0.46	0.73
Solvec	17° 27' N	120° 27' E	Ilocos Sur	0.35	—
San Vicente	18° 31' N	122° 08' E	Cagayan	0.58	0.93
San Narciso	13° 35' N	122° 34' E	Quezon, Camarines Sur	0.88	1.21
San Jose	12° 20' N	121° 05' E	Occidental Mindoro	0.54	0.85
San Fernando	16° 17' N	120° 18' E	La Union	0.33	—
Real	14° 40' N	121° 37' E	Quezon	0.80	1.35
Puerto Princesa	09° 45' N	118° 44' E	Palawan	0.61	0.96
Port Irene	18° 23' N	122° 06' E	Cagayan	0.56	0.90
Panascosa	09° 46' N	118° 31' E	Palawan	0.52	—
Palanan	17° 07' N	122° 28' E	Isabela	0.76	1.16
Ormoc	11° 15' N	124° 36' E	Leyte, Southern Leyte, Samar	0.80	1.19
Matnoq	12° 46' N	124° 00' E	Sorsogon, Masbate	0.23	1.21
Legaspi	13° 09' N	123° 45' E	Albay, Sorsogon	0.74	1.16
Laoang	12° 35' N	125° 00' E	Northern Samar, Eastern Samar	0.81	1.22
Iloilo	10° 42' N	122° 35' E	Iloilo, Guimaras	0.78	1.05
Dumaguete	09° 18' N	123° 18' E	Negros Oriental, Siquijor	0.57	0.83
Davao	07° 05' N	125° 38' N	Davao, Davao Oriental	0.76	1.31
Currimao	17° 59' N	120° 29' E	Ilocos Norte	0.28	—
Claveria	18° 36' N	120° 04' E	Fuga Island, Ilocos,Norte	0.33	0.56
Cebu	10° 18' N	123° 55' E	Cebu	0.69	1.02
Catanauan	13° 34' N	122° 19' E	Quezon, Marinduque	0.77	1.15
Cagayan De Oro	08° 30' N	124° 40' N	Misamis Oriental	0.57	0.83
Bislig	08° 12' N	126° 22' E	Surigao Del Sur	0.83	1.15
Batangas	13° 45' N	124° 00' E	Batangas, Oriental Mindoro	0.68	1.00
Batan	11° 35' N	122° 56' E	Alakan, Romblon	0.81	1.20
Basco	20° 27' N	121° 04' E	Baternes, Basco	0.39	0.63
Baler	15° 45' N	121° 35' E	Aurora	0.77	1.21
Balabac	08° 00' N	117° 04' E	Palawan	0.63	1.02

**Table 3.** Radiocarbon ages of Holocene samples from the Philippine Islands.

No.	Locality	Site name	Material	Elevation (m.mllw)	Conventional age	Calibrated age	$\delta^{13}\text{C}$	Laboratory No.
21	ILN-12	Bayog	coral	1.5	6100±60	6610(6515)6445	-0.9	Beta-131179
24	LIN-13	Bayog	coral	1.4	5350±60	5750(5710)5640	0.7	Beta-174952
29	ILN-15	Narbaan	coral	1.2	6470±60	7020(6950)6880	-1.3	Beta-174950
30	ILN-15	Narbaan	coral	0.6	4110±80	4270(4150)4060	-0.2	Beta-174951
48	ILN-48	Currimao	coral	1.4	5740±60	6210(6170)6095	-0.5	Beta-131176
52	ILN-52	Currimao	coral	0.3	5400±60	5860(5745)5695	-0.2	Beta-131177
88	ILS-6	Solvec Pt.	coral	2.7	6800±90	7360(7269)7204	-2.24	NUTA-5231
89	ILS-7	Solvec Pt.	coral	1.4	4840±90	5246(5073)4991	-1.1	NUTA-5222
93	ILS-10	San Pablo	coral	1.5	3810±90	3849(3719)3624	0.2	NUTA-5230
94	ILS-10	San Pablo	coral	2.2	2770±80	2589(2457)2354	0.45	NUTA-5223
167	CAG-6	Sinaga	coral	1.0	2570±70	2970(2890)2830	-0.1	Beta-161607
168	CAG-6	Sinaga	coral	1.2	1820±70	1420(1350)1290	-2.3	Beta-161609
172	AUR-1	Dibuhobong	coral	1.7	2570±70	2320(2280)2140	-2.1	Beta-161606
174	QUE-1	Poillo Is.	coral	0.6	4570±70	4840(4810)4700	-0.2	Beta-161608
265	NSA-2	Sojoton Pt.	coral	0.2	6580±30	7157(7139)7054	-1.9	NUTA-4835
269	NSA-6	Cahayagan	coral	0.5	6240±30	6714(6668)6646	-1.7	NUTA-4871
274	NSA-10	Kabatuan	coral	2.4	4820±30	5139(5063)5038	0.5	NUTA-4832
277	NSA-11	Mapanas	coral	1.5	6630±30	7216(7169)7134	-2.1	NUTA-4834
279	NSA-12	Mapanas	coral	0.5	6420±30	6939(6884)6843	-3.9	NUTA-4833
282	ESA-1	Aptian Is.	coral	1.1	6760±30	7313(7279)7251	0.2	NUTA-4381
295	ESA-7	Divinubo Is.	coral	1.0	4650±30	4873(4840)4818	1.6	NUTA-4830
301	ESA-10	Maydolong	coral	0.8	6900±30	7428(7412)7370	1.2	NUTA-4827
412	ESA-9	Maydolong	coral	1.2	6630±90	7242(7171)7037	0.6	NUTA2-225
413	ESA-9	Maydolong	coral	0.7	6170±90	6686(6617)6495	-1.2	NUTA2-223
298	ESA-10	Maydolong	coral	0.7	6140±30	6615(6563)6524	-2.2	NUTA-4829
299	ESA-10	Maydolong	coral	0.6	5800±40	6258(6215)6192	0.22	NUTA-4747
300	ESA-10	Maydolong	coral	0.5	5680±30	6117(6096)6028	0.3	NUTA-4826
305	ESA-12	Baiang	coral	1.0	5780±40	6245(6194)6172	-0.23	NUTA-4745
312	ESA-15	Buyayawon	coral	1.1	6820±40	7386(7336)7307	-2.06	NUTA-4744
312	ESA-15	Buyayawon	oyster	3.4	4240±40	4400(4350)4280	0	Beta-166696
327	WSA-3	Tinabanan	oyster	2.9	4130±60	4270(4180)4090	1.2	Beta-161610
326	WSA-3	Tinabanan	oyster	2.9	5090±90	5531(5449)5335	1.75	NUTA-6411
321	WSA-2	Tinabanan	oyster	2.9	4830±60	5250(5120)5020	0.3	Beta-169470
323	WSA-2	Tinabanan	coral	1.0	6790±90	7349(7255)7188	-1.09	NUTA-6638
324	WSA-2	Tinabanan	coral	0.7	6710±100	7291(7196)7096	-2.00	NUTA-6639
328	WSA-3	Tinabanan	oyster	2.8	4510±90	4805(4702)4584	1.91	NUTA-6410
401	WSA-2	Tinabanan-L*	shell	-7.0	5880±100	6389(6283)6193	1.23	NUTA-6561
402	WSA-2	Tinabanan-L*	shell	-6.0	5840±90	6352(6263)6164	0.91	NUTA-6627
403	WSA-2	Tinabanan-L*	shell	-5.0	5310±90	5760(5656)5575	0.58	NUTA-6628
404	WSA-2	Tinabanan-L*	shell	-1.5	4280±90	4499(4391)4259	0.15	NUTA-6562
405	WSA-2	Tinabanan-L*	shell	-0.9	4280±90	4498(4387)4244	0.31	NUTA-6556
406	WSA-2	Tinabanan-L*	organic	0.0	1260±90	1266(1174)1121	-27.90	NUTA-6621
333	WSA-5	Guimtin Is.	oyster	2.2	2520±70	2295(2160)2095	0.4	Beta-171281
207	ROM-3	Agsao	coral	1.1	4060±80	4210(4080)3970	-0.8	Beta-161605
245	LEY-1	Toringon	coral	1.5	3920±70	3975(3885)3815	-0.2	Beta-131180
350	PAL-2	Miniloc Is.	coral	0.4	5420±90	5883(5758)5697	-3.09	NUTA-4467
351	PAL-2	Miniloc Is.	coral	0.3	5120±80	5569(5466)5739	-3.18	NUTA-4468
347	PAL-1	El Nido Town	coral	0.3	3680±100	3692(3575)3450	-3.31	NUTA-6498
407	PAL-0	Rio River-L*	shell	-9.7	7140±80	7636(7551)7491	-3.01	NUTA-6056
408	PAL-0	Rio River-L*	shell	-7.7	7600±80	8077(7983)7923	-3.47	NUTA-6055
409	PAL-0	Rio River-L*	wood	-2.8	5730±80	6630(6493)6585	-28.7	NUTA-6062
359	PAL-5	Lagen Is.	coral	0.2	6330±100	6888(6775)6671	0.35	NUTA-4463
356	PAL-4	Lagen Is.	oyster	1.7	3220±70	3128(3026)2937	1.06	NUTA2-045
357	PAL-4	Lagen Is.	oyster	1.5	2820±70	2678(2594)2474	0.64	NUTA2-047
410	PAL-4	Lagen Is.	oyster	1.7	3260±40	3150(3080)3020	0.4	Beta-168546
411	PAL-4	Lagen Is.	oyster	1.7	3450±70	3390(3330)3250	0.7	Beta-174949

\*core sample



**Table 4.** Radiochemical data  $^{230}\text{Th}/^{234}\text{U}$  dates for Holocene coral from the Philippines.

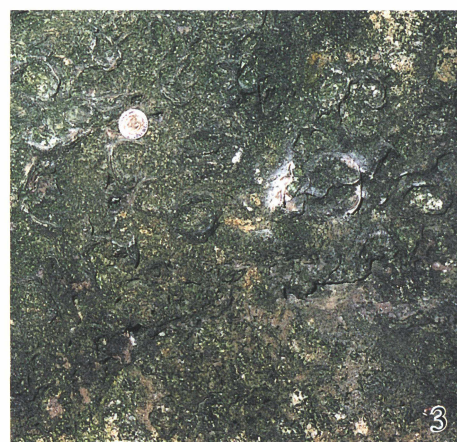
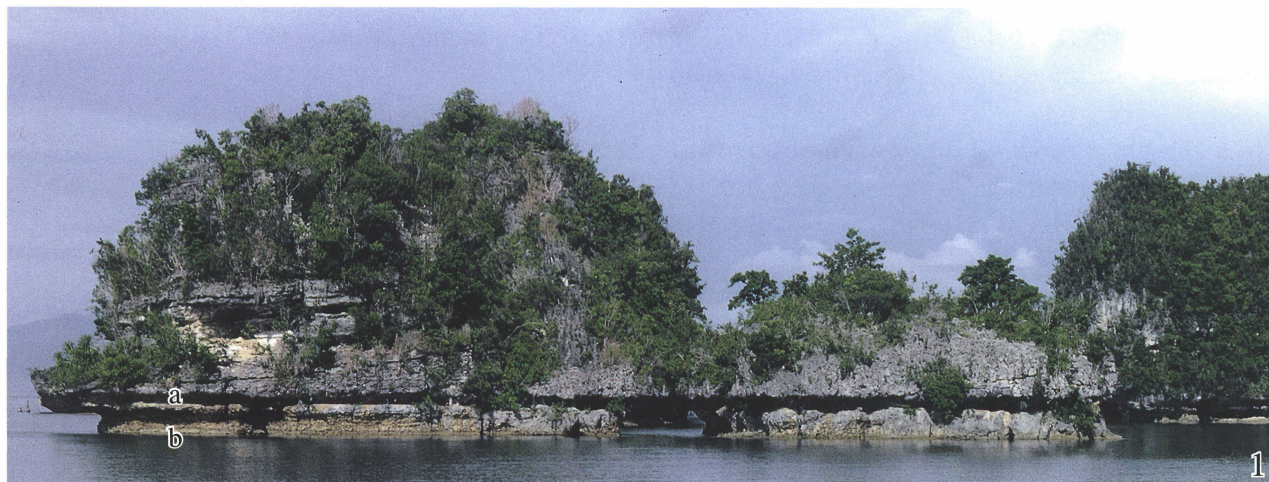
No.	Locality	Site name	Sample No.	Genus	Elevation (m, mllw)	$^{238}\text{U}$ (ppm)	$^{234}\text{U}/^{238}\text{U}$ (active ratio)	$^{230}\text{Th}/^{234}\text{U}$ (active ratio)	$(^{234}\text{U}/^{238}\text{U})_0$ (active ratio)	Date
4	CAG-1	Barit Is.	AO-484	<i>Platygyra</i>	1.2	2.322±0.014	1.137±0.007	0.0612±0.0011	1.139±0.007	6.84±0.12
14	ILN-6	Aggao	SA-09	<i>Diploastrea</i>	1.0	2.397±0.015	1.144±0.007	0.0355±0.0008	1.145±0.007	3.92±0.09
17	ILN-9	Buraon	SA-08	<i>Gardineroseris</i>	1.1	2.649±0.016	1.142±0.007	0.0626±0.0011	1.145±0.007	7.00±0.13
18	ILN-9	Buraon	SA-17	<i>Gardineroseris</i>	1.1	3.226±0.018	1.147±0.006	0.0587±0.0008	1.149±0.006	6.55±0.10
38	ILN-19	Culili Pt.	RB-01	<i>Goniastrea</i>	4.6	2.558±0.016	1.146±0.007	0.0624±0.0010	1.149±0.007	6.98±0.12
39	ILN-19	Culili Pt.	RB-02	<i>Porites</i>	4.0	2.596±0.016	1.141±0.007	0.0575±0.0011	1.143±0.007	6.42±0.12
49	ILN-22	Currimao	SA-02	<i>Goniastrea</i>	4.0	3.949±0.025	1.134±0.007	0.0725±0.0012	1.140±0.007	8.15±0.14
50	ILN-22	Currimao	SA-05	<i>Goniastrea</i>	1.4	2.230±0.014	1.147±0.007	0.0648±0.0010	1.150±0.007	7.14±0.11
72	ILN-28	Island Res.	SA-20	<i>Goniastrea</i>	0.5	2.260±0.014	1.137±0.007	0.0574±0.0010	1.140±0.007	6.40±0.12
71	ILN-28	Island Res.	SA-21	<i>Goniastrea</i>	0.8	2.989±0.019	1.140±0.007	0.0575±0.0010	1.143±0.007	6.41±0.12
73	ILN-28	Island Res.	SA-22	<i>Goniastrea</i>	0.3	2.879±0.017	1.153±0.007	0.0533±0.0009	1.156±0.007	5.93±0.10
83	ILS-2	Santa Cruz	AO-492	<i>Favia</i>	3.2	2.781±0.016	1.150±0.007	0.0495±0.0009	1.153±0.007	5.50±0.11
102	ILS-14	Ambucao	AO-493	<i>Alveopora</i>	2.3	2.535±0.015	1.149±0.007	0.0414±0.0009	1.151±0.007	4.58±0.10
109	LAU-1	Nalvo Sur	RB-04	<i>Porites</i>	1.3	2.377±0.017	1.141±0.008	0.0512±0.0009	1.144±0.008	5.69±0.11
110	LAU-1	Nalvo Sur	RB-05	<i>Porites</i>	1.3	2.559±0.014	1.146±0.006	0.0484±0.0014	1.148±0.006	5.38±0.16
111	LAU-2	Paraoir	MP-03	<i>Porites</i>	0.8	2.491±0.017	1.148±0.008	0.0135±0.0004	1.149±0.008	1.47±0.08
112	LAU-2	Paraoir	YSH-28	<i>Acropora</i>	0.8	2.984±0.019	1.140±0.007	0.0139±0.0004	1.141±0.007	1.51±0.10
113	LAU-2	Paraoir	YSH-29	<i>Porites</i>	0.8	2.503±0.017	1.133±0.007	0.0142±0.0004	1.134±0.007	1.55±0.10
114	LAU-2	Paraoir	YSH-22	<i>Acropora</i>	1.0	2.970±0.019	1.141±0.007	0.0406±0.0008	1.143±0.007	4.49±0.18
115	LAU-2	Paraoir	YSH-25	<i>Acropora</i>	0.8	2.857±0.018	1.138±0.006	0.0420±0.0008	1.140±0.006	4.65±0.18
116	LAU-2	Paraoir	YSH-30	<i>Goniastrea</i>	1.0	2.614±0.016	1.141±0.007	0.0281±0.0007	1.142±0.007	3.09±0.16
117	LAU-2	Paraoir	YSH-26	<i>Goniastrea</i>	2.7	2.465±0.017	1.146±0.008	0.0447±0.0009	1.148±0.008	4.31±0.18
118	LAU-2	Paraoir	YSH-27	<i>Hydonophora</i>	2.6	2.617±0.015	1.137±0.006	0.0416±0.0008	1.139±0.006	4.60±0.18
121	LAU-3	Quirimo	YSH-09	<i>Acropora</i>	3.0	3.741±0.025	1.148±0.007	0.0657±0.0011	1.151±0.007	7.36±0.24
123	LAU-5	Bacnotan	YSH-20	<i>Porites</i>	2.2	3.249±0.016	1.142±0.005	0.0591±0.0008	1.145±0.005	6.60±0.18
124	LAU-5	Bacnotan	YSH-11	<i>Acropora</i>	4.3	2.585±0.016	1.152±0.016	0.0650±0.0011	1.155±0.007	7.28±0.26
125	LAU-5	Bacnotan	YSH-10	<i>Acropora</i>	4.3	3.014±0.020	1.145±0.007	0.0689±0.0011	1.149±0.007	7.73±0.23
126	LAU-5	Bacnotan	YSH-17	<i>Porites</i>	5.3	2.499±0.016	1.150±0.007	0.0721±0.0012	1.154±0.007	8.10±0.26
127	LAU-5	Bacnotan	YSH-21	<i>Porites</i>	2.2	3.026±0.017	1.147±0.006	0.0662±0.0010	1.150±0.006	7.41±0.24
128	LAU-5	Bacnotan	YSH-24	<i>Porites</i>	2.2	2.897±0.020	1.151±0.007	0.0701±0.0010	1.154±0.007	7.88±0.24
129	LAU-5	Bacnotan	YSH-12	<i>Acropora</i>	2.0	3.069±0.019	1.137±0.007	0.0695±0.0011	1.140±0.007	7.80±0.24
130	LAU-5	Bacnotan	RB-06	<i>Platygyra</i>	1.0	2.472±0.015	1.145±0.007	0.0710±0.0011	1.148±0.007	7.98±0.26
131	LAU-5	Bacnotan	YSH-13	<i>Platygyra</i>	1.0	2.541±0.016	1.146±0.007	0.0709±0.0011	1.150±0.007	7.96±0.26
132	LAU-5	Bacnotan	YSH-15	<i>Cyphastrea</i>	0.6	2.210±0.013	1.148±0.006	0.0934±0.0014	1.152±0.007	9.19±0.28
133	LAU-5	Bacnotan	YSH-19	sclerospongiae	0.8	0.364±0.003	1.142±0.013	0.0775±0.0027	1.146±0.014	8.73±0.64
121	LAU-4	Bacnotan	YSH-09	<i>Acropora</i>	1.8	3.741±0.025	1.148±0.007	0.0657±0.0011	1.151±0.007	7.36±0.24
348	PAL-2	Minilog	YSH-02	<i>Goniastrea</i>	-0.1	2.906±0.019	1.134±0.007	0.0510±0.0010	1.137±0.007	5.67±0.22
350	PAL-2	Minilog	YSH-16	<i>Goniastrea</i>	-0.1	2.201±0.013	1.133±0.007	0.0535±0.0009	1.135±0.007	5.96±0.22
366	PAL-10	Manlipien	YSH-01	<i>Platygyra</i>	0.8	2.715±0.016	1.142±0.006	0.0556±0.0008	1.145±0.007	6.19±0.18
367	PAL-11	Nagtabon	YSH-03	<i>Platygyra</i>	0.8	2.341±0.017	1.135±0.008	0.0573±0.0010	1.138±0.009	6.43±0.24
361	PAL-6	San Vicente	YSH-14	<i>Platygyra</i>	0.9	2.535±0.017	1.147±0.007	0.0600±0.0012	1.150±0.007	6.70±0.27
372	PAL-14	Quezon	AO-453	<i>Goniastrea</i>	0.7	2.781±0.016	1.143±0.007	0.0534±0.0009	1.145±0.007	5.94±0.11
138	PAN-2	Silaqui Is.	SA-10	coral	1.0	2.803±0.018	1.129±0.007	0.0509±0.0009	1.131±0.007	5.66±0.10
138	PAN-2	Silaqui Is.	SA-11	coral	1.0	2.496±0.014	1.145±0.006	0.0467±0.0008	1.147±0.006	5.18±0.09
138	PAN-2	Silaqui Is.	SA-12	coral	1.0	2.771±0.018	1.149±0.007	0.0460±0.0009	1.151±0.007	5.11±0.10
150	PAN-10	Agno	SA-03	<i>Porites</i>	0.6	2.500±0.014	1.144±0.007	0.0357±0.0007	1.145±0.006	3.94±0.08
151	PAN-10	Agno	SA-04	<i>Platygyra</i>	0.4	2.426±0.013	1.143±0.006	0.0597±0.0009	1.145±0.007	6.67±0.10
173	AUR-2	Baler	SA-14	<i>Cyphastrea</i>	0.3	2.547±0.015	1.146±0.007	0.0364±0.0009	1.147±0.007	4.02±0.11
189	SOR-2	Sawanga	SA-01	<i>Leptoastrea</i>	0.9	2.391±0.016	1.138±0.008	0.0660±0.0012	1.140±0.008	7.39±0.14
230	BOH-2	Pangangan	AO-463	<i>Porites</i>	0.5	2.607±0.016	1.149±0.007	0.0439±0.0009	1.151±0.007	4.87±0.10

**Plate 1.** Marine notches and related features in Samar

- Photo 1.** Two notches (a and b) are carved along the side of Calowayan Island; the upper notch is etched along the roof of the lower notch (station WSA-4, fig. 200).
- Photo 2.** This notch relationship is also seen at the adjacent Tinabanan coast (station WSA-2, Fig. 197). Providing age control for the notches are corals and oyster shells. In Tinabanan, corals at 1.0m (d) and 0.7m (e) above mllw, yielded  $^{14}\text{C}$  ages of 7255 and 7196 cal BP, respectively.
- Photo 3.** In a cave on the right of Photo 2(c), an oyster at 2.9m above mllw was  $^{14}\text{C}$  dated at 5120 cal BP (Fig. 198).
- Photo 4.** On the opposite wall, approximately 75m across the embayment from the wall in Photo 2, shells occur along the zone separating the two notches (station WSA-3, Fig. 199). Two samples from 2.9 and one from above 2.8 m above mllw gave  $^{14}\text{C}$  ages of 5449, 4180 and 4702 cal BP. In the photo are the authors—Y.M. on the right and F.S. on the left.
- Photo 5.** The coastal profile of Divinubo Island, located along the east coast of Samar, consists of a wide uplifted coral reef platform paired with two discrete notches (station ESA-6, Fig. 180).



Plate 1



**Plate 2.** A marine notch and related features in Buyayawon, Southern Samar

**Photo 1.** The notch (a), 3.3 m above mllw, has a relatively flat floor (station ESA-14, Fig. 189). Below the notch is coral (b) attached to the steep face of the notched wall.

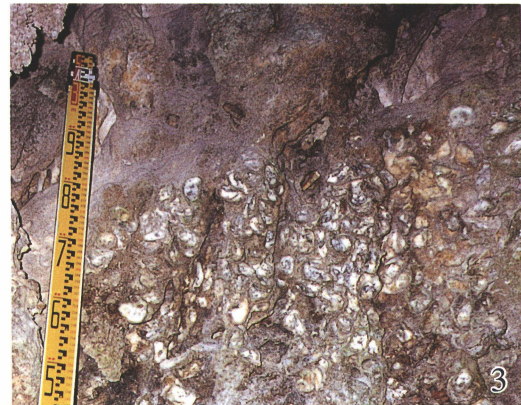
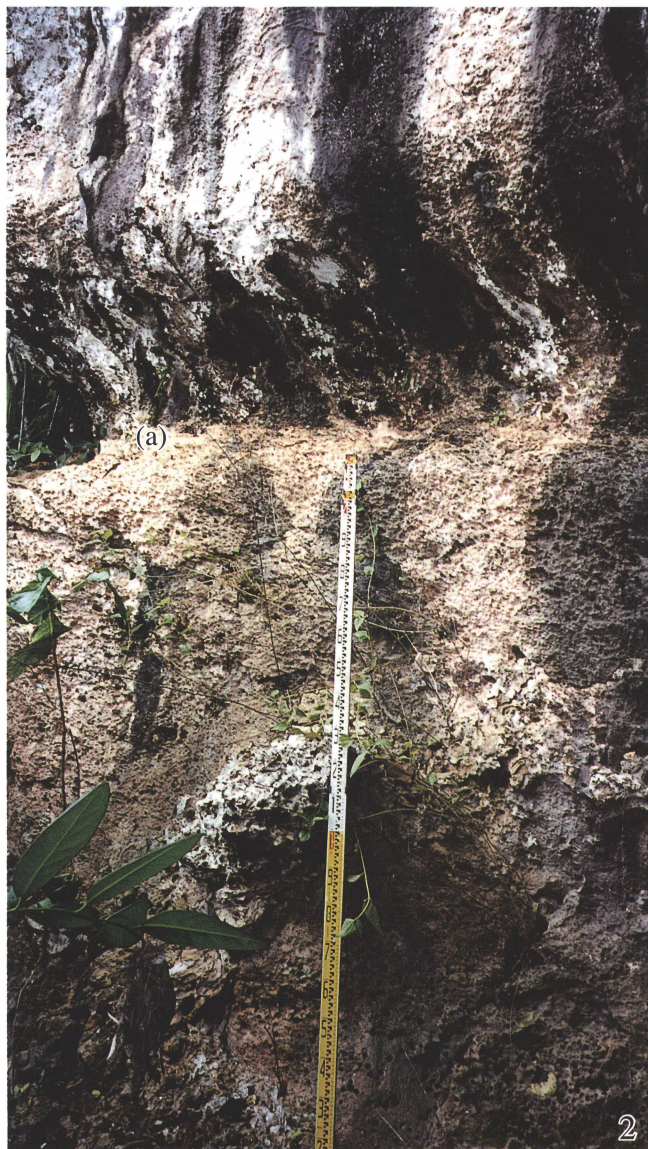
**Photo 2.** Behind the notched limestone in Photo 1 is a cave where corals (a) are attached to the entrance walls (also see Figs. 188 and 189). The upper limit of the coral (b) is at the same elevation as the notch just outside the cave.

**Photo 3.** Oyster shells lining the inner walls of the cave have an upper limit of shell concentration at the elevation of the notch.

**Photo 4.** In an adjacent cave, marked by an arrow (station ESA-15, Fig. 190), an oyster shell taken 3.4 m above mllw yielded a  $^{14}\text{C}$  age of 4350 cal BP, whereas 1.1m above mllw gave a  $^{14}\text{C}$  age of 7330 cal BP.



Plate 2



**Plate 3.** Notch and related features in West Samar

**Photo 1.** (1) and (2) Only one notch, at 1 m above mllw, occurs in Gumiti Island (stations WSA-6 and 7, Figs. 202 and 203). Arrows a and b in Photo 1 point to caves whose walls are lined with oyster shells.

**Photo 2.** Profile of the notch and the entrance to the first cave (a in Photos 1 and 2).

**Photo 3.** An oyster, 2.2 m above mllw, from the first cave gave a  $^{14}\text{C}$  age of 2160 cal BP.

**Photo 4.** Oyster shells on the walls of the second cave (b in Photo 1).



Plate 3





**Plate 4.** Marine notches and related features in Bacuit Bay, Palawan

**Photo 1.** Holocene (a) and OIS 5e (b) notches etched on the walls of Miniloc Island (Fig. 212).

**Photo 2.** *Goniastrea* sp., 0.4 m above mllw, along the floor of the lower notch in Miniloc Island gave a  $^{14}\text{C}$  age of 5758 cal BP and a  $^{230}\text{Th}/^{234}\text{U}$  age of  $5.96\pm 0.22$  ky.

**Photo 3.** Three notches in Lagen Island; the two lower notches, a and b are Holocene and c is correlated to OIS 5e.

**Photo 4.** A cave in Lagen Island (Fig. 214).

**Photo 5.** Oysters on the walls of the cave in Photo 4 generally increase in size towards the upper limit of shell occurrence. Four oyster shells, between 1.5 to 1.7 m above mllw, from this cave yielded  $^{14}\text{C}$  ages ranging from 3320 to 2594 cal BP.

**Photo 6.** Three notches are also found in EL Nido Town. The larger, higher notch (a) is assigned an OIS 5e age and the lower two (b and c) are Holocene. A coral (d) at the notch floor, 0.3 m above mllw, was  $^{14}\text{C}$  dated 3575 cal BP (Fig. 211).



Plate 4





**Plate 5.** Terraces and notches along the northwest coast of Luzon

**Photo 1.** The coast at Culili Point is marked by several terraces. In the foreground are four terraces, of possible Holocene ages, at 5.1, 3.0, 2.0 and 1.6 m above mllw (stations ILN-18 and 19, Figs. 22 and 23).

**Photo 2.** A fairly continuous terrace (a) along the Currimao coast stands at 3.3 to 4 m above mllw (stations ILN-20 to 24, Figs. 24 to 28).

**Photo 3.** Notches are carved on the scarp of the terrace in Photo 2 (station ILN-22, Fig. 26). A *Goniastrea* sp. from the terrace which is 3.7 m above mllw gave a  $^{230}\text{Th}/^{234}\text{U}$  age of  $8.20 \pm 0.14$  ky.

**Photo 4.** Uplifted *Porites* sp. micro atolls in Paroir, La Union (station LAU-2, Figs. 55–57) are partially submerged during high tide.

Plate 5

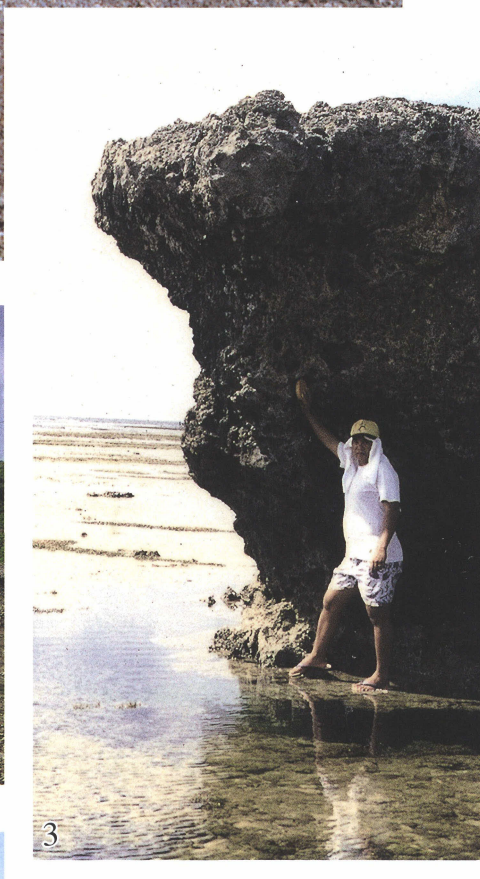
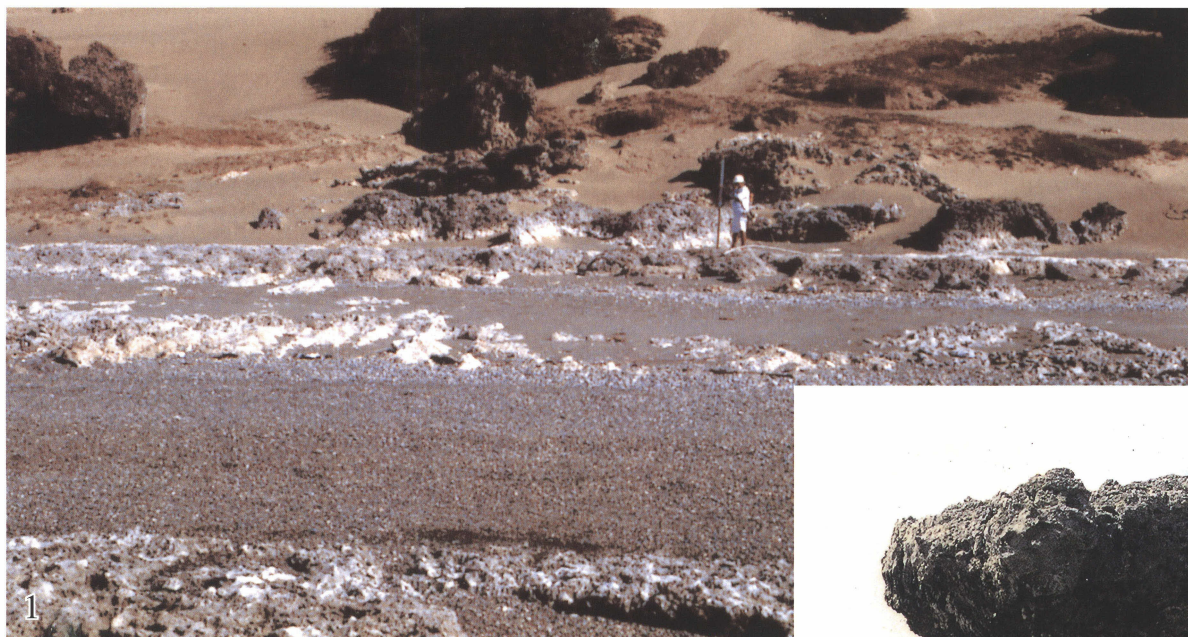




Plate 6

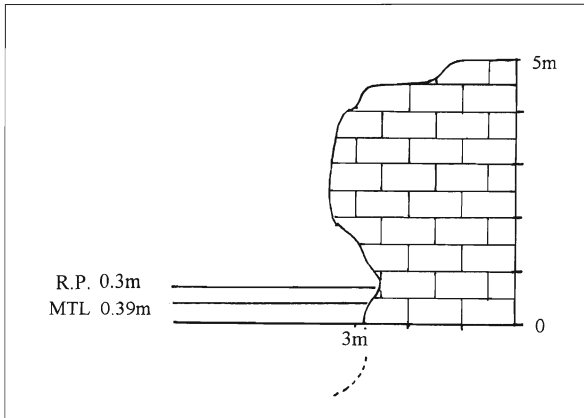


Figure 1. Port Basco, Batan Island, BATANES (No.1, BAA-1)

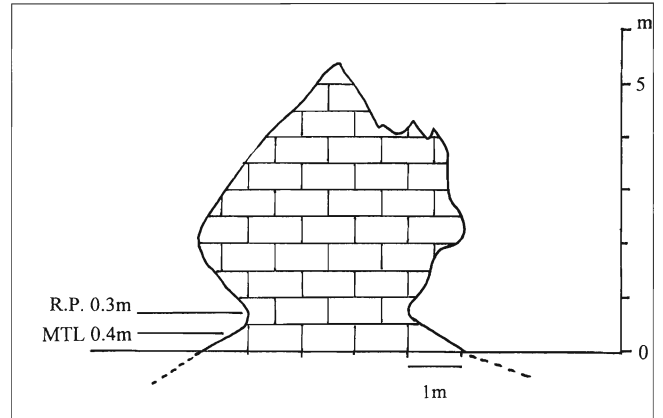


Figure 2. Port Basco, Batan Island, BATANES (No.2, BAA-2)

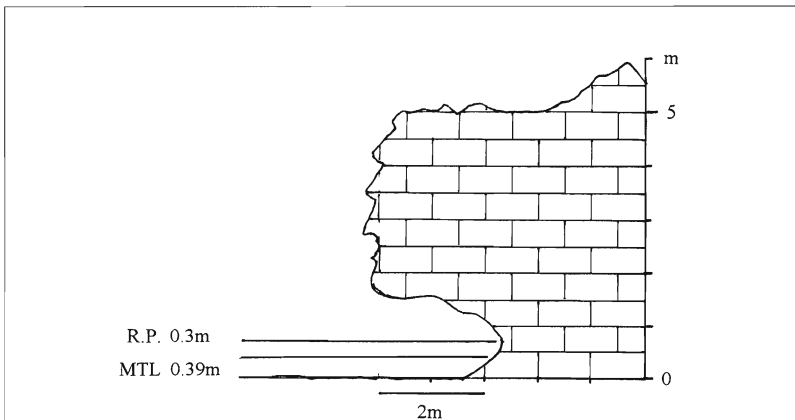


Figure 3. Batan Island, BATANES (No.3, BAA-3)

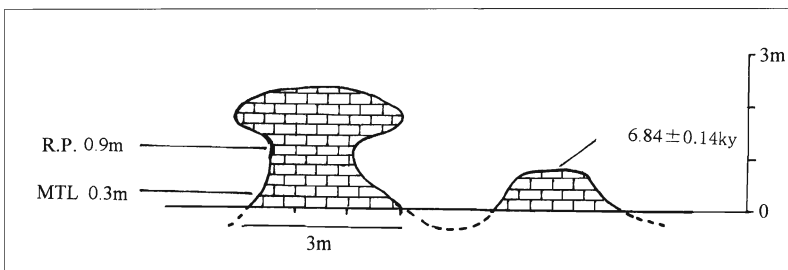


Figure 4. Barit Island, Babuyan Islands, CAGAYAN (No.4, CAG-1)

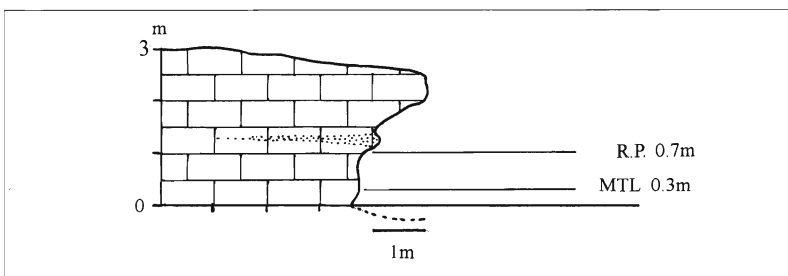


Figure 5. Fuga Island, Babuyan Islands, CAGAYAN (No.5, CAG-2)

### Legend

<p>1. </p> <p>2. </p> <p>3. </p> <p>4. </p> <p>5. </p> <p>6. </p> <p>7. </p> <p>8. </p> <p>9. </p> <p>10. </p>	<p>1. Holocene limestone.</p> <p>2. Pre-Holocene limestone.</p> <p>3. sandy limestone.</p> <p>4. Pleistocene limestone (5e).</p> <p>5,6. sedimentary rocks</p> <p>7. sand</p> <p>8. gravel</p> <p>9,10. igneous rocks</p>
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cal BP: <sup>14</sup>C calender age  
 ky: <sup>230</sup>Th/<sup>234</sup>U data  
 R.P.: Retreat Point (above mean sea level)  
 MS(T)L: Mean Sea level  
 Elevation is mean low low water

Plate 7

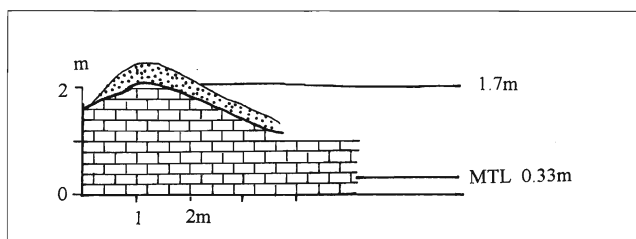


Figure 6. Mababoa, near Aggao, ILOCOS NORTE (No.6, LIN-1)

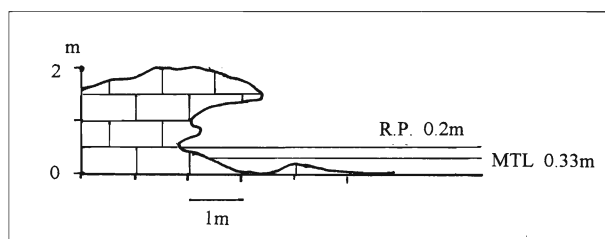


Figure 7. Aggao, ILOCOS NORTE (No.7, ILN-2)

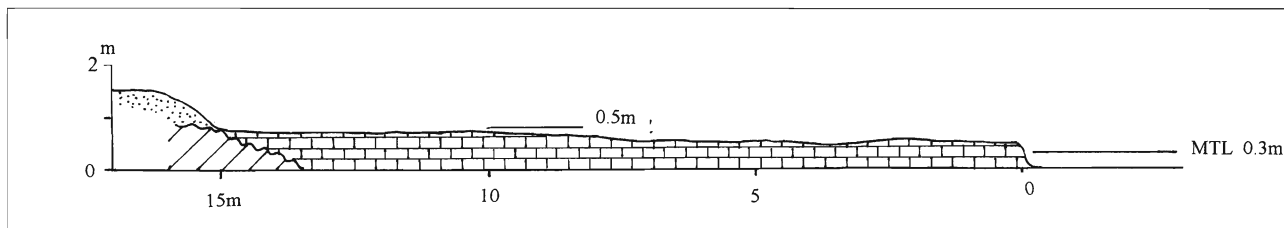


Figure 8. Aggao, ILOCOS NORTE (No.8, ILN-3)

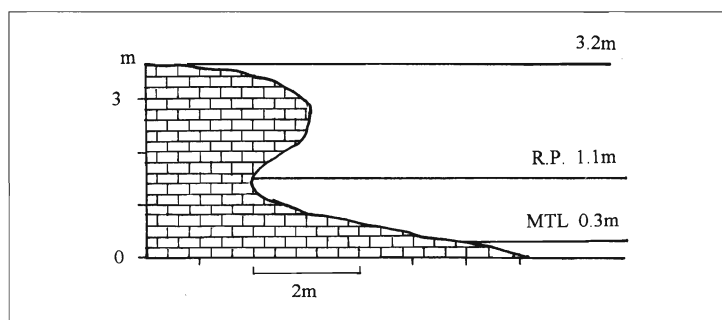


Figure 9. Aggao, ILOCOS NORTE (No.9, ILN-4)

