



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

November 2020

December 31, 2020

Alberta Environment and Parks

11th Floor, Oxbridge Place
9820-106 Street
Edmonton Alberta T5K 2J6

Subject: **Peace Airshed Zone Association (PAZA)**
November 2020 Ambient Air Quality Monitoring Report

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of November 2020.

The representative of the Person Responsible for this monitoring program is:

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This report was prepared by Matrix Solutions Inc. and reviewed by Mandeep Dhaliwal.

PAZA has retained the services of WSP Canada Inc. to conduct continuous ambient monitoring and Matrix Solutions Inc. to provide data validation and reporting.

This report is submitted by PAZA on behalf of the industrial member companies to satisfy the requirements of the facility Operating Approvals listed in Table A

The monthly summary report includes the operational summaries and hourly continuous monitoring and monthly passive results

Continuous Monitoring:

Seven (7) Stations including Henry Pirker (Grande Prairie), Evergreen Park, Smoky Heights, Beaverlodge, Valleyview, Donnelly and Wembley-Portable. Detailed Summaries are included in the report

Calibration and Data Submission:

Monthly report, hourly data and calibration reports for November 2020 were submitted to the ETS data system.

Table A. PAZA members with Facility Operating Approvals

Company	Facility	LSD	EPEA Approval No.
Advantage Oil & Gas Ltd.	Glacier	05-02-076-13-W6	262479-00-00
Alberta Power (2000) Ltd. (an ATCO company)	Sturgeon	SW-06-069-21-W5	10283-02-02
ATCO Power Canada	Poplar Hill	11-19-073-08-W6	67774-01-01
ATCO Power Canada	Valleyview	SW-06-069-21-W5	147709-01-01
AltaGas Ltd.	Pouce Coupe	03-03-081-13-W6	247673-00-00
	Ante Creek	02-26-068-25-W5	266694-00-00
	Gordondale	02-26-068-25-W5	287474-00-00
Apache Canada Ltd.	House Mountain	01-08-070-10-W5	10137-02-02
Birchcliff Energy Ltd.	Pouce Coupe	03-22-078-12-W6	252529-00-00
Canadian Natural Resources Limited	Bonanza	11-25-081-11-W6	00000029-01-00
	Progress/Gordondale	01-01-077-10-W6	00010036-02-00
	Gold Creek	13-26-067-05-W6	00010446-02-00
	Teepee Creek	SE-2-074-04-W6	00001635-02-00
	Sturgeon/Valleyview	02-02-069-22-W5	1633-02-00
Canfor Forest Products	Grande Prairie	SW-23-071-06-W6	152645-01-00
Conocophillips Canada Energy Partnership	Wembley	06-19-073-08-W6	00000212-01-00
Devon Canada	NW Belloy (Dunvegan)	16-36-079-03-W6	00009810-02-00
	Eaglesham (South)	02-14-077-25-W5	00047669-01-00
	North Normanville	03-36-079-23-W5	00047455-01-00
	West Culp	05-34-078-25-W6	00136284-00-00
	Cecil	08-15-084-08-W6	00010032-02-00
Encana Corporation	Sexsmith	04-08-075-07-W6	00010002-01-00
Enerplus Resources	Pouce Coupe	SW-06-069-21-W5	1464-02-03
Exshaw Oil Corporation	Spirit River	03-10-077-07-W6	344521-00-00
Grande Prairie Generation Inc.	Northern Prairie Power Project	04-19-073-08-W6	00238762-00-00
Inception Exploration Ltd.	Gold Creek	03-26-069-05-W6	00335317-00-02
Long Run Exploration	Eaglesham	01-25-076-01-W6	00241532-00-00
	Kakut	14-12-075-03-W6	00248469-00-00
	Donnelly	06-01-077-21-W5	00000087-02-00
	Puskwaskau	03-26-074-01-W6	00017524-01-00
Longview Oil Corp.	Sunset House	06-22-070-20-W5	138884-01-00
Penn West Petroleum Ltd.	Tangent	13-29-080-23-W5	00001746-02-00
	Pouce Coupe	16-07-078-11-W6	00000614-01-00
Petrus Resources	Rycroft	08-25-077-06-W6	11351-02-00
	Spirit River	08-34-077-06-W6	11096-02-00
NorthRiver Midstream Inc.	Fourth Creek	16-11-082-09-W6	00000263-01-00
	Gordondale	11-26-079-09-W6	00011495-01-01
	Pouce Coupe/Bonanza	3-23-080-13-W6	00070203-01-01
Suncor Energy Inc.	Progress	07-22-078-09-W6	00011428-02-00
TAQA North Ltd.	Valhalla	13-21-076-09-W6	00017620-01-00
Veresen Energy	Hythe Brainard	11-18-074-12-W6	00010910-02-00
Weyerhaeuser Canada	Grande Prairie Pulp and Wood Plant	01-14-070-05-W6	00000113-02-00

Concentrations in excess of the Clean Air (Maximum Levels) Regulation:

There was one 24-hr reading above the AAAQO at Henry Pirker station for PM_{2.5}
PM_{2.5} = 30.0 µg/m³ (AAAQO = 29 µg/m³), occurred on Nov 20, AEP ref#373871

Operational times less than 90 percent:

All operational times in November were greater than 90% with the exception of Wembley where the THC/CH₄/NMHC analyzer & zero air generator required troubleshooting with repair resulting in <90% uptime, AEP ref#373577

Air Incidents

None were reported to PAZA

Deviations from Authorized Monitoring Methods

None to report.

Passive Monitoring

- 33 Stations throughout the PAZA zone, the passive sample analyses were performed by Bureau Veritas Laboratories
- There were eight duplicate sites sampled in the month of November with RPD ranging from 0 to 15%
 - For sulphur dioxide duplicates at Steeprock Creek, Spirit River, Peavine stations
 - For ozone duplicate at Kinuso station
 - For nitrogen dioxide duplicates at Silver Valley, Sylvester, Gift Lake stations
 - For hydrogen sulphide duplicate at Girouxville 4 station
- There were no field notes of potential issues.
- There were no exceedances of the AAAQOs for all monitored parameters at any of the passive monitoring stations during this month.

I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements.

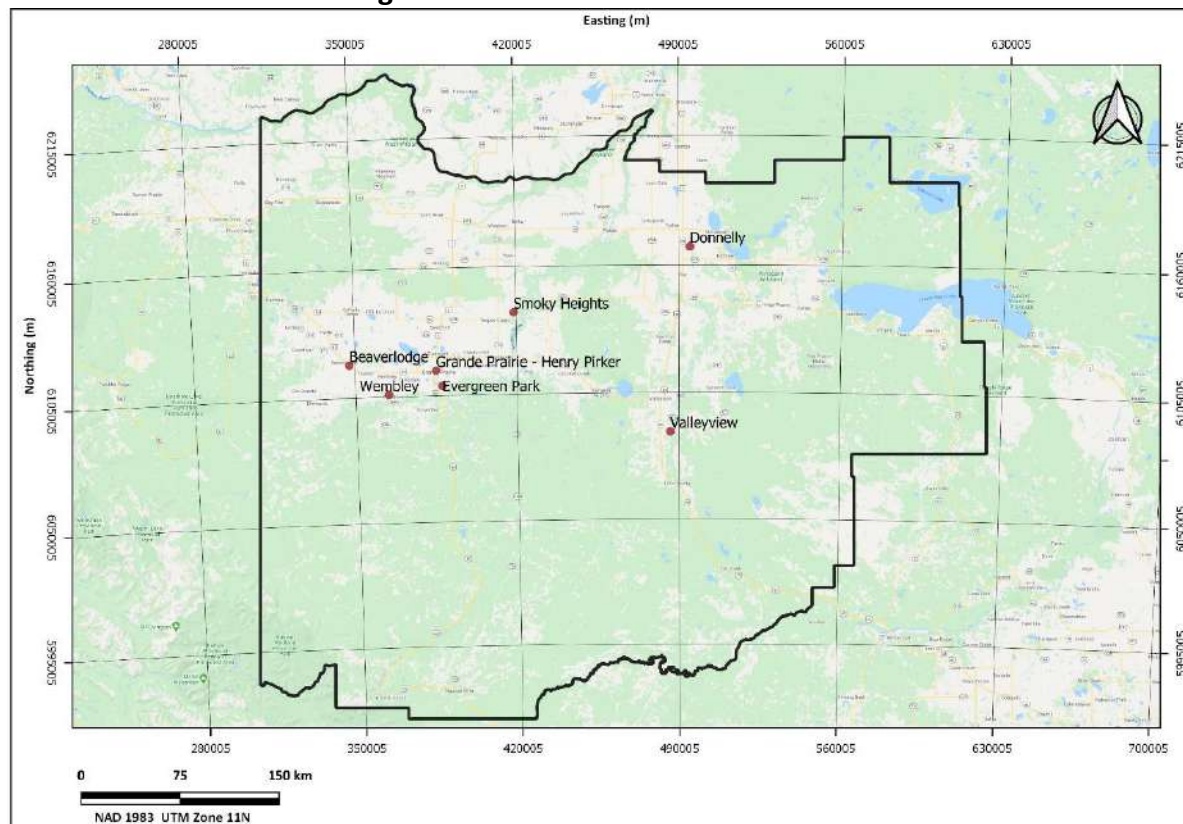


Mandeep Dhaliwal, B.Sc., P.Chem.
Program Manager

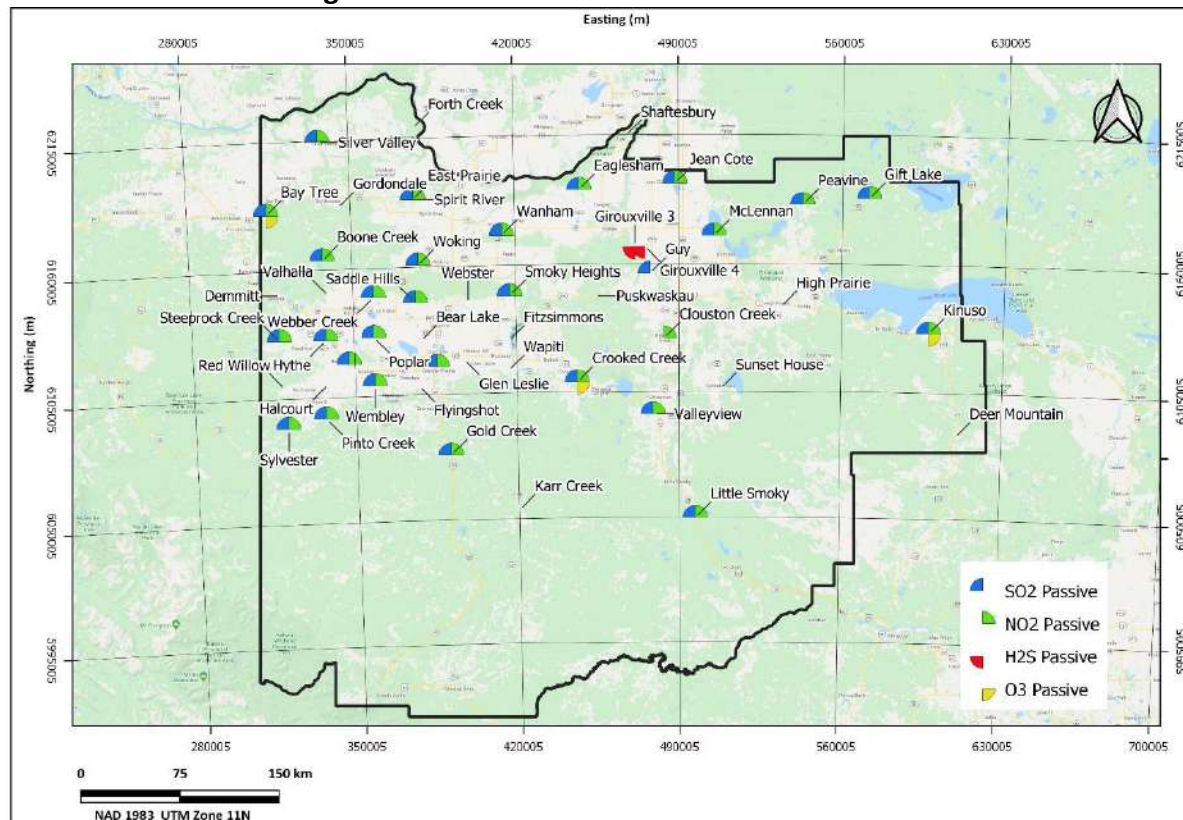
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PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 November Monthly Station Summaries

The following summaries are for the equipment and data results from the continuous ambient monitoring network

1.1 Beaverlodge Air Monitoring Station

PAZA - November 2020 Beaverlodge Station Report

Parameter	November			Operational	Max	1-hour		24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	1.0	0.0	95.1%	100.0%	23.1	-	Nov-23 13:00	5.9	-	Nov-23	-	-	-	-	Nov 03, 2020
NO ₂ (ppb)	5.4	0.4	95.1%	100.0%	25.6	159	Nov-23 18:00	14.1	-	Nov-23	0	-	-	-	Nov 03, 2020
NO _x (ppb)	6.4	0.4	95.1%	100.0%	38.7	-	Nov-20 09:00	20.1	-	Nov-23	-	-	-	-	Nov 03, 2020
O ₃ (ppb)	24.1	0.3	95.3%	100.0%	38.9	76	Nov-09 15:00	35.0	-	Nov-09	0	-	-	-	Nov 03, 2020
PM _{2.5} (µg/m ³)	5.2	0.0	99.6%	100.0%	36.0	80	Nov-20 07:00	17.1	29	Nov-20	0	-	0	-	Nov 02, 2020
SO ₂ (ppb)	0.6	0.0	95.3%	100.0%	9.2	172	Nov-07 02:00	2.1	48	Nov-17	0	-	0	0	Nov 02, 2020
Average															
Temp (°C)	-3.9	-18.6	100.0%	100.0%	16.7	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	75.7	30.8	100.0%	100.0%	100.0										
WS (km/hr)	9.1	0.2	100.0%	100.0%	51.6										
WD (deg)	285	0.0	100.0%	100.0%	360.0										
Average Wind Direction										285	WNW				

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	No Operational issues noted during the month
O ₃	Thermo	49i	No Operational issues noted during the month
PM _{2.5}	Sharp	5030	No Operational issues noted during the month
SO ₂	Thermo	43i-TLE	No Operational issues noted during the month
Met Equip	MetOne	50.5	No Operational issues noted during the month

1.2 Evergreen Park Air Monitoring Station

PAZA - November 2020 Evergreen Park Station Report

Parameter	November			Operational	Max	1-hour		24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
PM _{2.5} (µg/m ³)	5.5	0.0	98.9%	99.3%	36.4	80	Nov-13 00:00	20.2	29	Nov-20	0	-	0	-	Nov-03-2020
SO ₂ (ppb)	0.3	0.0	95.3%	100.0%	4.9	172	Nov-07 14:00	1.0	48	Nov-07	0	-	0	0	Nov-03-2020
TRS (ppb)	0.6	0.0	94.5%	99.3%	2.7	-	Nov-20 19:00	1.1	-	Nov-20	-	-	-	-	Nov-03-2020
Average															
Temp (°C)	-5.2	-20.8	100.0%	100.0%	16.6	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	78.3	31.2	100.0%	100.0%	98.2										
WS (km/hr)	2.8	0.0	100.0%	100.0%	18.9										
WD (deg)	264	0.0	100.0%	100.0%	359.3										
Average Wind Direction										264	W				

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted during the month; Nov 2, 4 hours removed due to insect contamination on filter
SO ₂	TECO	43i	No Operational issues noted during the month
TRS	TECO	43C	Second calibration performed Nov 13, due to elevated baseline, second calibration flagged as maintenance
Met Equip	GI/Young	MetPak/RMY86004	No Operational issues noted during the month

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - November 2020 Henry Pirker Station Report

Parameter	November			Operational	Max	1-hour		8-hour / 24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
NO (ppb)	9.9	0.0	95.0%	100.0%	114.6	-	Nov-20 18:00	33.2	-	Nov-20	-	-	-	-	Nov 02, 2020
NO ₂ (ppb)	15.0	1.3	95.0%	100.0%	47.0	159	Nov-20 18:00	32.3	-	Nov-13	0	-	-	-	Nov 02, 2020
NO _x (ppb)	25.1	1.3	95.0%	100.0%	162.1	-	Nov-20 18:00	64.2	-	Nov-13	-	-	-	-	Nov 02, 2020
O ₃ (ppb)	15.3	0.4	95.3%	100.0%	38.4	76	Nov-01 02:00	29.9	-	Nov-27	0	-	-	-	Nov 04, 2020
PM _{2.5} (µg/m ³)	9.0	0.5	99.6%	100.0%	45.2	80	Nov-13 18:00	30.0	29	Nov-20	0	-	1	-	Nov 13, 2020
SO ₂ (ppb)	0.3	0.0	95.3%	100.0%	11.7	172	Nov-28 13:00	1.6	48	Nov-28	0	-	0	0	Nov 04, 2020
H ₂ S (ppb)	0.3	0.0	95.3%	100.0%	1.6	10	Nov-23 11:00	0.7	3	Nov-13	0	-	0	-	Nov 05, 2020
CH ₄ (ppm)	2.2	1.7	94.7%	99.4%	3.3	-	Nov-29 08:00	2.6	-	Nov-29	-	-	-	-	Nov 05, 2020
THC (ppm)	2.2	1.7	94.7%	99.4%	3.3	-	Nov-29 08:00	2.7	-	Nov-20	-	-	-	-	Nov 05, 2020
NMHC (ppm)	0.0	0.0	94.7%	99.4%	0.4	-	Nov-29 15:00	0.2	-	Nov-20	-	-	-	-	Nov 05, 2020
CO (ppm)	0.3	0.1	95.1%	100.0%	1.2	13	Nov-13 09:00	0.7	5	Nov-13	0	0	-	-	Oct 06, 2020
Average Minimum Valid Operational Maximum															
Temp (°C)	-4.7	-21.6	100.0%	100.0%	16.3	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	70.7	35.5	100.0%	100.0%	88.5										
SR (W/m ²)	25.1	0.0	100.0%	100.0%	251.1										
WS (km/hr)	5.6	0.1	100.0%	100.0%	31.3										
WD (deg)	284	3.2	100.0%	100.0%	358.8	Average Wind Direction 284 WNW									

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	No Operational issues noted during the month
O ₃	TECO	49i	No Operational issues noted during the month
PM _{2.5}	Sharp	5030	No Operational issues noted during the month; 24-hr exceedance Nov 20, AEP ref#373871
SO ₂	TEI	43i-TLE	No Operational issues noted during the month
H ₂ S	TEI	450i	No Operational issues noted during the month
THC/CH ₄ /NMHC	TEI	55i	Replaced hydrogen & span cylinders; second calibration Nov 25 due to high span, flagged as maintenance
CO	TEI	48i-TLE	No Operational issues noted during the month; replaced span gas
Met Equip	MetOne	50.5	No Operational issues noted during the month

1.4 Smoky Heights Air Monitoring Station

PAZA - November 2020 Smoky Heights Station Report

Parameter	November			Operational	Max	1-hour		24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
PM _{2.5} (µg/m ³)	7.2	0.0	99.4%	100.0%	58.1	80	Nov-03 19:00	23.8	29	Nov-20	0	-	0	-	Nov 25, 2020
SO ₂ (ppb)	0.2	0.0	95.1%	100.0%	5.9	172	Nov-07 07:00	0.6	48	Nov-07	0	-	0	0	Nov 25, 2020
TRS (ppb)	0.2	0.0	95.1%	100.0%	0.7	-	Nov-12 04:00	0.3	-	Nov-21	-	-	-	-	Nov 25, 2020
Average Minimum Valid Operational Maximum															
Temp (°C)	-5.3	-23.3	100.0%	100.0%	14.8	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
WS (km/hr)	10.7	0.4	100.0%	100.0%	45.7										
WD (deg)	253	0.7	100.0%	100.0%	358.7	Average Wind Direction 253 WNW									

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Sharp	5030	No Operational issues noted during the month
SO ₂	TECO	43i	No Operational issues noted during the month
TRS	TEI	43i APSAA	No Operational issues noted during the month
Met Equip	MetOne	50.5	No Operational issues noted during the month

1.5 Valleyview Air Monitoring Station

PAZA - November 2020 Valleyview Station Report

Parameter	November			Operational	Max	1-hour		24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
SO ₂ (ppb)	0.1	0.0	95.3%	100.0%	2.1	172	Nov-07 12:00	0.4	48	Nov-21	0	-	0	0	Nov 26, 2020
H ₂ S (ppb)	0.1	0.0	95.4%	100.0%	0.6	10	Nov-13 20:00	0.2	3	Nov-15	0	-	0	-	Nov 26, 2020
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction 236 NW									
Temp (°C)	-4.0	-21.3	100.0%	100.0%	15.7										
RH (%)	82.2	35.1	100.0%	100.0%	100.2										
WS (km/hr)	3.9	0.1	100.0%	100.0%	20.6										
WD (deg)	236	0.0	100.0%	100.0%	359.8										

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	TEI	431-APSCB	No Operational issues noted during the month
H ₂ S	TEI	450I-APHAA	No Operational issues noted during the month
Met Equip	RMYoung	RMY86004	No Operational issues noted during the month

1.6 Donnelly Air Monitoring Station

PAZA - November 2020 Donnelly Station Report

Parameter	November			Operational	Max	1-hour		24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
SO ₂ (ppb)	0.2	0.0	94.2%	98.6%	1.6	172	Nov-26 20:00	0.4	48	Nov-11	0	-	0	0	Nov 16, 2020
H ₂ S (ppb)	0.1	0.0	93.6%	98.6%	0.7	10	Nov-20 17:00	0.2	3	Nov-01	0	-	0	-	Nov 16, 2020
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction 223 SW									
Temp (°C)	-4.2	-21.5	98.6%	98.6%	13.1										
WS (km/hr)	11.6	0.1	98.6%	98.6%	46.3										
WD (deg)	223	0.8	98.6%	98.6%	360.0										

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	Teco	43i	No Operational issues noted during the month; A data acquisition failure on Nov 19 resulted in 10 hours removed
H ₂ S	Thermo	45C	No Operational issues noted during the month; A data acquisition failure on Nov 19 resulted in 10 hours removed
Met Equip	RMYoung	5103	No Operational issues noted during the month; A data acquisition failure on Nov 19 resulted in 10 hours removed

1.7 Wembley Air Monitoring Station

PAZA - November 2020 Wembley Station Report

Parameter	November			Operational	Max	1-hour		24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
NO (ppb)	0.9	0.0	94.3%	99.3%	20.7	-	Nov-13 10:00	2.8	-	Nov-24	-	-	-	-	Nov 12, 2020
NO ₂ (ppb)	5.6	0.2	94.3%	99.3%	30.9	159	Nov-29 22:00	16.0	-	Nov-20	0	-	-	-	Nov 12, 2020
NO _x (ppb)	6.6	0.3	94.3%	99.3%	40.3	-	Nov-19 22:00	18.5	-	Nov-20	-	-	-	-	Nov 12, 2020
O ₃ (ppb)	22.1	0.1	95.3%	100.0%	40.5	76	Nov-01 01:00	36.5	-	Nov-27	0	-	-	-	Nov 12, 2020
PM _{2.5} (µg/m ³)	4.2	0.0	99.2%	99.4%	56.5	80	Nov-21 22:00	16.5	29	Nov-20	0	-	0	-	Nov 05, 2020
SO ₂ (ppb)	0.3	0.0	95.1%	100.0%	3.3	172	Nov-05 07:00	1.0	48	Nov-19	0	-	0	0	Nov 12, 2020
TRS (ppb)	0.3	0.1	95.3%	100.0%	1.3	-	Nov-21 22:00	0.5	-	Nov-23	-	-	-	-	Nov 06, 2020
CH ₄ (ppm)	2.1	1.9	77.8%	82.2%	2.9	-	Nov-30 10:00	2.4	-	Nov-20	-	-	-	-	Nov 09, 2020
THC (ppm)	2.2	1.9	77.8%	82.2%	2.9	-	Nov-30 10:00	2.4	-	Nov-20	-	-	-	-	Nov 09, 2020
NMHC (ppm)	0.0	0.0	77.8%	82.2%	0.0	-	Nov-29 16:00	0.0	-	Nov-29	-	-	-	-	Nov 09, 2020
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction 302 WNW									
Temp (°C)	-4.6	-21.8	100.0%	100.0%	16.4										
WS (km/hr)	7.3	0.3	100.0%	100.0%	32.0										
WD (deg)	302	0.1	100.0%	100.0%	360.0										

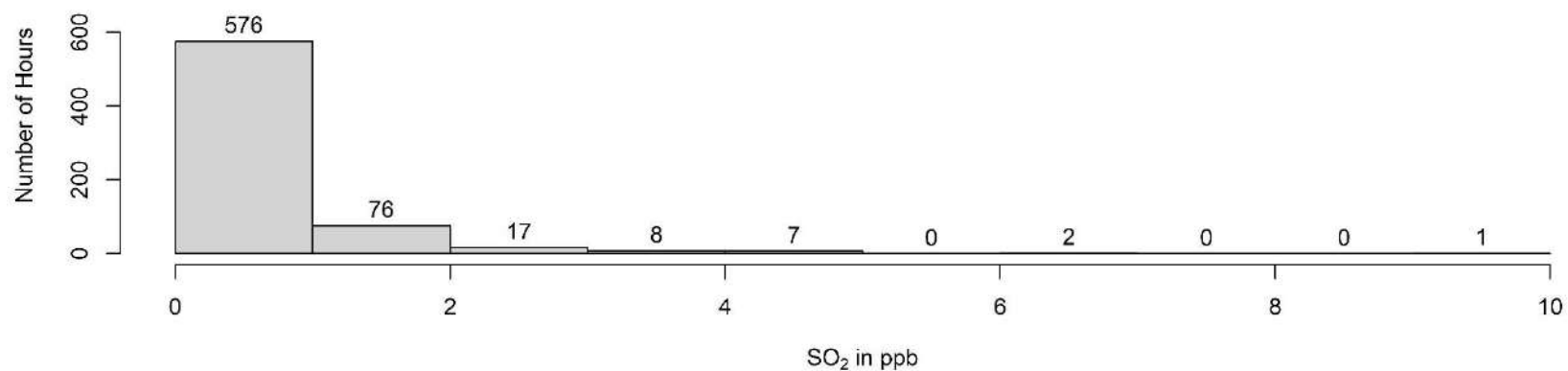
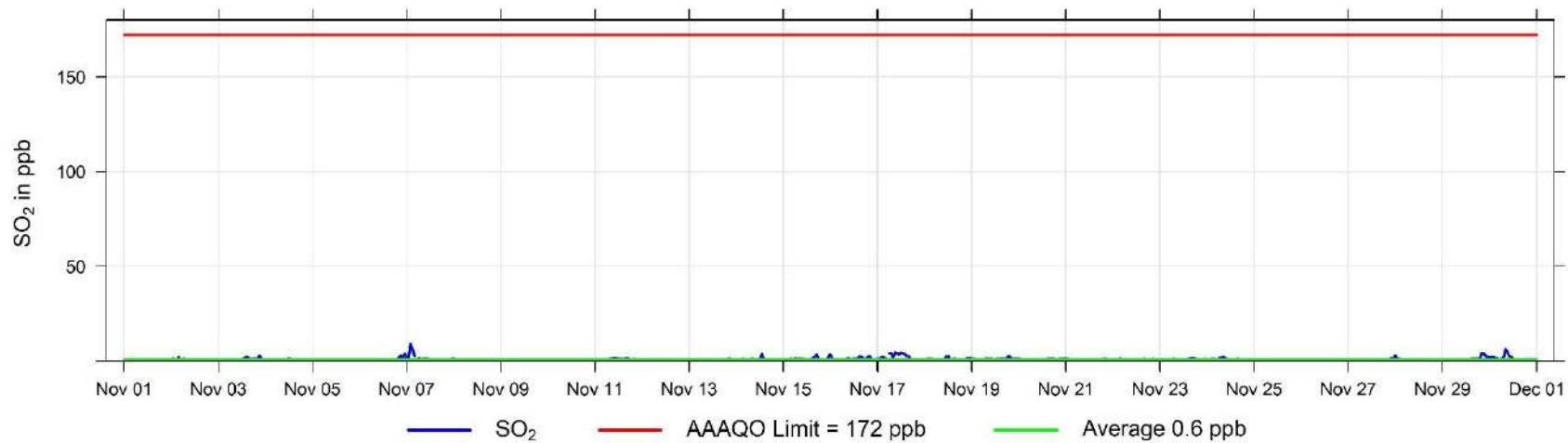
Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42i	Second calibration performed Nov 22 due to failed span, flagged as maintenance
O ₃	TEI	49i	No Operational issues noted during the month
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted during the month; 4 hours removed due to excessive negative drift
SO ₂	TEI	43i	No Operational issues noted during the month
TRS	TEI	43i	No Operational issues noted during the month
THC/CH ₄ /NMHC	TEI	55I-A3PHAA	Analyzer & zero air generator troubleshooting and repair including zero air rebuild + 4 calibrations, <90% uptime, AEP ref#373577
Met Equip	MetOne	50.5	No Operational issues noted during the month

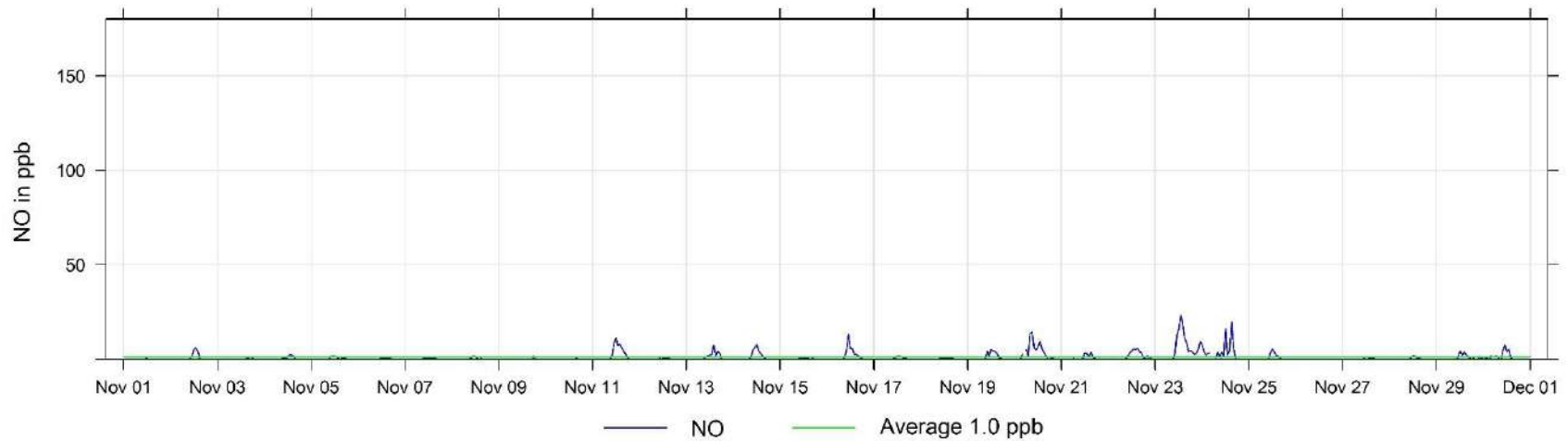
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

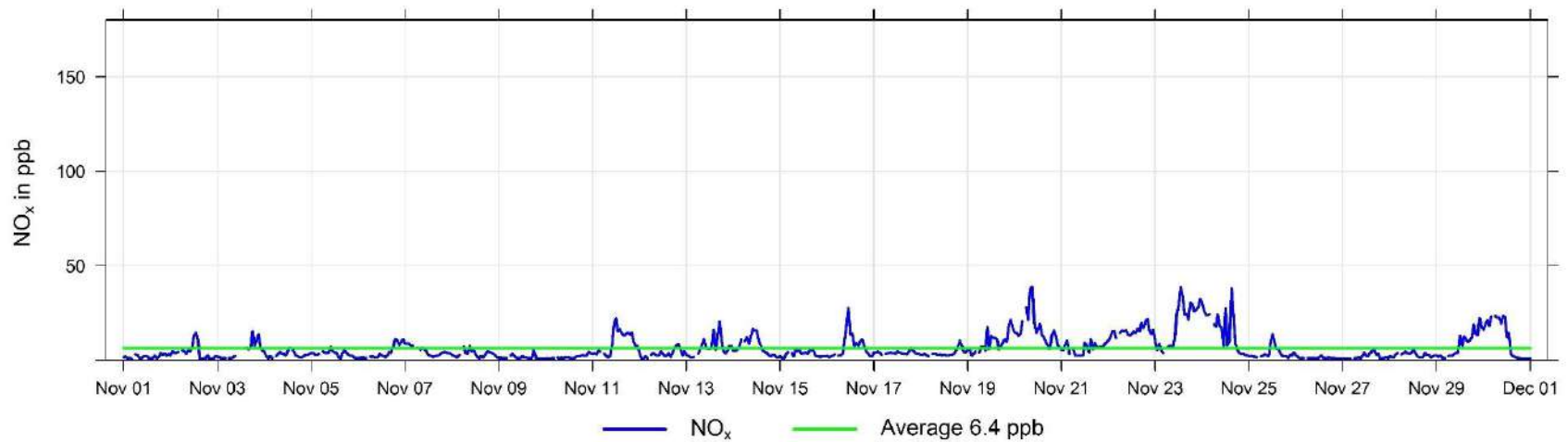
November Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



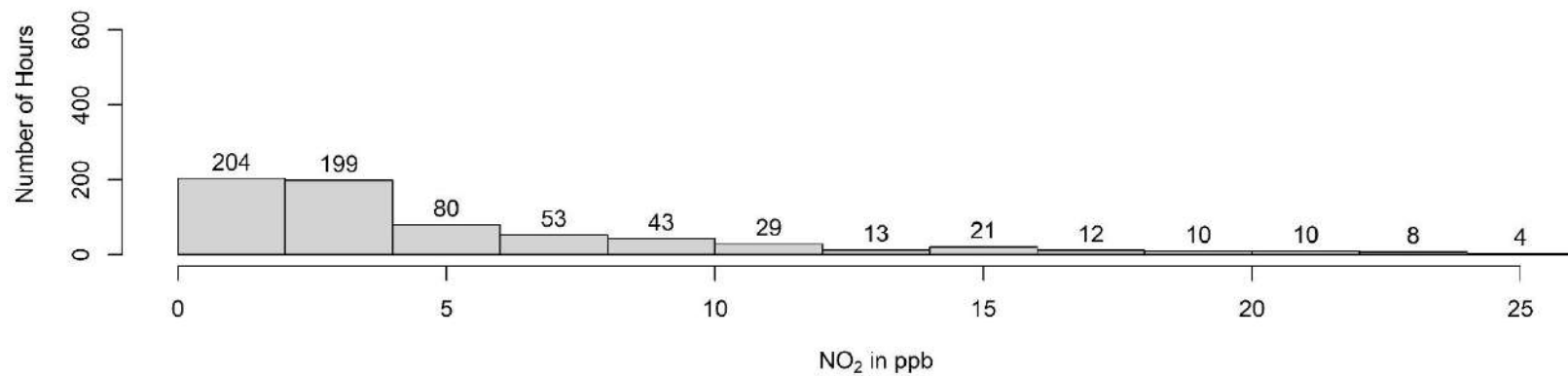
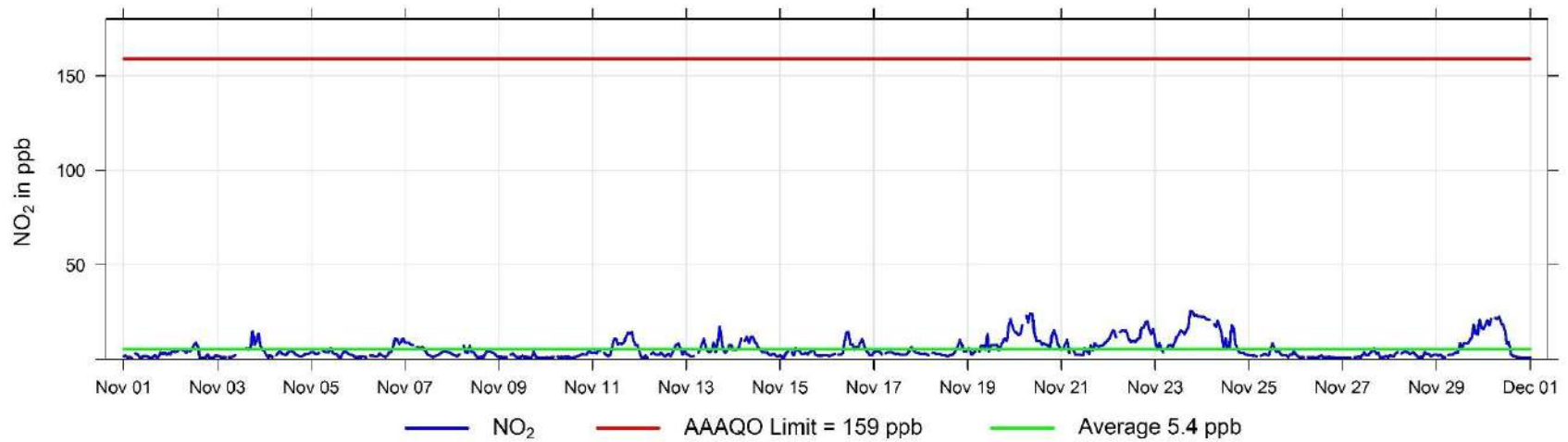
November Hourly Concentration Readings of NO (in ppb) at Beaverlodge



