Electronic Supplementary Material

Estuaries and Coasts

Suboptimal rootzone growth prevents Long Island (NY) salt marshes from keeping pace with sea level rise.

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Table S1. RSET station estimated starting marsh elevations and depth of RSET installed. All Shallow RSET were installed to a standard depth (0.51m). All Deep RSET were driven until refusal or 20 sections of 4' steel rod were used totaling 24.4m deep

	Plot ID	Depth of RSET (m)	Depth of Shallow RSET (m)	Starting marsh elevation (m - NAVD88)
Accabonac Harbor	AH-1	24.4	0.5	0.5
	AH-2	24.4	0.5	0.4
	AH-3	24.4	0.5	0.4
Bass Creek	BC-1	24.4	0.5	0.3
	BC-2	9.8	0.5	0.2
	BC-3	24.4	0.5	0.3
Cedar Beach	CB-1	≤24.4	--	0.2
	CB-2	≤24.4	--	0.3
	CB-3	≤24.4	--	0.3
Hubbard Creek	HC-1	24.4	0.5	0.4
	HC-2	19.5	0.5	0.3
	HC-3	19.5	0.5	0.3
Indian Island	II-4	≤24.4	--	0.4
	II-5	≤24.4	--	0.4
	II-6	≤24.4	--	0.4
Lawrence Marsh	LW-1	8.5	0.5	0.6
	LW-2	9.8	0.5	0.6
	LW-3	11.0	0.5	0.6
Mashomack Point	MP-1	≤24.4	0.5	0.3
	MP-2	≤24.4	0.5	0.3
	MP-3	≤24.4	0.5	0.3
North Green Sedge	NG-1	18.3	0.5	0.7
	NG-2	17.1	0.5	0.7
	NG-3	10.5	0.5	0.7
Pine Neck	PN-4	≤24.4	0.5	0.4
	PN-5	≤24.4	0.5	0.4
	PN-6	≤24.4	0.5	0.4

Table S2. Regression coefficients for fixed effects (Time) for individual models from which rates of elevation change were derived. Nested random effects, which includes pins nested within SET arm directions, nested within each SET station are not presented. For each study site an intercept only model, which removes time as an effect, was fit to act as a null model. AIC were compared between the full model and its null equivalent to determine if the effect of time significantly improved the model fit. In all cases, the model which included the effect of time was the accepted as the superior model fit and is reported here

	Rod SET			Surface Accretion			Shallow SET		
	Beta[1]	**SE**[2]	**Statistic**	**Beta**[1]	**SE**[2]	**Statistic**	**Beta**[1]	**SE**[2]	**Statistic**
(Intercept)	-2.07	0.989	-2.09	-0.60	0.439	-1.37	0.75	0.791	0.946
Accabonac Harbor	*2.96	0.355	8.33	***2.30	0.154	14.9	**4.05	0.271	15.0
(Intercept)	***2.28	0.528	4.32	2.62	0.966	2.71	-0.23	1.34	-0.168
Bass Creek	**3.67	0.190	19.3	***4.17	0.244	17.1	*4.05	0.634	6.38
(Intercept)	2.13	1.67	1.28	**2.29	0.409	5.58	1.72	0.860	2.00
Hubbard Creek	*2.86	0.407	7.04	***3.37	0.231	14.6	*4.14	0.713	5.80
(Intercept)	1.36	0.673	2.02	***4.56	0.505	9.03	**-2.95	0.735	-4.02
Mashomack Point	**4.46	0.350	12.8	***4.91	0.196	25.0	**4.49	0.443	10.1
(Intercept)	2.25	1.05	2.13	*3.18	0.669	4.75	*-6.02	1.74	-3.45
Pine Neck	***3.34	0.297	11.2	**3.62	0.299	12.1	***3.41	0.348	9.78
(Intercept)	-1.82	0.876	-2.08	*-0.82	0.329	-2.50	-0.42	0.840	-0.496
North Green Sedge	**4.26	0.227	18.7	***4.36	0.078	55.8	**4.64	0.216	21.4
(Intercept)	-2.22	0.538	-4.13	0.07	0.336	0.209	-1.77	0.666	-2.65
Lawrence Marsh	**3.06	0.119	25.7	***3.80	0.103	36.8	***3.45	0.066	52.2
(Intercept)	1.16	2.24	0.518	*4.36	1.00	4.34			
Cedar Beach	2.58	0.924	2.79	***4.27	0.227	18.8			
(Intercept)	1.52	1.01	1.50	2.23	0.661	3.37			
Indian Island	***2.09	0.301	6.95	***2.66	0.205	13.0			