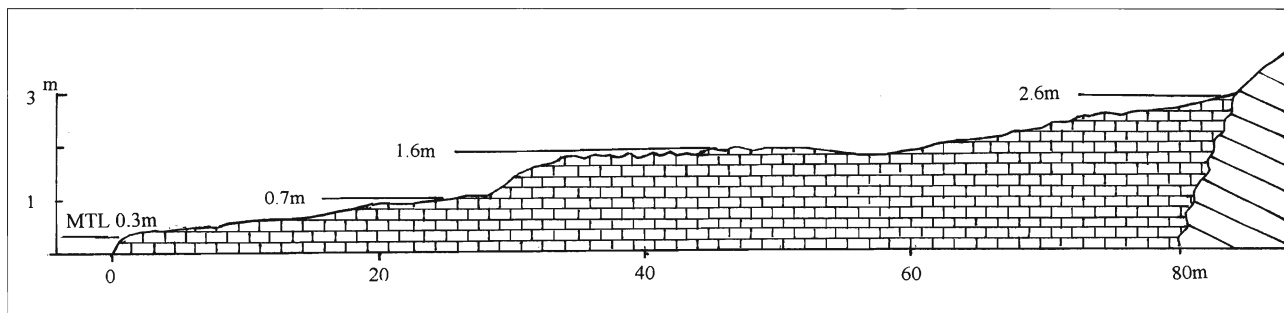


Figure 10. Aggao, ILOCOS NORTE (Nos.10, 11, 12, ILN-5)

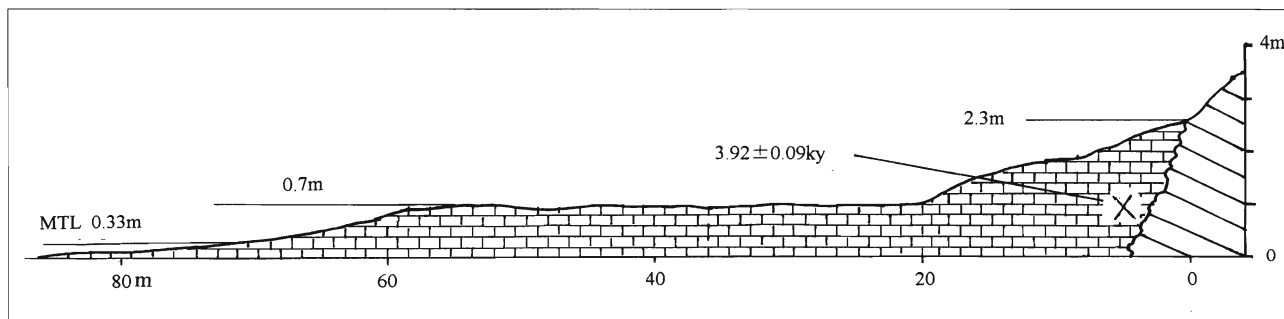


Figure 11. Aggao, ILOCOS NORTE (Nos.13, 14, ILN-6)

Plate 8

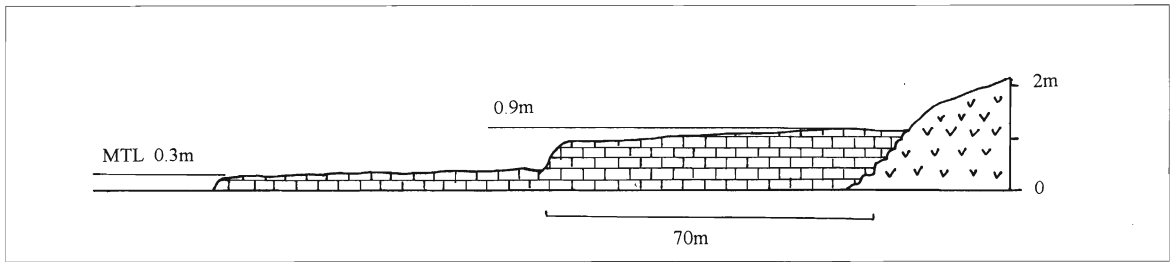


Figure 12. Saoit, ILOCOS NORTE (No.15, ILN-7)

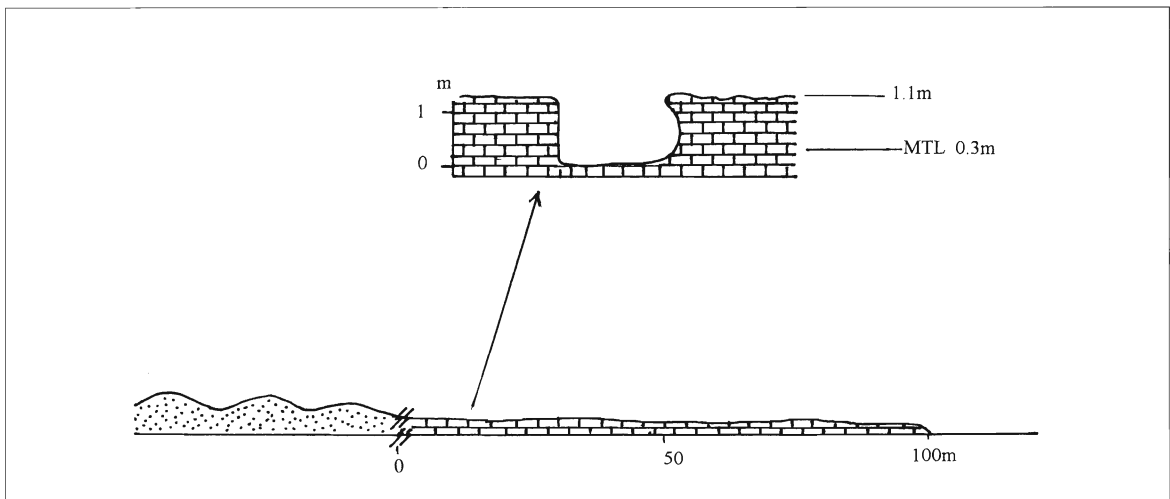


Figure 13. Pagali, ILOCOS NORTE (No.16, ILN-8)

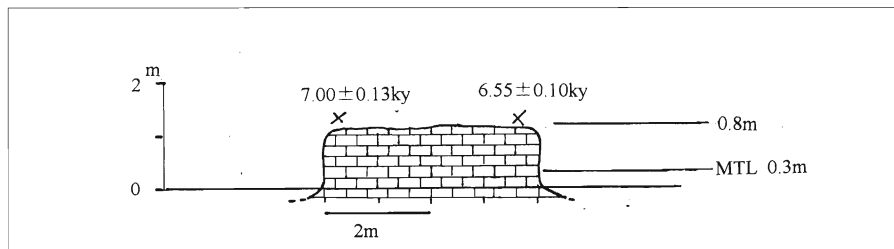


Figure 14. Buraan, ILOCOS NORTE (Nos.17, 18, ILN-9)

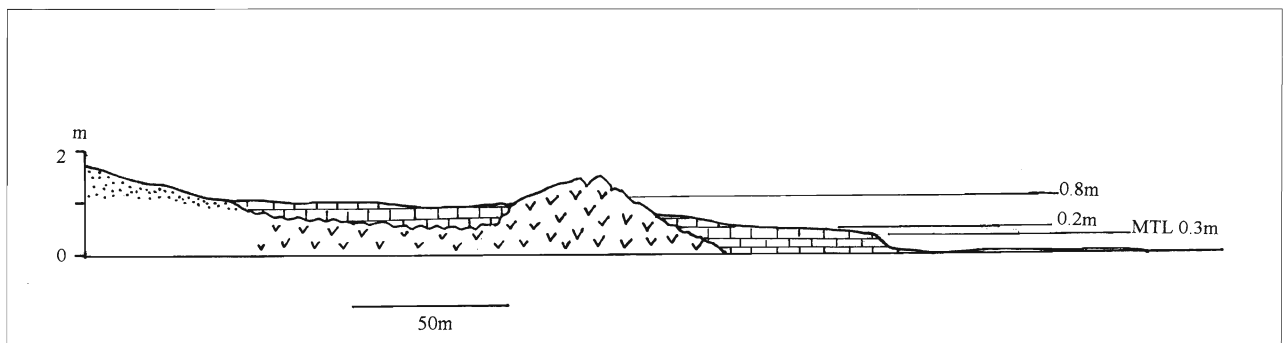


Figure 15. Bayog, ILOCOS NORTE (Nos.19, 20, ILN-10, 11)

Plate 9

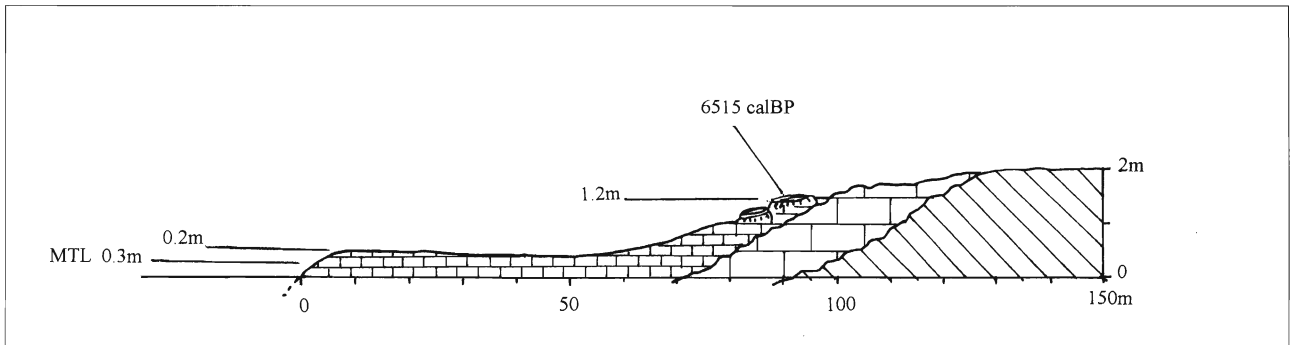


Figure 16. Bayog, ILOCOS NORTE (Nos.21, 22, ILN-12)

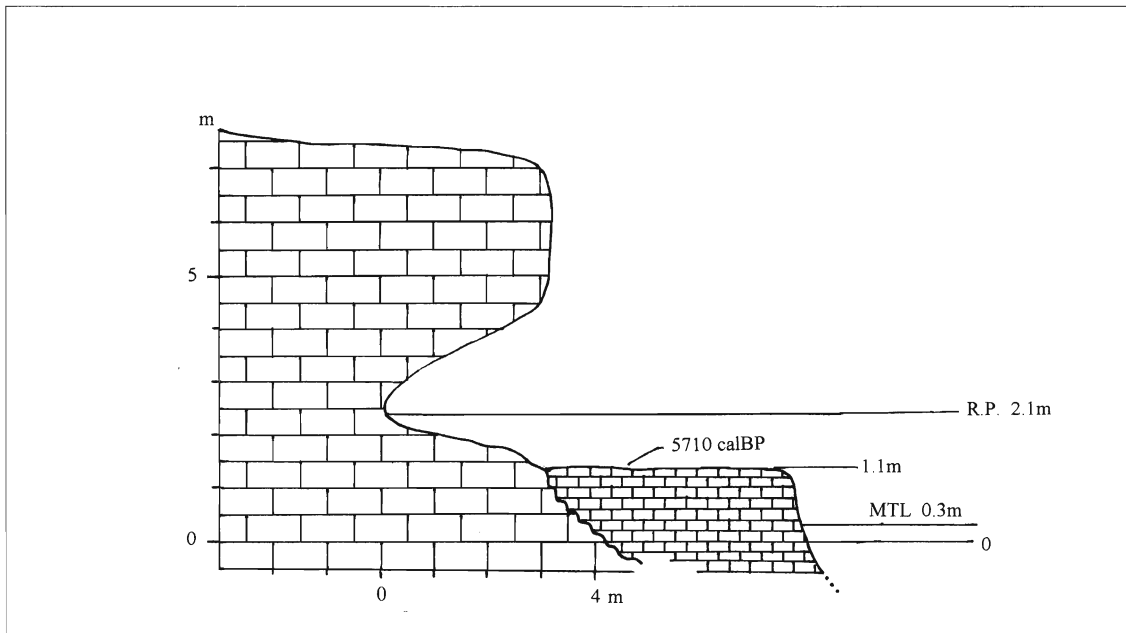


Figure 17. Bayog, ILOCOS NORTE (Nos.23, 24, ILN-13)

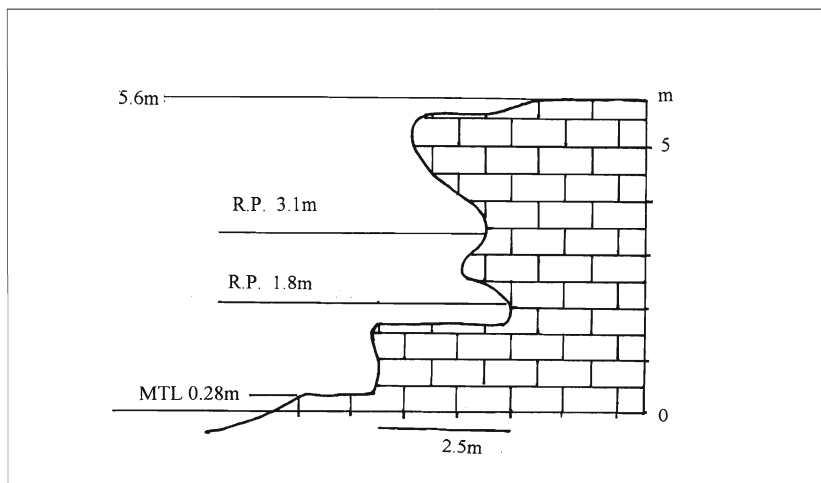


Figure 18. Bubon, ILOCOS NORTE (Nos.25, 26, ILN-14)

Plate 10

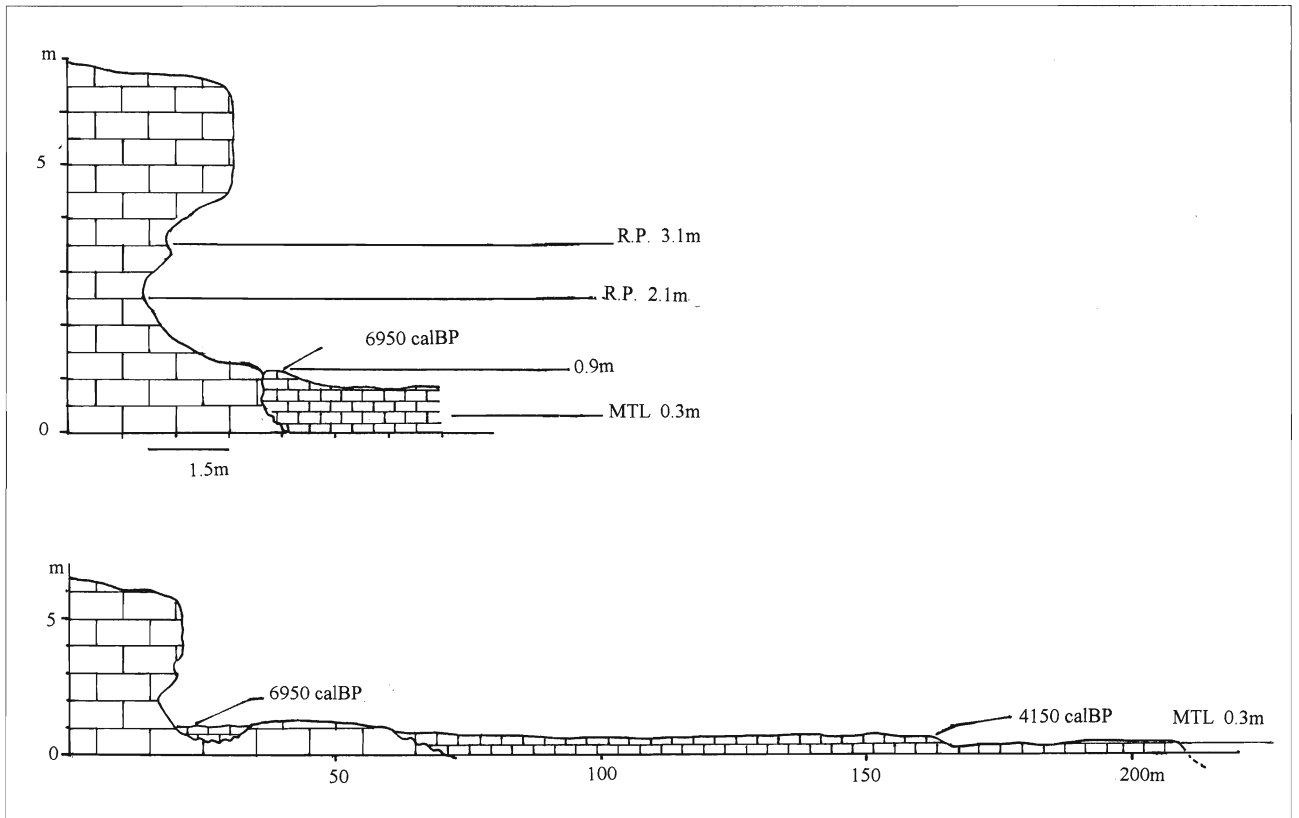


Figure 19. Narbaan, ILOCOS NORTE (Nos.27, 28, 29, 30, ILN-15)

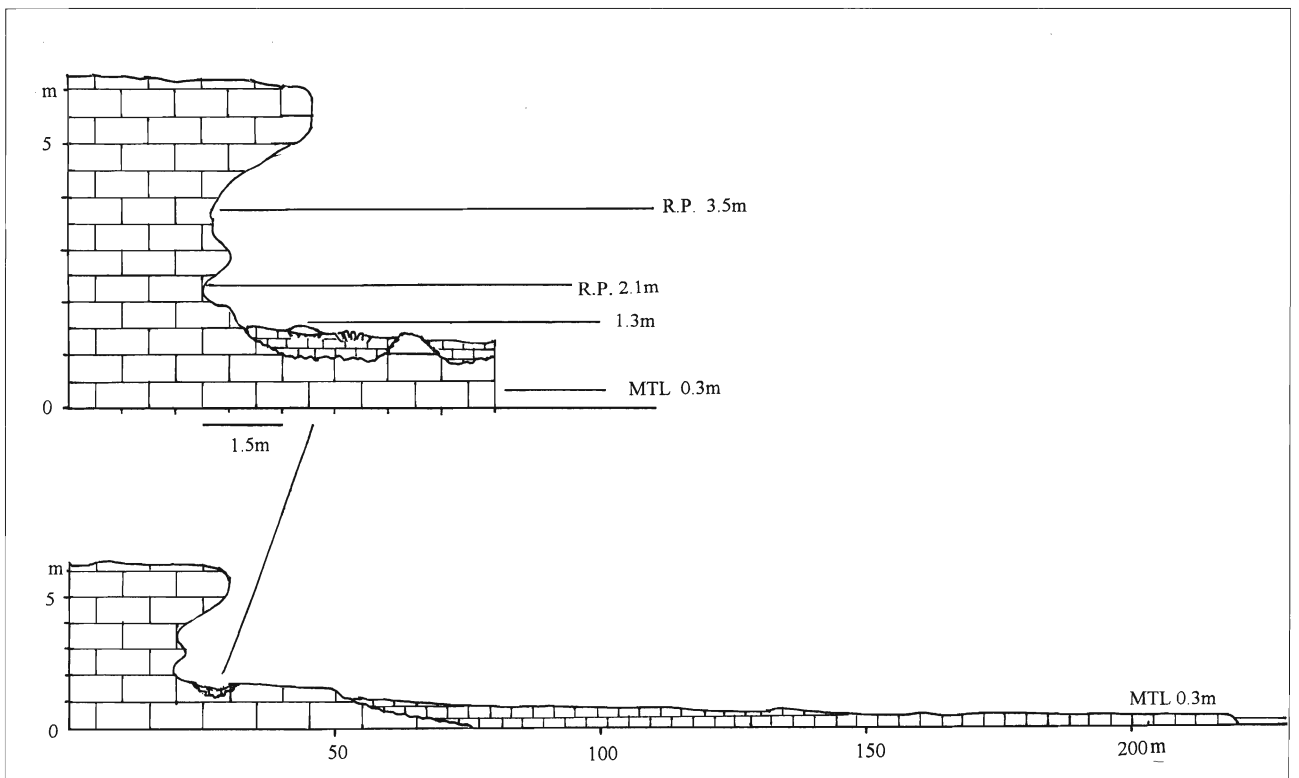


Figure 20. Narbaan, ILOCOS NORTE (Nos.31, 32, 33, ILN-16)



Plate 11

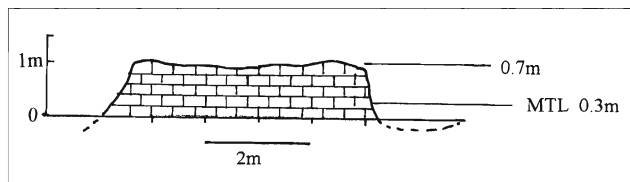


Figure 21. Cupuran, ILOCOS NORTE (No.34, ILN-17)

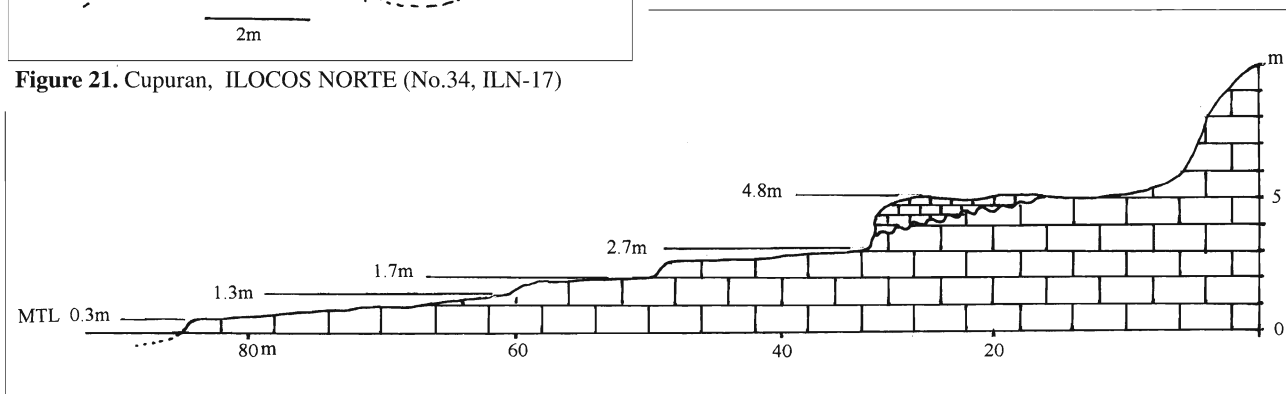


Figure 22. Culili Point, ILOCOS NORTE (Nos.35, 36, 37, 38, ILN-18)

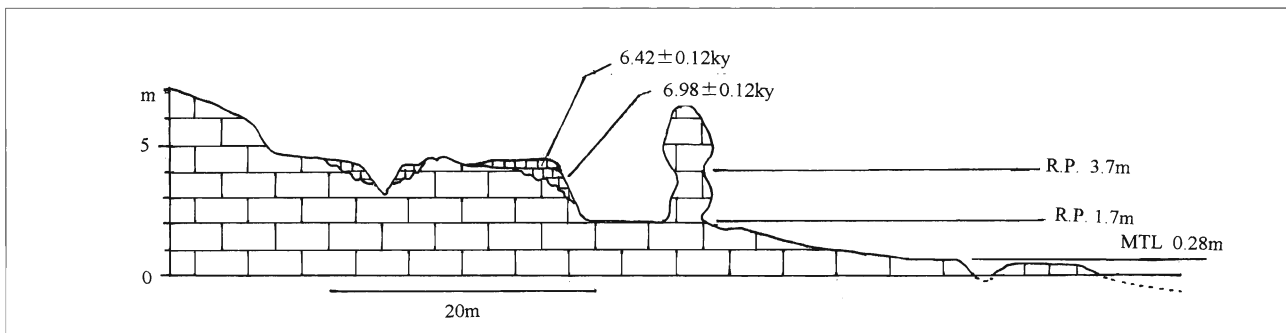


Figure 23. Culili Point, ILOCOS NORTE (Nos.39, 40, 41, ILN-19)

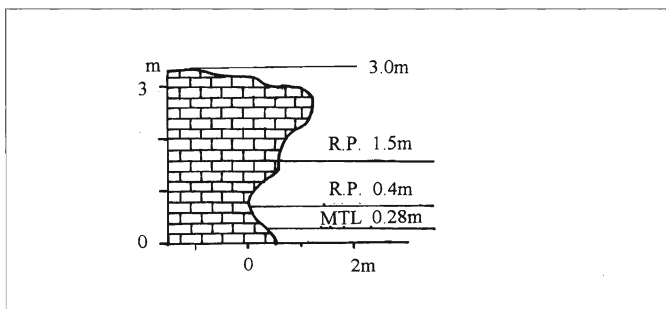


Figure 24. Currimao, ILOCOS NORTE (Nos.42, 43, 44, ILN-20)

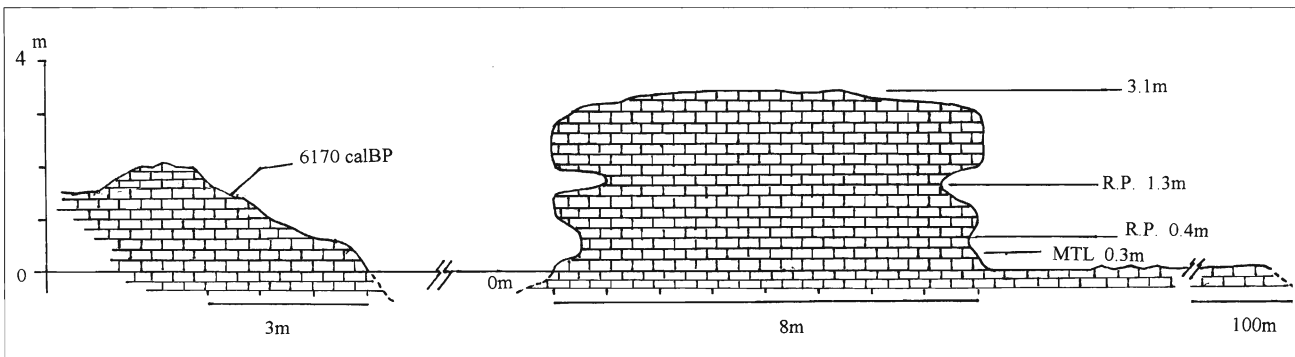


Figure 25. Currimao, ILOCOS NORTE (Nos.45, 46, 47, 48, ILN-21)

Plate 12

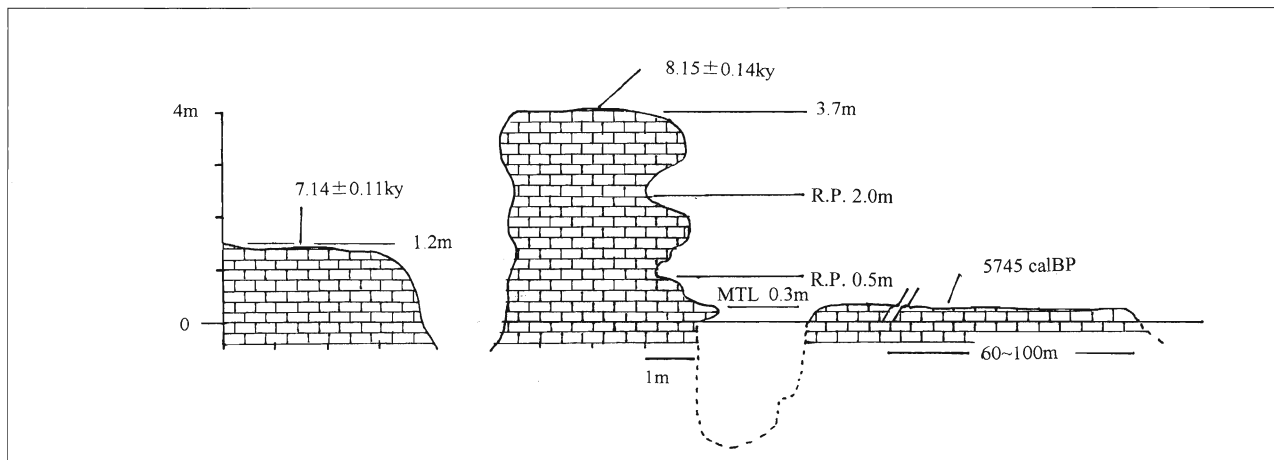


Figure 26. Currimao, ILOCOS NORTE (Nos.49, 50, 51, 52, 53, ILN-22)

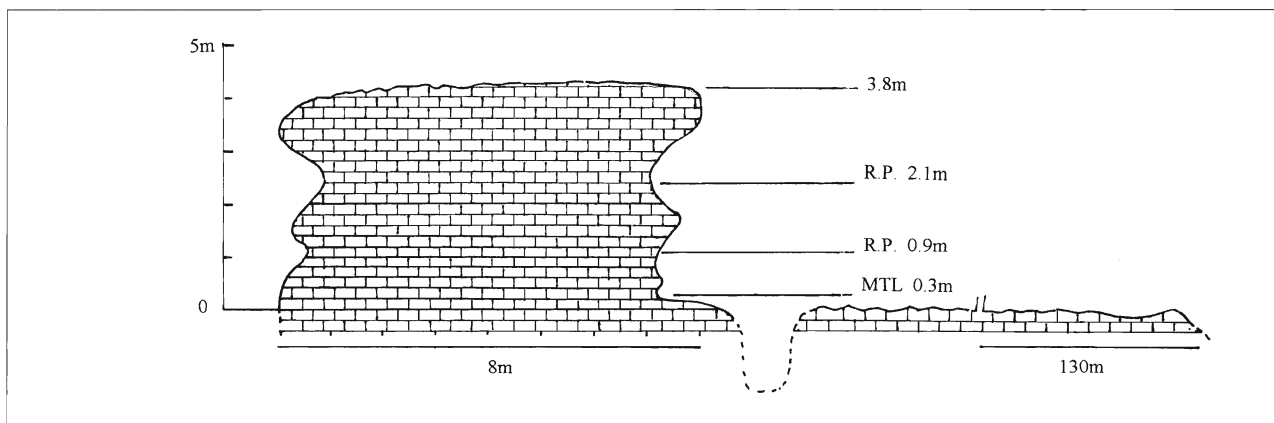


Figure 27. Currimao, ILOCOS NORE (Nos.54, 55, 56, ILN-23)

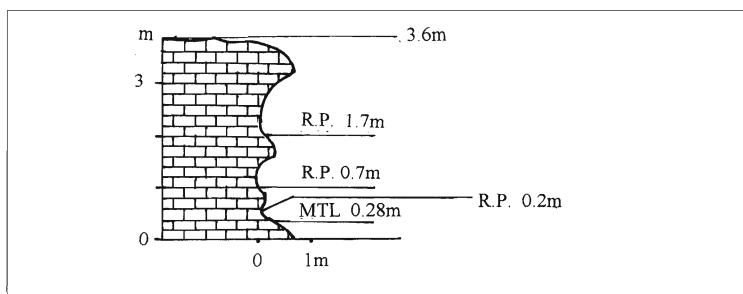


Figure 28. Currimao, ILOCOS NORTE (Nos.57, 58, 59, 60, ILN-24)

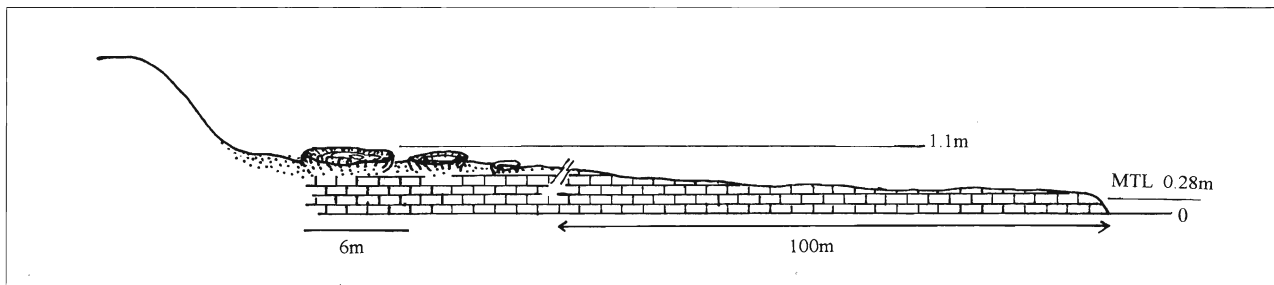


Figure 29. Salugan, ILOCOS NORTE (N0.61, ILN-25)

Plate 13

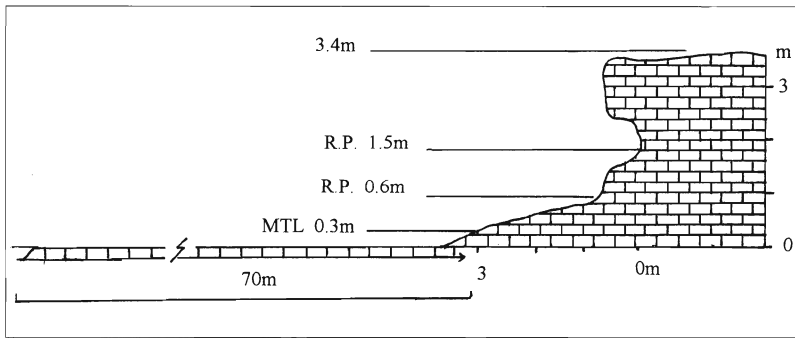


Figure 30. Logot Point, ILOCOS NORTE (Nos.62, 63, 64, ILN-26)

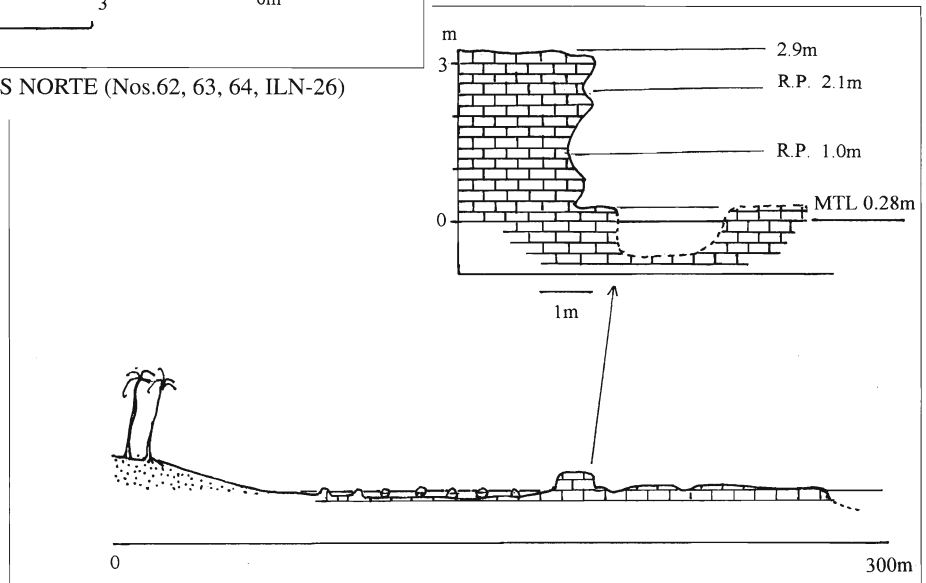


Figure 31. Pagsanahan, Badoc, ILOCOS NORTE (Nos.65, 66, 67, ILN-27)

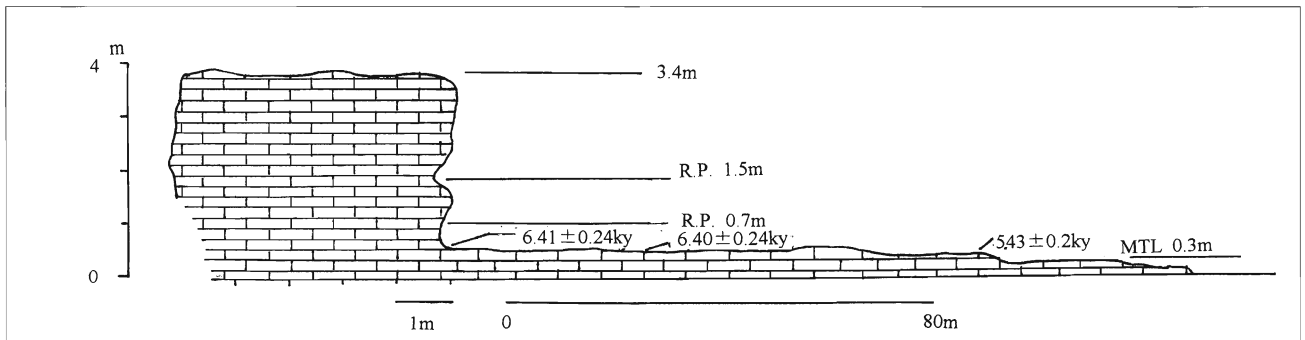


Figure 32. Island Resort, Badoc, ILOCOS NORTE (Nos.68, 69, 70, 71, 72, 73, ILN-28)

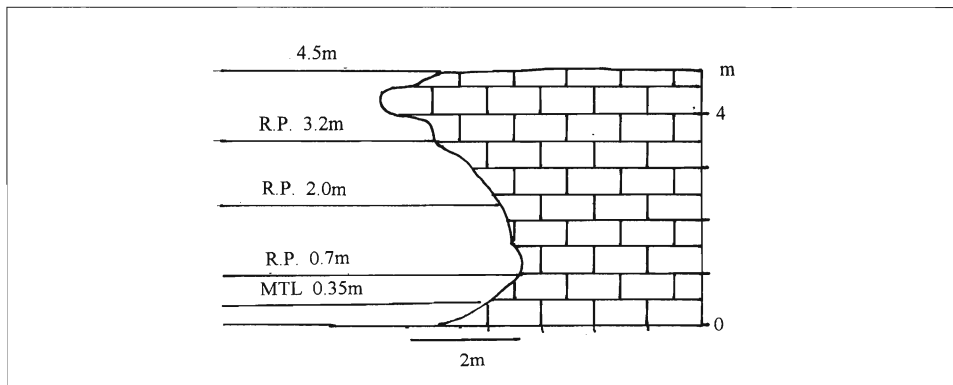


Figure 33. Badoc Island, Badoc, ILOCOD NORTE (Nos.74, 75, 76, 77, ILN-29)

Plate 14

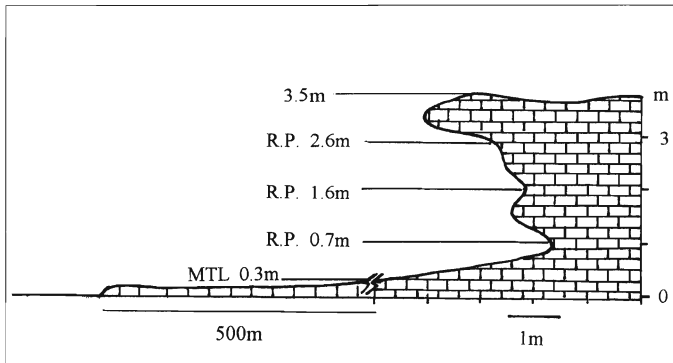


Figure 34. Dadalaquiten, Sinat, ILOCOS SUR (Nos.78, 79, 80, 81, ILS-1)

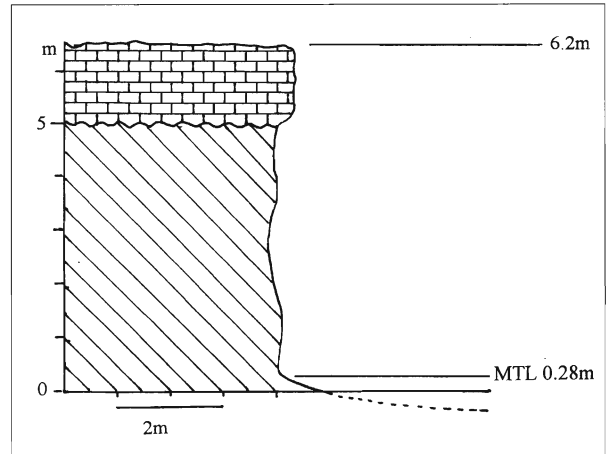


Figure 35. Santa Cruze, ILOCOS SUR (No.82, ILS-2)

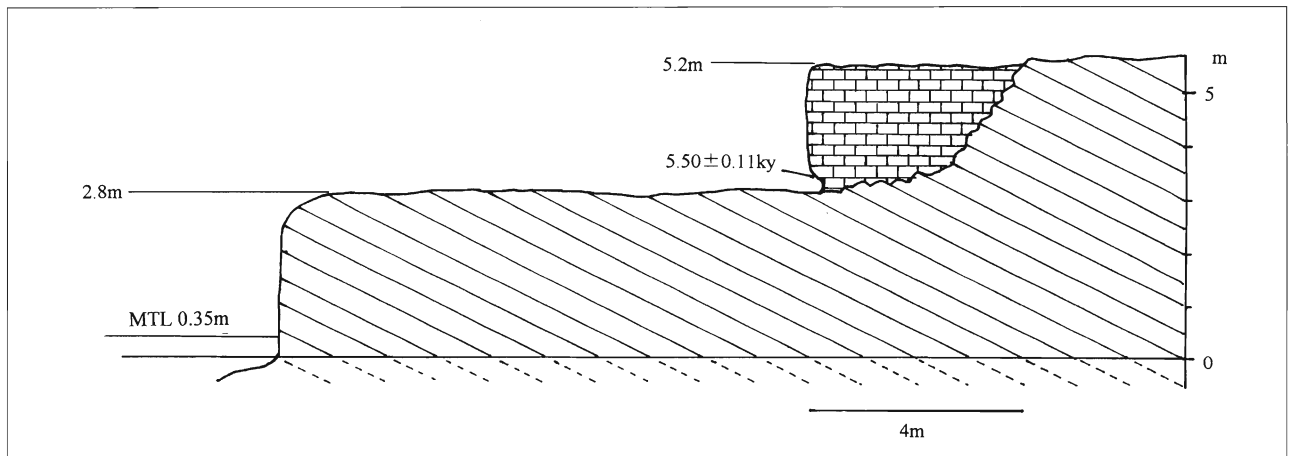


Figure 36. Santa Cruze, ILOCOS SUR (No.83, ILS-3)

