

[Supplementary Material]

Radiocarbon dating and Bayesian modelling of one of Remote Oceania's oldest cemeteries at Chelechorra Orrak, Palau

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Burial Schematics and Output

Parameter Name	Type	z	mu	sigma	llim	ulim
0 intcal13	Curve				-48054.5	1965.5
5	Boundary		-887.831	79.6844	-2459.5	-529.5
6 IntCal13	Curve				-48054.5	1965.5
7 OS-34566	R_Date		-819.551	21.6236	-1019.5	-529.5
8 IntCal13	Curve				-48054.5	1965.5
9 Marine13	Curve				-48054.5	1965.5
10 Mixed	Mix_Curves		50.0002	0.288749	49	51
11	Delta_R		-50.6241	21.3504	-189	86
12 AA-43058	R_Date		-790.627	18.8301	-1019.5	-384.5
13 Marine13	Curve				-48054.5	1965.5
14 AA-43052	R_Date		-755.441	25.8943	-989.5	-374.5
15 IntCal13	Curve				-48054.5	1965.5
16 Marine13	Curve				-48054.5	1965.5
17 Mixed	Mix_Curves		49.9995	0.288604	49	51
18	Delta_R		-42.1036	20.6136	-189	86
19 AA-40957	R_Date		-730.046	37.7014	-989.5	-374.5
20 IntCal13	Curve				-48054.5	1965.5
21 Marine13	Curve				-48054.5	1965.5
22 Mixed	Mix_Curves		50.0003	0.289414	49	51
23	Delta_R		-45.8298	19.0216	-189	86
24 AA-45890	R_Date		-693.879	46.4793	-989.5	-369.5
25 AA-43063	R_Date		-655.128	51.3049	-929.5	-369.5
26 IntCal13	Curve				-48054.5	1965.5
27 Marine13	Curve				-48054.5	1965.5
28 Mixed	Mix_Curves		49.9996	0.288438	49	51
29	Delta_R		-62.5613	20.2921	-189	86
30 AA-45891	R_Date		-615.566	54.9932	-844.5	-369.5
31 Marine13	Curve				-48054.5	1965.5
32	Delta_R		-52.1279	20.7301	-189	86
33 AA-43060	R_Date		-580.276	53.1066	-844.5	-369.5
34 IntCal13	Curve				-48054.5	1965.5
35 Marine13	Curve				-48054.5	1965.5
36 Mixed	Mix_Curves		50.0002	0.288683	49	51

37	Delta_R	-46.3027	24.6683	-189	86
38 PL3	R_Date	-544.124	52.7287	-829.5	-369.5
39 PL2	R_Date	-437.182	41.1467	-774.5	-189.5
40 PL1	R_Date	-401.626	30.3598	-769.5	-184.5
41 AA-43050	R_Date	-128.133	71.3249	-419.5	170.5
42 Marine13	Curve			-48054.5	1965.5
43	Delta_R	-63.0224	21.4411	-189	86
44 OS-33447	R_Date	67.9309	50.1498	-214.5	420.5
45 IntCal13	Curve			-48054.5	1965.5
46 Marine13	Curve			-48054.5	1965.5
47 Mixed	Mix_Curves	49.9996	0.288278	49	51
48	Delta_R	-48.8052	21.5925	-189	86
49 AA-43054	R_Date	109.086	49.3807	-214.5	420.5
50	Boundary	176.229	91.9724	-214.5	1860.5

Name	Unmodelled (BP)			Modelled (BP)			Indices					
	from	to	%	from	to	%	Amodel 101.6	Aoverall 97.5	A	L	P	C
				1928	1578	95.4						96.9
AA-43054	1971	1726	95.4	1934	1731	95.4			107.3			99.4
	-95.5	-8.5	95.4	-93	-4.5	95.4			100.3			99.7
Mixed	49.5	50.5	95.4	49.5	50.5	95.4			100			100
Marine13												
IntCal13												
OS-33447	1923	1633	95.4	1985	1780	95.4			61.3			99.2
	-95.5	-8.5	95.4	-106.5	-19.5	95.4			94.8			99.4
Marine13												
AA-43050	2291	1947	95.4	2290	1939	95.4			99.9			99.5
PL1	2466	2315	95.4	2422	2305	95.4			109.4			99.5
PL2	2481	2326	95.4	2469	2323	95.4			99.6			99.3
PL3	2715	2466	95.4	2585	2368	95.4			70.4			99.5
	-95.5	-8.5	95.4	-91	4	95.4			93.4			99.3
Mixed	49.5	50.5	95.4	49.5	50.5	95.4			100			100
Marine13												
IntCal13												
AA-43060	2685	2361	95.4	2635	2420	95.4			115.6			99.7
	-95.5	-8.5	95.4	-94.5	-10	95.4			103			99.7
Marine13												
AA-45891	2681	2341	95.4	2670	2455	95.4			66.5			99.6
	-95.5	-8.5	95.4	-104	-20.5	95.4			97.7			99.4
Mixed	49.5	50.5	95.4	49.5	50.5	95.4			100			100
Marine13												
IntCal13												
AA-43063	2732	2408	95.4	2696	2505	95.4			114.9			99.7
AA-45890	2750	2445	95.4	2719	2546	95.4			114.1			99.8

