



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

January 2021

February 28, 2021

Alberta Environment and Parks

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

Subject: **Peace Airshed Zone Association (PAZA)**
January 2021 Ambient Air Quality Monitoring Report

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of January 2021.

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 January 2021 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	03-23-080-13-W6	00070203-01-01
Suncor Energy Inc.	Progress	07-22-078-09-W6	00011428-02-00
Strathcona Resources Ltd.	Jayar Sour Gas Processing Plant	06-08-062-03 W6	361040
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 1-hour PM_{2.5} reading exceeding 80 µg/m³ (PM_{2.5} AAAQG), result is summarized in the following table.

Summary of 1-hr readings above the PM_{2.5} AAAQG (80 µg/m³)

Station	Reference Number	Date	From MST	To MST	Hour avg ppb	WS km/h	WD degrees
Smoky Heights	375473	Jan 26, 2021	23:00	24:00	82.5	5.9	5.0

Operational times less than 90 percent:

There were no operational times less than 90% in January 2021

Air Incidents

None were reported to PAZA

Deviations from Authorized Monitoring Methods

None to report.

Passive Monitoring

- 51 Stations throughout the PAZA zone, the passive sample analyses were performed by Bureau Veritas Laboratories
- There were nine duplicate sites sampled in the month of January with RPD ranging from 3 to 34% (SO₂), 16% (O₃), 17% to 113% (NO₂), 19 to 49% (H₂S);
 - SO₂ duplicates at Bear Lake, Puskwaskau, Deer Mountain, Jayar 5 stations
 - O₃ duplicate at Crooked Creek station
 - NO₂ duplicates at Beaverlodge, McLennan, Little Smoky, Jayar 5 stations
 - H₂S duplicates Guy and Jayar 5 stations
- The following field notes were listed of potential issues
 - Site 3 (Forth Creek) - Not installed: No access
 - Site 20, 35, 40 (Shaftesbury, Jean Cote, McLennan) - Road to station not plowed out
 - Site 34 (Puskwaskau) - Old station missing, Installed new station
- There were no exceedances of the AAQOs 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.

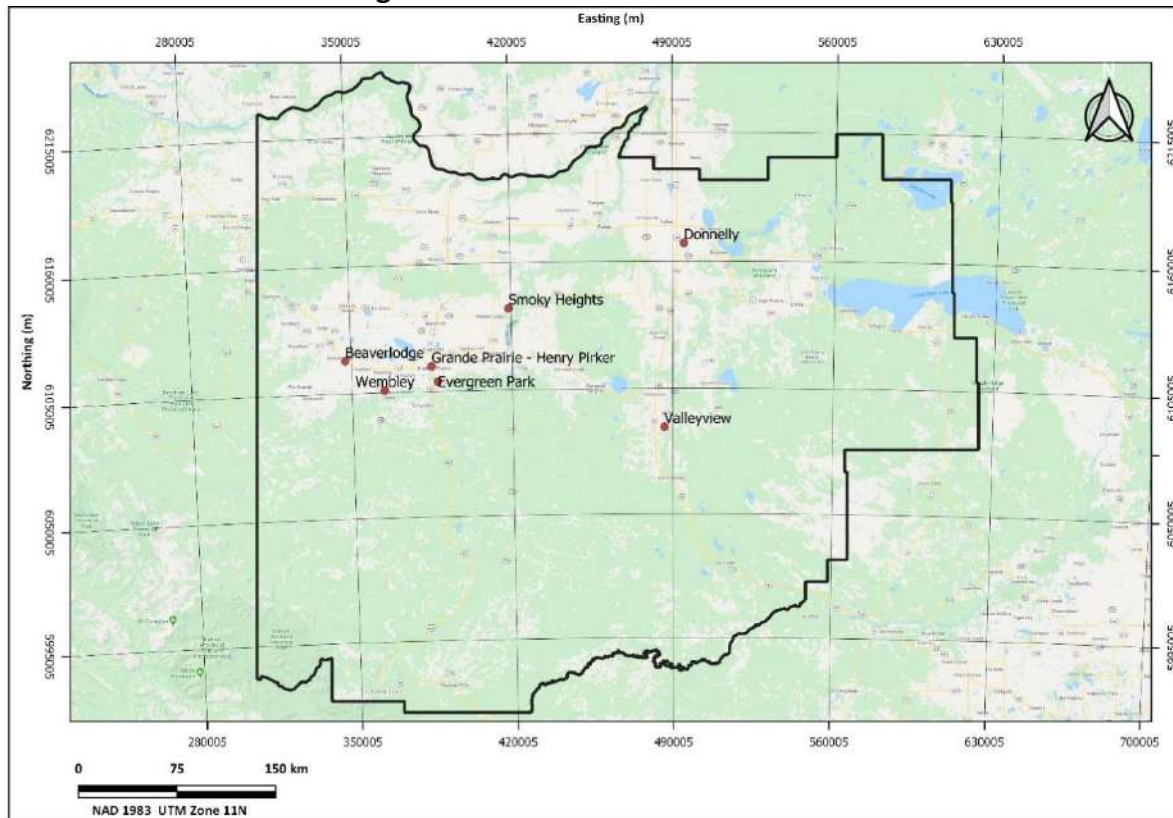


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Program Manager

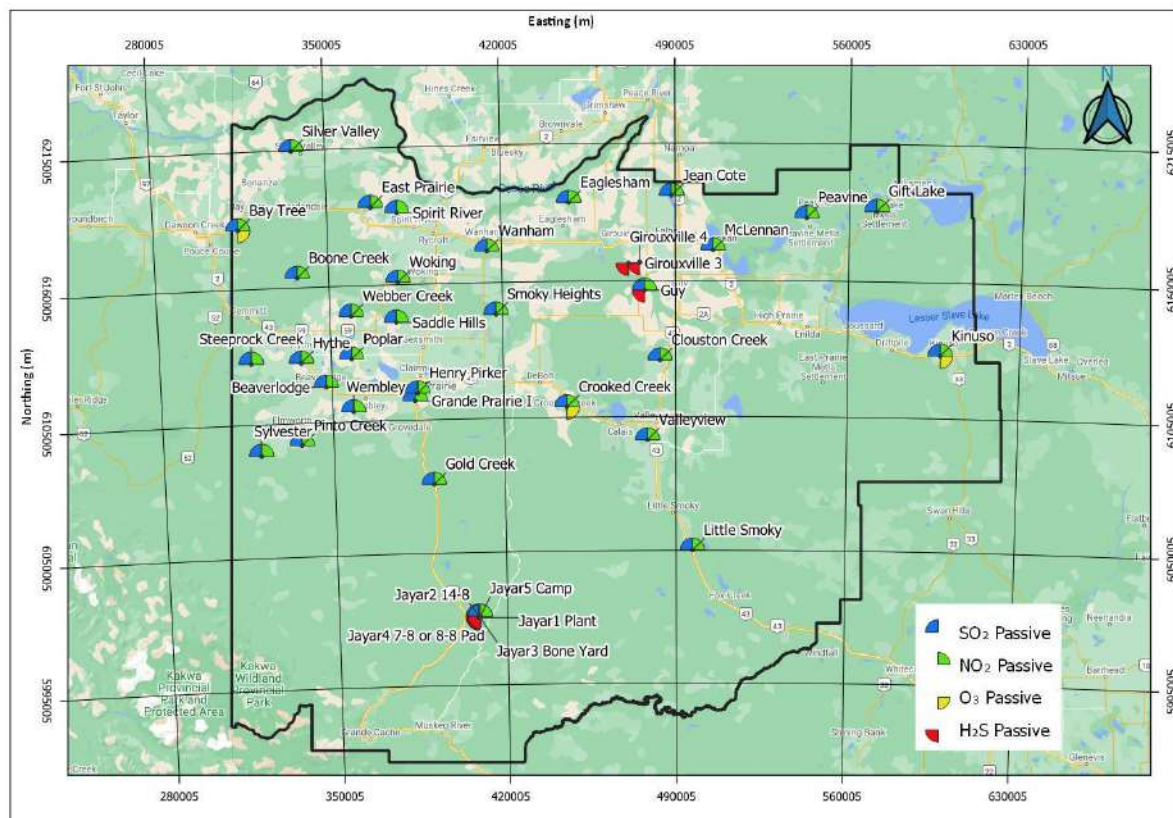
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PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 January 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 - January 2021 Beaverlodge Station Report

Parameter	January		Valid	Operational	Max	1-hour		24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum				Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
NO (ppb)	1.7	0.0	95.2%	100.0%	57.0	-	Jan-30 12:00	13.3	-	Jan-30	-	-	-	-	Jan 05, 2021
NO ₂ (ppb)	7.5	0.3	95.2%	100.0%	30.8	159	Jan-30 02:00	24.5	-	Jan-30	0	-	-	-	Jan 05, 2021
NO _x (ppb)	9.3	0.3	95.2%	100.0%	79.9	-	Jan-30 12:00	38.0	-	Jan-30	-	-	-	-	Jan 05, 2021
O ₃ (ppb)	26.9	0.1	95.4%	100.0%	43.7	76	Jan-11 16:00	40.2	-	Jan-03	0	-	-	-	Jan 05, 2021
PM _{2.5} (µg/m ³)	5.4	0.2	99.7%	100.0%	39.1	80	Jan-29 22:00	20.8	29	Jan-31	0	-	0	-	Jan 04, 2021
SO ₂ (ppb)	0.7	0.0	95.4%	100.0%	12.9	172	Jan-28 23:00	3.5	48	Jan-28	0	-	0	0	Jan 04, 2021
Average															
Temp (°C)	-5.9	-23.0	100.0%	100.0%	7.5	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	69.2	42.0	100.0%	100.0%	97.6										
WS (km/hr)	10.5	0.2	100.0%	100.0%	55.4										
WD (deg)	262	0.3	100.0%	100.0%	358.7										
Average Wind Direction											262	W			

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 - January 2021 Evergreen Park Station Report

Parameter	January		Valid	Operational	Max	1-hour		24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum				Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
PM _{2.5} (µg/m ³)	4.1	0.0	97.9%	98.3%	25.7	80	Jan-29 13:00	15.3	29	Jan-31	0	-	0	-	Jan-29-2021
SO ₂ (ppb)	0.3	0.0	94.5%	99.2%	8.3	172	Jan-15 13:00	1.0	48	Jan-30	0	-	0	0	Jan-29-2021
TRS (ppb)	0.6	0.0	94.5%	99.2%	2.5	-	Jan-08 12:00	1.2	-	Jan-08	-	-	-	-	Jan-29-2021
Average															
Temp (°C)	-7.8	-27.2	99.2%	99.2%	8.8	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	70.8	34.5	99.2%	99.2%	92.8										
WS (km/hr)	3.7	0.0	99.2%	99.2%	21.4										
WD (deg)	248	7.4	99.2%	99.2%	357.1										
Average Wind Direction											248	WSW			

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Thermo	TEOM AB	No Operational issues; Data acquisition failure Jan 2 (6 hrs); Jan 11 negative drift (1 hr)
SO ₂	TECO	43i	No Operational issues; Data acquisition failure Jan 2 (6 hrs)
TRS	TECO	43C	No Operational issues; Data acquisition failure Jan 2 (6 hrs)
Met Equip	GI/Young	MetPak/RMY86004	No Operational issues; Data acquisition failure Jan 2 (6 hrs)

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - January 2021 Henry Pirker Station Report

Parameter	January		Valid	Operational	Max	1-hour		8-hour / 24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum				Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
NO (ppb)	10.1	0.0	95.2%	100.0%	137.9	-	Jan-07 10:00	34.5	-	Jan-10	-	-	-	-	Jan 20, 2021
NO ₂ (ppb)	15.8	1.1	95.2%	100.0%	55.1	159	Jan-07 10:00	35.1	-	Jan-07	0	-	-	-	Jan 20, 2021
NO _x (ppb)	26.2	1.2	95.2%	100.0%	193.6	-	Jan-07 10:00	69.1	-	Jan-07	-	-	-	-	Jan 20, 2021
O ₃ (ppb)	19.8	0.4	95.3%	100.0%	41.3	76	Jan-03 10:00	35.8	-	Jan-03	0	-	-	-	Jan 20, 2021
PM _{2.5} (µg/m ³)	7.2	0.0	99.5%	100.0%	51.9	80	Jan-10 22:00	23.8	29	Jan-31	0	-	0	-	Jan 11, 2021
SO ₂ (ppb)	0.3	0.0	95.3%	100.0%	5.9	172	Jan-29 15:00	1.3	48	Jan-29	0	-	0	0	Jan 20, 2021
H ₂ S (ppb)	0.3	0.0	95.3%	100.0%	1.6	10	Jan-30 09:00	0.8	3	Jan-30	0	-	0	-	Jan 11, 2021
CH ₄ (ppm)	2.3	2.0	95.4%	100.0%	3.8	-	Jan-11 06:00	3.0	-	Jan-30	-	-	-	-	Jan 13, 2021
THC (ppm)	2.4	2.0	95.4%	100.0%	4.2	-	Jan-11 06:00	3.3	-	Jan-30	-	-	-	-	Jan 13, 2021
NMHC (ppm)	0.0	0.0	95.4%	100.0%	0.5	-	Jan-12 19:00	0.3	-	Jan-30	-	-	-	-	Jan 13, 2021
CO (ppm)	0.3	0.1	95.3%	100.0%	1.7	13	Jan-05 08:00	0.6	5	Jan-10	0	0	-	-	Jan 13, 2021
Average					Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction 258 WSW									
Temp (°C)	-7.1	-27.1	100.0%	100.0%	8.7										
RH (%)	64.7	37.6	100.0%	100.0%	84.5										
SR (W/m ²)	22.9	0.0	100.0%	100.0%	230.4										
WS (km/hr)	6.4	0.1	100.0%	100.0%	33.2										
WD (deg)	258	2.2	100.0%	100.0%	359.6										

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
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	No Operational issues noted during the month; Jan 14 manual zero/span sequence triggered
CO	TEI	48i-TLE	No Operational issues noted during the month
Met Equip	MetOne	50.5	No Operational issues noted during the month

1.4 Smoky Heights Air Monitoring Station

PAZA - January 2021 Smoky Heights Station Report

AAR - January 2021 Smoky Heights Station Report															
Parameter	January			Operational	1-hour			24-hour			Exceedance				Calibration
	Average	Minimum	Valid		Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date
PM _{2.5} (µg/m³)	4.7	0.0	99.6%	100.0%	82.5	80	Jan-26 00:00	27.8	29	Jan-31	1	-	0	-	Jan 18, 2021
SO ₂ (ppb)	0.4	0.0	95.4%	100.0%	4.9	172	Jan-16 06:00	1.5	48	Jan-16	0	-	0	0	Jan 18, 2021
TRS (ppb)	0.2	0.0	95.3%	100.0%	1.3	-	Jan-22 01:00	0.4	-	Jan-01	-	-	-	-	Jan 18, 2021
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction253WNW									
Temp (°C)	-8.0	-27.2	100.0%	100.0%	5.6										
WS (km/hr)	13.6	0.5	99.9%	99.9%	57.7										
WD (deg)	253	0.3	99.9%	99.9%	359.7										

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Sharp	5030	No Operational issues noted during the month; 1x 1hr event >80 µg/m ³ (AEP #375473)
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; DAQs failure on Jan 18 (1hr)

1.5 Valleyview Air Monitoring Station

PAZA - January 2021 Valleyview Station Report

AZAR - January 2021 Valleyview Station Report															
Parameter	January			Operational	Max	1-hour		Max	24-hour		Exceedance				Calibration
	Average	Minimum	Valid			Objective	Max Day and Time		Objective	Max Day	1hr	8hr	24hr	30d	Date
SO ₂ (ppb)	0.1	0.0	95.0%	100.0%	2.7	172	Jan-22 07:00	0.5	48	Jan-26	0	-	0	0	Jan 21, 2021
H ₂ S (ppb)	0.1	0.0	95.2%	100.0%	0.7	10	Jan-13 17:00	0.2	3	Jan-27	0	-	0	-	Jan 21, 2021
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	-7.1	-26.4	100.0%	100.0%	9.3	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	73.9	38.5	100.0%	100.0%	100.2										
WS (km/hr)	4.5	0.0	100.0%	100.0%	26.2										
WD (deg)	251	0.8	100.0%	100.0%	359.9	Average Wind Direction		251	NW						

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	TEI	431-APSCB	No Operational issues noted during the month
H ₂ S	TEI	4501-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 - January 2021 Donnelly Station Report

AQA - January 2021 Donnelly Station Report															
Parameter	January			Operational	Max	1-hour		24-hour			Exceedance				Calibration
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date
SO ₂ (ppb)	0.2	0.0	95.3%	100.0%	1.6	172	Jan-09 02:00	0.4	48	Jan-31	0	-	0	0	Jan 25, 2021
H ₂ S (ppb)	0.1	0.0	95.3%	100.0%	0.6	10	Jan-21 20:00	0.3	3	Jan-31	0	-	0	-	Jan 25, 2021
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	-6.6	-26.6	100.0%	100.0%	6.5	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
WS (km/hr)	13.2	0.5	100.0%	100.0%	53.6										
WD (deg)	223	0.9	100.0%	100.0%	358.4	Average Wind Direction 223 SW									

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	Teco	43i	No Operational issues noted during the month
H ₂ S	Thermo	45C	No Operational issues noted during the month
Met Equip	RMYoung	5103	No Operational issues noted during the month

1.7 Wembley Air Monitoring Station

PAZA - January 2021 Wembley Station Report

January 2021 Summary Station Report					1-hour			24-hour			Exceedance				Calibration	
Parameter	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date	
NO (ppb)	1.4	0.0	94.1%	99.1%	32.3	-	Jan-31 12:00	8.3	-	Jan-30	-	-	-	-	Jan 07, 2021	
NO ₂ (ppb)	6.6	0.2	94.1%	99.1%	31.6	159	Jan-08 04:00	20.4	-	Jan-30	0	-	-	-	Jan 07, 2021	
NO _x (ppb)	8.1	0.2	94.1%	99.1%	53.3	-	Jan-31 12:00	29.0	-	Jan-30	-	-	-	-	Jan 07, 2021	
O ₃ (ppb)	26.2	0.1	94.4%	99.1%	44.0	76	Jan-03 15:00	41.5	-	Jan-03	0	-	-	-	Jan 07, 2021	
PM _{2.5} (µg/m³)	3.1	0.0	98.1%	98.5%	22.8	80	Jan-31 12:00	16.2	29	Jan-31	0	-	0	-	Jan 08, 2021	
SO ₂ (ppb)	0.5	0.0	94.4%	99.1%	16.5	172	Jan-28 12:00	3.5	48	Jan-28	0	-	0	0	Jan 07, 2021	
TRS (ppb)	0.4	0.1	94.2%	99.1%	1.5	-	Jan-01 09:00	0.9	-	Jan-30	-	-	-	-	Jan 08, 2021	
CH ₄ (ppm)	2.2	2.0	93.7%	98.3%	3.1	-	Jan-30 05:00	2.9	-	Jan-30	-	-	-	-	Jan 02, 2021	
THC (ppm)	2.2	2.0	93.7%	98.3%	3.1	-	Jan-10 15:00	2.9	-	Jan-30	-	-	-	-	Jan 02, 2021	
NMHC (ppm)	0.0	0.0	93.7%	98.3%	0.7	-	Jan-10 15:00	0.0	-	Jan-10	-	-	-	-	Jan 02, 2021	
Average		Minimum	Valid	Operational	Maximum											
Temp (°C)	-7.0	-27.2	99.1%	99.1%	9.1	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%										
WS (km/hr)	7.9	0.2	99.1%	99.1%	31.6											
WD (deg)	288	0.8	99.1%	99.1%	358.5	Average Wind Direction		288	WNW							

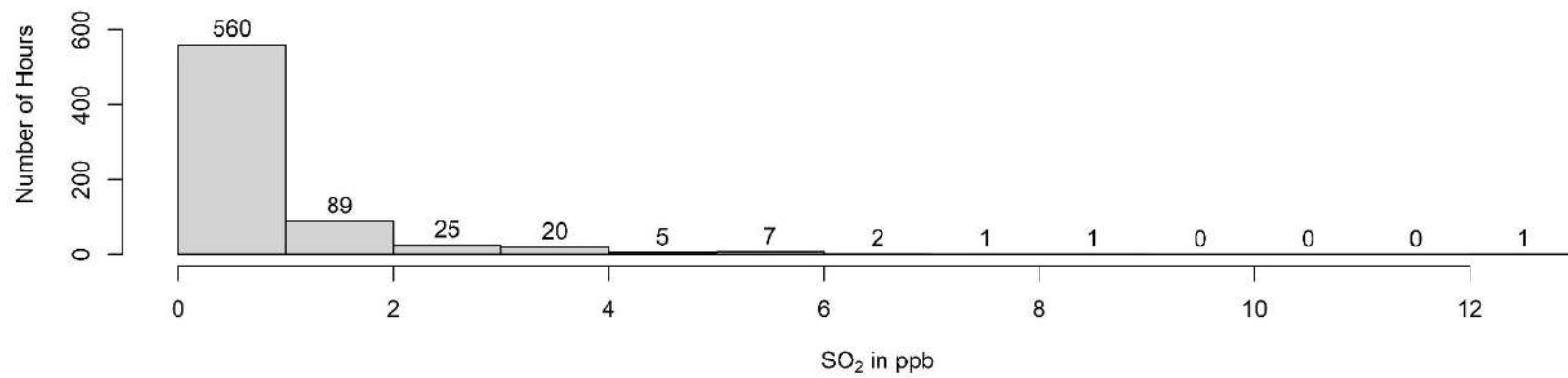
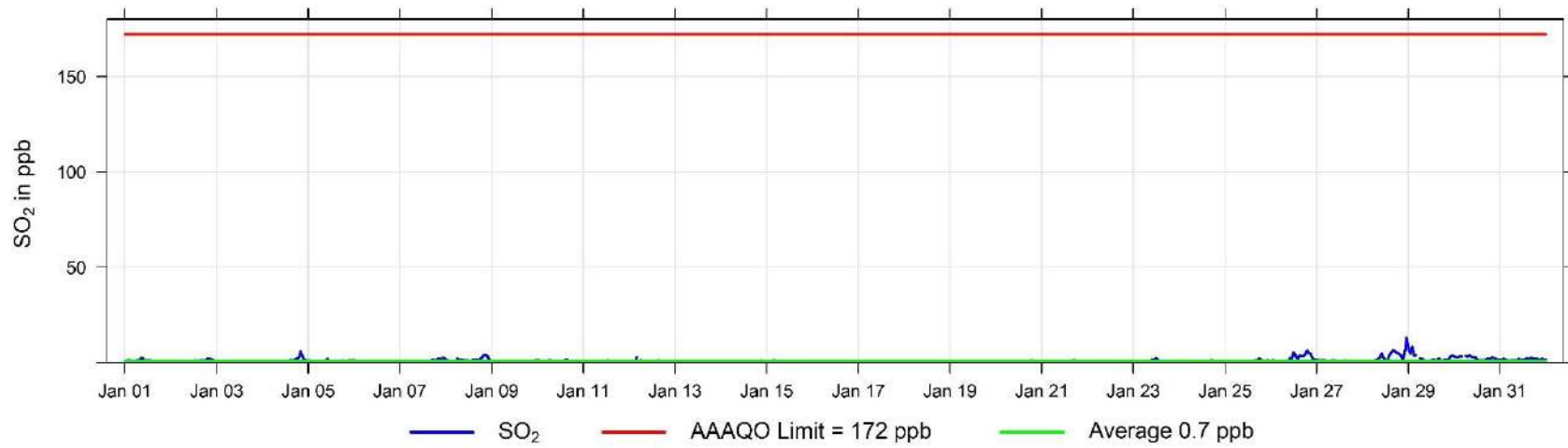
Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42i	No Operational issues noted; Power failure Jan 19 (7hrs)
O ₃	TEI	49i	No Operational issues noted; Power failure Jan 19 (7hrs)
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted; Power failure Jan 19 (7hrs)
SO ₂	TEI	43i	No Operational issues noted; Power failure Jan 19 (7hrs)
TRS	TEI	43i	No Operational issues noted; Power failure Jan 19 (7hrs)
THC/CH ₄ /NMHC	TEI	551-A3PHAA	Power failure Jan 19 (7hrs) analyzer maintenance on Jan 2 (6hrs), replaced actuator, hydrogen cylinder, optimized gas pressures
Met Equip	MetOne	50.5	No Operational issues noted; Power failure Jan 19 (7hrs)

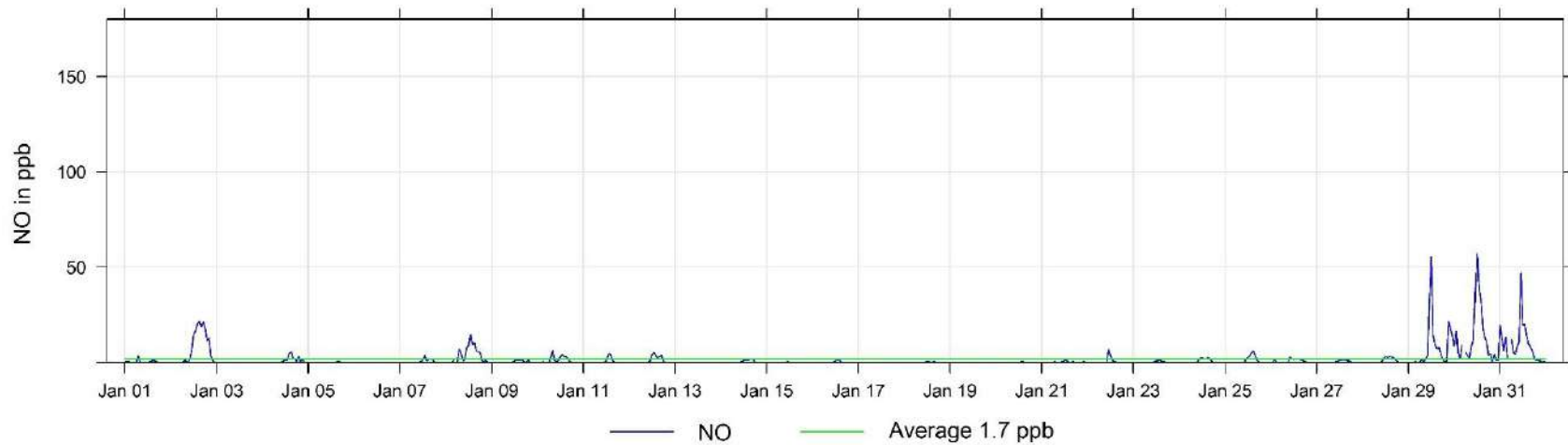
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

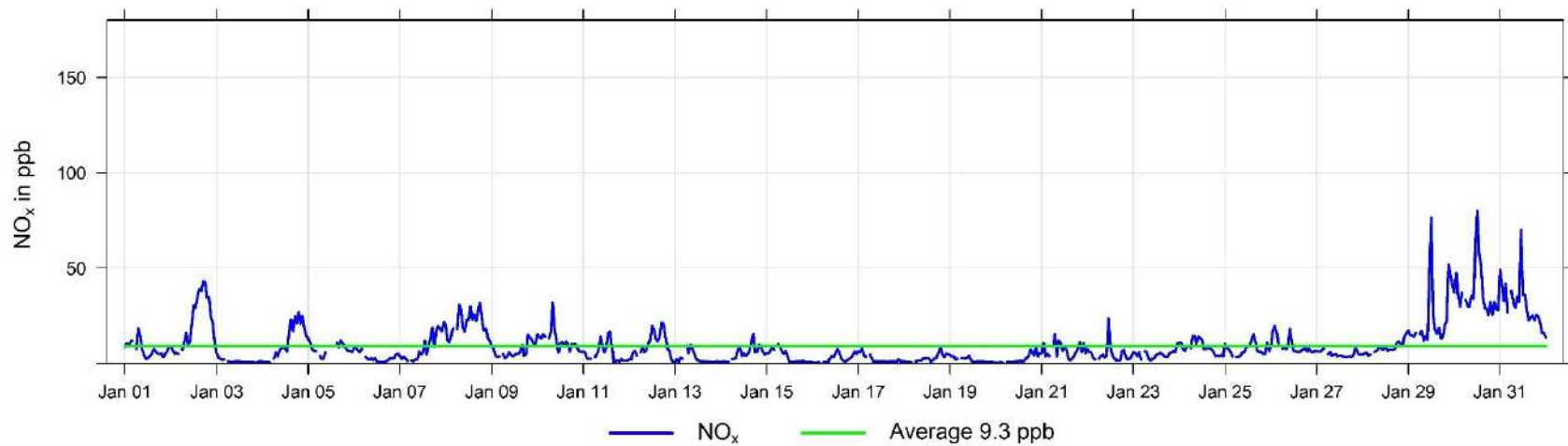
January Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



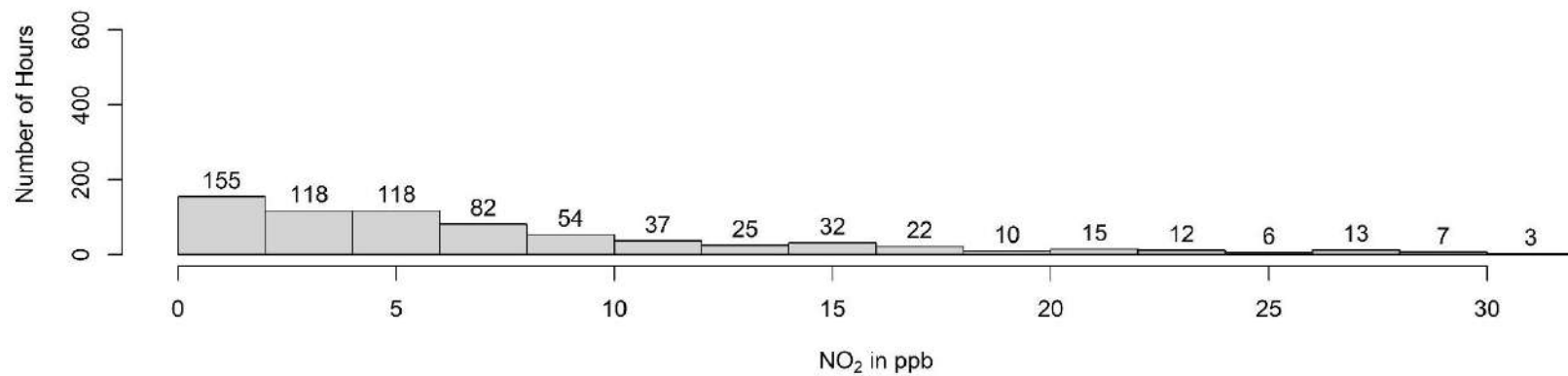
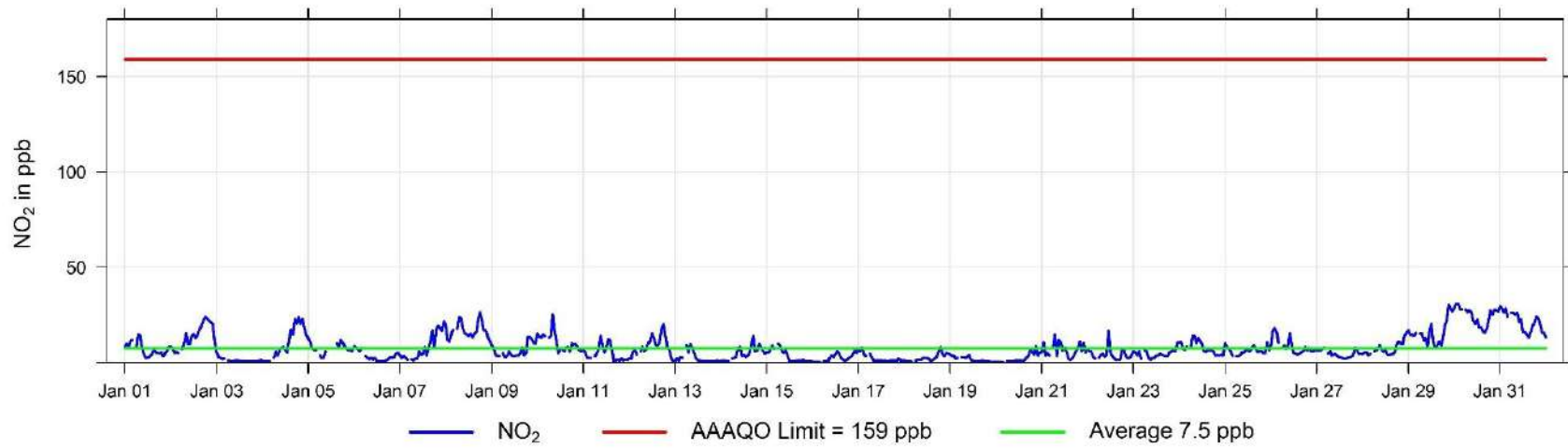
January Hourly Concentration Readings of NO (in ppb) at Beaverlodge



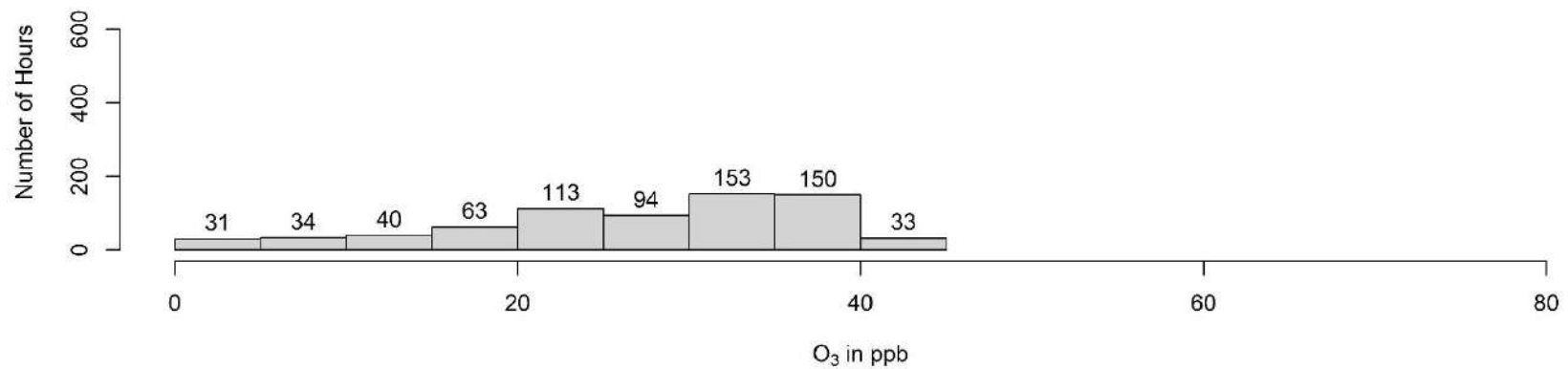
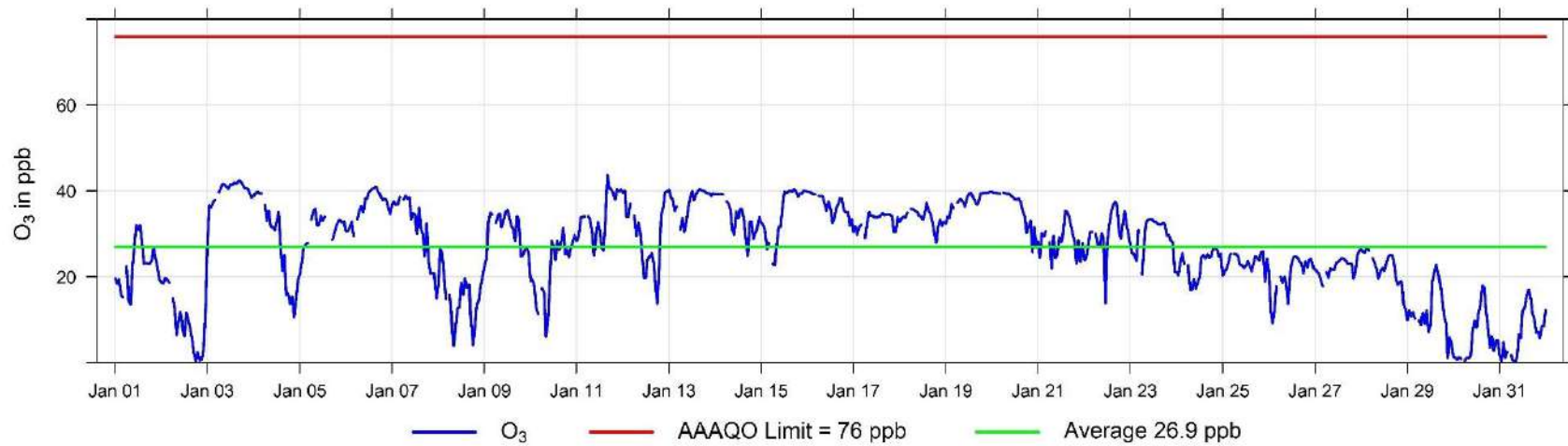
January Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



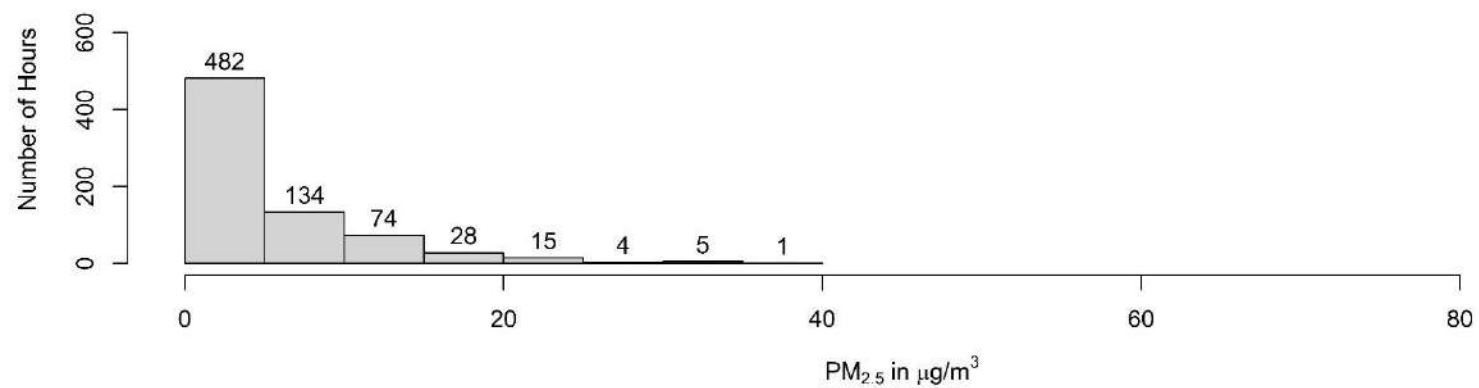
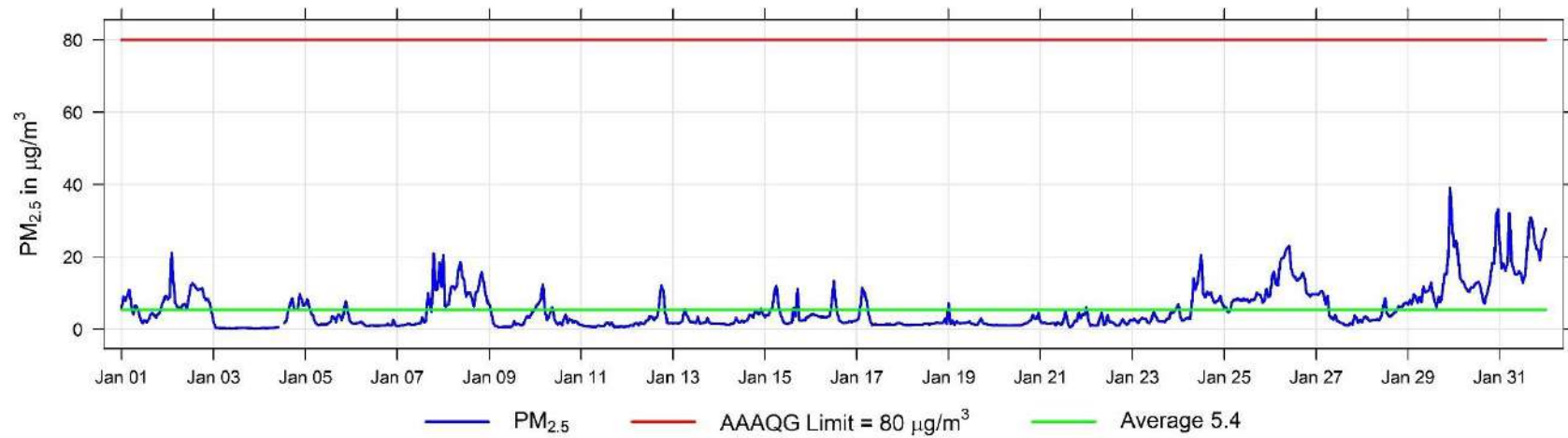
January Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge