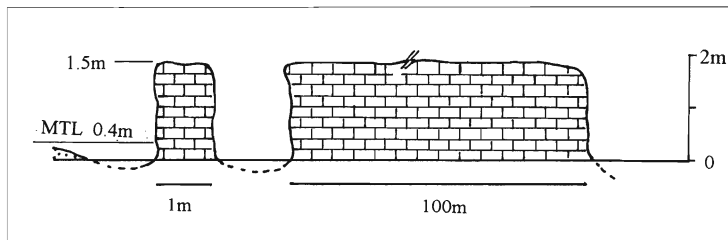


Figure 37. Santa Cruze, ILOCOS SUR (No. 84, ILS-4)

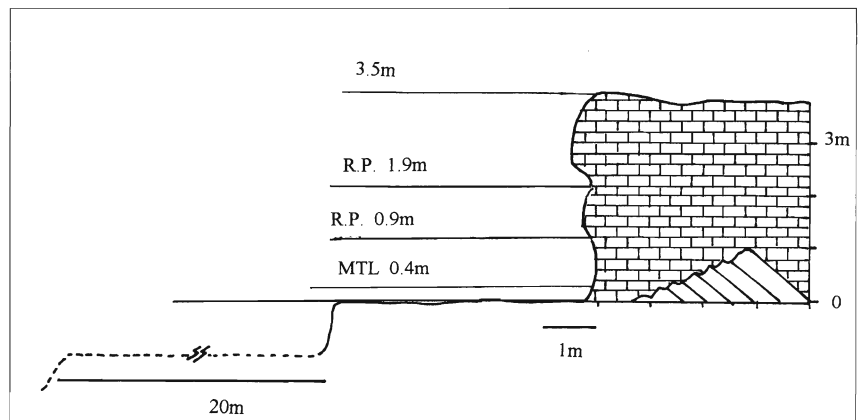


Figure 38. Solvec Point, ILOCOS SUR (Nos. 85, 86, 87, ILS-5)

Plate 15

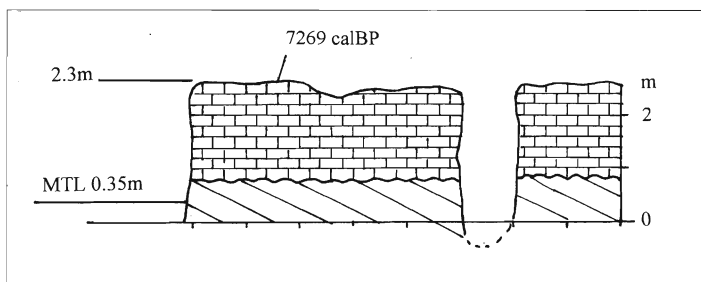


Figure 39. Solvec Point, ILOCOS SUR (No.88, ILS-6)

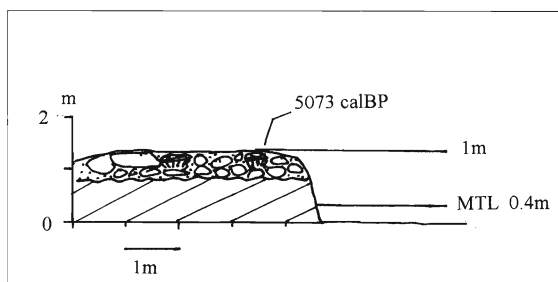


Figure 40. Solvec Point, ILOCOS SUR (No.89, ILS-7)

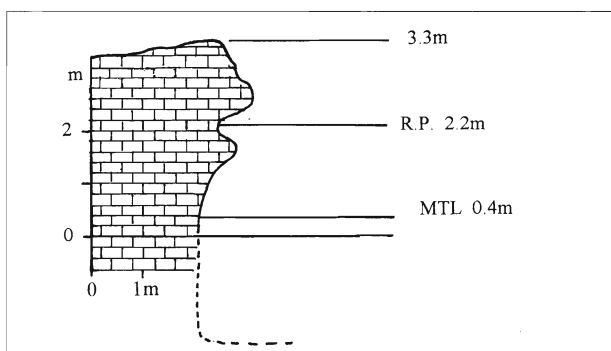


Figure 41. Solvec Point, ILOCOS SUR (Nos.90, 91, ILS-8)

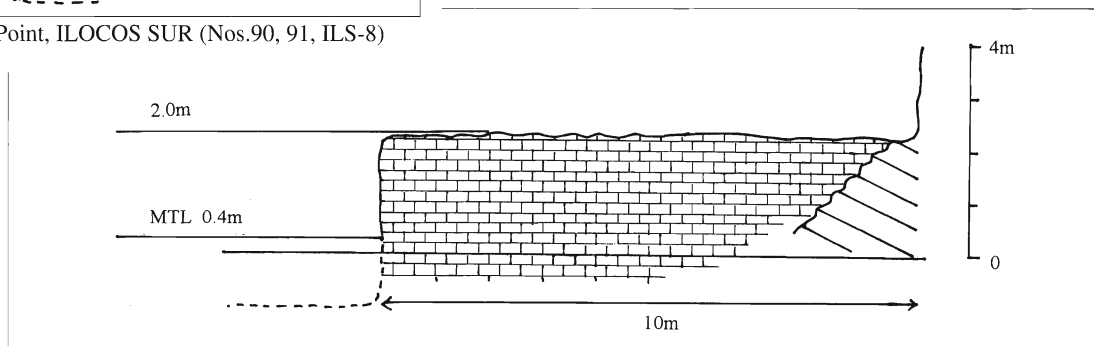


Figure 42. Suso Point, ILOCOS SUR (No.92, ILS-9)

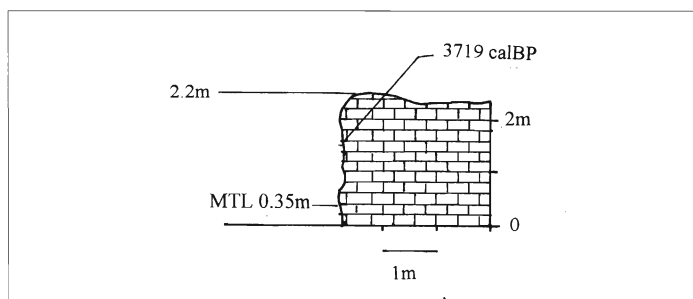


Figure 43. San Pablo, ILOCOS SUR (No.93, ILS-10)

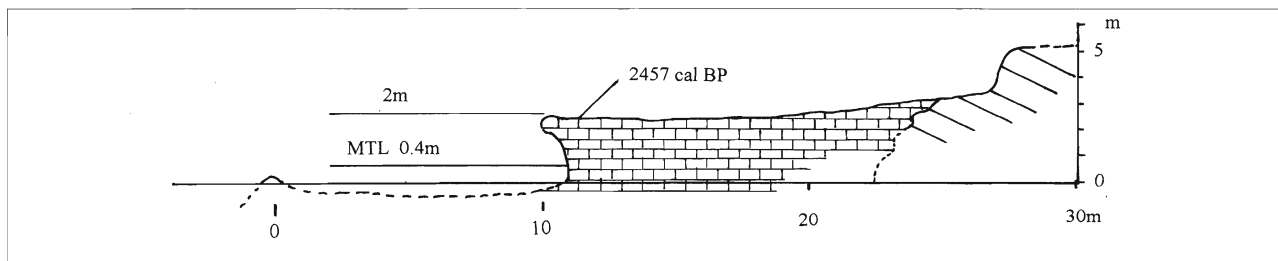


Figure 44. San Pablo, ILOCOS SUR (No.94, ILS-11)

Plate 16

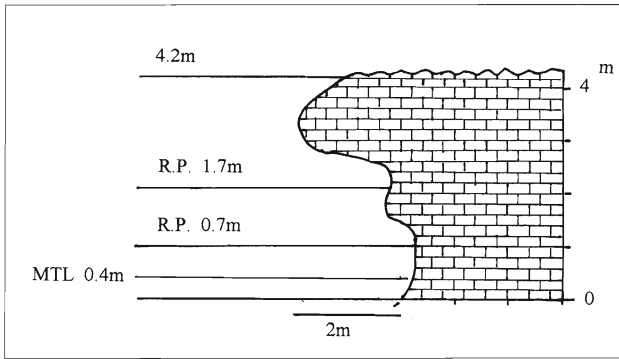


Figure 45. Apatot, ILOCOS SUR (Nos.95, 96, 97, ILS-12)

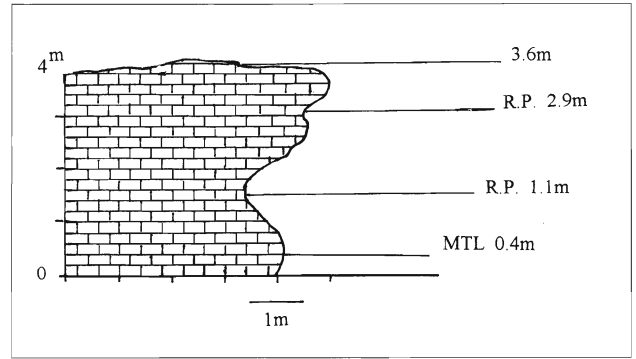


Figure 46. Patot Liang, ILOCOS SUR (Nos. 98, 99, 100, ILS-13)

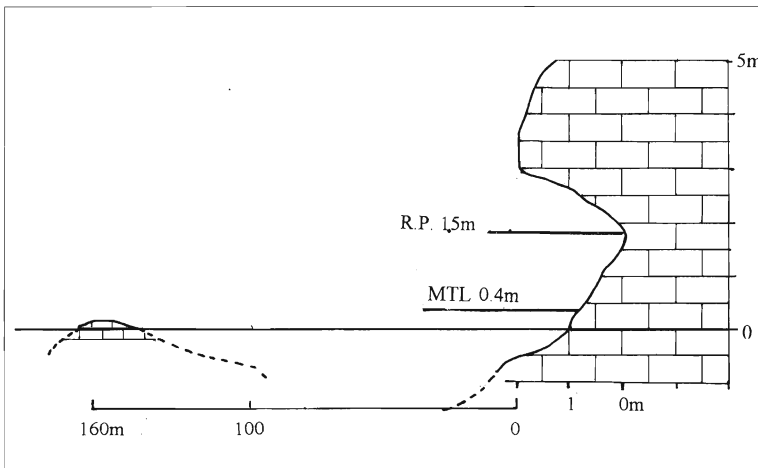


Figure 47. Ambucaao, ILOCOS SUR (No.101, ILS-14)

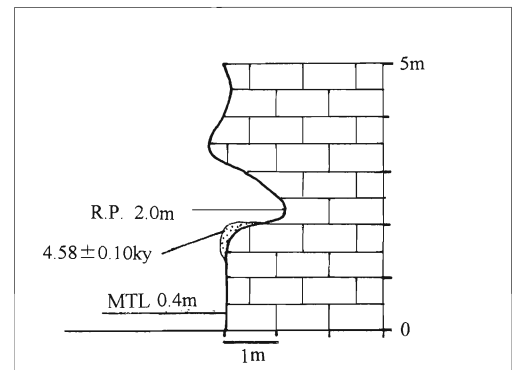


Figure 48. Ambucaao, ILOCOS SUR (No.102, ILS-14)

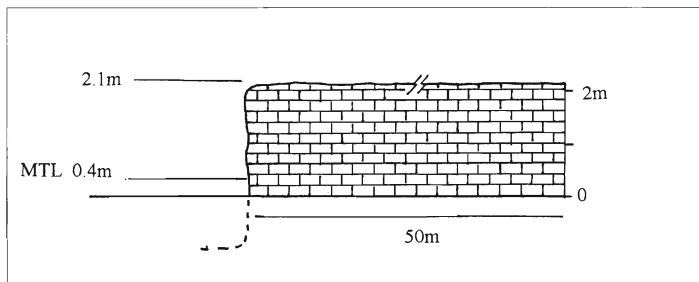


Figure 49. Santiago, ILOCOS SUR (No.103, ILS-15)

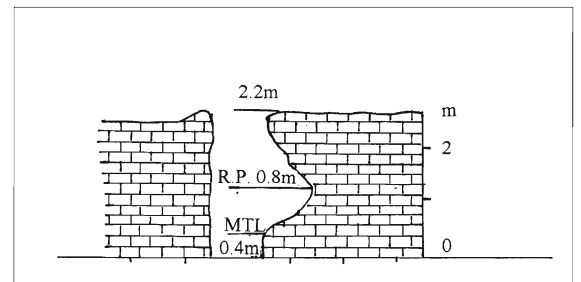


Figure 50. Guinabang, ILOCOS SUR (Nos.104, 105, ILS-16)

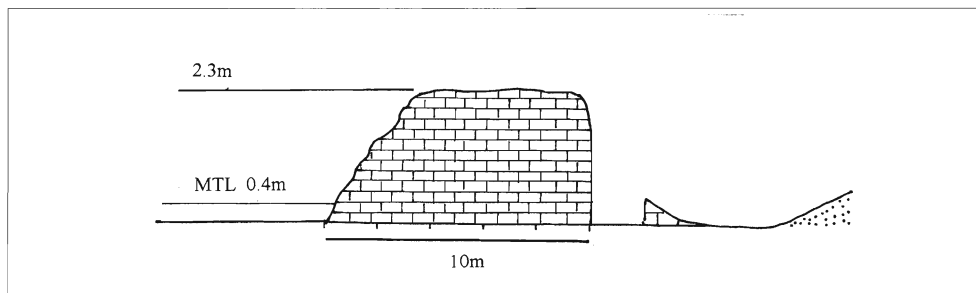


Figure 51. San Roue, ILOCOS SUR (No.106, ILS-17)

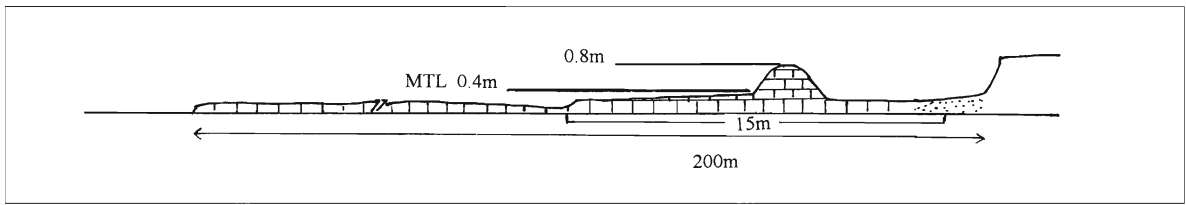


Figure 52. Gabao, ILOCOS SUR (No.107, ILS-18)

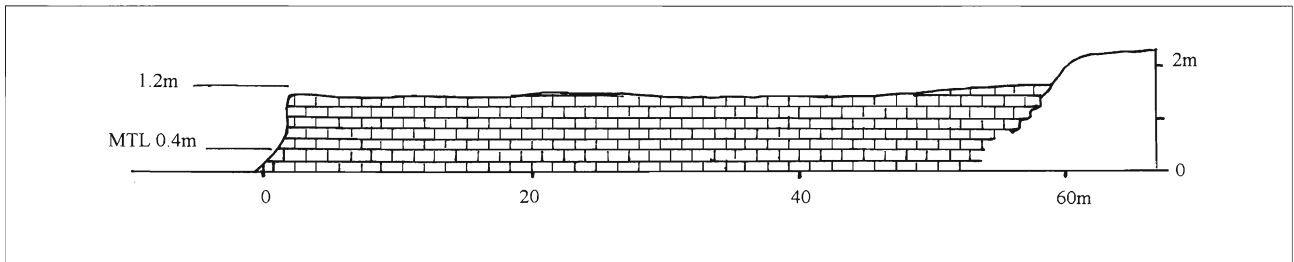


Figure 53. Tamurong, Condon, ILOCOS SUR (No.108, ILS-19)

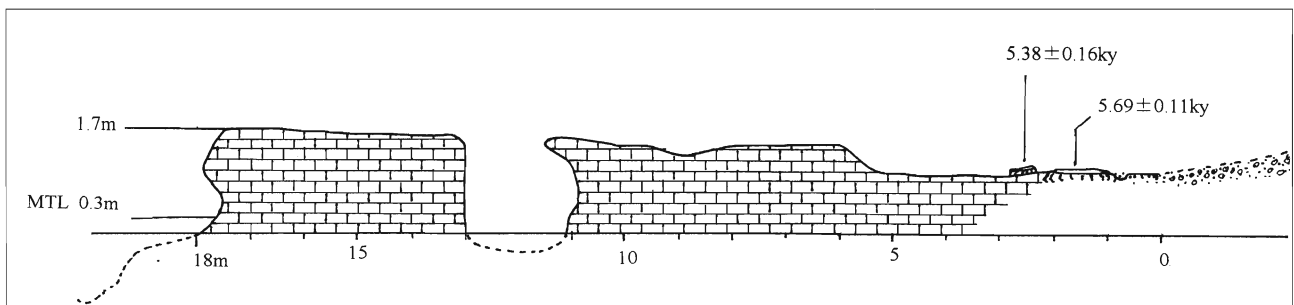


Figure 54. Nalvo Sur, Norceda Beach, LA UNION (Nos.109, 110, LAU-1)

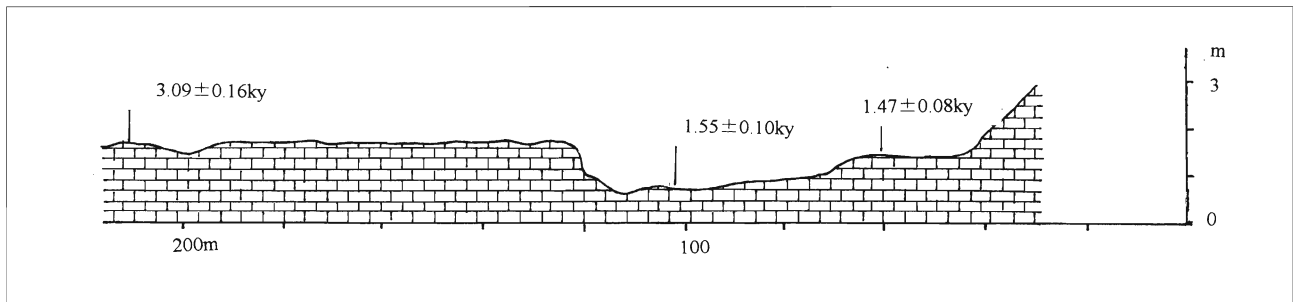


Figure 55. Paraoir, LA UNION (Nos. 111, 113, 116, LAU-2) (Hosono et al. 2003)

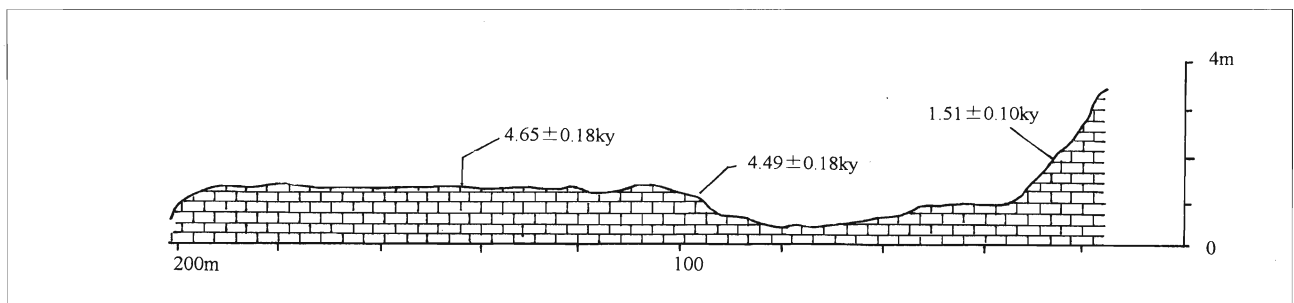
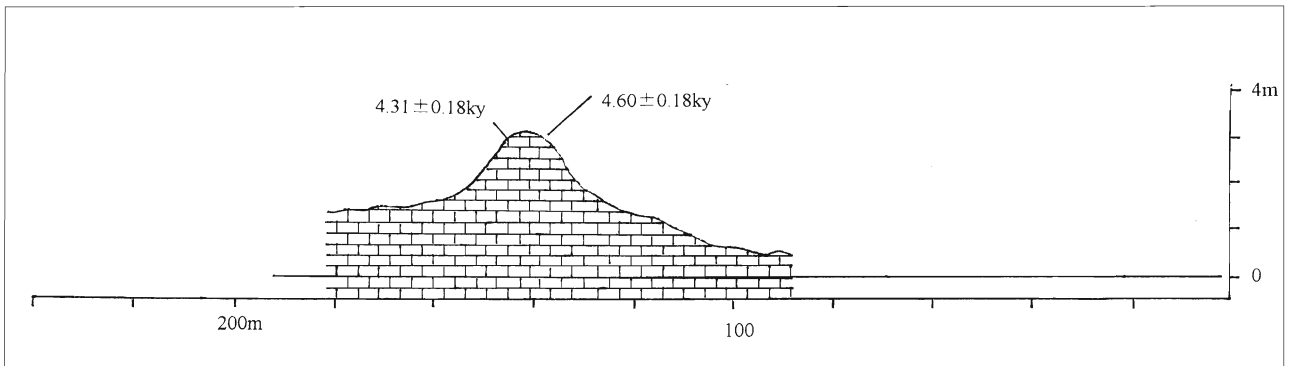
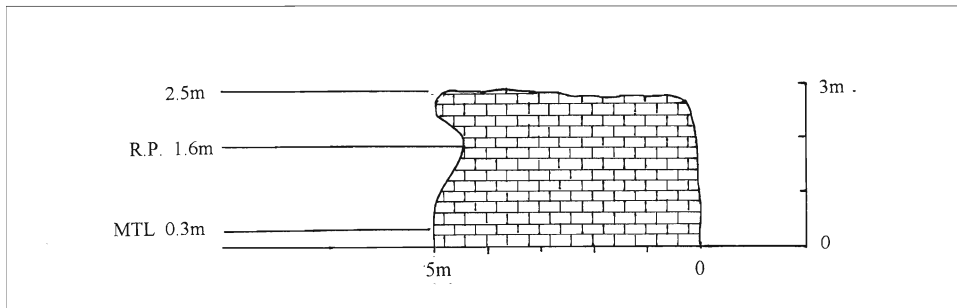


Figure 56. Paraoir, LA UNION (Nos.112, 114, 115, LAU-2) (Hosono et al. 2003)

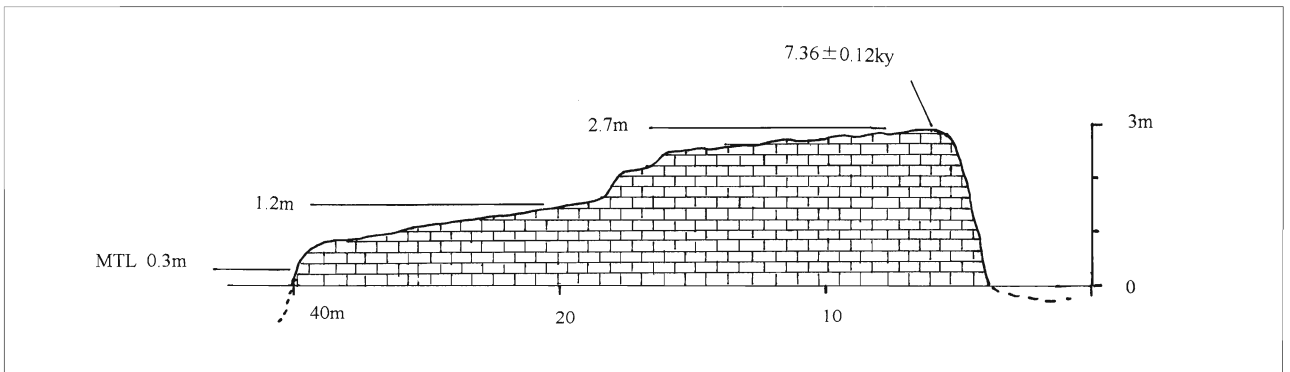
Plate 18



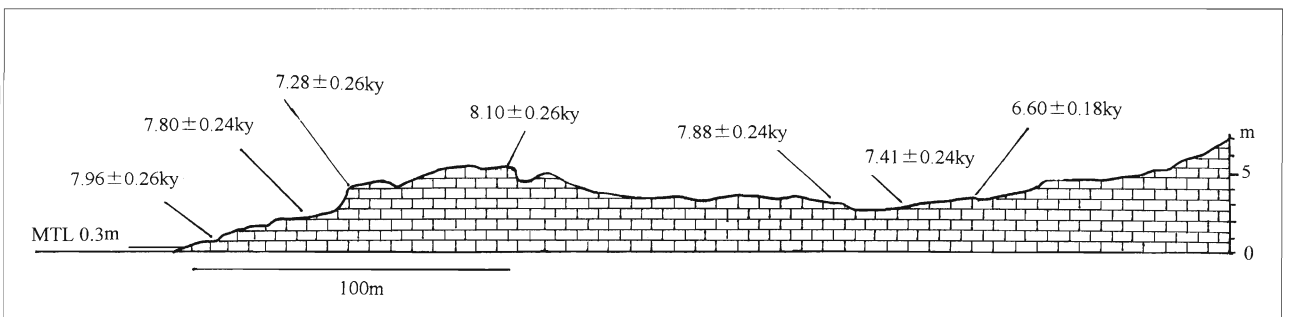
**Figure 57.** Paraoir, LA UNION (Nos.117, 118, LAU-2) (Hosono et al. 2003)



**Figure 58.** North of Quirimo, LA UNION (Nos.119, 120, LAU-3)



**Figure 59.** Quirimo, LA UNION (Nos.121, 122, LAU-4)



**Figure 60.** Bacnotan, LA UNION (Nos.123, 124, 126, 127, 128, 129, 130, 131, LAU-5) (Hosono et al. 2003)



Plate 19

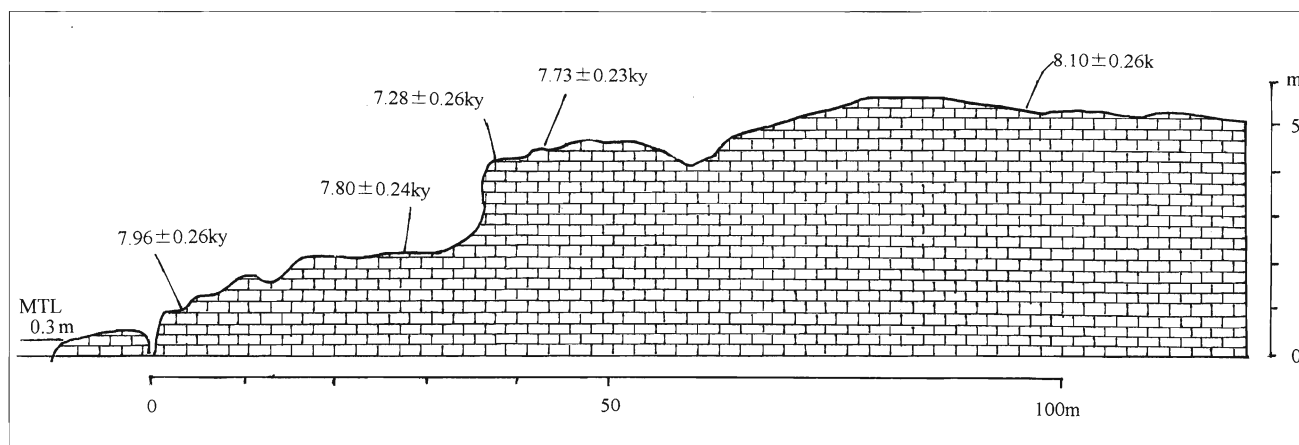


Figure 61. Bacnotan, LA UNION (Nos.124, 125, 126, 129, 130, 131, LAU-5) (Hosono et al. 2003)

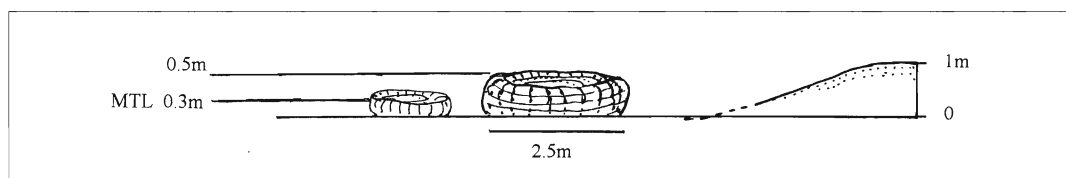


Figure 62. Caratan, San Fernando, LA UNION (No.134, LAU-6)

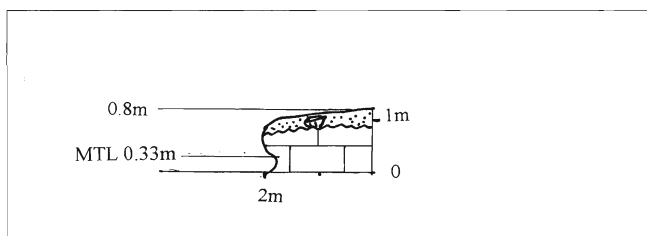


Figure 63. Poro, San Fernando, LA UNION (No.135, LAU-7)

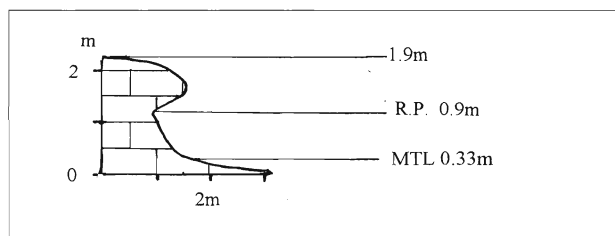


Figure 64. Poro, San Fernando, LA UNION (No.136, LAU-8)

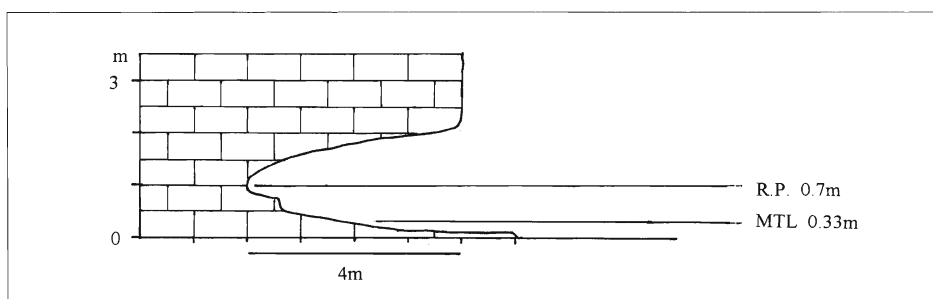


Figure 65. Quezon Island, Hundred Islands, PANGASINAN (No.137, PAN-1)

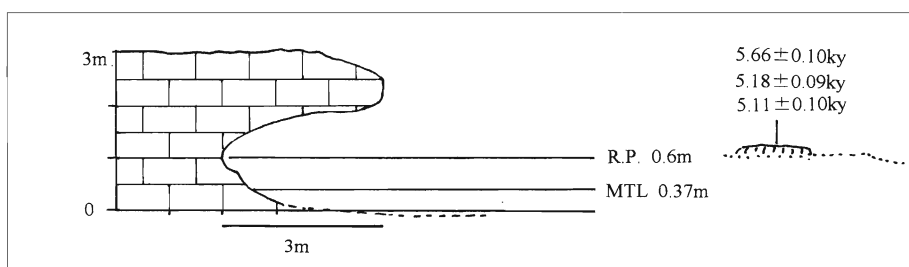


Figure 66. Silaqui Island, Santiago Islands, PANGASINAN (No.138, PAN-2)

Plate 20

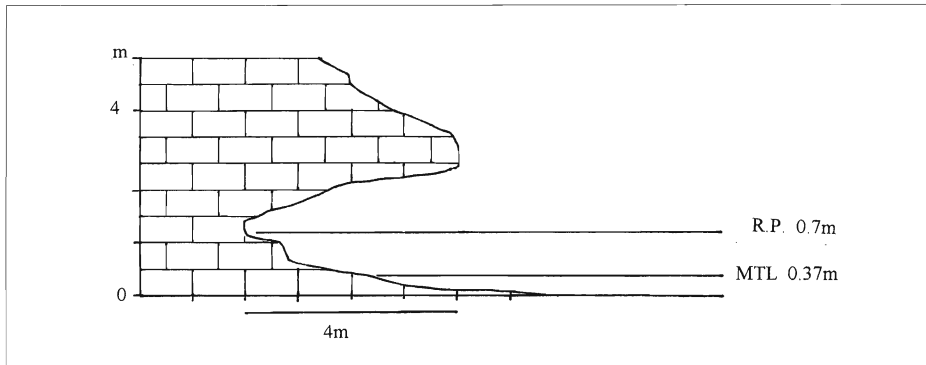


Figure 67. Pisalayan Island, Santiago Islands, PANGASINAN (No.139, PAN-3)

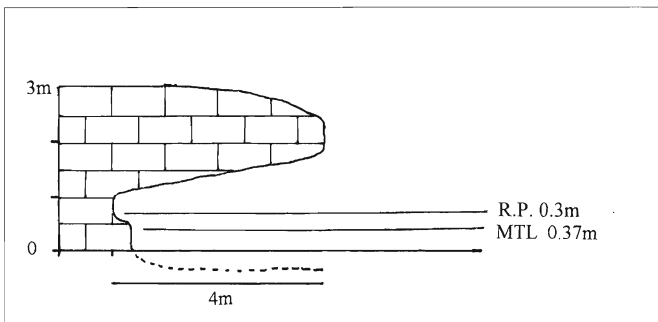


Figure 68. near Santiago Island, PANGASINAN (No.140, PAN-4)

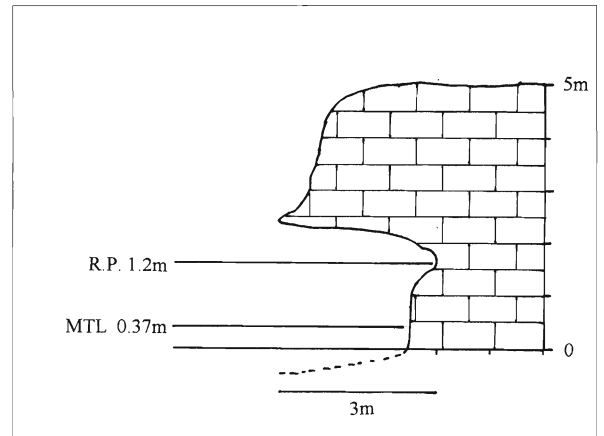


Figure 69. Bolinao, PANGASINAN (No.141, PAN-5)

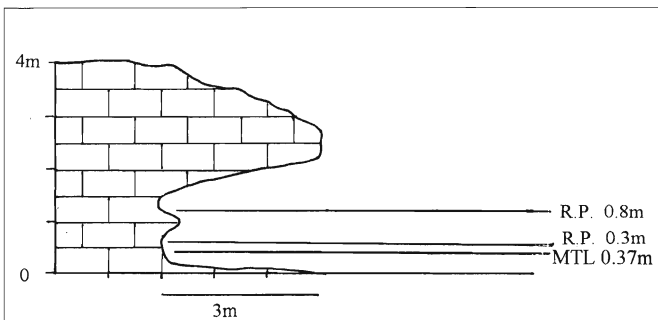


Figure 70. Poropanaen Island, PANGASINAN (Nos.142, 143, PAN-6)

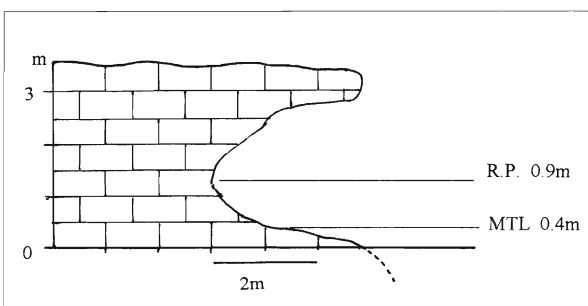


Figure 71. Patar, PANGASINAN (No.144, PAN-7)

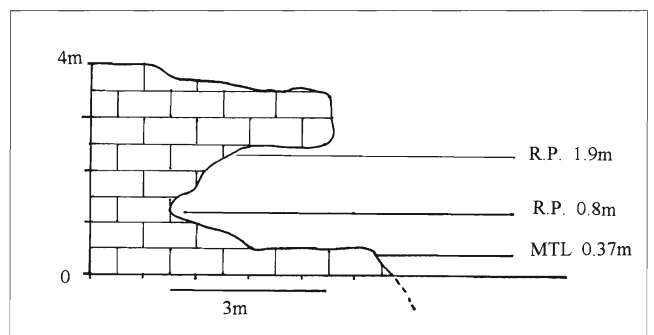


Figure 72. Piedra Point, PANGASINAN (Nos.145, 146, PAN-8)

Plate 21

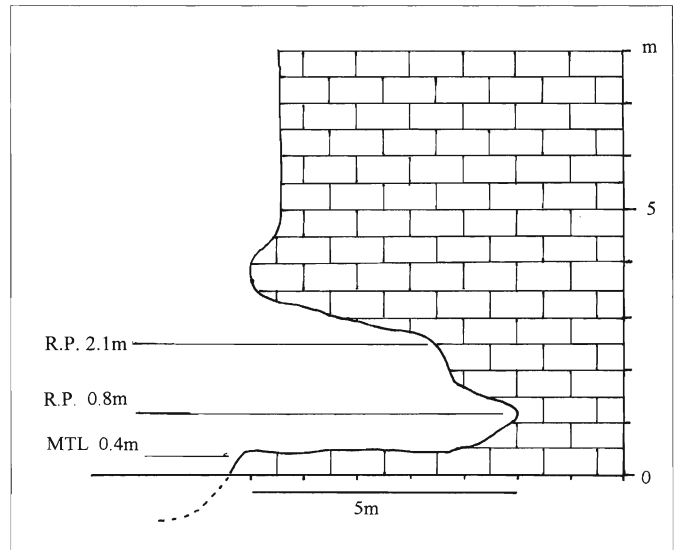


Figure 73. Surip, PANGASINAN (Nos.147, 148, PAN-9)

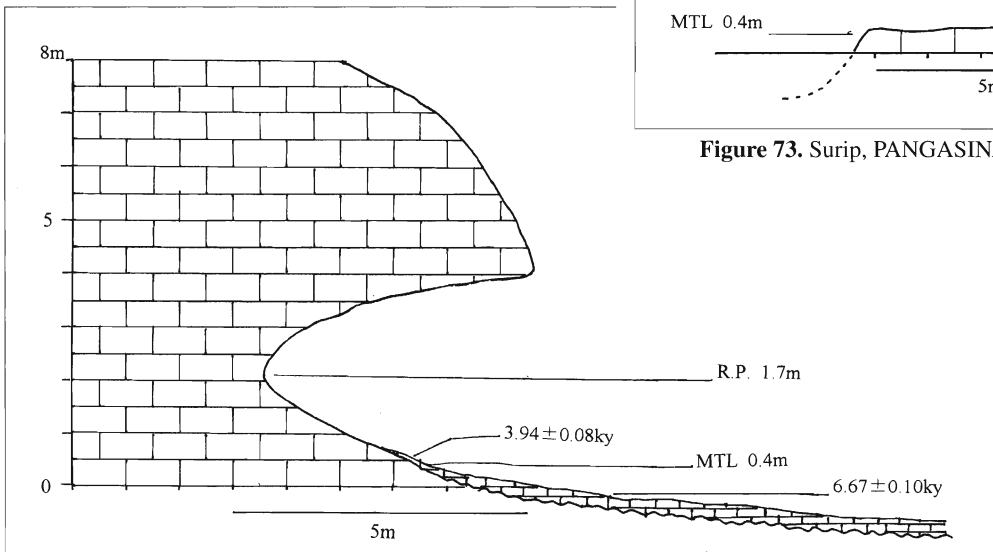


Figure 74. Umbrella rock, Agno, PANGASINAN (Nos.149, 150, 151, PAN-10)

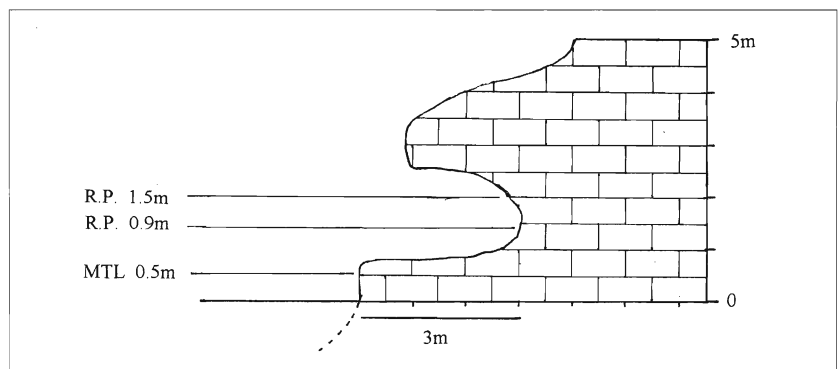


Figure 75. Cabang coast, PANGASINAN (Nos.152, 153, PAN-11)

