



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

August 2020

September 30, 2020

Alberta Environment and Parks

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

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

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of August 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 August 2020 were submitted to the ETS data system.

There was an issue with TRS at Smoky Heights and data was removed from July 31 into August, as such the July data is being 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
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 hour at Donnelly where H₂S was >10 ppb, H₂S = 10.1 ppb;
WS = 8.8 km/hr; 133 degrees. This was reported to AEP under ref# 370114.

Operational times less than 90 percent:

The TRS analyzer at Wembley station had operational issues that resulted in the analyzer having an **operational time** less than 90% and **valid time** less than 75% in August 2020, this was reported to AEP under reference number 370391.

The TRS analyzer at Smoky Heights station had operational issues that resulted in the analyzer having an **operational time** less than 90% but **valid time** was greater than 75% in August 2020, this was reported to AEP under reference number 372260.

Air Incidents

None were reported to PAZA

Deviations from Authorized Monitoring Methods

Trees nearby to Valleyview air monitoring station exceed the height allowed under section 2.3 of the siting criteria in Chapter 3 of the AMD. This variance was authorized in writing by the director on February 4, 2019.

Passive Monitoring

- 33 Stations throughout the PAZA zone, the passive sample analyses were performed by Bureau Veritas Laboratories
- There were seven duplicate sites sampled in the month of August with RPD all less than 15% except the O₃ duplicate at 64% (results 27.7 and 14.3 ppb)
 - For sulphur dioxide duplicates at Poplar, Eaglesham, and Clouston Creek stations
 - For ozone duplicate at Crooked Creek station
 - For nitrogen dioxide duplicates at Boon Creek, Spirit River, and Guy stations
 - For hydrogen sulphide duplicate at Guy station
- There were no recorded field issues with passives.
- 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.

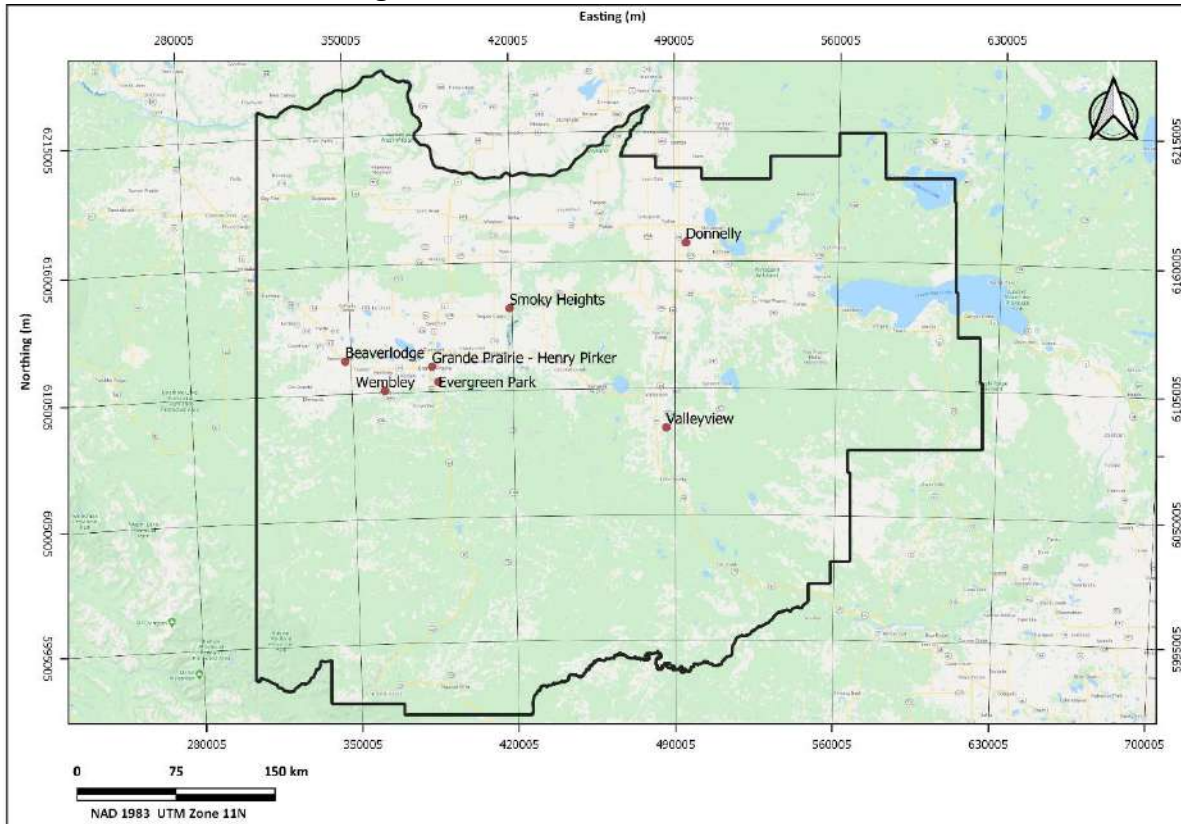


Mandeep Dhaliwal, B.Sc., P.Chem.
Program Manager

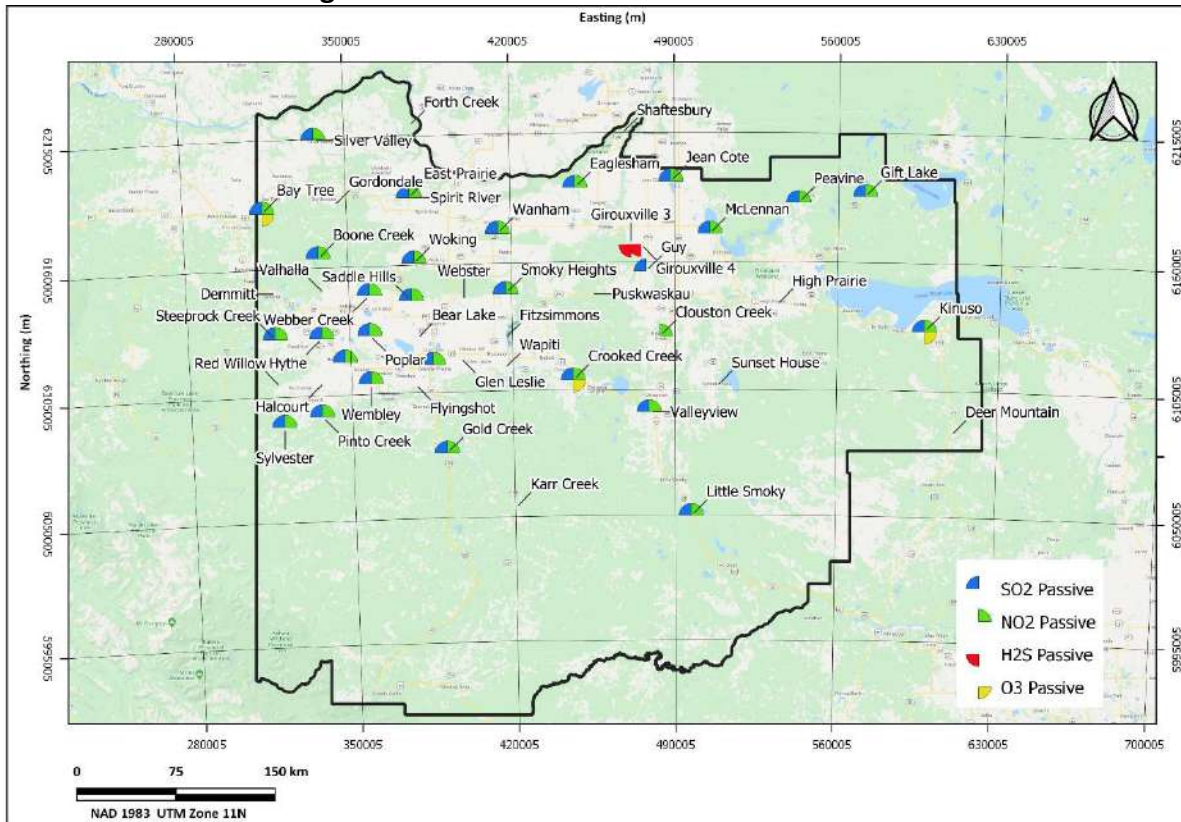
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PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 August 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 - August 2020 Beaverlodge Station Report

Parameter	August			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)	0.3	0.0	95.0%	100.0%	9.7	-	Aug-17 08:00	1.0	-	Aug-17	-	-	-	-	Aug 06, 2020
NO ₂ (ppb)	1.8	0.1	95.0%	100.0%	10.3	159	Aug-27 07:00	3.3	-	Aug-17	0	-	-	-	Aug 06, 2020
NO _x (ppb)	2.1	0.0	95.0%	100.0%	17.1	-	Aug-18 08:00	4.3	-	Aug-17	-	-	-	-	Aug 06, 2020
O ₃ (ppb)	22.9	2.2	93.8%	98.3%	48.0	76	Aug-05 14:00	27.9	-	Aug-19	0	-	-	-	Aug 06, 2020
PM _{2.5} (µg/m ³)	4.2	0.3	91.9%	92.3%	32.7	80	Aug-01 15:00	23.2	29	Aug-01	0	-	0	-	Aug 11, 2020
SO ₂ (ppb)	0.1	0.0	95.2%	100.0%	4.4	172	Aug-05 11:00	0.6	48	Aug-20	0	-	0	0	Aug 11, 2020
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	14.7	4.2	100.0%	100.0%	28.4	<div style="border: 1px solid black; padding: 5px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div>									
RH (%)	64.9	25.2	100.0%	100.0%	100.0										
WS (km/hr)	13.8	0.1	100.0%	100.0%	50.4										
WD (deg)	258	0.7	100.0%	100.0%	356.2	<div style="border: 1px solid black; padding: 2px;"> Average Wind Direction 258 WSW </div>									

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	Several hours of data were removed when instrument froze Aug 5-6
PM _{2.5}	Sharp	5030	Several hours of maintenance and invalid negative data removed throughout month, majority removed Aug 28-31
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 - August 2020 Evergreen Park Station Report

Parameter	August			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)	3.8	0.0	94.8%	95.0%	37.0	80	Aug-10 06:00	13.2	29	Aug-10	0	-	0	-	Aug-25-2020
SO ₂ (ppb)	0.2	0.0	95.2%	99.9%	6.4	172	Aug-03 21:00	0.7	48	Aug-03	0	-	0	0	Aug-25-2020
TRS (ppb)	0.4	0.0	94.4%	98.9%	2.8	-	Aug-24 07:00	1.2	-	Aug-14	-	-	-	-	Aug-25-2020
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	15.4	1.7	99.9%	99.9%	30.0	<div style="border: 1px solid black; padding: 5px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div>									
RH (%)	64.5	24.9	99.9%	99.9%	98.4										
WS (km/hr)	5.0	0.0	99.9%	99.9%	17.1										
WD (deg)	247	0.5	99.9%	99.9%	347.0	<div style="border: 1px solid black; padding: 2px;"> Average Wind Direction 247 WSW </div>									

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Thermo	TEOM AB	Several hours of excessive negative drift resulted in non-valid hours; power failure resulted in 1-hr data loss
SO ₂	TECO	43i	No Operational issues noted during the month; power failure resulted in 1-hr data loss
TRS	TECO	43C	Additional maintenance required due to span issue following calibration; power failure resulted in 1-hr data loss
Met Equip	Gil/RMYoung	MetPak/RMY86004	No Operational issues noted during the month; power failure resulted in 1-hr data loss

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - August 2020 Henry Pirker Station Report

Parameter	August			Operational	Max	1-hour		8-hour / 24-hour			Exceedance				Calibration Date	
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d		
NO (ppb)	0.7	0.0	90.3%	95.4%	22.9	-	Aug-17 07:00	3.3	-	Aug-28	-	-	-	-	Aug 12, 2020	
NO ₂ (ppb)	3.3	0.0	90.3%	95.4%	19.1	159	Aug-06 07:00	6.8	-	Aug-28	0	-	-	-	Aug 12, 2020	
NO _x (ppb)	4.2	0.1	89.5%	94.6%	41.6	-	Aug-06 07:00	10.2	-	Aug-28	-	-	-	-	Aug 12, 2020	
O ₃ (ppb)	22.4	1.0	95.3%	100.0%	55.5	76	Aug-18 16:00	27.5	-	Aug-19	0	-	-	-	Aug 12, 2020	
PM _{2.5} (µg/m ³)	3.3	0.0	99.6%	100.0%	19.1	80	Aug-02 07:00	11.7	29	Aug-02	0	-	0	-	Aug 24, 2020	
SO ₂ (ppb)	0.1	0.0	95.0%	100.0%	5.4	172	Aug-25 00:00	0.7	48	Aug-25	0	-	0	0	Aug 12, 2020	
H ₂ S (ppb)	0.2	0.0	95.4%	100.0%	1.4	10	Aug-05 07:00	0.4	3	Aug-03	0	-	0	-	Aug 24, 2020	
CH ₄ (ppm)	2.1	1.9	95.4%	100.0%	4.2	-	Aug-28 02:00	2.3	-	Aug-28	-	-	-	-	Aug 12, 2020	
THC (ppm)	2.1	1.9	95.4%	100.0%	4.2	-	Aug-28 02:00	2.3	-	Aug-28	-	-	-	-	Aug 21, 2020	
NMHC (ppm)	0.0	0.0	95.4%	100.0%	0.4	-	Aug-19 23:00	0.0	-	Aug-19	-	-	-	-	Aug 21, 2020	
CO (ppm)	0.1	0.1	95.2%	100.0%	0.4	13	Aug-27 22:00	0.2	5	Aug-28	0	0	-	-	Aug 21, 2020	
Average	Minimum	Valid	Operational	Maximum												
Temp (°C)	16.1	4.6	100.0%	100.0%	31.0	<div style="border: 1px solid black; padding: 5px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div>										
RH (%)	59.9	22.8	100.0%	100.0%	91.0											
SR (W/m ²)	169.1	0.0	100.0%	100.0%	683.4											
WS (km/hr)	9.3	0.1	100.0%	100.0%	32.7											
WD (deg)	256	0.0	100.0%	100.0%	359.4	Average Wind Direction		256	WSW							

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	Several hours of maintenance on Aug 12, 13, 16, 19, 24, 27 - adjusting perm oven temp, replacing perm oven and fittings; Loose wire caused just the NOx signal loss
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
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 - August 2020 Smoky Heights Station Report

Parameter	August			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)	4.8	0.8	99.6%	100.0%	29.2	80	Aug-02 22:00	12.8	29	Aug-01	0	-	0	-	Aug 04, 2020	
SO ₂ (ppb)	0.3	0.0	95.4%	100.0%	3.8	172	Aug-07 01:00	0.9	48	Aug-07	0	-	0	0	Aug 04, 2020	
TRS (ppb)	0.2	0.0	84.6%	89.0%	1.4	-	Aug-05 09:00	0.8	-	Aug-05	-	-	-	-	Aug 04, 2020	
Average	Minimum	Valid	Operational	Maximum												
Temp (°C)	14.7	2.2	100.0%	100.0%	29.2	<div style="border: 1px solid black; padding: 5px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div>										
WS (km/hr)	14.6	0.5	98.4%	98.4%	40.4											
WD (deg)	251	0.1	98.4%	98.4%	359.6	Average Wind Direction		251	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	Faulty scrubber replaced, several hours of maintenance resulted in <90% uptime
Met Equip	MetOne	50.5	Wind speed sensor recording high windspeeds in error sensor needs replacement

1.5 Valleyview Air Monitoring Station

PAZA - August 2020 Valleyview Station Report

Parameter	August			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	
SO ₂ (ppb)	0.1	0.0	95.3%	99.9%	1.6	172	Aug-07 06:00	0.2	48	Aug-07	0	-	0	0	Aug 05, 2020
H ₂ S (ppb)	0.1	0.0	95.2%	99.9%	0.9	10	Aug-17 00:00	0.3	3	Aug-17	0	-	0	-	Aug 05, 2020
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	15.7	2.7	99.9%	99.9%	32.9	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	71.4	21.9	99.9%	99.9%	100.2										
WS (km/hr)	4.3	0.1	99.9%	99.9%	16.7	Average Wind Direction 262 NW									
WD (deg)	262	0.4	99.9%	99.9%	359.1										

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	TEI	43I-APSCB	No Operational issues noted during the month; one hour of missing data Aug 21
H ₂ S	TEI	450I-APHAA	No Operational issues noted during the month; one hour of missing data Aug 21
Met Equip	RMYoung	RMY86004	No Operational issues noted during the month; one hour of missing data Aug 21

1.6 Donnelly Air Monitoring Station

PAZA - August 2020 Donnelly Station Report

Parameter	August			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	
SO ₂ (ppb)	0.3	0.0	94.1%	98.8%	6.6	172	Aug-04 08:00	0.7	48	Aug-04	0	-	0	0	Aug 03, 2020
H ₂ S (ppb)	0.2	0.0	95.2%	99.9%	10.1	10	Aug-06 11:00	1.0	3	Aug-06	1	-	0	-	Aug 07, 2020
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	15.7	4.0	99.9%	99.9%	31.1	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
WS (km/hr)	13.1	0.3	99.9%	99.9%	38.0										
WD (deg)	252	8.6	99.9%	99.9%	359.8	Average Wind Direction 252 WSW									

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	Teco	43I	Calibration Aug 3 and maintenance Aug 7 and 10 with perm tube replaced; one hour missing data Aug 29
H ₂ S	Thermo	45C	No Operational issues noted during the month; one hour missing data Aug 20
Met Equip	RMYoung	5103	No Operational issues noted during the month; one hour missing data Aug 20

1.7 Wembley Air Monitoring Station

PAZA - August 2020 Wembley Station Report

Parameter	August			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)	0.3	0.0	93.0%	97.9%	18.2	-	Aug-19 05:00	1.0	-	Aug-19	-	-	-	-	Aug 01, 2020
NO ₂ (ppb)	1.5	0.0	93.0%	97.9%	14.8	159	Aug-19 05:00	2.5	-	Aug-20	0	-	-	-	Aug 01, 2020
NO _x (ppb)	1.8	0.0	93.0%	97.9%	33.1	-	Aug-19 05:00	3.5	-	Aug-19	-	-	-	-	Aug 01, 2020
O ₃ (ppb)	23.5	1.9	94.2%	98.9%	46.5	76	Aug-05 13:00	27.1	-	Aug-03	0	-	-	-	Aug 04, 2020
PM _{2.5} (µg/m ³)	1.8	0.0	98.3%	98.5%	16.1	80	Aug-01 15:00	10.7	29	Aug-01	0	-	0	-	Aug 17, 2020
SO ₂ (ppb)	0.2	0.0	94.1%	98.9%	9.6	172	Aug-24 16:00	0.9	48	Aug-24	0	-	0	0	Aug 04, 2020
TRS (ppb)	0.3	0.1	43.4%	46.2%	2.3	-	Aug-17 21:00	0.5	-	Aug-21	-	-	-	-	Aug 17, 2020
CH ₄ (ppm)	2.0	1.7	93.4%	98.0%	2.6	-	Aug-05 06:00	2.1	-	Aug-28	-	-	-	-	Aug 17, 2020
THC (ppm)	2.0	1.8	93.4%	97.9%	2.6	-	Aug-05 06:00	2.1	-	Aug-28	-	-	-	-	Aug 17, 2020
NMHC (ppm)	0.0	0.0	93.4%	98.0%	0.0	-	Aug-27 20:00	0.0	-	Aug-24	-	-	-	-	Aug 17, 2020
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	15.2	3.4	99.1%	99.1%	29.7	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
WS (km/hr)	9.3	0.0	99.6%	99.6%	29.9										
WD (deg)	281	1.1	99.6%	99.6%	359.3	Average Wind Direction 281 WNW									

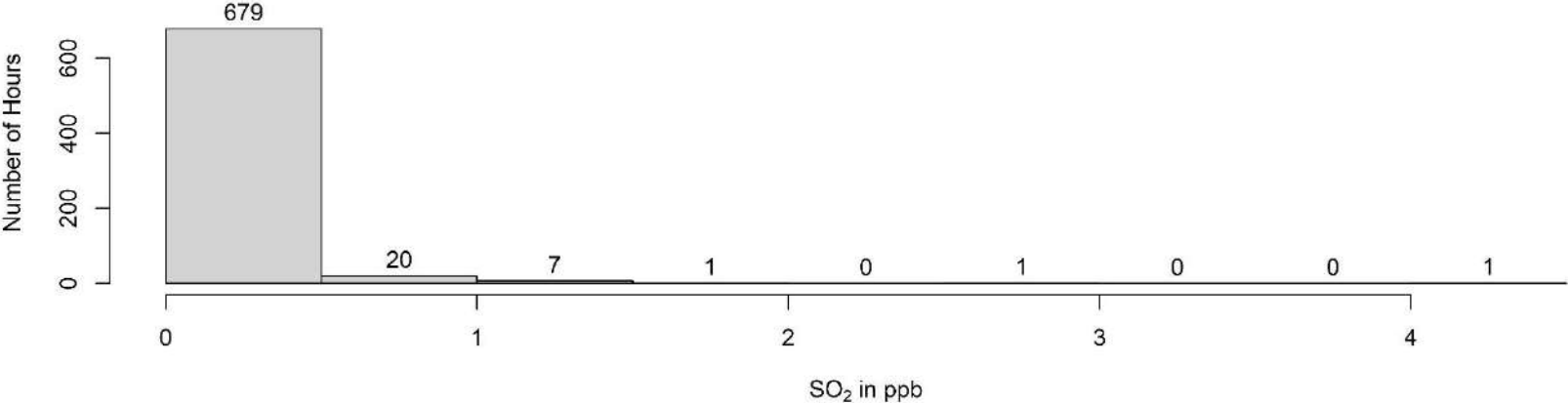
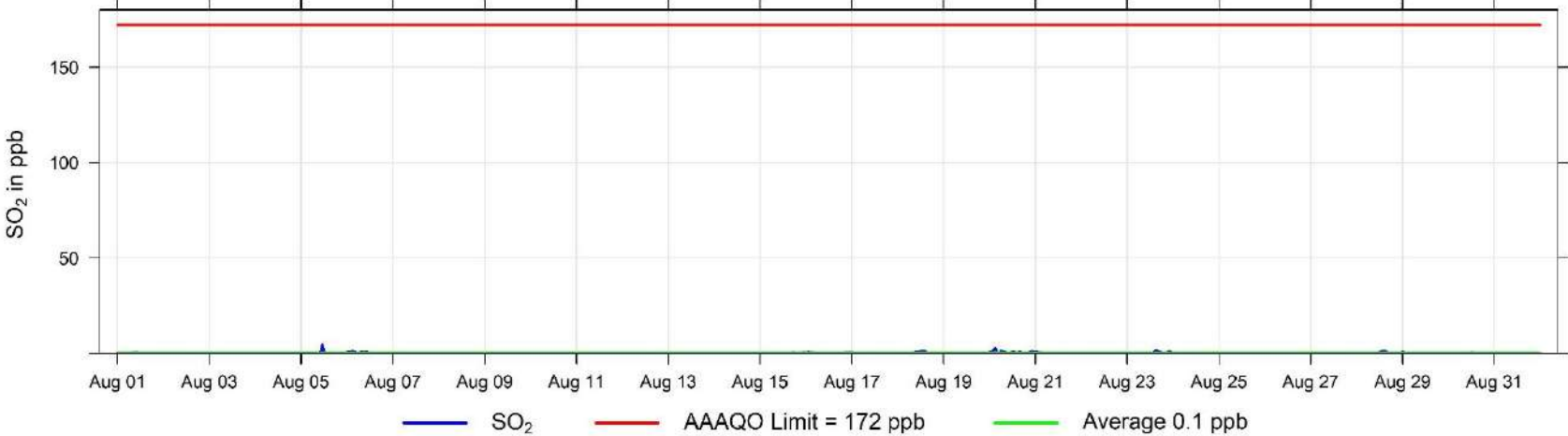
Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42i	No Operational issues noted during the month; power failure Aug 25 resulted in missing data
O ₃	TEI	49I	No Operational issues noted during the month; power failure Aug 25 resulted in missing data
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted during the month; power failure Aug 25 resulted in missing data
SO ₂	TEI	43I	No Operational issues noted during the month; power failure Aug 25 resulted in missing data
TRS	TEI	43I	Several calibrations and maintenance due to span issues in early Aug and ultimately equipment replaced resulted in data flagged not valid until after final calibration Aug 17
THC/CH ₄ /NMHC	TEI	55I-A3PHAA	No Operational issues noted during the month; Aug 17 nitrogen cylinder replaced; power failure Aug 25 resulted in missing data
Met Equip	MetOne	50.5	No Operational issues noted during the month; power failure Aug 25 resulted in missing data

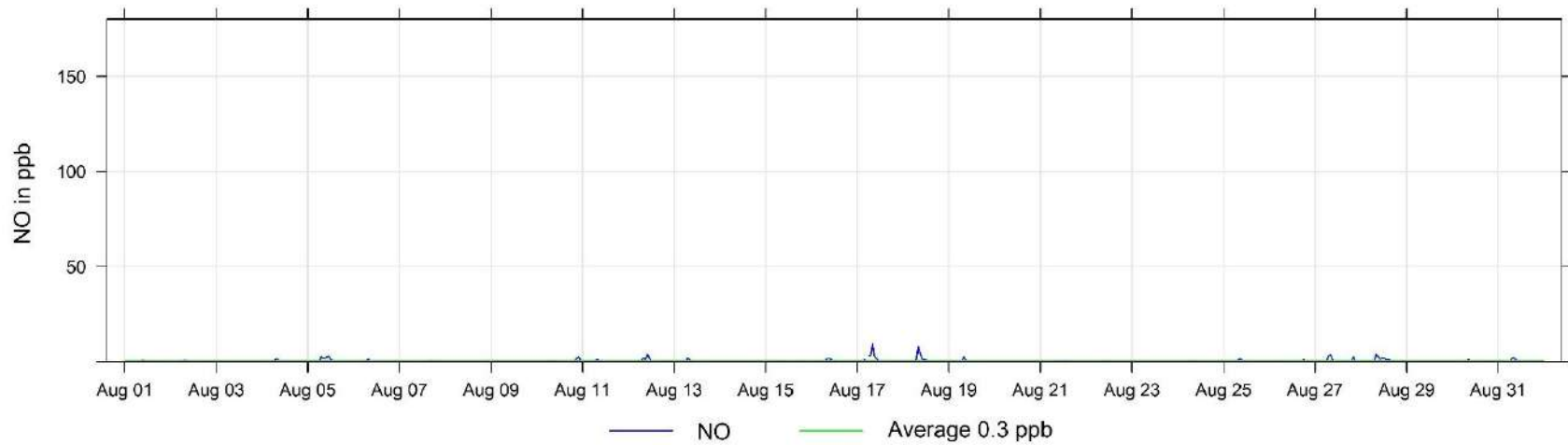
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

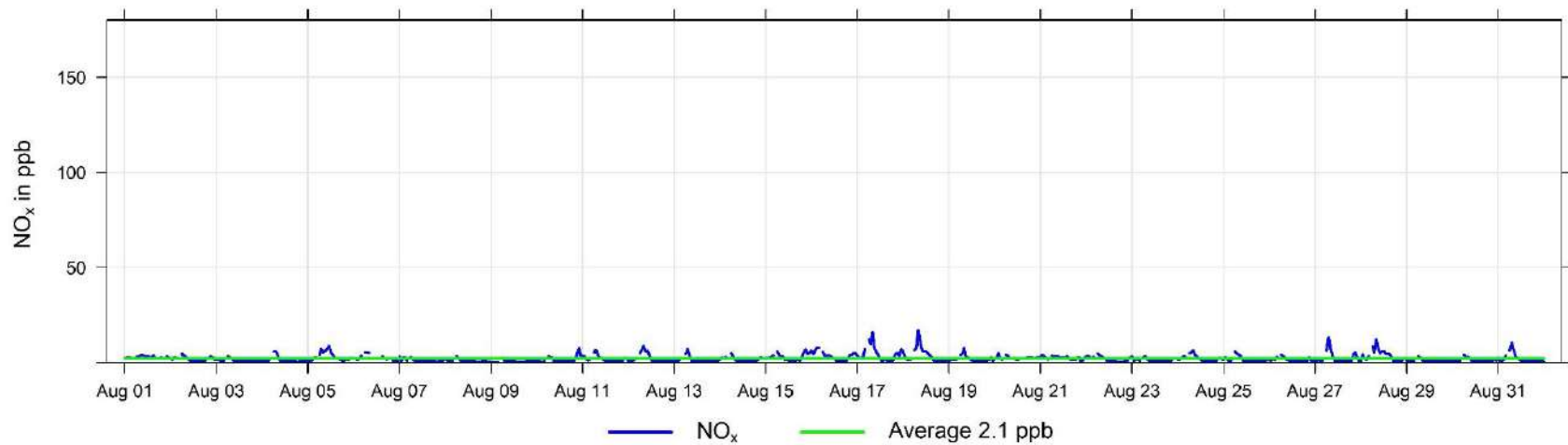
August Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



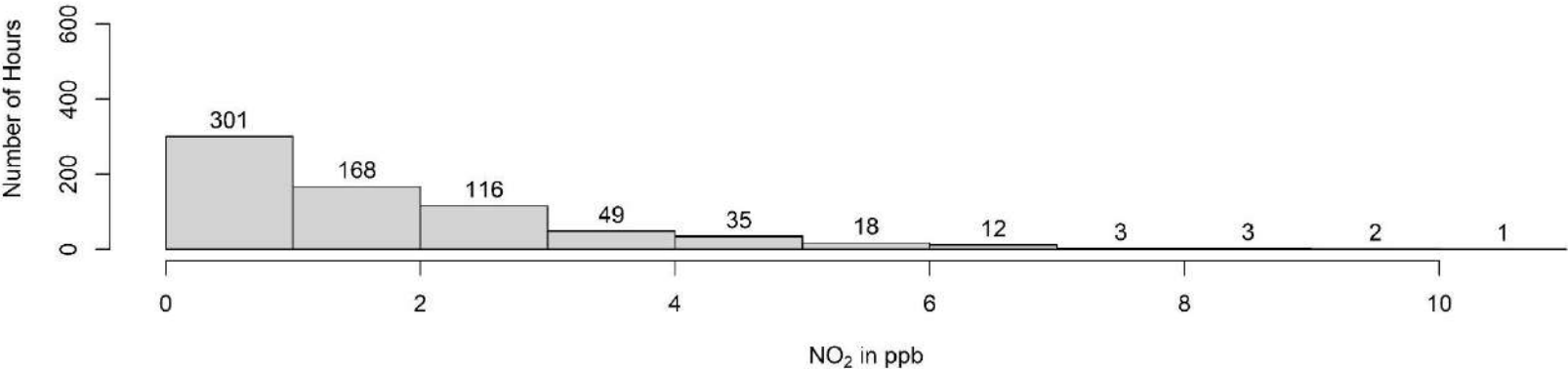
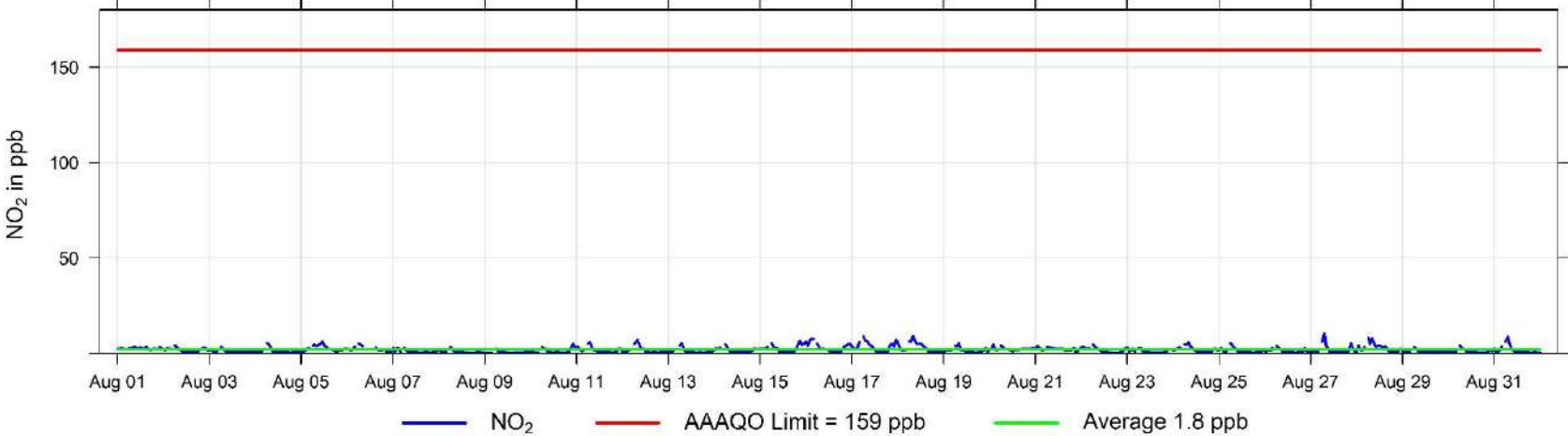
August Hourly Concentration Readings of NO (in ppb) at Beaverlodge



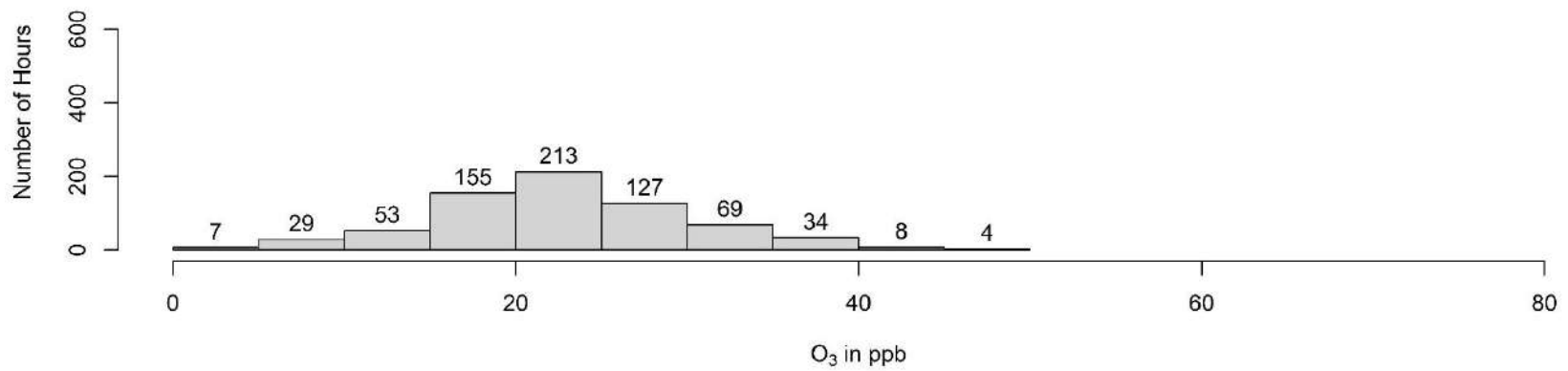
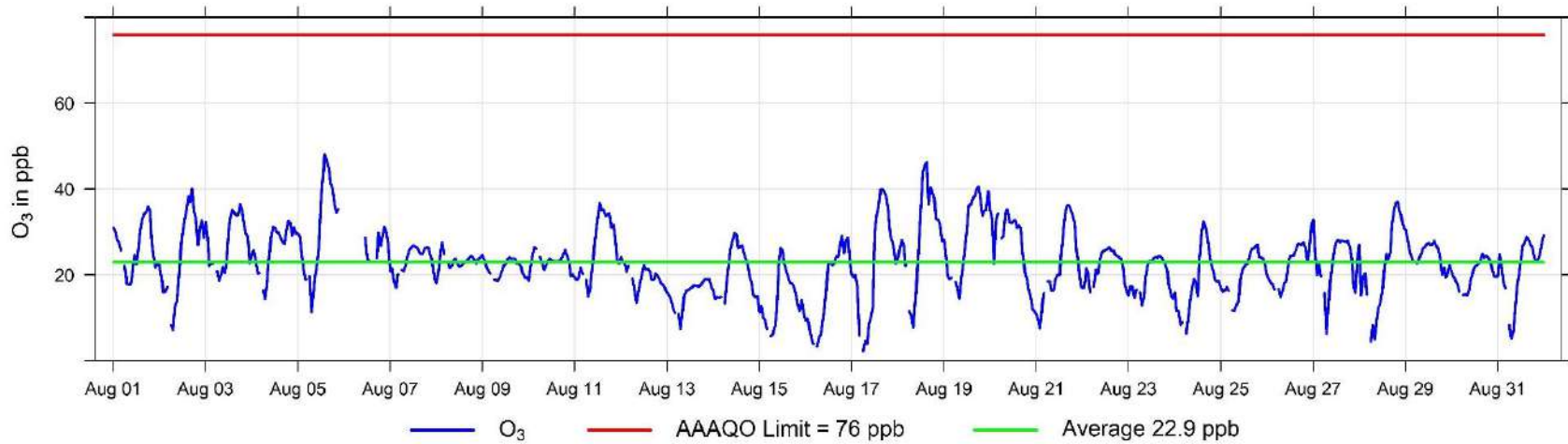
August Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



