Carbonate sediment production in some coastal areas may offset the benefits of seagrass "blue carbon" storage

Online Supplementary Material

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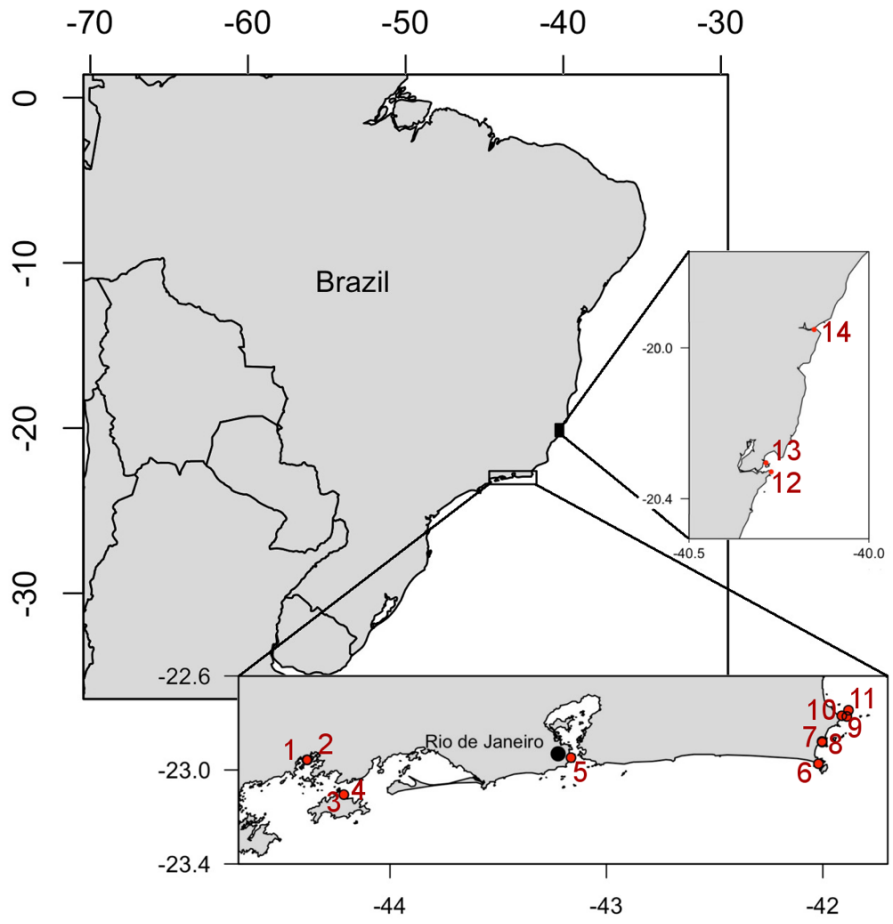
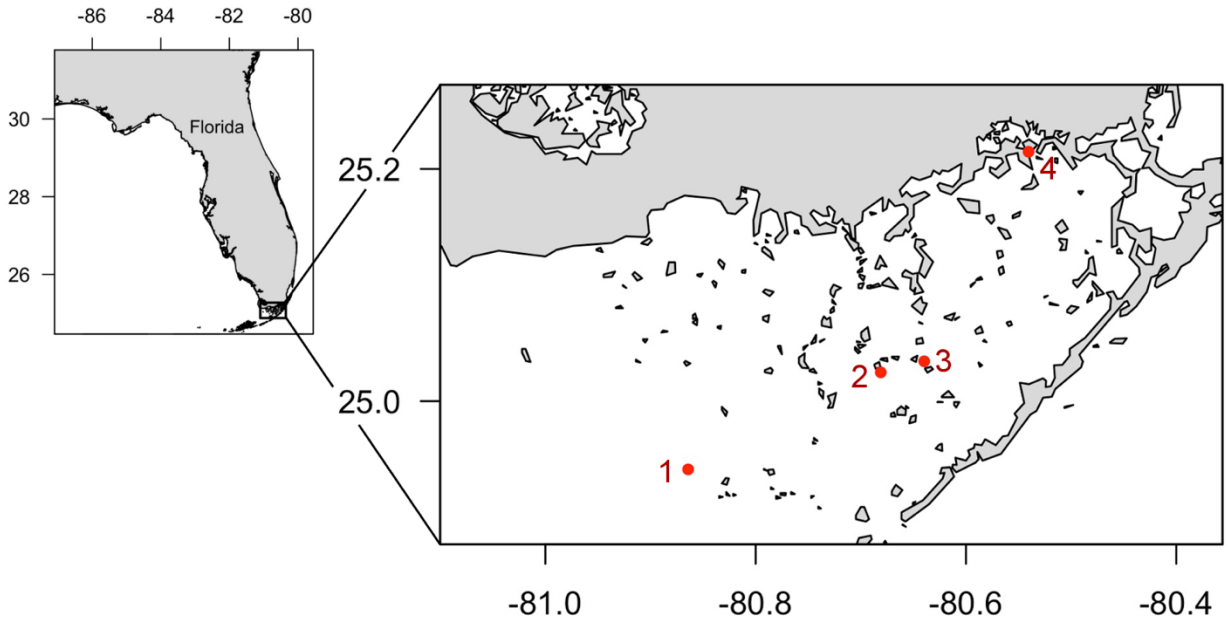


