

Supporting Information (SI)

Title: Physical and Ecological Controls on Freshwater Floc Trace Metal Dynamics

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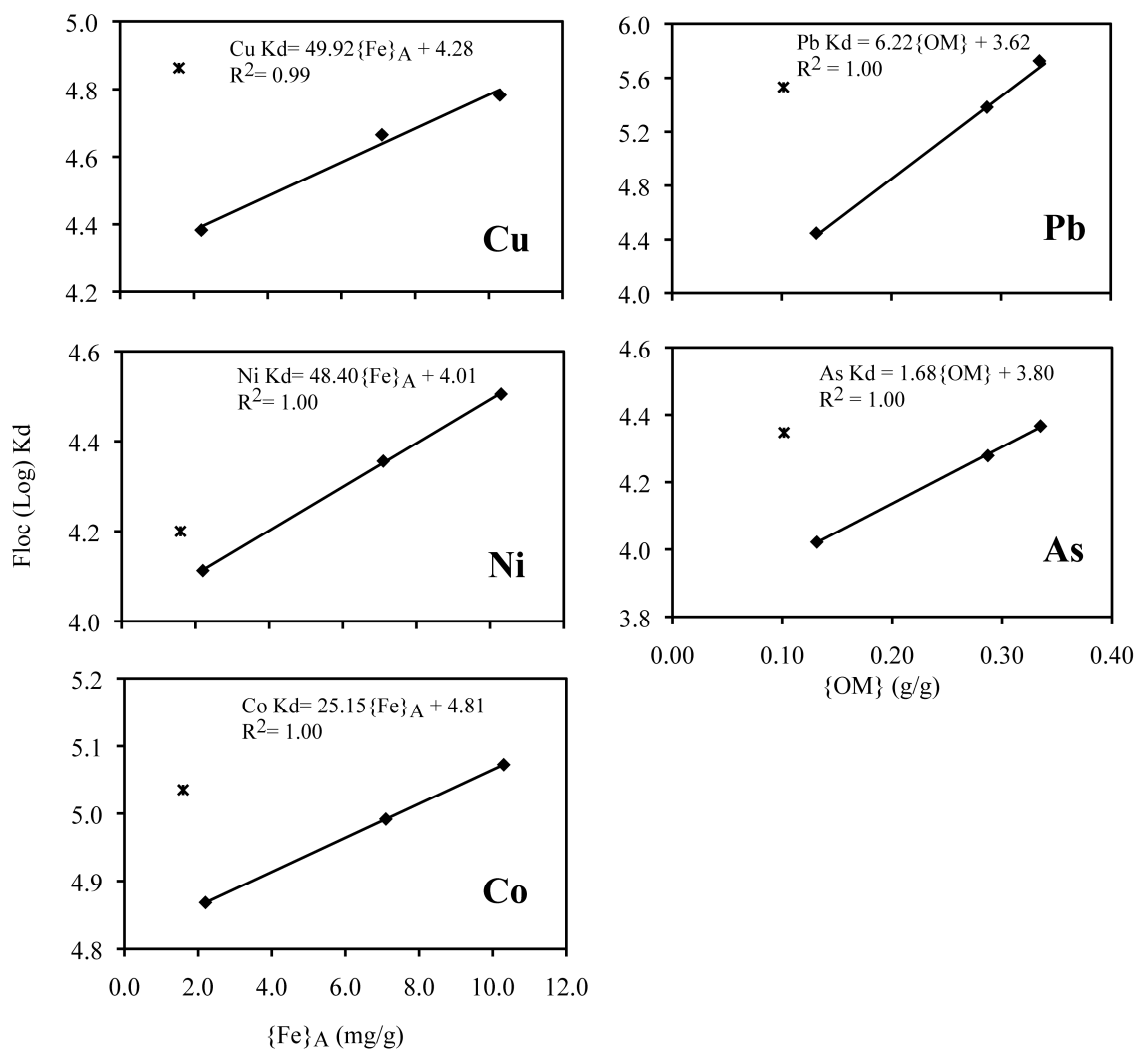


FIGURE S1: Distribution coefficients (Kd) versus floc {Fe}_A and {OM}. Calm-floc (◆) and storm-floc (×).

