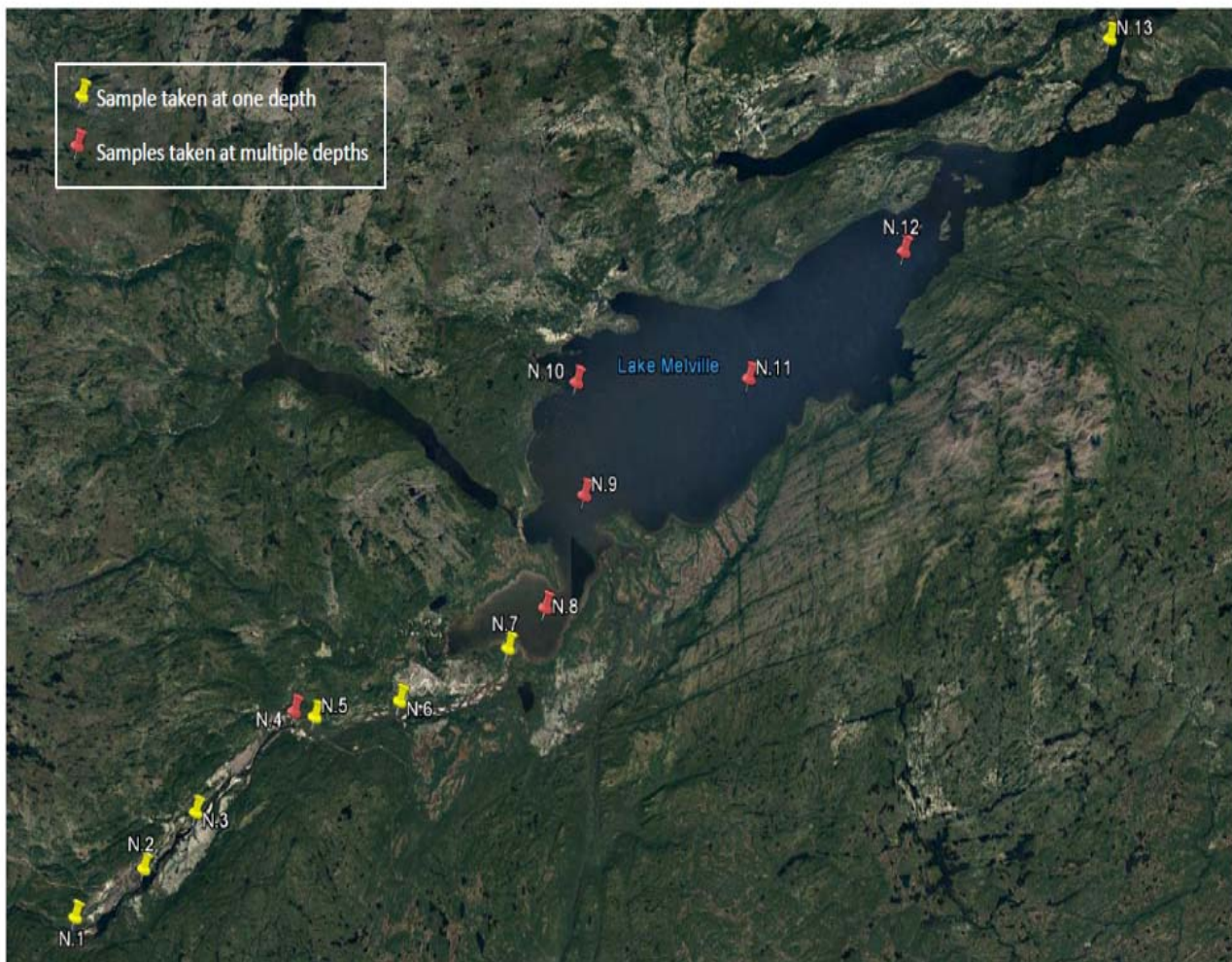


MeHg Generation in MFR

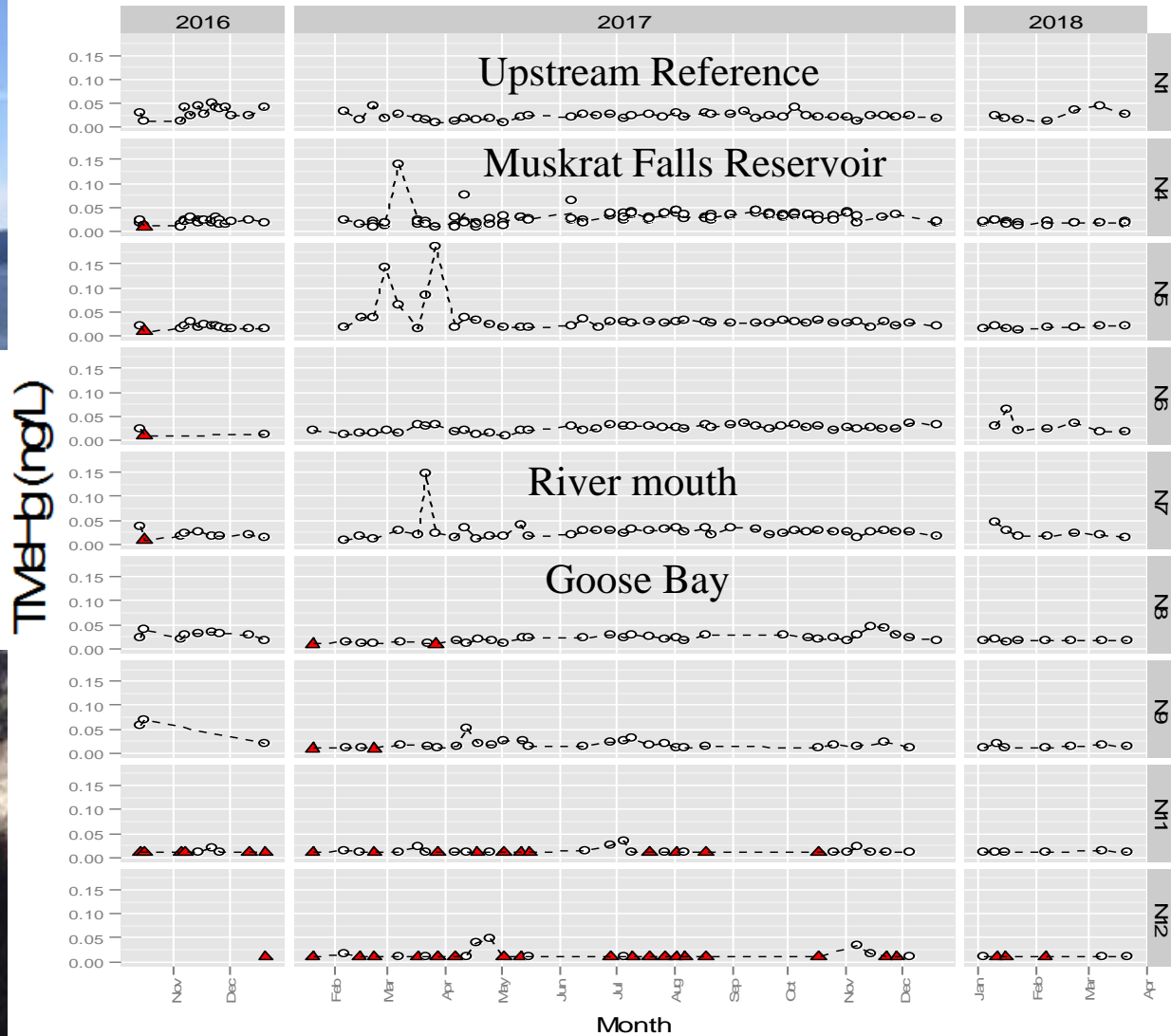
Summary of Water Results December 2017 – May 2018

St. John's Nfld., June 28

Water Quality Monitoring Results



- Weekly water quality monitoring for TSS, conventionals, DOC, THg, TMeHg, DMeHg
- Surface + depth at N4, N8, N9, N10, N11, N12
- Reduced to twice monthly in 2018