	-95.5	-8.5	95.4	-84	-8	95.4	104.6	99.6
Mixed	49.5	50.5	95.4	49.5	50.5	95.4	100	100
Marine13								
IntCal13								
AA-40957	2758	2501	95.4	2740	2585	95.4	108.2	99.8
	-95.5	-8.5	95.4	-84	-0.5	95.4	97.6	99.6
Mixed	49.5	50.5	95.4	49.5	50.5	95.4	100	100
Marine13								
IntCal13								
AA-43052	2744	2497	95.4	2750	2649	95.4	114.1	99.8
Marine13								
AA-43058	2858	2541	95.4	2780	2700	95.4	141.2	99.9
	-95.5	-8.5	95.4	-93.5	-7.5	95.4	101.4	99.6
Mixed	49.5	50.5	95.4	49.5	50.5	95.4	100	100
Marine13								
IntCal13								
OS-34566	2844	2740	95.4	2840	2739	95.4	106.7	99.8
IntCal13				3011	2745	95.4		97.4
IntCal13								

Occupation Schematics and Output

Parameter	Name	Type	z	mu	sigma	llim	ulim
	0 intcal13	Curve				-48055	1965.5
	5 end	Boundary		-435.345	169.289	-2785	-44.5
	6 D-AMS-009262	R_Date		-292.148	45.7916	-409.5	-44.5
	7	Delta_R		-54.6894	20.7919	-189	86
	8 AA-43057	R_Date		-239.917	48.991	-409.5	75.5
	9	Delta_R		-53.138	21.278	-189	86
	10 AA-43065	R_Date		-181.977	43.144	-409.5	75.5
	11	Delta_R		-45.1659	18.8546	-189	86
	12 D-AMS-010115	R_Date		-135.558	33.6687	-399.5	75.5
	13	Delta_R		-46.253	18.9331	-189	86
	14 D-AMS-009263	R_Date		-88.193	34.555	-384.5	90.5
	15 IntCal13	Curve				-48055	1965.5
	16 AA-43064	R_Date		344.59	51.7543	65.5	610.5
	17 AA-43048	R_Date		700.052	31.3562	550.5	980.5
	18 AA-43049	R_Date		771.442	53.3587	595.5	1005.5
	19 IntCal13	Curve				-48055	1965.5
	20 AA-43055	R_Date		1075.21	32.8659	885.5	1290.5
	21 Marine13	Curve				-48055	1965.5
	22	Delta_R		-45.3588	20.6501	-189	86
	23 AA-43051	R_Date		1121.21	38.9425	885.5	1325.5
	24 D-AMS-010113	R_Date		1169.78	37.9386	915.5	1325.5
	25 IntCal13	Curve				-48055	1965.5
	26 AA-43056	R_Date		1728.65	53.4094	1515.5	1965.5
	27 AA-43047	R_Date		1786.65	69.4233	1630.5	1965.5
	28 Marine13	Curve				-48055	1965.5
	29	Delta_R		-46.8553	21.1068	-189	86
	30 D-AMS-010114	R_Date		1841.58	65.4726	1630.5	1965.5
	31 start	Boundary		1983.69	175.601	1630.5	4340.5