Online Resource 1. Study area showing sampling sites for seagrass and soil cores in southeastern Brazil. Two sediment cores and three seagrass cores were taken at each of the 14 sites. See Online Resource 2 for site descriptions.

Online Resource 2. Location and site characteristics of seagrass survey sites.

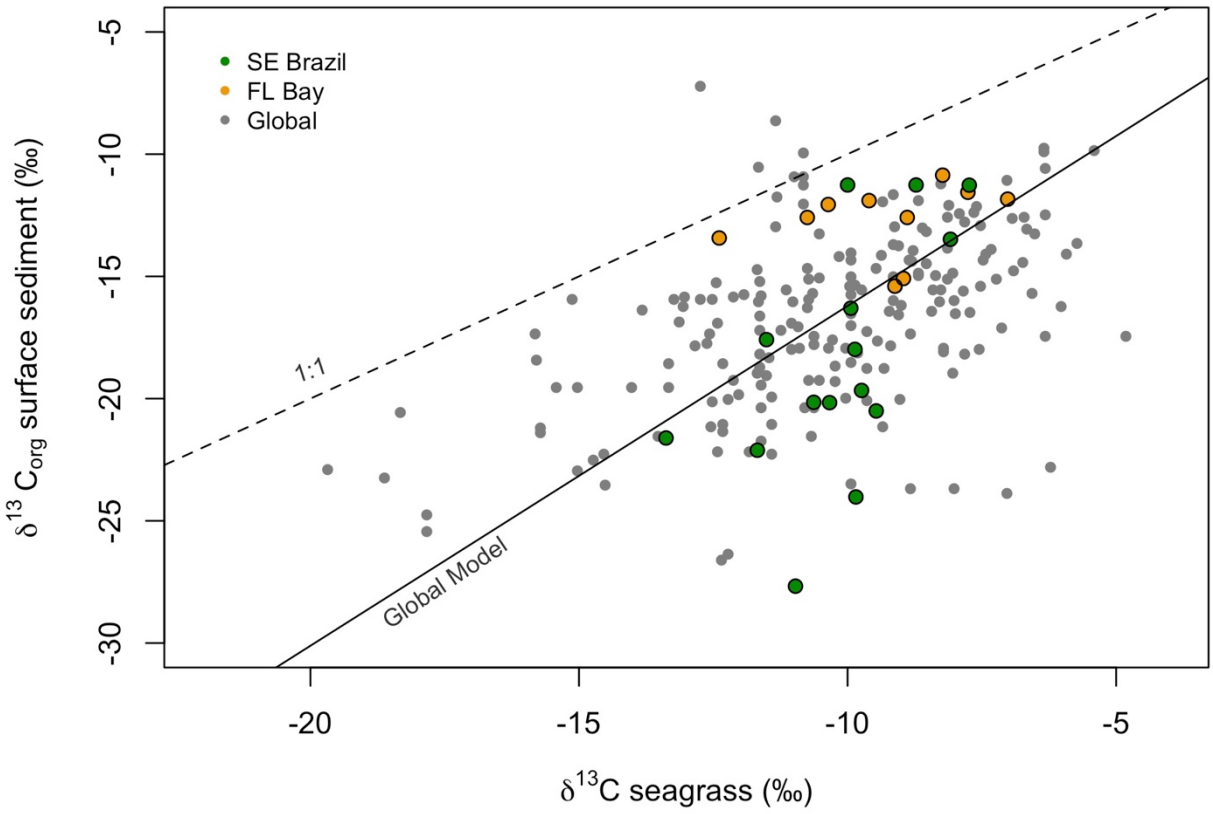
Map Key	Site name	Latitude (°N)	Longitude (°E)	Salinity (psu)	Temp (°C)	depth (cm)	Seagrass present	Cohabitants	epiphytes	notes
1	Bracui - site 1	-22.957100°	-44.384567°	35	24.4	30	*Halodule wrightii*	epiphtic Rhodophyta	yes	on subtidal sandbank
2	Bracui - site 2	-22.957267°	-44.381133°	35	24.4	50	*Halodule wrightii*	epiphtic Rhodophyta, benthic cyanobacteria	yes	near mangrove-lined embayment
3	Ilha Grande - site 1	-23.104933°	-44.213233°	35	22.7	20	*Halodule wrightii*	none	no	shallow water beach used for harvesting infauna
4	Ilha Grande - site 2	-23.133783°	-44.151083°	37	22.8	170	*Halodule wrightii*	none	no	near mangrove-lined coast
5	Urca	-22.947603°	-43.163558°	36	23.4	200	*Halophila decipiens*	none	no	urban beach near mouth of Guanabara Bay