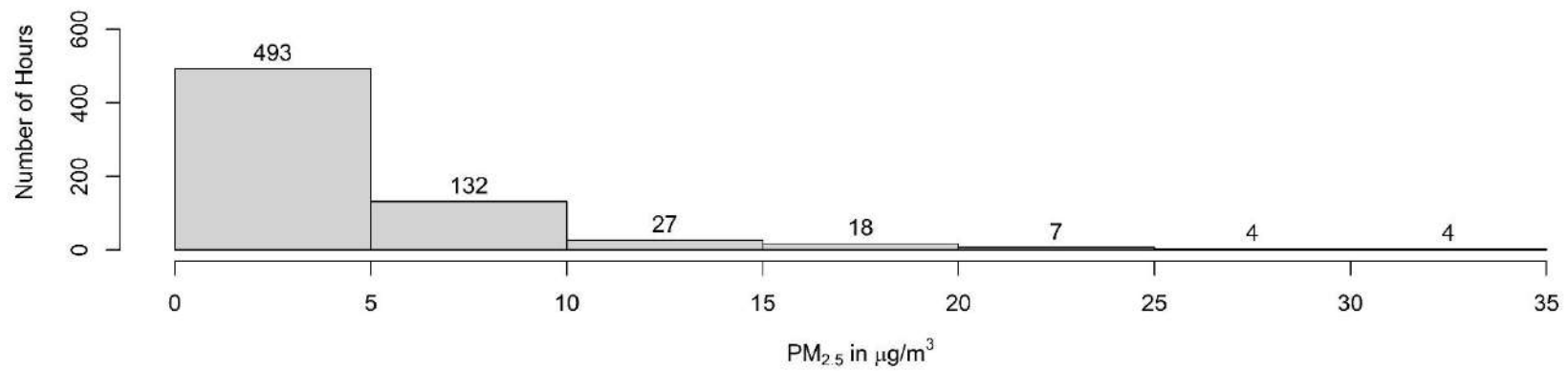
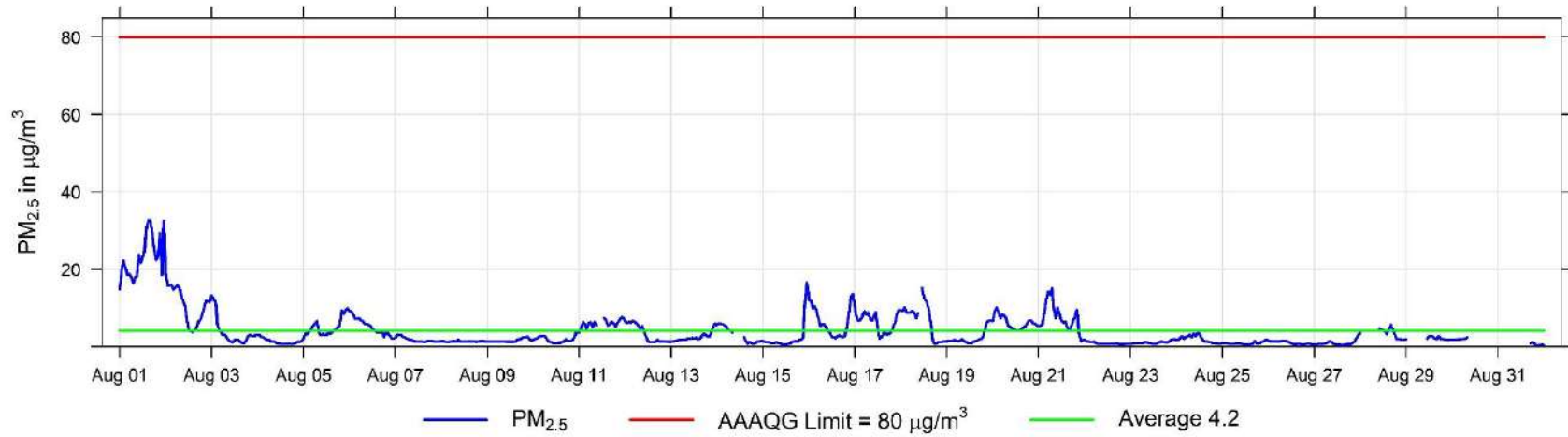
August Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge



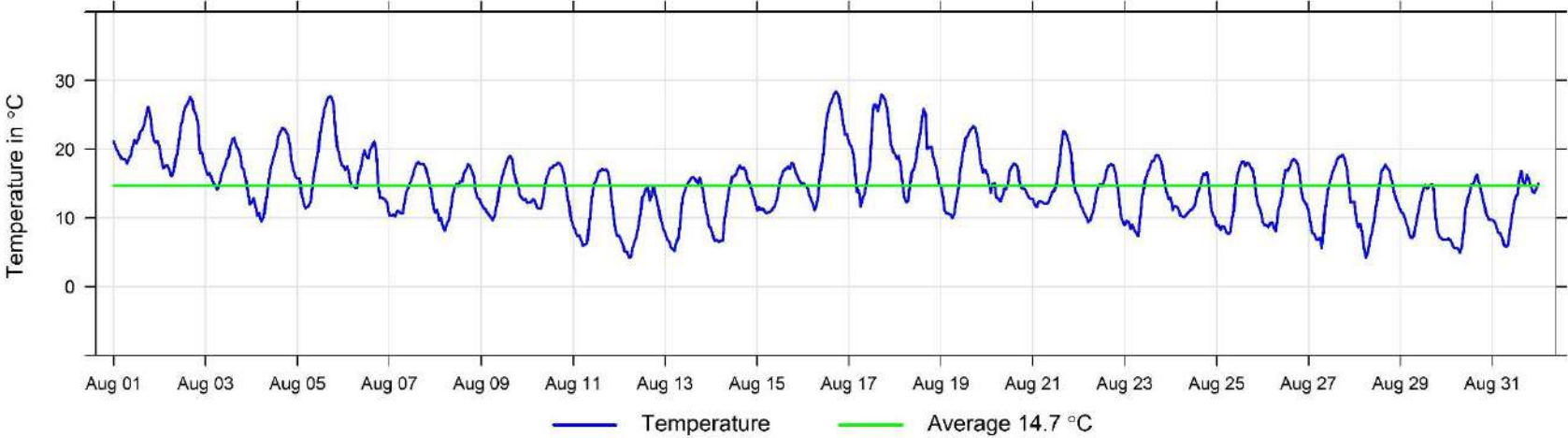
August Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



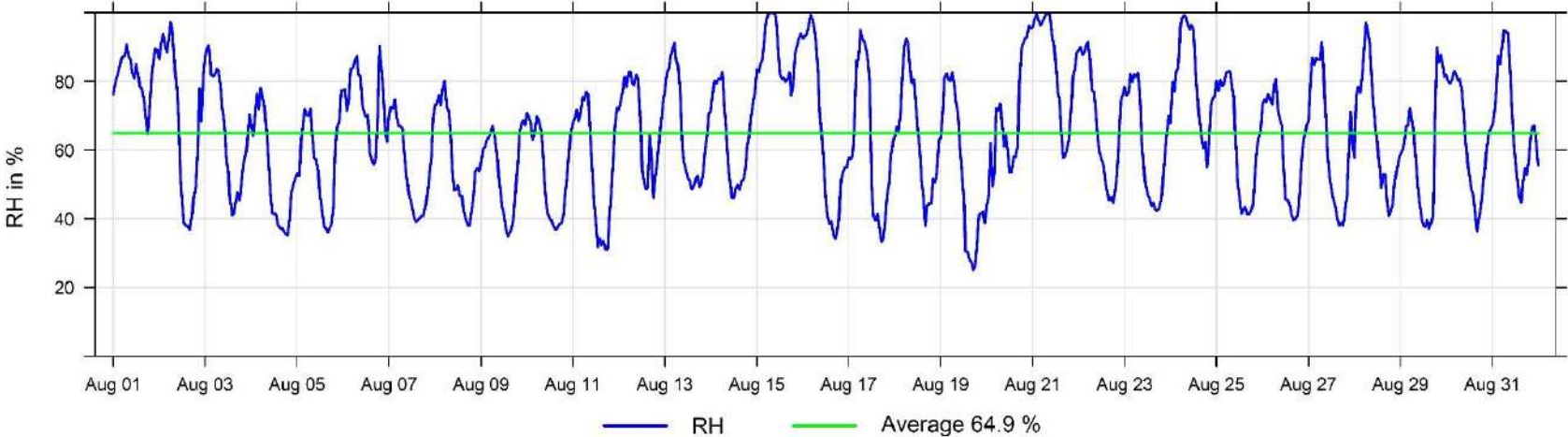
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



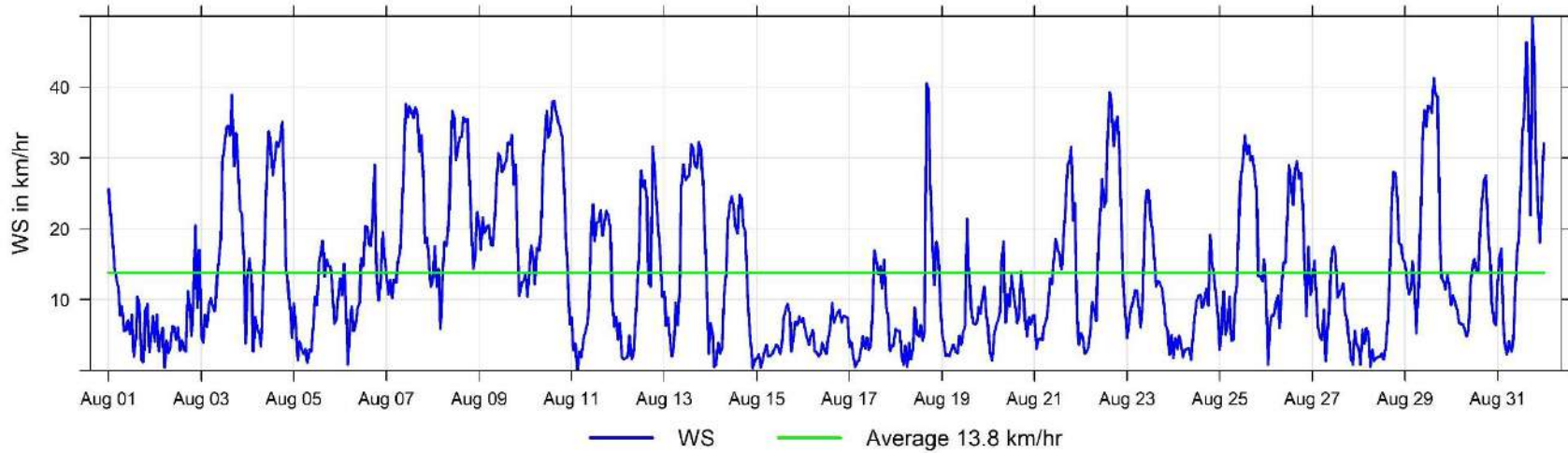
August Hourly Temperature Readings (in °C) at Beaverlodge



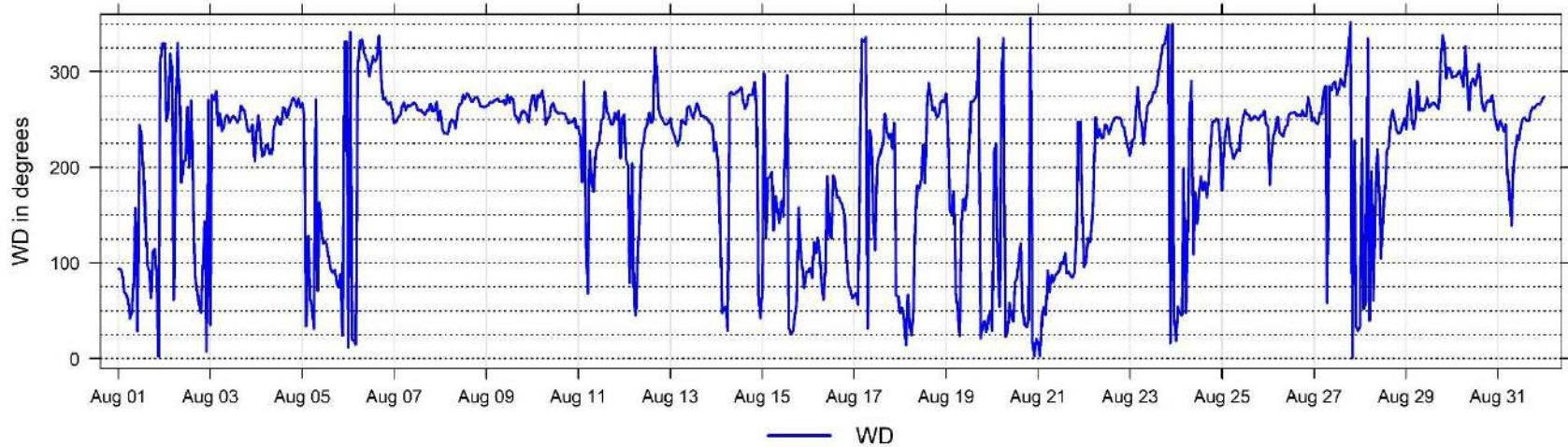
August Hourly Readings of Relative Humidity (in %) at Beaverlodge



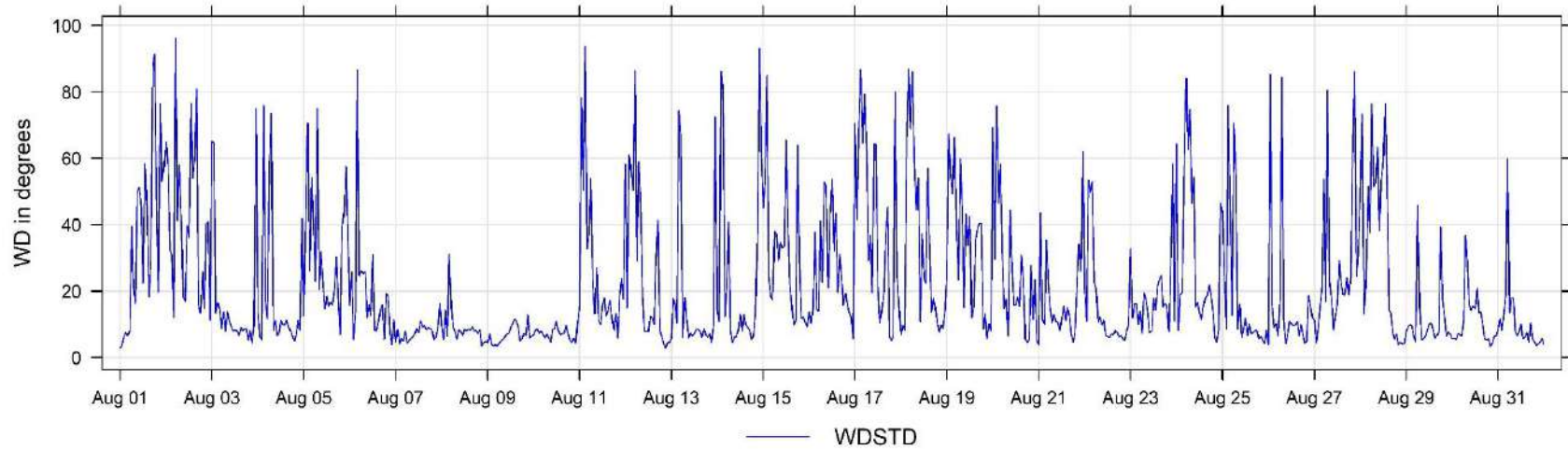
August Hourly Readings of Wind Speed (in km/hr) at Beaverlodge

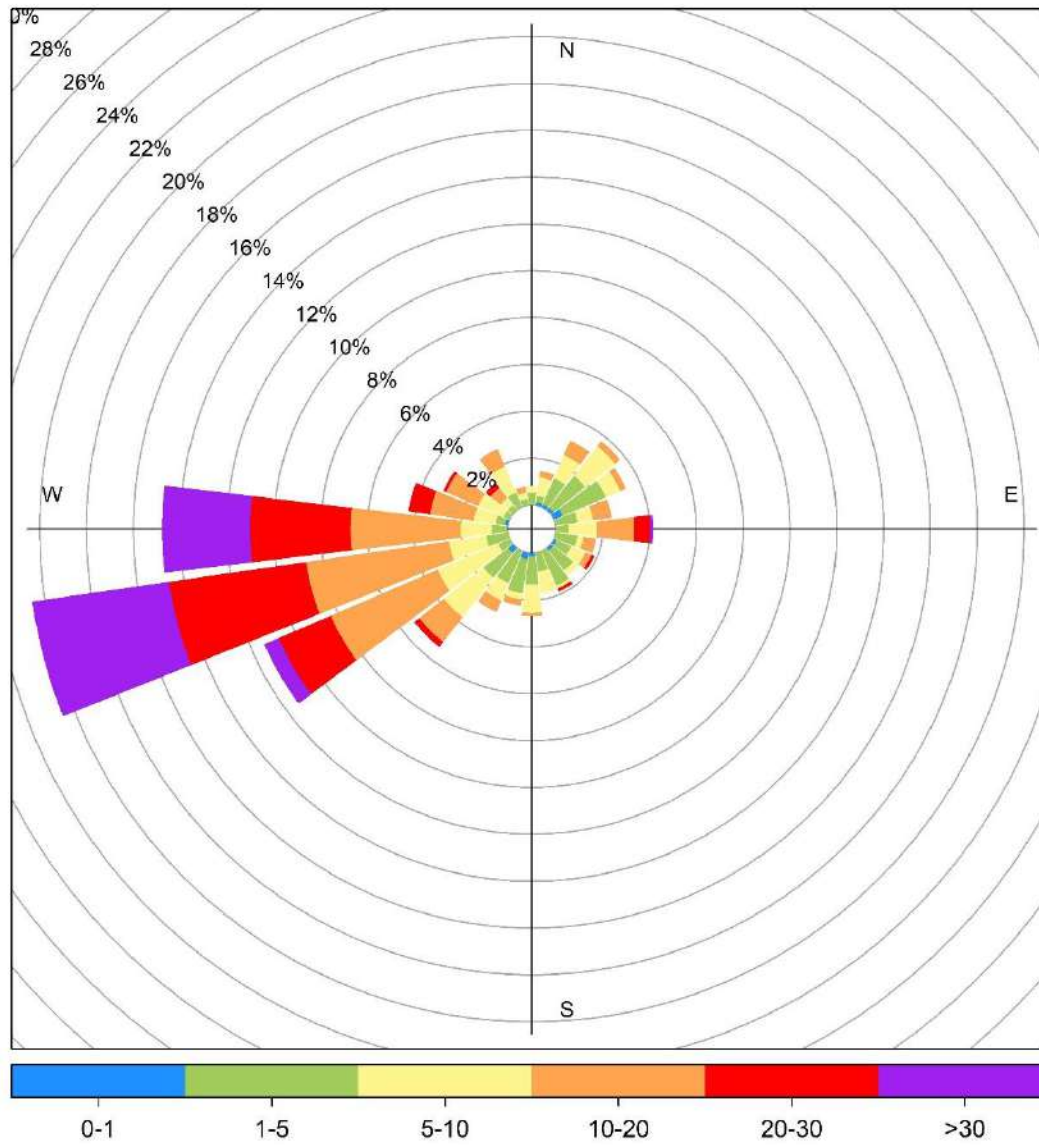


August Hourly Readings of Wind Direction (in degrees) at Beaverlodge



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



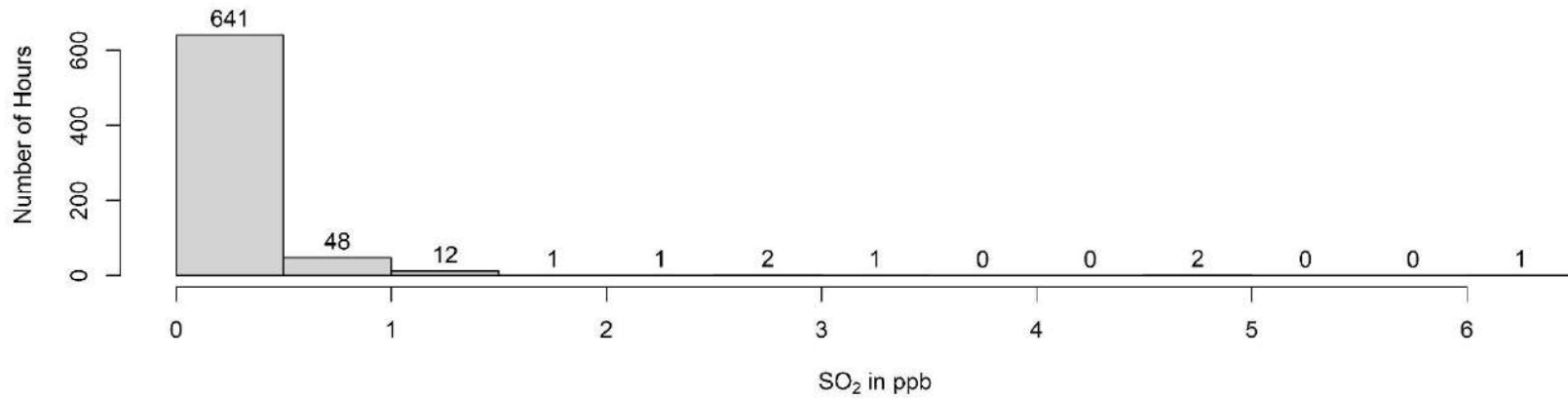
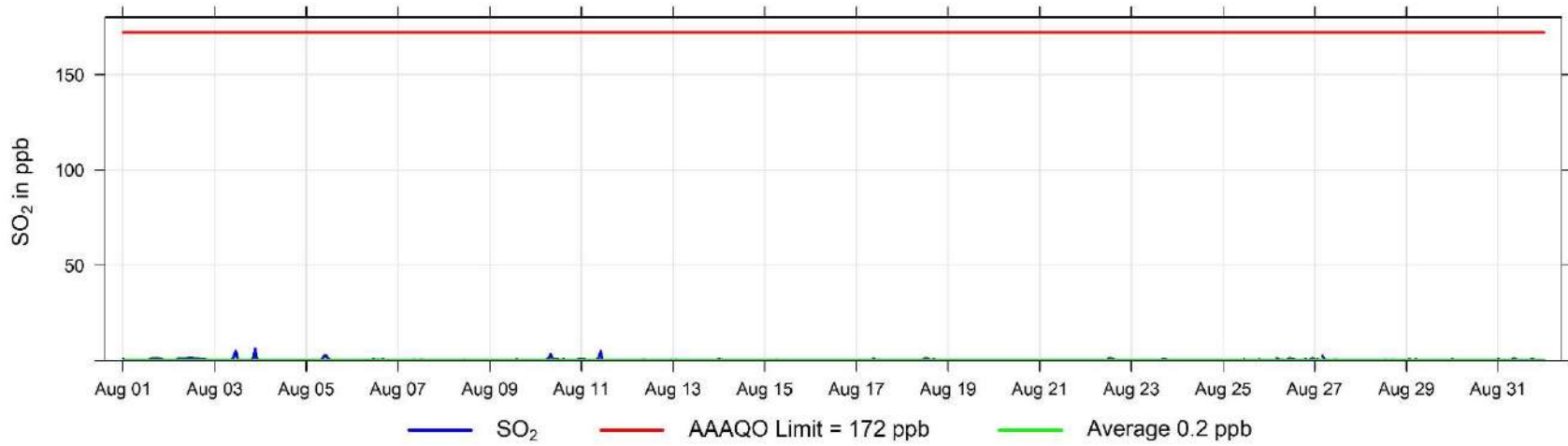


Beaverlodge August Wind Rose, wind speed in km/hr

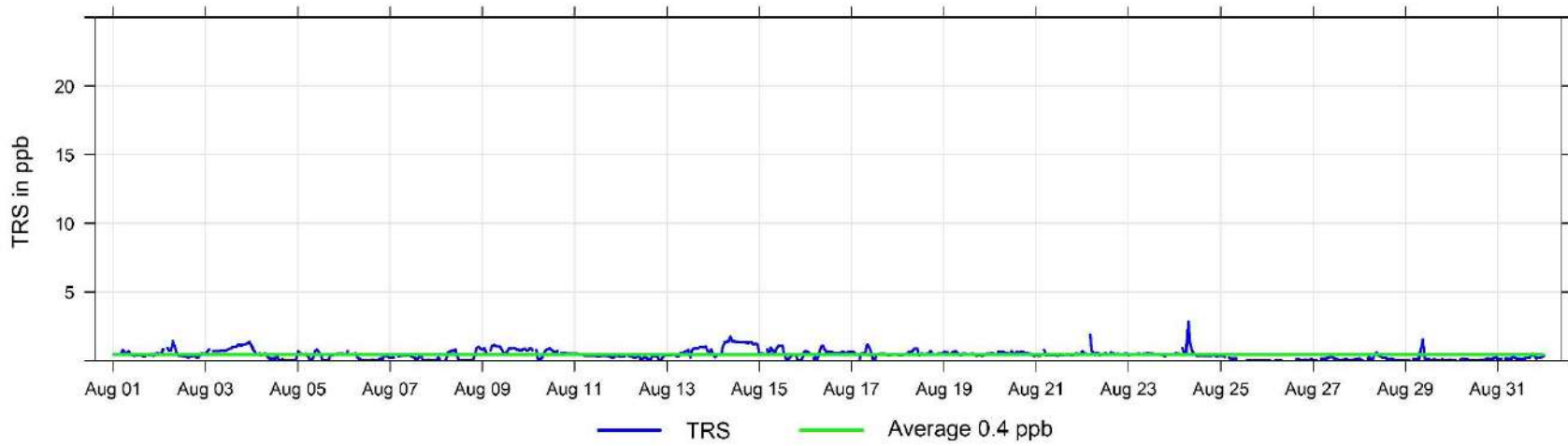
3 Evergreen Park Charts

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

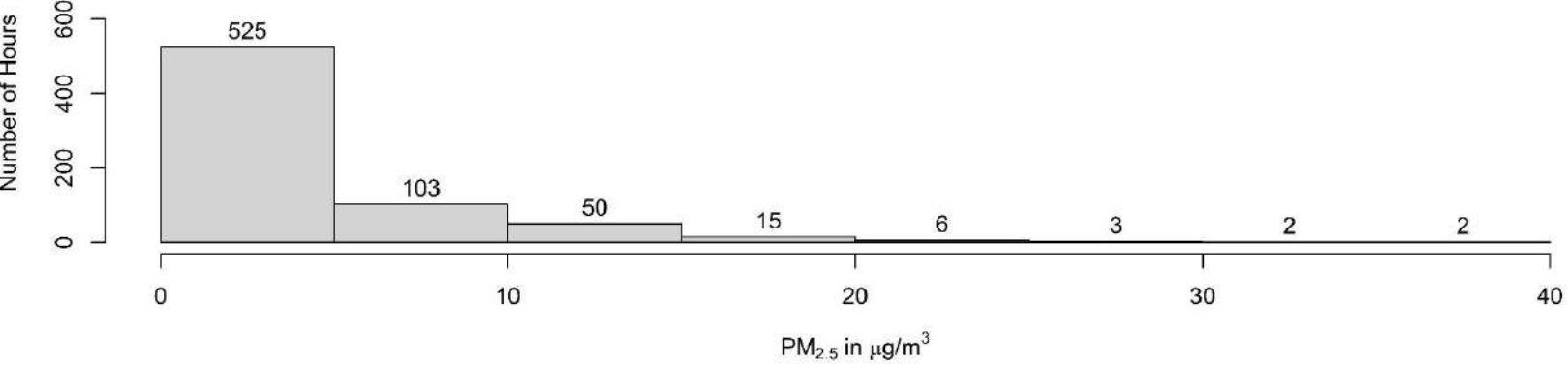
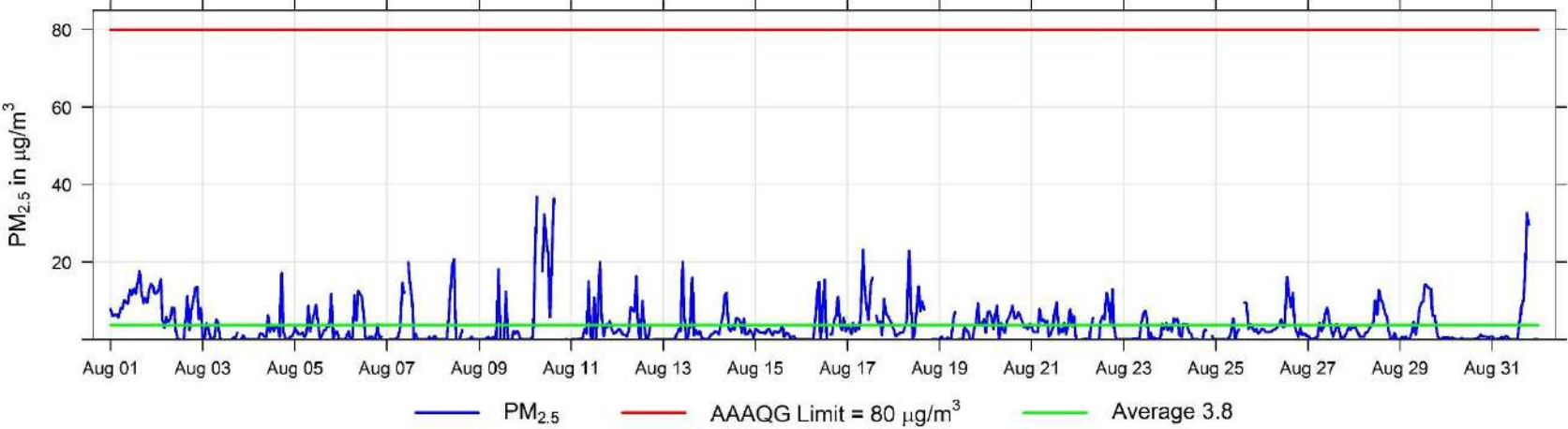
August Hourly Concentration Readings of SO₂ (in ppb) at Evergreen Park



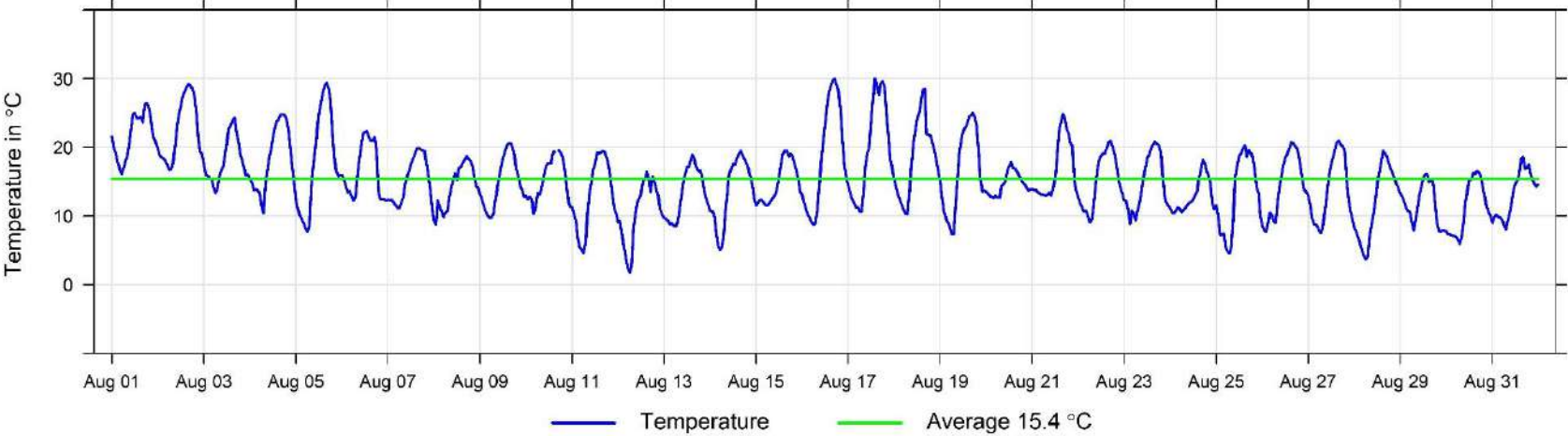
August Hourly Concentration Readings of TRS (in ppb) at Evergreen Park



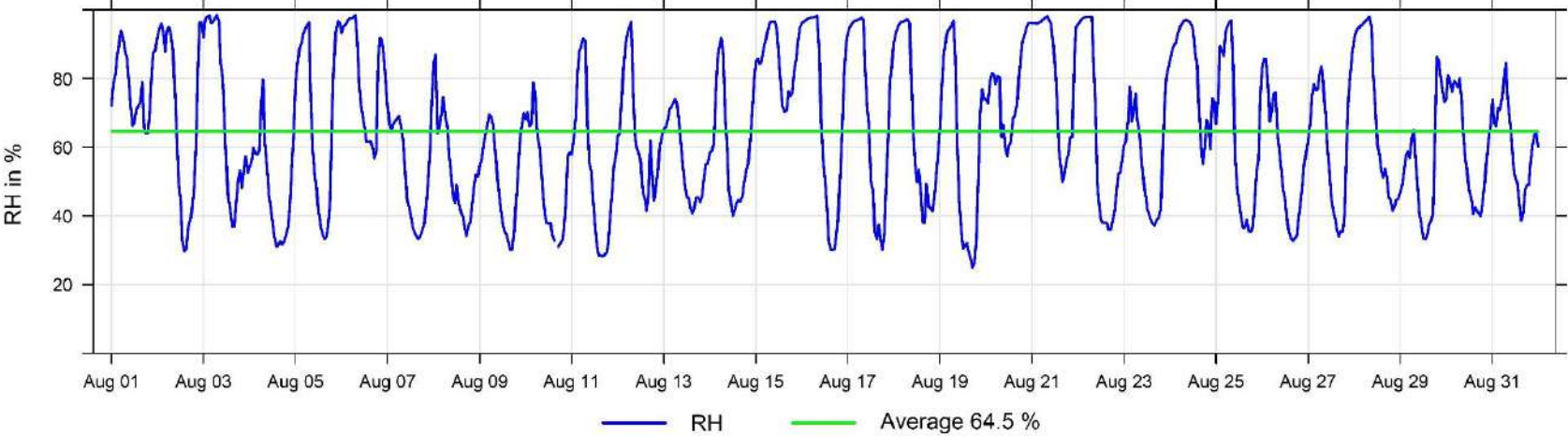
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Evergreen Park



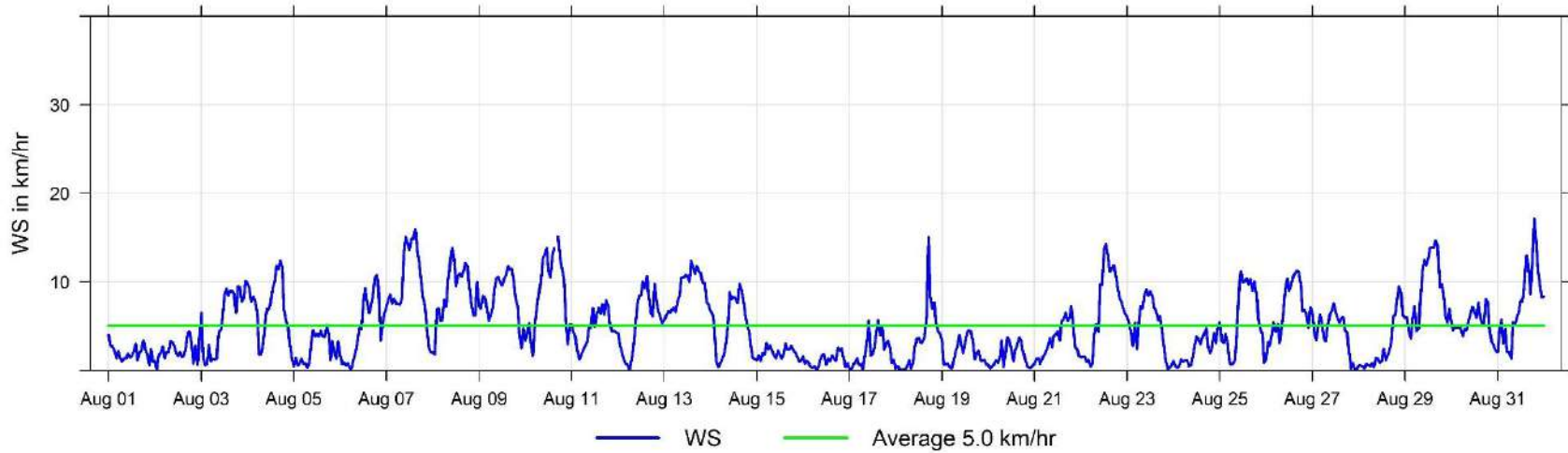
August Hourly Temperature Readings (in °C) at Evergreen Park



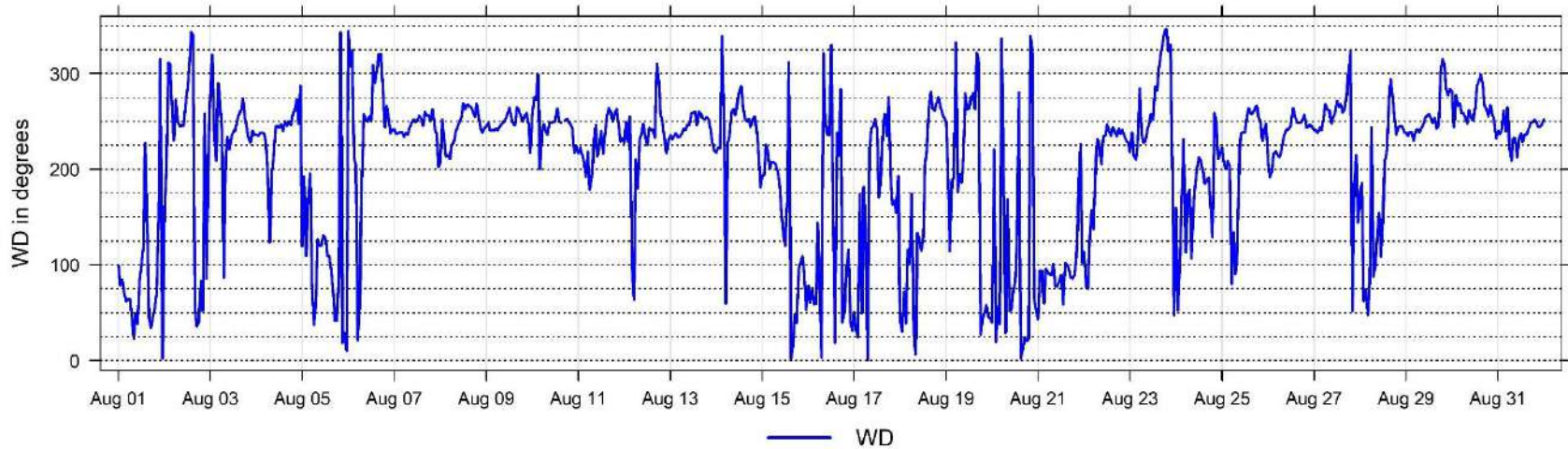
August Hourly Readings of Relative Humidity (in %) at Evergreen Park



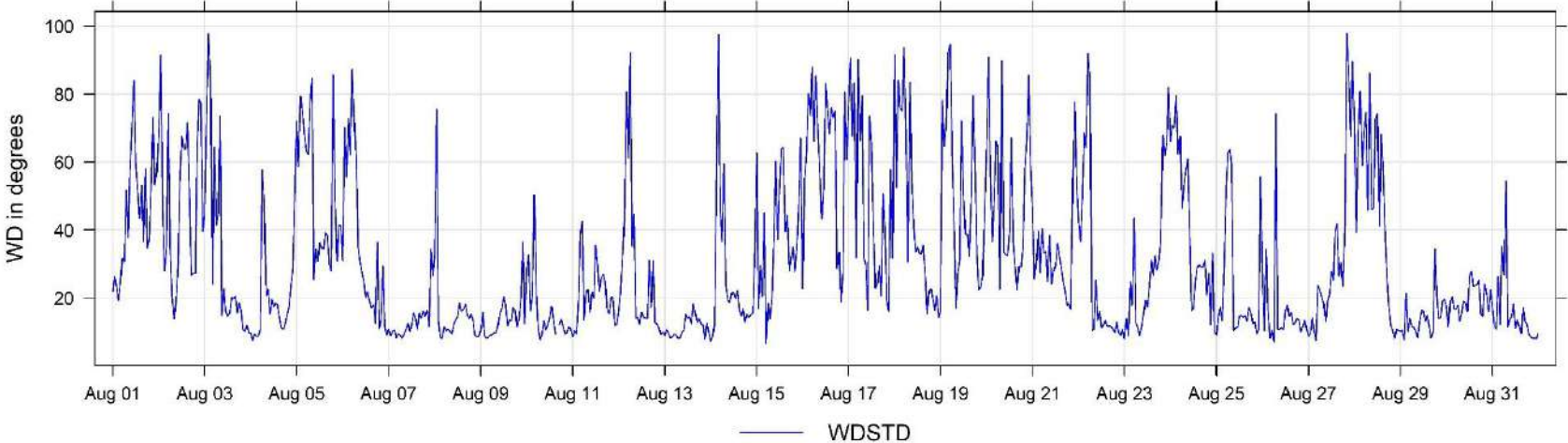
August Hourly Readings of Wind Speed (in km/hr) at Evergreen Park