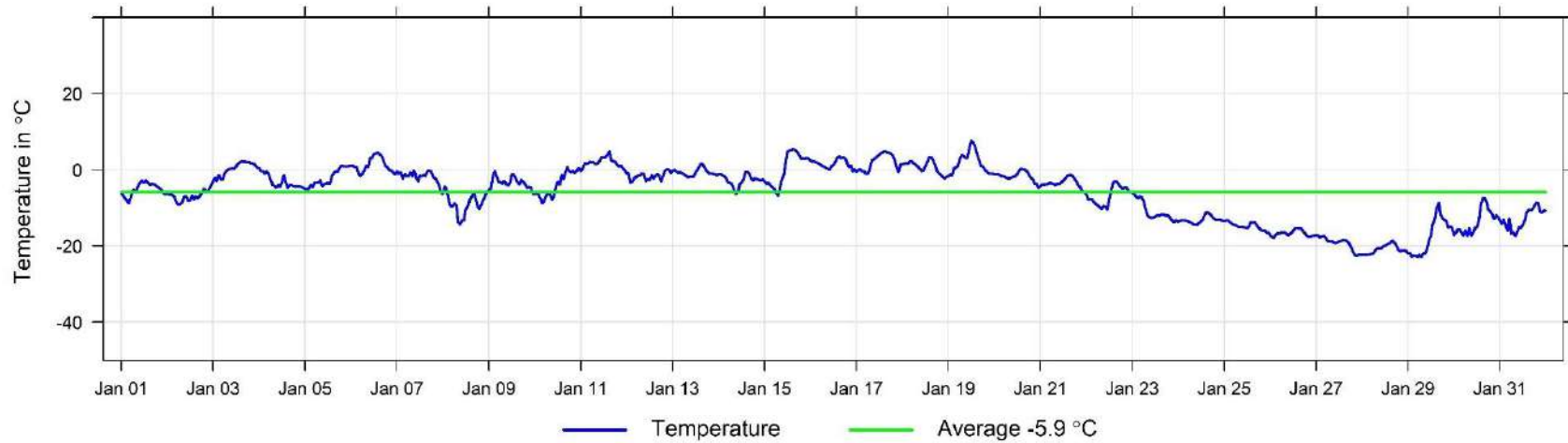
January Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



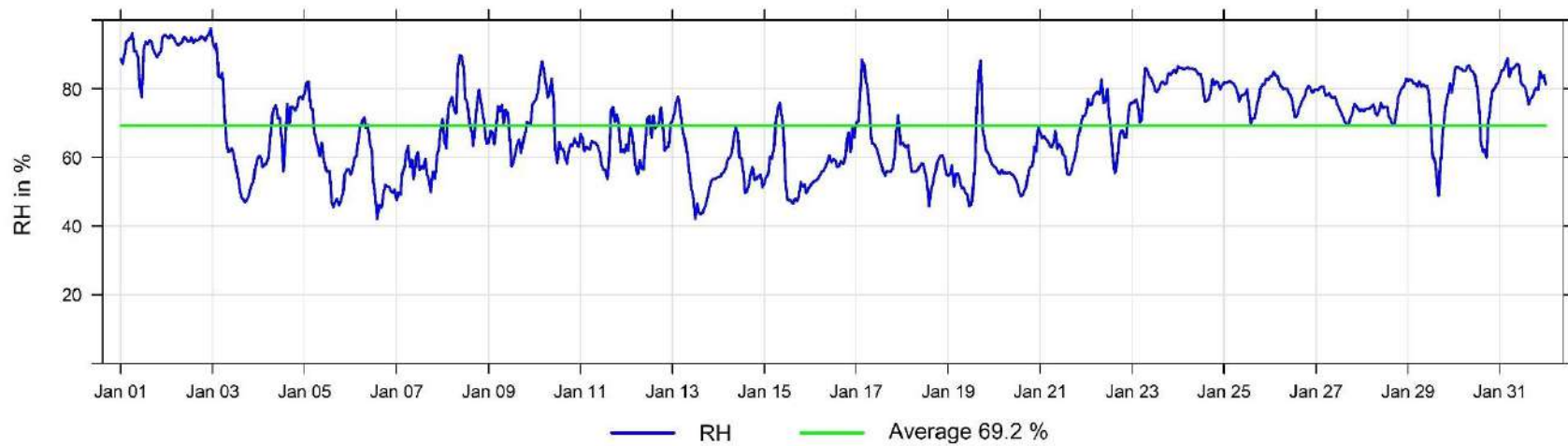
January Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



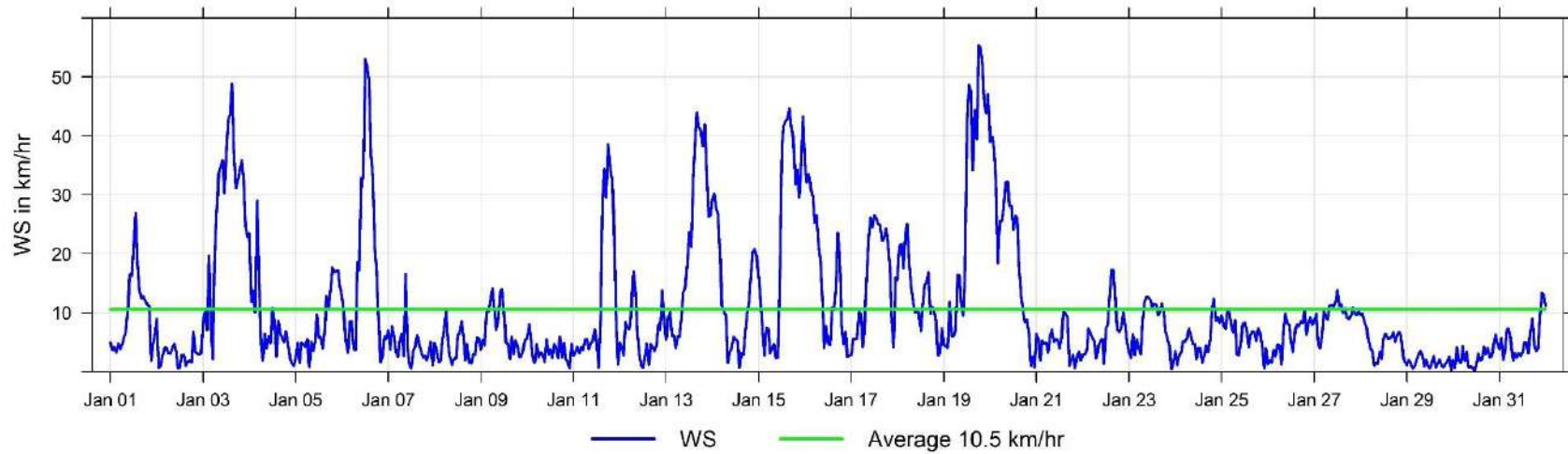
January Hourly Temperature Readings (in °C) at Beaverlodge



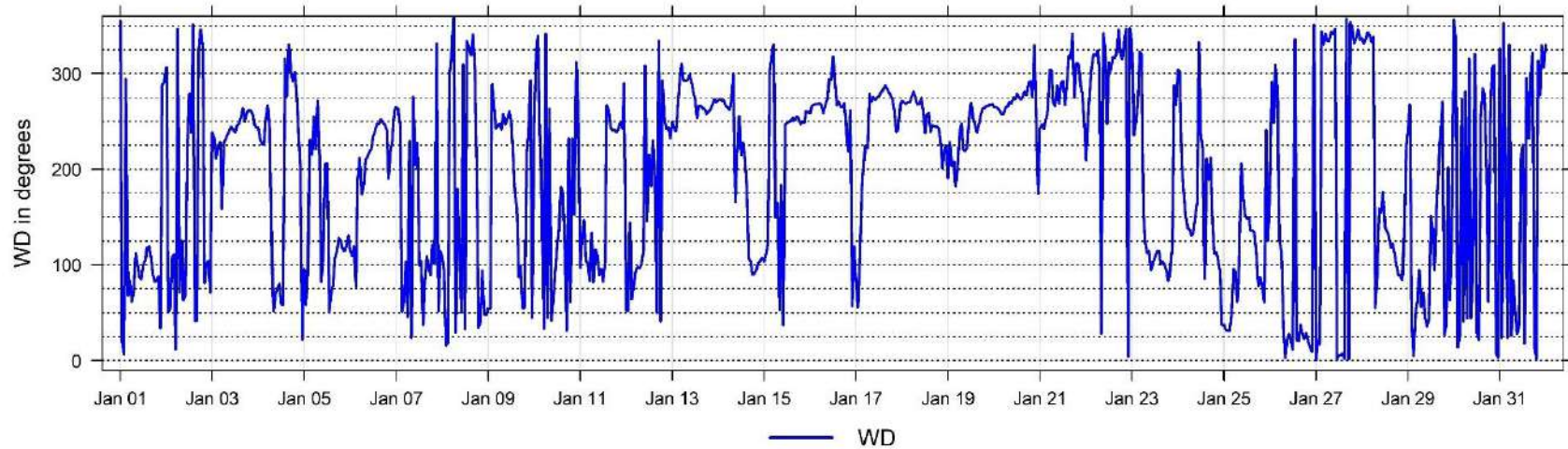
January Hourly Readings of Relative Humidity (in %) at Beaverlodge



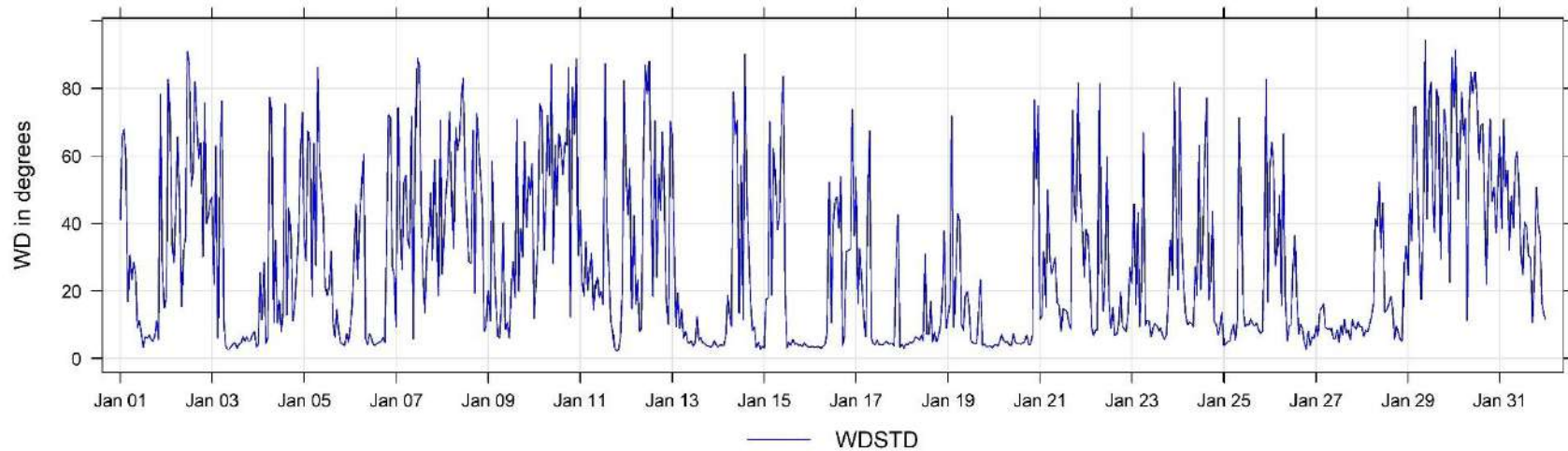
January Hourly Readings of Wind Speed (in km/hr) at Beaverlodge

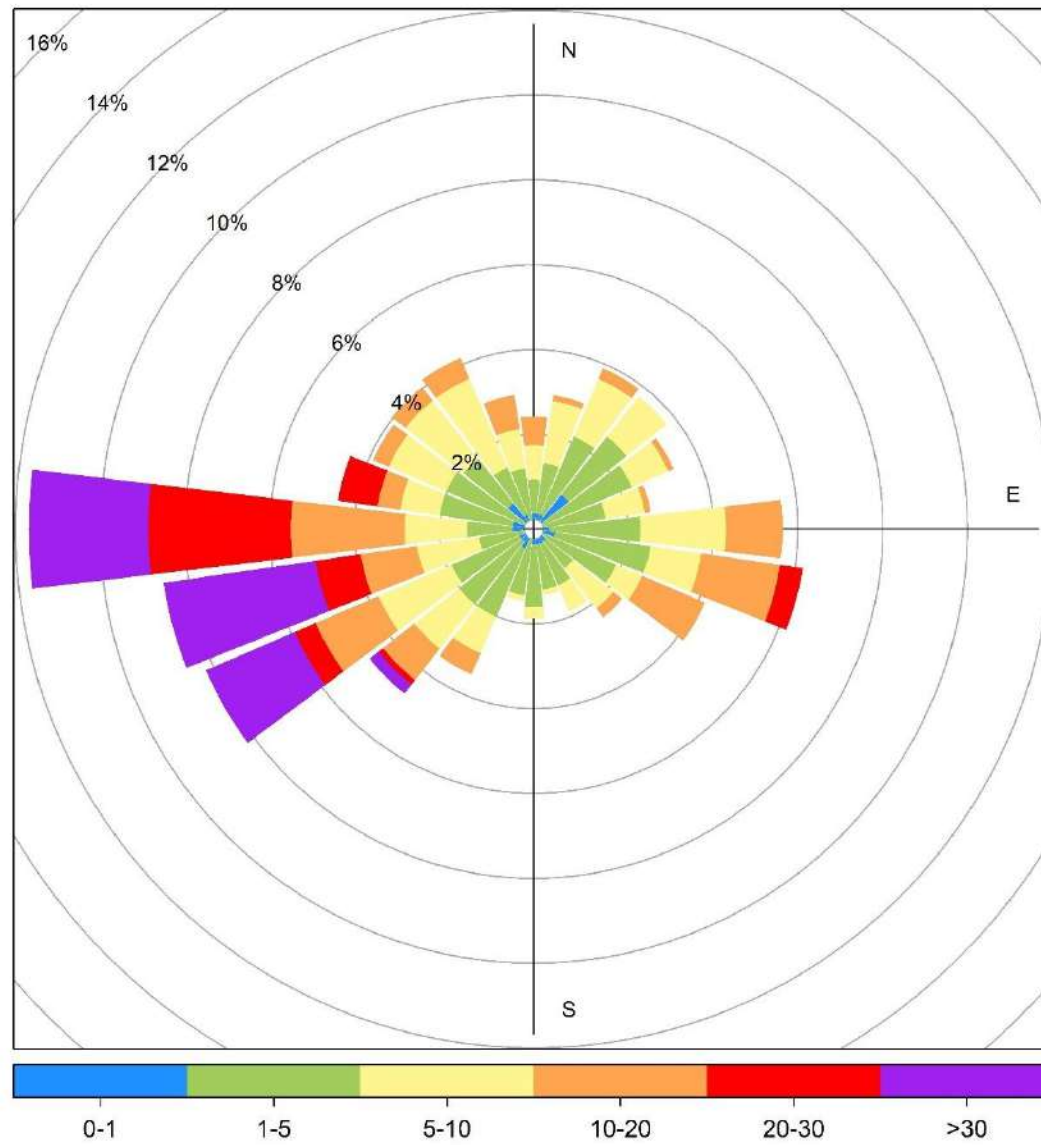


January Hourly Readings of Wind Direction (in degrees) at Beaverlodge



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



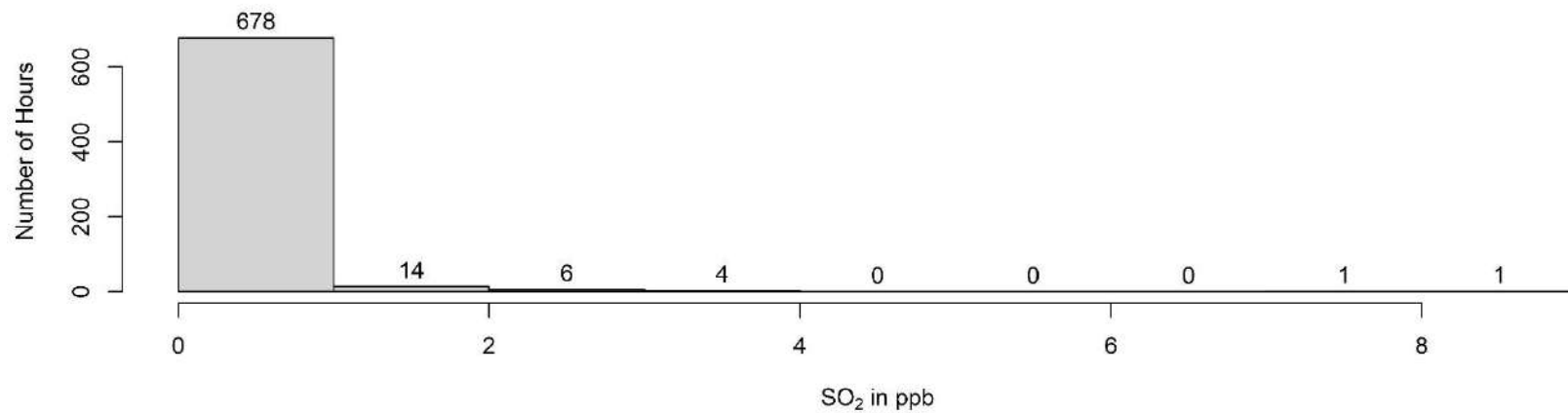
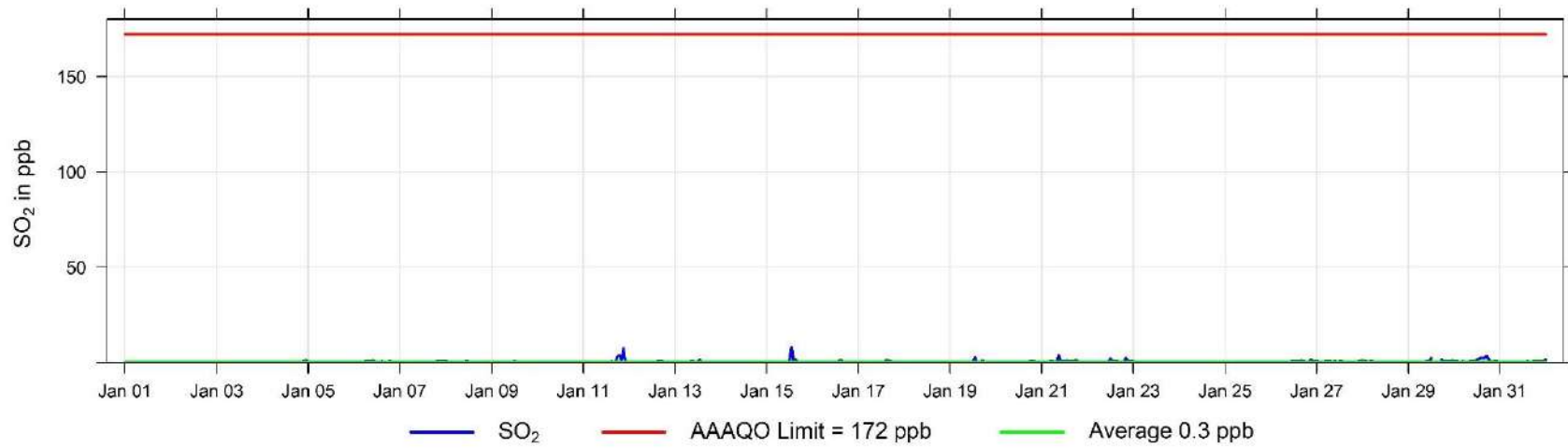


Beaverlodge January Wind Rose, wind speed in km/hr

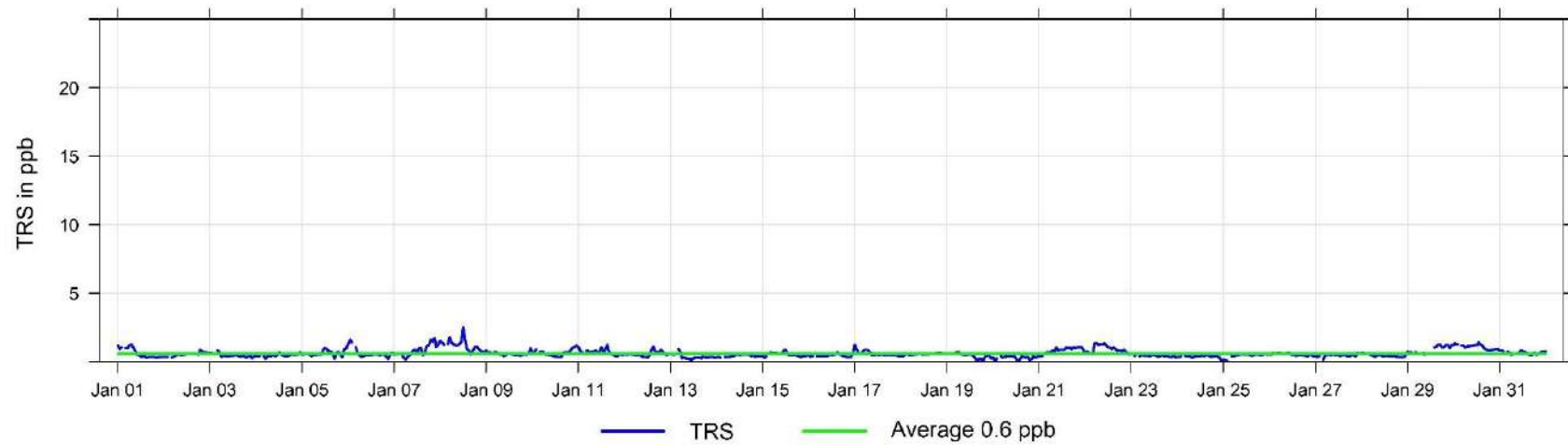
3 Evergreen Park Charts

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

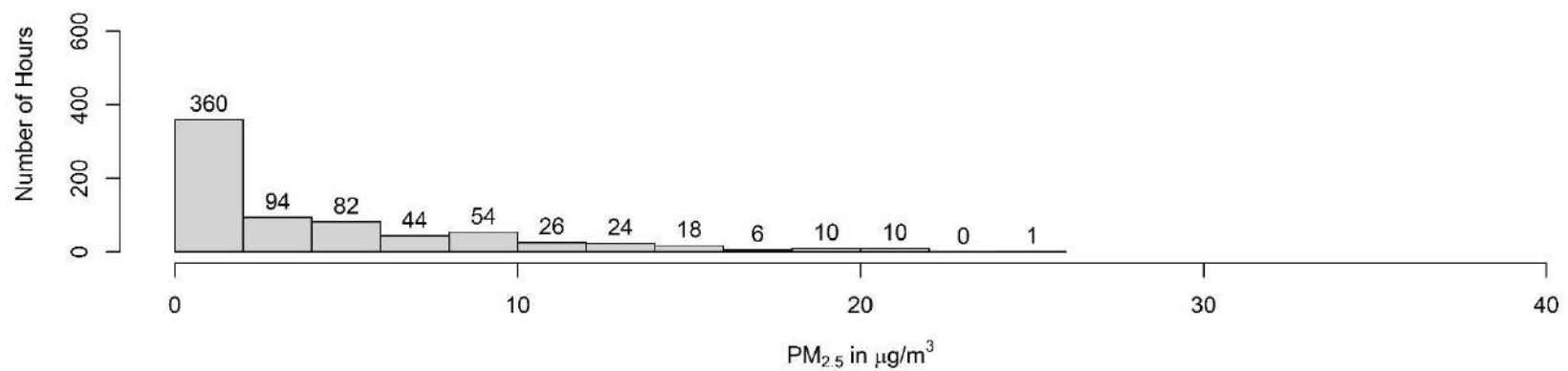
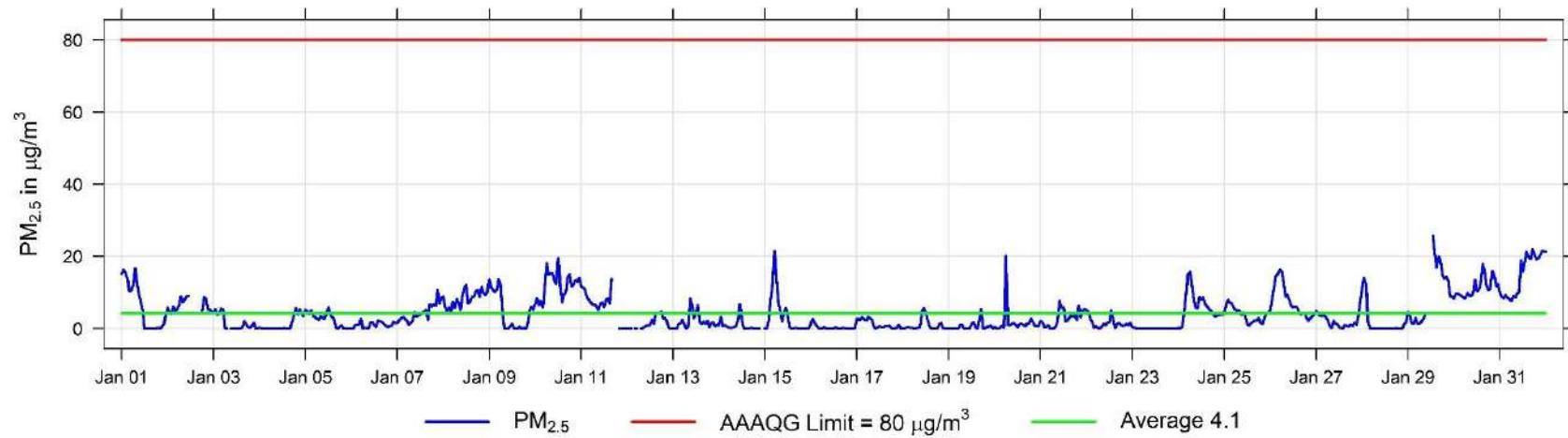
January Hourly Concentration Readings of SO₂ (in ppb) at Evergreen Park



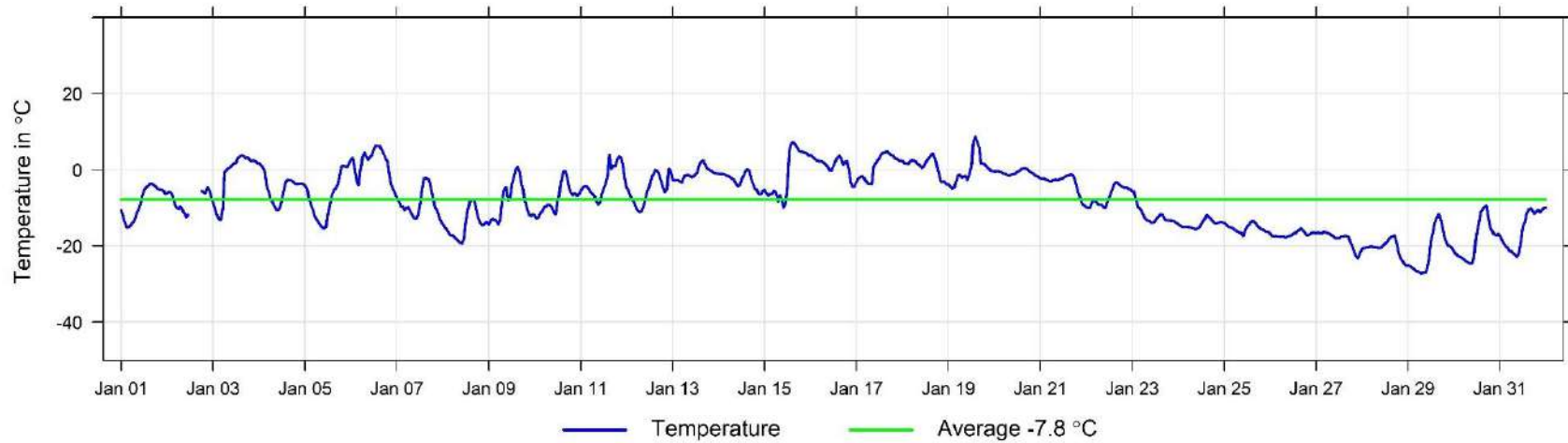
January Hourly Concentration Readings of TRS (in ppb) at Evergreen Park



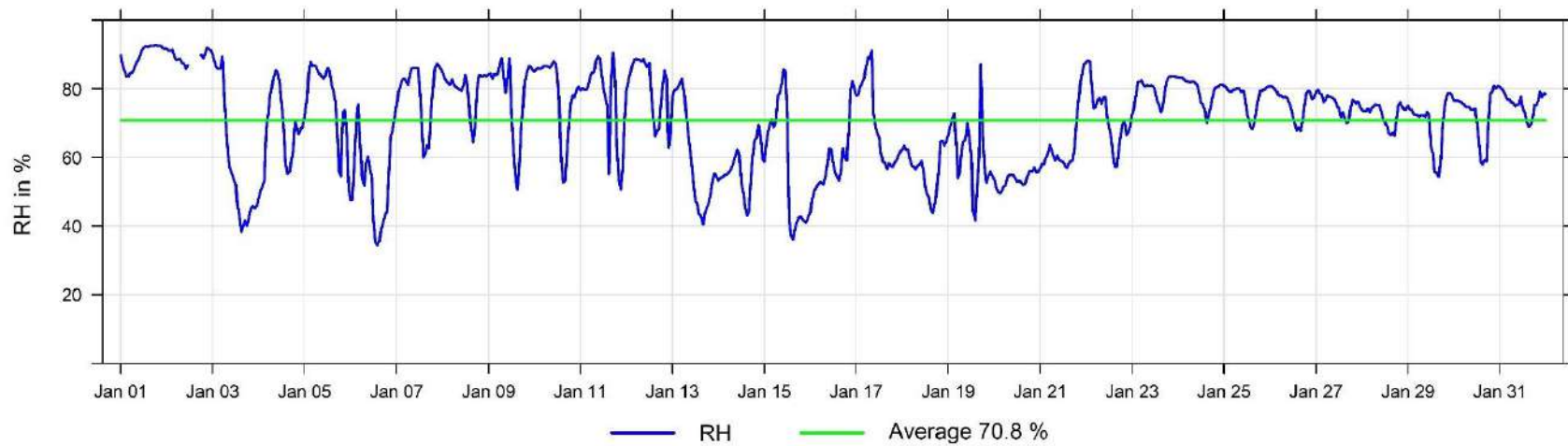
January Hourly Concentration Readings of PM_{2.5} in µg/m³ at Evergreen Park



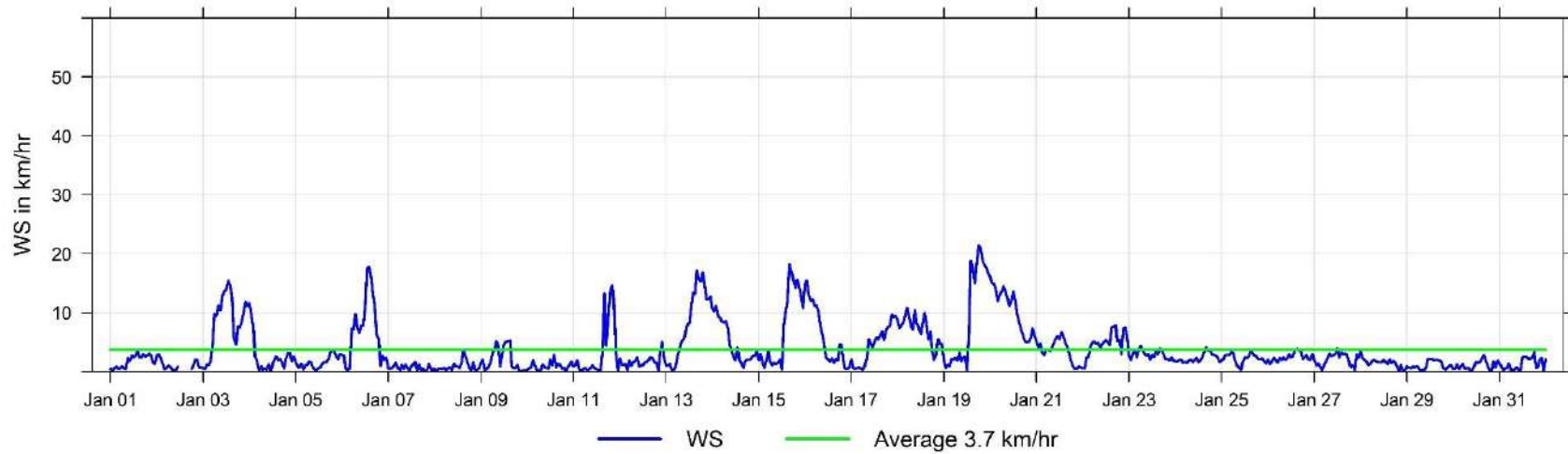
January Hourly Temperature Readings (in °C) at Evergreen Park



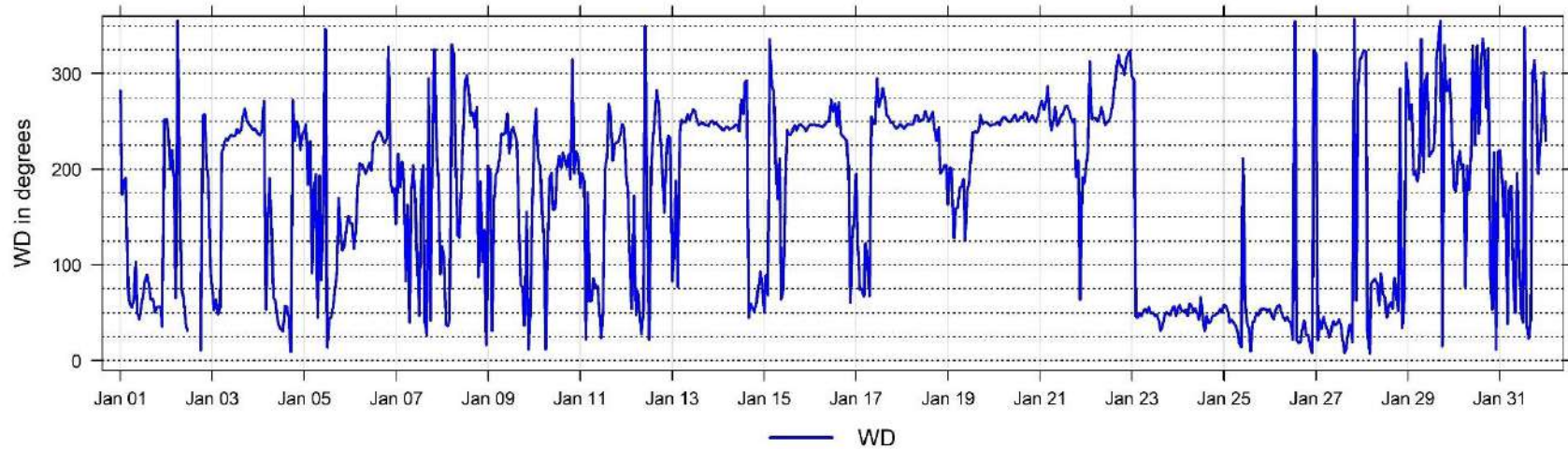
January Hourly Readings of Relative Humidity (in %) at Evergreen Park



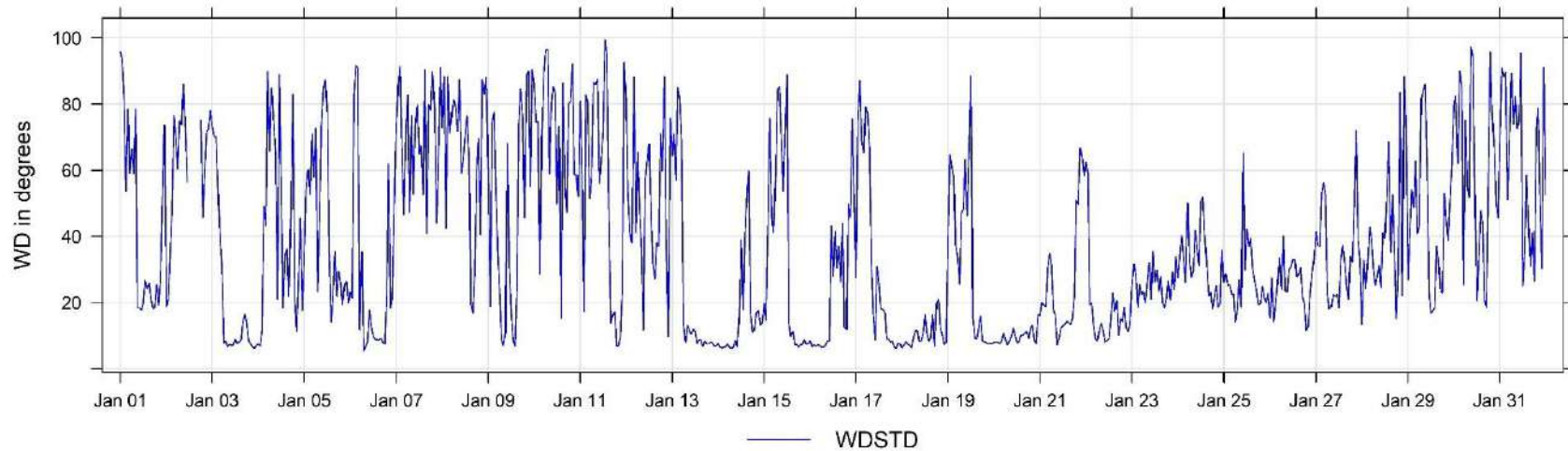
January Hourly Readings of Wind Speed (in km/hr) at Evergreen Park