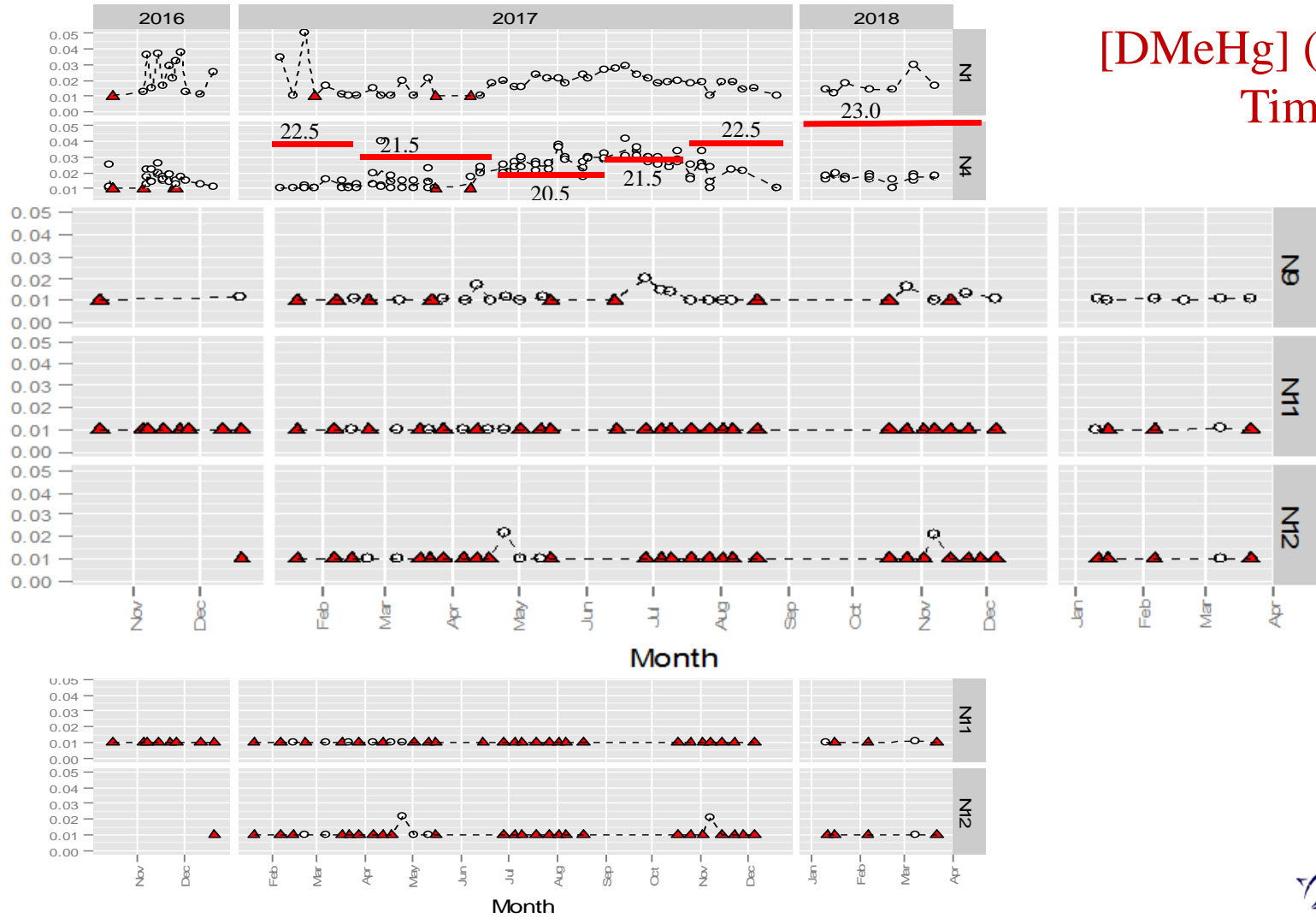
[TMeHg] (ng/L) vs Time

- Low, uniform concentrations at all stations
- Higher concentrations in summer at all stns
- Most at N11, N12 are non-detect





23.5 – Elevation (m asl)