Name	Unmodelled (BP)			Modelled (BP)			Indices						
	from	to	%	from	to	%	Amodel 118.3	Aoverall 113.2	Acomb	A	L	P	C
start					225	-393	95.4						95.3
D-AMS-010114 (459,20)	248	...		95.4	229	-2	95.4			93.3			99.6
-52,22	-95.5		-8.5	95.4	-90	-5	95.4			100			99.6
Marine13 (Marine13.14c)													
AA-43047 (96,33)	268		15	95.4	264	34	95.4			98.2			99.7
AA-43056 (122,34)	274		10	95.4	285	96	95.4			96.7			99.7
IntCal13 (IntCal13.14c)													
D-AMS-010113 (1212,21)	896		726	95.4	861	707	95.4			96.9			99.5
AA-43051 (1245,54)	955		707	95.4	902	755	95.4			117			99.8
-52,22	-95.5		-8.5	95.4	-86.5	-3.5	95.4			101			99.7
Marine13 (Marine13.14c)													
AA-43055 (916,36)	922		746	95.4	927	806	95.4			107			99.8
IntCal13 (IntCal13.14c)													
AA-43049 (1253,36)	1279		1075	95.4	1265	1072	95.4			94.7			99.5
AA-43048 (1306,36)	1295		1180	95.4	1297	1184	95.4			103			99.7
AA-43064 (1692,40)	1701		1530	95.4	1700	1530	95.4			99.8			99.4
IntCal13 (IntCal13.14c)													
D-AMS-009263 (2041,21)	2145		1993	95.4	2117	1987	95.4			101			99.6
-52,22	-95.5		-8.5	95.4	-84	-7.5	95.4			106			99.6
D-AMS-010115 (2070,22)	2295		2000	95.4	2148	2015	95.4			113			99.8
-52,22	-95.5		-8.5	95.4	-83.5	-7.5	95.4			104			99.7
AA-43065 (2084,54)	2311		1990	95.4	2250	2046	95.4			119			99.9
-52,22	-95.5		-8.5	95.4	-96.5	-10	95.4			102			99.5
AA-43057 (2128,42)	2327		2056	95.4	2295	2115	95.4			108			99.7
-52,22	-95.5		-8.5	95.4	-96	-13	95.4			102			99.6
D-AMS-009262 (2203,21)	2310		2150	95.4	2311	2155	95.4			99.2			99.6
end					2737	2159	95.4						95.3

Outlier Analysis Burial Schematics and Output

Name	Unmodelled (BP)			Modelled (BP)			Indices ²					
	from	to	%	from	to	%	Acomb	A	L	P	C	
Outlier_Model burial												100
#NAME?												100
Sequence												
Boundary				3976	3402	95.4						96.4
Curve IntCal13												
Curve Marine13												
Mix_Curves Mixed	49.5	50.5	95.4	49.5	50.5	95.4			100			100
R_Date 43053	5055	3163	95.4	3794	3382	95.4			74.9			99.8
R_Date 43062	3340	3035	95.4	3470	3373	95.4			0.2			99.8
R_Date 43061	3959	3606	95.4	3459	3368	95.4			0			99.8
Curve IntCal13												
R_Date OS-33568	2946	2788	95.4	2945	2790	95.4			100.6			99.8
R_Date OS-34566	2844	2740	95.4	2842	2740	95.4			102.2			99.9
Curve IntCal13												
Curve Marine13												
Mix_Curves Mixed	49.5	50.5	95.4	49.5	50.5	95.4			100			100
R_Date AA-43058	2763	2501	95.4	2765	2665	95.4			142.5			99.9
Curve Marine13												
R_Date AA-43052	2744	2497	95.4	2736	2594	95.4			126.9			99.9
Curve IntCal13												
Curve Marine13												
Mix_Curves Mixed	49.5	50.5	95.4	49.5	50.5	95.4			100			100
R_Date AA-40957	2736	2478	95.4	2709	2523	95.4			109.4			99.9
Curve IntCal13												
Curve Marine13												
Mix_Curves Mixed	49.5	50.5	95.4	49.5	50.5	95.4			100			100
R_Date AA-45890	2715	2383	95.4	2676	2471	95.4			114.3			99.9
R_Date AA-43063	2684	2359	95.4	2618	2414	95.4			112.3			99.8
Curve IntCal13												
Curve Marine13												
Mix_Curves Mixed	49.5	50.5	95.4	49.5	50.5	95.4			100			100
R_Date AA-45891	2660	2300	95.4	2538	2378	95.4			73.9			99.9