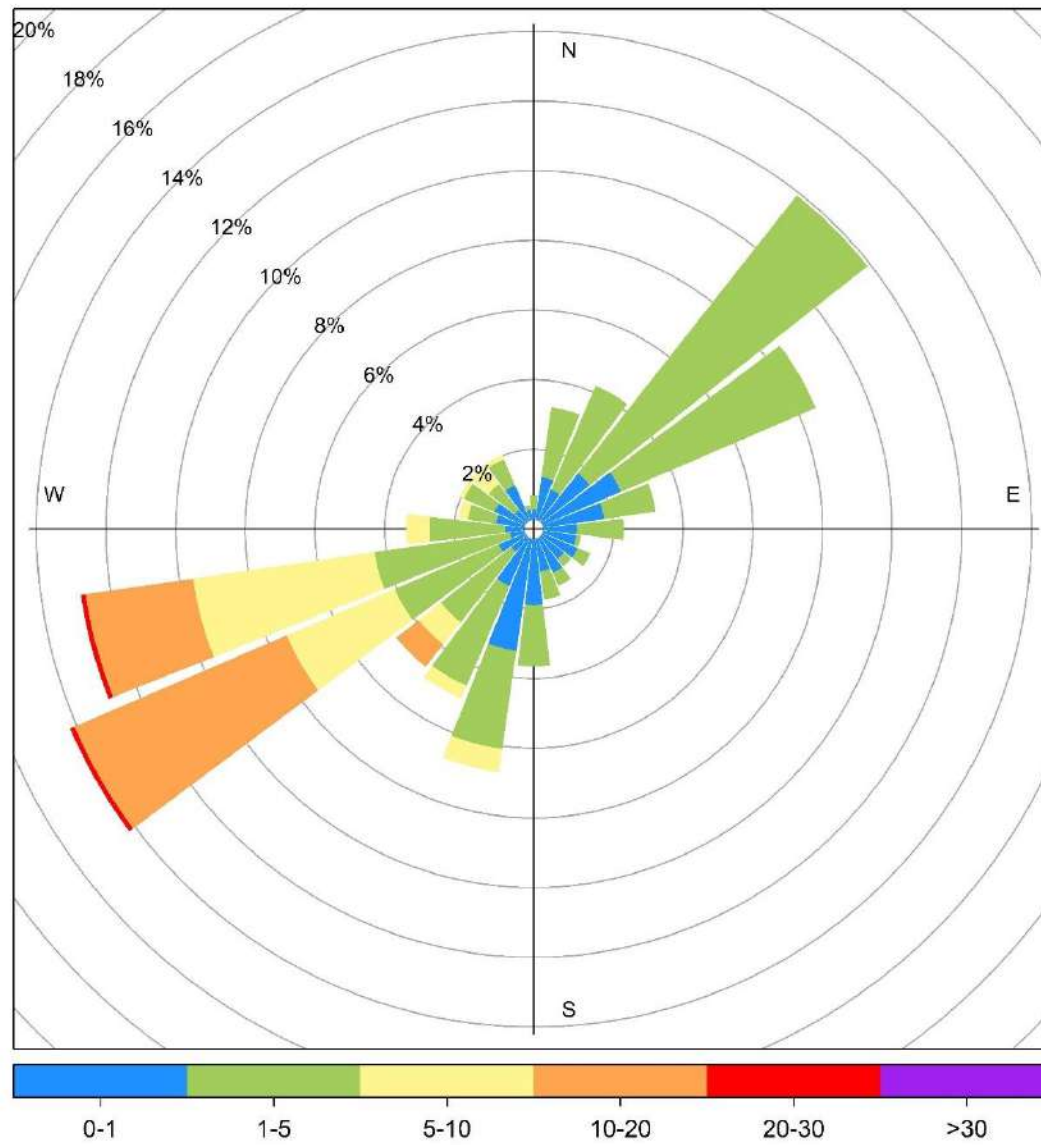


January Hourly Readings of Wind Direction (in degrees) at Evergreen Park



January Hourly Readings of Wind Direction Standard Deviation (in degrees) at Evergreen Park



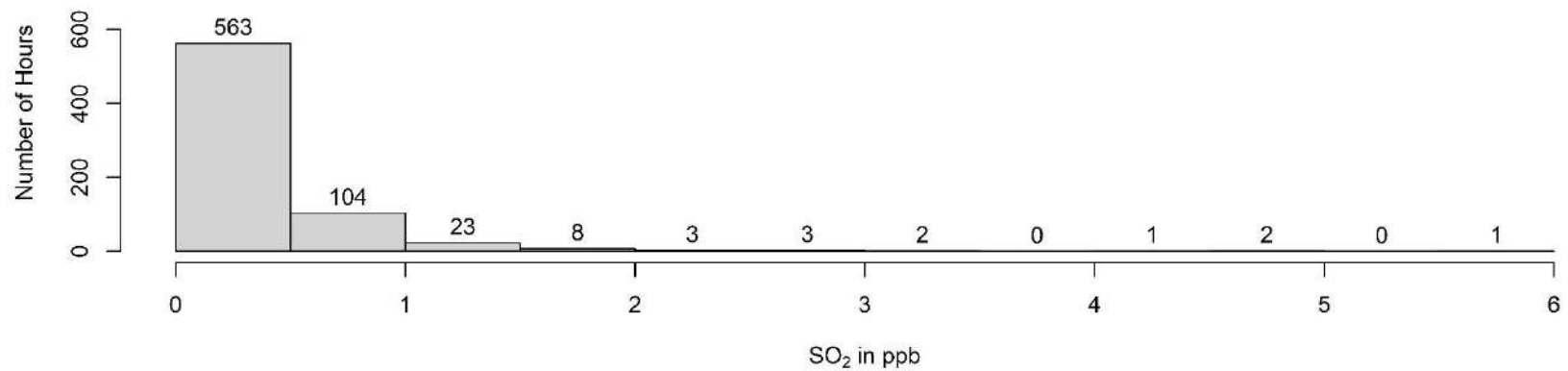
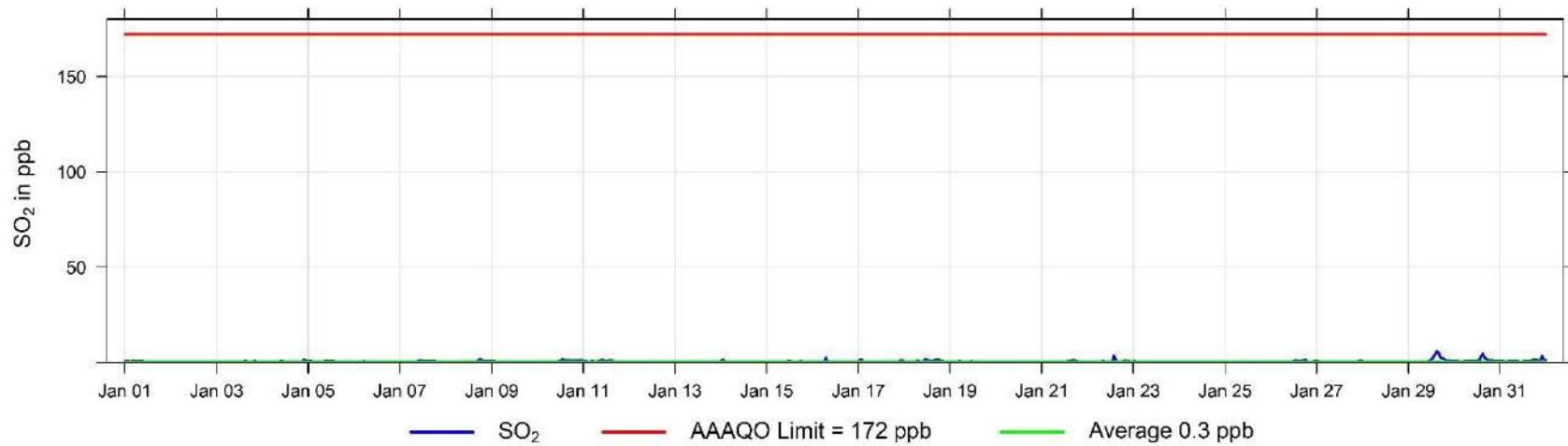


Evergreen Park January Wind Rose, wind speed in km/hr

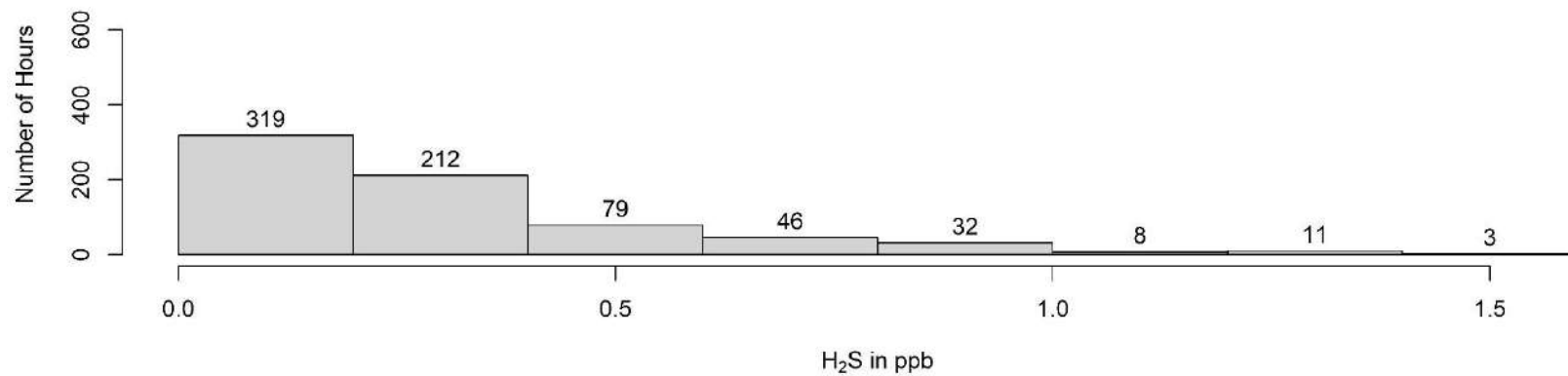
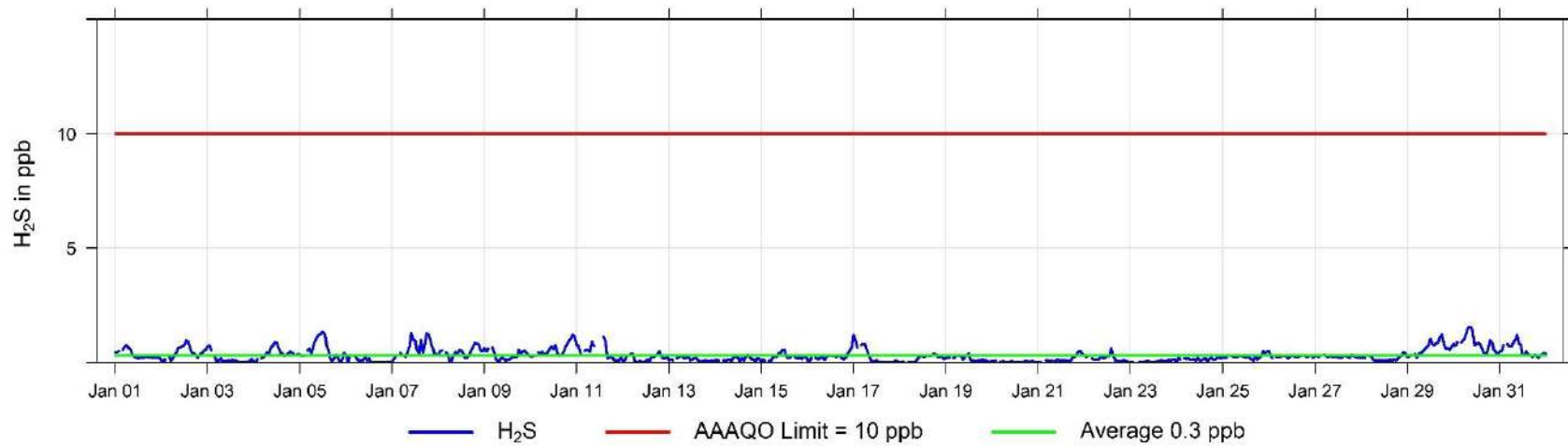
4 Grande Prairie - Henry Pirker Charts

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

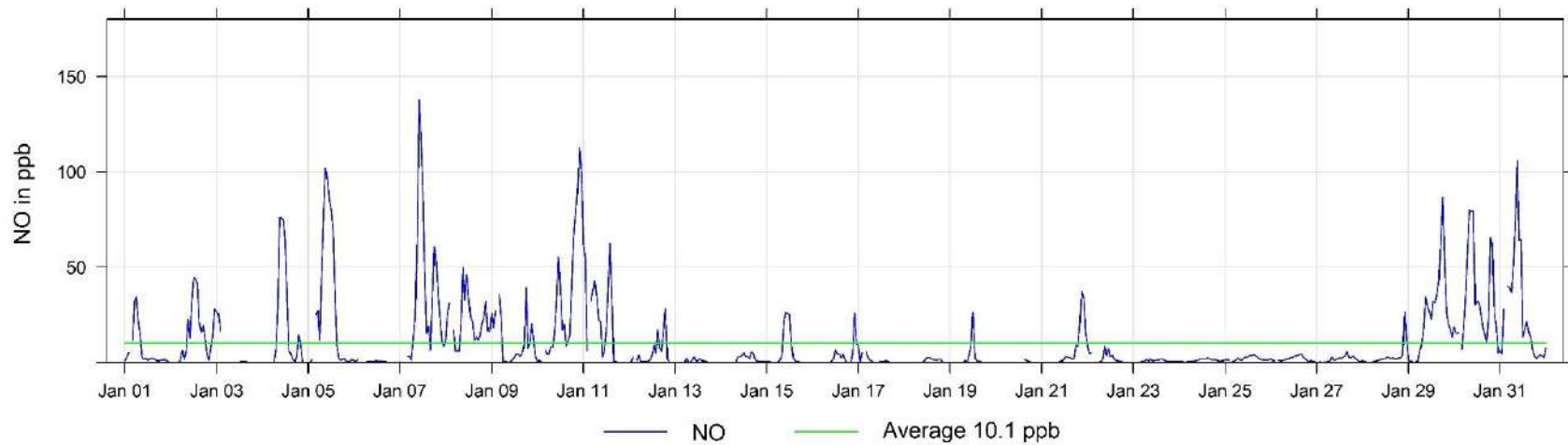
January Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



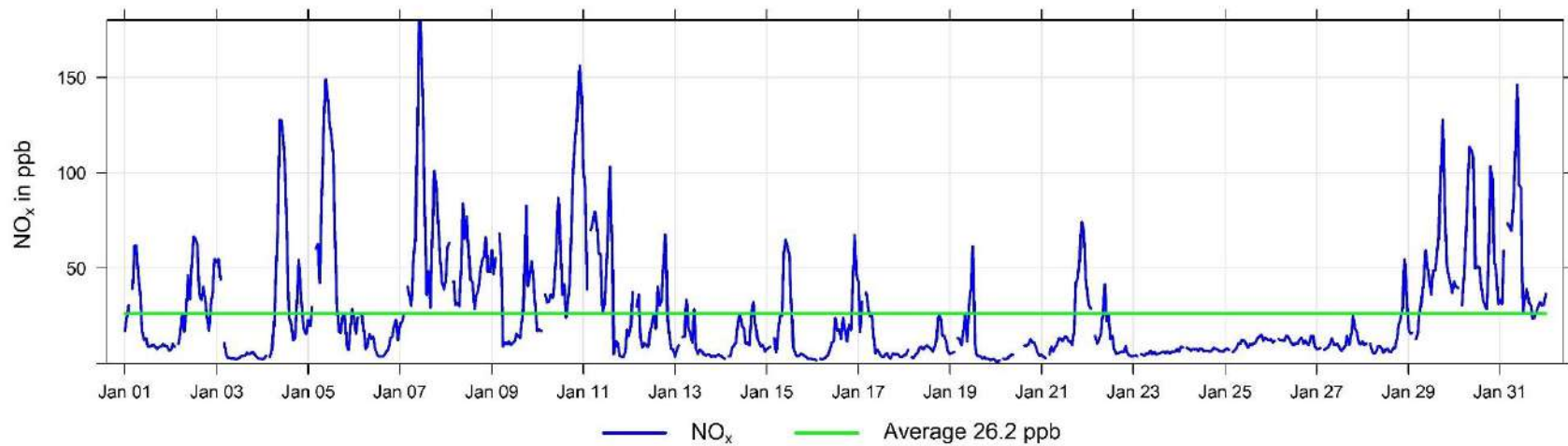
January Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



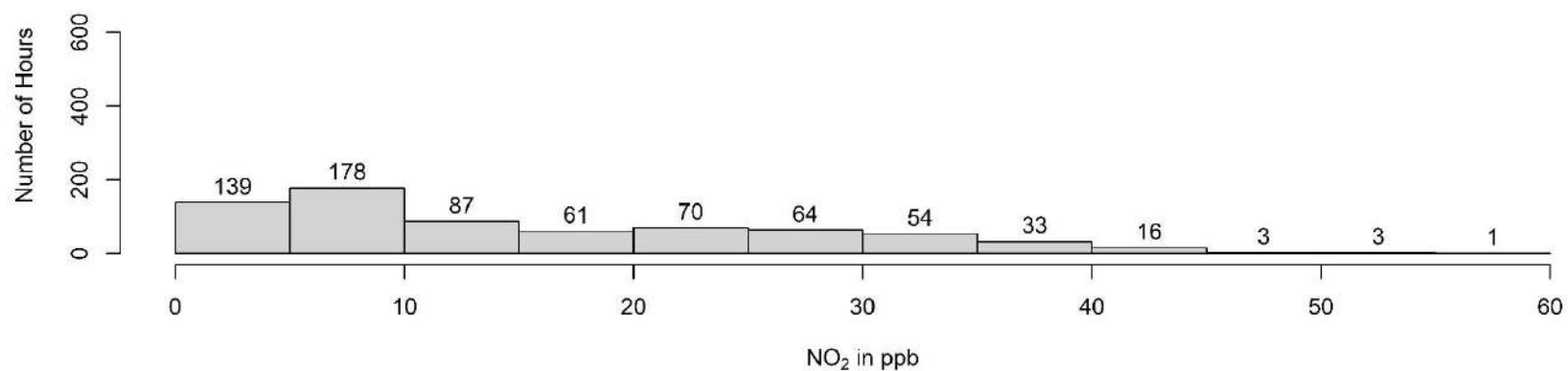
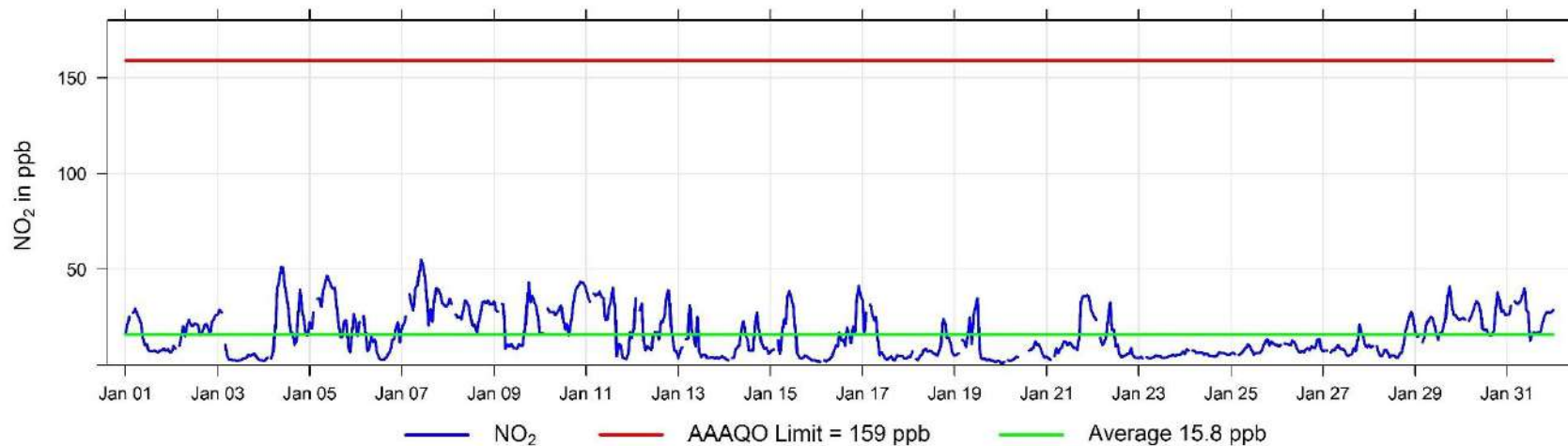
January Hourly Concentration Readings of NO (in ppb) at Henry Pirker



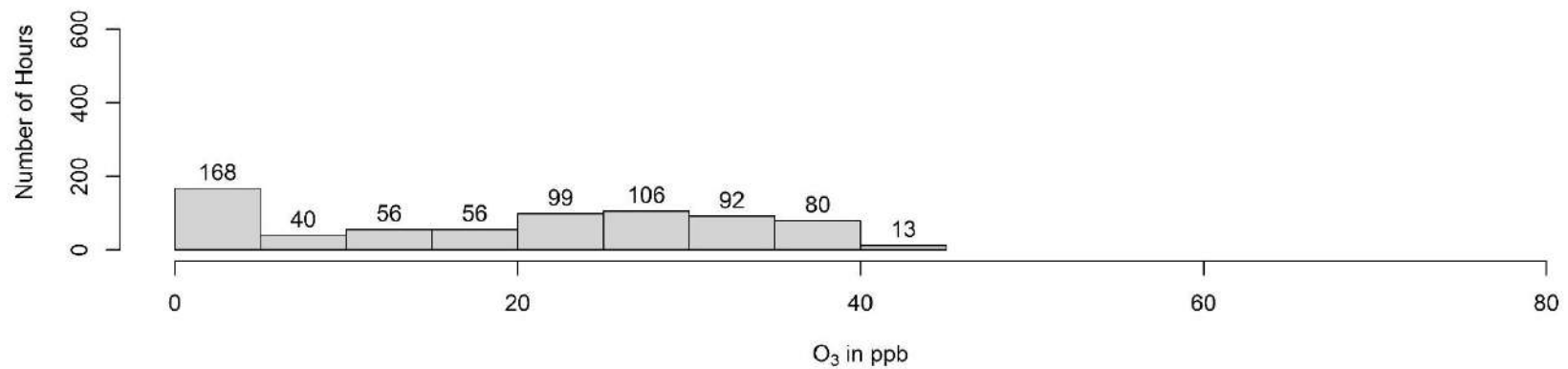
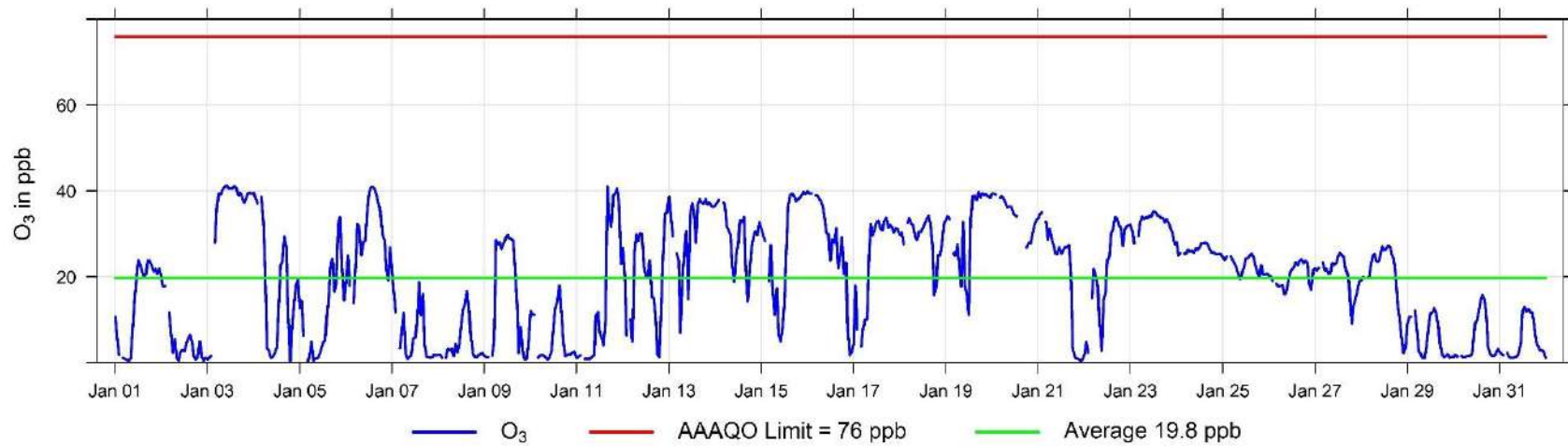
January Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



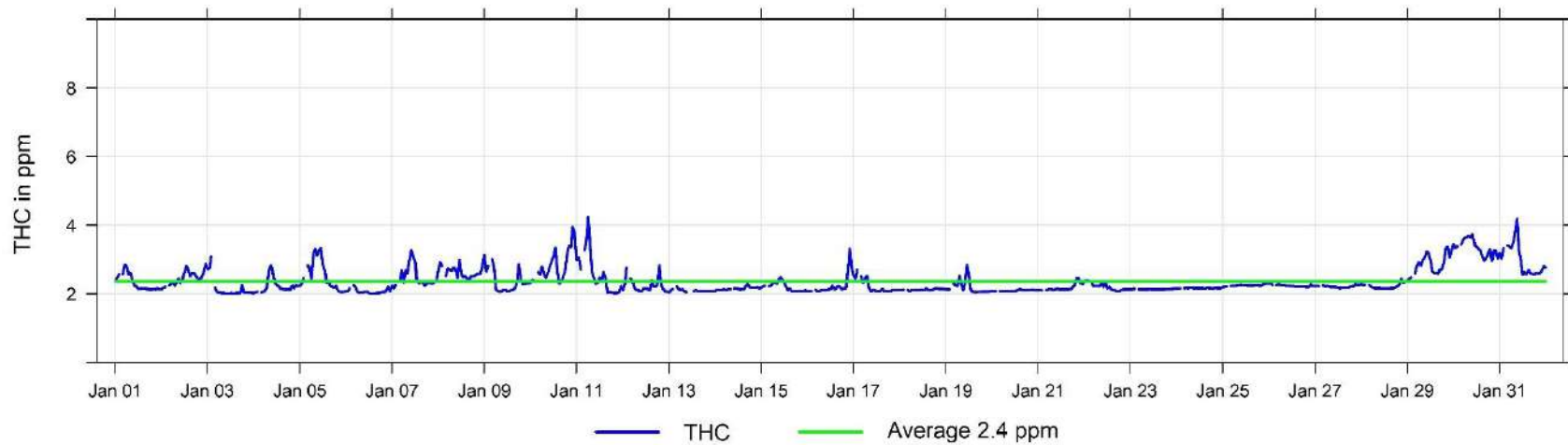
January Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker



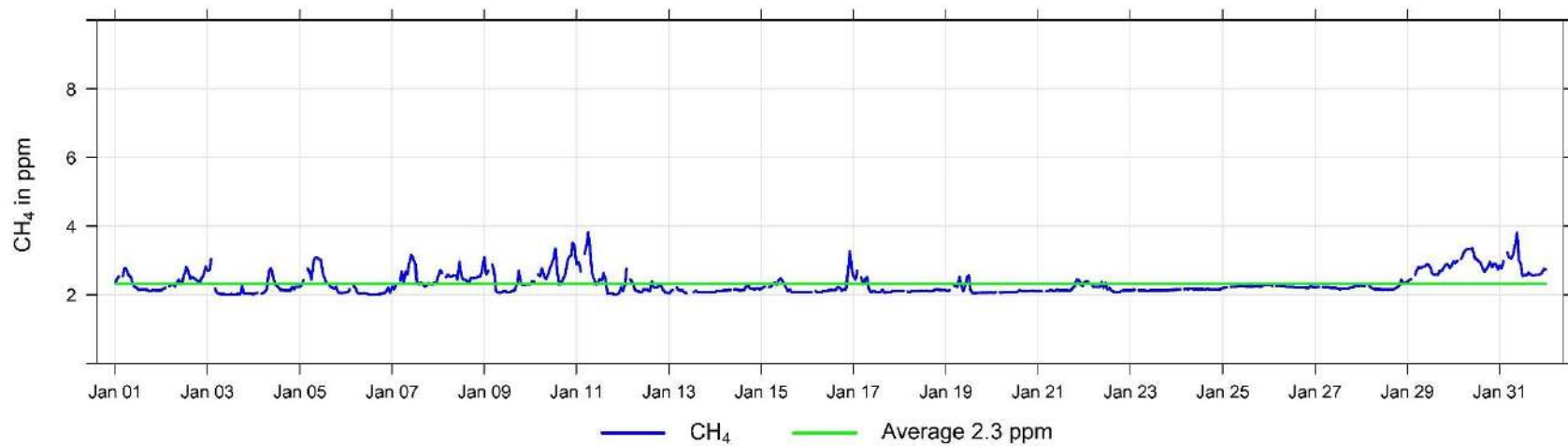
January Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



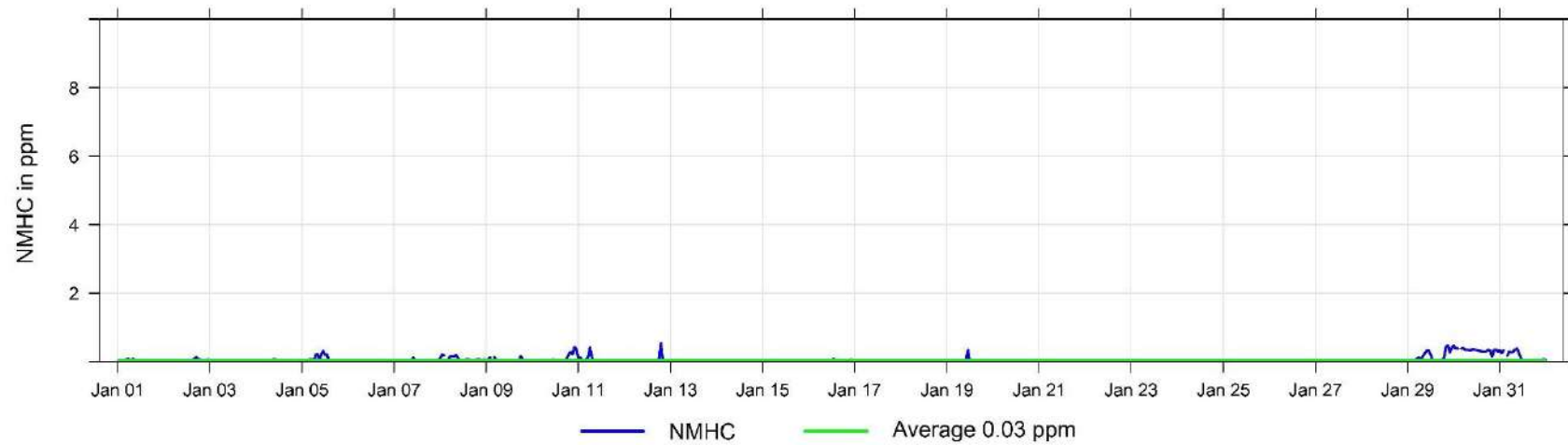
January Hourly Concentration Readings of THC (in ppm) at Henry Pirker



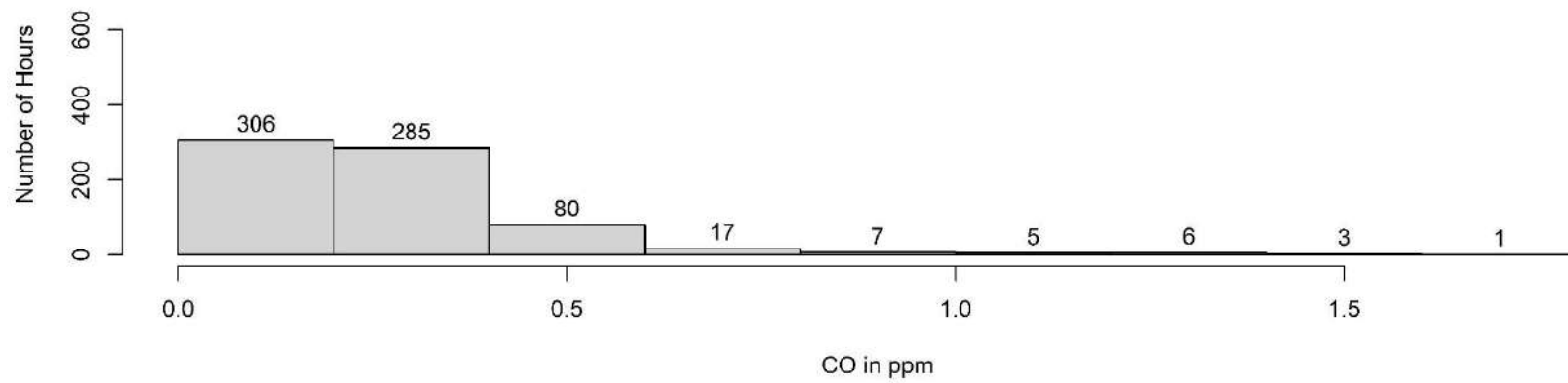
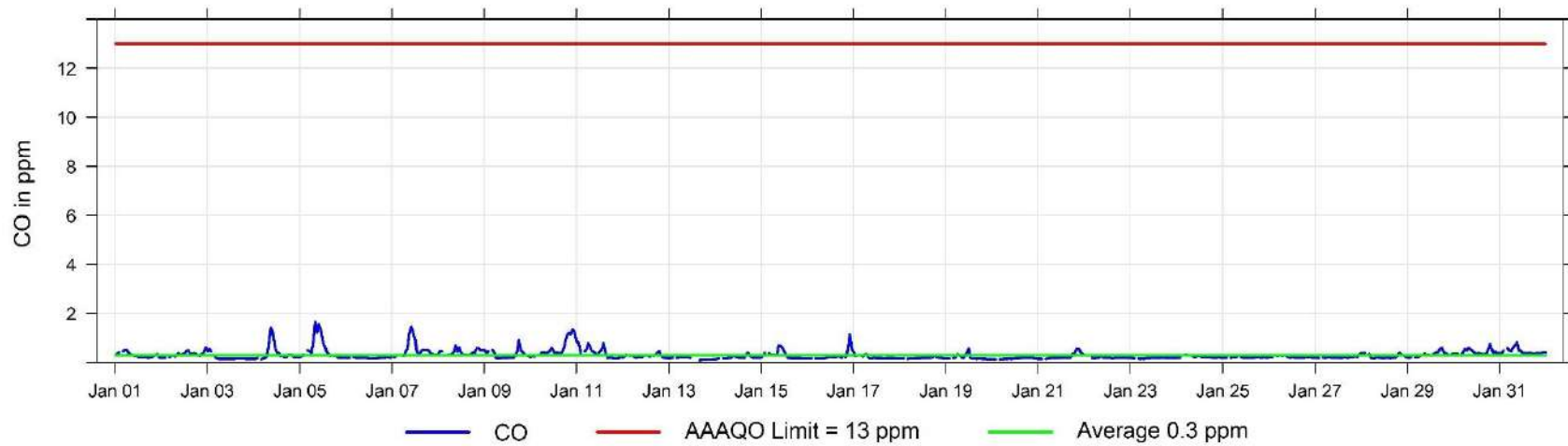
January Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



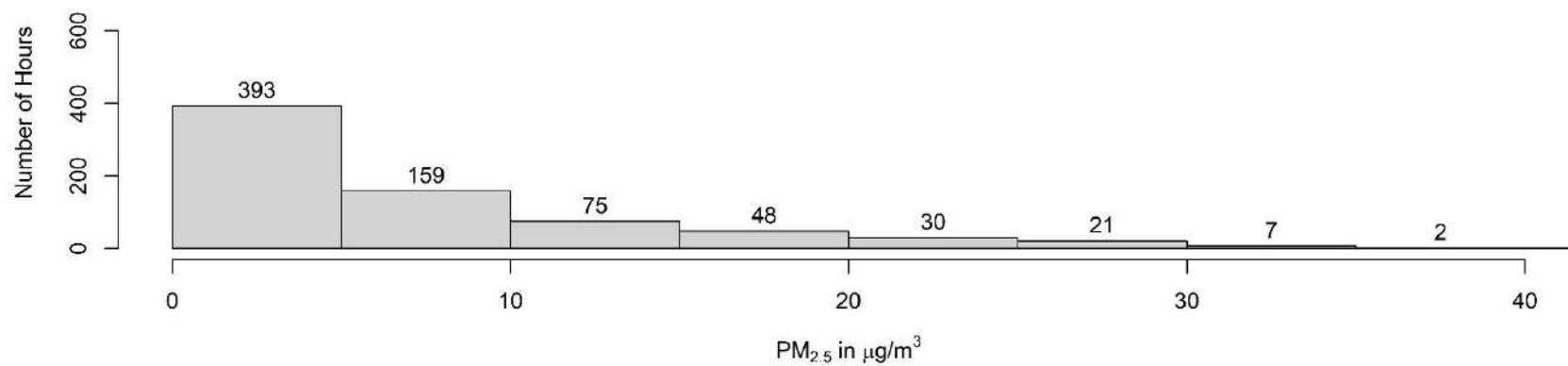
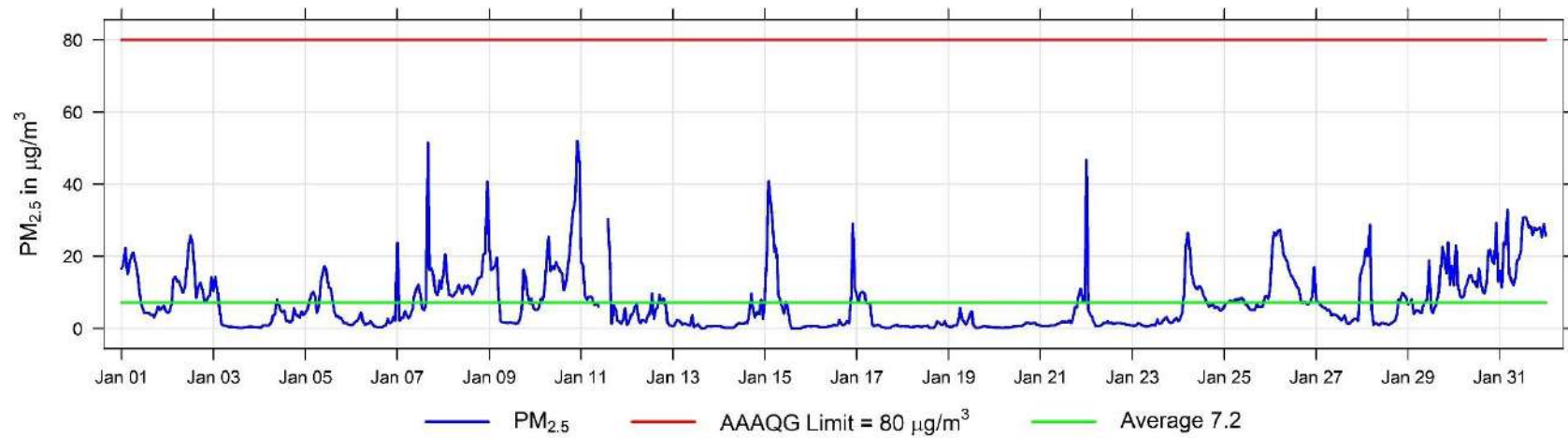
January Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



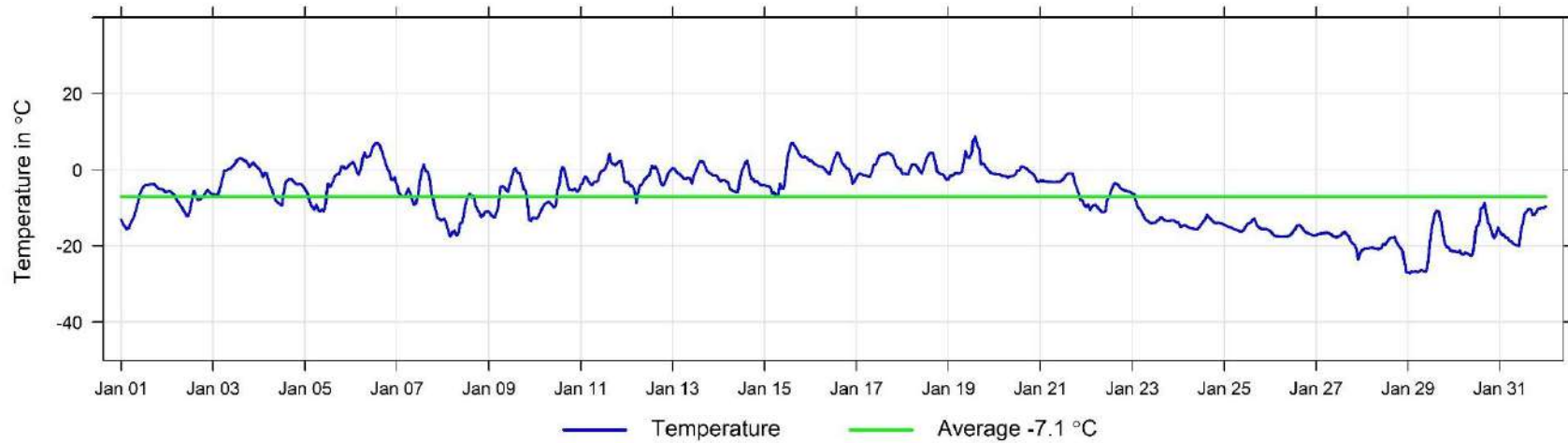
January Hourly Concentration Readings of CO (in ppm) at Henry Pirker



