

Supplemental Information for:

Benthic Alkalinity fluxes from coastal sediments of the Baltic and North Seas: Comparing approaches and identifying knowledge gaps

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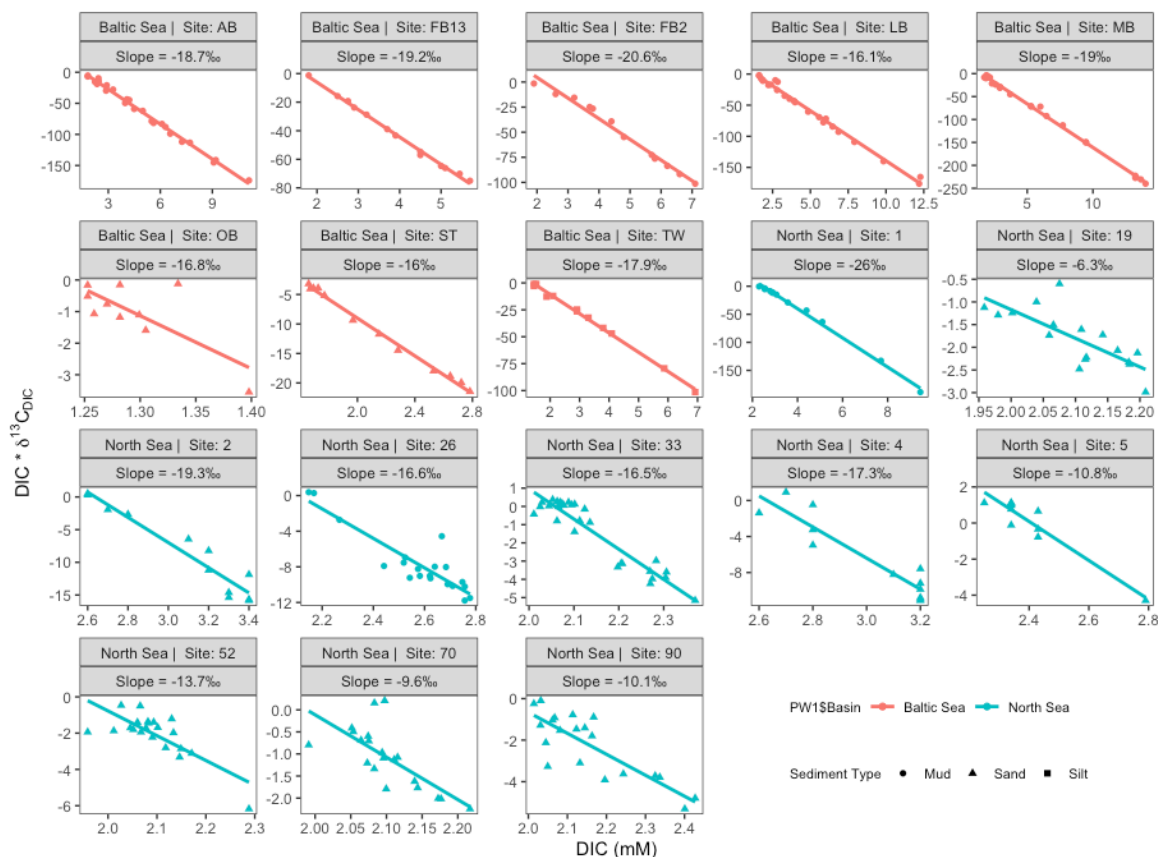
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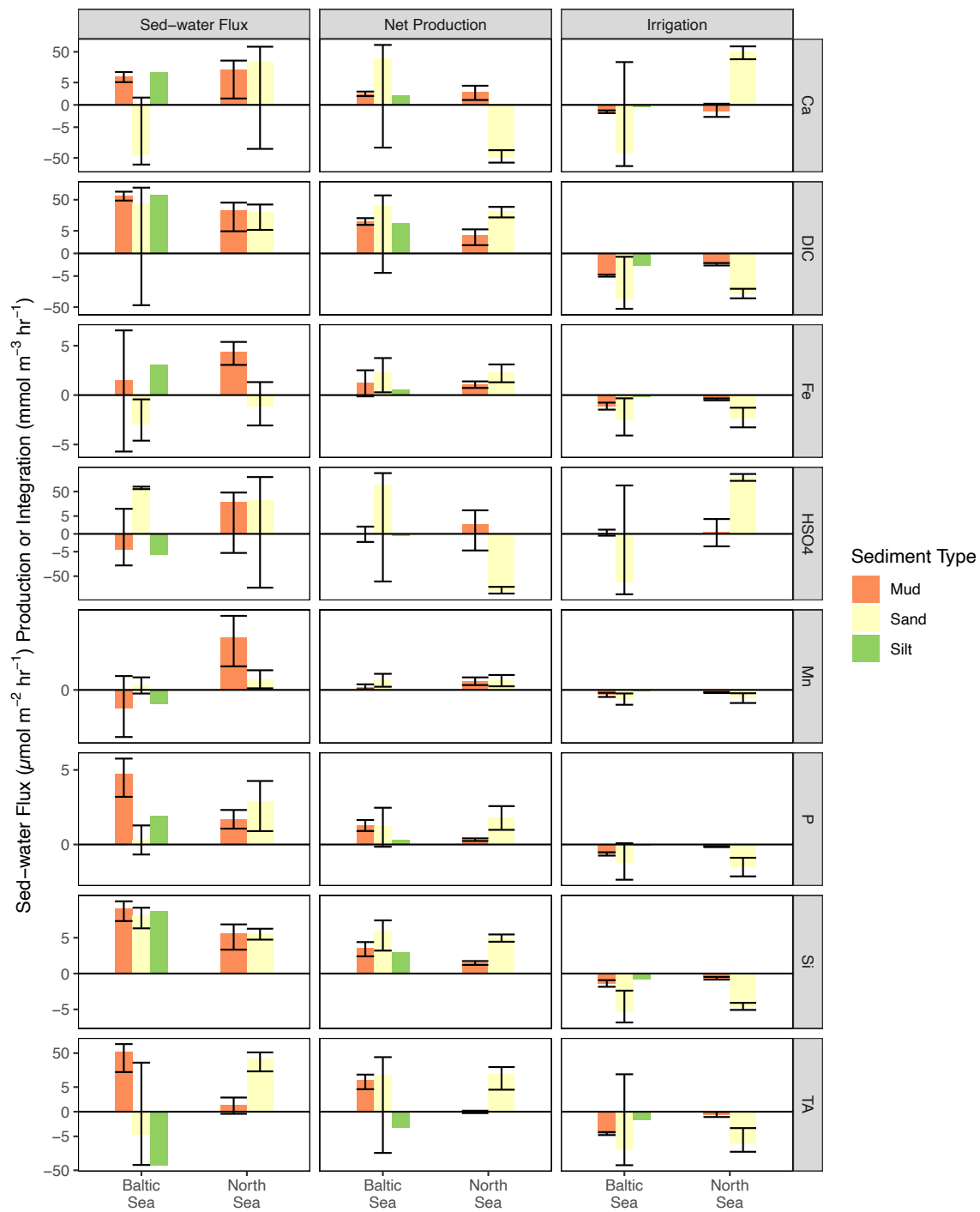
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- 15 **Supplementary Figure S1.** Miller-Tans plots of DIC * $\delta^{13}\text{C-DIC}$ (mM * ‰) vs DIC (mM)



