

Supplement of Biogeosciences, 17, 3685–3704, 2020
<https://doi.org/10.5194/bg-17-3685-2020-supplement>
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Supplement of

The control of hydrogen sulfide on benthic iron and cadmium fluxes in the oxygen minimum zone off Peru

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1 **Supplement**

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3 **Table S1: Input data from M136 & M137 for diffusive flux calculations.**

station	Fe(II) concentration bottom water	Fe(II) concentration in pore water at sediment surface	Cd concentration bottom water	Cd concentration in pore water at sediment surface	porosity	temperature	pressure	salinity
	(μM)	(μM)	(nM)	(nM)		($^{\circ}\text{C}$)	(bar)	
1	0.10	1.06	0.22	0.90	0.93	16.17	8.77	35.06
3	0.17	0.47	0.81	0.65	0.95	13.96	13.90	34.97
4	0.00	6.34	0.66	0.47	0.96	13.96	15.40	34.97
5	0.00	0.59	0.68	0.44	0.96	13.21	20.40	34.92
6	0.06	3.14	0.76	0.55	0.95	13.33	25.60	34.94
9	0.00	0.00	0.99	1.25	0.74	6.28	75.00	34.55
10	0.01	0.37	-	-	0.61	4.36	98.20	34.55

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7 **Table S2: Input data from M92 for diffusive flux calculations.**

station	Fe(II) concentration in bottom water	Fe(II) concentration in pore water sediment surface	porosity	temperature	pressure	salinity
	(μM)	(μM)		($^{\circ}\text{C}$)	(bar)	
1	0.70	4.83	0.96	13.99	8.1	34.98
3	0.21	0.77	0.98	13.84	13.90	34.98
4	1.15	1.80	0.96	13.77	15.50	34.96
5	0.03	0.31	0.96	13.16	20.50	34.94
6	0.20	2.13	0.96	13.16	25.40	34.94
9	0.03	0.03	0.84	5.17	78.30	34.54
10	0.00	0.06	0.74	4.62	103.4	34.55

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9 Table S3: Silicic acid (Si(OH)₄) concentrations in the near-bottom water column.

	Station 1	Station 3	Station 4	Station 5	Station 6	Station 9
distance from seafloor	Si(OH) ₄ concentration	Si(OH) ₄ concentration	Si(OH) ₄ concentration	Si(OH) ₄ concentration	Si(OH) ₄ concentration	Si(OH) ₄ concentration
(m)	(μM)	(μM)	(μM)	(μM)	(μM)	(μM)
0.5	31.28	29.74	24.86	24.32	27.28	-
1	31.63	29.22	24.51	24.20	27.14	56.22
2	-	29.2	23.61	24.35	27.02	56.04
3	31.38	28.66	24.36	-	-	55.96
4	31.27	28.17	24.20	24.00	27.04	55.44

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13 Table S4: Equations for linear regressions from benthic chamber incubation data (Y =
14 concentration, X = incubation time) and coefficients of determination (R²).

station	Fe	Fe	Cd	Cd
	linear regression	R ²	linear regression	R ²
1	Y = 0.88 * X + 186.18	0.01	Y = 0.00 * X + 0.068	0.06
4	Y = 4.78 * X + 7.07	0.72	Y = -0.01 * X + 0.55	0.96
5	Y = -0.89 * X + 89.28	0.1	Y = -0.01 * X + 0.53	0.89
6	Y = 2.32 * X + 57.34	0.47	Y = -0.01 * X + 0.58	0.87
9	Y = 2.95 * X + 76.38	0.49	Y = 0.00 * X + 1.01	0.36
10	Y = 0.67 * X + 28.20	0.12	Y = 0.00 * X + 0.99	0.07

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19 **Figure captions**

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21 Fig. S1: Close up of pore water dissolved Fe(II) and hydrogen sulfide concentrations
22 in the first 5 cm of the surface sediment. Data from an earlier cruise, M92, at Station
23 1 (75 m water depth) are displayed for comparison. The uppermost sample
24 represents the bottom water concentration. The analytical error is smaller than the
25 symbol size.

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27 Fig. S2: Close up of pore water dissolved Cd and hydrogen sulfide concentrations in
28 the first 5 cm of the surface sediment. The uppermost sample represents the bottom
29 water concentrations. The analytical error is smaller than the symbol size.