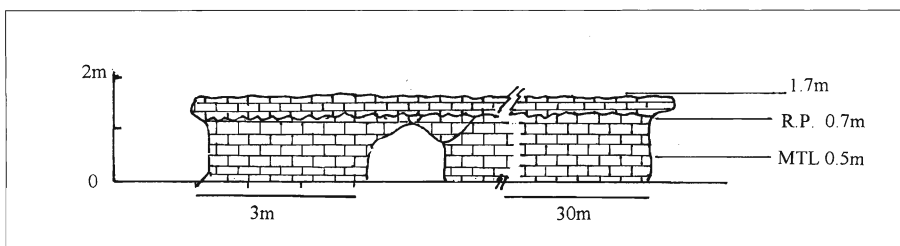


Figure 76. Hermana Menor Island, ZAMBALES (Nos.154, 155, ZAM-1)

Plate 22

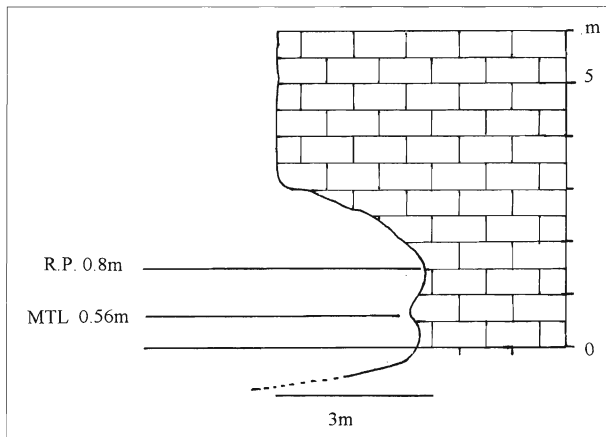


Figure 77. Gonzaga, CAGAYAN (No.156, CAG-3)

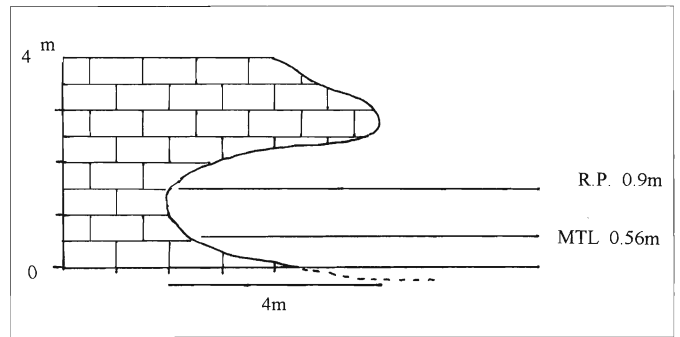


Figure 78. Gonzaga, CAGAYAN (No.157, CAG-4)

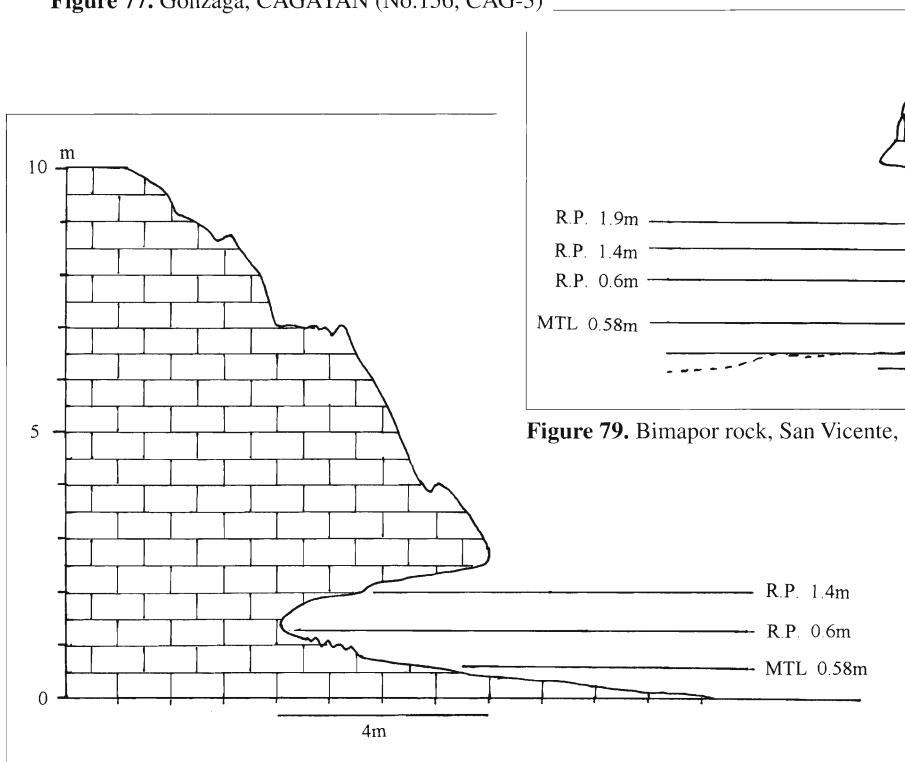


Figure 80. Siniguian Point, CAGAYAN (Nos.161, 162, CAG-6)

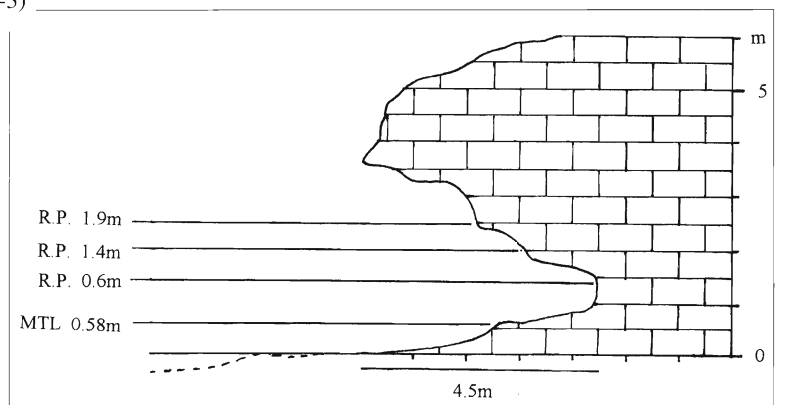


Figure 79. Bimapor rock, San Vicente, CAGAYAN (Nos.158, 159, 160, CAG-5)

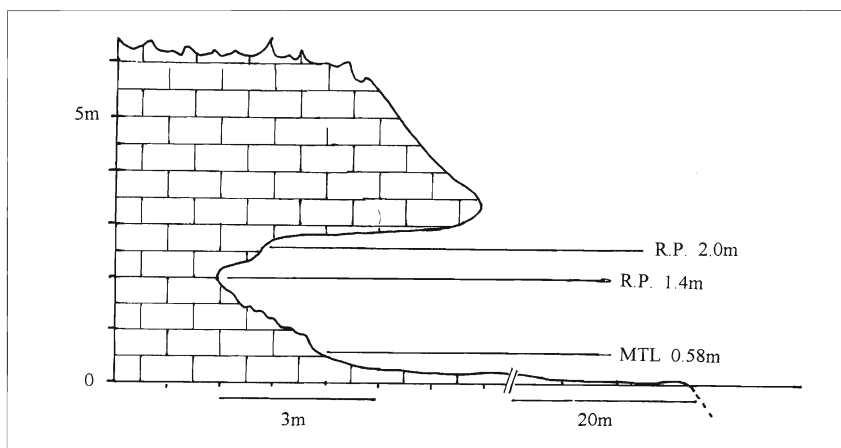


Figure 81. Sinaga, CAGAYAN (Nos.163, 164, CAG-7)

Plate 23

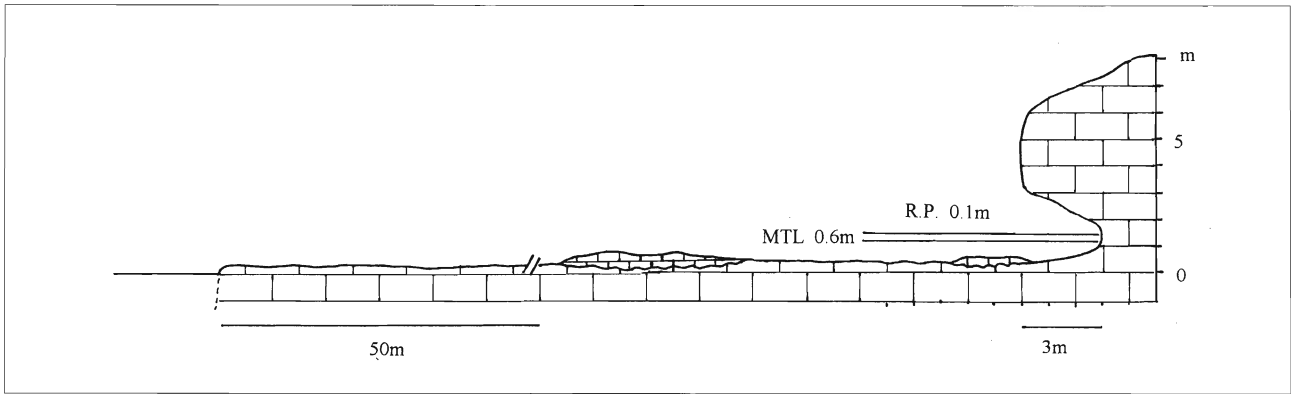


Figure 82. Sinaga, CAGAYAN (No.165, CAG-8)

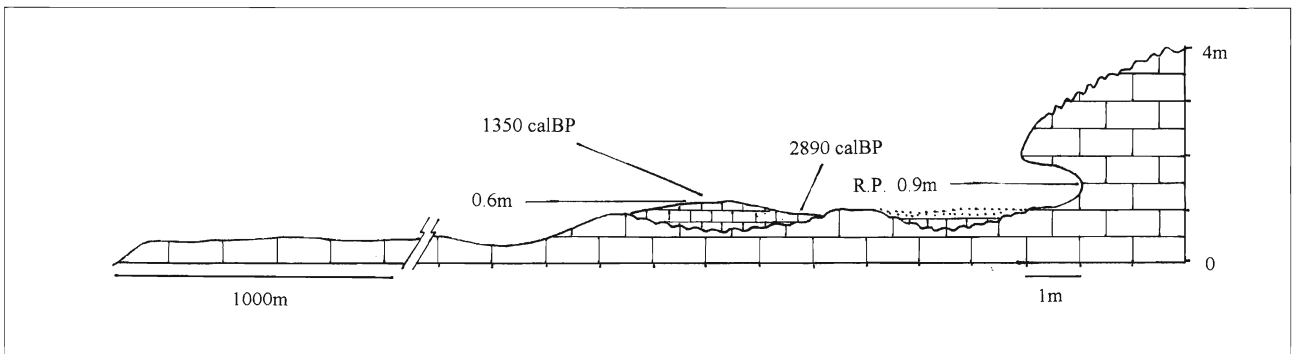


Figure 83. Sinaga, CAGAYAN (Nos.166, 167, 168, CAG-9)

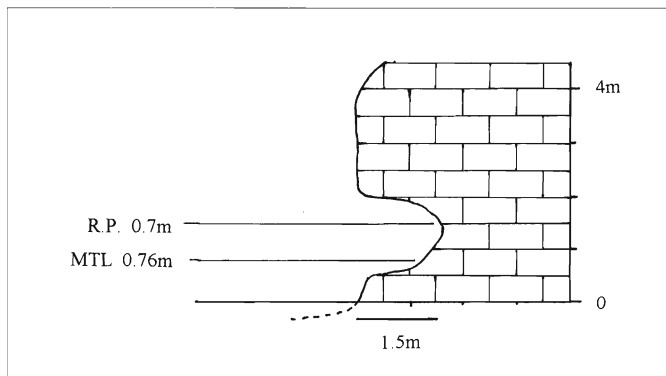


Figure 84. Dimangit ISABELA (No.169, ISA-1)

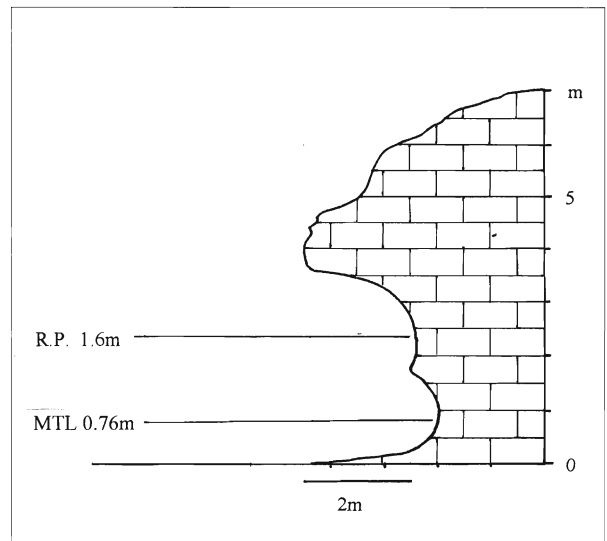


Figure 85. Diviuisa Point, ISABELA (No.170, ISA-2)

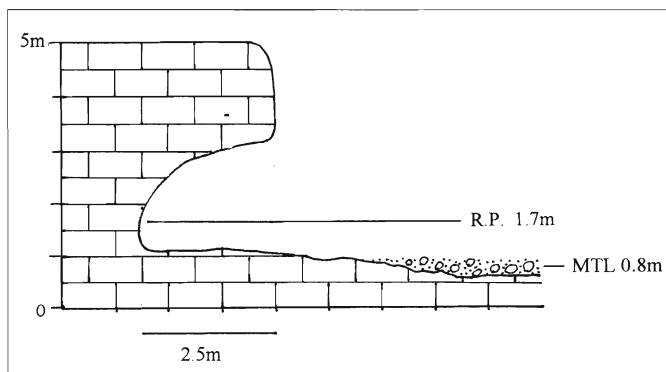


Figure 86. Diviuisa Point, ISABELA (No.171, ISA-3)

Plate 24

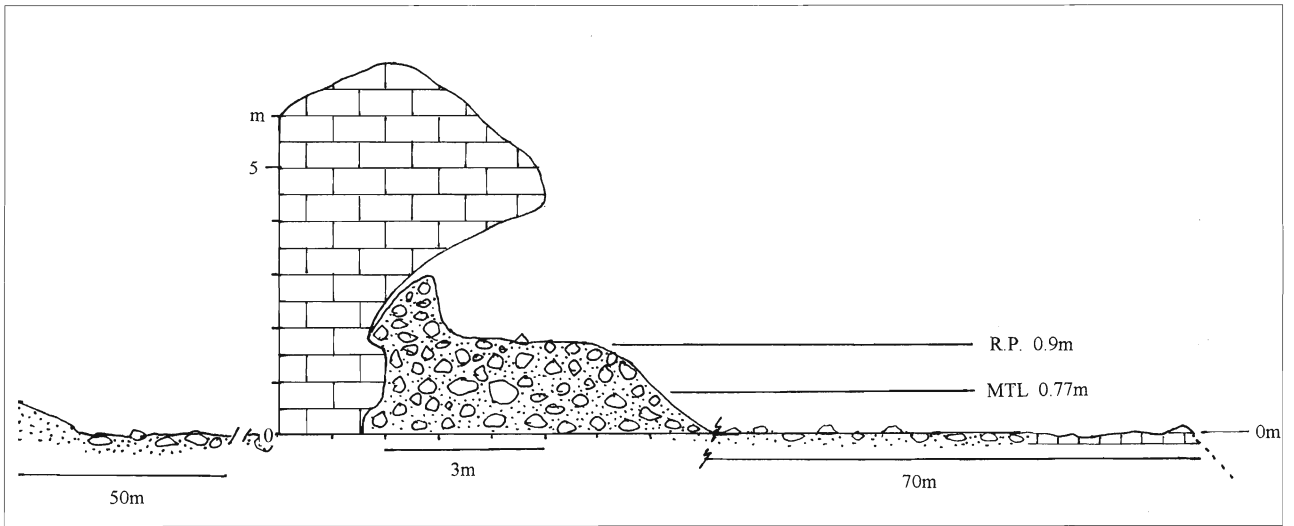


Figure 87. Dibuhobong, AURORA (No.172, AUR-1)

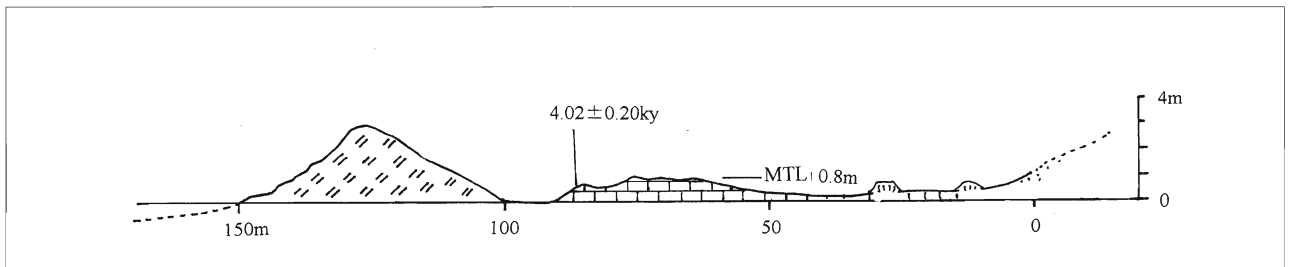


Figure 88. Baler, AURORA (No.173, AUR-2)

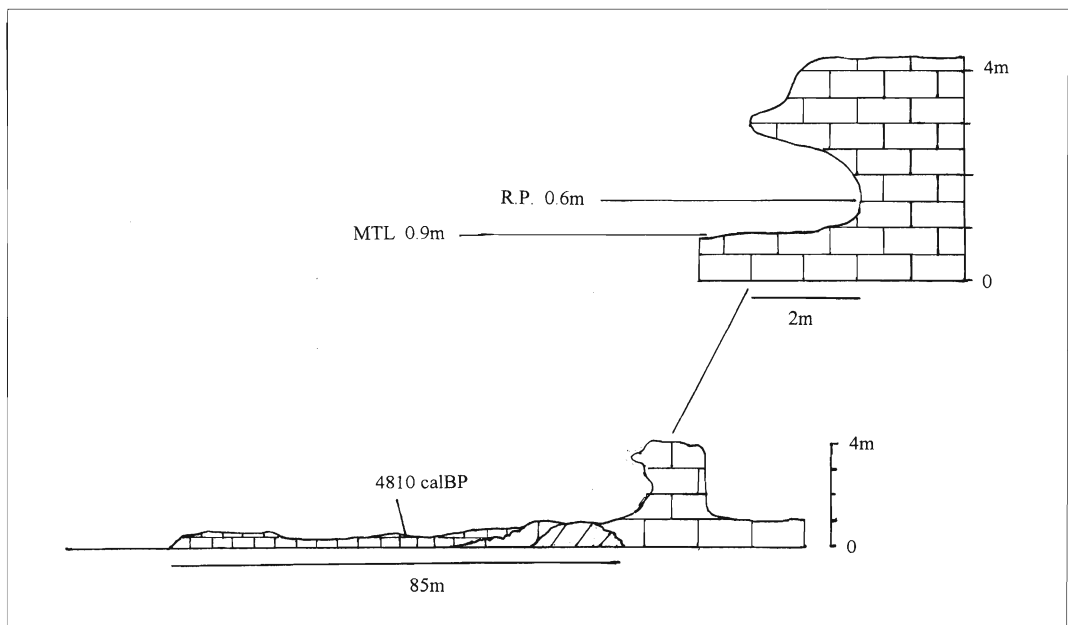


Figure 89. Polillo Island, QUEZON (No.174, QUE-1)

Plate 25

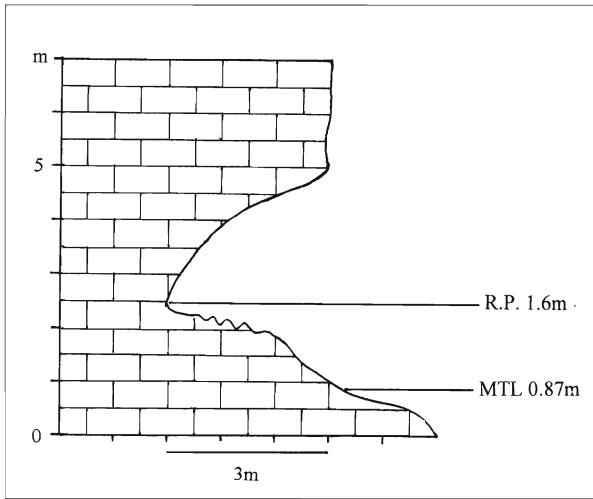


Figure 90 Lemon Bay, QUEZON (No.175, QUE-2)

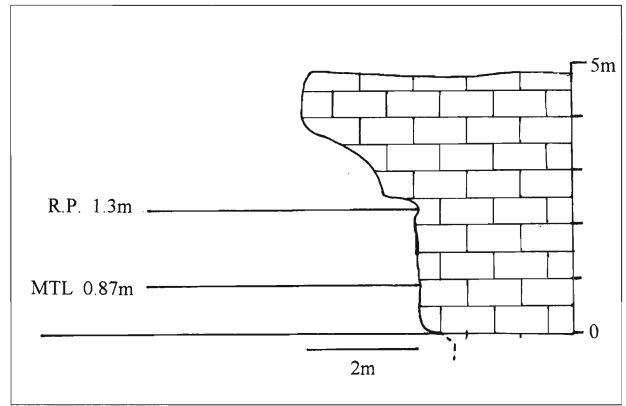


Figure 91 Baliscan Island, QUEZON (No.176, QUE-3)

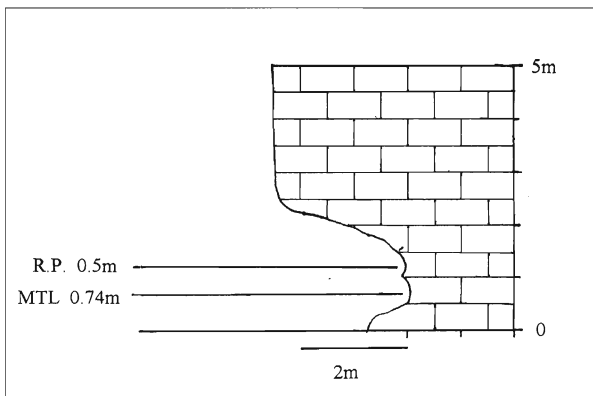


Figure 92. Bikal, CAMARINES (No.177, CAS-1)

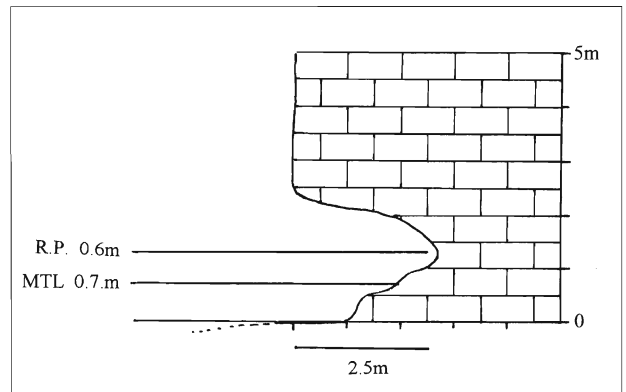


Figure 93. Virac Point, CATANDUANES (No.178, CAT-1)

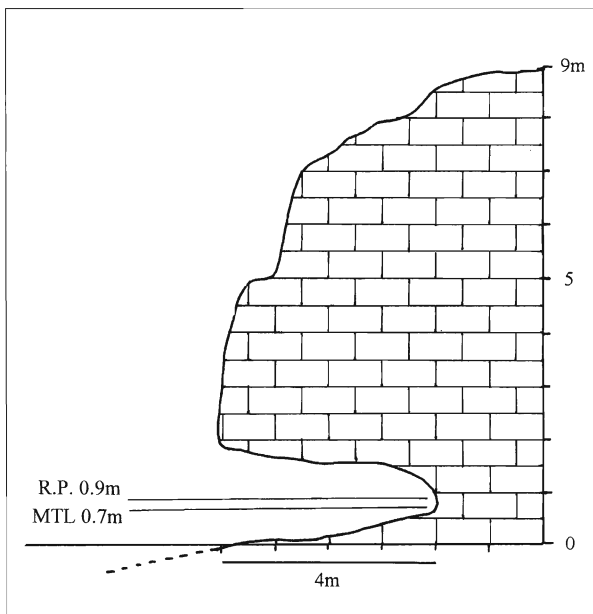


Figure 94. Lacot Bay, CATANDUANES (No.179, CAT-2)

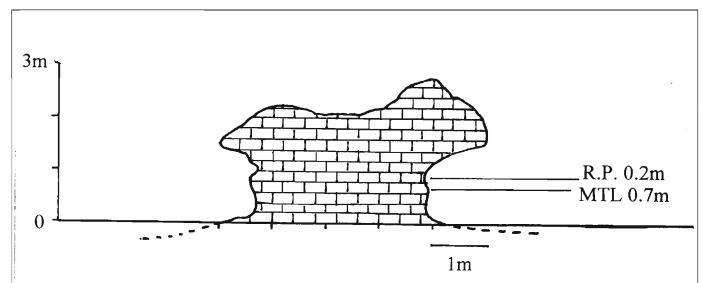


Figure 95. Badoc Bay, CATANDUANES (No.180, CAT-3)

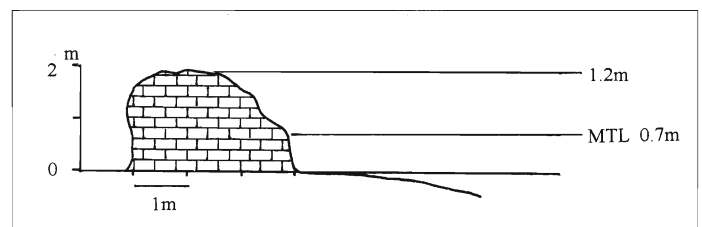


Figure 96. Badoc Bay, CATANDUANES (No.181, CAT-4)

Plate 26

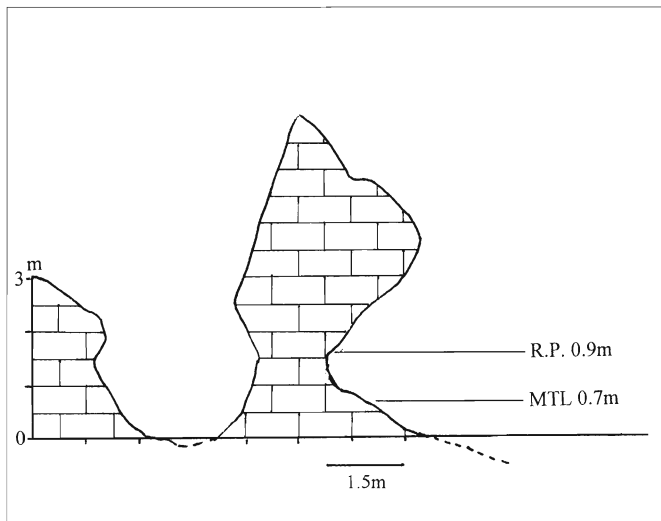


Figure 97. Codon Point, CATANDUANES (No.182, CAT-5)

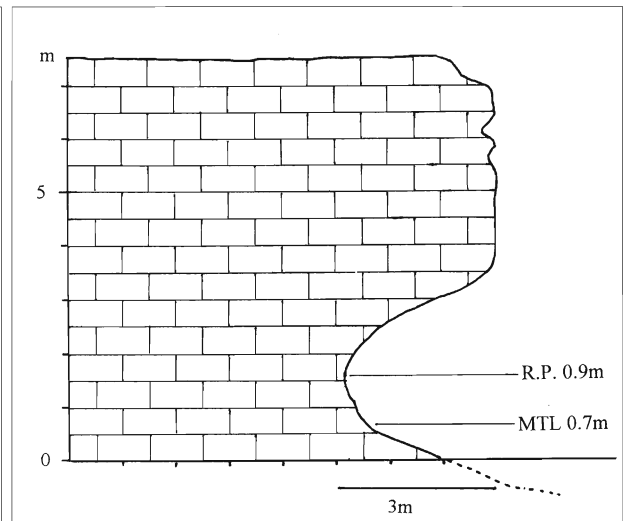


Figure 98. Bislig Point, CATANDUANES (No.183, CAT-6)

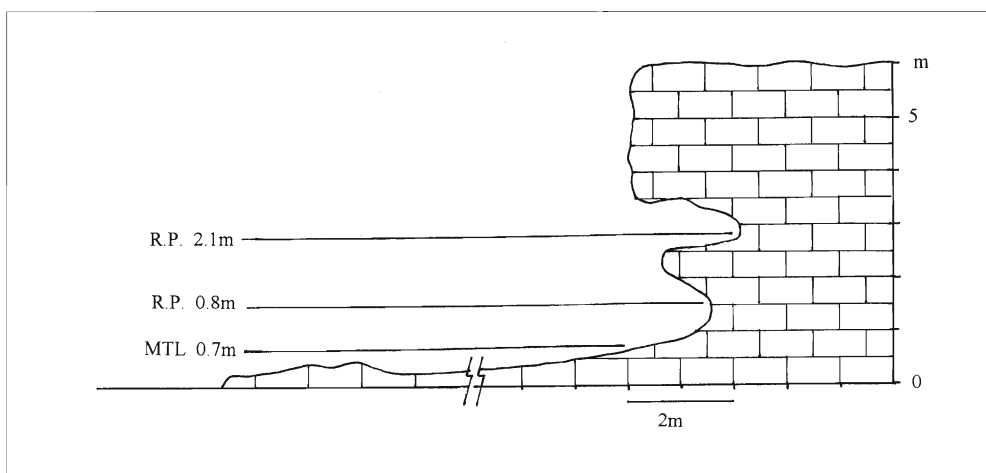


Figure 99. Ferry, SORSOGON (Nos.184, 185, SOR-1)

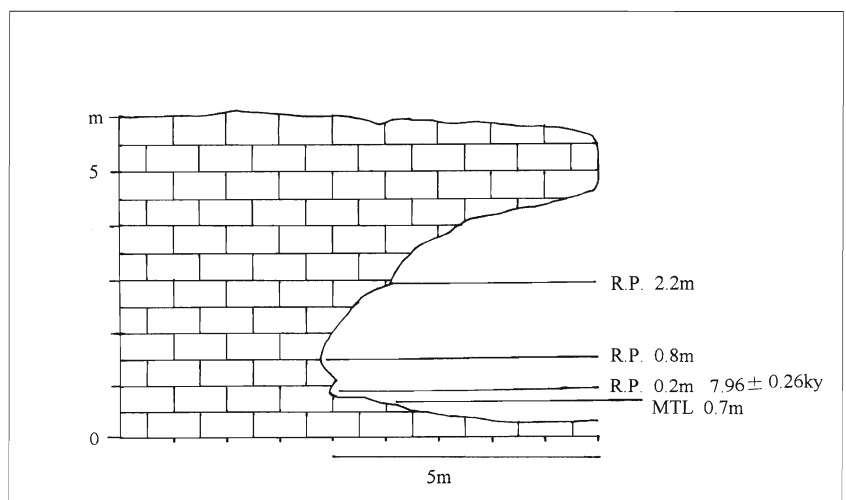


Figure 100. Sawanga, SORSOGON (Nos.186, 187, 189, SOR-2)



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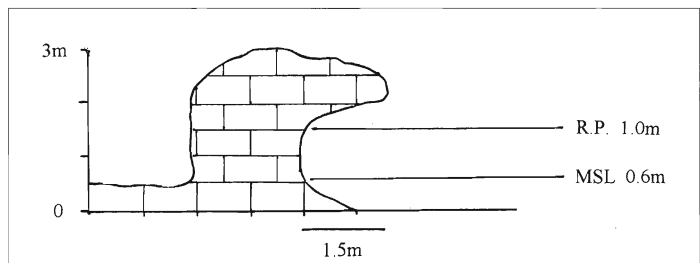


Figure 101. Malimatok, west of Batangas, BATANGAS (No.190, BAT-1)

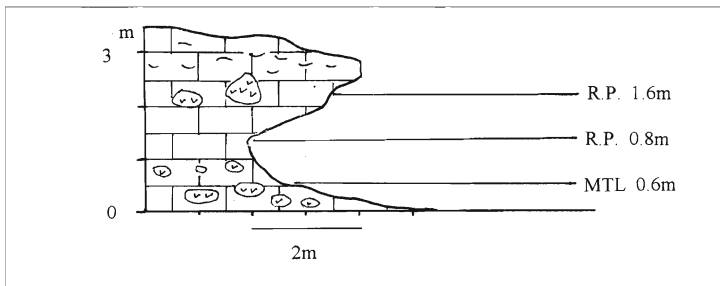


Figure 102. Pagkilatan, near Matoco Point, BATANGAS (Nos.191, 192, BAT-2)

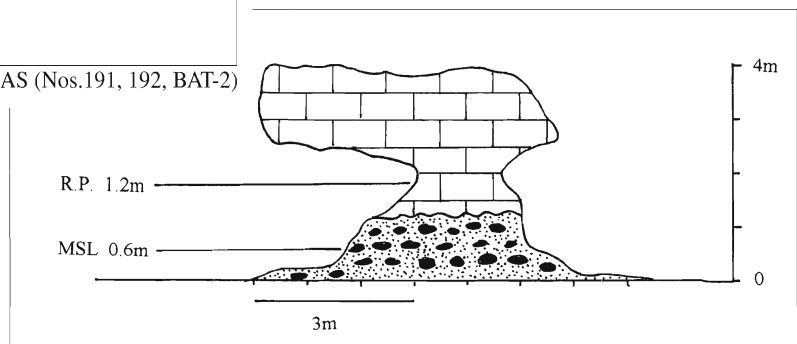


Figure 103. Maricaban, Bay mouth of Batangas, BATANGAS (No.193, BAT-3)

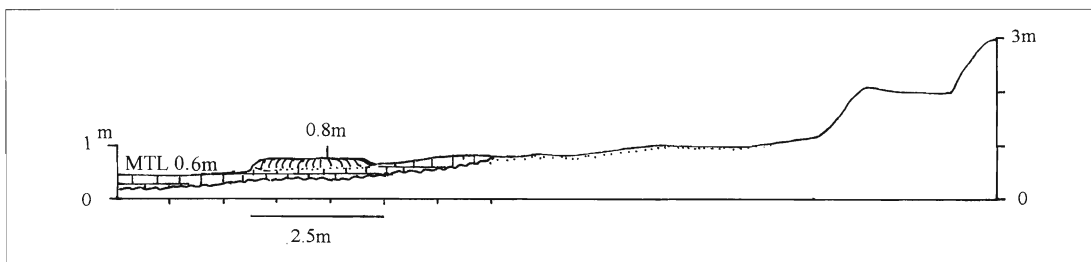


Figure 104. Malicaban, Bay mouth of Batangas, BATANGAS (No.194, BAT-4)

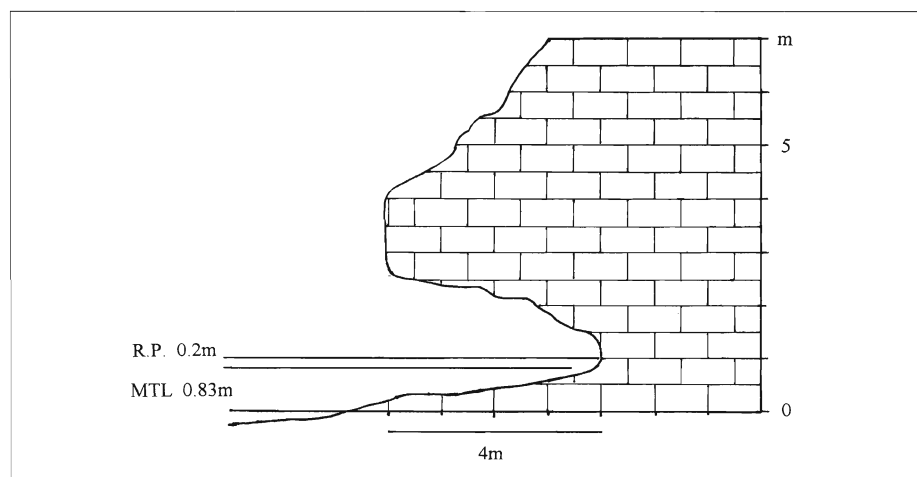


Figure 105. Lipata, east of Pagbilao Grande Island, QUEZON (No.195, QUE-4)

Plate 28

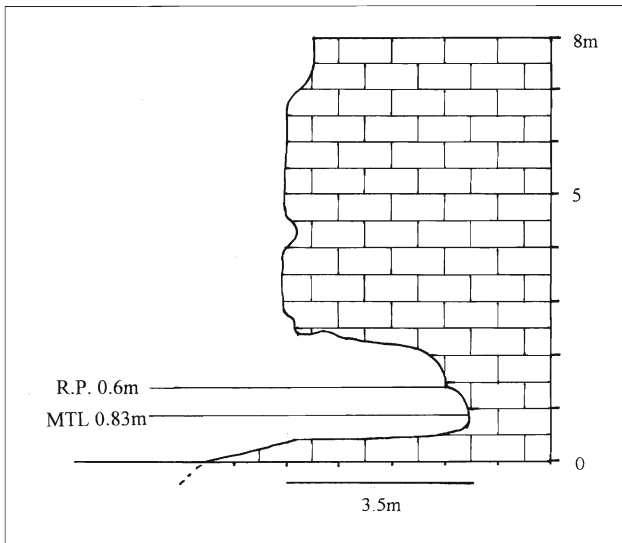


Figure 106. Magasawan, Bato, Burgos, QUEZON (No.196, QUE-5)

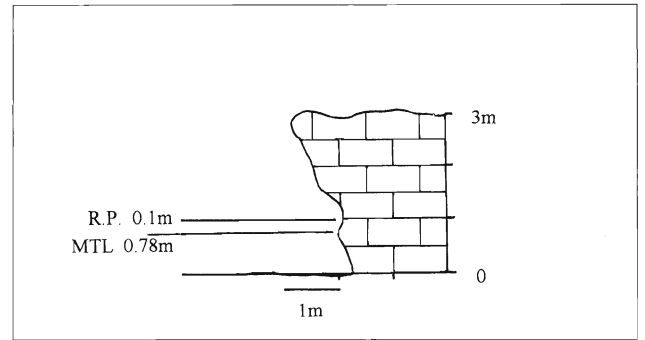


Figure 107. Mulanay, Bondoc Peninsula, QUEZON (No.197, QUE-6)

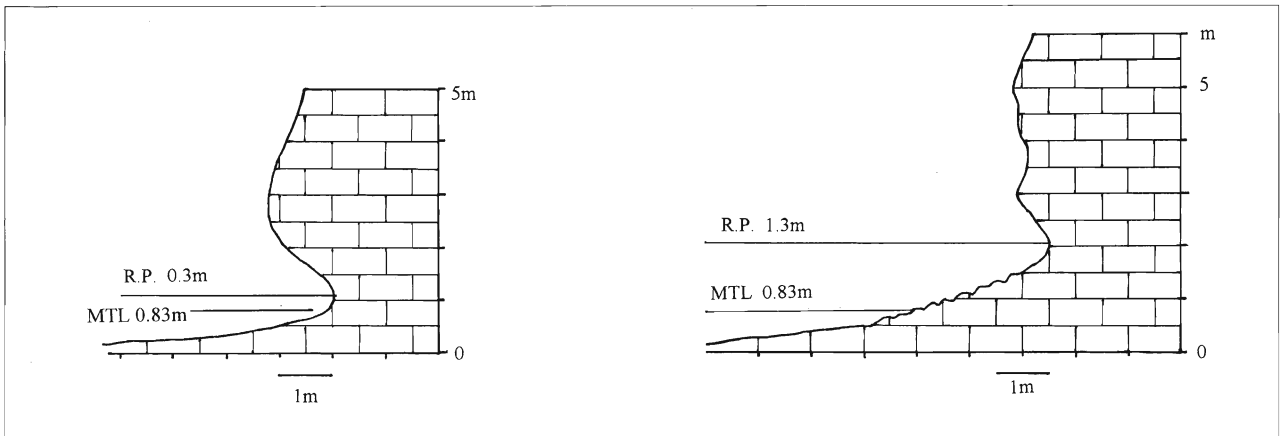


Figure 108. Cqnowep, Bondoc Peninsula, QUEZON (Nos.198, 199, QUE-7)

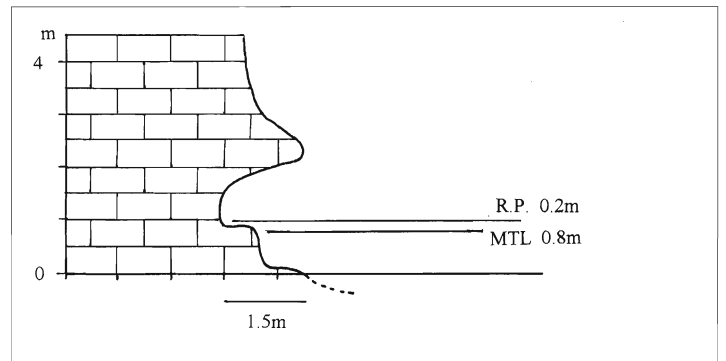


Figure 109. San Narciso, Bondoc Peninsula, QUEZON (No.200, QUE-8)

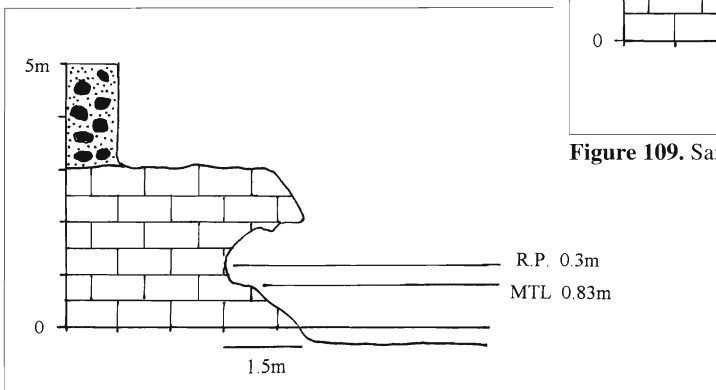


Figure 110. San Narciso, Bondoc Peninsula, QUEZON (No.201, QUE-9)

