

Air Quality Monitoring Results

Supplementary Data

2017

New Brunswick
Department of Environment
and Local Government



**New Brunswick Department of Environment and Local Government
Environmental Reporting Series
2019**

ISBN 978-1-4605-2362-9

ISSN 2368-9692

This report provides detailed, site-specific air quality information, and is provided as a companion document to the Department of Environment and Local Government's "Air Quality Monitoring Results 2017" report, which is available electronically via the DELG website:

www.gnb.ca/environment

Feedback

We are interested in your feedback on this report. All suggestions will be considered, and if possible, incorporated in future reports. You may contact the Air and Water Sciences Branch, Department of Environment and Local Government (DELG) at elg/egl-info@gnb.ca with any comments.

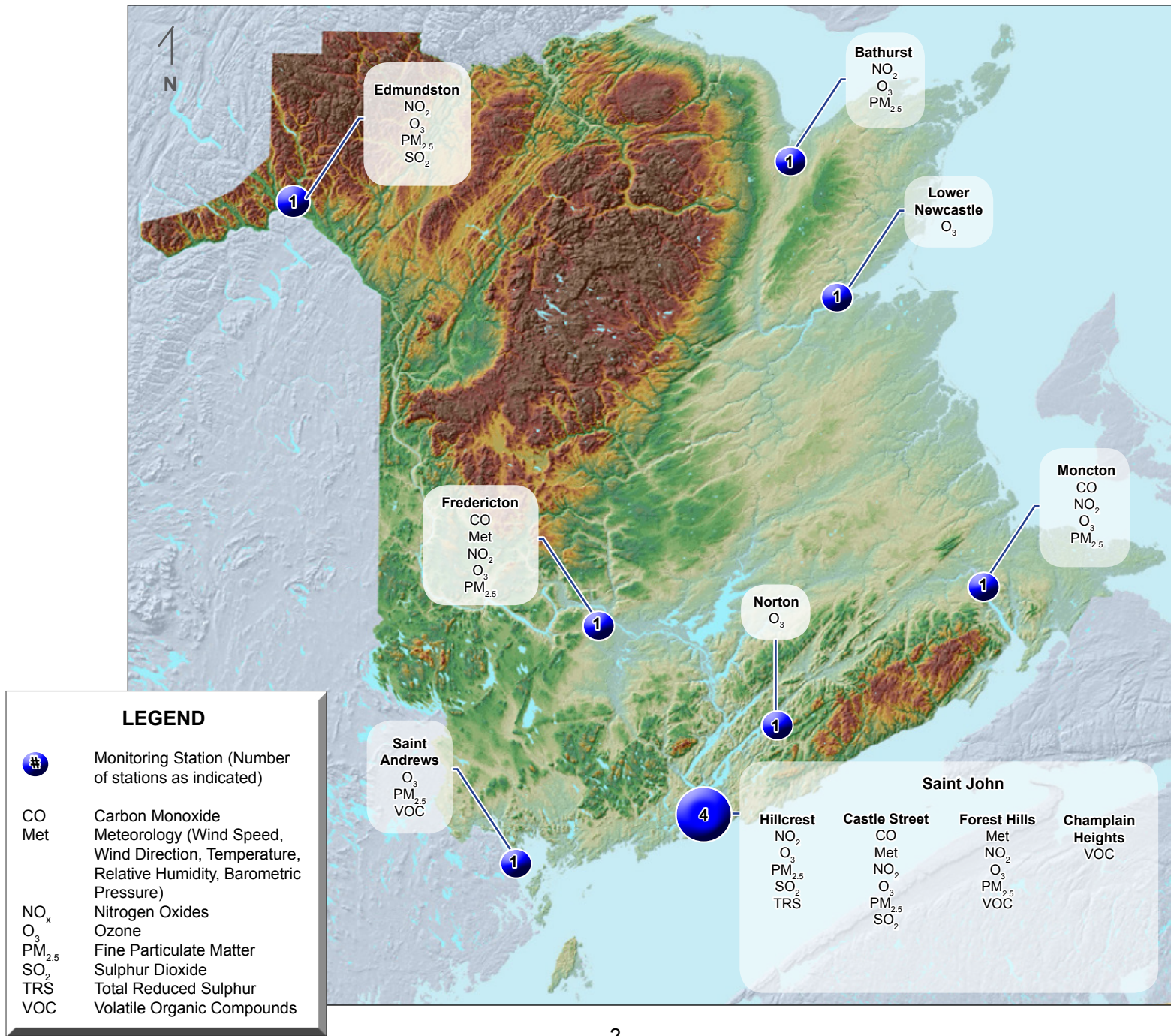
TABLE OF CONTENTS

PART I: THE PROVINCIAL AIR QUALITY MONITORING NETWORK: Stations Operated by the Province.....	1
Network Map - New Brunswick Air Quality Monitoring Network, Stations Operated by the Province.....	2
Continuous Air Quality Monitoring Results.....	3
Carbon Monoxide.....	3
Nitrogen Dioxide.....	4
Ozone.....	6
Fine Particulate Matter.....	9
Sulphur Dioxide.....	11
Total Reduced Sulphur.....	12
Volatile Organic Compounds, Saint John Region.....	13
Air Toxics.....	13
Ozone Depleting Substances.....	14
Smog-Forming.....	15
PART II: ACID PRECIPITATION MONITORING NETWORK.....	16
Network Map - New Brunswick Acid Precipitation Monitoring Network.....	17
Sulphate and Nitrate Deposition Trends.....	18
Network-wide Annual Mean Sulphate and Nitrate Concentration Trends.....	21
PART III: THE PROVINCIAL AIR QUALITY MONITORING NETWORK: Stations Operated by Industry.....	24
Network Map - New Brunswick Air Quality Monitoring Network, Stations Operated by Industry.....	25
Industry-Operated Monitoring Network Results.....	26
Glencore, Belledune.....	26
NB Power, Belledune.....	28
NB Power, Millbank.....	32
NB Power, Coleson Cove.....	35
Irving Oil Ltd., Saint John.....	37
Irving Pulp and Paper, Saint John.....	42
Irving Pulp and Paper, Lake Utopia.....	43
Twin Rivers Paper Company, Edmundston.....	44
AV Nackawic, Nackawic.....	45
AV Cell, Atholville.....	46
Arbec Forest Products, Miramichi.....	47
PART IV: DETAILED STATION LOCATION MAPS.....	48
Saint John Region.....	49
Atholville and Belledune.....	50
Edmundston and Lower Newcastle.....	51

List of Acronyms and Abbreviations

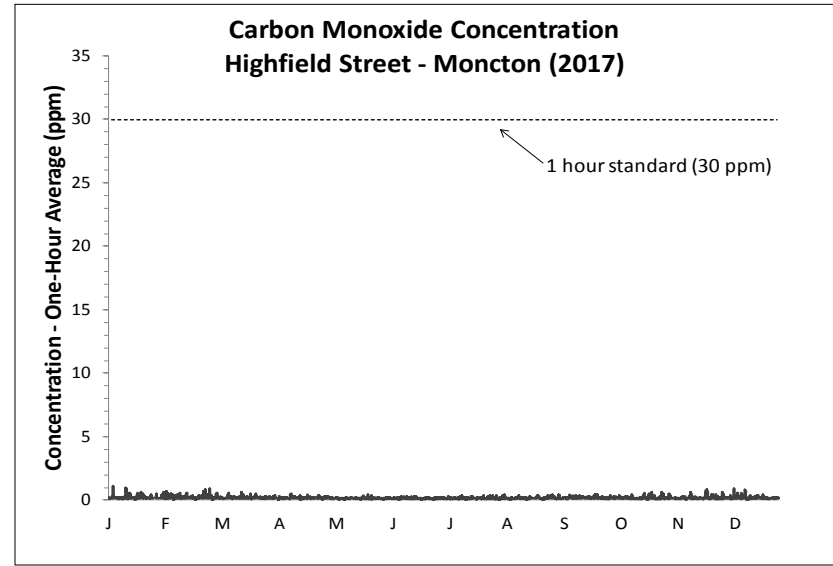
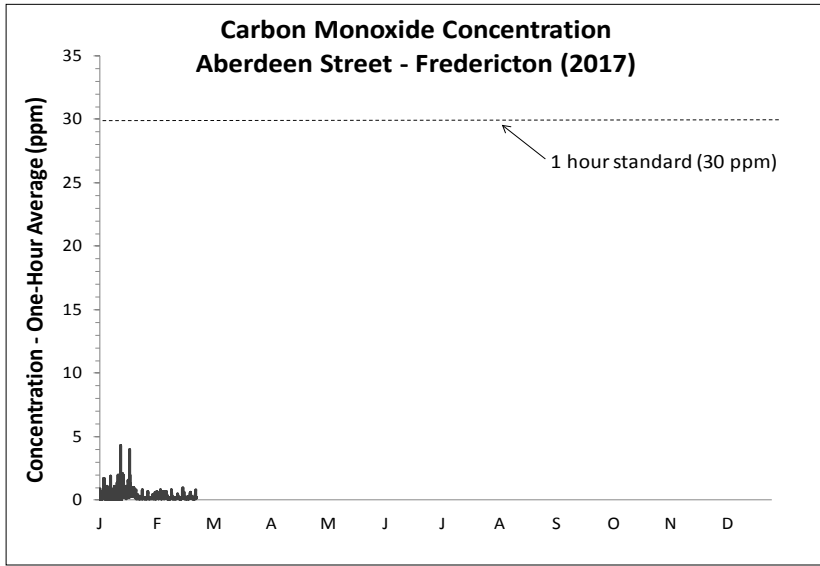
CO	Carbon Monoxide
eq/ha/yr	Equivalents (molar equivalent acidity) per hectare per year
PM _{2.5}	Fine Particulate Matter (less than 2.5 microns)
H ₂ S	Hydrogen Sulphide
kg/ha/yr	Kilograms per hectare per year
Met	Meteorology (Wind Speed, Wind Direction, Temperature, Relative Humidity, Barometric pressure)
µg/m ³	Micrograms per cubic meter
meq/L	Milliequivalents (molar equivalent acidity) per litre
mg/L	Milligrams per litre
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
O ₃	Ozone
ppb	Parts per billion
ppm	Parts per million
SO ₂	Sulphur Dioxide
TRS	Total Reduced Sulphur
TSP	Total Suspended Particulate
VOC	Volatile Organic Compound

PART I:
THE PROVINCIAL AIR QUALITY MONITORING NETWORK:
STATIONS OPERATED BY THE PROVINCE

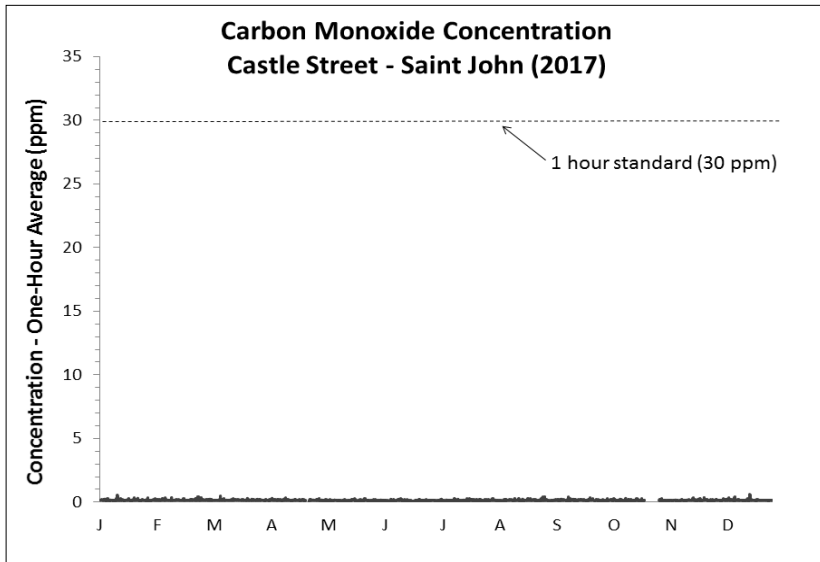


PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Carbon Monoxide

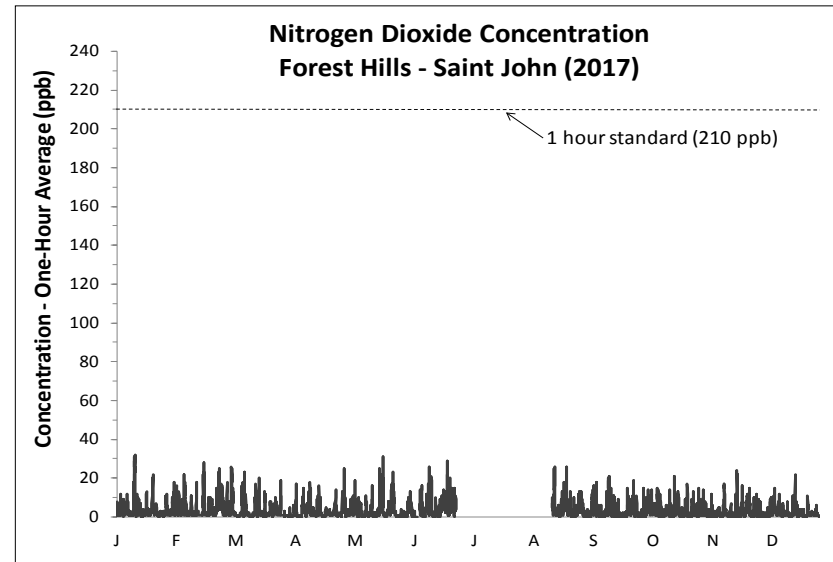
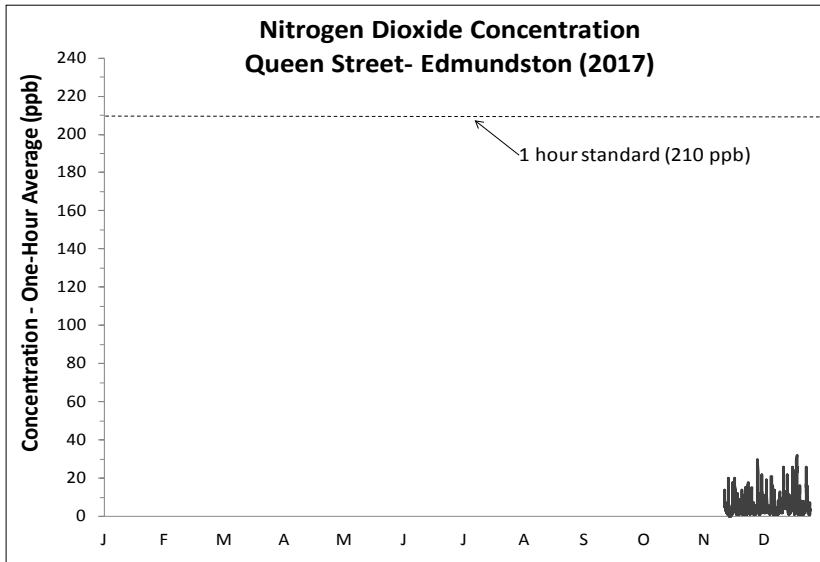
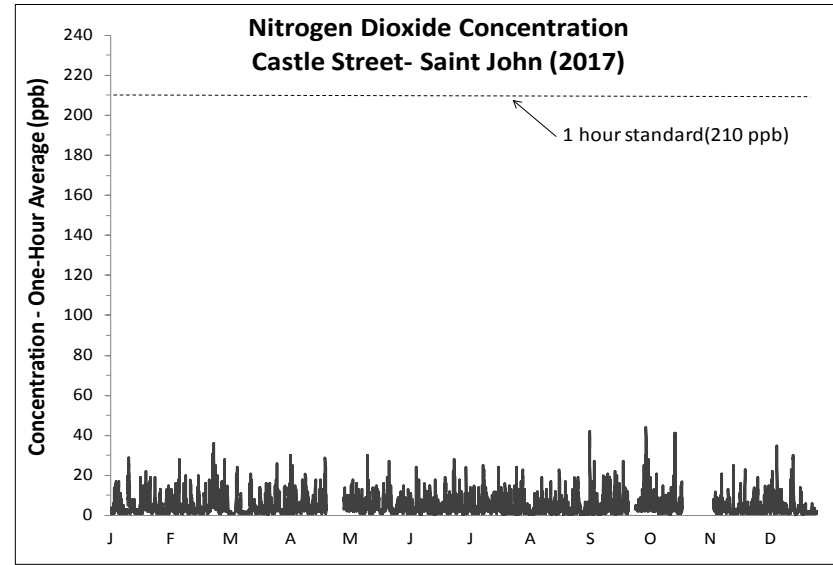
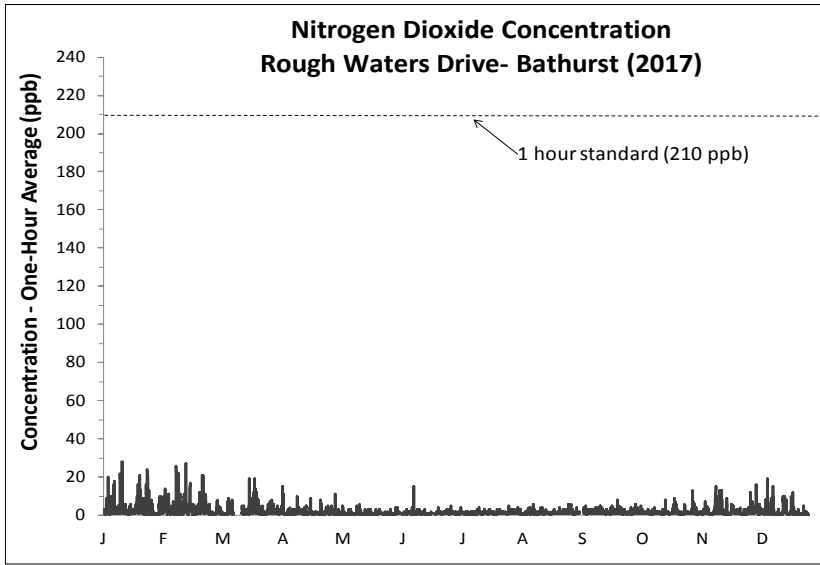


*Note: Fredericton station moved to Needham Street as of July 2017



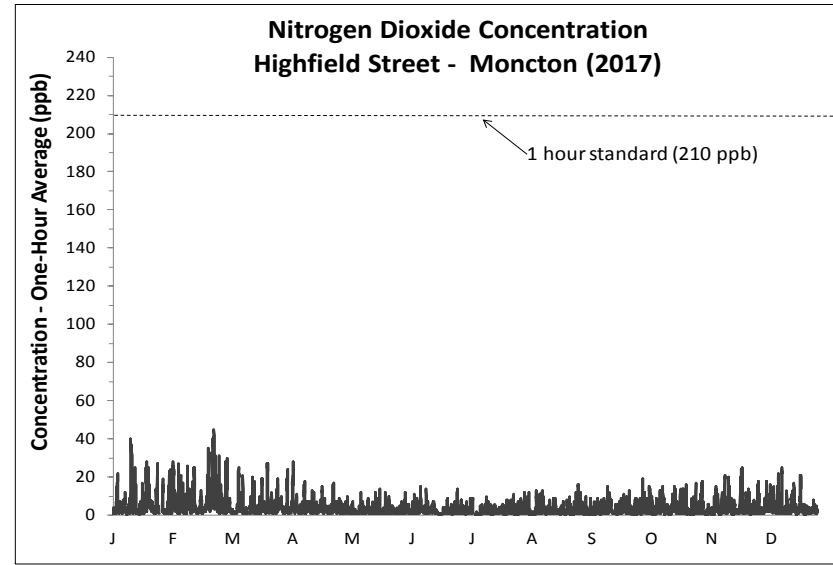
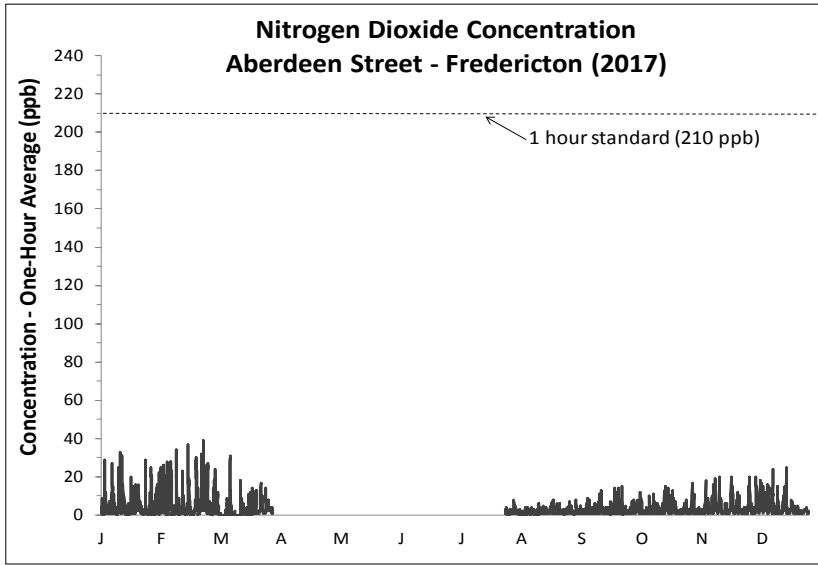
PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Nitrogen Dioxide

