

SUPPLEMENTARY INFORMATION

Table S1. Coordinates of the sampling locations.

Site Name	Latitude	Longitude
Upstream Young	-2.230183035	-79.83072496
Upstream Old	-2.236209624	-79.83263863
Intermediate Young	-2.51660197	-79.73883701
Intermediate Old	-2.522481037	-79.73375003
Downstream Young	-2.635219982	-79.75186097
Downstream Old	-2.635031976	-79.73747000
El Salado	-2.428225027	-79.92496597

Table S2. Average values (\pm SD) of sediment dry bulk density, OC and nitrogen (N) content, C:N ratio (weight/weight), and $\delta^{13}\text{C}$ values from the sampling sites.

Site		Bulk Density (g cm ⁻³)	OC (%)	N (%)	C:N	$\delta^{13}\text{C}$ (‰)
Upstream	Young	0.53 \pm 0.13	1.57 \pm 0.34	0.11 \pm 0.02	13.67 \pm 1.70	-26.5 \pm 0.29
	Old	0.45 \pm 0.10	2.03 \pm 0.19	0.15 \pm 0.02	12.72 \pm 0.63	-26.1 \pm 0.67
Intermediate	Young	0.32 \pm 0.09	2.10 \pm 0.30	0.16 \pm 0.03	13.21 \pm 0.72	-26.6 \pm 0.36
	Old	0.31 \pm 0.11	3.75 \pm 0.56	0.17 \pm 0.02	21.91 \pm 1.83	-27.0 \pm 0.27
Downstream	Young	0.37 \pm 0.11	1.77 \pm 0.36	0.13 \pm 0.03	13.55 \pm 1.13	-26.5 \pm 0.44
	Old	0.31 \pm 0.07	4.38 \pm 0.96	0.18 \pm 0.03	24.68 \pm 3.92	-27.5 \pm 0.28
El Salado	Young	0.36 \pm 0.15	4.16 \pm 1.01	0.19 \pm 0.01	16.07 \pm 1.56	-26.6 \pm 0.55
	Old	0.26 \pm 0.09	5.24 \pm 0.92	0.22 \pm 0.04	23.56 \pm 2.75	-27.5 \pm 0.30

Table S3 Total sediment organic carbon (SOC) stocks (Mg C ha⁻¹) for the upper 0.64_m of the vertical sampling profiles. Standard deviation was calculated based on the SOC stocks of three replicate cores per site.

	OC Stocks (Mg C ha ⁻¹)	
	Young Mangrove	Old Mangrove
Upstream	55.78 \pm 0.78	56.92 \pm 0.65
Intermediate	48.66 \pm 1.14	78.43 \pm 1.07
Downstream	46.63 \pm 0.29	98.26 \pm 1.98
El Salado	97.74 \pm 1.52	92.68 \pm 0.93