[1]*p<0.05; **p<0.01; ***p<0.001

[2]SE = Standard Error

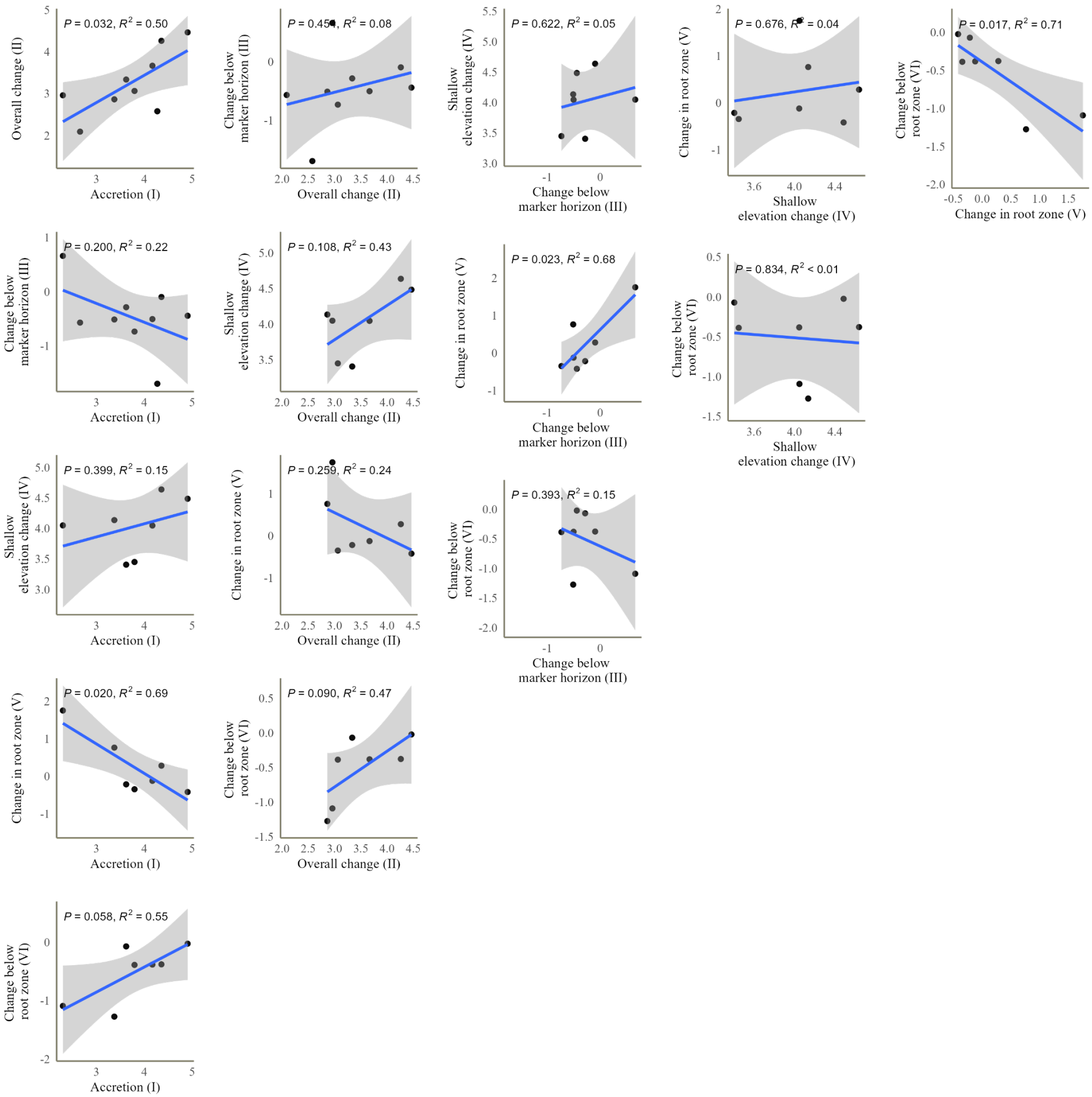

Fig. S3. Linear relationships across elevation components with R^2 and *p* values fit using least squares regression. Note that all subcomponents of elevation change are reported here regardless of significance of fit. All rates of change (mm/yr)

