



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

August 2021

September 30, 2021

Alberta Environment and Parks

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

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

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of August 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 August 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
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
KANATA Energy Group Ltd.	Valhalla	13-21-076-09-W6	00017620-02-02
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
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
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
Strathcona Resources Ltd.	Jayar Sour Gas Processing Plant	06-08-062-03 W6	3612040
Suncor Energy Inc.	Progress	07-22-078-09-W6	00011428-02-00
Tidewater Midstream and Infrastructure Ltd.	Pipestone Sour Gas Plant	NW-35-70-9 W6	00403309-00-00
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 were six readings above the AAAQO (6, 24hr PM_{2.5}) and 23 readings above the AAAQG (1hr PM_{2.5}), results are summarized below:

There were 23, 1hr PM_{2.5} readings above 80 µg/m³ (AAAQG) as follows:

Reference Number	Pollutant	Station	Date	From MST	To MST	Hour avg µg/m ³	WS km/h	WD degrees
382203	PM _{2.5}	Wembley	06-Aug-21	14:00	15:00	94.7	17.3	270.1
382465	PM _{2.5}	Smoky Heights	13-Aug-21	23:00	00:00	80.7	8.1	228.7
382465	PM _{2.5}	Smoky Heights	13-Aug-21	22:00	23:00	117.9	11.2	267.5
382465	PM _{2.5}	Smoky Heights	13-Aug-21	21:00	22:00	118.9	13.2	261.8
382465	PM _{2.5}	Smoky Heights	13-Aug-21	20:00	21:00	83.7	14.9	259.8
382466	PM _{2.5}	Henry Pirker	14-Aug-21	23:00	00:00	110.2	3.6	228.9
382466	PM _{2.5}	Henry Pirker	14-Aug-21	09:00	10:00	105.1	10.1	231.5
382466	PM _{2.5}	Henry Pirker	14-Aug-21	08:00	09:00	155.2	9.8	233.9
382466	PM _{2.5}	Henry Pirker	14-Aug-21	07:00	08:00	85.9	5.7	228.0
382466	PM _{2.5}	Henry Pirker	15-Aug-21	02:00	03:00	105.8	2.8	199.1
382466	PM _{2.5}	Henry Pirker	15-Aug-21	01:00	02:00	128.9	2.4	200.5
382466	PM _{2.5}	Henry Pirker	15-Aug-21	00:00	01:00	139.5	3.5	236.6
382467	PM _{2.5}	Evergreen Park	14-Aug-21	23:00	00:00	98	3.4	227.4
382467	PM _{2.5}	Evergreen Park	14-Aug-21	22:00	23:00	93.6	5.5	225.8
382467	PM _{2.5}	Evergreen Park	14-Aug-21	21:00	22:00	82.2	6.8	224.1
382467	PM _{2.5}	Evergreen Park	14-Aug-21	09:00	10:00	98.8	7.9	242.2
382467	PM _{2.5}	Evergreen Park	14-Aug-21	08:00	09:00	108.4	6.9	244.6
382467	PM _{2.5}	Evergreen Park	14-Aug-21	07:00	08:00	82.1	6.6	237.0
382468	PM _{2.5}	Wembley	14-Aug-21	23:00	00:00	113.4	8.5	231.5
382468	PM _{2.5}	Wembley	14-Aug-21	07:00	08:00	123.5	7.4	232.7
382468	PM _{2.5}	Wembley	14-Aug-21	06:00	07:00	108.7	6.8	217.3
382468	PM _{2.5}	Wembley	15-Aug-21	00:00	01:00	104.7	5.4	230.6
382499	PM _{2.5}	Smoky Heights	15-Aug-21	02:00	03:00	89.0	9.9	209.3

There were 6, 24hr PM_{2.5} readings above 29 µg/m³ (AAAQO) as follows:

Reference Number	Pollutant	Station	Date	Day avg µg/m ³	WS km/h	WD degrees
382029	PM _{2.5}	Evergreen Park	02-Aug-21	34.4	1.3	246
382031	PM _{2.5}	Wembley	02-Aug-21	35.3	3.2	247
382465	PM _{2.5}	Smoky Heights	13-Aug-21	29.9	20.8	252
382467	PM _{2.5}	Evergreen Park	14-Aug-21	42.8	6.7	251
382466	PM _{2.5}	Henry Pirker	14-Aug-21	39.1	13.5	244
382468	PM _{2.5}	Wembley	14-Aug-21	33.0	12.0	257

Operational times less than 90 percent:

No operational times less than 90%.

Air Incidents

Wildfires resulted in elevated PM_{2.5}, ozone and carbon monoxide readings during the month

Deviations from Authorized Monitoring Methods

None to report.

Passive Monitoring

- 45 Stations throughout the PAZA zone
 - Passive sample analyses were performed by Bureau Veritas Laboratories
- There were 14 duplicate sites sampled in the month of August
 - Six SO₂ duplicates located at Forth Creek, Poplar, Grande Prairie, Kinuso, Duvernay 4, Jayar Bone Yard; RPD ranging from 9% to 37% (no fails)
 - One O₃ duplicate at Bay Tree; RPD at 10%
 - Five NO₂ duplicates at Boone Creek, Steeprock Creek, Crooked Creek, East Prairie, Jayar 7-8; RPD ranging from 0% to 35% (no fails)
 - Two H₂S duplicates, Duvernay 4, Jayar Bone Yard; RPD ranging from 0% to 12% (no fails)
- One field note that all three Girouxville samples were not collected as there was “No access. Roads not passable”
- Milner Sites collected and reported separately.
- 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.

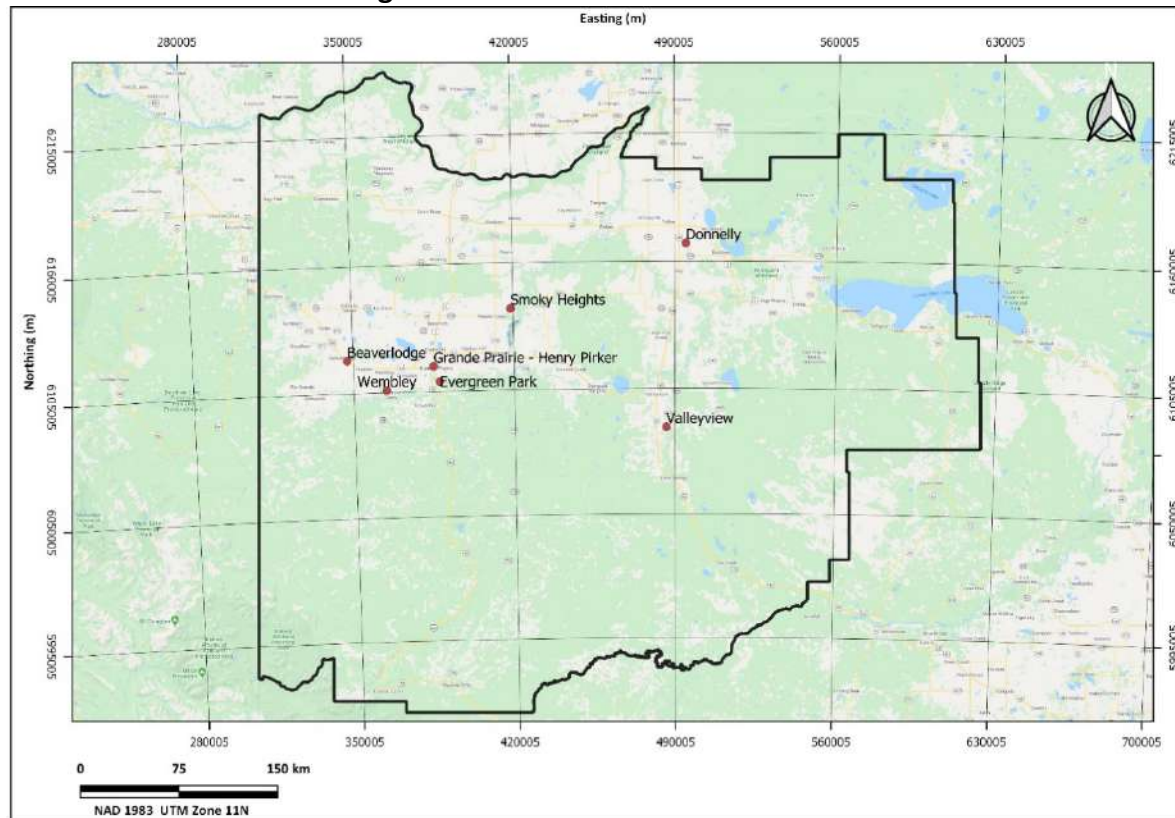


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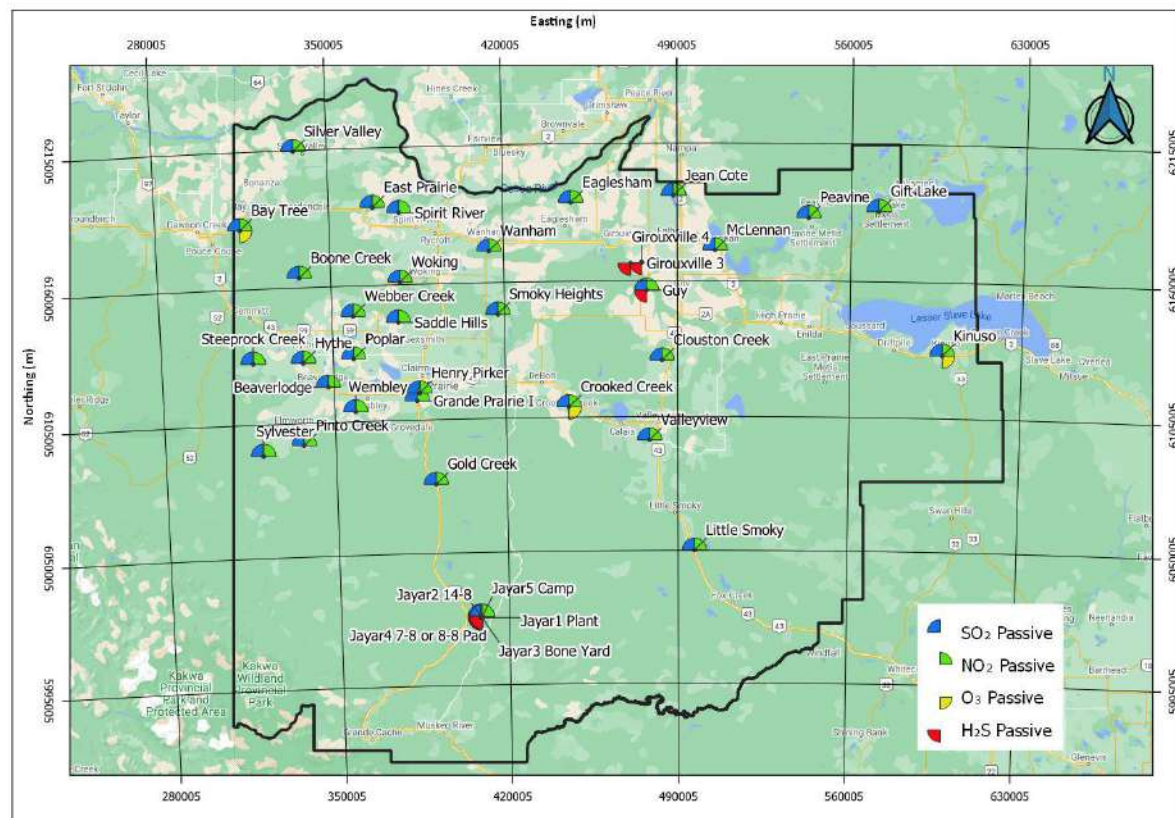
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PAZA Continuous Monitoring Station Locations