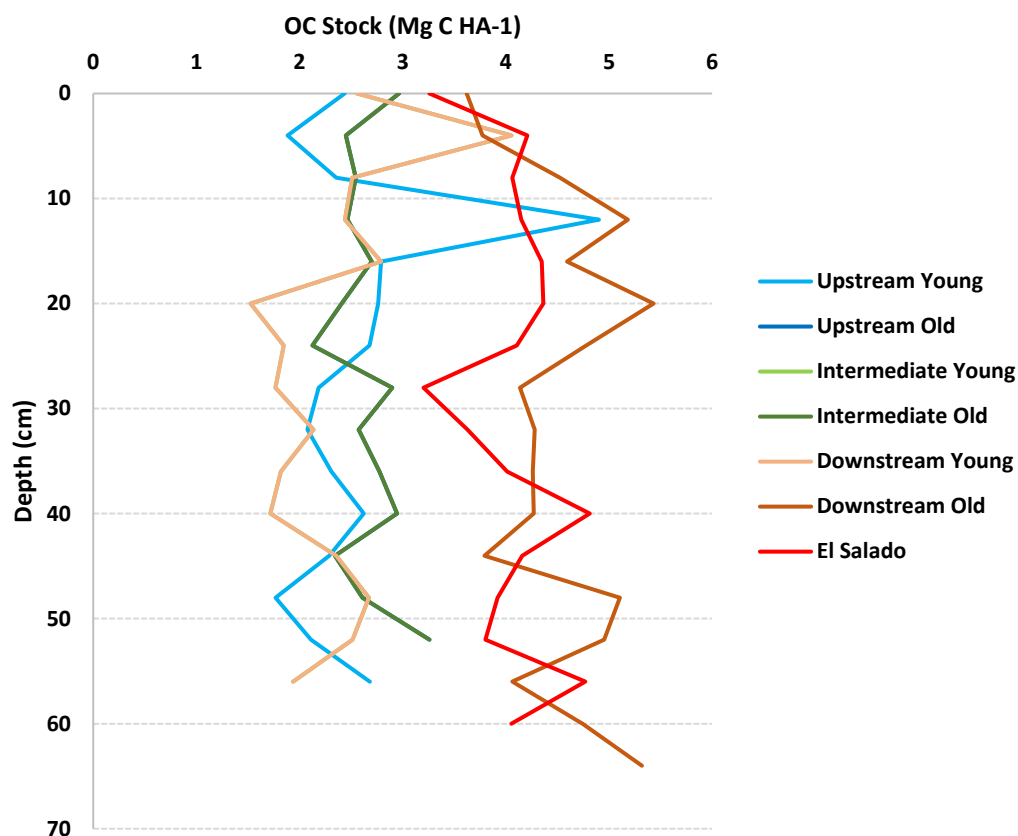


Figure S1. Downcore profile of organic carbon stock (Mg C ha⁻¹) for all sites. Values are averages of calculated stocks for the three replicate cores per site.

Table S4. Average elemental and isotopic values of the above- and belowground vegetation samples (leaves and twigs; sun-exposed and sun-shaded) collected in all sites.

VEGETATION			
	d13C	C/N	%C
Upstream Young	-29.66359793	38.02908119	35.37297317
Upstream Old	-30.44364274	38.81577096	41.50683274
Intermediate Young	-29.85944234	29.78286022	34.09707074
Intermediate Old	-29.15367319	59.09320523	39.85188803
Downstream Young	-29.01597733	36.24931493	35.60161094
Downstream Old	-29.72282494	65.17726349	43.44982479
El Salado	-29.26842541	27.05625971	26.53586235
El Salado Old	-29.22627625	47.19742232	36.79645821
Max	-29.01597733	65.17726349	43.44982479
Min	-30.44364274	27.05625971	26.53586235
Average	-29.58965484	42.02910796	36.65156512

Table S5. Elemental and isotopic values of the POC of the suspended particulate matter collected in the estuarine zone of the delta. Values are averages of data collected in dry and wet seasons.

POC (average dry and wet season)			
Stations	d13C	C/N	%OC
LT20	-25.5916	9.132098	1.451785
LT30	-25.5545	9.484568	1.672867
LT40	-25.4961	9.128386	1.625243
LT50	-25.1786	8.918236	1.695907
LT60	-25.8451	8.998877	1.919865
LT15	-25.4016	9.540545	1.578292
LT25	-25.2214	8.867861	1.620175
LT35	-25.4724	9.291912	1.632906
LT45	-25.5664	8.256801	1.71873
LT55	-25.8887	8.391194	1.780894
HT20	-25.4585	7.777592	1.724006
HT30	-25.7888	8.127518	1.746856
HT40	-25.7143	7.785988	1.844373
HT50	-25.7999	7.849447	1.982116
HT60	-25.6782	7.411576	2.070946
HT15	-26.6138	7.3732	3.240154
HT25	-26.4203	7.377663	2.283054
HT35	-26.4572	7.771362	1.932142
HT45	-25.9157	8.470695	1.850968
HT55	-25.8792	7.769142	2.201139
LT SITE 3	-26.1131	8.681934	2.578353
LT SITE 4	-25.6704	7.493975	1.464966
HT SITE 3	-26.8522	8.058445	2.380307
HT SITE 4	-27.1516	8.029017	1.66768
Min	-27.1516	7.3732	1.451785
Max	-25.1786	9.540545	3.240154
Average	-25.8637	8.332835	1.902655

Table S6. Detailed grain texture data of the mangrove sediments collected at all sites. Values per site are averages of three replicate cores.

