Table S1. Detection limits (DL), certified material concentrations (mg kg^{-1}), recovering for metals measurements in ICP-OES/MS in the 3050B extractions.

Element	DL	BCSS-1*	Recovery (%)	Unit	Equipment
Al	0.01	62610.28	23.6	mg Kg^{-1}	ICP - OES
Ca	0.01	5431.8	139.5		
Fe	0.01	0.25	85.5		
Mn	0.01	229	72.1		
Mg	0.01	32873.2	85.6		
K	0.01	18014.4	30.9		
Si	0.01	308977.8	1.5		
Cd	0.001	0.25	0.4		
Cu	0.01	18.5	91.6		
Ni	0.01	55.3	72.3		
Pb	0.01	22.7	74.5		
Zn	0.01	119	80.3		

*The concentrations for BCSS-1 are referred to total extractions. For the present study the extractions were partial (leachable)

Table S2. Principal component analysis results for each site. Eigenvalues of correlation matrix, related statistics and factor coordinates od the variables, based on correlations.

	Guaratiba		Marambaia		Enseada das Garças		Coroa Grande	
	Factor 1	*Factor 2*	*Factor 1*	*Factor 2*	*Factor 1*	*Factor 2*	*Factor 1*	*Factor 2*
Eigenvalue	2.21	1.31	3.38	1.13	3.56	1.25	3.58	1.02
% Total	44.12	26.20	67.67	22.50	71.12	25.09	71.63	20.32
Cumulative	44.12	70.32	67.67	90.17	71.12	96.21	71.63	91.95
Cd	0.50	-0.57	-0.76	0.55	-0.92	0.34	-0.23	-0.97
Cu	0.53	0.68	-0.87	-0.22	-0.94	-0.27	-0.96	0.22
Ni	0.89	0.13	-0.90	-0.33	-0.14	-0.98	-0.95	0.13
Pb	0.93	-0.29	-0.86	-0.47	-0.95	-0.19	-0.95	-0.02
Zn	0.12	0.65	-0.70	0.67	-0.95	0.27	-0.89	-0.11
**TOC*	0.44	0.67	-0.17	0.48	-0.84	0.12	-0.88	0.28
**PT*	0.34	0.43	-0.42	0.70	-0.83	0.35	-0.94	0.12
**Sand*	-0.84	0.19	0.23	-0.49	0.73	-0.02	0.82	0.01
**Silt*	0.81	-0.05	-0.17	0.56	-0.72	0.37	-0.85	0.07
**Clay*	0.82	-0.32	-0.31	0.06	0.16	-0.61	-0.39	-0.38
**Al*	0.72	0.00	-0.49	0.21	-0.52	-0.74	-0.99	0.02
**Fe*	0.34	-0.31	-0.87	-0.40	-0.37	-0.87	-0.97	0.07
**Mn*	0.37	-0.05	-0.69	0.41	-0.57	-0.36	-0.92	0.11
**Ca*	0.27	0.57	-0.68	-0.52	-0.38	-0.28	-0.88	-0.18
**K*	0.64	0.01	-0.67	-0.20	0.01	-0.80	-0.92	0.06
**Mg*	0.78	0.23	-0.57	-0.06	0.21	-0.79	-0.95	0.03
**Si*	0.16	-0.44	-0.55	-0.25	-0.39	-0.33	-0.27	0.15

Table S3. Means, minimum, maximum and standard deviation for major and trace elements (mg kg^{-1}), total organic carbon (%), total phosphorous (mg kg^{-1}) and grain size (%) (sand, silt and clay).

Variable	Guaratiba	Marambaia

	Mean	*Minimum*	*Maximum*	*Std.Dev.*	*Mean*	*Minimum*	*Maximum*	*Std.Dev.*
Al	2368.938	159.660	5697.500	1949.911	11000.90	3346.640	19194.04	5339.021
Fe	2849.278	267.660	8165.130	2677.926	11091.96	6415.530	16020.77	3302.060
Mn	19.549	4.700	80.080	22.649	90.89	23.690	154.57	51.766
Ca	307.663	151.890	587.190	140.427	1622.97	689.280	2497.53	696.614
K	395.470	93.280	717.260	193.643	1882.11	991.880	3309.24	744.997
Cd	0.122	0.041	0.260	0.061	0.35	0.160	0.67	0.155
Cu	3.716	2.630	5.160	0.835	9.59	3.080	14.84	3.681
Ni	0.787	0.200	1.540	0.441	4.39	2.320	6.25	1.447
Pb	0.990	0.220	2.000	0.631	4.37	2.090	6.59	1.430
Zn	6.033	3.350	8.920	1.689	38.69	12.580	94.90	26.103
Mg	548.718	141.320	1183.000	341.109	2336.03	976.660	4708.18	1248.847
Si	1903.643	1046.140	2830.830	668.572	3691.42	1188.840	9207.38	2271.023
TOC	0.142	0.050	0.500	0.132	0.62	0.272	1.32	0.360
PT	134.243	75.972	188.917	33.292	375.86	176.359	826.31	206.404
Sand	73.138	47.430	97.750	21.813	35.27	16.980	50.88	13.055
Silt	12.587	1.070	27.350	10.254	40.20	28.610	58.86	11.052
Clay	14.491	1.085	30.190	12.299	24.54	17.640	29.66	3.799
	Enseada das Garças				**Coroa Grande**			
	Mean	*Minimum*	*Maximum*	*Std.Dev.*	*Mean*	*Minimum*	*Maximum*	*Std.Dev.*
Al	25900.49	16365.99	34364.65	5416.921	23217.03	6775.550	36064.75	11655.01
Fe	35715.14	26893.91	46675.17	5501.067	26091.61	7873.080	44943.61	14663.15
Mn	569.89	298.39	1140.98	262.892	174.76	38.390	322.04	99.35
Ca	5959.38	3236.58	14271.42	3187.927	2660.21	1199.190	4513.96	1228.74
K	7880.28	5755.36	11195.05	1356.713	5808.35	1587.260	10319.22	3099.17
Cd	0.56	0.00	2.35	0.819	0.23	0.001	1.03	0.35
Cu	10.72	5.07	18.81	4.144	9.81	2.930	16.03	4.81
Ni	9.54	7.40	12.23	1.489	5.87	1.810	10.79	3.41
Pb	12.60	9.17	20.42	3.468	9.26	3.190	12.59	3.59
Zn	110.83	43.77	364.72	112.650	191.01	20.910	393.05	147.39
Mg	11731.13	7761.55	16140.77	2030.497	7371.35	2430.310	11764.96	3639.41
Si	3013.45	1358.88	8530.48	2030.691	1617.45	934.600	2935.29	602.63
TOC	1.00	0.06	2.36	0.545	0.76	0.010	2.00	0.70
PT	578.85	425.09	943.84	147.410	451.57	133.142	781.73	271.06
Sand	4.91	0.00	12.00	4.283	45.41	25.010	79.59	21.73
Silt	64.05	55.79	74.36	4.955	43.76	14.560	63.71	19.11
Clay	31.05	25.64	35.88	2.901	10.82	5.441	17.71	3.64

