

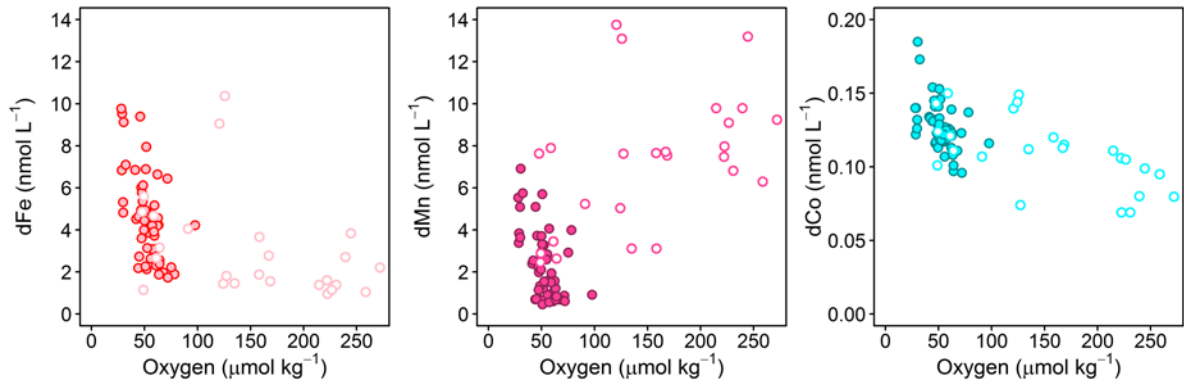
**SUPPLEMENTARY MATERIAL****Table S1.** Pearson correlations of all data below 50 m water depth for the same parameters as used for the principle component analysis.

	dFe	dMn	dCo	dNi	dCd	dPb	oxy	Γ	depth	turb	PO <sub>4</sub>	NO <sub>3</sub>	AOU	dCu	Si(OH) <sub>4</sub>	temp	sal
dFe	1																
dMn	0.57	1															
dCo	0.60	0.65	1														
dNi	-0.08	-0.62	-0.10	1													
dCd	-0.13	-0.64	-0.06	0.96	1												
dPb	0.09	-0.34	0.01	0.78	0.69	1											
oxy	-0.55	-0.61	-0.58	0.43	0.36	0.42	1										
Γ	0.43	0.78	0.40	-0.67	-0.65	-0.42	-0.52	1									
depth	-0.11	-0.58	-0.11	0.97	0.95	0.79	0.45	-0.61	1								
turb	0.76	0.56	0.41	-0.32	-0.36	-0.27	-0.64	0.53	-0.35	1							
PO <sub>4</sub>	0.23	-0.37	0.15	0.85	0.84	0.68	-0.12	-0.49	0.84	0.00	1						
NO <sub>3</sub>	-0.03	-0.65	-0.09	0.92	0.93	0.63	0.11	-0.68	0.89	-0.22	0.89	1					
AOU	0.29	-0.29	0.30	0.62	0.67	0.39	-0.22	-0.22	0.58	0.08	0.76	0.74	1				
dCu	0.29	-0.02	0.36	0.59	0.51	0.74	0.12	-0.16	0.55	-0.10	0.57	0.44	0.42	1			
Si(OH) <sub>4</sub>	0.17	-0.41	0.11	0.93	0.90	0.77	0.08	-0.50	0.95	-0.09	0.94	0.88	0.71	0.65	1		
temp	0.15	0.70	0.20	-0.97	-0.97	-0.73	-0.45	0.71	-0.96	0.37	-0.85	-0.95	-0.61	-0.50	-0.90	1	
sal	0.06	0.68	0.21	-0.93	-0.92	-0.74	-0.48	0.64	-0.93	0.25	-0.79	-0.89	-0.55	-0.45	-0.86	0.96	1