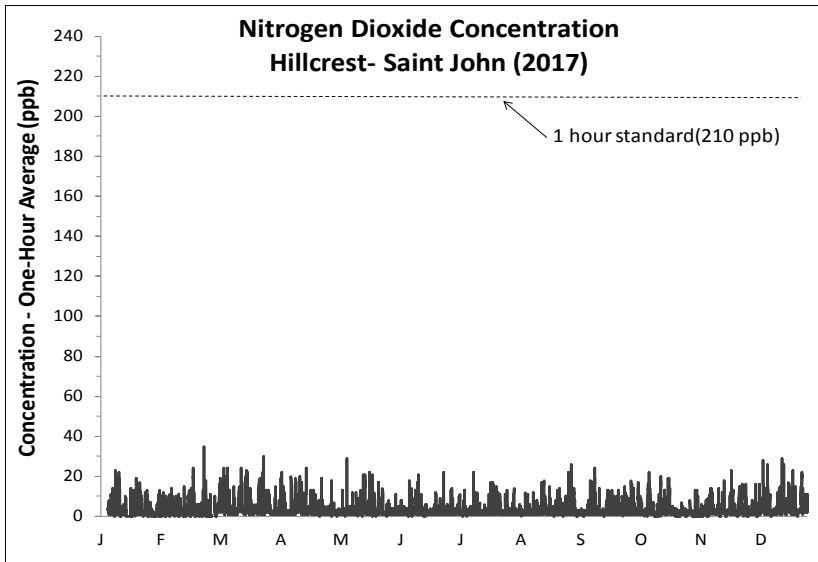


PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Nitrogen Dioxide

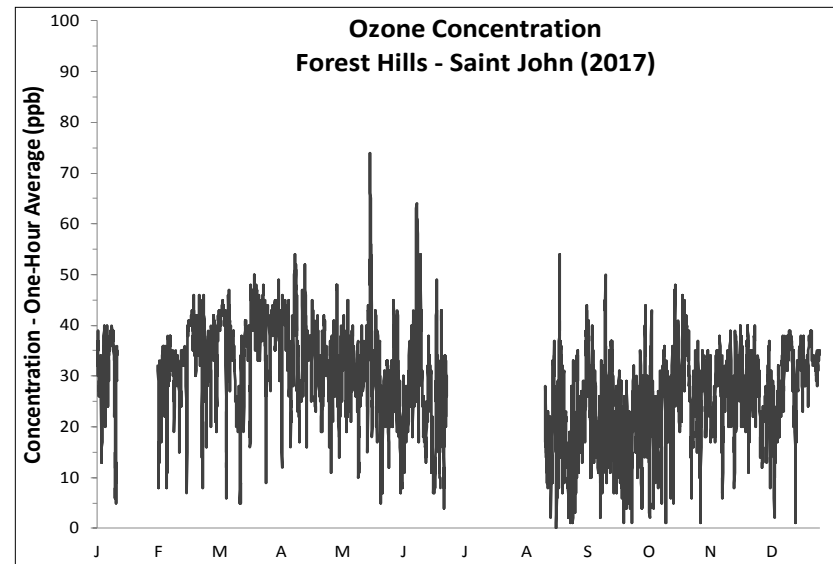
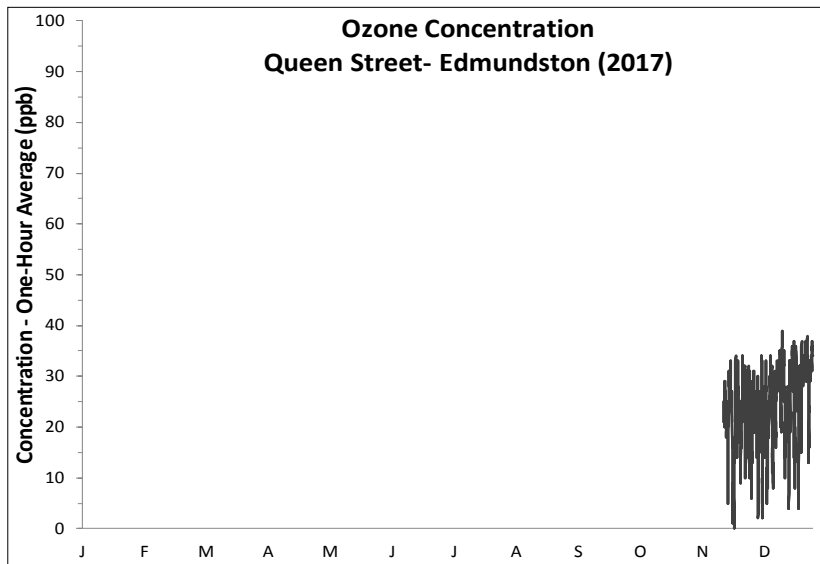
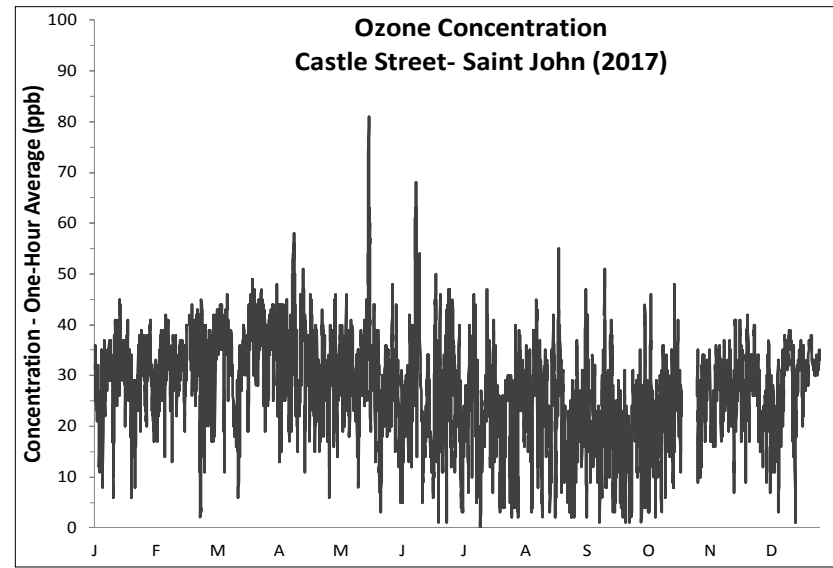
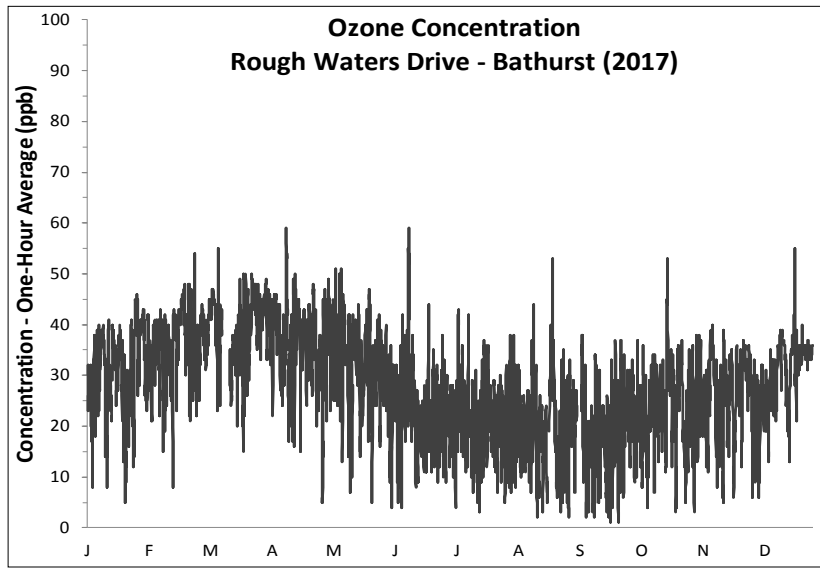


*Note: Fredericton station moved to Needham Street as of July 2017



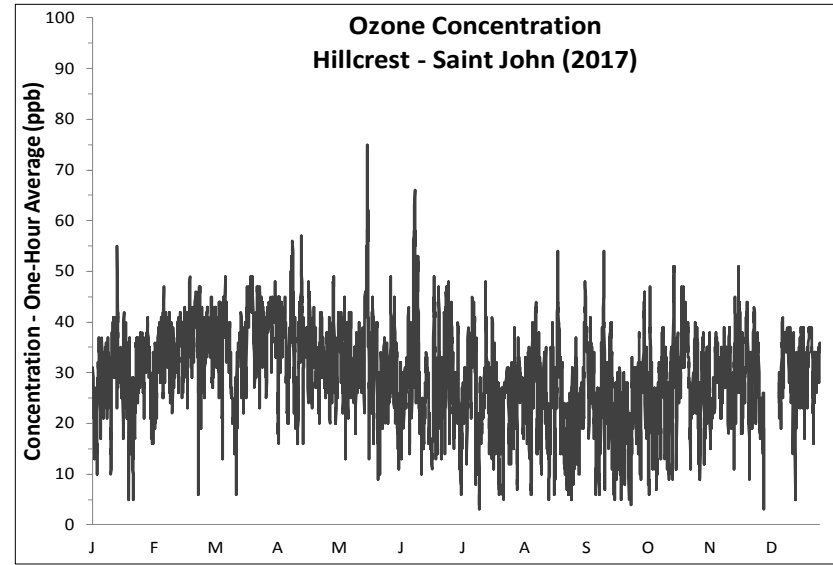
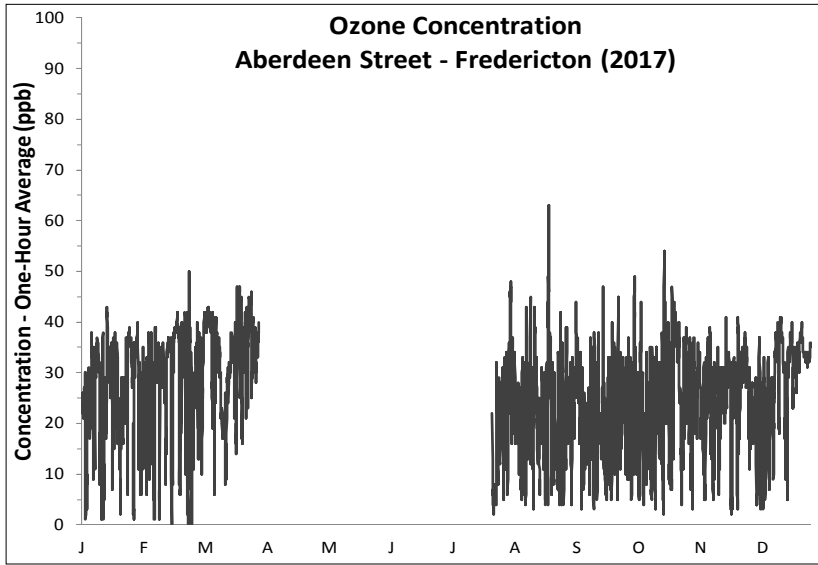
PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Ozone

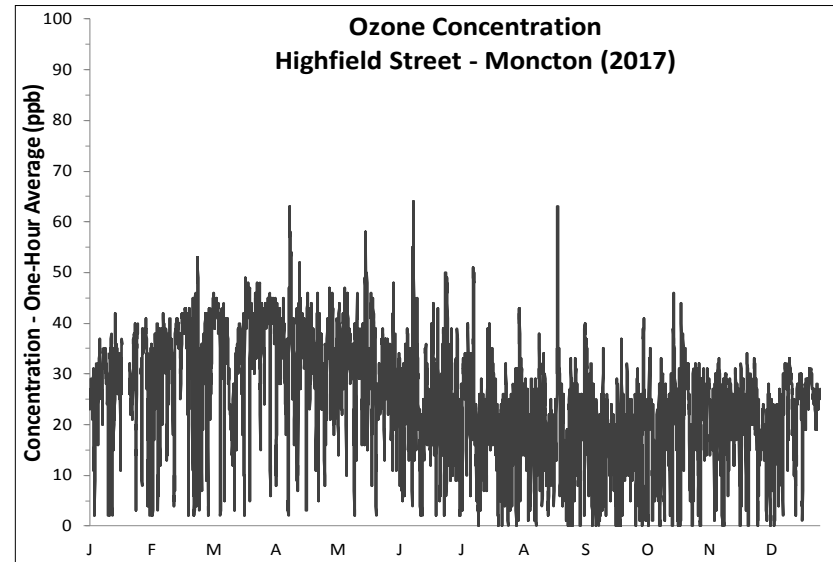
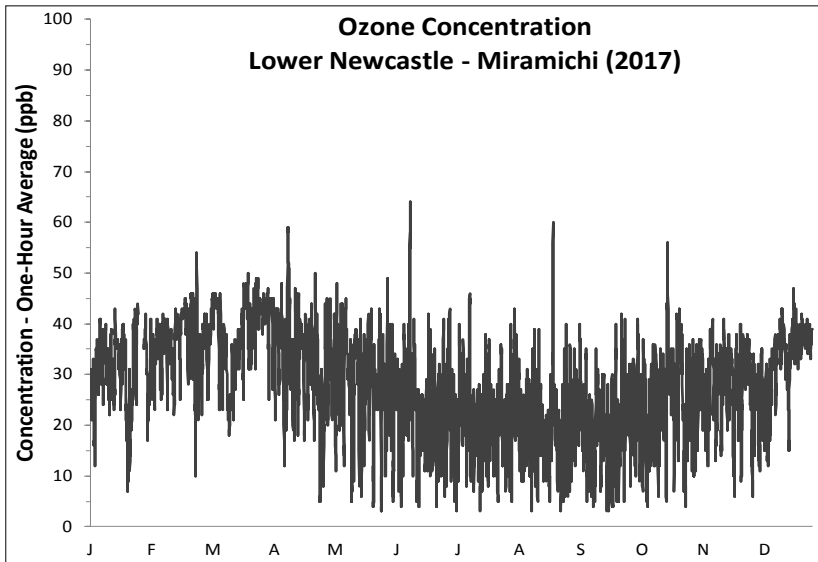


PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Ozone

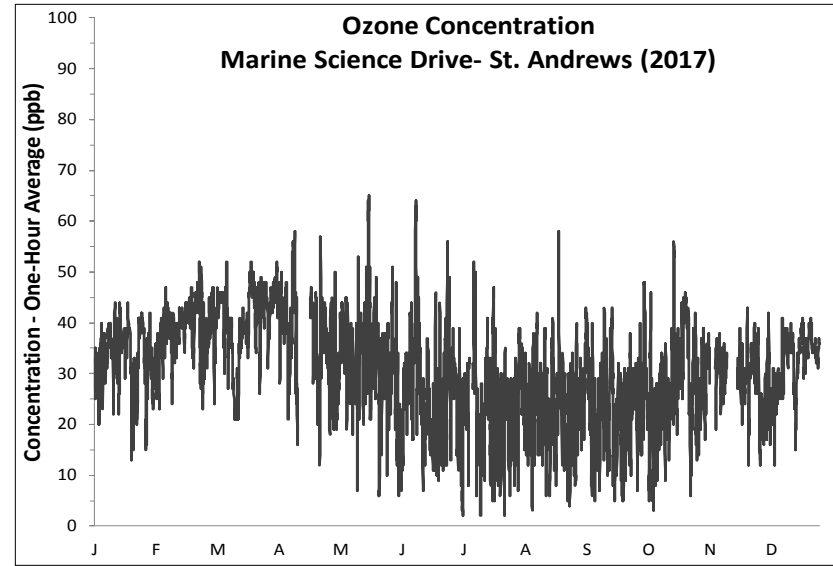
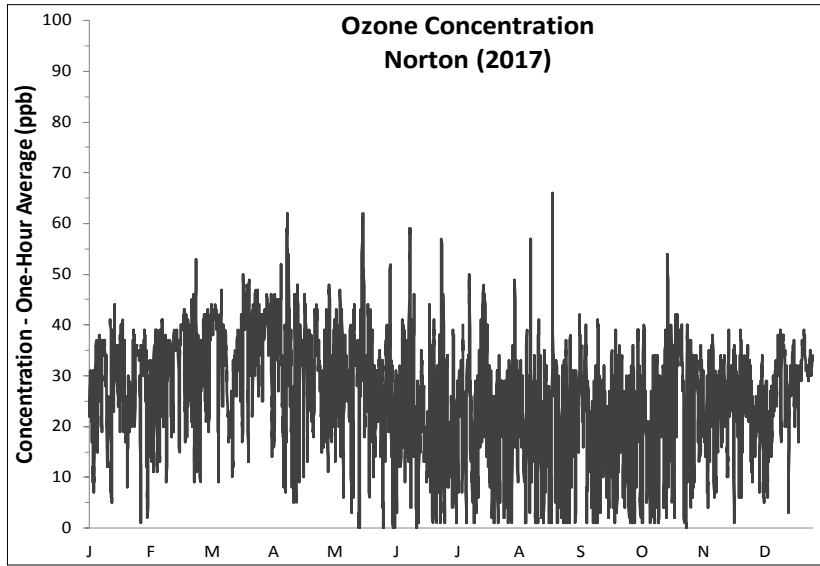


*Note: Fredericton station moved to Needham Street as of July 2017



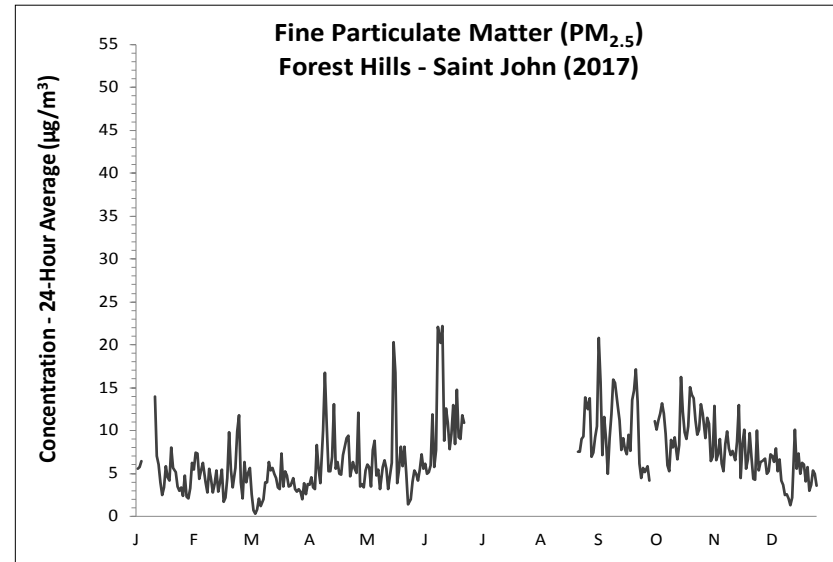
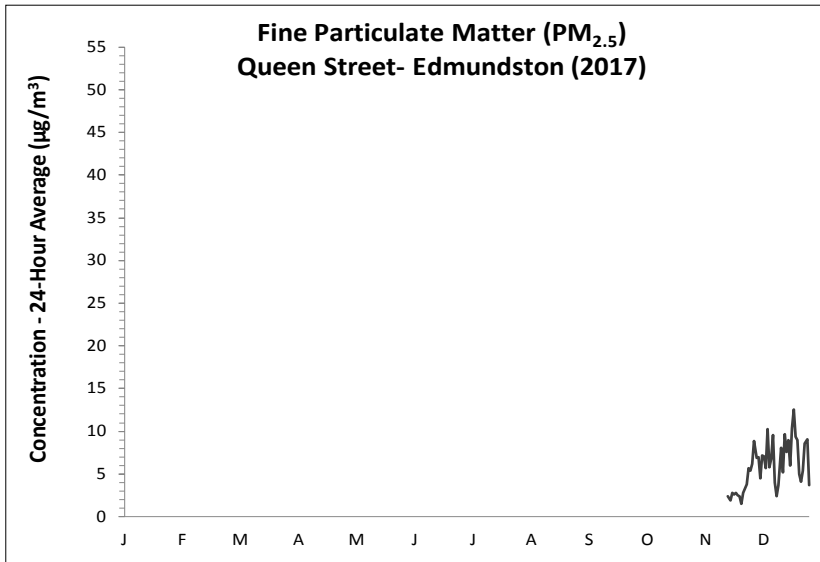
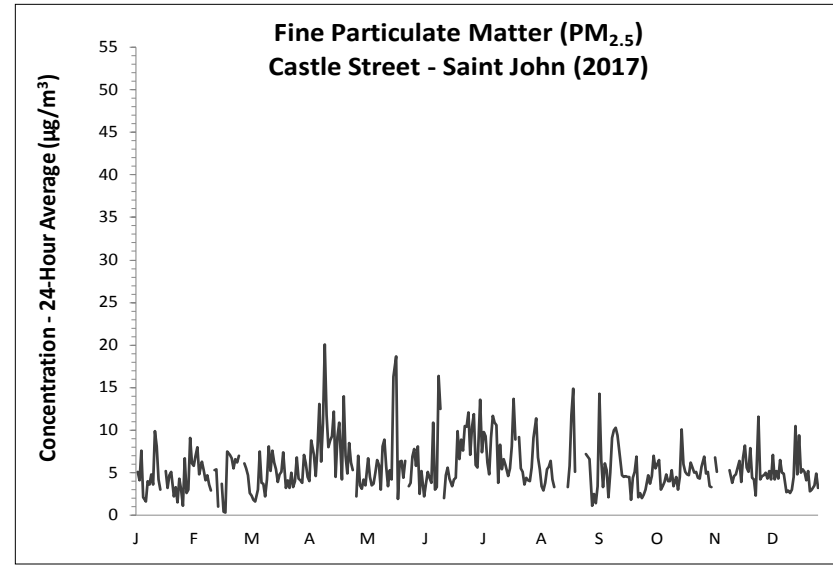
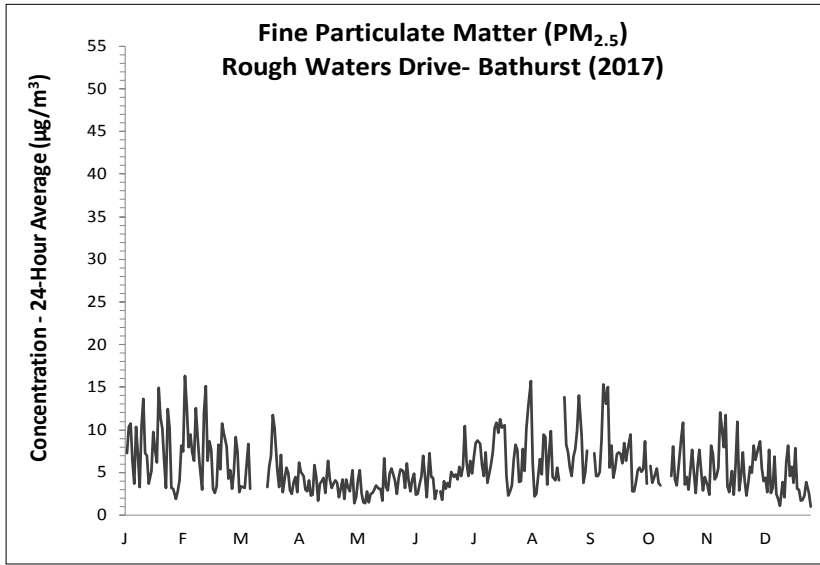
PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Ozone



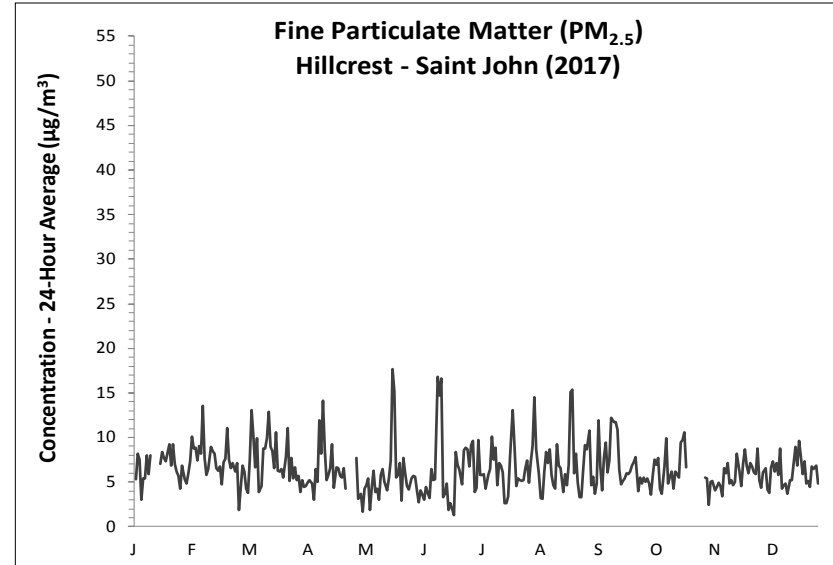
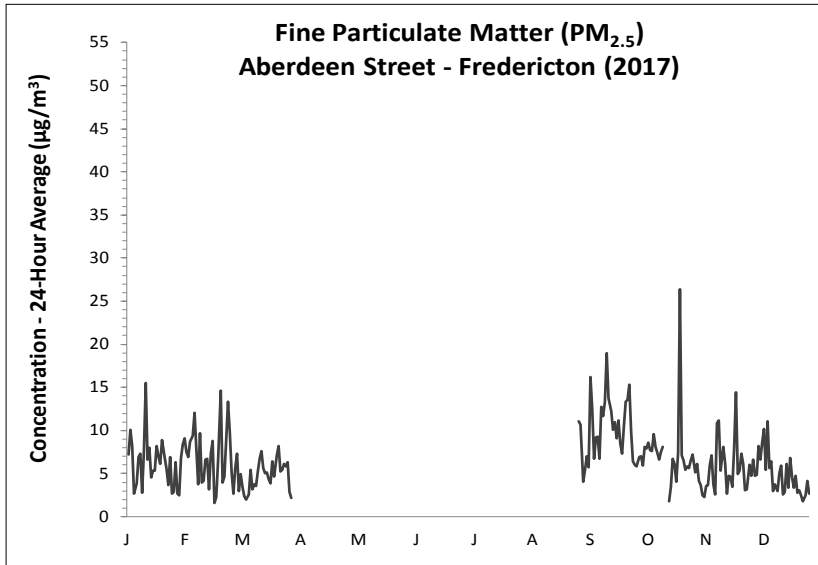
PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Fine Particulate Matter