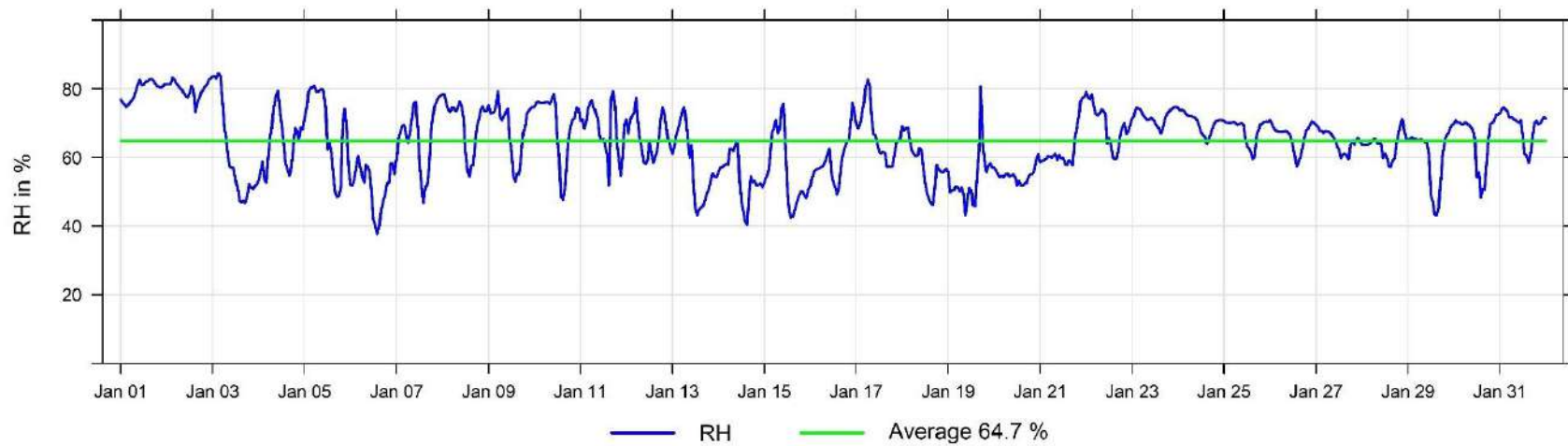
January Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker



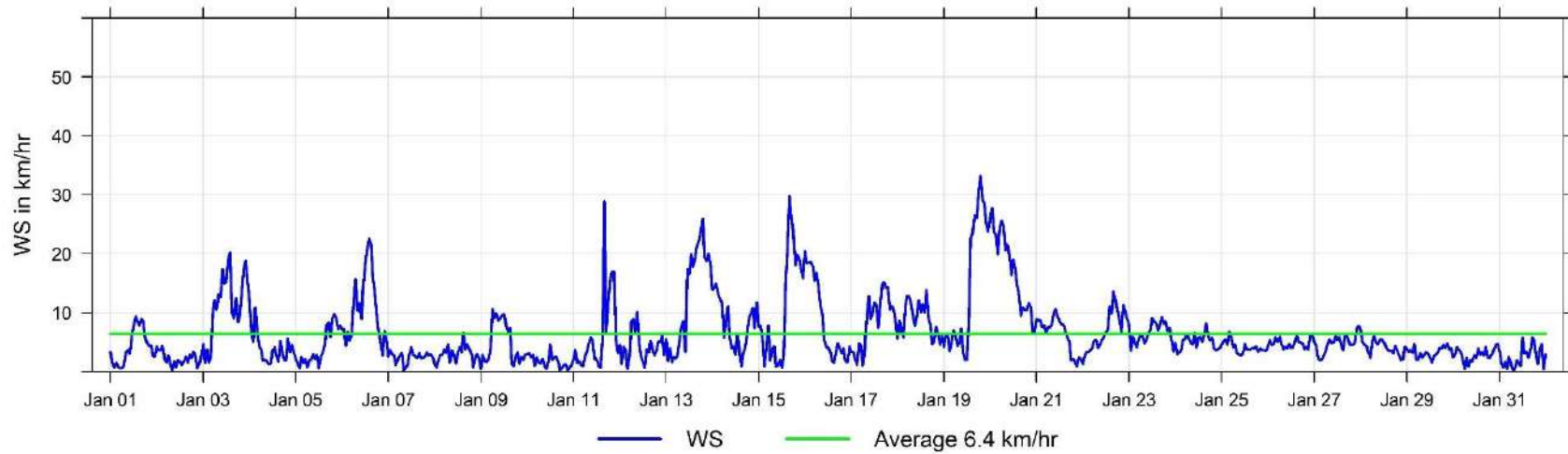
January Hourly Temperature Readings (in °C) at Henry Pirker



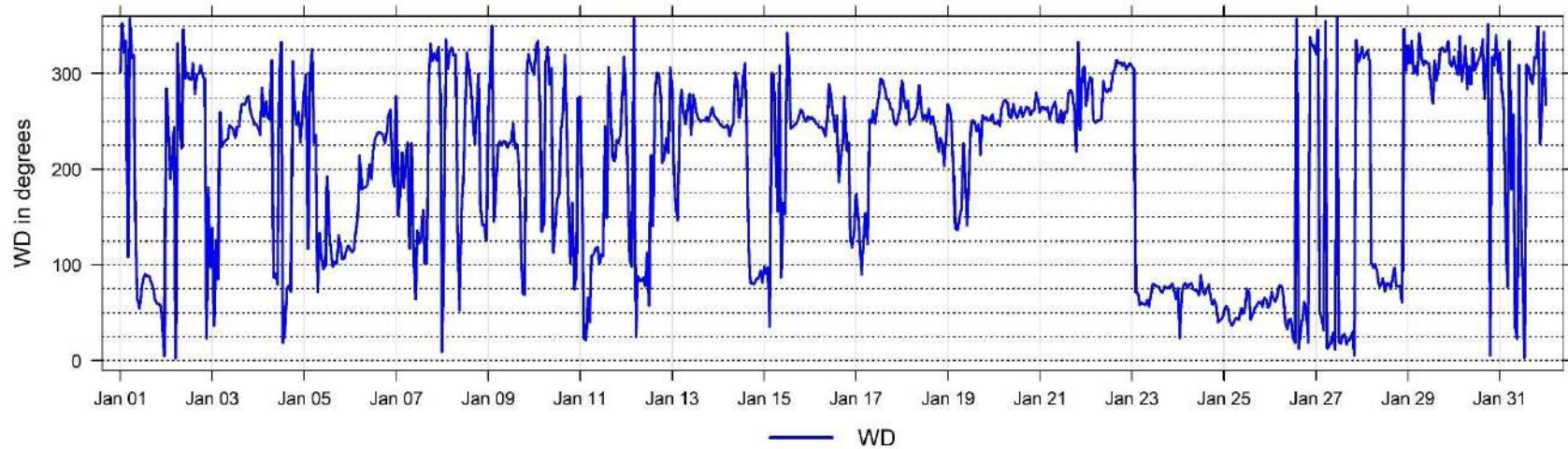
January Hourly Readings of Relative Humidity (in %) at Henry Pirker



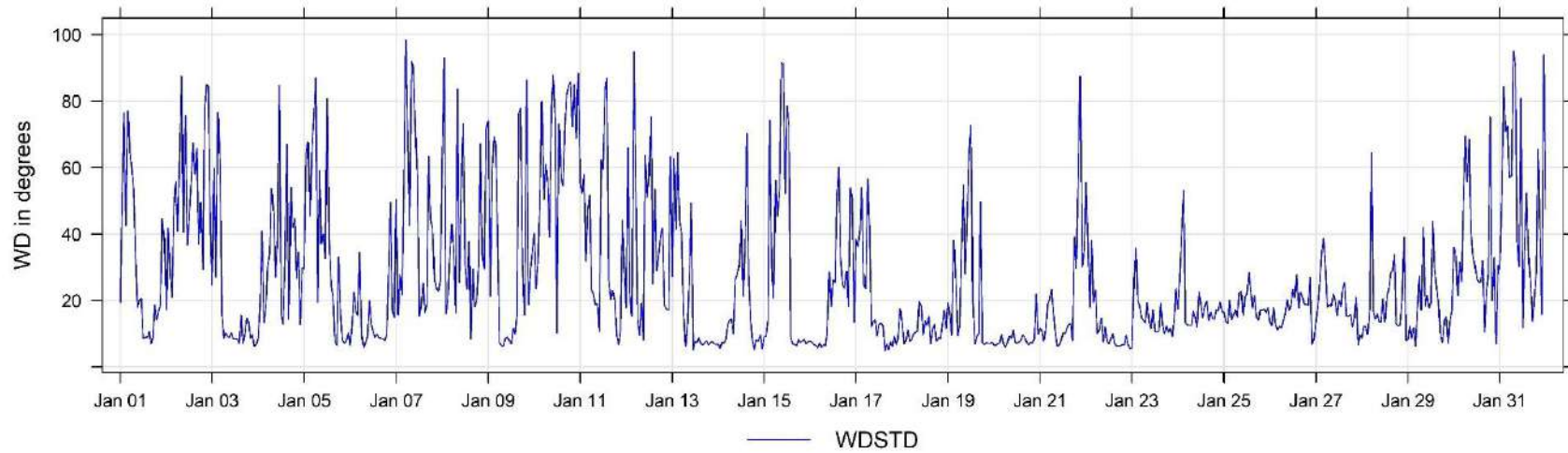
January Hourly Readings of Wind Speed (in km/hr) at Henry Pirker

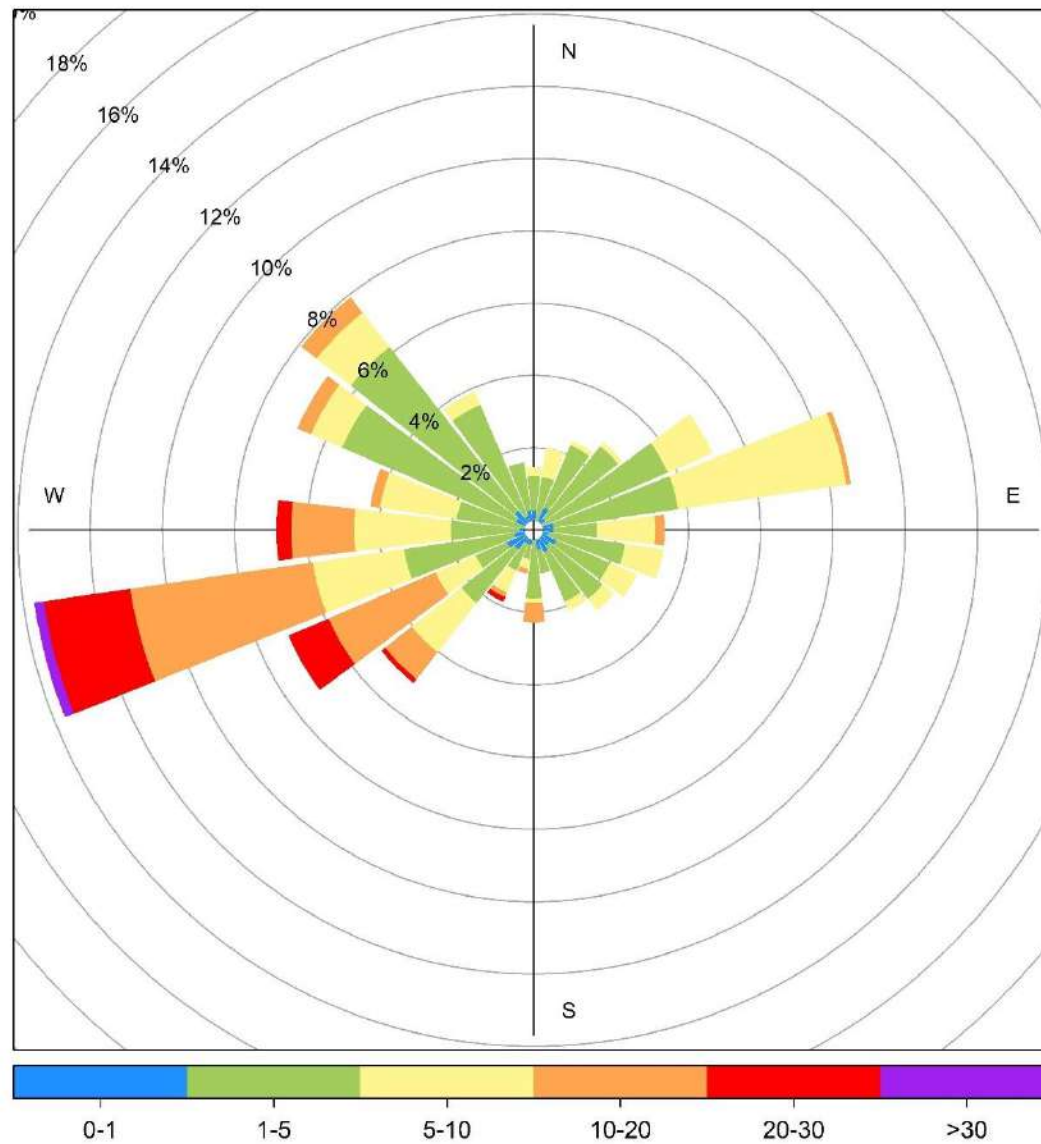


January Hourly Readings of Wind Direction (in degrees) at Henry Pirker



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



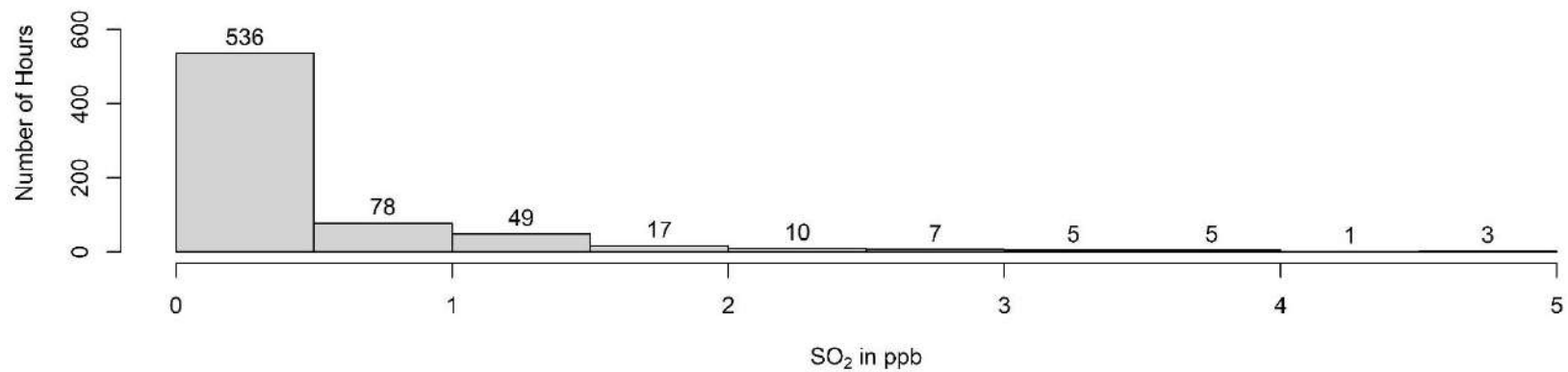
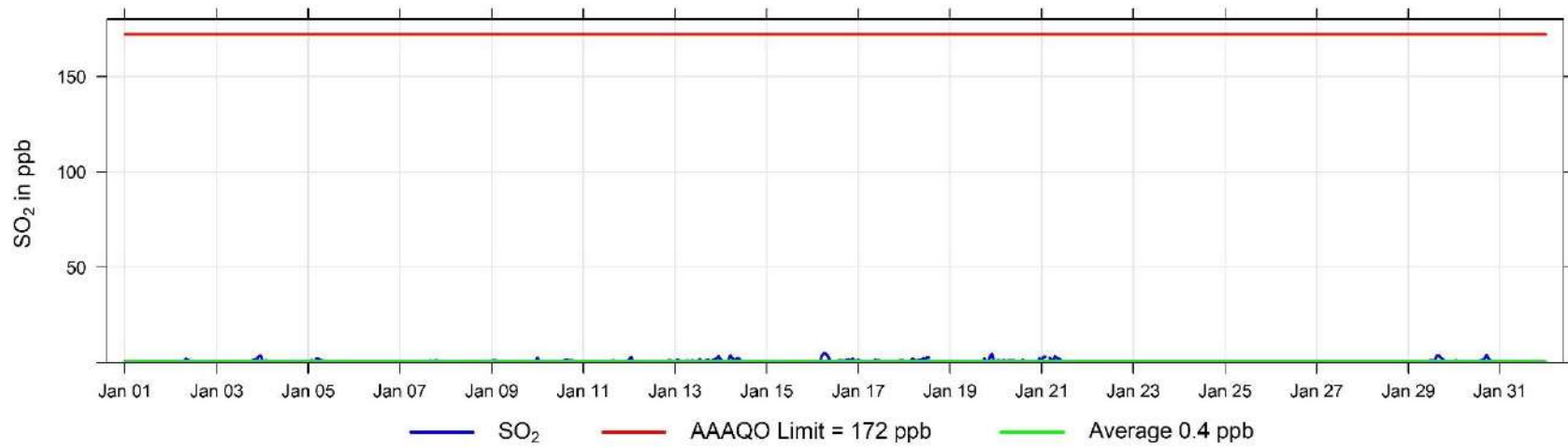


Henry Pirker January Wind Rose, wind speed in km/hr

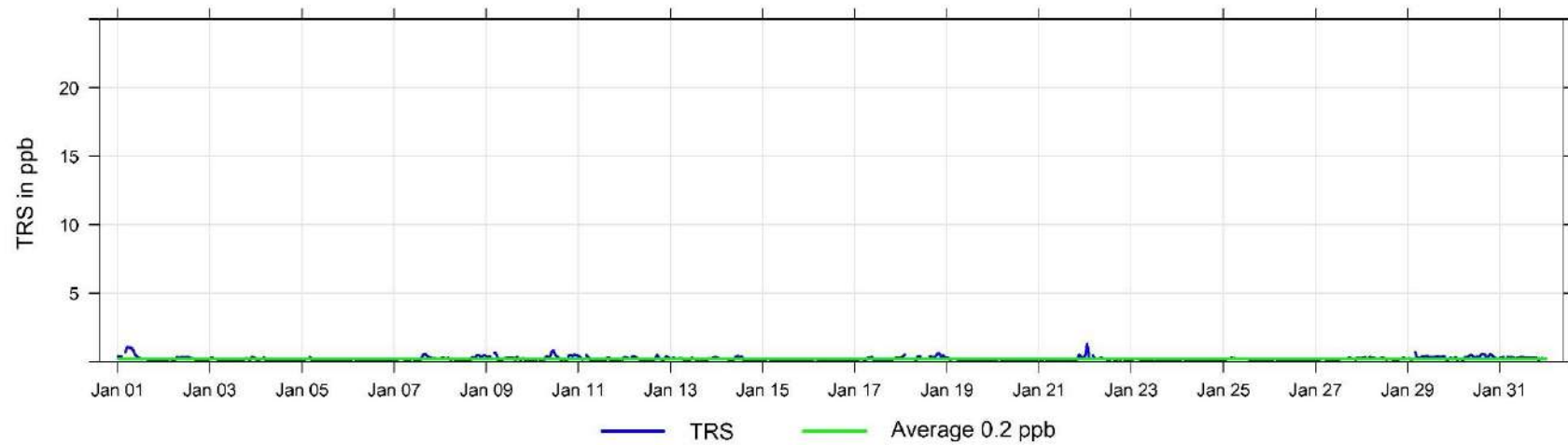
5 Smoky Heights Charts

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

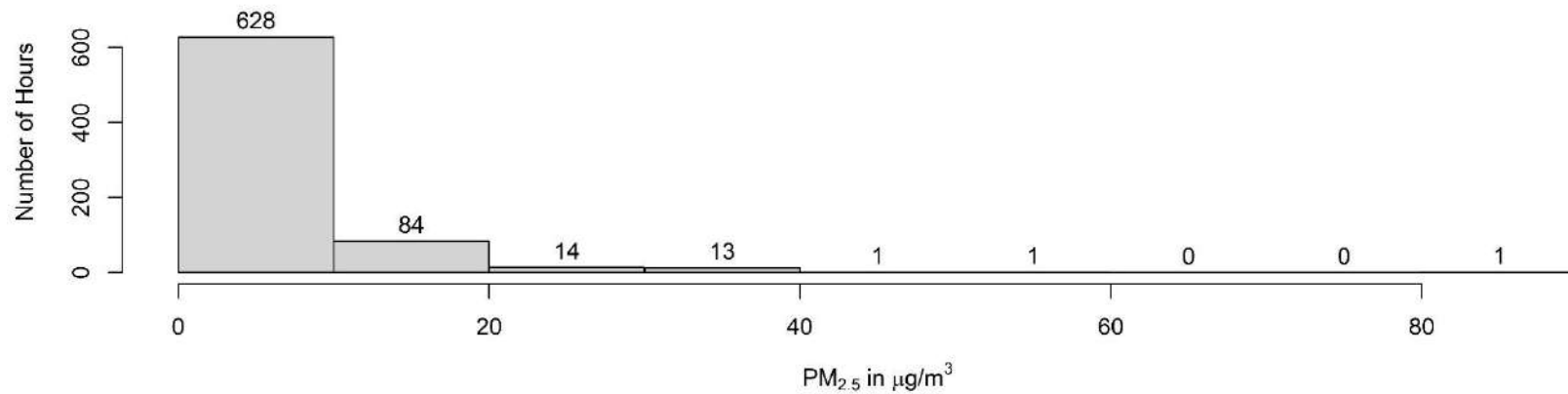
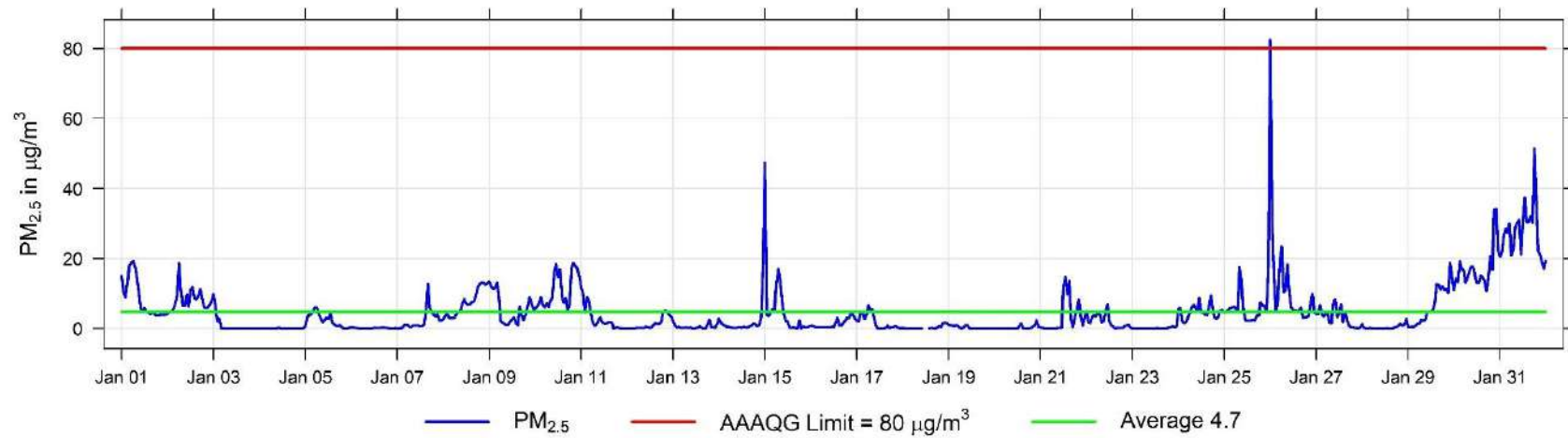
January Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



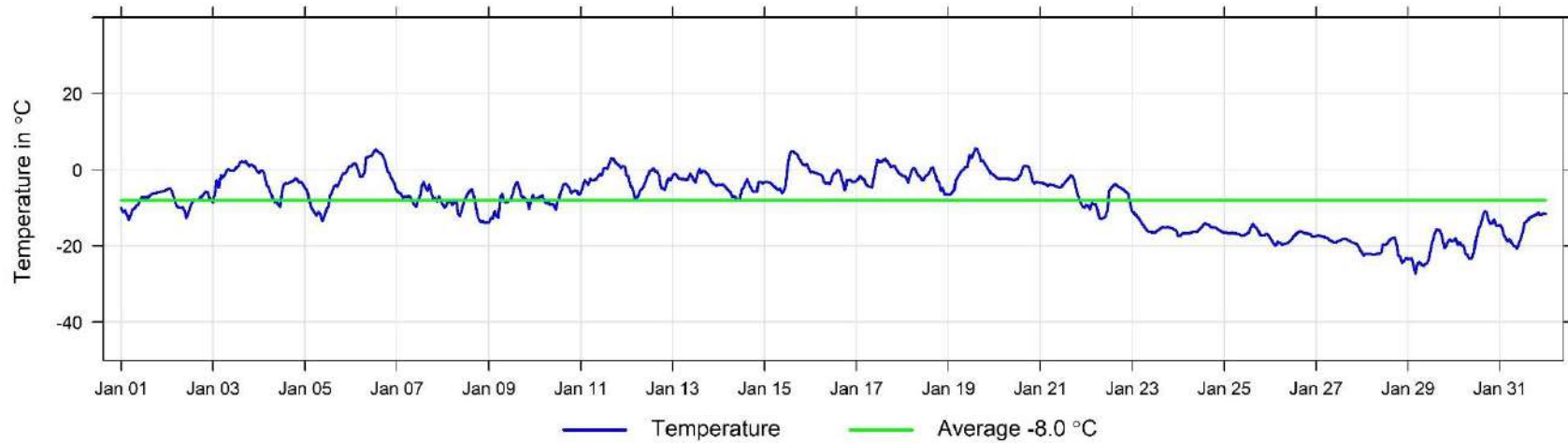
January Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



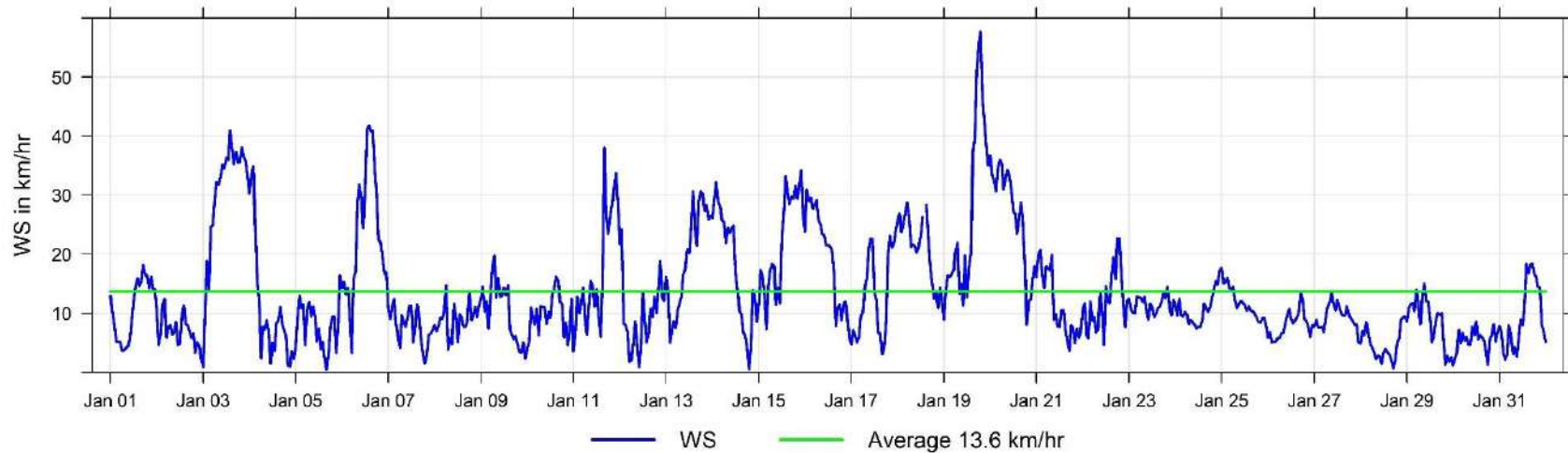
January Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Smoky Heights



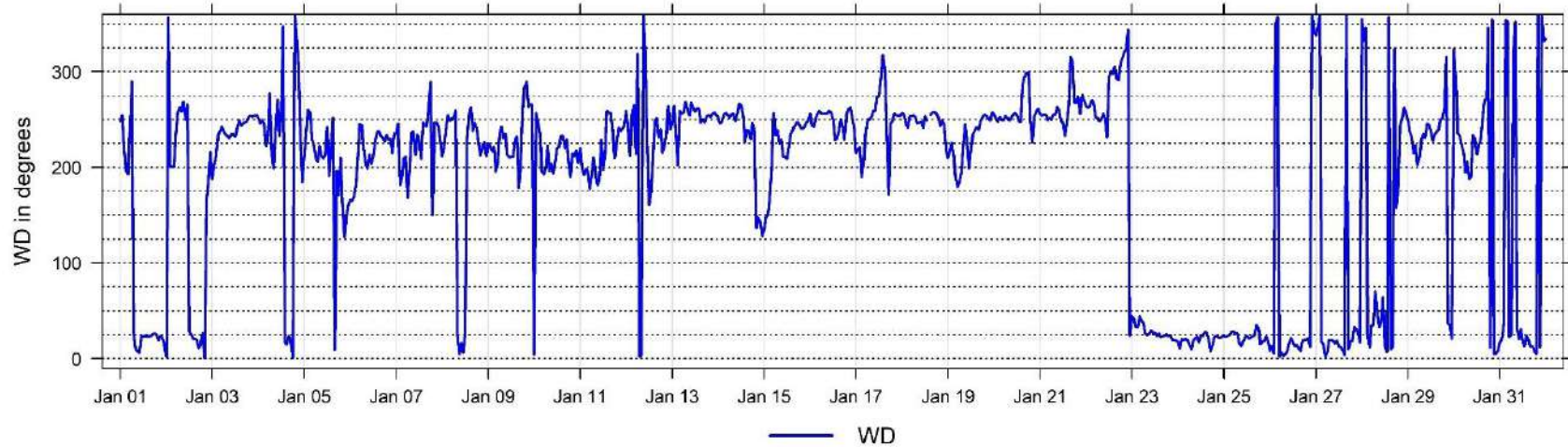
January Hourly Temperature Readings (in °C) at Smoky Heights



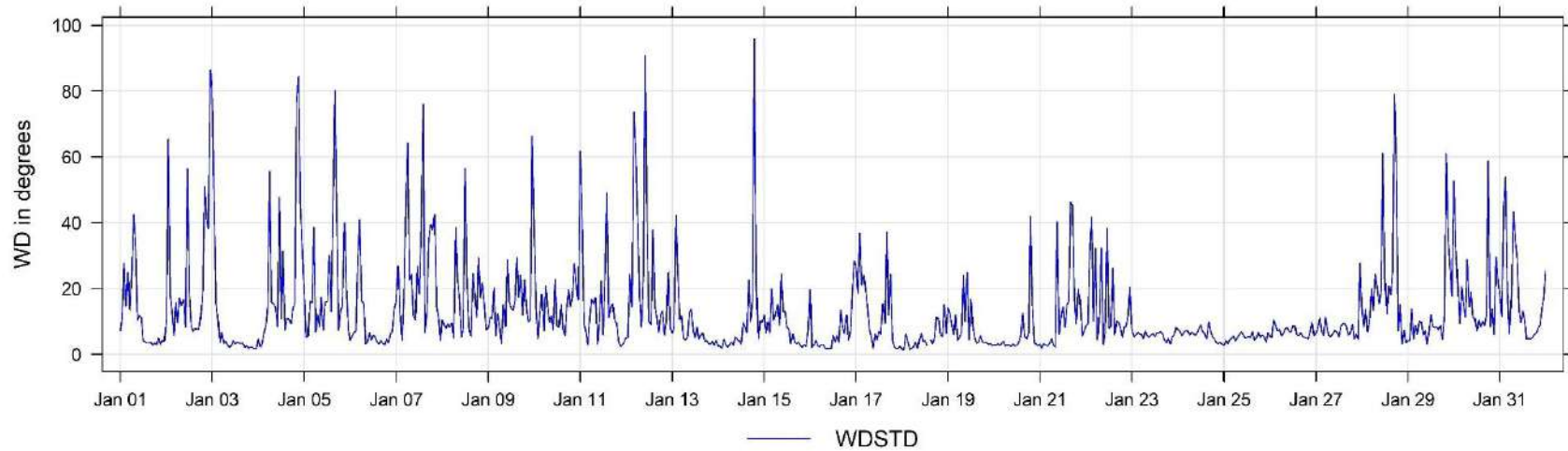
January Hourly Readings of Wind Speed (in km/hr) at Smoky Heights

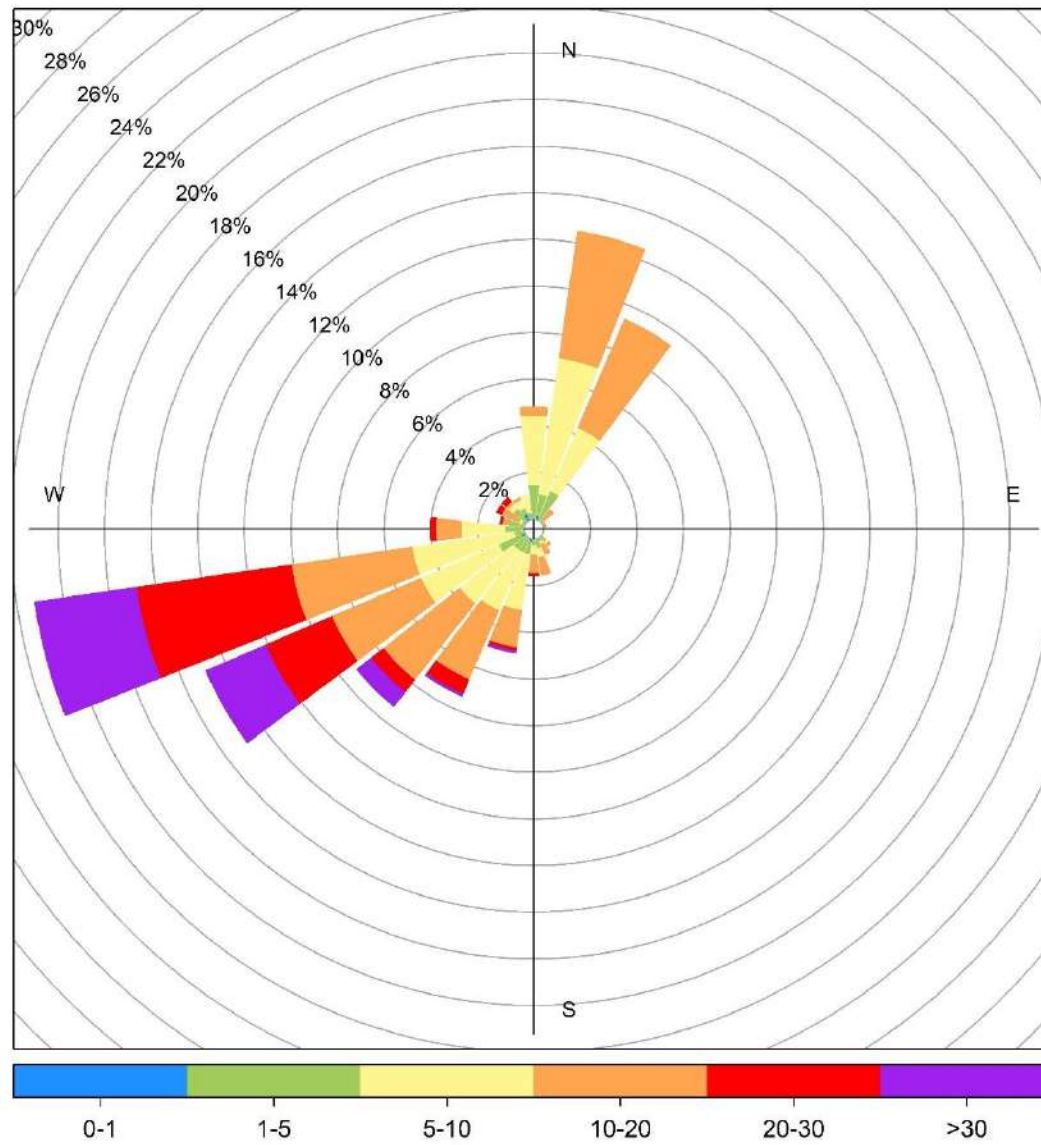


January Hourly Readings of Wind Direction (in degrees) at Smoky Heights



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

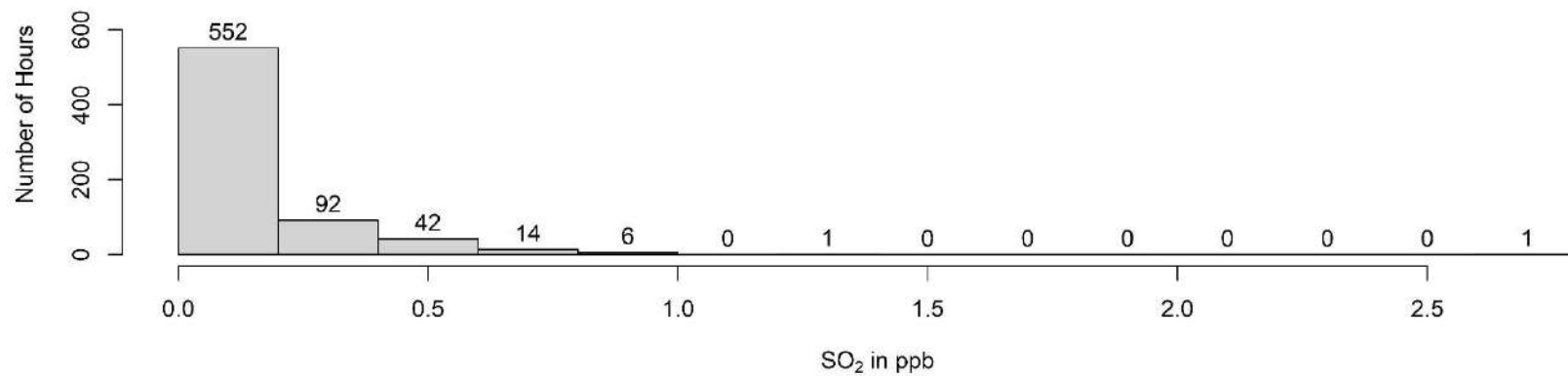
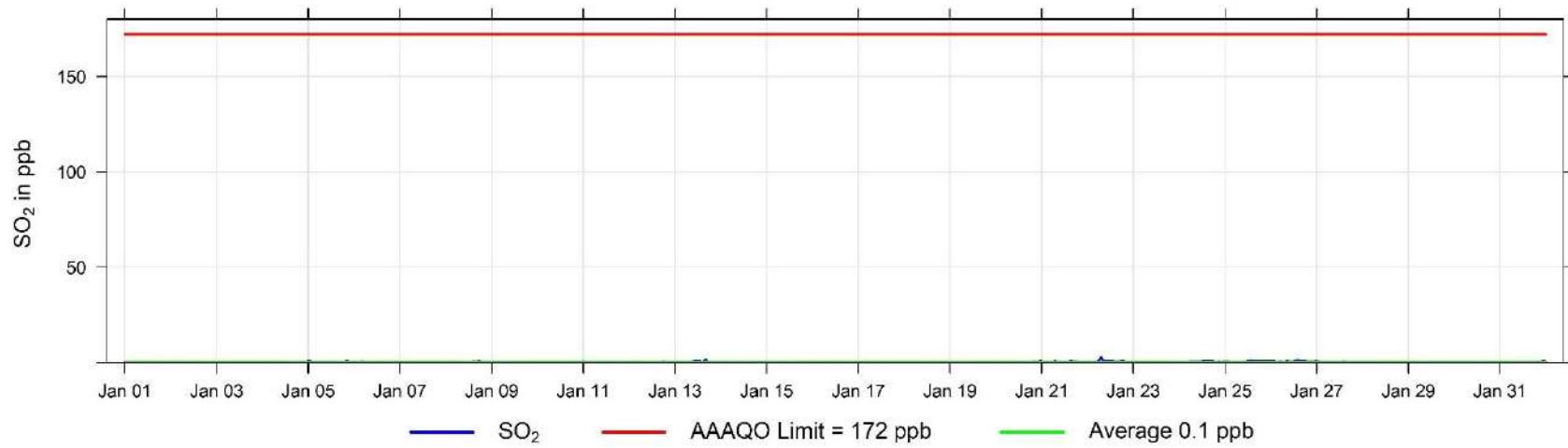