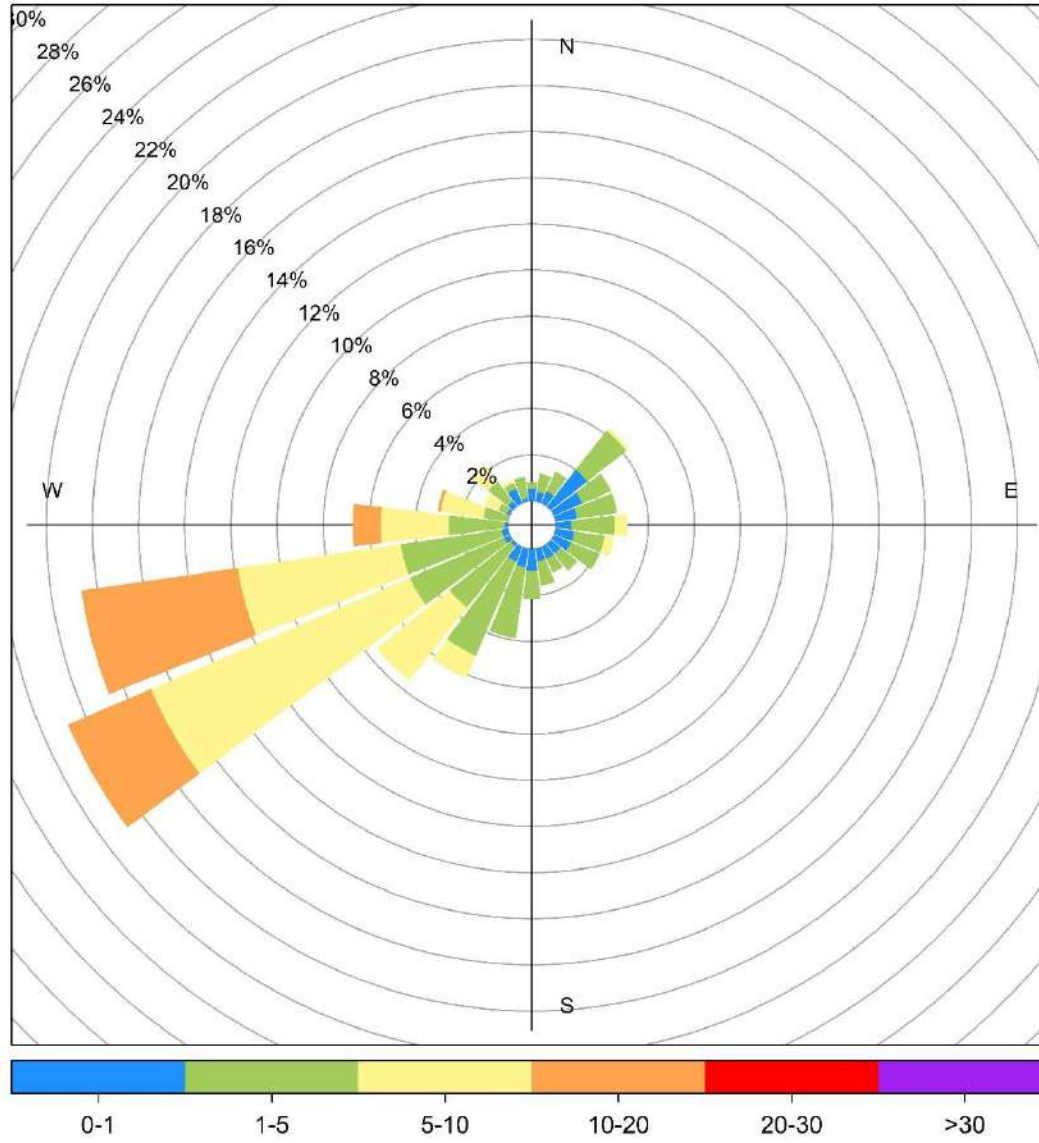


August Hourly Readings of Wind Direction (in degrees) at Evergreen Park



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



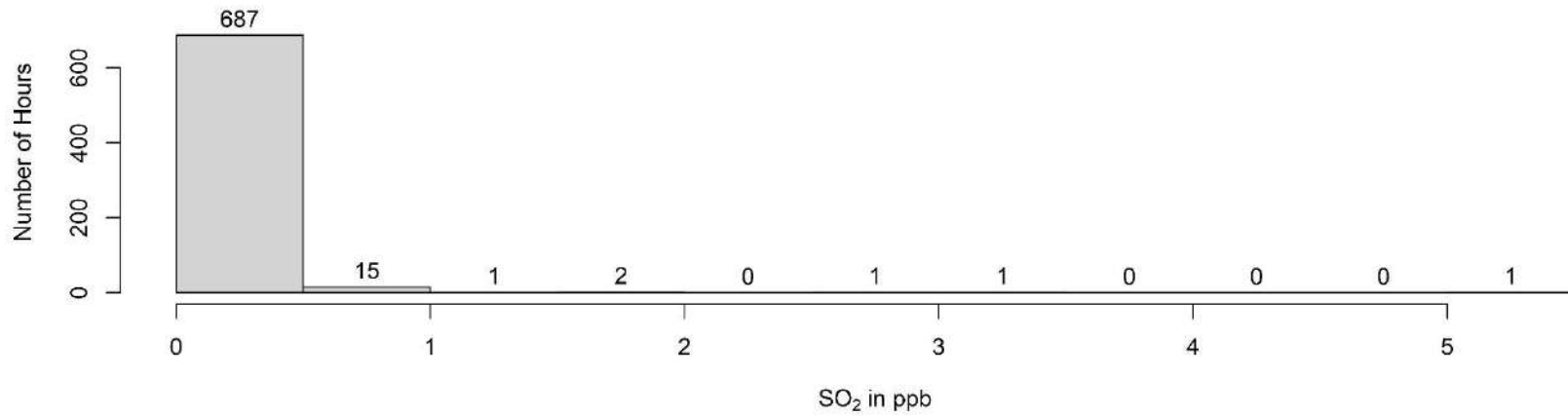
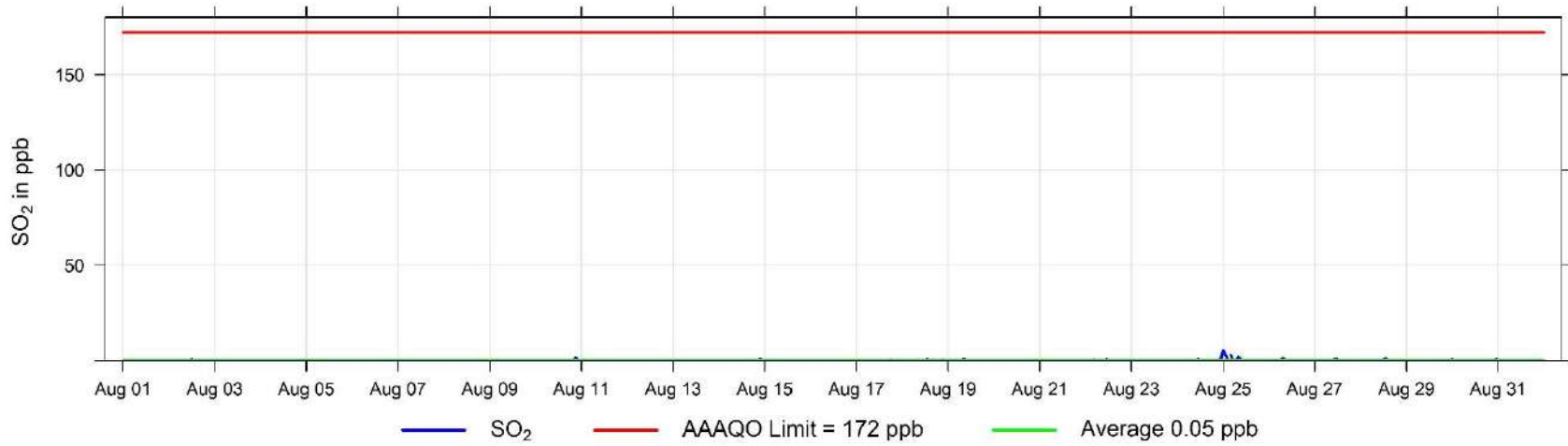


Evergreen Park August Wind Rose, wind speed in km/hr

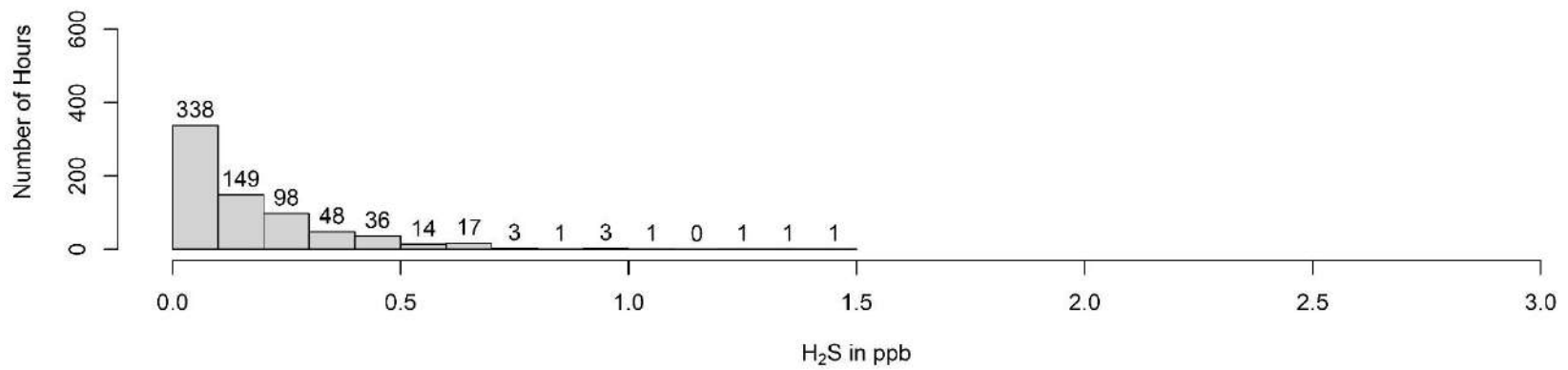
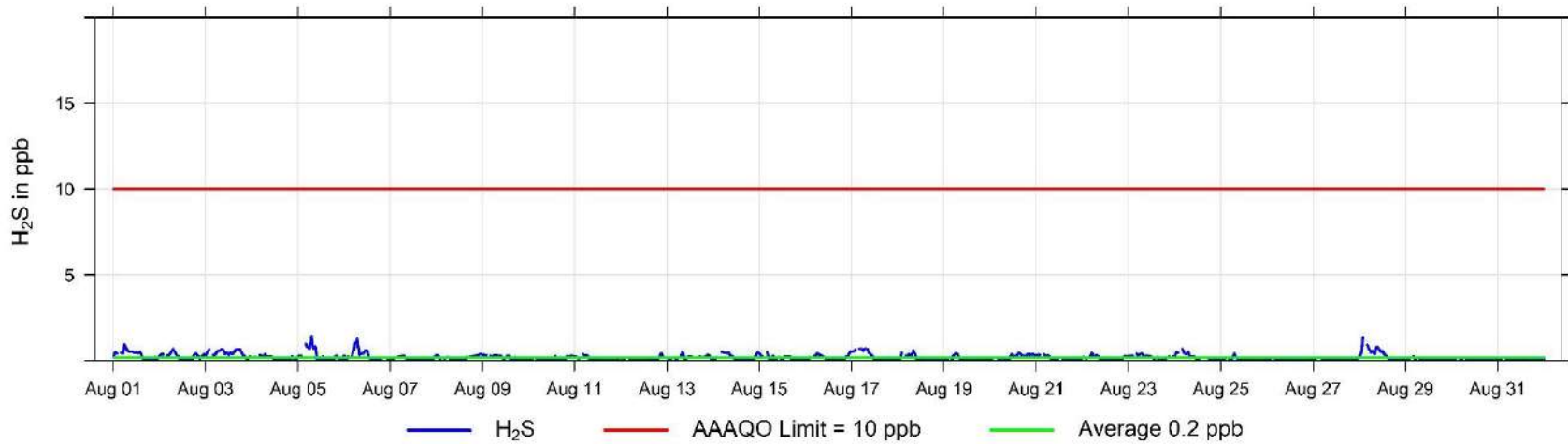
4 Grande Prairie - Henry Pirker Charts

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

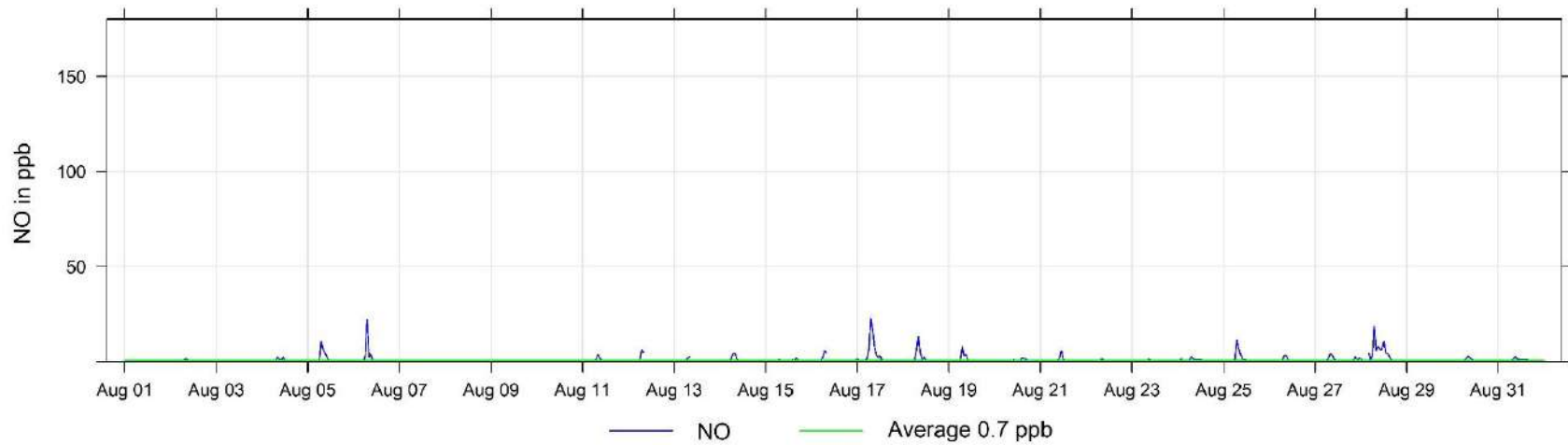
August Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



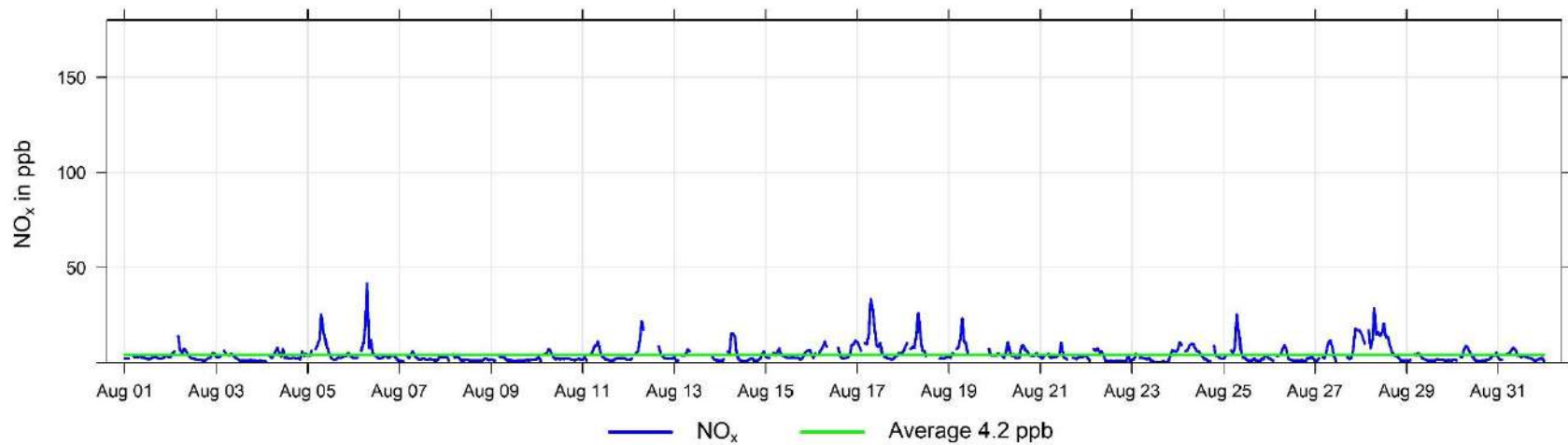
August Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



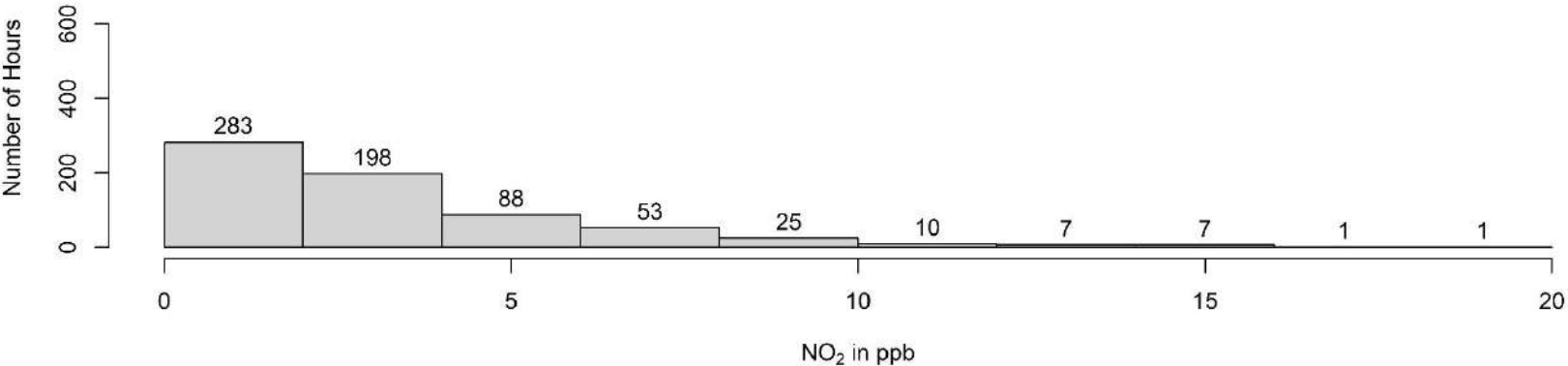
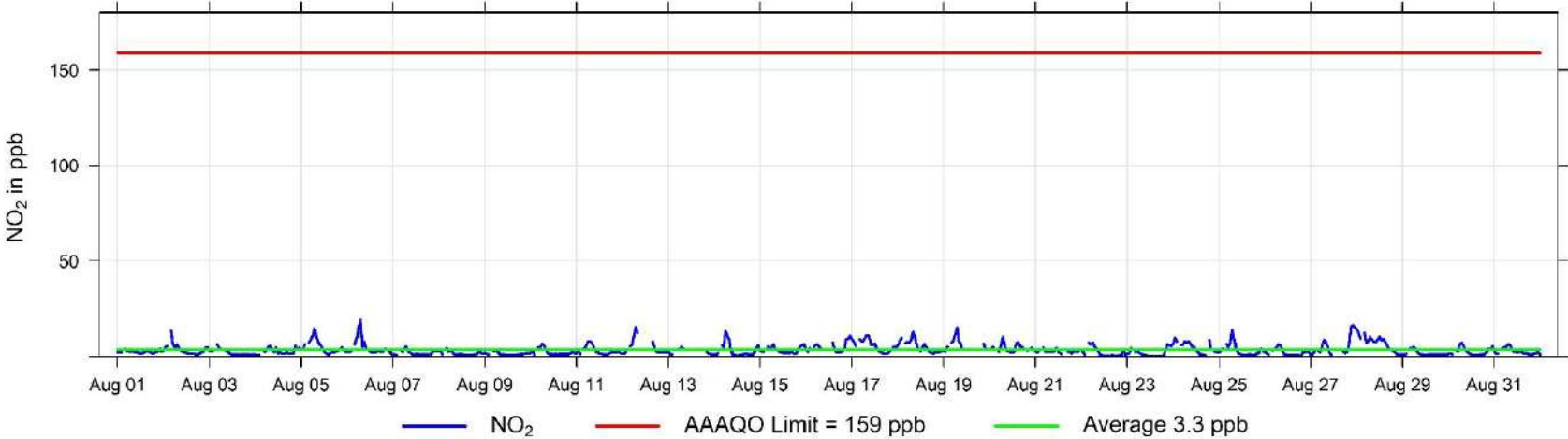
August Hourly Concentration Readings of NO (in ppb) at Henry Pirker



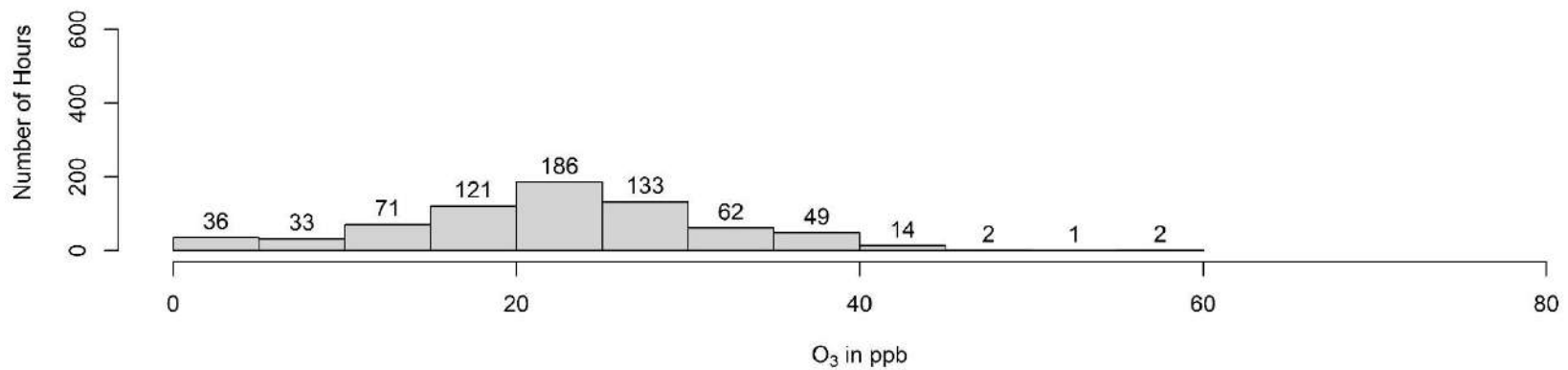
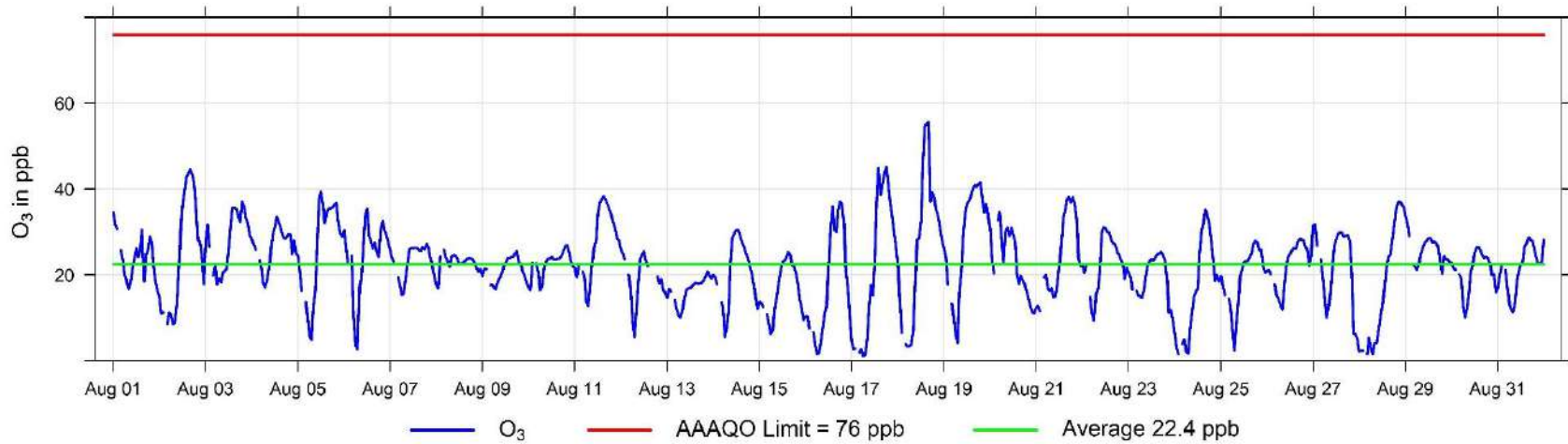
August Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



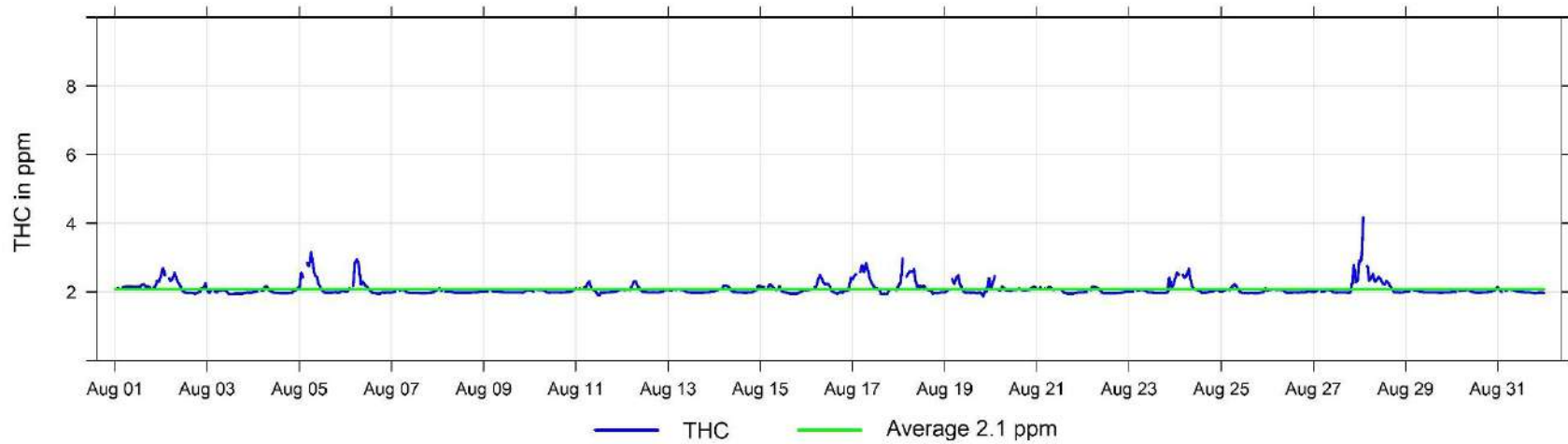
August Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker



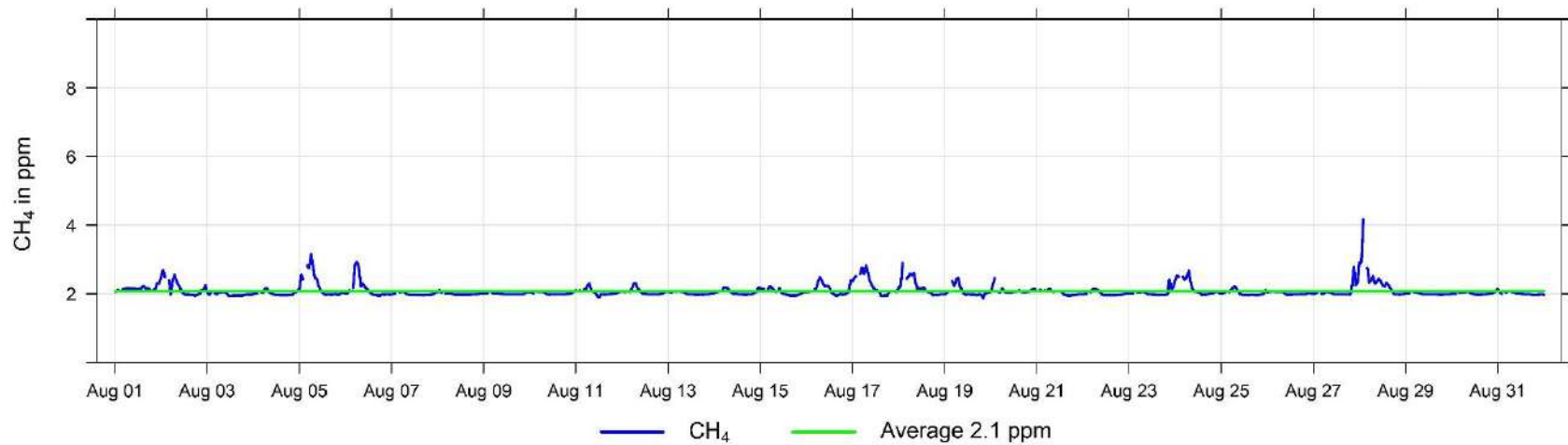
August Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



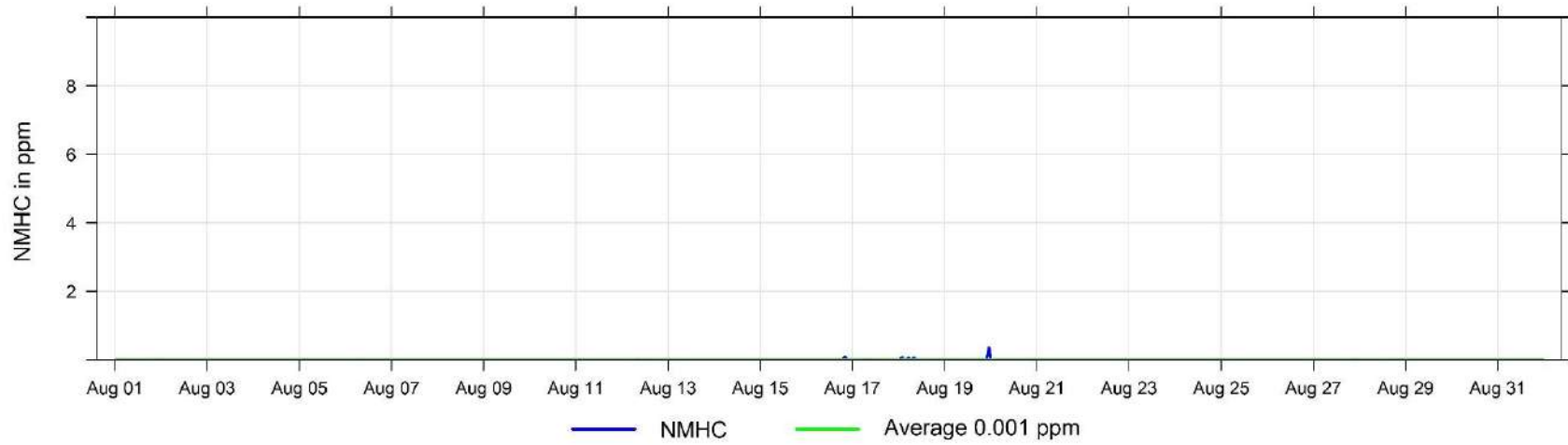
August Hourly Concentration Readings of THC (in ppm) at Henry Pirker



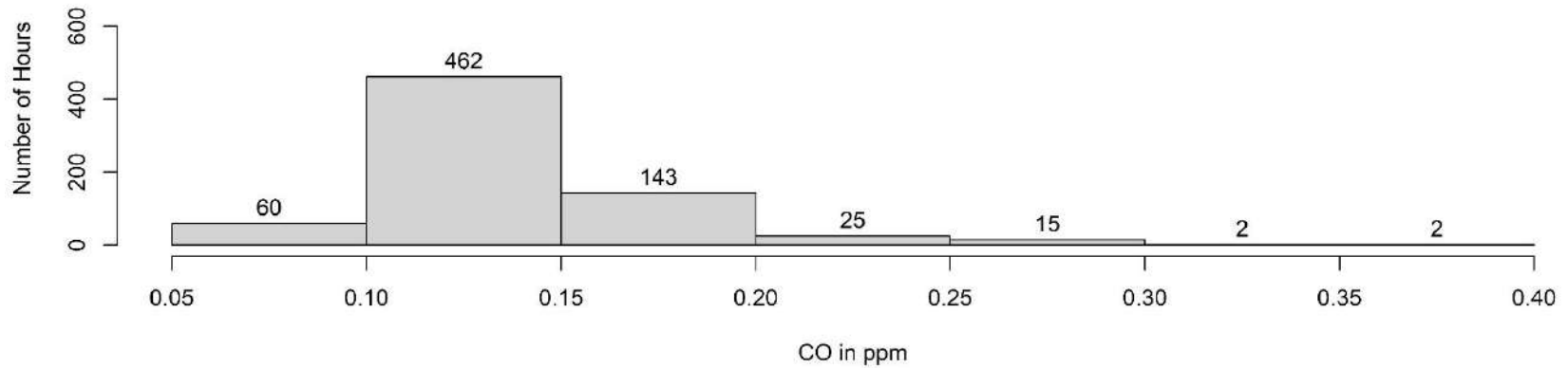
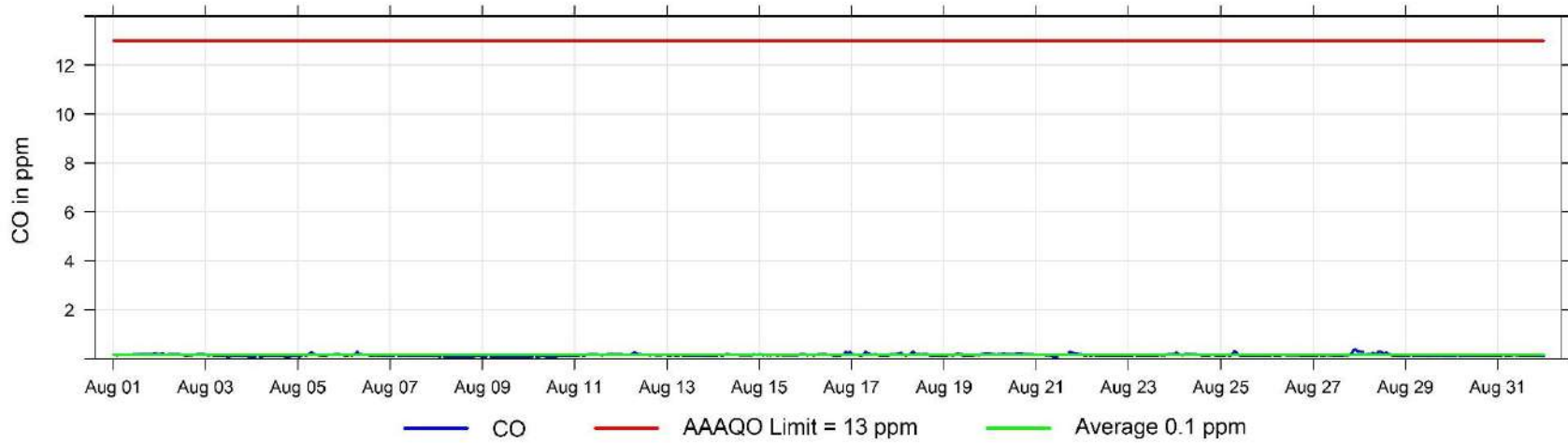
August Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



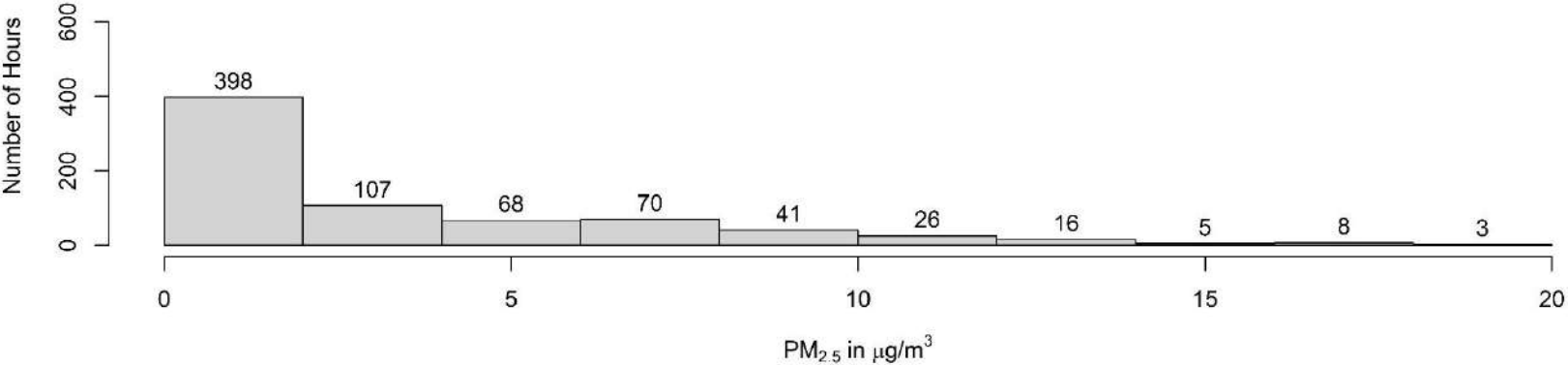
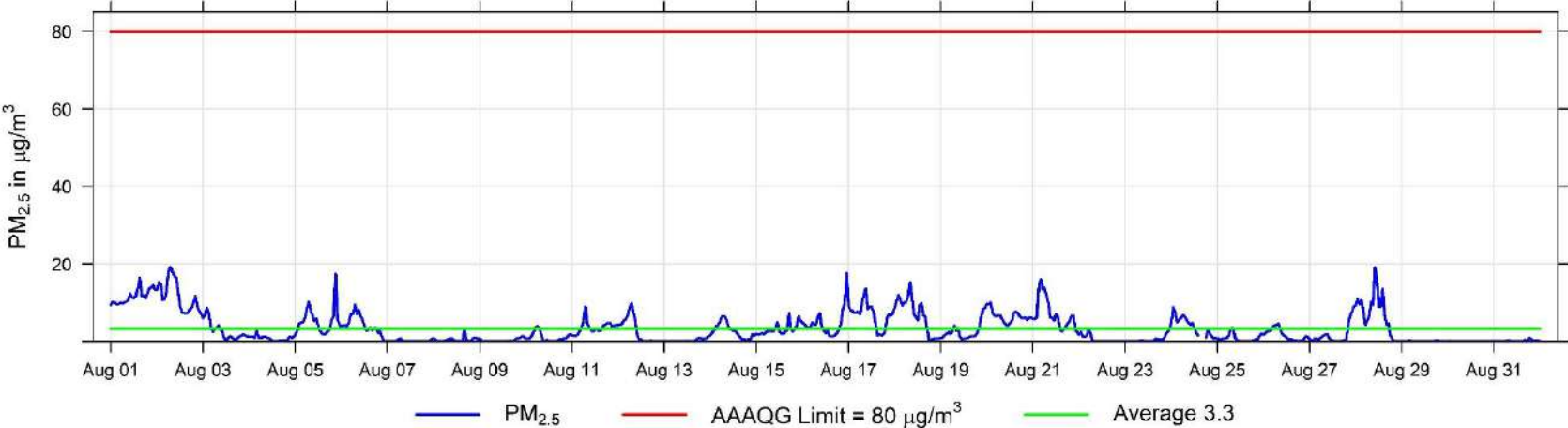
August Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