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 2021 Beaverlodge Station Report

Parameter	August		Valid	Operational	1-hour			24-hour			Exceedance				Calibration
	Average	Minimum			Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date
NO (ppb)	0.4	0.0	95.0%	100.0%	10.0	-	Aug-05 07:00	1.1	-	Aug-05	-	-	-	-	Aug 04, 2021
NO ₂ (ppb)	2.7	0.0	95.0%	100.0%	15.5	159	Aug-02 06:00	10.3	-	Aug-01	0	-	-	-	Aug 04, 2021
NO _x (ppb)	3.0	0.2	95.0%	100.0%	21.2	-	Aug-05 07:00	10.9	-	Aug-01	-	-	-	-	Aug 04, 2021
O ₃ (ppb)	26.1	3.5	95.3%	100.0%	51.8	76	Aug-05 12:00	35.2	-	Aug-29	0	-	-	-	Aug 04, 2021
PM _{2.5} (µg/m³)	6.2	0.0	99.7%	100.0%	56.0	80	Aug-03 10:00	28.1	29	Aug-02	0	-	0	-	Aug 03, 2021
SO ₂ (ppb)	0.3	0.0	95.3%	100.0%	14.7	172	Aug-26 01:00	1.9	48	Aug-25	0	-	0	0	Aug 03, 2021
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
Temp (°C)	15.8	3.8	100.0%	100.0%	31.1										
RH (%)	63.5	20.7	100.0%	100.0%	99.9										
WS (km/hr)	12.3	0.3	100.0%	100.0%	52.8										
WD (deg)	269	0.1	100.0%	100.0%	358.6										
						Average Wind Direction		269		W					

Update Summary:

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

1.2 Evergreen Park Air Monitoring Station

PAZA - August 2021 Evergreen Park Station Report

Parameter	August		Valid	Operational	1-hour			24-hour			Exceedance				Calibration
	Average	Minimum			Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date
PM _{2.5} (µg/m³)	8.0	0.0	97.4%	97.7%	108.4	80	Aug-14 09:00	42.8	29	Aug-14	6	-	2	-	Aug-07-2021
SO ₂ (ppb)	0.2	0.0	95.3%	100.0%	4.9	172	Aug-26 10:00	0.6	48	Aug-26	0	-	0	0	Aug-16-2021
TRS (ppb)	0.3	0.0	94.2%	99.3%	1.5	-	Aug-01 02:00	0.4	-	Aug-14	-	-	-	-	Aug-01-2021
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction267W									
Temp (°C)	15.8	1.8	100.0%	100.0%	32.4										
RH (%)	66.4	20.5	100.0%	100.0%	98.3										
WS (km/hr)	3.8	0.0	100.0%	100.0%	16.1										
WD (deg)	267	2.0	100.0%	100.0%	357.3										

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Thermo	TEOM AB	Eights readings above the AAAQO and AAAQG; 14hrs of excessive negative drift with 3hrs of maintenance
SO ₂	TECO	43i	No Operational issues noted during the month
TRS	TECO	43C	TRS second calibration flagged as maintenance (5hrs)
Met Equip	Gil/RMYoung	MetPak/RMY86004	No Operational issues noted during the month

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - August 2021 Henry Pirker Station Report

Parameter	August				1-hour			8-hour / 24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	0.9	0.0	94.9%	100.0%	22.6	-	Aug-26 08:00	3.8	-	Aug-26	-	-	-	-	Aug 17, 2021
NO ₂ (ppb)	5.1	0.7	94.9%	100.0%	18.5	159	Aug-26 00:00	10.8	-	Aug-01	0	-	-	-	Aug 17, 2021
NO _x (ppb)	6.2	0.8	94.9%	100.0%	38.1	-	Aug-26 08:00	12.1	-	Aug-26	-	-	-	-	Aug 17, 2021
O ₃ (ppb)	21.1	0.4	95.2%	100.0%	55.8	76	Aug-05 13:00	28.7	-	Aug-21	0	-	-	-	Aug 17, 2021
PM _{2.5} (µg/m ³)	9.0	0.0	99.6%	100.0%	155.2	80	Aug-14 08:00	39.1	29	Aug-14	7	-	1	-	Aug 18, 2021
SO ₂ (ppb)	0.2	0.0	95.3%	100.0%	12.4	172	Aug-08 09:00	0.9	48	Aug-12	0	-	0	0	Aug 17, 2021
H ₂ S (ppb)	0.2	0.0	95.2%	100.0%	2.5	10	Aug-24 08:00	0.4	3	Aug-24	0	-	0	-	Aug 18, 2021
CH ₄ (ppm)	2.0	1.8	95.4%	100.0%	3.9	-	Aug-25 07:00	2.3	-	Aug-25	-	-	-	-	Aug 17, 2021
THC (ppm)	2.0	1.8	95.4%	100.0%	3.9	-	Aug-25 07:00	2.3	-	Aug-25	-	-	-	-	Aug 16, 2021
NMHC (ppm)	0.0	0.0	95.4%	100.0%	0.2	-	Aug-25 02:00	0.1	-	Aug-01	-	-	-	-	Aug 16, 2021
CO (ppm)	0.2	0.1	94.6%	99.5%	1.8	13	Aug-15 01:00	0.5	5	Aug-14	0	0	-	-	Aug 06, 2021
Average															
Temp (°C)	16.9	3.2	100.0%	100.0%	33.7										
RH (%)	60.0	20.0	100.0%	100.0%	91.3										
SR (W/m ²)	133.1	0.0	100.0%	100.0%	658.0										
WS (km/hr)	7.9	0.1	100.0%	100.0%	31.2										
WD (deg)	263	1.2	100.0%	100.0%	359.9										
Note: Valid hours must be greater than 75% Operational hours must be greater than 90%															
Average Wind Direction									263	W					

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42IQ	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; 7hrs (above AAAQG); 1hr (above AAAQO)
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	Analyzer replaced with repaired unit Aug 6, Second calibration on Aug 16 flagged as maintenance (4hrs)
Met Equip	MetOne	50.5	No Operational issues noted during the month

1.4 Smoky Heights Air Monitoring Station

PAZA - August 2021 Smoky Heights Station Report

Parameter	August				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
PM _{2.5} (µg/m ³)	8.1	0.0	99.9%	100.0%	118.9	80	Aug-13 22:00	29.9	29	Aug-13	5	-	1	-	Aug 07, 2021
SO ₂ (ppb)	0.2	0.0	95.3%	100.0%	9.8	172	Aug-24 14:00	0.6	48	Aug-24	0	-	0	0	Aug 07, 2021
TRS (ppb)	0.2	0.0	90.3%	95.3%	1.3	-	Aug-09 04:00	0.3	-	Aug-19	-	-	-	-	Aug 02, 2021
Average															
Temp (°C)	15.8	2.7	100.0%	100.0%	33.1										
WS (km/hr)	13.3	0.4	99.9%	99.9%	53.4										
WD (deg)	257	0.3	99.9%	99.9%	359.6										
Note: Valid hours must be greater than 75% Operational hours must be greater than 90%															
Average Wind Direction									257	WNW					

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Sharp	5030	No Operational issues noted; one reading above AAAQO and five readings above AAAQG
SO ₂	TECO	43i	No Operational issues noted during the month
TRS	TEI	43I APSAA	TRS cal Aug 2 for span failure (30hrs removed), cal Aug 7 flagged as maintenance (oxidizer temp optimization)
Met Equip	MetOne	50.5	One hour of wind data removed Aug 24 due to invalid spike

1.5 Valleyview Air Monitoring Station

PAZA - August 2021 Valleyview Station Report

A2A - August 2021 Valleyview Station Report																
August				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	
SO ₂ (ppb)	0.1	0.0	95.3%	100.0%	1.0	172	Aug-21 12:00	0.2	48	Aug-21	0	-	0	0	Aug 12, 2021	
H ₂ S (ppb)	0.1	0.0	95.3%	100.0%	0.4	10	Aug-25 00:00	0.2	3	Aug-01	0	-	0	-	Aug 12, 2021	
Average		Minimum	Valid	Operational	Maximum											
Temp (°C)	15.7	1.7	100.0%	100.0%	33.5	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%										
RH (%)	75.2	21.9	100.0%	100.0%	100.2											
WS (km/hr)	3.9	0.1	100.0%	100.0%	14.9											
WD (deg)	269	0.3	100.0%	100.0%	359.5											
Average Wind Direction									269	NW						

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	TEI	43I-APSCB	No Operational issues noted during the month
H ₂ S	TEI	450I-APHAA	No Operational issues noted during the month
Met Equip	RMYoung	RMY86004	No Operational issues noted during the month