6	Arraial do Cabo	-22.973434°	-42.020278°	36	23	370	*Halodule wrightii*	none	no	long sandy beach with minimal surrounding vegetation
7	Ilha do Japones - site 1	-22.881841°	-42.002751°	31	22.8	55	*Halodule wrightii*	*Hypnea musciformis,* Ulva sp.	yes	beach located near inlet
8	Ilha do Japones - site 2	-22.878932°	-42.003653°	31	22.8	40	*Halodule wrightii*	*Hypnea musciformis,* Ulva sp.	yes	beach located near inlet, adjacent to tropical forest.
9	Manguinhos	-22.769126°	-41.912172°	40	21.1	40	*Halodule wrightii*	none	no	long sandy beach adjacent to urban area
10	Praia da Ferradura	-22.772383°	-41.888983°	37	21.9	210	*Halodule wrightii*	epiphtic Rhodophyta	yes	long sandy beach with minimal surrounding vegetation
11	Praia dos Ossos	-22.745867°	-41.881450°	37	21.5	180	*Halodule wrightii*	none	no	long sandy beach adjacent to urban area
12	Vila Velha	-20.325117°	-40.271533°	36	25.7	30	*Halodule emarginata*	none	no	small embayment used for ship storage
13	Vitoria	-20.301767°	-40.285967°	36	23.7	40	*Halodule emarginata*	bryopisis sp	no	long sandy beach adjacent to urban area
14	Santa Cruz	-19.953650°	-40.152067°	34	24	40	*H. decipiens* & *H. wrightii*	Ulva sp., Rhodophyta	no	beach located at river mouth