Curve Marine13								
R_Date AA-43060	2644	2328	95.4	2492	2363	95.4	128	99.9
Curve IntCal13								
Curve Marine13								
Mix_Curves Mixed	49.5	50.5	95.4	49.5	50.5	95.4	100	100
R_Date PL3	2674	2364	95.4	2460	2352	95.4	70.5	99.9
R_Date PL2	2357	2303	95.4	2358	2314	95.4	107.1	100
R_Date PL1	2358	2296	95.4	2350	2207	95.4	96.2	99.8
R_Date AA-43050	2128	1904	95.4	2129	1905	95.4	100.1	99.6
Curve Marine13								
R_Date OS-33447	1859	1591	95.4	1899	1721	95.4	73.5	99.6
Curve IntCal13								
Curve Marine13								
Mix_Curves Mixed	49.5	50.5	95.4	49.5	50.5	95.4	100	100
R_Date AA-43054	1896	1696	95.4	1863	1695	95.4	102.3	99.8
Boundary				1853	1435	95.4		98.3

Schematic

Parameter	Name	Type	z	mu	sigma	llim	ulim
0	intcal13	Curve				-48054.5	1965.5
2	burial	Outlier_Model				NaN	NaN
3	#NAME?	Sum				NaN	NaN
5		Boundary		-1680.58	161.253	-9874.5	-1404.5
6	IntCal13	Curve				-48054.5	1965.5
7	Marine13	Curve				-48054.5	1965.5
8	Mixed	Mix_Curves		50.0024	0.288948	49	51
9	43053	R_Date		-1587.67	119.062	-4719.5	-1404.5
10	43062	R_Date		-1472.43	22.6882	-1554.5	-1404.5
11	43061	R_Date		-1458.23	21.6479	-1554.5	-1404.5
12	IntCal13	Curve				-48054.5	1965.5
13	OS-33568	R_Date		-915.393	42.4088	-1199.5	-784.5
14	OS-34566	R_Date		-821.296	23.8323	-1019.5	-529.5
15	IntCal13	Curve				-48054.5	1965.5
16	Marine13	Curve				-48054.5	1965.5
17	Mixed	Mix_Curves		50.0002	0.28833	49	51
18	AA-43058	R_Date		-769.048	25.3274	-1014.5	-374.5
19	Marine13	Curve				-48054.5	1965.5
20	AA-43052	R_Date		-724.084	37.397	-989.5	-364.5
21	IntCal13	Curve				-48054.5	1965.5
22	Marine13	Curve				-48054.5	1965.5
23	Mixed	Mix_Curves		50.0038	0.289073	49	51
24	AA-40957	R_Date		-671.875	50.3894	-909.5	-364.5
25	IntCal13	Curve				-48054.5	1965.5
26	Marine13	Curve				-48054.5	1965.5
27	Mixed	Mix_Curves		49.9978	0.288616	49	51
28	AA-45890	R_Date		-616.212	54.3385	-909.5	-364.5
29	AA-43063	R_Date		-558.087	51.9122	-839.5	-364.5
30	IntCal13	Curve				-48054.5	1965.5
31	Marine13	Curve				-48054.5	1965.5

32	Mixed	Mix_Curves	49.9933	0.288793	49	51
33	AA-45891	R_Date	-504.457	40.2085	-809.5	-364.5
34	Marine13	Curve			-48054.5	1965.5
35	AA-43060	R_Date	-475.038	35.0867	-809.5	-364.5
36	IntCal13	Curve			-48054.5	1965.5
37	Marine13	Curve			-48054.5	1965.5
38	Mixed	Mix_Curves	50.017	0.28864	49	51
39	PL3	R_Date	-446.485	30.0708	-794.5	-364.5
40	PL2	R_Date	-387.168	11.3358	-559.5	-184.5
41	PL1	R_Date	-365.899	26.7972	-554.5	-174.5
42	AA-43050	R_Date	-70.3772	56.938	-389.5	235.5
43	Marine13	Curve			-48054.5	1965.5
44	OS-33447	R_Date	139.846	44.6043	-154.5	435.5
45	IntCal13	Curve			-48054.5	1965.5
46	Marine13	Curve			-48054.5	1965.5
47	Mixed	Mix_Curves	50.0039	0.288854	49	51
48	AA-43054	R_Date	180.318	44.1458	-154.5	435.5
49		Boundary	274.895	117.314	-154.5	5590.5