1.6 Donnelly Air Monitoring Station

PAZA - August 2021 Donnelly Station Report

A2A - August 2021 Donnelly Station Report																	
August					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		
SO ₂ (ppb)	0.1	0.0	95.3%	100.0%	2.3	172	Aug-24 18:00	0.3	48	Aug-29	0	-	0	0	Aug 05, 2021		
H ₂ S (ppb)	0.1	0.0	95.2%	100.0%	3.9	10	Aug-02 09:00	0.6	3	Aug-02	0	-	0	-	Aug 05, 2021		
Average		Minimum	Valid	Operational	Maximum												
Temp (°C)	16.4	2.1	100.0%	100.0%	33.0	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%											
WS (km/hr)	11.8	0.3	100.0%	100.0%	38.3												
WD (deg)	246	1.2	100.0%	100.0%	359.5												
Average Wind Direction									246		WSW						

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 - August 2021 Wembley Station Report

AAR - August 2021 Wombey Station Report																
August					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)	0.3	0.0	94.9%	100.0%	7.4	-	Aug-24 05:00	1.3	-	Aug-30	-	-	-	-	Aug 11, 2021	
NO ₂ (ppb)	2.3	0.1	94.9%	100.0%	12.8	159	Aug-26 01:00	8.3	-	Aug-01	0	-	-	-	Aug 11, 2021	
NO _x (ppb)	2.6	0.0	94.9%	100.0%	15.5	-	Aug-24 05:00	8.9	-	Aug-01	-	-	-	-	Aug 11, 2021	
O ₃ (ppb)	23.5	1.1	95.3%	100.0%	48.4	76	Aug-05 19:00	31.3	-	Aug-16	0	-	-	-	Aug 11, 2021	
PM _{2.5} (µg/m³)	6.8	0.0	98.5%	98.8%	123.5	80	Aug-14 08:00	35.3	29	Aug-02	5	-	2	-	Aug 10, 2021	
SO ₂ (ppb)	0.5	0.0	95.0%	100.0%	26.6	172	Aug-05 18:00	3.7	48	Aug-11	0	-	0	0	Aug 11, 2021	
TRS (ppb)	0.3	0.0	94.5%	99.3%	1.4	-	Aug-26 12:00	0.6	-	Aug-01	-	-	-	-	Aug 02, 2021	
CH ₄ (ppm)	2.0	1.8	95.3%	100.0%	2.4	-	Aug-30 09:00	2.2	-	Aug-01	-	-	-	-	Aug 10, 2021	
THC (ppm)	2.0	1.8	95.3%	100.0%	2.5	-	Aug-30 09:00	2.2	-	Aug-01	-	-	-	-	Aug 10, 2021	
NMHC (ppm)	0.0	0.0	95.3%	100.0%	0.0	-	Aug-14 21:00	0.0	-	Aug-14	-	-	-	-	Aug 10, 2021	
	Average	Minimum	Valid	Operational	Maximum											
Temp (°C)	16.0	1.3	100.0%	100.0%	32.1	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction272W										
WS (km/hr)	7.6	0.3	100.0%	100.0%	28.4											
WD (deg)	272	1.2	100.0%	100.0%	359.1											

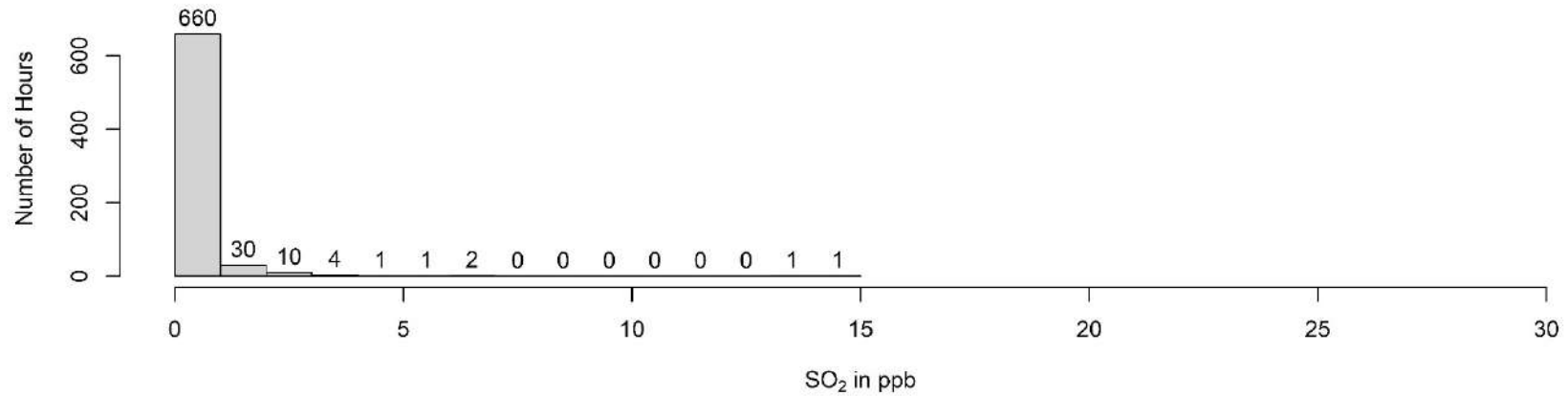
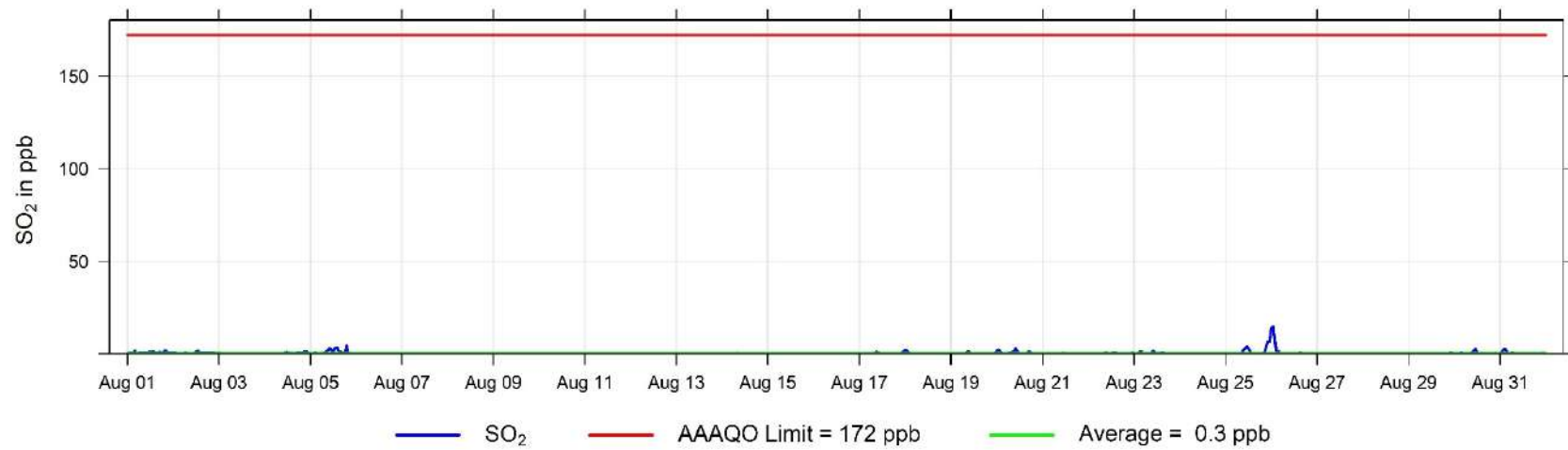
Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42I	No Operational issues noted
O ₃	TEI	49I	No Operational issues noted
PM _{2.5}	Thermo	TEOM AB	4hrs of negative drift; 5hrs maintenance Aug 11; 3hrs above the AAAQO and 5hrs above the AAAQG (PM2.5)
SO ₂	TEI	43I	No Operational issues noted
TRS	TEI	43I	TRS had five hours of maintenance Aug 10 as a result of spans close to limit
THC/CH ₄ /NMHC	TEI	55I-A3PHAA	No Operational issues noted
Met Equip	MetOne	50.5	No Operational issues noted

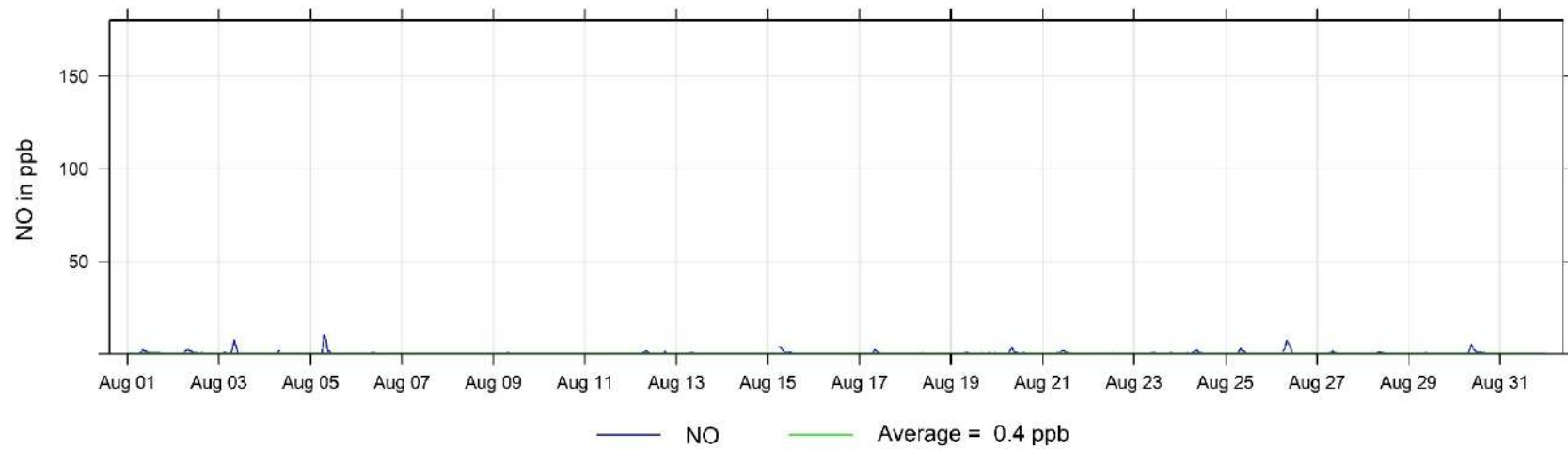
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