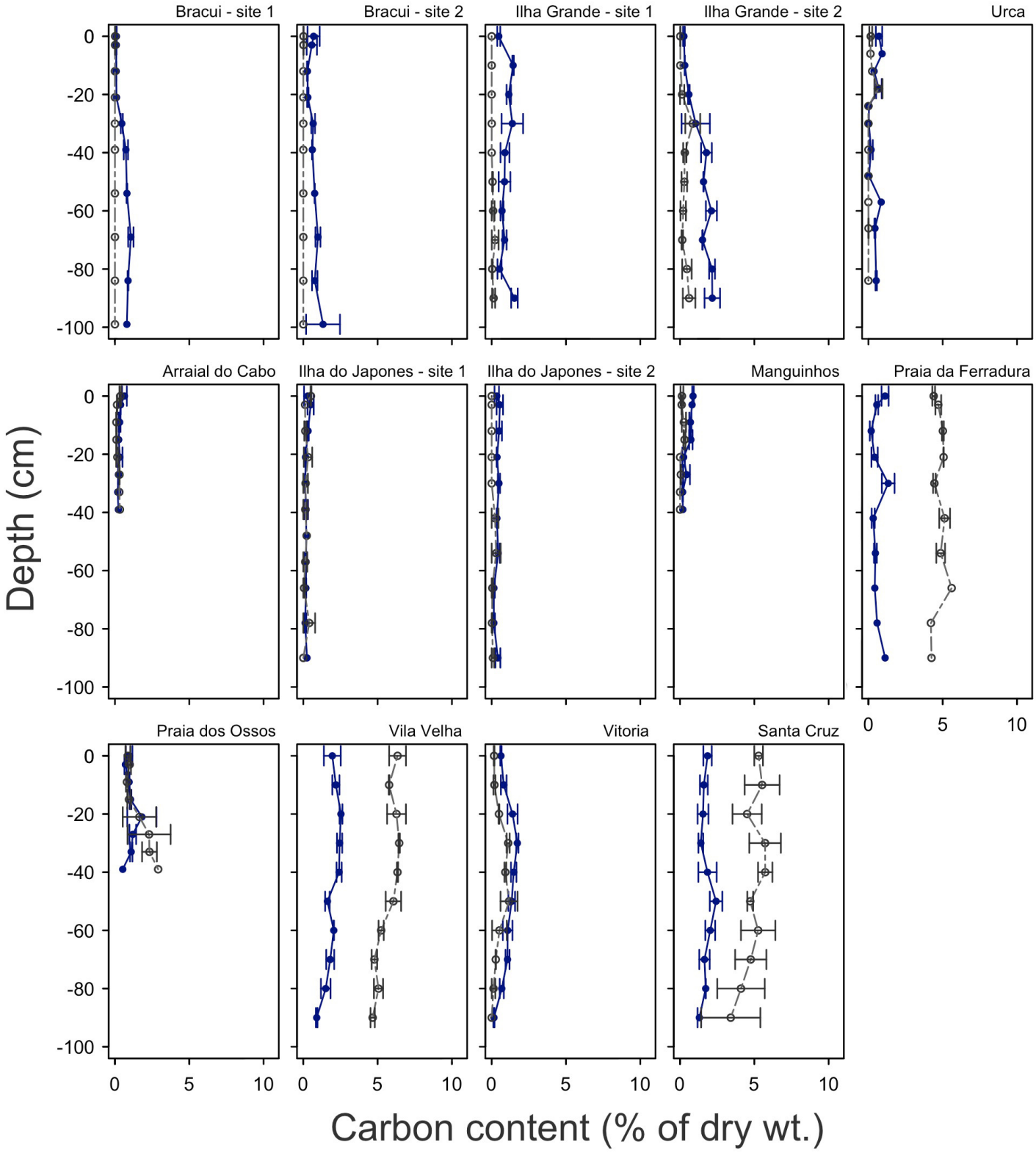
Online Resource 3. Referenced study areas showing sampling sites for seagrasses and soil cores in Florida Bay, USA. See Online Resource 4 for site descriptions.

Online Resource 4. Location and site characteristics of referenced seagrass survey sites in Florida Bay.