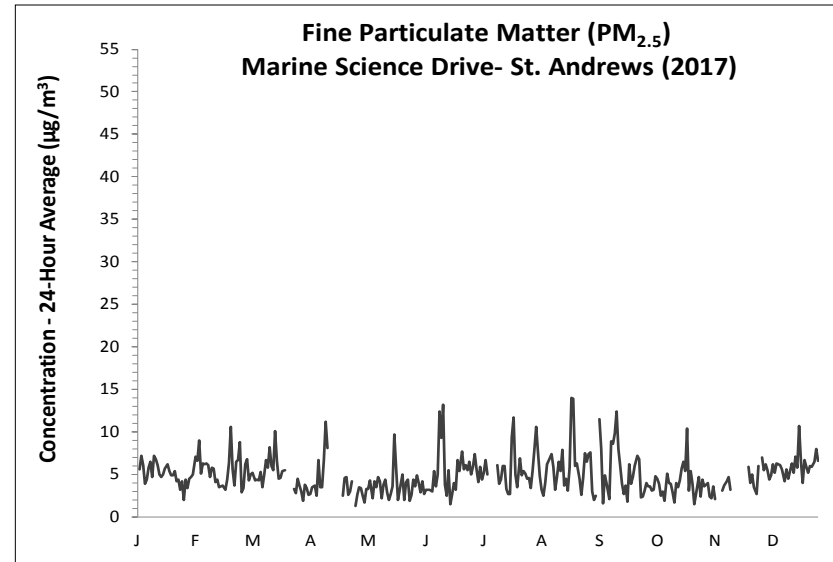
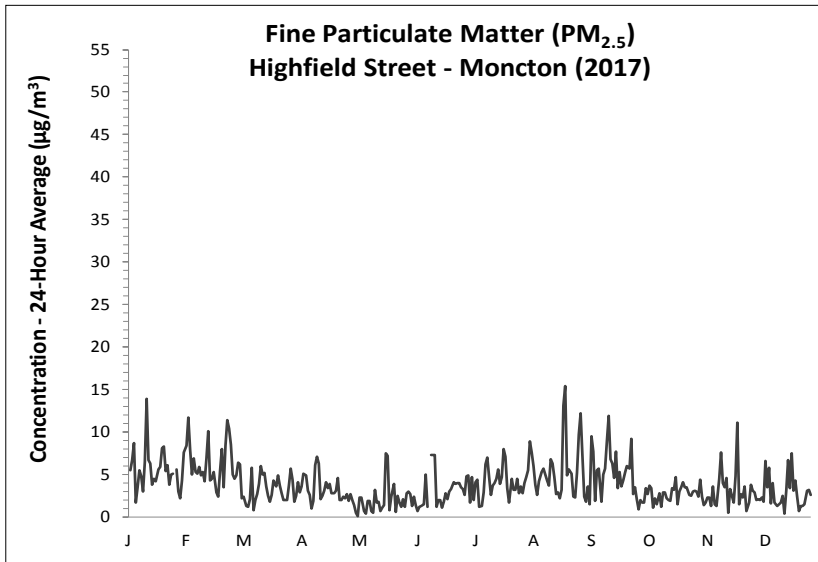


PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Fine Particulate Matter

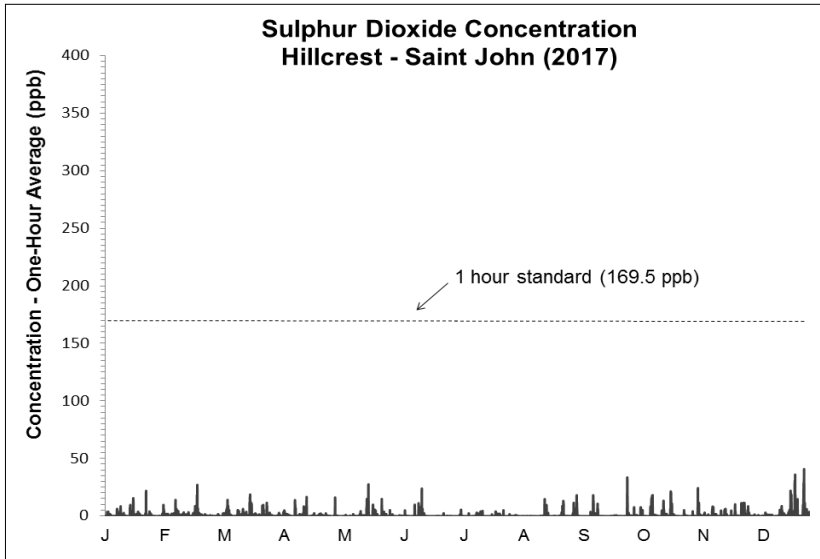
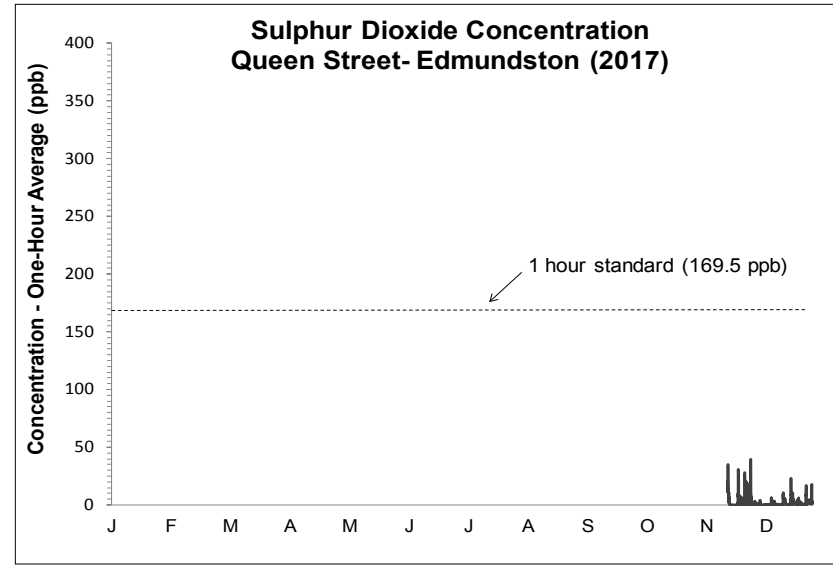
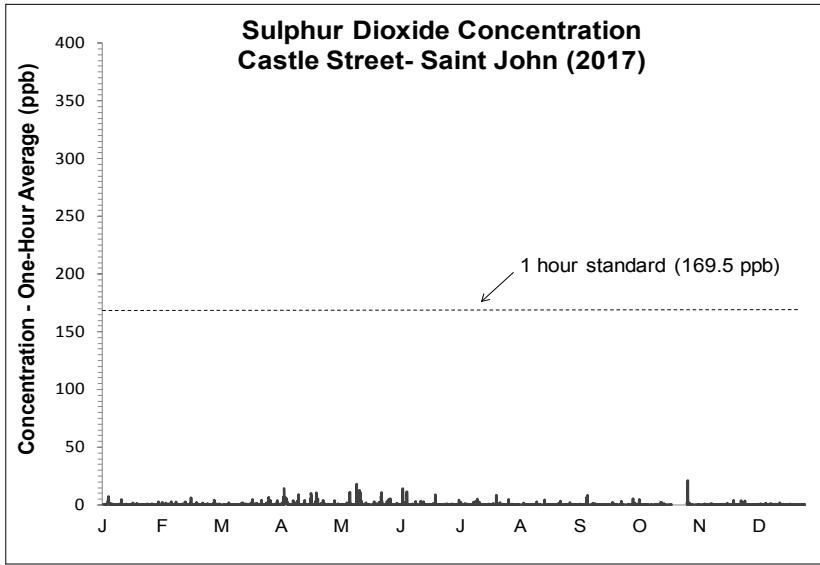


*Note: Fredericton station moved to Needham Street as of July 2017



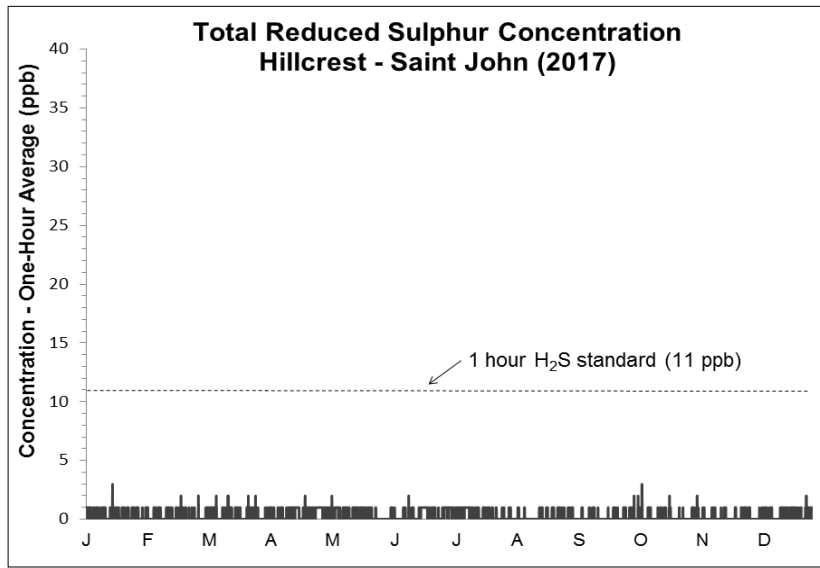
PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Sulphur Dioxide



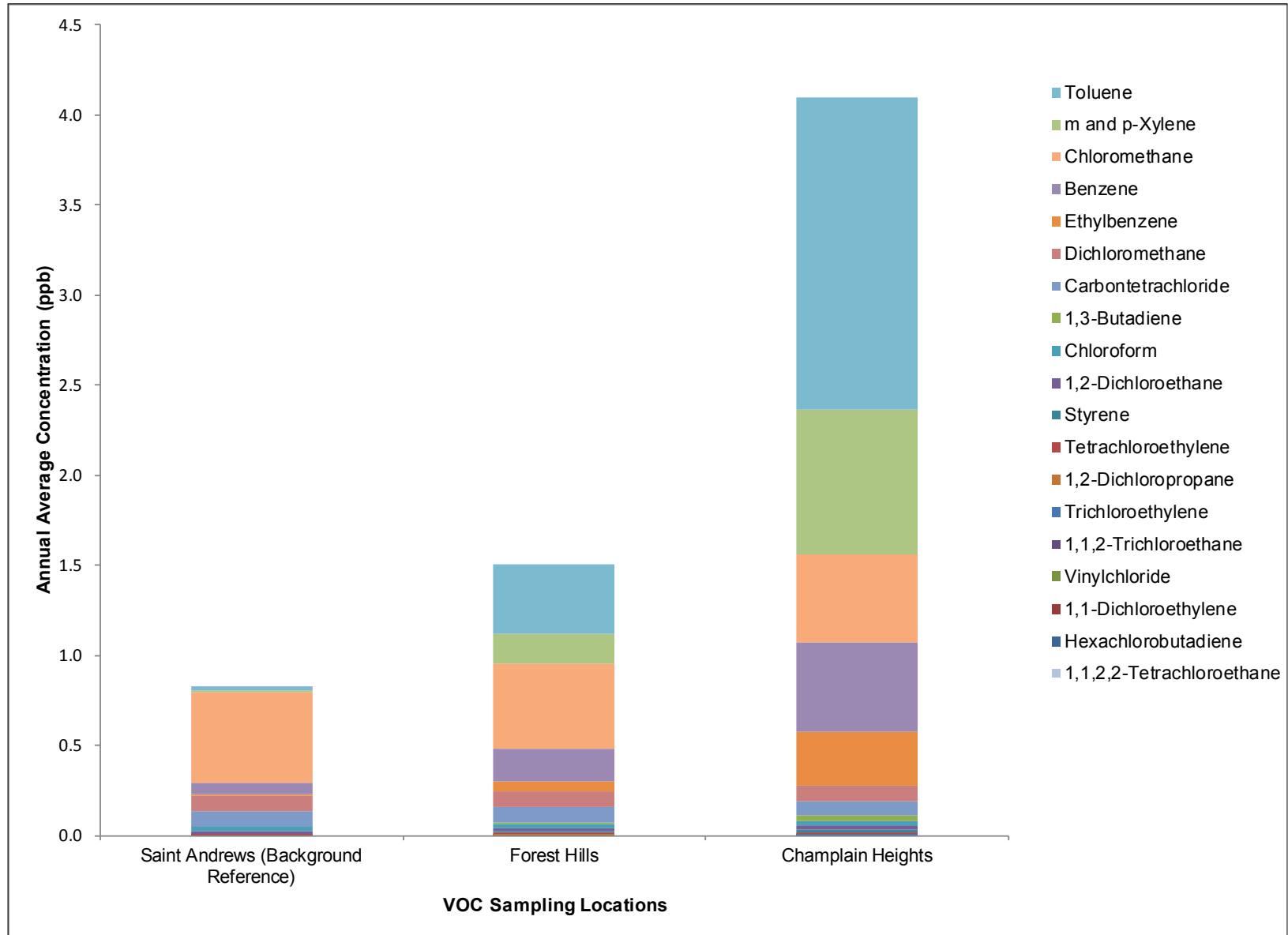
PART I: STATIONS OPERATED BY THE PROVINCE - Continuous Air Quality Monitoring Results

Total Reduced Sulphur

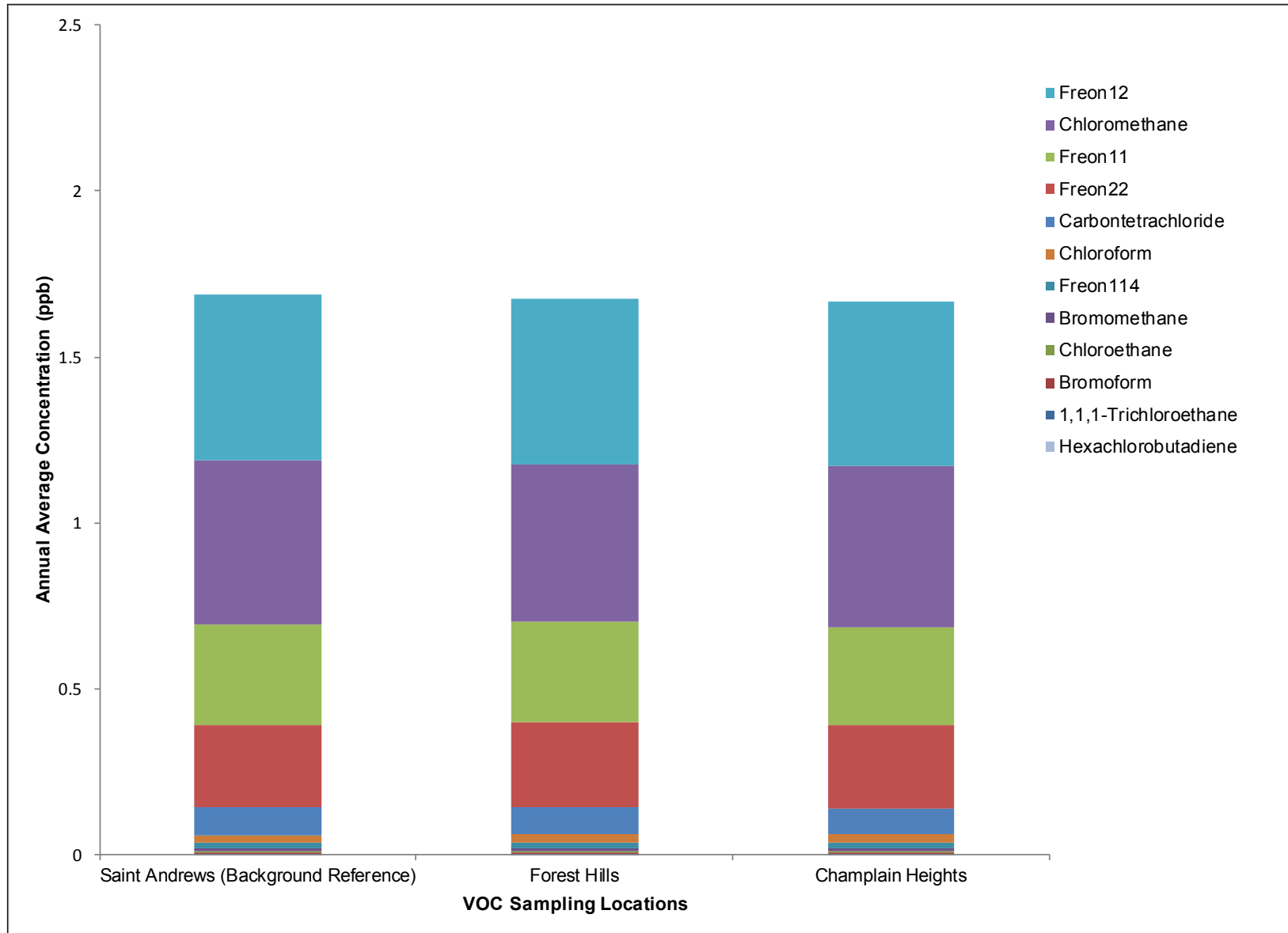


PART I: STATIONS OPERATED BY THE PROVINCE - Volatile Organic Compounds, Saint John Region

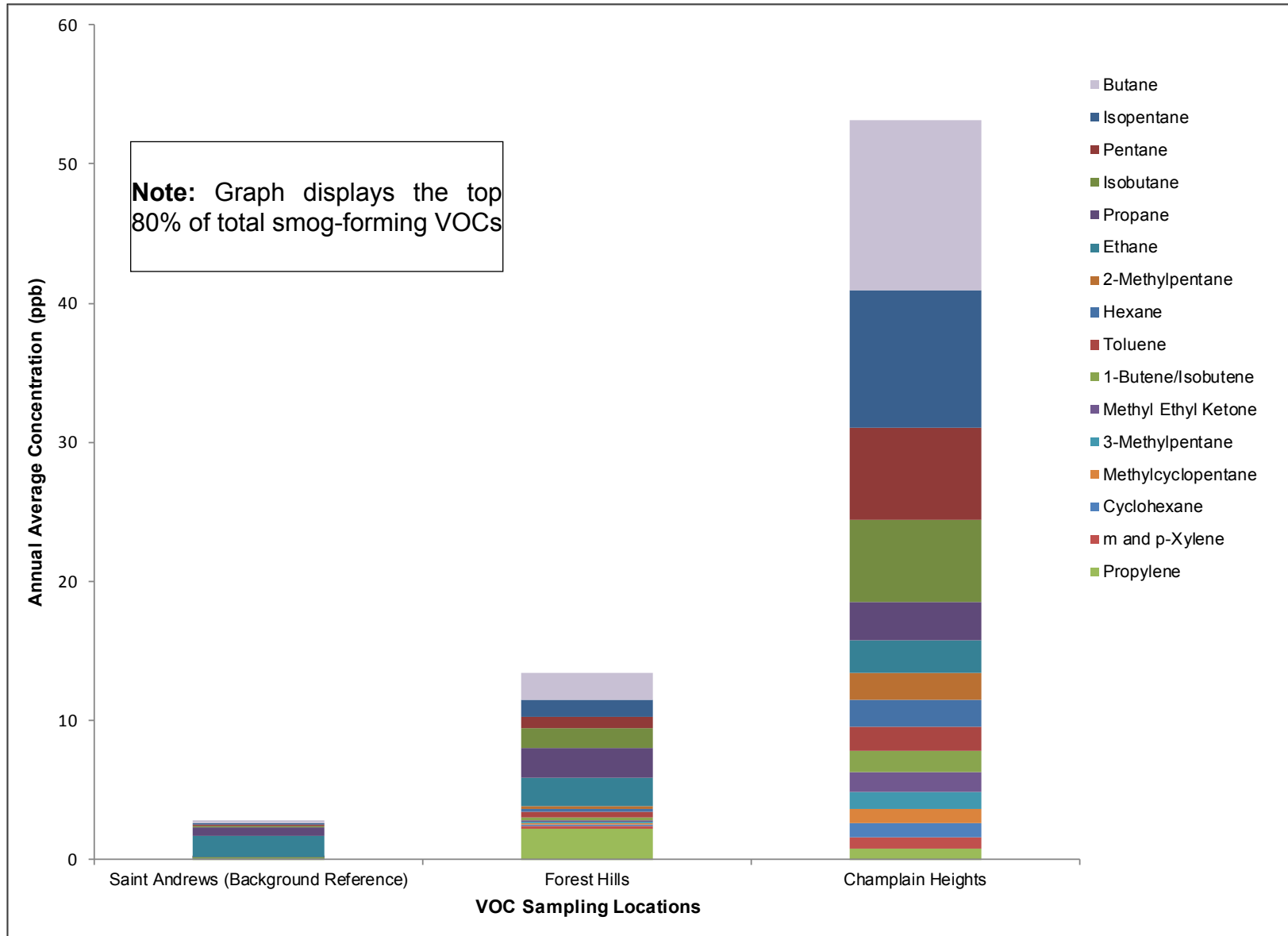
Air Toxics - 2017 Annual Average Concentration Range Chart



PART I: STATIONS OPERATED BY THE PROVINCE - Volatile Organic Compounds, Saint John Region
Ozone Depleting Substances - 2017 Annual Average Concentration Range Chart

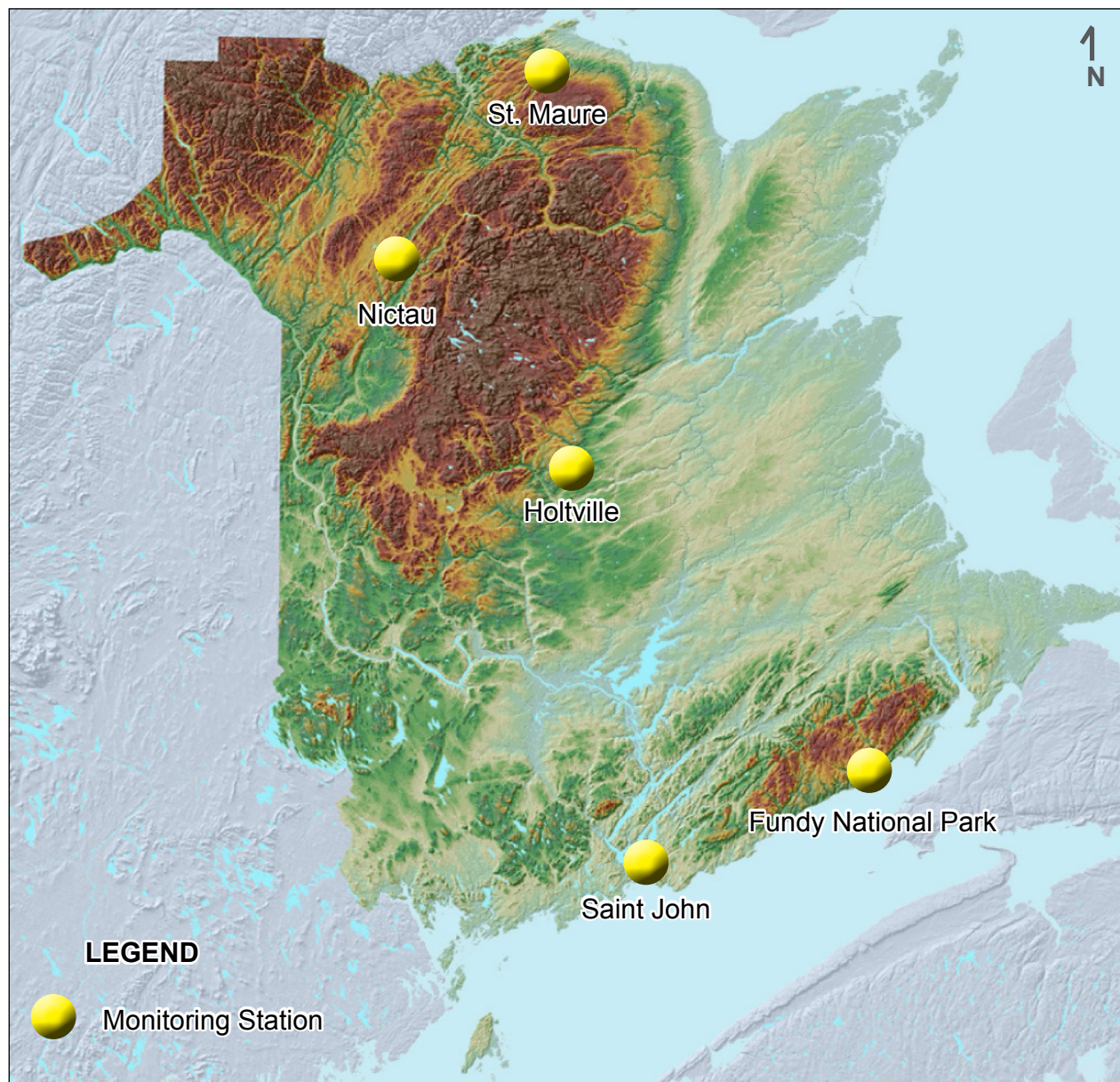


PART I: STATIONS OPERATED BY THE PROVINCE - Volatile Organic Compounds, Saint John Region
Smog-Forming VOCs - 2017 Annual Average Concentration Range Chart