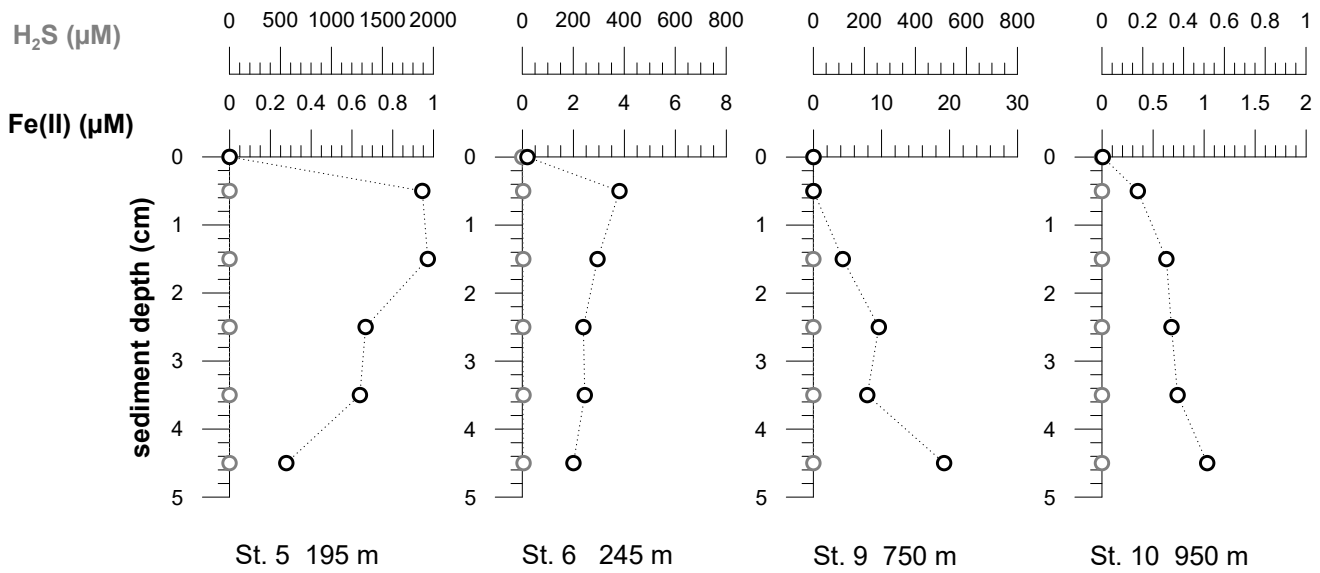
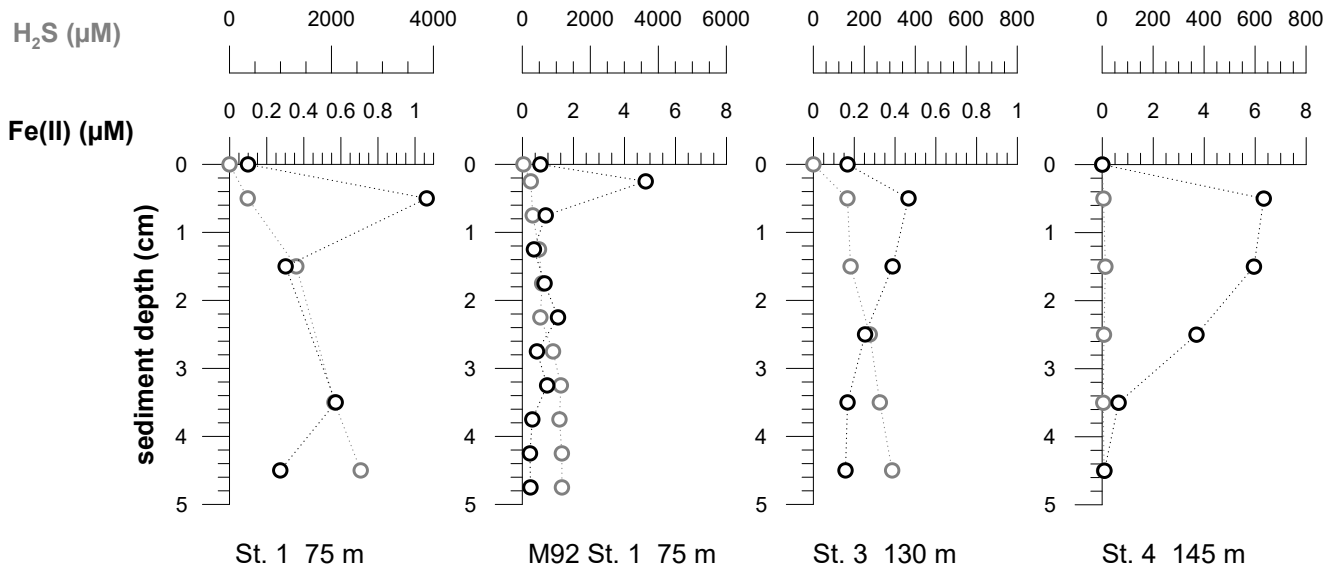