UPSTREAM YOUNG				UPSTREAM OLD			
Depth (cm)	%clay (<2 μm)	%silt (2μm - 63 μm)	%sand (>63 μm)	Depth (cm)	%clay (<2 μm)	%silt (2μm - 63 μm)	%sand (>63 μm)
0-3	23.04	72.57	4.36	0-3	23.44	72.81	3.80
8-9	11.21	54.00	34.82	8-9	21.99	72.07	5.96
16-17	16.41	76.71	6.87	16-17	25.62	71.13	3.25
24-25	17.59	78.97	3.44	24-25	26.42	70.61	2.98
32-33	22.44	73.81	3.71	32-33	22.92	73.82	3.28
40-41	27.59	69.98	2.45	40-41	25.67	69.50	4.84
48-49	22.59	74.42	2.97	48-49	26.75	70.04	3.24
56-57	27.80	72.05	0.16	56-57	20.53	70.78	8.73
64-65	16.93	77.53	5.53	64-65	28.43	69.29	2.28
AVERAGE	20.62	72.23	7.15	AVERAGE	24.64	71.12	4.26

INTERMEDIATE YOUNG				INTERMEDIATE OLD			
Depth (cm)	%clay (<2 μm)	%silt (2μm - 63 μm)	%sand (>63 μm)	Depth (cm)	%clay (<2 μm)	%silt (2μm - 63 μm)	%sand (>63 μm)
0-3	9.8	71.5	18.7	0-3	17.52	79.61	2.87
8-9	21.3	75.8	2.8	8-9	18.40	78.74	2.86
16-17	7.9	58.8	33.2	16-17	18.95	78.99	2.08
24-25	17.6	77.2	5.1	24-25	22.03	75.66	2.30
32-33	16.3	79.6	4.2	32-33	21.23	76.53	2.23
40-41	15.1	77.1	7.8	40-41	19.20	78.97	1.86
48-49	20.5	74.4	5.0	48-49	16.28	80.90	2.91
56-57	13.6	82.5	3.9	56-57	21.75	75.24	3.03
64-65	18.2	76.3	5.5	64-65	17.08	80.54	2.37
72-73	15.7	82.0	2.3	72-73	17.94	79.66	2.44
80-81	15.9	79.2	5.0	80-81	18.34	79.00	2.66
AVERAGE	15.6	75.9	8.5	AVERAGE	18.97	78.53	2.51

DOWNSTREAM YOUNG			
Depth (cm)	%clay (<2 μm)	%silt (2μm - 63 μm)	%sand (>63 μm)
0-3	12.01	81.94	6.04
8-9	14.87	81.48	3.66
16-17	12.23	81.56	6.20
24-25	13.77	82.38	3.84
32-33	14.92	80.81	4.28
40-41	9.60	81.59	8.81
48-49	14.14	79.61	6.28
56-57	14.20	81.64	4.19
64-65	17.67	79.35	3.00
72-73	18.86	78.22	2.87
AVERAGE	14.23	80.86	4.92

DOWNSTREAM OLD			
Depth (cm)	%clay (<2 μm)	%silt (2μm - 63 μm)	%sand (>63 μm)
0-3	19.44	79.05	1.49
8-9	16.85	79.25	3.93
16-17	14.15	83.23	2.66
24-25	19.42	78.12	2.49
32-33	21.71	78.30	0.00
40-41	13.83	83.02	3.20
48-49	19.06	78.94	2.01
56-57	17.15	80.10	2.74
64-65	15.48	81.22	3.27
72-73	6.17	43.57	50.26
AVERAGE	16.33	76.48	7.20

EL SALADO			
Depth (cm)	%clay (<2 μm)	%silt (2μm - 63 μm)	%sand (>63 μm)
0-3	14.89	81.57	3.57
8-9	17.98	79.30	2.75
16-17	13.78	82.06	4.17
24-25	14.87	79.46	5.67
32-33	13.51	64.08	22.43
40-41	14.47	81.88	3.68
48-49	16.71	81.95	1.37
56-57	12.57	82.32	5.05
64-65	19.82	76.19	4.01
72-73	15.54	78.06	6.39
AVERAGE	15.41	78.69	5.91