PART II:
ACID PRECIPITATION MONITORING NETWORK

2017 Acid Precipitation Network Map



PART II: ACID PRECIPITATION MONITORING NETWORK - Sulphate and Nitrate Deposition Trends

Annual Sulphate and Nitrate Wet Deposition (eq/ha/yr) at New Brunswick Monitoring Sites, 2008-2017

Site	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
St. Maure	253.52	176.43	177.00	168.80	120.53	121.30	140.76	86.68	95.41	85.79*
Robertville	239.60	200.84	184.26	173.56	118.33	124.20	168.35	85.95	--	--
Nictau	198.12	154.56	121.21	150.02	96.50	108.13	119.96	80.73	71.17	81.29
Trout Brook	195.52	163.08	135.17	134.02	101.20	100.78	116.05	65.07	--	--
Holtville	269.87	210.01	122.63	184.33	98.19	127.23	126.63	78.33	73.59	99.39
Harcourt	256.90	199.91	159.91	139.40	91.68	99.92	120.67	74.02	--	--
South Oromocto Lake	278.39	230.26	163.31	164.09	128.81	154.73	150.02	107.51	--	--
Pennfield	409.11	349.97	290.78	--	228.24	265.32	223.61	179.91	--	--
Lakewood Heights	357.59	310.16	194.27	--	169.58	193.66	164.38	144.65	173.21	134.98
Fundy	428.04	322.81	226.37	263.55	208.08	249.13	200.13	143.40	126.30	122.62

*41 weeks of data

-- insufficient data

PART II: ACID PRECIPITATION MONITORING NETWORK - Sulphate and Nitrate Deposition Trends

Annual Sulphate Wet Deposition (kg/ha/yr) at New Brunswick Monitoring Sites, 2008-2017

Site	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
St. Maure	11.02	7.67	7.80	7.19	5.17	5.06	5.92	3.60	3.97	3.58*
Robertville	10.32	8.76	8.06	7.38	4.92	5.17	7.13	3.51	--	--
Nictau	8.21	6.44	5.01	6.07	3.77	4.25	4.65	3.02	2.59	3.07
Trout Brook	8.26	6.91	5.69	5.49	4.09	4.01	4.71	2.46	--	--
Holtville	11.43	8.93	4.99	7.52	3.88	5.02	5.00	2.92	2.79	3.86
Harcourt	10.92	8.52	6.76	5.69	3.67	3.92	4.82	2.77	--	--
South Oromocto Lake	11.89	9.80	6.77	6.73	5.16	6.24	5.96	4.00	--	--
Pennfield	17.81	15.20	12.49	---	9.65	11.28	9.31	7.30	--	--
Lakewood Heights	15.67	13.48	8.29	---	7.20	8.20	8.12	5.98	7.28	5.63
Fundy	18.79	13.91	9.65	11.20	8.86	10.64	8.21	5.82	5.14	5.09

*41 weeks of data

-- insufficient data

PART II: ACID PRECIPITATION MONITORING NETWORK - Sulphate and Nitrate Deposition Trends

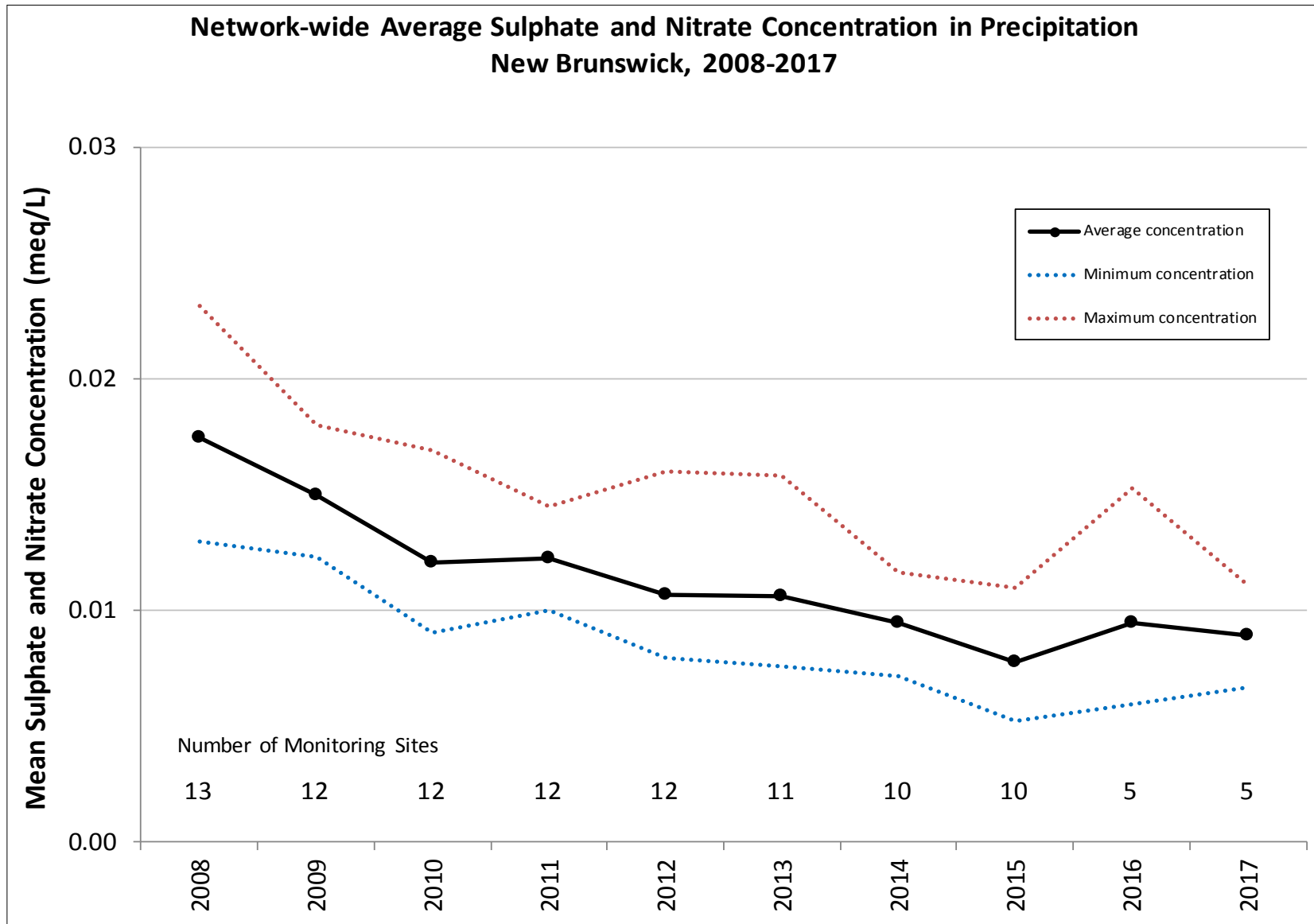
Annual Nitrate Wet Deposition (kg/ha/yr) at New Brunswick Monitoring Sites, 2008-2017

Site	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
St. Maure	1.50	1.03	0.90	1.18	0.80	0.99	1.09	0.72	0.80	0.70*
Robertville	1.53	1.15	1.02	1.24	0.99	1.03	1.17	0.79	--	--
Nictau	1.69	1.27	1.05	1.46	1.12	1.23	1.44	1.11	1.07	1.08
Trout Brook	1.47	1.19	1.04	1.23	1.00	1.07	1.11	0.86	--	--
Holtville	1.98	1.50	1.16	1.72	1.08	1.41	1.40	1.08	0.97	1.19
Harcourt	1.84	1.40	1.19	1.30	0.95	1.14	1.26	1.01	--	--
South Oromocto Lake	1.92	1.63	1.39	1.49	1.33	1.54	1.61	1.51	--	--
Pennfield	2.38	2.08	1.90	---	1.70	1.89	1.85	1.74	--	--
Lakewood Heights	1.95	1.84	1.35	---	1.22	1.42	1.57	1.25	1.34	1.10
Fundy	2.29	2.06	1.58	1.89	1.46	1.71	1.81	1.39	1.20	1.03

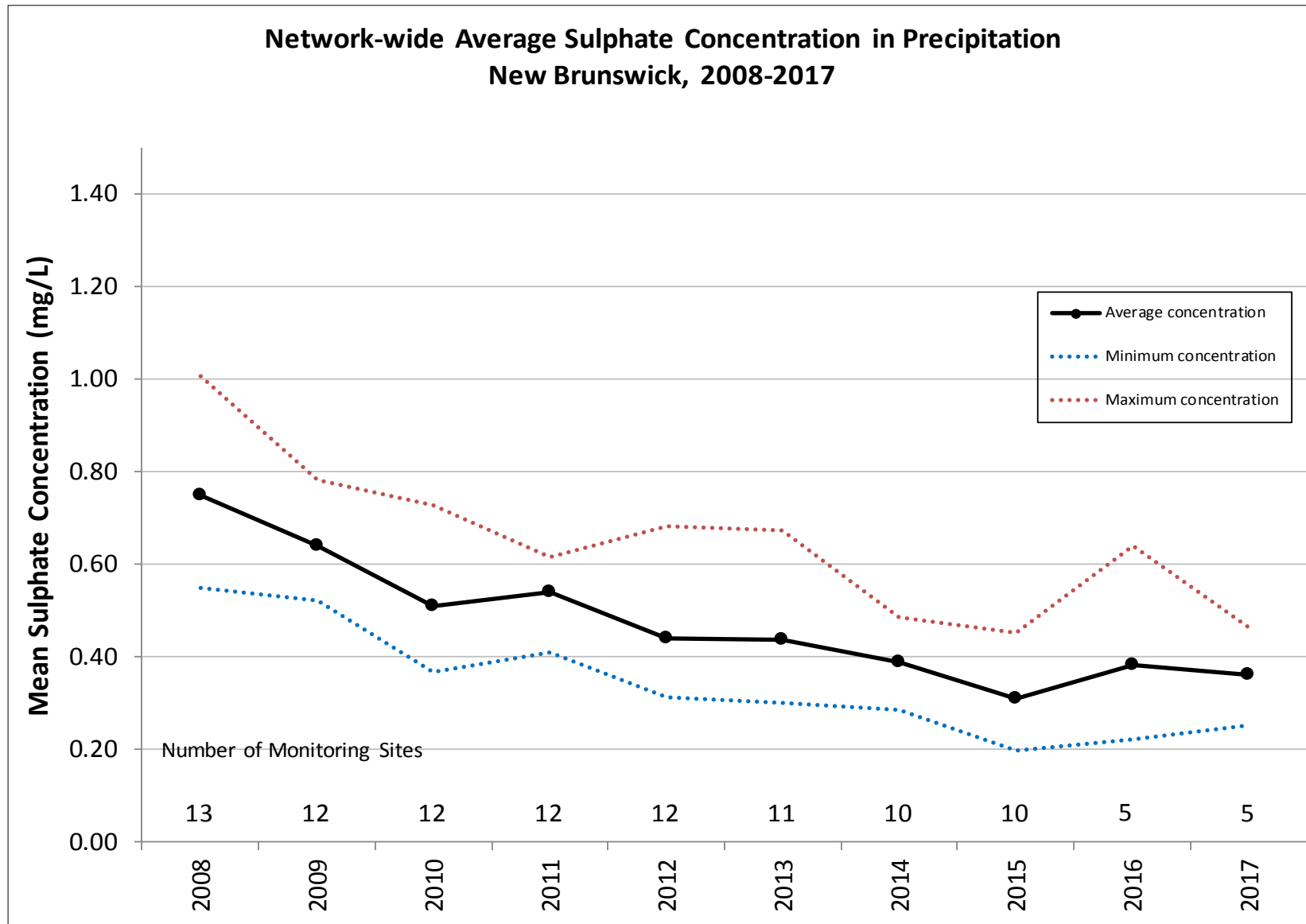
*41 weeks of data

-- insufficient data

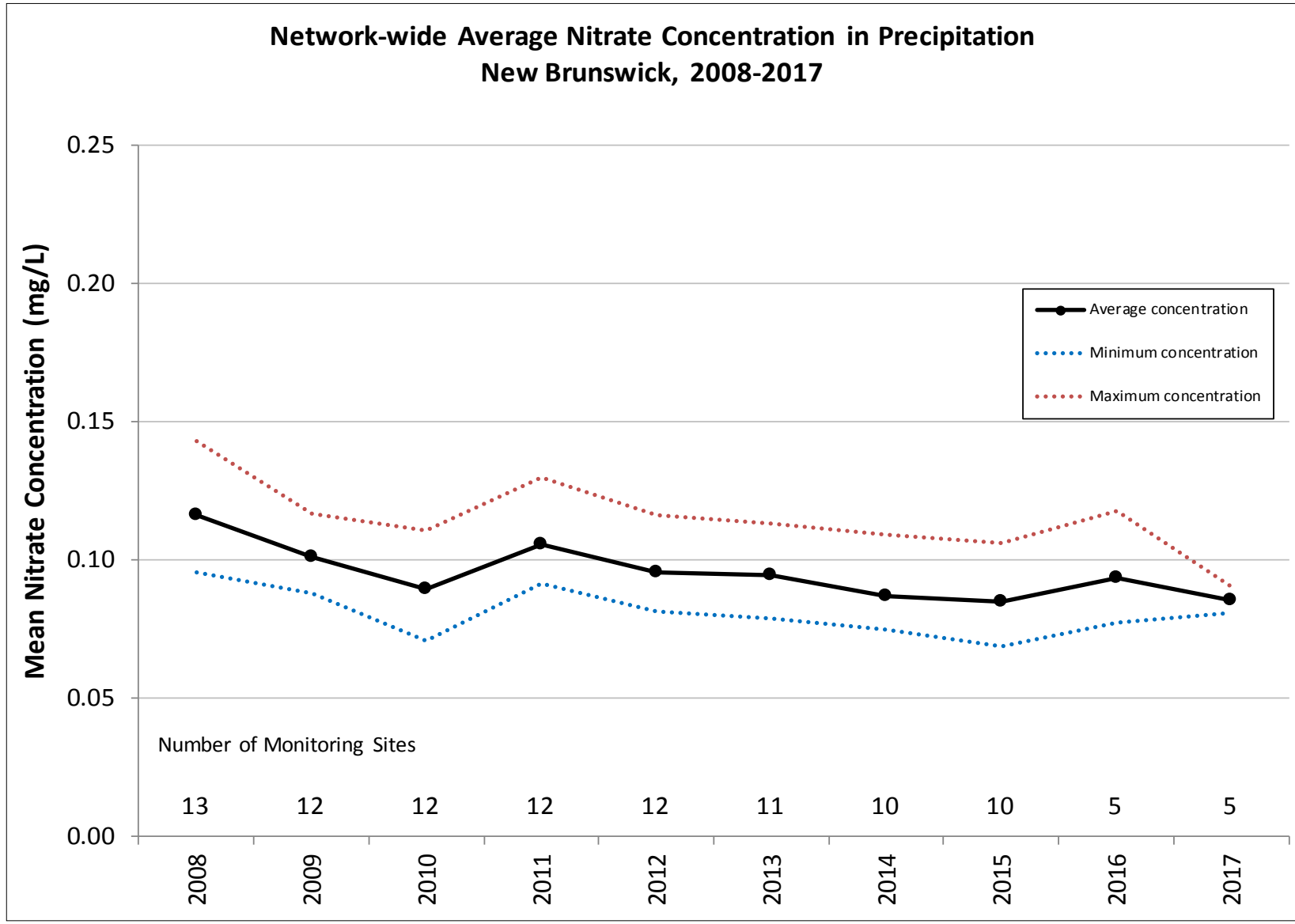
PART II: ACID PRECIPITATION MONITORING NETWORK - Network-wide Annual Mean Sulphate and Nitrate Concentration Trends



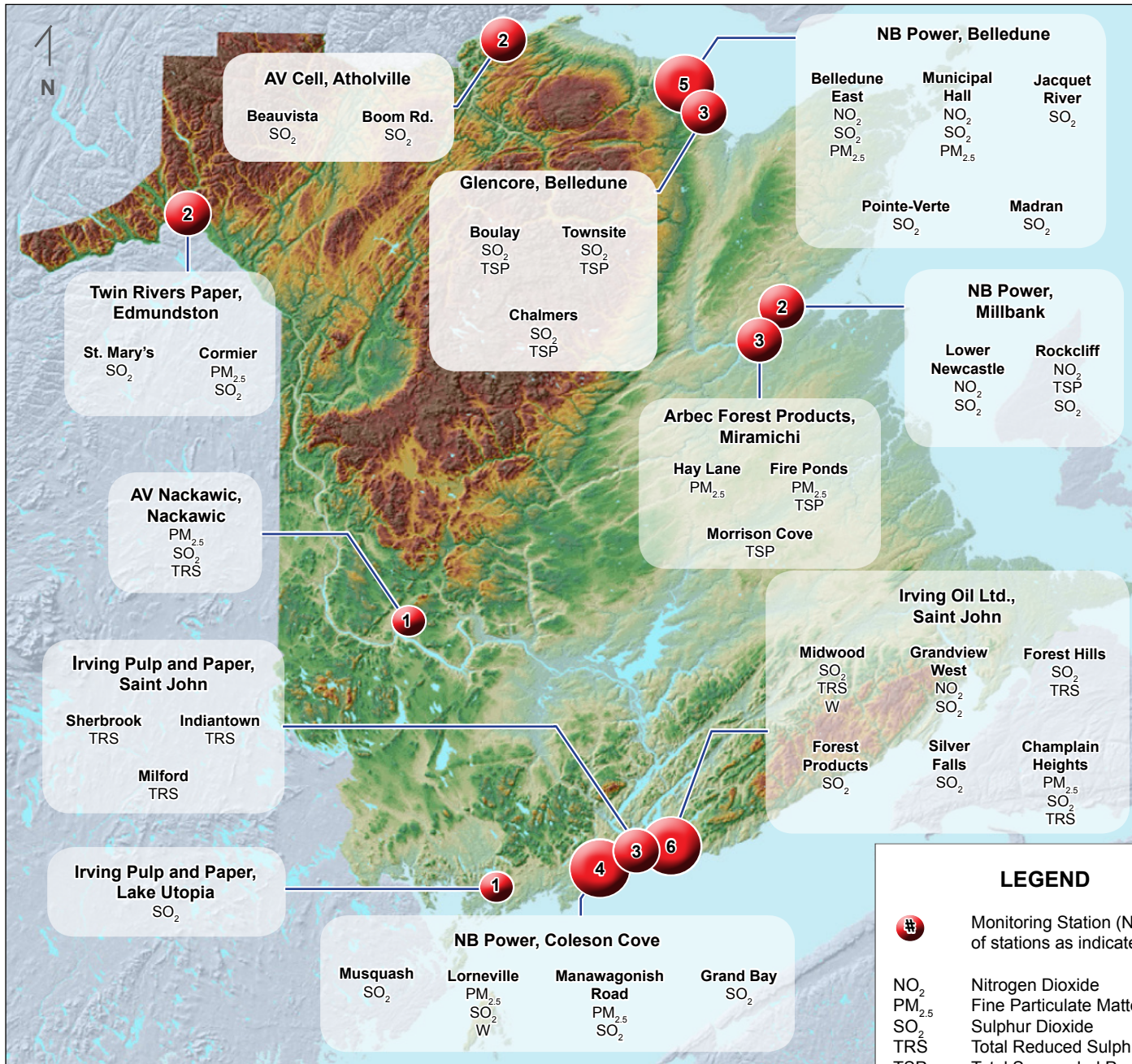
PART II: ACID PRECIPITATION MONITORING NETWORK - Network-wide Annual Mean Sulphate and Nitrate Concentration Trends



PART II: ACID PRECIPITATION MONITORING NETWORK - Network-wide Annual Mean Sulphate and Nitrate Concentration Trends



PART III:
THE PROVINCIAL AIR QUALITY MONITORING NETWORK:
STATIONS OPERATED BY INDUSTRY

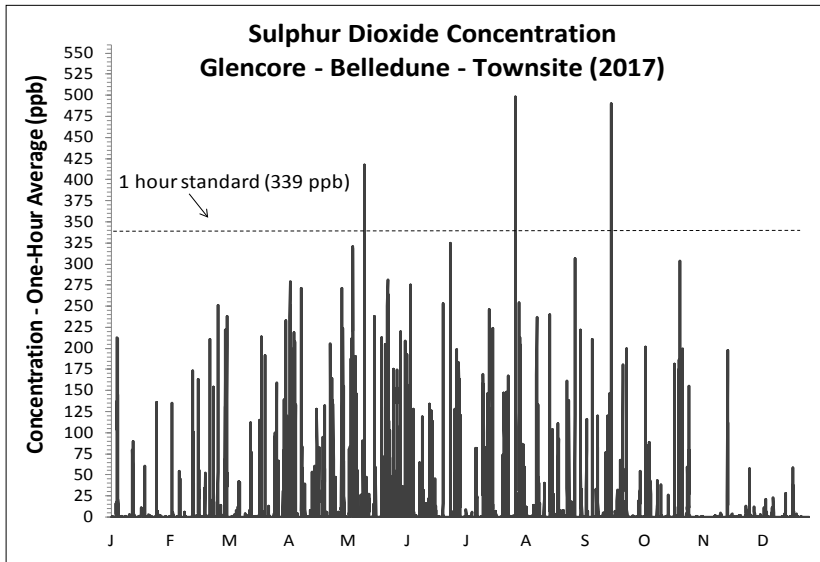
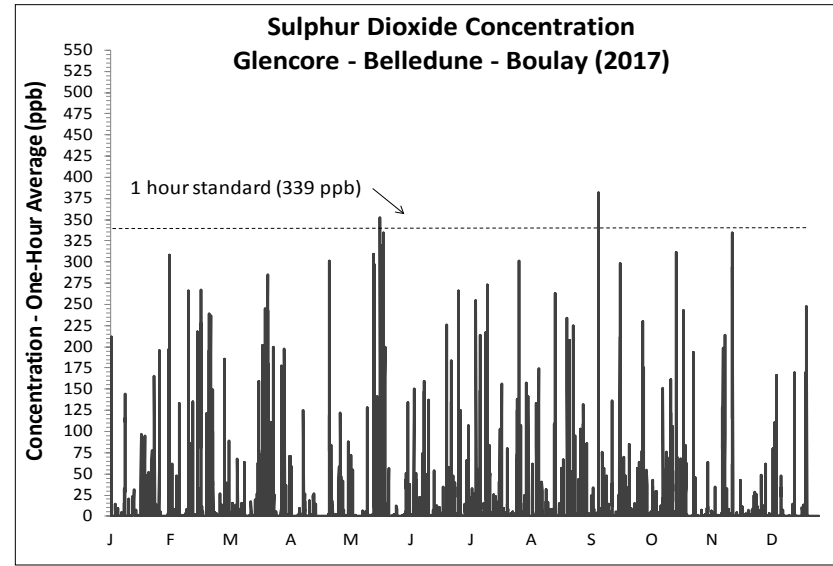
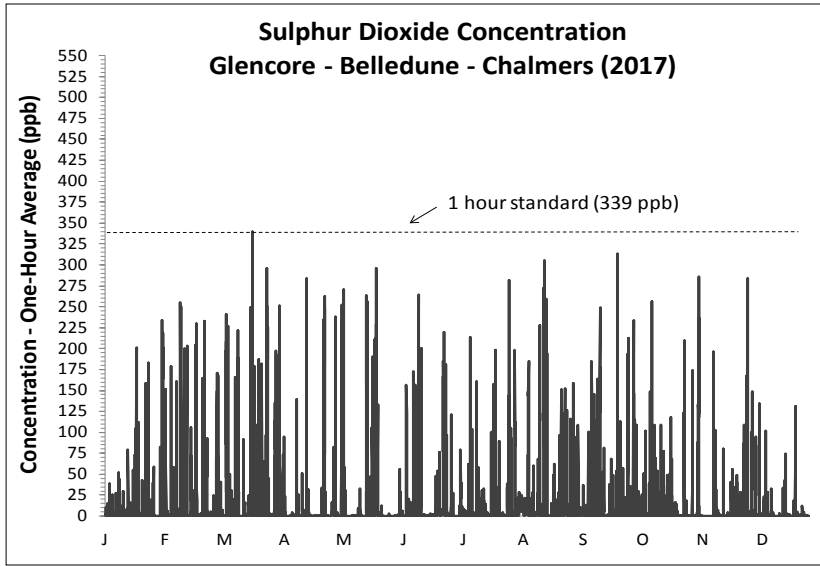