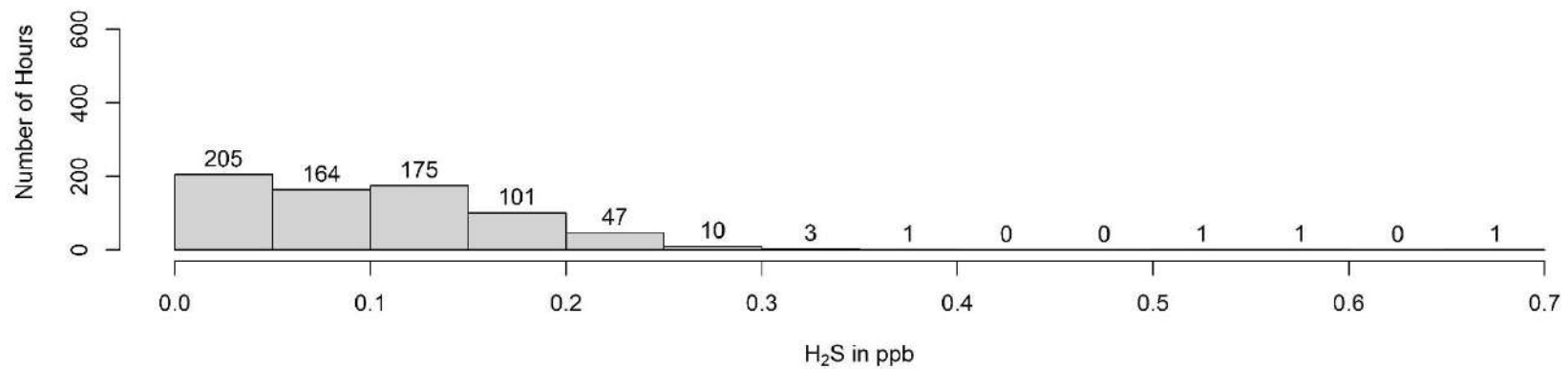
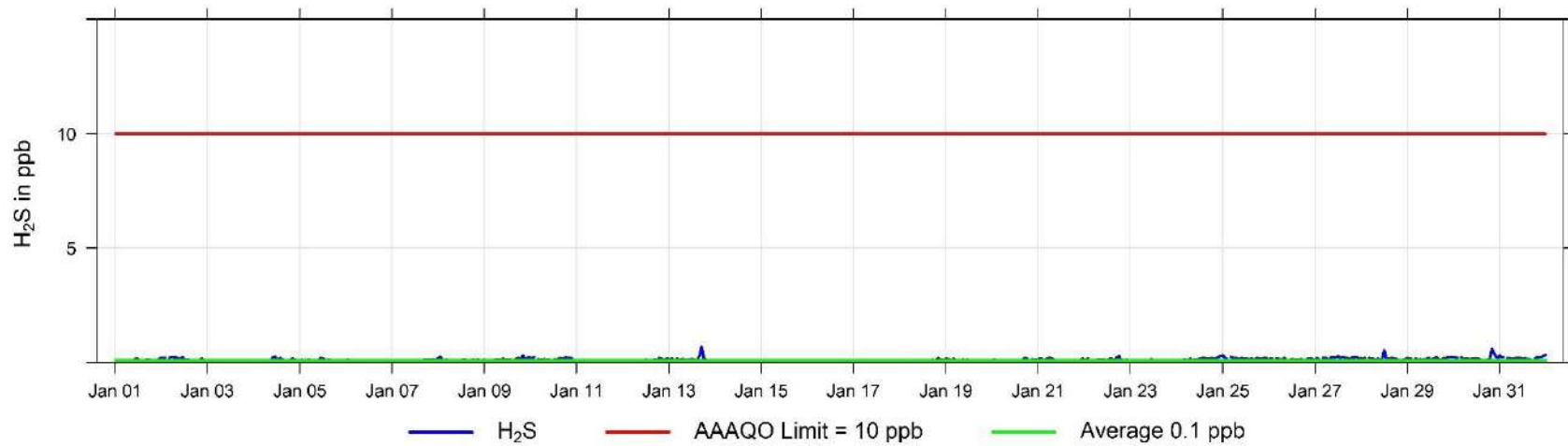
6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

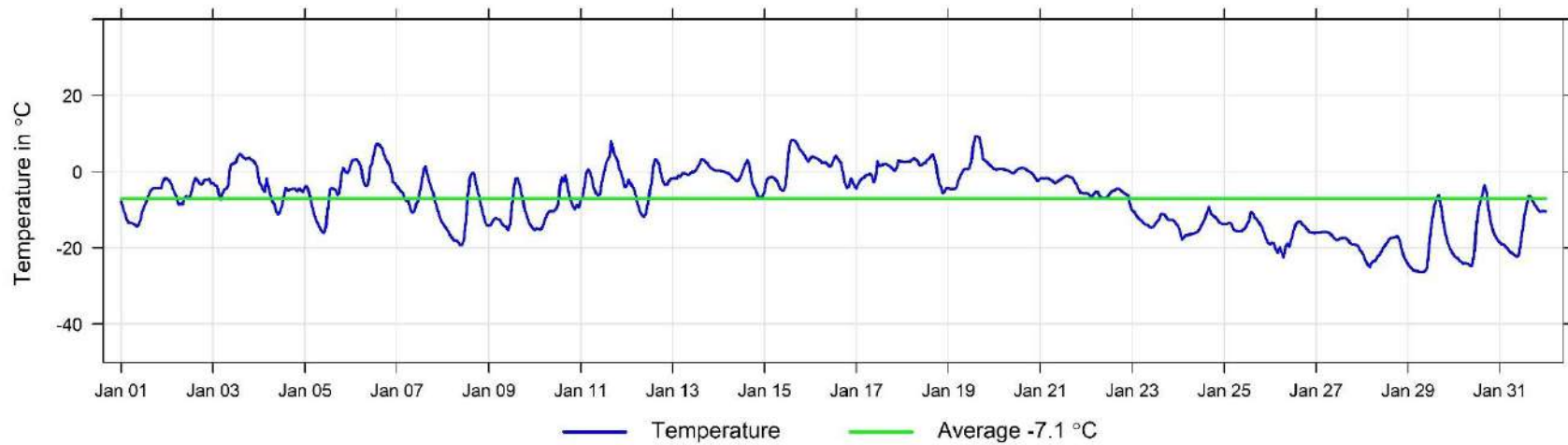
January Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



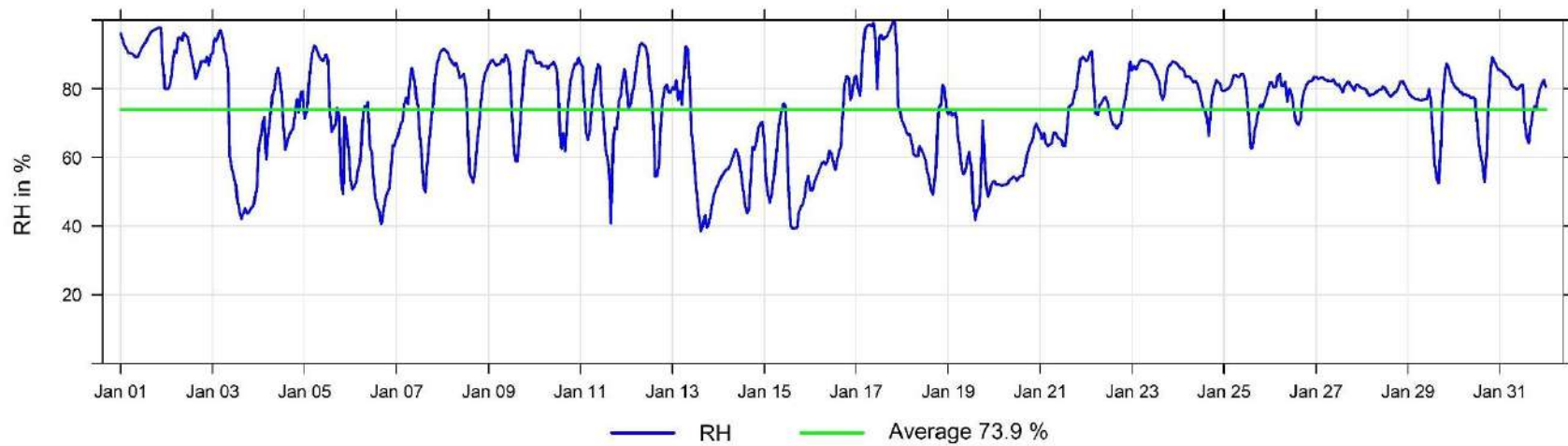
January Hourly Concentration Readings of H₂S (in ppb) at Valleyview



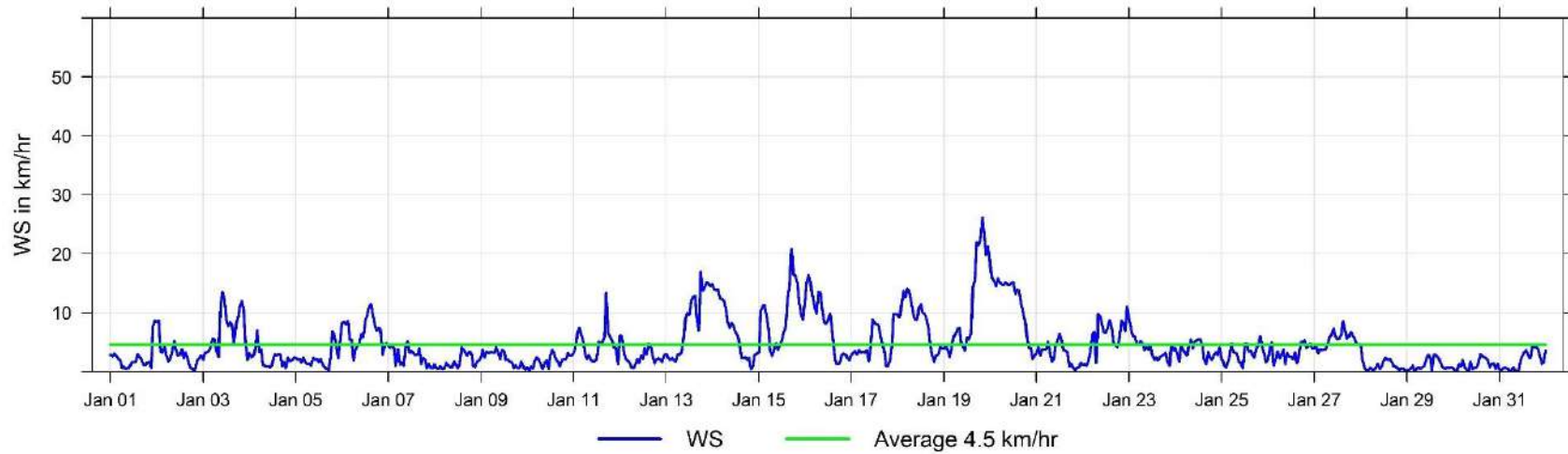
January Hourly Temperature Readings (in °C) at Valleyview



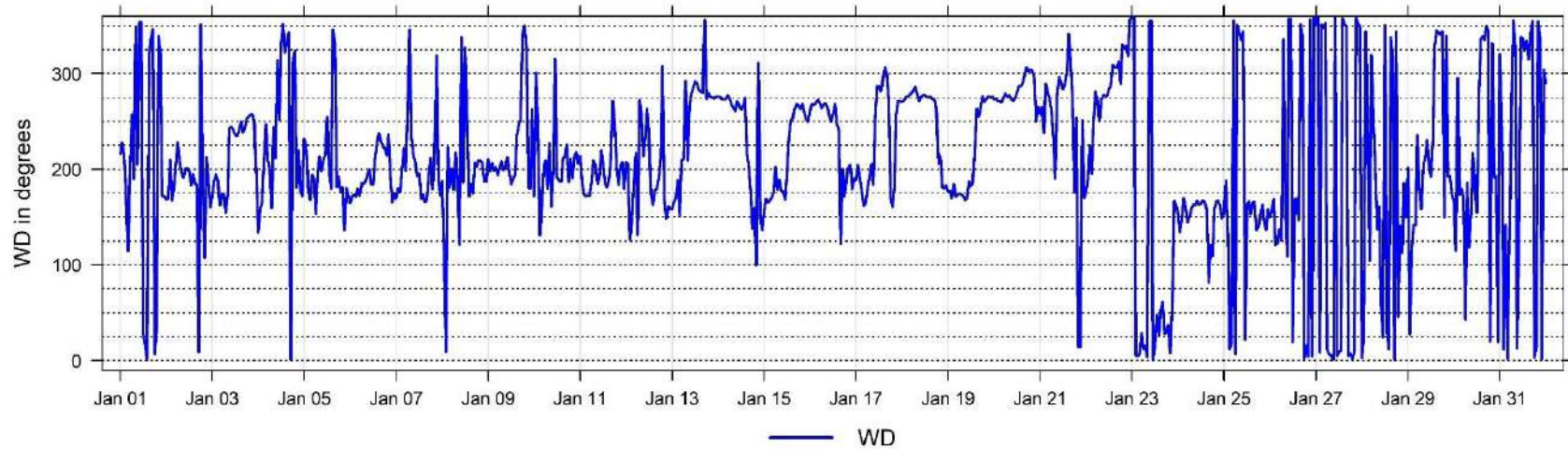
January Hourly Readings of Relative Humidity (in %) at Valleyview



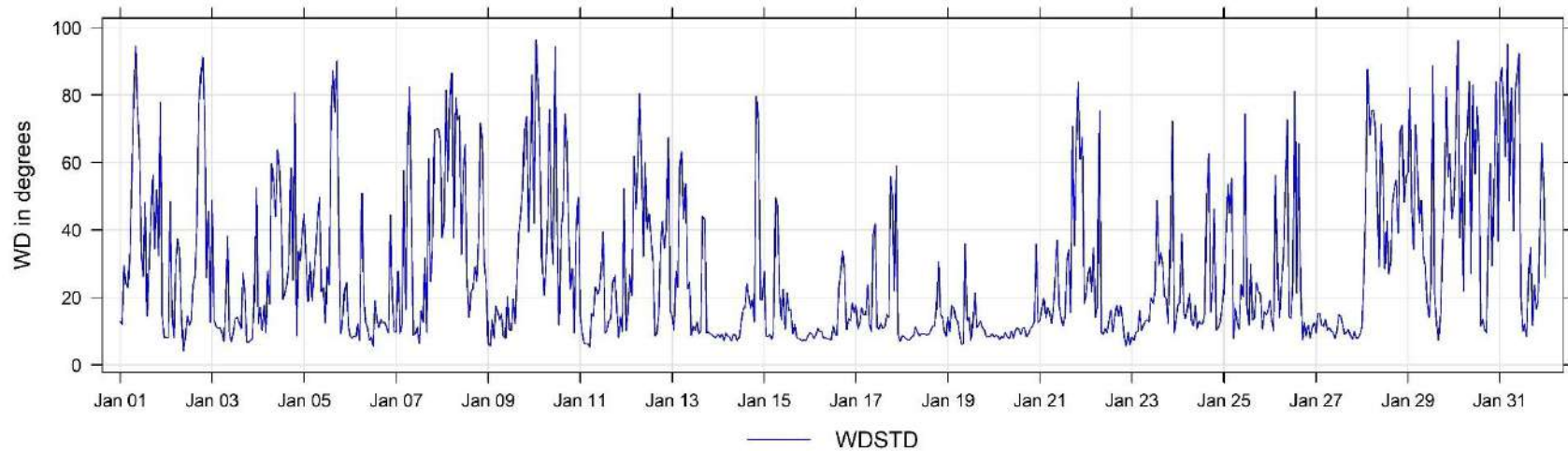
January Hourly Readings of Wind Speed (in km/hr) at Valleyview

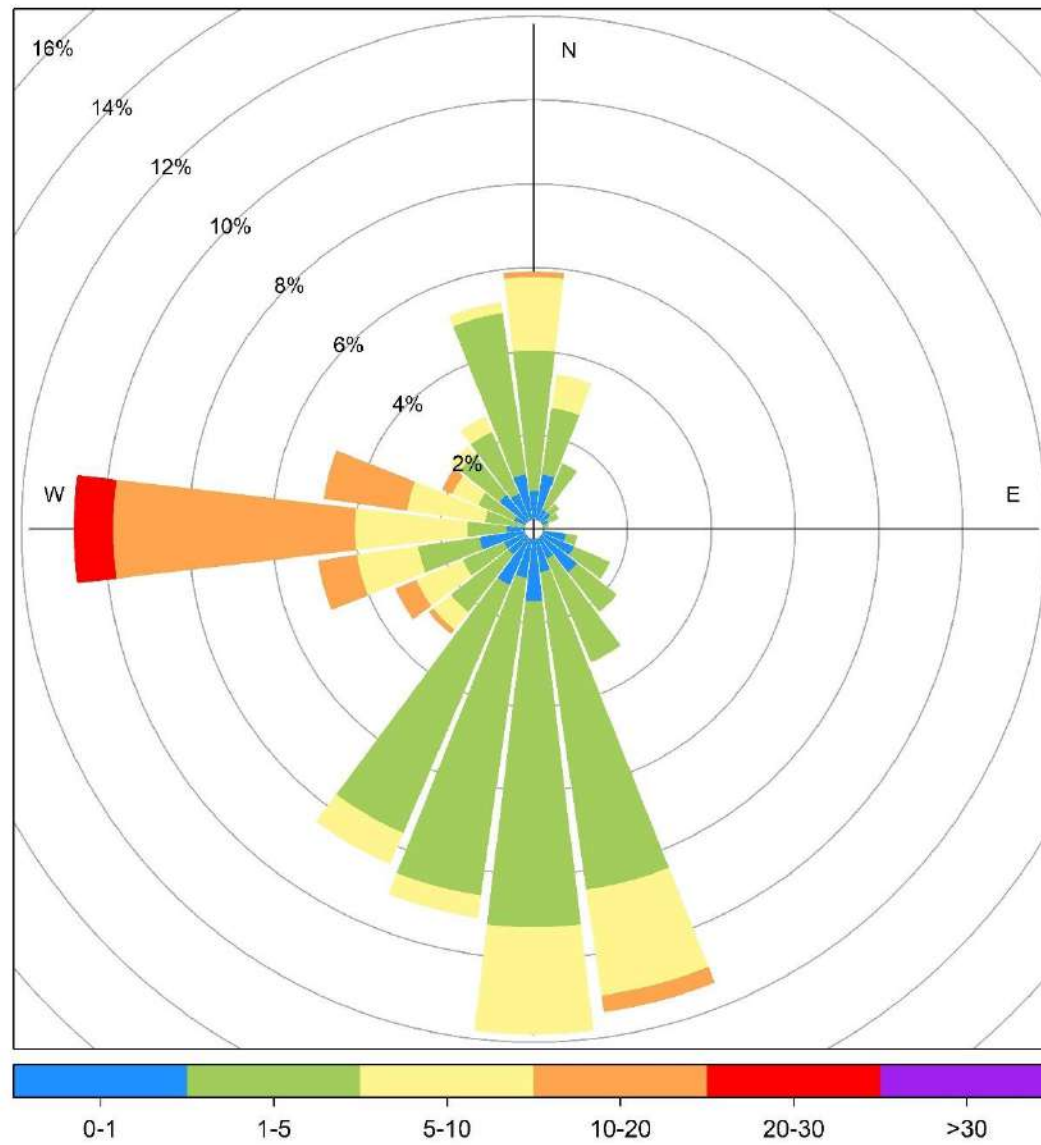


January Hourly Readings of Wind Direction (in degrees) at Valleyview



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



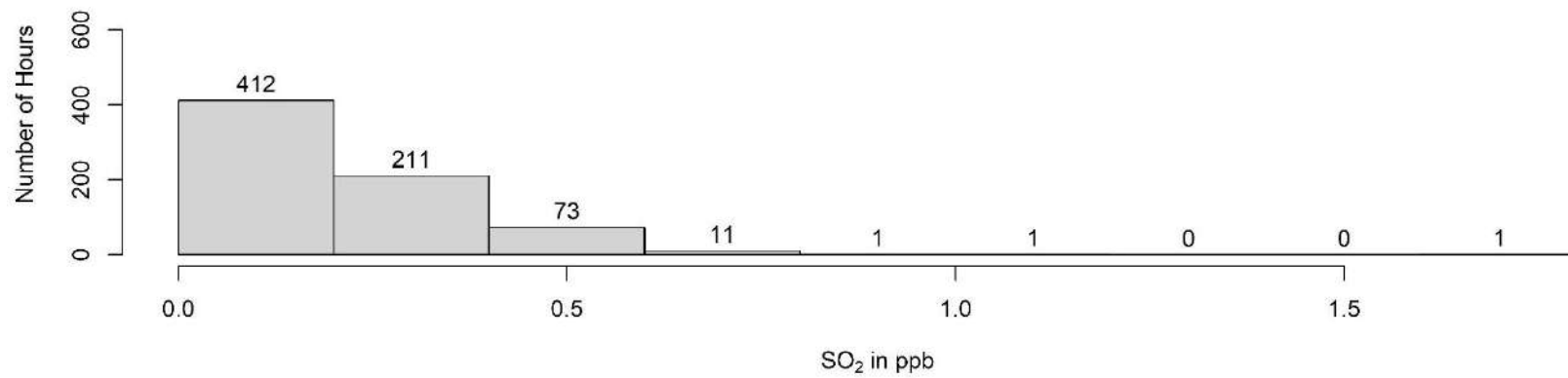
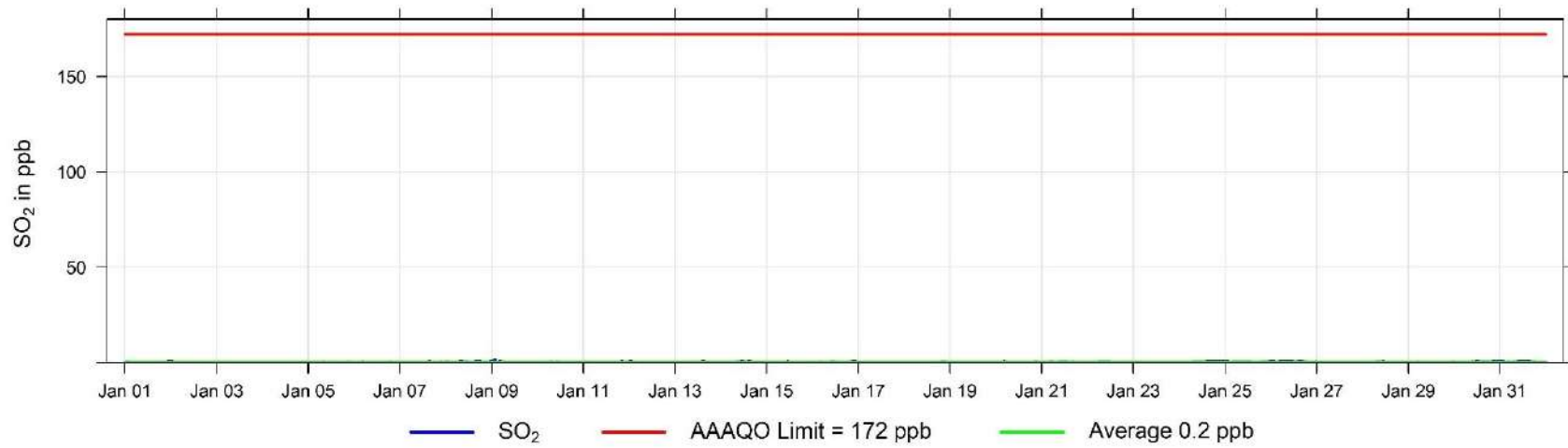


Valleyview January Wind Rose, wind speed in km/hr

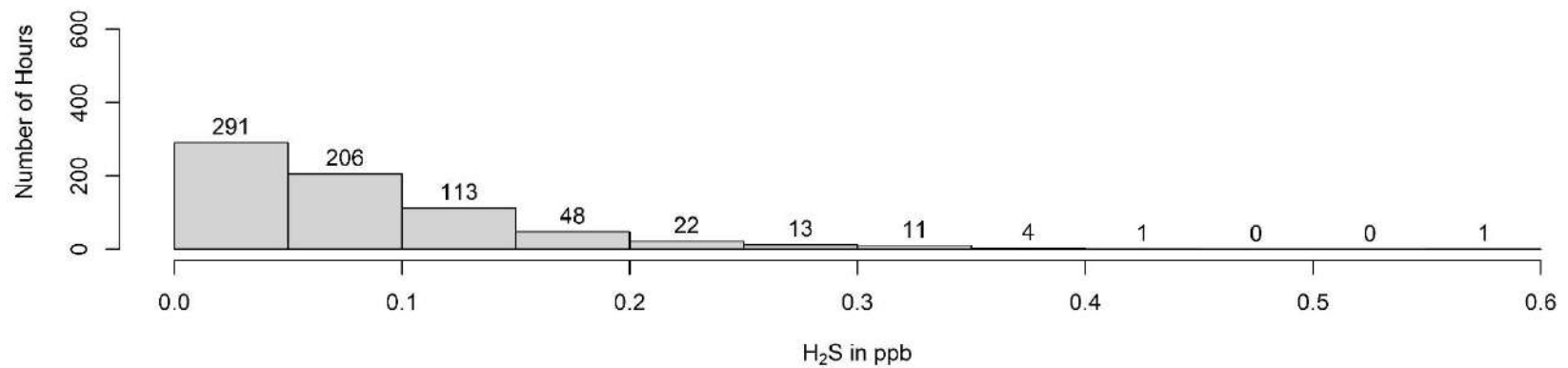
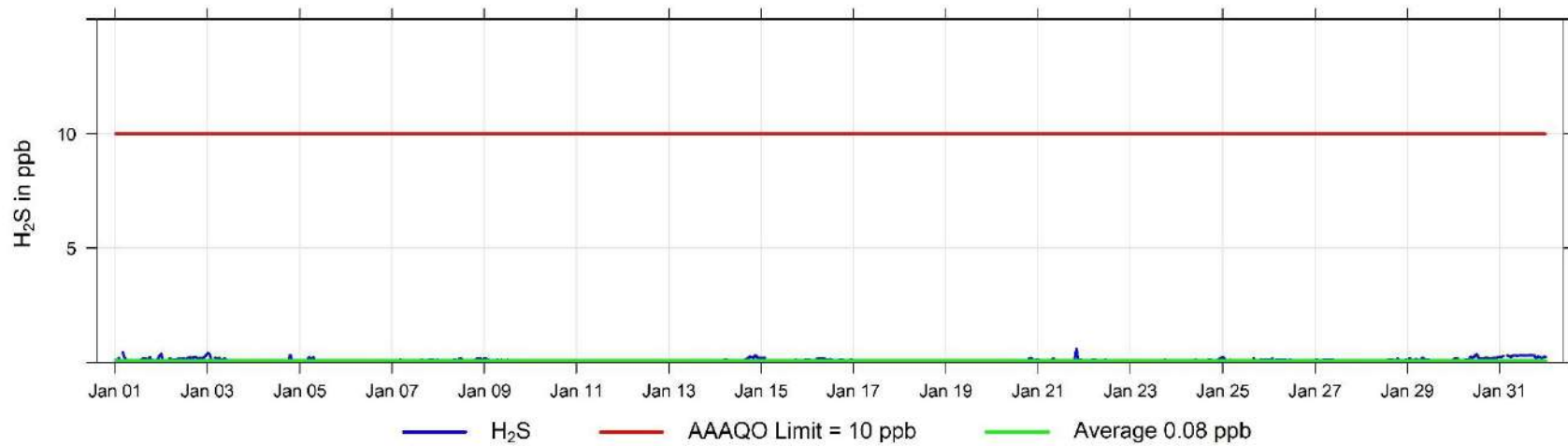
7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

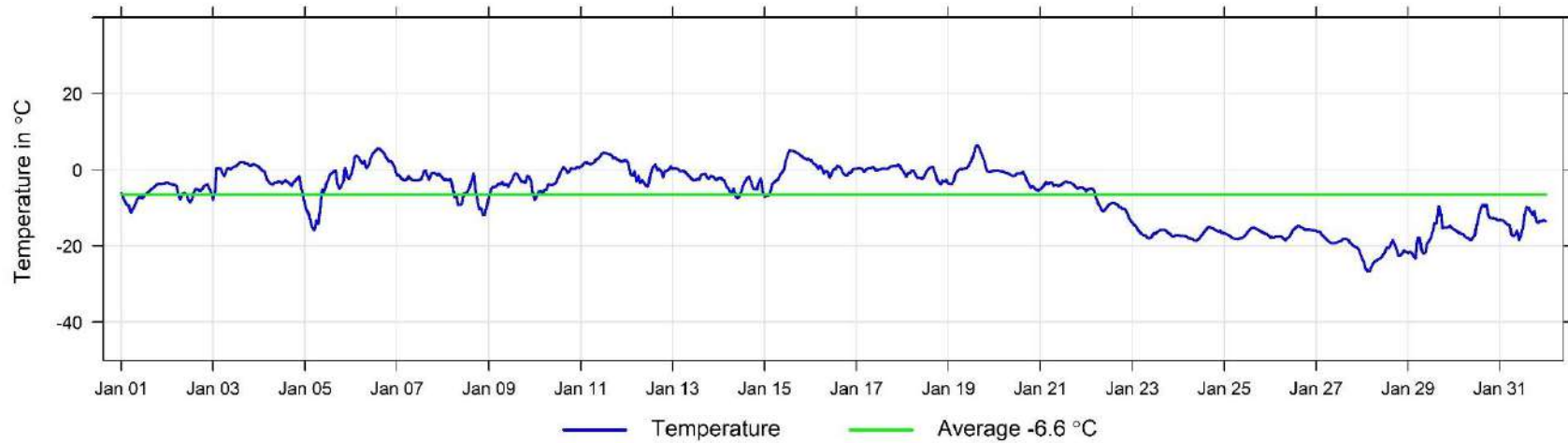
January Hourly Concentration Readings of SO₂ (in ppb) at Donnelly



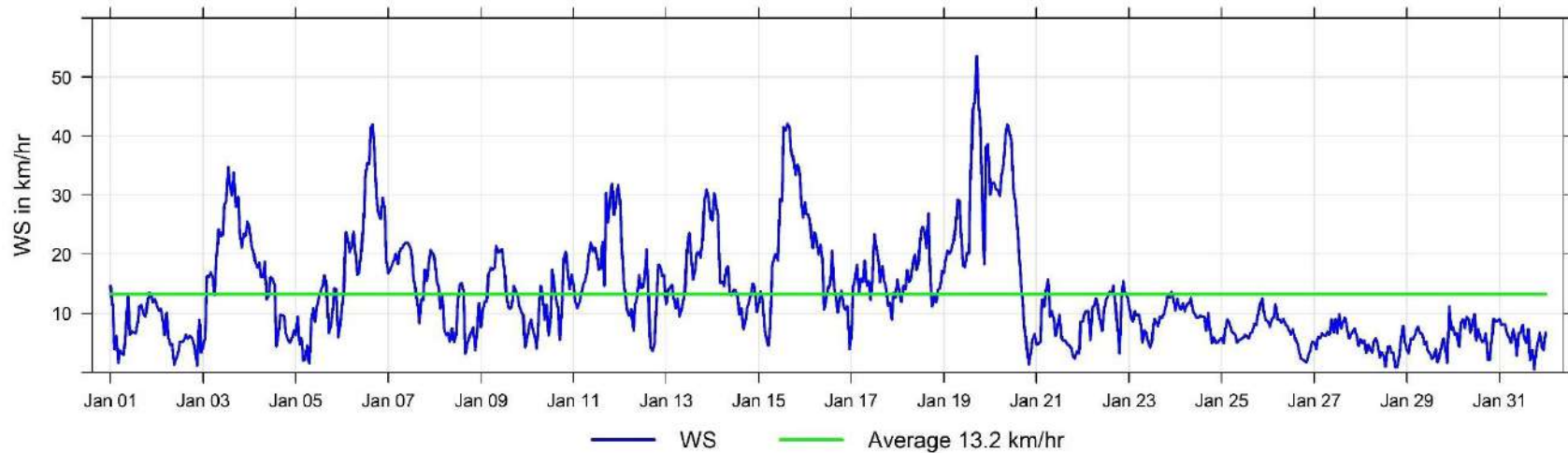
January Hourly Concentration Readings of H₂S (in ppb) at Donnelly



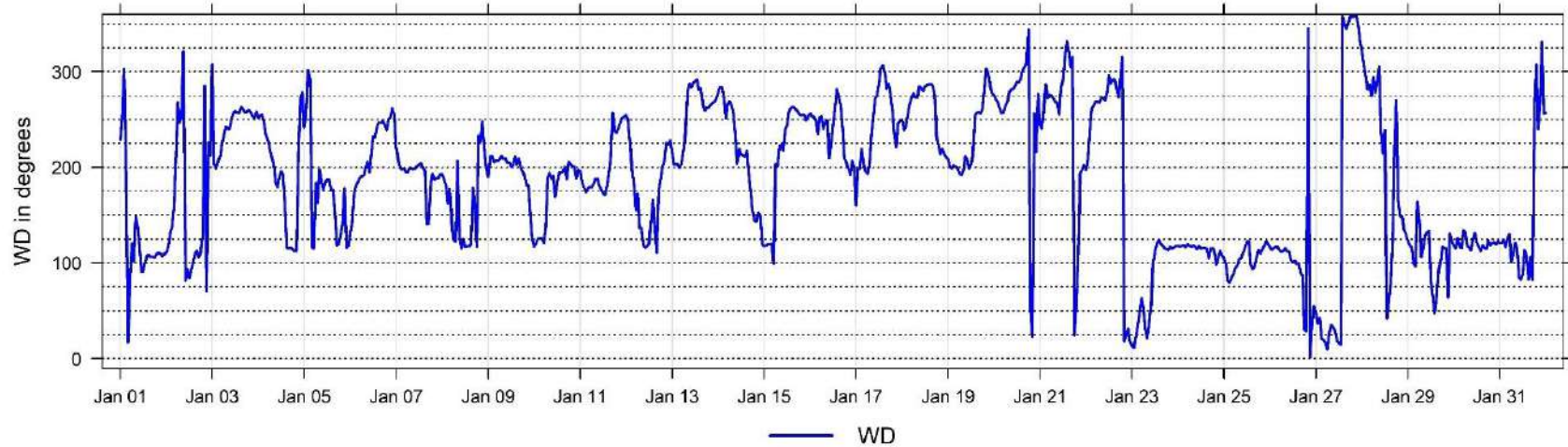
January Hourly Temperature Readings (in °C) at Donnelly



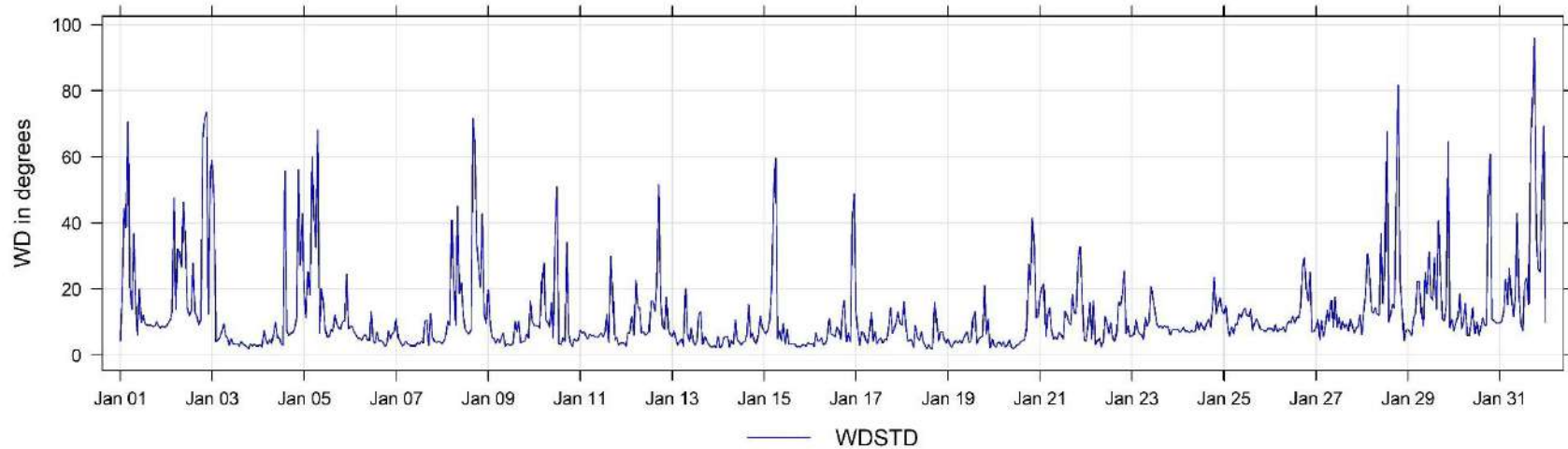
January Hourly Readings of Wind Speed (in km/hr) at Donnelly