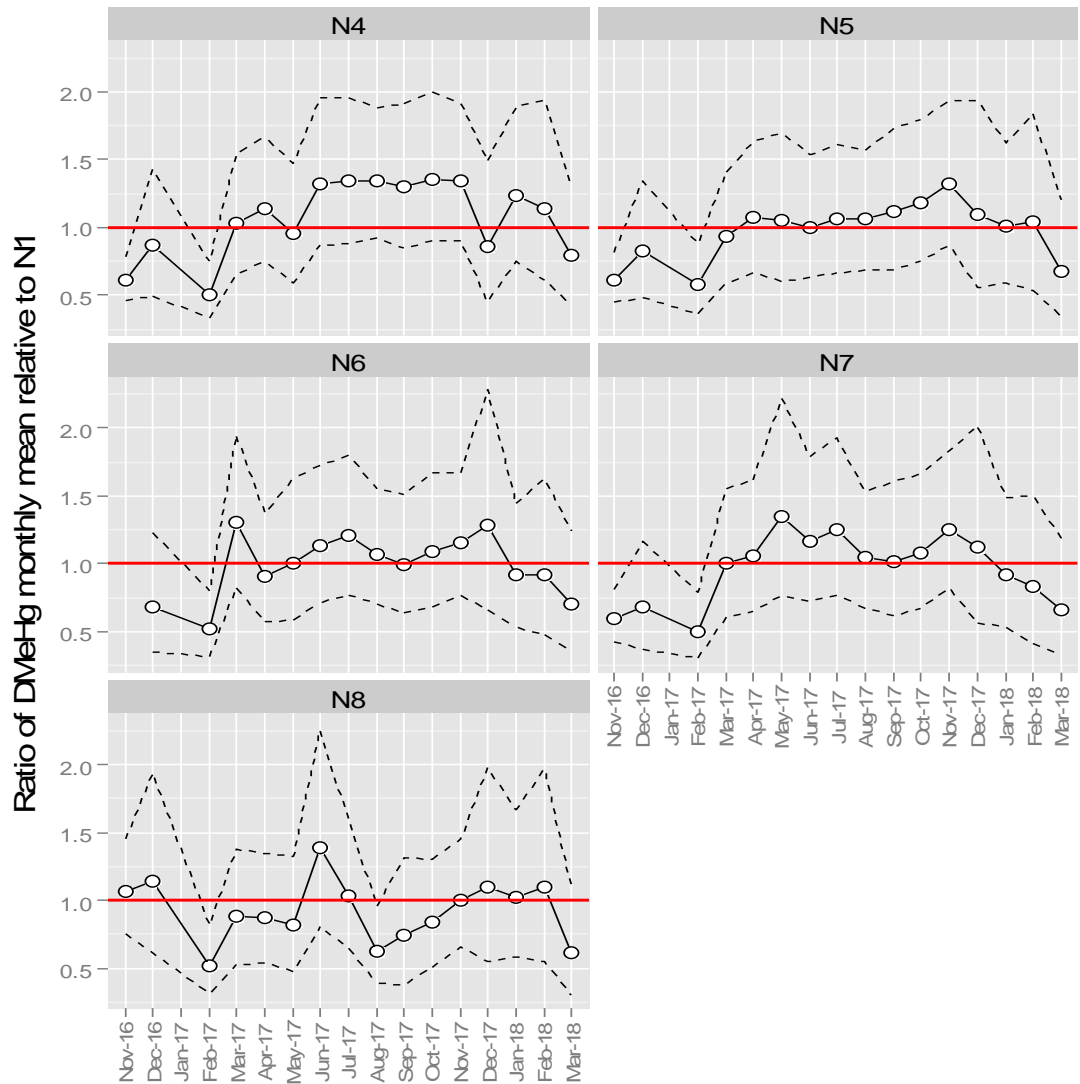
[DMeHg] (ng/L) vs Time

ated MeHg [1

centrations at all stns

[DMeHg] are non-





Ratio of mean monthly [DMeHg] (ng/L) at N4 – N8 vs Station N1

- Distinct ‘signal’ at N4 but diminishes moving downstream
- Minimal difference at N7
- No difference in [DMeHg] between N1 and Goose Bay (N9)