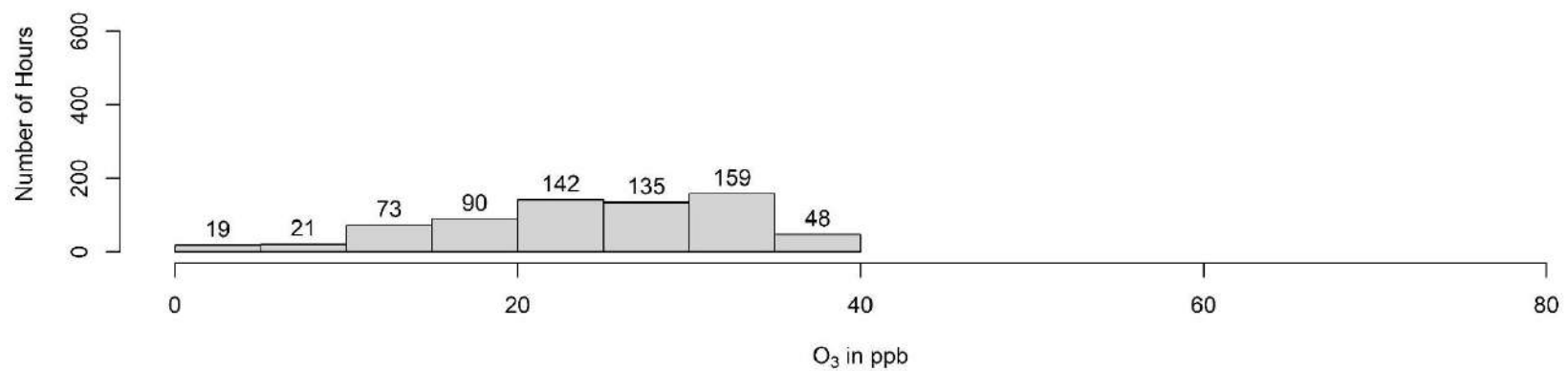
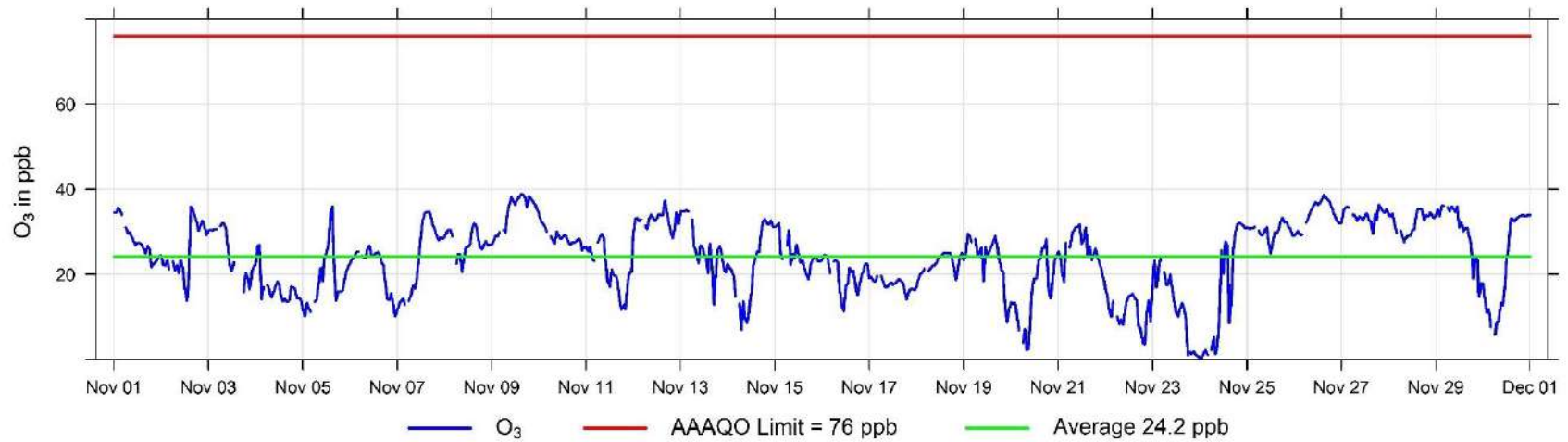
November Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



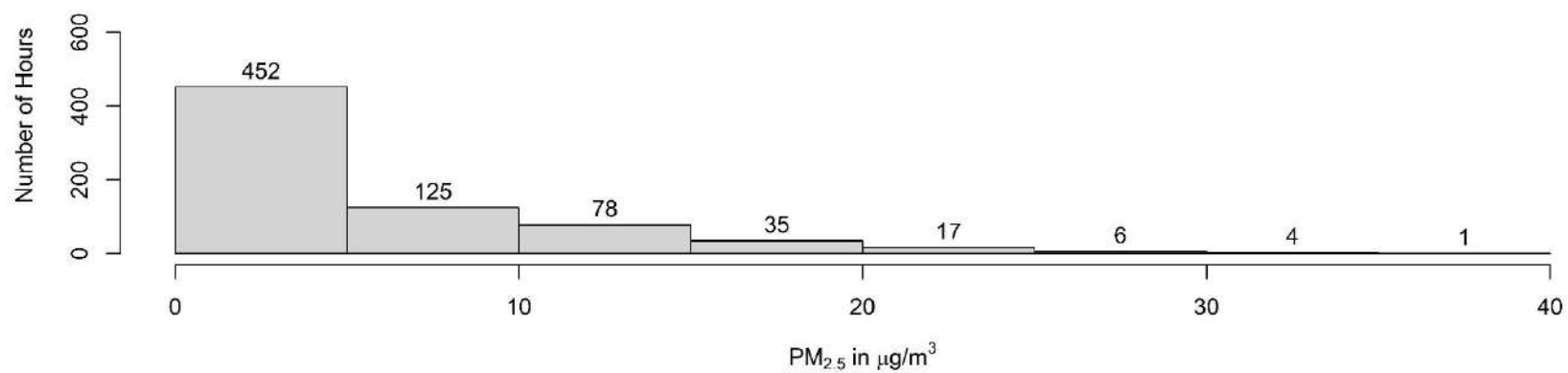
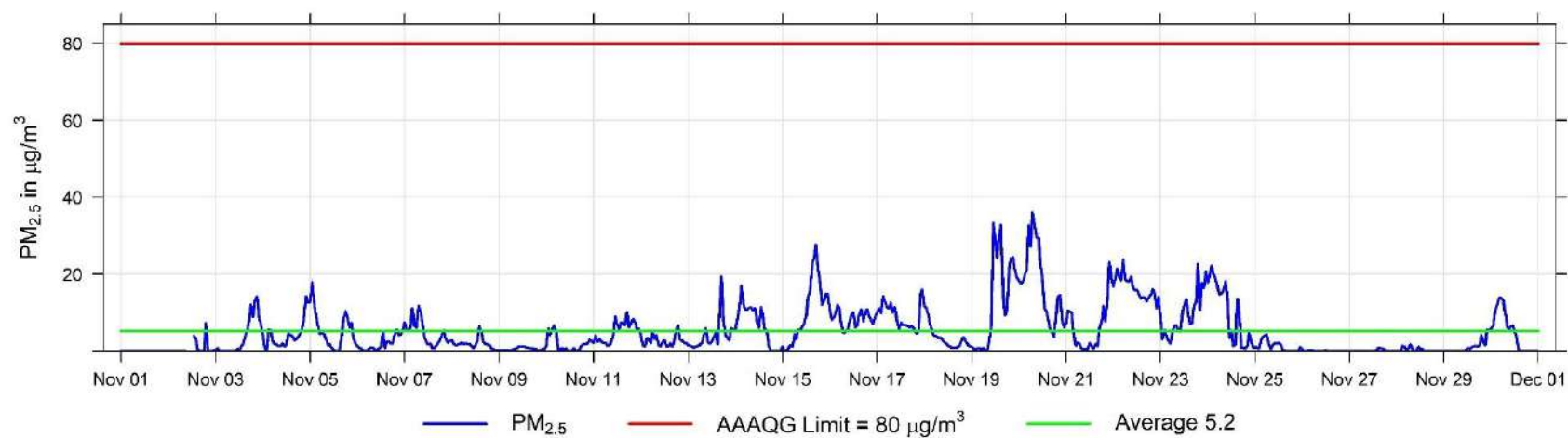
November Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge



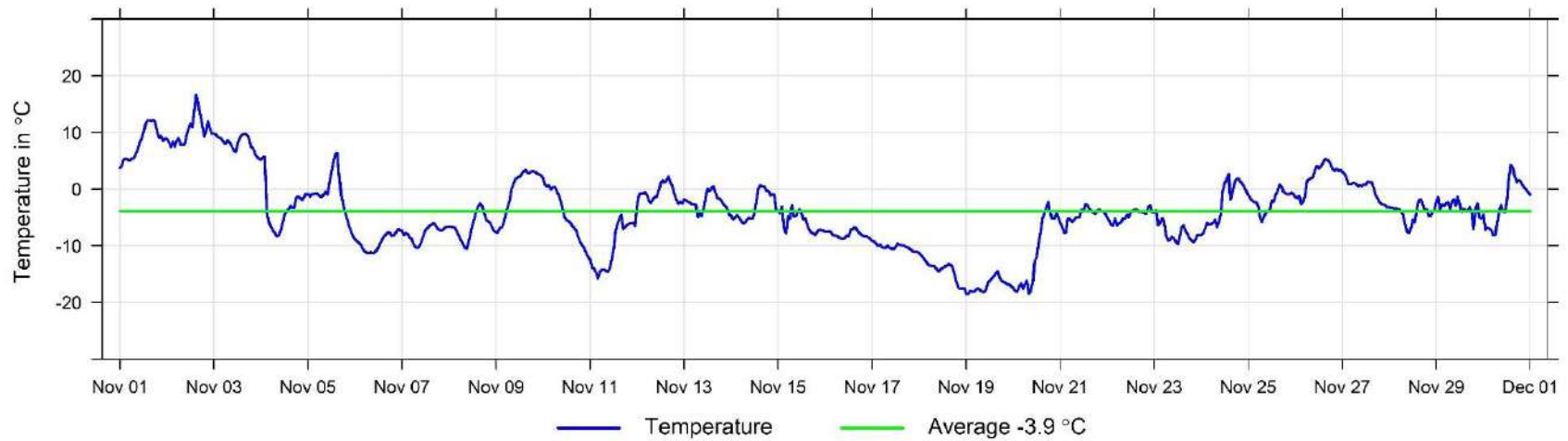
November Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



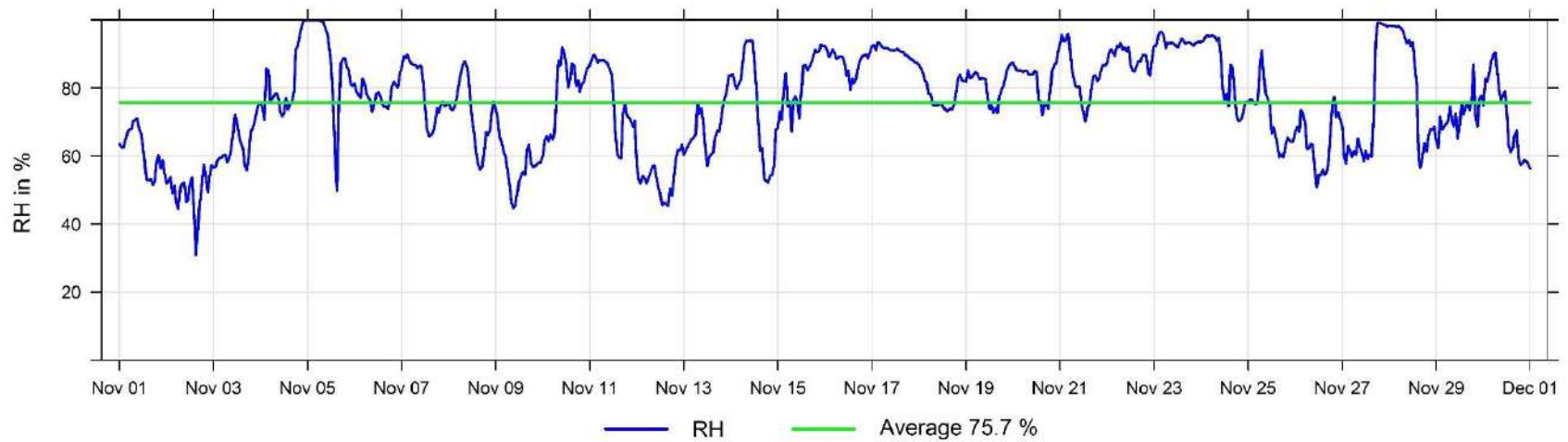
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



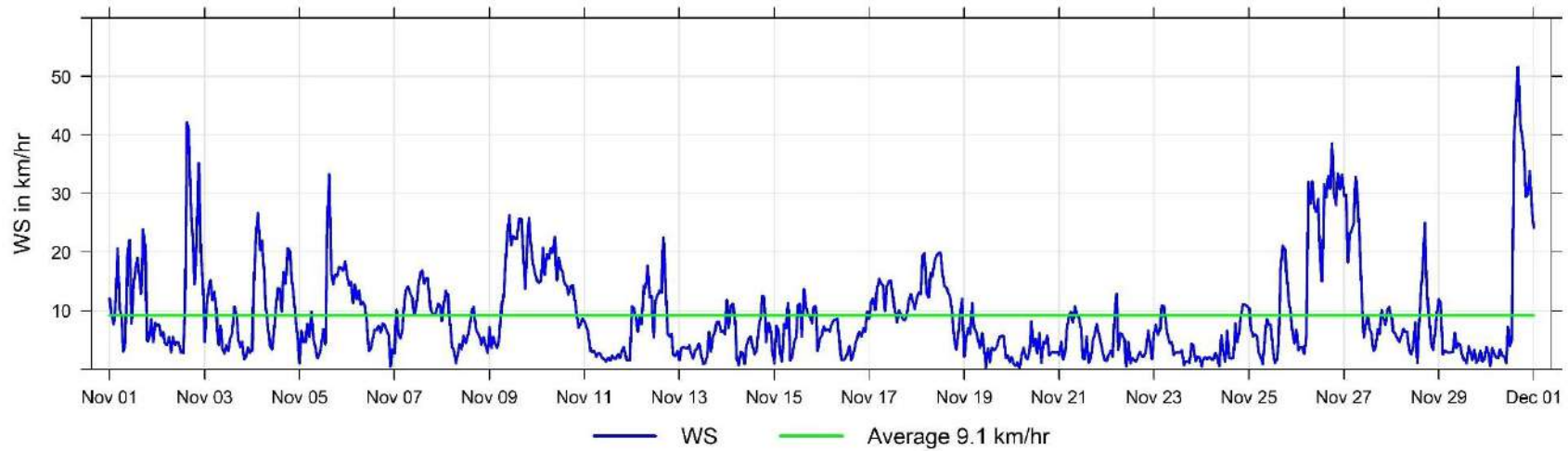
November Hourly Temperature Readings (in °C) at Beaverlodge



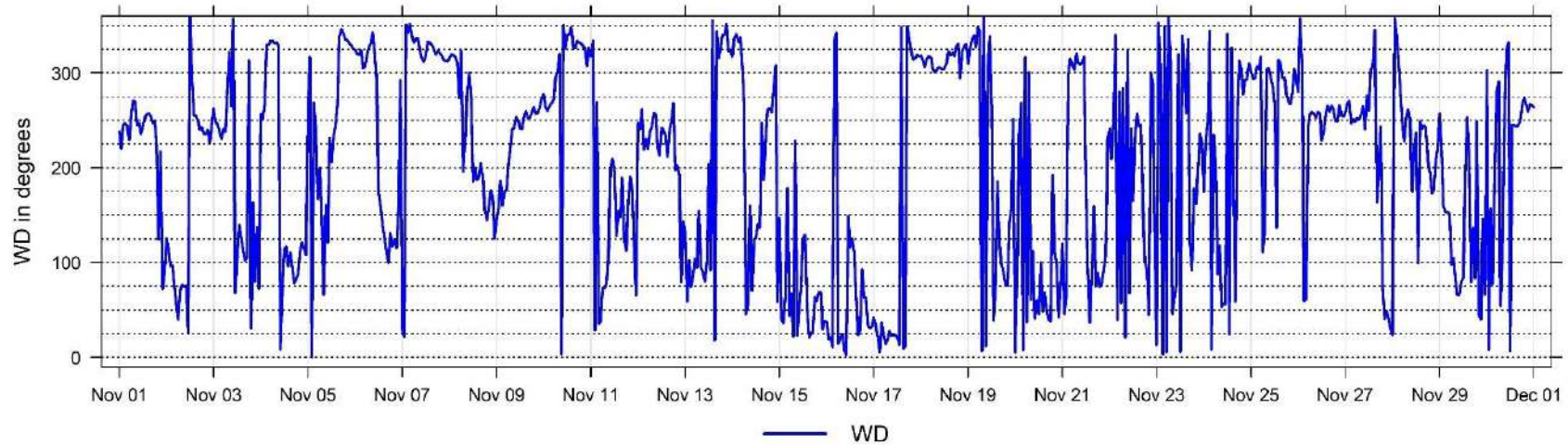
November Hourly Readings of Relative Humidity (in %) at Beaverlodge



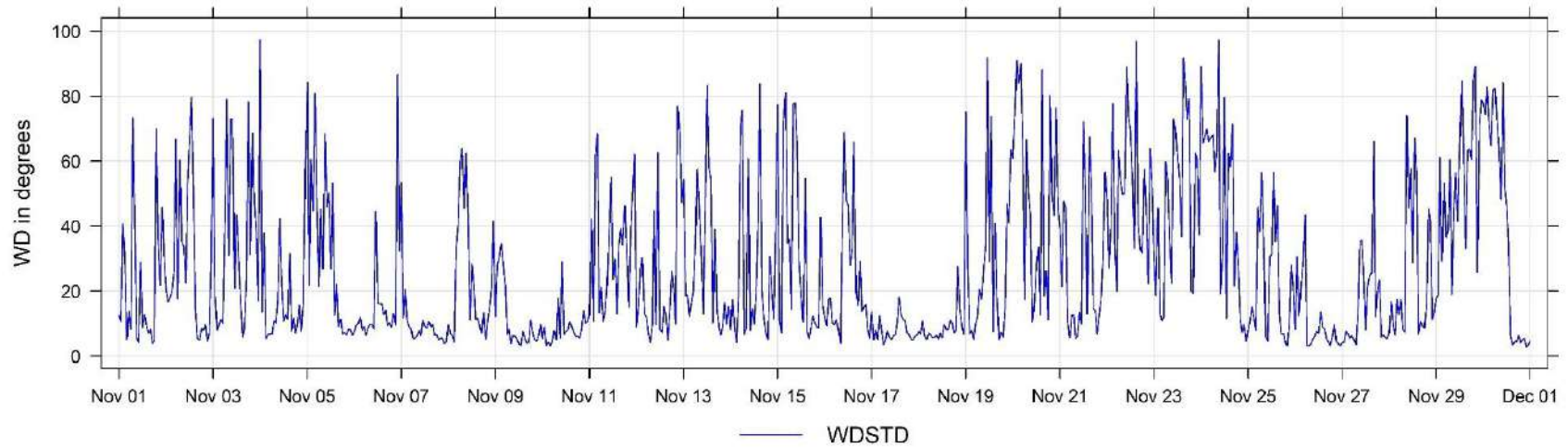
November Hourly Readings of Wind Speed (in km/hr) at Beaverlodge



November Hourly Readings of Wind Direction (in degrees) at Beaverlodge



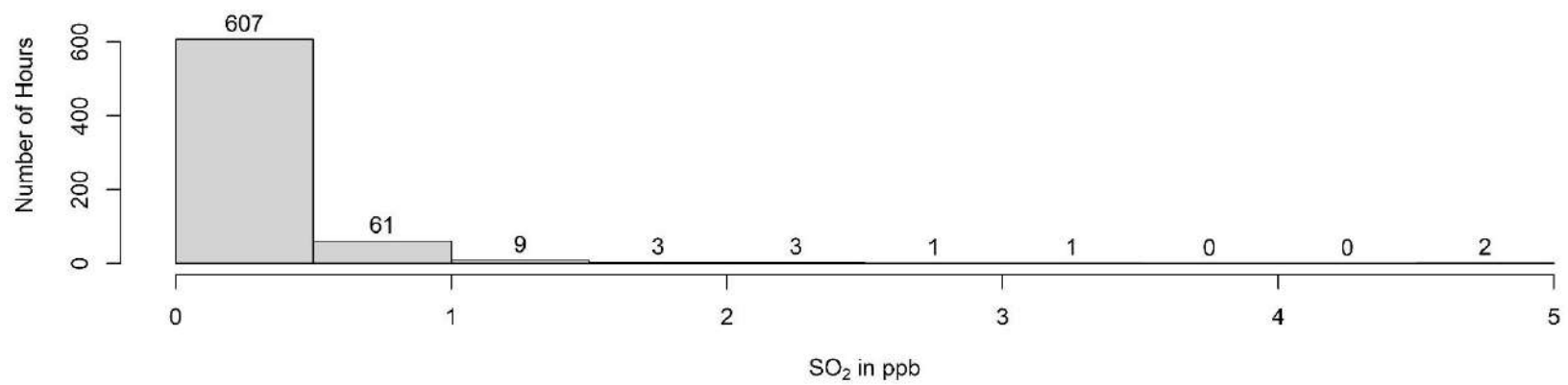
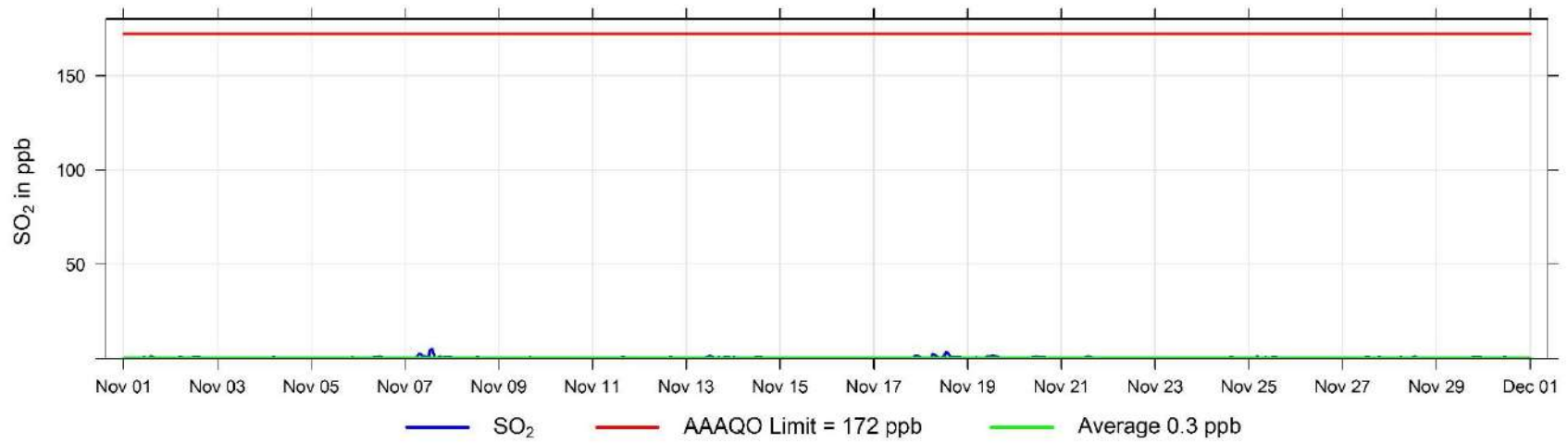
November Hourly Readings of Wind Direction Standard Deviation (in degrees) at Beaverlodge



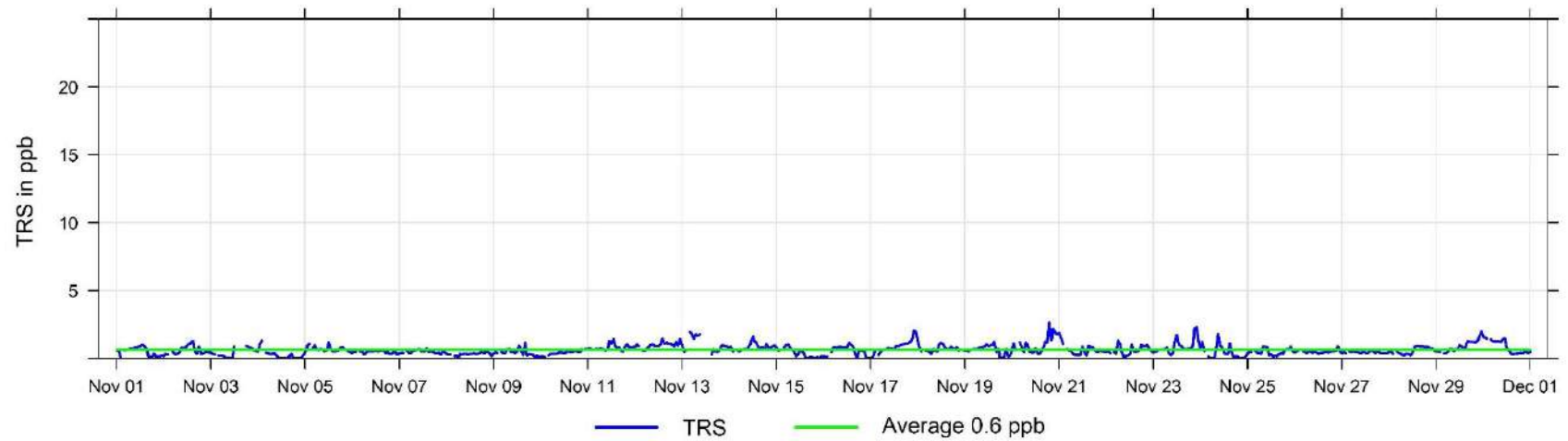
3 Evergreen Park Charts

The following pages include the charts and histograms for Evergreen Park Station

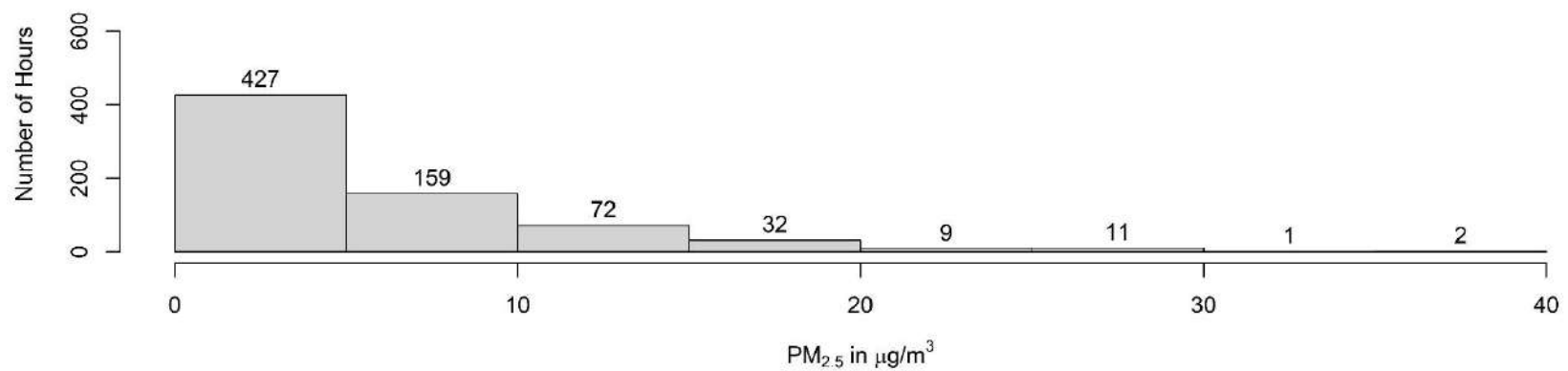
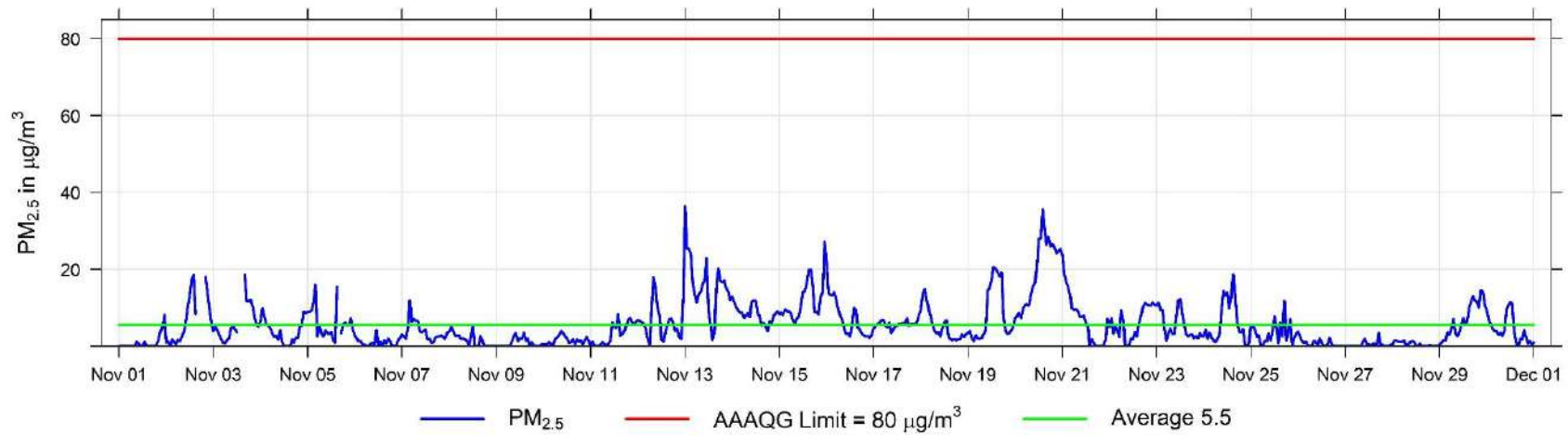
November Hourly Concentration Readings of SO₂ (in ppb) at Evergreen Park



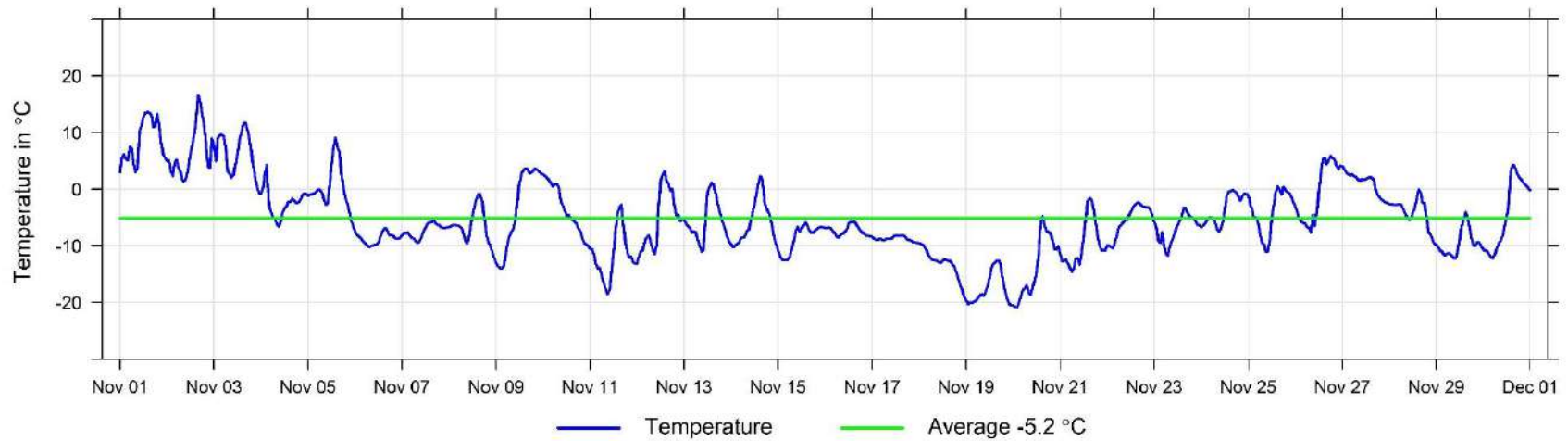
November Hourly Concentration Readings of TRS (in ppb) at Evergreen Park



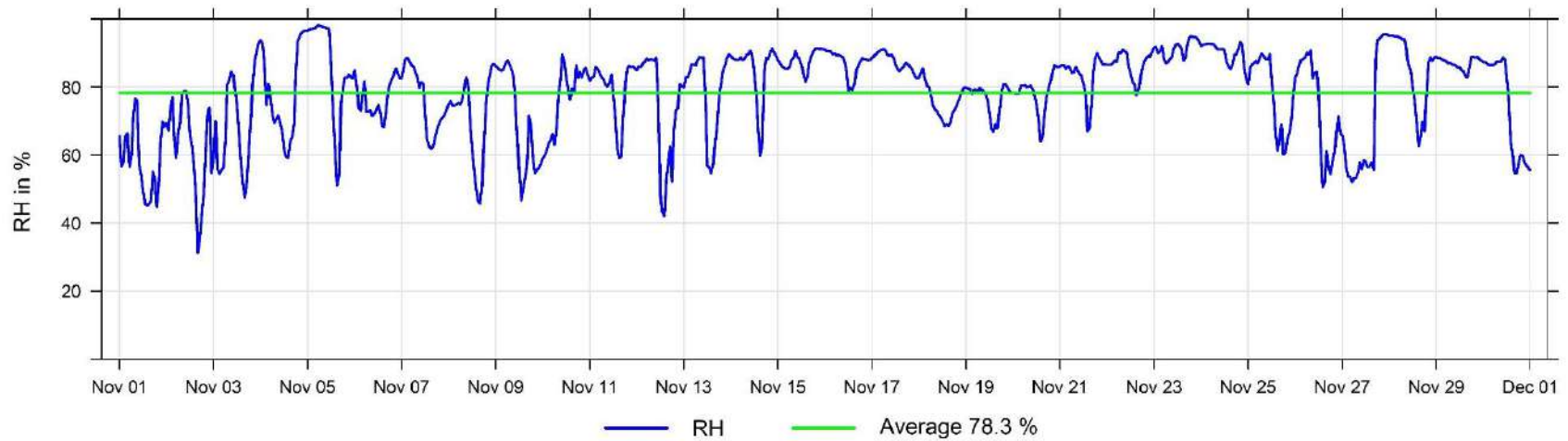
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Evergreen Park



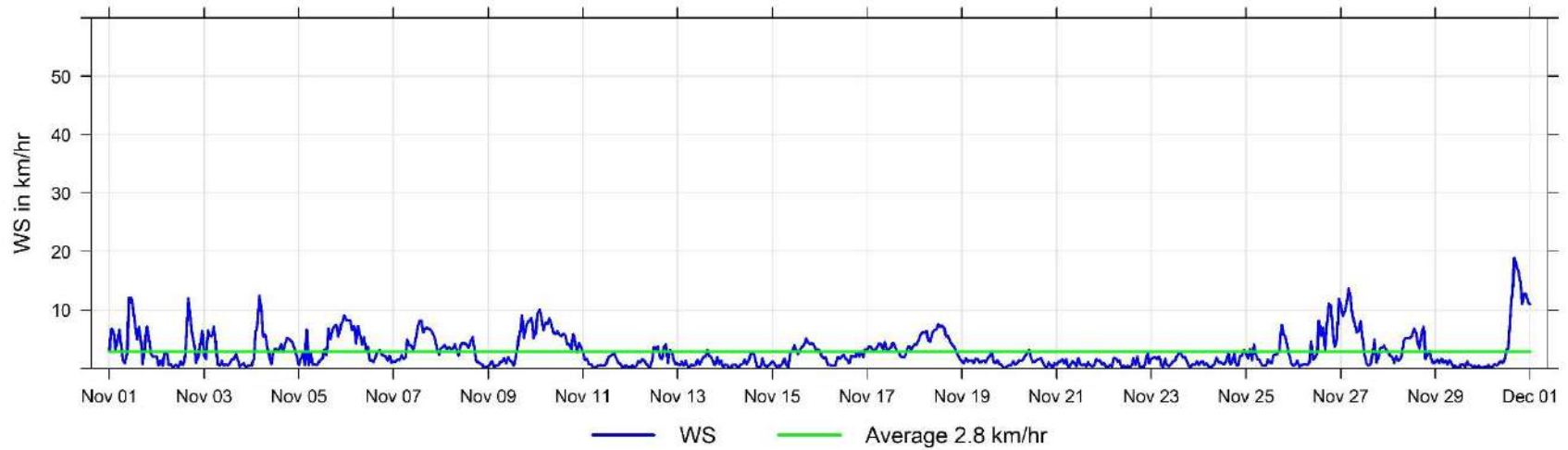
November Hourly Temperature Readings (in °C) at Evergreen Park



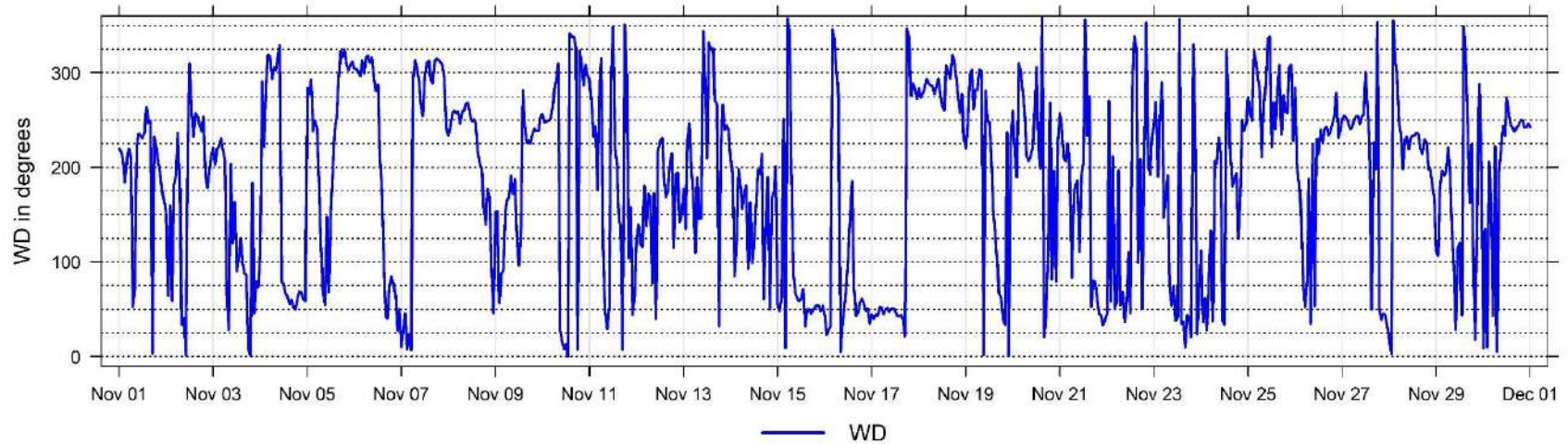
November Hourly Readings of Relative Humidity (in %) at Evergreen Park