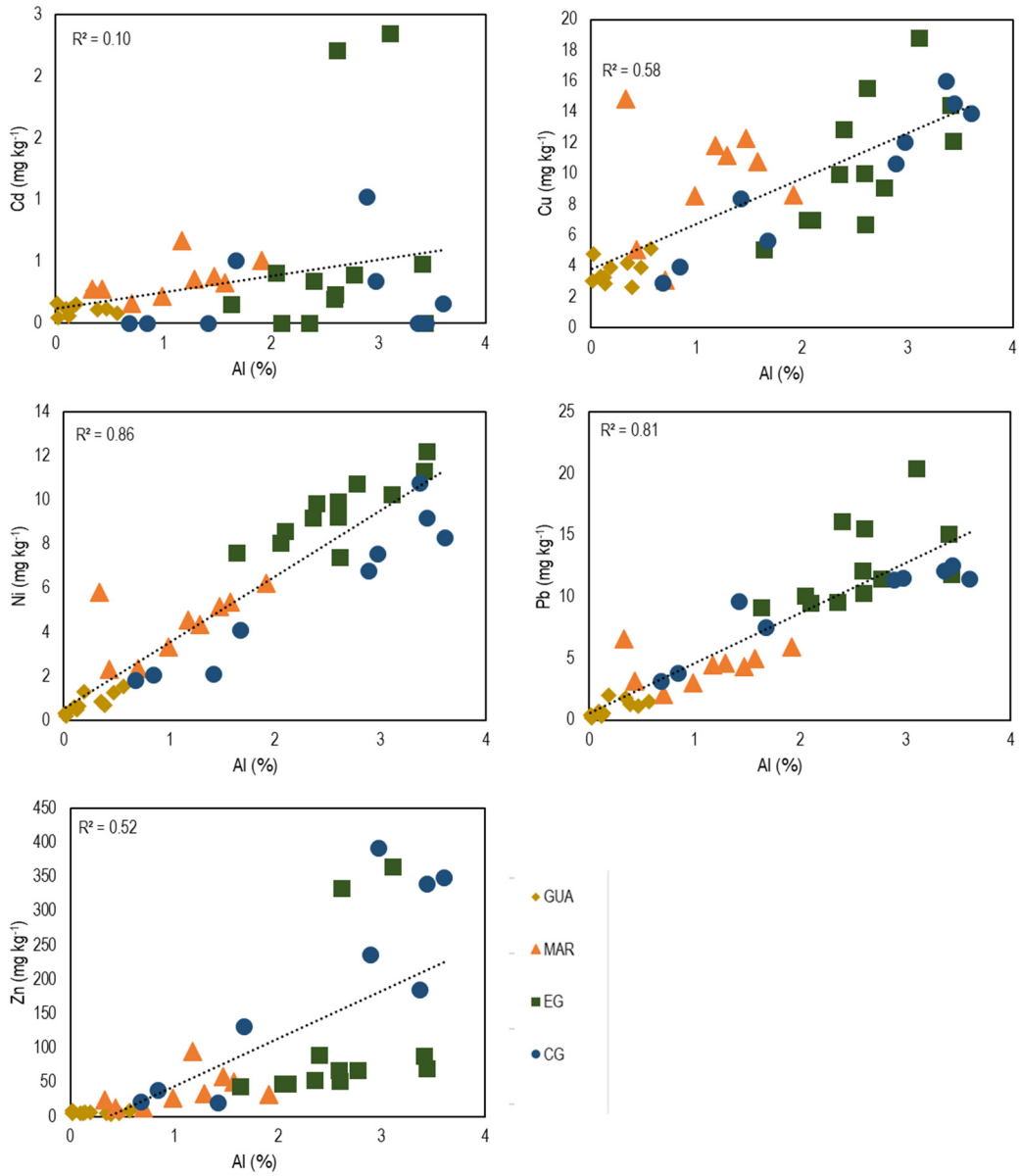


Figure S1. Correlation between aluminum and metals (Cd, Cu, Ni, Pb and Zn) content on all sediment analyzed from the cores sampled at the inner area (Enseada das Garças and Coroa Grande) and nearby to Marambaia Barrier Island (Maramabaia and Guaratiba).