Supplementary Figure S2. Net sediment-water fluxes ($\mu\text{mol m}^{-2} \text{hr}^{-1}$) and volumetric production and irrigation rates ($\text{mmol m}^{-3} \text{hr}^{-1}$) generated in PROFILE, presented for each sediment class, averaged across all sites in each basin.



Supplementary Table S1. Preservation techniques and measurement methods for each sampled parameter

Parameter	Preservation technique	Method	
		HE541	Other cruises
H ₂ S	Zn-acetate solution (5% (v/v)), freezing	Photometry	
Ca	Filtration (< 0.45 μm), acidification with HNO ₃ solution (65% (w/w)), cooling	ICP-MS/MS	ICP-OES
Fe			
Mn			
P			
HSO ₄ ⁻			
DIC	HgCl ₂ solution (sat.), cooling	CF-irmMS	
δ ¹³ C-DIC			
TA	0.1 N HCl, cooling	Potentiometric titration	
NO ₃ ⁻	freezing	Continuous flow analyzer (colorimetric analysis)	
NH ₄ ⁺			
Si			

Supplemental Table S2: PCA input values

Basin	Sed Type	Site	Phi	RDS	RFeP	Max_Fe	Max_HS	DHS_1	Max_NO3	DNO3	Max_Si	Max_DIC	Miller-Tans
Baltic	Sand	OB	0.40	0.10	0.00	5.1	8.5	4.30	2.9	2.30	50	1.40	-16.8
Baltic	Mud	AB	0.85	-2.56	0.00	191.6	1160.0	5.50	13.8	11.50	598	11.11	-18.7
Baltic	Mud	LB	0.85	-1.03	0.00	235.5	2800.0	1.00	30.0	14.50	750	12.28	-16.1
Baltic	Mud	MB	0.85	-1.87	0.00	619.6	338.0	2.50	42.5	6.50	1090	14.01	-19.0
Baltic	Sand	ST	0.40	-0.32	0.00	63.1	123.0	3.00	23.8	3.00	327	2.78	-16.0
Baltic	Mud	FB2	0.85	-1.48	0.00	509.4	1192.0	2.00	8.7	5.00	750	7.10	-20.6
Baltic	Mud	FB1 3	0.85	-1.68	0.00	133.2	840.0	2.00	8.0	5.00	690	5.45	-19.2
Baltic	Silt	TW	0.60	-1.62	0.00	218.5	1360.0	4.00	16.1	7.00	690	6.92	-17.9
North	Mud	1	0.80	-0.31	0.00	162.4	2.8	4.50	11.5	0.50	288	9.45	-26.0
North	Sand	2	0.40	-0.28	0.17	333.1	20.0	3.00	3.8	2.00	207	3.40	-19.3
North	Sand	4	0.40	-0.10	0.14	117.8	2.0	9.50	10.8	2.50	96	3.20	-17.3
North	Sand	5	0.40	0.03	0.26	17.3	3.5	9.00	5.4	5.00	30	2.80	-10.8
North	Mud	26	0.65	0.01	0.44	89.6	28.1	7.00	3.8	4.00	225	2.80	-16.6
North	Sand	33	0.40	-0.05	0.25	53.6	1.0	20.00	5.8	1.00	78	2.30	-16.5
North	Sand	52	0.40	0.03	0.32	55.3	15.9	5.00	10.9	1.00	49	2.25	-13.7
North	Sand	70	0.40	-0.02	0.00	10.6	0.0	20.00	13.8	20.00	41	2.20	-9.6

North	Sand	90	0.40	0.09	0.00	45.3	0.0	20.00	10.2	4.00	34	2.40	-10.1
North	Sand	19	0.40	0.04	0.00	0.2	0.0	15.00	15.5	11.00	42	2.20	-6.3