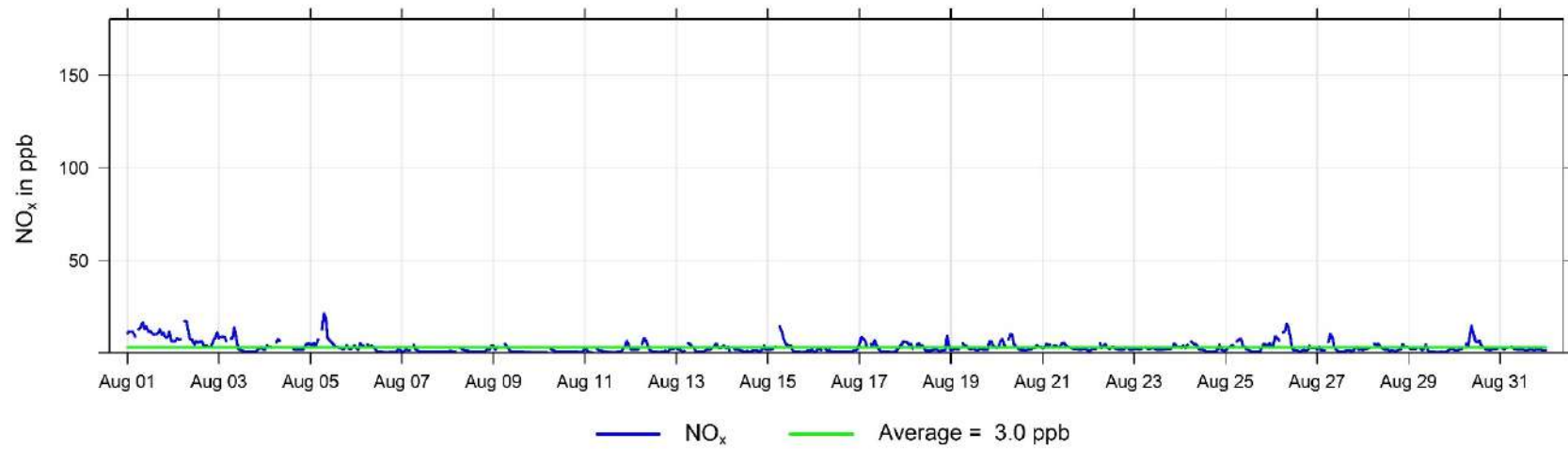
August Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



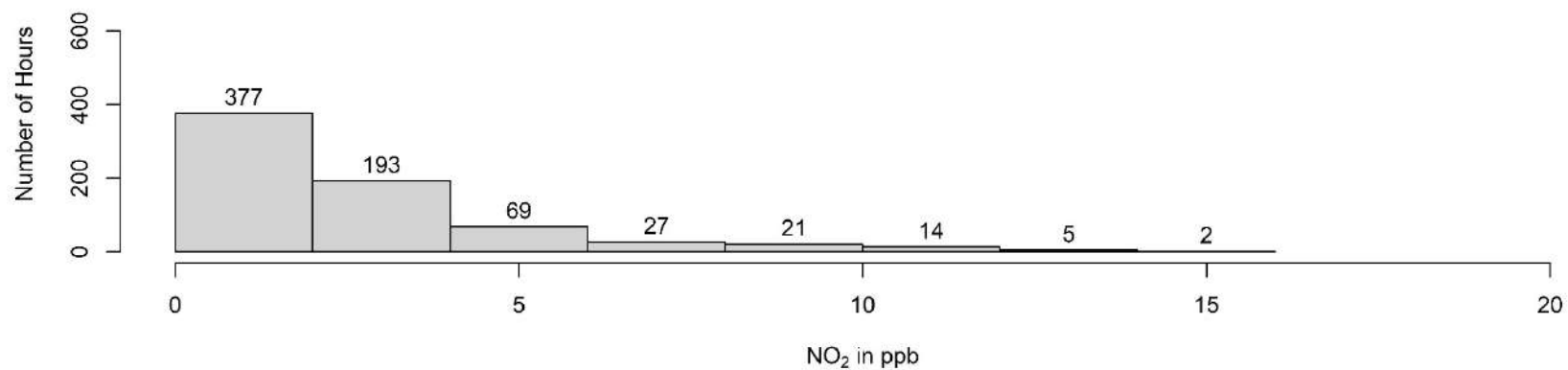
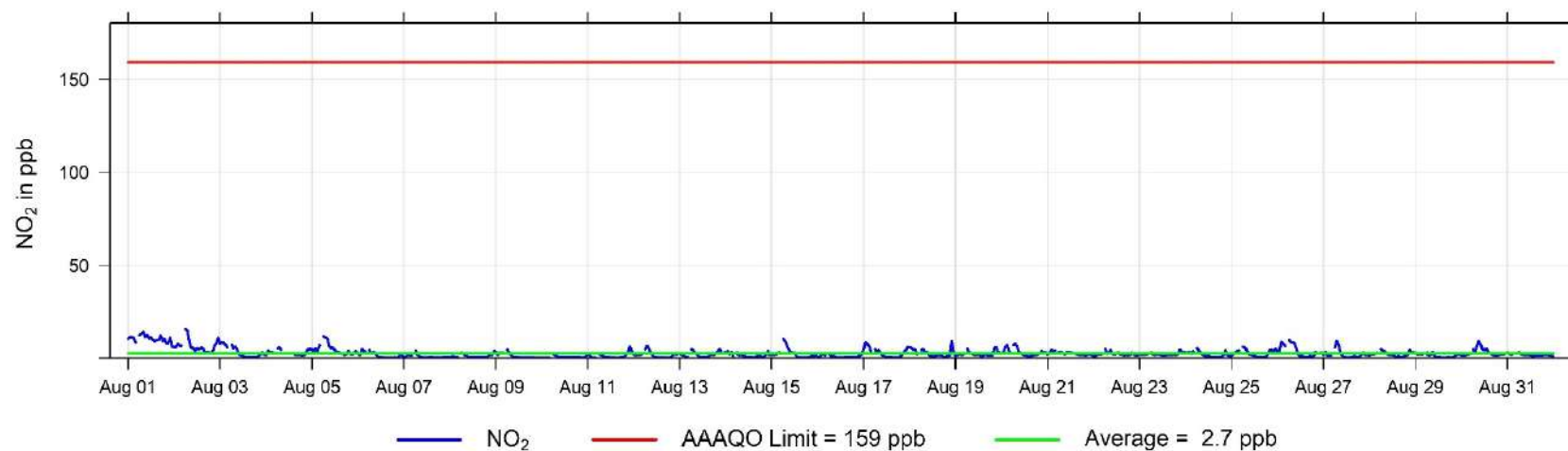
August Hourly Concentration Readings of NO (in ppb) at Beaverlodge



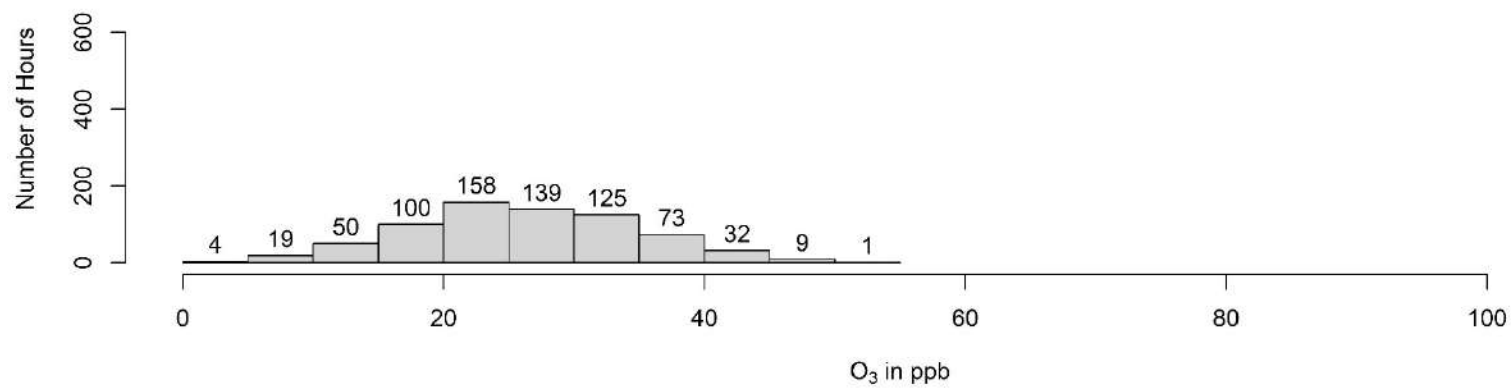
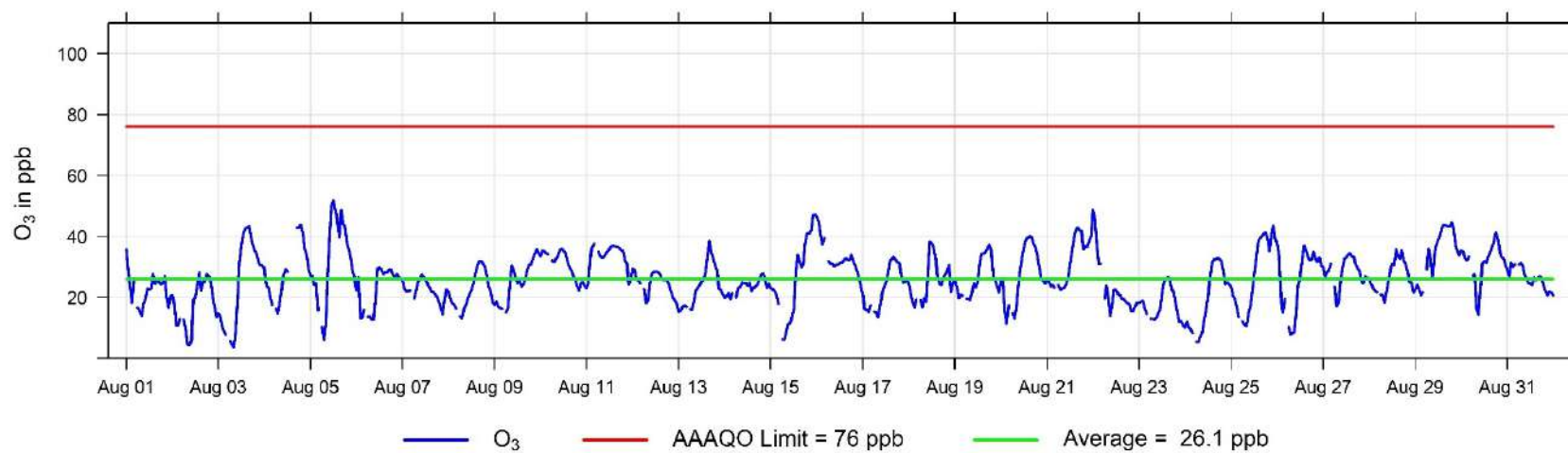
August Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