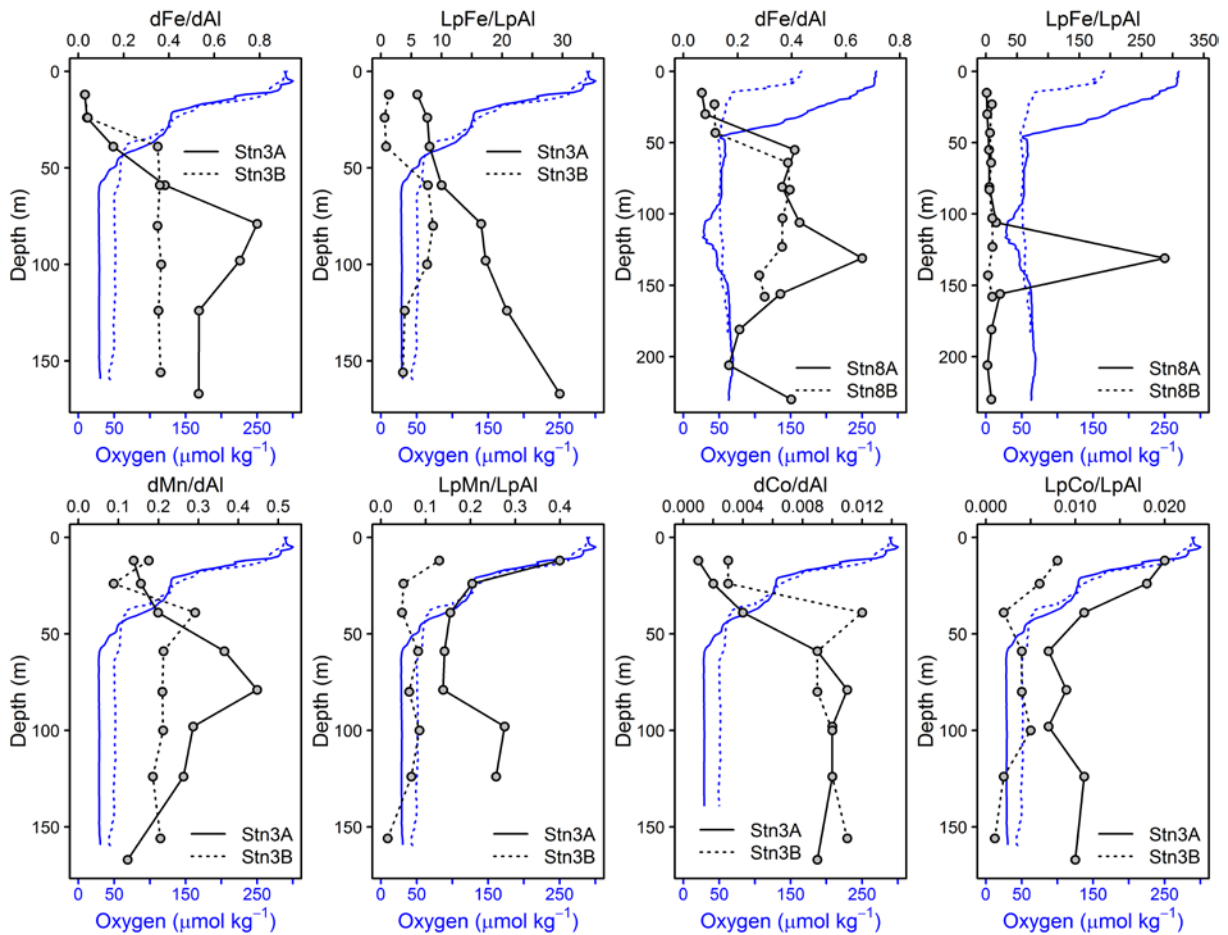
**Table S2.** Atmospheric flux of dFe and vertical fluxes of dFe, LpFe and dCo. Atmospheric fluxes are obtained from dAl inventory in the mixed layer. Vertical fluxes are combined diffusive (Diff.) and upwelling (Adv.) fluxes. Minimum and maximum vertical fluxes were calculated using the upper and lower 95% confidence interval of diffusivity measurements and an error of 50% for the upwelling velocity.

Station	Atmospheric dFe flux ( $\mu\text{mol m}^{-2} \text{d}^{-1}$ )	Vertical dFe flux ( $\mu\text{mol m}^{-2} \text{d}^{-1}$ )		
	Mean (min–max)	Mean (min–max)	Diff.	Adv.
4	0.66 (0.39–2.14)	13.5 (7.13–22.15)	1.56	11.98
7	0.74 (0.44–2.41)	2.31 (1.52–3.25)	1.75	0.56
3A	0.77 (0.46–2.52)	2.31 (1.28–3.74)	1.63	0.68
3B	0.63 (0.37–2.06)	1.35 (0.75–2.18)	0.79	0.57
8A	0.68 (0.40–2.20)	0.95 (0.58–1.42)	0.72	0.22
8B	1.18 (0.70–3.84)	-	-	-
9	-	0.08 (0.05–0.12)	0.04	0.04
5	0.87 (0.51–2.83)	1.27 (0.60–2.42)	1.03	0.25
2	1.43 (0.85–4.65)	0.16 (0.09–0.23)	0.05	0.10

Station	Vertical dCo flux ( $\text{nmol m}^{-2} \text{d}^{-1}$ )		
	Mean (min–max)	Diff.	Adv.
4	113 (59.5–185)	13.0	100
7	28.4 (18.6–39.9)	21.5	6.9
3A	33.6 (18.7–54.5)	23.8	9.9
3B	10.3 (5.7–16.5)	6.0	4.3
8A	14.6 (8.9–21.9)	11.1	3.5
8B	-	-	-
9	-	-	-
5	3.6 (1.7–6.8)	2.9	0.7
2	1.9 (1.1–2.8)	0.7	1.2



**Figure S1.** Dissolved TM concentrations against oxygen for Fe (left), Mn (middle) and Co (right). Filled circles display all data points below 50 m depth, open circles at depths shallower than 50 m.



**Figure S2.** Dissolved and leachable particulate Fe to Al ratios for repeat profiles at station 3 (A+B) and station 8 (A+B) and dissolved and leachable particulate Co and Mn to Al ratios for repeated profiles at station 3 (A+B).