Net mass export (gm) of TMeHg from MFR to Goose Bay

Total Methylmercury				Concentration (ng/L)				Monthly Mass (g)				Net Mass	
Month	Days/ Month	Discharge (m3/s)		N1	N4	N5	N7	N1	N4	N5	N7	Net Mass	Net Mass
												Net Mass (g)	Net Mass (g)
Feb-17	28	1938		0.028	0.016	0.059	0.012	129	75	277	58	-71	
Mar-17	31	1999		0.017	0.032	0.087	0.056	91	173	466	297	206	
Apr-17	30	1286		0.017	0.023	0.028	0.020	55	77	92	66	11	11
May-17	31	2573		0.018	0.025	0.017	0.025	124	172	119	172	48	48
Jun-17	30	1904		0.025	0.031	0.026	0.027	125	154	126	132	7	7
Jul-17	31	1497		0.023	0.033	0.028	0.029	90	133	111	116	26	26
Aug-17	31	1617		0.027	0.033	0.028	0.030	116	142	123	132	16	16
Sep-17	30	1595		0.023	0.036	0.027	0.025	96	151	113	103	7	7
Oct-17	31	1481		0.028	0.031	0.028	0.028	109	123	112	109	0	0
Nov-17	30	1825		0.021	0.031	0.025	0.024	99	147	119	112	12	12
Dec-17	31	2119		0.021	0.019	0.023	0.022	119	110	131	122	3	3
Jan-18	31	2130		0.019	0.019	0.016	0.031	108	108	90	177	68	68
Feb-18	28	2087		0.024	0.018	0.018	0.020	119	90	91	98	-20	-20
Mar-18	31	2085		0.035	0.018	0.021	0.017	193	99	117	92	-101	
Apr-18	30	1258		0.032	0.023	0.023	0.024	104	75	75	78	-26	-26
May-18	31	2573		0.023	0.026	0.022	0.024	158	179	152	166	8	8
Total Mass (g)								1835	2005	2314	2031	187	179

Net mass export (gm) of DMeHg from MFR to Goose Bay

Dissolved Methylmercury													
Month	Days/ Month	Discharge (m3/s)	Concentration (ng/L)				Monthly Mass (g)				Net Mass	Net Mass	
			N1	N4	N5	N7	N1	N4	N5	N7			
Feb-17	28	1938	0.026	0.010	0.012	0.010	123	48	55	47	-76		
Mar-17	31	1999	0.012	0.012	0.011	0.012	64	64	58	62	-3	-3	
Apr-17	30	1286	0.014	0.016	0.015	0.014	46	53	48	48	2	2	
May-17	31	2573	0.014	0.012	0.014	0.018	94	86	96	122	28	28	
Jun-17	30	1904	0.015	0.019	0.014	0.017	72	93	69	81	10	10	
Jul-17	31	1497	0.019	0.025	0.020	0.023	77	101	80	93	16	16	
Aug-17	31	1617	0.022	0.029	0.023	0.023	96	128	100	100	3	3	
Sep-17	30	1595	0.026	0.032	0.027	0.025	105	134	113	103	-2	-2	
Oct-17	31	1481	0.019	0.025	0.022	0.021	74	101	86	82	8	8	
Nov-17	30	1825	0.016	0.022	0.020	0.019	77	103	96	92	15	15	
Dec-17	31	2119	0.013	0.010	0.013	0.014	71	57	74	77	6	6	
Jan-18	31	2130	0.015	0.017	0.014	0.013	84	100	82	74	-10	-10	
Feb-18	28	2087	0.014	0.016	0.014	0.011	71	79	71	56	-15	-15	
Mar-18	31	2085	0.024	0.017	0.015	0.014	131	96	81	78	-53		
Apr-18	30	1258	0.020	0.017	0.018	0.013	65	55	59	42	-23	-23	
May-18	31	2573	0.022	0.023	0.018	0.024	151	158	124	165	14	14	
Total Mass (g)												-80	49

Water Chemistry Conclusions

- Strong seasonal component with higher DMeHg in ‘summer’ at all stations
- A measurable difference / contribution of MeHg between N1 & N4
- At 21 – 23 m elevation, 6 – 13% of organic soil total (30 km²) is inundated, with net load to Goose Bay of **179 gm** of TMeHg of which only **49 gm** is DMeHg over ~15 months
- Possibly see a greater export during forthcoming summer months
- BUT, at this amount of flooding the mass export vs Calder et al prediction is much less (e.g., 7 kg/y at 38 m or ~1 kg at 23 m)