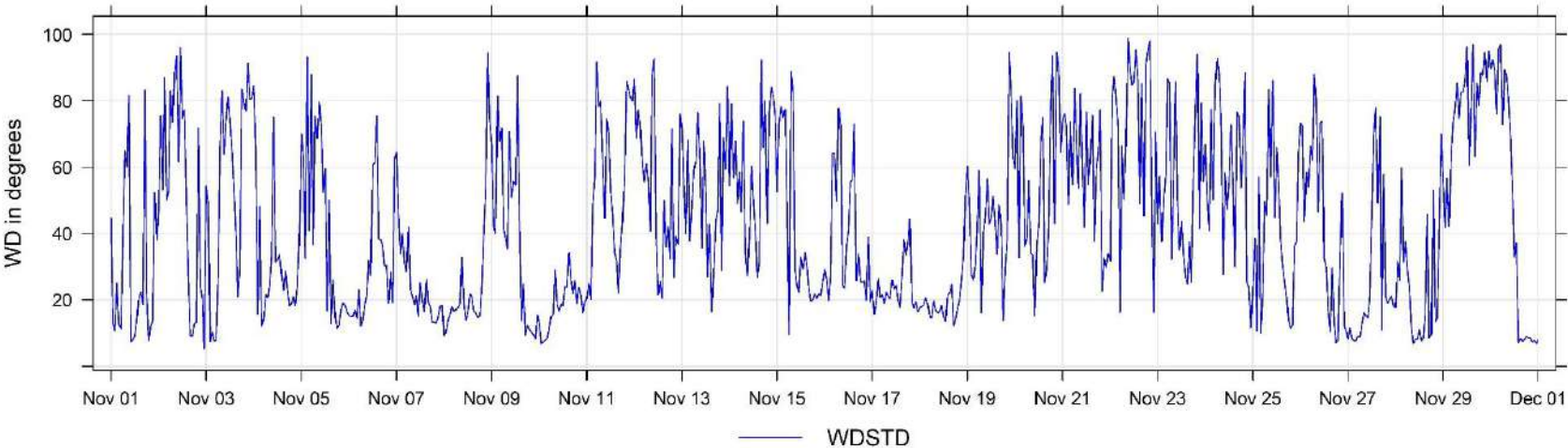
November Hourly Readings of Wind Speed (in km/hr) at Evergreen Park



November Hourly Readings of Wind Direction (in degrees) at Evergreen Park



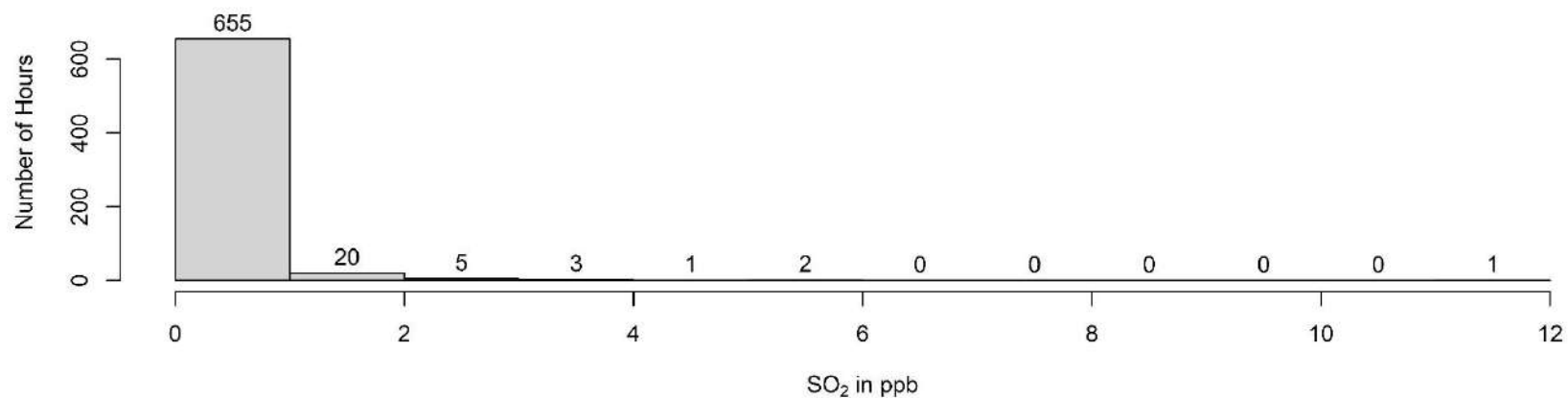
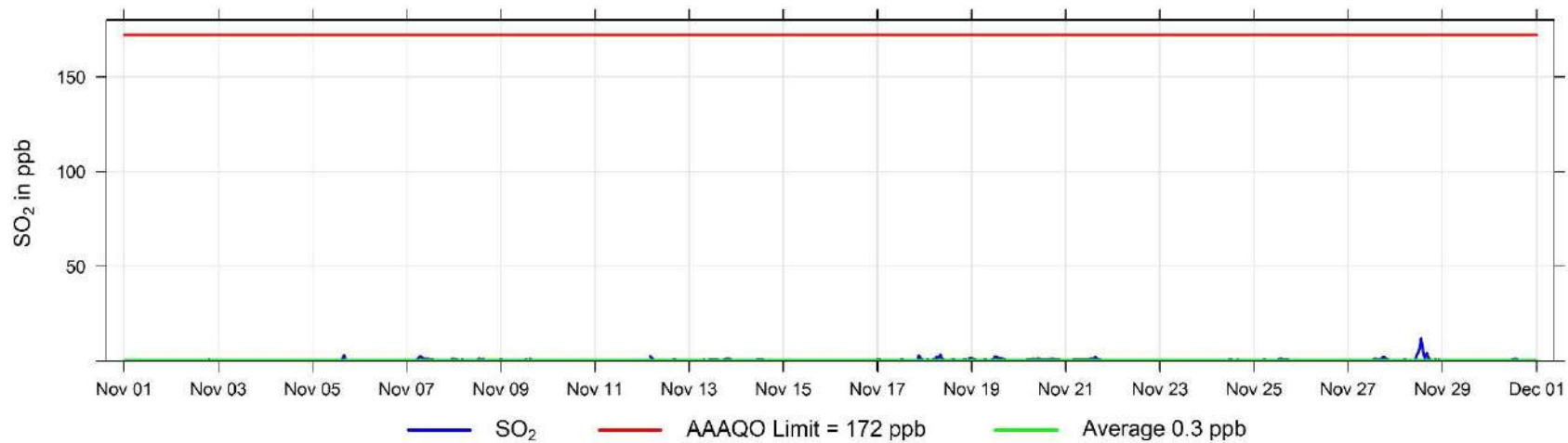
November Hourly Readings of Wind Direction Standarded Deviation (in degrees) at Evergreen Park



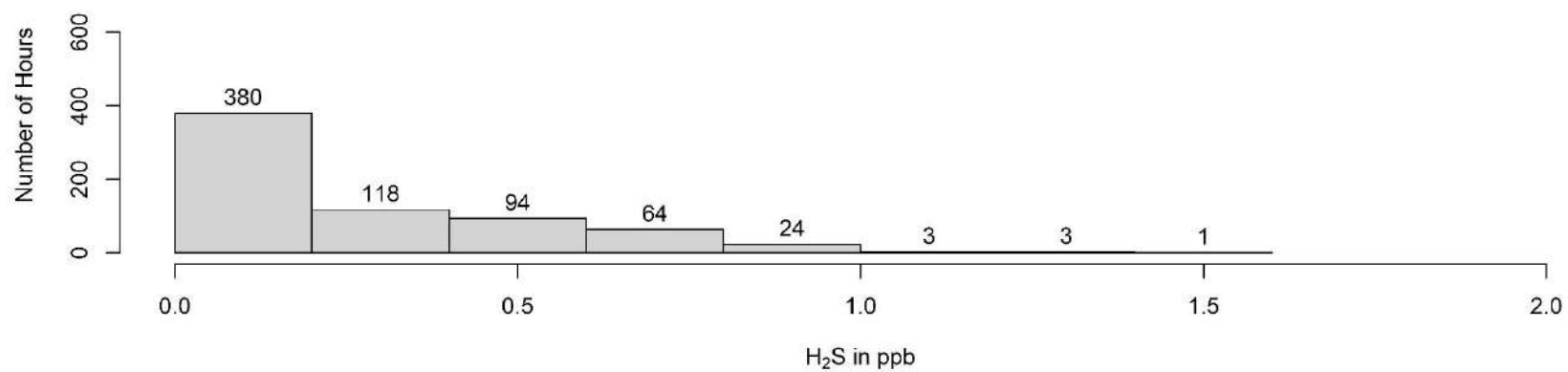
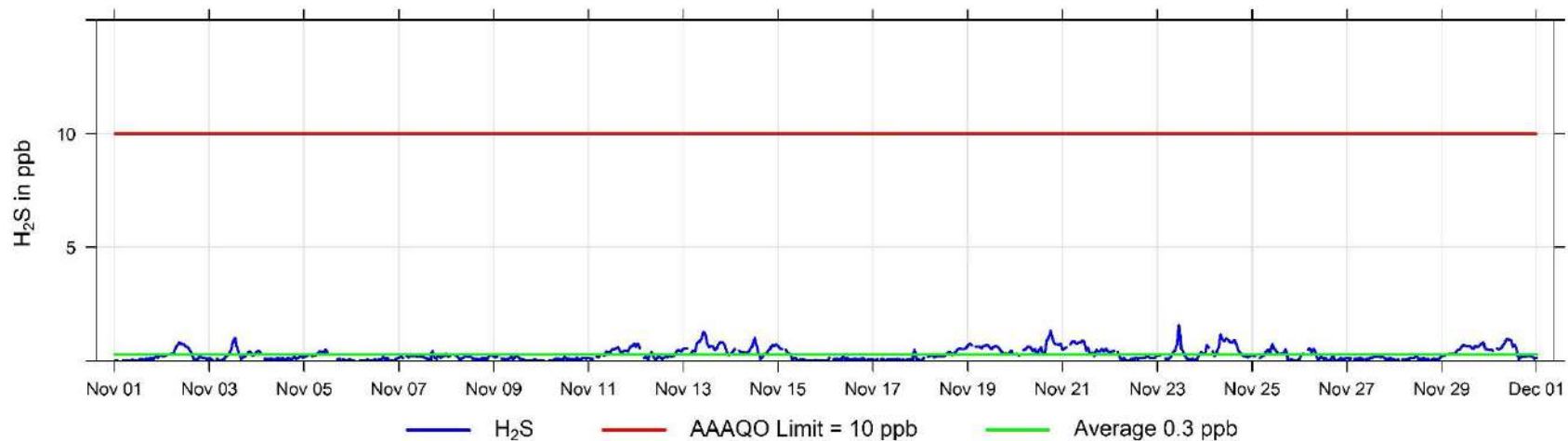
4 Grande Prairie - Henry Pirker Charts

The following pages include the charts and histograms for Henry Pirker Station in Grande Prairie

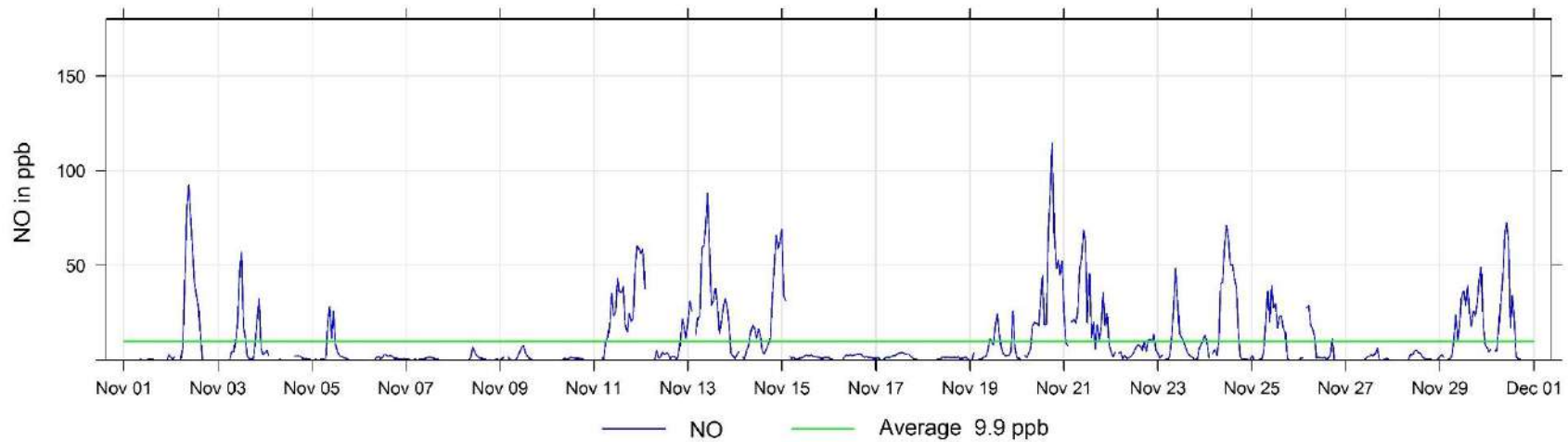
November Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



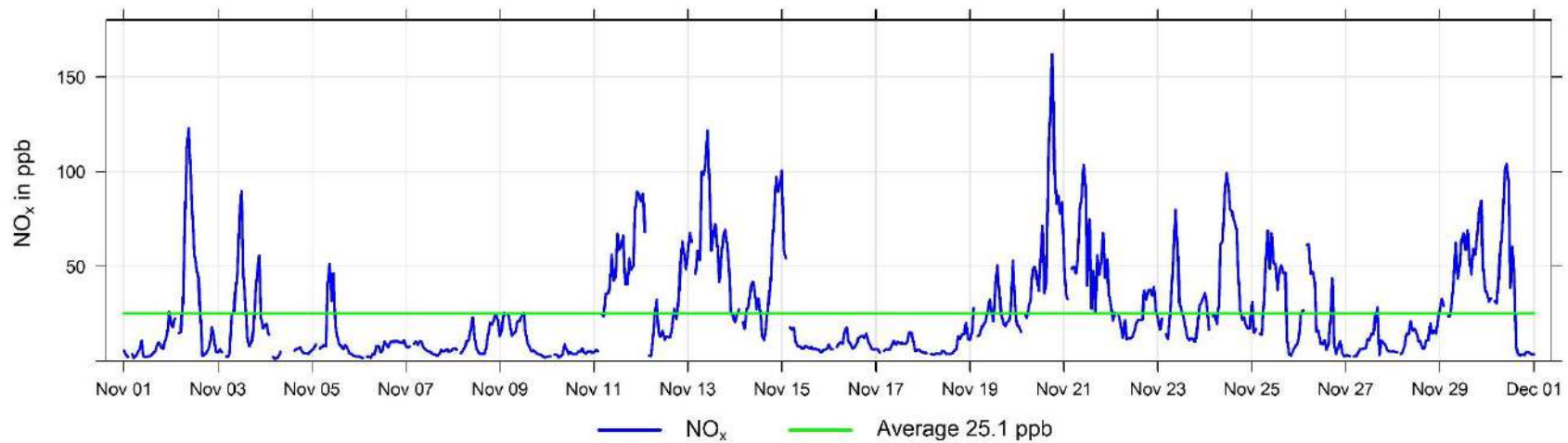
November Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



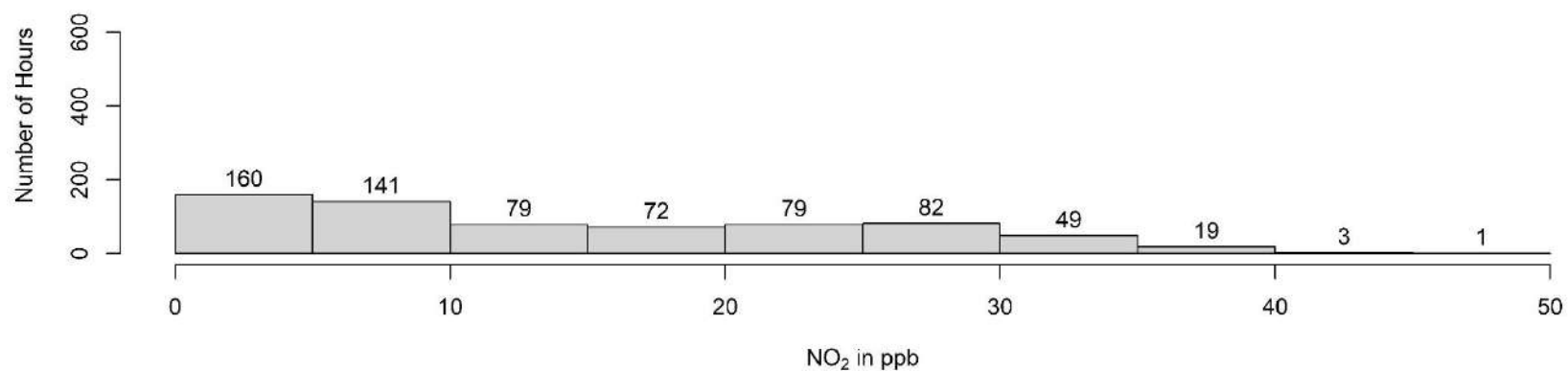
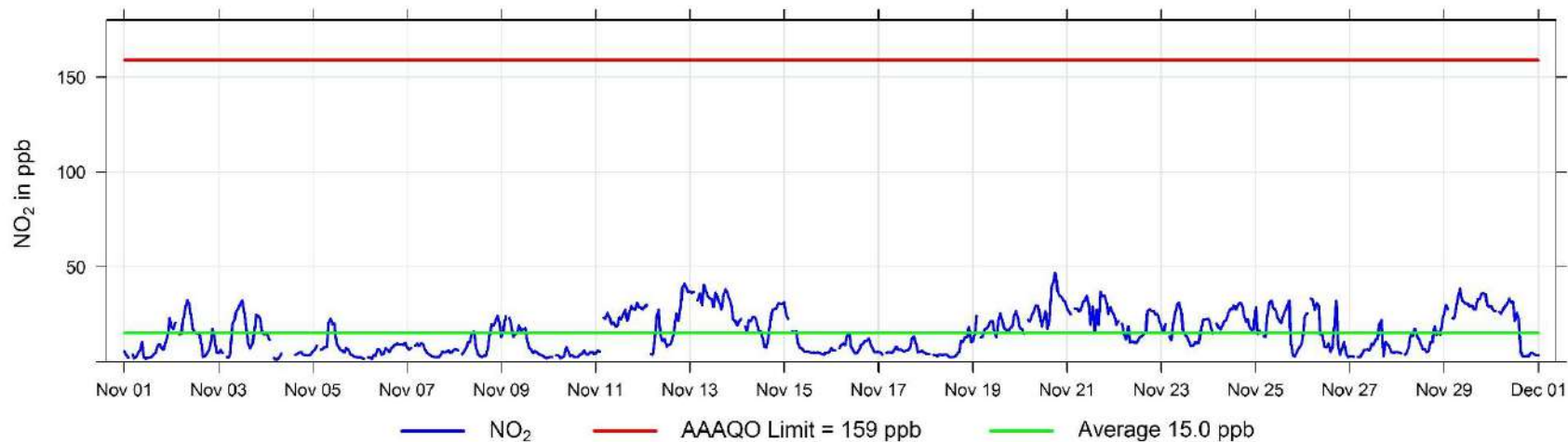
November Hourly Concentration Readings of NO (in ppb) at Henry Pirker



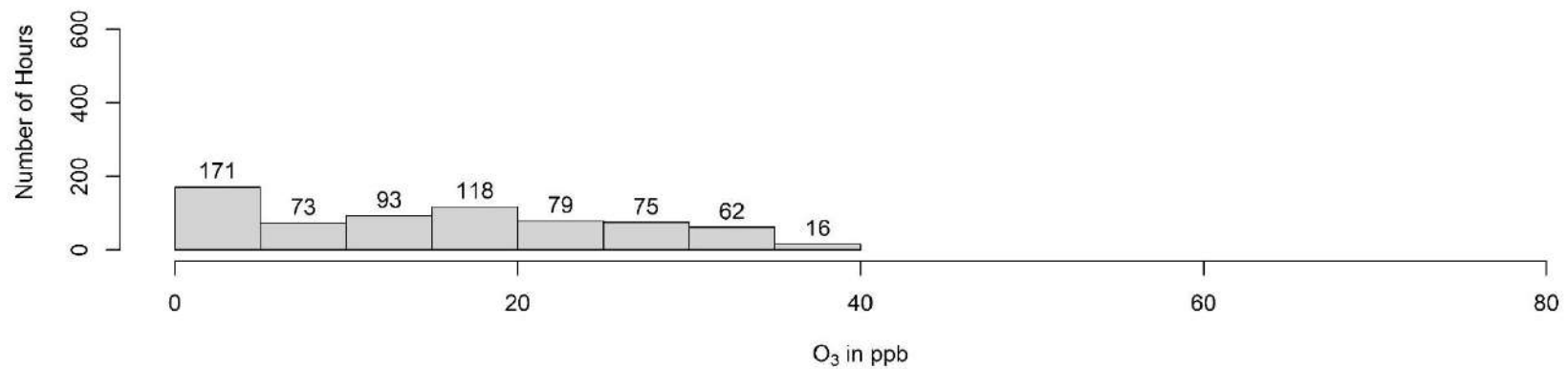
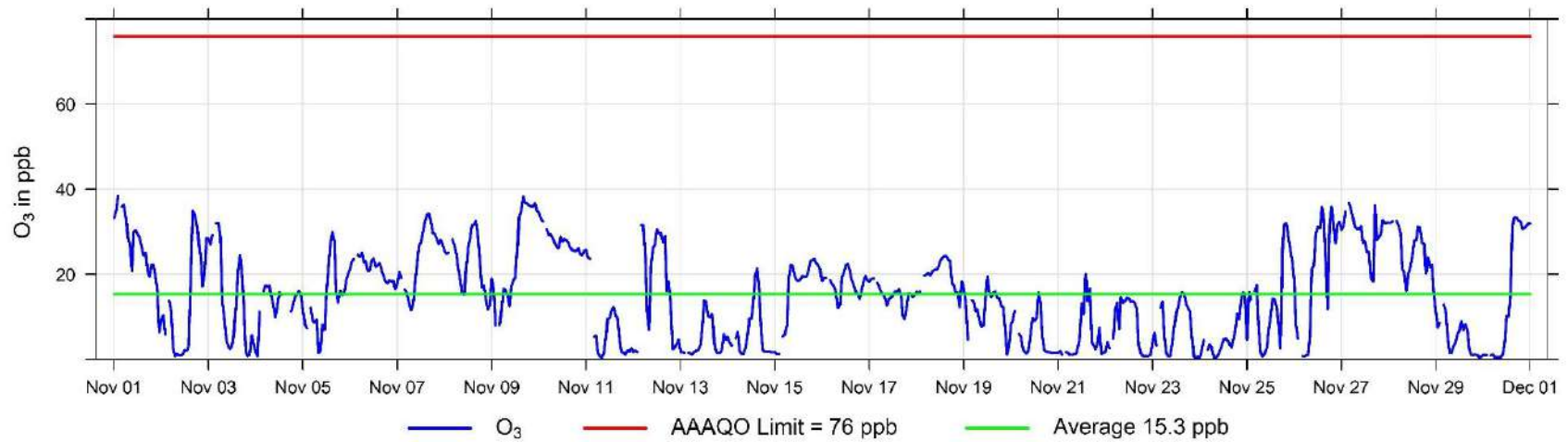
November Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



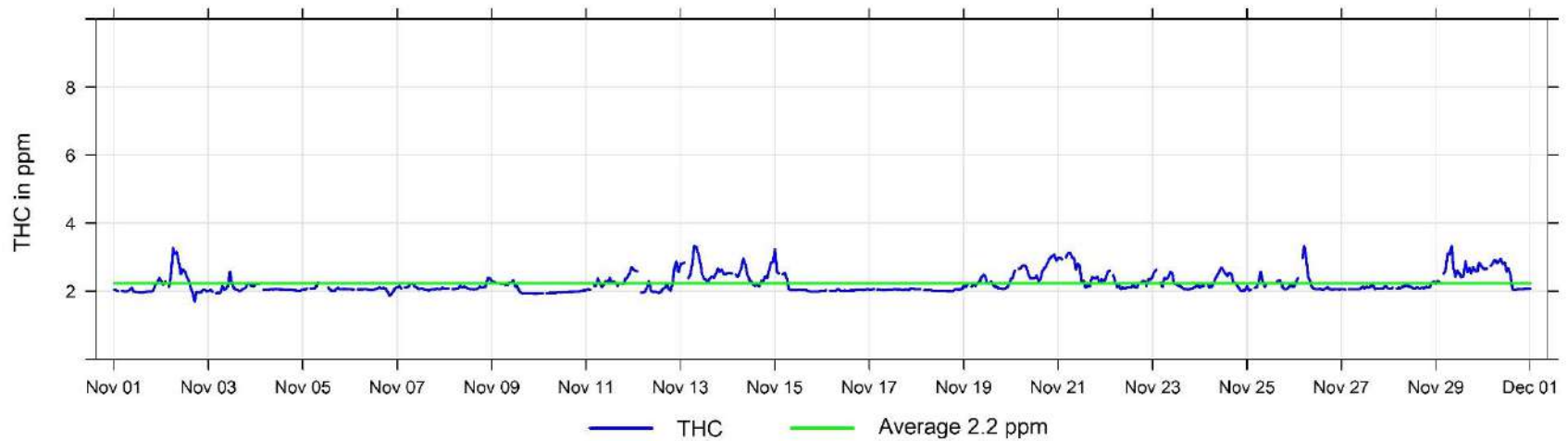
November Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker



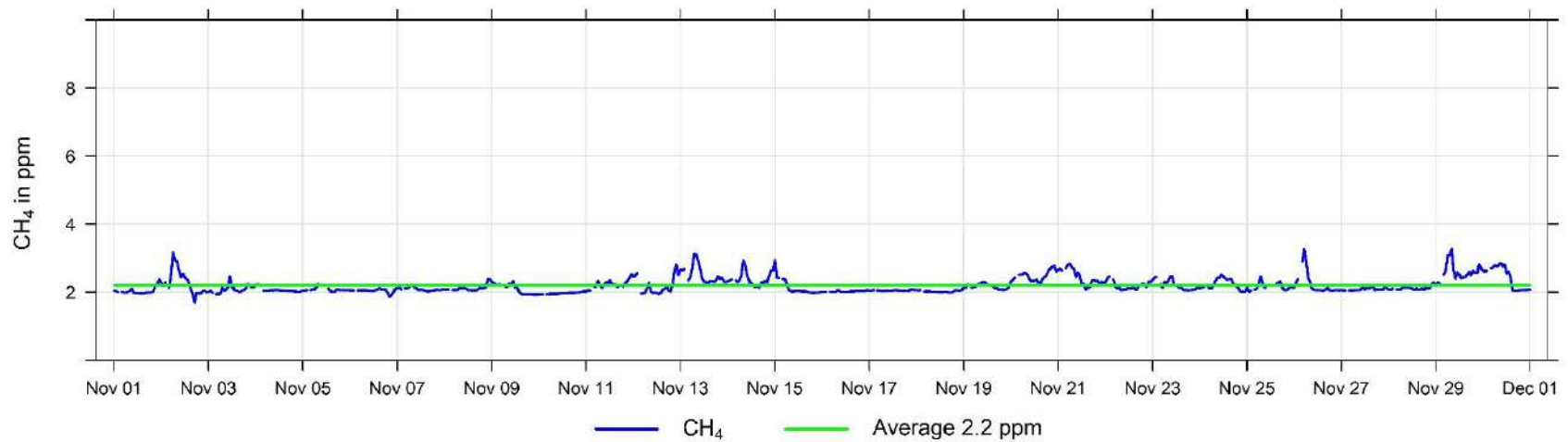
November Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



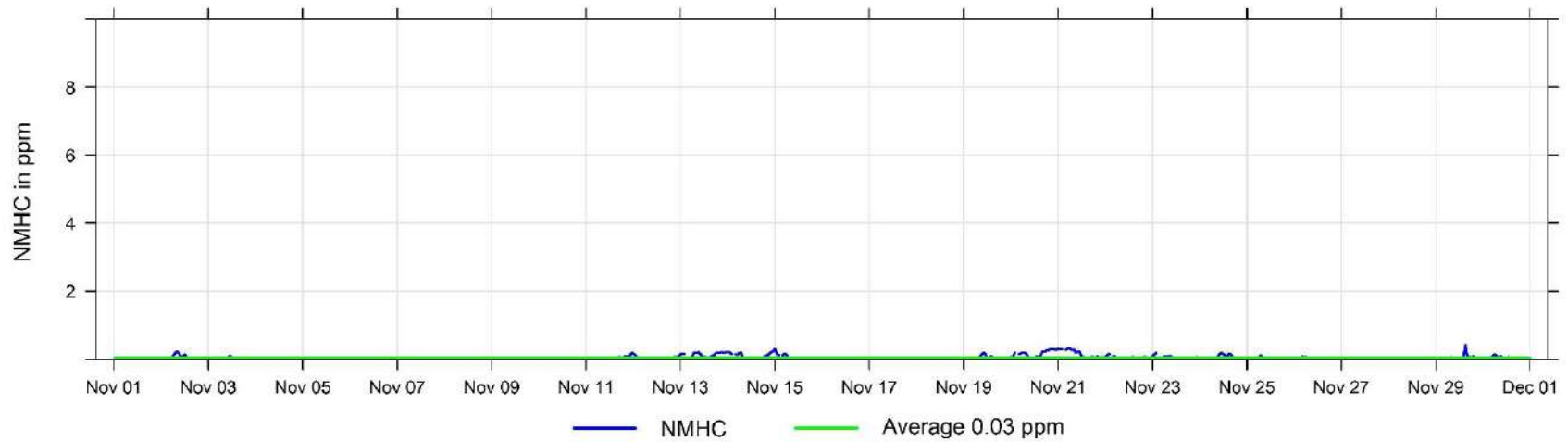
November Hourly Concentration Readings of THC (in ppm) at Henry Pirker



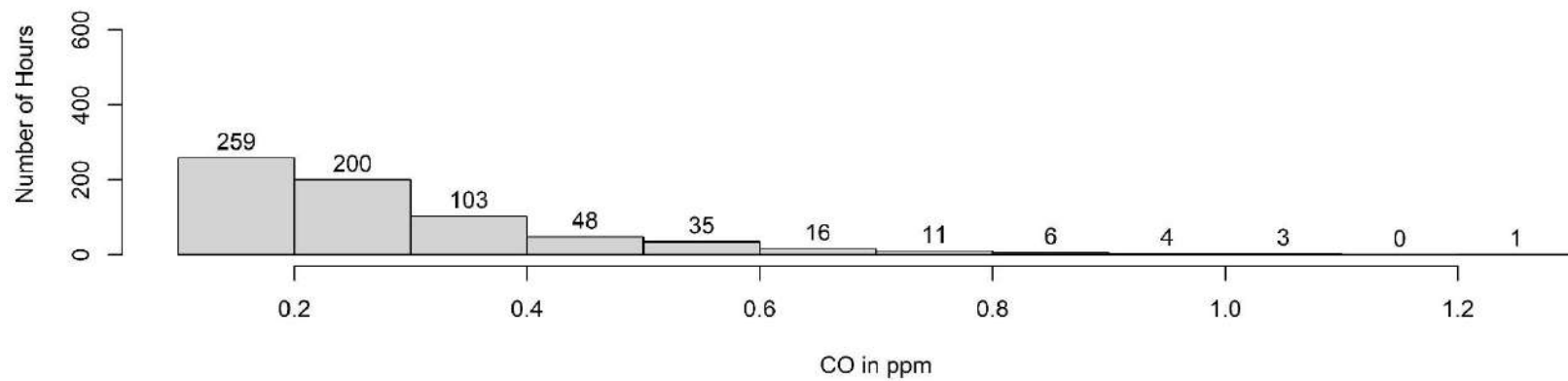
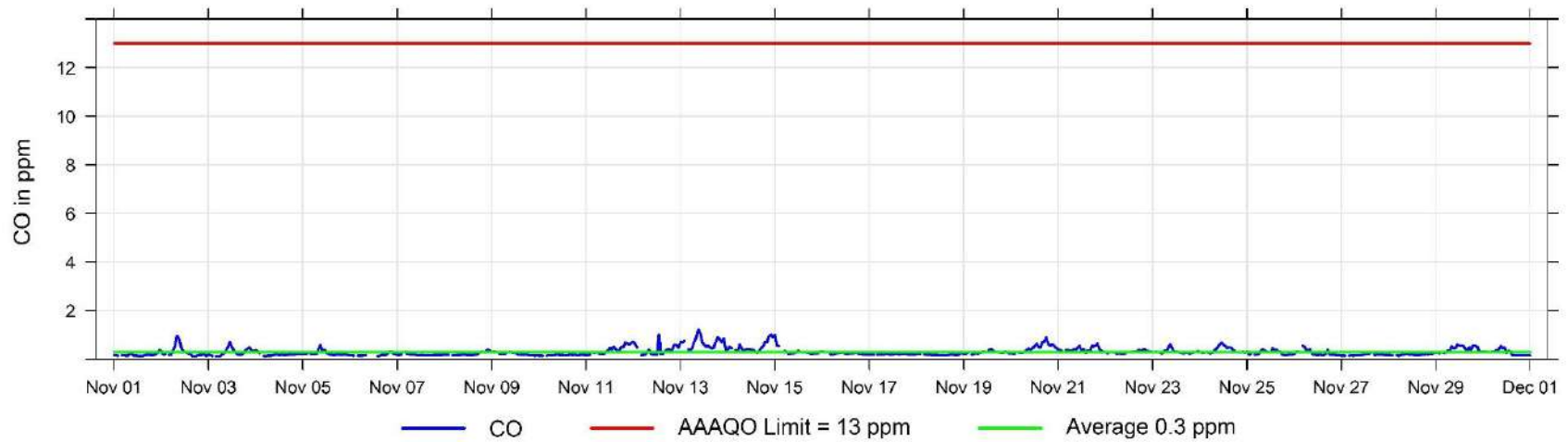
November Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



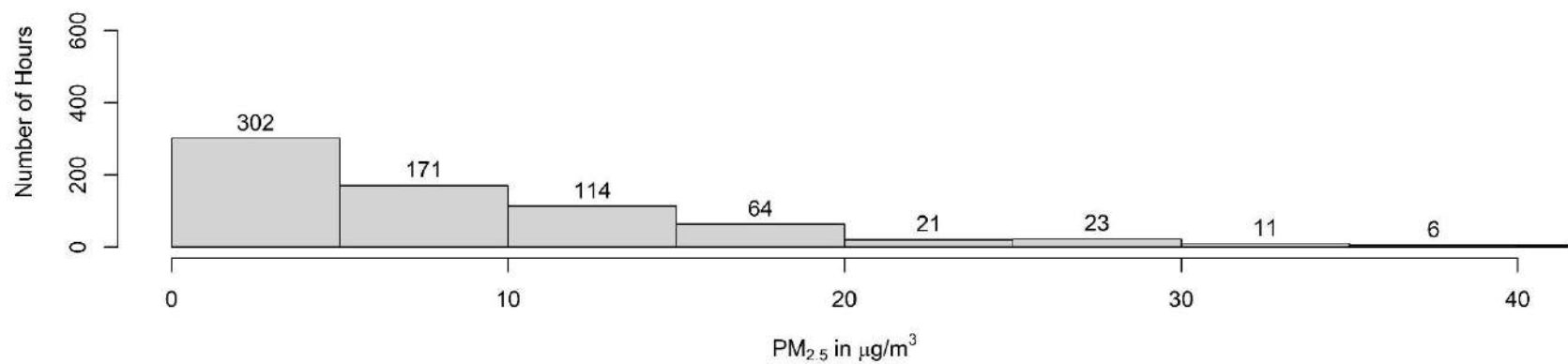
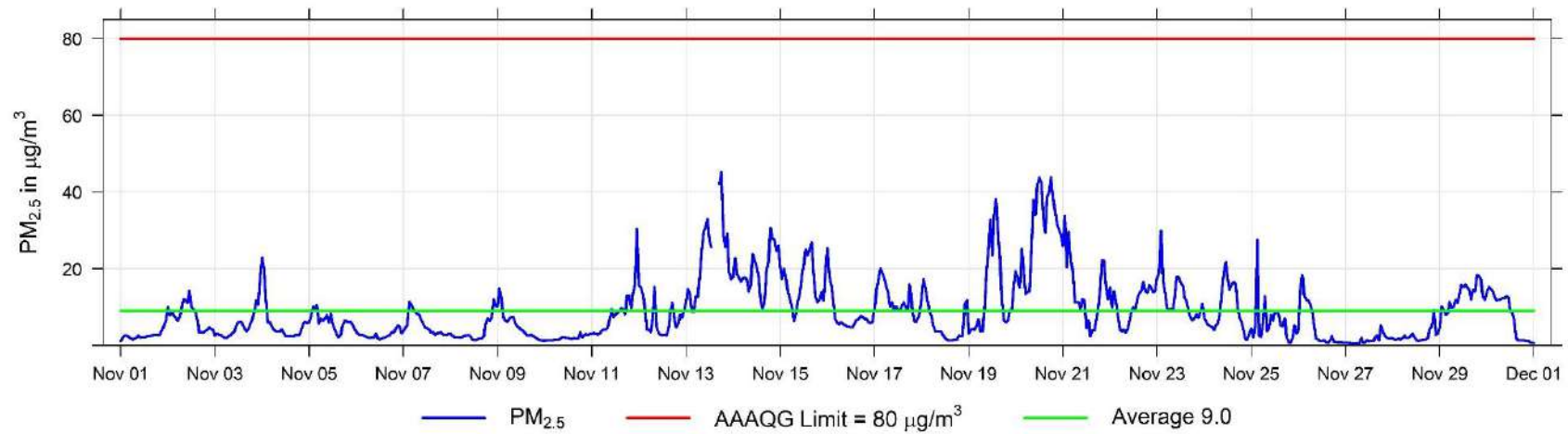
November Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