Plate 29

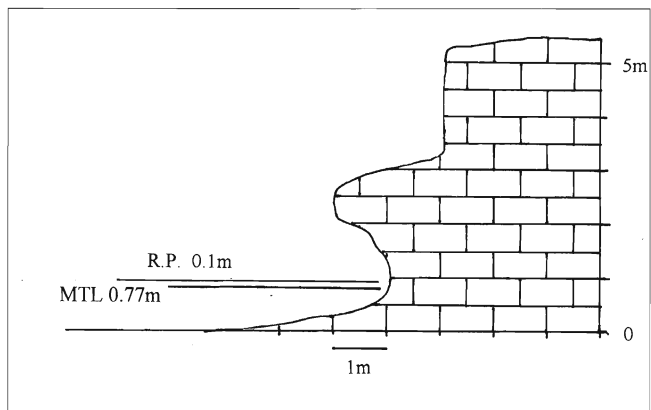


Figure 111. Maniuayan Island, MARINDUQUE (No.202, MAR-1)

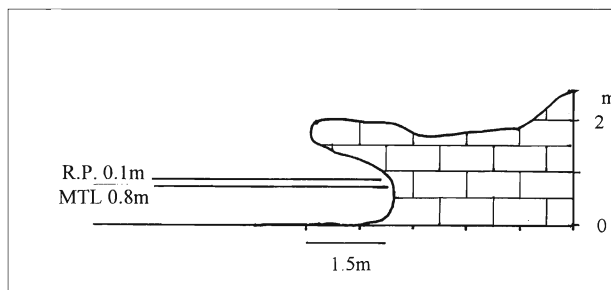


Figure 112. Mompong Island, MARINDUQUE (No.203, MAR-2)

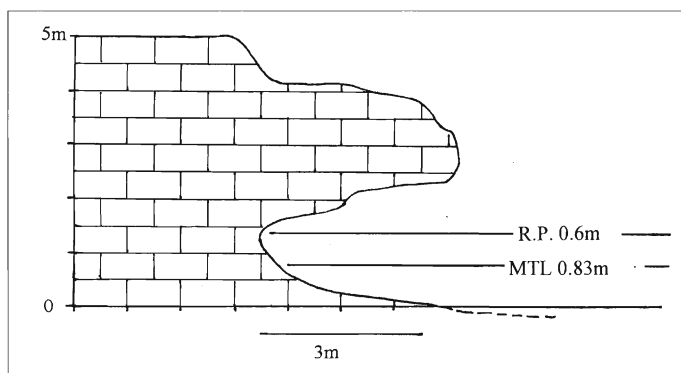


Figure 113. Tagbac, east coast of Ragay Gulf, ALBAY (No.204, ALB-1)

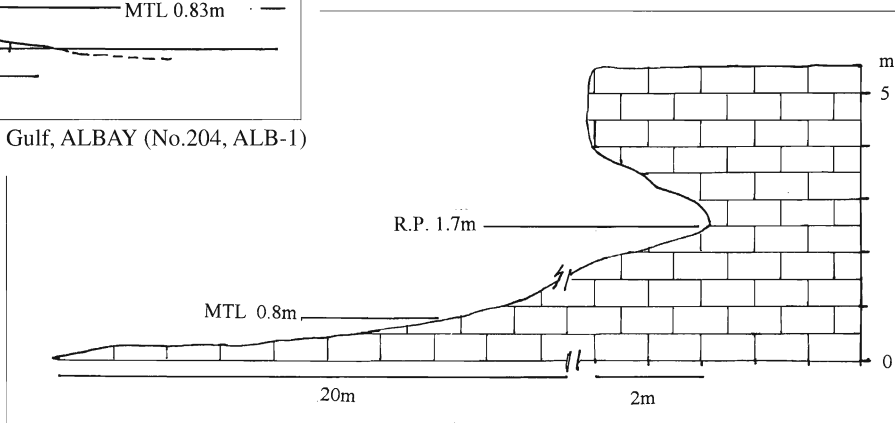


Figure 114. Look, Tablas Island, ROMBLON (No.205, ROM-1)

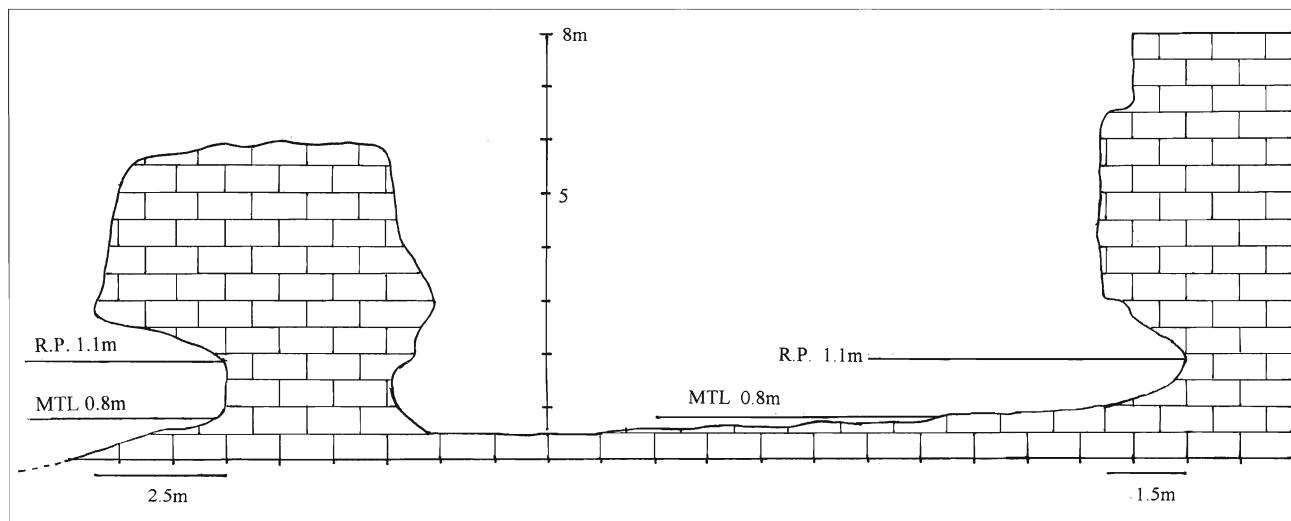
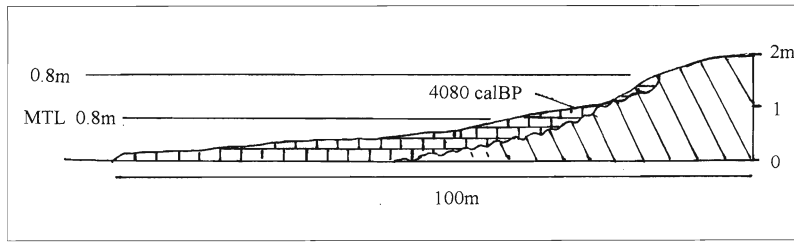
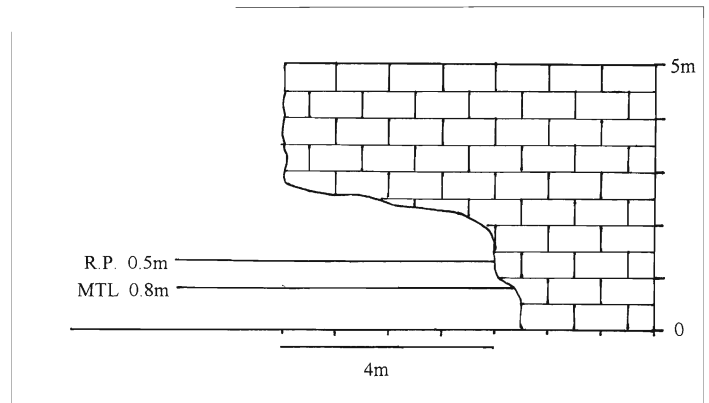


Figure 115. Alad, Romblon Island, ROMBLON (No.206, ROM-2)

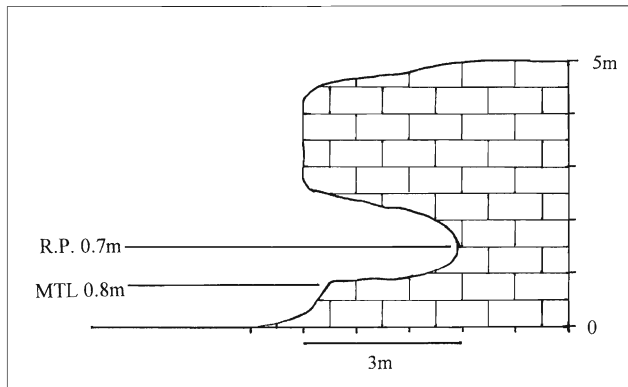
Plate 30



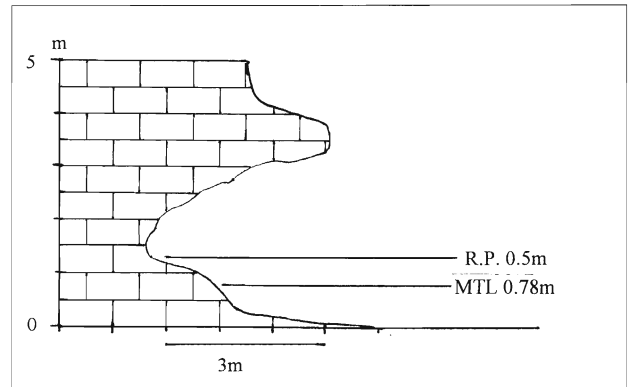
**Figure 116.** Agasao, Sibuyan Island, ROMBLON (No.207, ROM-3)



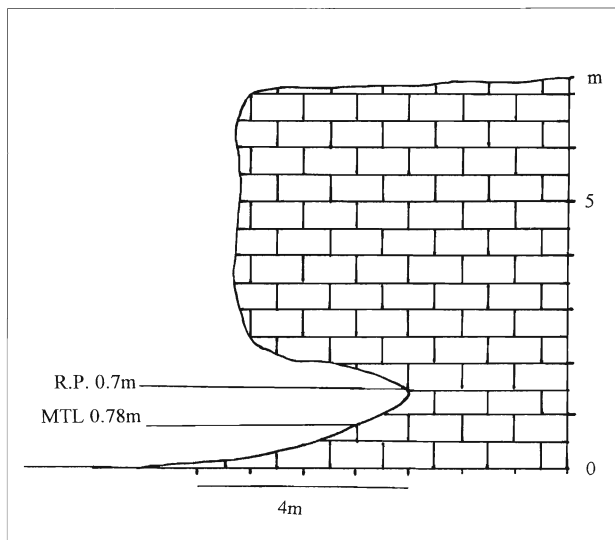
**Figure 117.** Deagan Island, MASBATE (No.208, MAS-1)



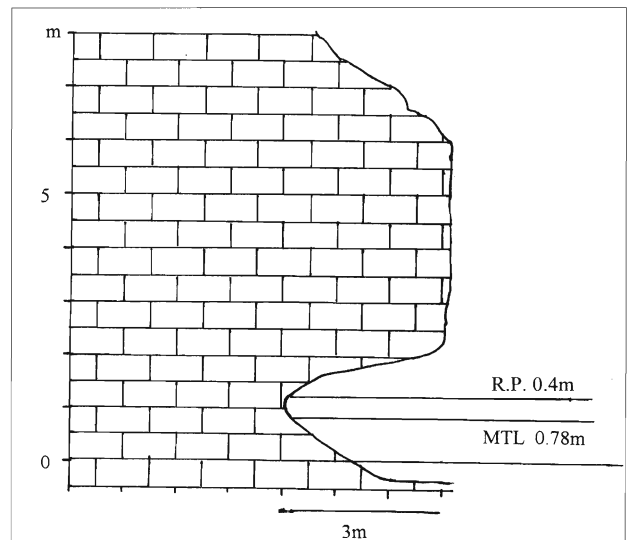
**Figure 118.** Caticlan Point, AKLAN (No.209, AKL-1)



**Figure 119.** Bondulan Point, GUIMARAS (No.210, GUI-1)



**Figure 120.** Pangasian, GUIMARAS (No.211, GUI-2)



**Figure 121.** Abe Maria Island, GUIMARAS (No.212, GUI-3)

Plate 31

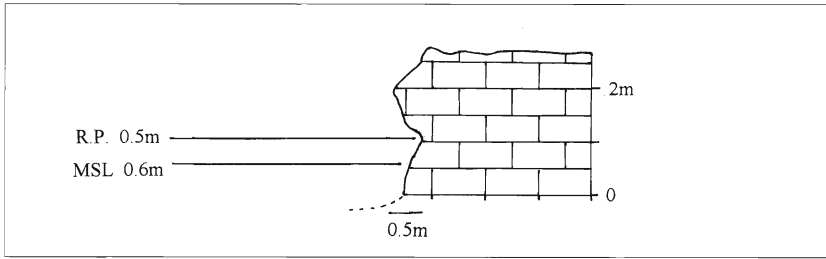


Figure 122. Paniguin Island, Puert Galera, ORIENTAL MINDORO (No.213, ORM-1)

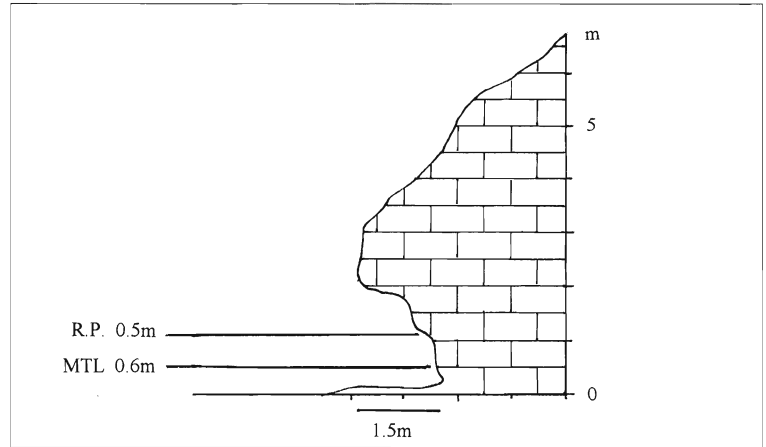


Figure 123. Balatero, Puert Galera, ORIENTAL MINDORO (No.214, ORM-2)

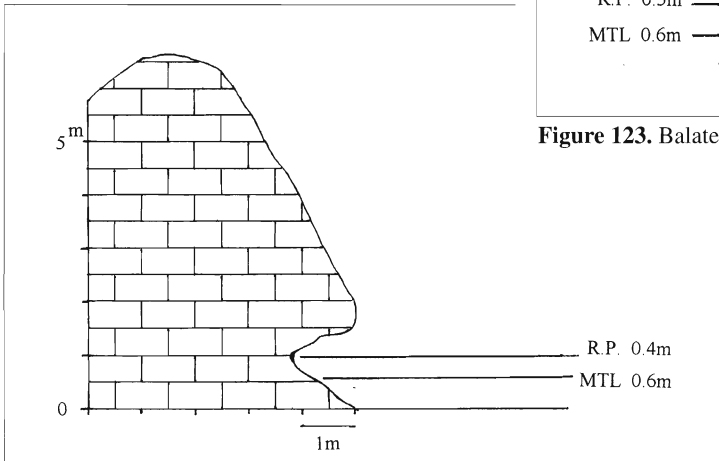


Figure 124. Saiin, Verde Island, ORIENTAL MINDORO (No.215, ORM-3)

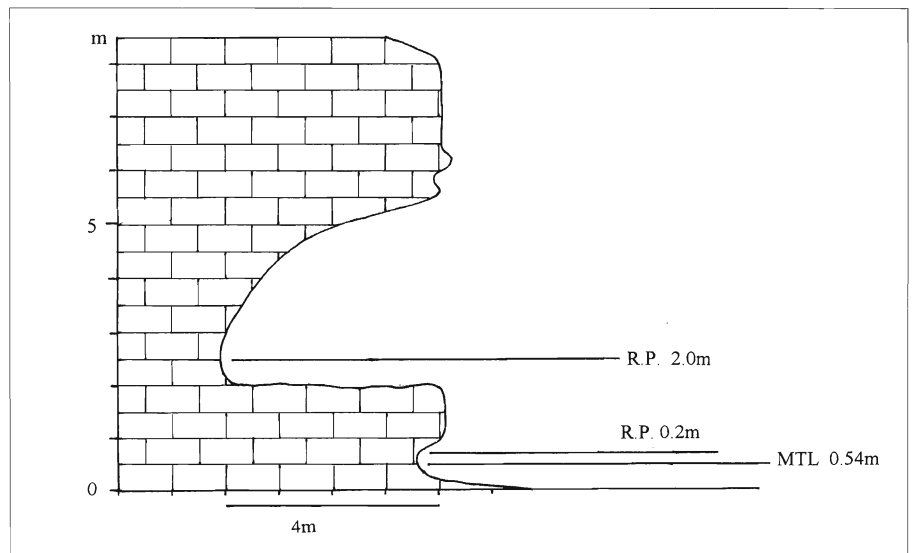


Figure 125. Sablayan, OCCIDENTAL MINDORO (No.216, OCM-1)

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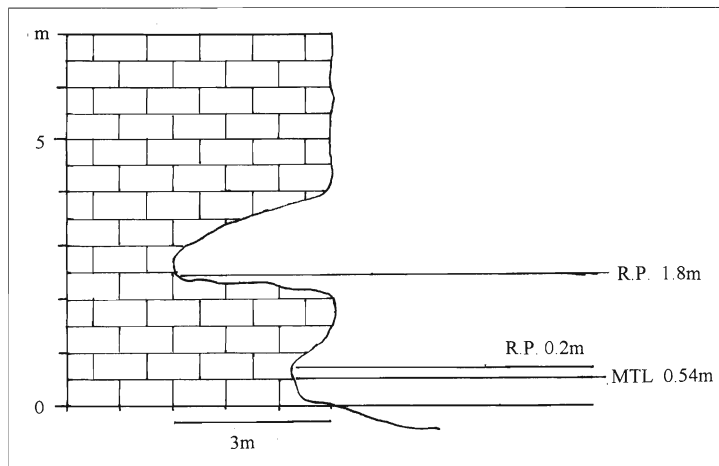


Figure 126. Sablayan, OCCIDENTAL MINDORO (No.217, OCM-1)

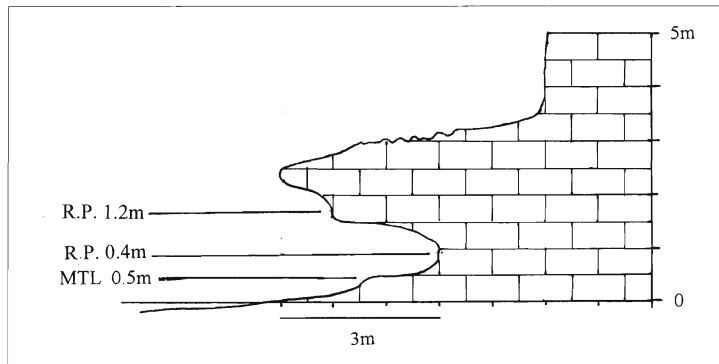


Figure 127. Sta. Teresa, OCCIDENTAL MINDORO (No.218, OCM-2)

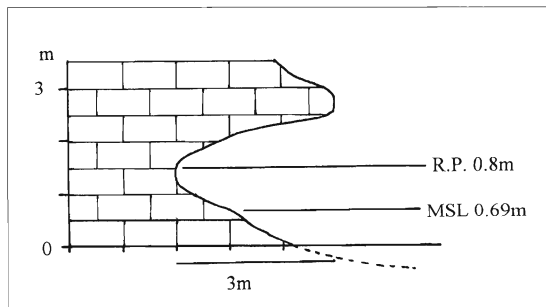


Figure 130. Olongo Island, CEBU (No.221, CEB-3)

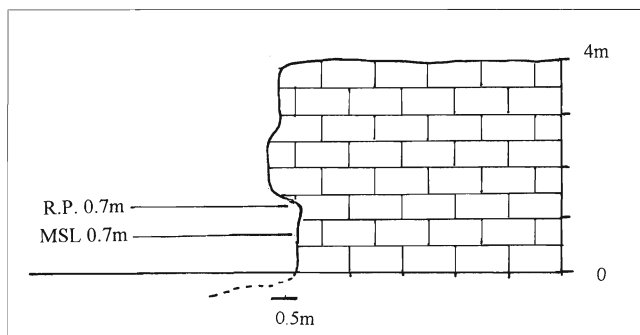


Figure 131. Dongan, CEBU (No.222, CEB-4)

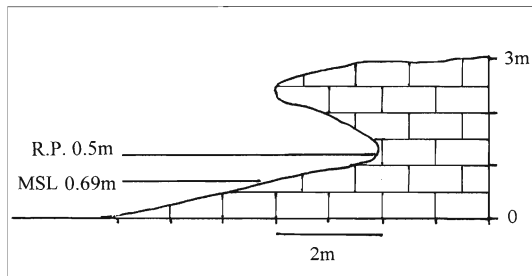


Figure 128. Mactan Island, CEBU (No.219, CEB-1)

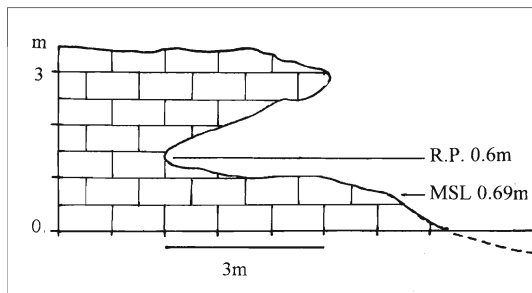


Figure 129. Mactan Island, CEBU (No.220, CEB-2)

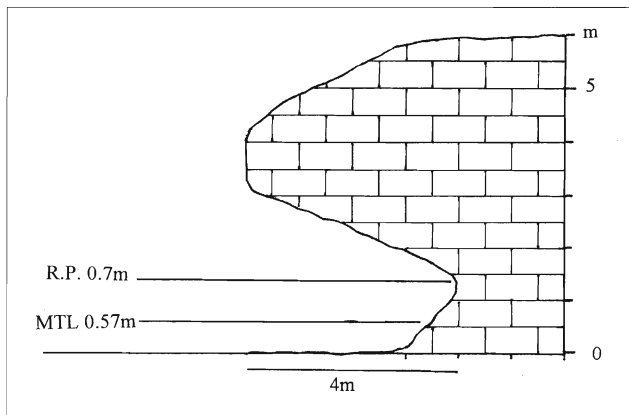


Figure 132. Sumilon Bluewater Island, CEBU (No.223, CEB-5)

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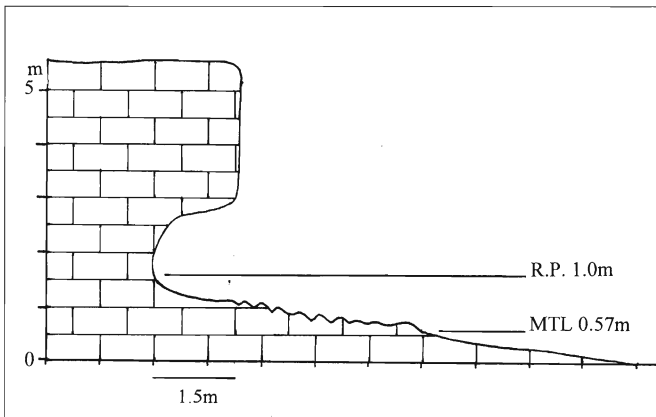


Figure 133. Manite, CEBU (No.224, CEB-6)

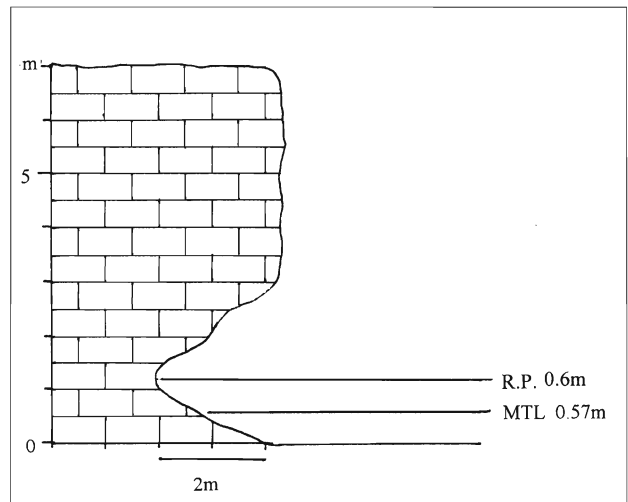


Figure 134. Dondon Point, NEGROS ORIENTAL (No.225, NGR-1)

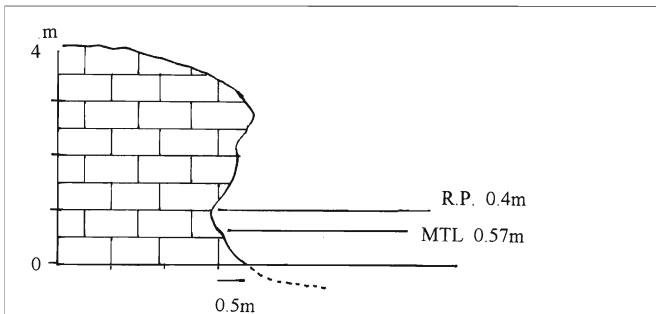


Figure 135. Salag Point, NEGROS ORIENTAL (No.226, NGR-2)

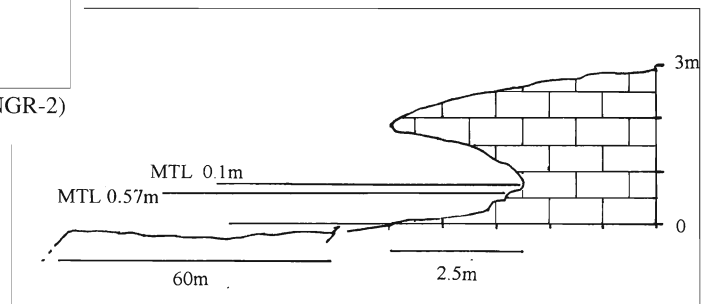


Figure 136. Siquijor Port, SIQUIJOR (No.227, SIQ-1)

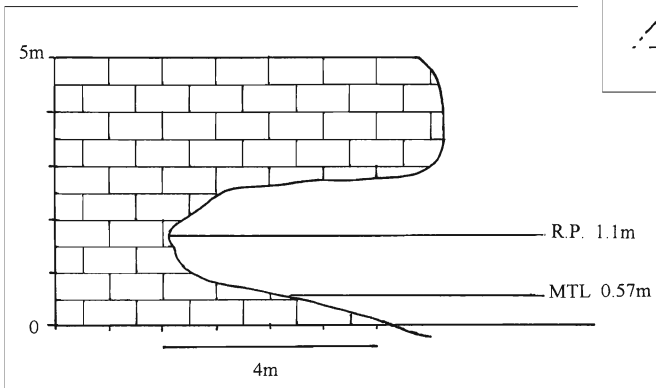


Figure 137. Salagdoong Beach, Maria, SIQUIJOR (No.228, SIQ-2)

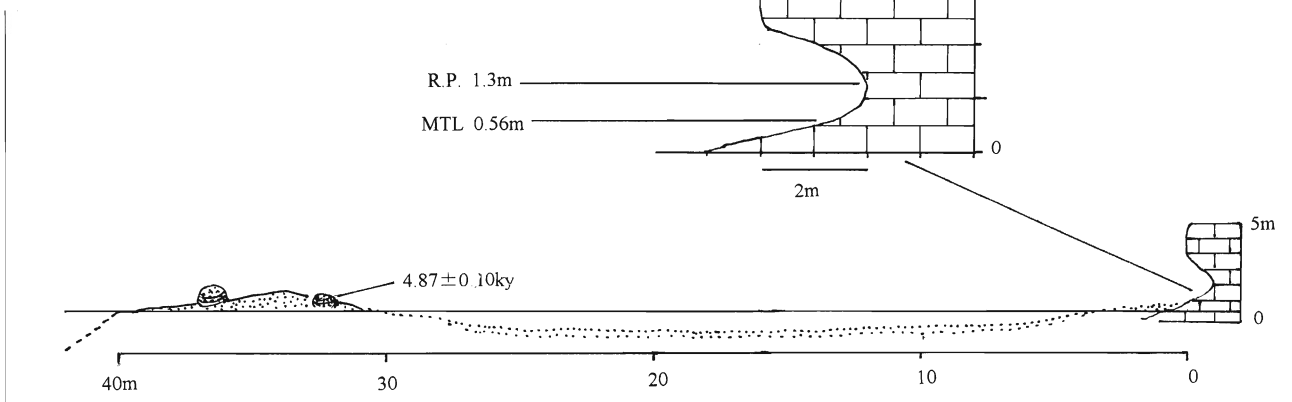


Figure 138. Pangangan Island, BOHOL (Nos.229, 230, BOH-1,2)

Plate 34

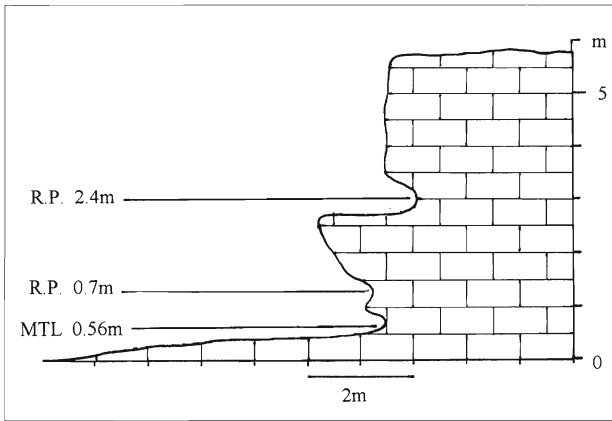


Figure 139. Cabilao Island, BOHOL (Nos.231, 232, BOH-3)

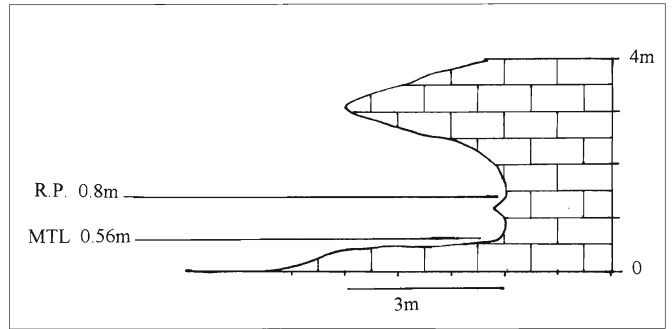


Figure 140. Sandingan Island, BOHOL (No.233, BOH-4)

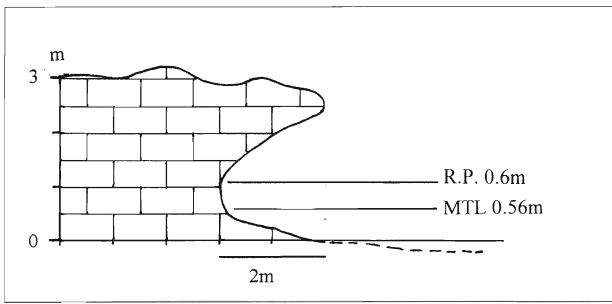


Figure 141. Cruz Point, BOHOL (No.234, BOH-5)

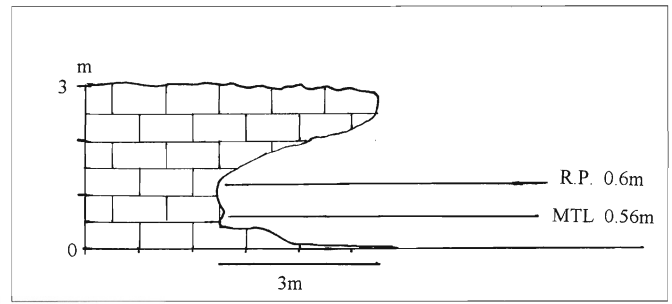


Figure 142. Baclayon, BOHOL (No.235, BOH-6)

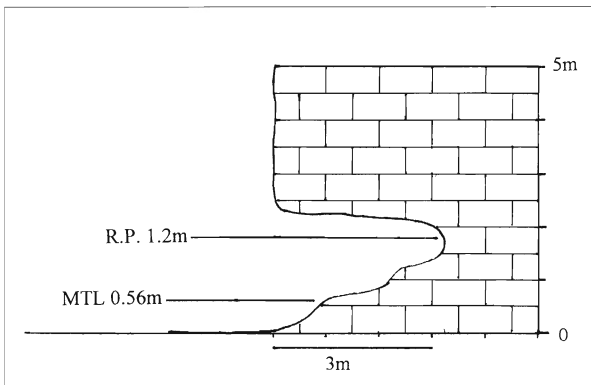


Figure 143. Tutolan, Panglao Island, BOHOL (No.236, BOH-7)

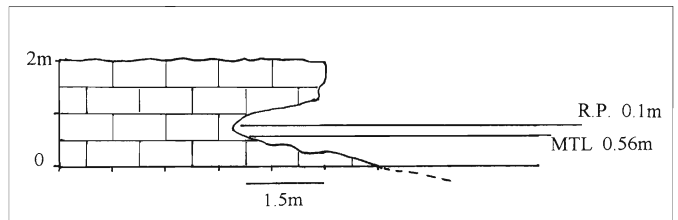


Figure 144. Tangnan, Panglao Island, BOHOL (No.237, BOH-8)

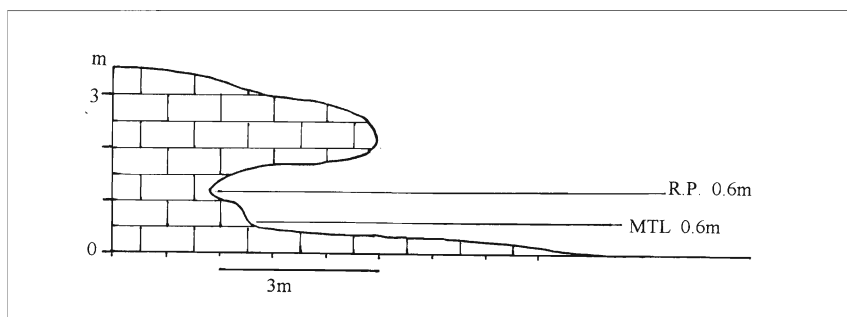


Figure 145. Bil-isan, Panglao Island, BOHOL (No.238, BOH-9)



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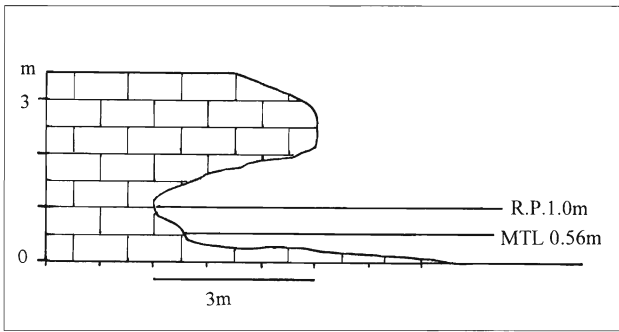


Figure 146. Lo-oc, Panglao Island, BOHOL (No.239, BOH-10)

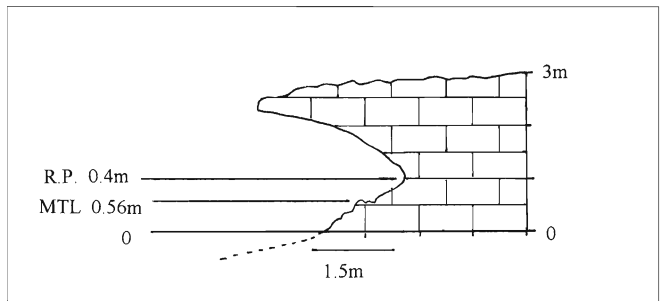


Figure 147. Lo-oc, Panglao Island, BOHOL (No.240, BOH-11)

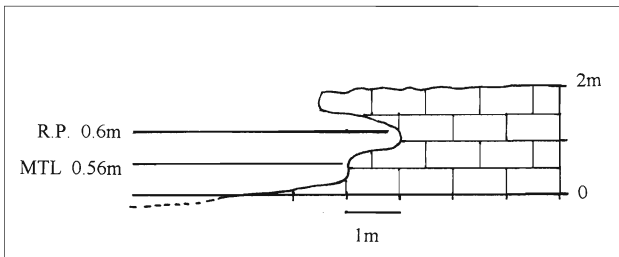


Figure 148. Doljo Point, Panglao Island, BOHOL (No.241, BOH-12)

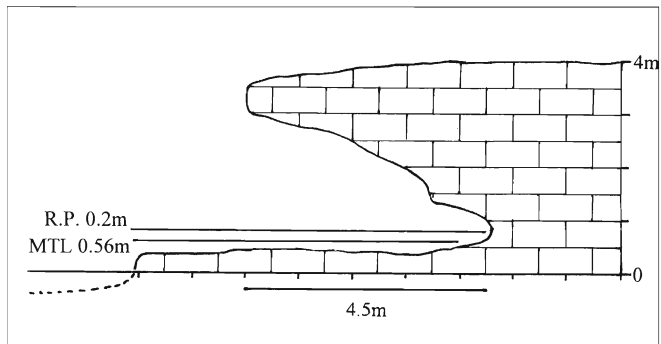


Figure 149. San Isidro, Panglao Island, BOHOL (No.242, BOH-13)

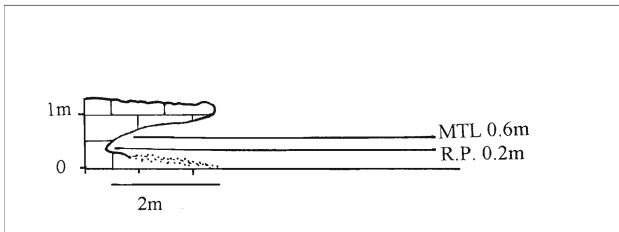


Figure 150. Gak-Ang Island, BOHOL (No.243, BOH-14)

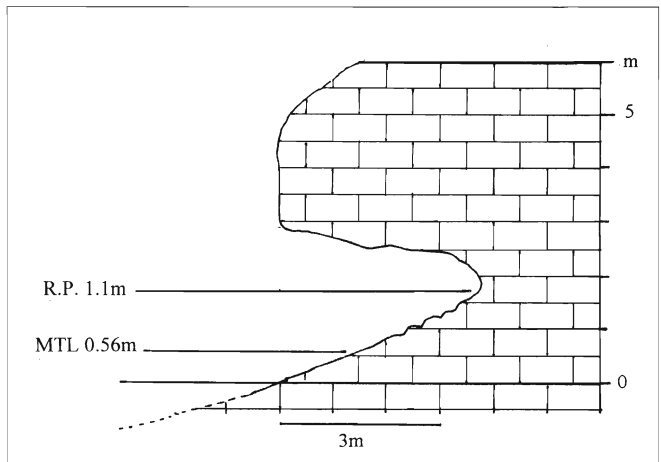


Figure 151. Pamilakan Island BOHOL (No.244, BOH-15)

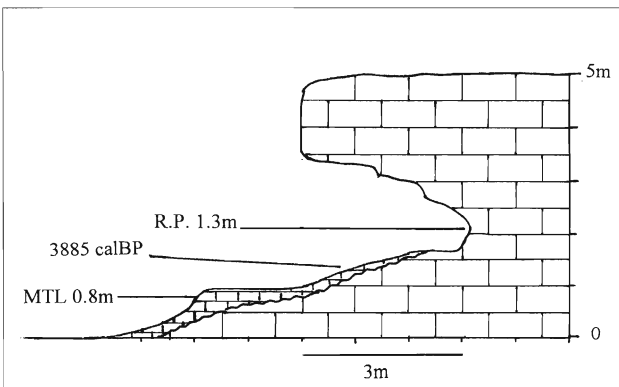


Figure 152. Tringon, LEYTE (Nos.245, 246, LEY-1)

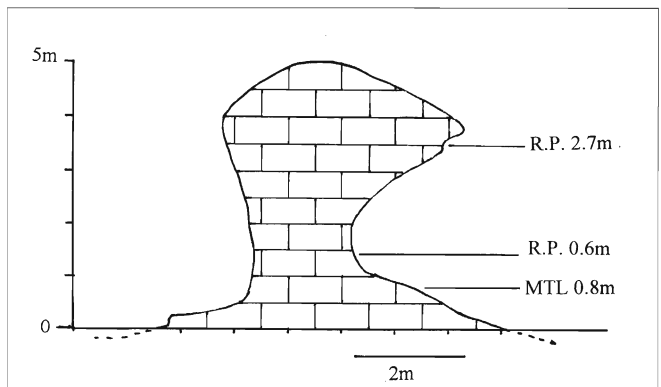


Figure 153. Namanoc, LEYTE (Nos.247, 248, LEY-2)

Plate 36

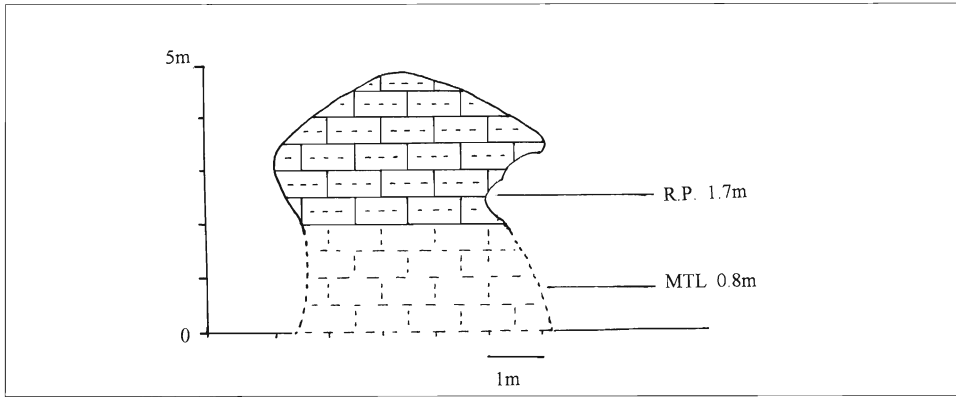


Figure 154. Villaba, LEYTE (No.249, LEY-3)