LEGEND

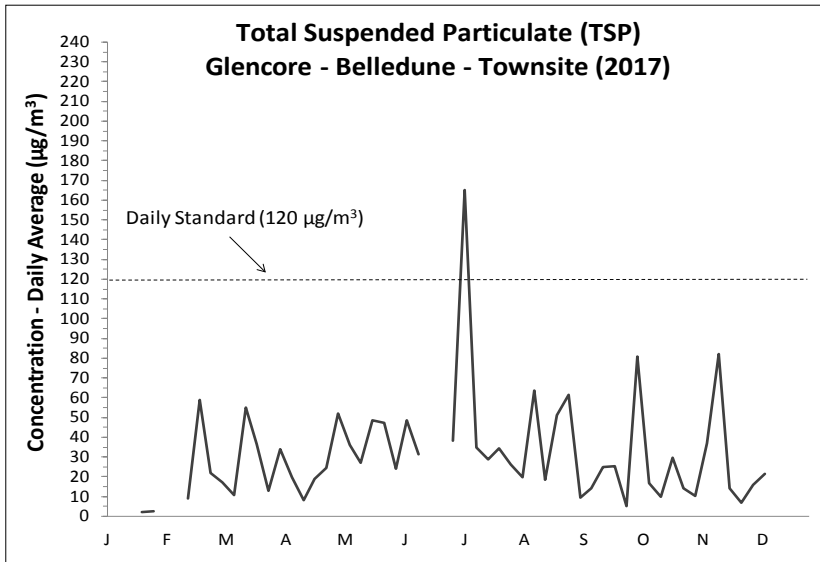
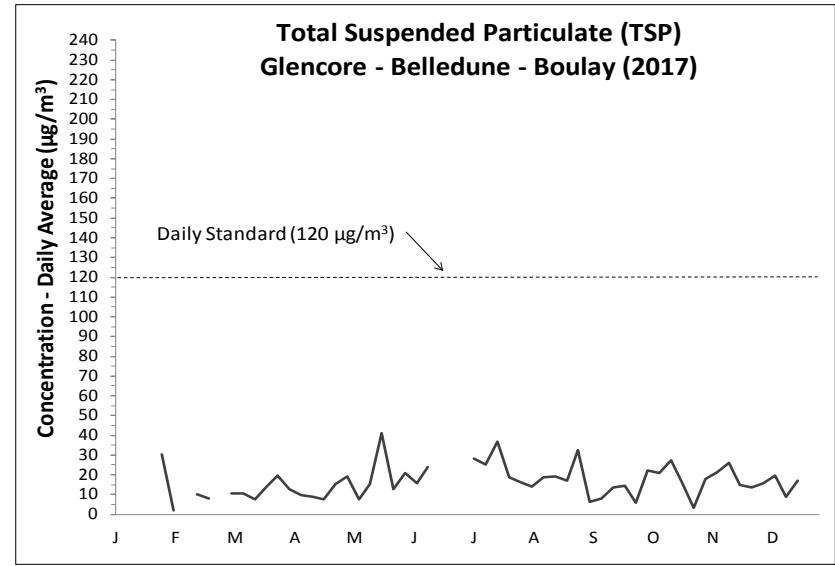
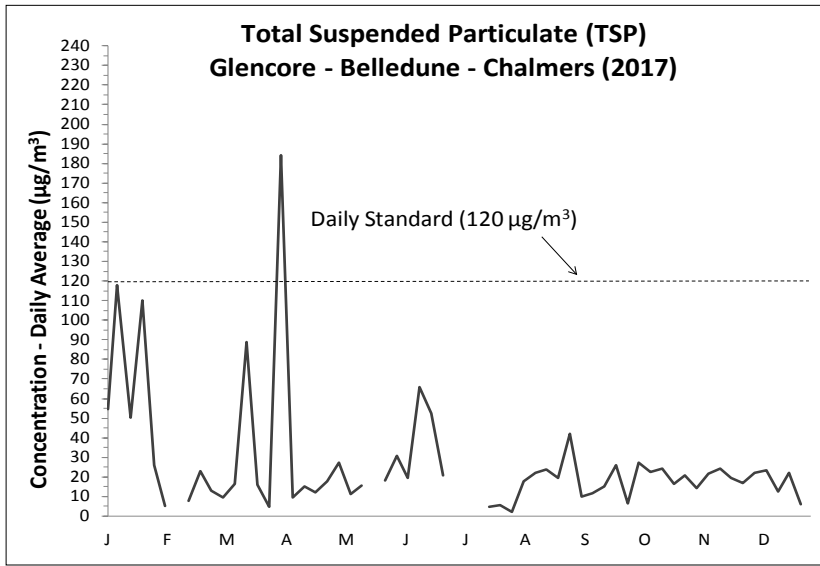
Monitoring Station (Number of stations as indicated)

NO₂ Nitrogen Dioxide
 PM_{2.5} Fine Particulate Matter
 SO₂ Sulphur Dioxide
 TRS Total Reduced Sulphur
 TSP Total Suspended Particulate
 W Wind Speed & Direction

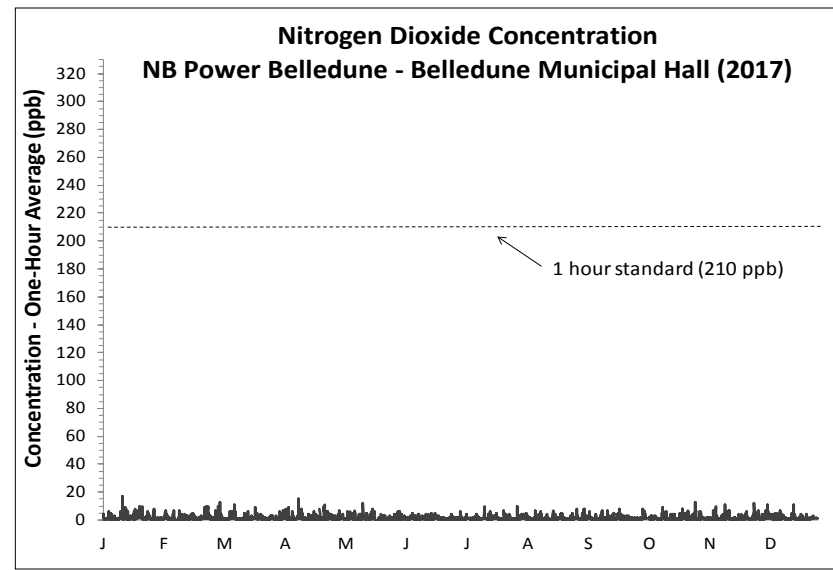
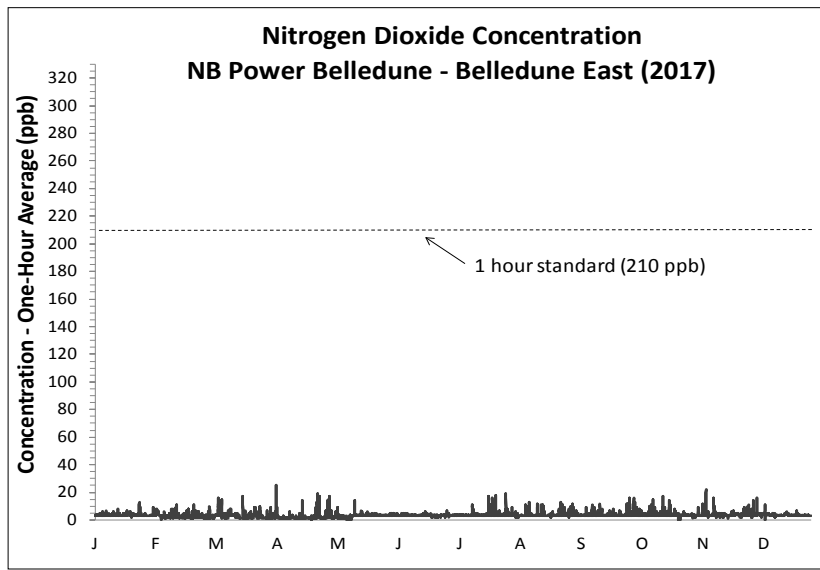
PART III: STATIONS OPERATED BY INDUSTRY - Glencore, Belledune - Sulphur Dioxide



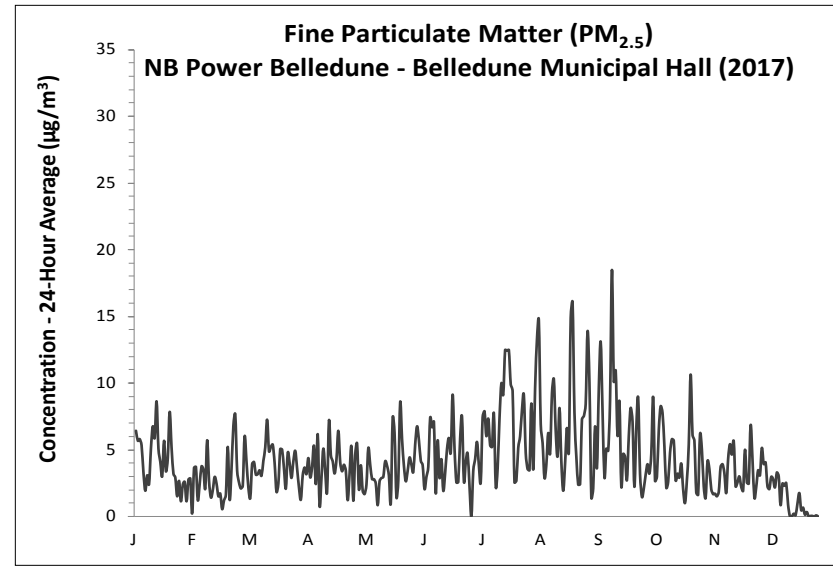
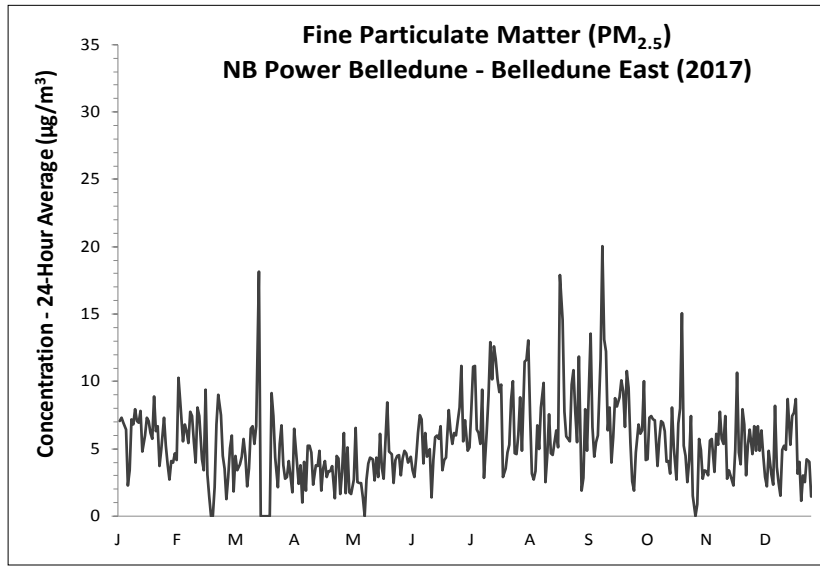
PART III: STATIONS OPERATED BY INDUSTRY - Glencore, Belledune - Total Suspended Particulate



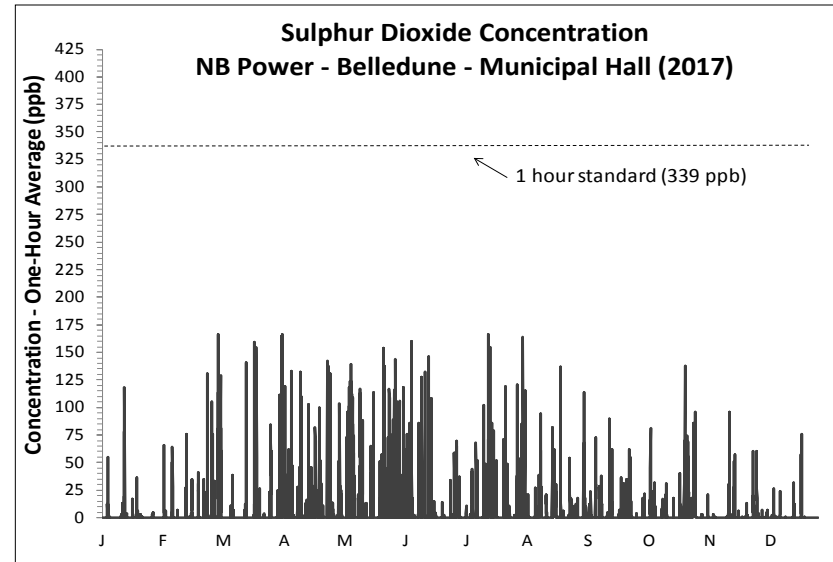
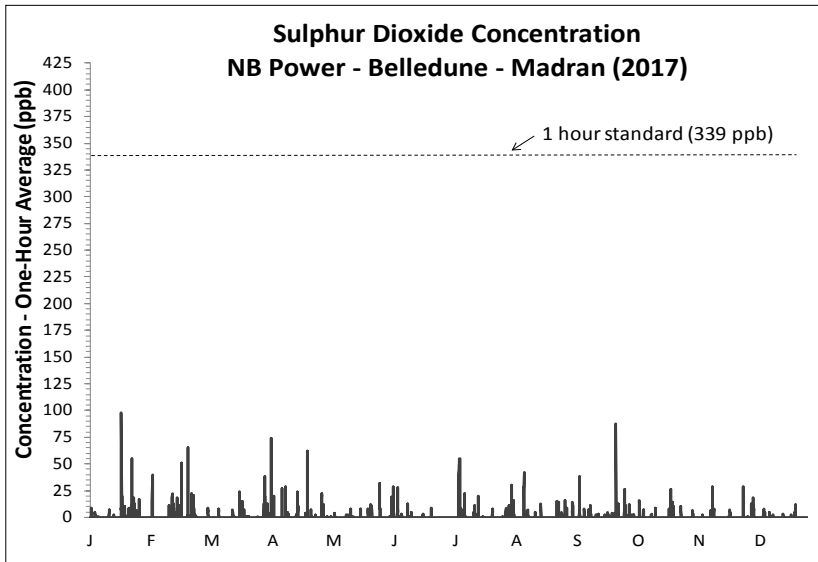
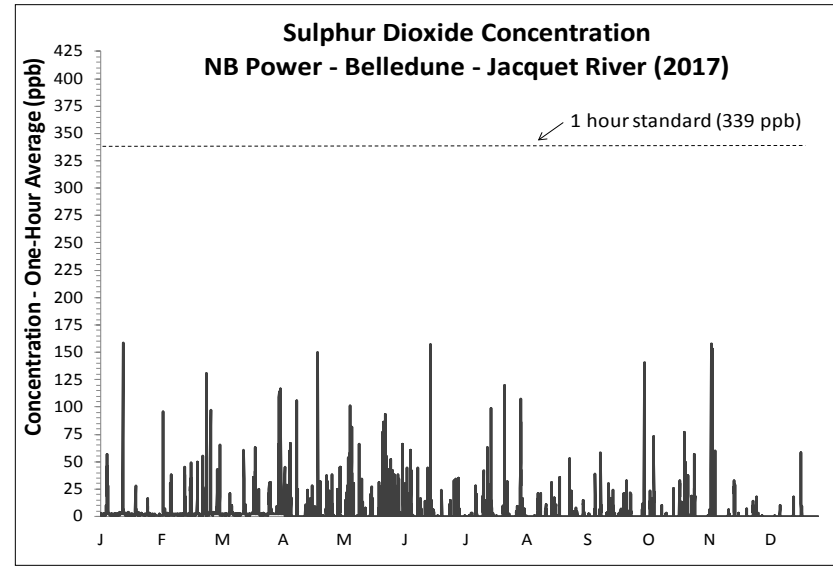
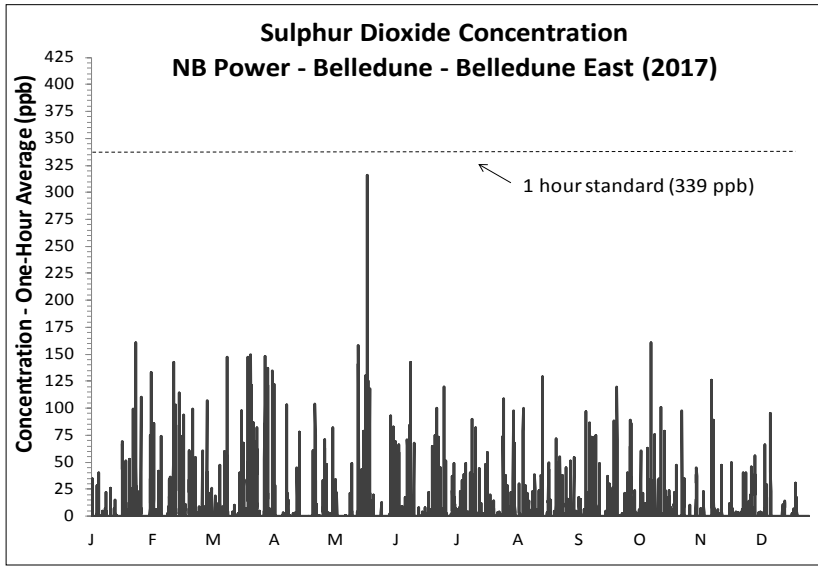
PART III: STATIONS OPERATED BY INDUSTRY - NB Power, Belledune - Nitrogen Dioxide



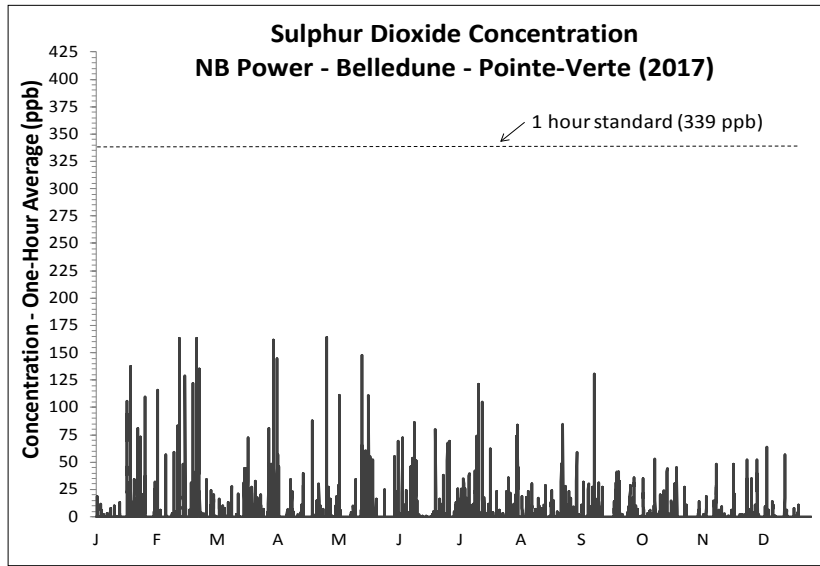
PART III: STATIONS OPERATED BY INDUSTRY - NB Power, Belledune - Fine Particulate Matter



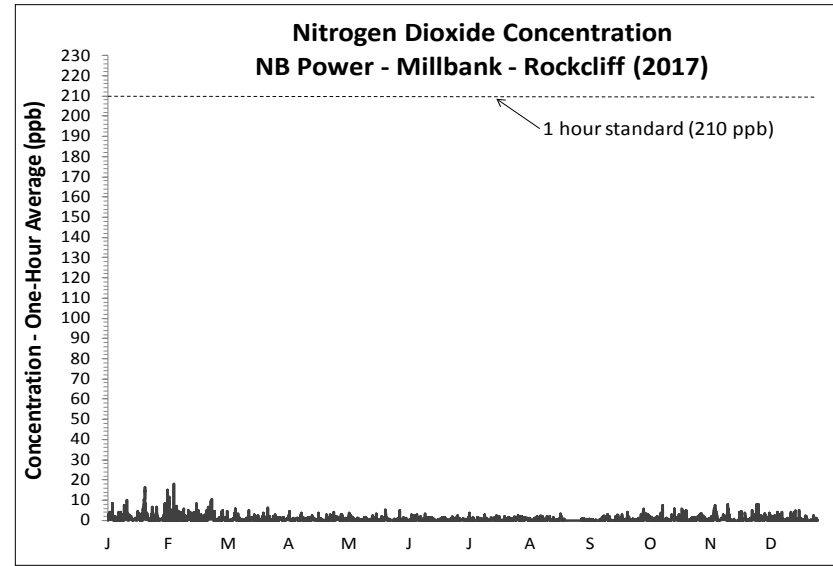
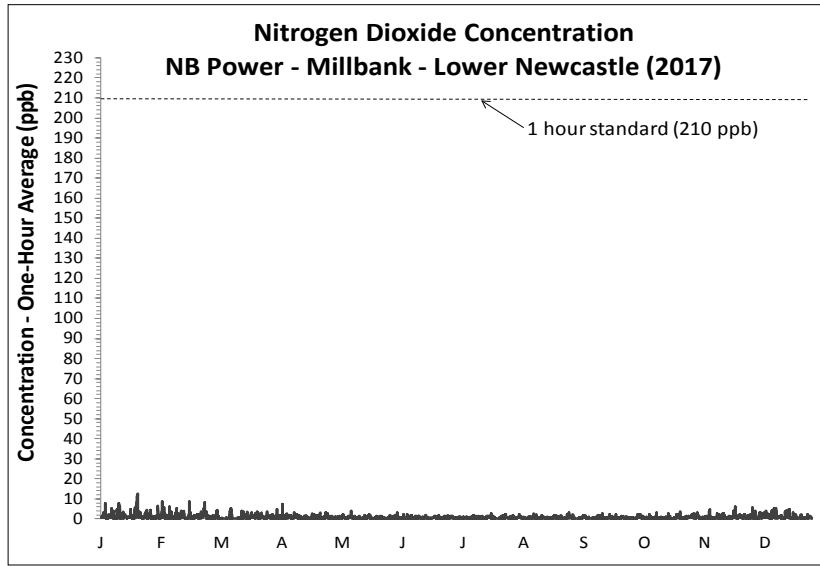
PART III: STATIONS OPERATED BY INDUSTRY - NB Power, Belledune - Sulphur Dioxide