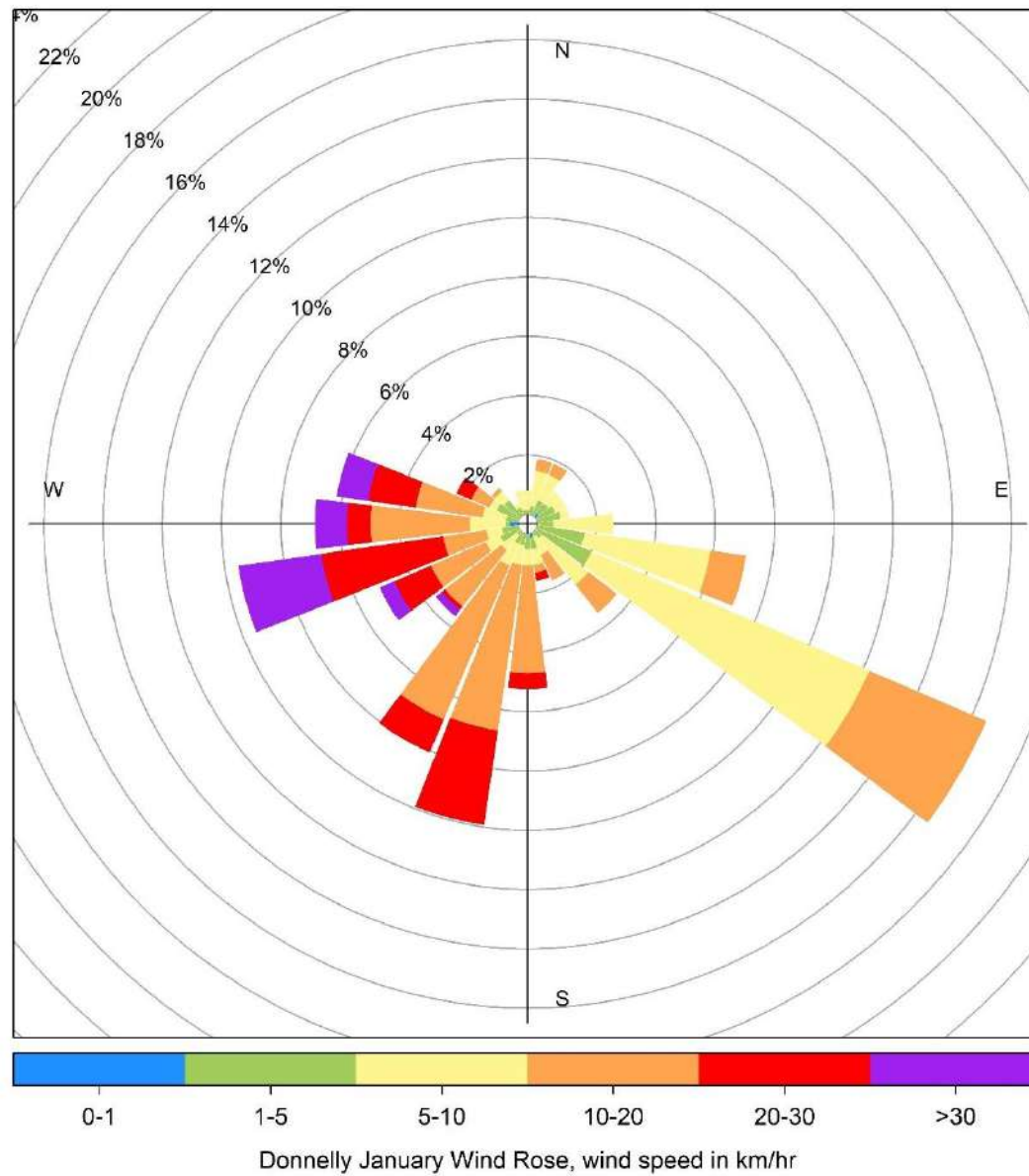


January Hourly Readings of Wind Direction (in degrees) at Donnelly



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

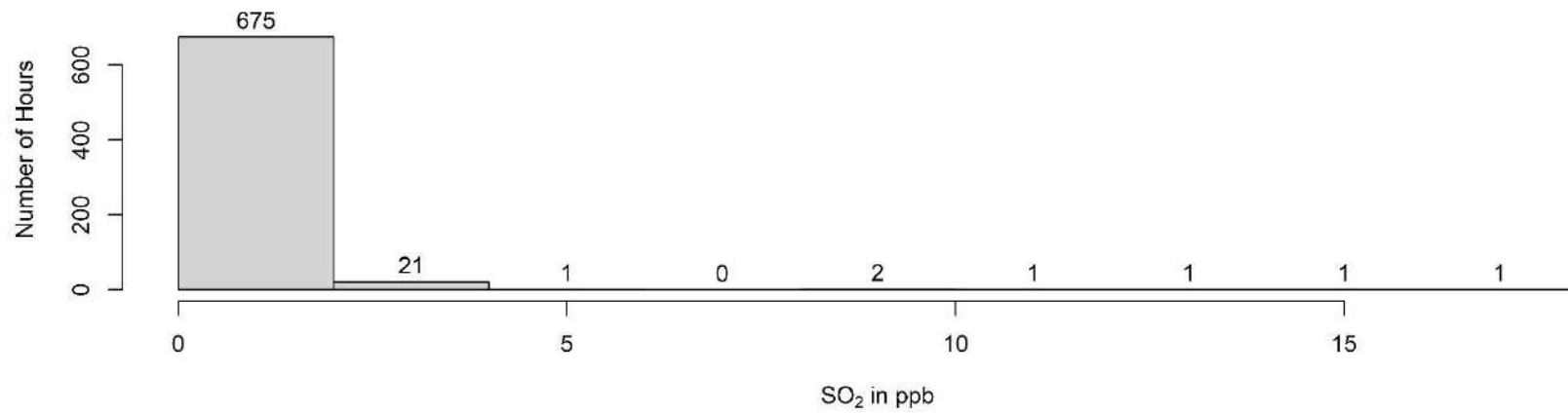
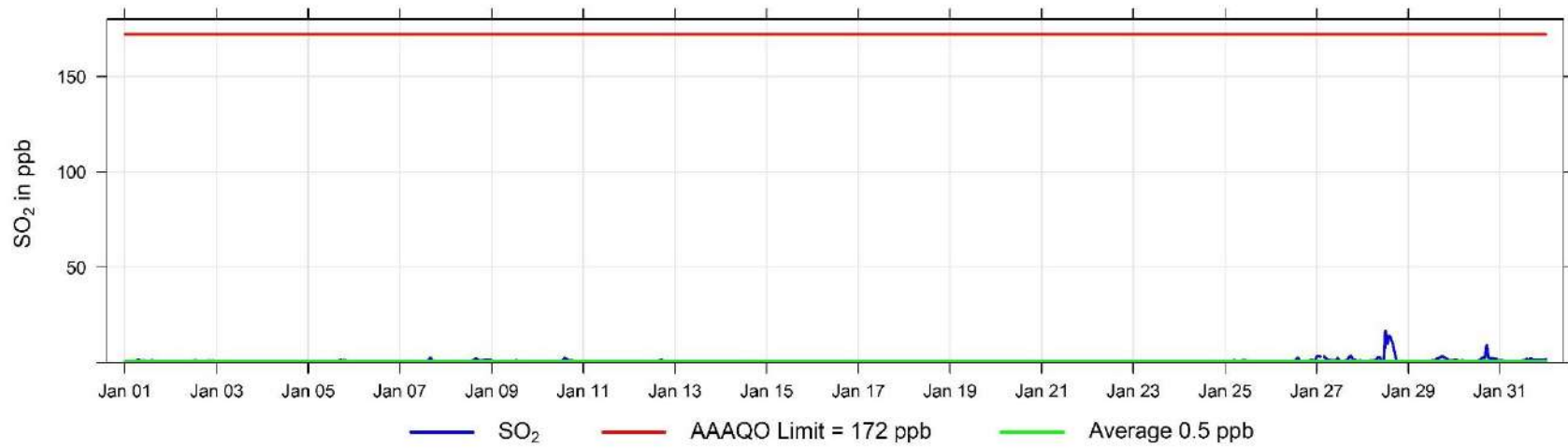




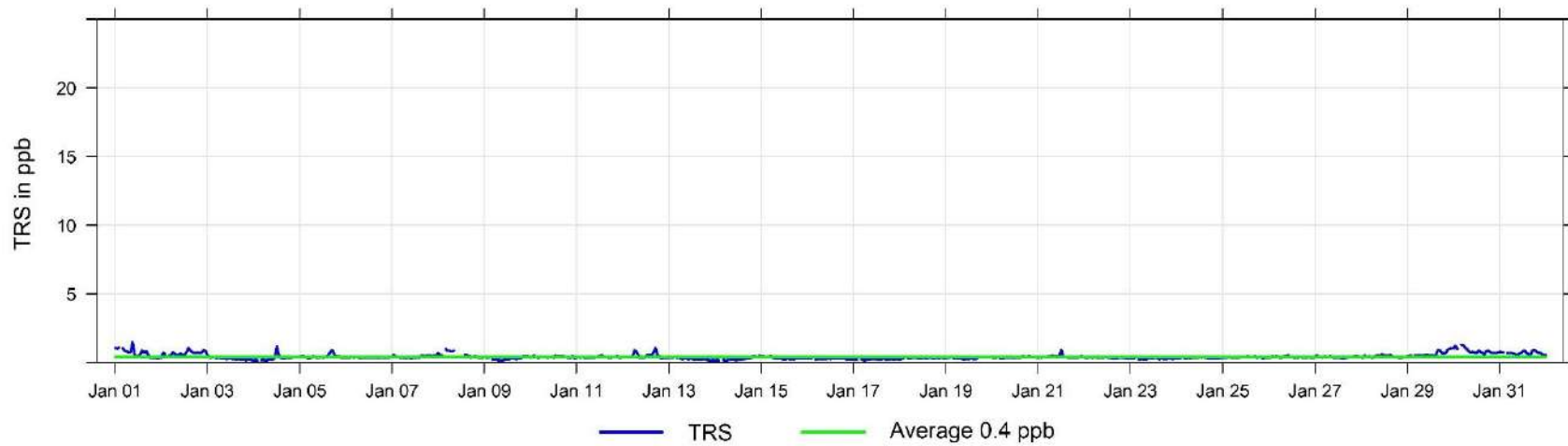
8 Wembley (Portable) Charts

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

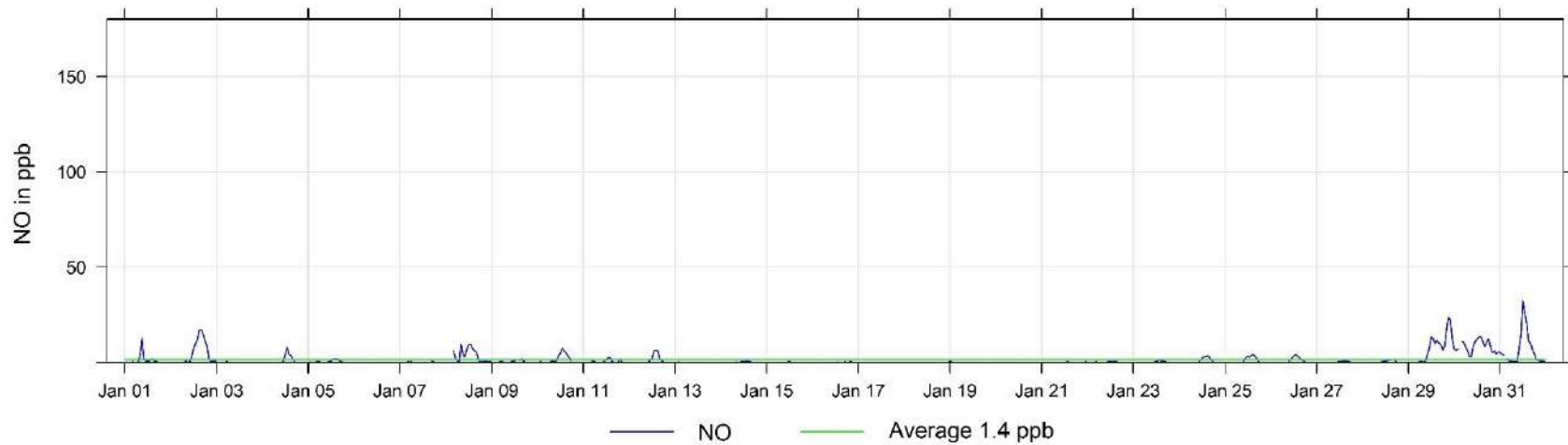
January Hourly Concentration Readings of SO₂ (in ppb) at Wembley



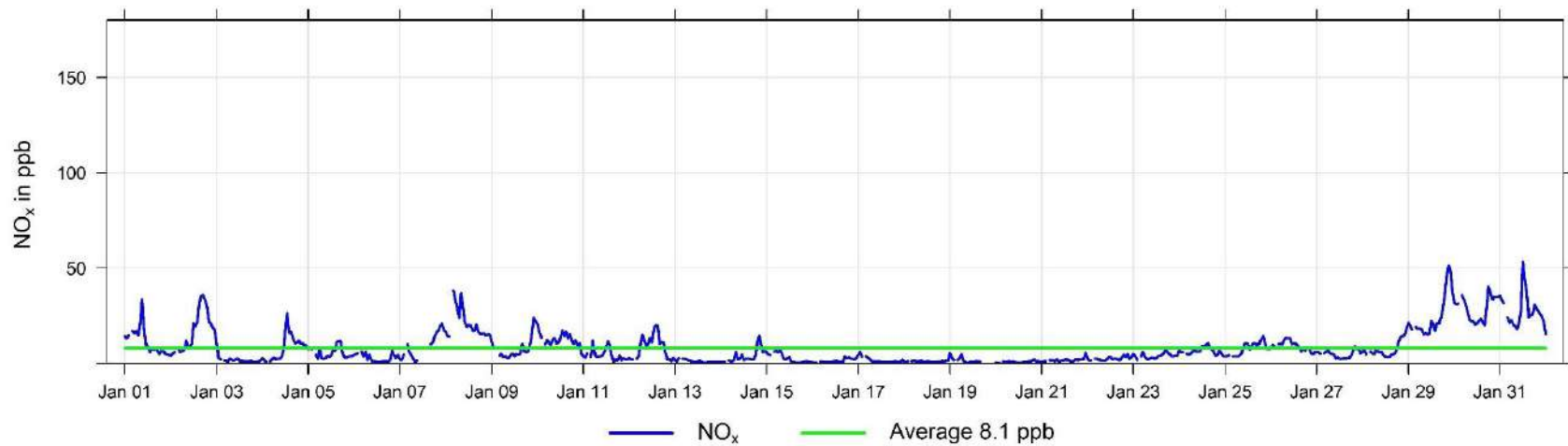
January Hourly Concentration Readings of TRS (in ppb) at Wembley



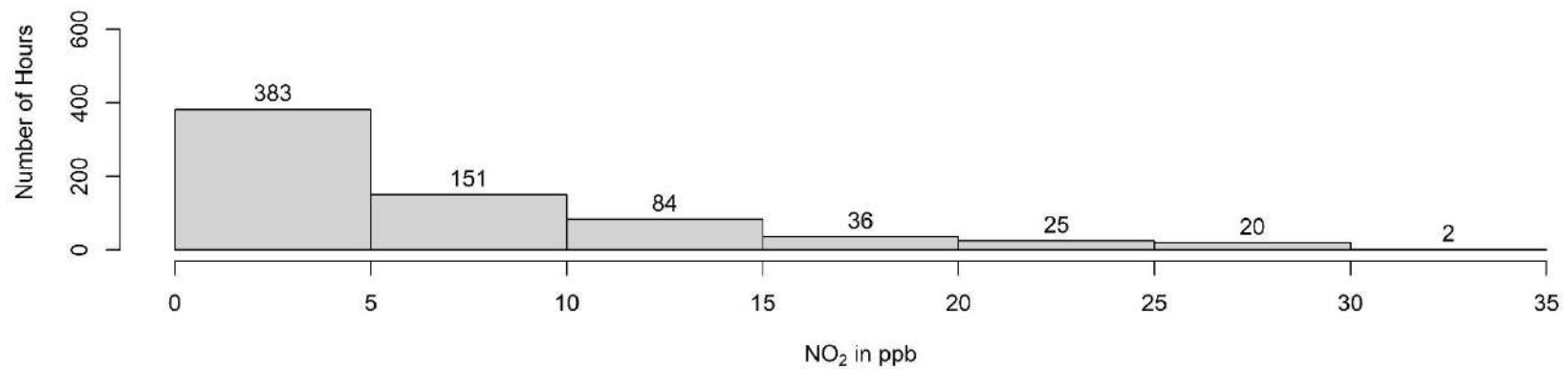
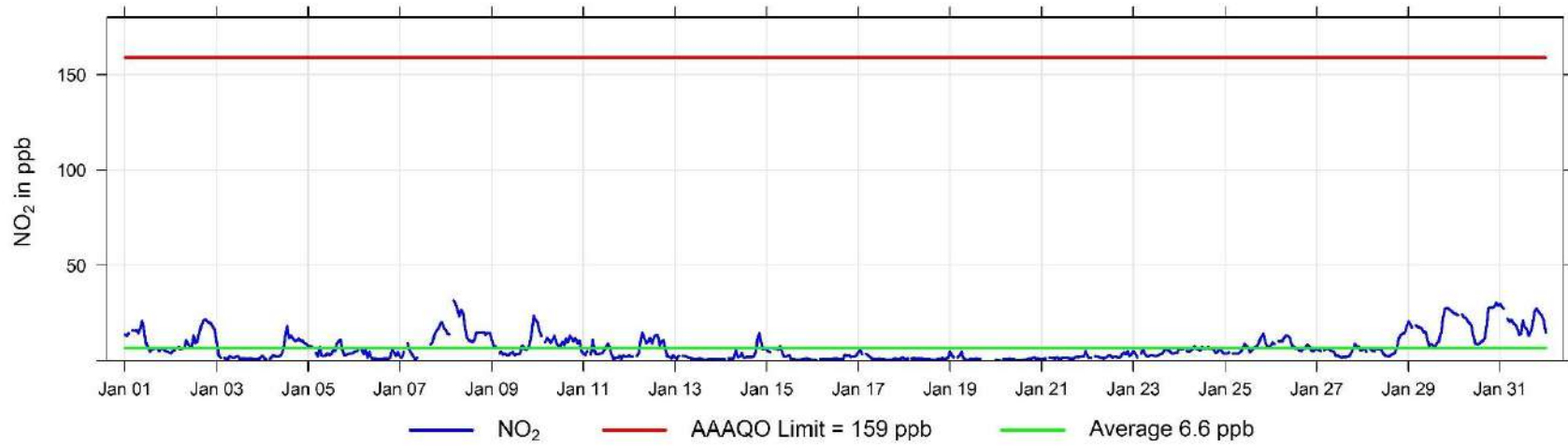
January Hourly Concentration Readings of NO (in ppb) at Wembley



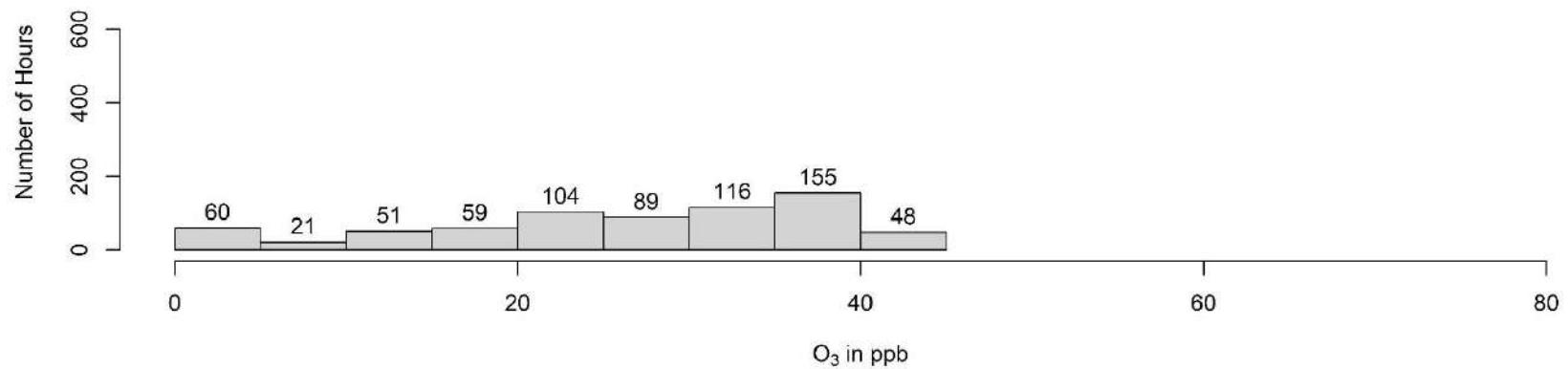
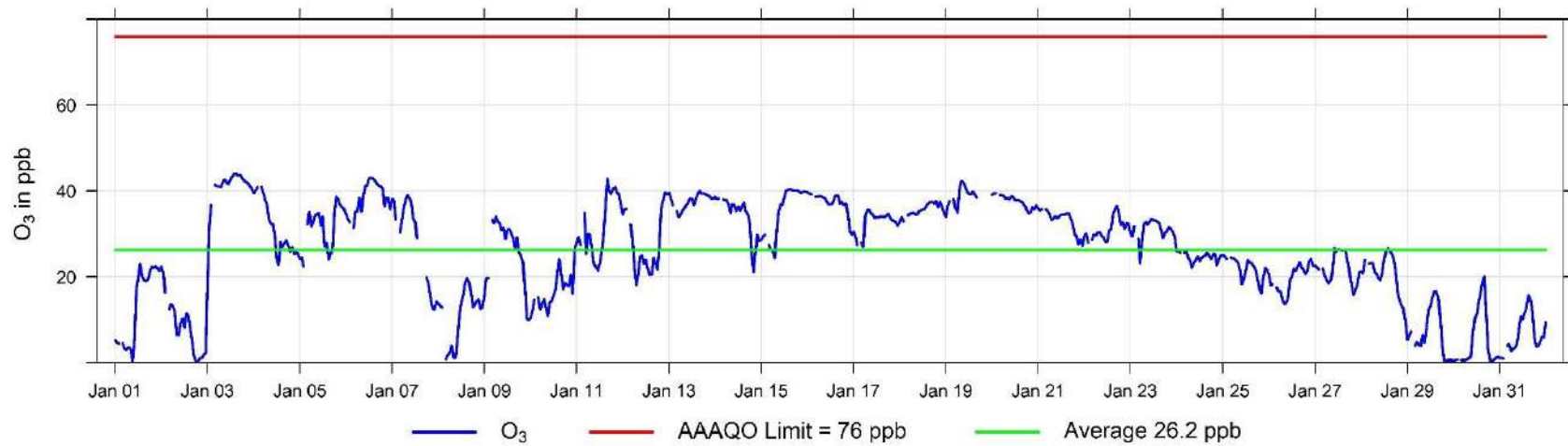
January Hourly Concentration Readings of NO_x (in ppb) at Wembley



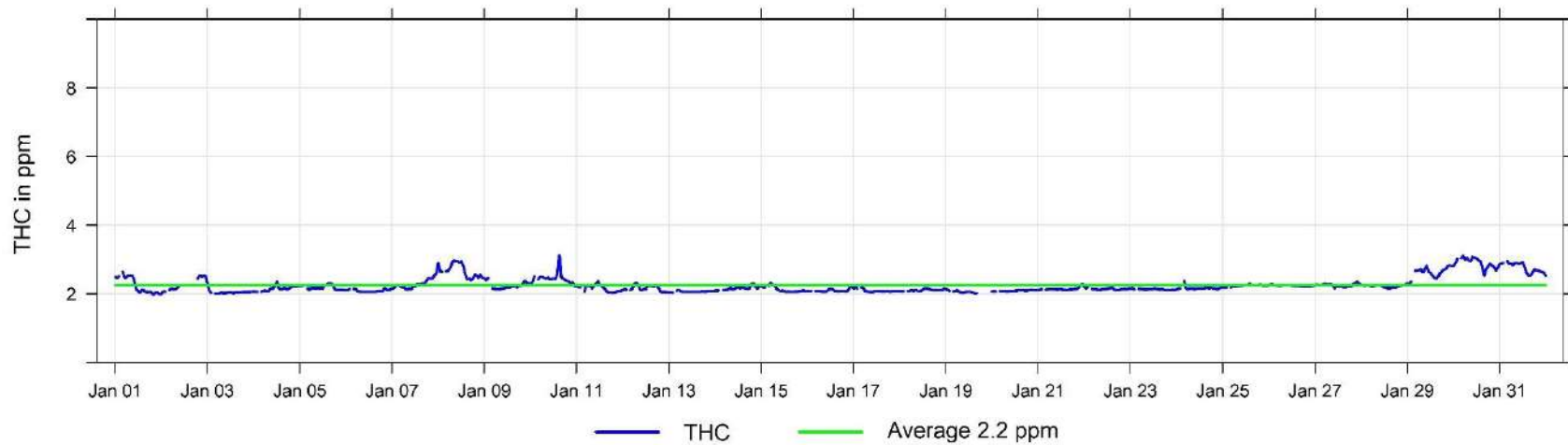
January Hourly Concentration Readings of NO₂ (in ppb) at Wembley



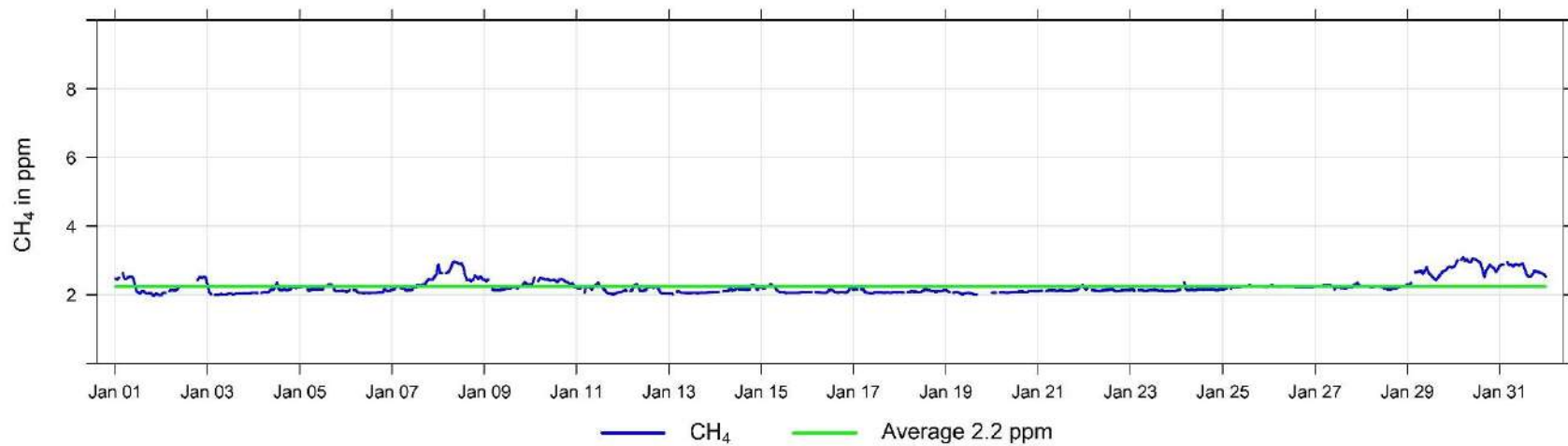
January Hourly Concentration Readings of O₃ (in ppb) at Wembley



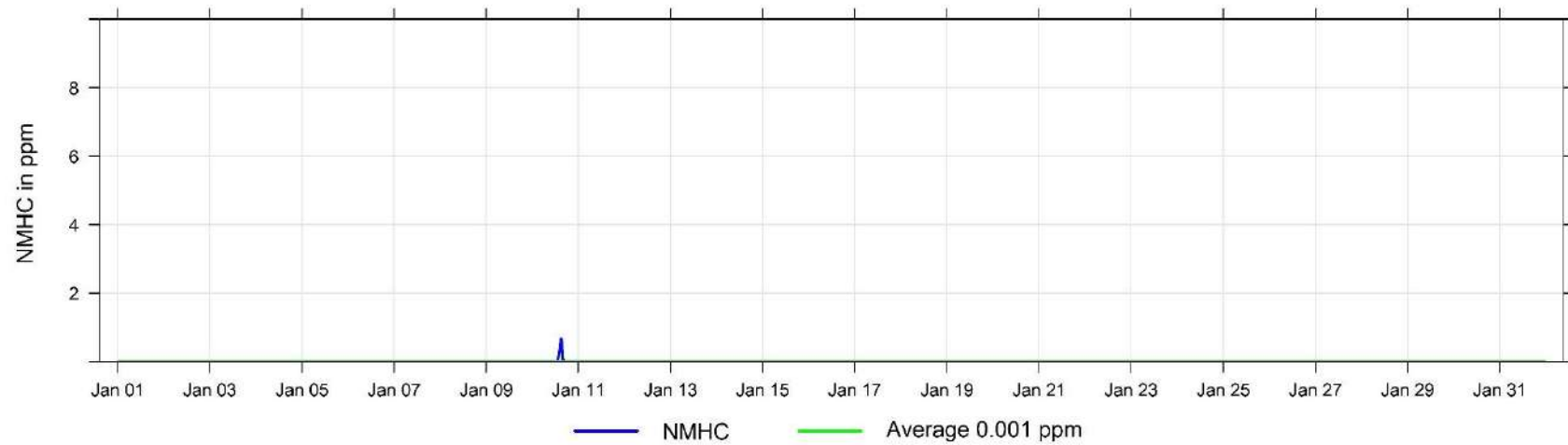
January Hourly Concentration Readings of THC (in ppm) at Wembley



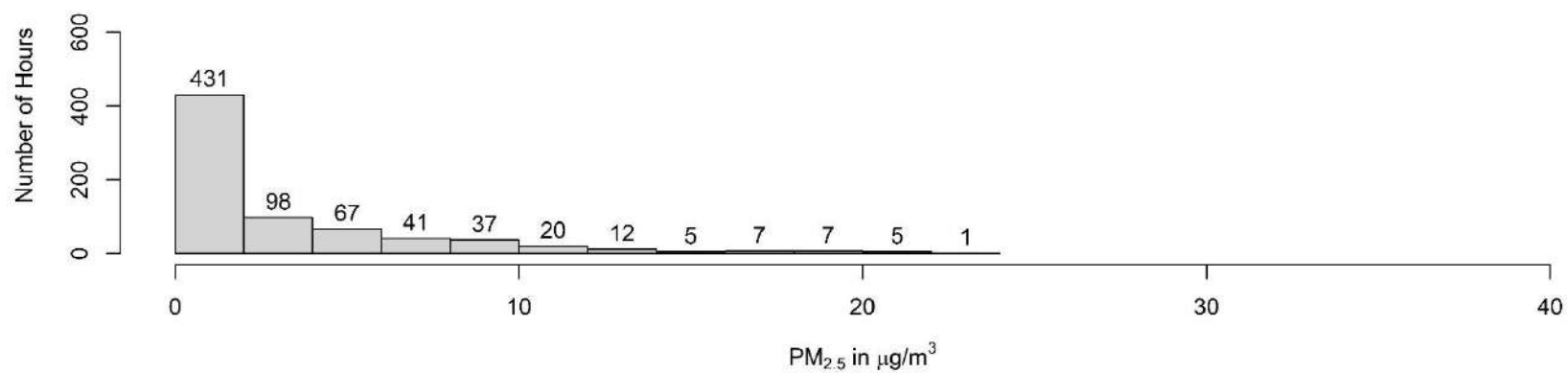
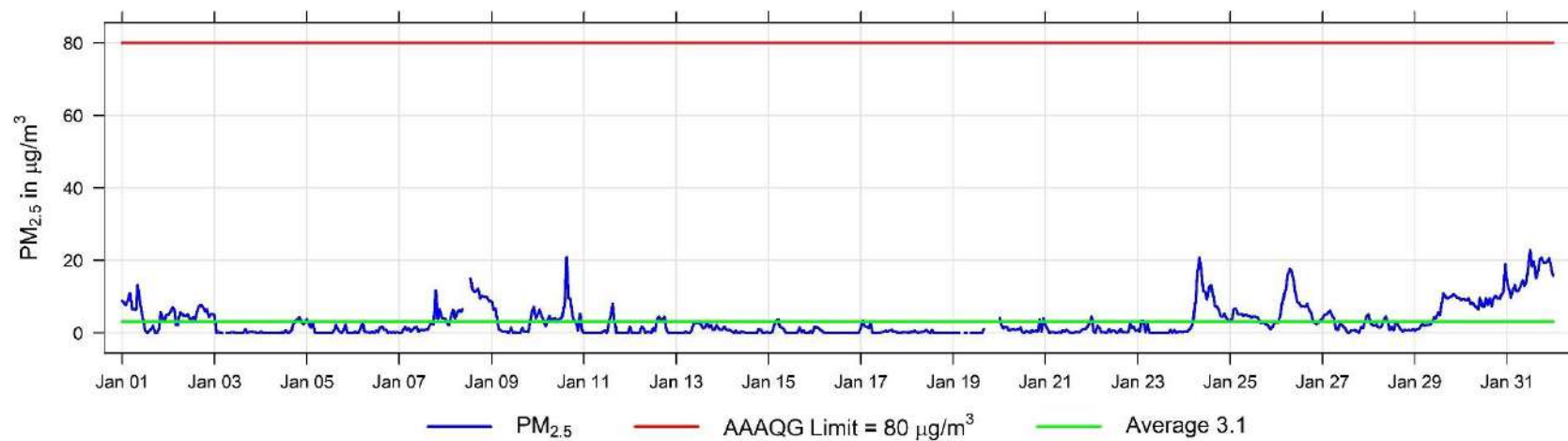
January Hourly Concentration Readings of CH₄ (in ppm) at Wembley



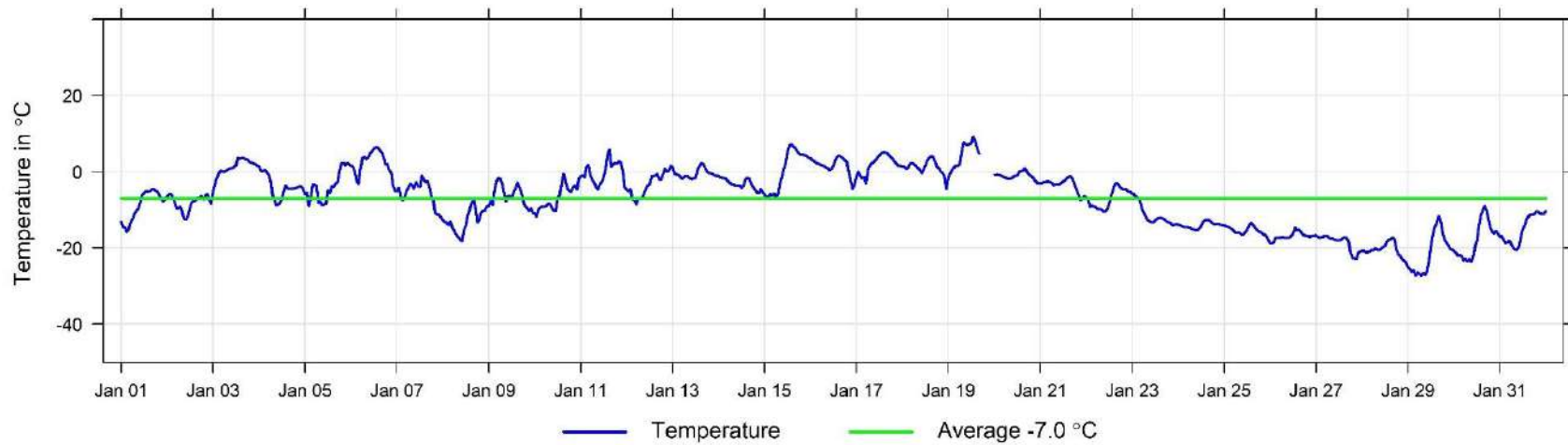
January Hourly Concentration Readings of NMHC (in ppm) at Wembley



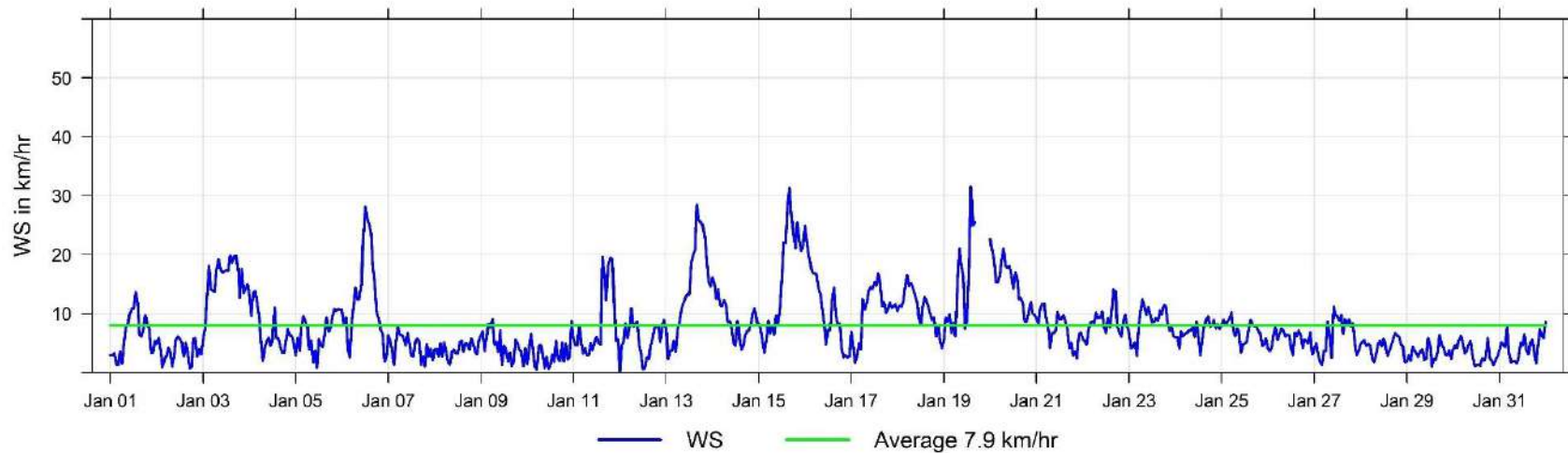
January Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Wembley



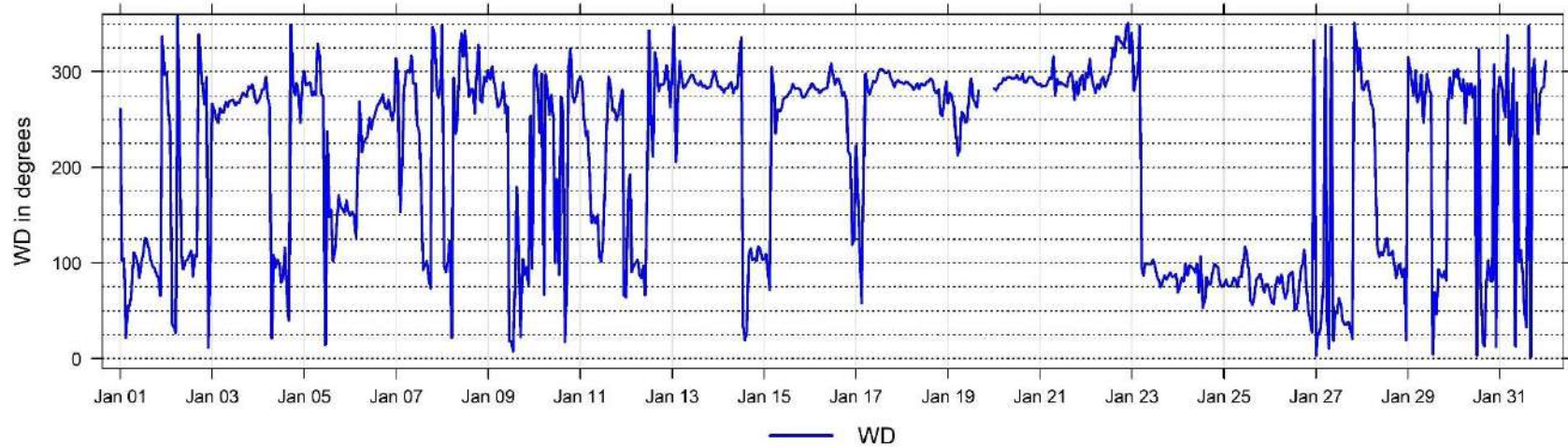
January Hourly Temperature Readings (in °C) at Wembley