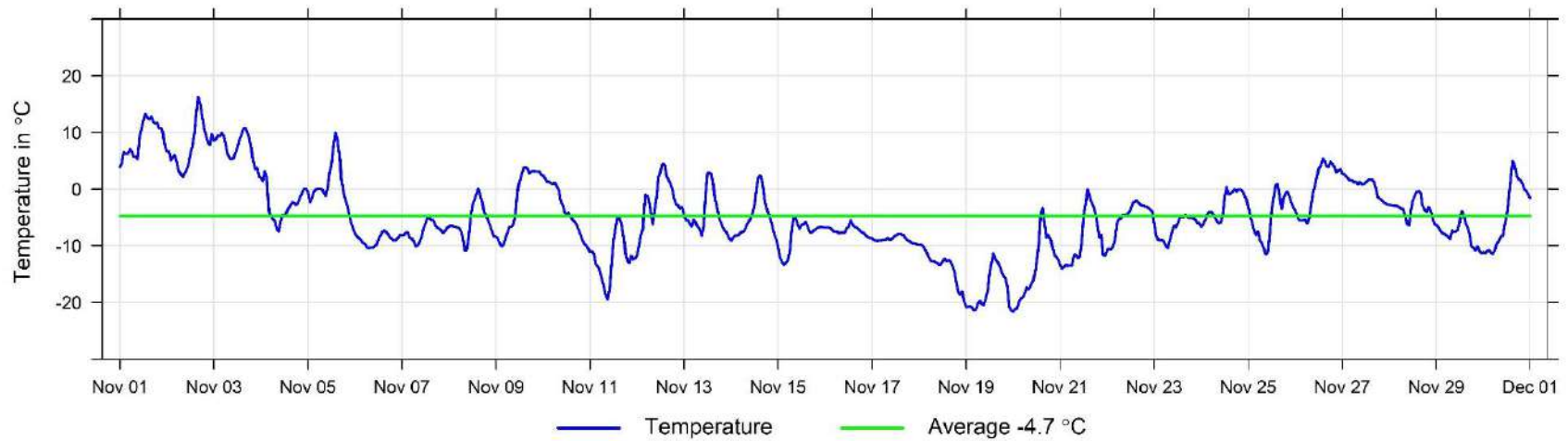
November Hourly Concentration Readings of CO (in ppm) at Henry Pirker



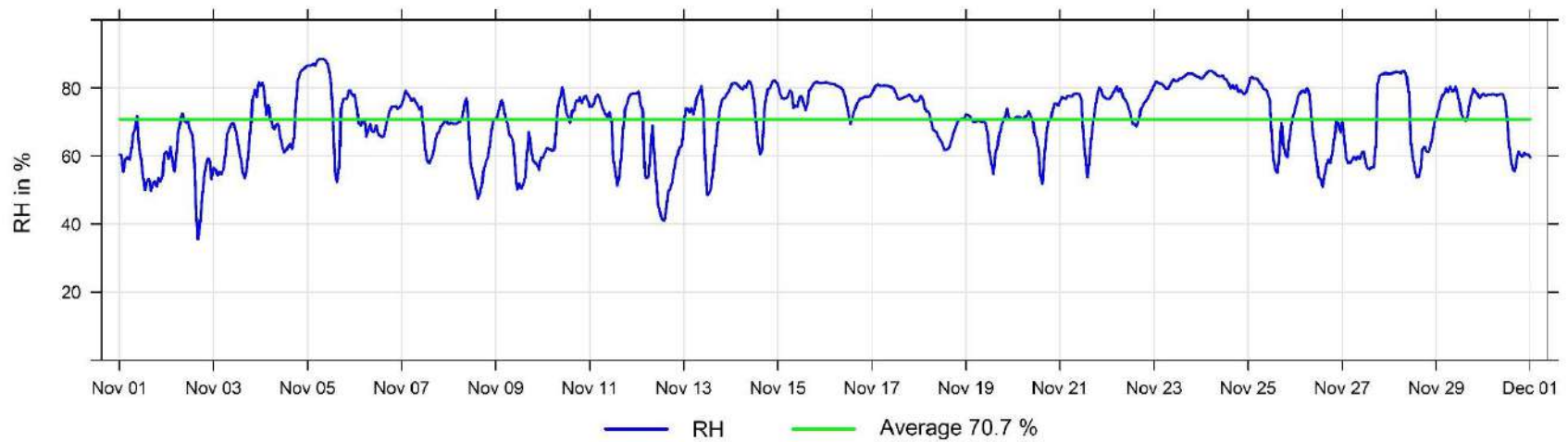
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker



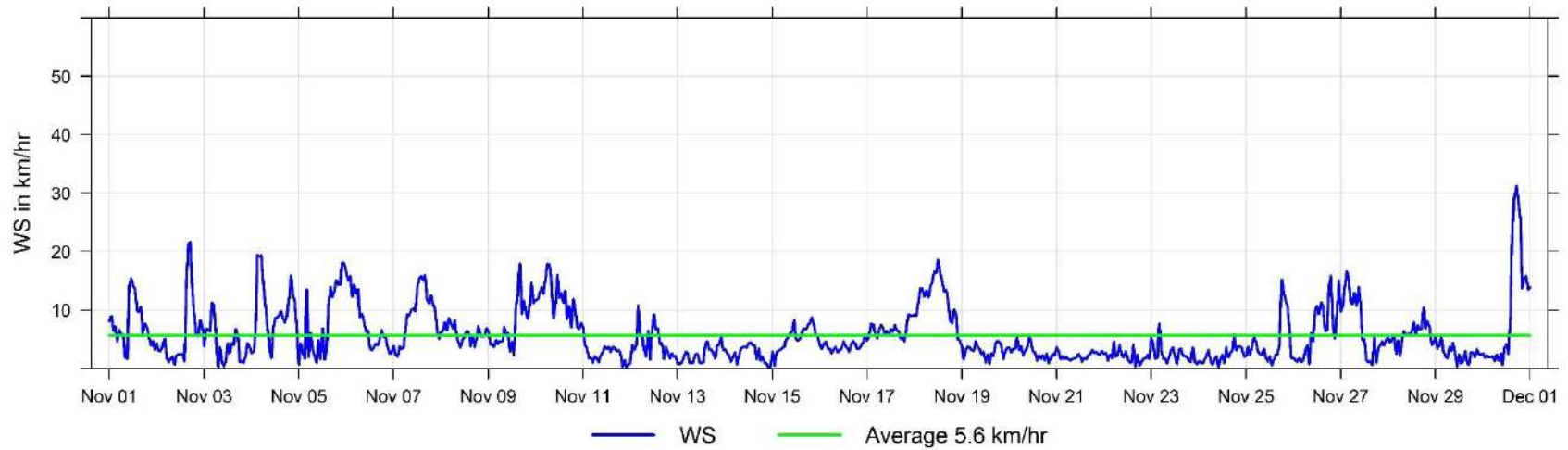
November Hourly Temperature Readings (in °C) at Henry Pirker



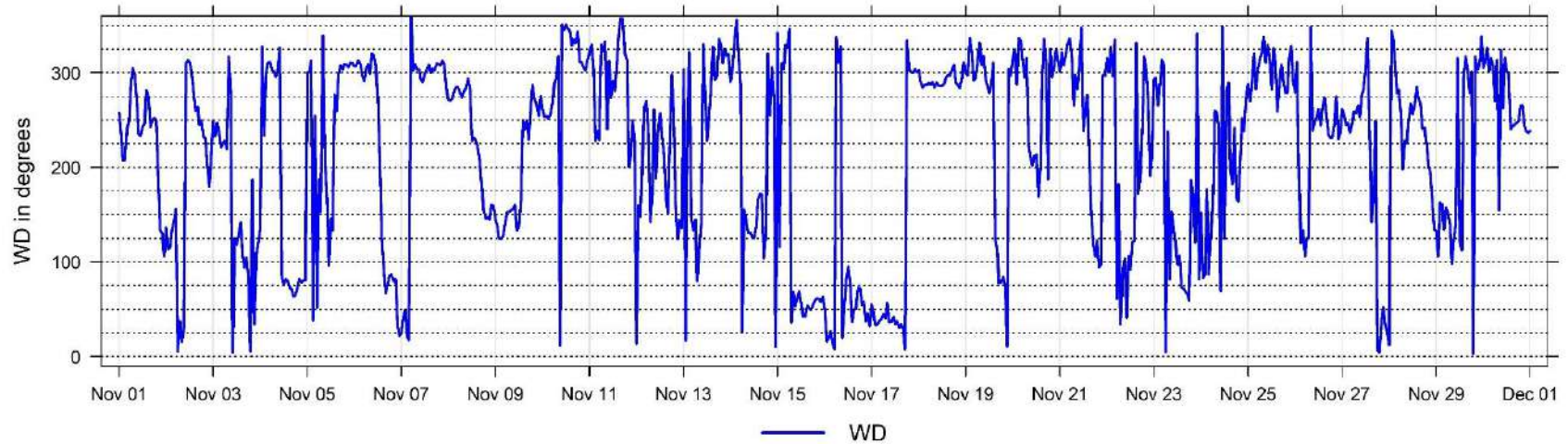
November Hourly Readings of Relative Humidity (in %) at Henry Pirker



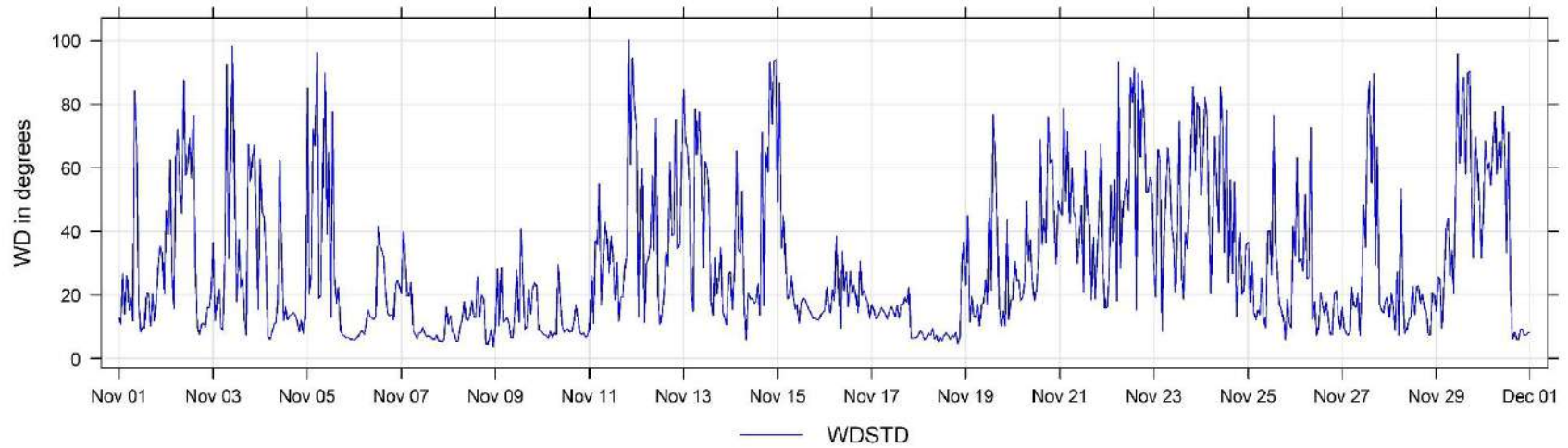
November Hourly Readings of Wind Speed (in km/hr) at Henry Pirker

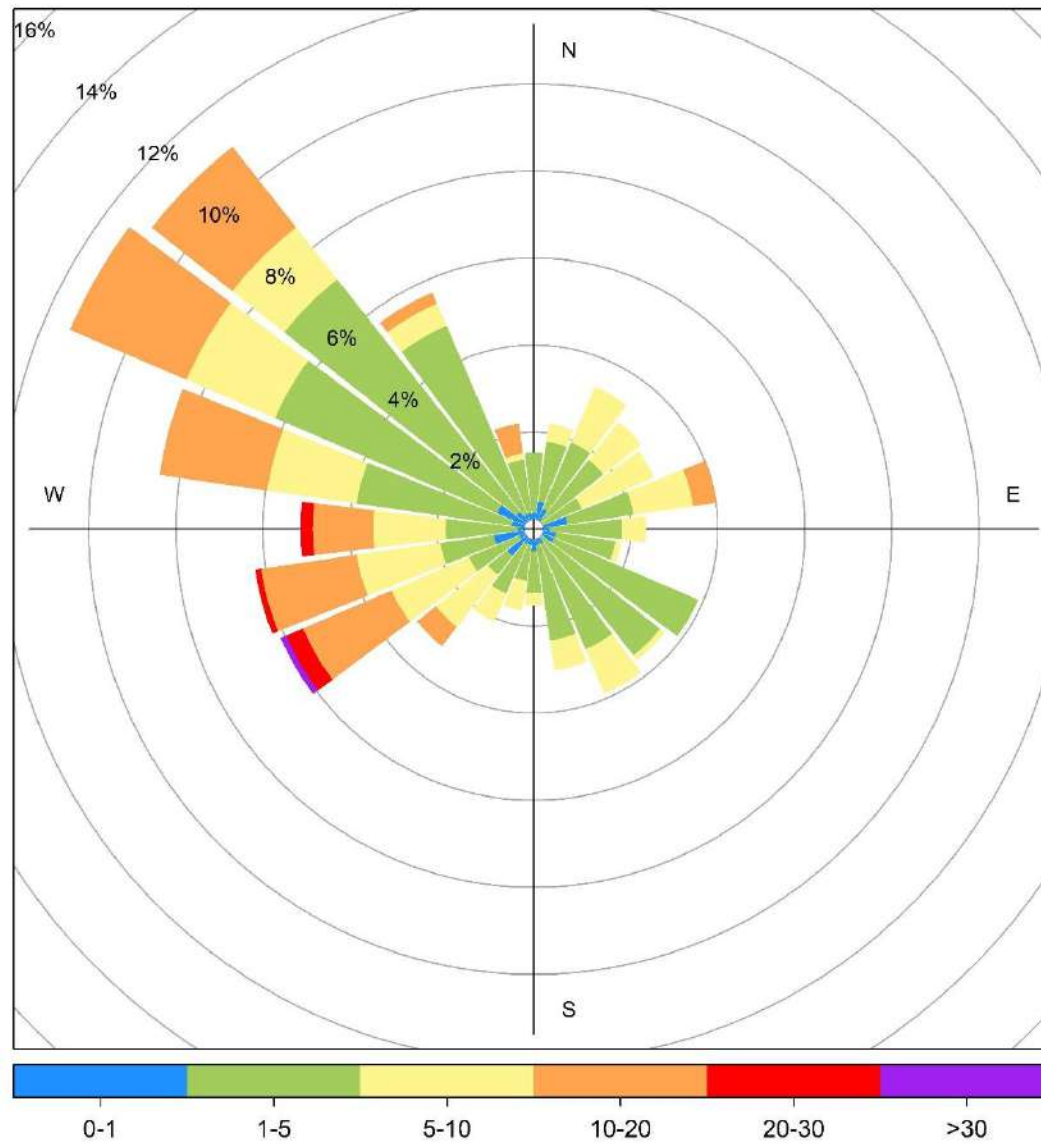


November Hourly Readings of Wind Direction (in degrees) at Henry Pirker



November Hourly Readings of Wind Direction Standard Deviation (in degrees) at Henry Pirker



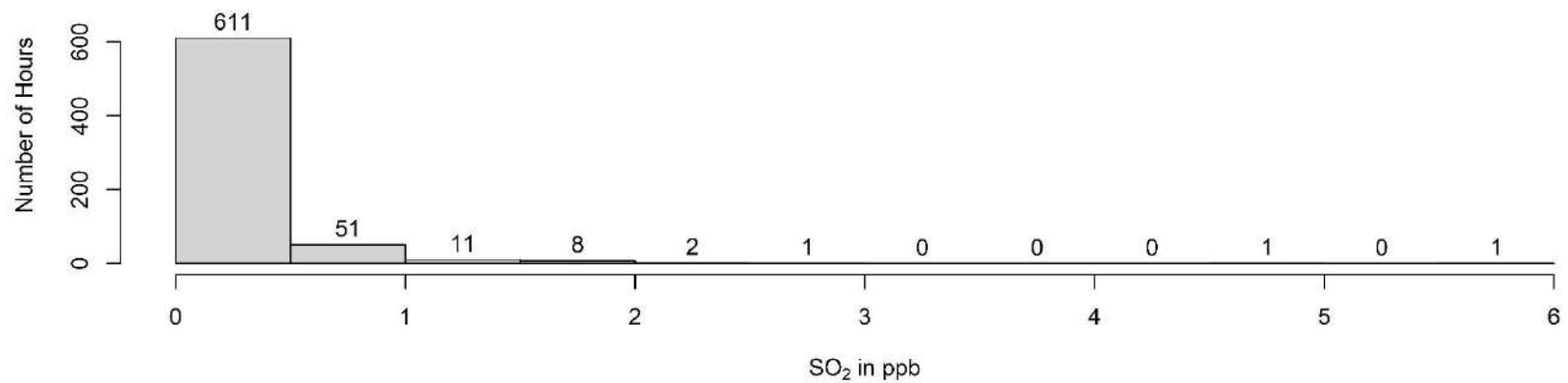
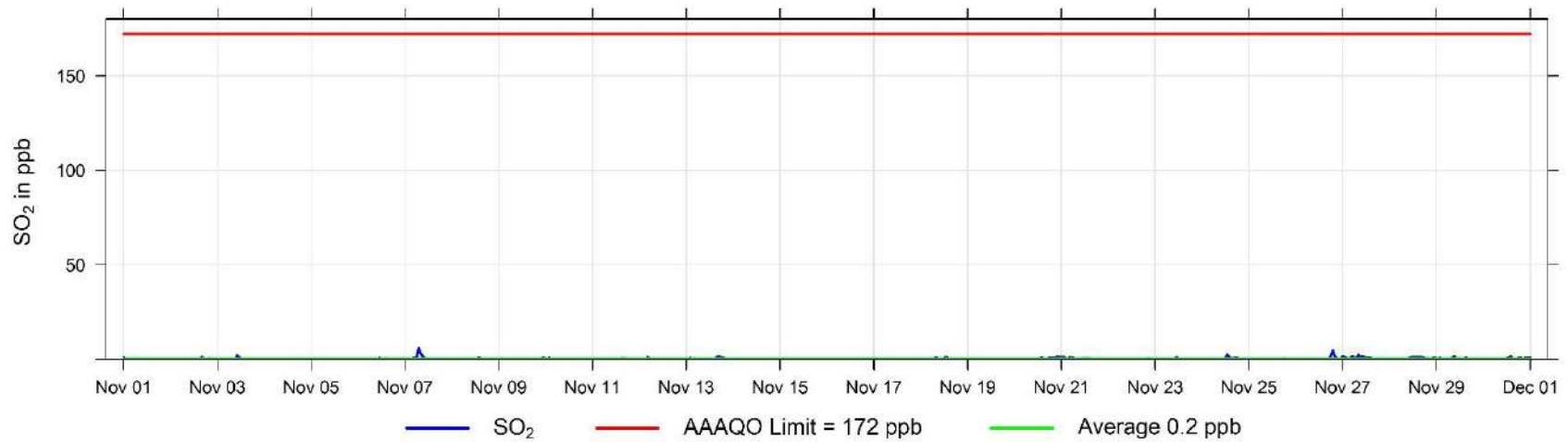


Henry Pirker November Wind Rose, wind speed in km/hr

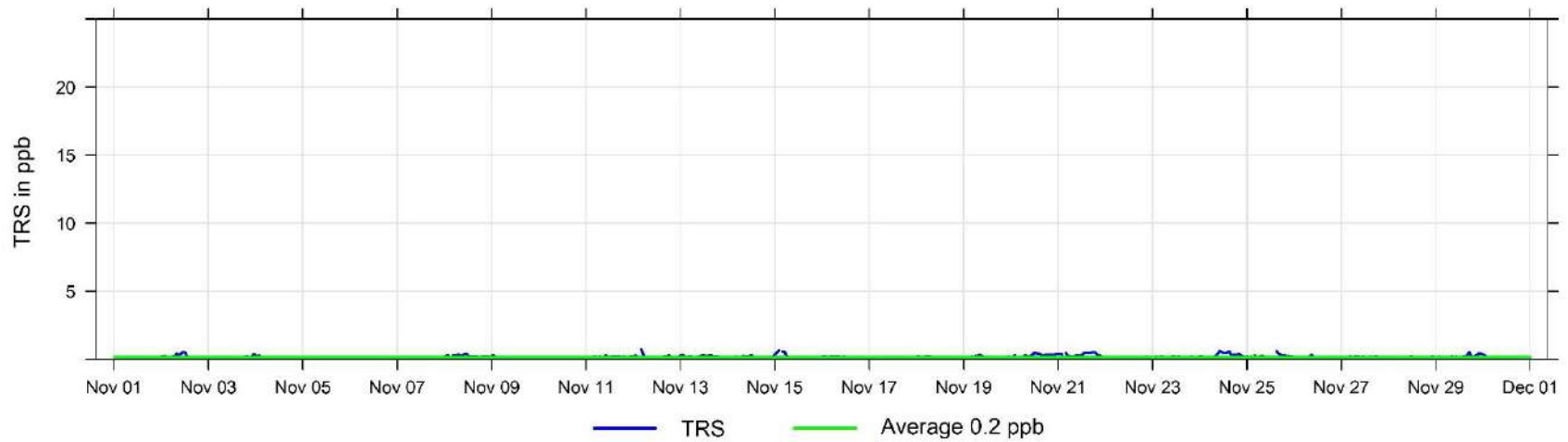
5 Smoky Heights Charts

The following pages include the charts and histograms for Smoky Heights Station

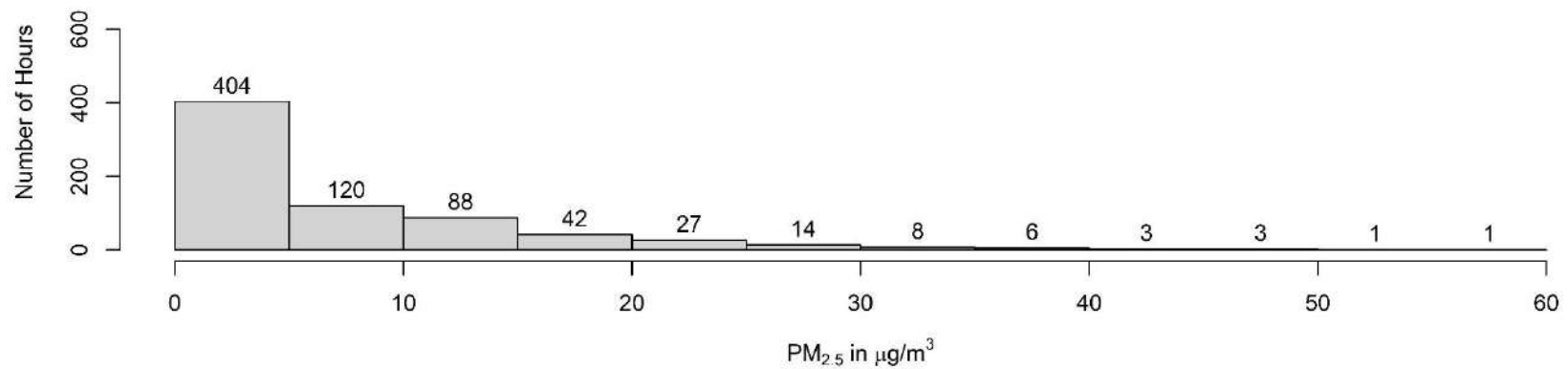
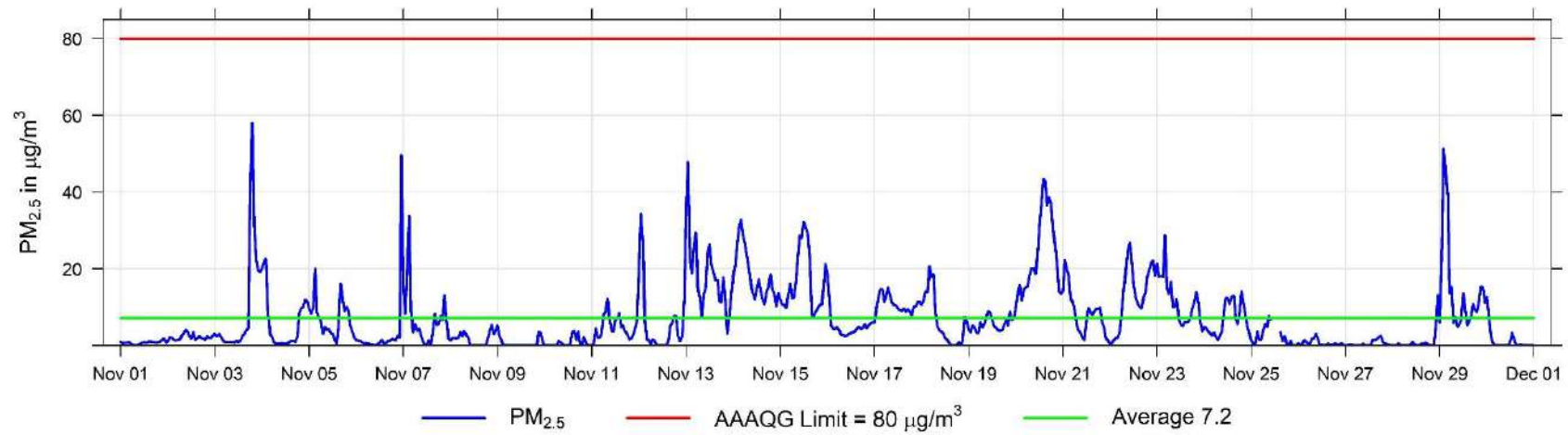
November Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



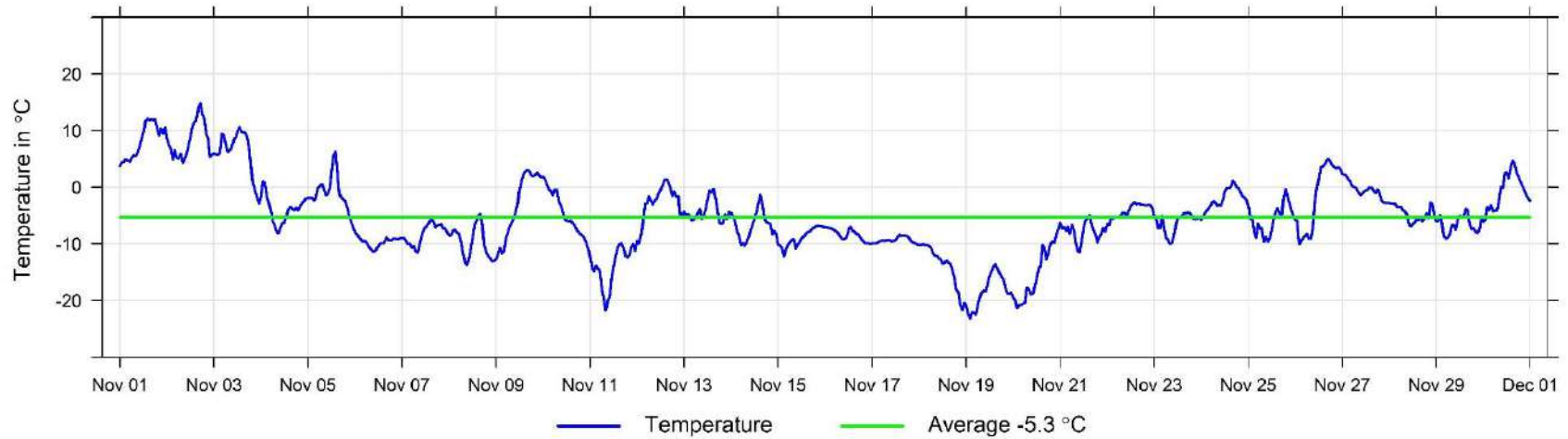
November Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



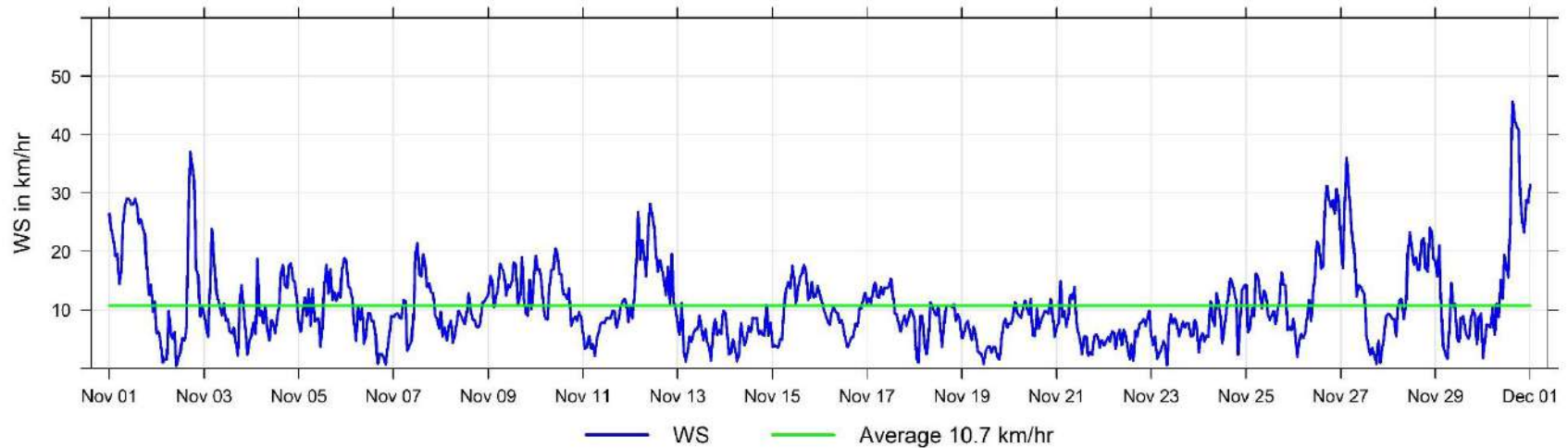
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Smoky Heights



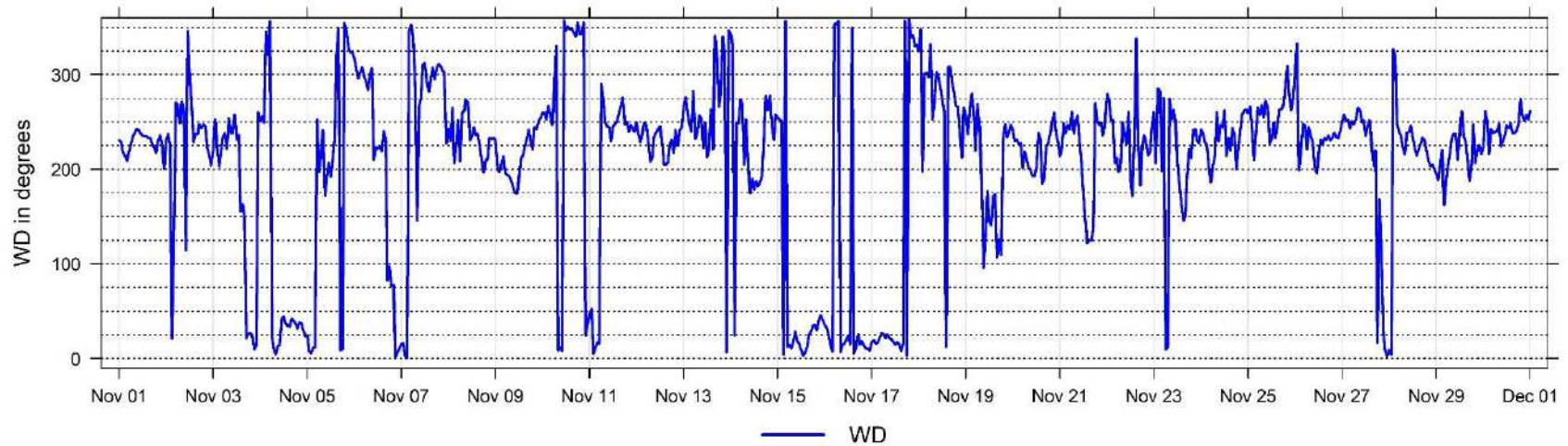
November Hourly Temperature Readings (in °C) at Smoky Heights



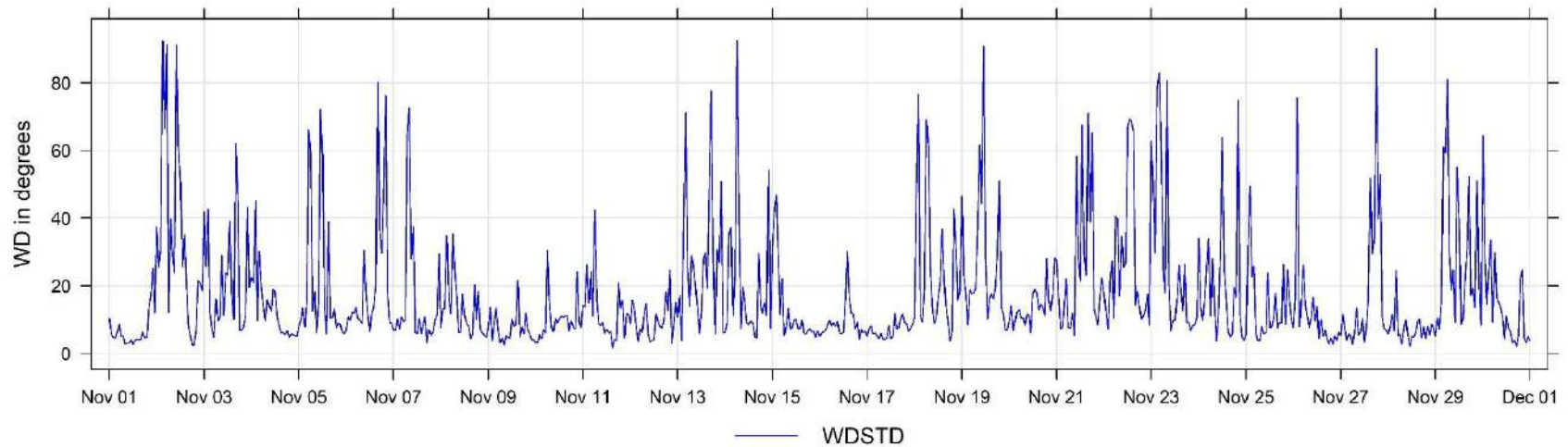
November Hourly Readings of Wind Speed (in km/hr) at Smoky Heights



November Hourly Readings of Wind Direction (in degrees) at Smoky Heights



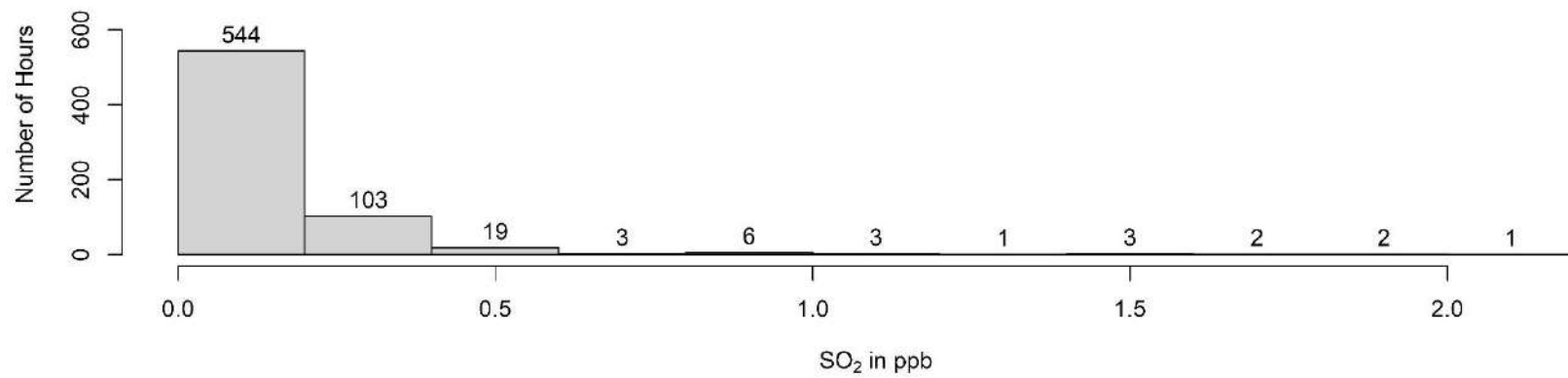
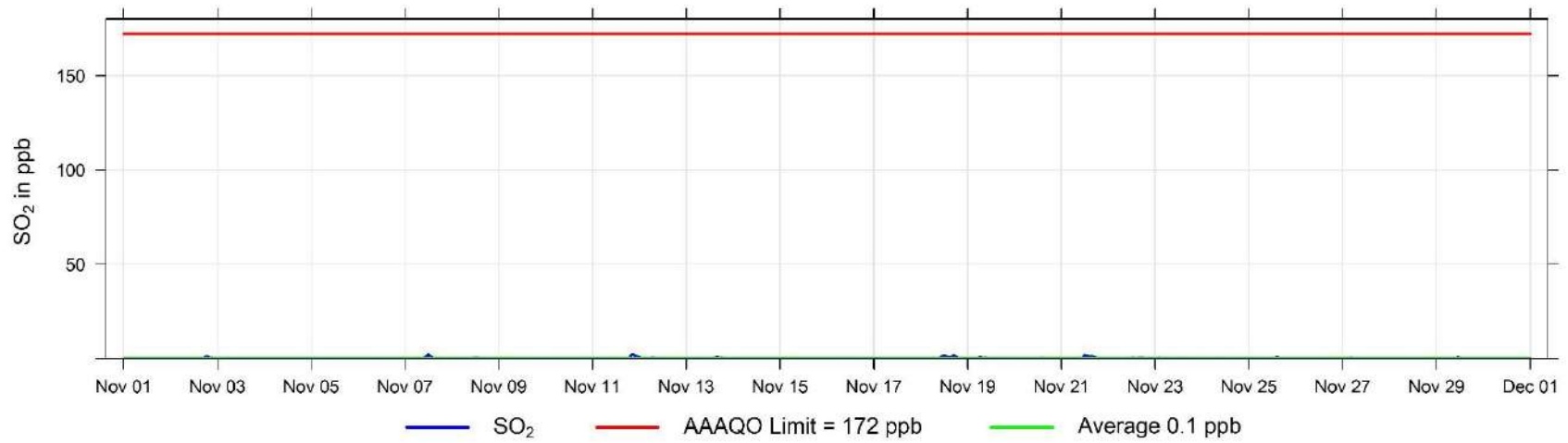
November Hourly Readings of Wind Direction Standard Deviation (in degrees) at Smoky Heights