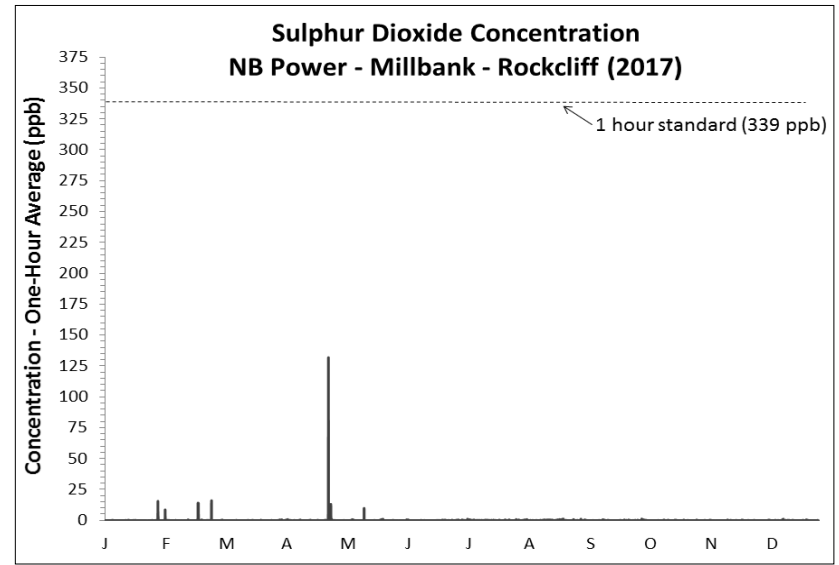
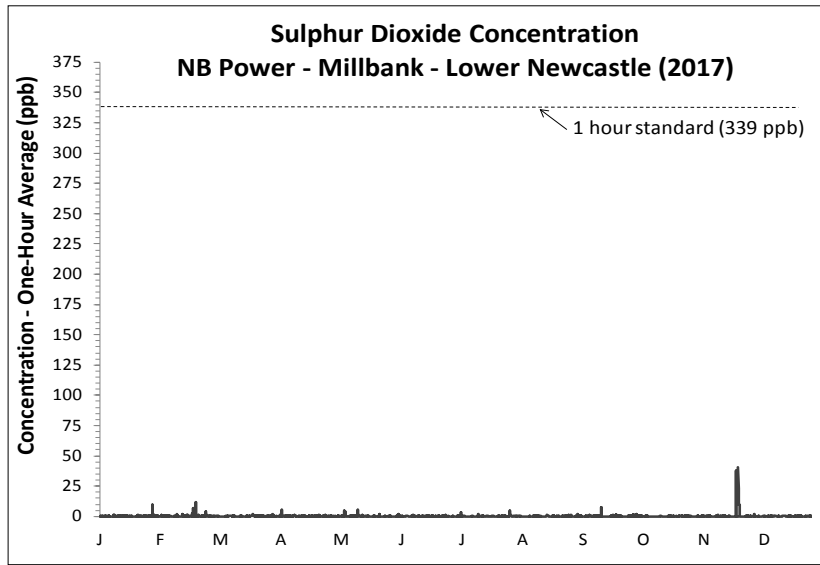
PART III: STATIONS OPERATED BY INDUSTRY - NB Power, Belledune - Sulphur Dioxide



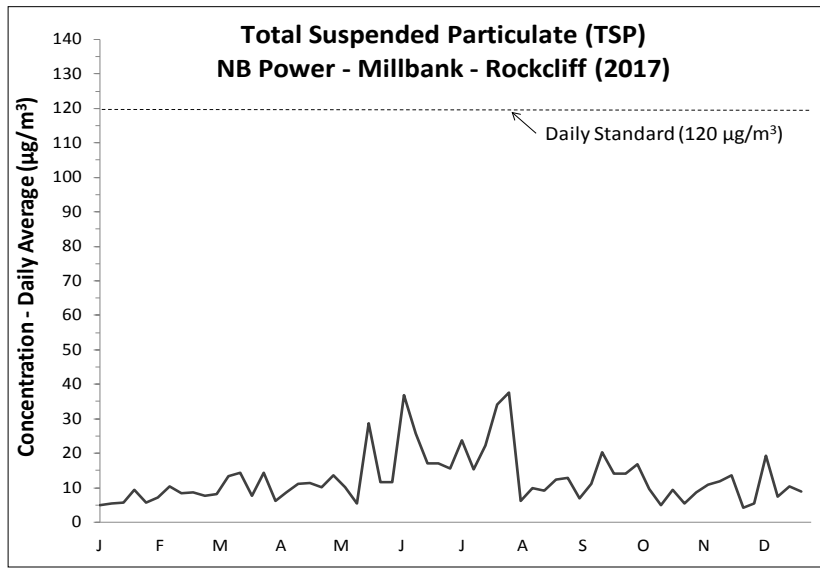
PART III: INDUSTRY-OPERATED NETWORKS - NB Power, Millbank - Nitrogen Dioxide



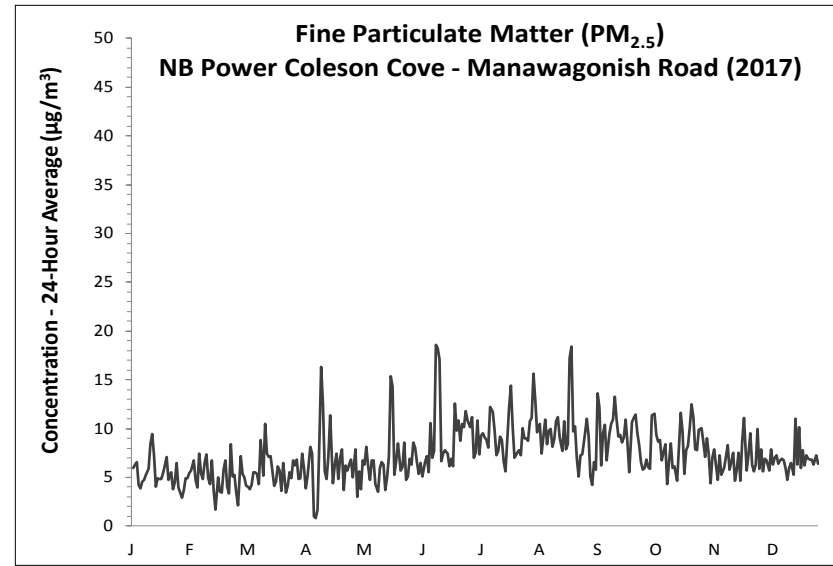
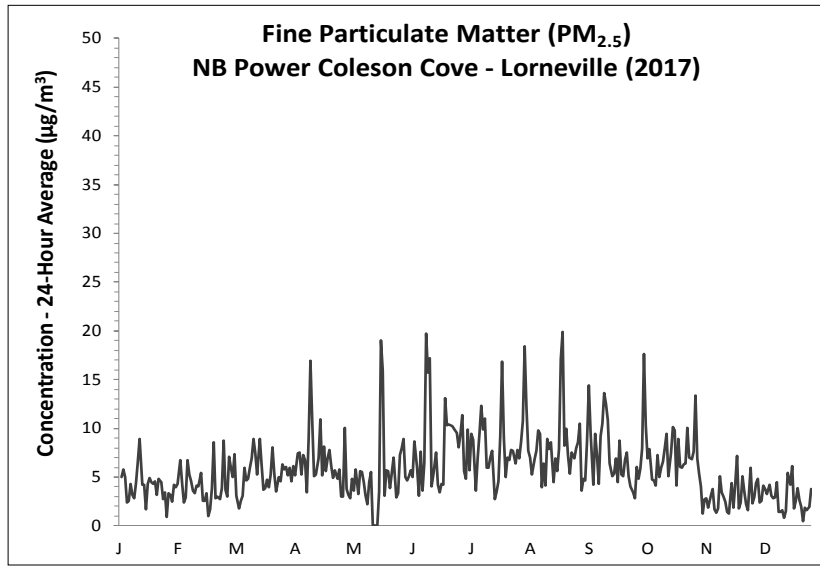
PART III: INDUSTRY-OPERATED NETWORKS - NB Power, Millbank - Sulphur Dioxide



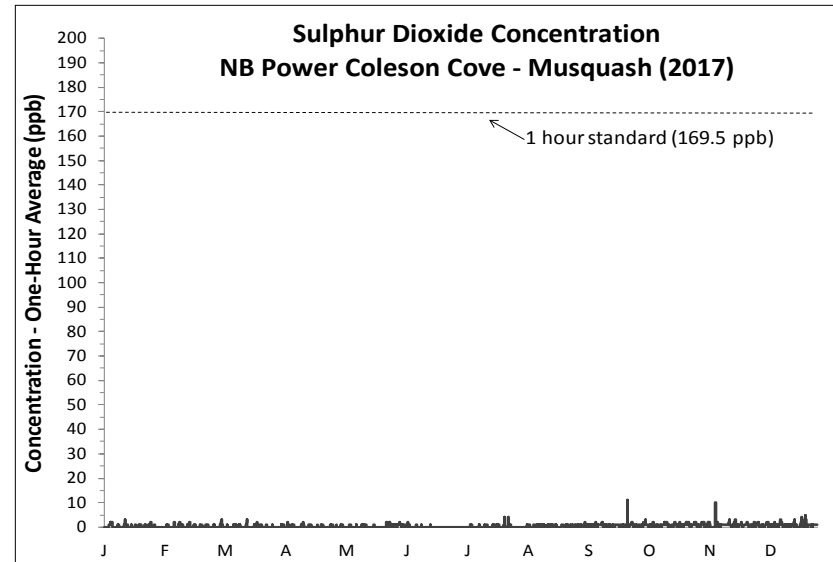
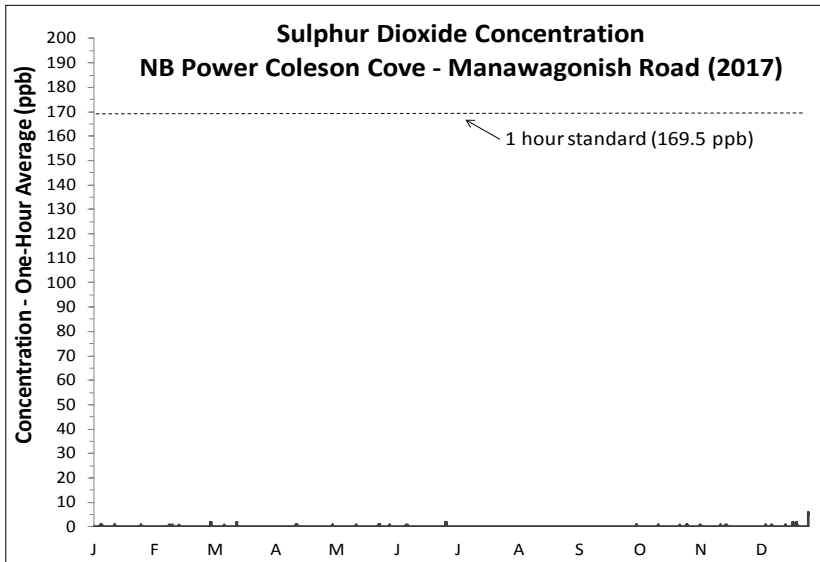
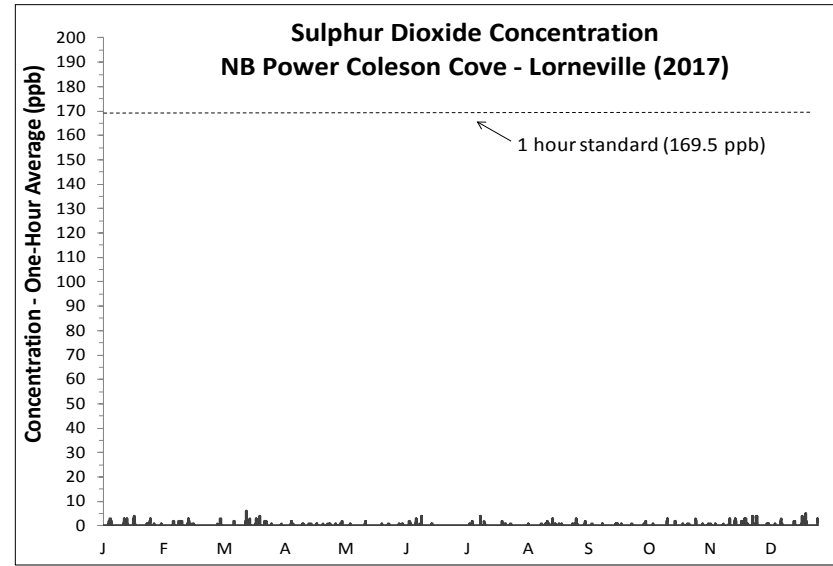
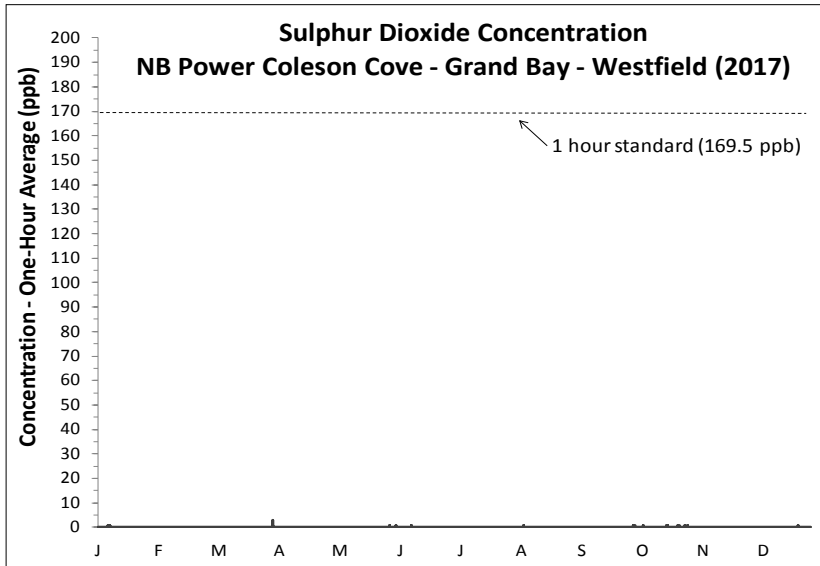
PART III: STATIONS OPERATED BY INDUSTRY - NB Power, Millbank - Total Suspended Particulate



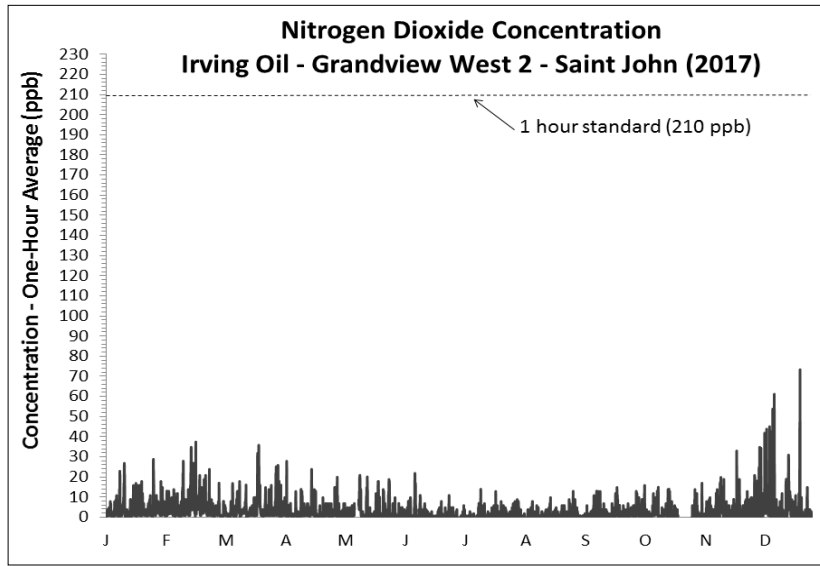
PART III: STATIONS OPERATED BY INDUSTRY - NB Power, Coleson Cove - Fine Particulate Matter



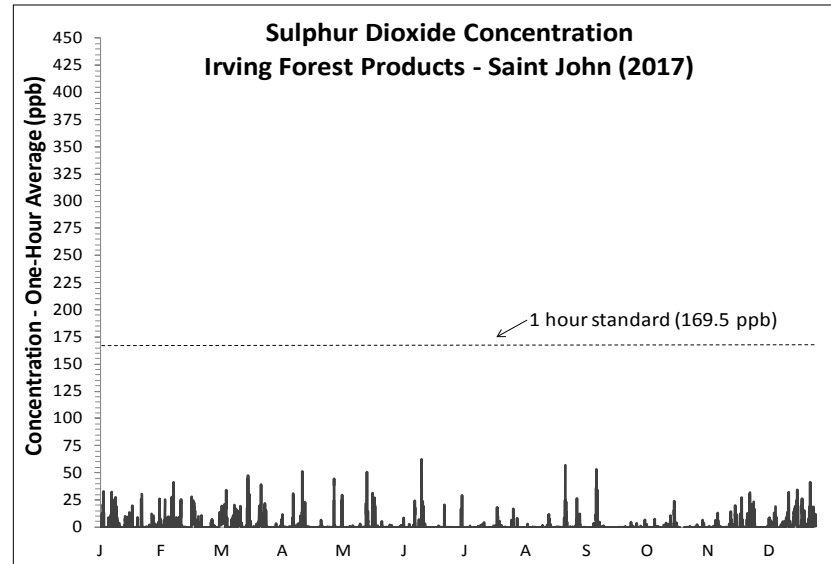
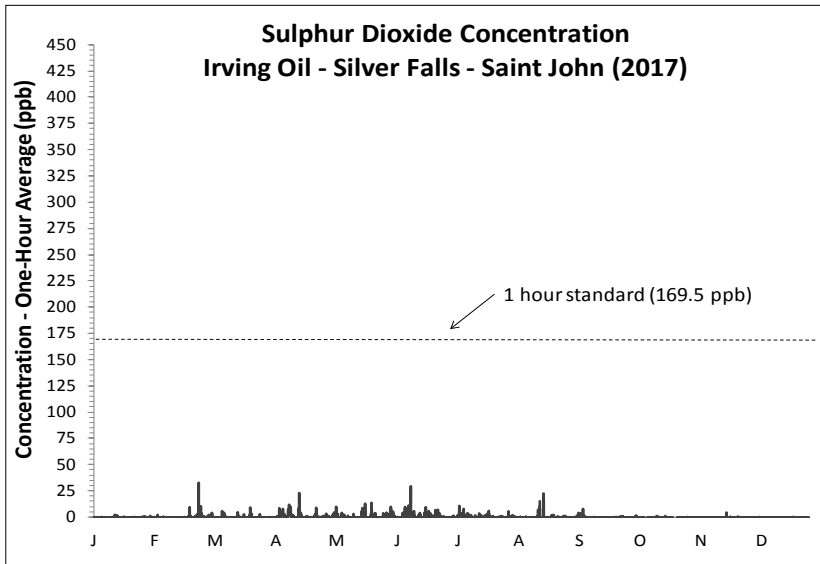
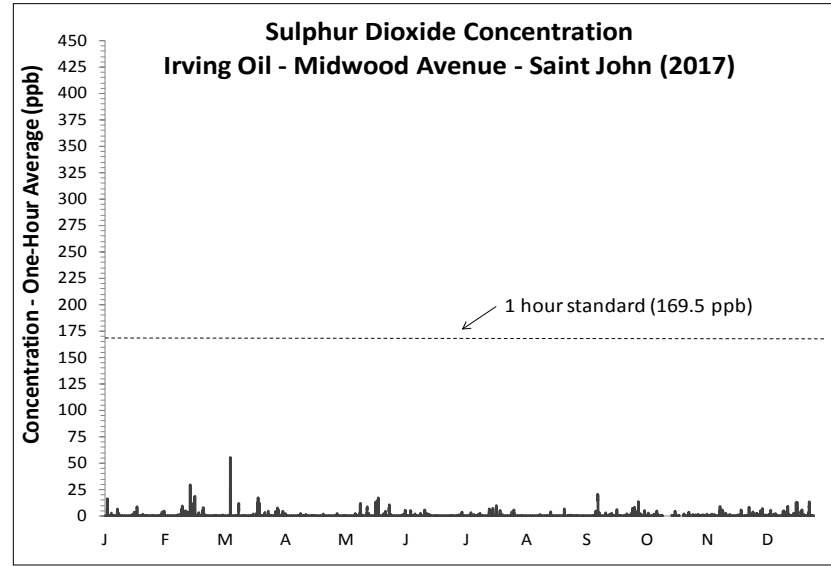
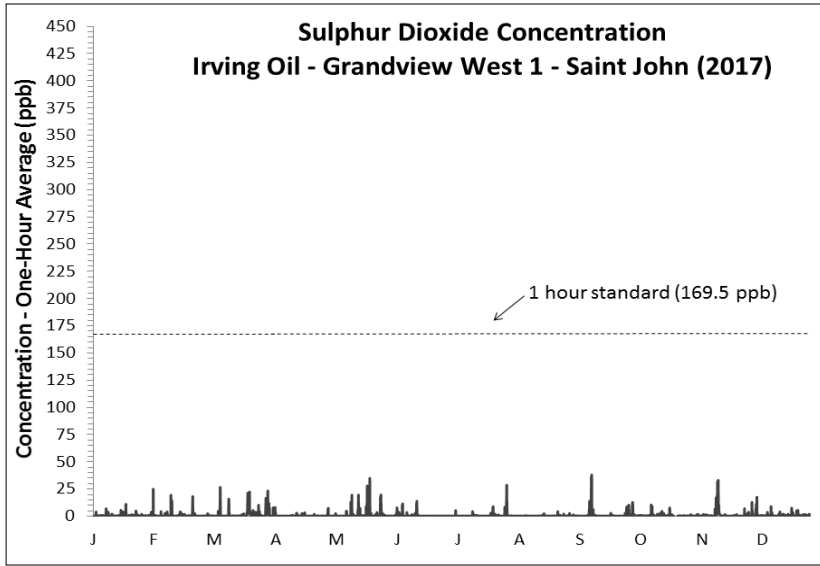
PART III: STATIONS OPERATED BY INDUSTRY - NB Power, Coleson Cove - Sulphur Dioxide