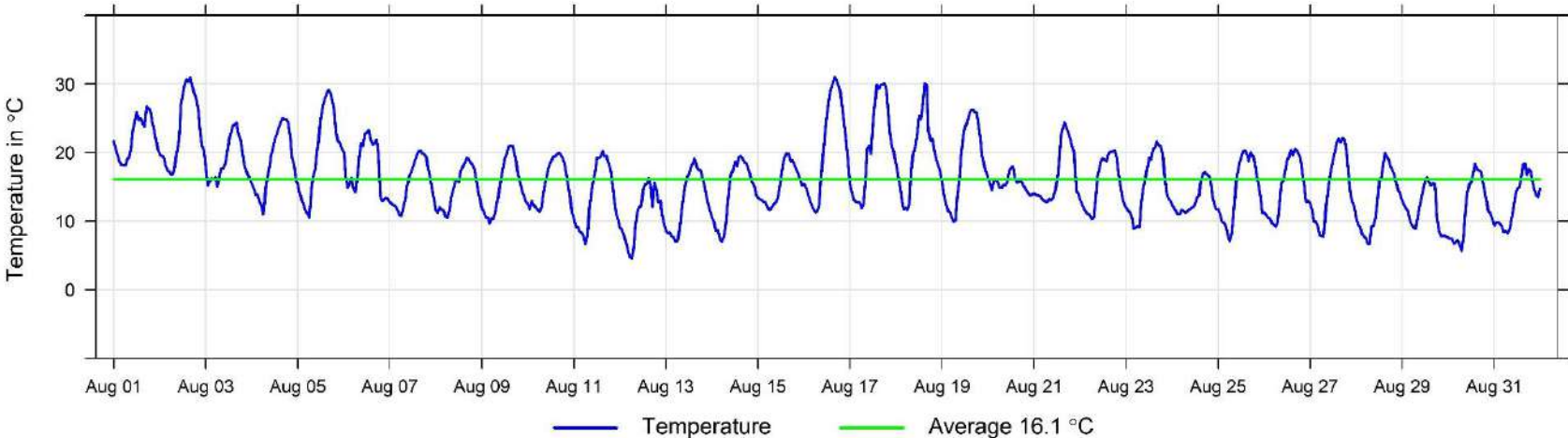
August Hourly Concentration Readings of CO (in ppm) at Henry Pirker



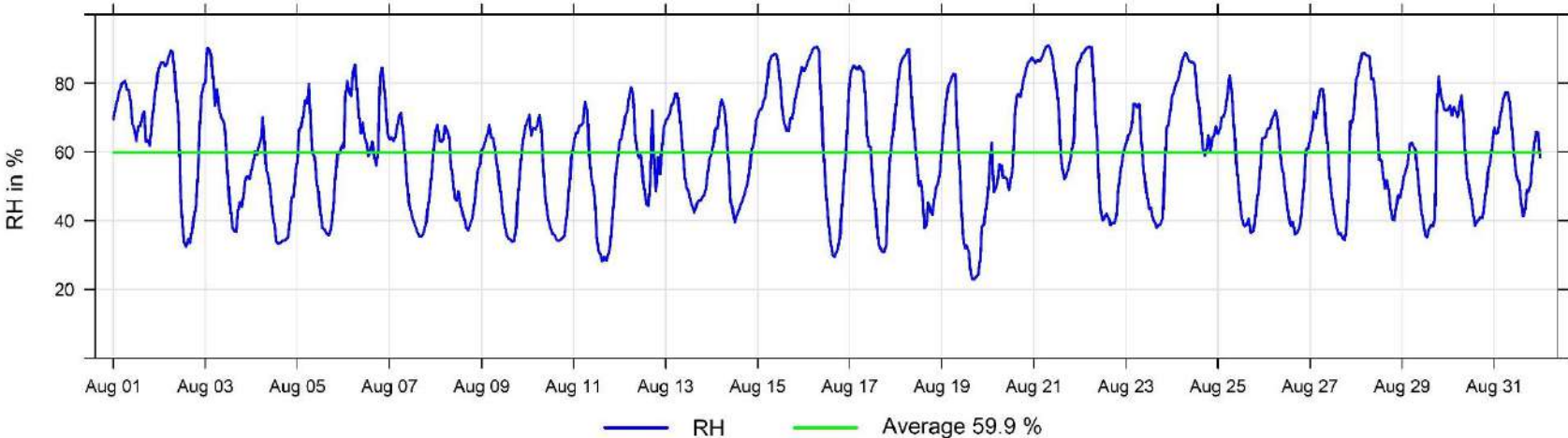
Hourly Concentration Readings of PM_{2.5} in µg/m³ at Henry Pirker



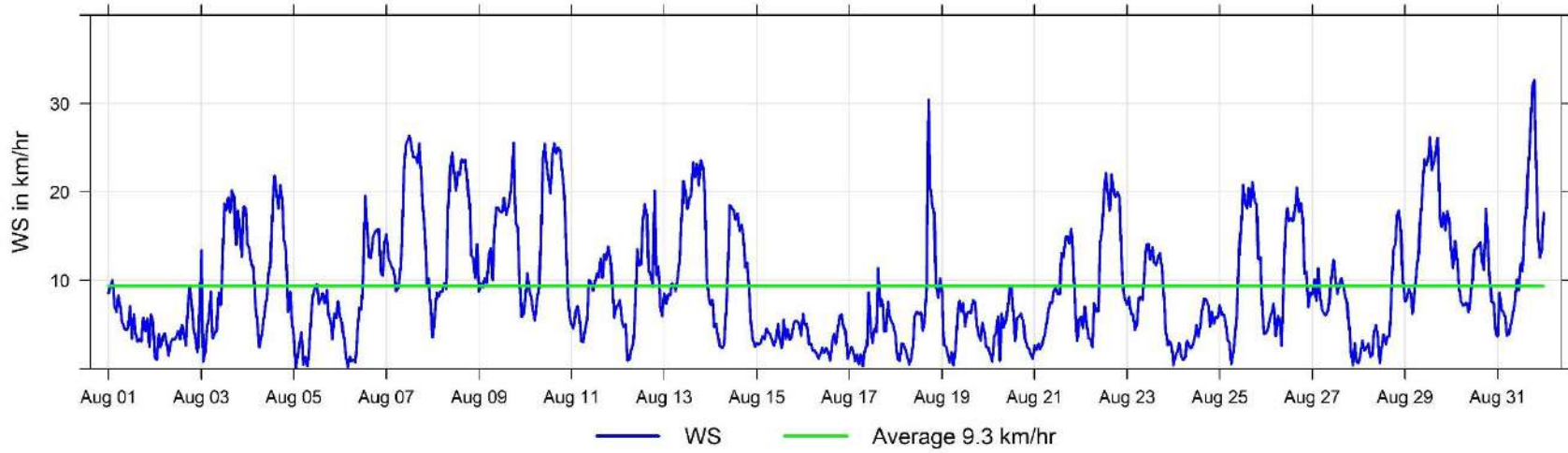
August Hourly Temperature Readings (in °C) at Henry Pirker



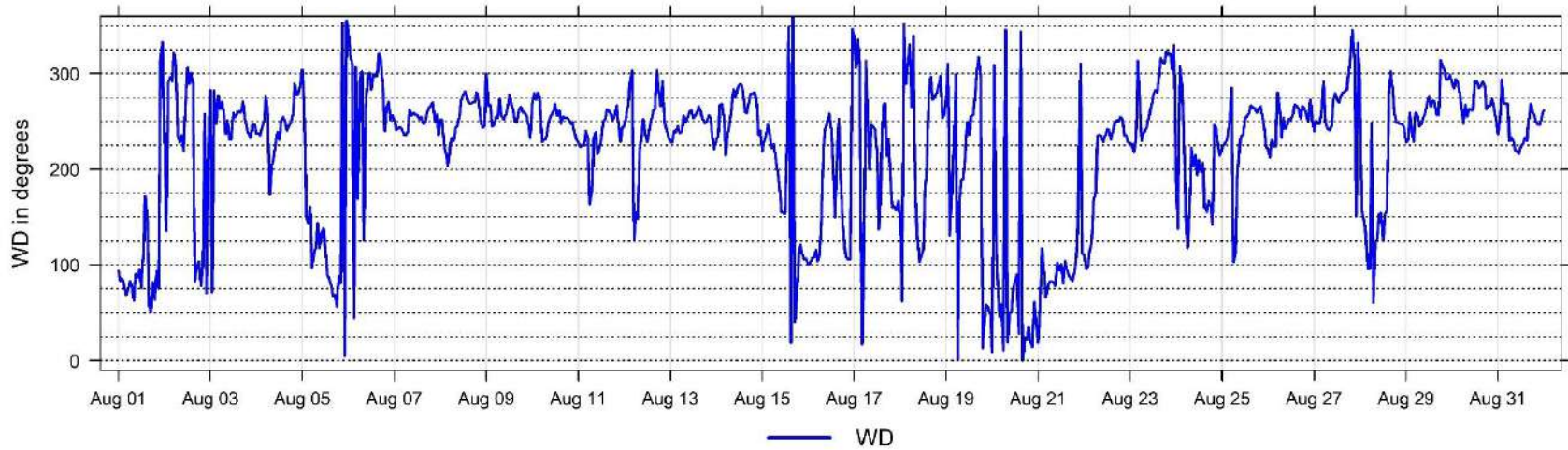
August Hourly Readings of Relative Humidity (in %) at Henry Pirker



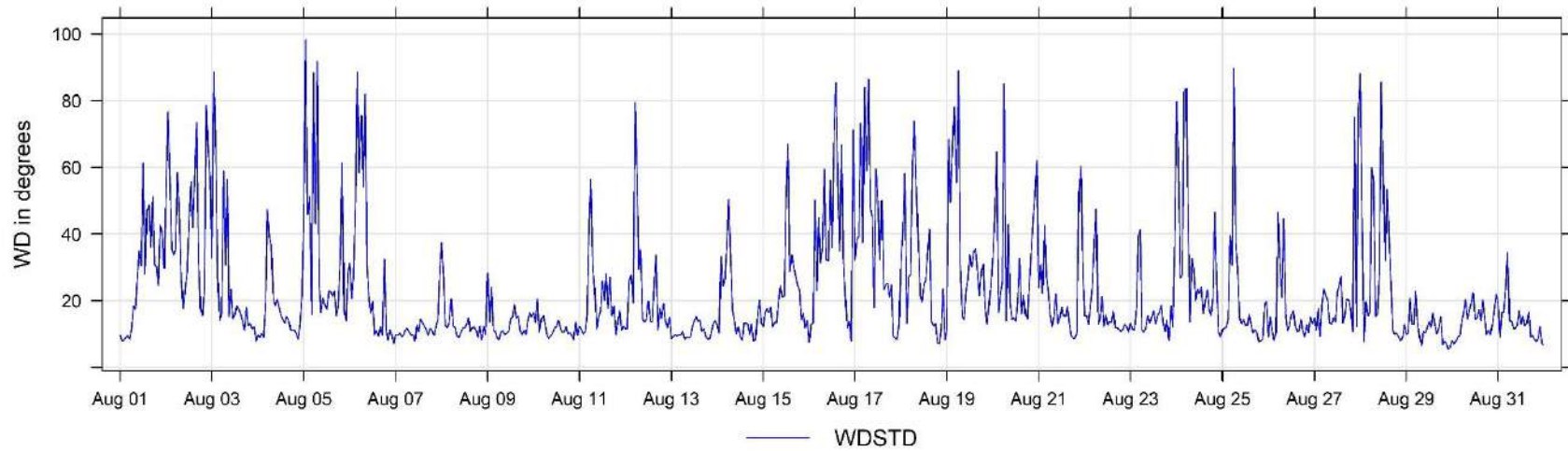
August Hourly Readings of Wind Speed (in km/hr) at Henry Pirker

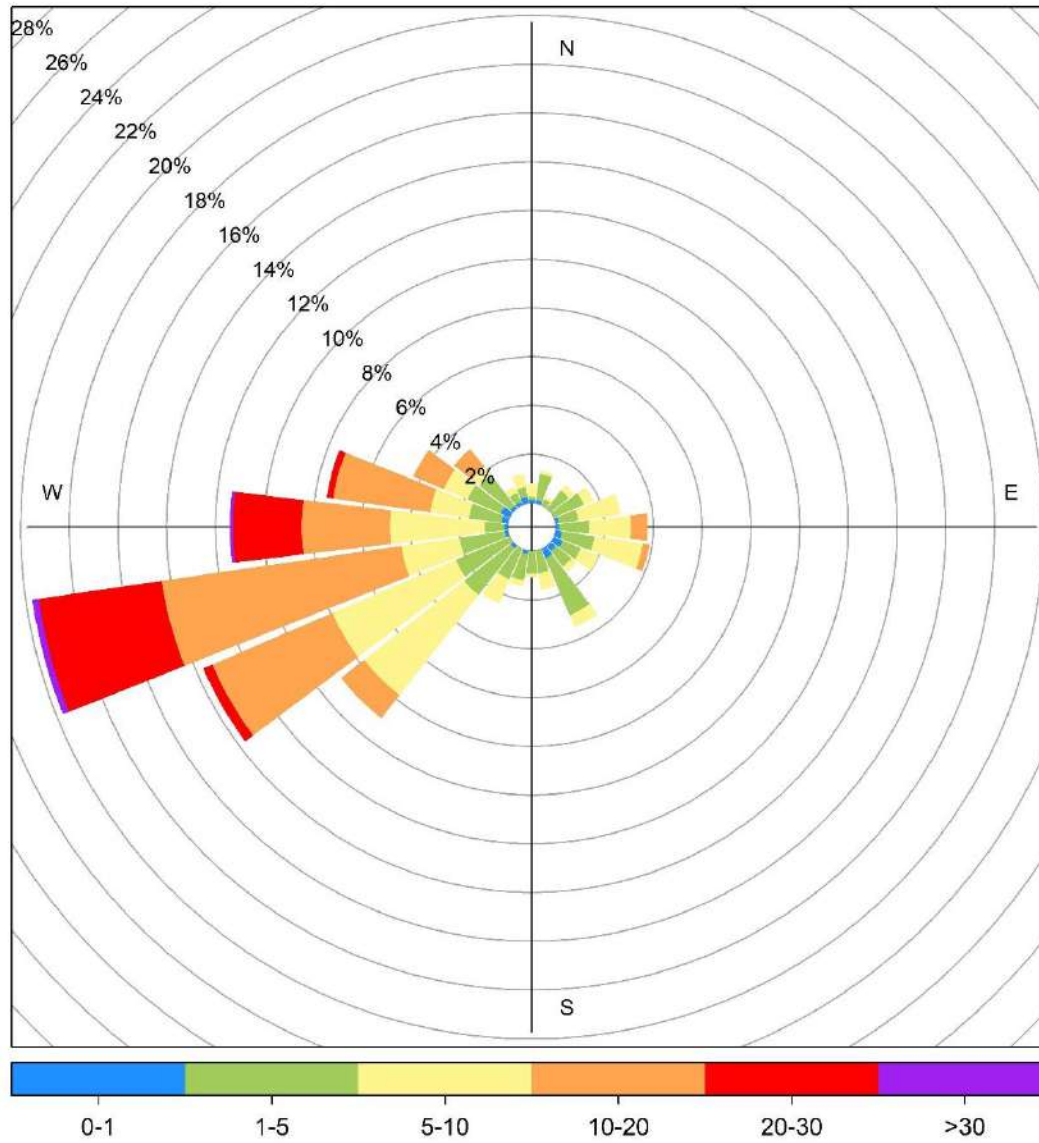


August Hourly Readings of Wind Direction (in degrees) at Henry Pirker



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

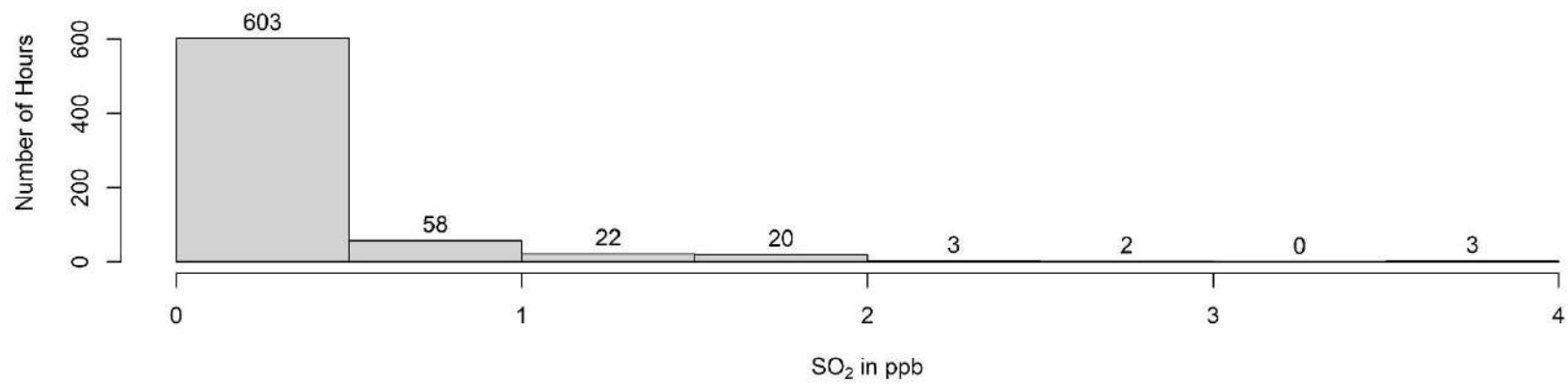
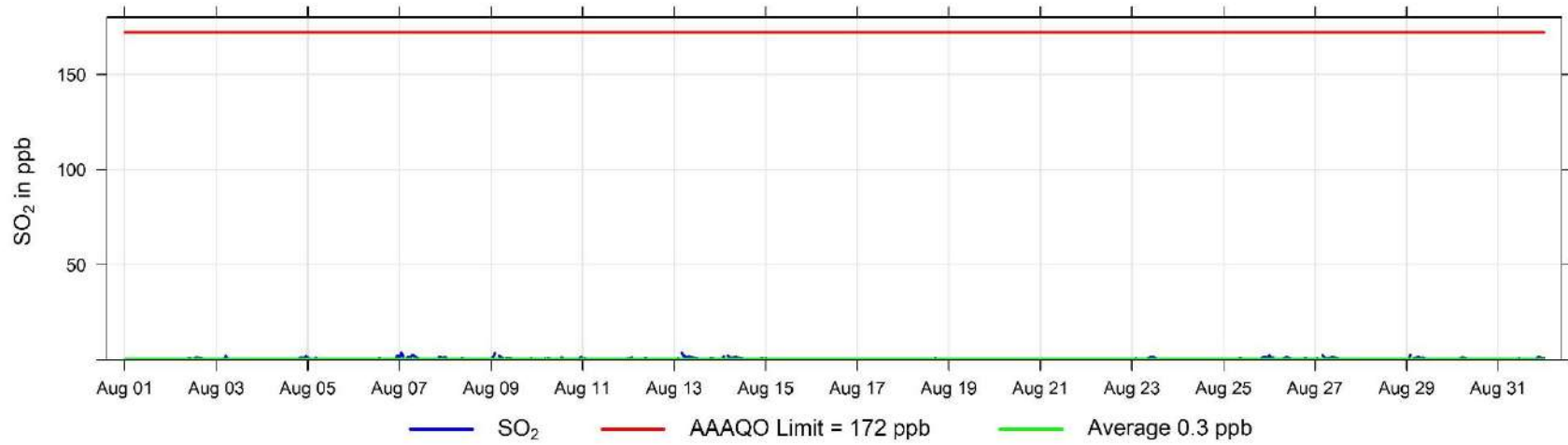




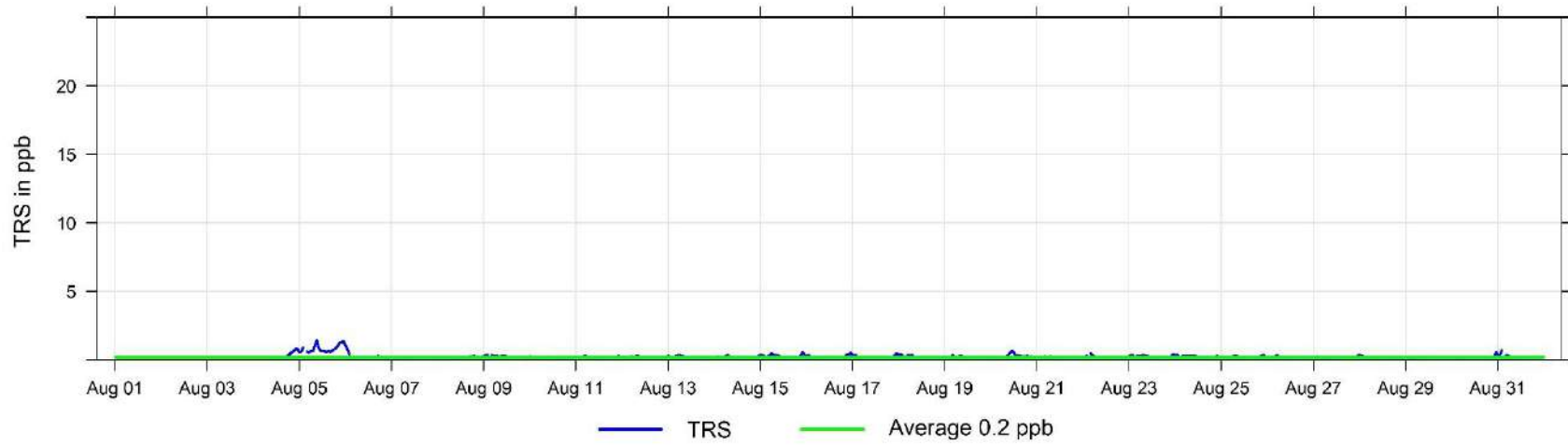
5 Smoky Heights Charts

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

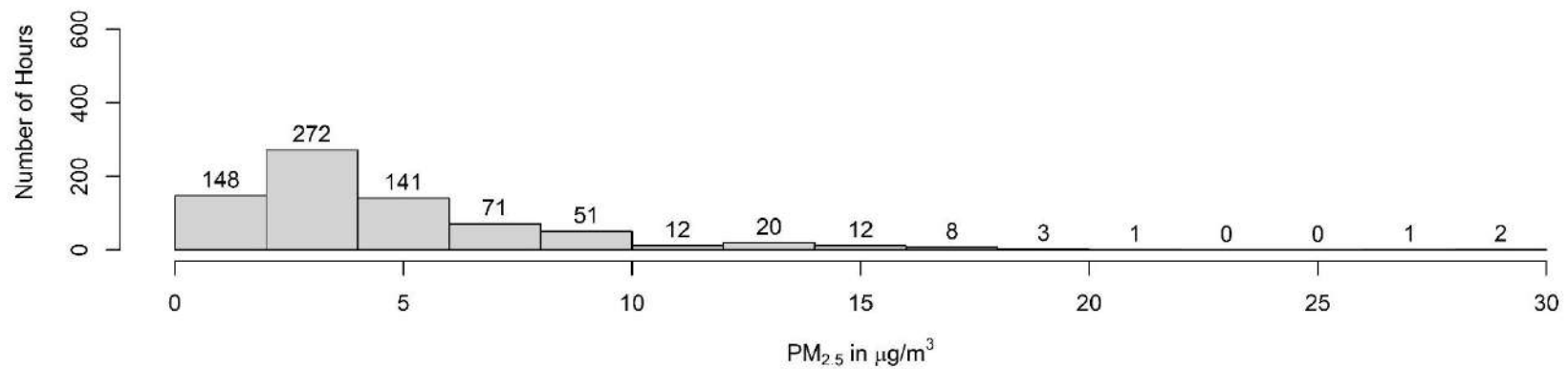
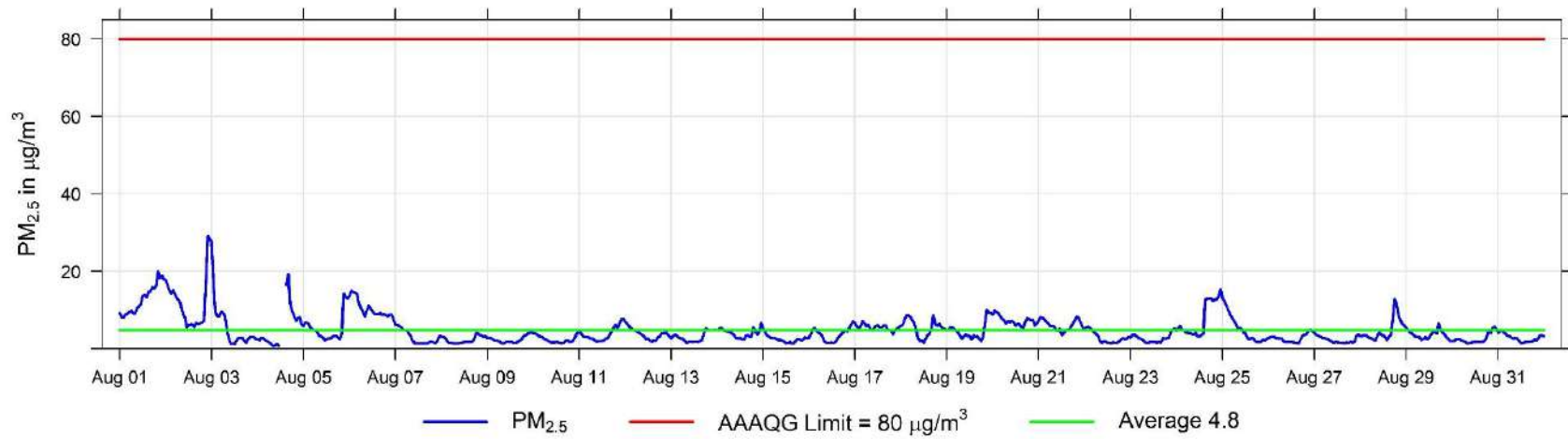
August Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



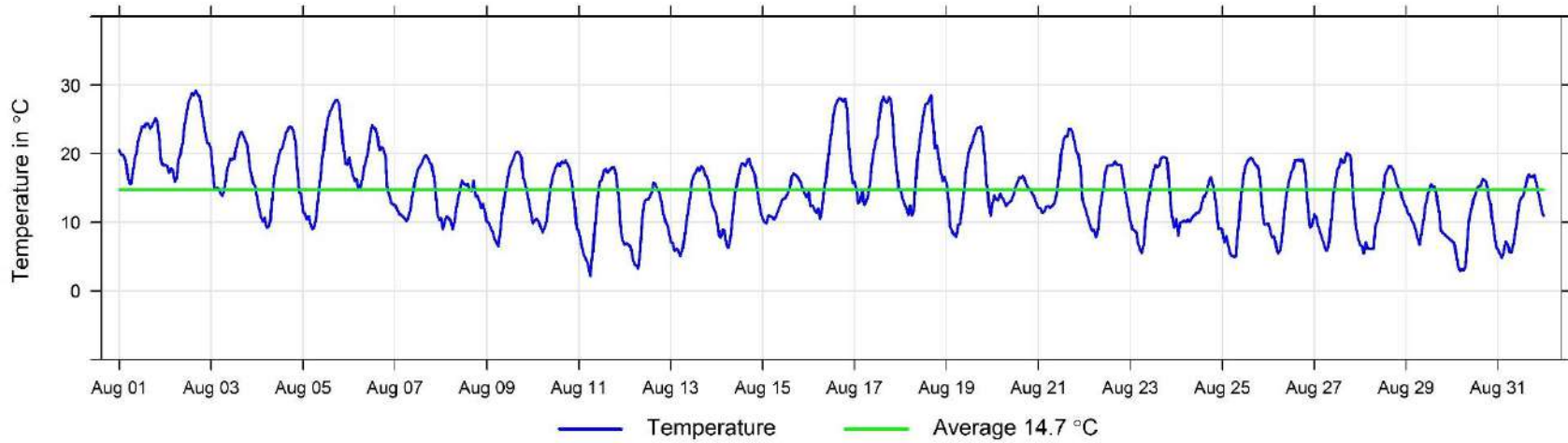
August Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



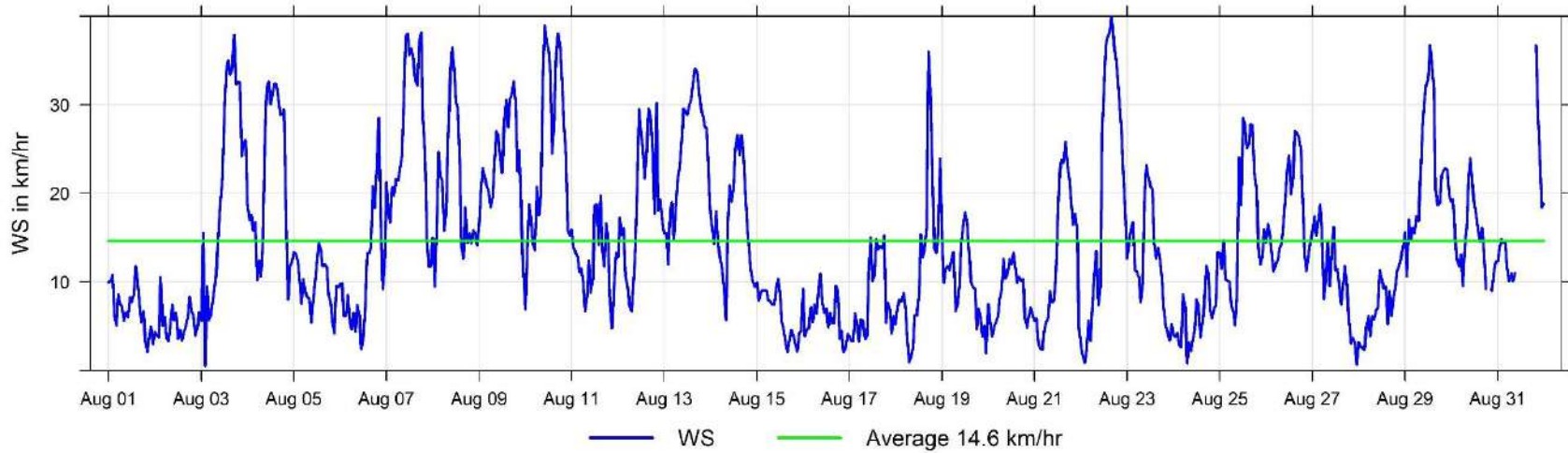
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Smoky Heights



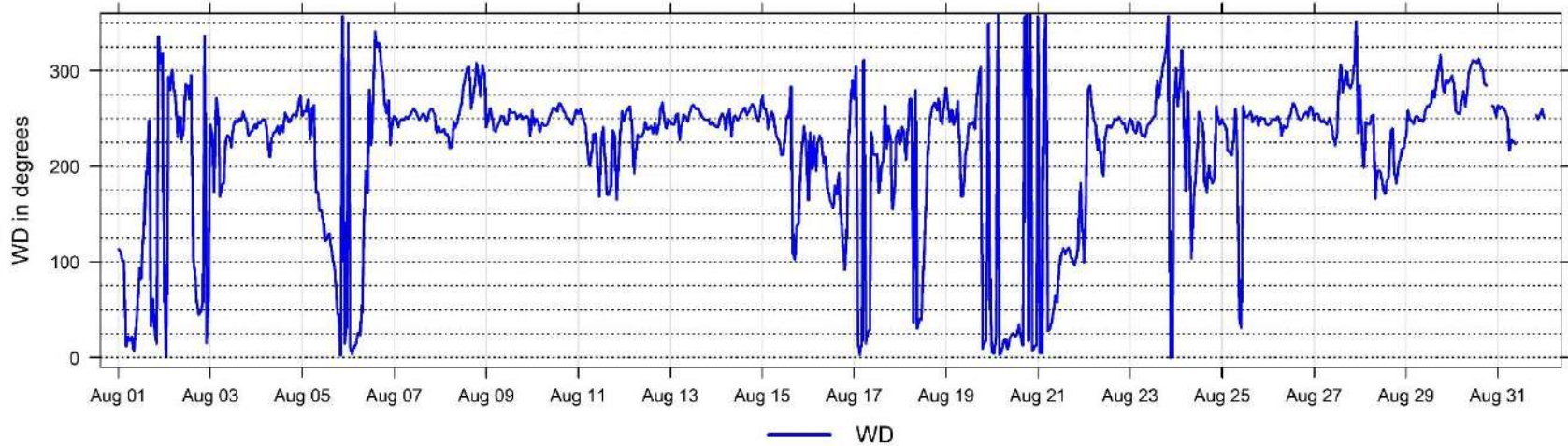
August Hourly Temperature Readings (in °C) at Smoky Heights



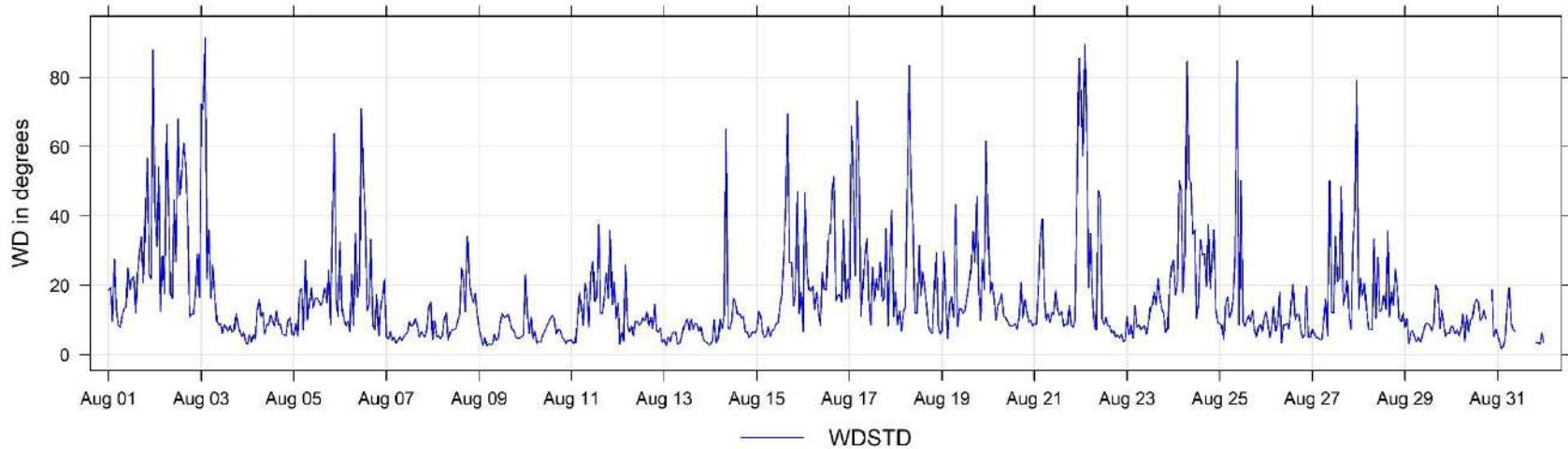
August Hourly Readings of Wind Speed (in km/hr) at Smoky Heights