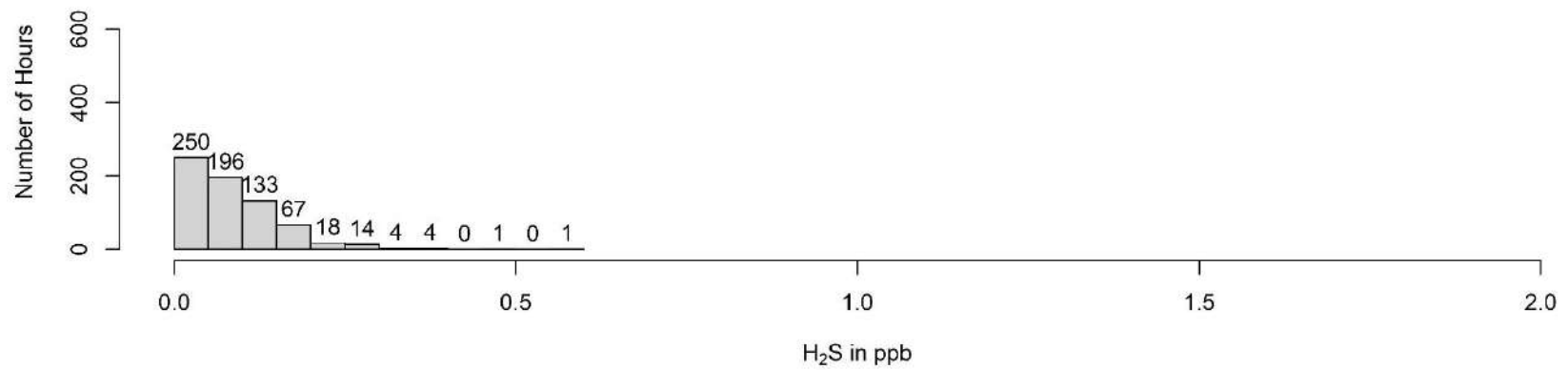
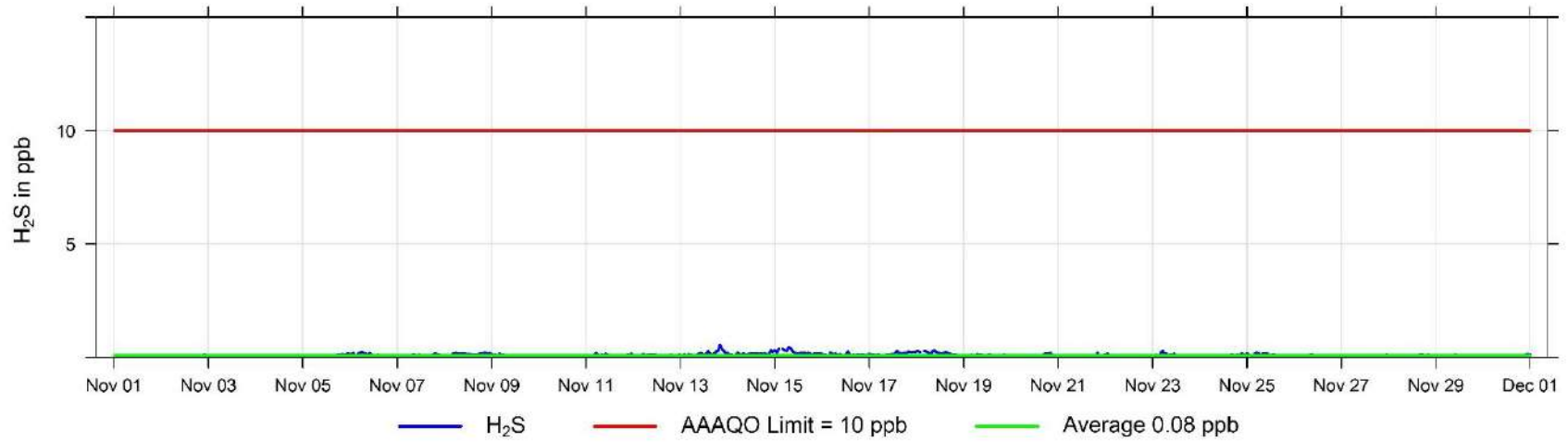
6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

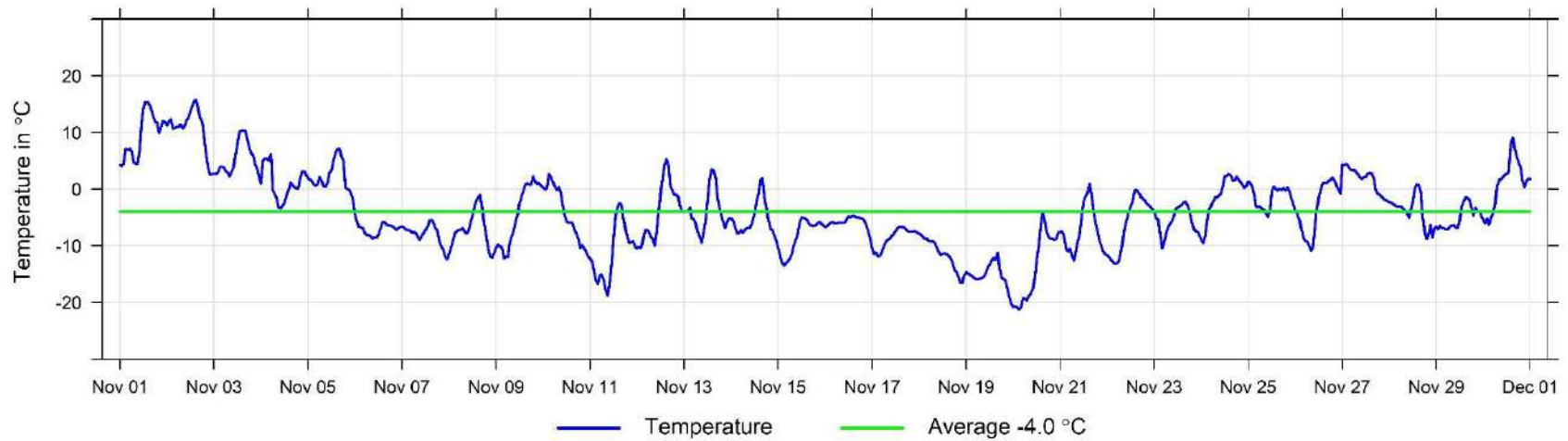
November Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



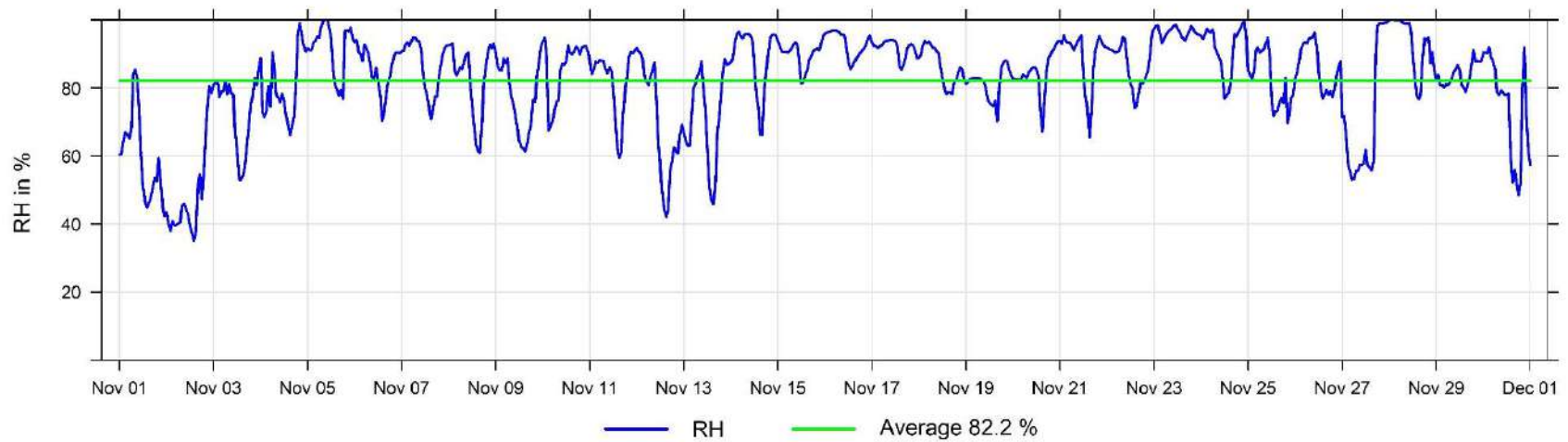
November Hourly Concentration Readings of H₂S (in ppb) at Valleyview



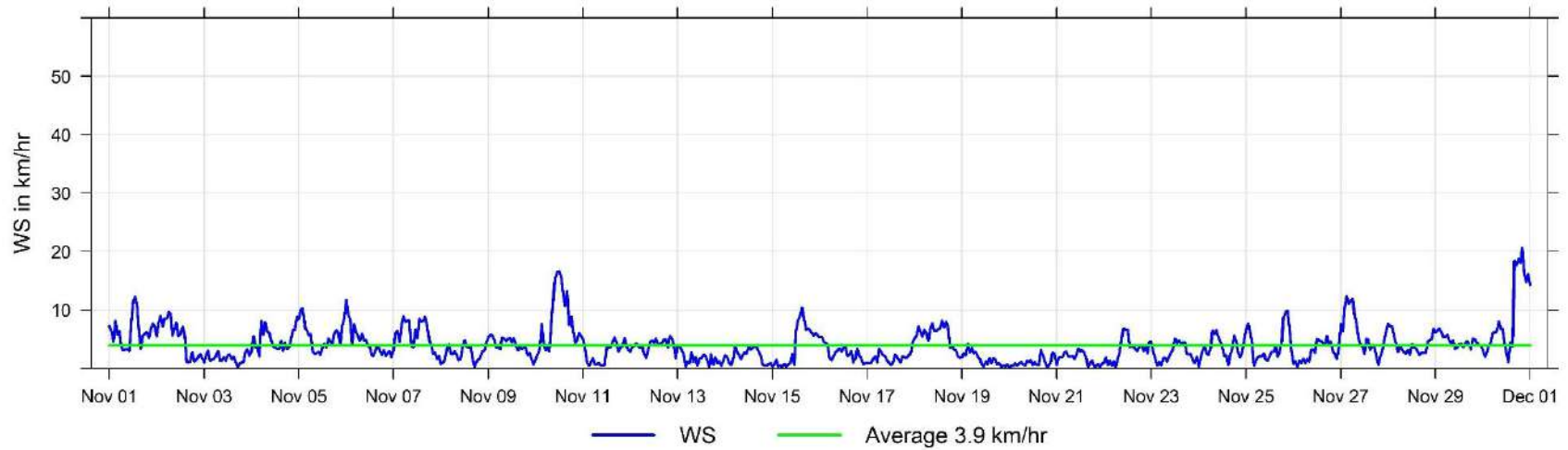
November Hourly Temperature Readings (in °C) at Valleyview



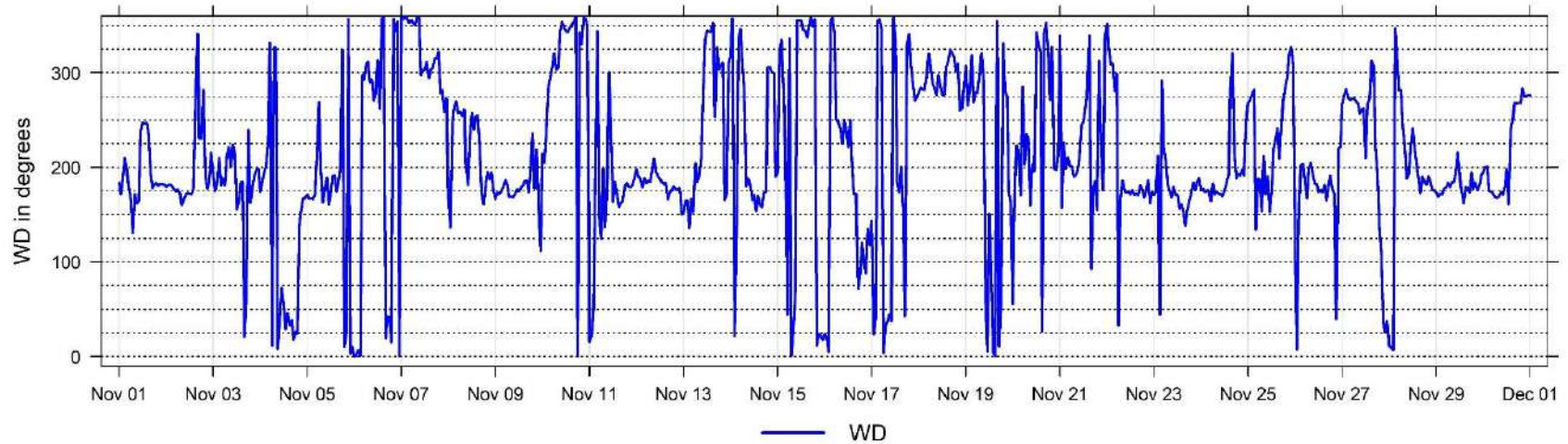
November Hourly Readings of Relative Humidity (in %) at Valleyview



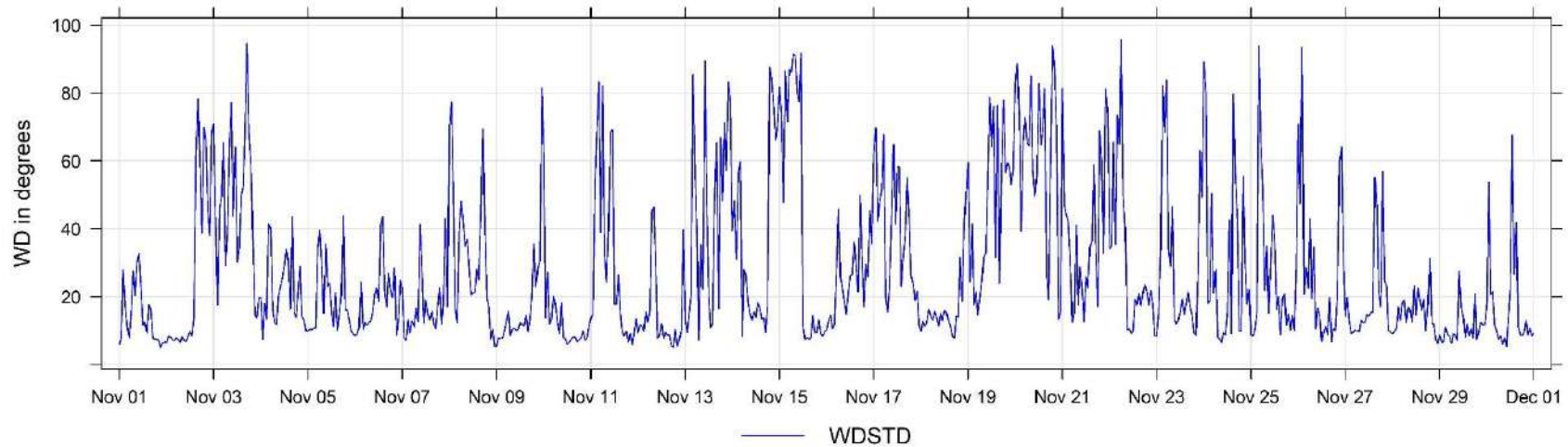
November Hourly Readings of Wind Speed (in km/hr) at Valleyview

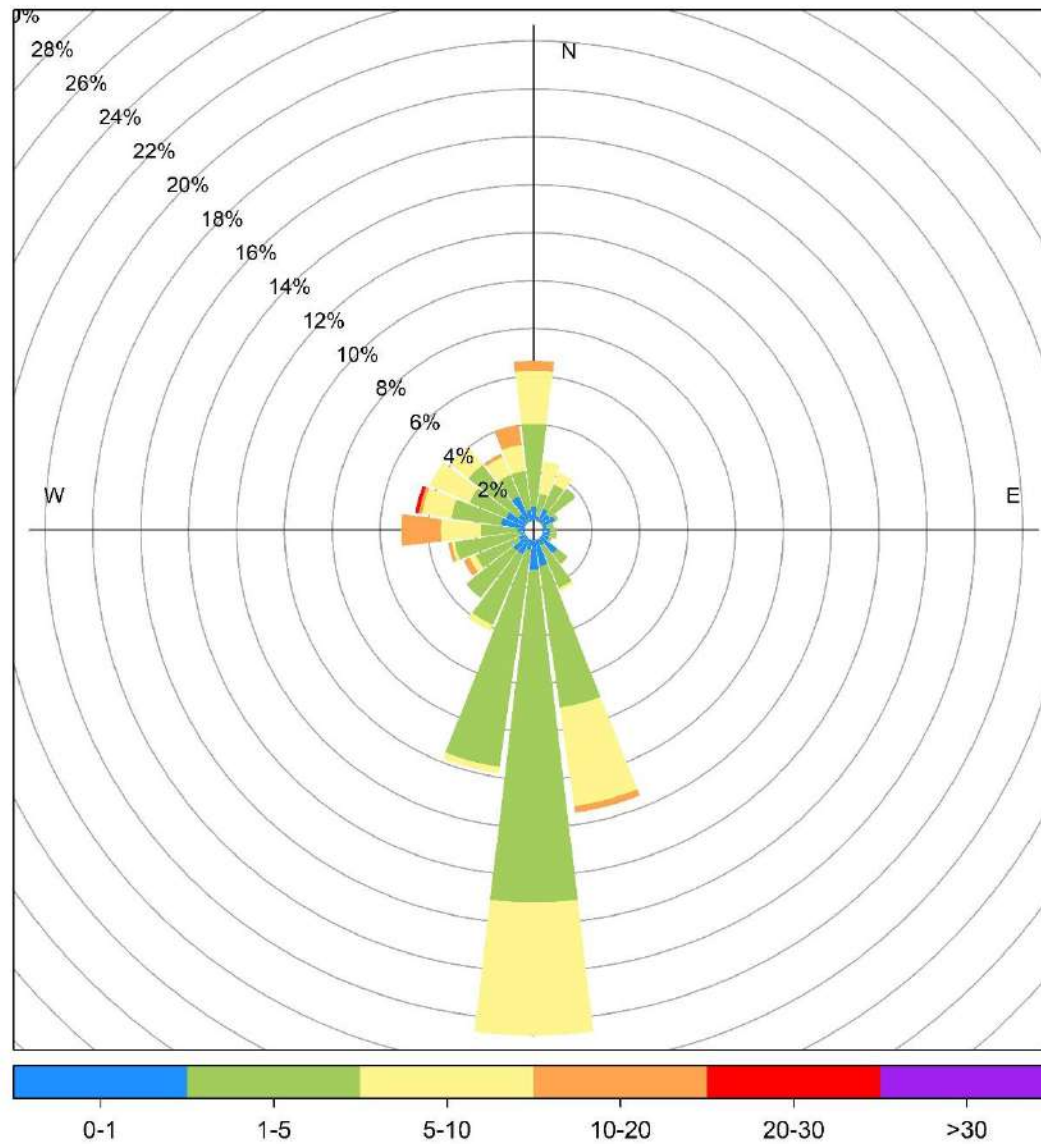


November Hourly Readings of Wind Direction (in degrees) at Valleyview



November Hourly Readings of Wind Direction Standard Deviation (in degrees) at Valleyview



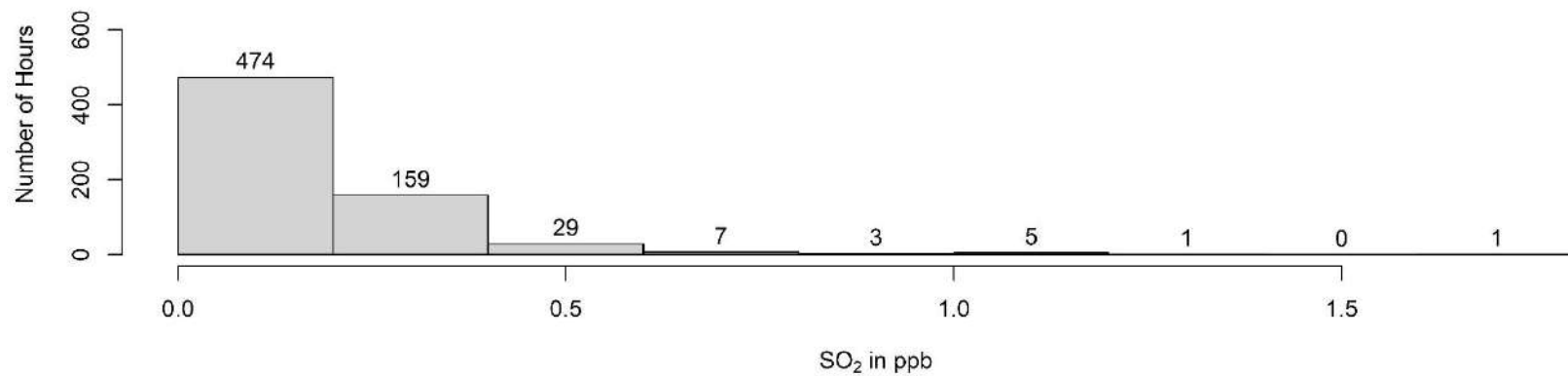
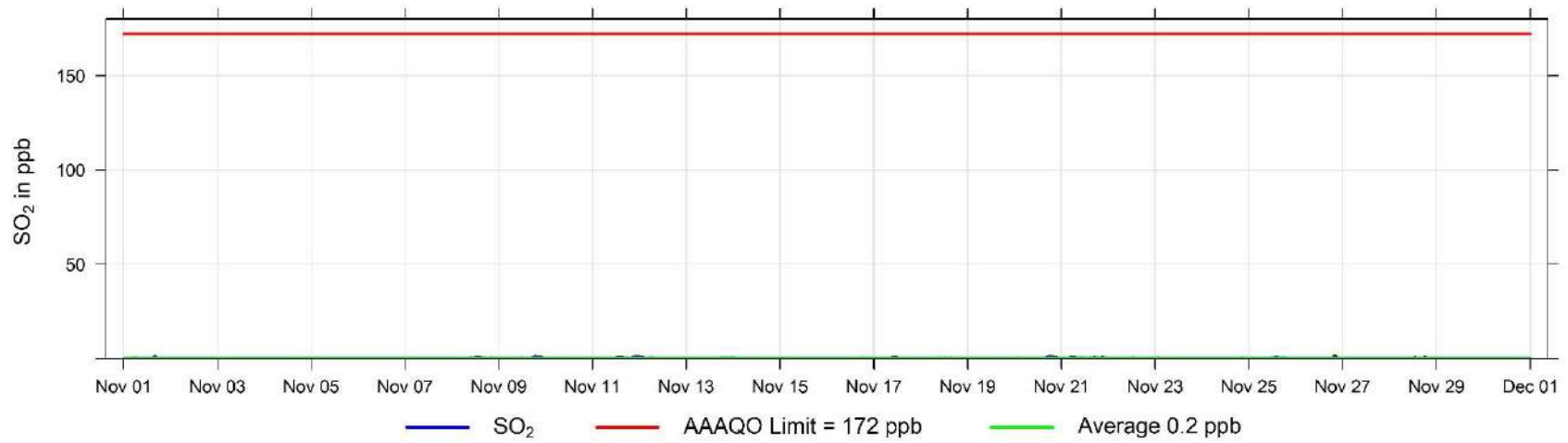


Valleyview November Wind Rose, wind speed in km/hr

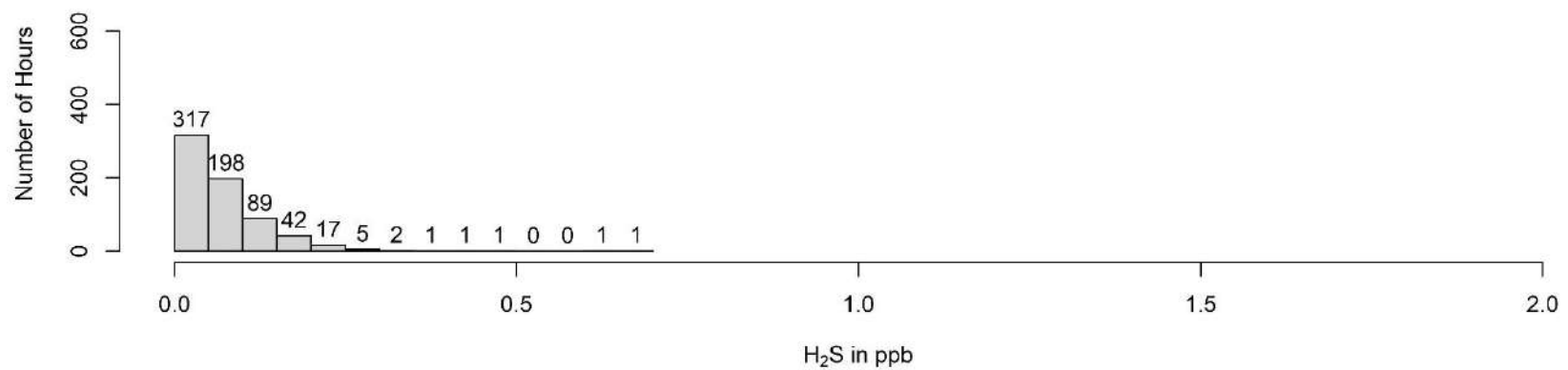
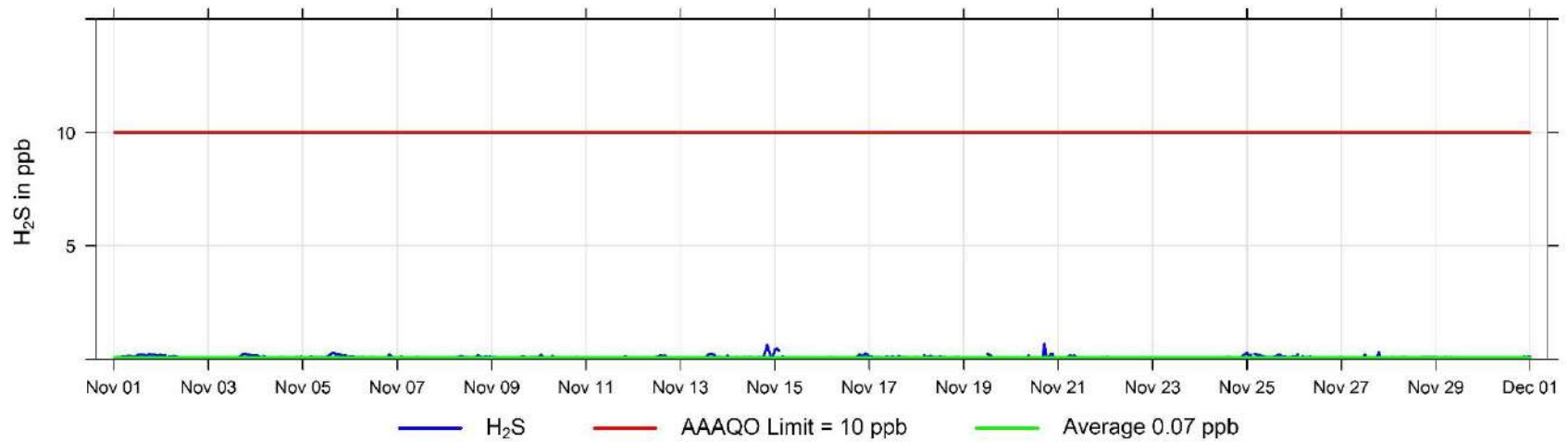
7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

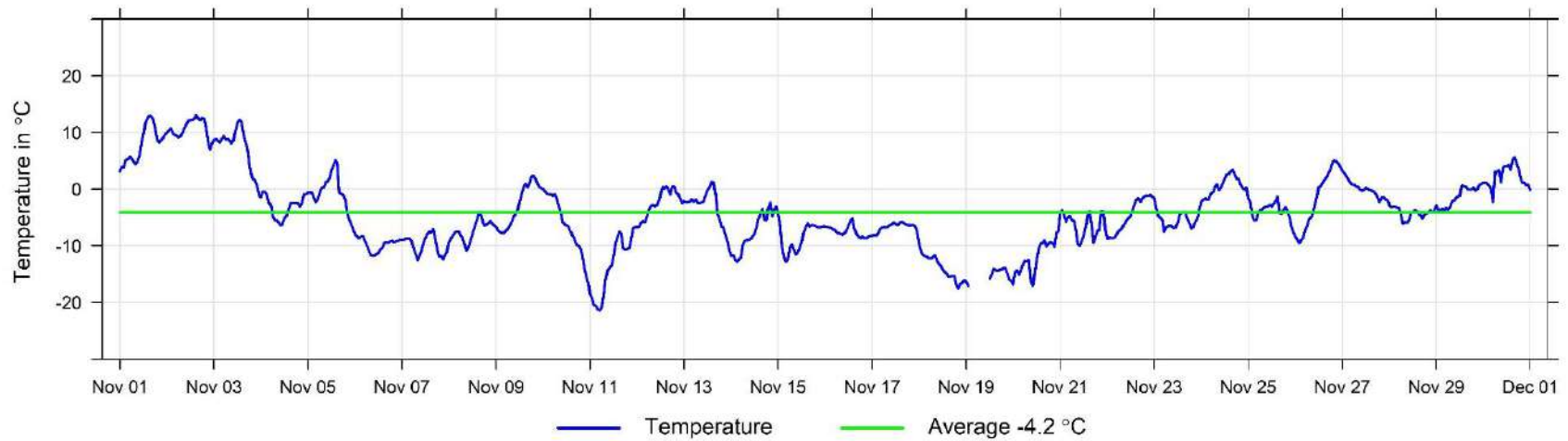
November Hourly Concentration Readings of SO₂ (in ppb) at Donnelly



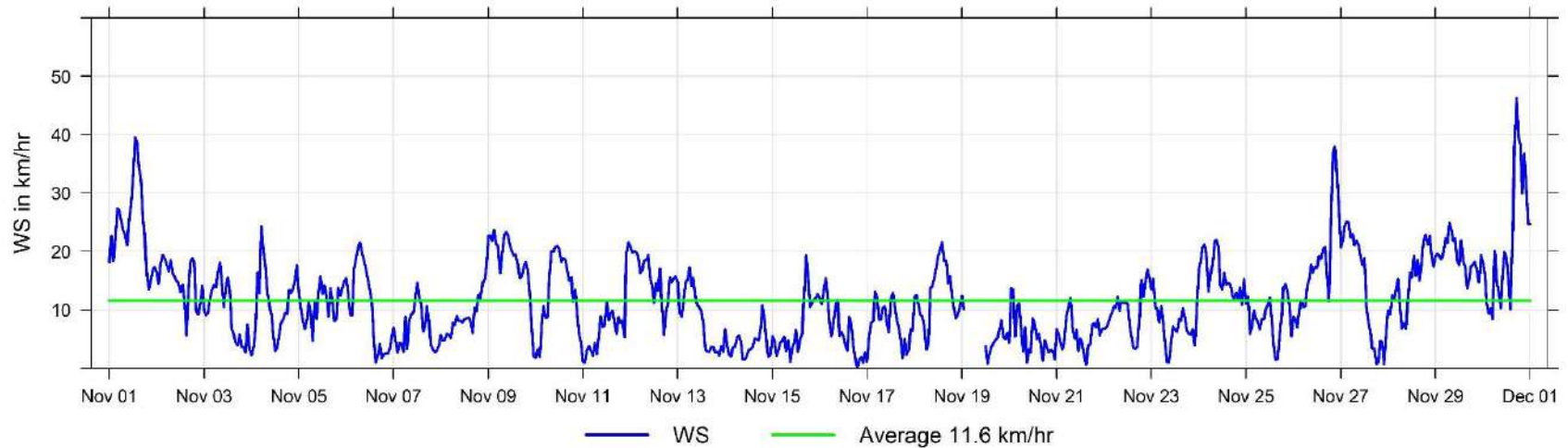
November Hourly Concentration Readings of H₂S (in ppb) at Donnelly



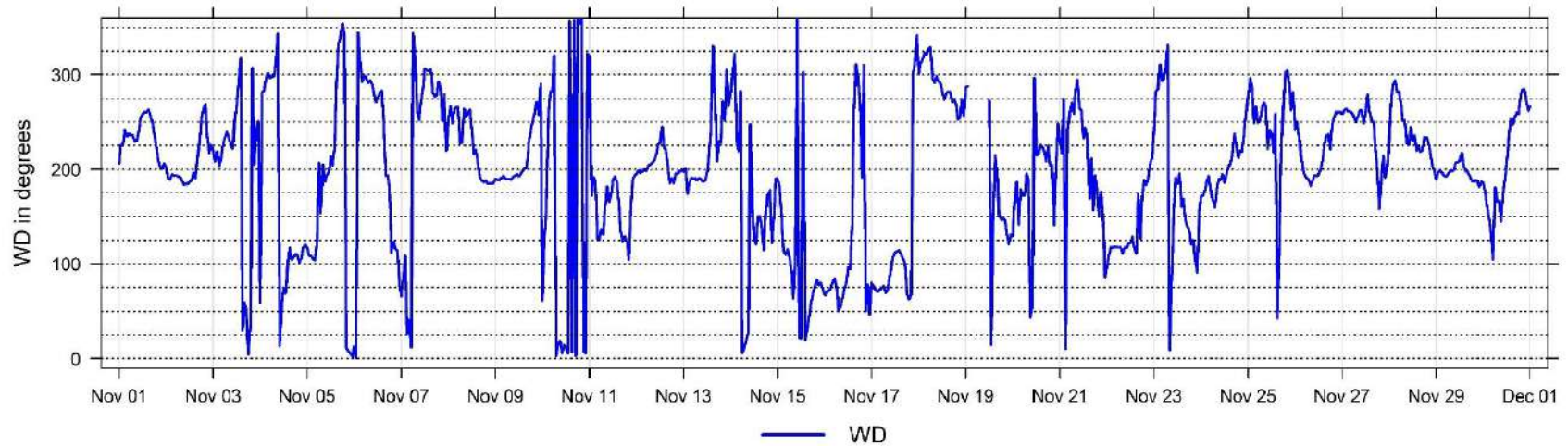
November Hourly Temperature Readings (in °C) at Donnelly



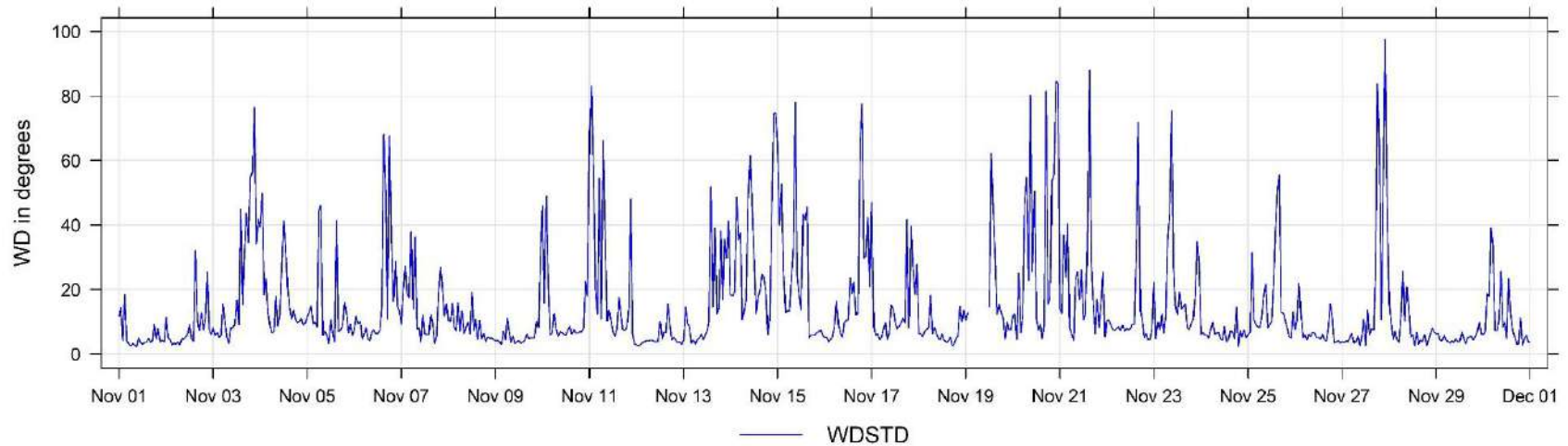
November Hourly Readings of Wind Speed (in km/hr) at Donnelly