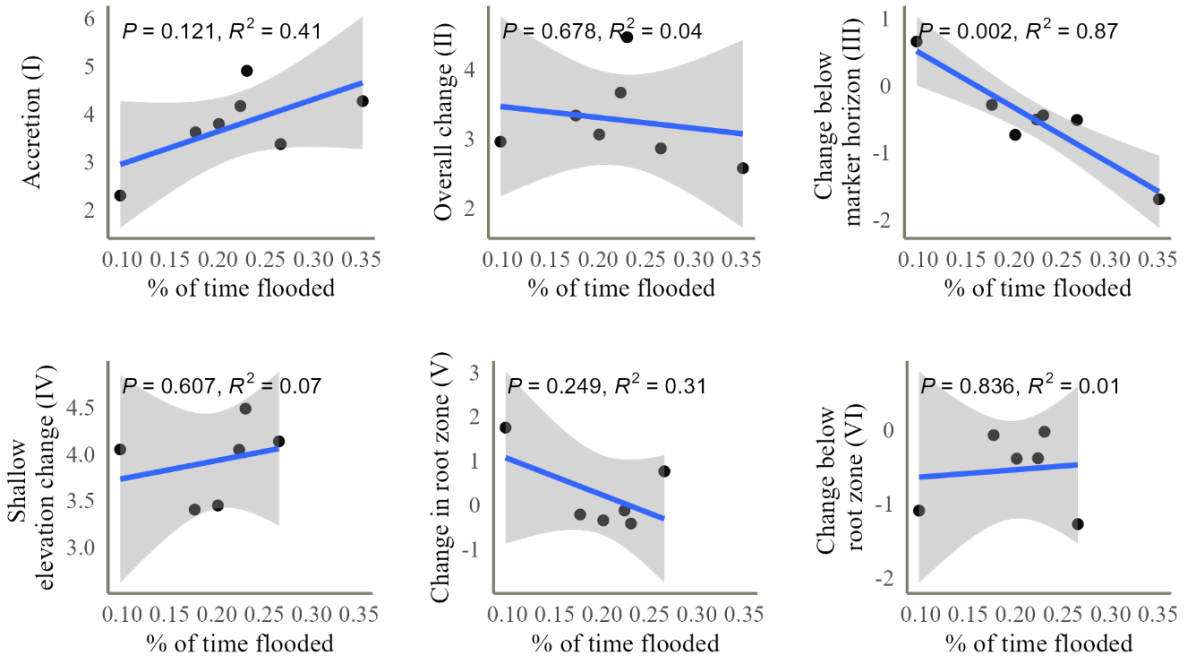

Fig. S4. Linear relationships between inundation and marsh processes across strata with R^2 and *p* values fit using least squares regression. Note that all subcomponents of elevation change are reported here regardless of significance of fit. All rates of change (mm/yr)

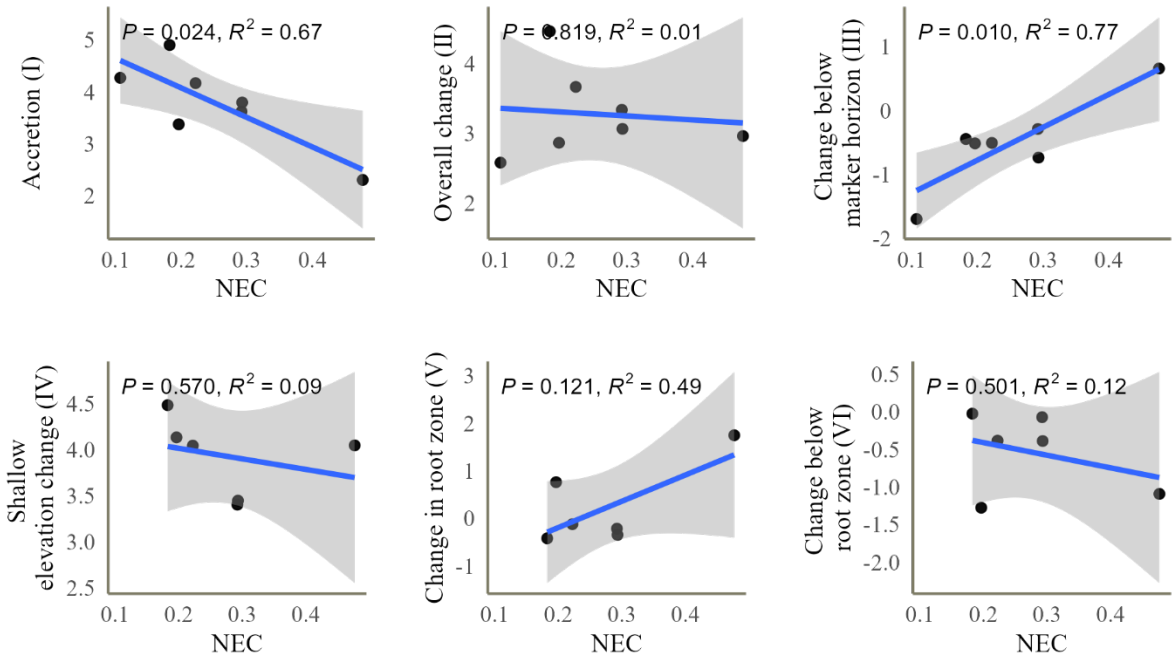

Fig. S5. Correlations and relationships between NEC and marsh processes across strata with R^2 and p values fit using least squares regression. Note that all subcomponents of elevation change are reported here regardless of significance of fit. All rates of change (mm/yr)