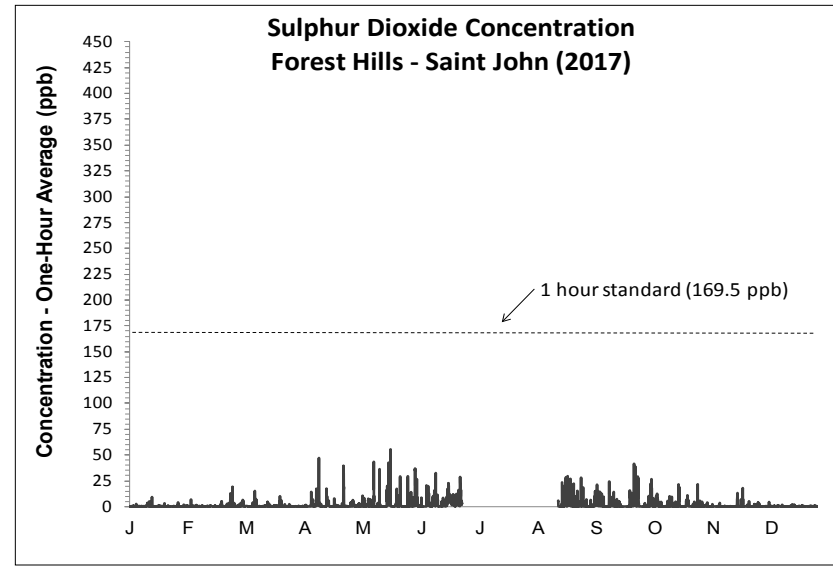
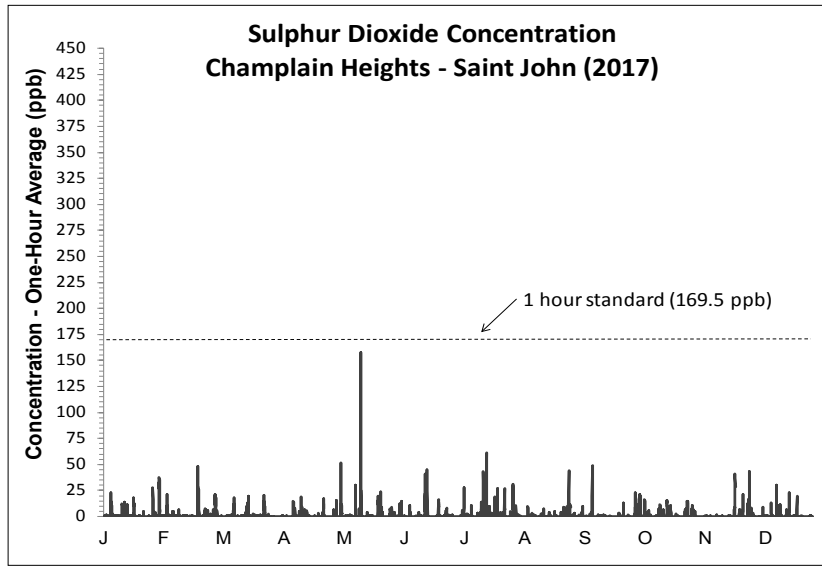
PART III: STATIONS OPERATED BY INDUSTRY - Irving Oil Ltd., Saint John - Nitrogen Dioxide



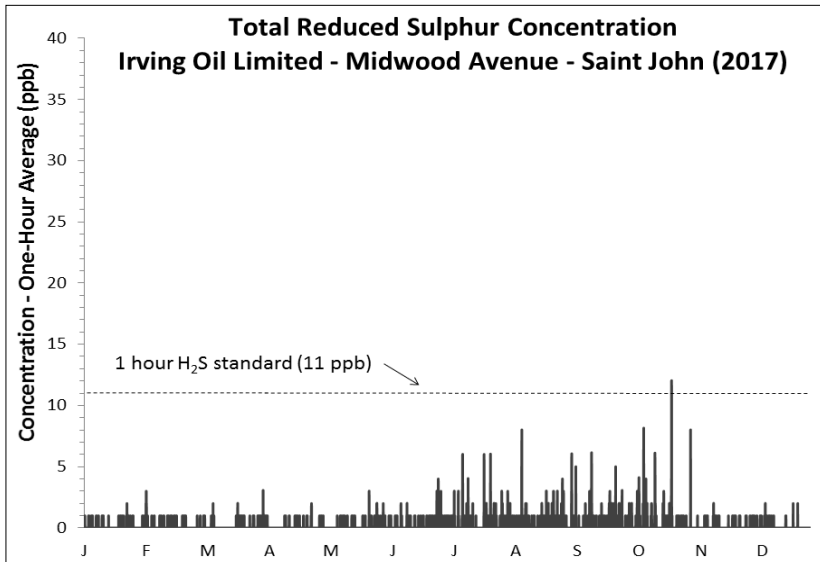
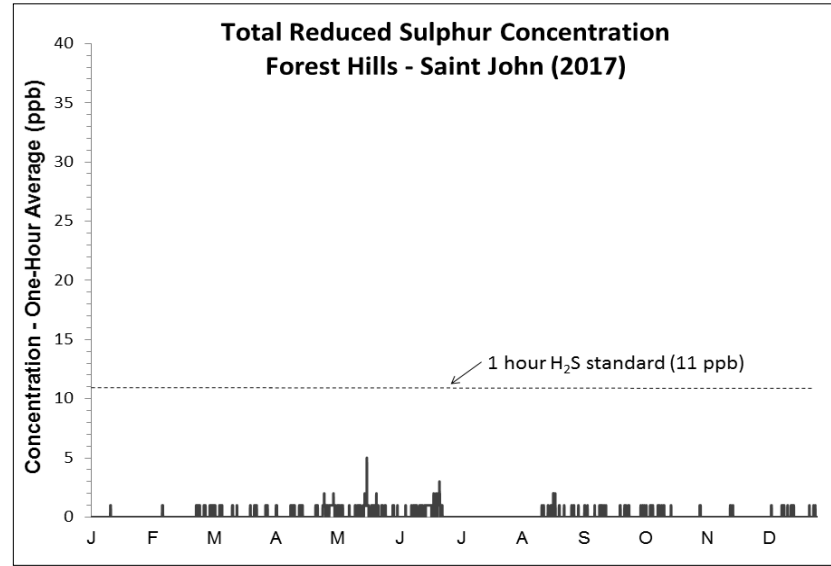
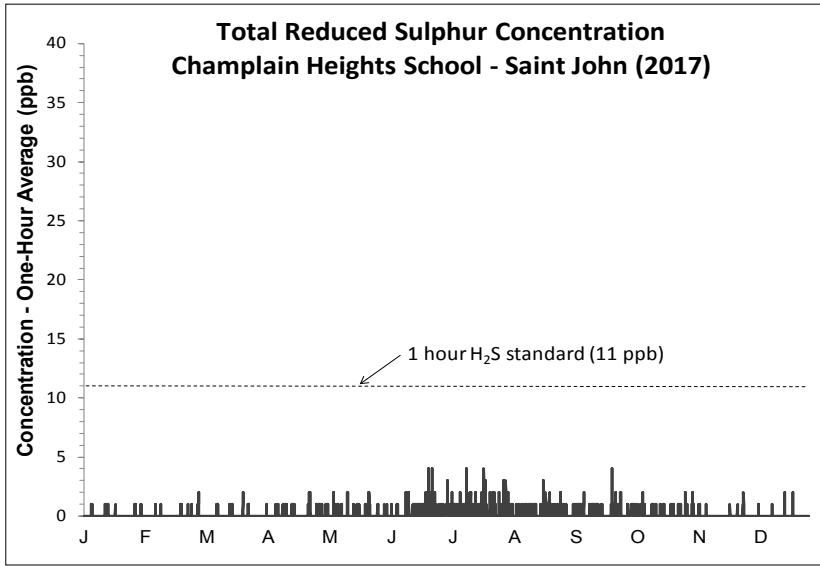
PART III: STATIONS OPERATED BY INDUSTRY - Irving Oil Ltd., Saint John - Sulphur Dioxide



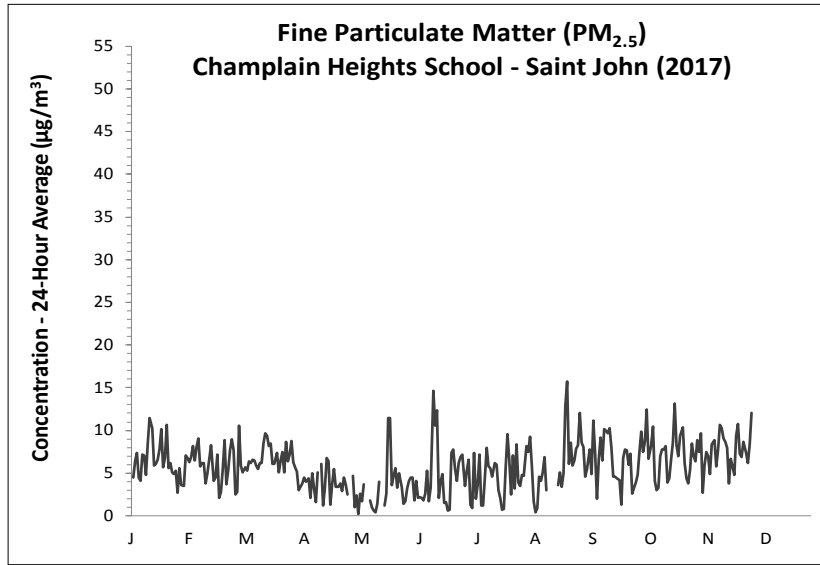
PART III: STATIONS OPERATED BY INDUSTRY - Irving Oil Ltd., Saint John - Sulphur Dioxide



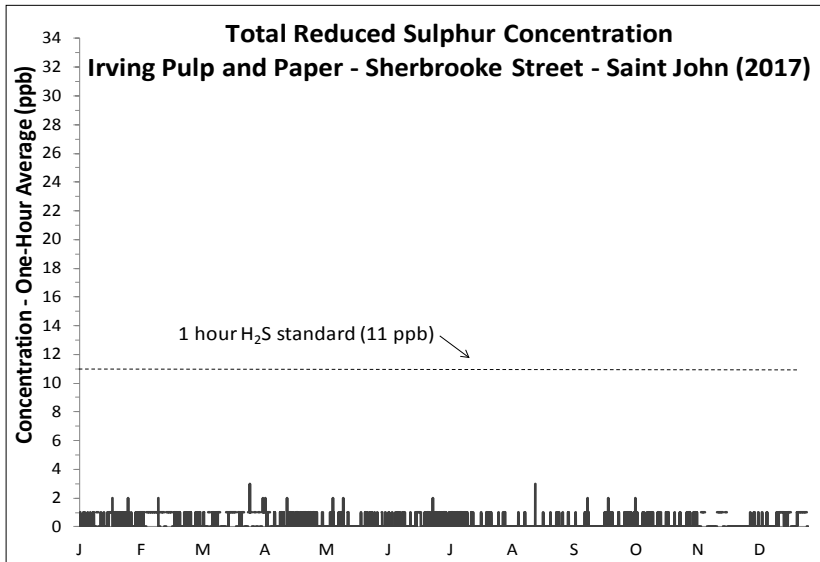
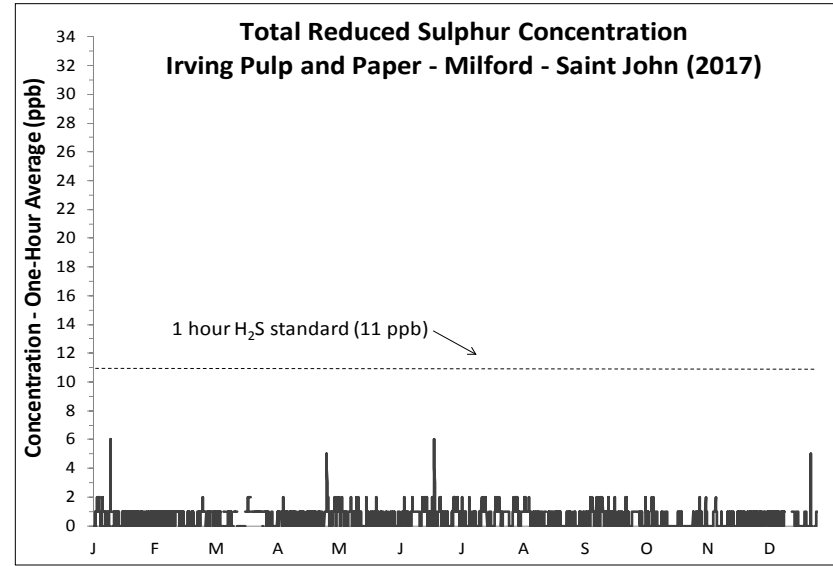
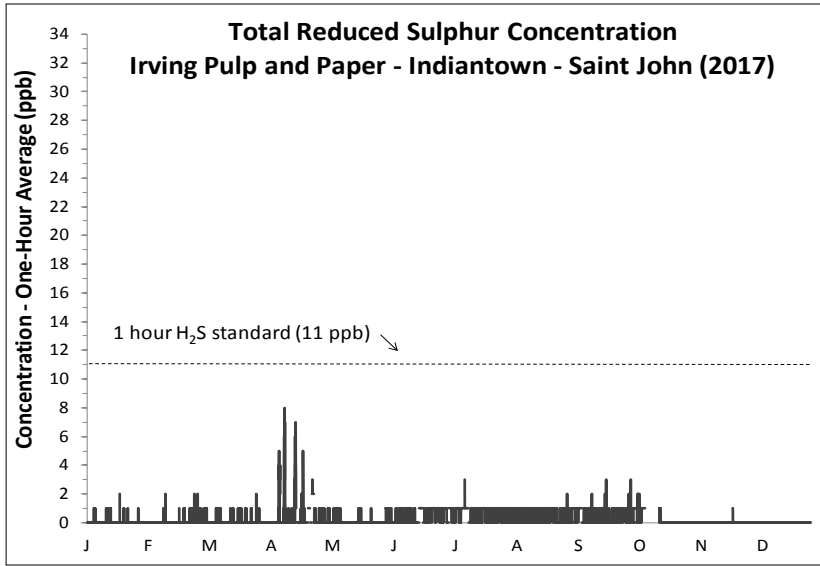
PART III: STATIONS OPERATED BY INDUSTRY - Irving Oil Ltd., Saint John - Total Reduced Sulphur



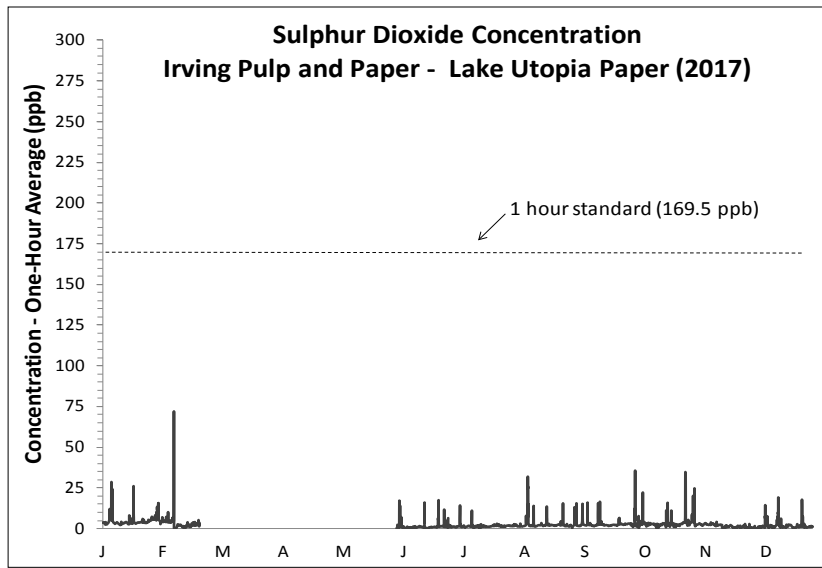
PART III: STATIONS OPERATED BY INDUSTRY - Irving Oil Ltd., Saint John - Fine Particulate Matter



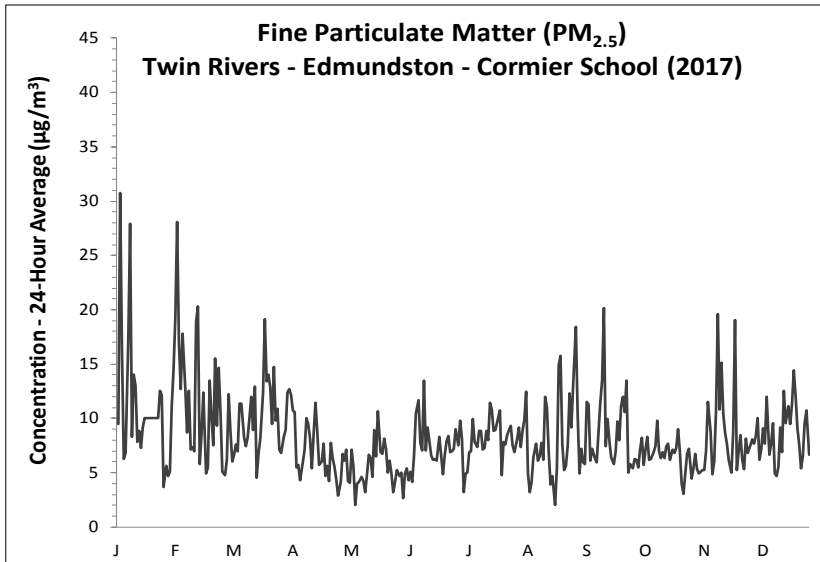
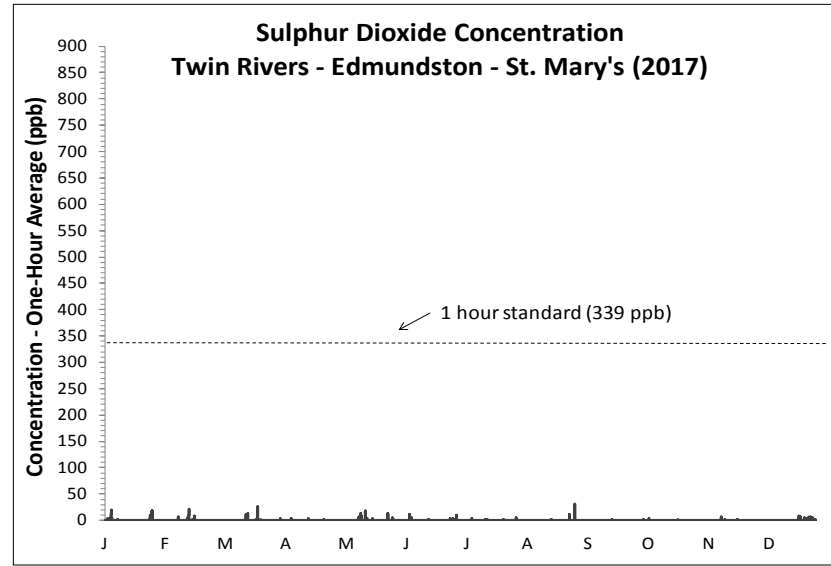
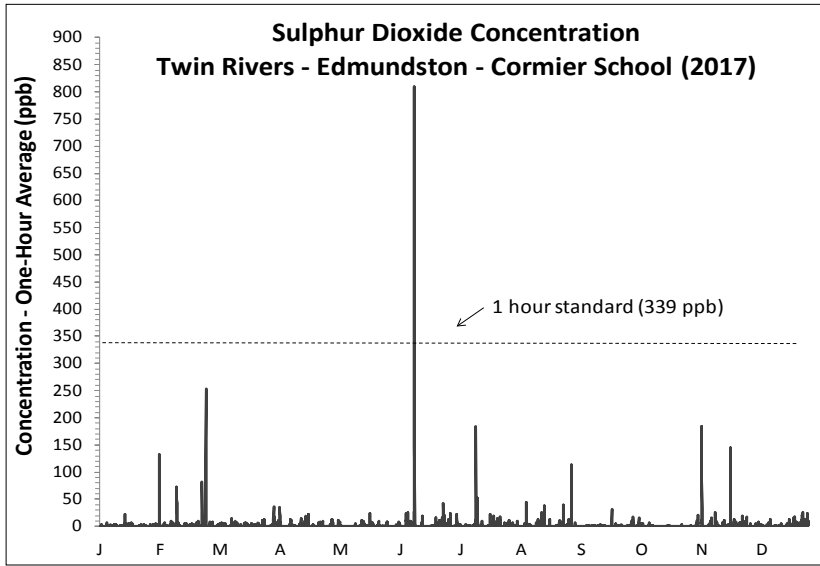
PART III: STATIONS OPERATED BY INDUSTRY - Irving Pulp and Paper, Saint John - Total Reduced Sulphur



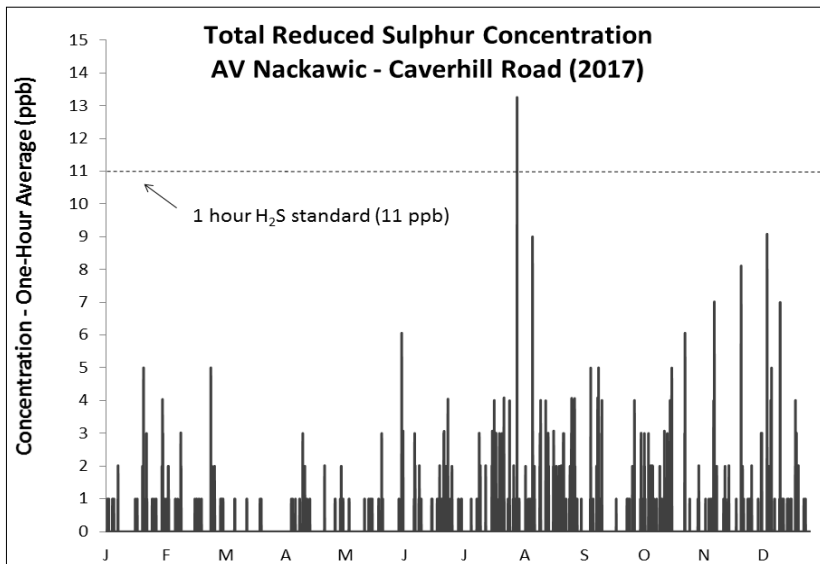
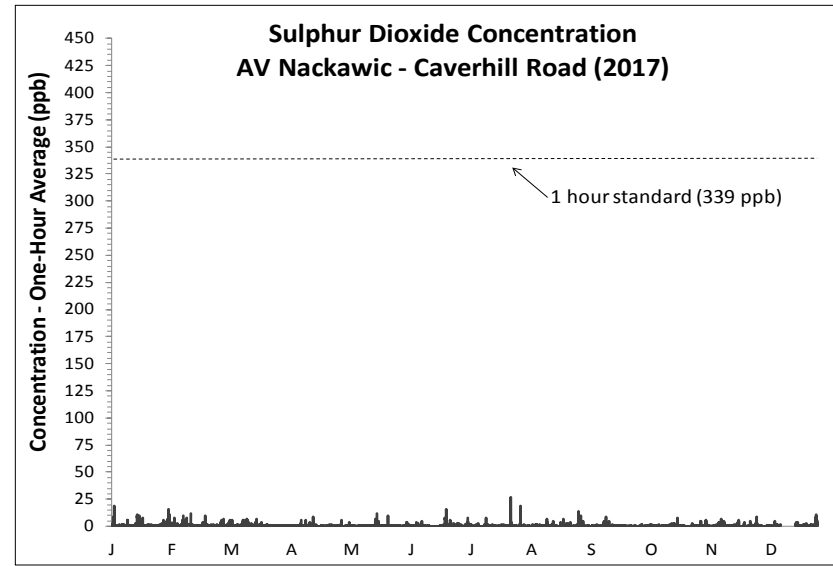
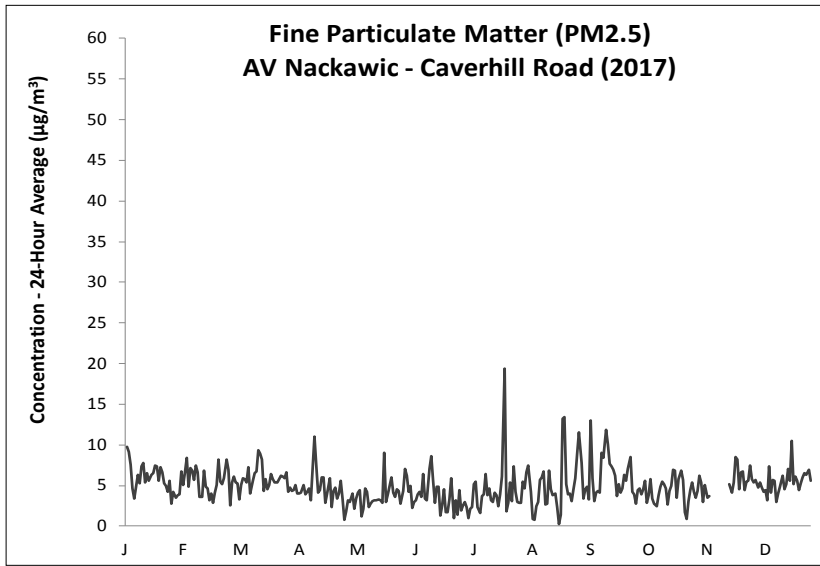
PART III: STATIONS OPERATED BY INDUSTRY - Irving Pulp and Paper, Lake Utopia - Sulphur Dioxide