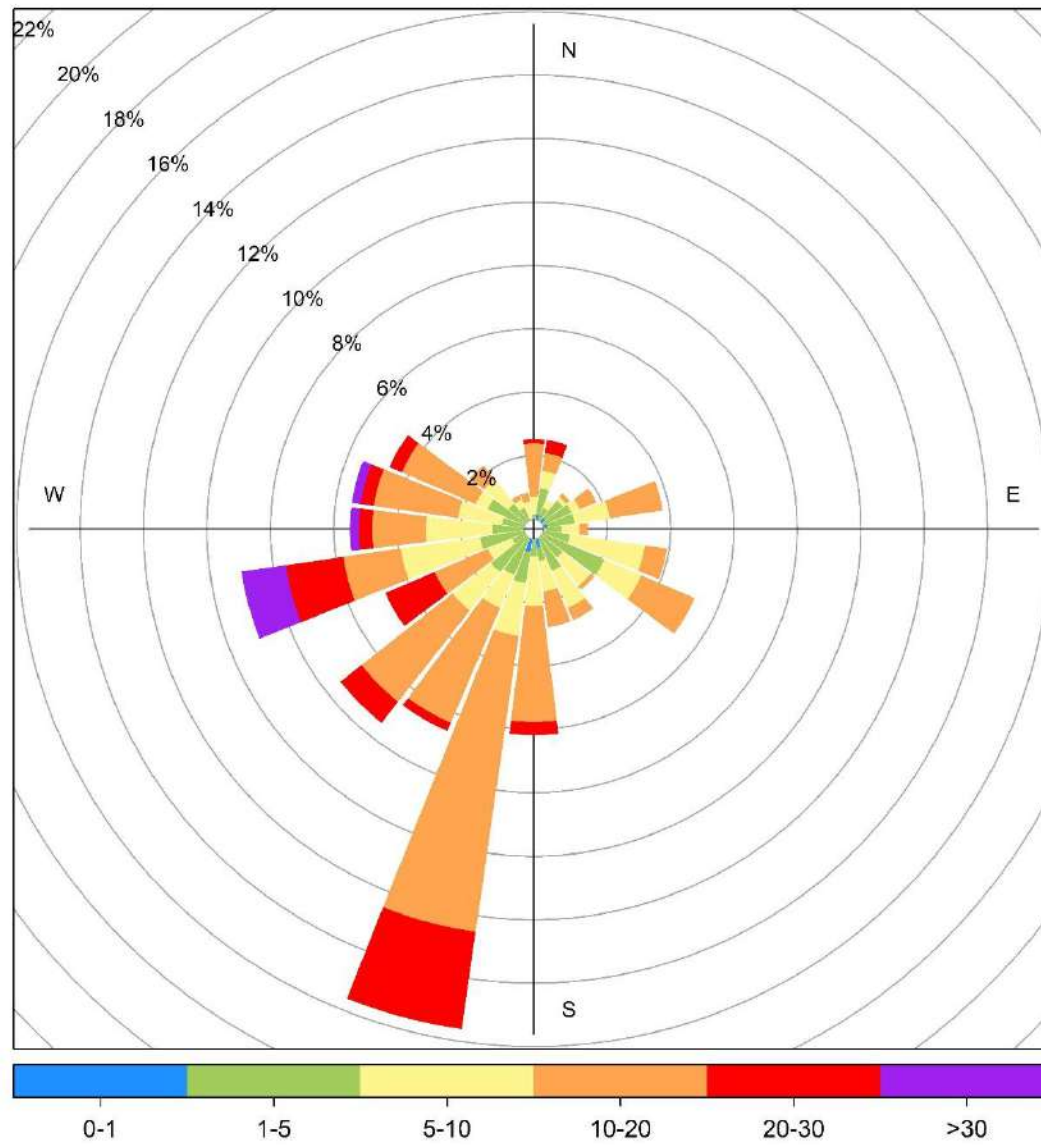


November Hourly Readings of Wind Direction (in degrees) at Donnelly



November Hourly Readings of Wind Direction Standard Deviation (in degrees) at Donnelly



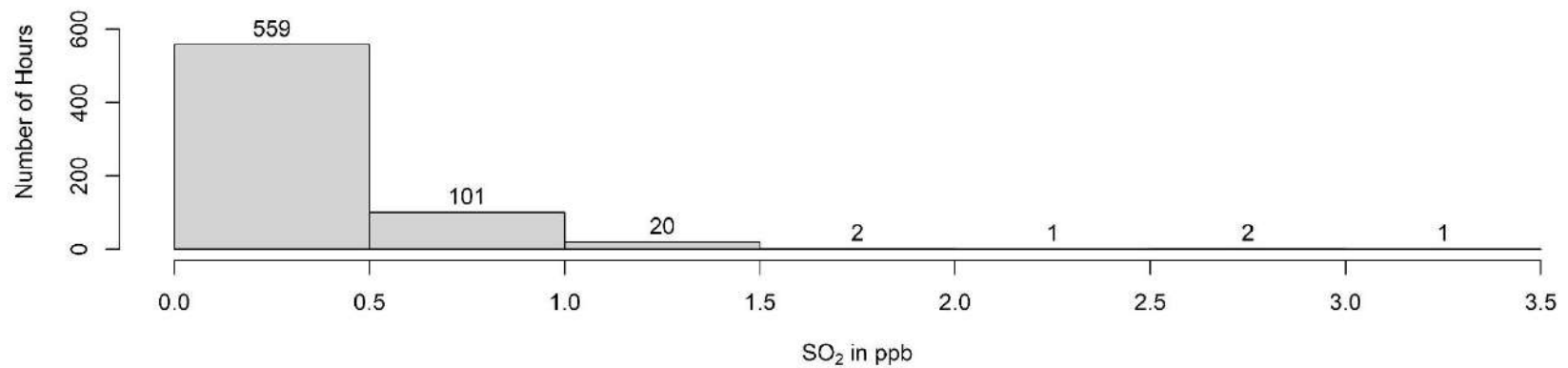
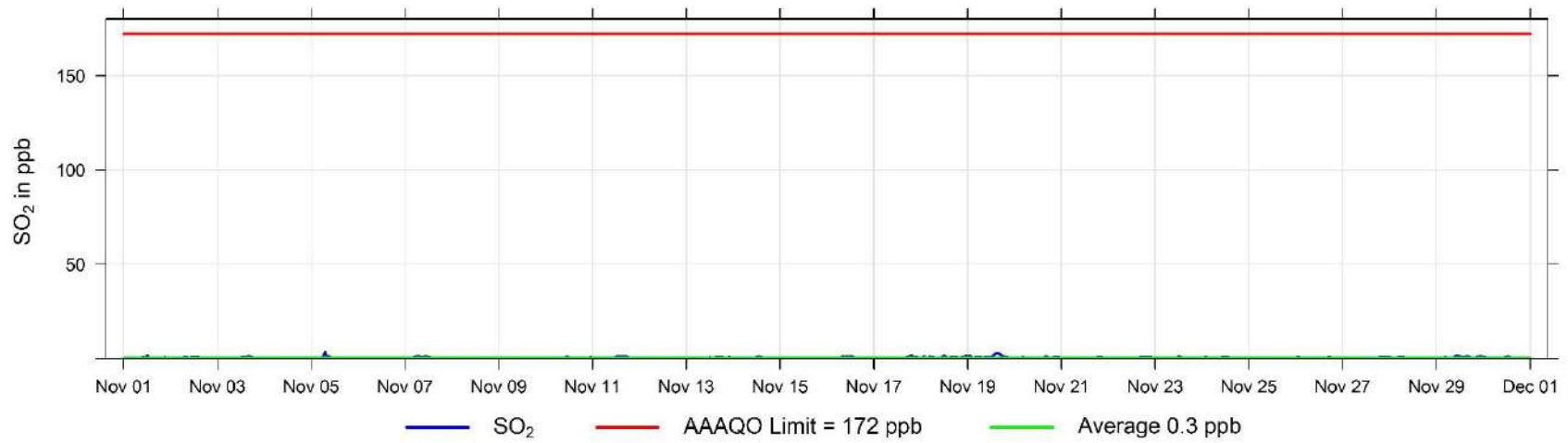


Donnelly November Wind Rose, wind speed in km/hr

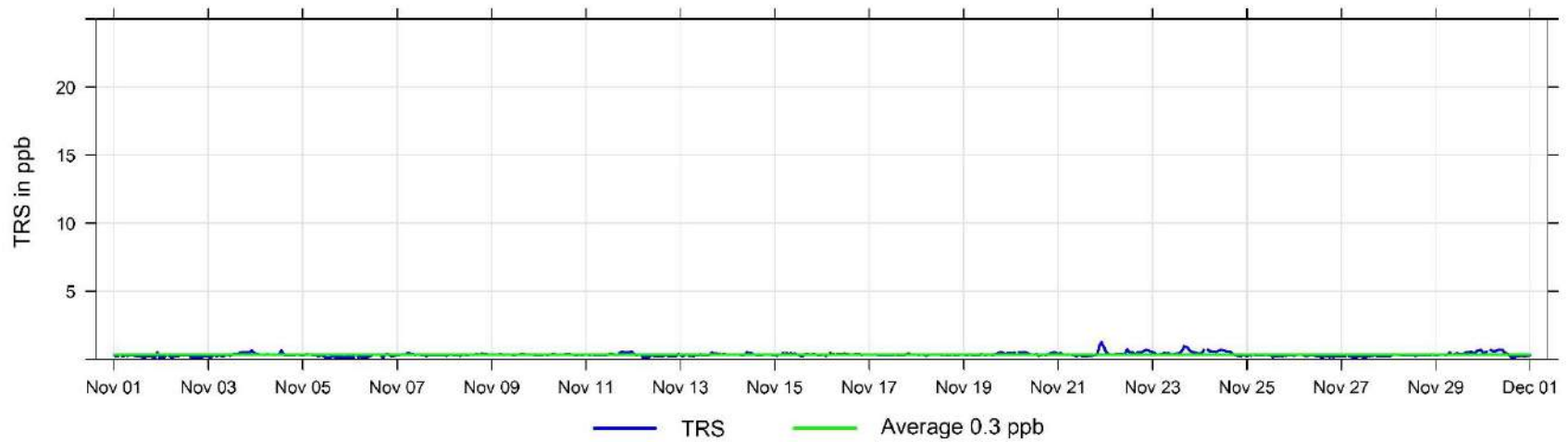
8 Wembley (Portable) Charts

The following pages include the charts and histograms for Wembley Portable Station

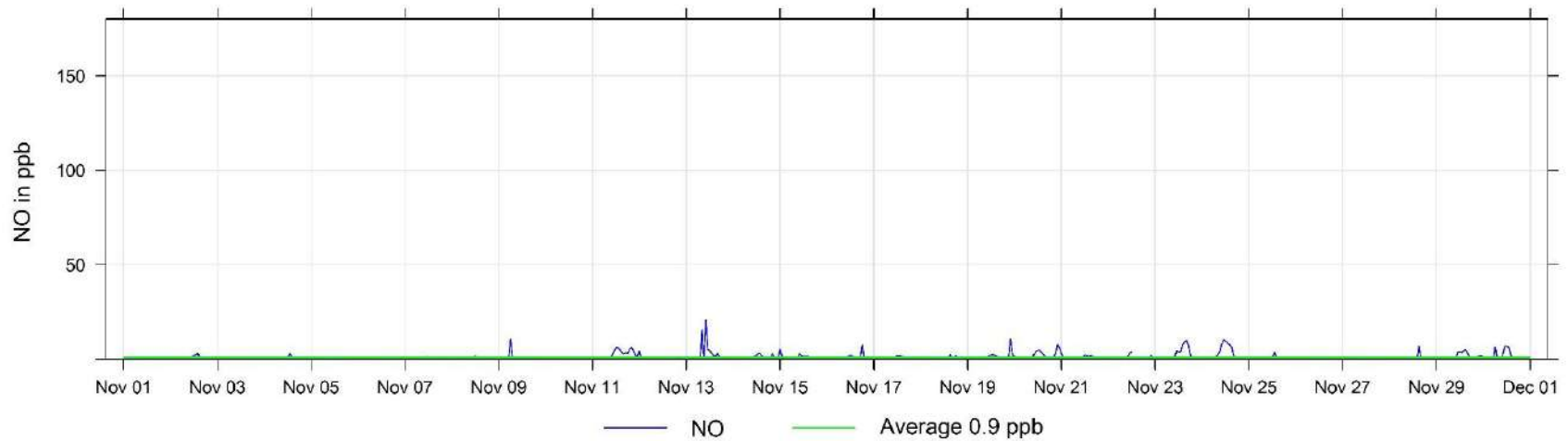
November Hourly Concentration Readings of SO₂ (in ppb) at Wembley



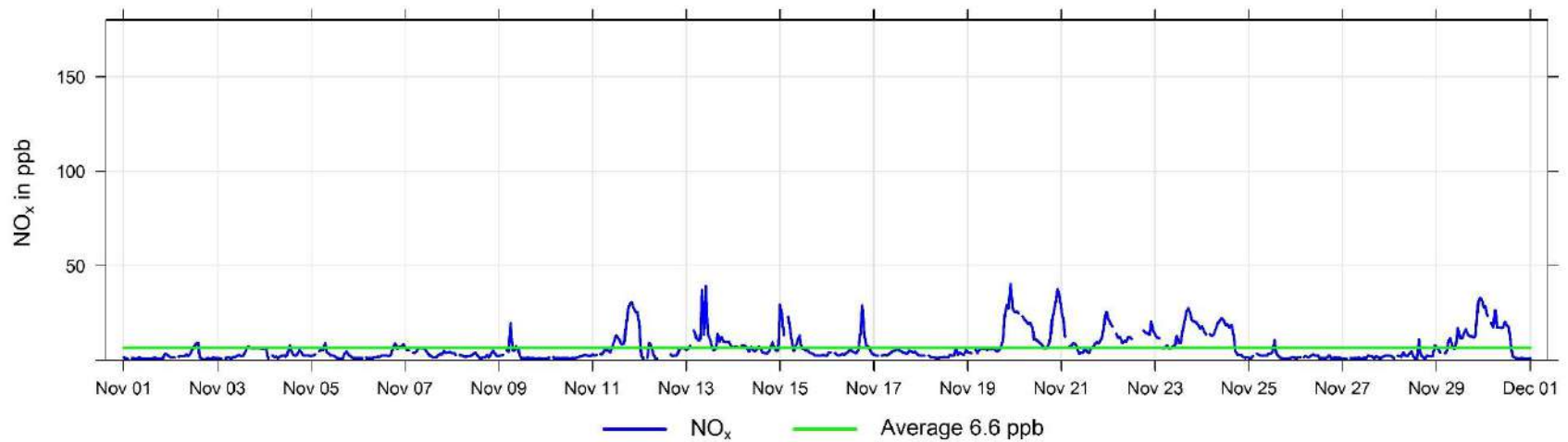
November Hourly Concentration Readings of TRS (in ppb) at Wembley



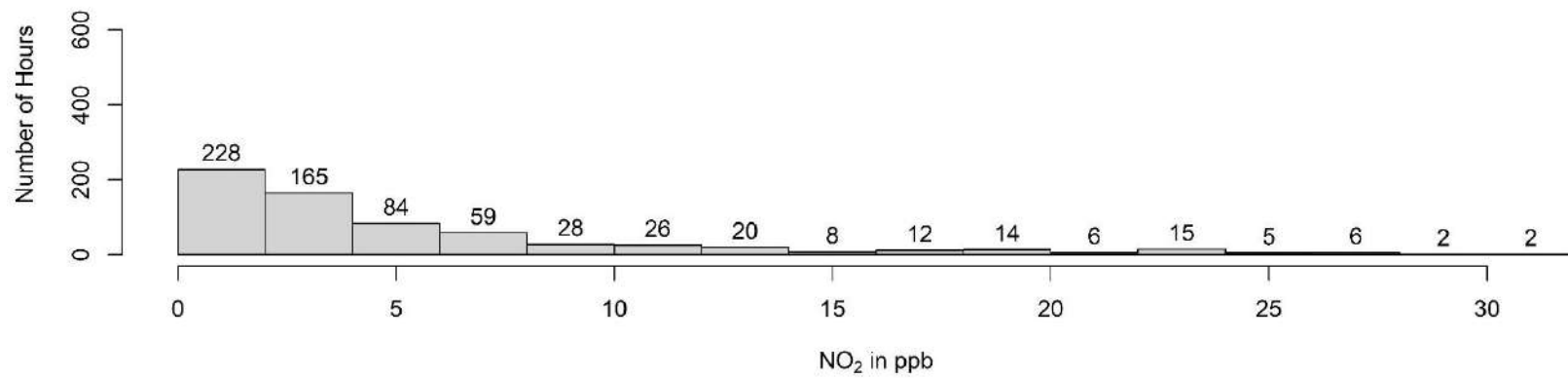
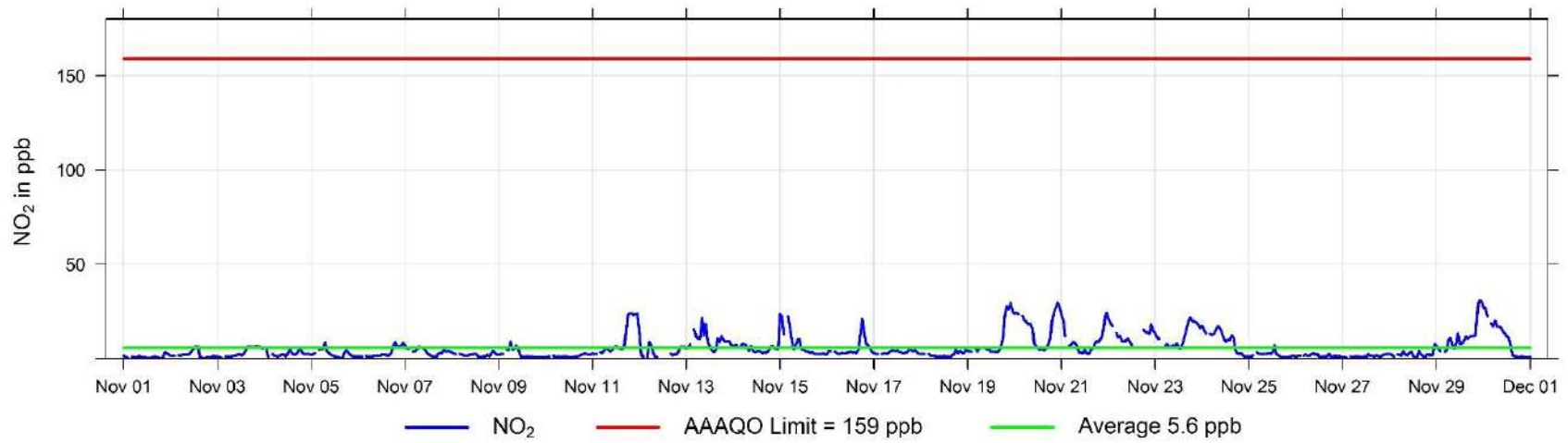
November Hourly Concentration Readings of NO (in ppb) at Wembley



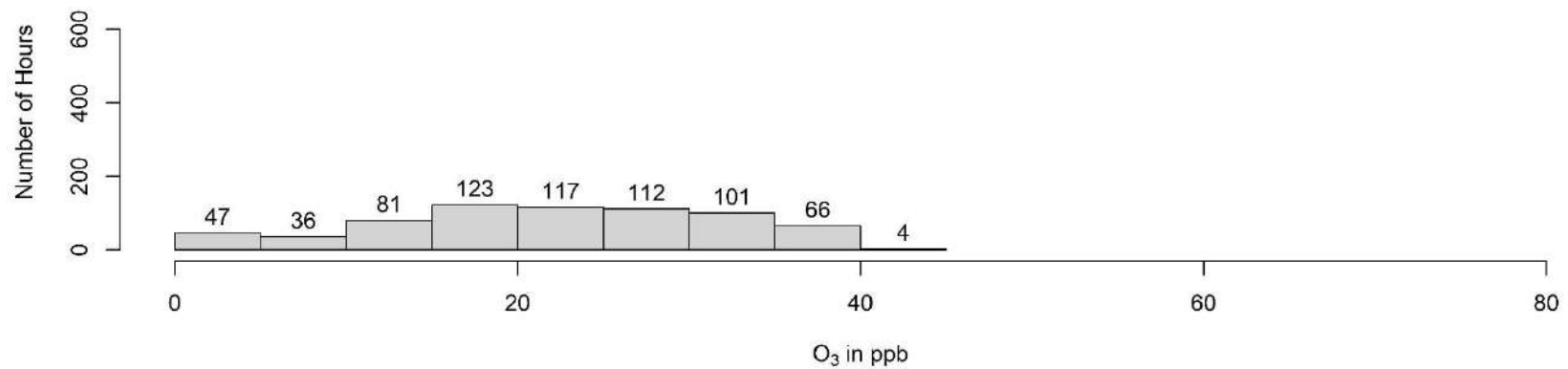
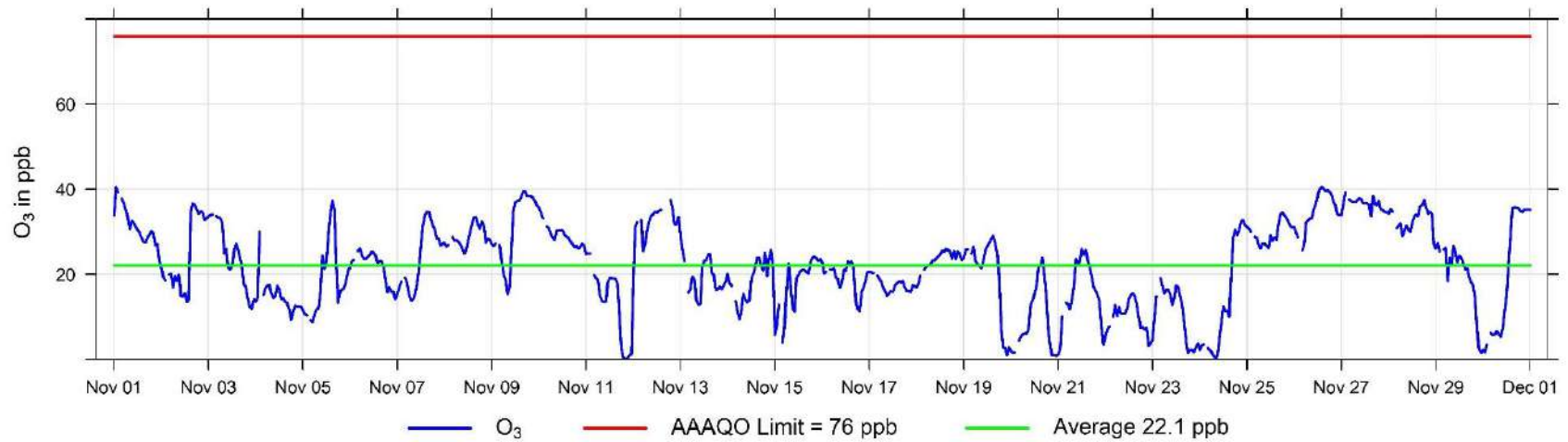
November Hourly Concentration Readings of NO_x (in ppb) at Wembley



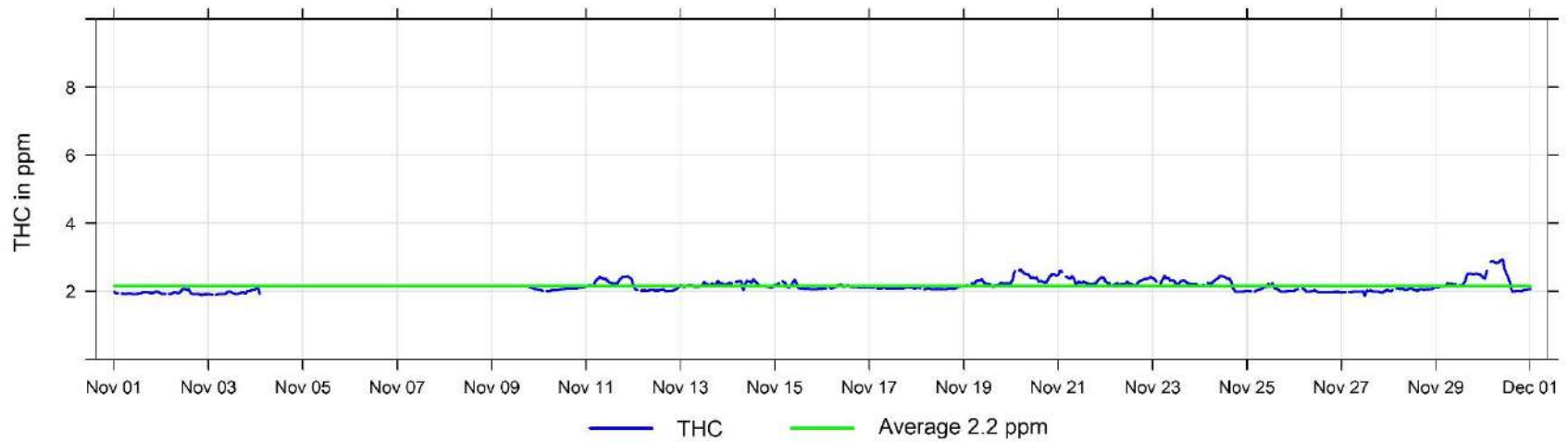
November Hourly Concentration Readings of NO₂ (in ppb) at Wembley



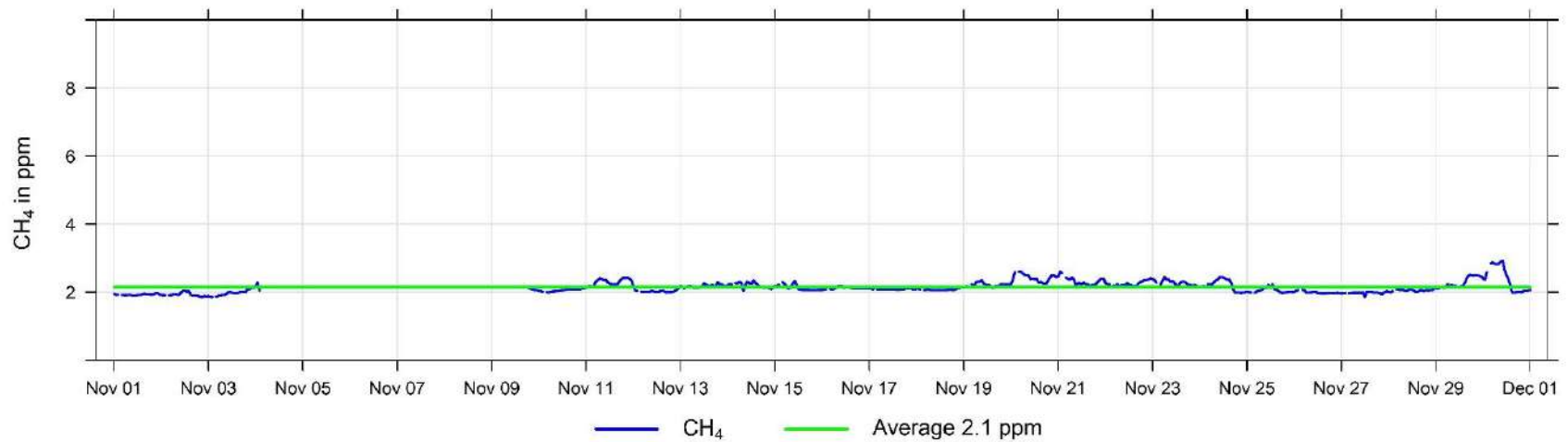
November Hourly Concentration Readings of O₃ (in ppb) at Wembley



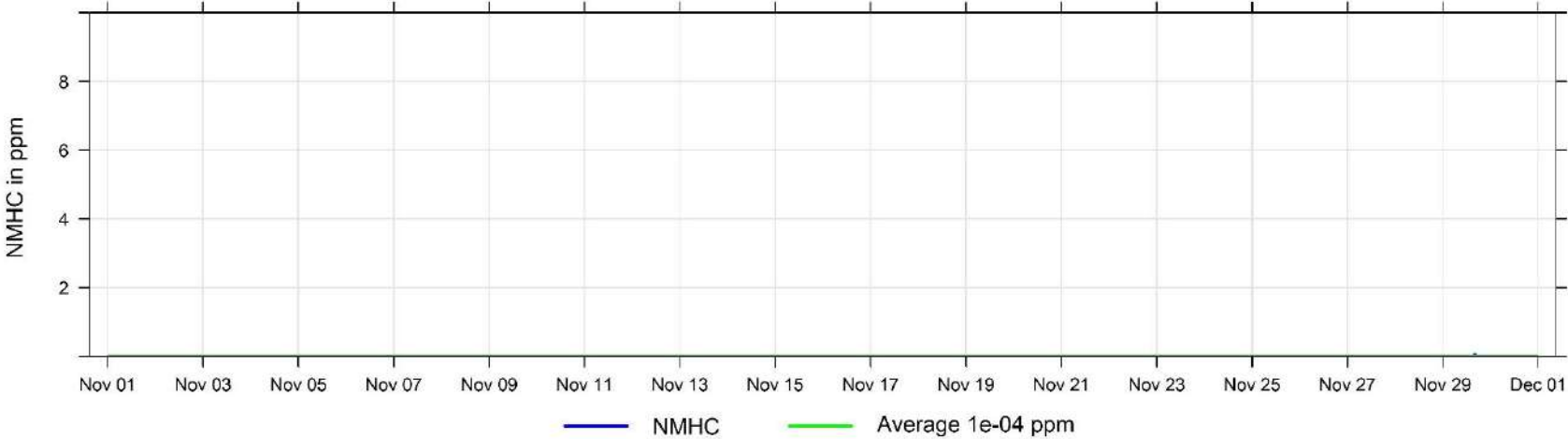
November Hourly Concentration Readings of THC (in ppm) at Wembley



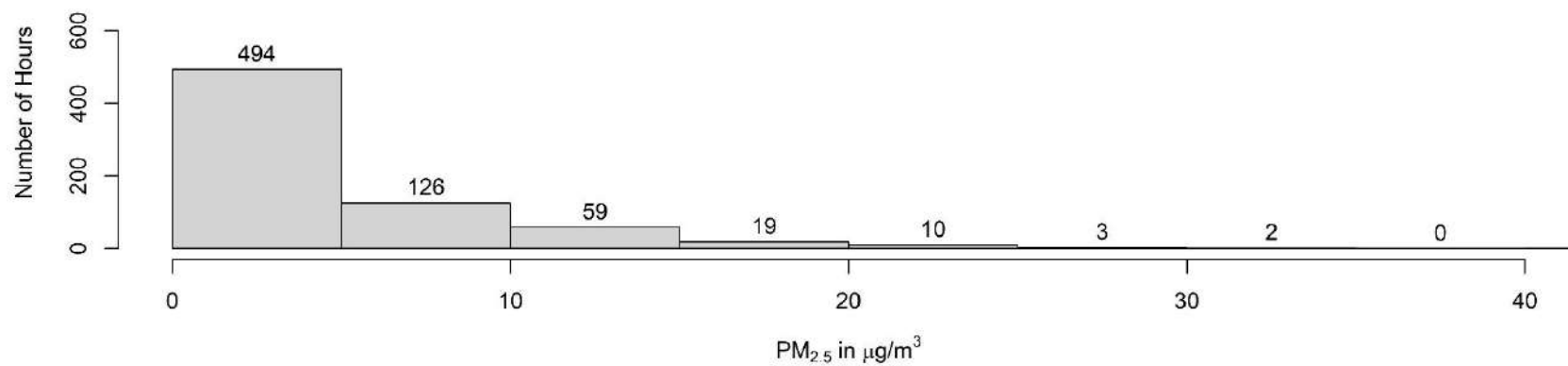
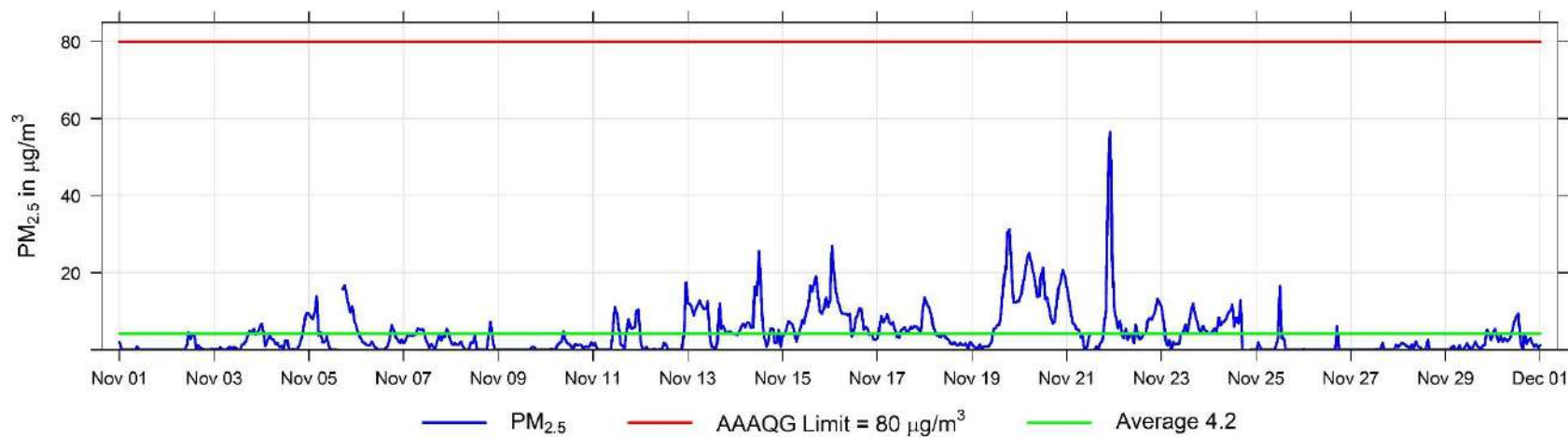
November Hourly Concentration Readings of CH₄ (in ppm) at Wembley



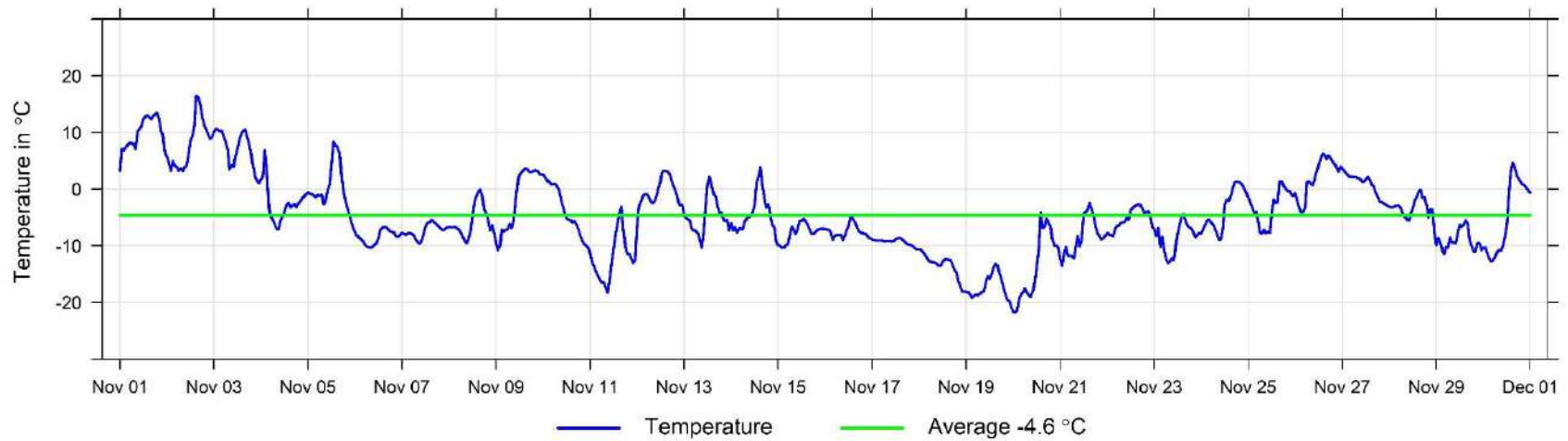
November Hourly Concentration Readings of NMHC (in ppm) at Wembley



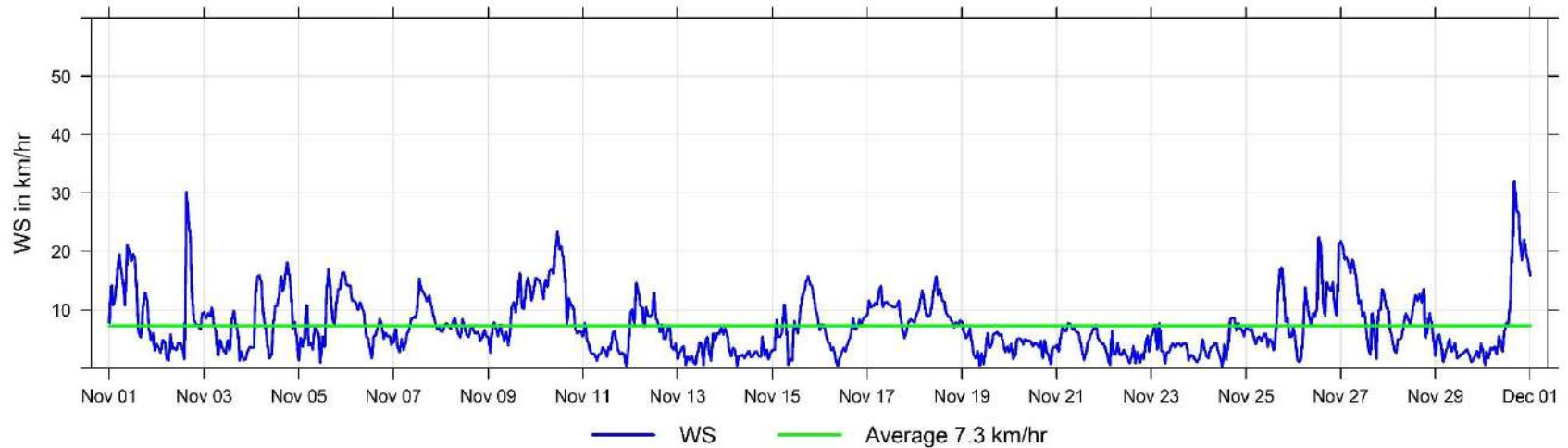
Hourly Concentration Readings of PM_{2.5} in µg/m³ at Wembley