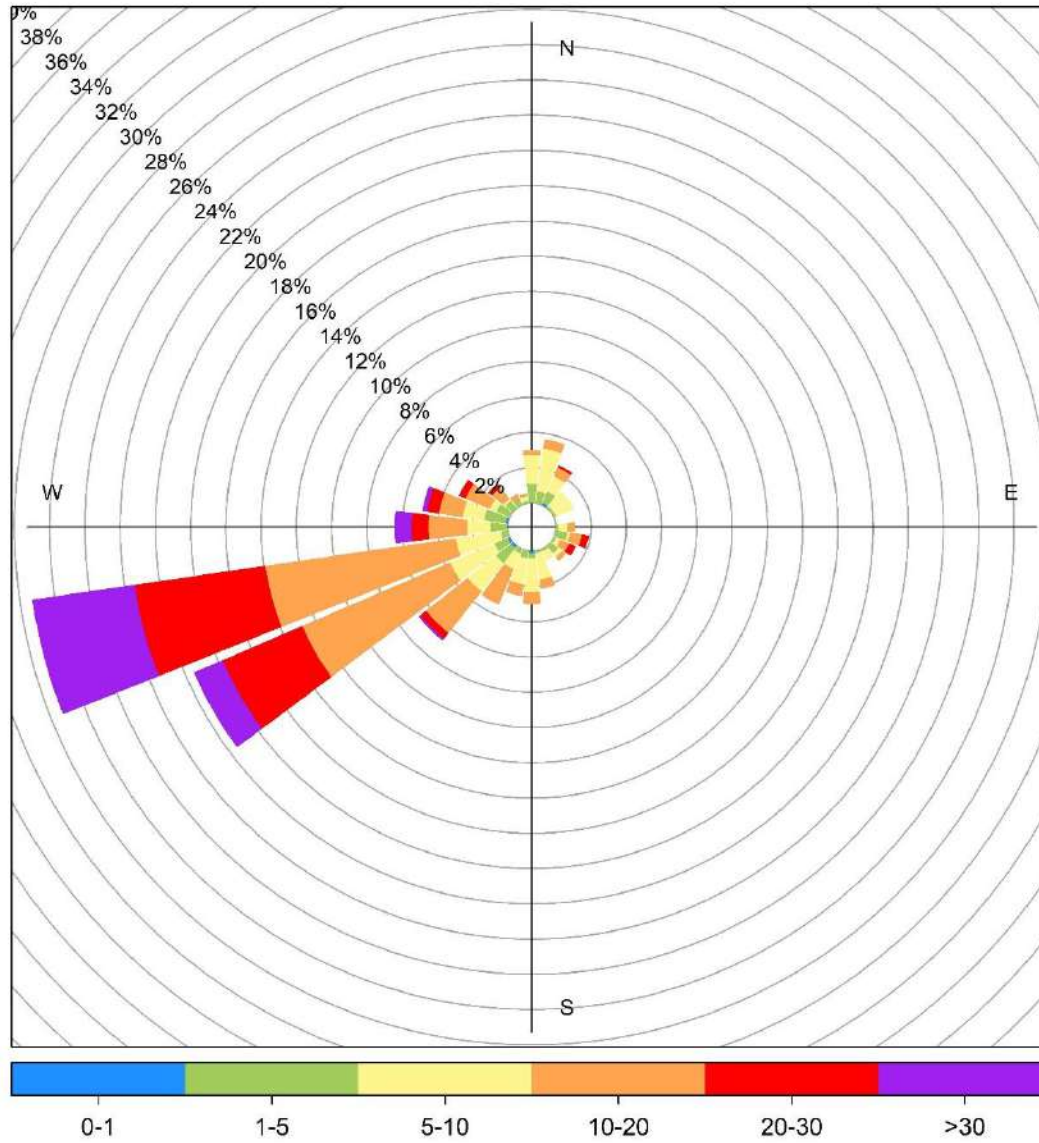


August Hourly Readings of Wind Direction (in degrees) at Smoky Heights



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



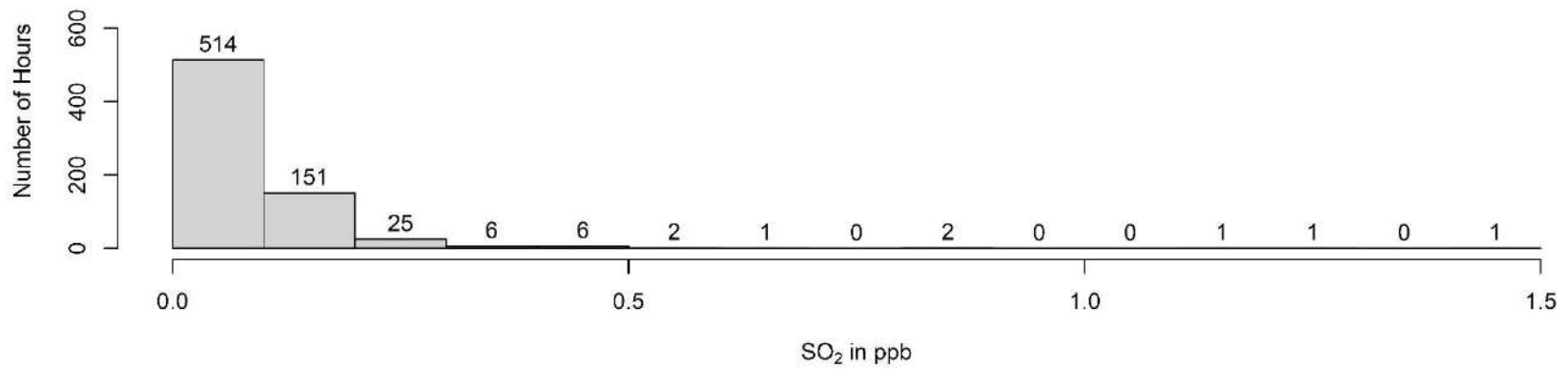
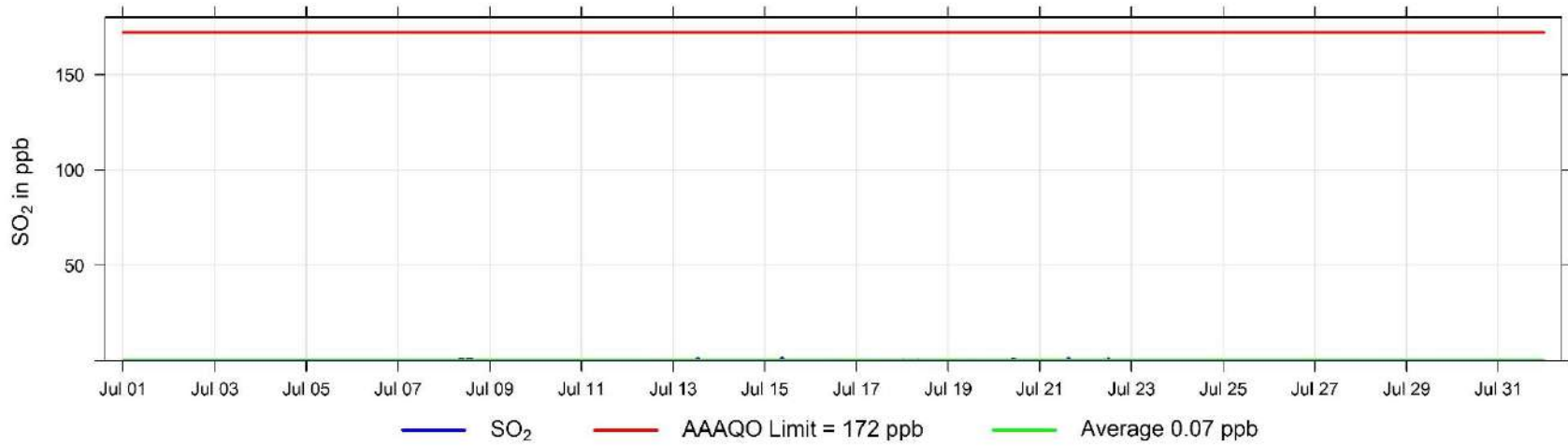


Smoky Heights August Wind Rose, wind speed in km/hr

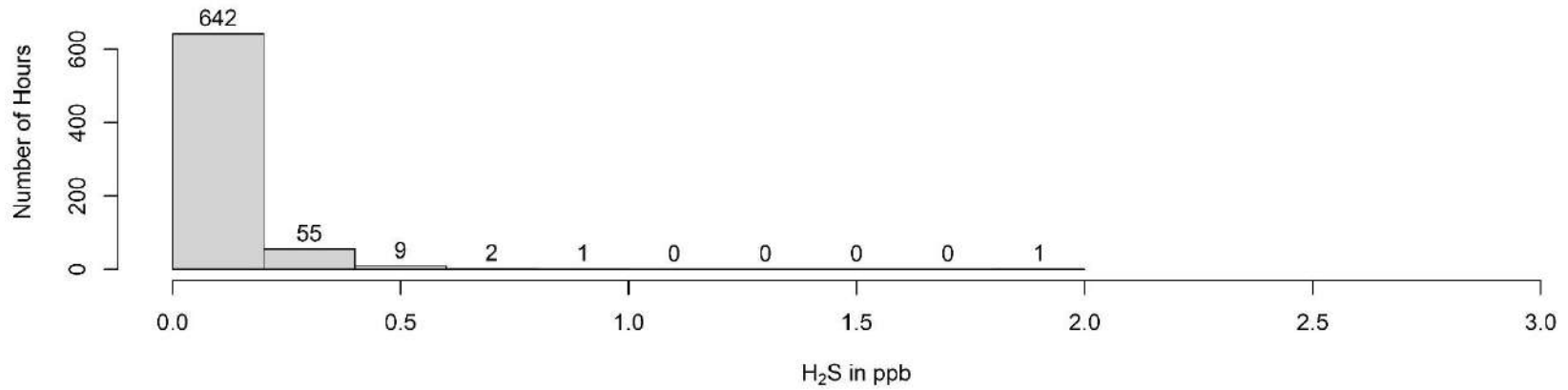
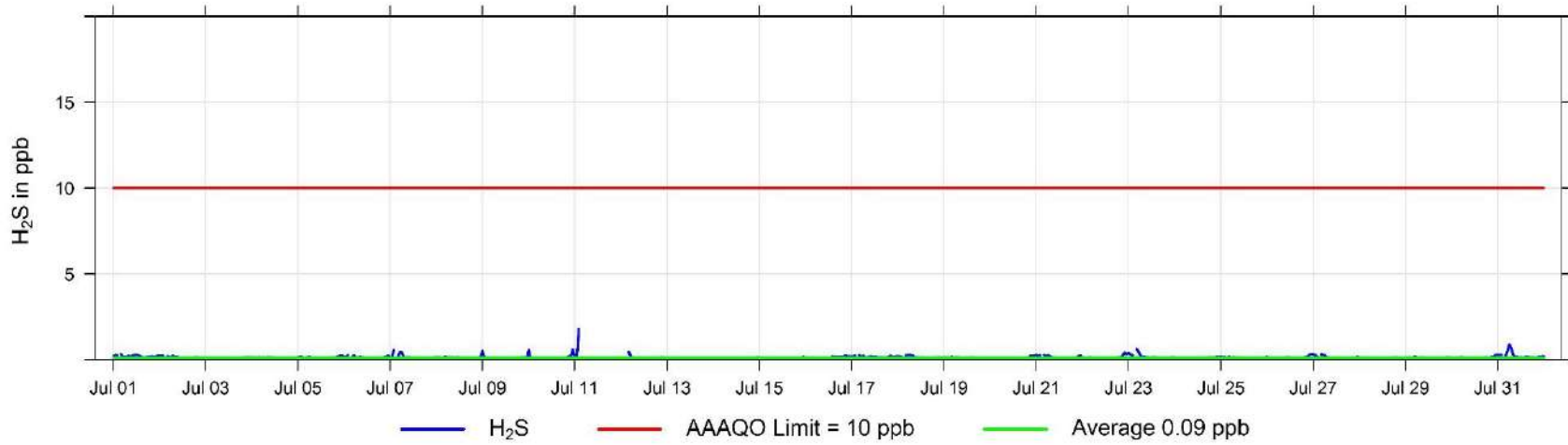
6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

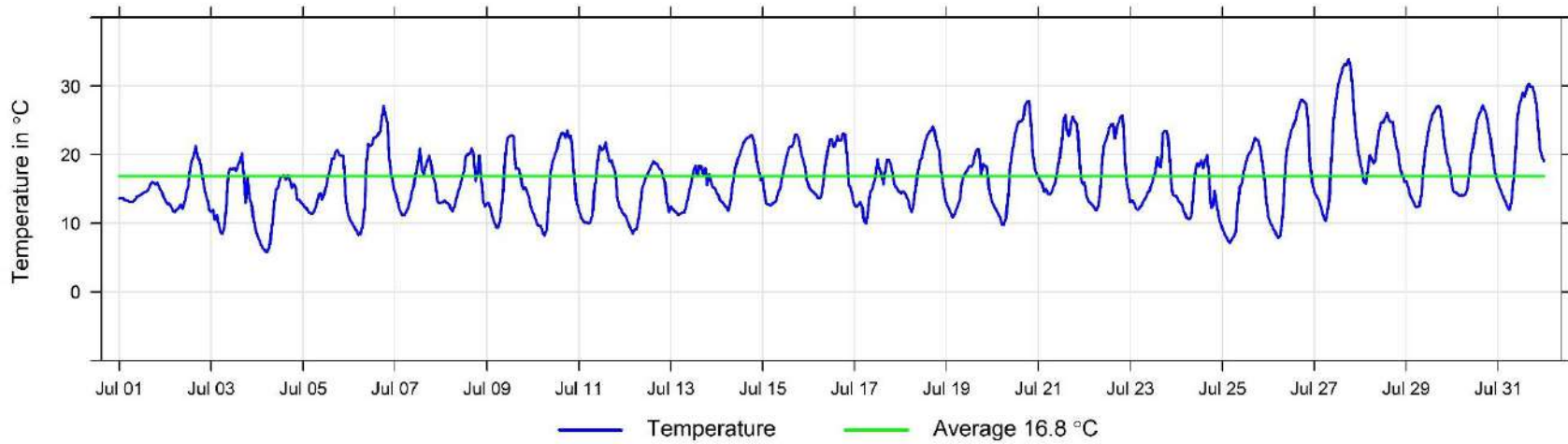
August Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



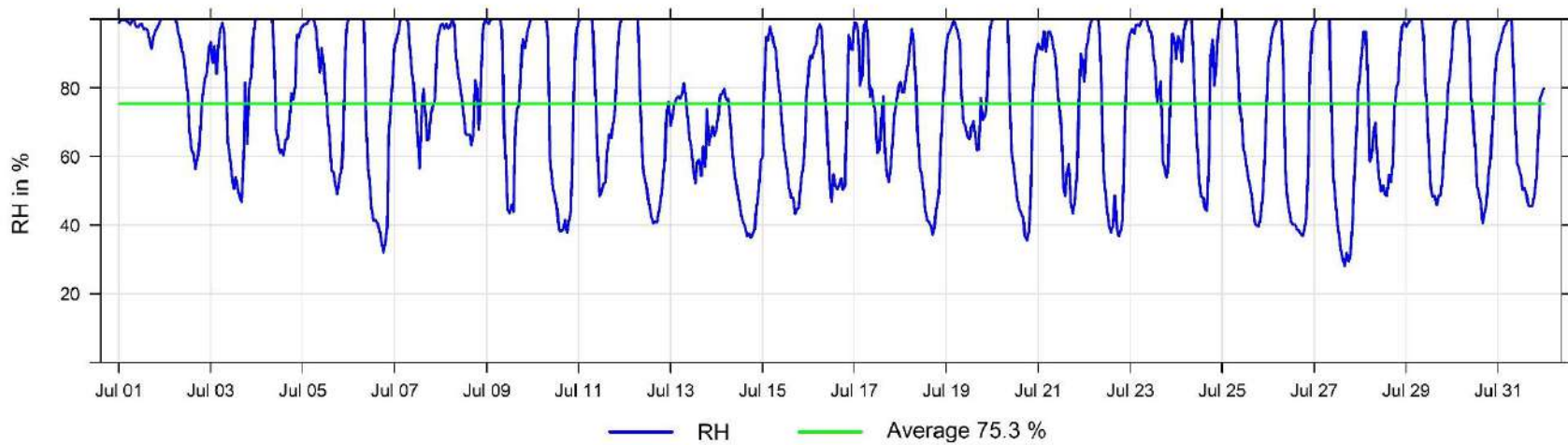
August Hourly Concentration Readings of H₂S (in ppb) at Valleyview



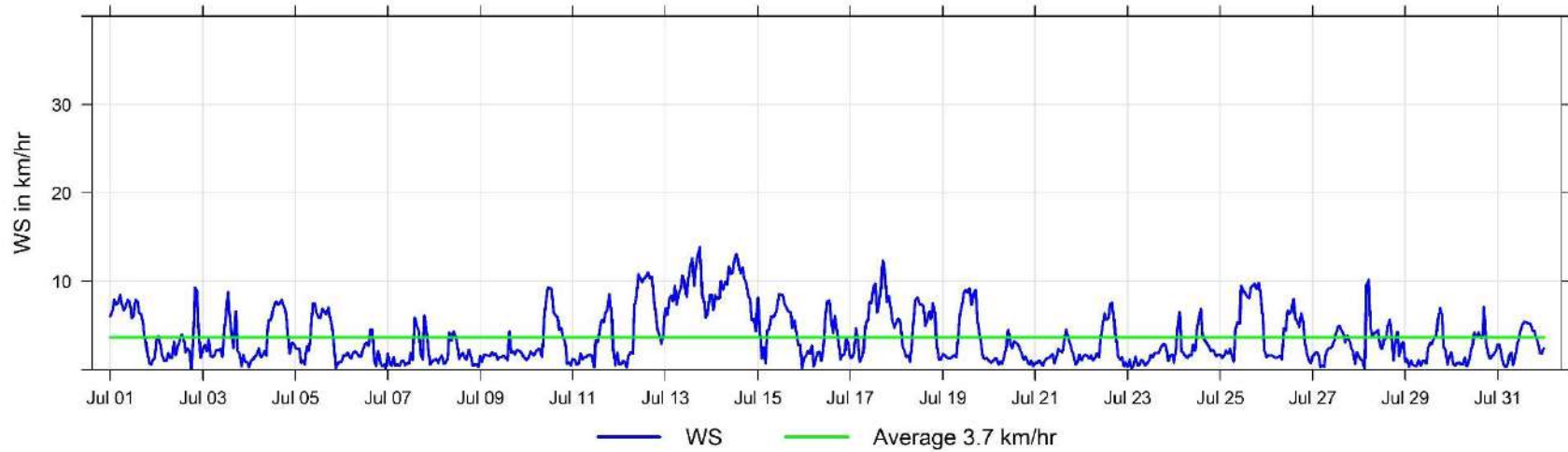
August Hourly Temperature Readings (in °C) at Valleyview



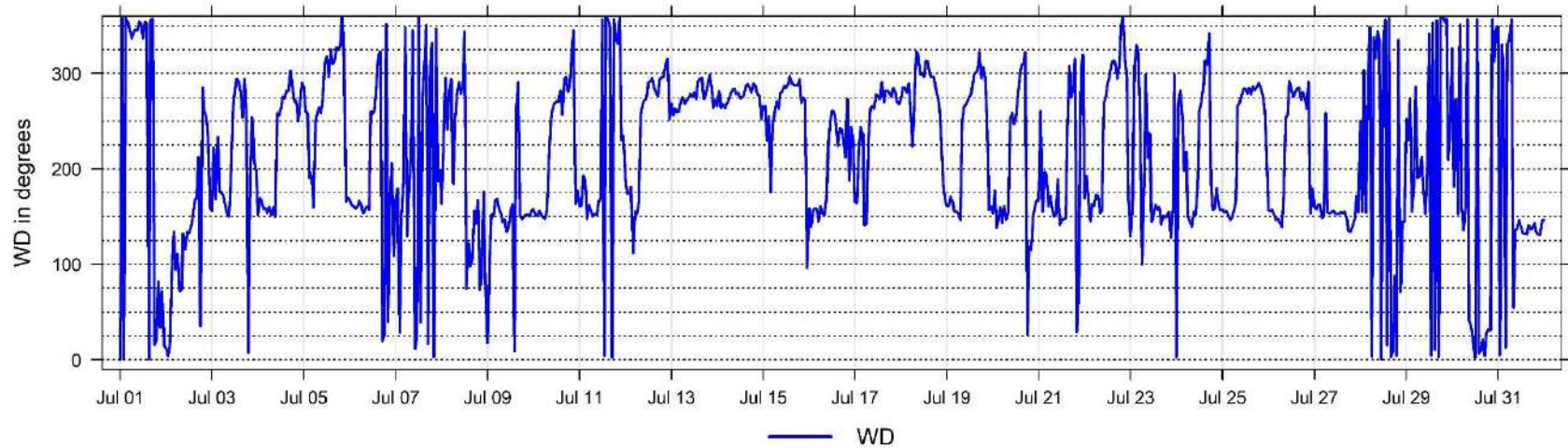
August Hourly Readings of Relative Humidity (in %) at Valleyview



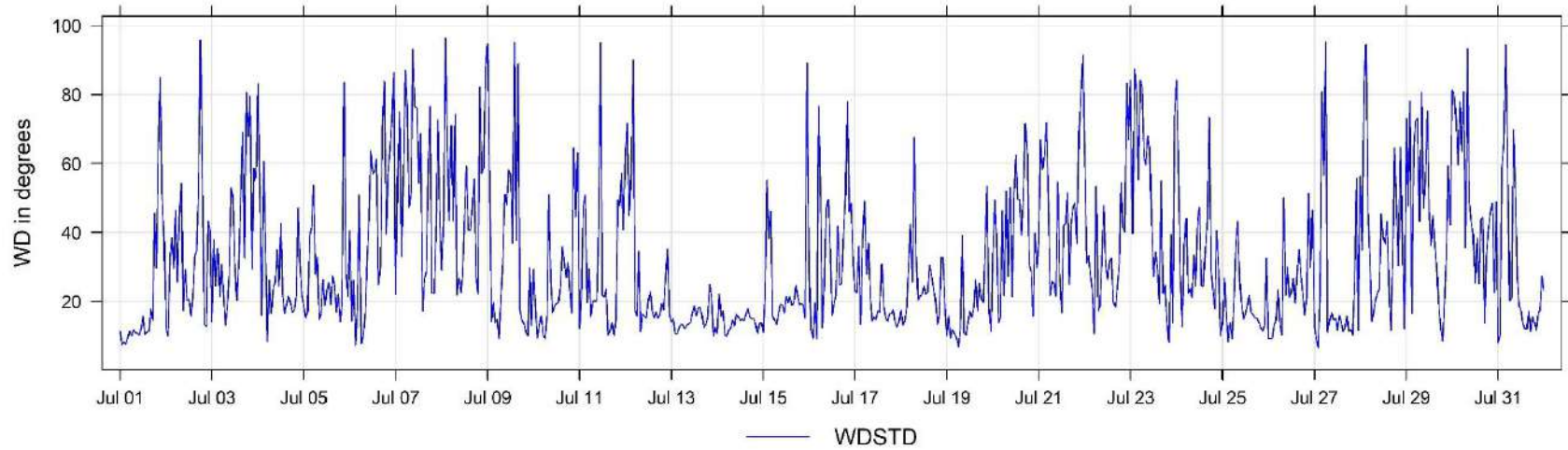
August Hourly Readings of Wind Speed (in km/hr) at Valleyview

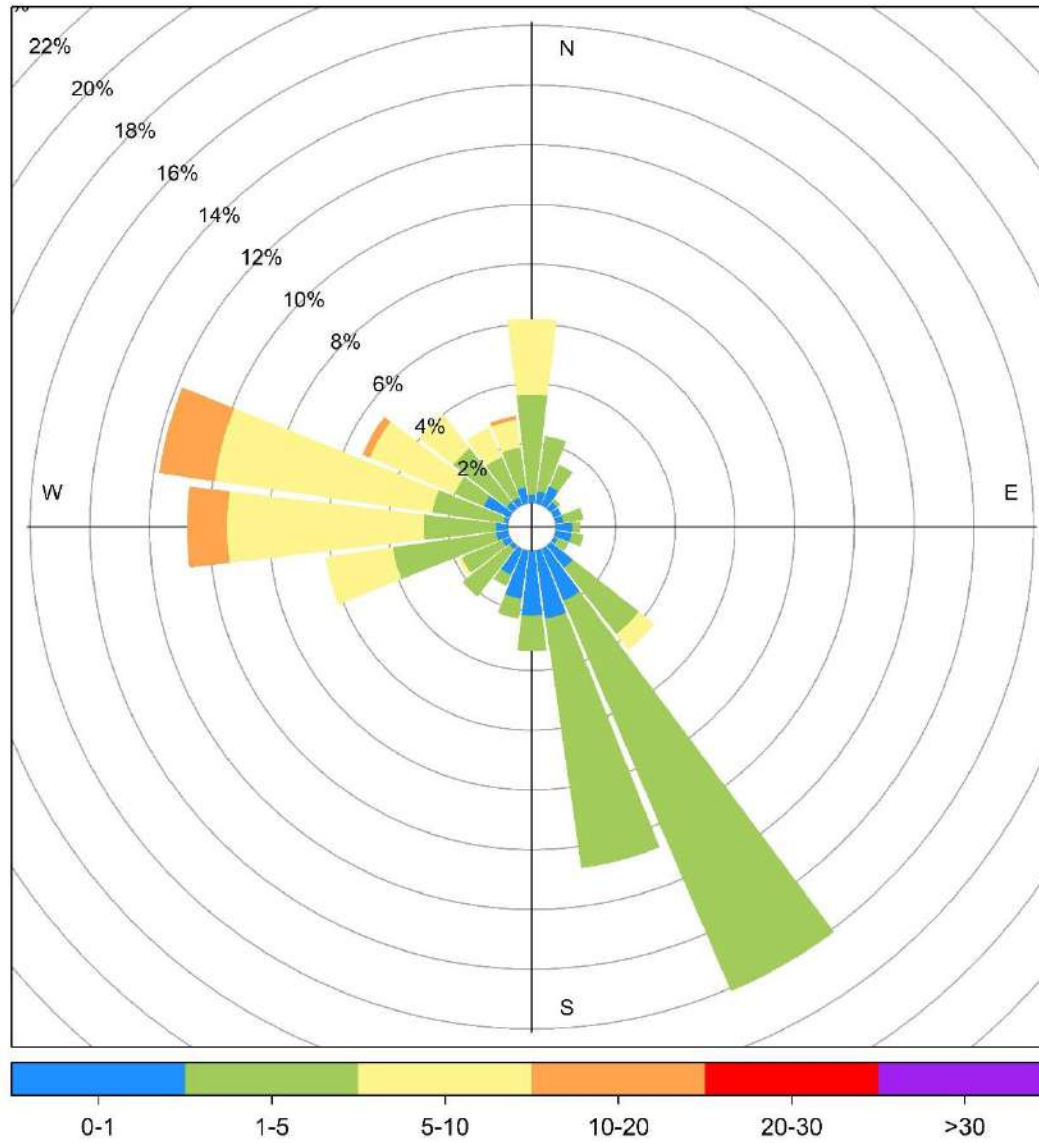


August Hourly Readings of Wind Direction (in degrees) at Valleyview



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



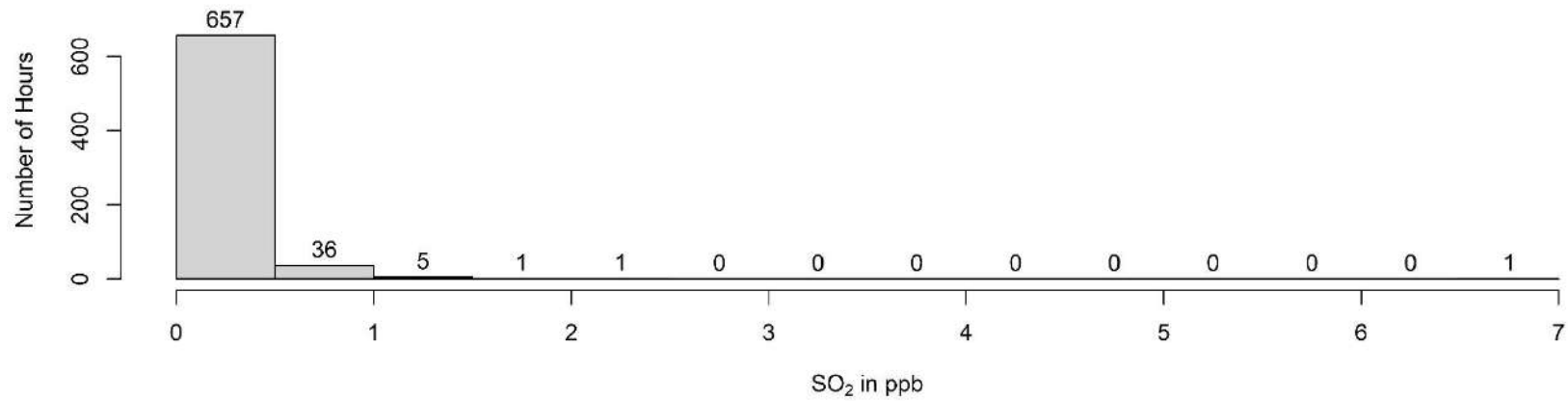
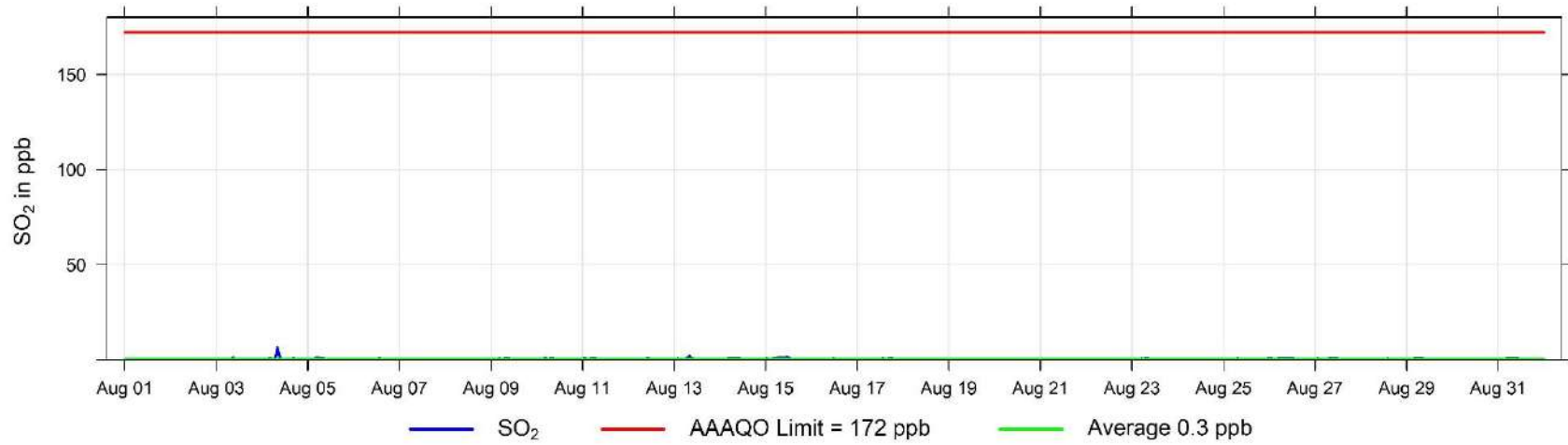


Valleyview August Wind Rose, wind speed in km/hr

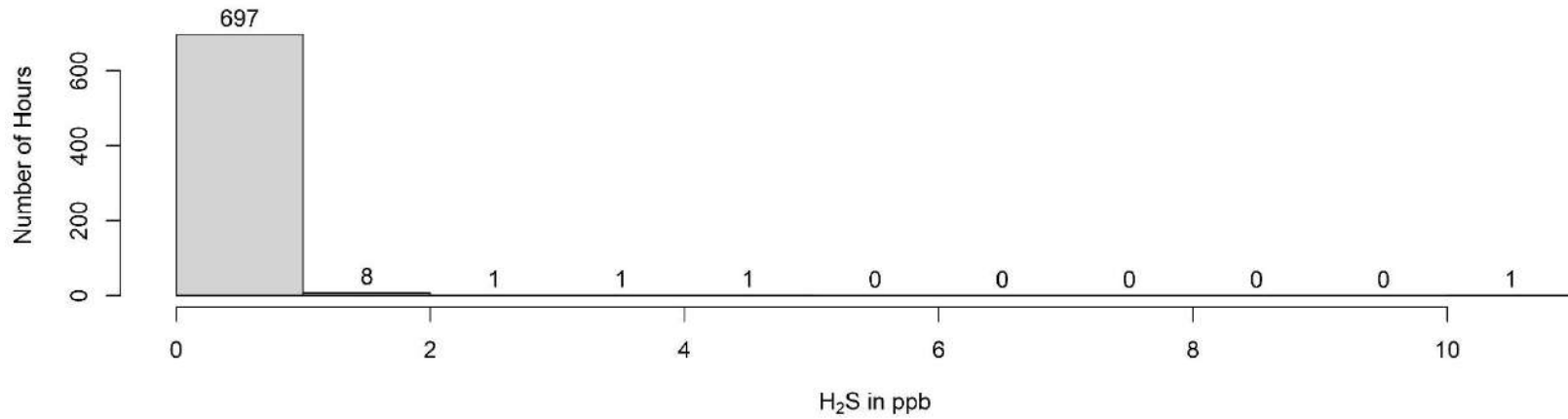
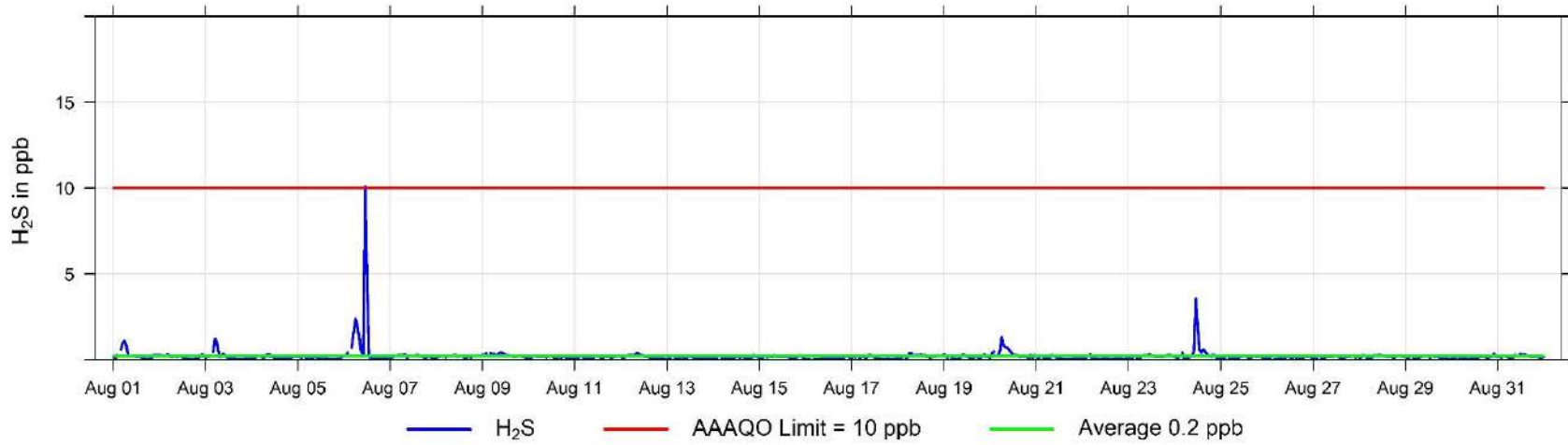
7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

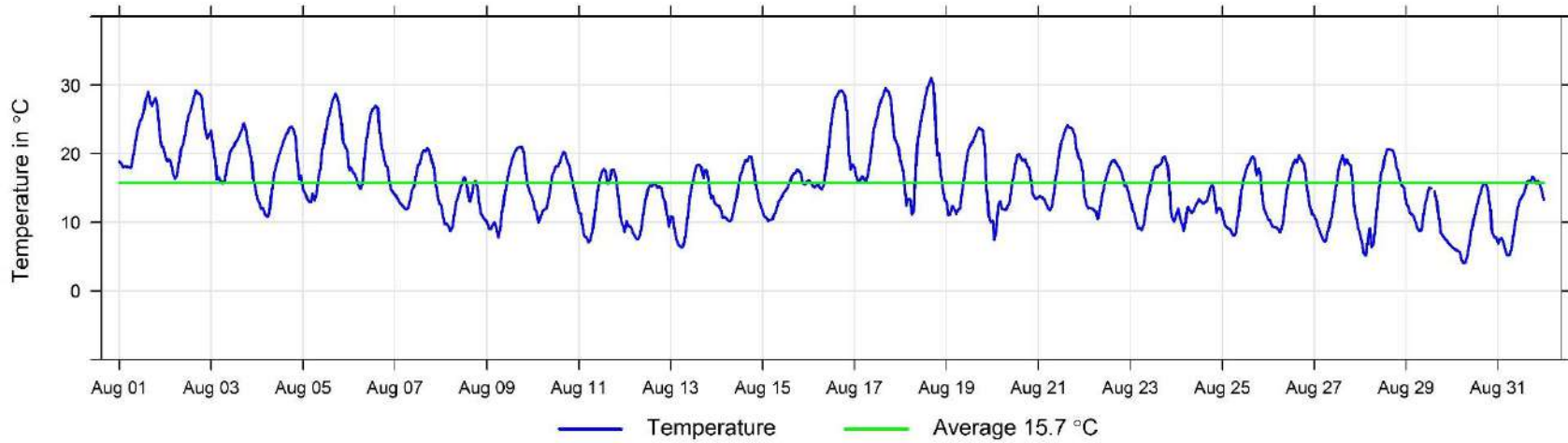
August Hourly Concentration Readings of SO₂ (in ppb) at Donnelly



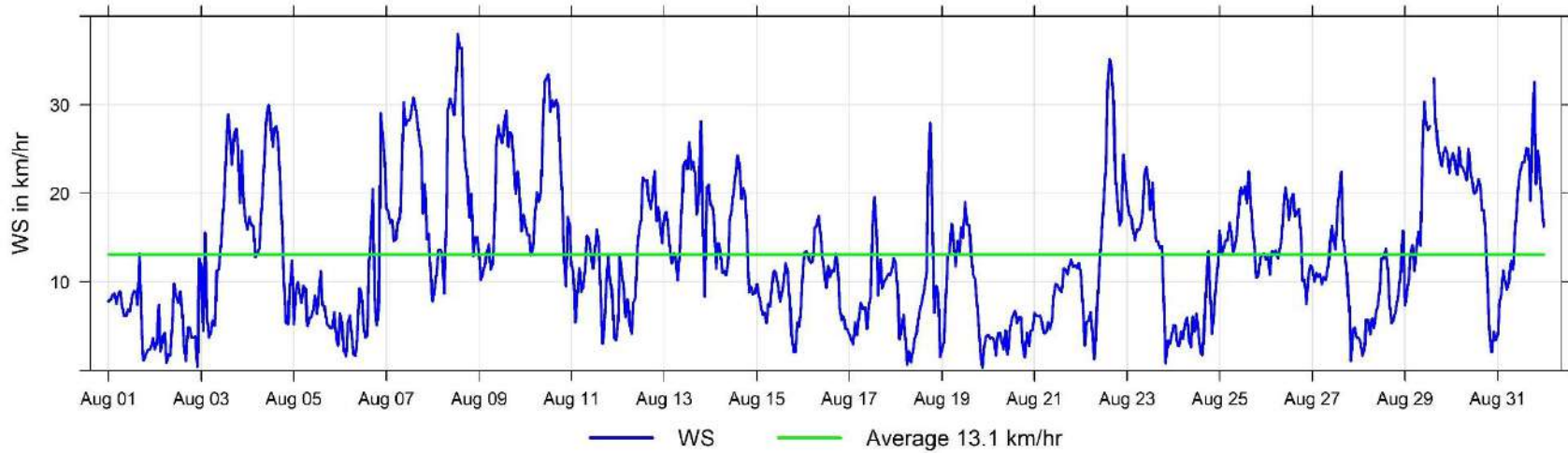
August Hourly Concentration Readings of H₂S (in ppb) at Donnelly