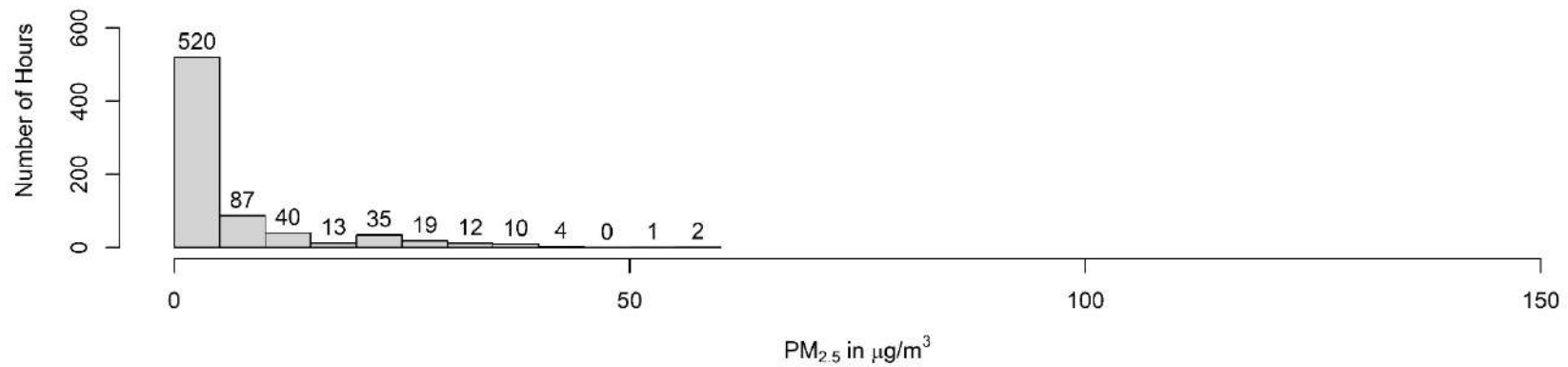
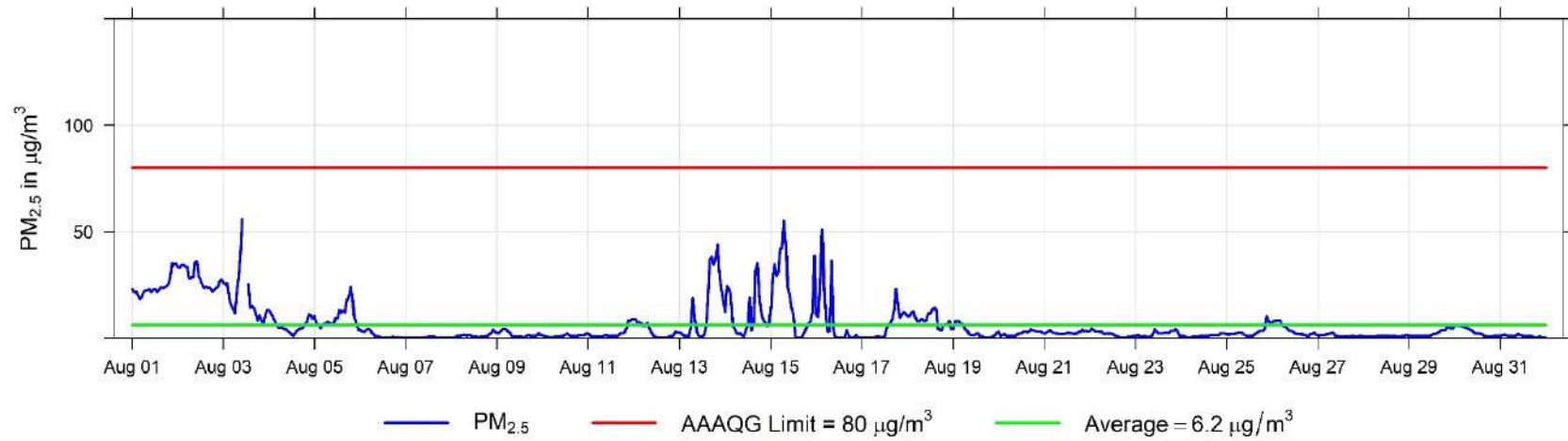
August Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge



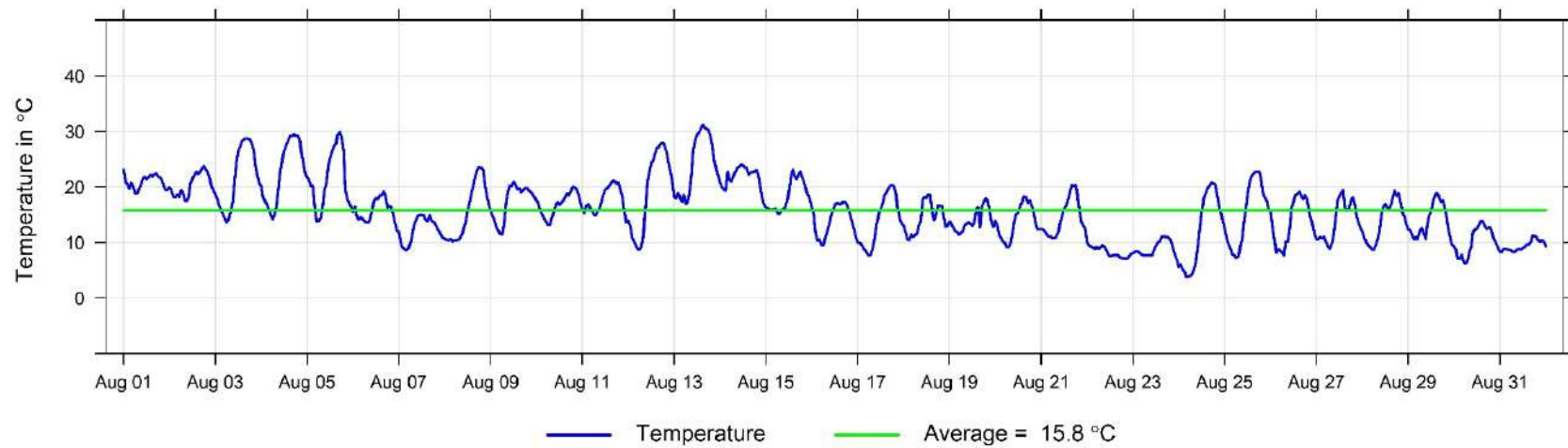
August Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



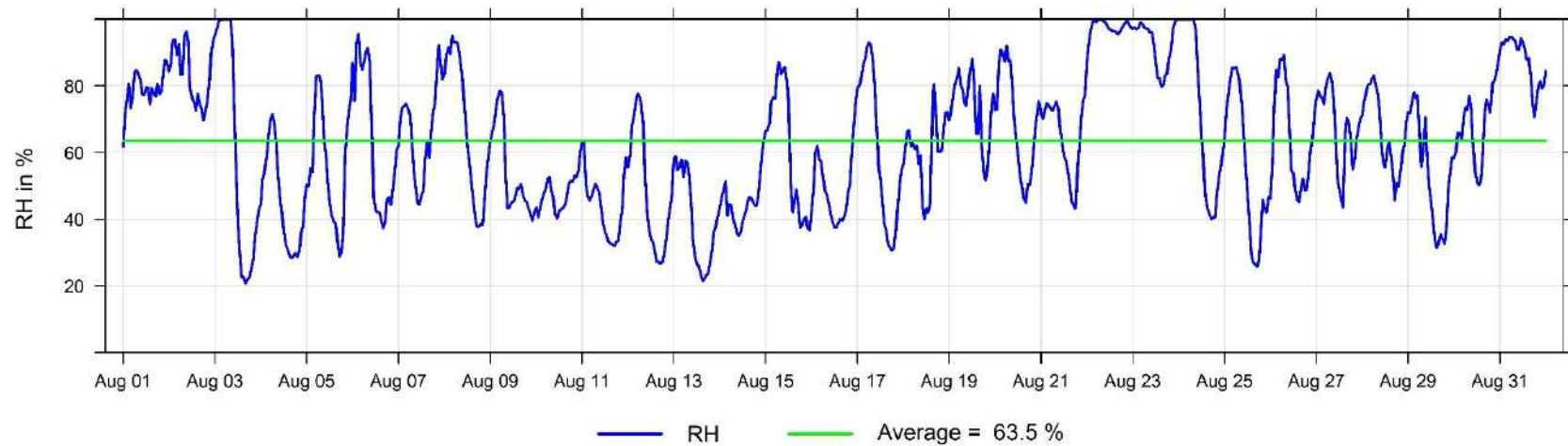
August Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