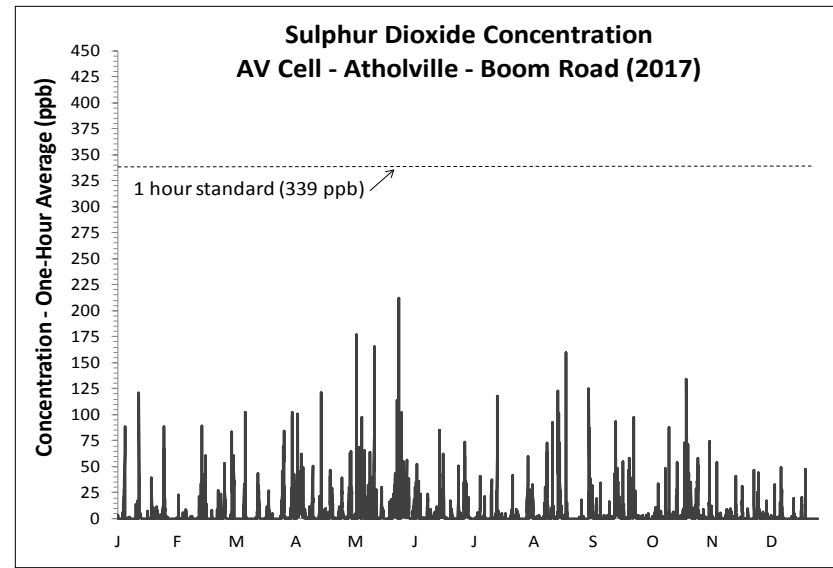
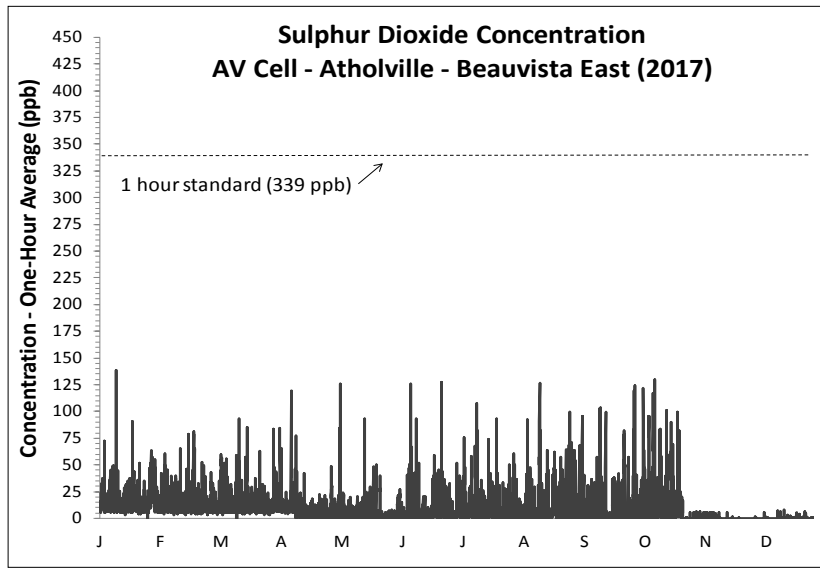
PART III: STATIONS OPERATED BY INDUSTRY - Twin Rivers Paper Company, Edmundston - All Parameters



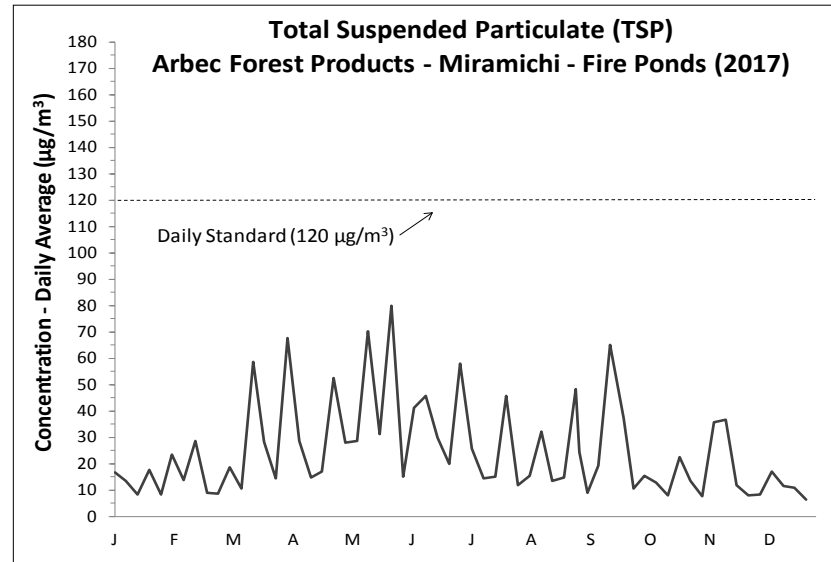
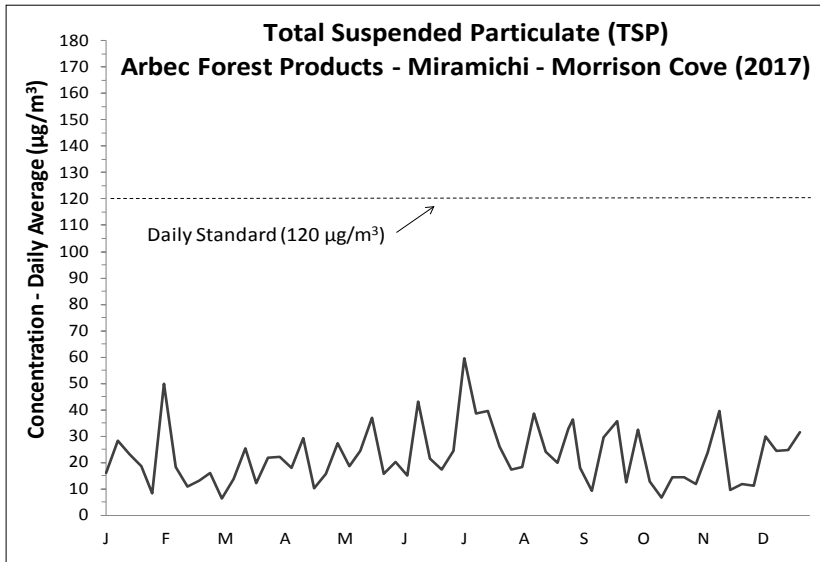
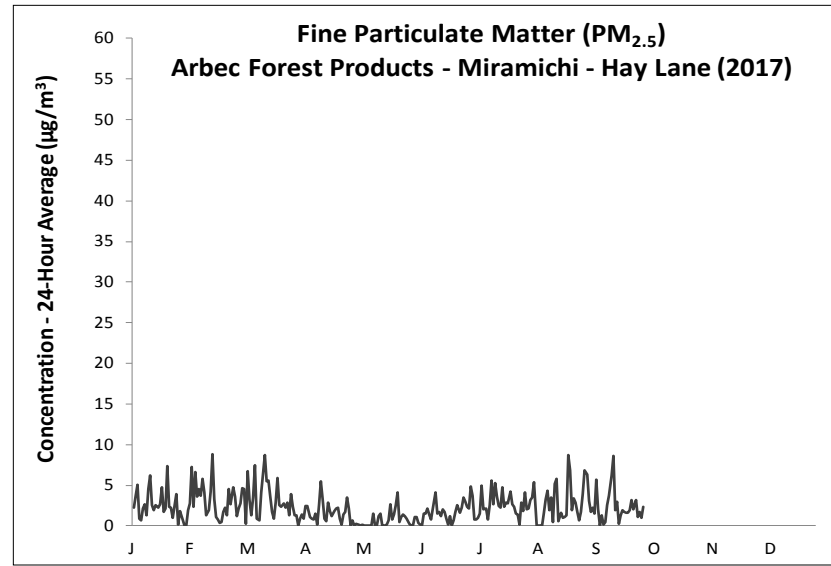
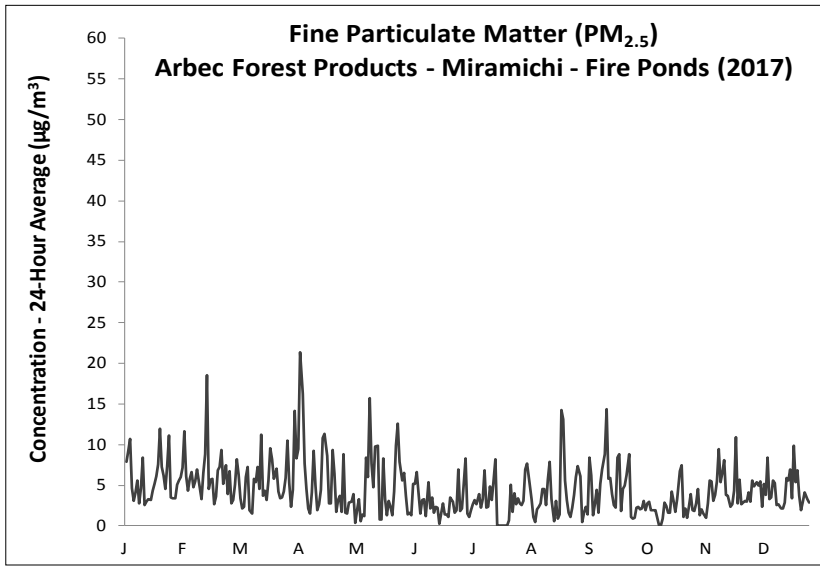
PART III: STATIONS OPERATED BY INDUSTRY - AV Nackawic, Nackawic - All Parameters



PART III: STATIONS OPERATED BY INDUSTRY - AV Cell, Atholville - Sulphur Dioxide



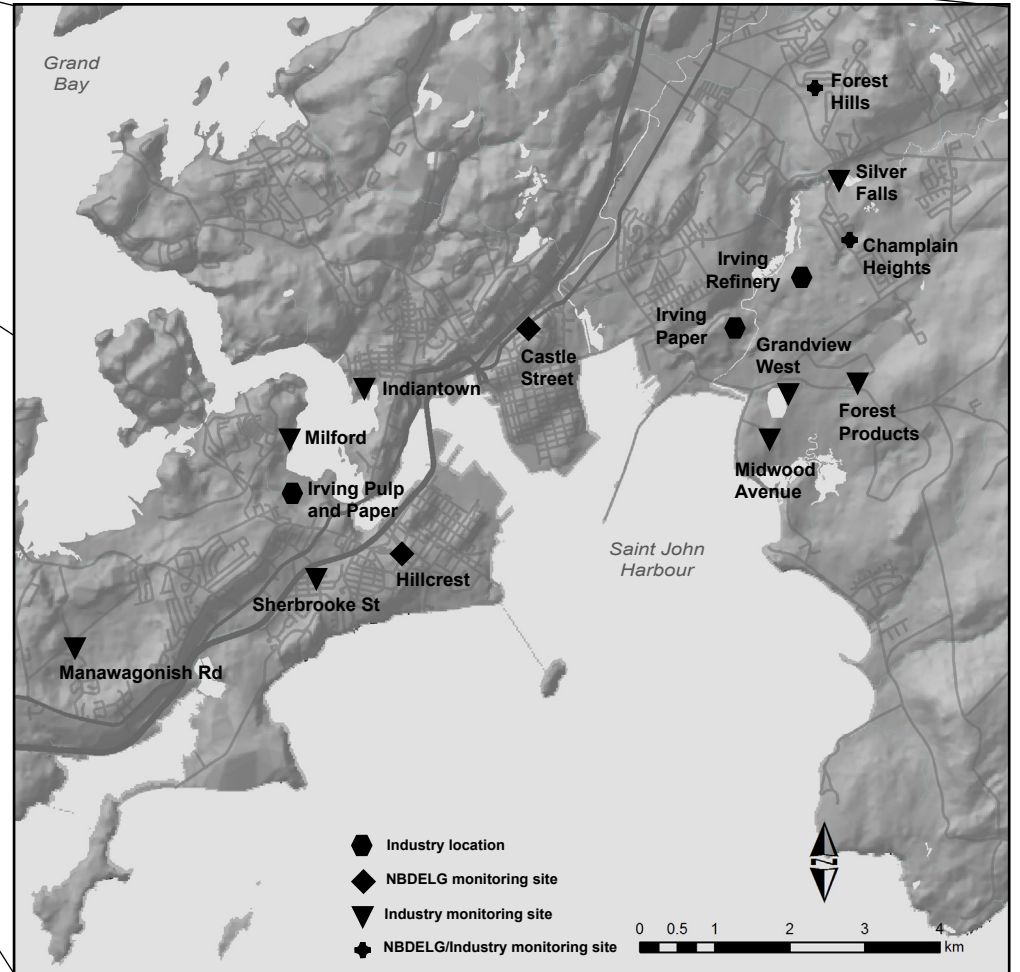
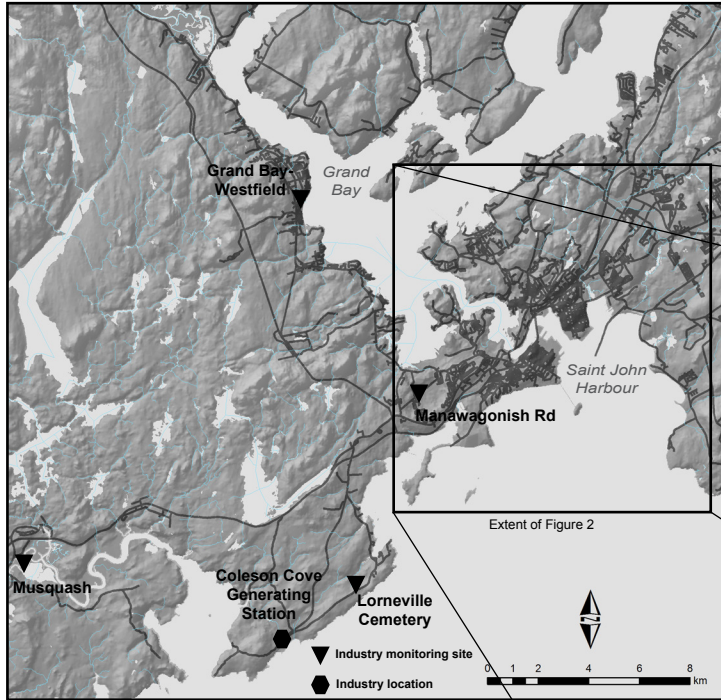
PART III: STATIONS OPERATED BY INDUSTRY - Arbec Forest Products, Miramichi- All Parameters



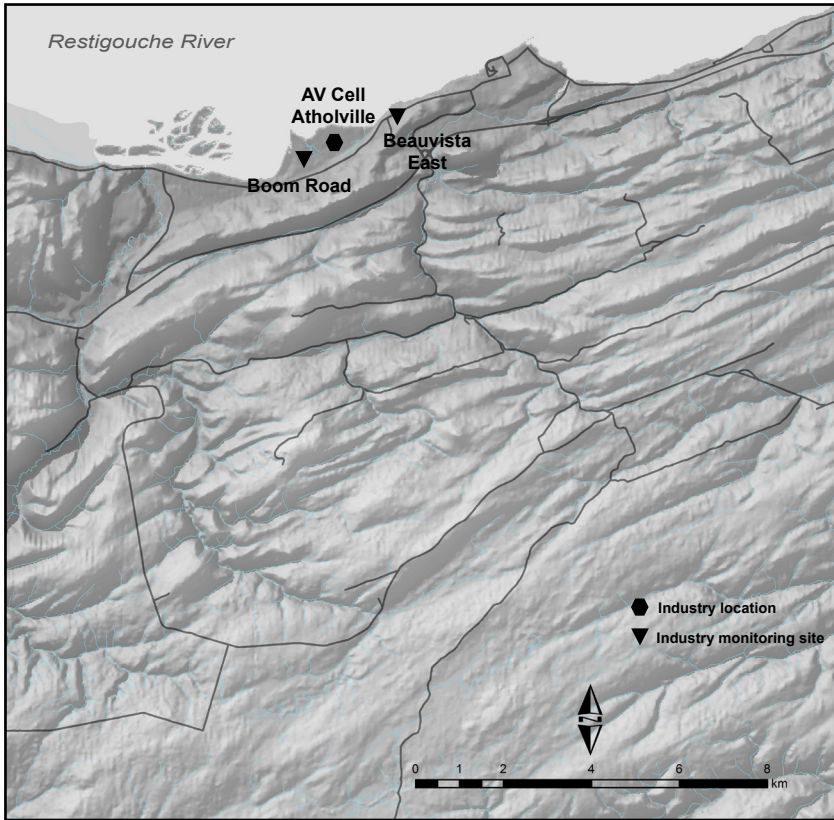
PART IV:
DETAILED STATION LOCATION MAPS

PART IV: DETAILED STATION LOCATION MAPS - Saint John Region

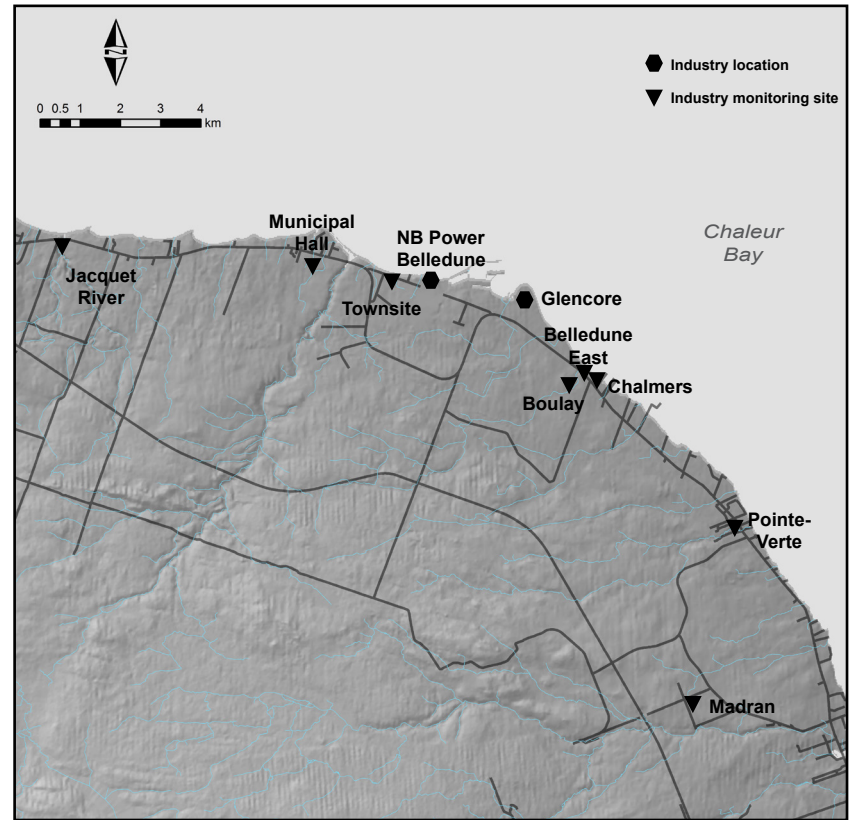
Grand Bay/Musquash/Saint John Area



PART IV: DETAILED STATION LOCATION MAPS - Atholville and Belledune

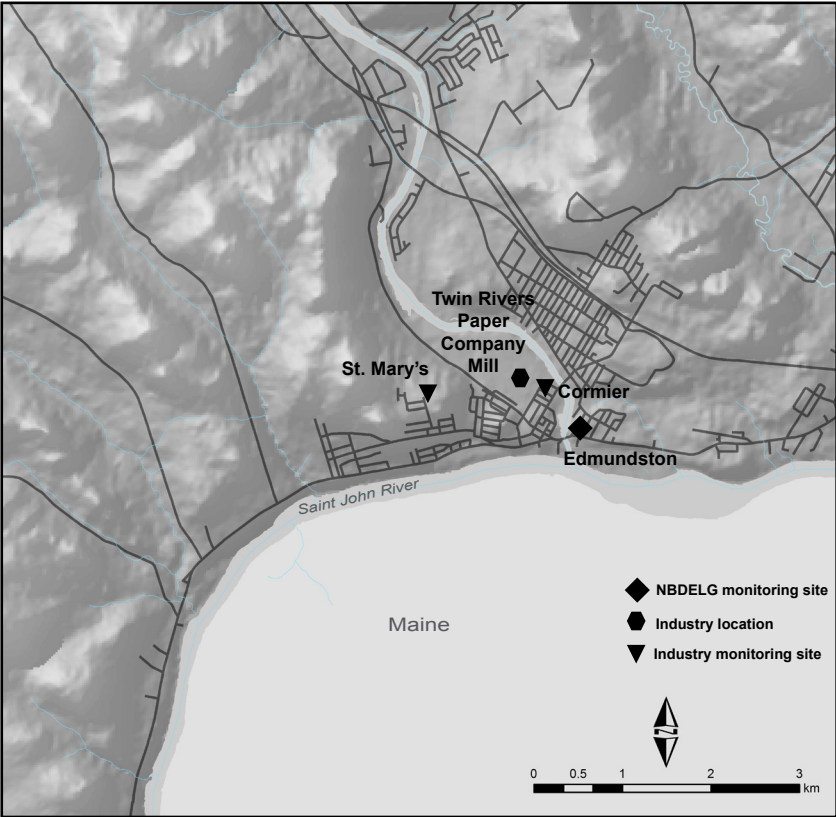


Atholville Area

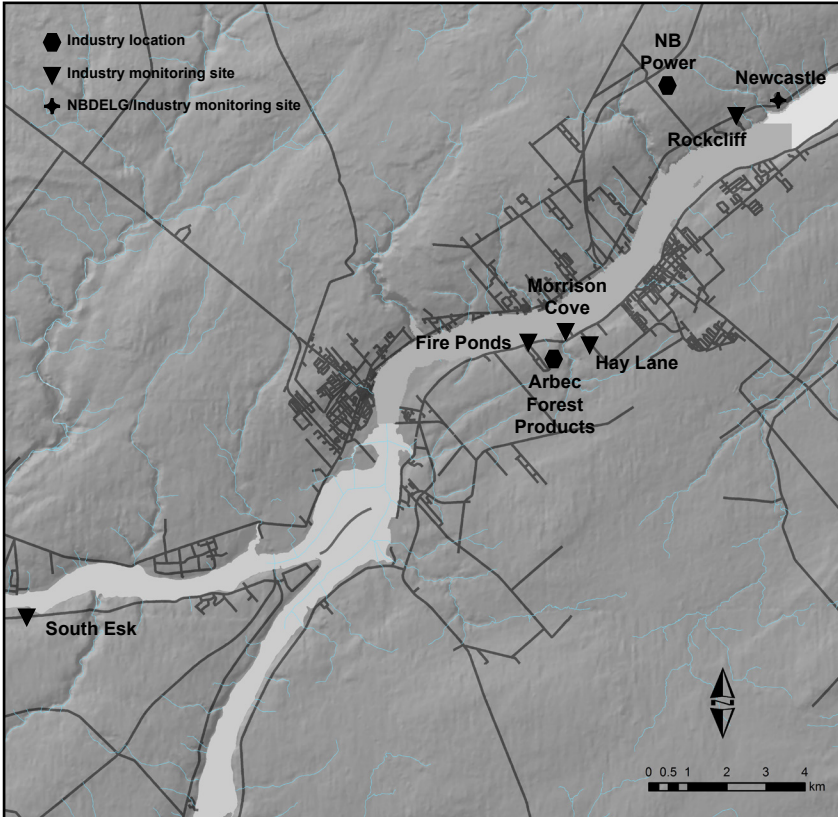


Belledune Area

PART IV: DETAILED STATION LOCATION MAPS - Edmundston and Lower Newcastle



Edmundston Area



Lower Newcastle