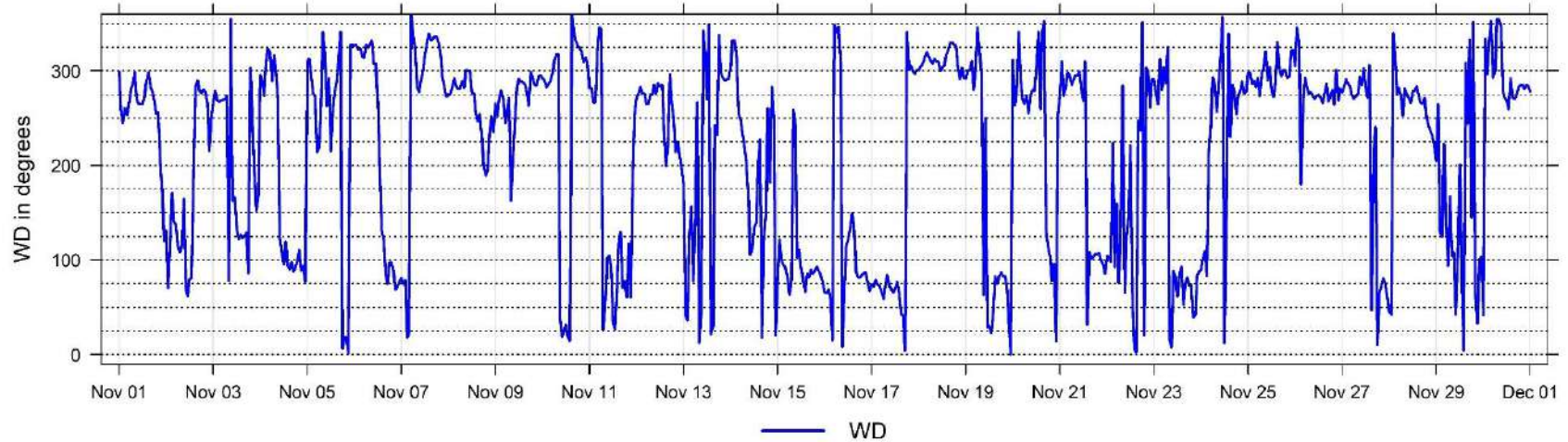
November Hourly Temperature Readings (in °C) at Wembley



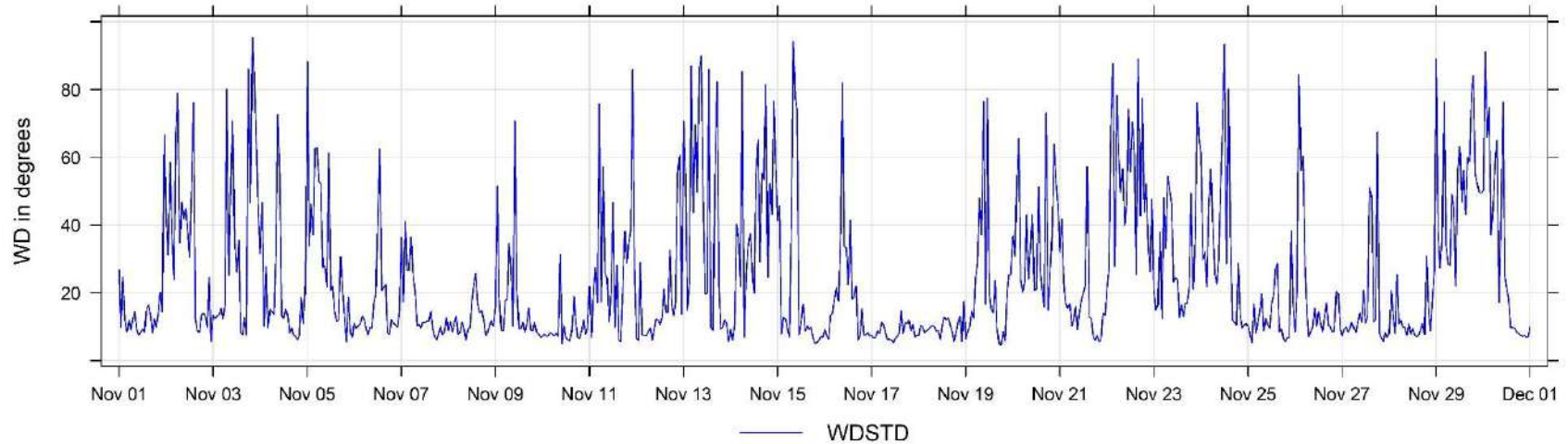
November Hourly Readings of Wind Speed (in km/hr) at Wembley

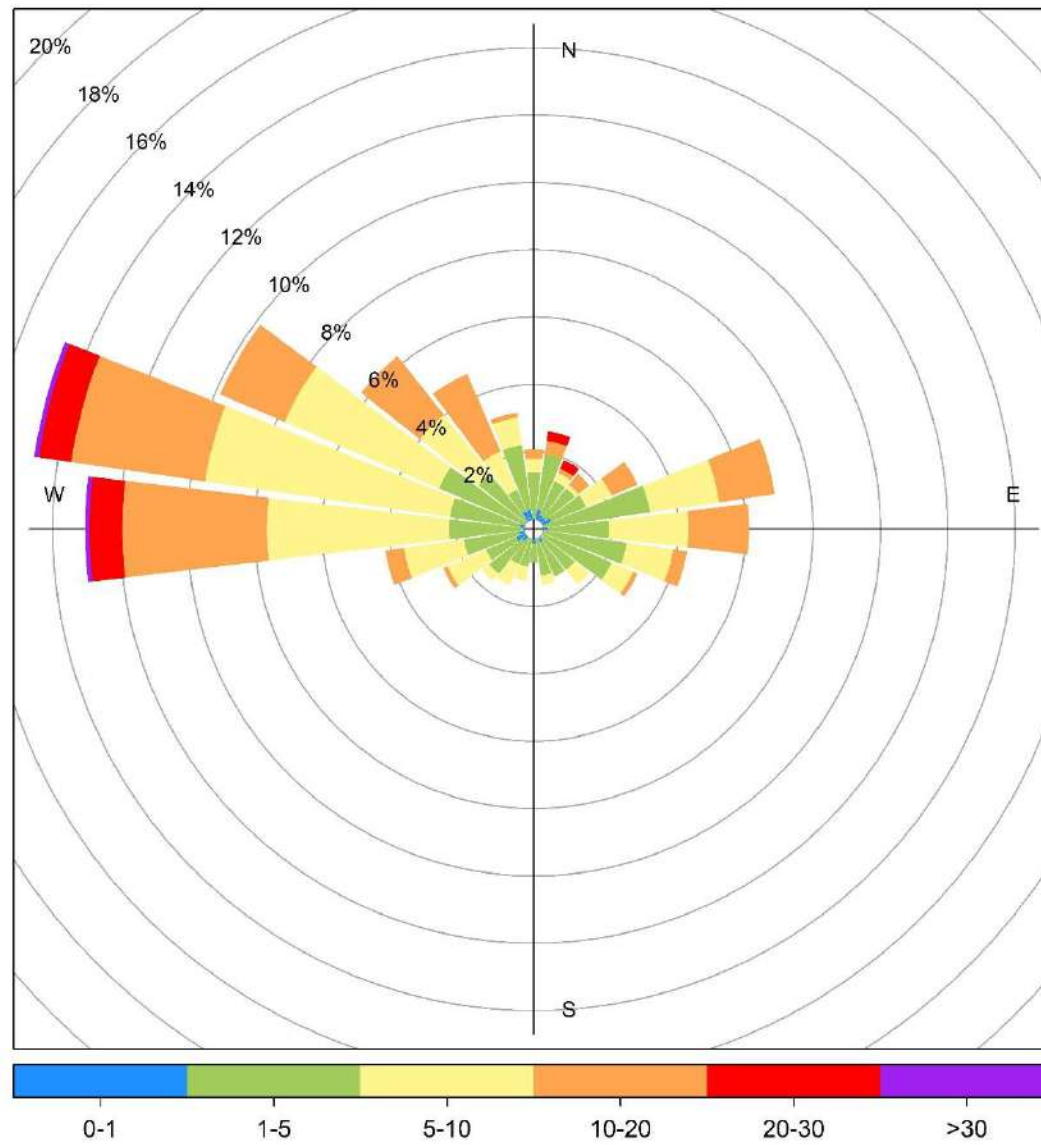


November Hourly Readings of Wind Direction (in degrees) at Wembley



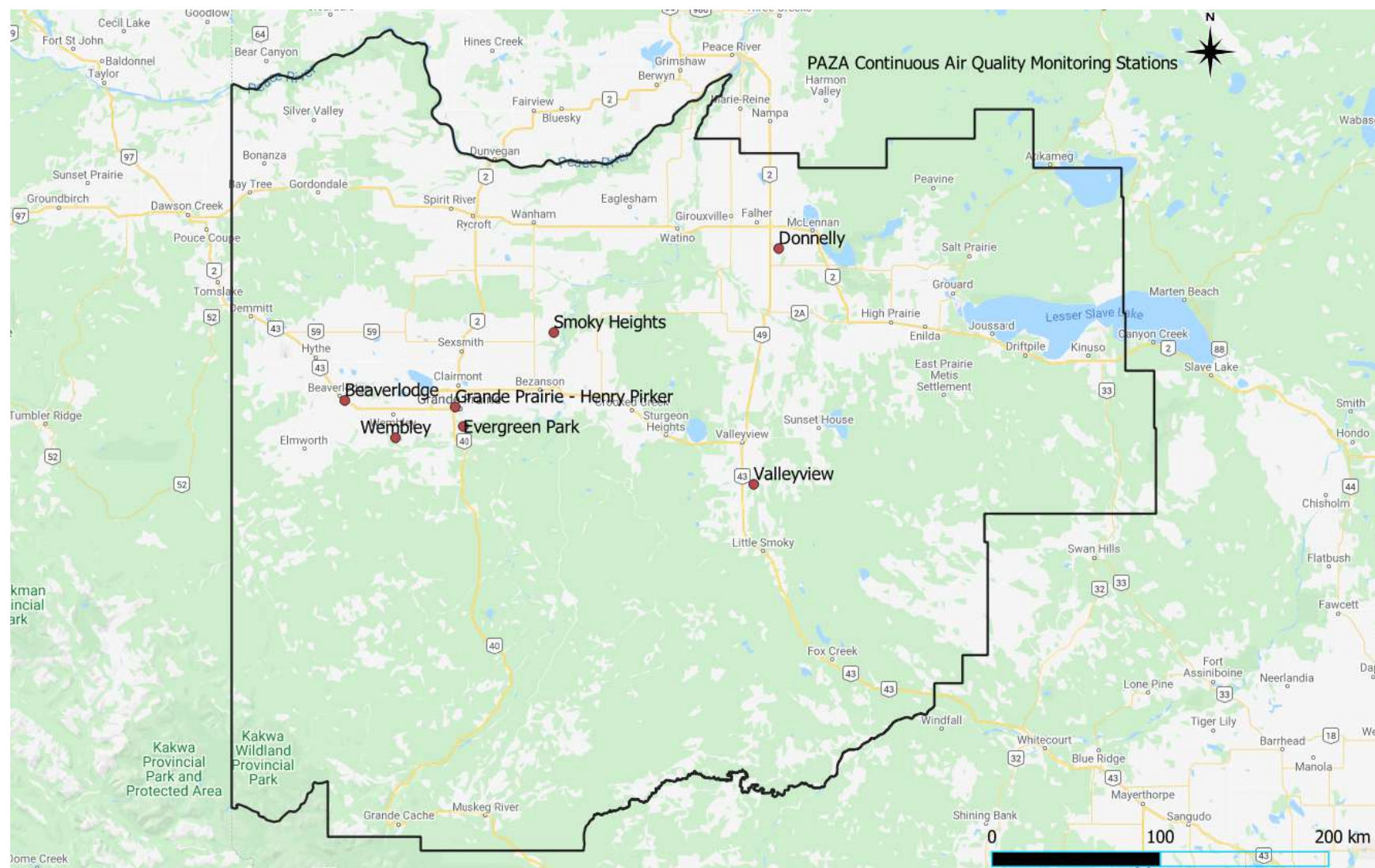
November Hourly Readings of Wind Direction Standard Deviation (in degrees) at Wembley





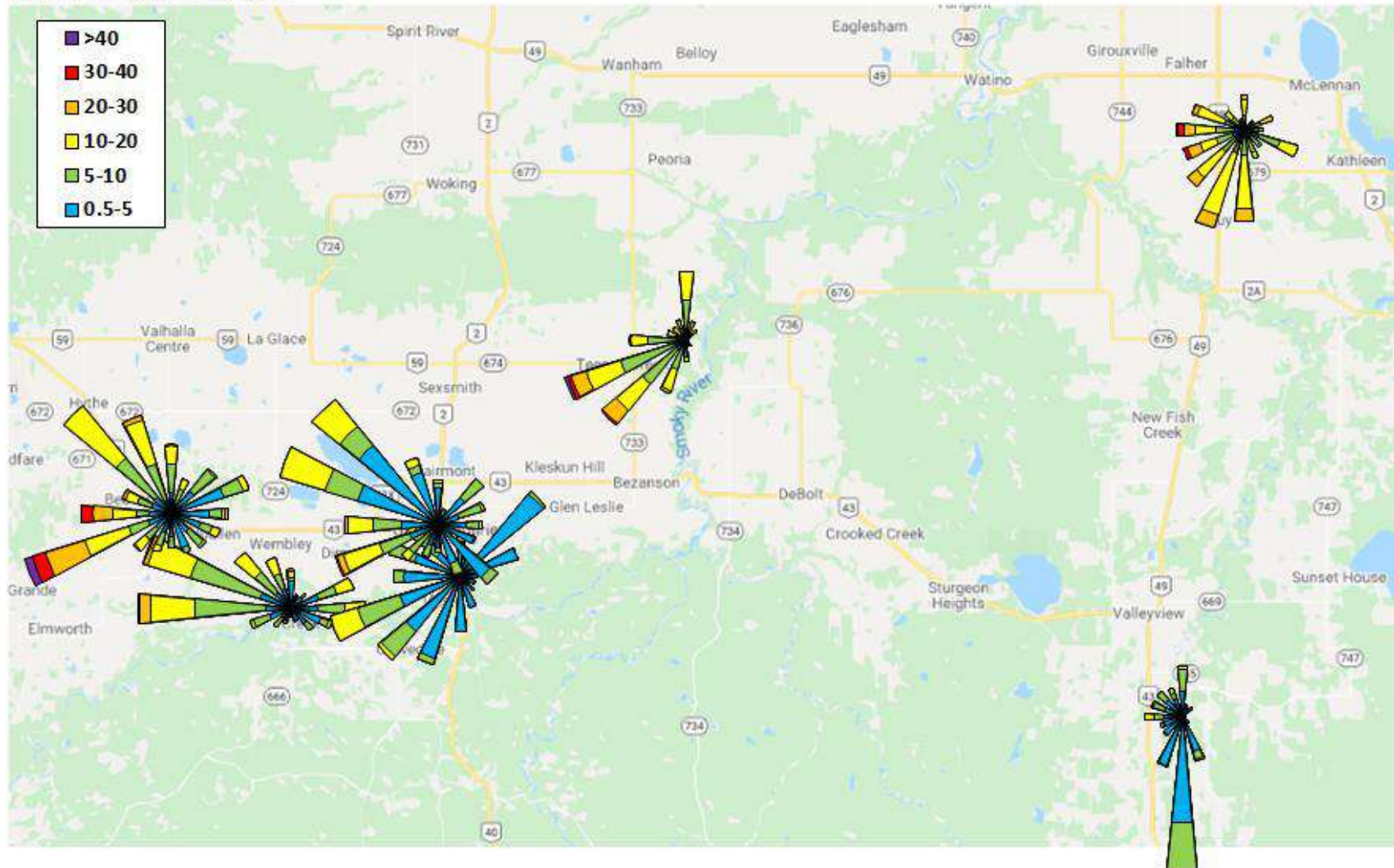
Wembley November Wind Rose, wind speed in km/hr

9 Concentration Roses for PAZA



9.1 Wind Roses

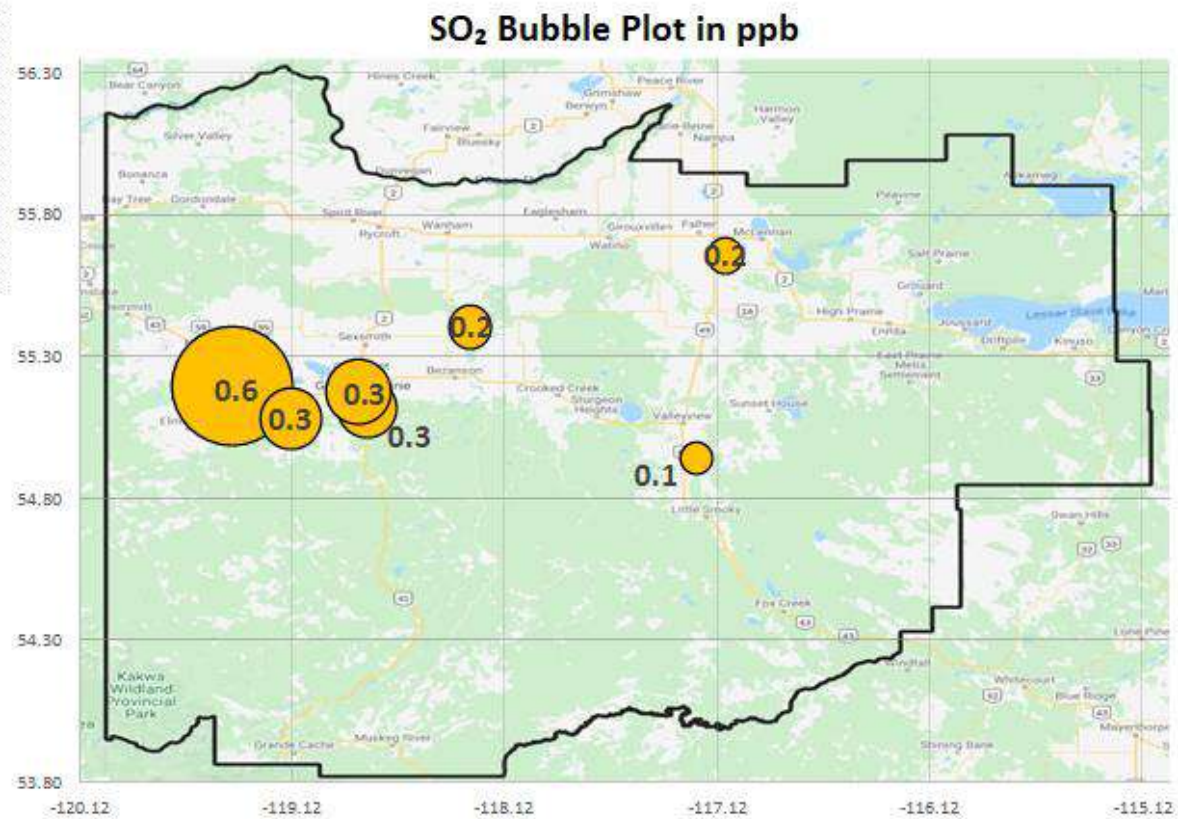
Wind Roses in km/hr



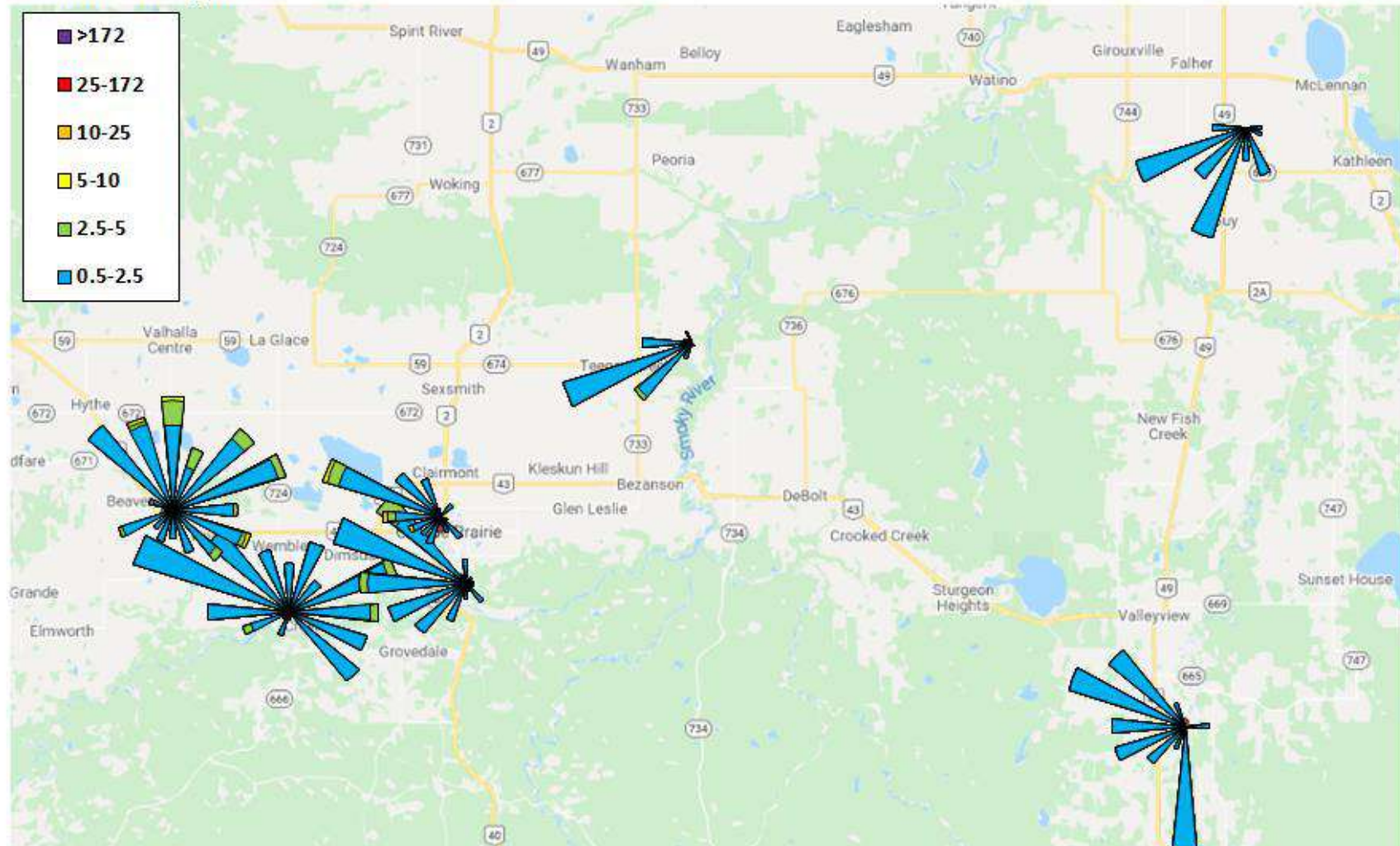
9.2 Sulphur Dioxide Plots

November 2020 SO₂ Summary

Station	Avg (ppb)
Evergreen Park	0.3
Henry Pirker	0.3
Smoky Heights	0.2
Beaverlodge	0.6
Valleyview	0.1
Donnelly	0.2
Wembley	0.3



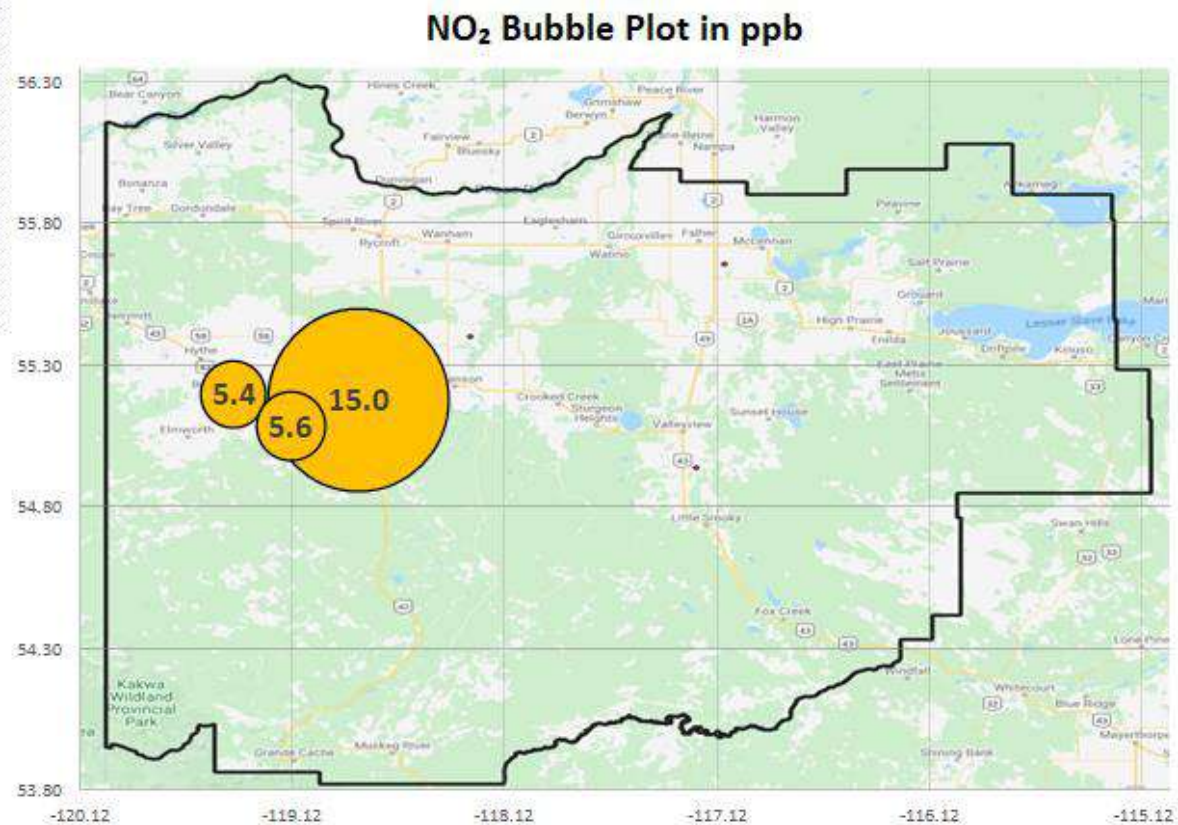
SO₂ Roses in ppb



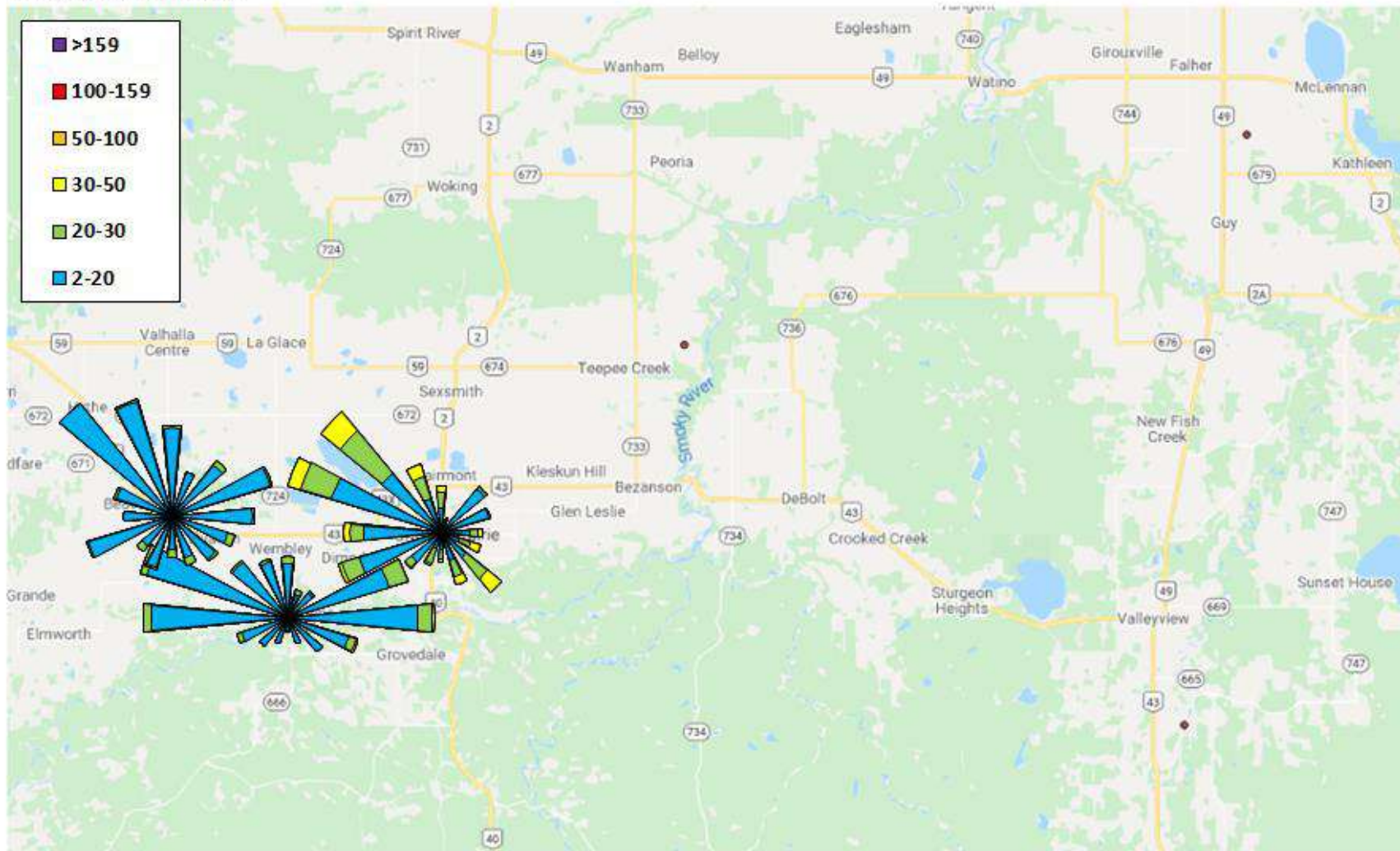
9.3 Nitrogen Dioxide Plots

November 2020 NO₂ Summary

Station	Avg (ppb)
Evergreen Park	-
Henry Pirker	15.0
Smoky Heights	-
Beaverlodge	5.4
Valleyview	-
Donnelly	-
Wembley	5.6

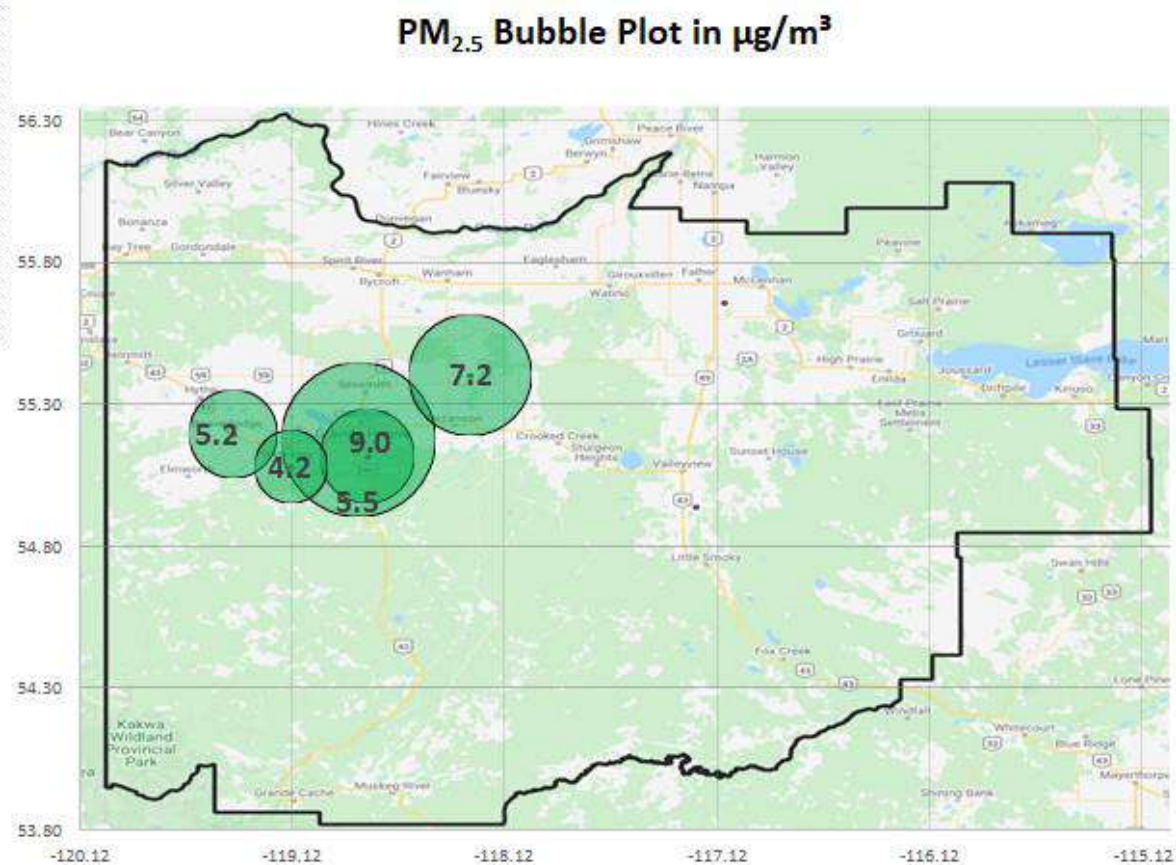


NO₂ Roses in ppb

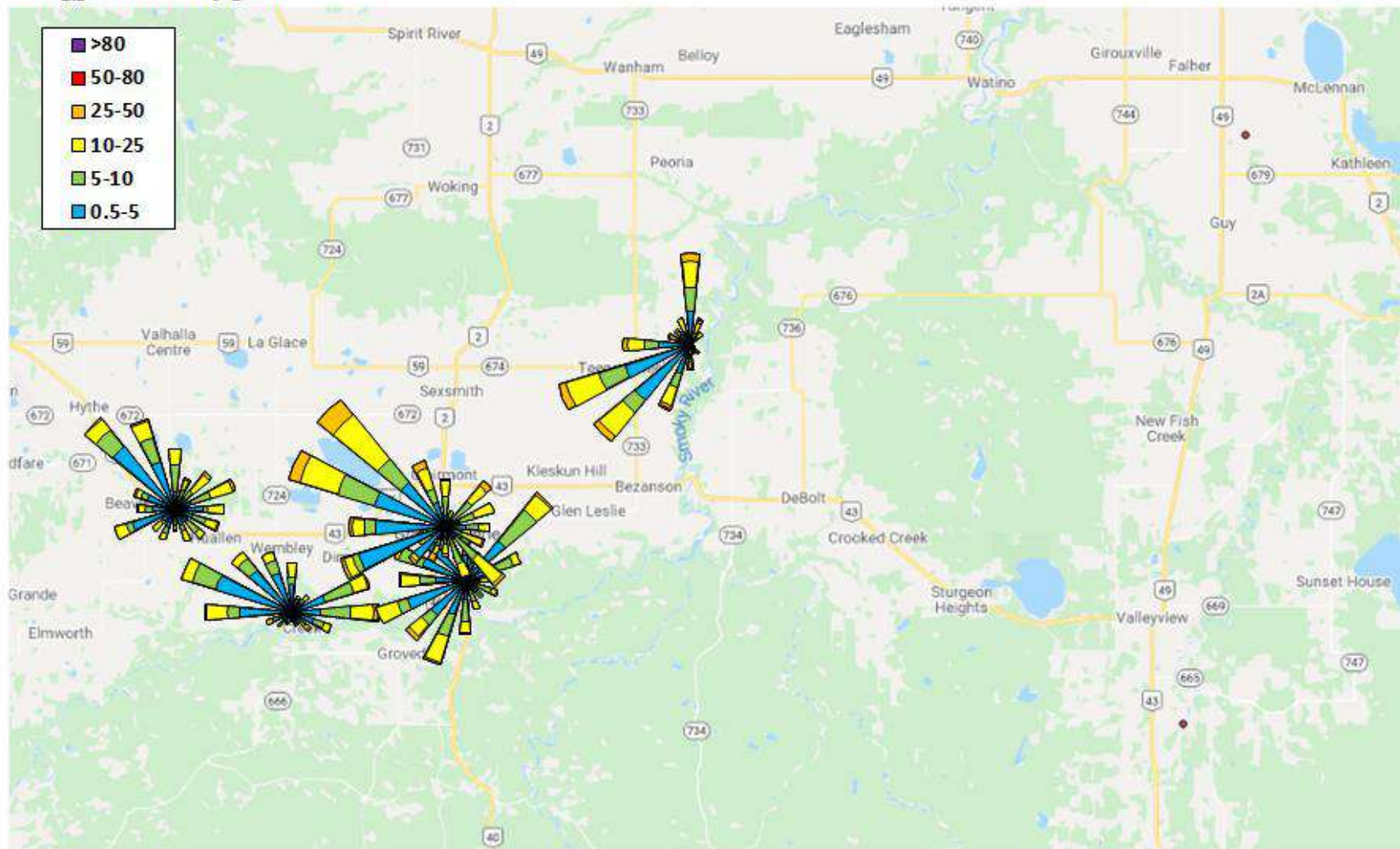


9.4 Fine Particulate Matter (PM_{2.5}) Plots

November 2020 PM _{2.5} Summary	
Station	Avg (µg/m ³)
Evergreen Park	5.5
Henry Pirker	9.0
Smoky Heights	7.2
Beaverlodge	5.2
Valleyview	-
Donnelly	-
Wembley	4.2