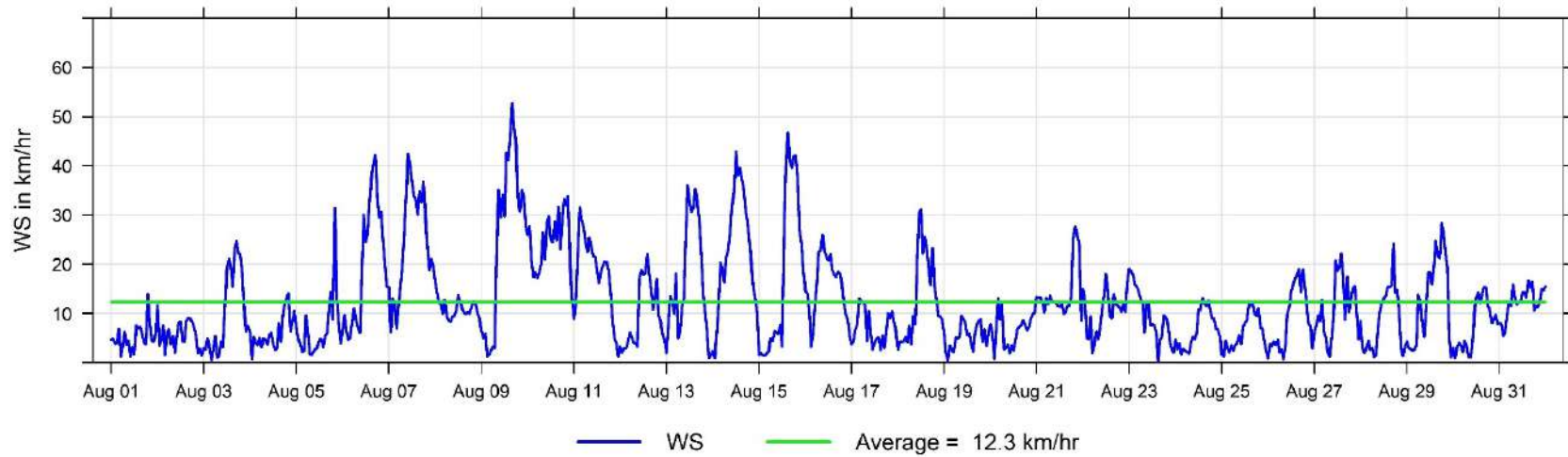
August Hourly Temperature Readings (in °C) at Beaverlodge



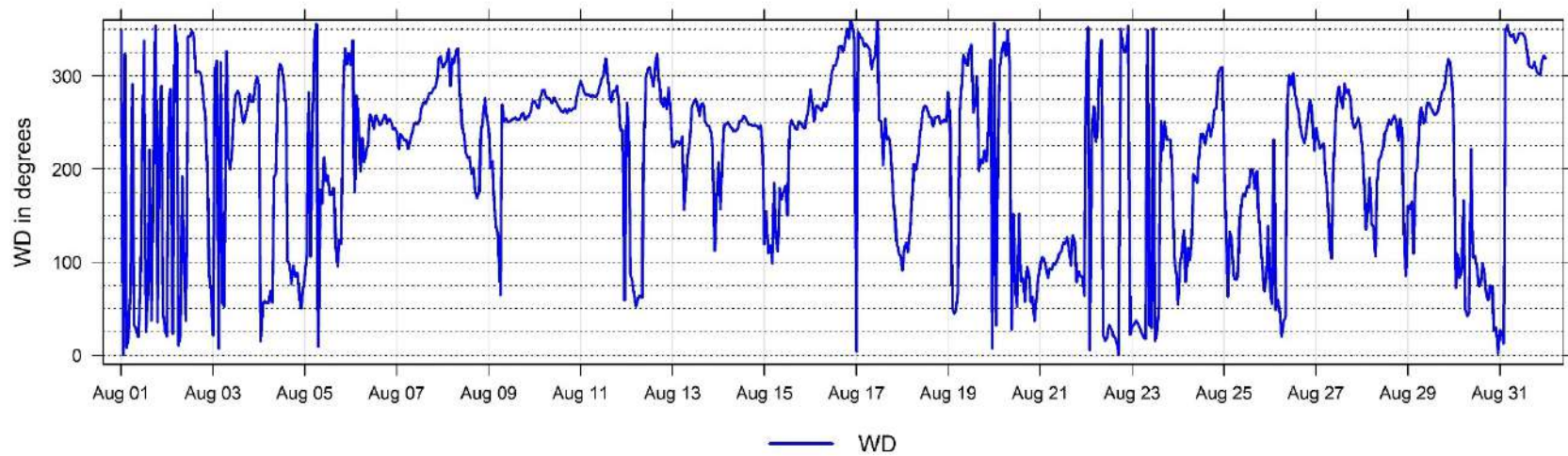
August Hourly Readings of Relative Humidity (in %) at Beaverlodge



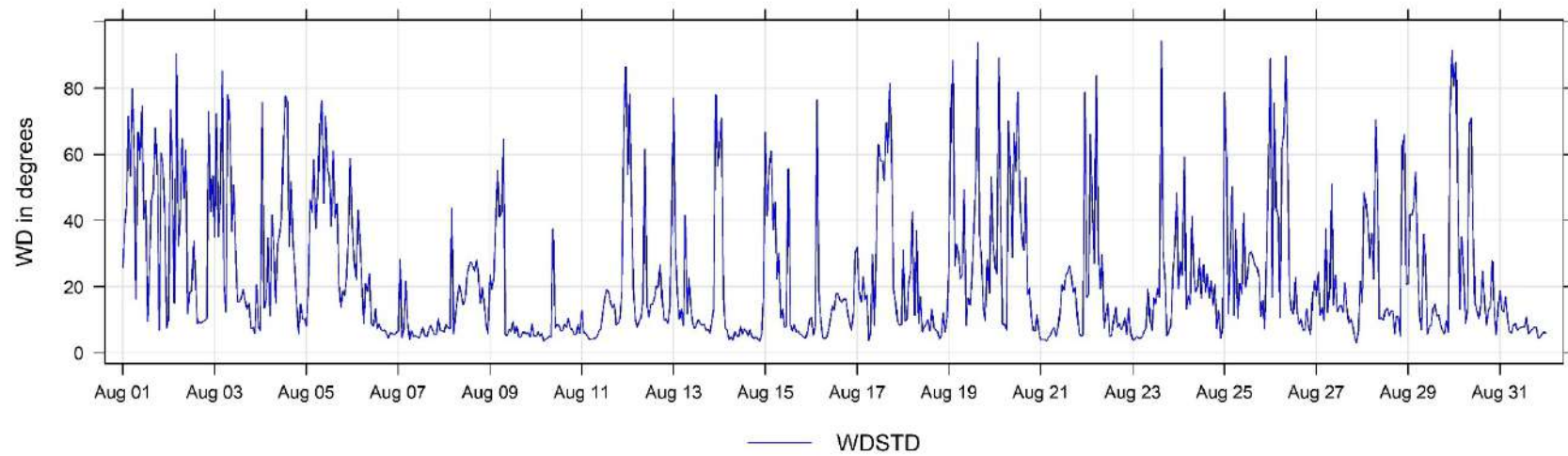
August Hourly Readings of Wind Speed (in km/hr) at Beaverlodge