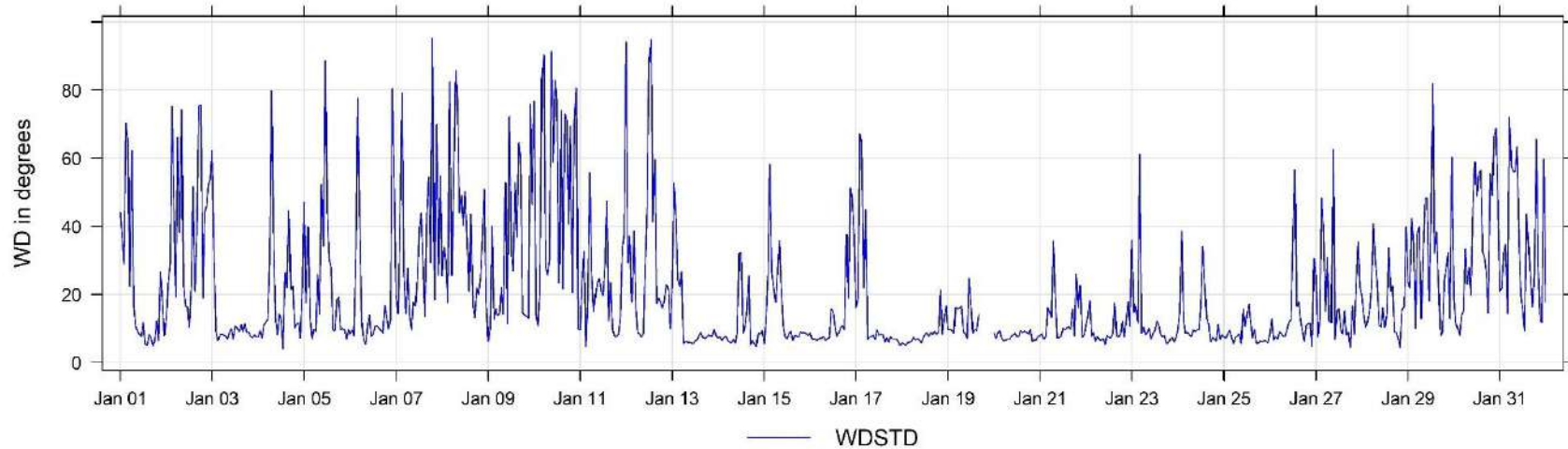
January Hourly Readings of Wind Speed (in km/hr) at Wembley



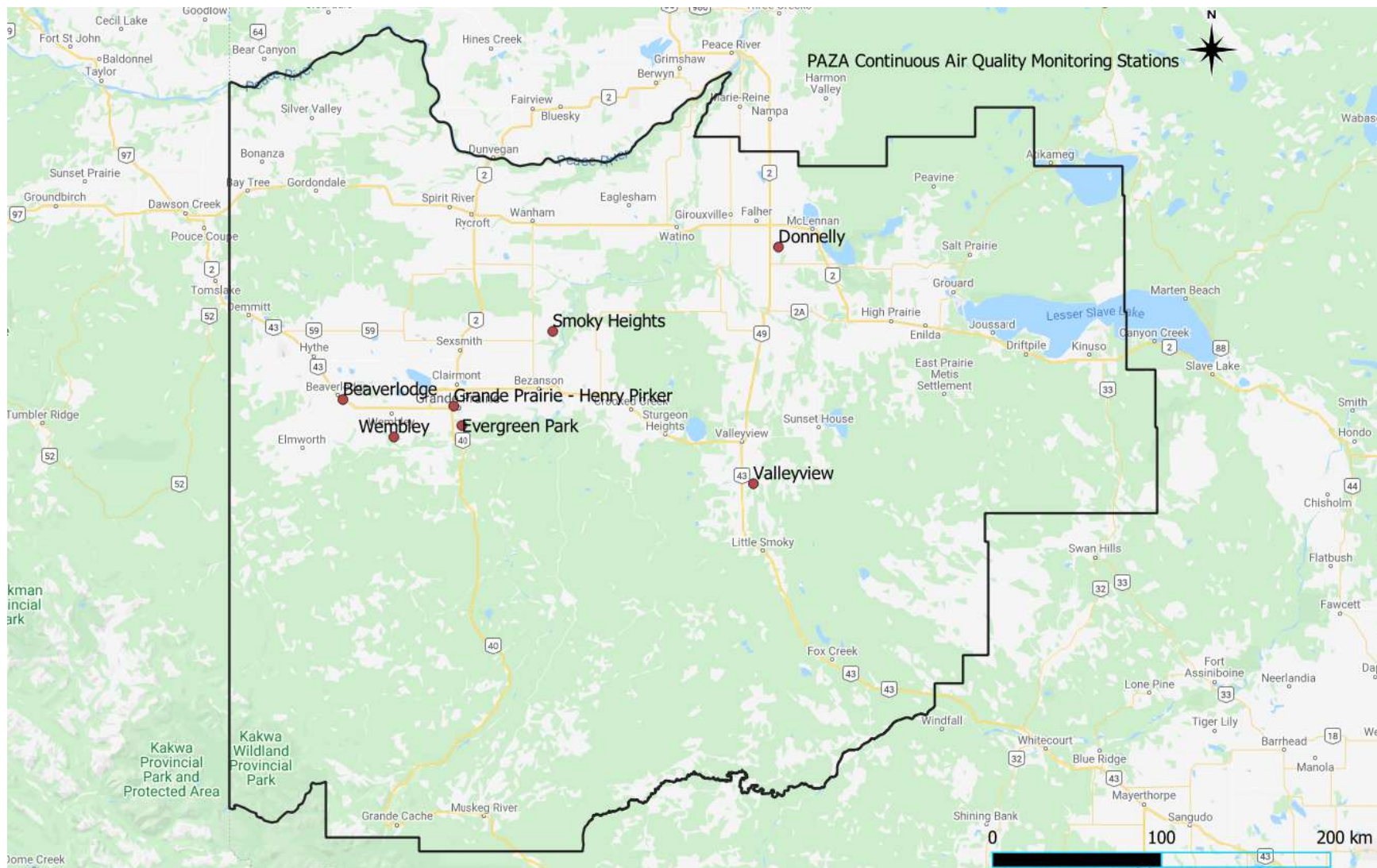
January Hourly Readings of Wind Direction (in degrees) at Wembley



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

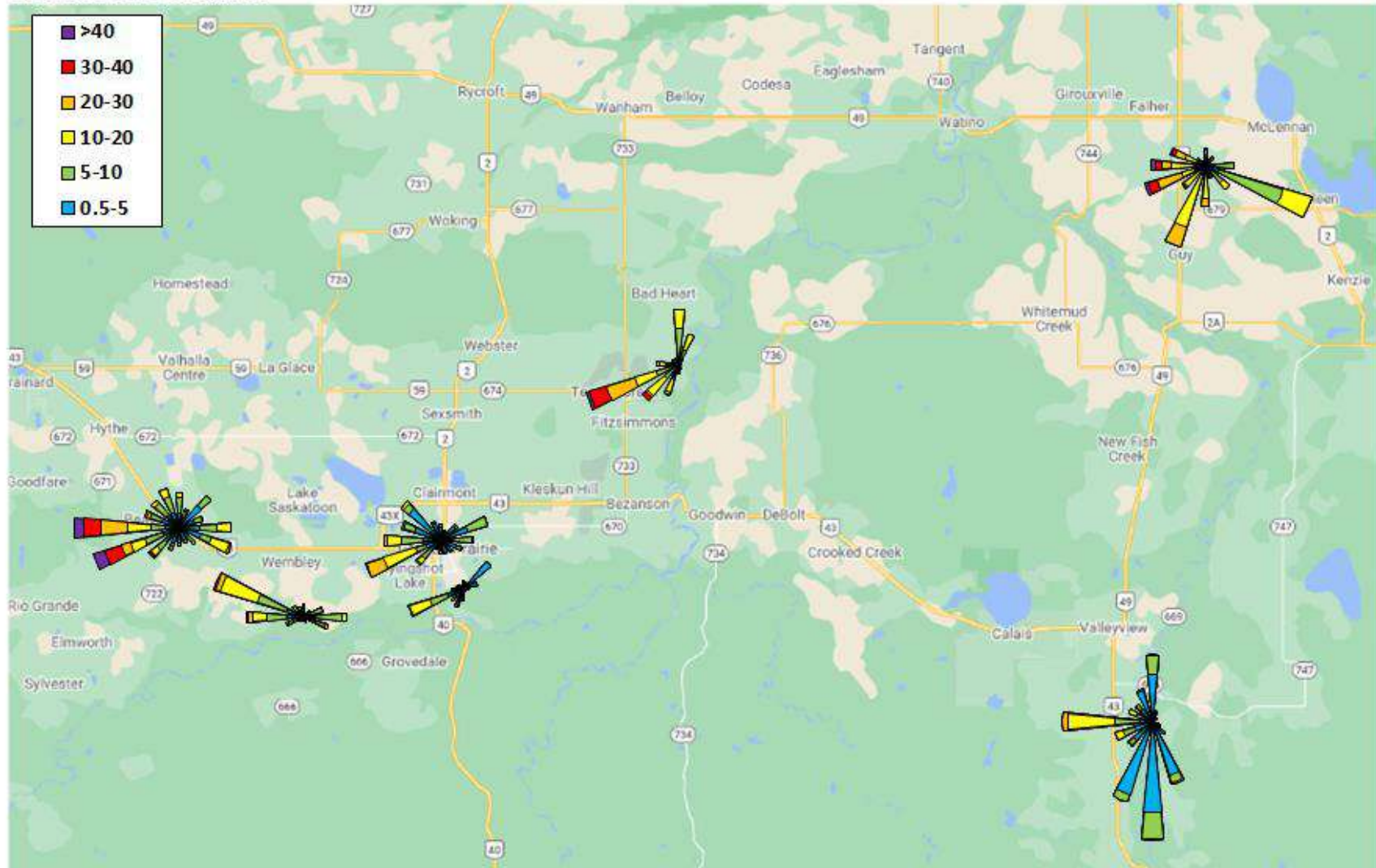


9



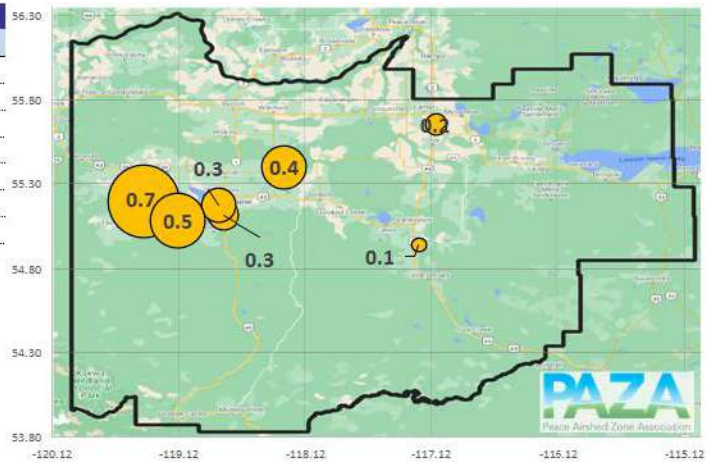
9.1 Wind Roses

Wind Roses in km/hr

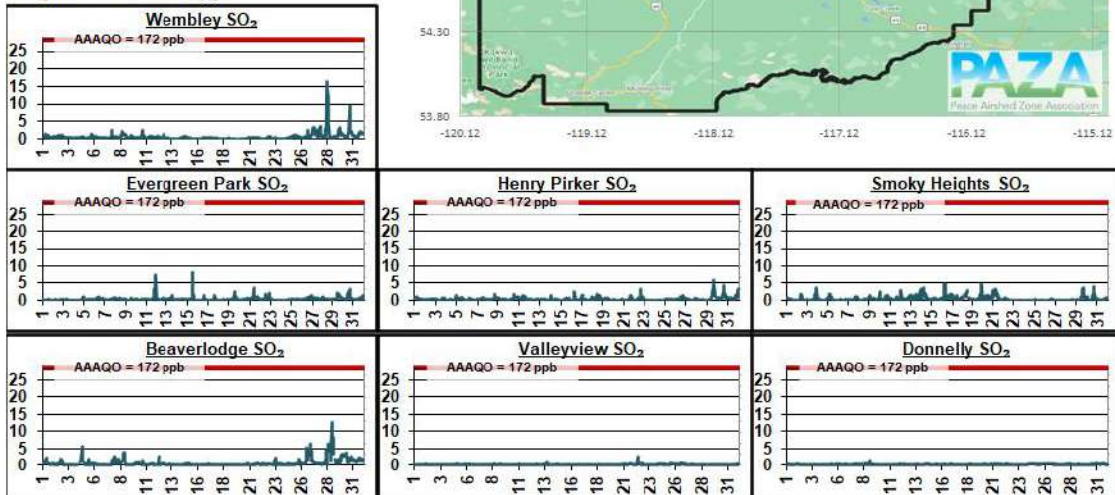


9.2 Sulphur Dioxide (SO₂) Plots

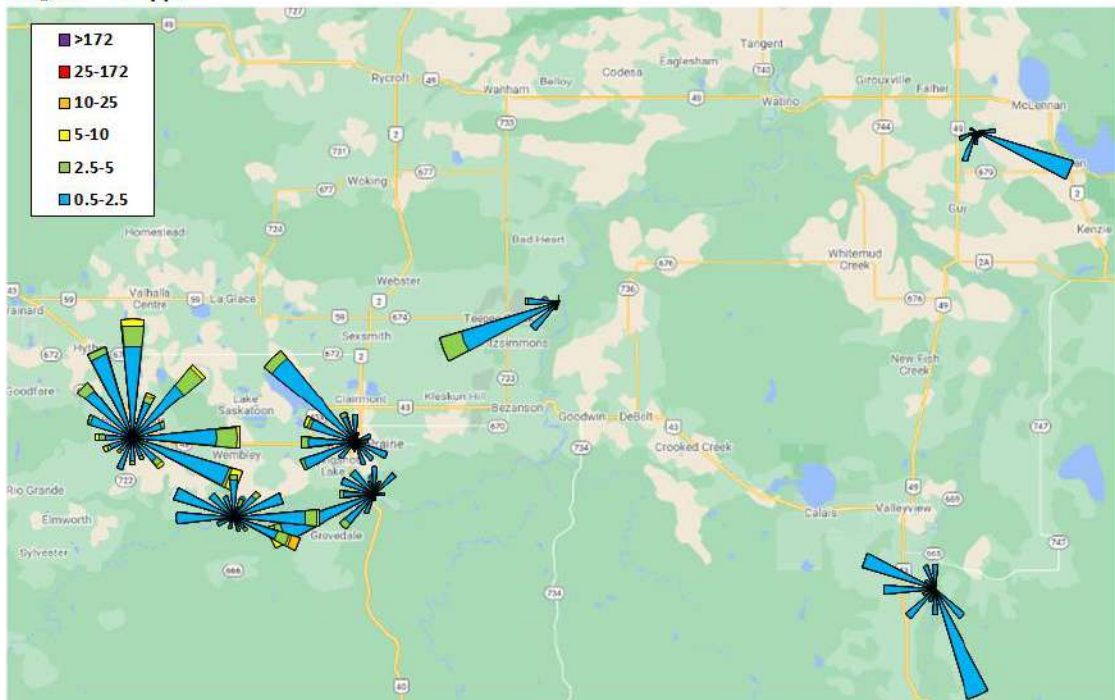
January 2021 SO ₂ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park SO ₂	0.3	8.3
Henry Pirker SO ₂	0.3	5.9
Smoky Heights SO ₂	0.4	4.9
Beaverlodge SO ₂	0.7	12.9
Valleyview SO ₂	0.1	2.7
Donnelly SO ₂	0.2	1.6
Wembley SO ₂	0.5	16.5



Sulphur Dioxide in ppb

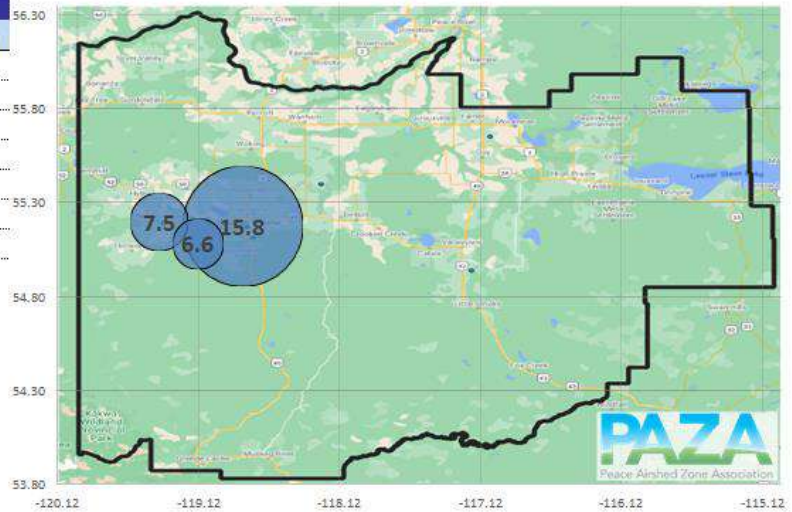


SO₂ Roses in ppb

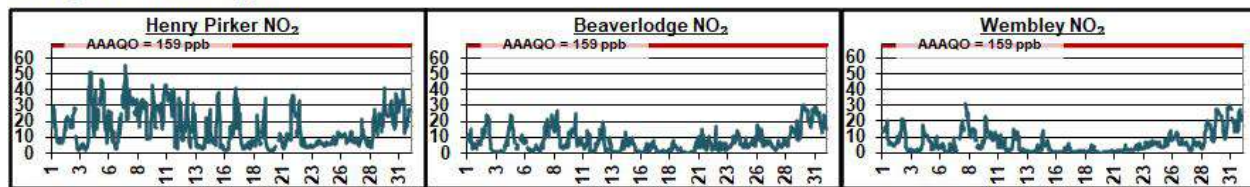


9.3 Nitrogen Dioxide (NO₂) Plots

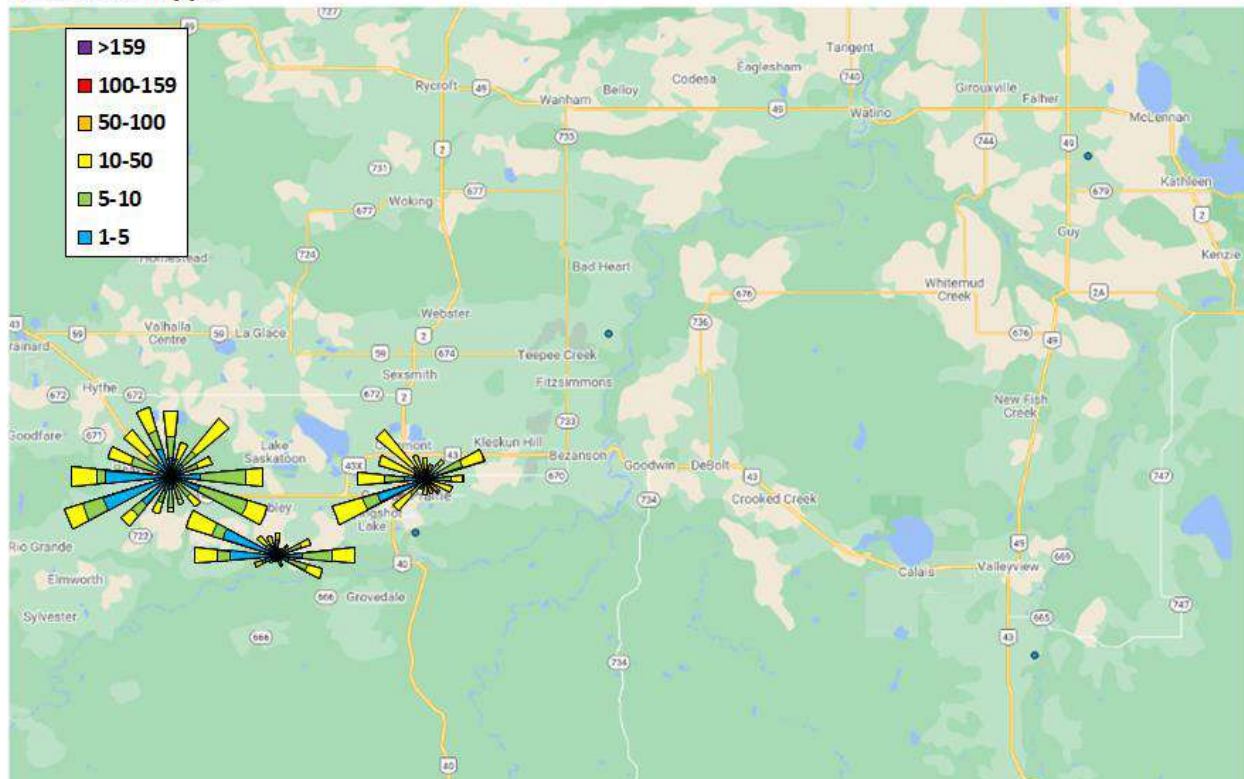
January 2021 NO ₂ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park NO ₂	-	-
Henry Pirkler NO ₂	15.8	55.1
Smoky Heights NO ₂	-	-
Beaverlodge NO ₂	7.5	30.8
Valleyview NO ₂	-	-
Donnelly NO ₂	-	-
Wembley NO ₂	6.6	31.6



Nitrogen Dioxide in ppb

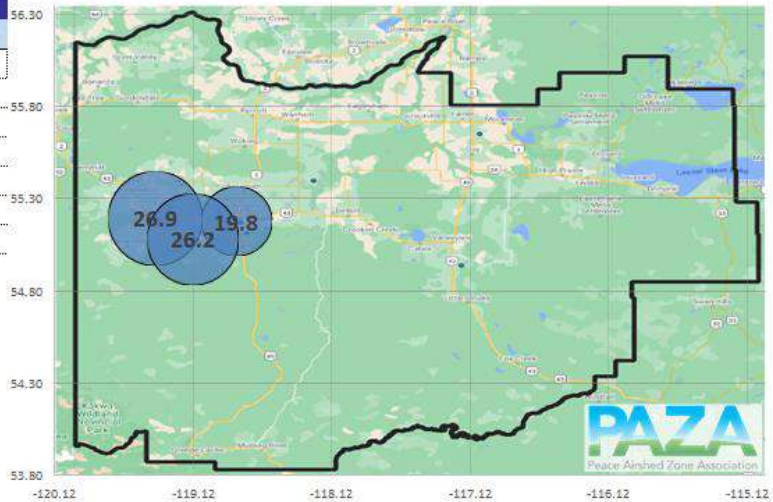


NO₂ Roses in ppb

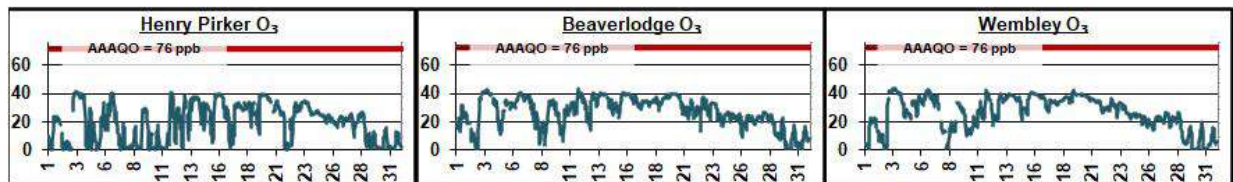


9.4 Ozone (O₃) Plots

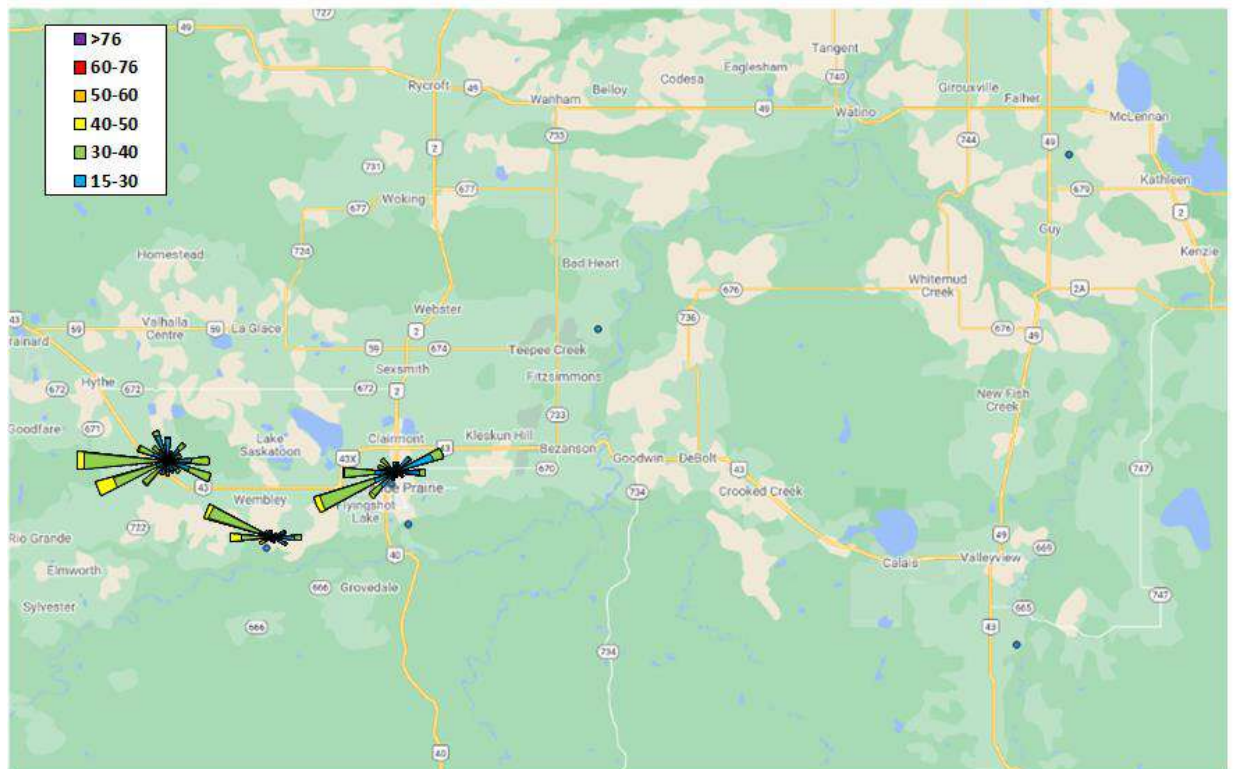
January 2021 O ₃ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park O ₃	-	-
Henry Pirkler O ₃	19.8	41.3
Smoky Heights O ₃	-	-
Beaverlodge O ₃	26.9	43.7
Valleyview O ₃	-	-
Donnelly O ₃	-	-
Wembley O ₃	26.2	44.0



Ozone in ppb



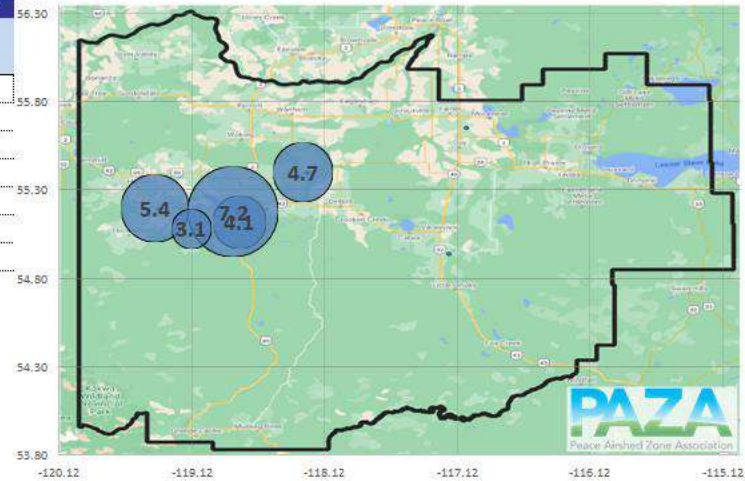
O₃ Roses in ppb



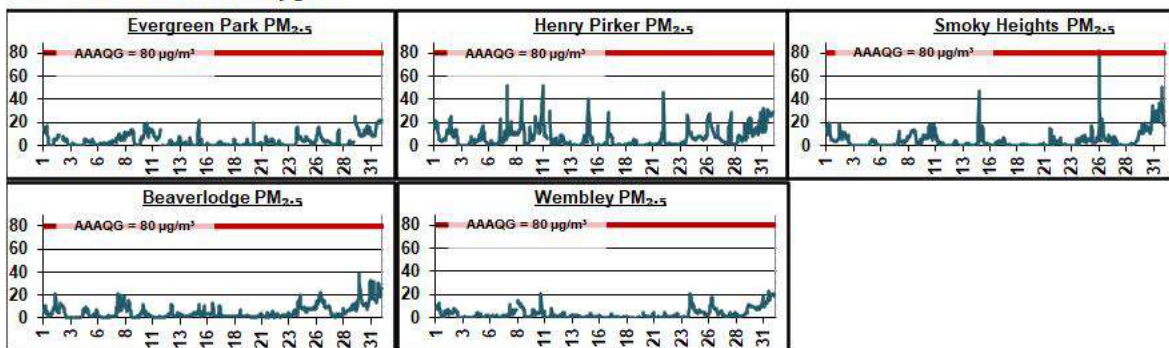
9.5 Fine Particulate Matter (PM_{2.5}) Plots

January 2021 PM_{2.5} Station Summary

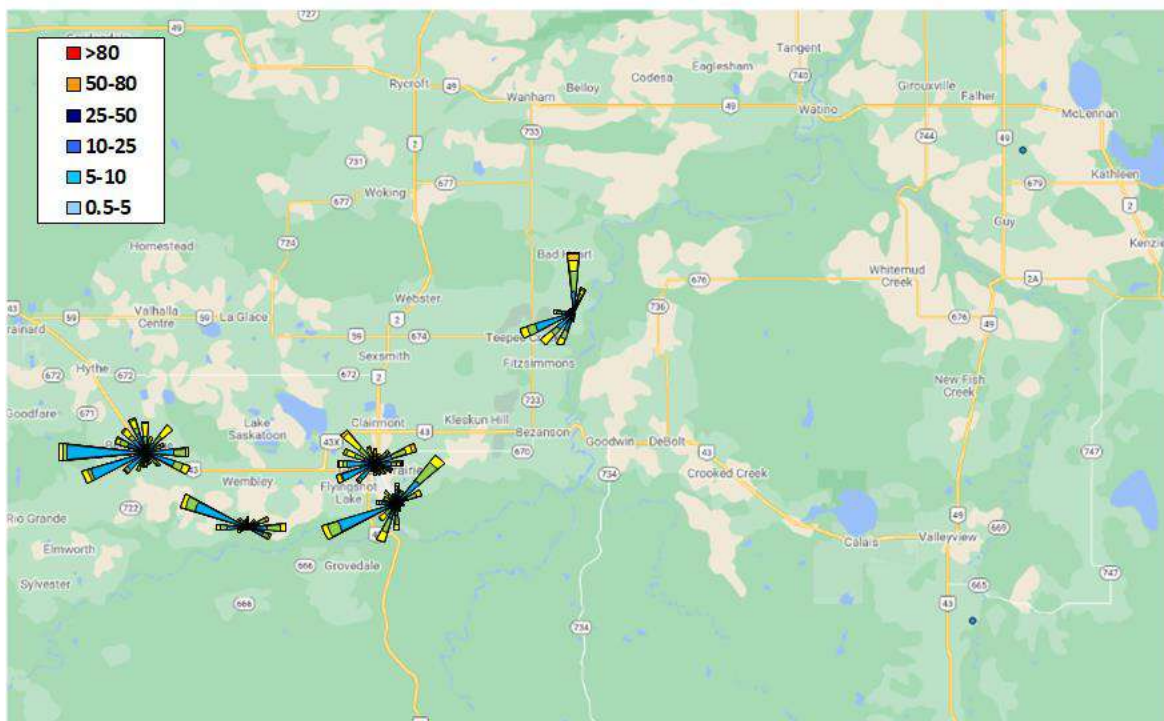
Station	Avg µg/m ³	Max µg/m ³
Evergreen Park PM _{2.5}	4.1	25.7
Henry Pirkler PM _{2.5}	7.2	51.9
Smoky Heights PM _{2.5}	4.7	82.5
Beaverlodge PM _{2.5}	5.4	39.1
Valleyview PM _{2.5}	-	-
Donnelly PM _{2.5}	-	-
Wembley PM _{2.5}	3.1	22.8



Fine Particulate Matter in µg/m³



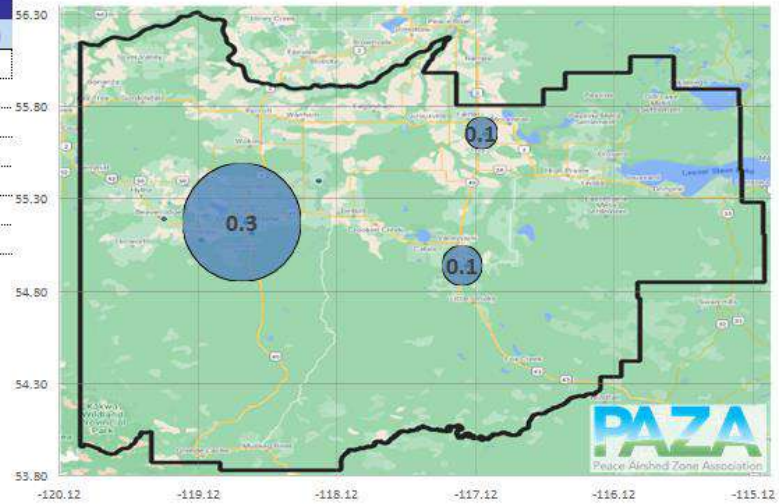
PM_{2.5} Roses in µg/m³



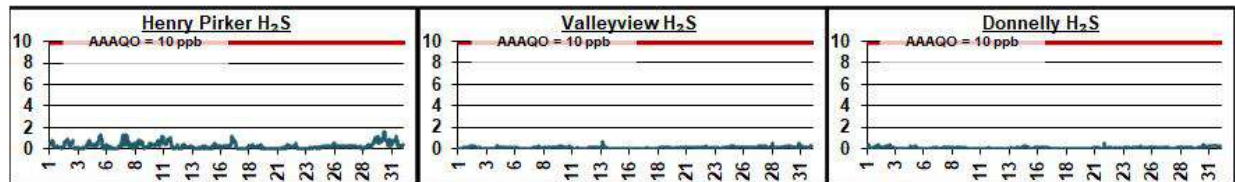
9.6 Hydrogen Sulphide (H₂S) Plots

January 2021 H₂S Station Summary

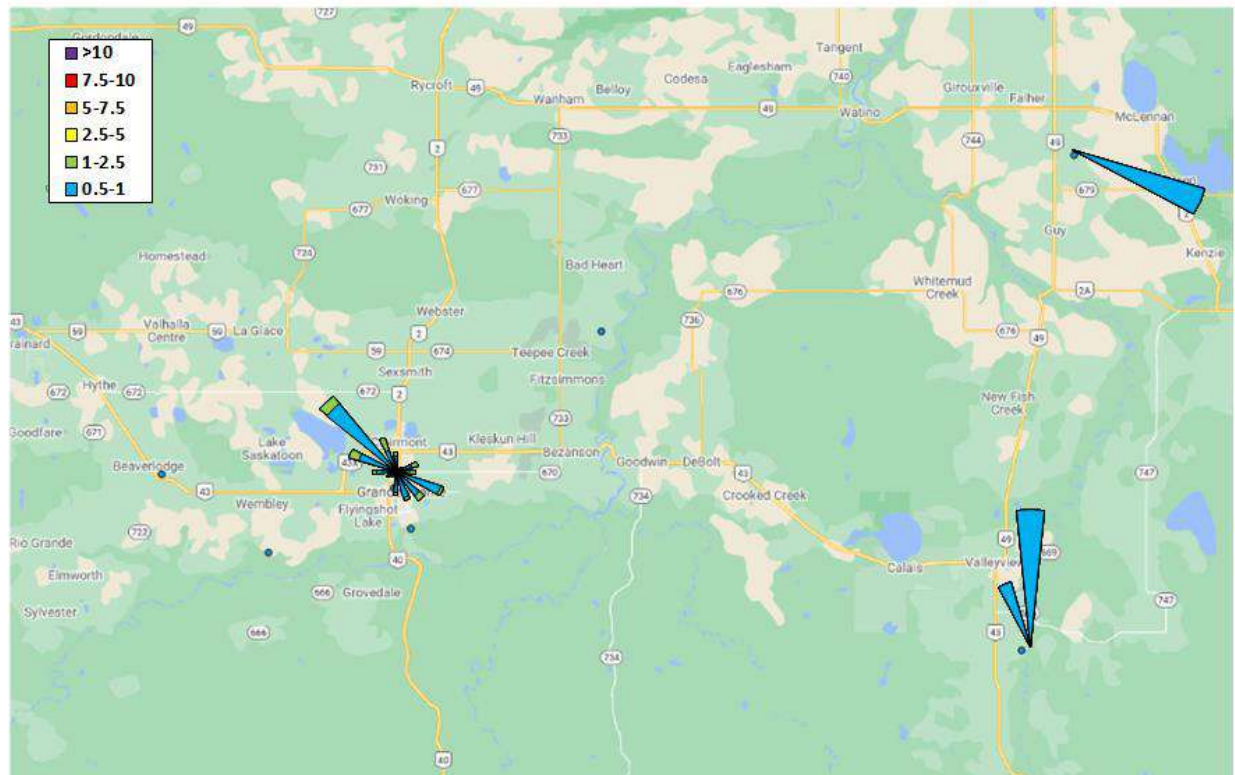
Station	Avg (ppb)	Max (ppb)
Evergreen Park H ₂ S	-	-
Henry Pirkler H ₂ S	0.3	1.6
Smoky Heights H ₂ S	-	-
Beaverlodge H ₂ S	-	-
Valleyview H ₂ S	0.1	0.7
Donnelly H ₂ S	0.1	0.6
Wembley H ₂ S	-	-



Hydrogen Sulphide in ppb

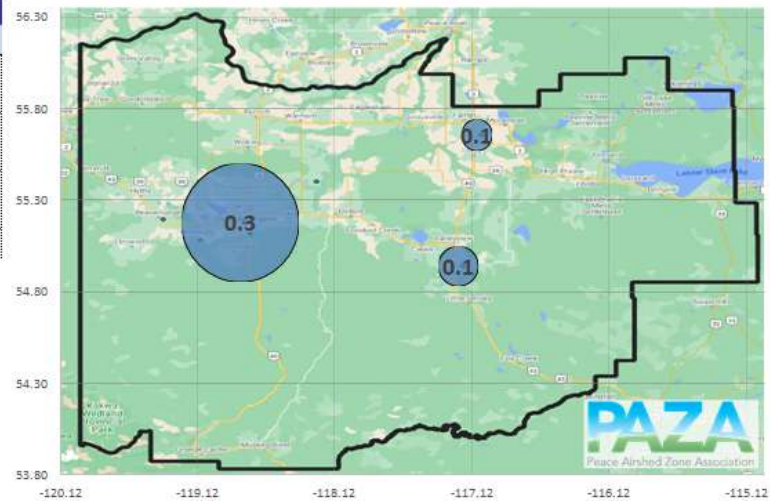


H₂S Roses in ppb

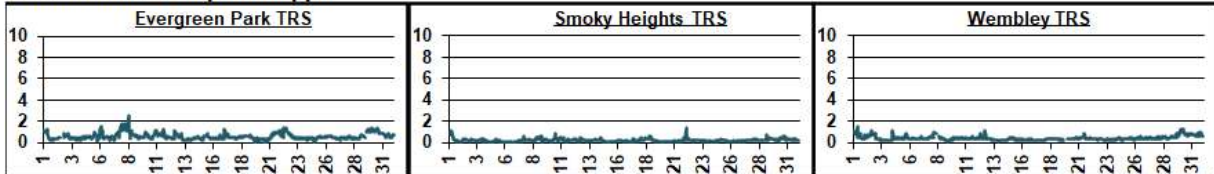


9.7 Total Reduced Sulphur (TRS) Plots

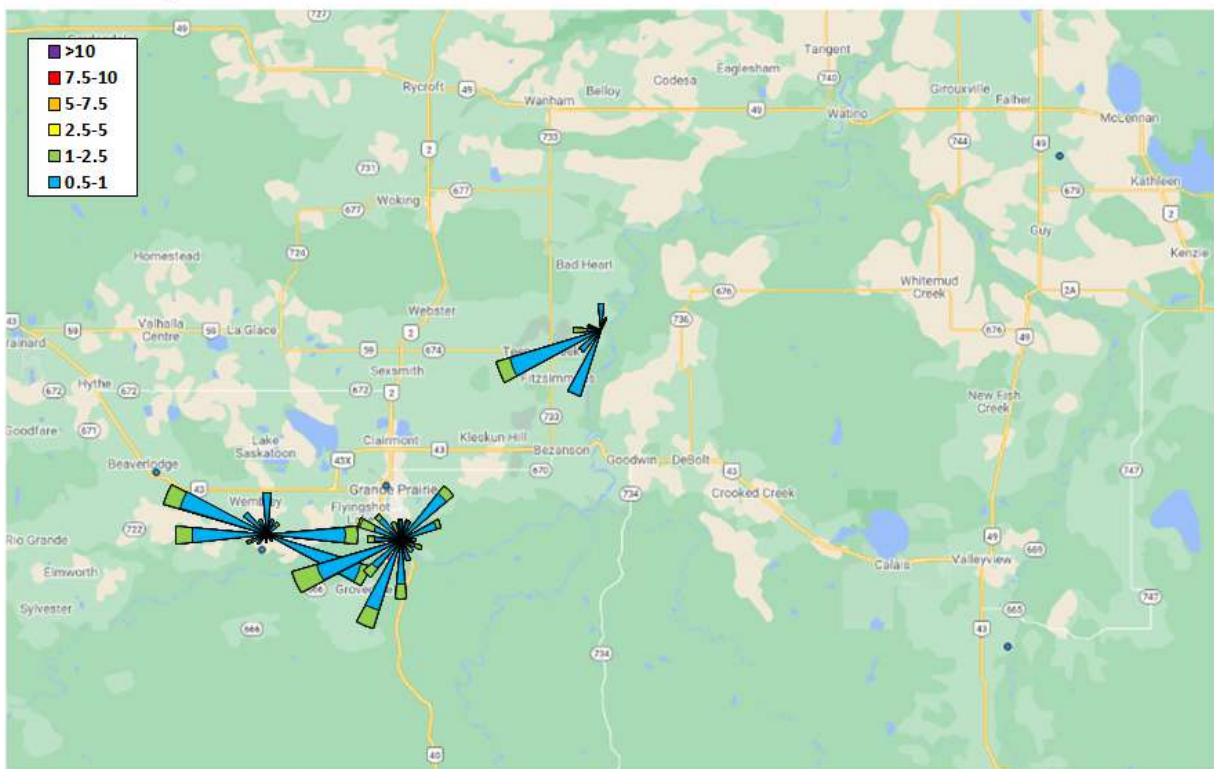
January 2021 TRS Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park TRS	0.6	2.5
Henry Pirkar TRS	-	-
Smoky Heights TRS	0.2	1.3
Beaverlodge TRS	-	-
Valleyview TRS	-	-
Donnelly TRS	-	-
Wembley TRS	0.4	1.5