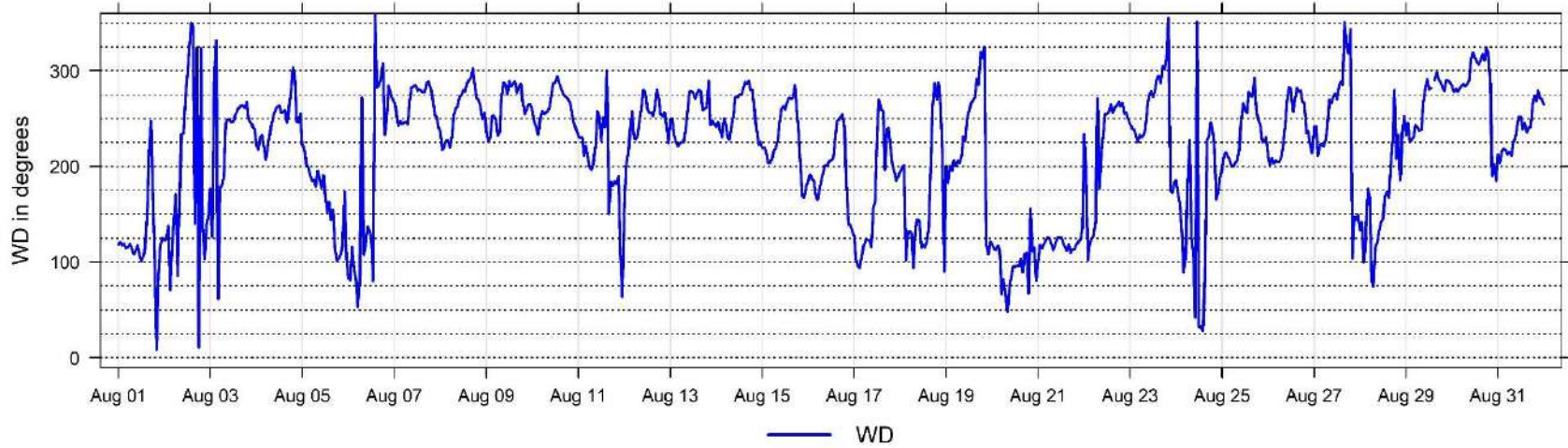
August Hourly Temperature Readings (in °C) at Donnelly



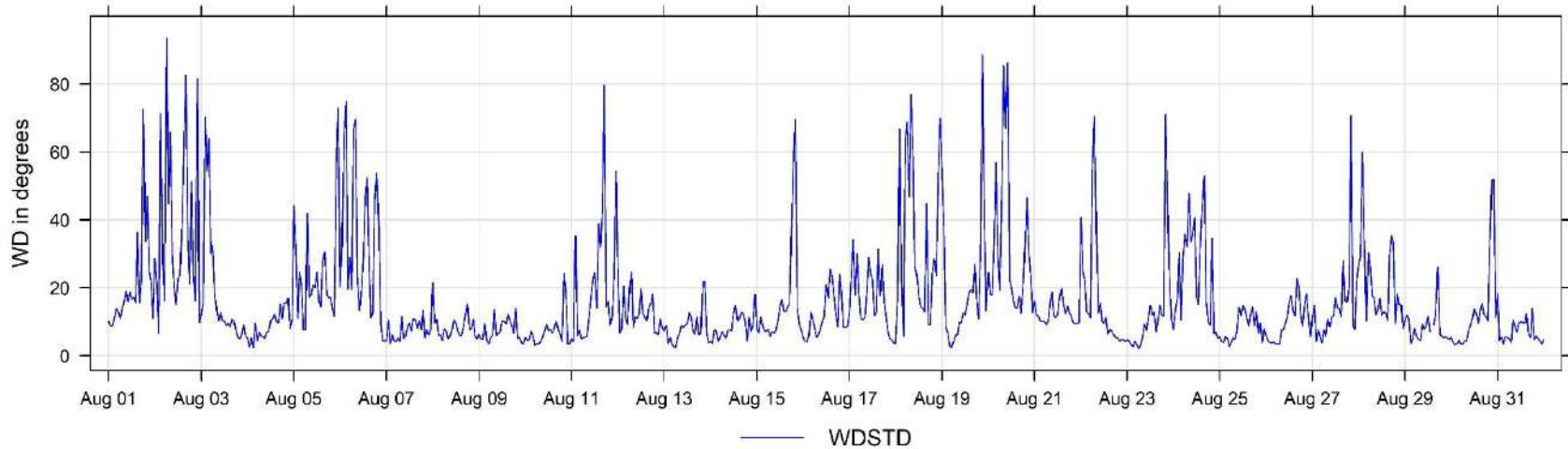
August Hourly Readings of Wind Speed (in km/hr) at Donnelly

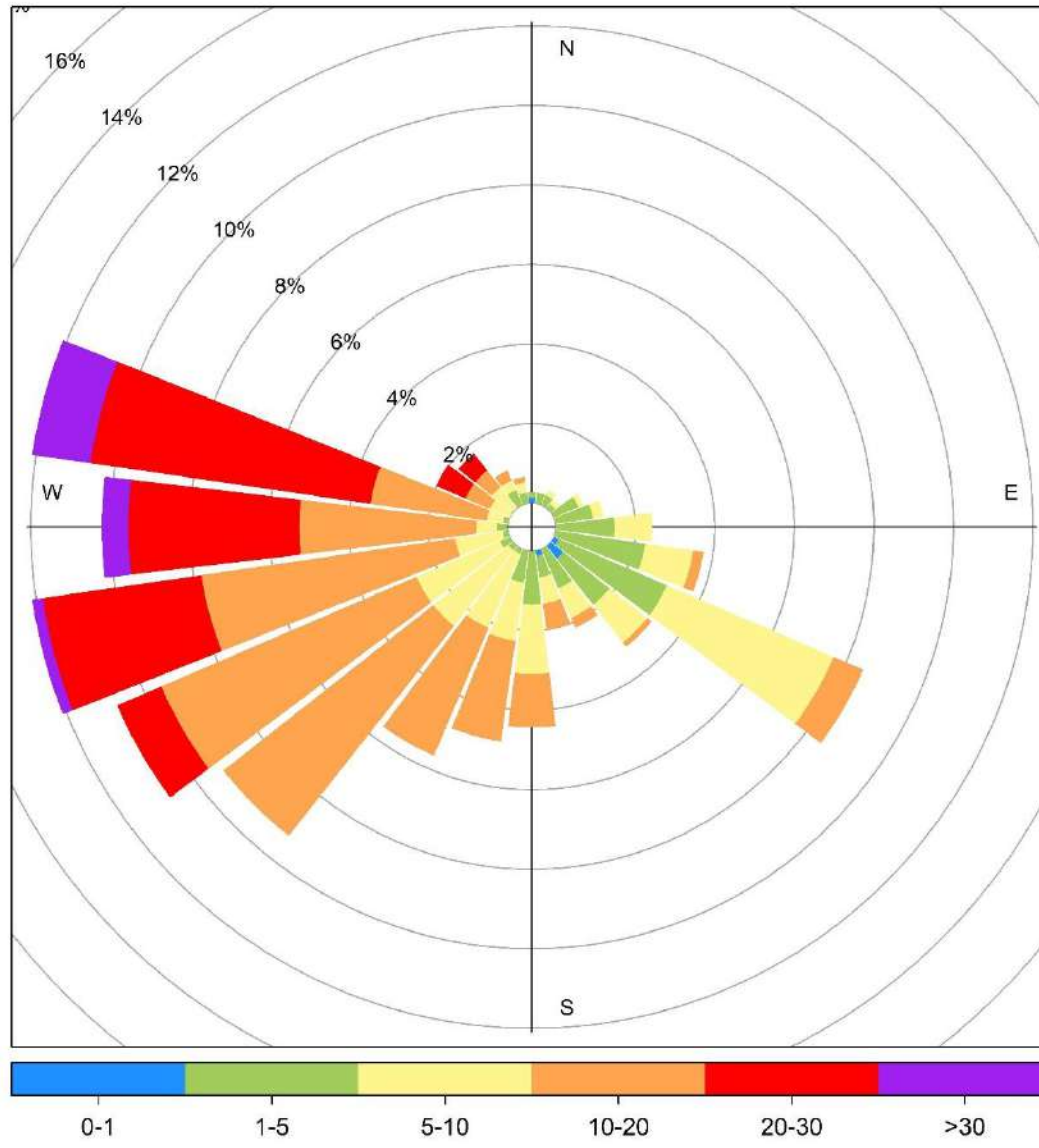


August Hourly Readings of Wind Direction (in degrees) at Donnelly



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



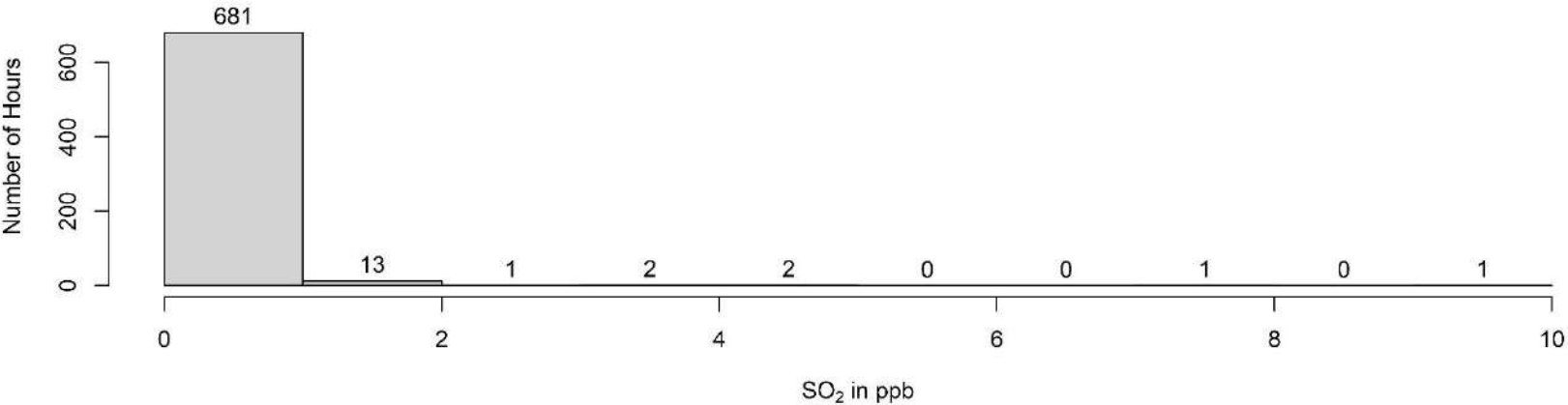
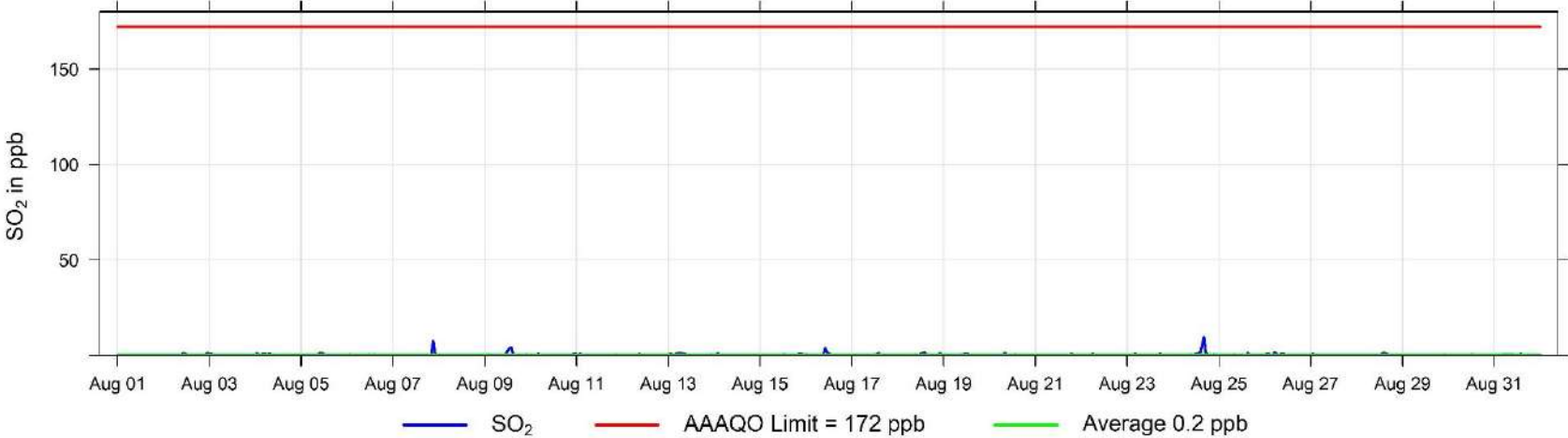


Donnelly August Wind Rose, wind speed in km/hr

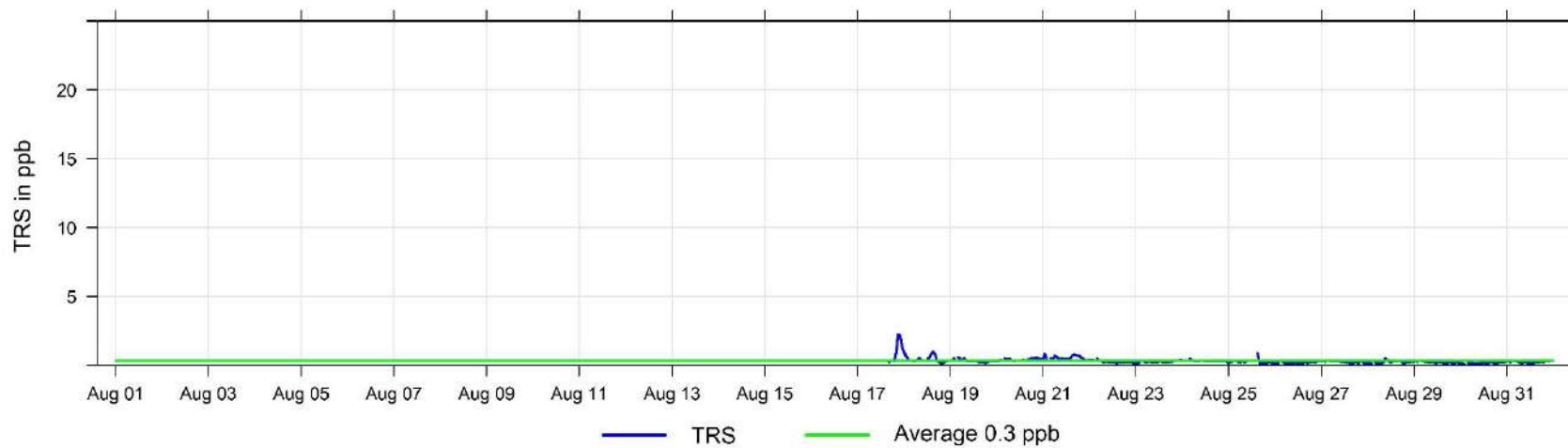
8 Wembley (Portable) Charts

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

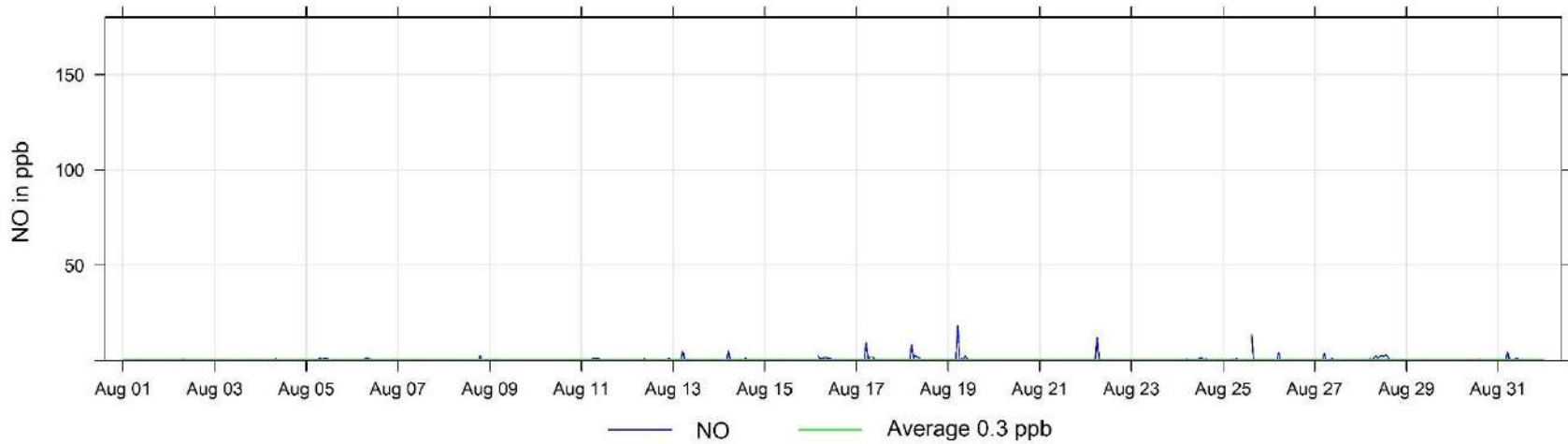
August Hourly Concentration Readings of SO₂ (in ppb) at Wembley



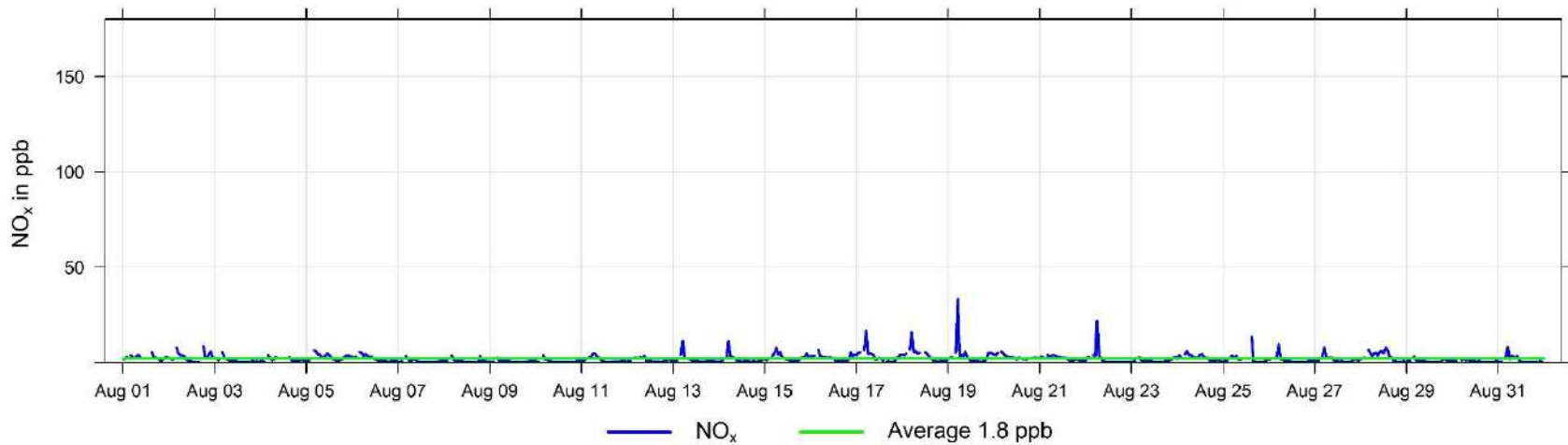
August Hourly Concentration Readings of TRS (in ppb) at Wembley



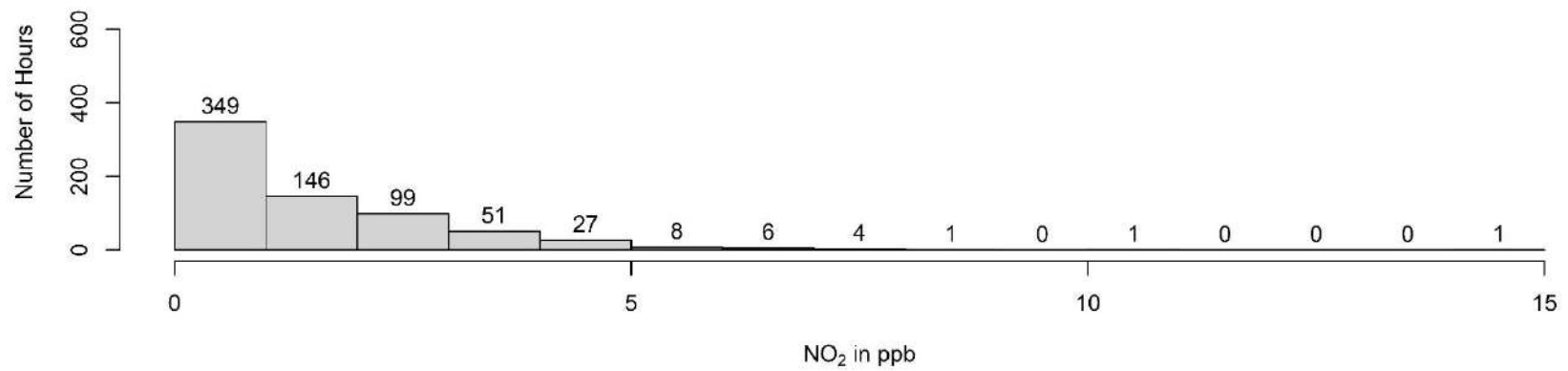
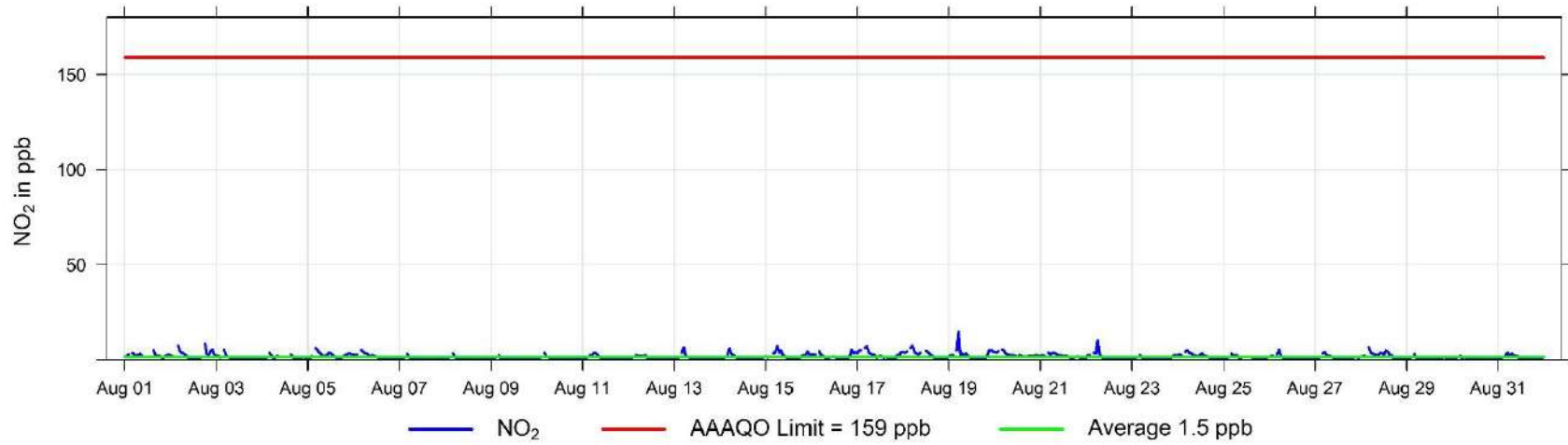
August Hourly Concentration Readings of NO (in ppb) at Wembley



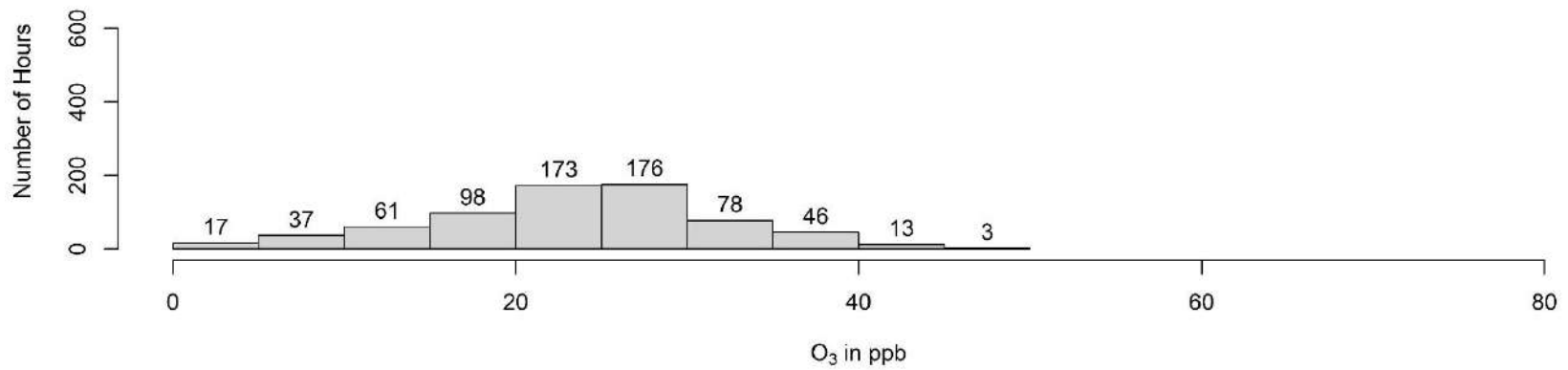
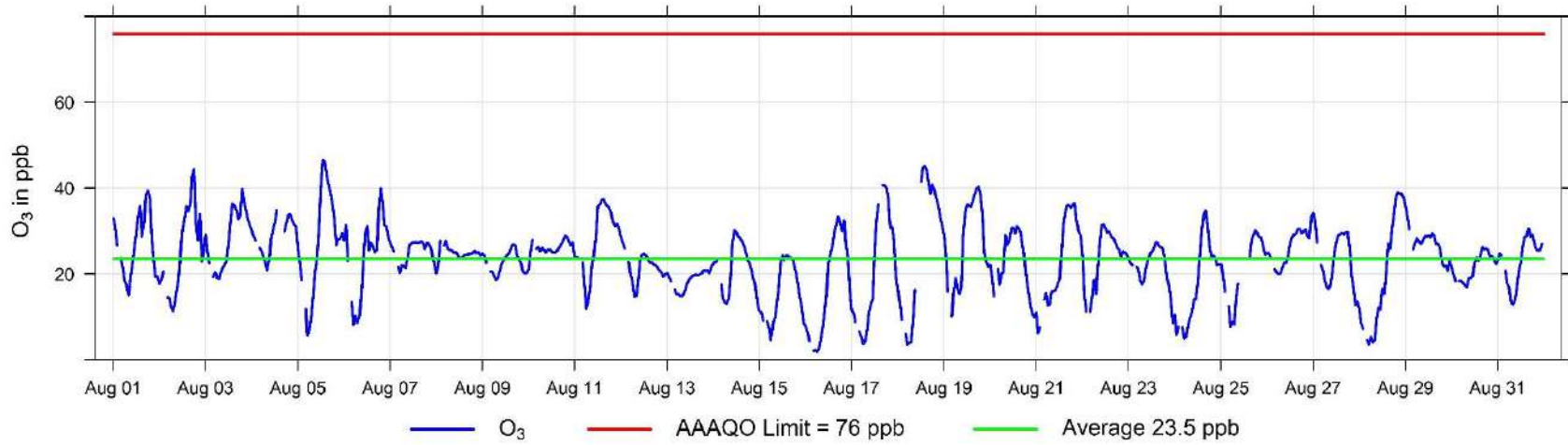
August Hourly Concentration Readings of NO_x (in ppb) at Wembley



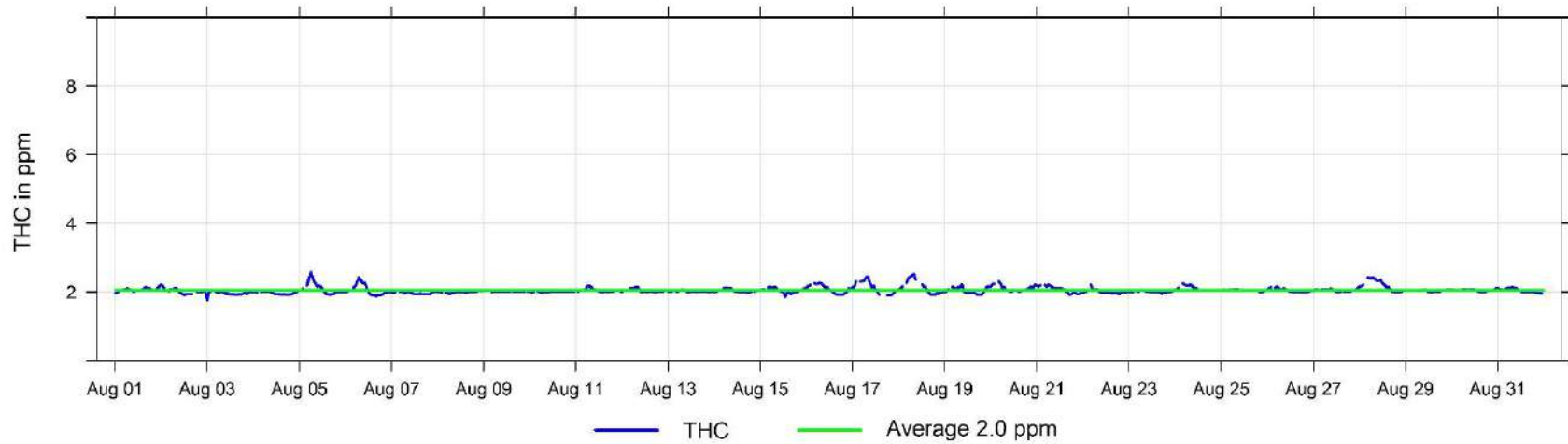
August Hourly Concentration Readings of NO₂ (in ppb) at Wembley



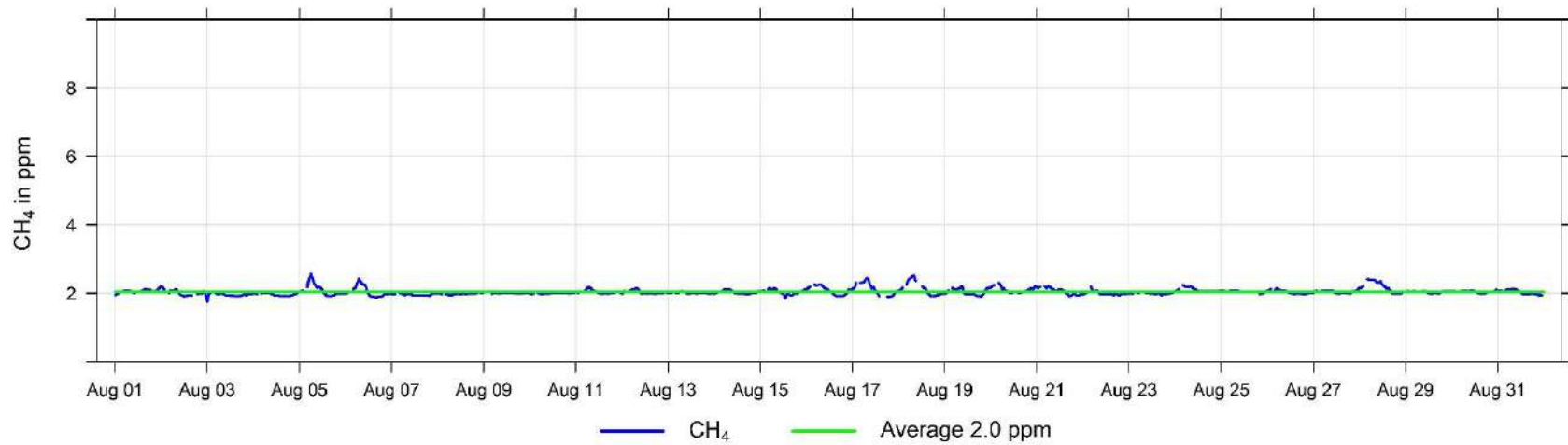
August Hourly Concentration Readings of O₃ (in ppb) at Wembley



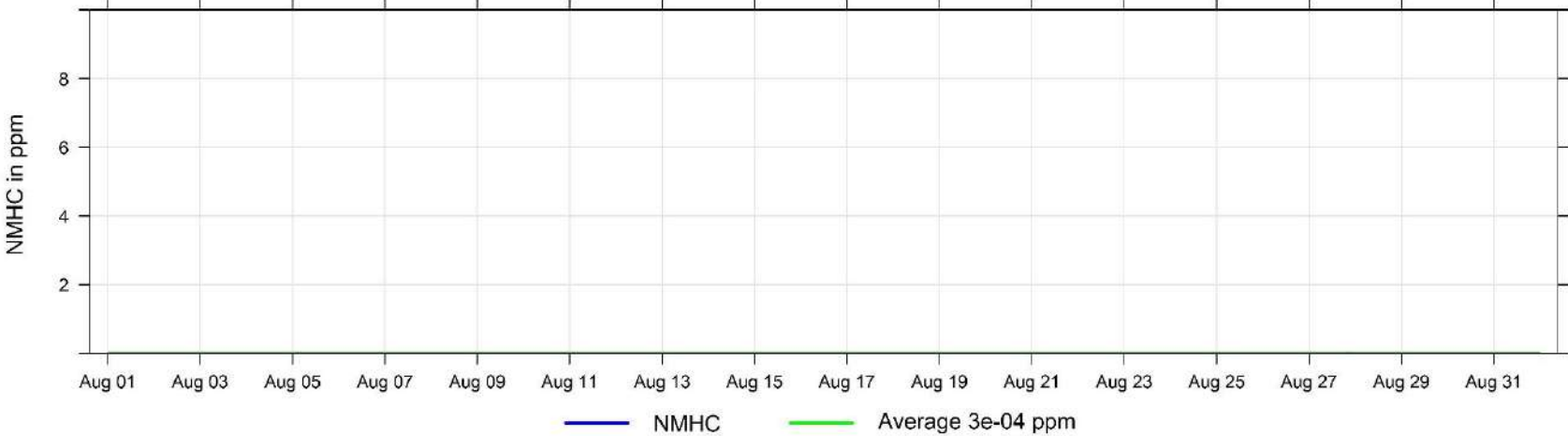
August Hourly Concentration Readings of THC (in ppm) at Wembley



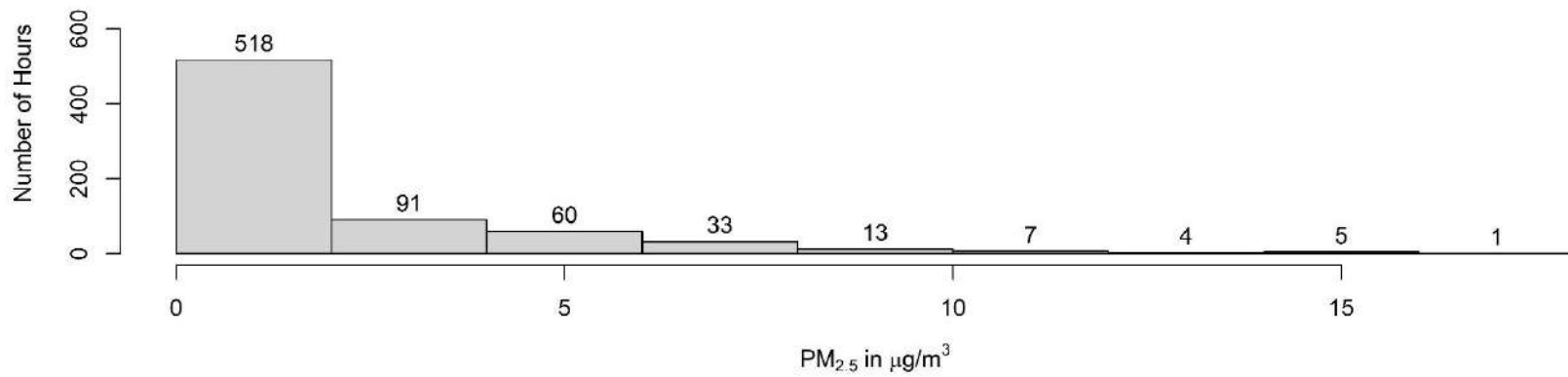
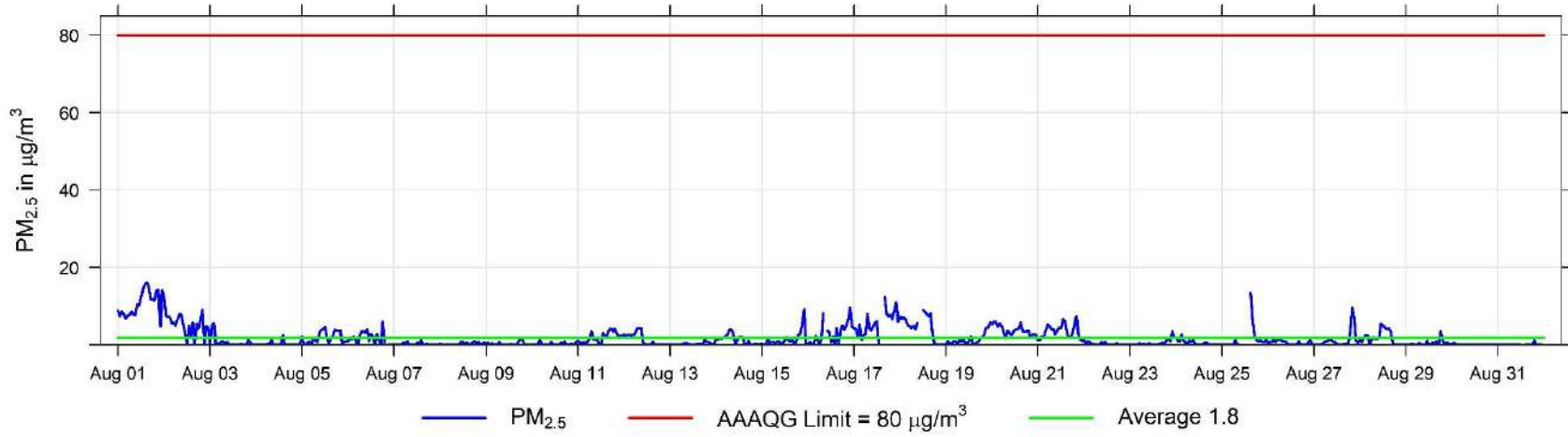
August Hourly Concentration Readings of CH₄ (in ppm) at Wembley