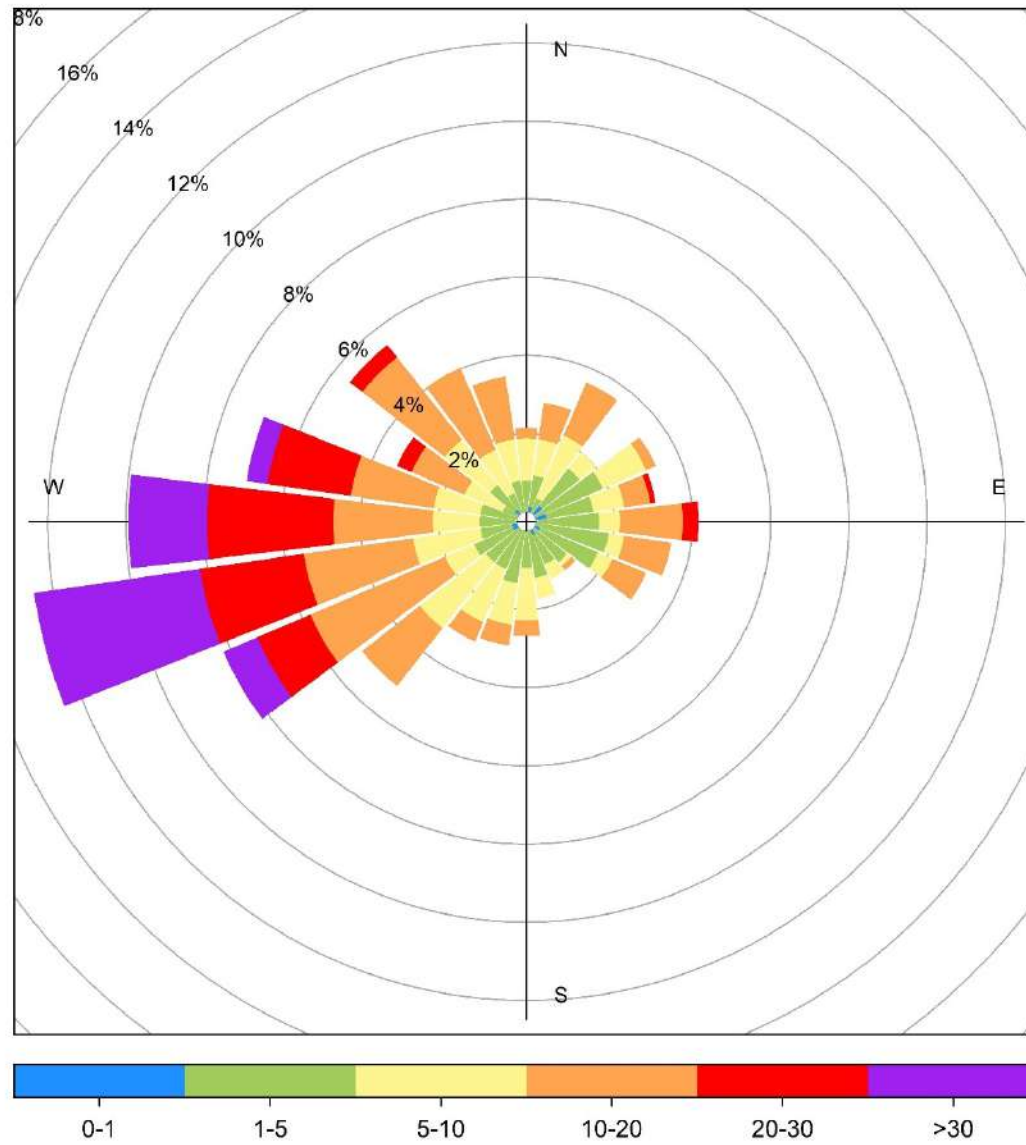


August Hourly Readings of Wind Direction (in degrees) at Beaverlodge



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



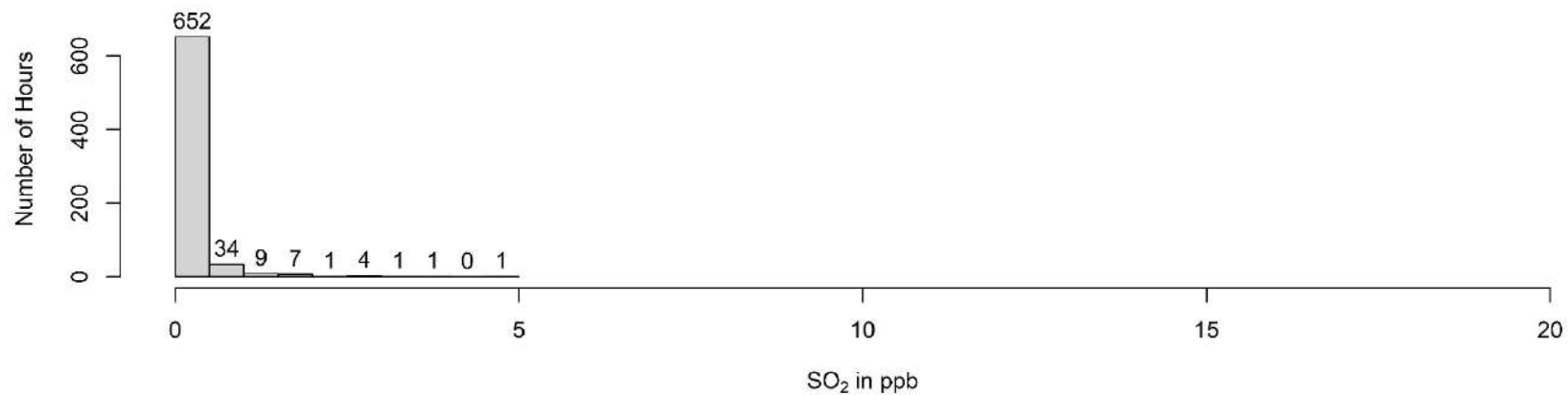
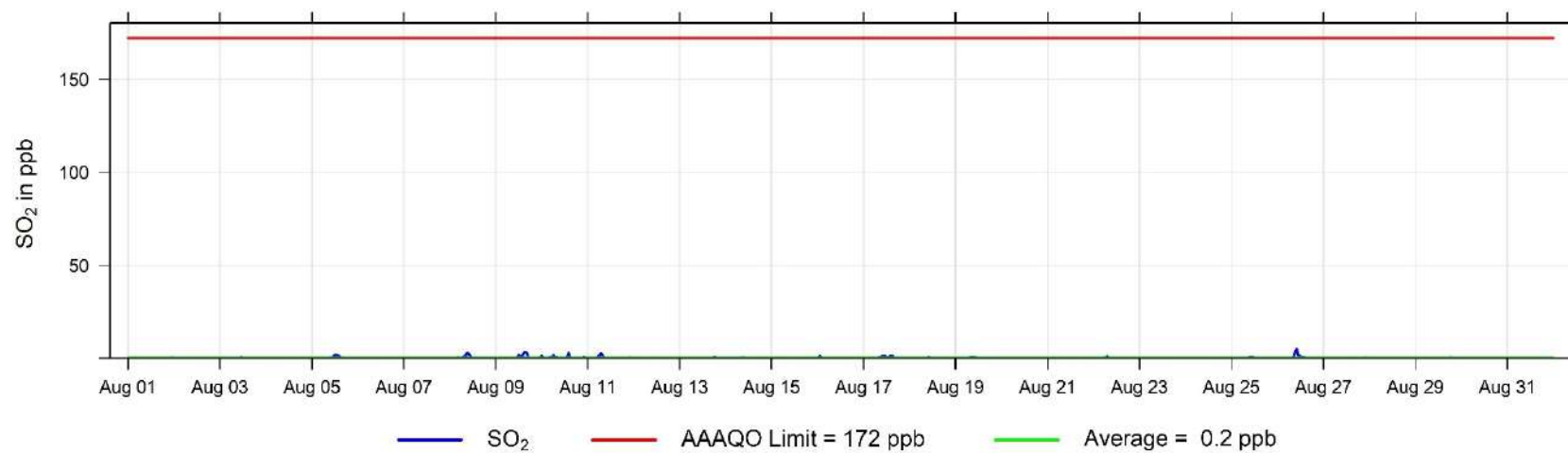


Beaverlodge August Wind Rose, wind speed in km/hr

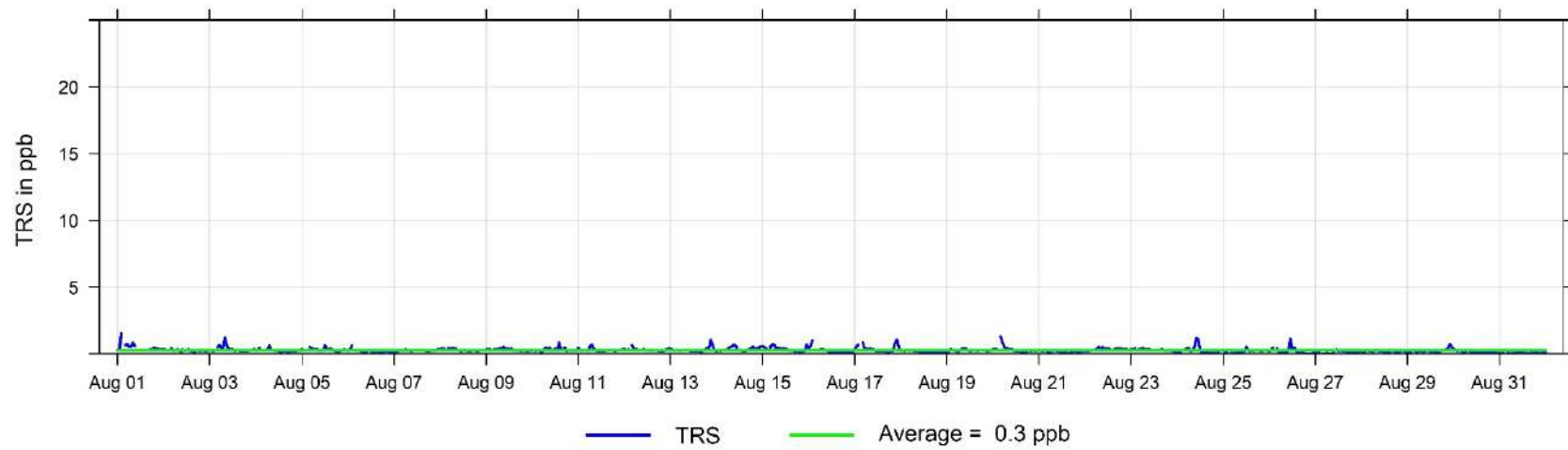
3 Evergreen Park Charts

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

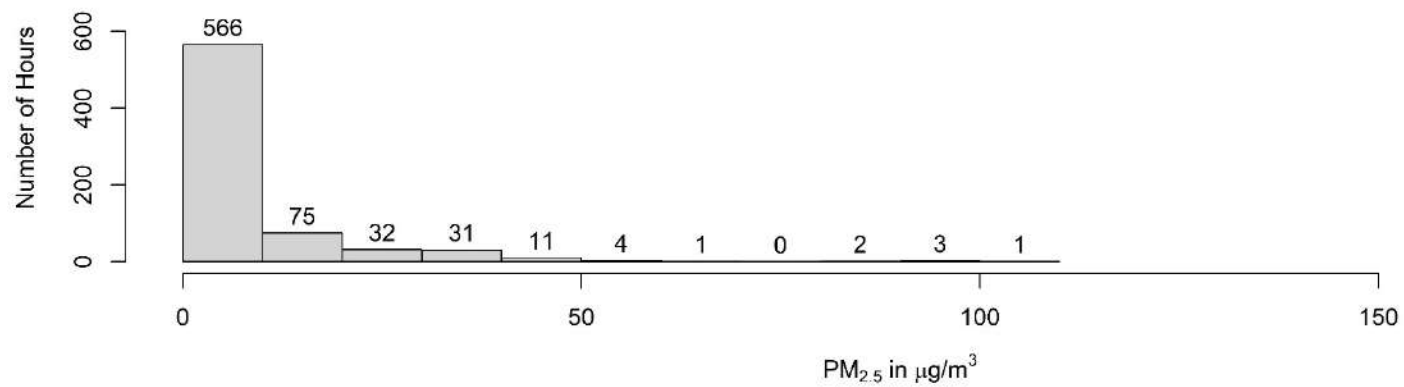
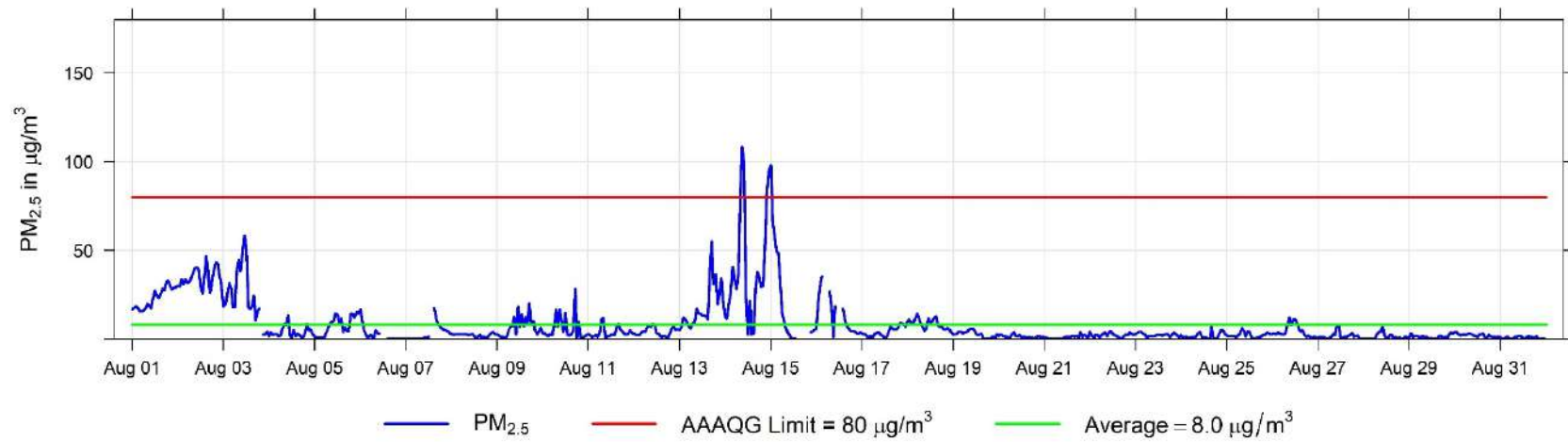
August Hourly Concentration Readings of SO₂ (in ppb) at Evergreen Park