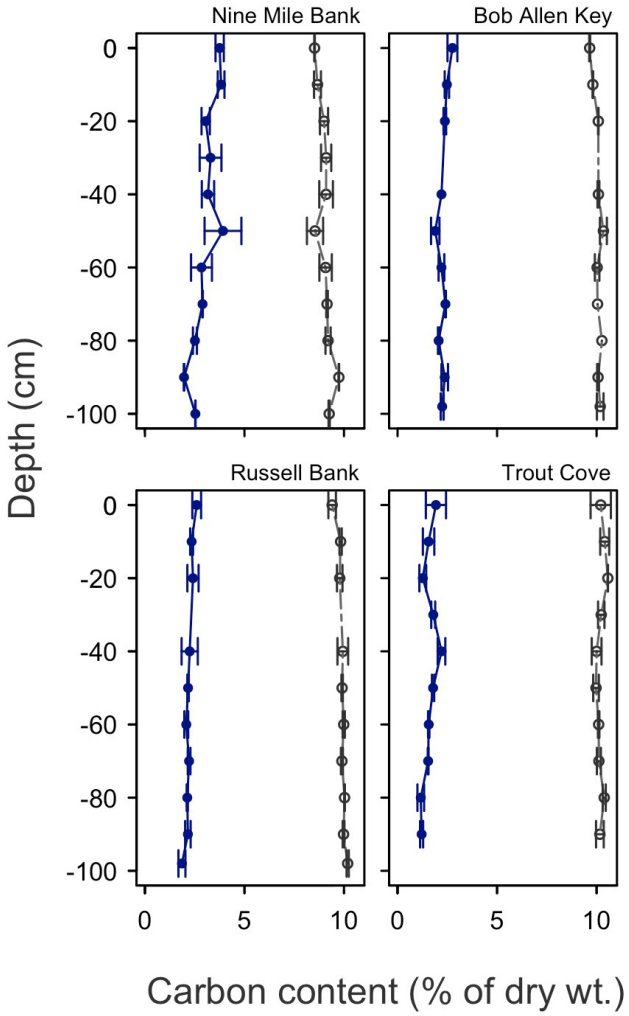
Map Key	Site name	Latitude (°N)	Longitude (°E)	Seagrass present	Cohabitants	epiphytes	notes
1	Nine Mile Bank	24.9412°	-80.8642°	*T. testudinum*	sparse Penicillus spp., Halimeda spp.	yes	Dense seagrass on shallow bank. Data from Armitage and Fourqurean 2016; Fourqurean unpublished
2	Bob Allen Keys	25.0248°	-80.6810°	*T. testudinum*	Batophora spp., Penicillus spp.	yes	Sparse seagrass in fine sediment. Data from Armitage and Fourqurean 2016; Fourqurean unpublished
3	Russell Bank	25.0343°	-80.6397°	*T. testudinum*	rare	yes	Sparse seagrass in fine sediment. Data from Armitage and Fourqurean 2016; Fourqurean unpublished
4	Trout Cove	25.2148°	-80.5404°	*T. testudinum* & *H. wrightii*	rare	yes	Sparse seagrass in fine sediment. Data from Armitage and Fourqurean 2016; Fourqurean unpublished



Online Resource 5. The relationship between δ^{13}C of seagrass and δ^{13}C of organic fraction of underlying surface sediments. Dark green points are from this study, orange points are comparable data from Florida Bay (Howard et al. 2016) and black points are the global data set for reference (Kennedy et al. 2010).



Online Resource 6. Down core profiles of soil C_{org} (---) and C_{inorg} (---) (means ± 1 SE, n=1–3) across 14 sampling sites. Sites are arranged from most southern to northern.



Online Resource 7. Down core profiles of soil C_{org} (—) and C_{inorg} (---) (means ± 1 SE, n=2) across 4 sites in Florida Bay, USA (Fourqurean unpublished). Sites are arranged from most southern to northern, also following a nutrient availability gradient from replete to limited.