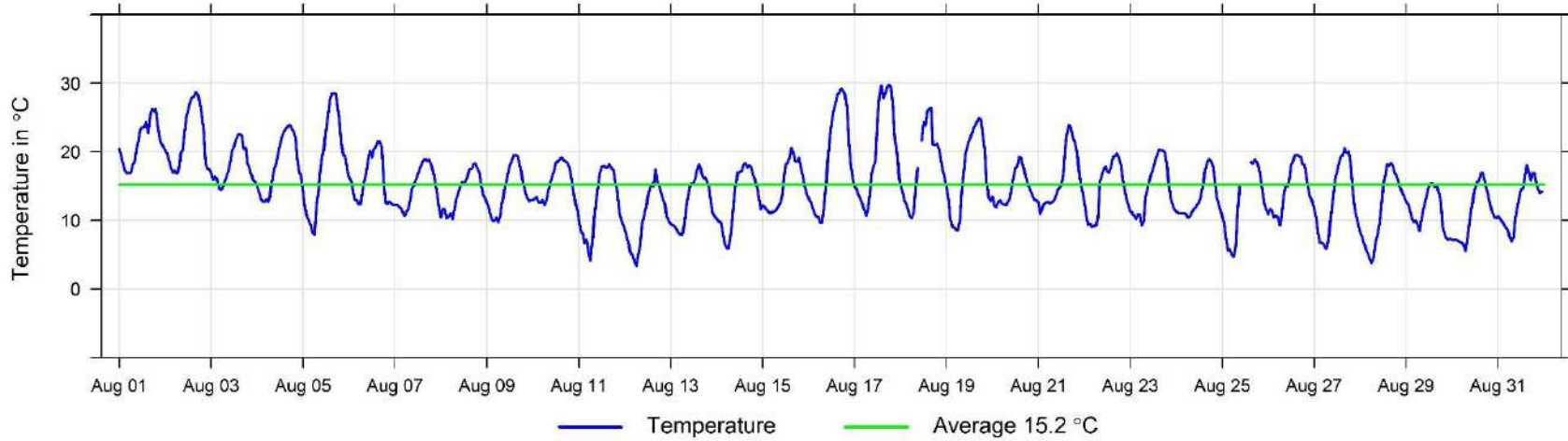
August Hourly Concentration Readings of NMHC (in ppm) at Wembley



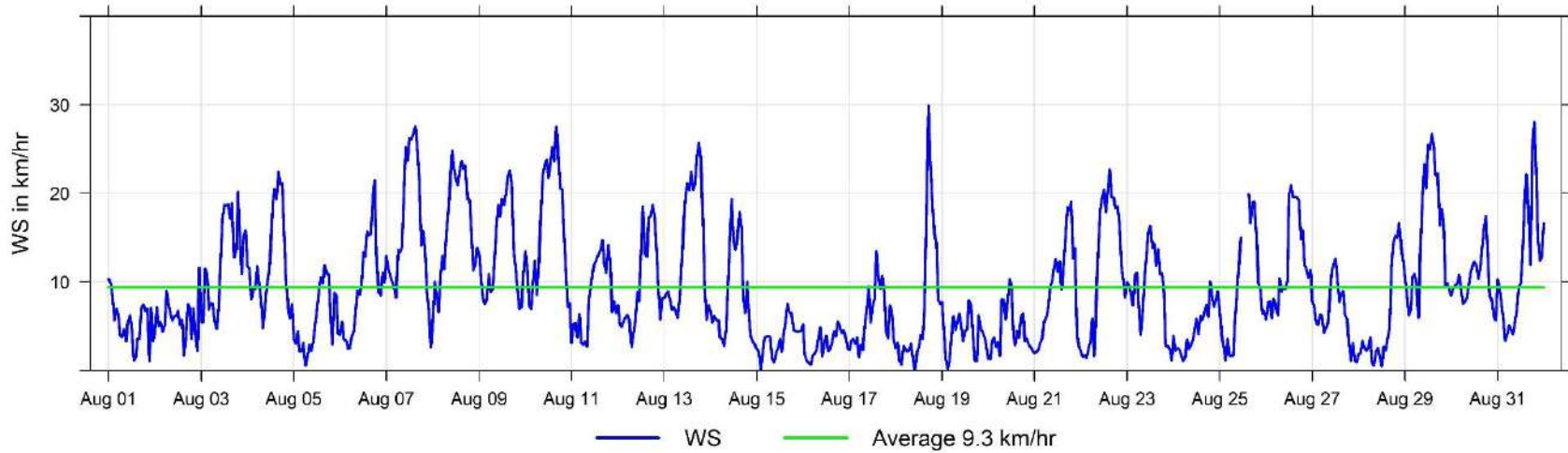
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Wembley



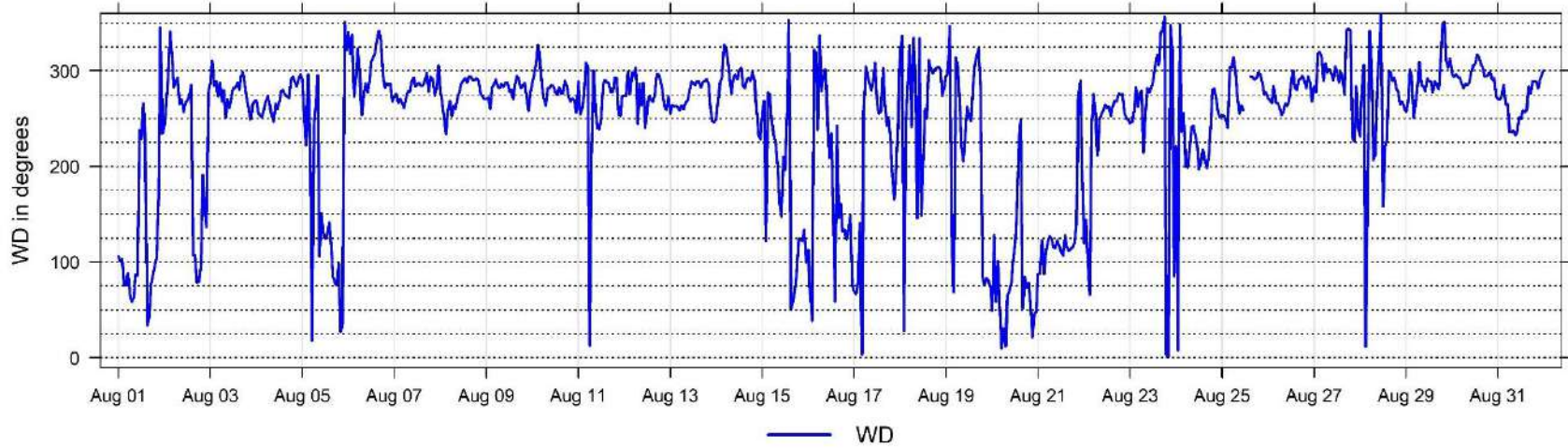
August Hourly Temperature Readings (in °C) at Wembley



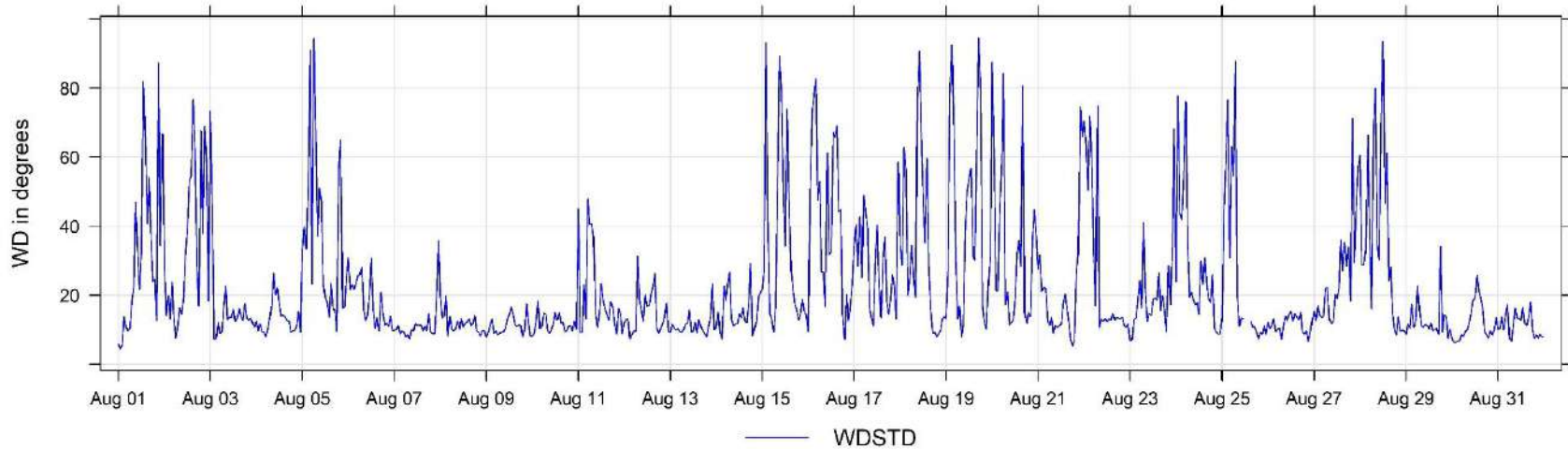
August Hourly Readings of Wind Speed (in km/hr) at Wembley

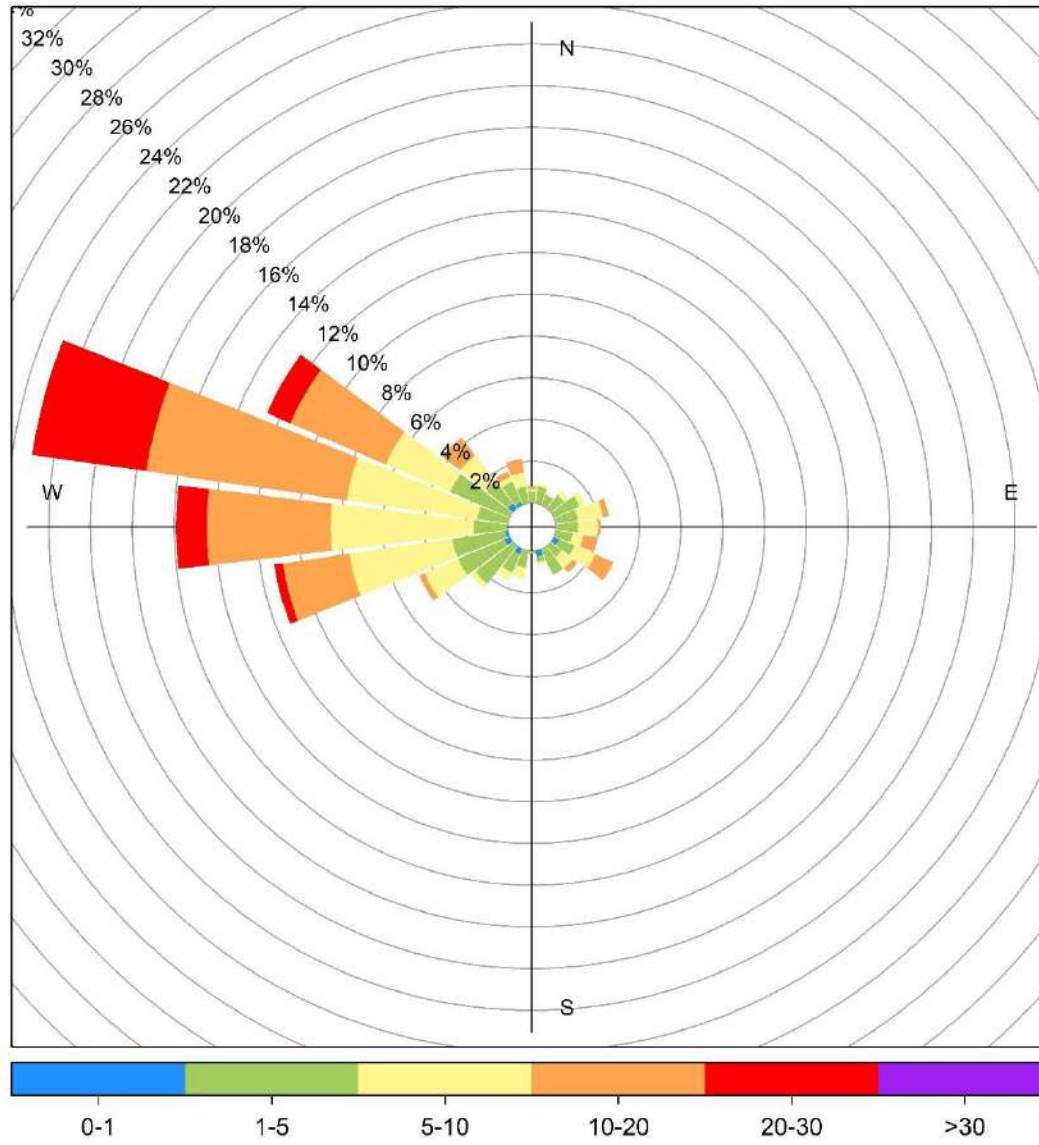


August Hourly Readings of Wind Direction (in degrees) at Wembley

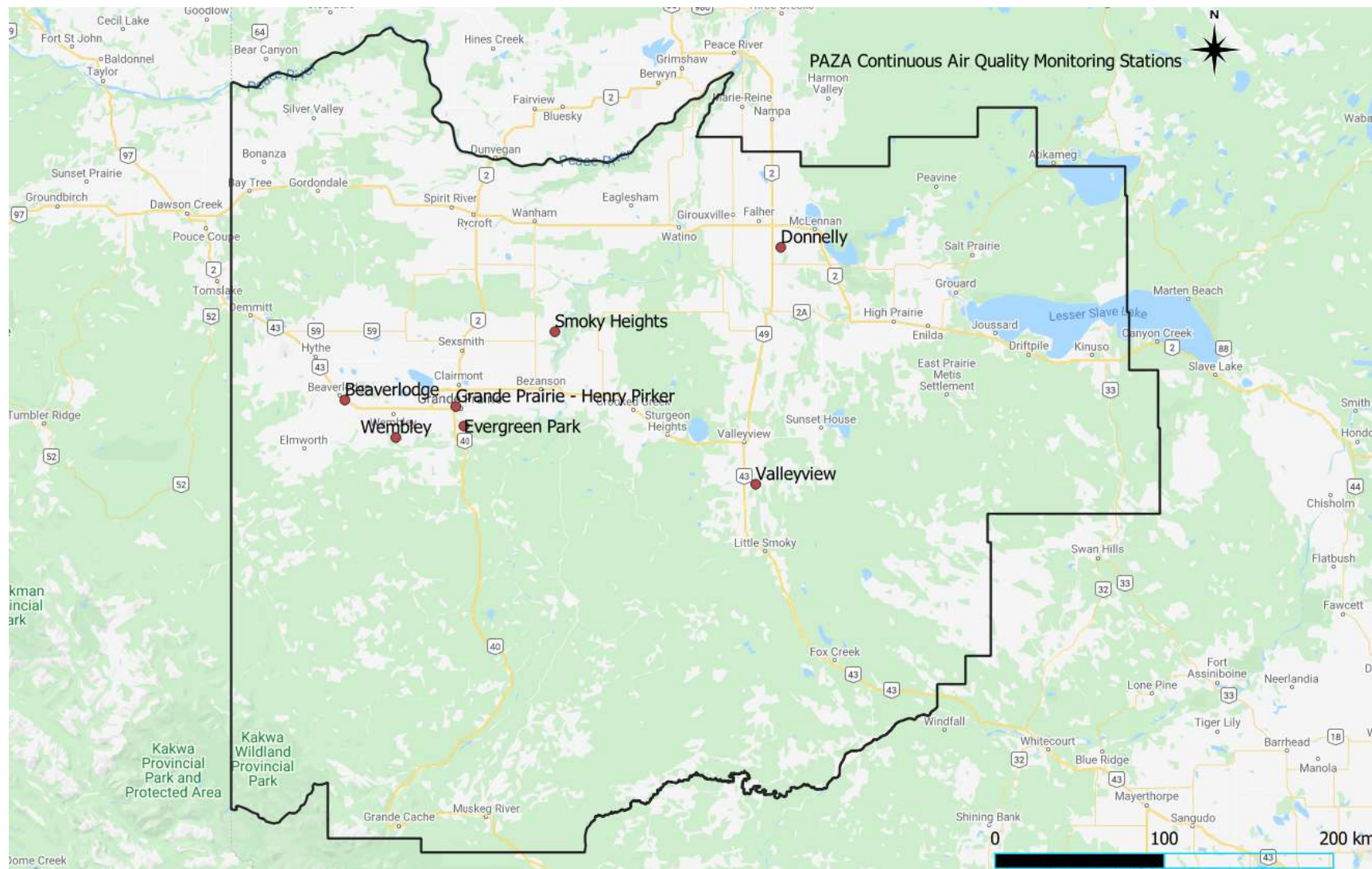


August Hourly Readings of Wind Direction Standard Deviation (in degrees) at Wembley





9 Concentration Roses for PAZA



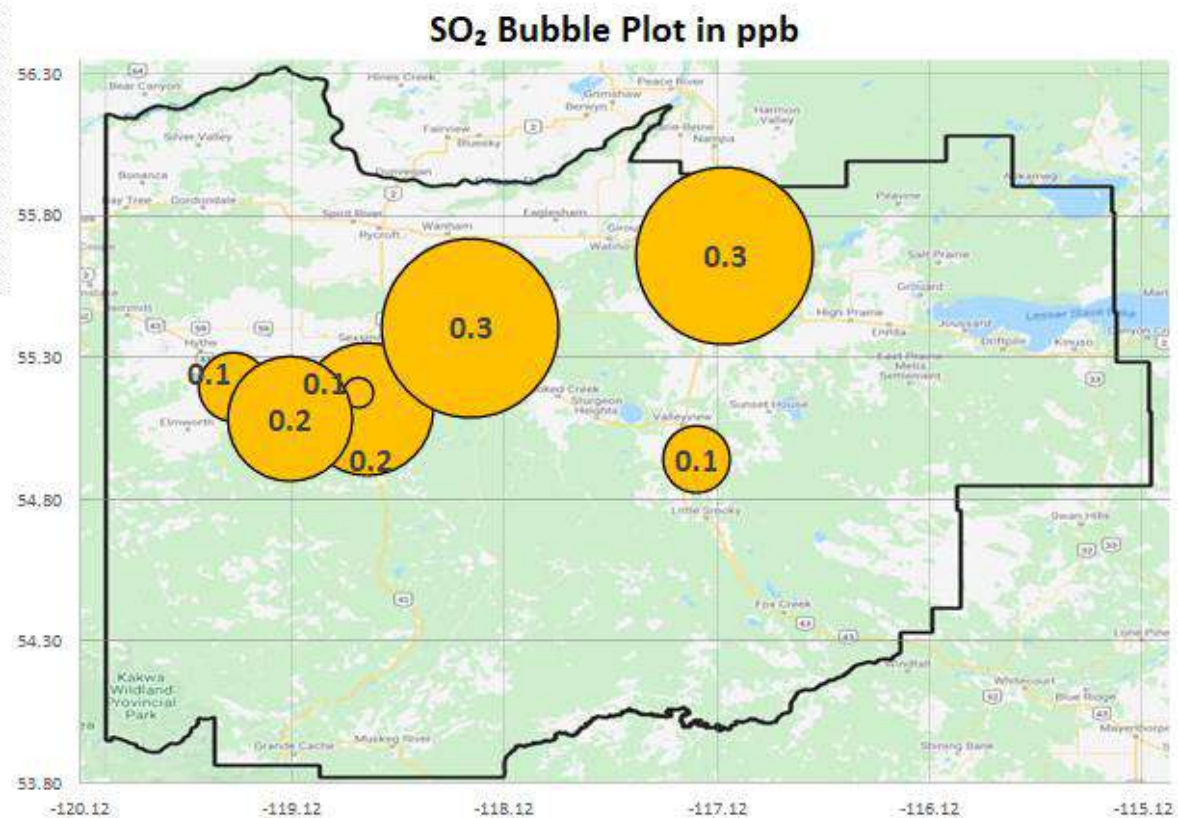
9.1 Wind Roses

Wind Roses in km/hr

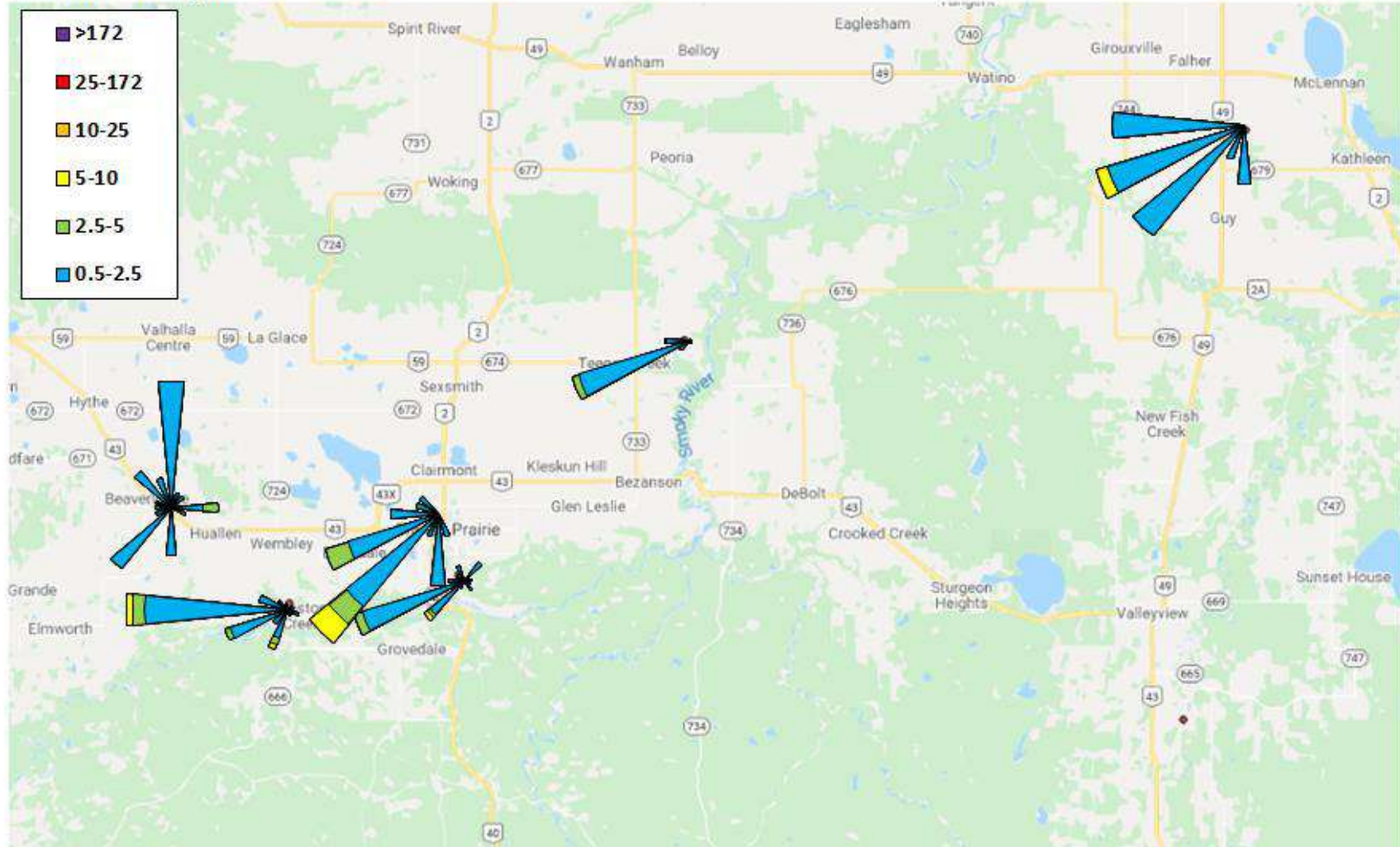


9.2 Sulphur Dioxide Plots

August 2020 SO ₂ Summary	
Station	Avg (ppb)
Evergreen Park	0.2
Henry Pirker	0.1
Smoky Heights	0.3
Beaverlodge	0.1
Valleyview	0.1
Donnelly	0.3
Wembley	0.2

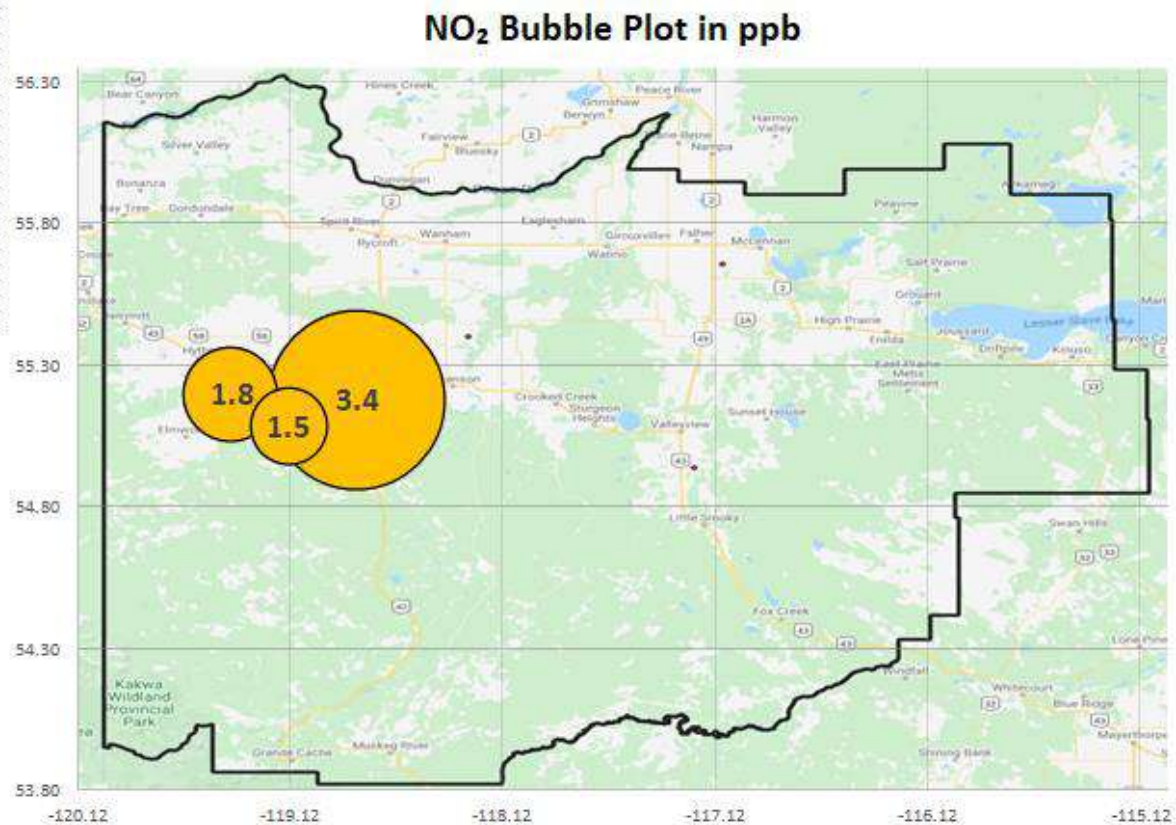


SO₂ Roses in ppb

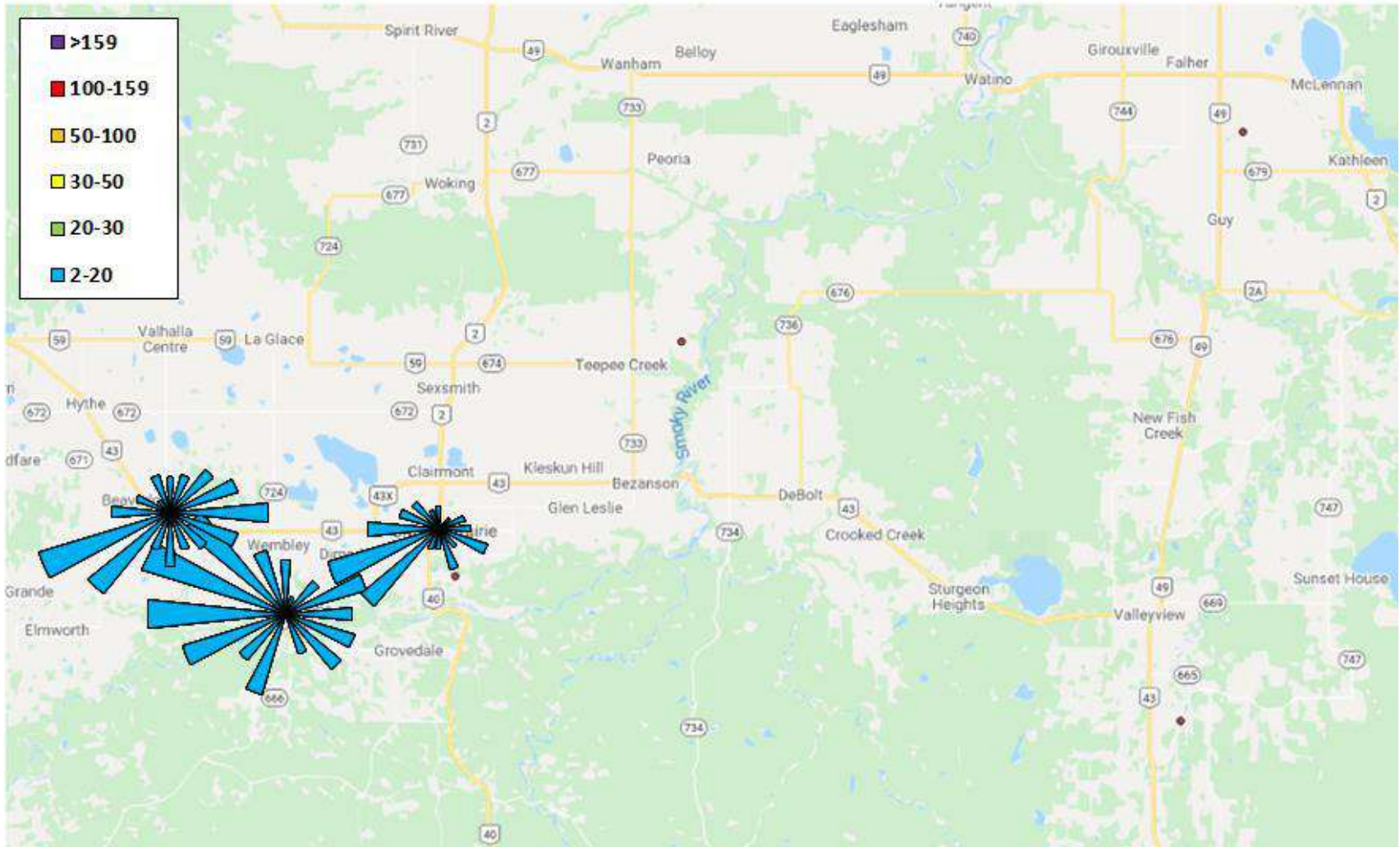


9.3 Nitrogen Dioxide Plots

August 2020 NO ₂ Summary	
Station	Avg (ppb)
Evergreen Park	-
Henry Pirker	3.4
Smoky Heights	-
Beaverlodge	1.8
Valleyview	-
Donnelly	-
Wembley	1.5



NO₂ Roses in ppb

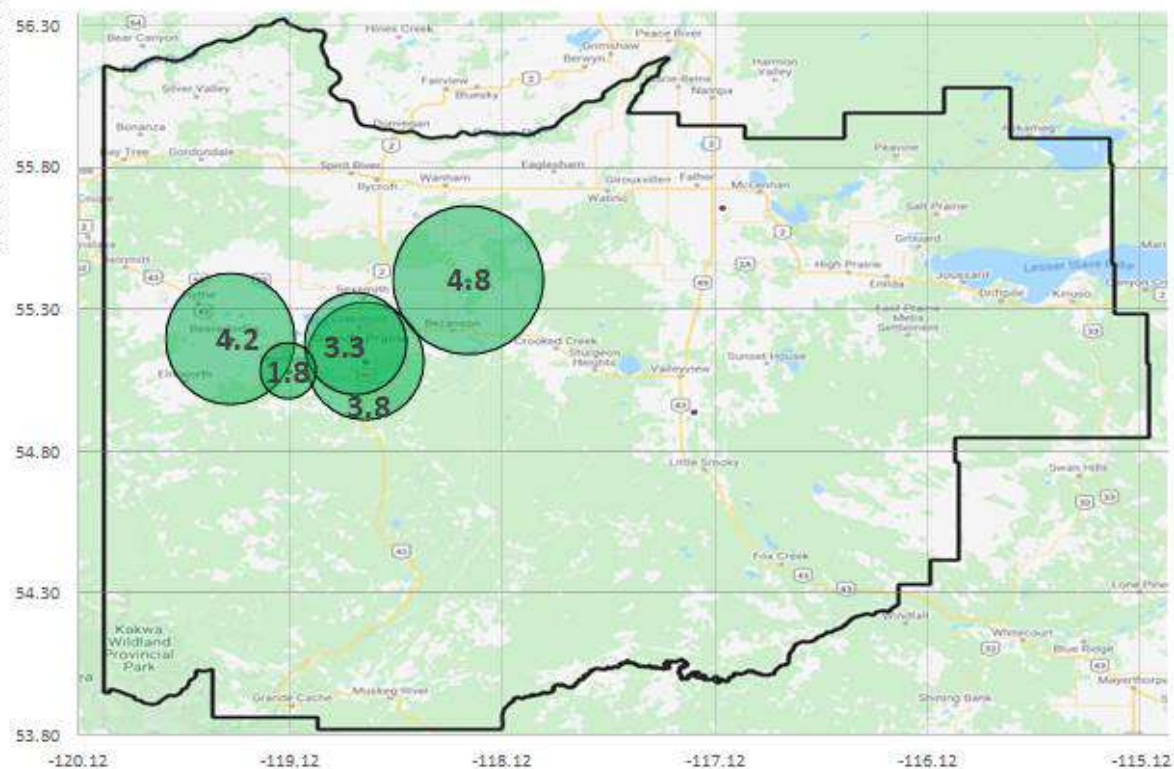


9.4 Fine Particulate Matter (PM_{2.5}) Plots

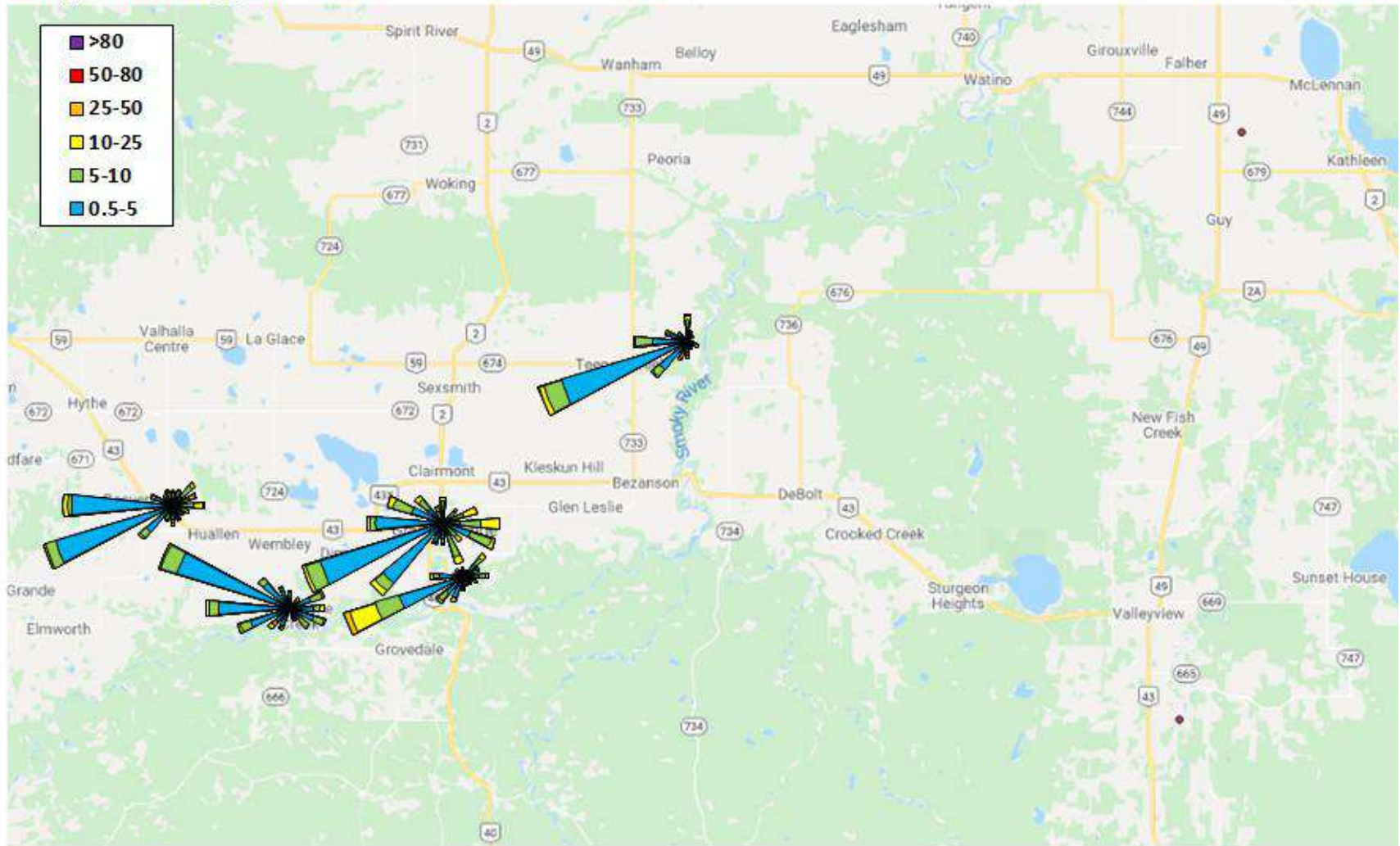
August 2020 PM_{2.5} Summary

Station	Avg (µg/m ³)
Evergreen Park	3.8
Henry Pirker	3.3
Smoky Heights	4.8
Beaverlodge	4.2
Valleyview	-
Donnelly	-
Wembley	1.8