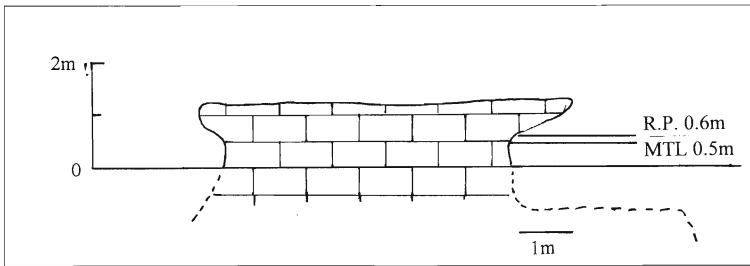


Figure 155. Panaon Island, SOUTHRN LEYTE (No.250, SLE-1)

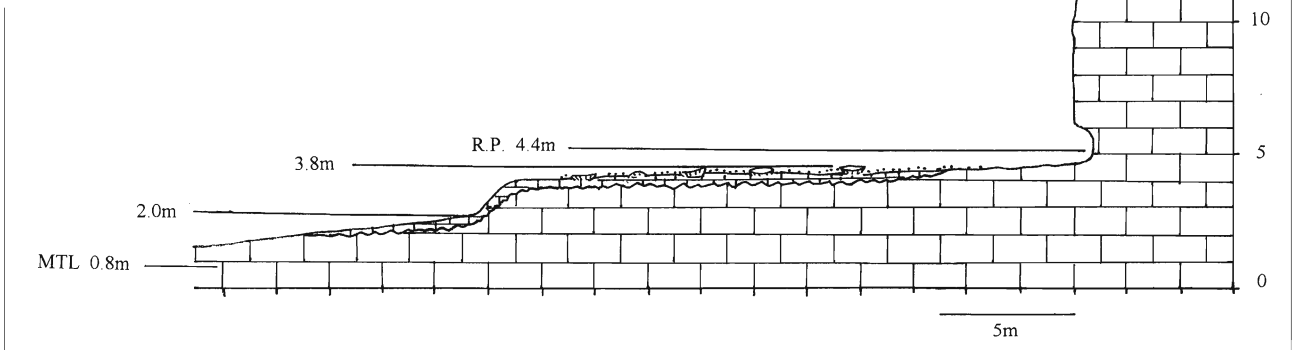


Figure 156. Tangkoan Point, Burgos, SOUTHERN LEYTE (Nos.252, 253, SLE-2)

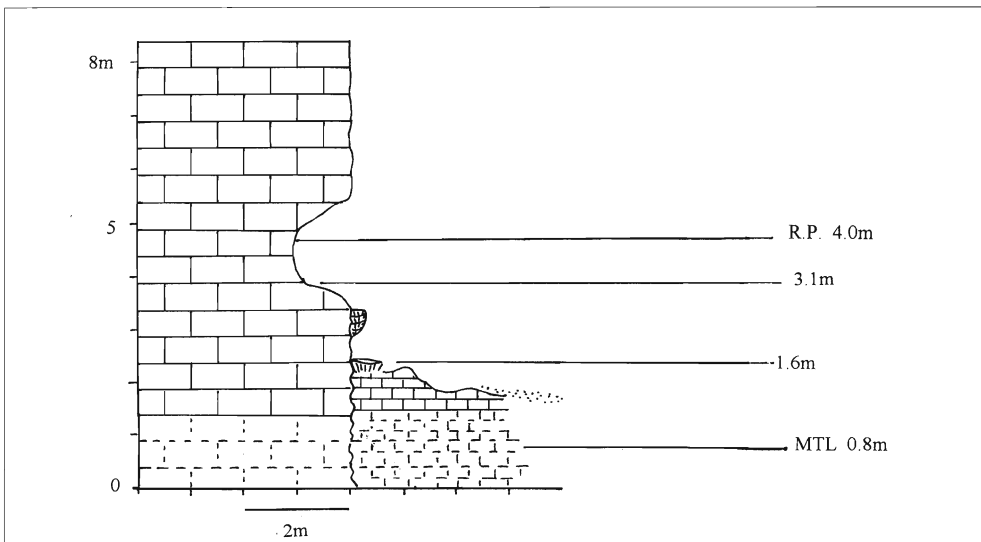


Figure 157. Tangkoan Point, Burgos, SOUTHERN LEYTE (Nos.254, 255, 256, SLE-2)

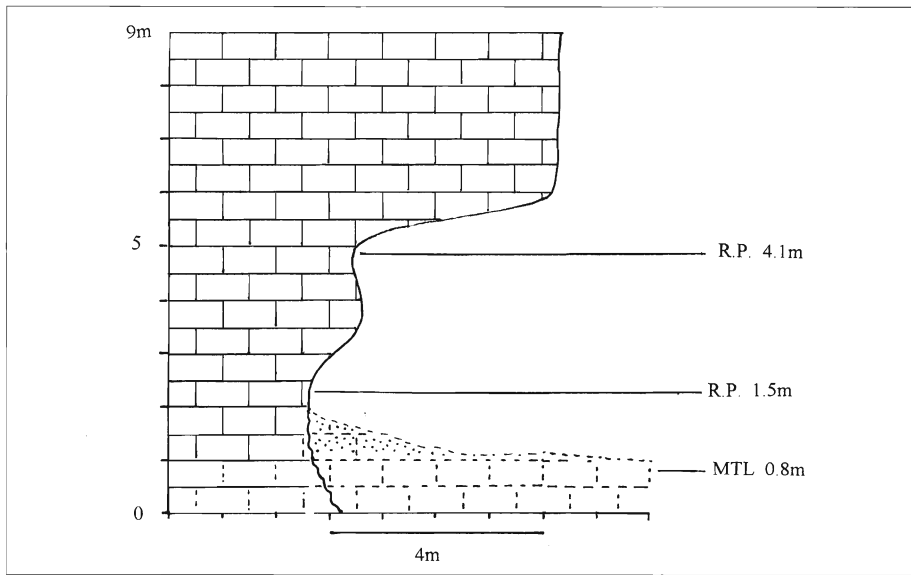


Figure 158. Tangkoan Point, Burgos, SOUTHERN LEYTE (Nos.257, 258, SLE-2)

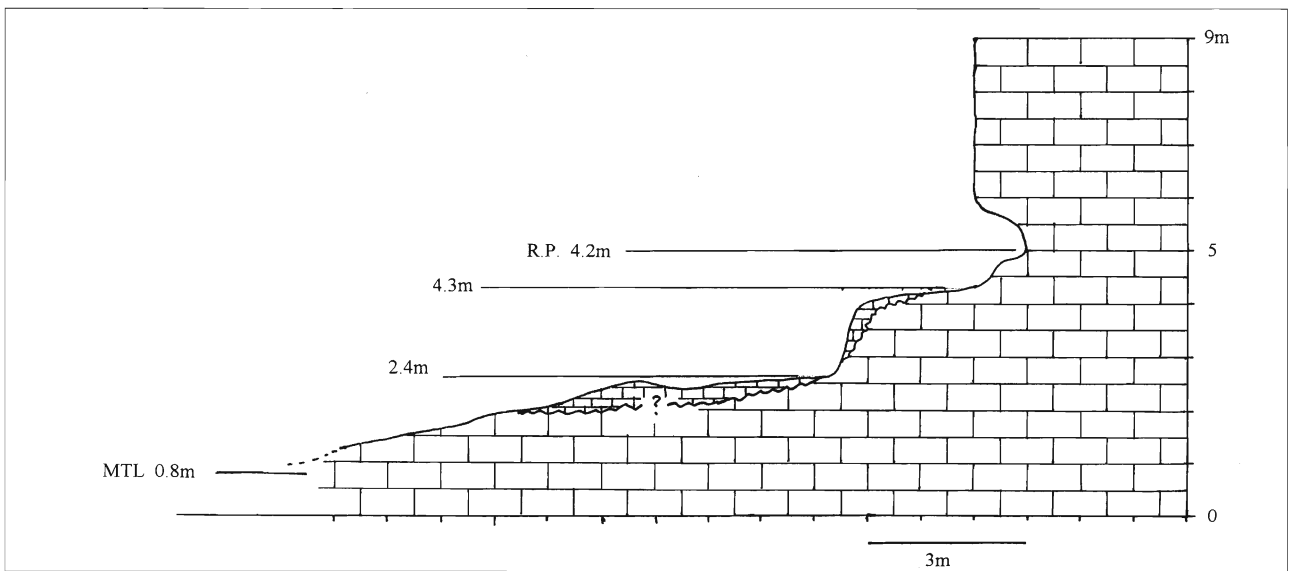


Figure 159. Tangkoan Point, Burgos, SOUTHERN LEYTE (Nos.259, 260, 261, SLE-3)

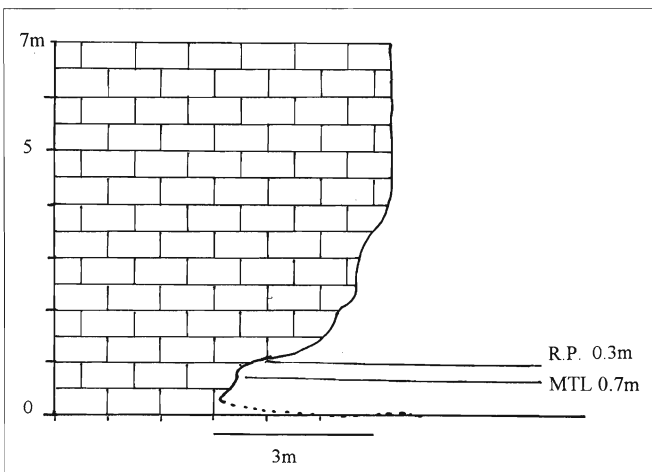


Figure 160. Mataas, Cagraray Island, ALBAY (No.262, ALB-2)

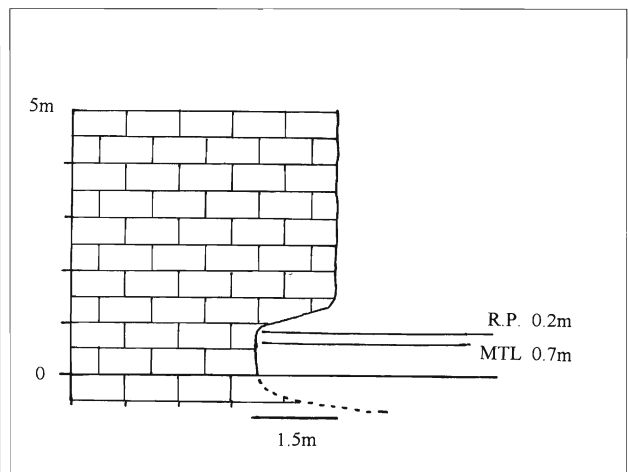


Figure 161. Salug, Cagraray Island, ALBAY (No.263, ALB-3)

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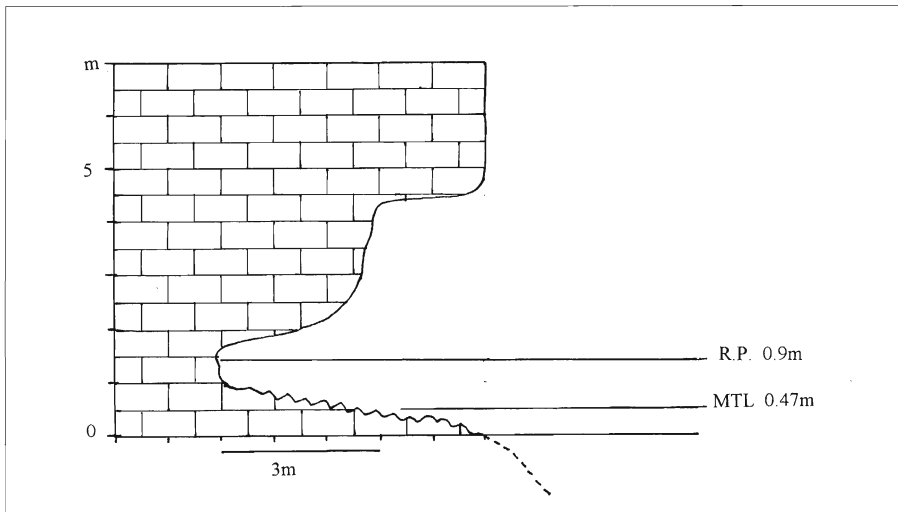


Figure 162. Sajoton Point, NORTHERN SAMAR (No.264, NSA-1)

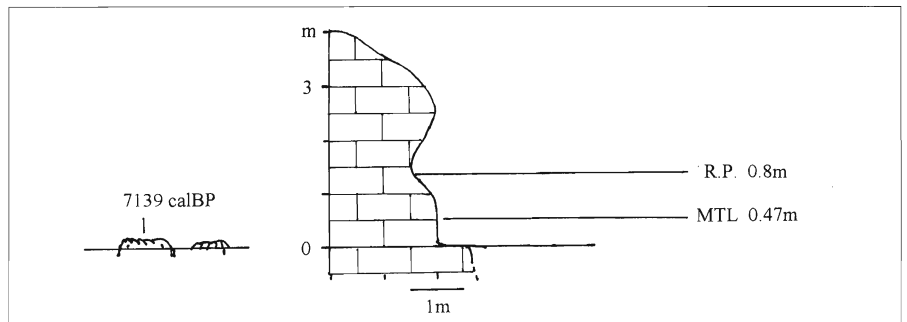


Figure 163. Sajoton Point, NORTHERN SAMAR (No.265, NSA-2)

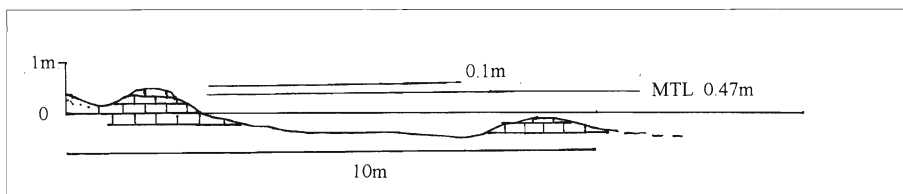


Figure 164. Alegria, NORTHERN SAMAR (No.266, NSA-3)

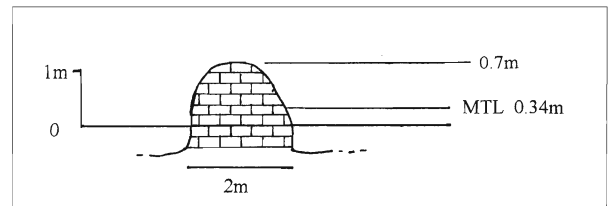


Figure 165. San Jose, NORTHERN SAMAR (No.267, NSA-4)

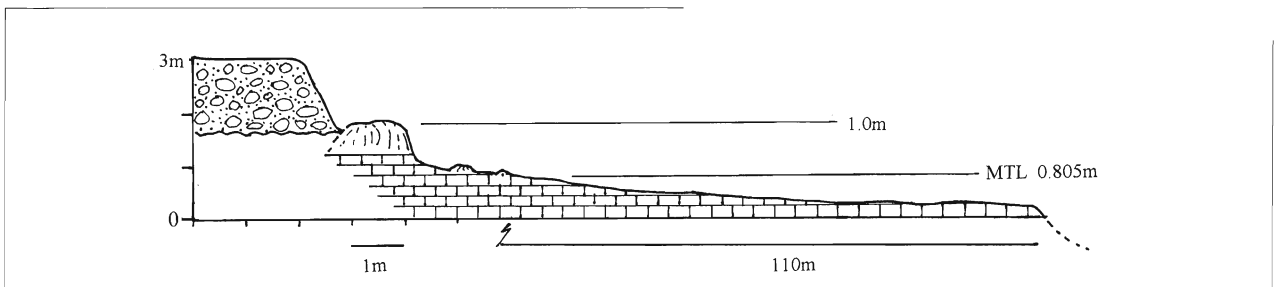
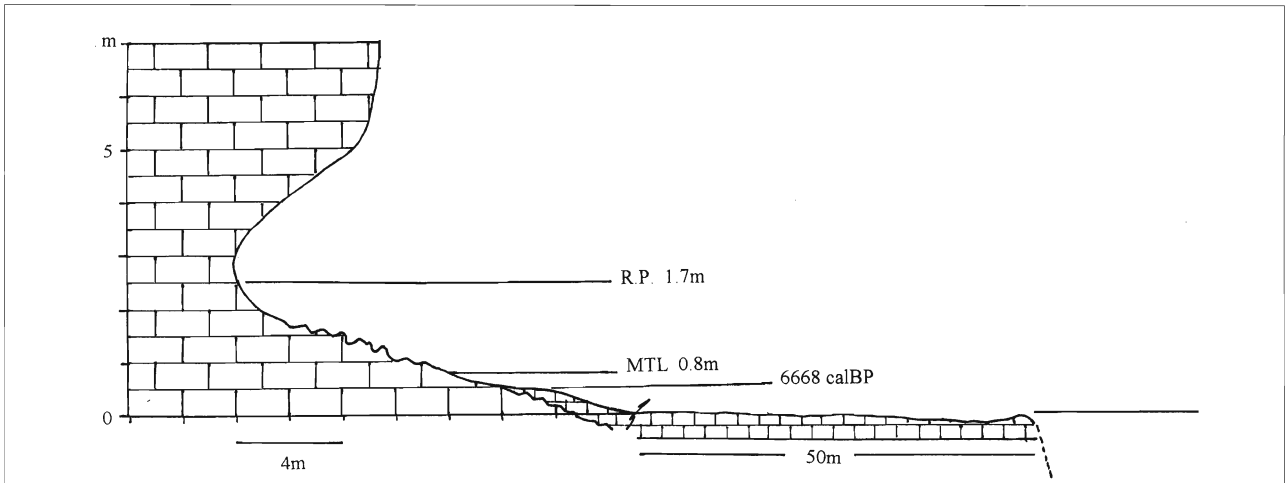
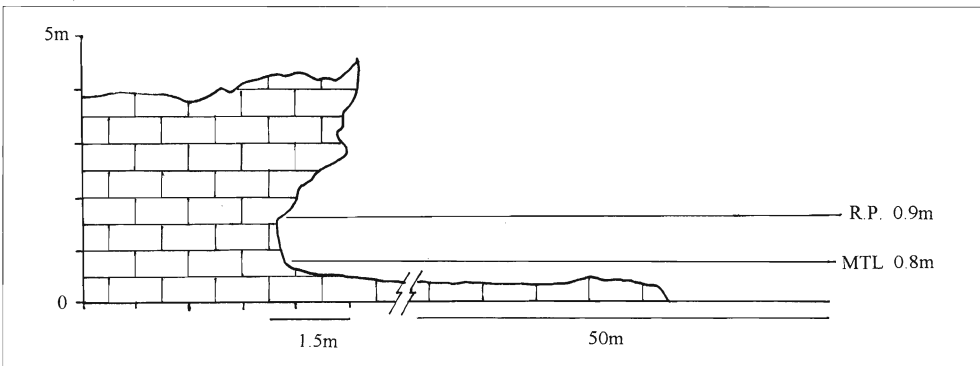


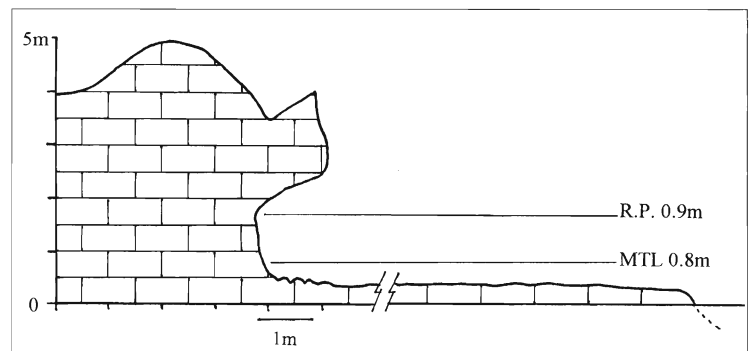
Figure 166. Panirongan, NORTHERN SAMAR (No.268, NSA-5)



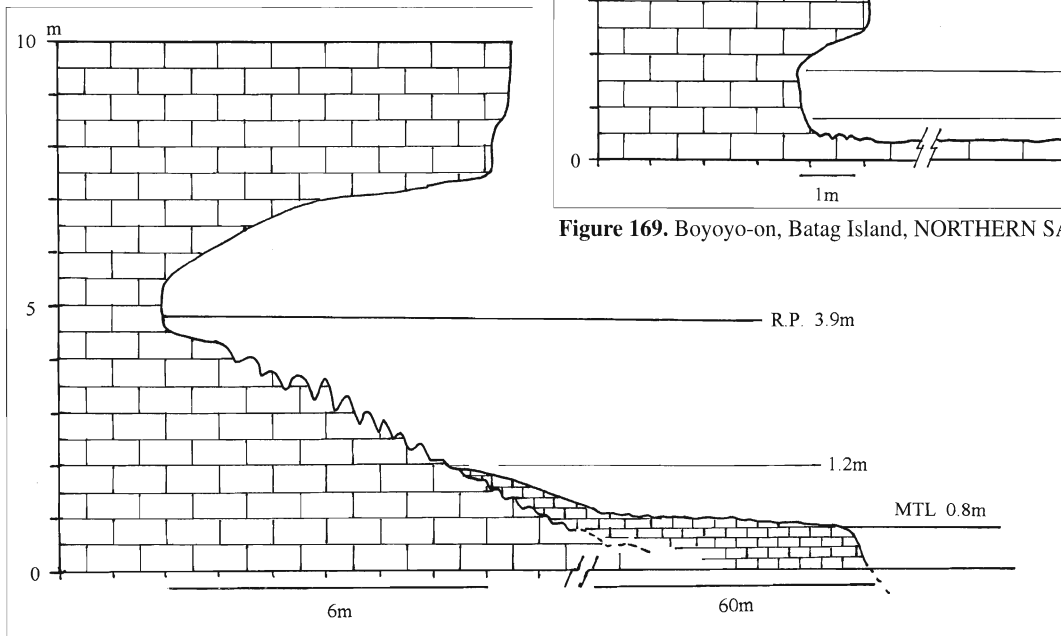
**Figure 167.** Cahayagan, Batag Island, NORTHERN SAMAR (No.269, NSA-6)



**Figure 168.** Boyoyo-on, Batag Island, NORTHERN SAMAR (No.270, NSA-7)



**Figure 169.** Boyoyo-on, Batag Island, NORTHERN SAMAR (No.271, NSA-8)



**Figure 170.** Pinatau, Batag Island, NORTHERN SAMAR (Nos.272, 273, NSA-9)



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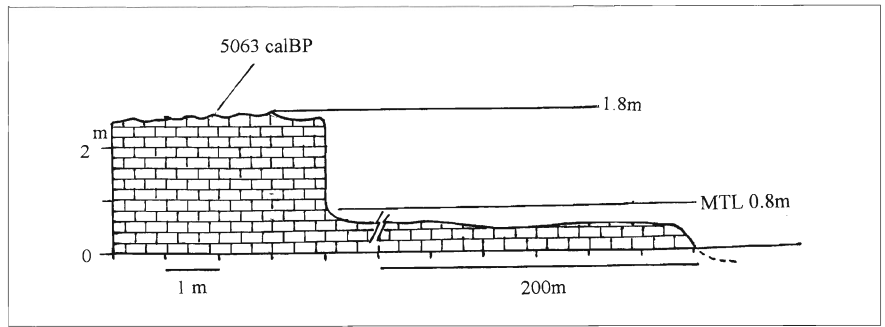


Figure 171. Kabatuan, NORTHERN SAMAR (No.274, NSA-10)

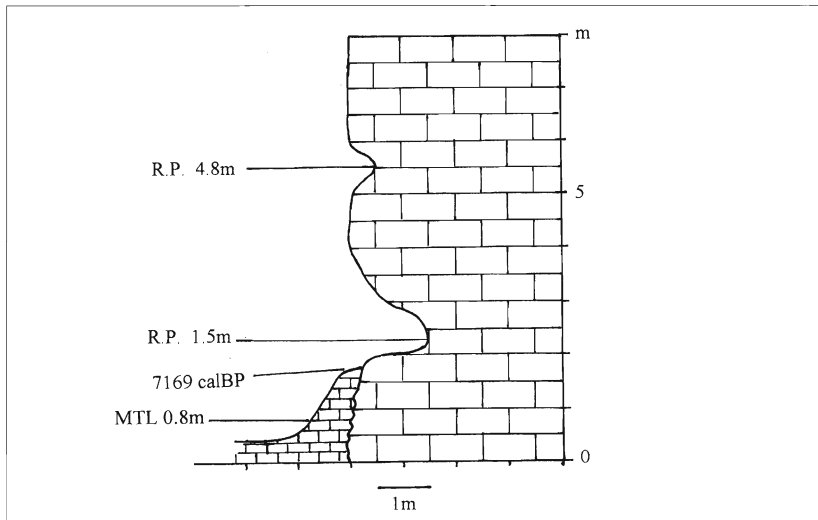


Figure 172. Mapanus, NORTHERN SAMAR (Nos.275, 276, 277, NSA-11)

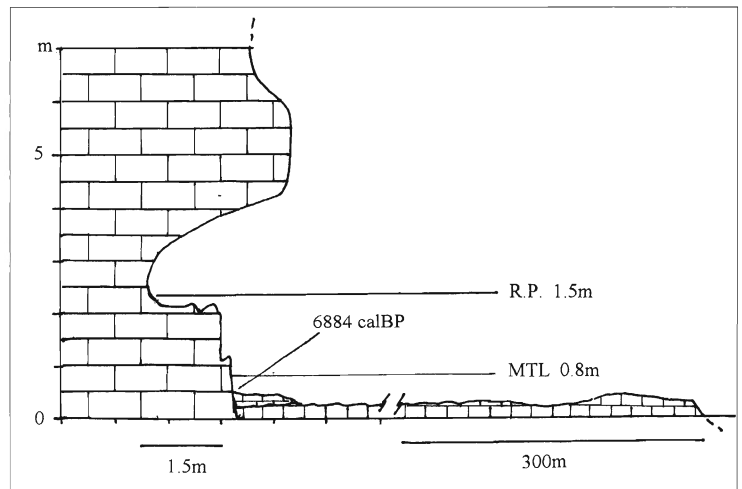


Figure 173. Mapanus, NORTHERN SAMAR (Nos.278, 279, NSA-12)

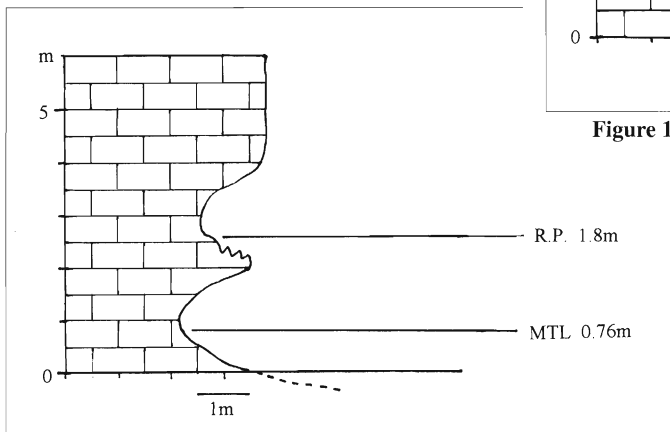


Figure 174. Gamay, NORTYERN SAMAR (No.280, NSA-13)

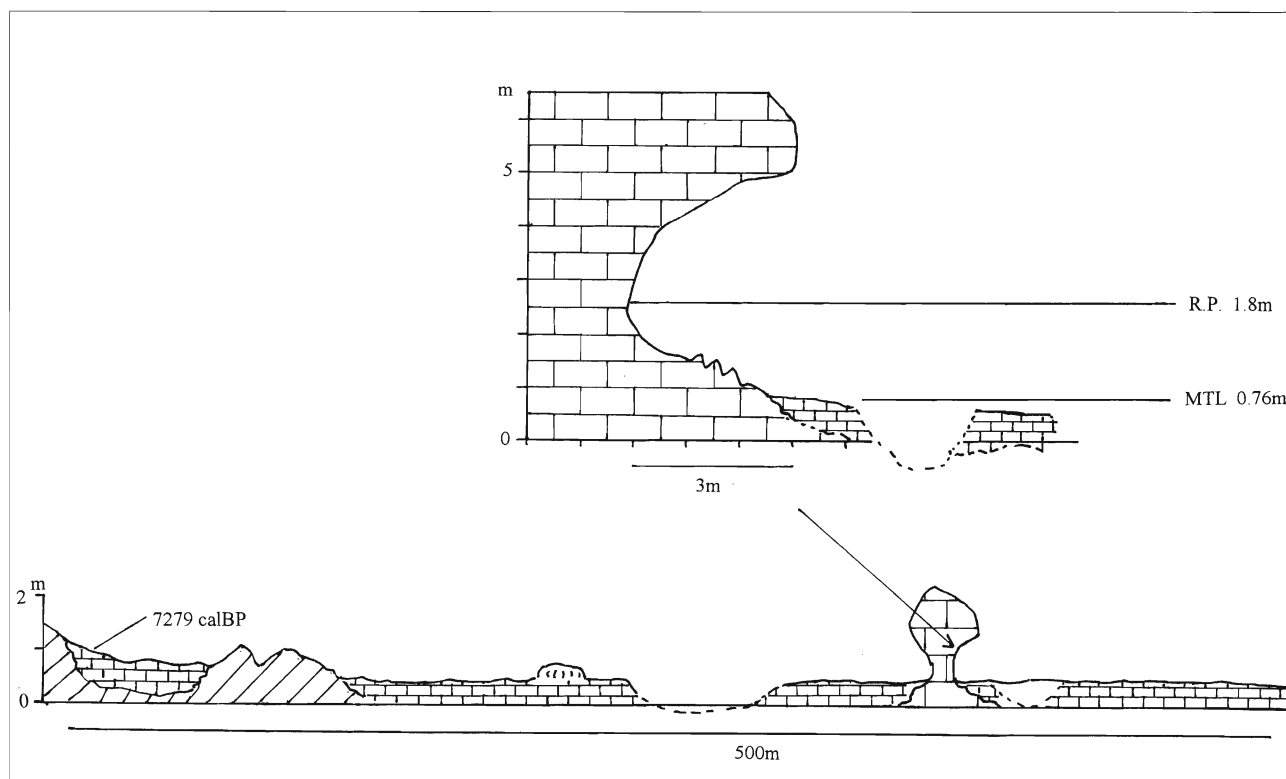


Figure 175. Apitan Island, EASTERN SAMAR (Nos.281, 282, ESA-1)

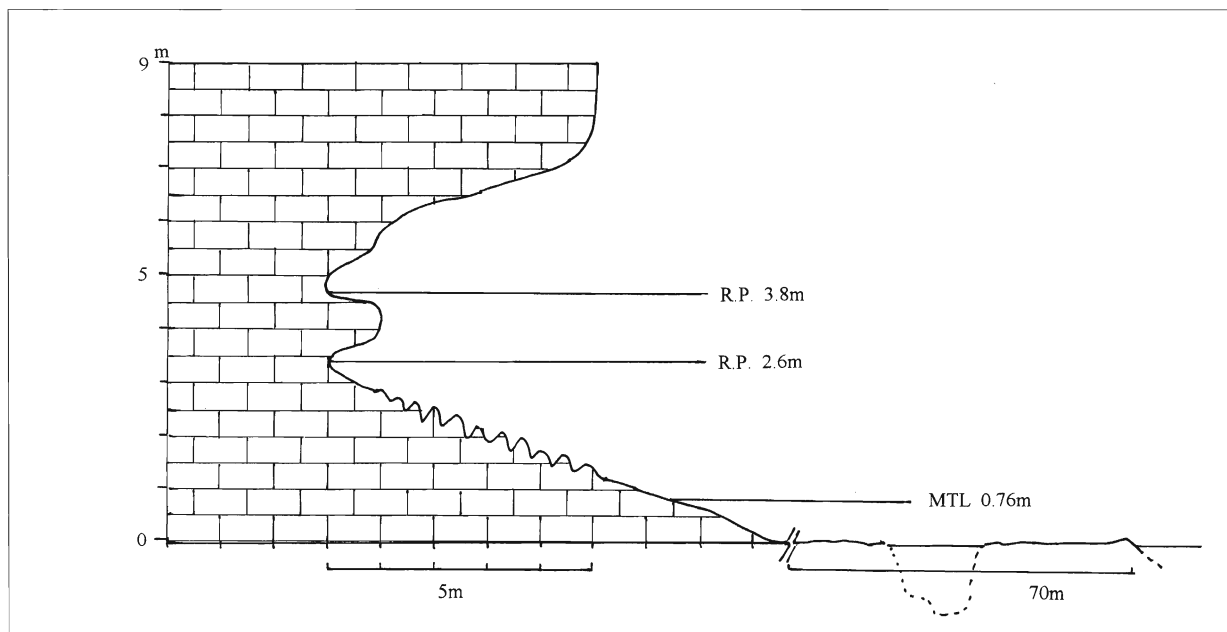


Figure 176. Tubabao Island, EASTERN SAMAR (Nos.283, 284, ESA-2)

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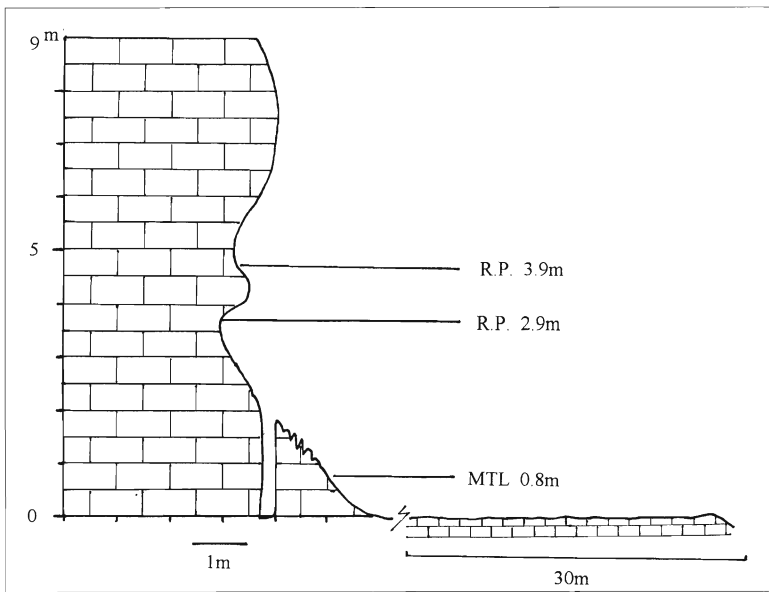


Figure 177. Catalaban Island, EASTERN SAMAR (Nos.285, 286, ESA-3)

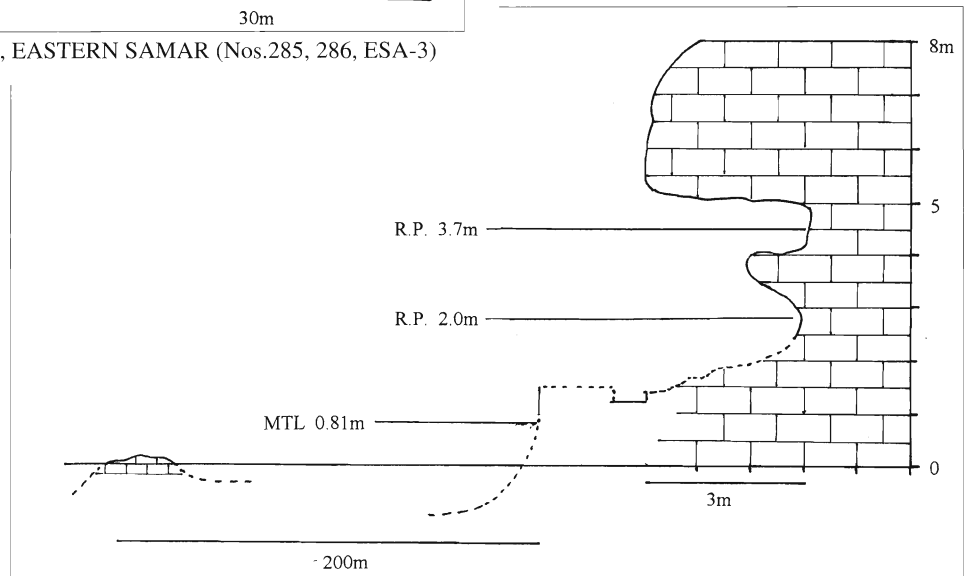


Figure 178. San Julian, EASTERN SAMAR (Nos.287, 288, NSA-4)

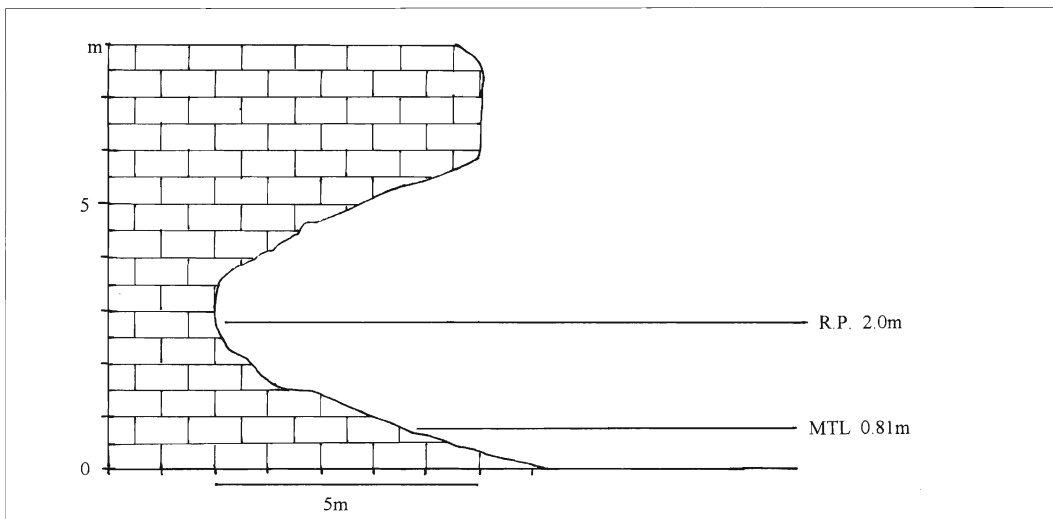


Figure 179. San Julian, EASTERN SAMAR (No.289, ESA-5)

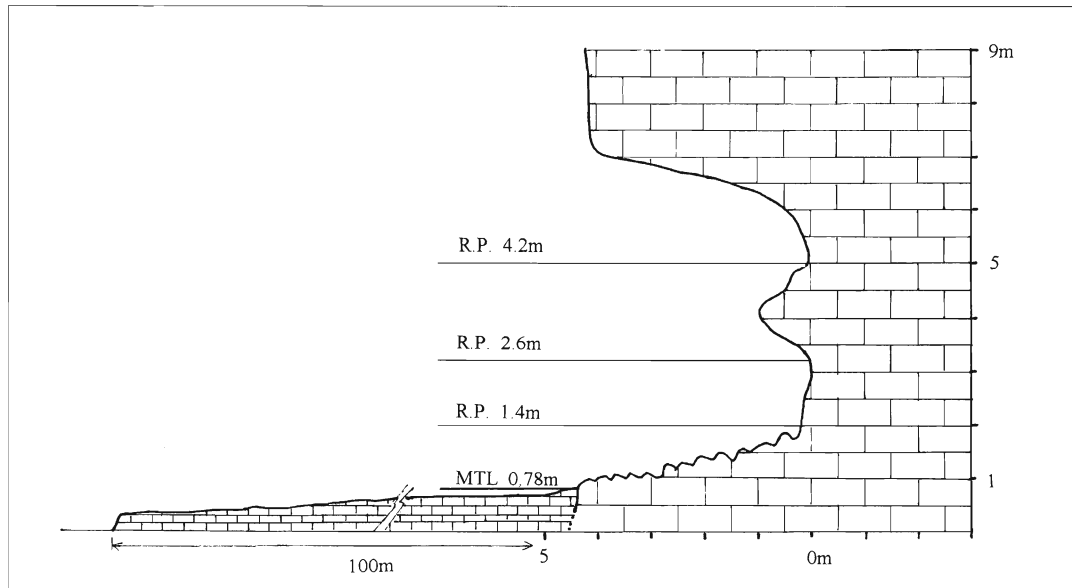


Figure 180. Divinubo Island, EASTERN SAMAR (Nos.290, 291, 292, ESA-6)

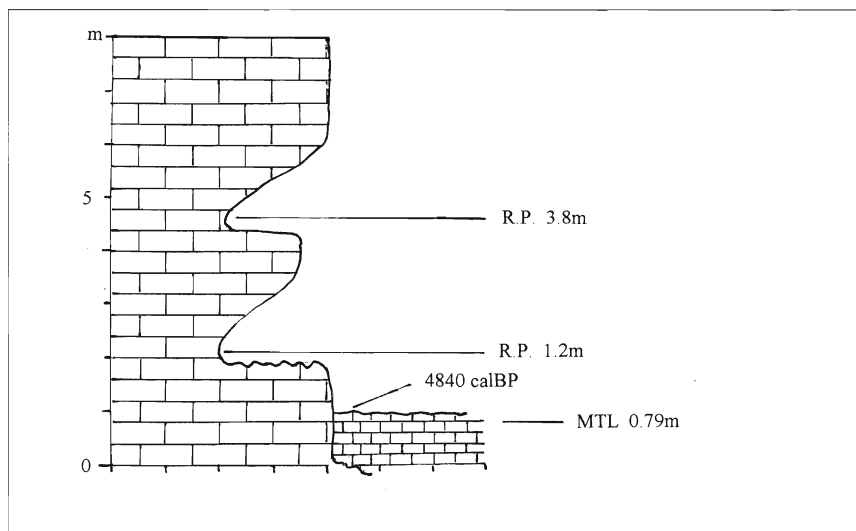


Figure 181. Divinubo Island, EASTERN SAMAR (Nos.293, 294, 295, ESA-7)