Fig. S1

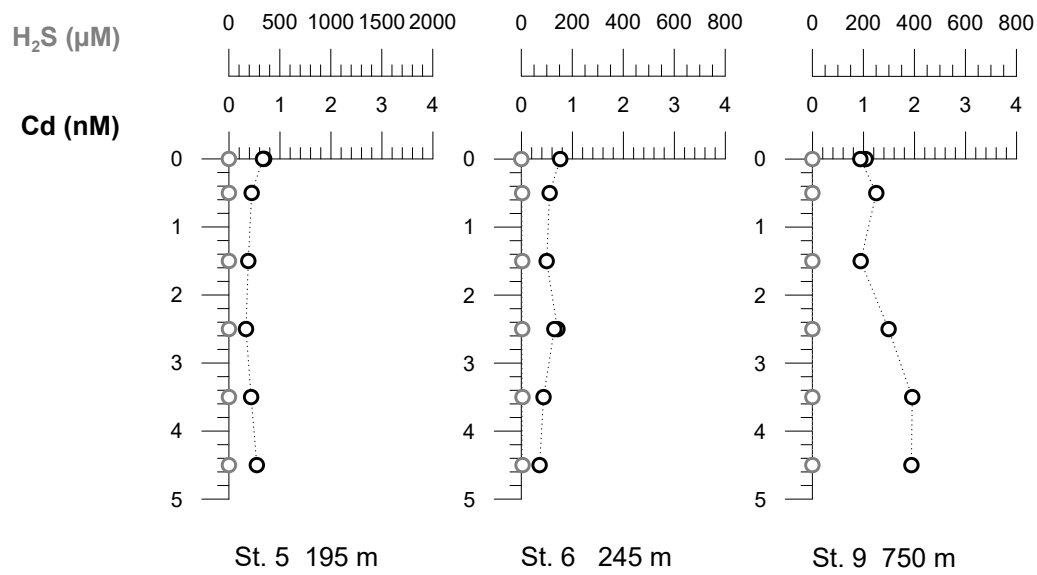
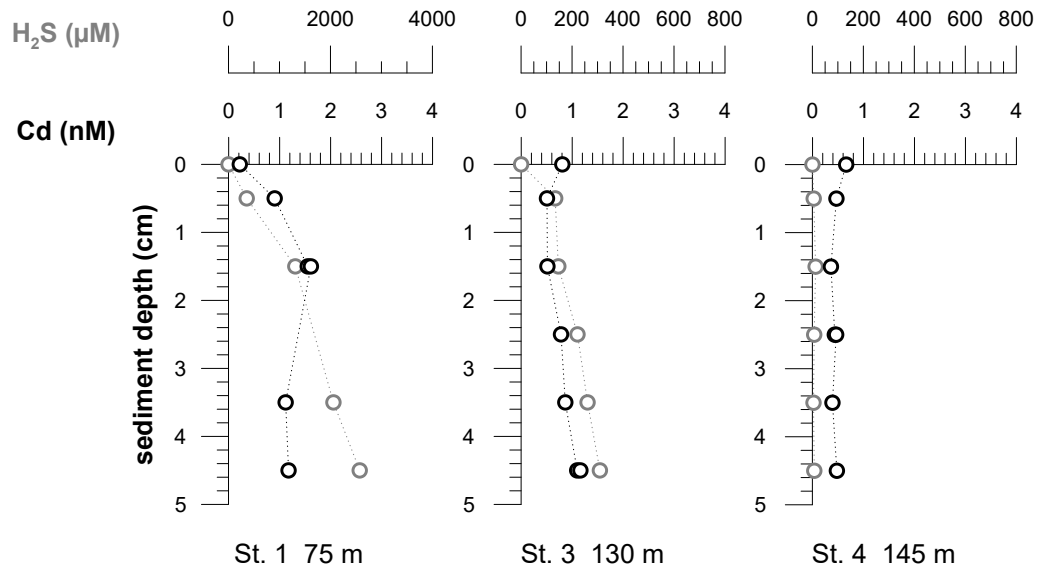


Fig. S2