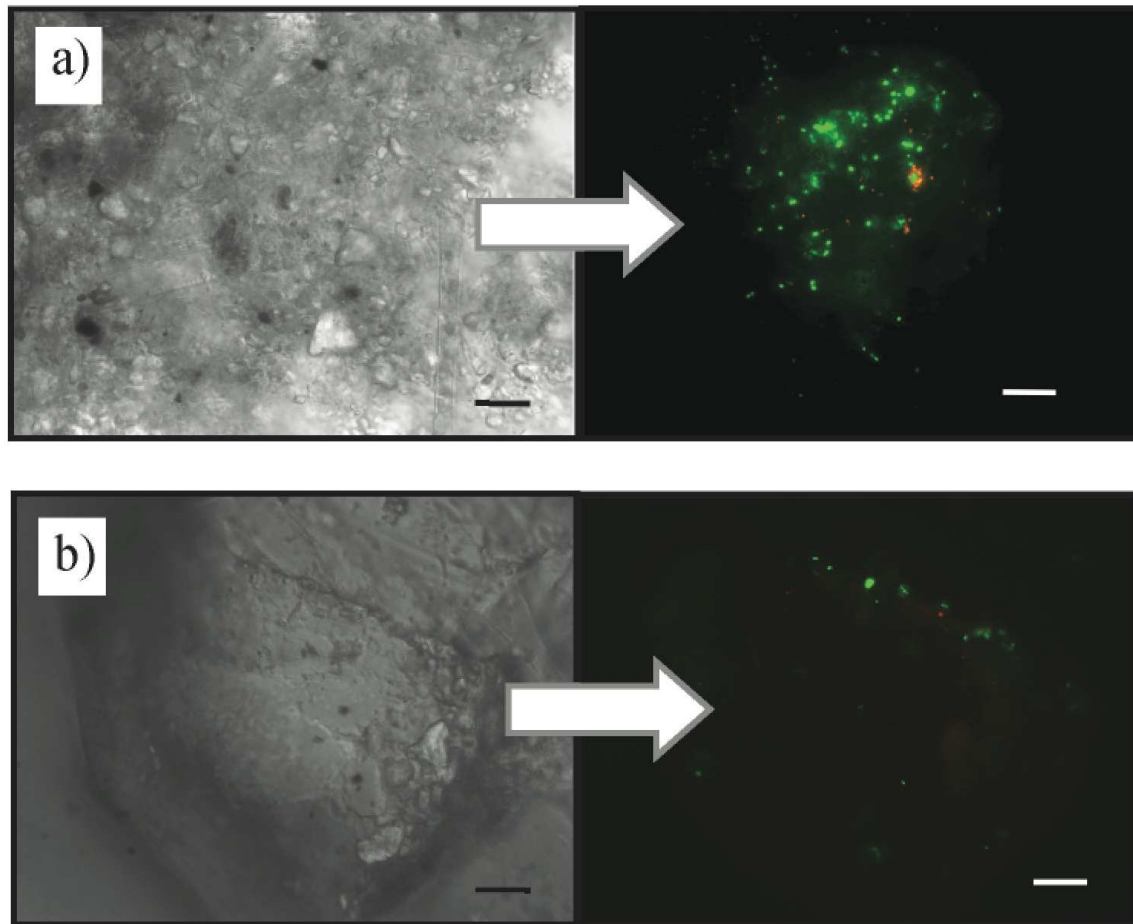


FIGURE S2: Live (green) and dead (red) microbial community of floc (a) and bed sediments (b). Scale represents 10 μ m.

TABLE S1. Physico-chemical conditions of flocc environment (0.5m above sediment-water interface) and mean metal- reactive constituents of flocc and surficial bed sediments