PM_{2.5} Bubble Plot in µg/m³

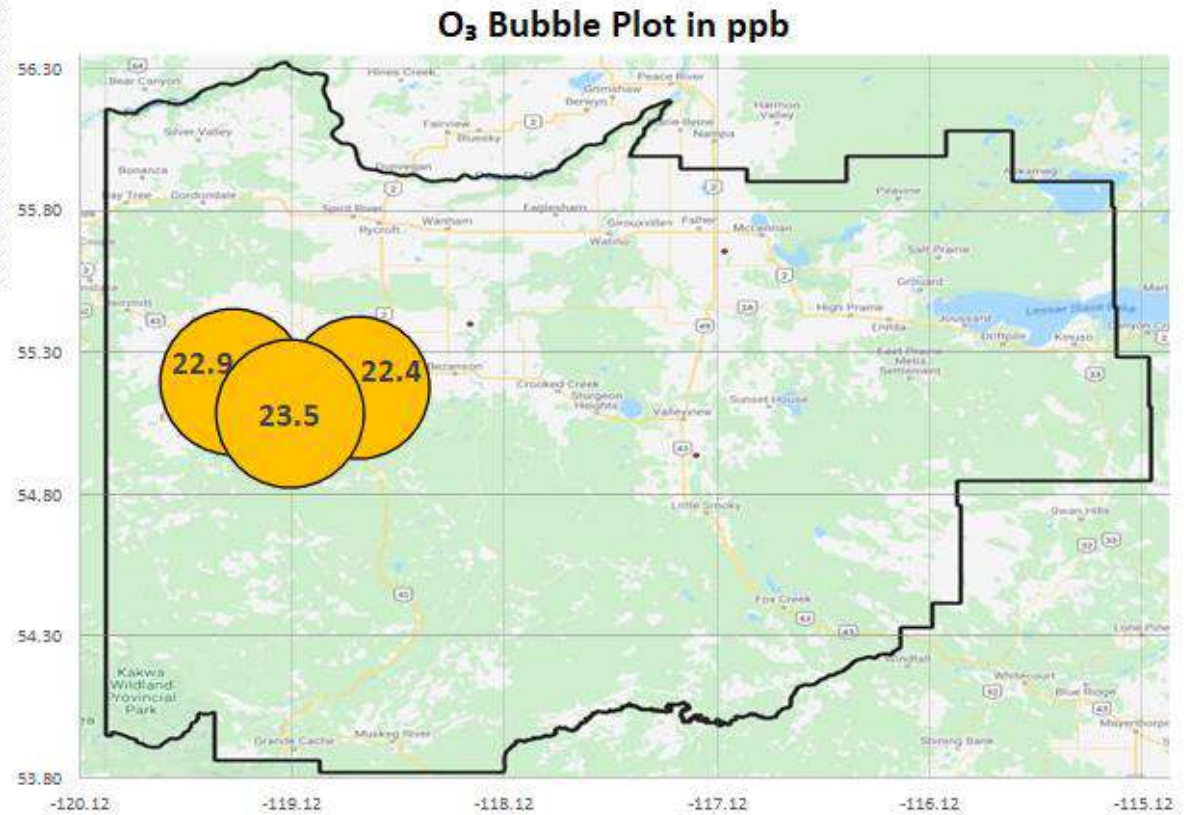


PM_{2.5} Roses in $\mu\text{g}/\text{m}^3$

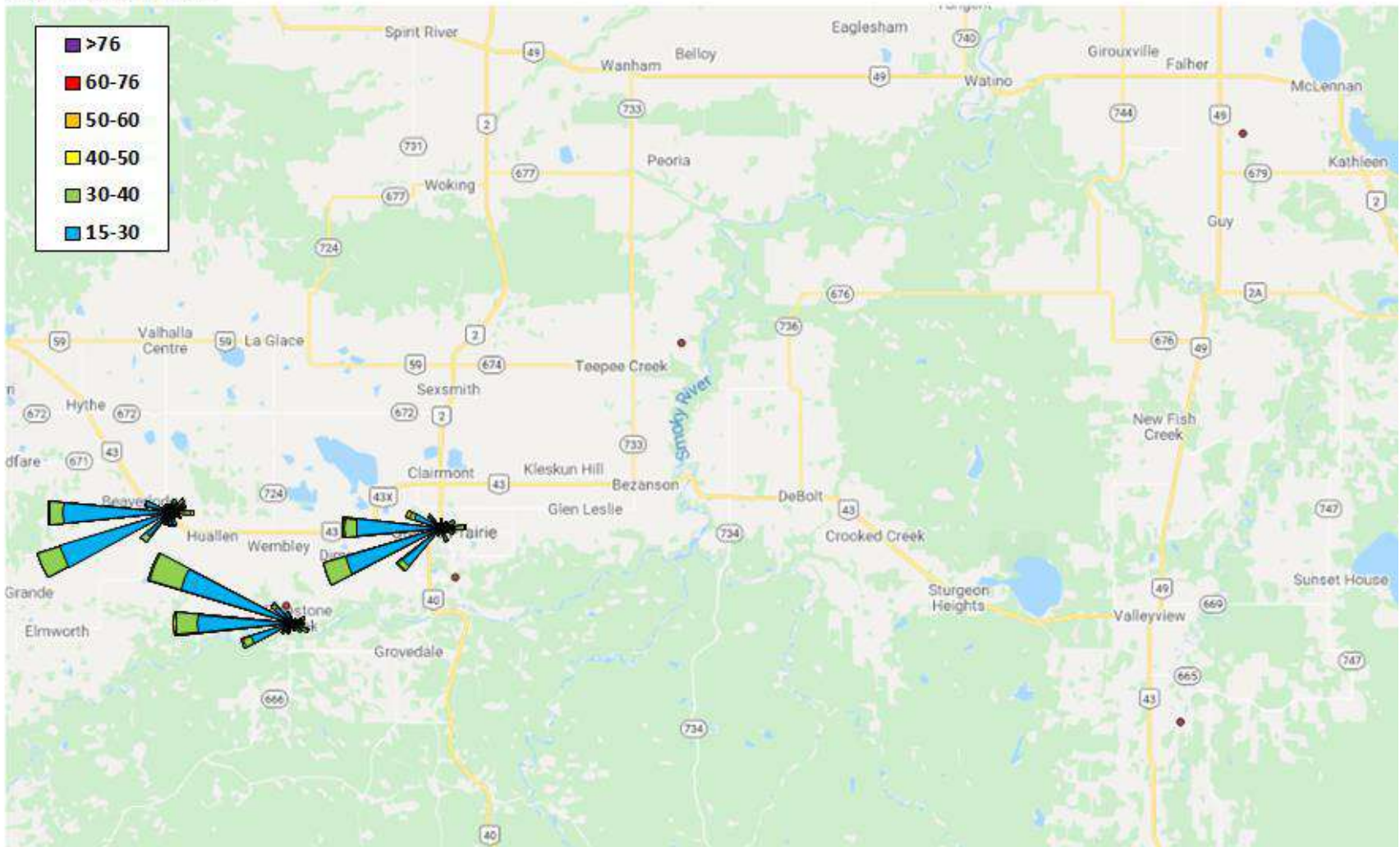


9.5 Ozone (O₃) Plots

August 2020 O ₃ Summary	
Station	Avg (ppb)
Evergreen Park	-
Henry Pirker	22.4
Smoky Heights	-
Beaverlodge	22.9
Valleyview	-
Donnelly	-
Wembley	23.5



O₃ Roses in ppb



10 Passive Monitoring Data

Peace Airshed Zone Association - PAZA Passive Stations for August 2020

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

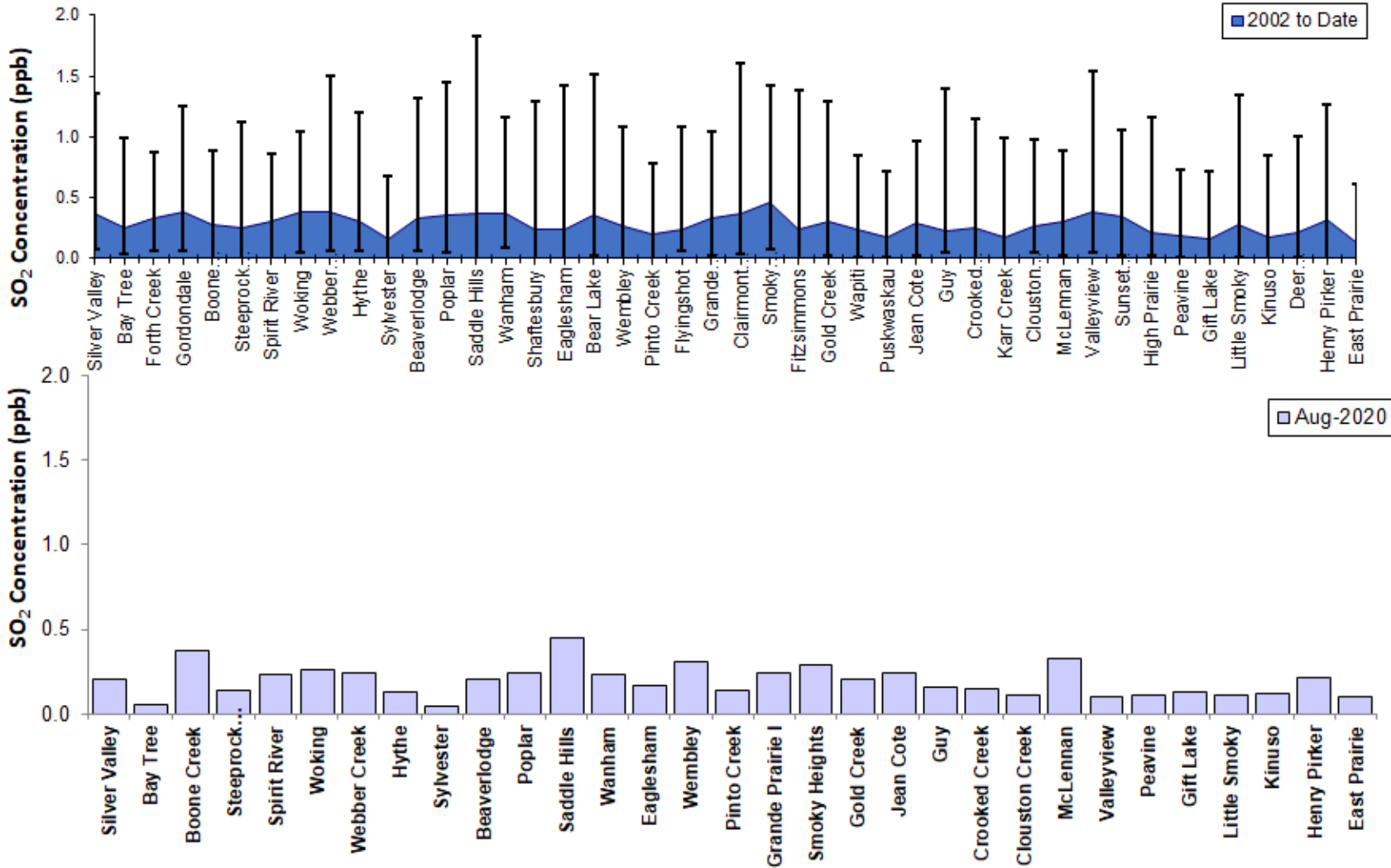
5a	Boone Creek			0.4		
5b	Boone Creek			0.4		
9a	Spirit River			1.2		
9b	Spirit River			1.1		
17a	Poplar	0.2				
17b	Poplar	0.3				
21a	Eaglesham	0.2				
21b	Eaglesham	0.2				
36a	Guy			0.4	0.2	
36b	Guy			0.4	0.2	
37a	Crooked Creek		27.7			
37b	Crooked Creek		14.3			
39a	Clouston Creek	0.1				
39b	Clouston Creek	0.1				

1	Silver Valley	0.2	-	0.7	-	08-27-081-11 W6M
2	Bay Tree	0.1	17.4	1.4	-	13-16-078-13 W6M
5	Boone Creek	0.4	-	0.4	-	01-23-076-11 W6M
7	Steepprock Creek	0.1	-	0.2	-	09-35-072-13 W6M
9	Spirit River	0.2	-	1.1	-	08-12-079-07 W6M
10	Woking	0.3	-	0.5	-	01-13-076-07 W6M
11	Webber Creek	0.2	-	1.4	-	09-36-074-09 W6M
12	Hythe	0.1	-	0.6	-	14-36-072-11 W6M
14	Sylvester	0.0	-	0.5	-	08-06-069-12 W6M
16	Beaverlodge	0.2	-	0.9	-	15-36-071-10 W6M
17	Poplar	0.2	-	1.1	-	13-06-073-08 W6M
18	Saddle Hills	0.4	-	0.4	-	04-25-074-07 W6M
19	Wanham	0.2	-	0.3	-	16-22-077-03 W6M
21	Eaglesham	0.2	-	0.3	-	16-21-079-25 W5M
24	Wembley	0.3	-	1.0	-	12-31-070-08 W6M
25	Pinto Creek	0.1	-	0.5	-	04-24-069-11 W6M
27	Grande Prairie I	0.2	-	1.7	-	08-15-071-06 W6M
29	Smoky Heights	0.3	-	0.7	-	04-06-075-02 W6M
32	Gold Creek	0.2	-	1.3	-	06-33-067-05 W6M
35	Jean Cote	0.2	-	0.5	-	12-35-079-21 W5M
36	Guy	0.2	-	0.4	0.2	03-04-076-22 W5M
37	Crooked Creek	0.2	21.0	0.7	-	16-01-071-26 W5M
39	Clouston Creek	0.1	-	0.3	-	12-01-073-22 W5M
40	McLennan	0.3	-	0.7	-	03-29-077-19 W5M
41	Valleyview	0.1	-	0.5	-	09-30-069-22 W5M
44	Peavine	0.1	-	0.1	-	03-05-079-15 W5M
45	Gift Lake	0.1	-	0.3	-	10-07-079-12 W5M
46	Little Smoky	0.1	-	1.1	-	12-01-065-21 W5M
47	Kinuso	0.1	27.4	0.3	-	12-10-073-10 W5M
49	Henry Pirker	0.2	-	1.9	-	17-26-071-06 W6M
50	East Prairie	0.1	-	0.2	-	11-13-079-08 W6M
63	Girouxville 3	-	-	-	-	14-02-077-23 W5M
64	Girouxville 4	-	-	-	0.7	04-08-077-22 W5M

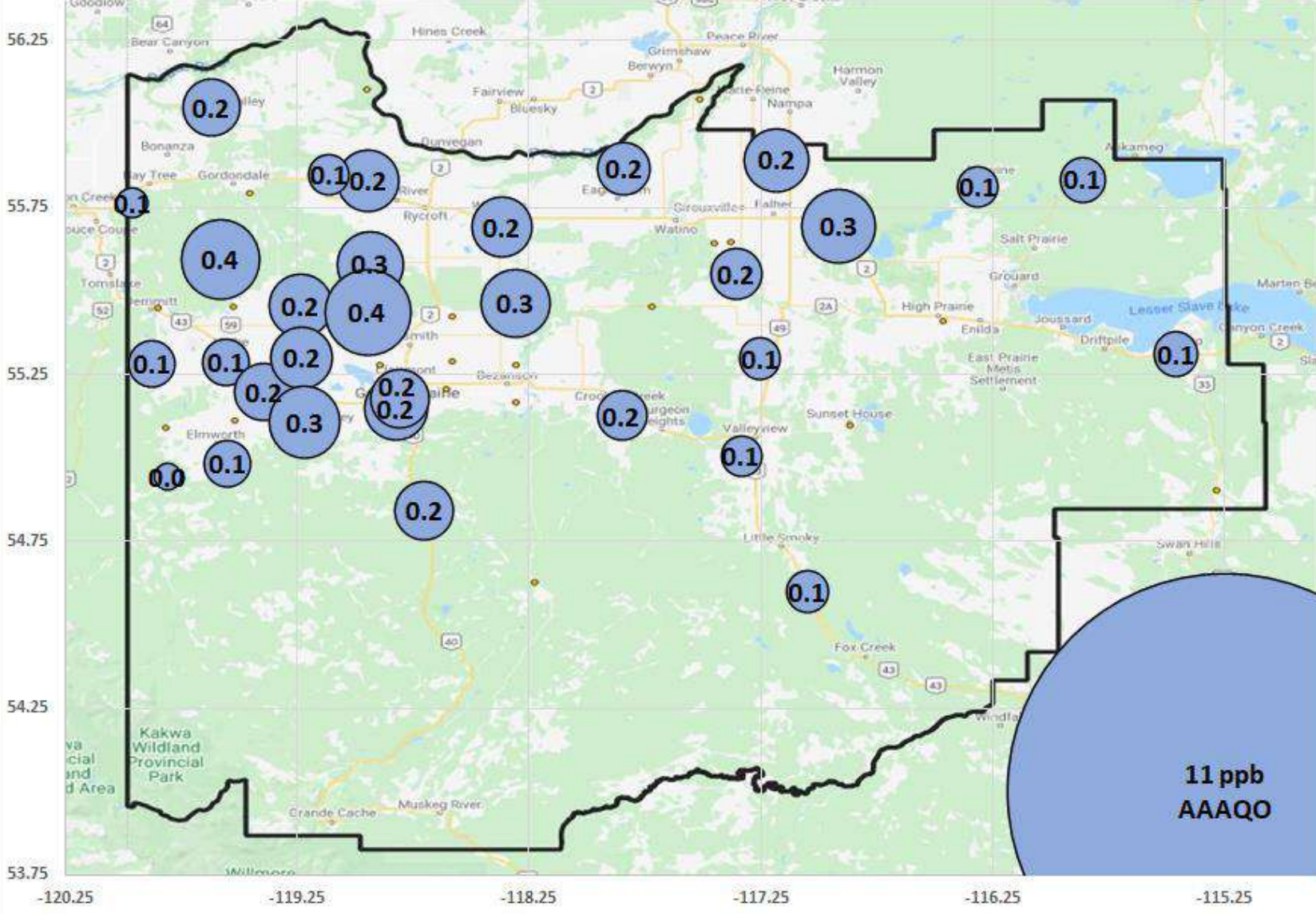
Passive Summary for August 2020

Stats	Sulphur Dioxide SO ₂	Ozone O ₃	Nitrogen Dioxide NO ₂	Hydrogen Sulphide H ₂ S
	ppb	ppb	ppb	ppb
Passive Summary for August 2020 (PAZA)				
Mean	0.2	21.9	0.7	0.4
Standard Deviation	0.1	5.1	0.5	0.3
Minimum	0.0	17.4	0.1	0.2
	Sylvester (#14)	Bay Tree (#2)	Peavine (#44)	Guy (#36)
Maximum	0.4	27.4	1.9	0.7
	Saddle Hills (#18)	Kinuso (#47)	Henry Pirker (#49)	Girouxville 4 (#64)
Continuous and Passive Monitoring Comparision				
PAZA Beaverlodge Station	0.1	22.9	1.8	-
Beaverlodge Passive (#16)	0.2	-	0.9	-
PAZA Henry Pirker Station	0.1	22.4	3.4	0.2
Henry Pirker passive (#49)	0.2	-	1.9	-

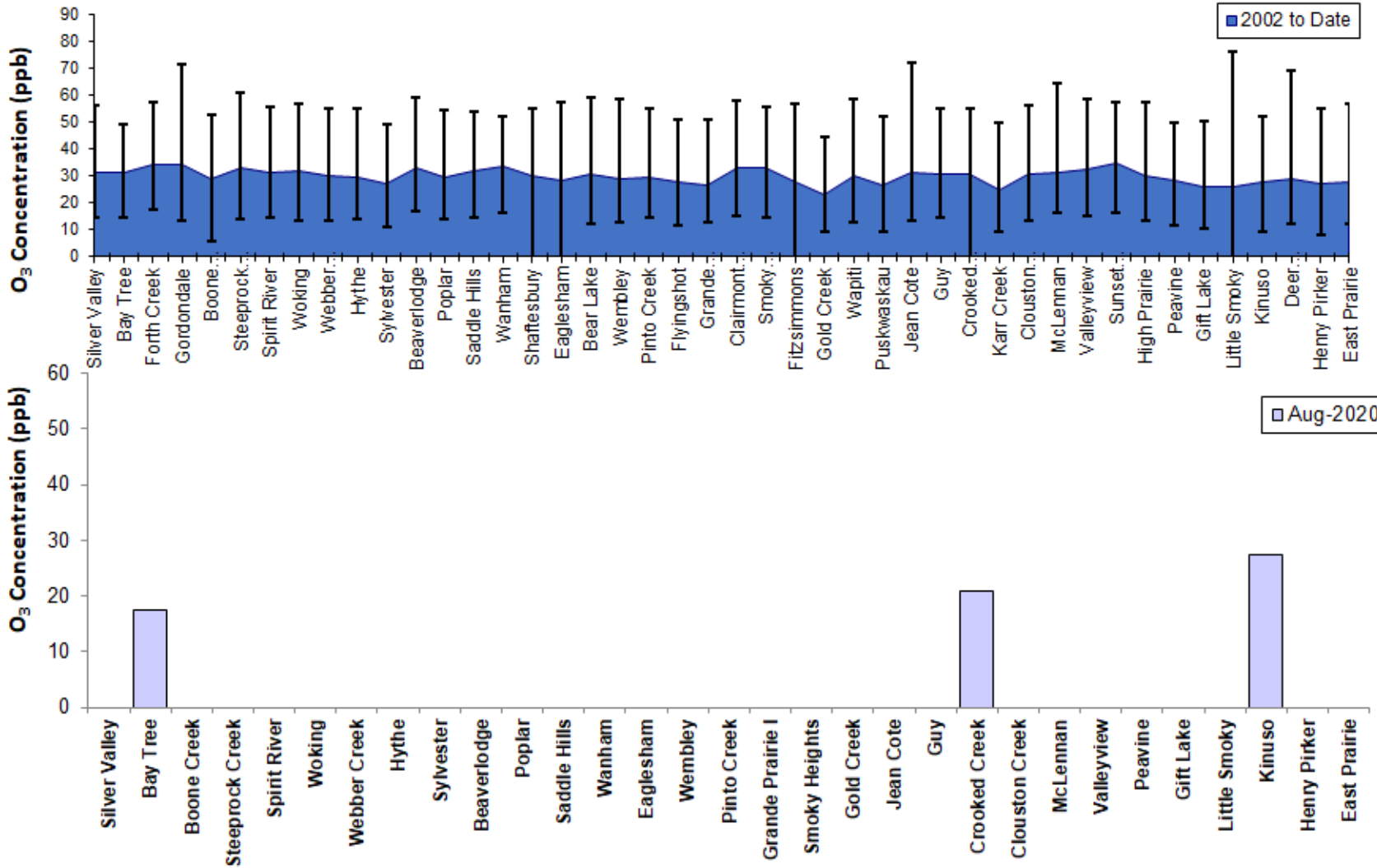
Alberta Ambient Air Quality Objective - 30-day SO₂ Objective is 11 ppb



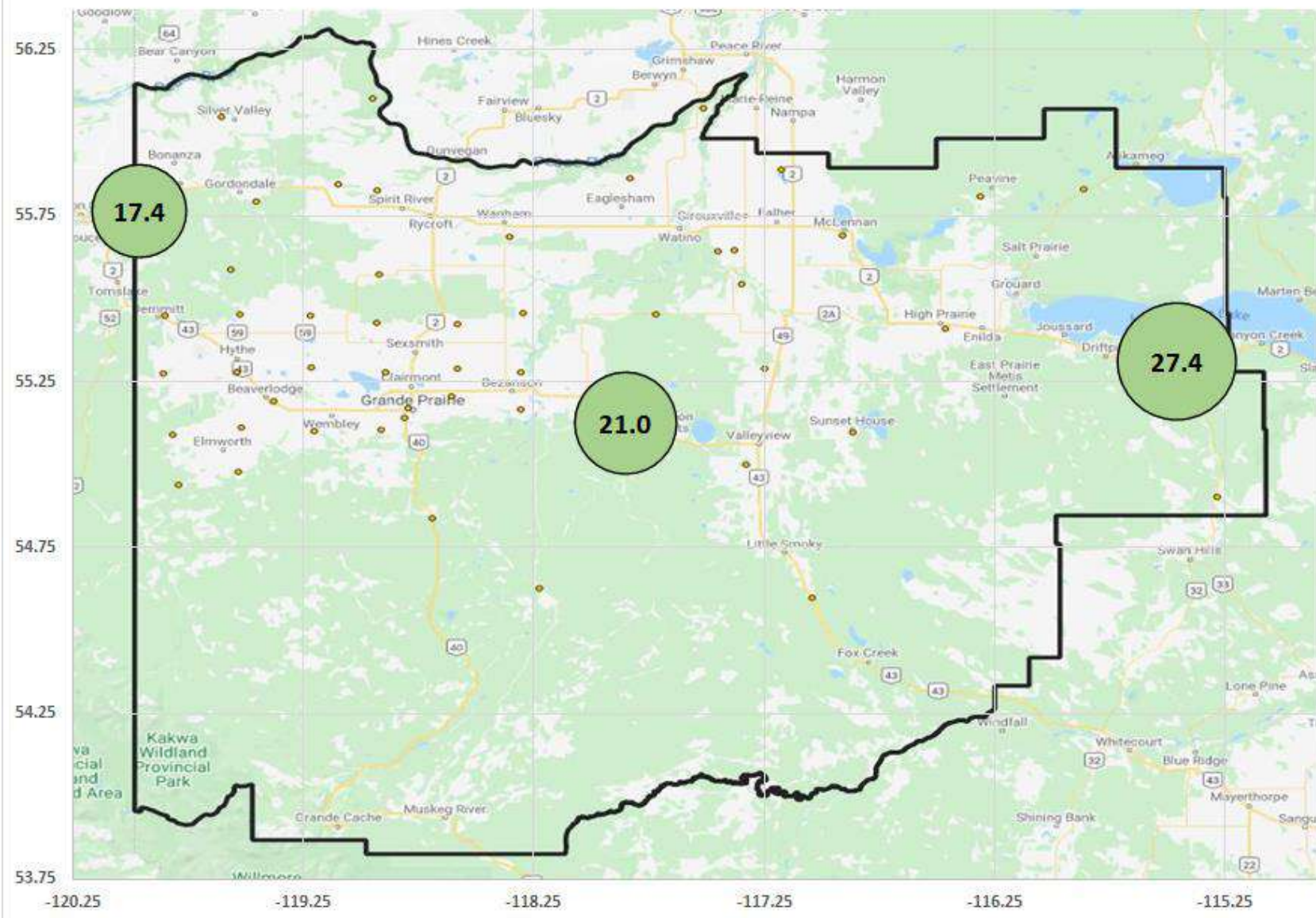
SO₂ Monthly Average (units in ppb)



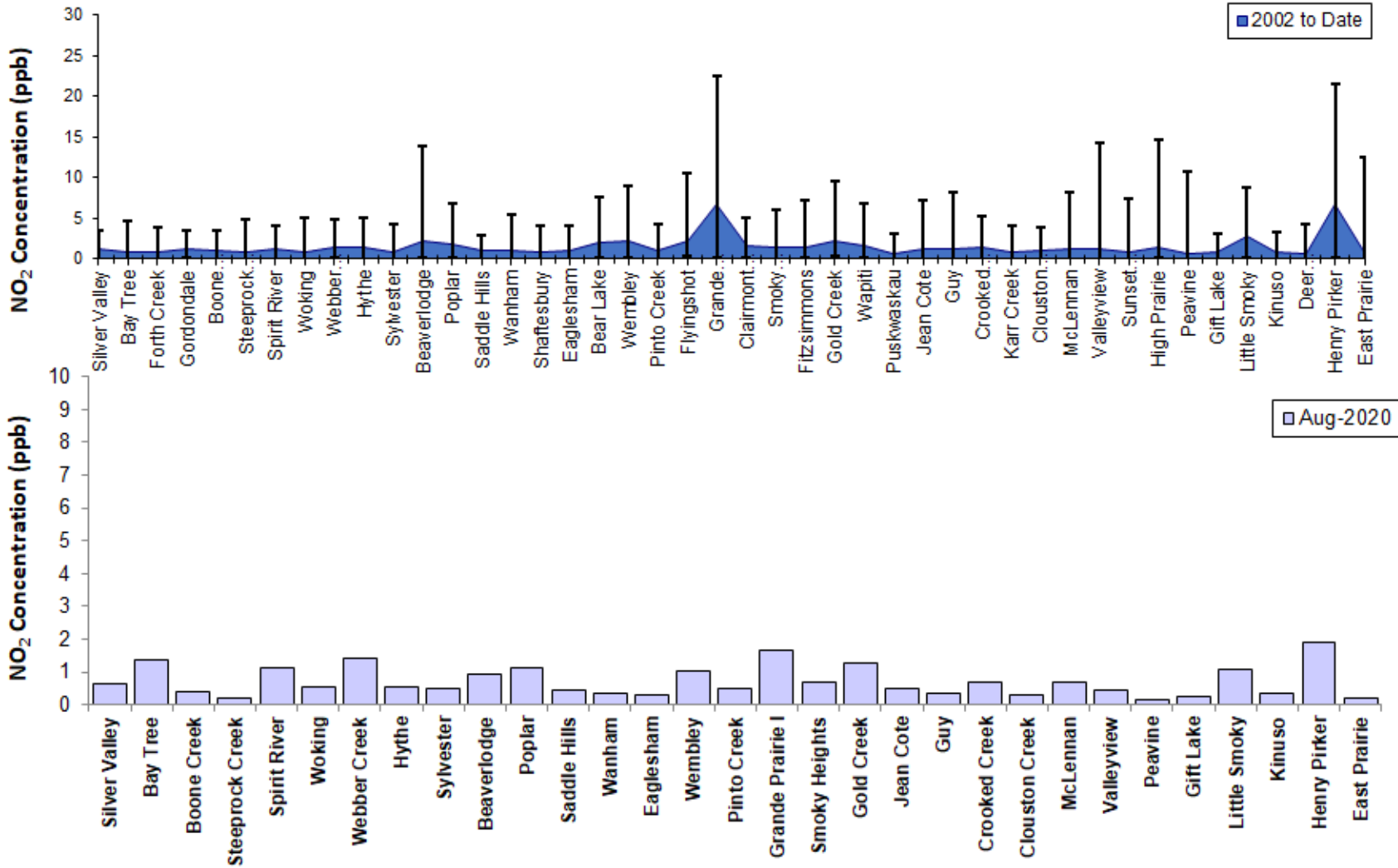
No Monthly or Annual Alberta Ambient Air Quality Objective for O₃



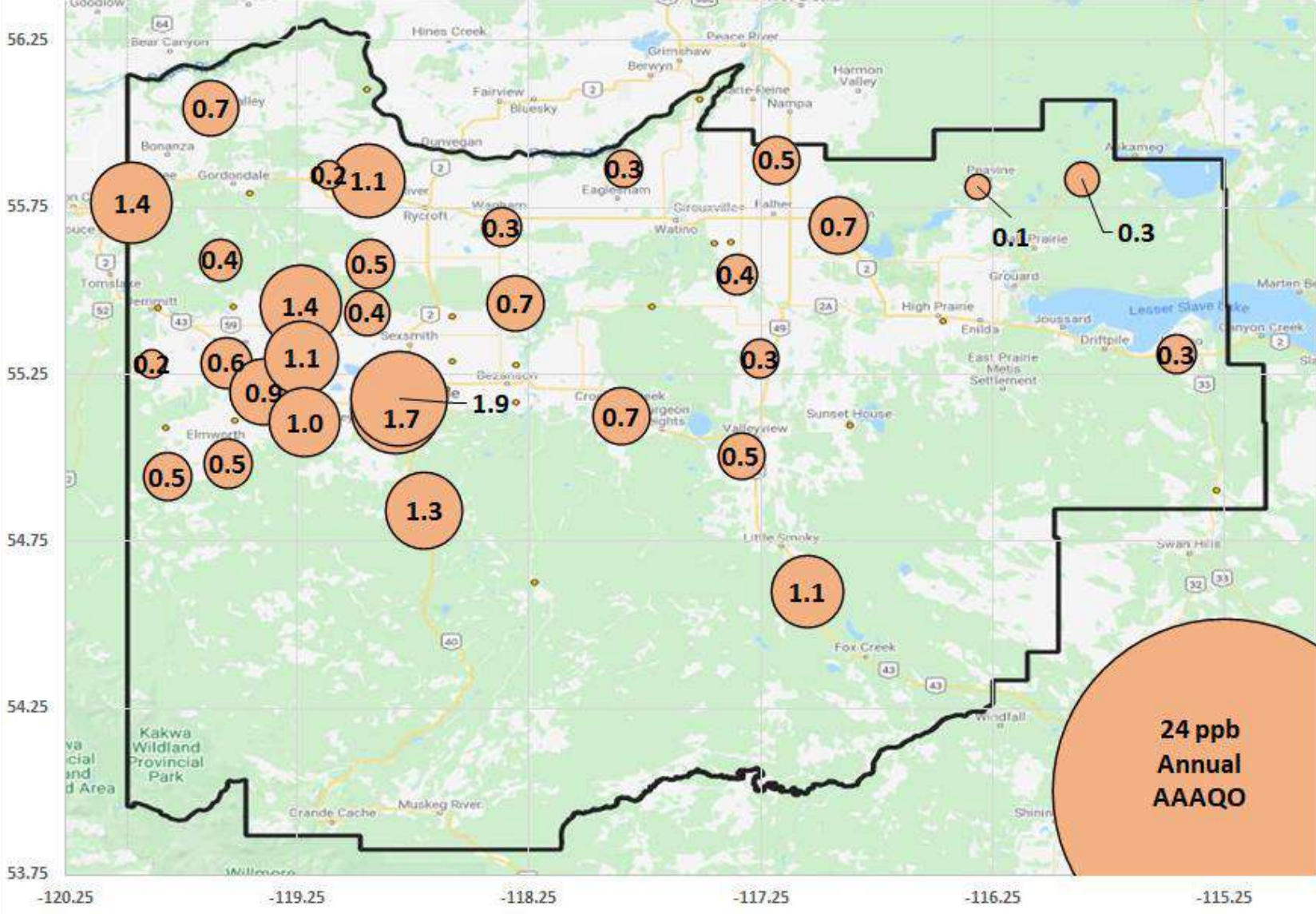
O₃ Monthly Average (units in ppb)



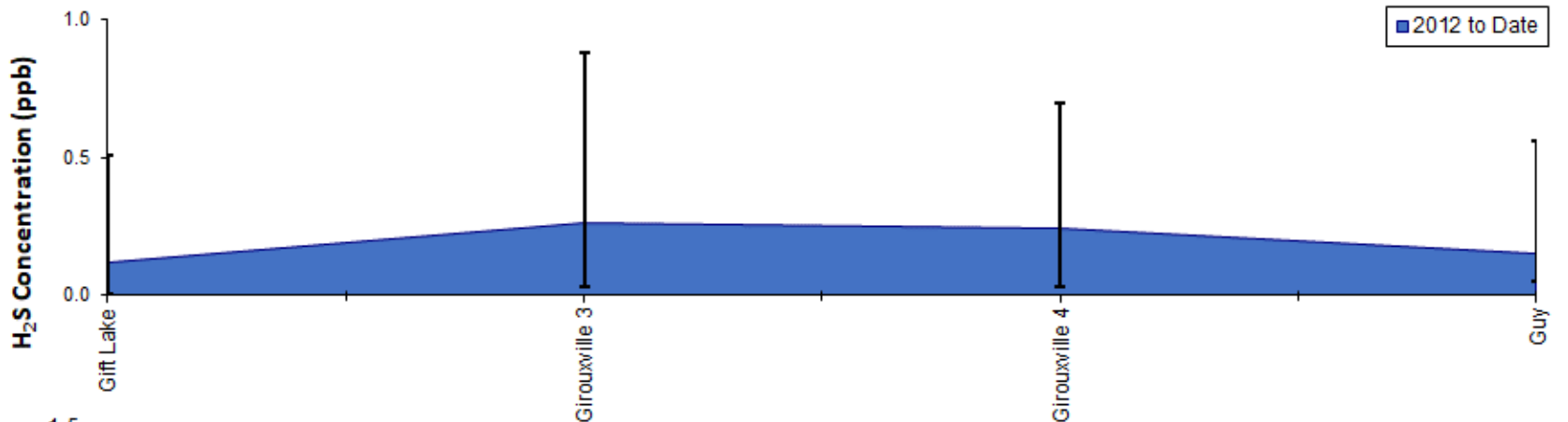
Alberta Ambient Air Quality Objective - Annual NO₂ Objective is 24 ppb



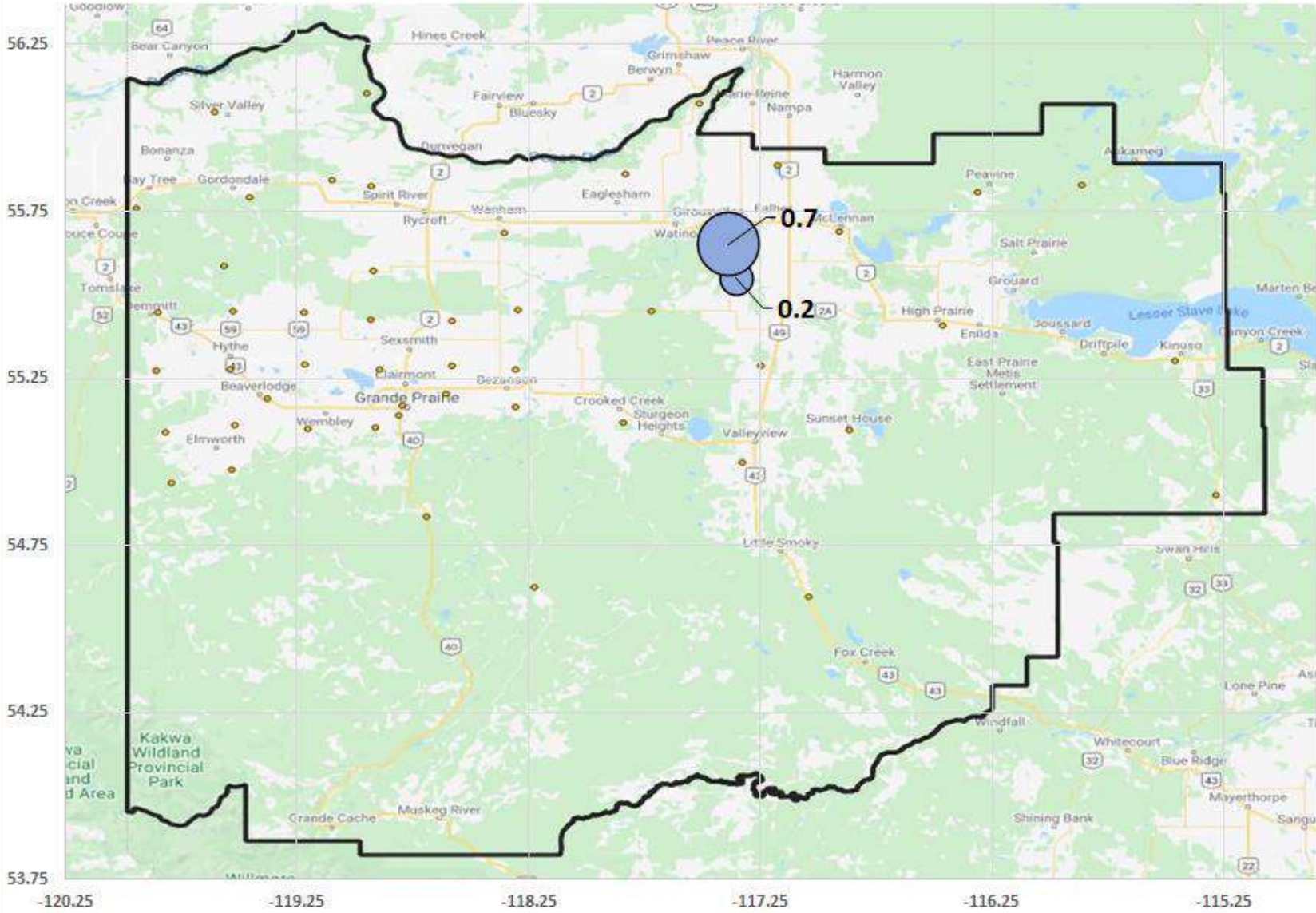
NO₂ Monthly Average (units in ppb)



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

August 2020