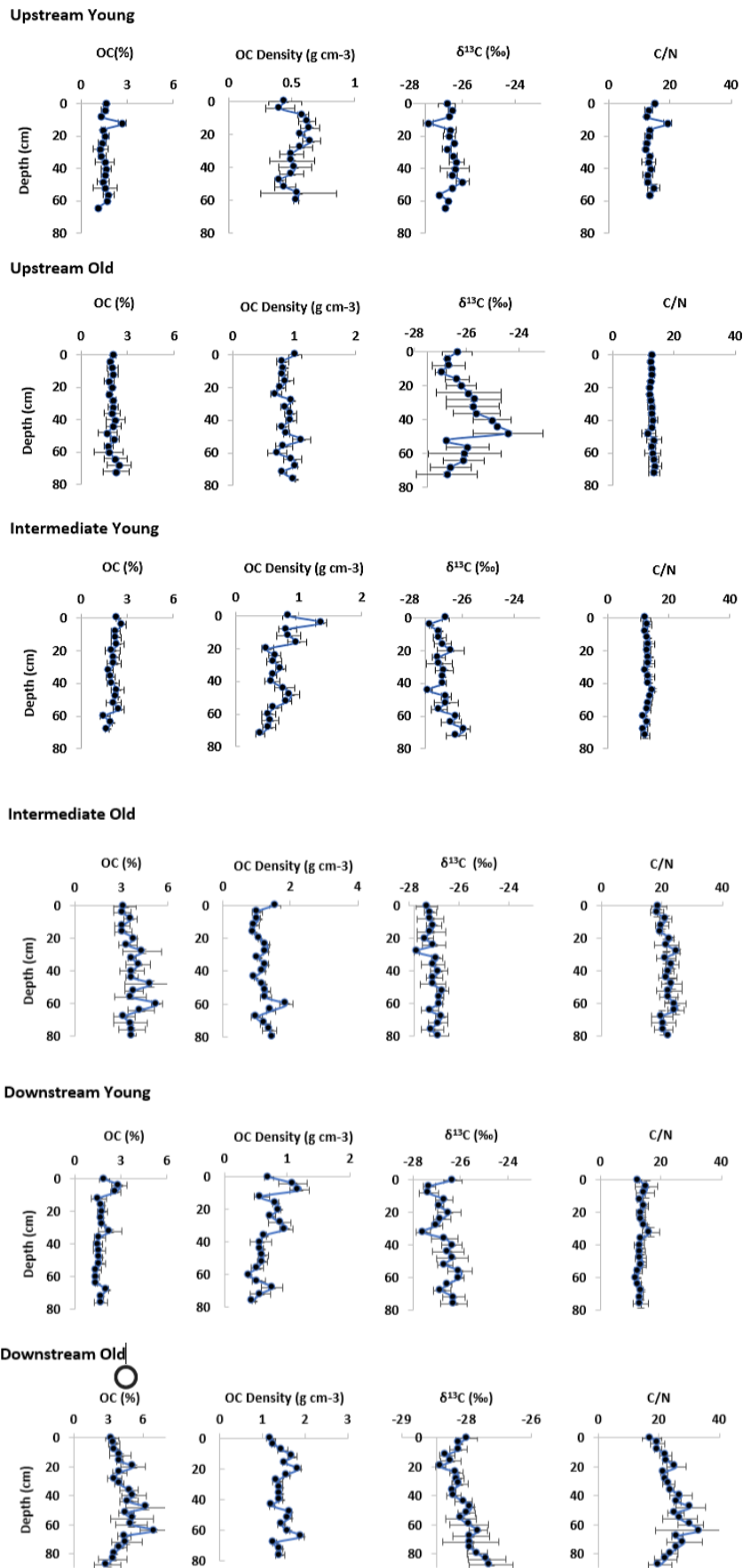


Figure S2. Downcore variation of sediment properties of the sites. Error bars represent standard deviation.