Total Reduced Sulphur in ppb



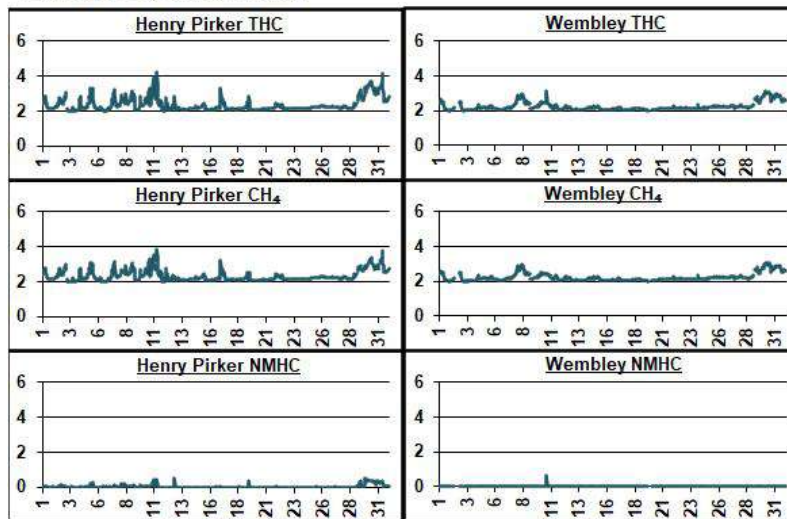
TRS Roses in ppb



9.8 Total Hydrocarbon (THC) Plots

January 2021 THC Station Summary						
Station	Total Hydrocarbons		Methane		Non-Methane HCs	
	Avg (ppm)	Max (ppm)	Avg (ppm)	Max (ppm)	Avg (ppm)	Max (ppm)
Evergreen Park THC	-	-	-	-	-	-
Henry Pirker THC	2.4	4.2	3.8	3.8	0.5	0.5
Smoky Heights THC	-	-	-	-	-	-
Beaverlodge THC	-	-	-	-	-	-
Valleyview THC	-	-	-	-	-	-
Donnelly THC	-	-	-	-	-	-
Wembley THC	2.2	3.1	3.1	3.1	0.7	0.7

Total Hydrocarbons in ppm

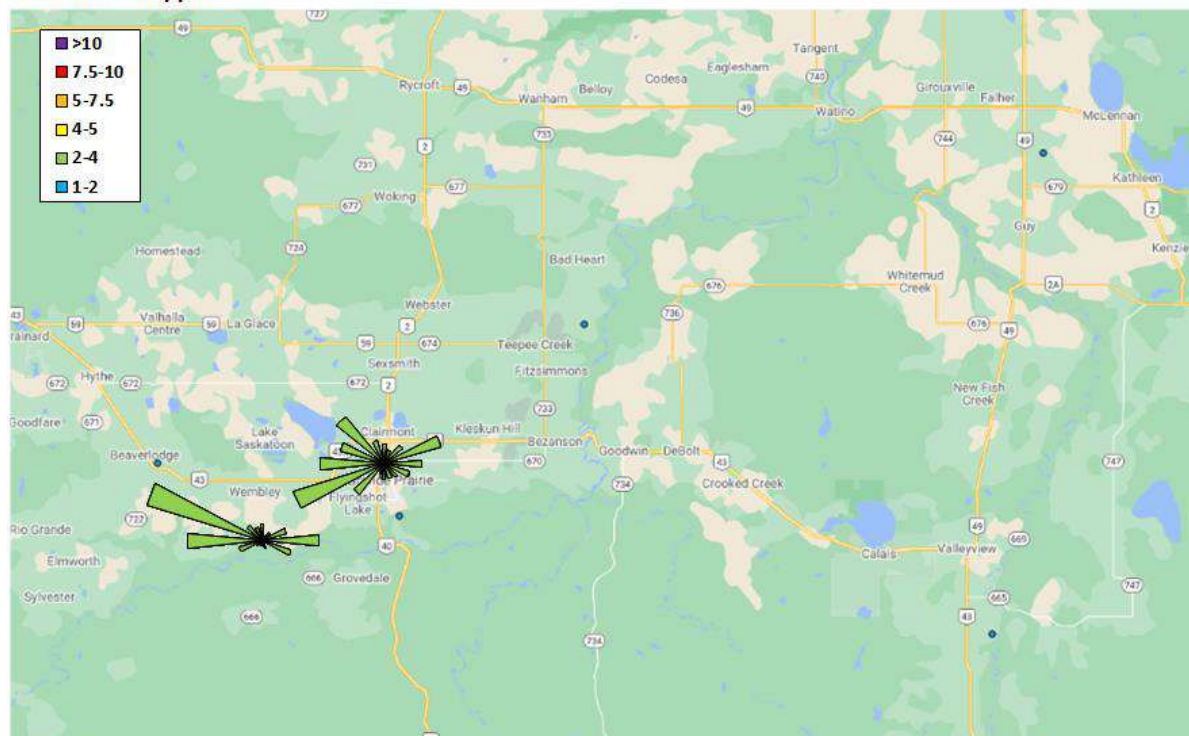


Total Hydrocarbons (THC)

Methane (CH₄)

Non-Methane Hydrocarbons (NMHC)

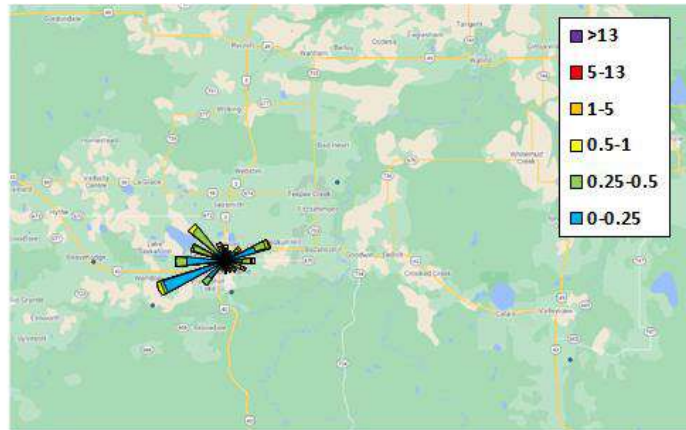
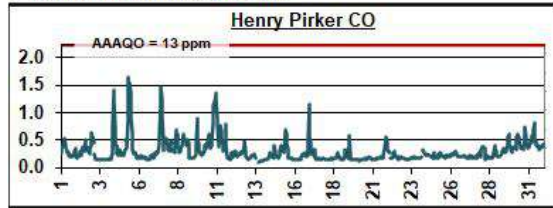
THC Roses in ppm



9.9 Carbon Monoxide (CO) Plots

January 2021 CO Station Summary		
Station	Avg (ppm)	Max (ppm)
Henry Pirkler CO	0.29	1.65

Carbon Monoxide in ppm



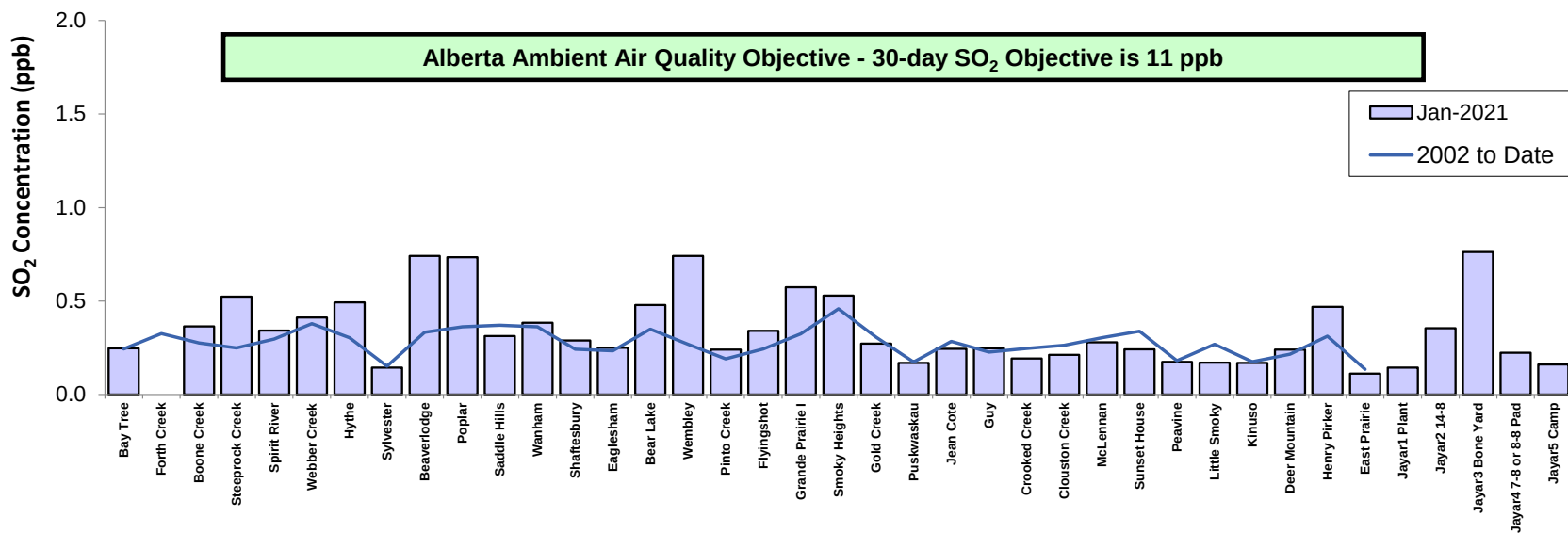
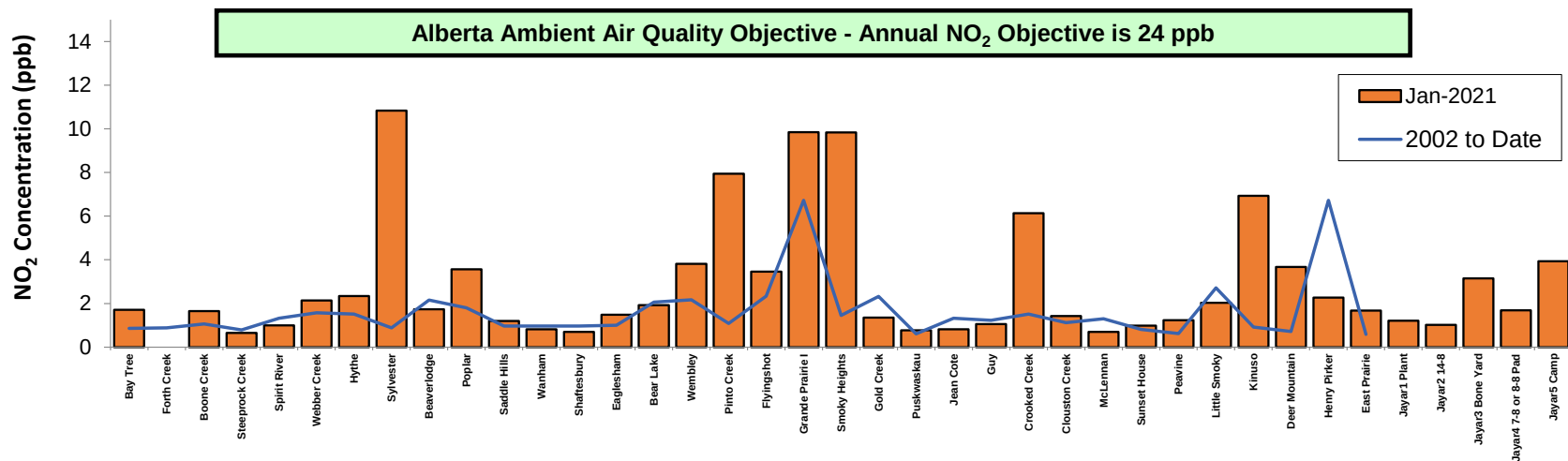
10 Passive Monitoring Data

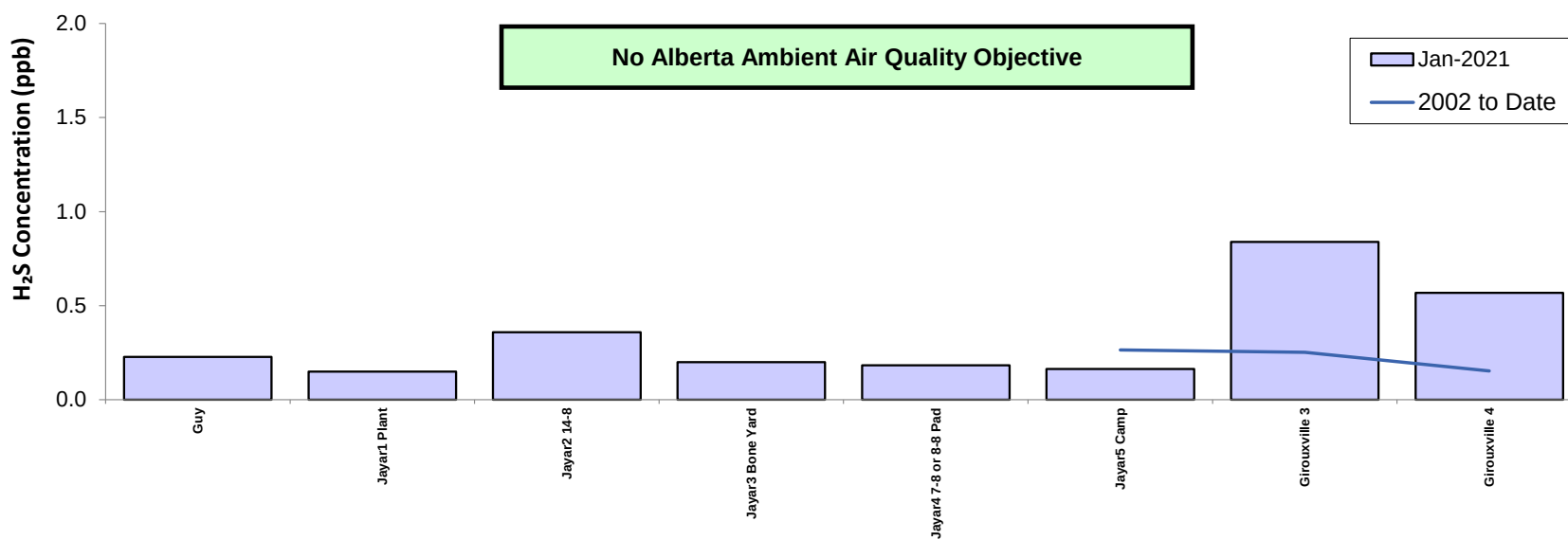
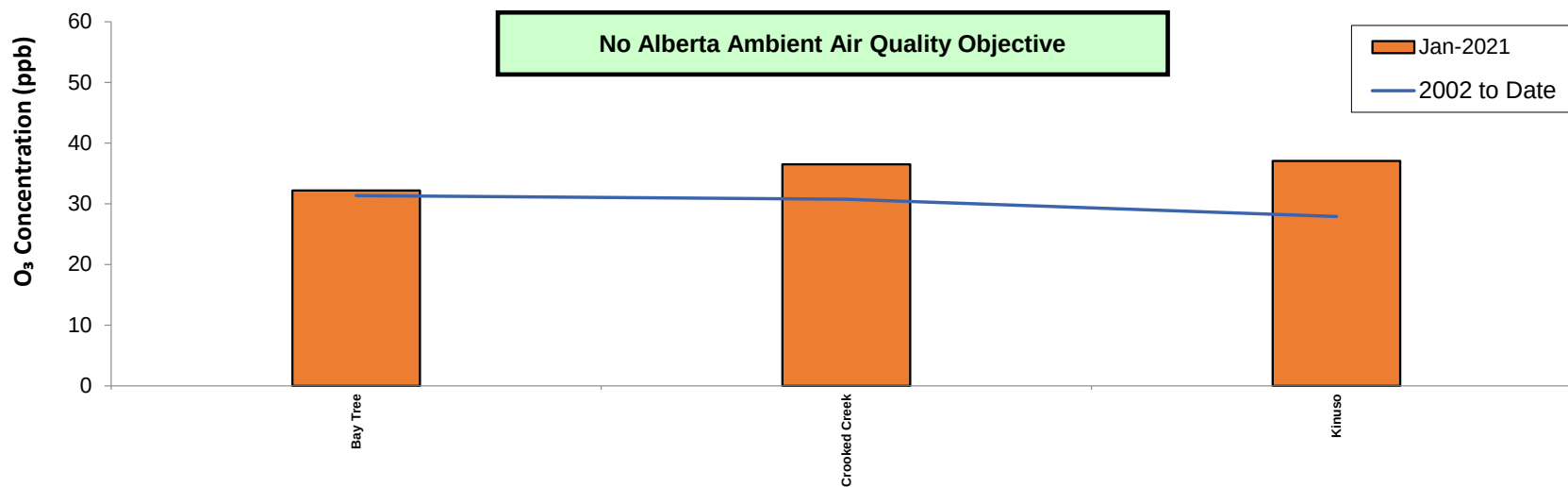
Peace Airshed Zone Association - PAZA Passive Stations for January 2021

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
Duplicates						
16a	Beaverlodge			2.3		
16b	Beaverlodge			1.2		
23a	Bear Lake	0.5				
23b	Bear Lake	0.5				
34a	Puskwaskau	0.2				
34b	Puskwaskau	0.2				
36a	Guy				0.2	
36b	Guy				0.2	
37a	Crooked Creek		33.7			
37b	Crooked Creek		39.3			
40a	McLennan			0.6		
40b	McLennan			0.8		
46a	Little Smoky			1.9		
46b	Little Smoky			2.2		
48a	Deer Mountain	0.3				
48b	Deer Mountain	0.2				
61a	Jayar5 Camp	0.2		6.2	0.2	
61b	Jayar5 Camp	0.1		1.7	0.3	
2	Bay Tree	0.2	32.2	1.7	-	13-16-078-13 W6M
3	Forth Creek	-	-	-	-	04-13-082-07 W6M
5	Boone Creek	0.4	-	1.6	-	01-23-076-11 W6M
7	Steeprock Creek	0.5	-	0.7	-	09-35-072-13 W6M
9	Spirit River	0.3	-	1.0	-	08-12-079-07 W6M
11	Webber Creek	0.4	-	2.1	-	09-36-074-09 W6M
12	Hythe	0.5	-	2.3	-	14-36-072-11 W6M
14	Sylvester	0.1	-	10.8	-	08-06-069-12 W6M
16	Beaverlodge	0.7	-	1.7	-	15-36-071-10 W6M
17	Poplar	0.7	-	3.6	-	13-06-073-08 W6M
18	Saddle Hills	0.3	-	1.2	-	04-25-074-07 W6M
19	Wanham	0.4	-	0.8	-	16-22-077-03 W6M
20	Shaftesbury	0.3	-	0.7	-	04-03-082-23 W5M
21	Eaglesham	0.2	-	1.5	-	16-21-079-25 W5M
23	Bear Lake	0.5	-	1.9	-	15-31-072-06 W6M
24	Wembley	0.7	-	3.8	-	12-31-070-08 W6M
25	Pinto Creek	0.2	-	7.9	-	04-24-069-11 W6M
26	Flyingshot	0.3	-	3.5	-	15-36-070-07 W6M
27	Grande Prairie I	0.6	-	9.8	-	08-15-071-06 W6M
29	Smoky Heights	0.5	-	9.8	-	04-06-075-02 W6M
32	Gold Creek	0.3	-	1.3	-	06-33-067-05 W6M
34	Puskwaskau	0.2	-	0.8	-	15-35-074-25 W5M
35	Jean Cote	0.2	-	0.8	-	12-35-079-21 W5M
36	Guy	0.2	-	1.1	0.2	03-04-076-22 W5M
37	Crooked Creek	0.2	36.5	6.1	-	16-01-071-26 W5M
39	Clouston Creek	0.2	-	1.4	-	12-01-073-22 W5M
40	McLennan	0.3	-	0.7	-	03-29-077-19 W5M
42	Sunset House	0.2	-	1.0	-	05-32-070-19 W5M
44	Peavine	0.2	-	1.2	-	03-05-079-15 W5M
46	Little Smoky	0.2	-	2.0	-	12-01-065-21 W5M
47	Kinuso	0.2	37.1	6.9	-	12-10-073-10 W5M
48	Deer Mountain	0.2	-	3.7	-	15-22-068-09 W5M
49	Henry Pirker	0.5	-	2.3	-	17-26-071-06 W6M
50	East Prairie	0.1	-	1.7	-	11-13-079-08 W6M
57	Jayar1 Plant	0.1	-	1.2	0.1	06-08-062-03 W6M
58	Jayar2 14-8	0.4	-	1.0	0.4	07-08-062-03 W6M
59	Jayar3 Bone Yard	0.8	-	3.2	0.2	14-08-062-03 W6M
60	Jayar4 7-8 or 8-8 Pad	0.2	-	1.7	0.2	10-08-062-03 W6M
61	Jayar5 Camp	0.2	-	3.9	0.2	11-08-062-03 W6M
63	Girouxville 3	-	-	-	0.8	14-02-077-23 W5M
64	Girouxville 4	-	-	-	0.6	04-08-077-22 W5M

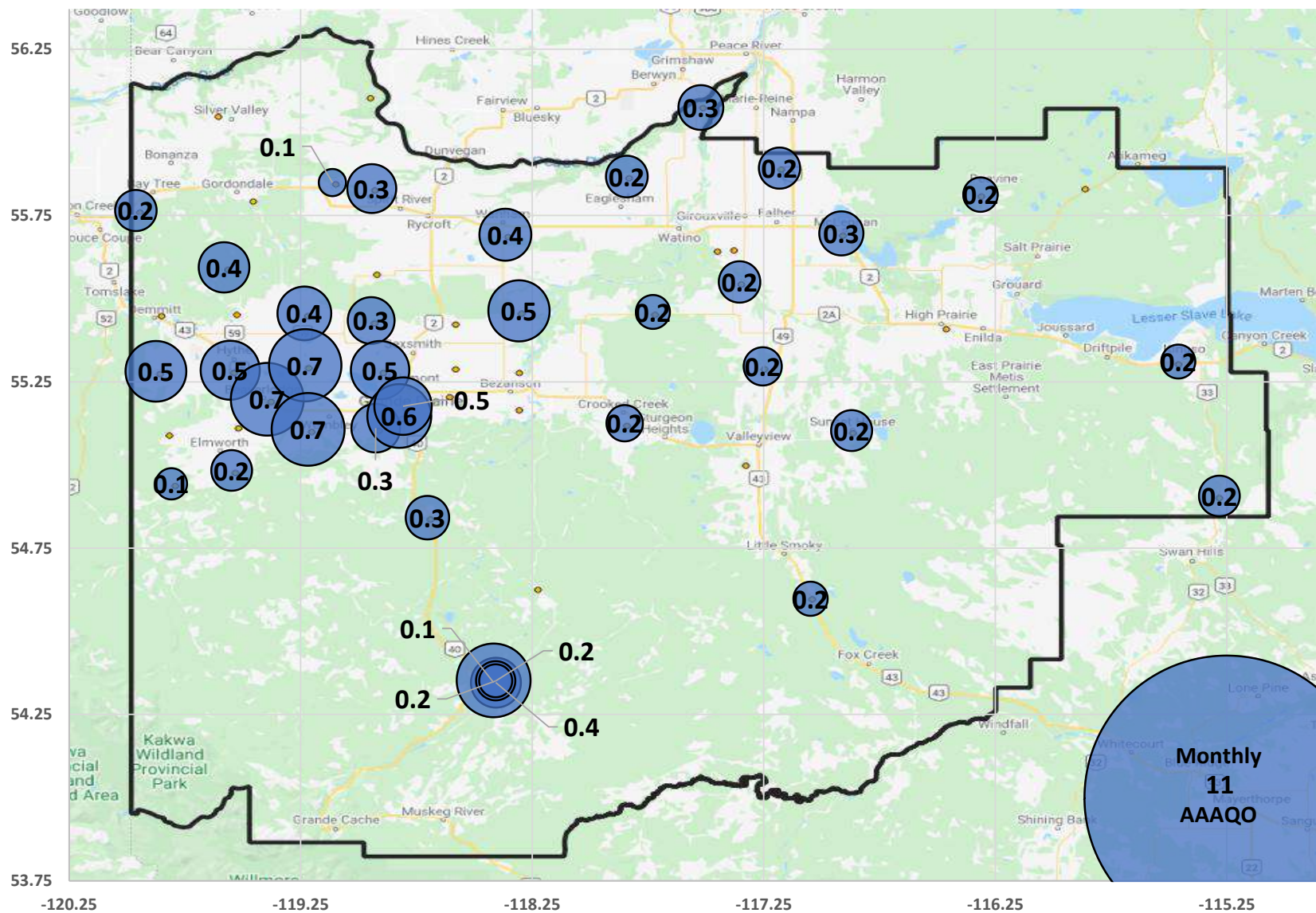
Passive Summary for January 2021

Stats	Sulphur Dioxide SO ₂	Ozone O ₃	Nitrogen Dioxide NO ₂	Hydrogen Sulphide H ₂ S
	ppb	ppb	ppb	ppb
Passive Summary for January 2021 (PAZA)				
Mean	0.3	35.3	2.9	0.3
Standard Deviation	0.2	2.7	2.8	0.2
Minimum	0.1	32.2	0.7	0.1
Maximum	East Prairie (#50)	Bay Tree (#2)	Steepprock Creek (#7)	Jayar1 Plant (#57)
	0.8	37.1	10.8	0.8
	Jayar3 Bone Yard (#59)	Kinuso (#47)	Sylvester (#14)	Girouxville 3 (#63)
Continuous and Passive Monitoring Comparision				
PAZA Beaverlodge Station	0.7	26.9	7.5	-
Beaverlodge Passive (#16)	0.7	-	1.7	-
PAZA Henry Pirker Station	0.3	19.8	15.8	0.3
Henry Pirker passive (#49)	0.5	-	2.3	-

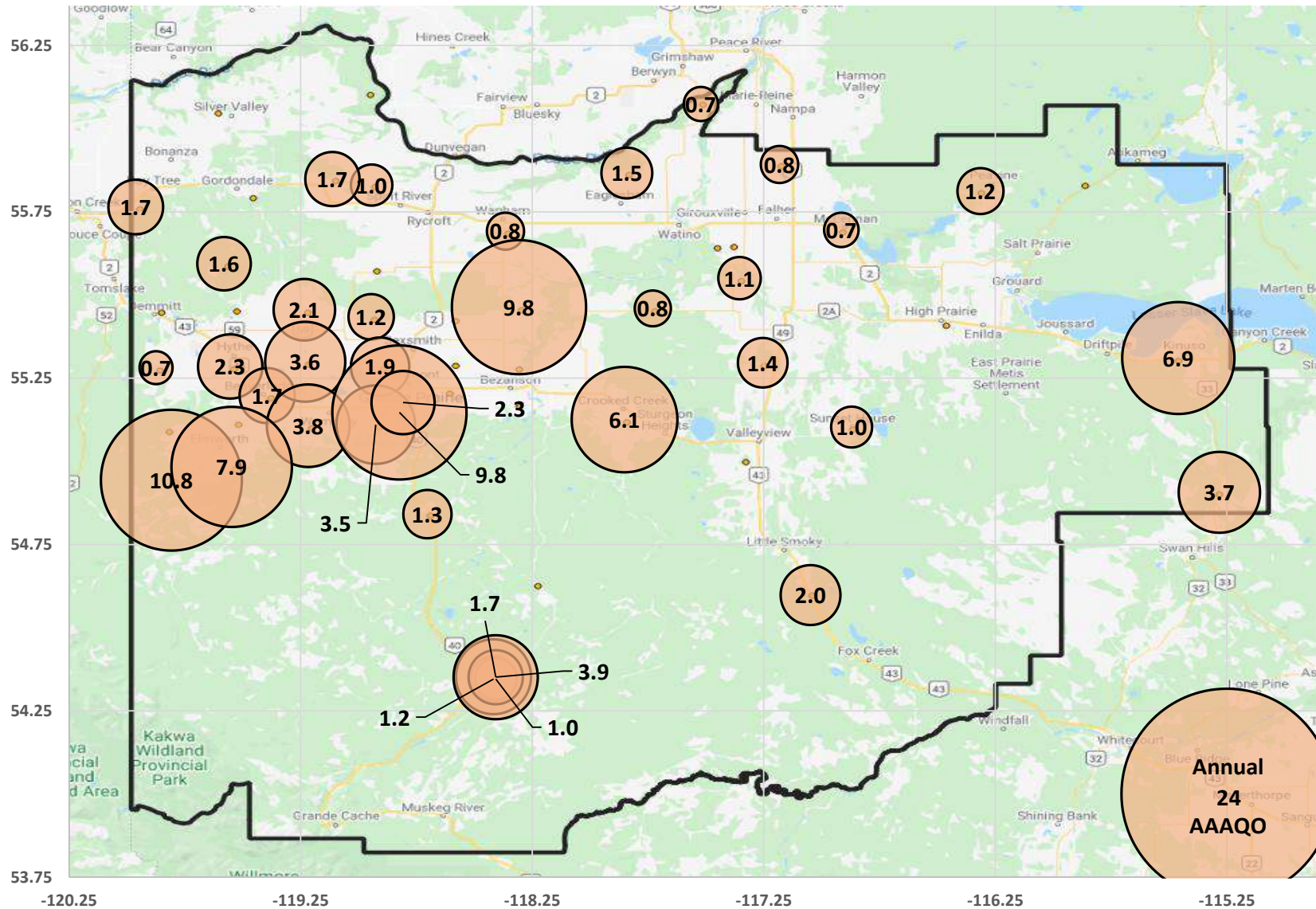




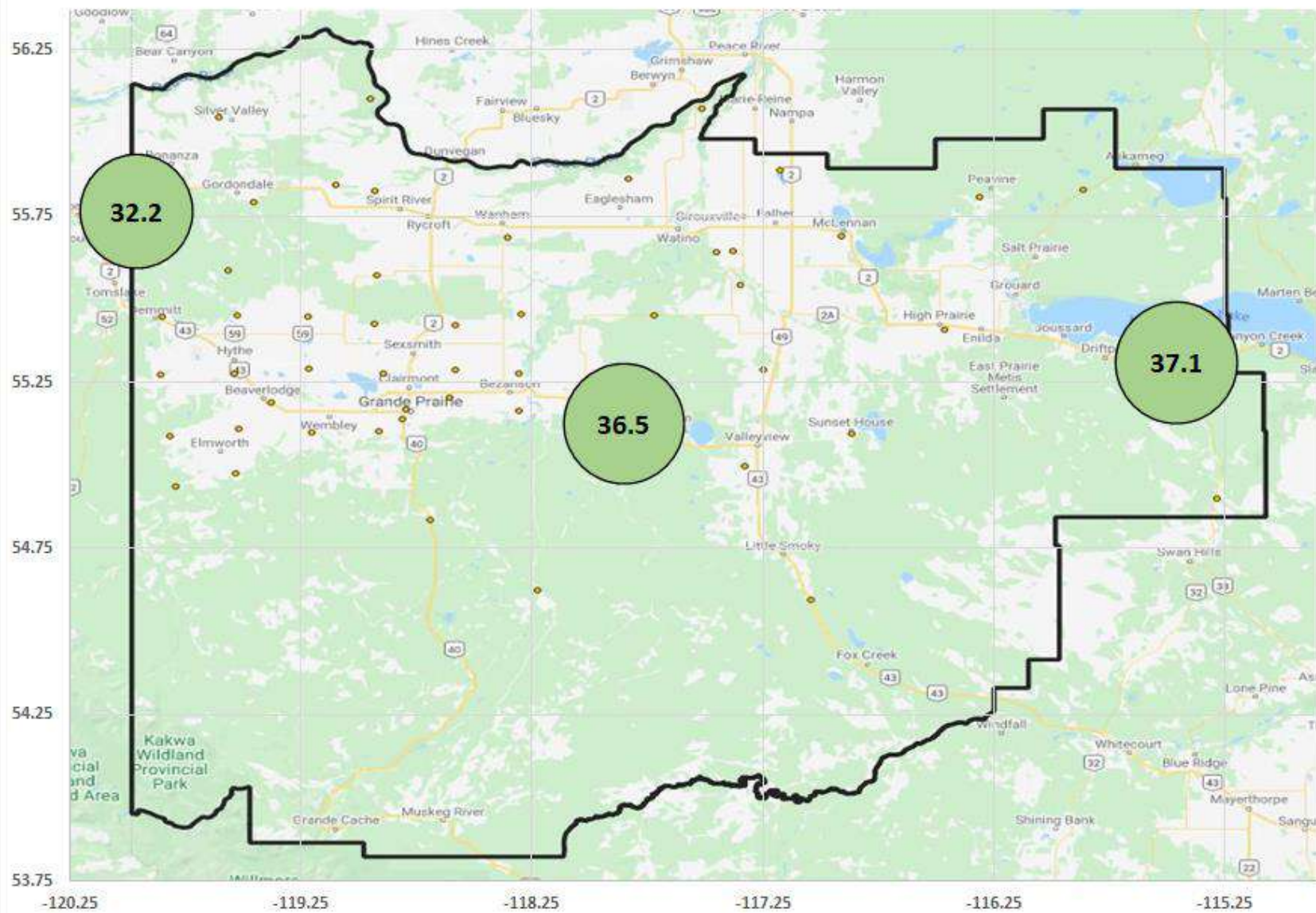
SO₂ Monthly Average (units in ppb)



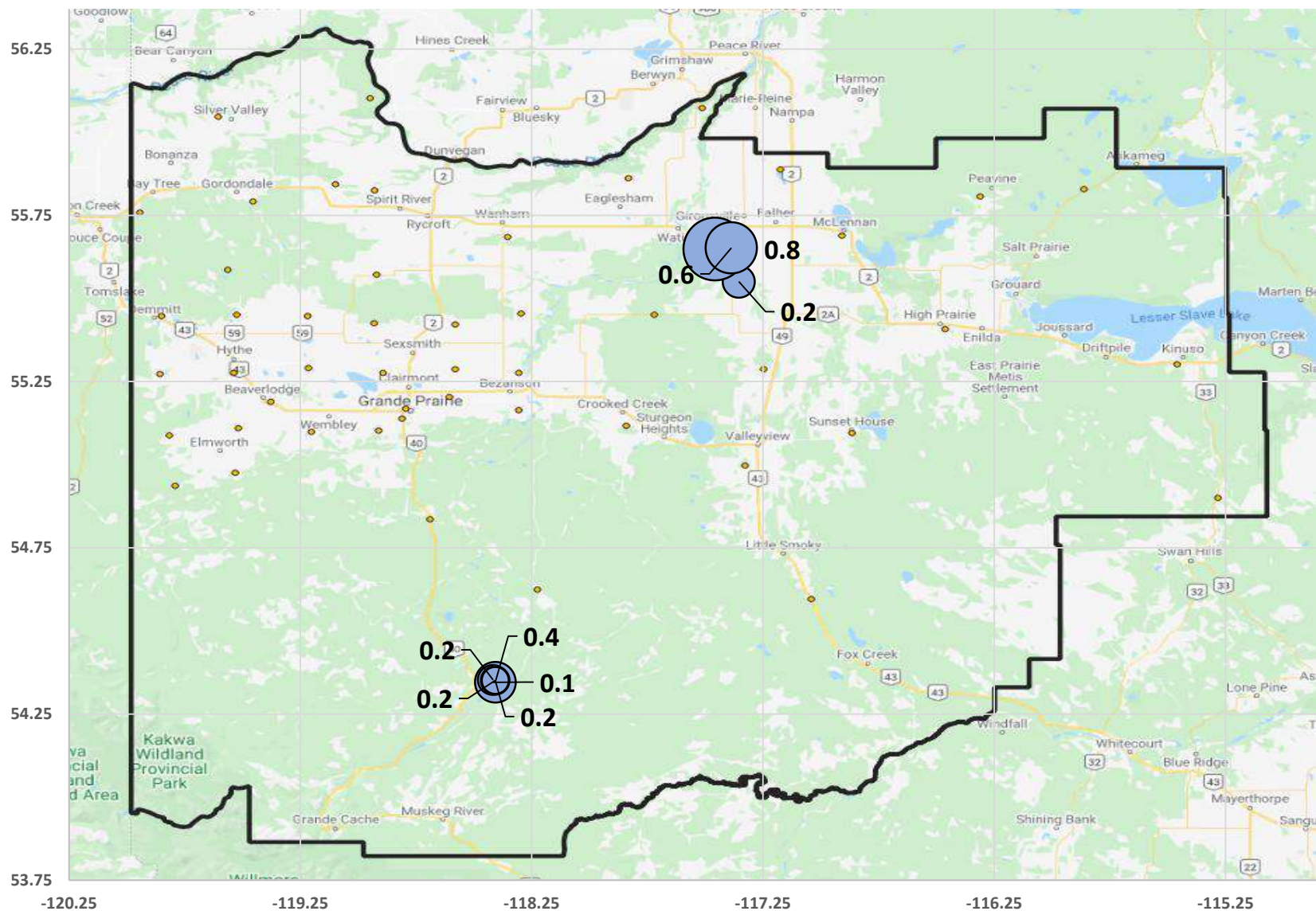
NO₂ Monthly Average (units in ppb)



O₃ Monthly Average (units in ppb)



H₂S Monthly Average (units in ppb)



End of Report



Peace Airshed Zone Association

Ambient Air Monitoring Report

January 2021