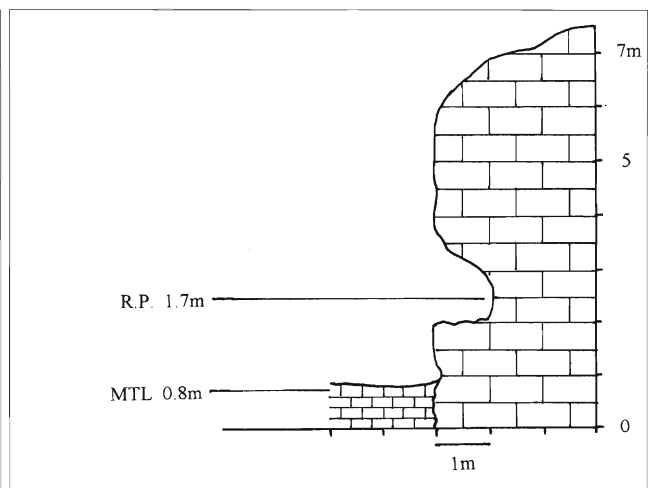
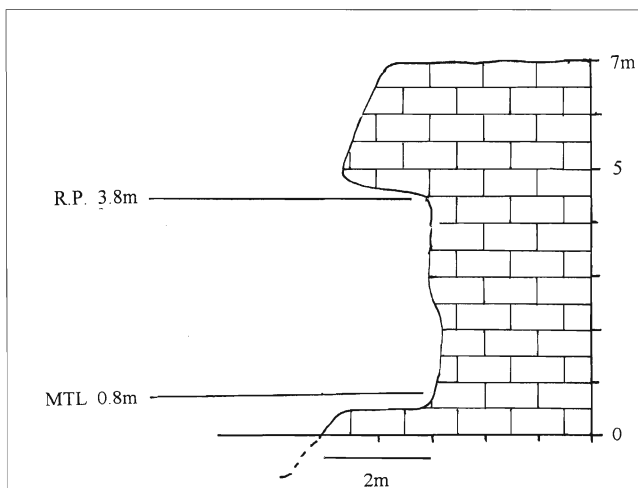


Figure 183. Divinubo Island, EASTERN SAMAR (No.297, ESA-9) Figure 182. Maydolong, EASTERN SAMAR (No.296, ESA-8)

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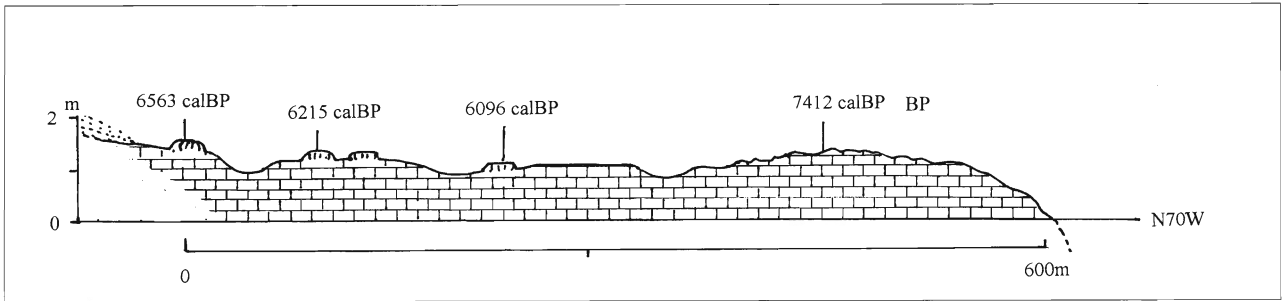


Figure 184. Maydolong, EASTERN SAMAR (Nos.298, 299, 300, 301, ESA-10)

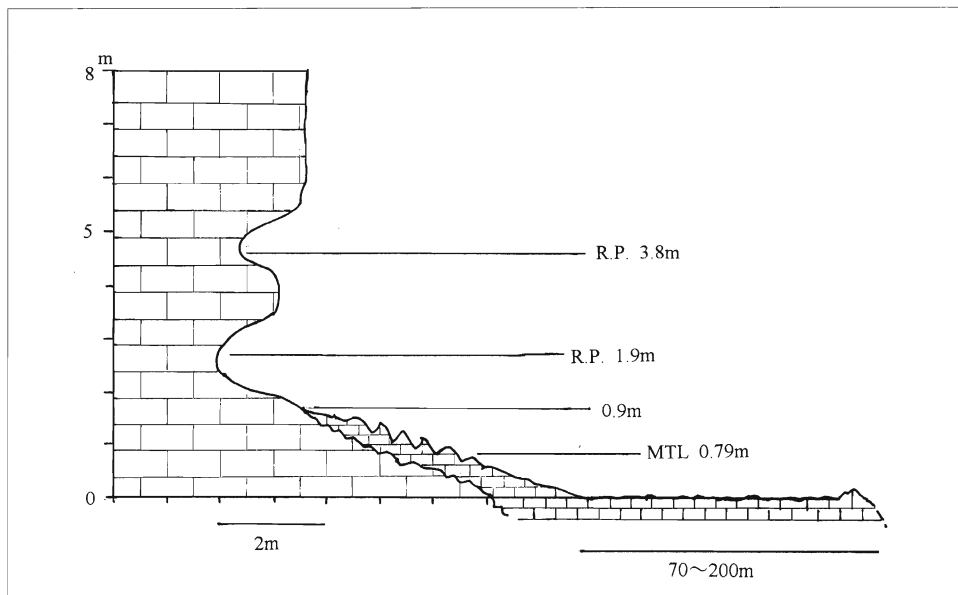


Figure 185. Liorente, EASTERN SAMAR (Nos.302, 303, 304, ESA-11)

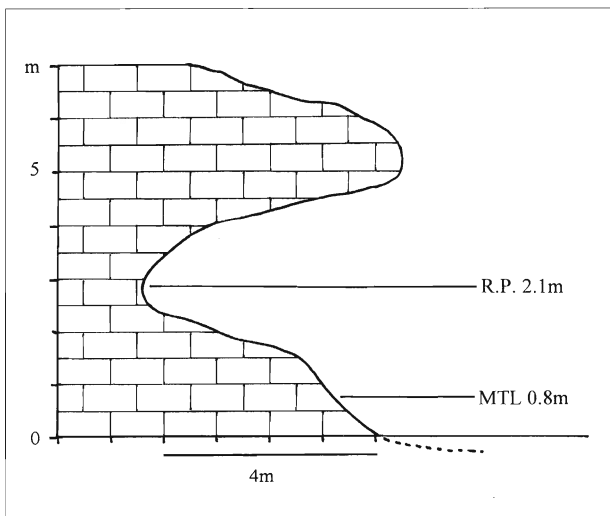


Figure 186. Baiang, EASTERN SAMAR (No.305, ESA-12)

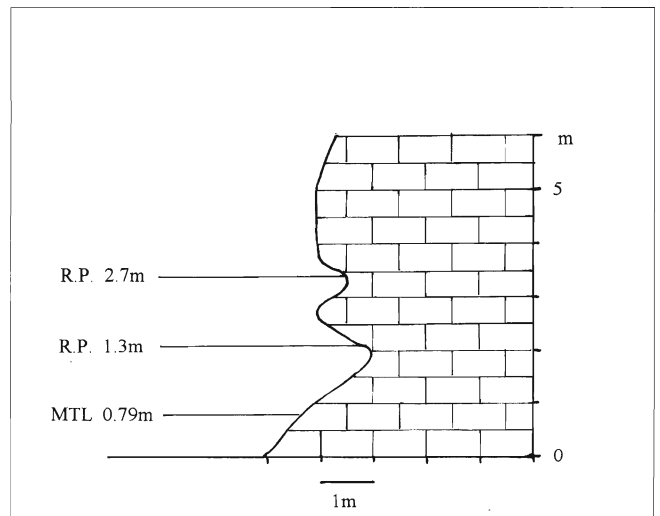


Figure 187. Garawon, EASTERN SAMAR (Nos.306, 307, ESA-13)

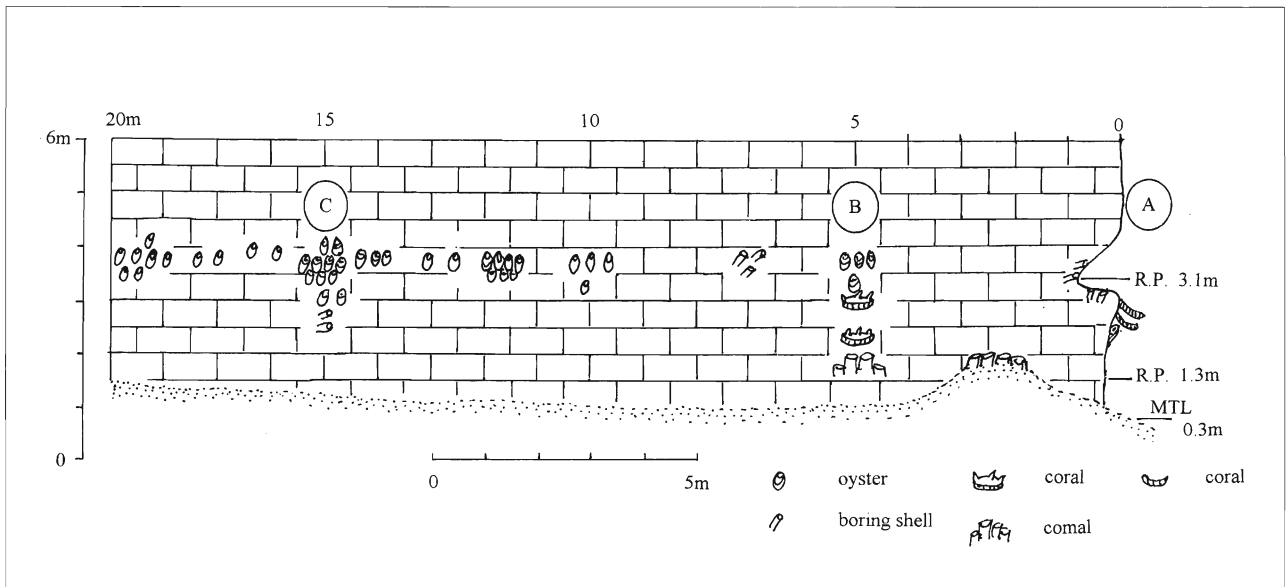


Figure 188. Buyayawon, EASTERN SAMAR (Nos.308, 309, ESA-14)

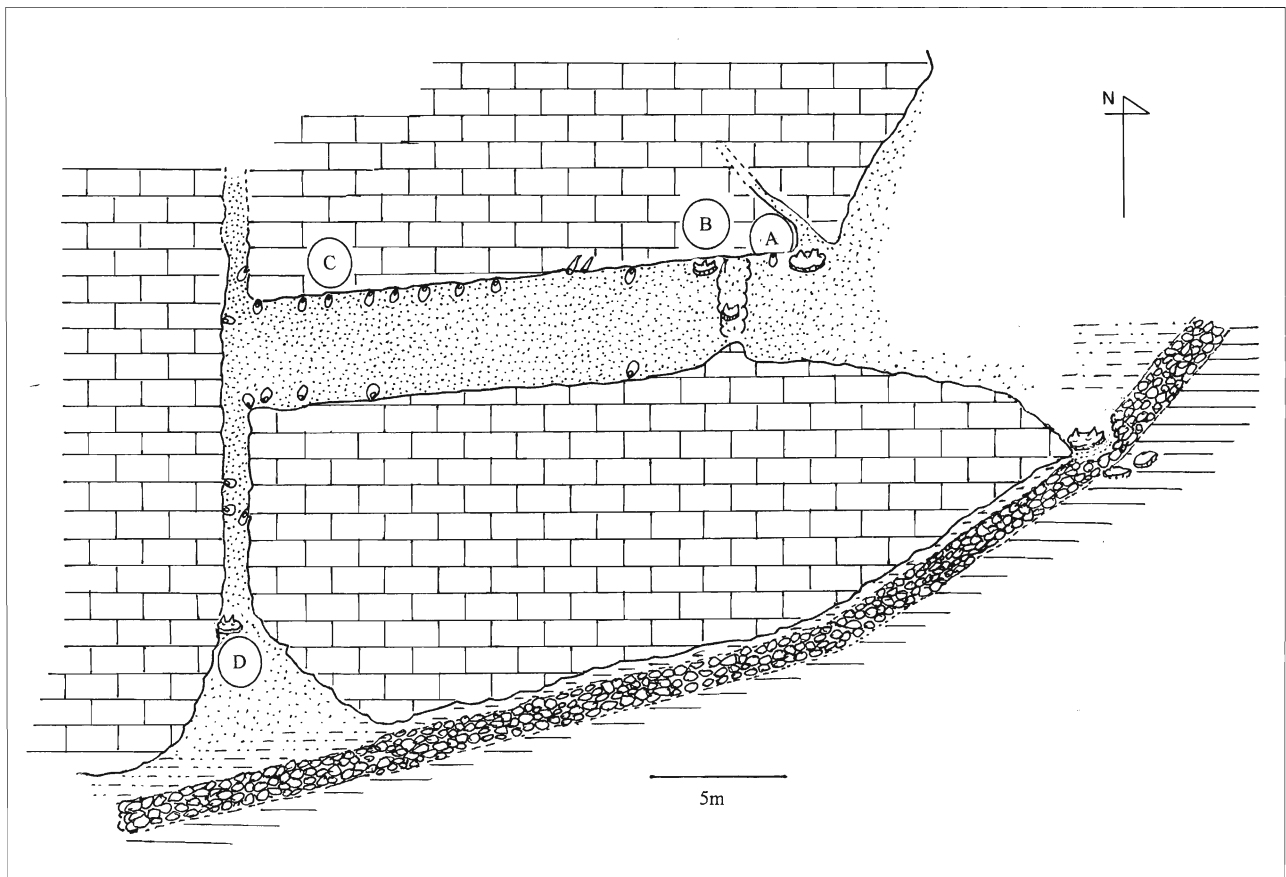


Figure 189. Buyayawon, EASTERN SAMAR (Nos.310, 311, ESA-14)



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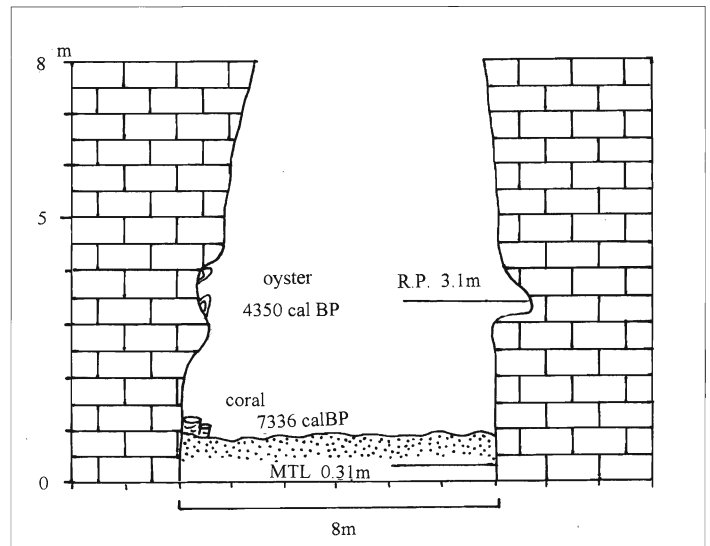


Figure 190. Buyayawon, EASTERN SAMAR (Nos.312, 313, ESA-15)

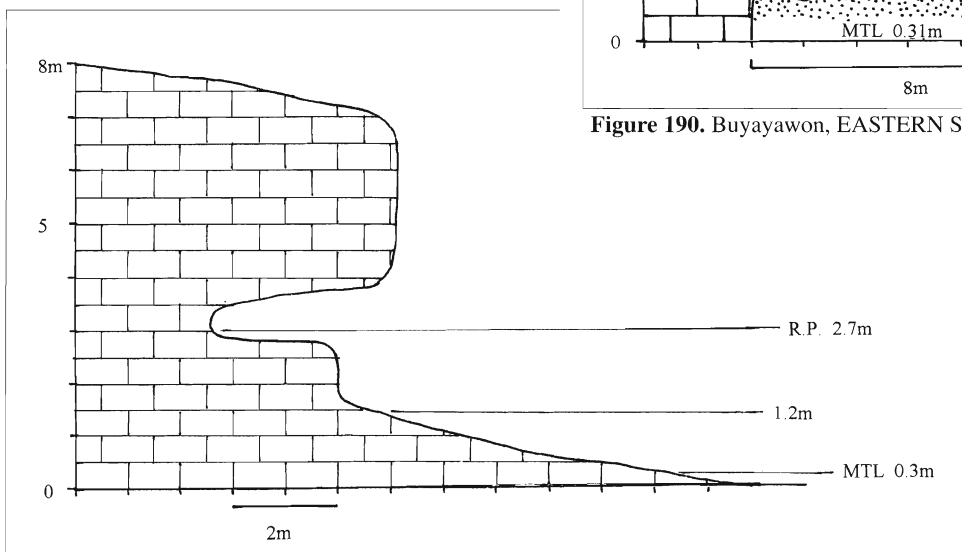


Figure 191. Pagdamiton, Guiaan, EASTERN SAMAR (Nos.314, 315, ESA-16)

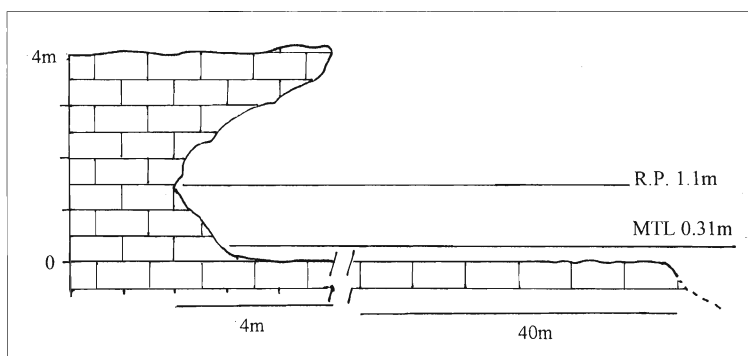


Figure 192. Sarog, Calicon Island, EASTERN SAMAR (No.316, ESA-17)

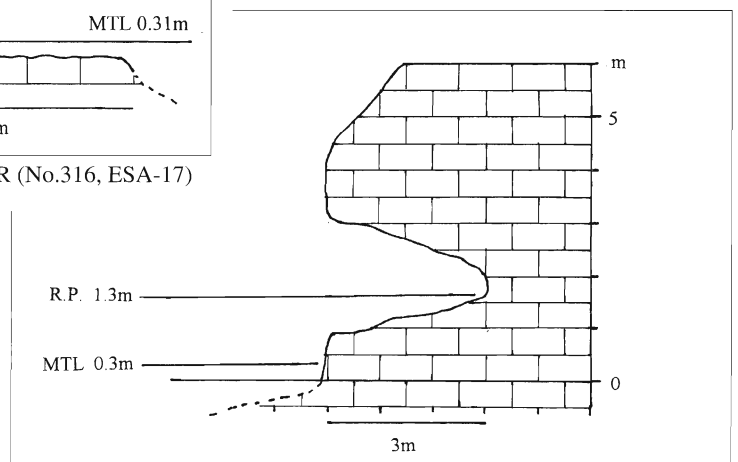


Figure 193. Barahon, Calicon Island, (EASTERN SAMAR (No.317, ESA-18)

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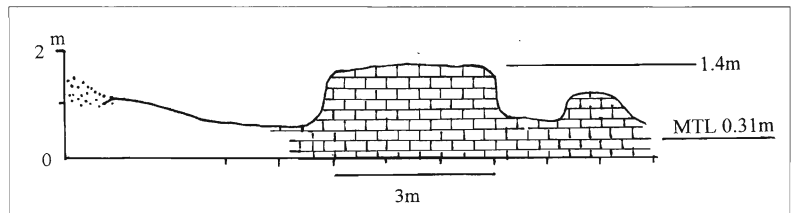


Figure 194. Leleboan, EASTERN SAMAR (No.318, ESA-19)

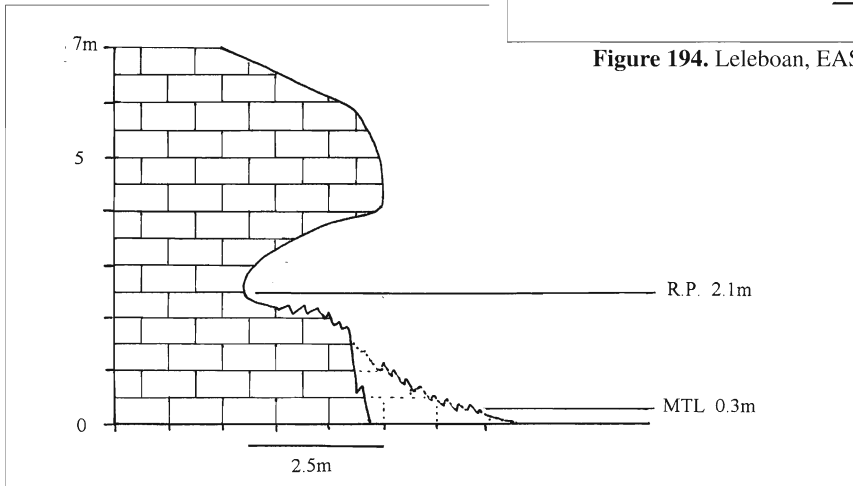


Figure 195. Sungi Point, Candulo Island, EASTERN SAMAR (No.319, ESA-20)

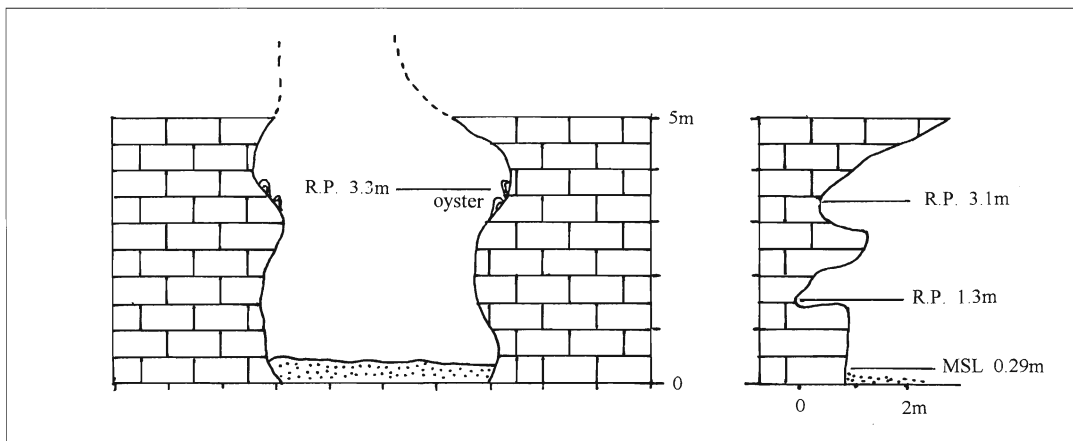


Figure 196. North of Osmena, SAMAR (Nos.320, 321, WSA-1)

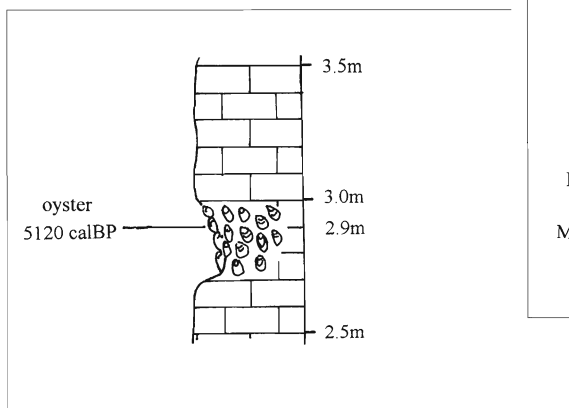


Figure 198. Tinabanan, SAMAR (No.326, WSA-2)

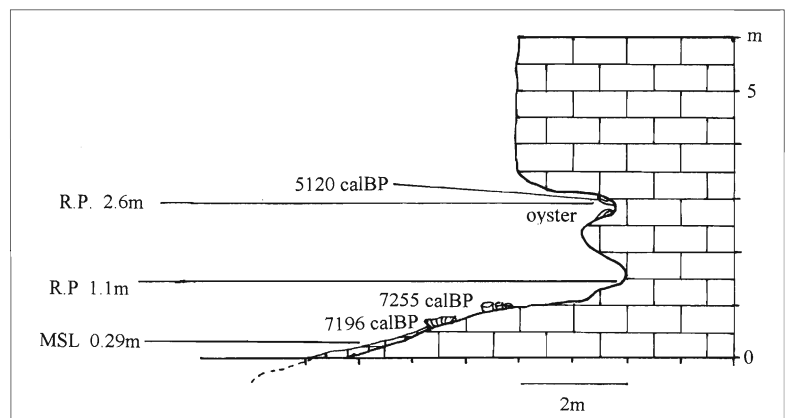


Figure 197. Tinabanan, SAMAR (Nos.322, 323, 324, 325, WSA-2)

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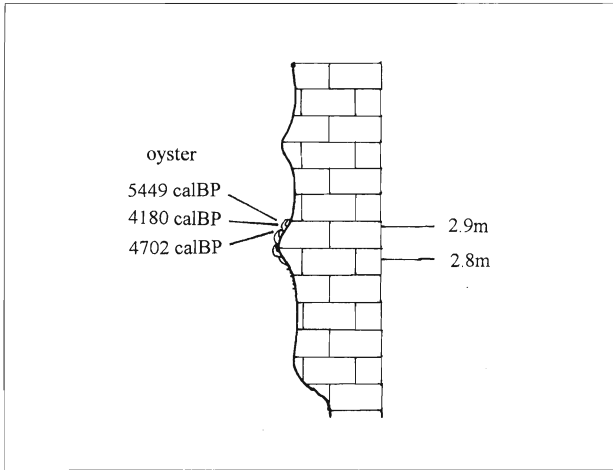


Figure 199. Tinabanan, SAMAR (Nos.327, 328, 329, WSA-3)

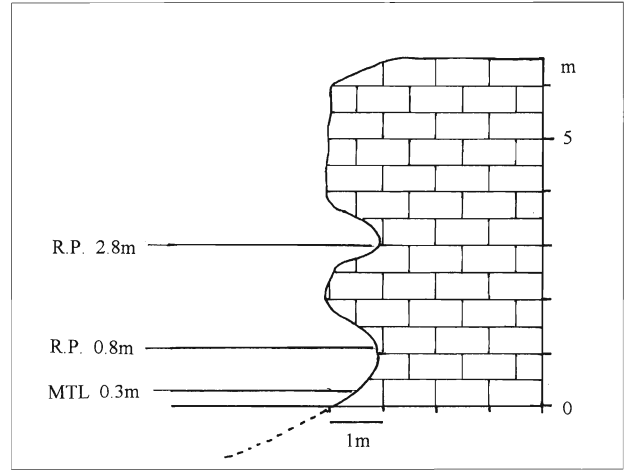


Figure 200. Calowayan, SAMAR (Nos.330, 331, WSA-4)

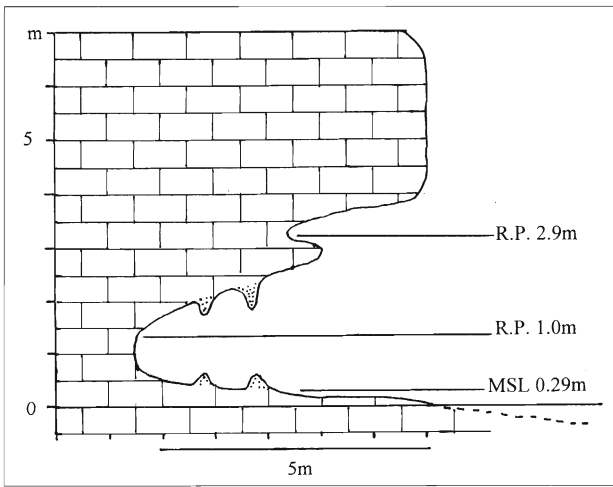


Figure 201. Cabugao, SAMAR (Nos.332, 333, WSA-5)

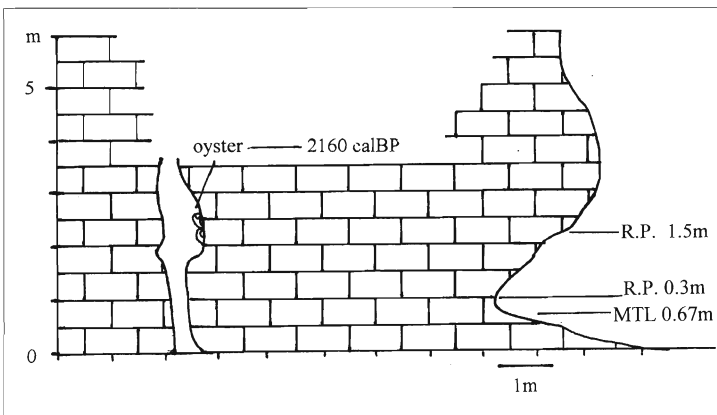


Figure 202. Guimtin Island, SAMAR (Nos.334, 335, WSA-6)

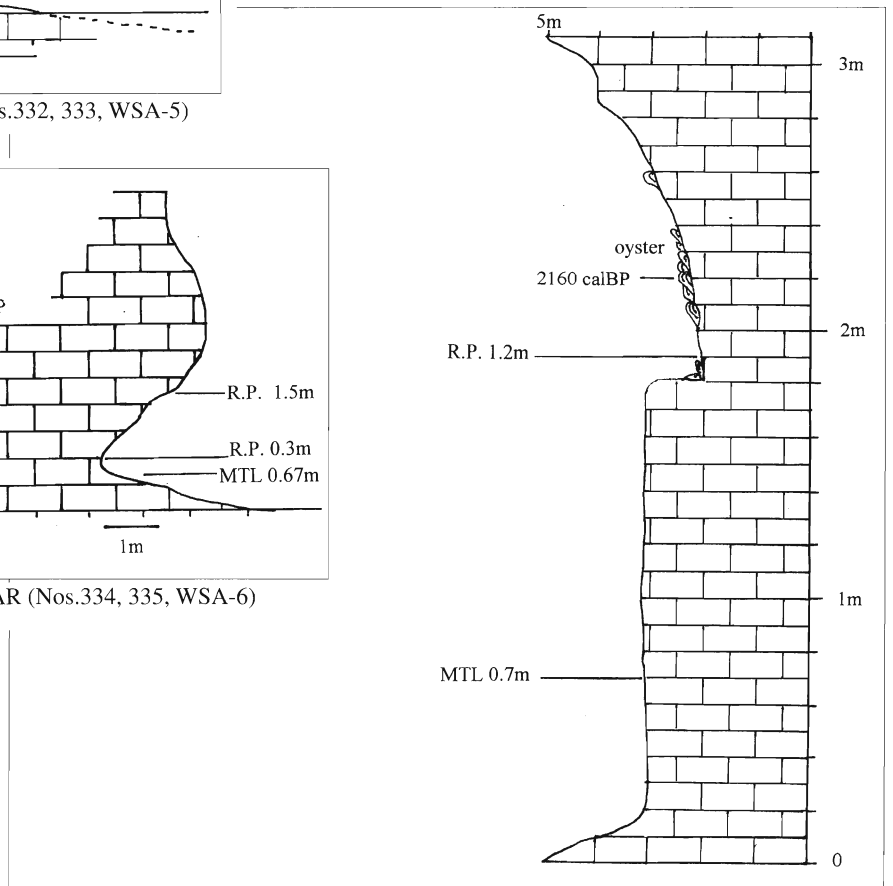


Figure 203. Guimtin Island, SAMAR (No.336, WSA-7)

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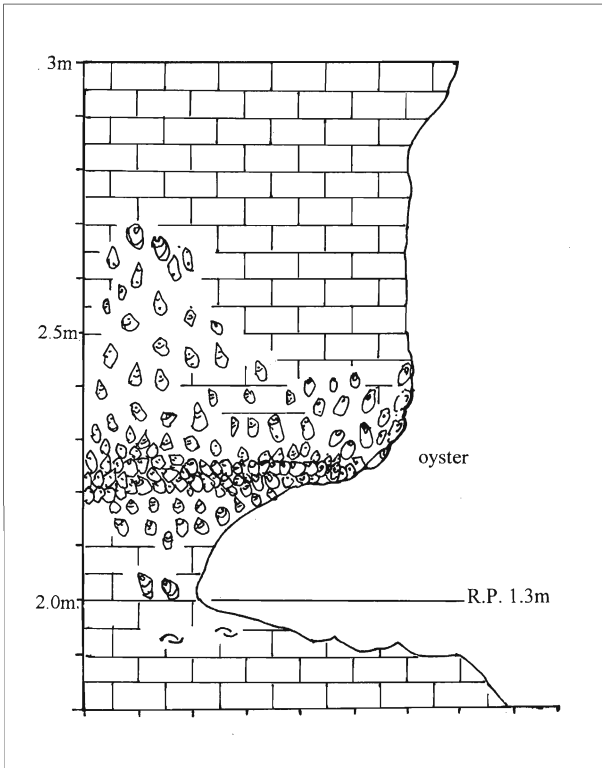


Figure 204. Guimtin Island, SAMAR (No.337, WSA-7)

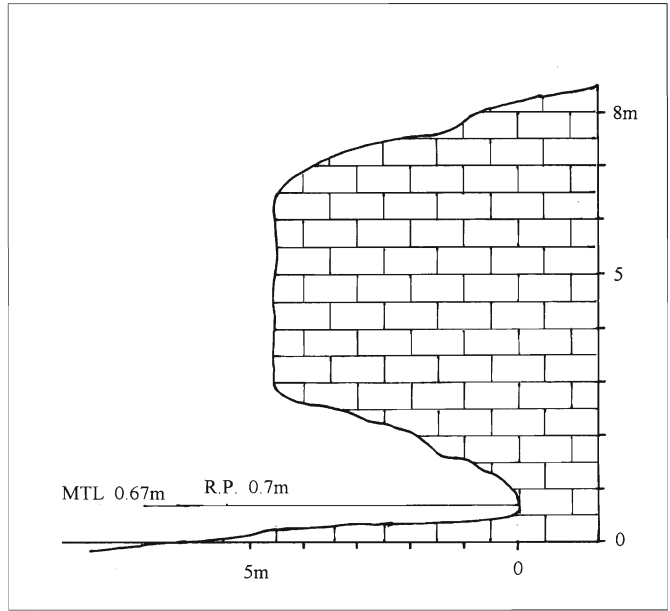


Figure 205. Guimtin Island, SAMAR (No.338, WSA-8)

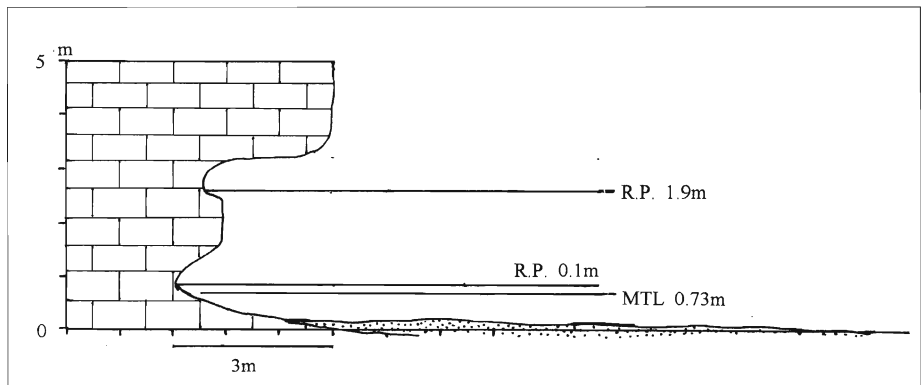


Figure 206. Bunuanan, Catobalogan, SAMAR (Nos.339, 340, WSA-9)

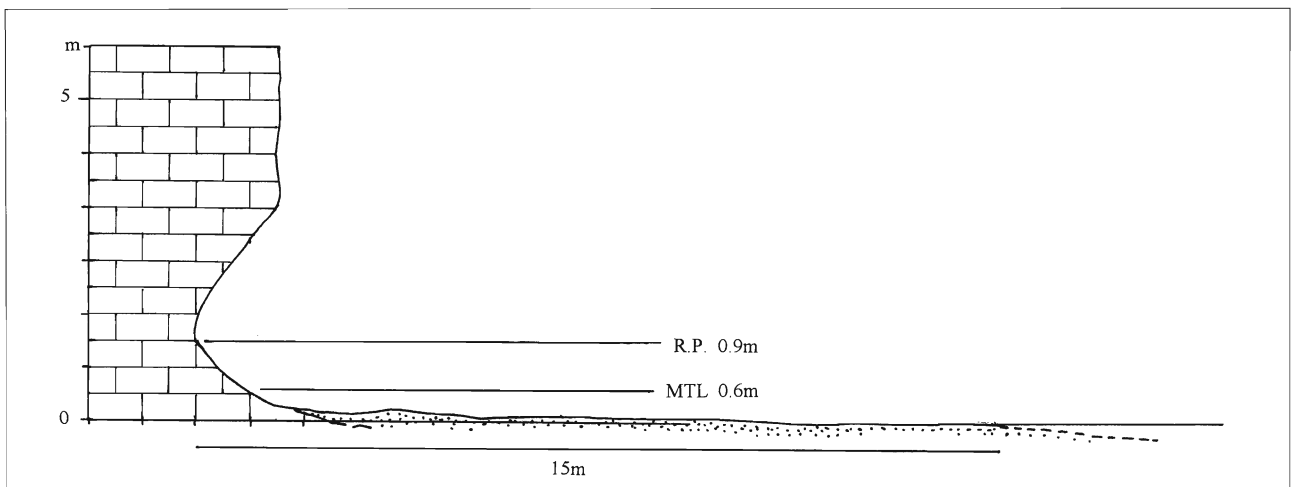


Figure 207. Malopalo, SAMAR (No.341, WSA-10)

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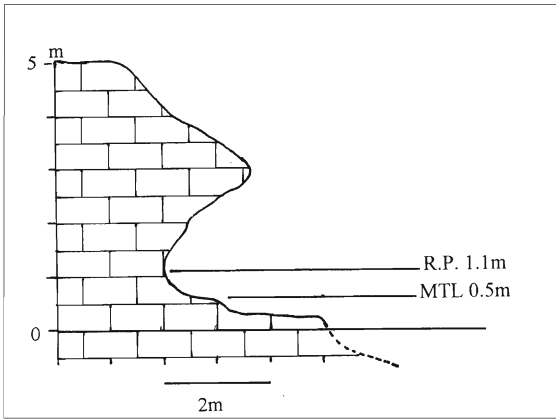


Figure 208. Cagnipa, SAMAR (No.342, WSA-11)

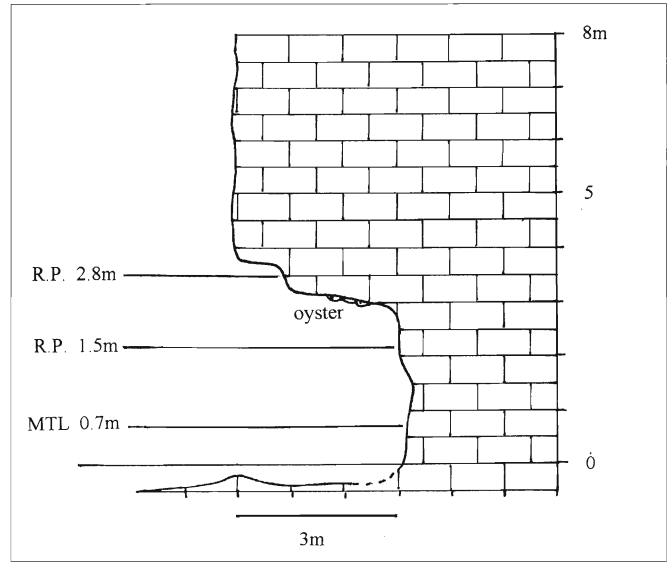


Figure 209. Malara, Darama Island, SAMAR (Nos.343, 344, WSA-12)

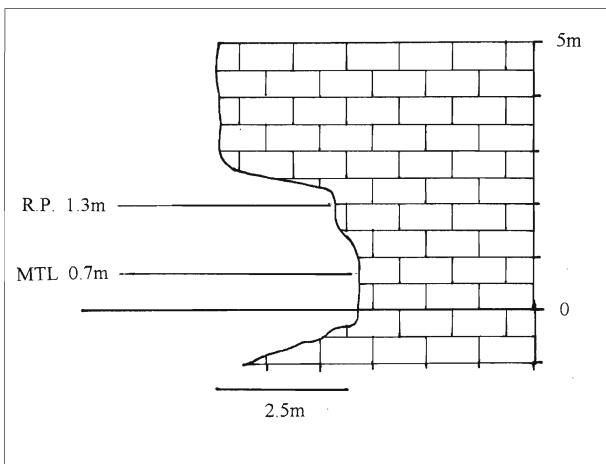


Figure 210. Malara, Darama Island, SAMAR (No.345, WSA-13)

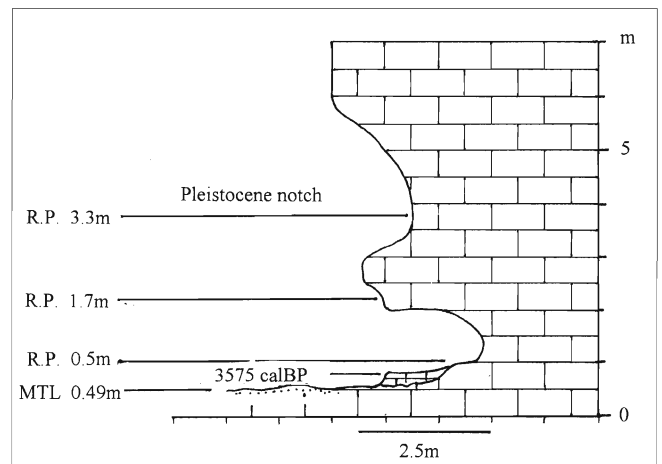


Figure 211. El Nido Town, PALAWAN (Nos.346, 347, PAL-1)