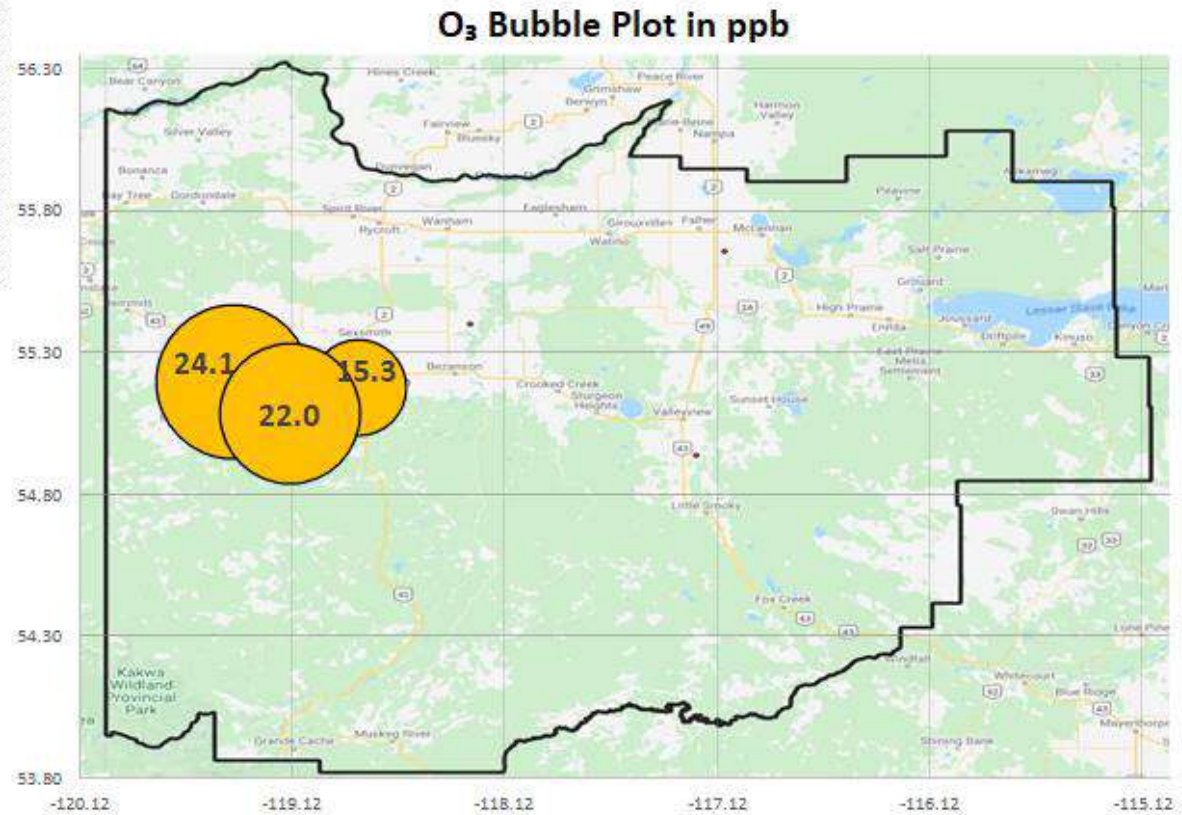
PM_{2.5} Roses in µg/m³



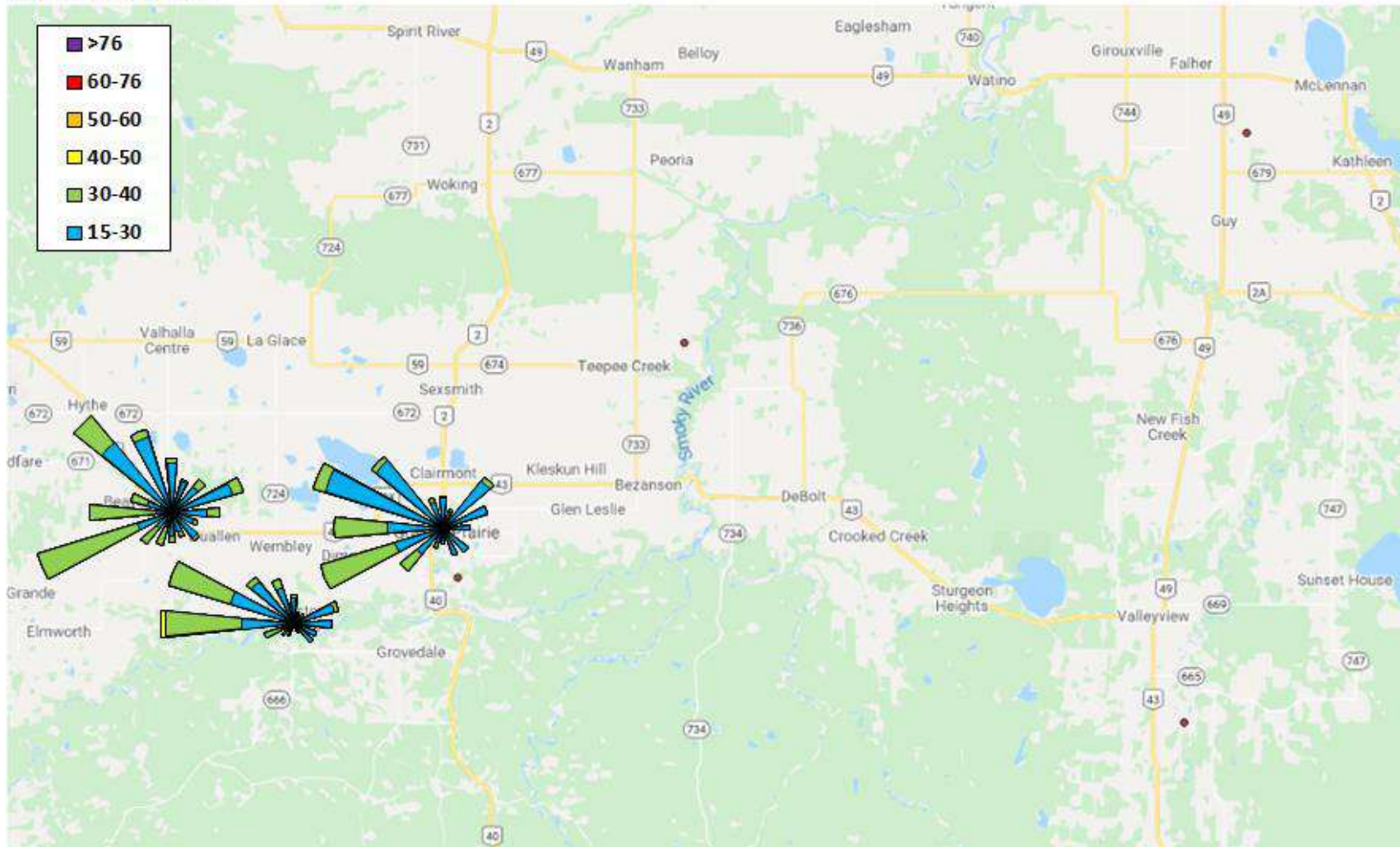
9.5 Ozone (O₃) Plots

November 2020 O₃ Summary

Station	Avg (ppb)
Evergreen Park	-
Henry Pirker	15.3
Smoky Heights	-
Beaverlodge	24.1
Valleyview	-
Donnelly	-
Wembley	22.0



O₃ Roses in ppb



10 Passive Monitoring Data

Peace Airshed Zone Association - PAZA Passive Stations for November 2020

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
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Duplicates

1a	Silver Valley			1.2		
1b	Silver Valley			1.3		
7a	Steepprock Creek	0.2				
7b	Steepprock Creek	0.2				
9a	Spirit River	0.2				
9b	Spirit River	0.2				
14a	Sylvester			0.9		
14b	Sylvester			0.9		
44a	Peavine	0.1				
44b	Peavine	0.1				
45a	Gift Lake			0.6		
45b	Gift Lake			0.6		
47a	Kinuso		27.7			
47b	Kinuso		28.6			
64a	Girouxville 4				0.3	
64b	Girouxville 4				0.3	

1	Silver Valley	0.2	-	1.2	-	08-27-081-11 W6M
2	Bay Tree	0.2	31.0	0.9	-	13-16-078-13 W6M
5	Boone Creek	0.3	-	1.2	-	01-23-076-11 W6M
7	Steepprock Creek	0.2	-	0.7	-	09-35-072-13 W6M
9	Spirit River	0.2	-	1.3	-	08-12-079-07 W6M
10	Woking	0.9	-	0.7	-	01-13-076-07 W6M
11	Webber Creek	0.3	-	3.9	-	09-36-074-09 W6M
12	Hythe	0.5	-	2.2	-	14-36-072-11 W6M
14	Sylvester	0.1	-	0.9	-	08-06-069-12 W6M
16	Beaverlodge	0.5	-	2.9	-	15-36-071-10 W6M
17	Poplar	0.7	-	3.0	-	13-06-073-08 W6M
18	Saddle Hills	0.5	-	0.9	-	04-25-074-07 W6M
19	Wanham	0.4	-	0.9	-	16-22-077-03 W6M
21	Eaglesham	0.1	-	0.6	-	16-21-079-25 W5M
24	Wembley	0.3	-	3.9	-	12-31-070-08 W6M
25	Pinto Creek	0.2	-	1.1	-	04-24-069-11 W6M
27	Grande Prairie I	0.4	-	12.6	-	08-15-071-06 W6M
29	Smoky Heights	0.3	-	2.6	-	04-06-075-02 W6M
32	Gold Creek	0.2	-	4.7	-	06-33-067-05 W6M
35	Jean Cote	0.2	-	0.9	-	12-35-079-21 W5M
36	Guy	0.1	-	0.8	0.2	03-04-076-22 W5M
37	Crooked Creek	0.2	29.6	1.4	-	16-01-071-26 W5M
39	Clouston Creek	0.2	-	1.0	-	12-01-073-22 W5M
40	McLennan	0.2	-	0.9	-	03-29-077-19 W5M
41	Valleyview	0.2	-	1.9	-	09-30-069-22 W5M
44	Peavine	0.1	-	0.6	-	03-05-079-15 W5M
45	Gift Lake	0.1	-	0.6	-	10-07-079-12 W5M
46	Little Smoky	0.4	-	2.6	-	12-01-065-21 W5M
47	Kinuso	0.1	28.2	0.9	-	12-10-073-10 W5M
49	Henry Pirker	0.4	-	10.8	-	17-26-071-06 W6M
50	East Prairie	0.1	-	0.9	-	11-13-079-08 W6M
63	Girouxville 3	-	-	-	0.4	14-02-077-23 W5M
64	Girouxville 4	-	-	-	0.3	04-08-077-22 W5M

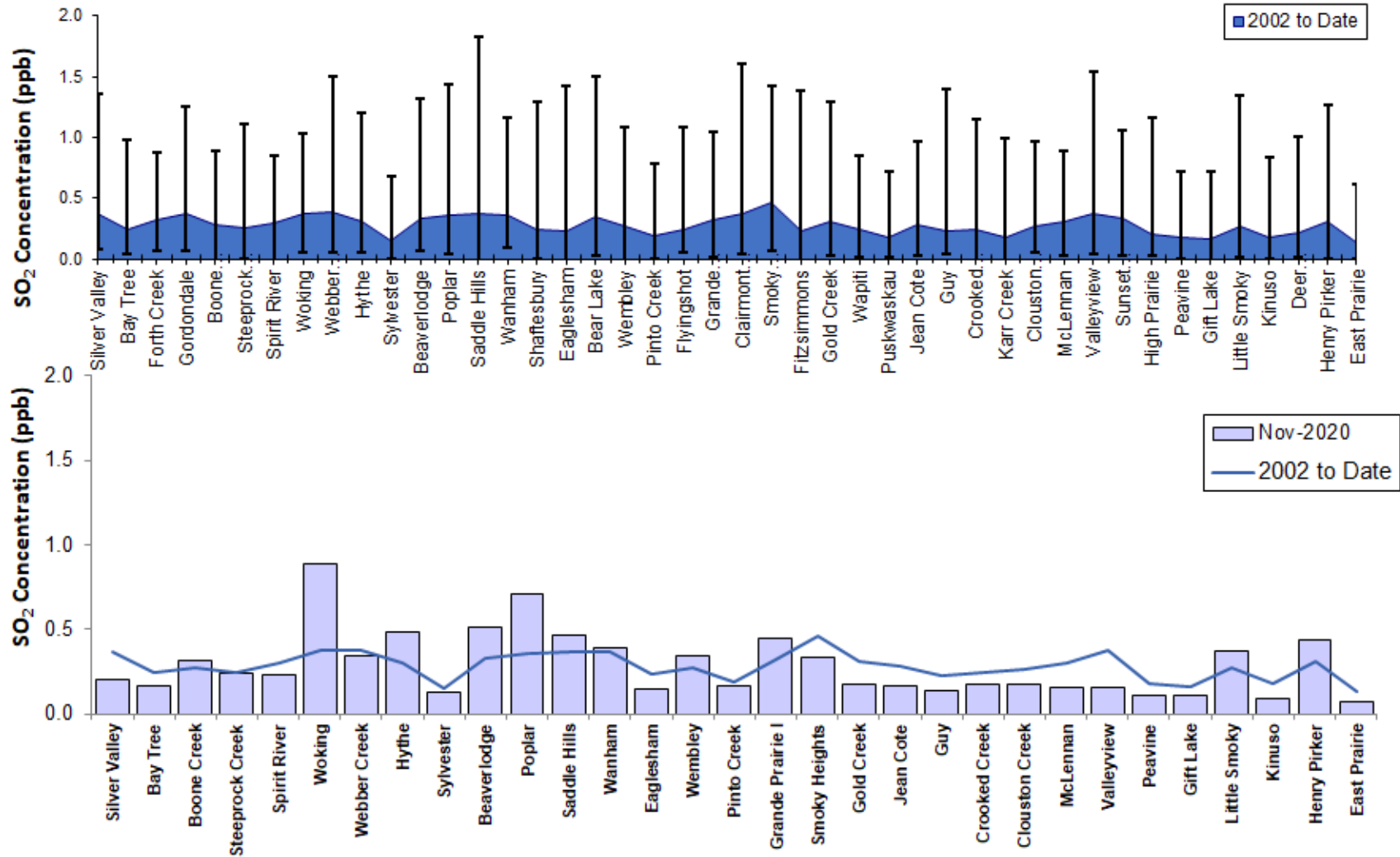
Passive Summary for November 2020

Stats	Sulphur Dioxide SO ₂	Ozone O ₃	Nitrogen Dioxide NO ₂	Hydrogen Sulphide H ₂ S
	ppb	ppb	ppb	ppb

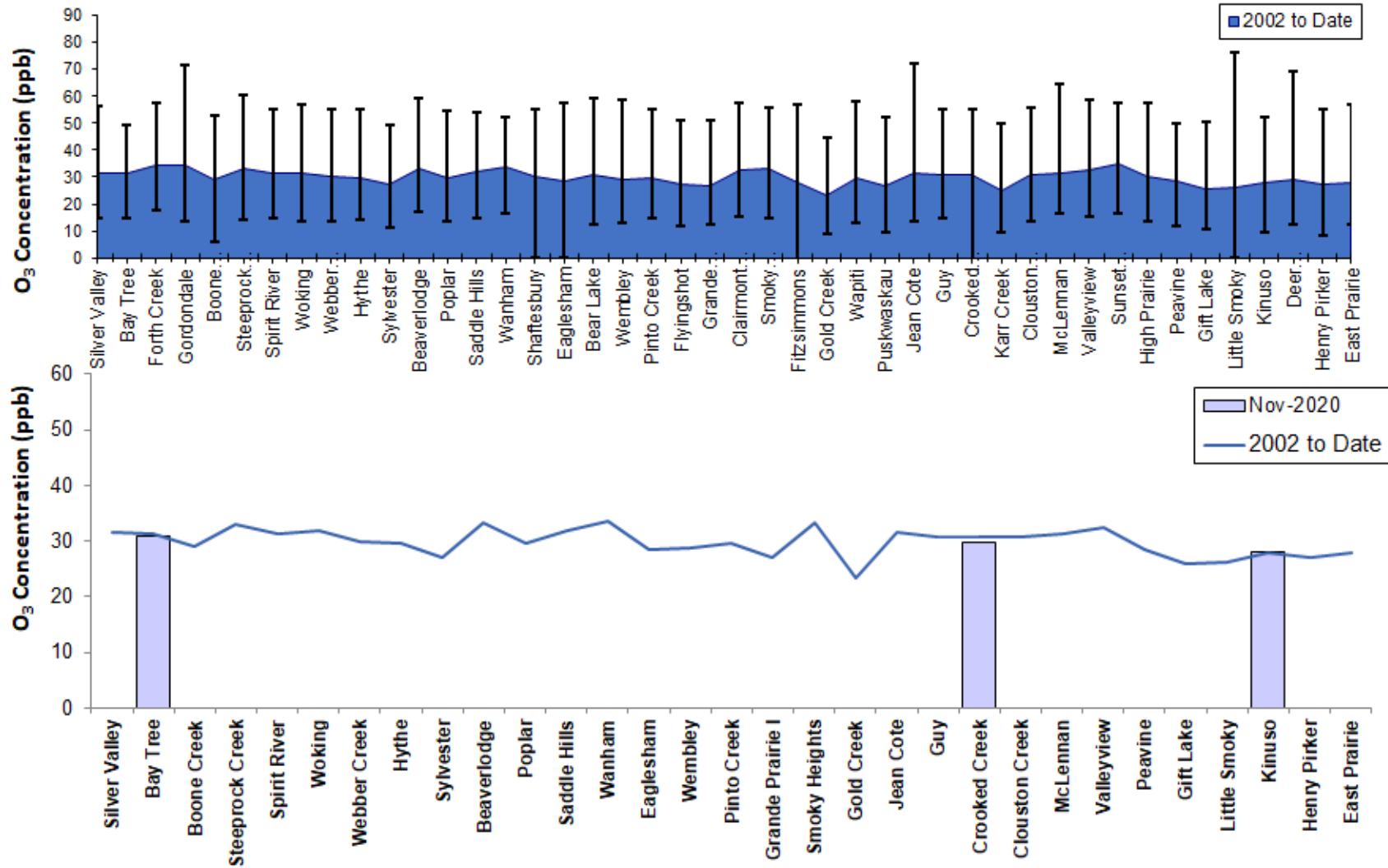
Passive Summary for November 2020 (PAZA)				
Mean	0.3	29.6	2.2	0.3
Standard Deviation	0.2	1.4	2.8	0.1
Minimum	0.1	28.2	0.6	0.2
	East Prairie (#50)	Kinuso (#47)	Eaglesham (#21)	Guy (#36)
Maximum	0.9	31.0	12.6	0.4
	Woking (#10)	Bay Tree (#2)	Grande Prairie I (#27)	Girouxville 3 (#63)

Continuous and Passive Monitoring Comparision				
PAZA Beaverlodge Station	0.6	24.1	5.4	-
Beaverlodge Passive (#16)	0.5	-	2.9	-
PAZA Henry Pirker Station	0.3	15.3	15.0	0.3
Henry Pirker passive (#49)	0.4	-	10.8	-

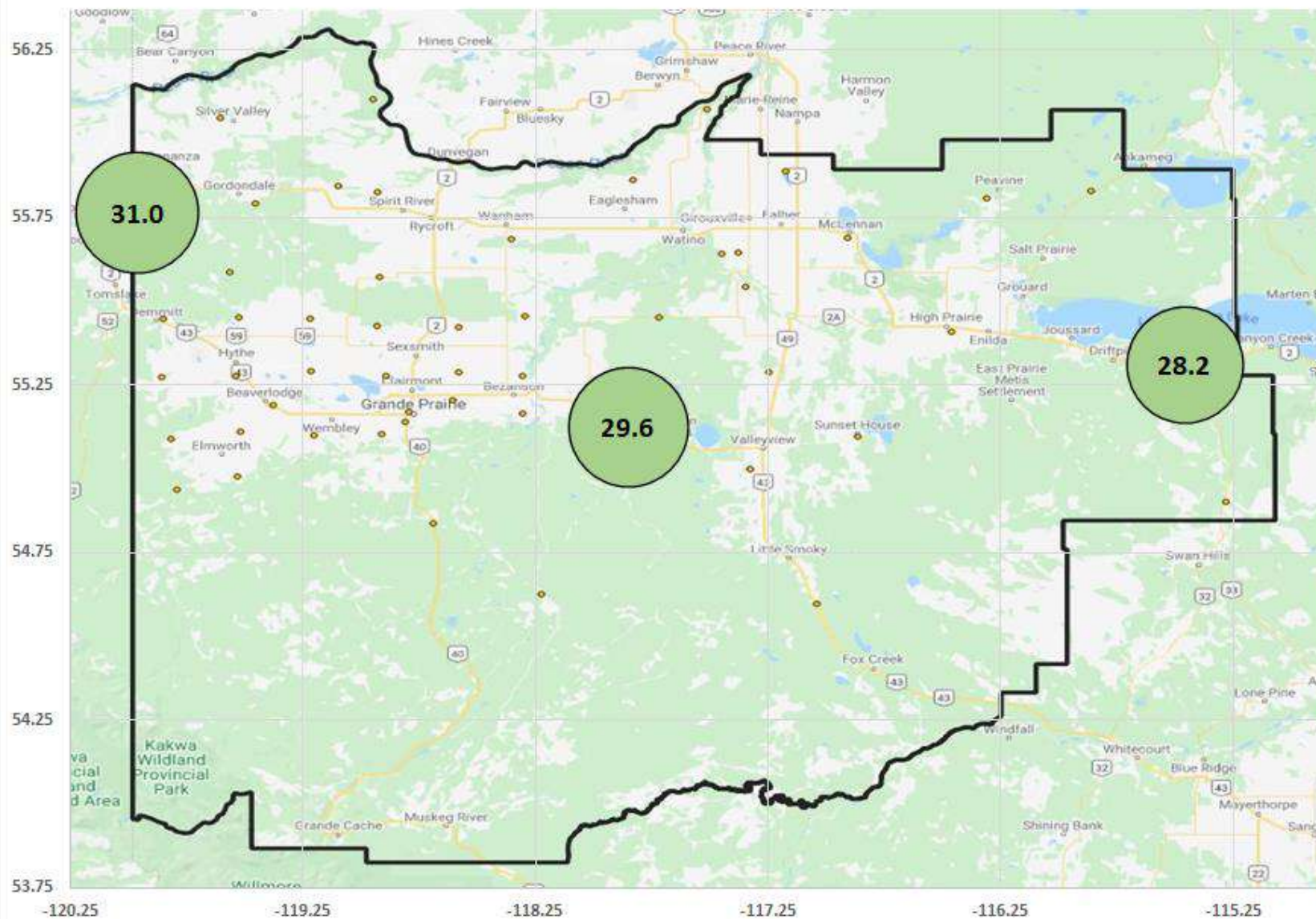
Alberta Ambient Air Quality Objective - 30-day SO₂ Objective is 11 ppb



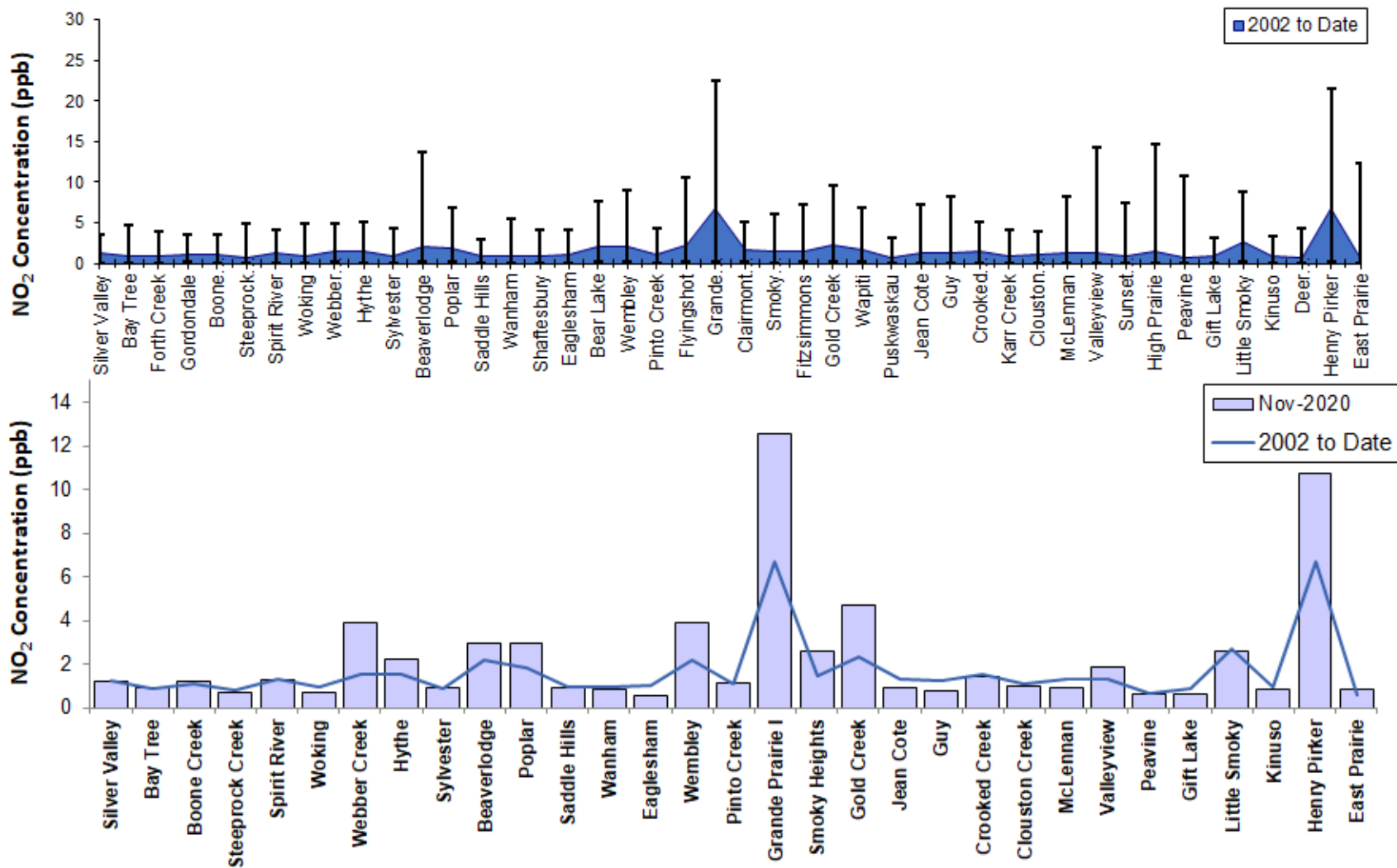
No Monthly or Annual Alberta Ambient Air Quality Objective for O₃



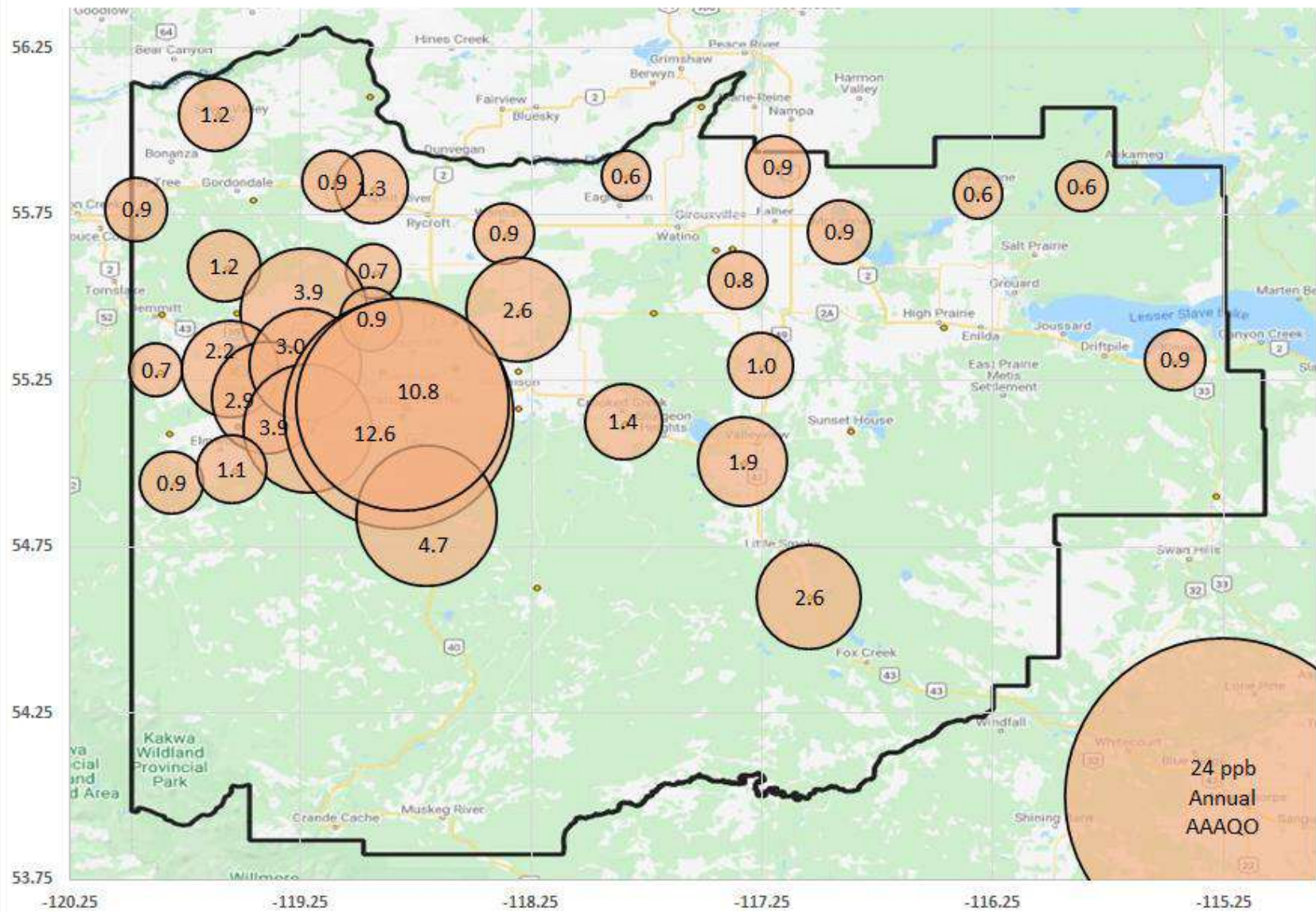
O₃ Monthly Average (units in ppb)



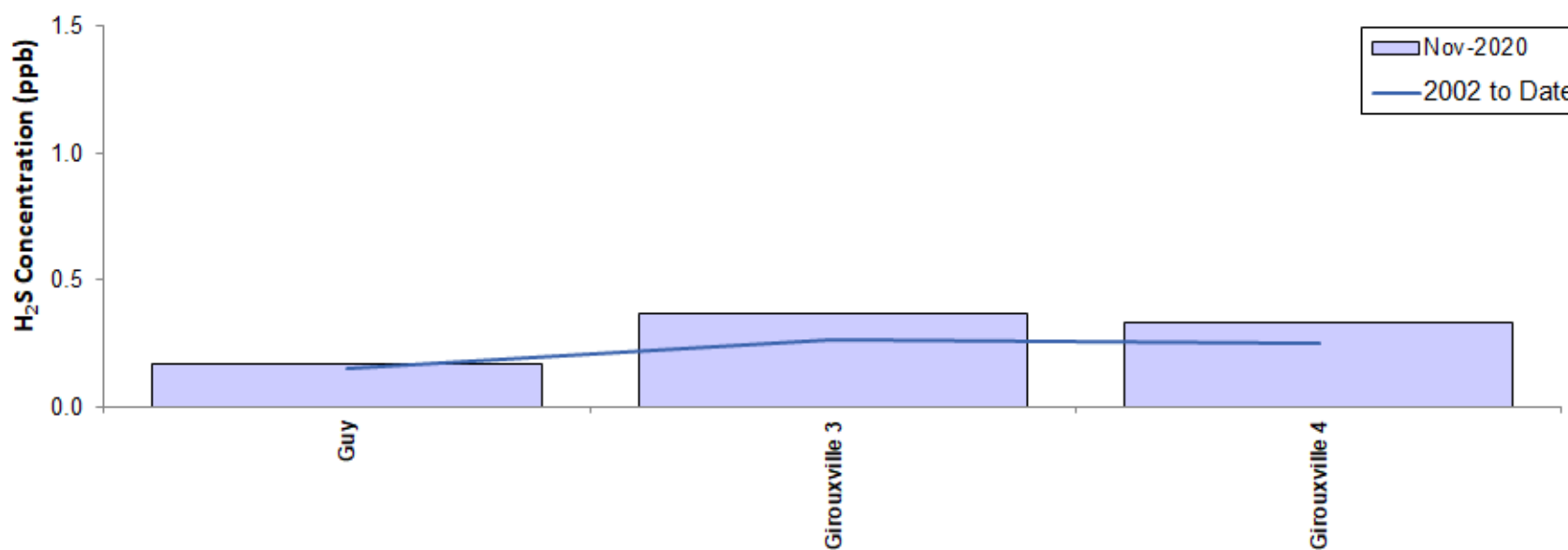
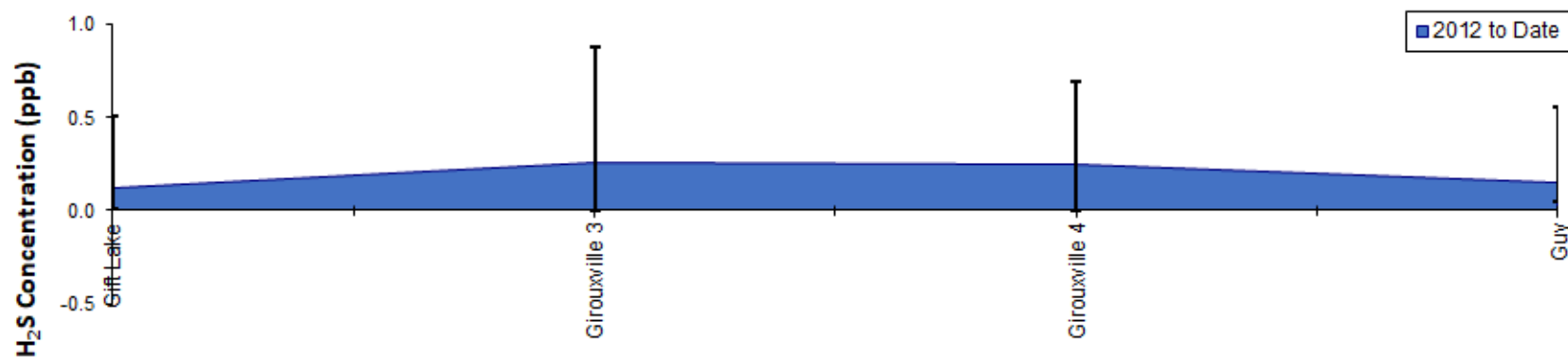
Alberta Ambient Air Quality Objective - Annual NO₂ Objective is 24 ppb



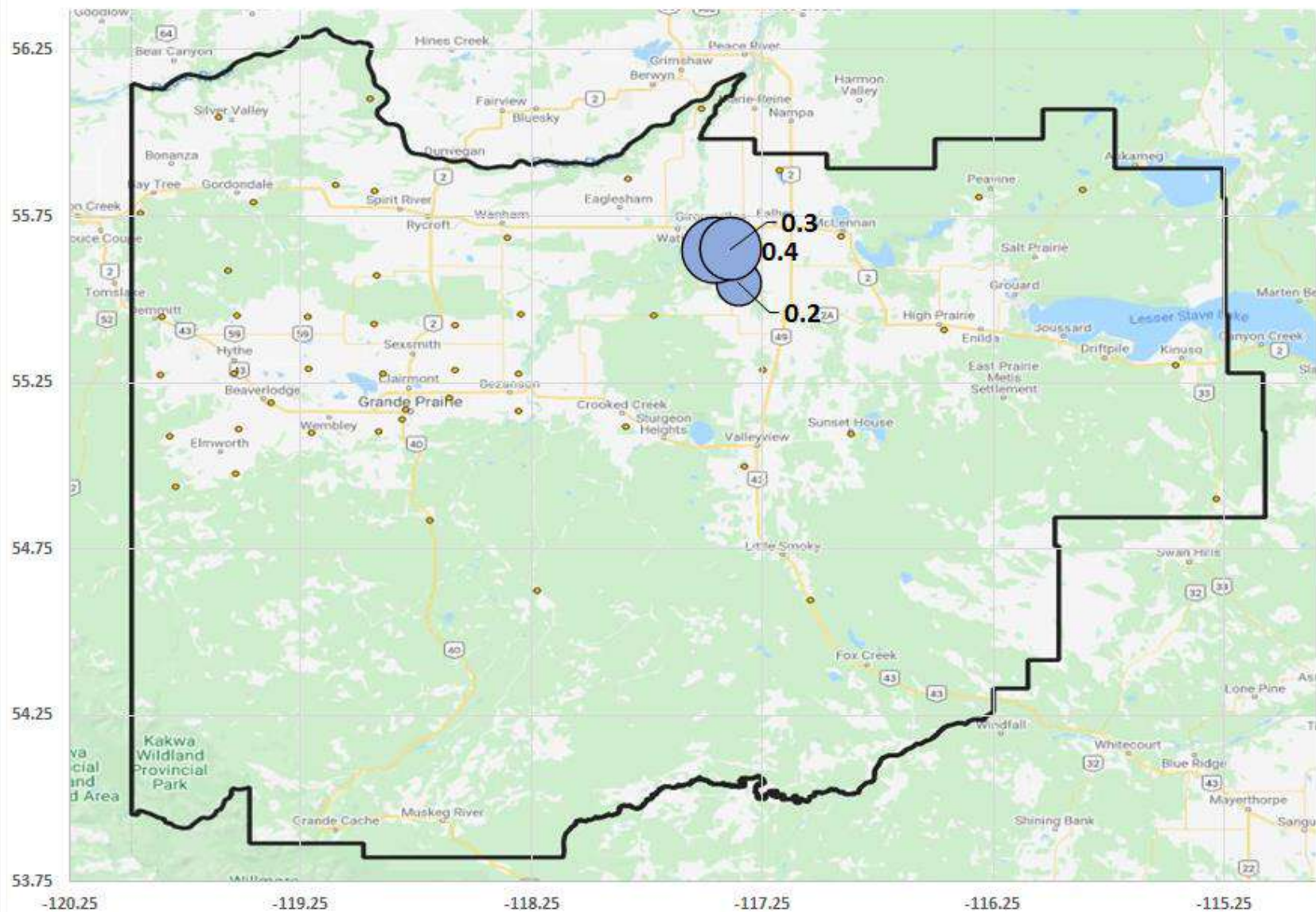
NO₂ Monthly Average (units in ppb)



No Monthly or Annual Alberta Ambient Air Quality Objective for H₂S



H₂S Monthly Average (units in ppb)



End of Report



Peace Airshed Zone Association

Ambient Air Monitoring Report

November 2020