		July 21, 2009	May 13, 2009	May 14, 2009	May 13, 2008
		Calm-1	Calm-2	Storm	Post-Storm
Wind Speed	8hr mean, range (Km h ⁻¹)	15, 9- 20	22, 17- 26	35, 13-55	11, 6- 15
	48hr mean, range (Km h ⁻¹)	9, 4- 17	11, 0- 20	13, 4- 26	16, 0- 44
source: http://www.weatheroffice.gc.ca/canada_e.html					
Water	[As] _D (nmolL ⁻¹)	11	13	13	12
	[Cu] _D (nmolL ⁻¹)	19	25	15	24
	[Co] _D (nmolL ⁻¹)	1.4 ^a	2	2	1.4 ^a
	[Ni] _D (nmolL ⁻¹)	33	38	33	17
	[Pb] _D (nmolL ⁻¹)	0.3 ^a	5	1	7
	Temp (°C)	13.95	10.74	9.98	8.51
	pH	7.94	7.90	7.36	7.66
	DO (mgL ⁻¹)	12.9	12.7	13.5	12.2
	SPC (µScm ⁻¹)	305.3	348.9	347.1	340.8
	SS (mgL ⁻¹)	1.38 ± 0.1	1.67 ± 0.2	101 ± 13	1.37 ± 0.01
	DIC (mgL ⁻¹)	23.5 ± 0.25	23.1 ± 0.4	23 ± 0.4	23.5 ± 0.25
	DOC (mgL ⁻¹)	2.97 ± 0.38	2.57 ± 0.06	2.36 ± 0.06	2.97 ± 0.38
	[Fe] (mgL ⁻¹)	0.02 ± 0.01	0.01 ± 0.00	0.06 ± 0.01	0.01 ± 0.00
	Limit of quantification (LOQ)= ((average of zeros) + ((standard deviation of zeros) x3)) x3				
LOQ= 0.05, 8, 14, 1.4,13 and 0.3 nmol L ⁻¹ for Ag, As, Cu, Co, Ni and Pb respectively					
^a procedural quantification value, used to generate Kds					
Floc^b	Carbonates (g g ⁻¹)	0.05	0.09	0.12	0.21
	{Fe} _A (mg g ⁻¹)	7.1	2.2	1.6	10.3
	{Fe} _C (mg g ⁻¹)	4.9	5.8	11.3	3.6
	{Mn} _A (mg g ⁻¹)	0.15	0.36	0.25	0.28
	{Mn} _C (mg g ⁻¹)	0.08	0.02	0.15	0.02
	Organic C (g g ⁻¹)	0.33	0.13	0.10	0.29
Surficial Bed^b	Carbonates (g g ⁻¹)	0.01	0.06	0.04	0.07
	{Fe} _A (mg g ⁻¹)	0.14	0.60	0.37	1.1
	{Fe} _C (mg g ⁻¹)	1.2	1.2	1.5	1.3
	{Mn} _A (mg g ⁻¹)	0.07	0.09	0.09	0.03
	{Mn} _C (mg g ⁻¹)	0.04	0.03	0.03	0.01
	Organic C (g g ⁻¹)	0.01	0.01	0.01	0.01
^b mean values (n=3). Standard deviation Organic C, Carboante=10 ⁻¹ , {Fe} _A =10 ⁻⁴ , {Fe} _C =10 ⁻² , {Mn} _A =10 ⁻² , {Mn} _C =10 ⁻²					

TABLE S2. Floc and surficial bed sediment concentration factors (CF)

		Calm-1	Calm-2	Storm	Post-Storm
Ag	Floc {Fe} _A	14	4.5	*	0.47
	{Fe} _C	0.38	0	0.70	0.39
	{OM}	*	*	0.01	*
	Bed {Fe} _A	*	0.46	*	0.01
	{Fe} _C	1.5	2.2	1.5	0.05
	{OM}	0.01	0.06	0.02	*
As	Floc {Fe} _A	6.0	25	9.0	8.7
	{Fe} _C	6.2	8.5	20	7.6
	{OM}	0.06	0.07	0.06	0.07
	Bed {Fe} _A	2.3	9.9	6.8	1.7
	{Fe} _C	32	21	6.7	18
	{OM}	0.22	0.18	0.13	0.23
Co	Floc {Fe} _A	5.6	42	4.1	7.8
	{Fe} _C	9.0	5.3	6.0	11
	{OM}	0.02	0.02	1.0	0.03
	Bed {Fe} _A	1.6	7.5	0.79	0.75
	{Fe} _C	14	8.4	3.1	2.6
	{OM}	0.31	0.22	0.11	0.15
Cu	Floc {Fe} _A	19	103	6.8	47
	{Fe} _C	43	19	59	44
	{OM}	1.1	1	1.9	1.5
	Bed {Fe} _A	1.6	6	*	1.4
	{Fe} _C	48	18	*	5.0
	{OM}	1.5	0.48	0.34	1.2
Ni	Floc {Fe} _A	18	117	33	23
	{Fe} _C	84	17	23	35
	{OM}	0.14	0.19	0.37	0.09
	Bed {Fe} _A	26	29	37	2.3
	{Fe} _C	70	19	12	7.3
	{OM}	2	0	0.49	0.47
Pb	Floc {Fe} _A	9.7	51	38	8.1
	{Fe} _C	3.9	3.4	20	5.2
	{OM}	0.01	*	0.07	0.01
	Bed {Fe} _A	2.4	4.8	56	0.4
	{Fe} _C	17	2.5	20	0.6
	{OM}	0.08	0.02	*	0.02

* no metal associated with sediment fraction