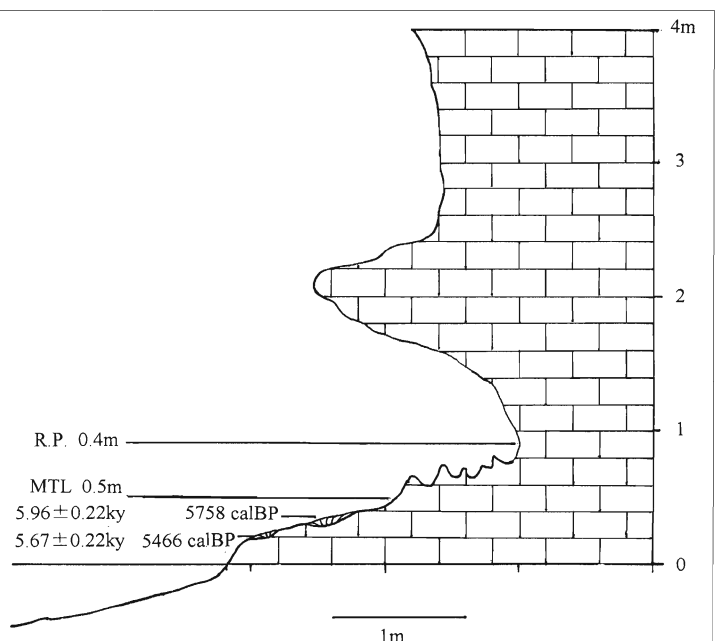
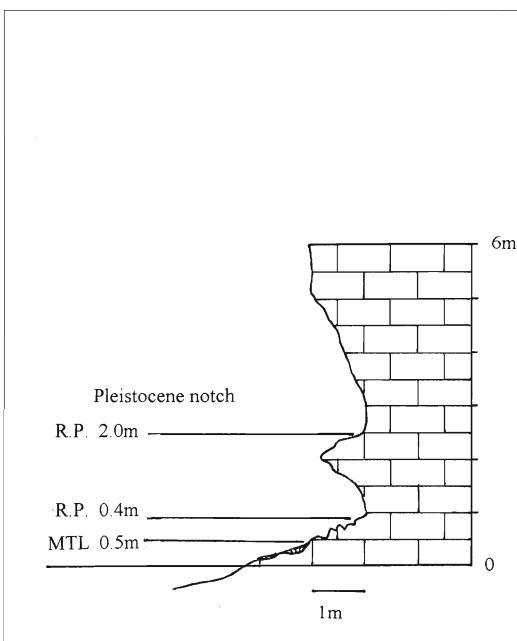


Figure 212. Miniloc, El Nido, PALAWAN (Nos.348, 349, 350, 351, 352, PAL-2)

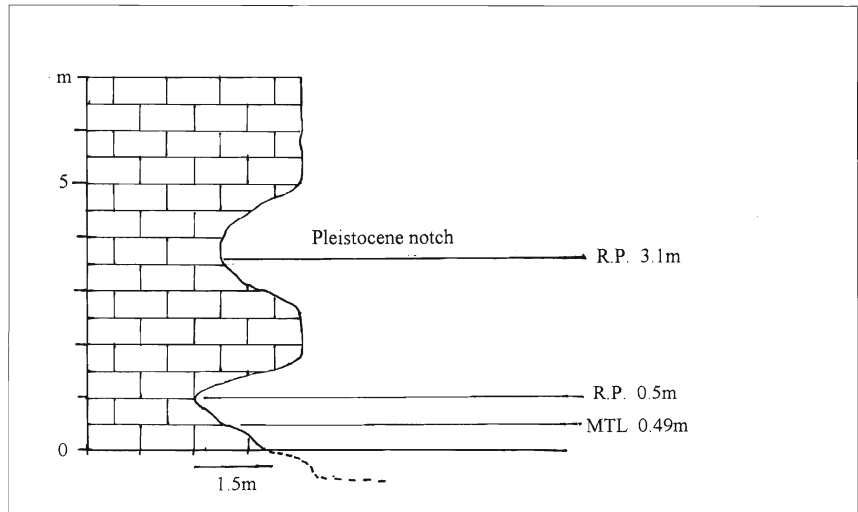


Figure 213. Binanlaogaoan Island, El Nido, PALAWAN (No.353, PAL-3)

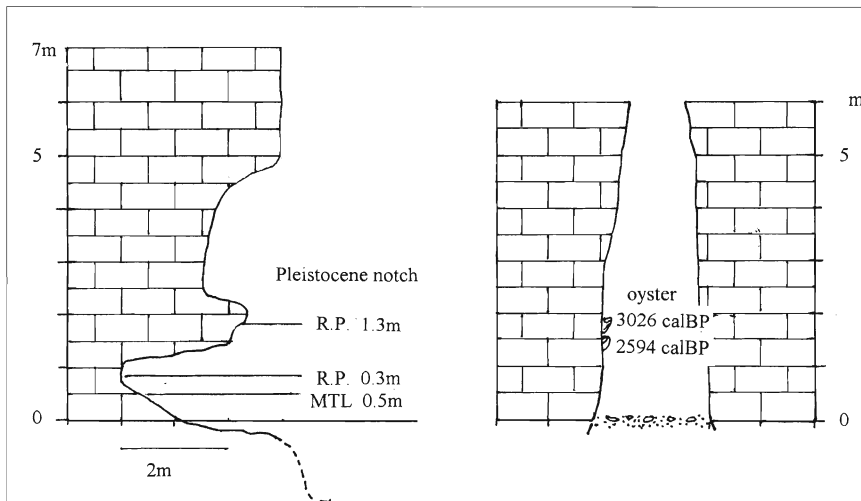


Figure 214. Lagen Island, El Nido, PALAWAN (Nos.354, 355, 356, 357, PAL-4)

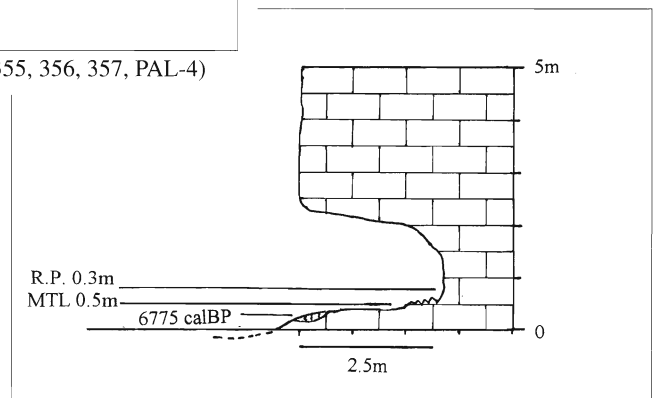


Figure 215. Lagen Island, El Nido, PALAWAN (Nos.358, 359, PAL-5)

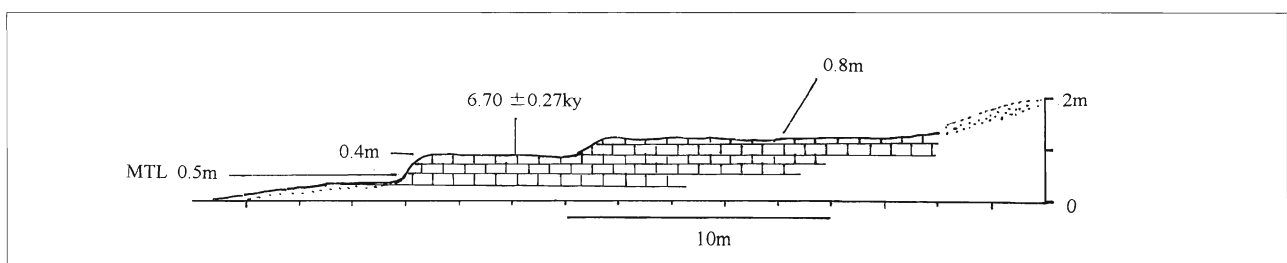


Figure 216. San Vicente, PALAWAN (Nos.360, 361, PAL-6)

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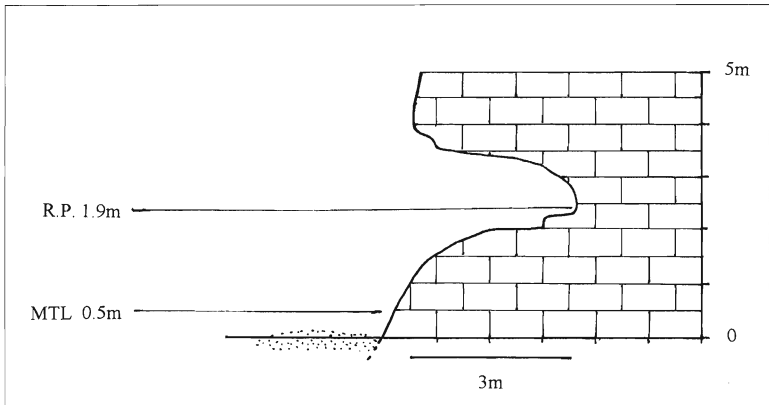


Figure 217. Underground River, Sabang, PALAWAN (No.362, PAL-7)

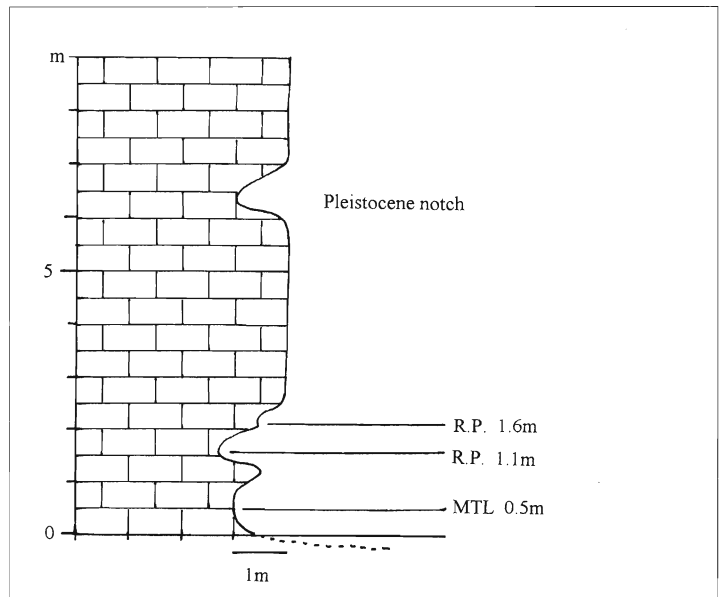


Figure 218. Underground River, Sabang, PALAWAN (Nos.363, 364, PAL-8)

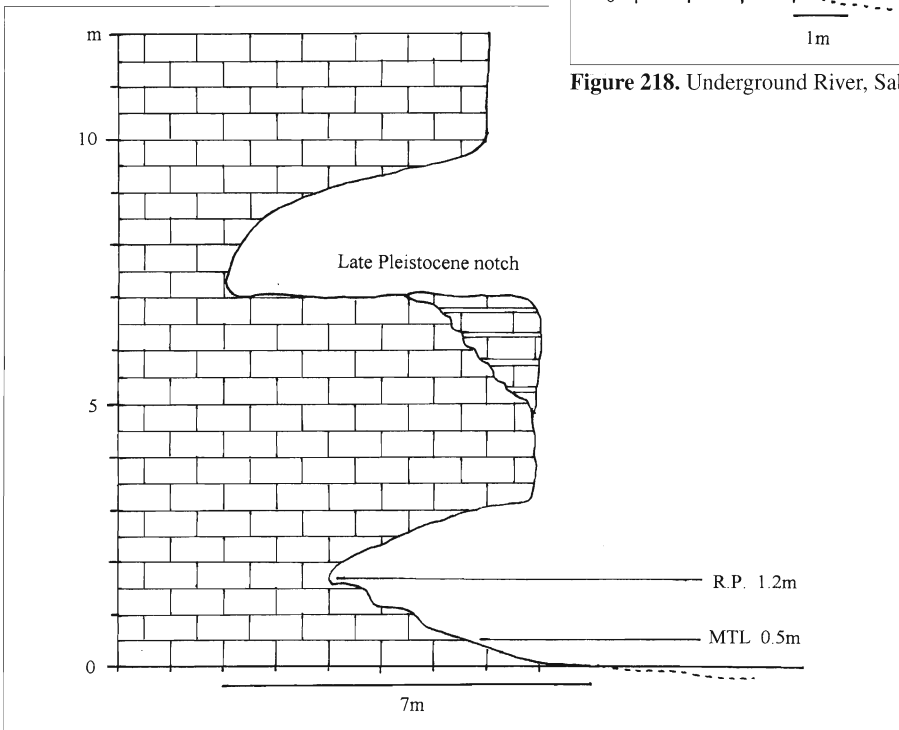


Figure 219. Tuturringuen Point, Sabang, PALAWAN (No.365, PAL-9)



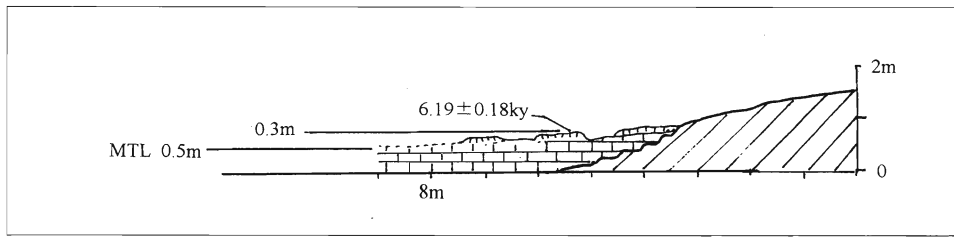


Figure 220. Manlipien, Sabang, PALAWAN (No.366, PAL-10)

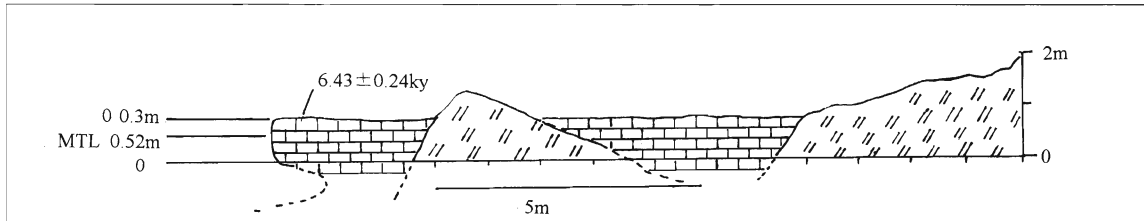


Figure 221. Nagtabon, PALAWAN (No.367, PLA-11)

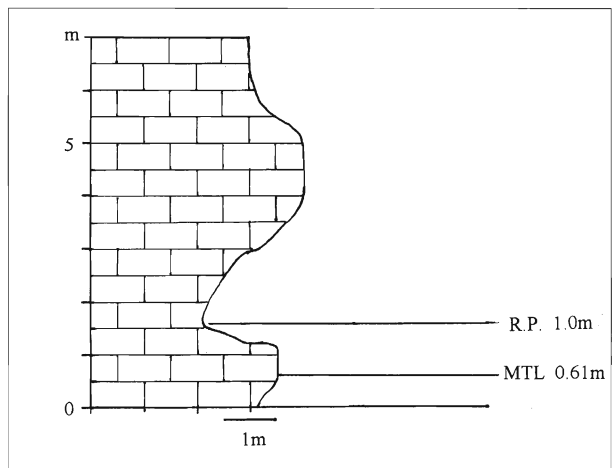
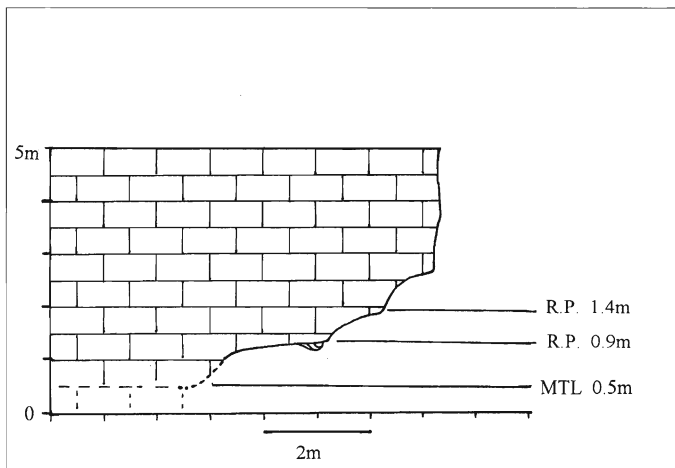


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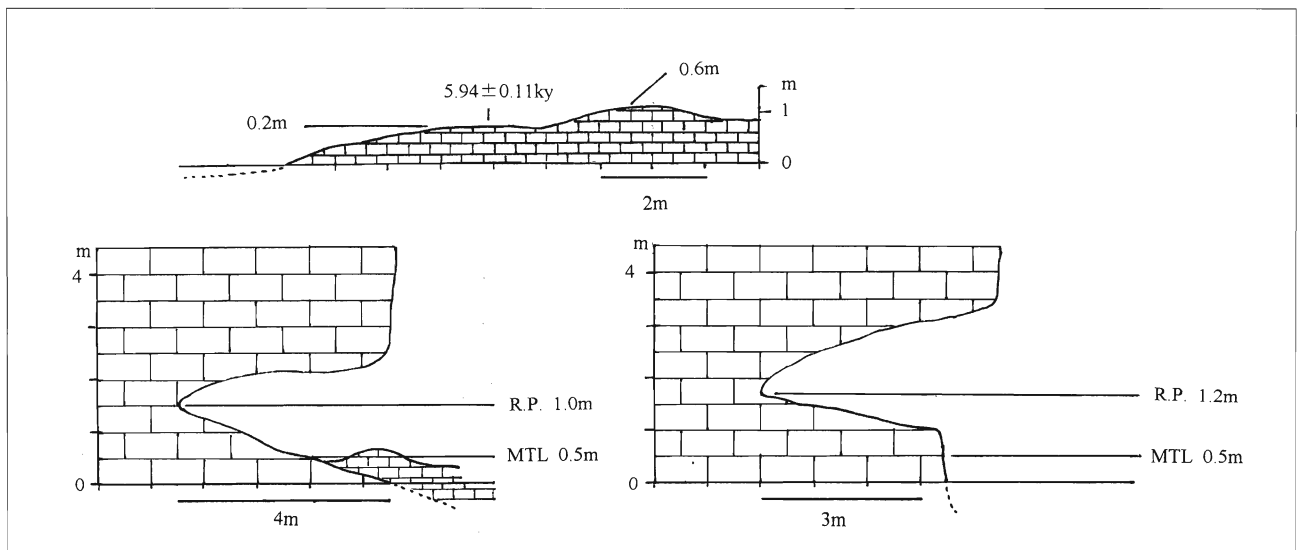


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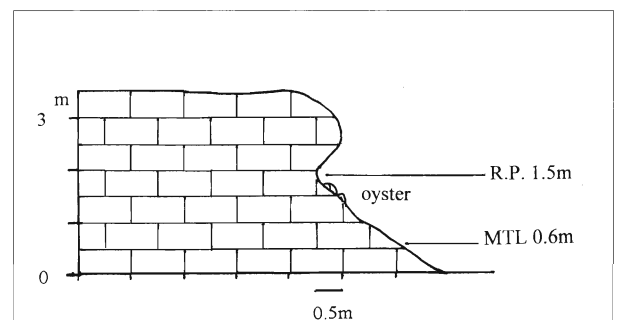
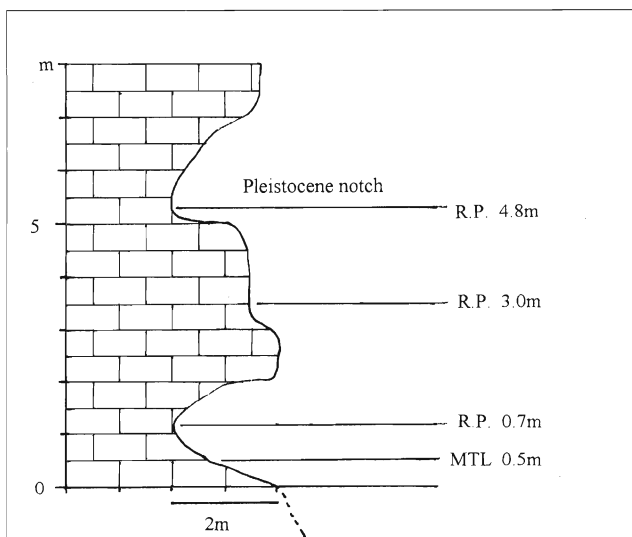
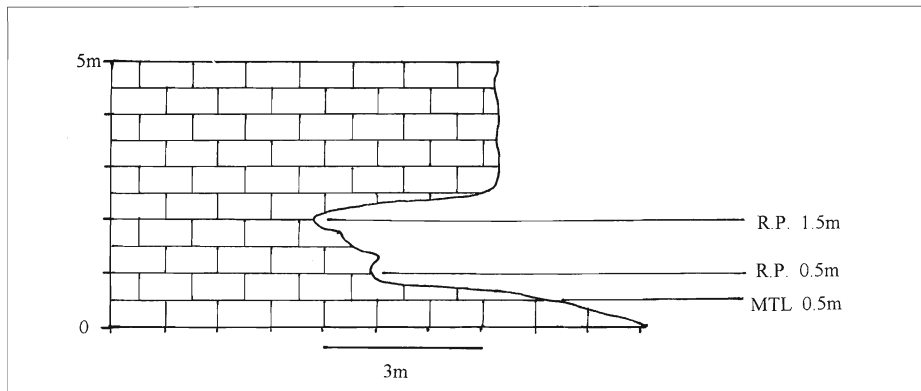
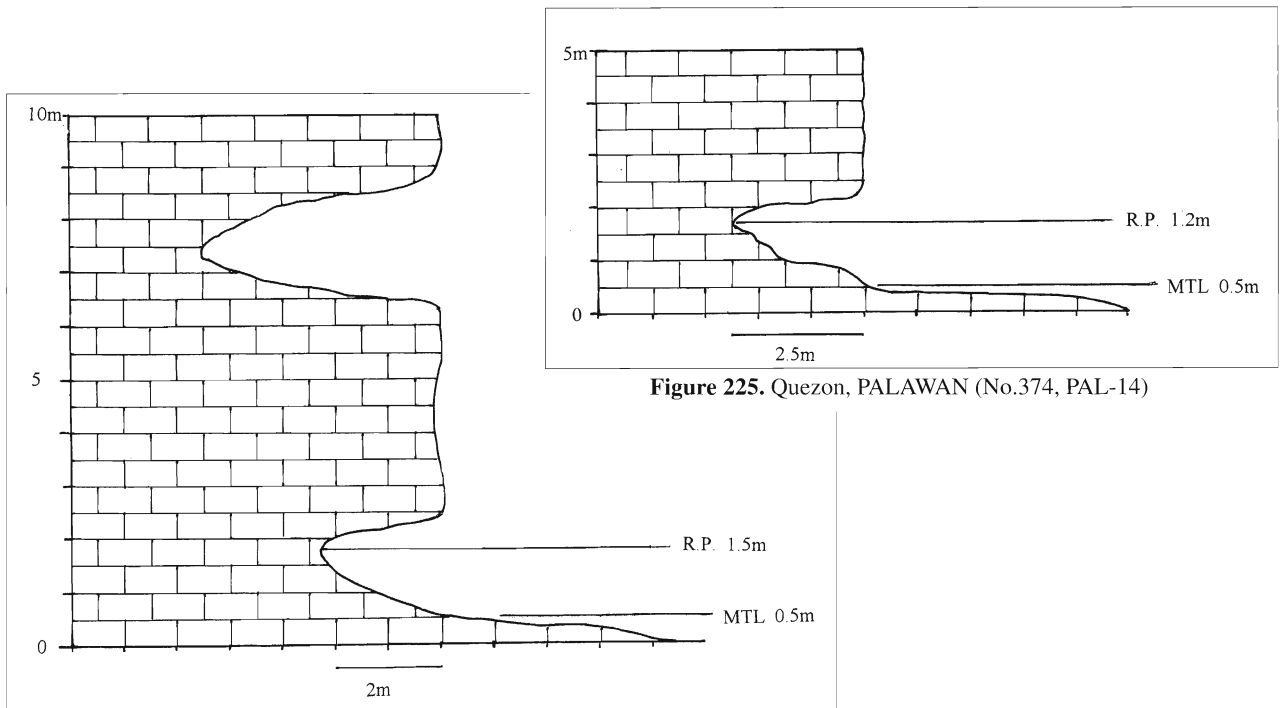


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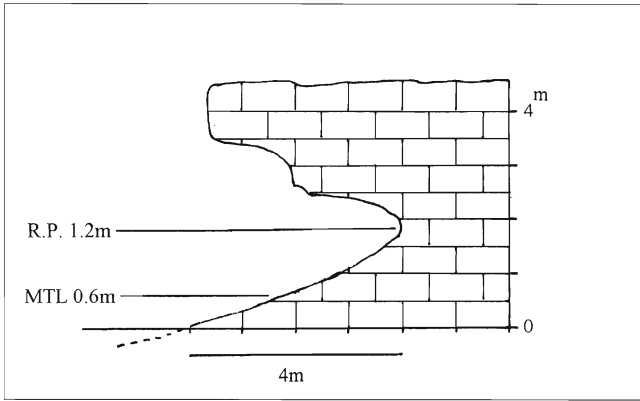


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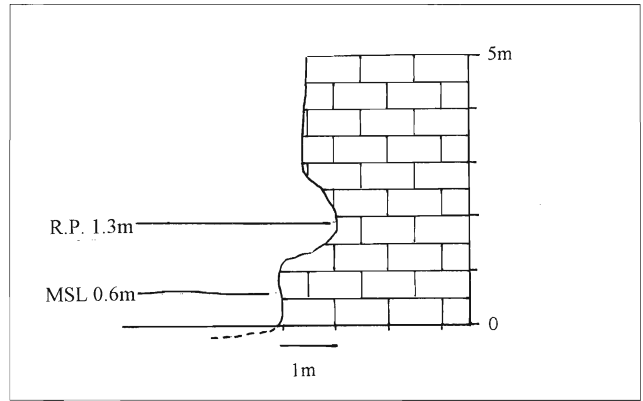


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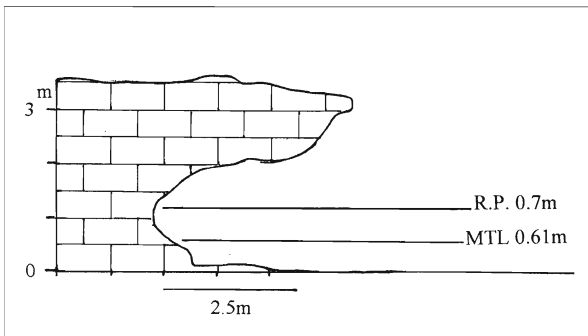


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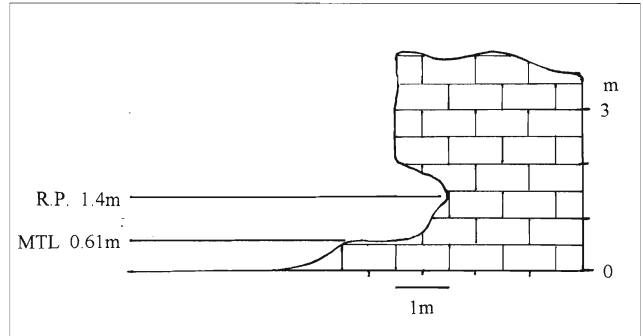


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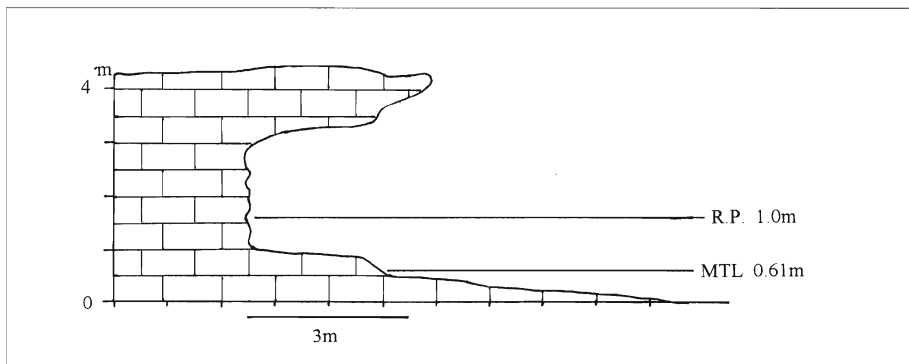


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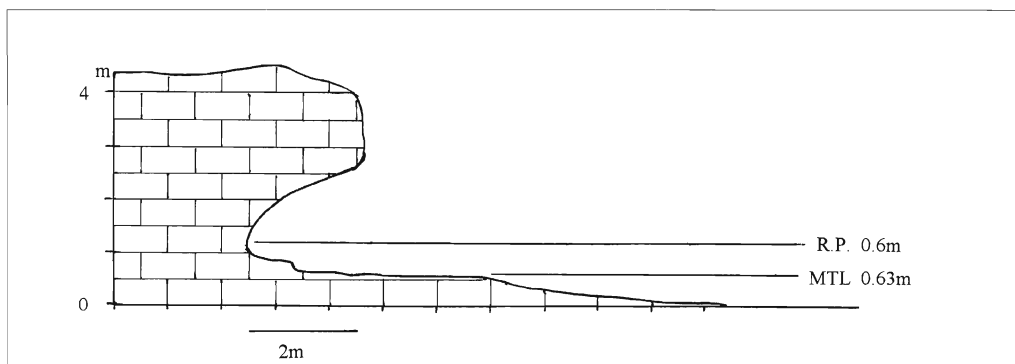


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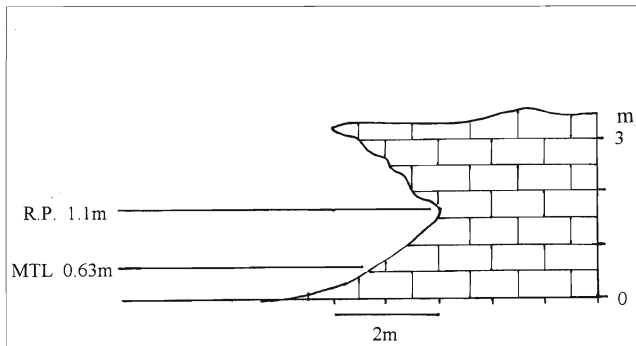


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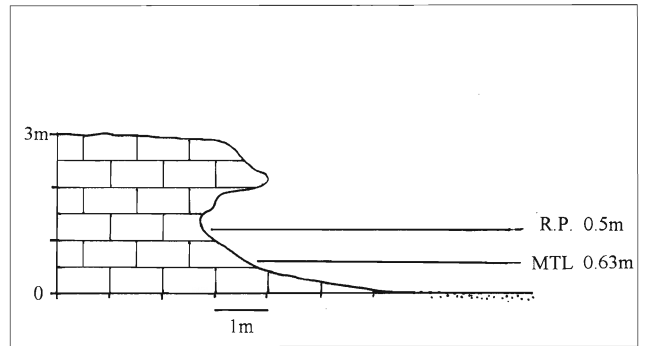


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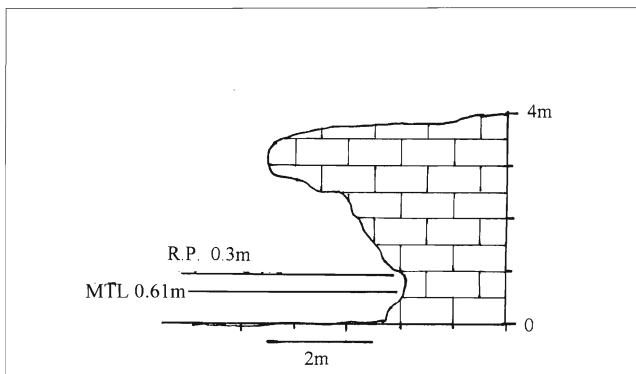


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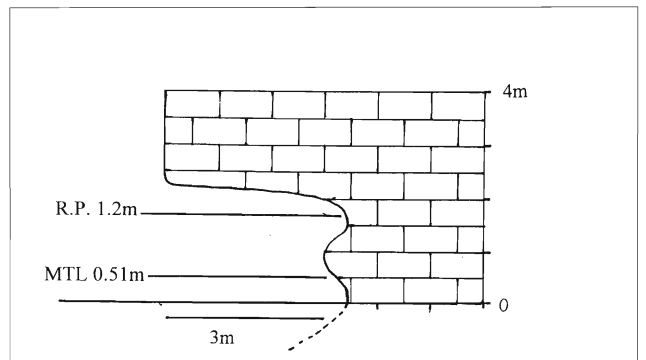


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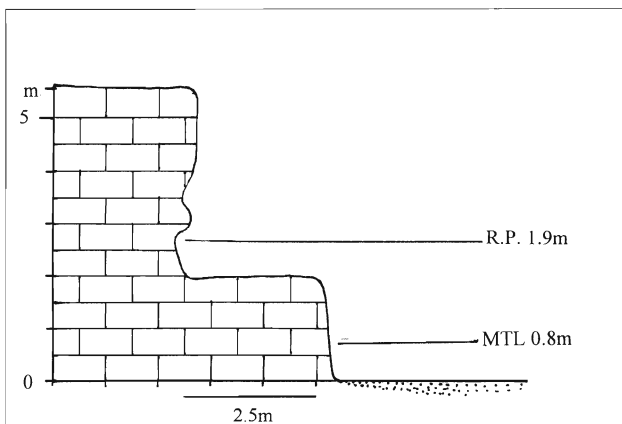


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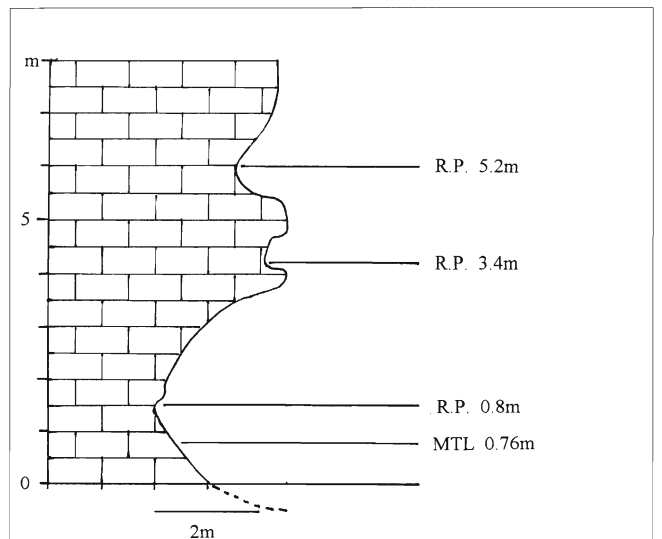


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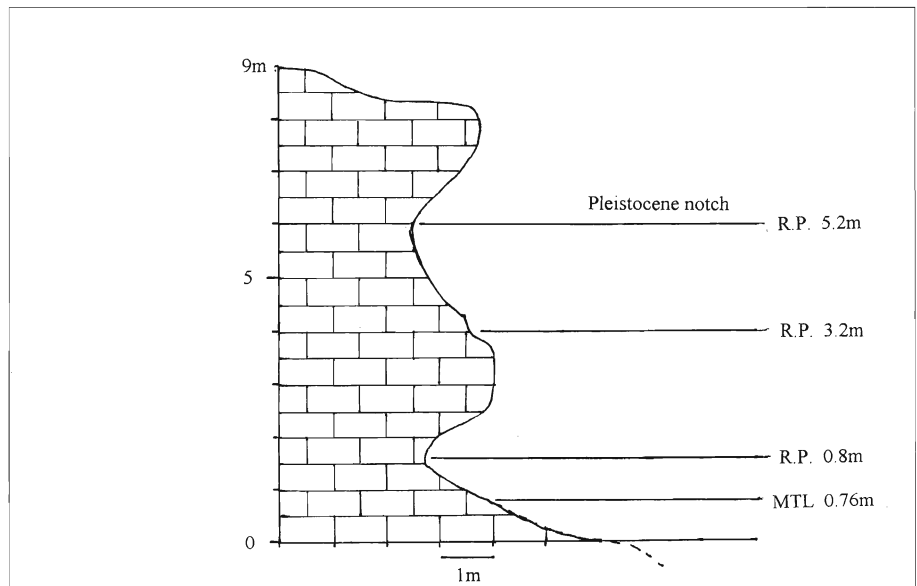


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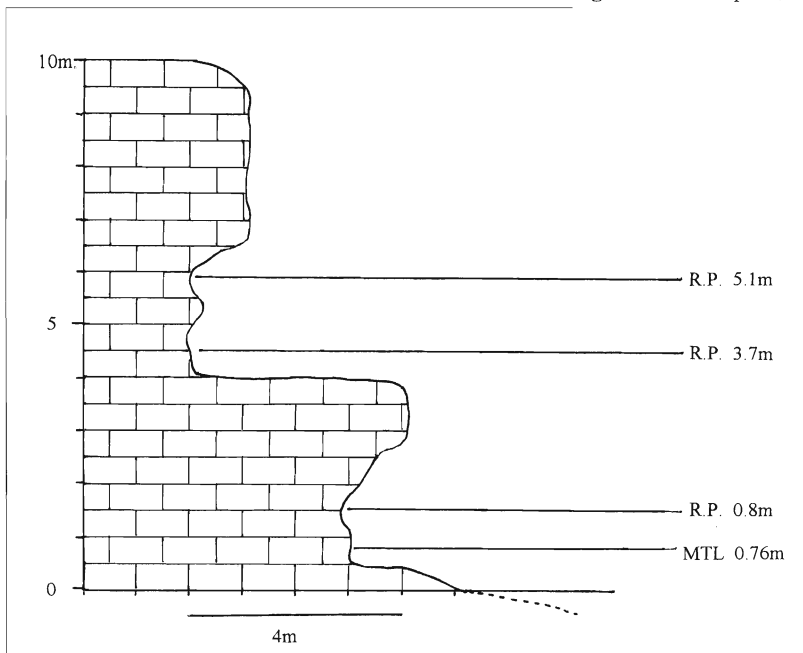


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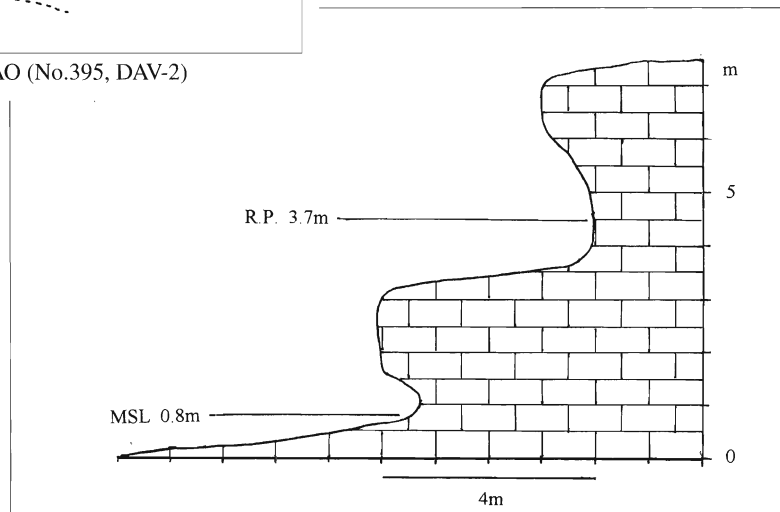


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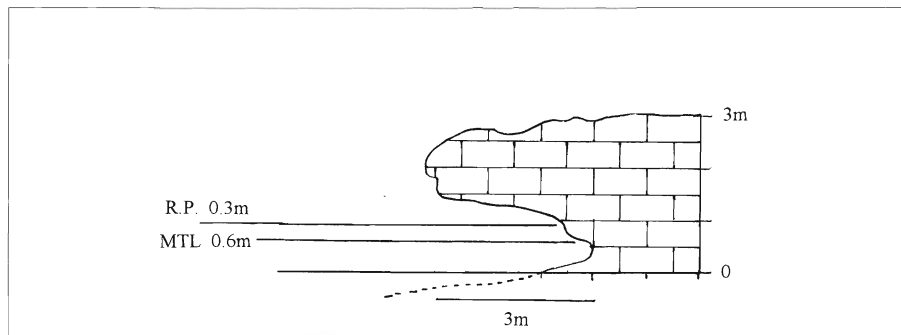
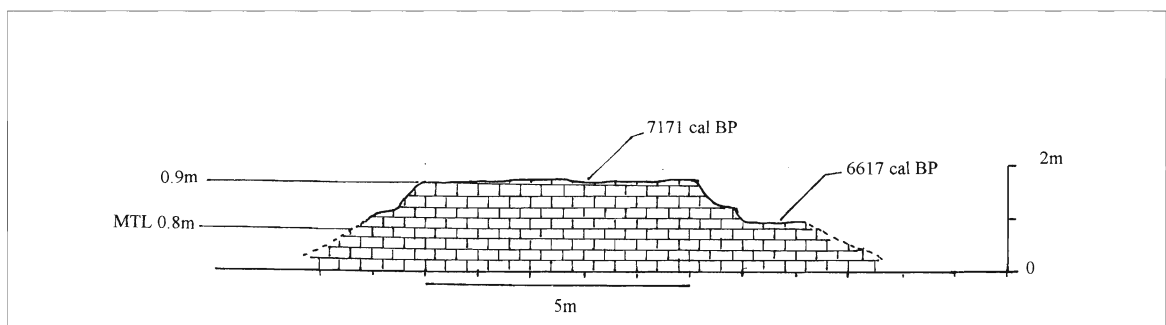


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