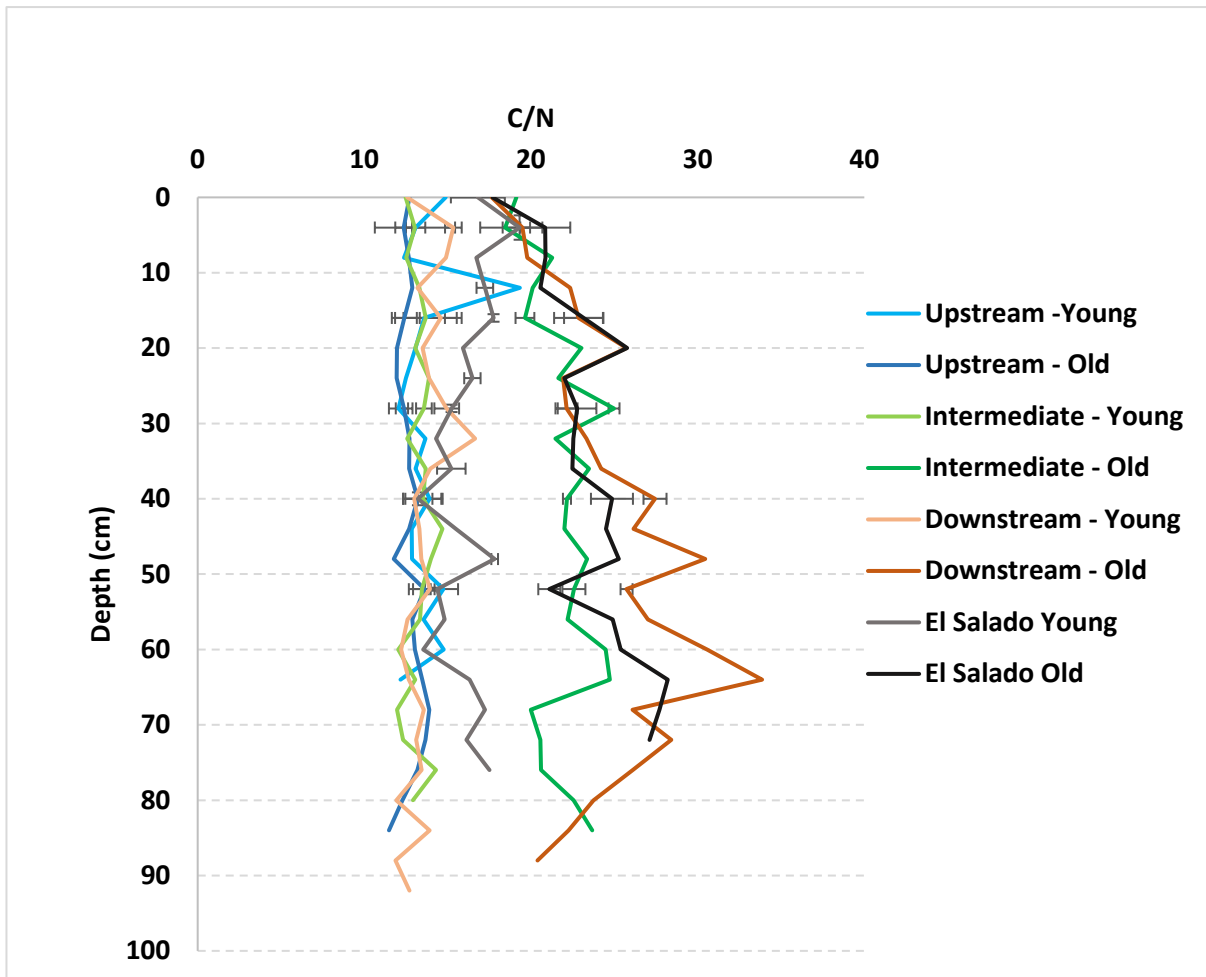


Figure S3. Depth profiles of C:N ratio for all sites. Error bars represent the standard deviation of subsamples taken at 0.04m depth increment for the three replicate cores at each site.

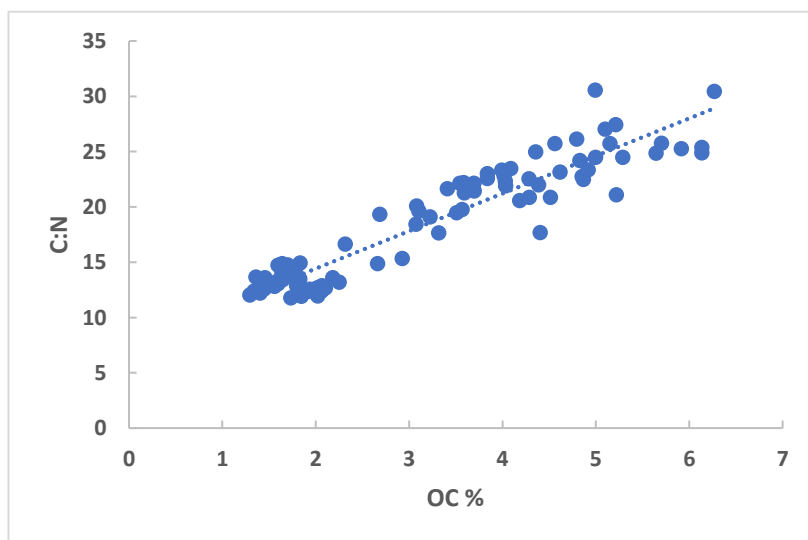


Figure S4. Sediment organic carbon content (% dry weight) versus carbon nitrogen ratios of all study sites. Data points represent average values of subsamples taken every 0.04m of three replicate cores per sites.