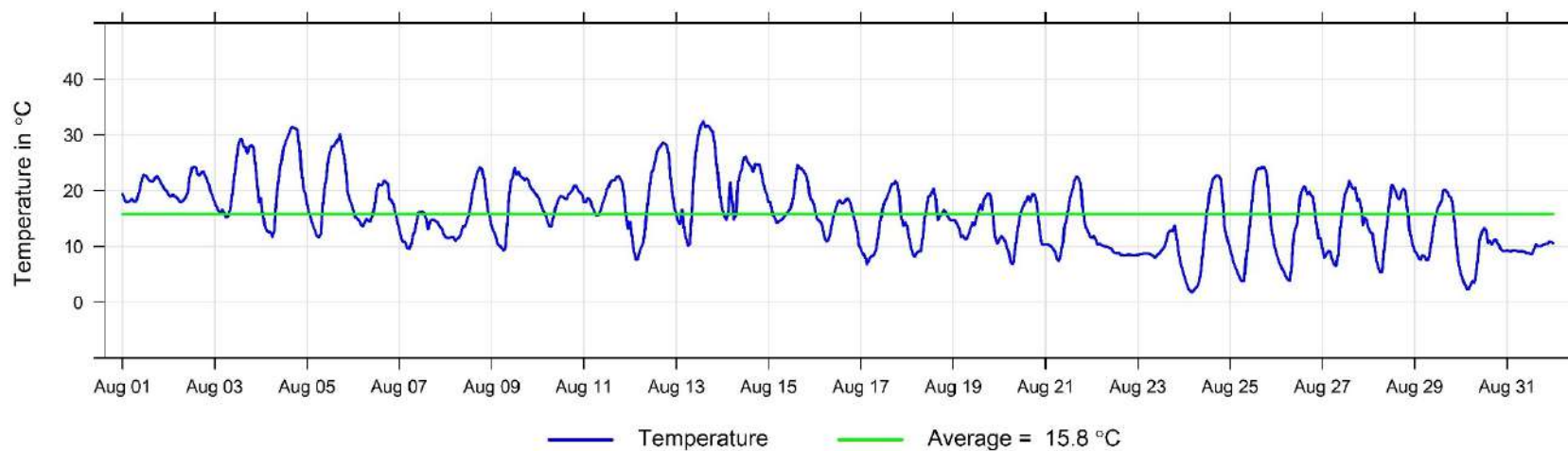
August Hourly Concentration Readings of TRS (in ppb) at Evergreen Park



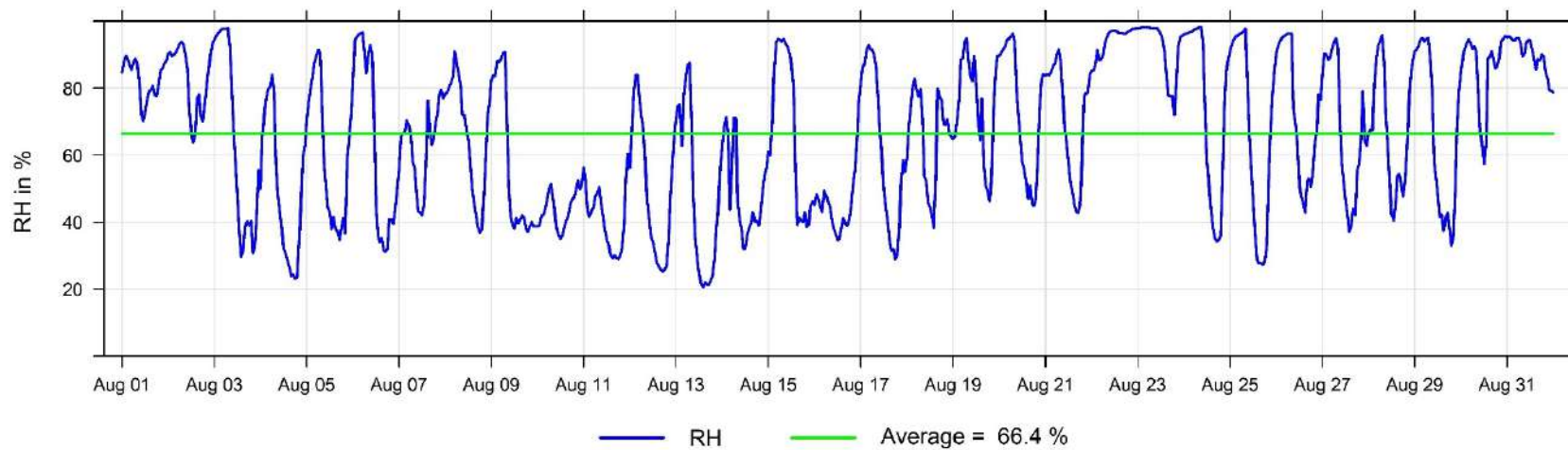
August Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Evergreen Park



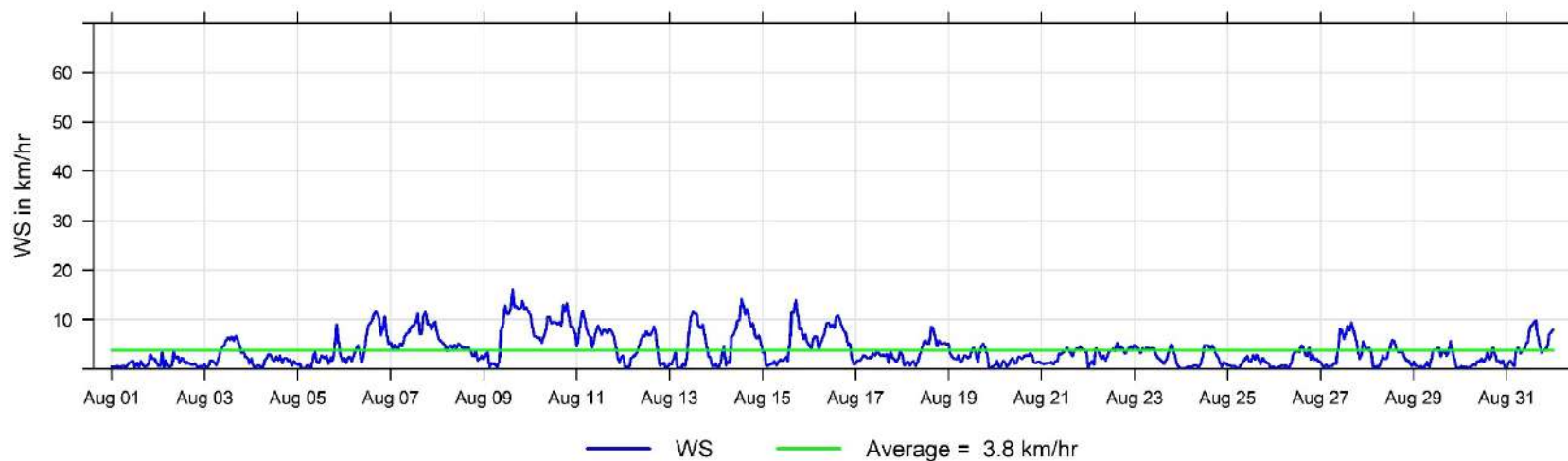
August Hourly Temperature Readings (in °C) at Evergreen Park



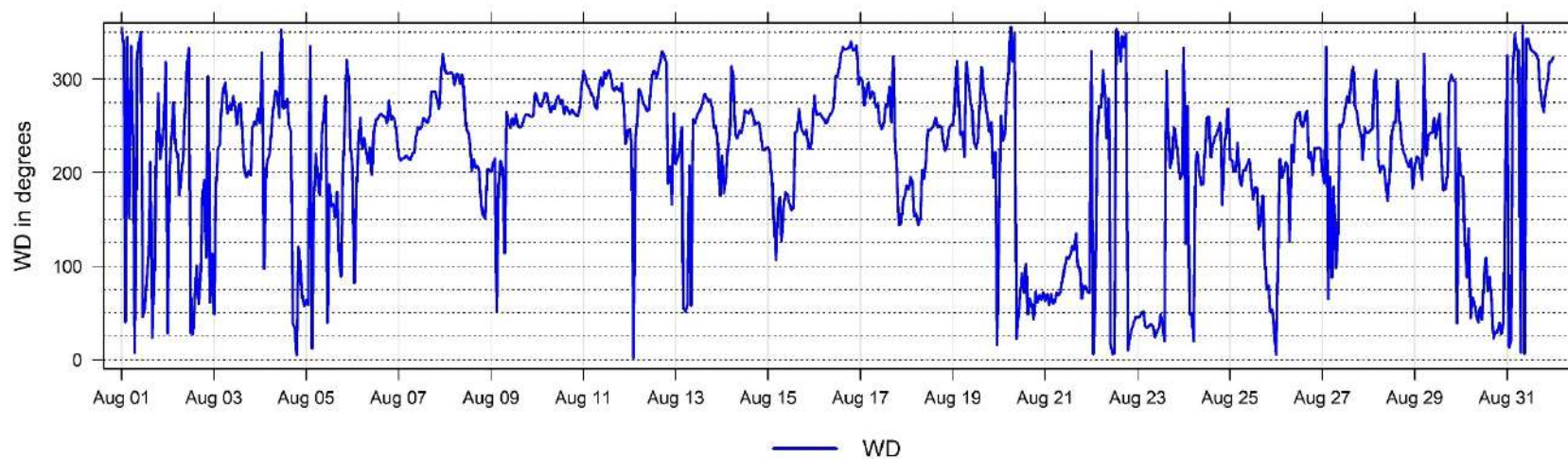
August Hourly Readings of Relative Humidity (in %) at Evergreen Park



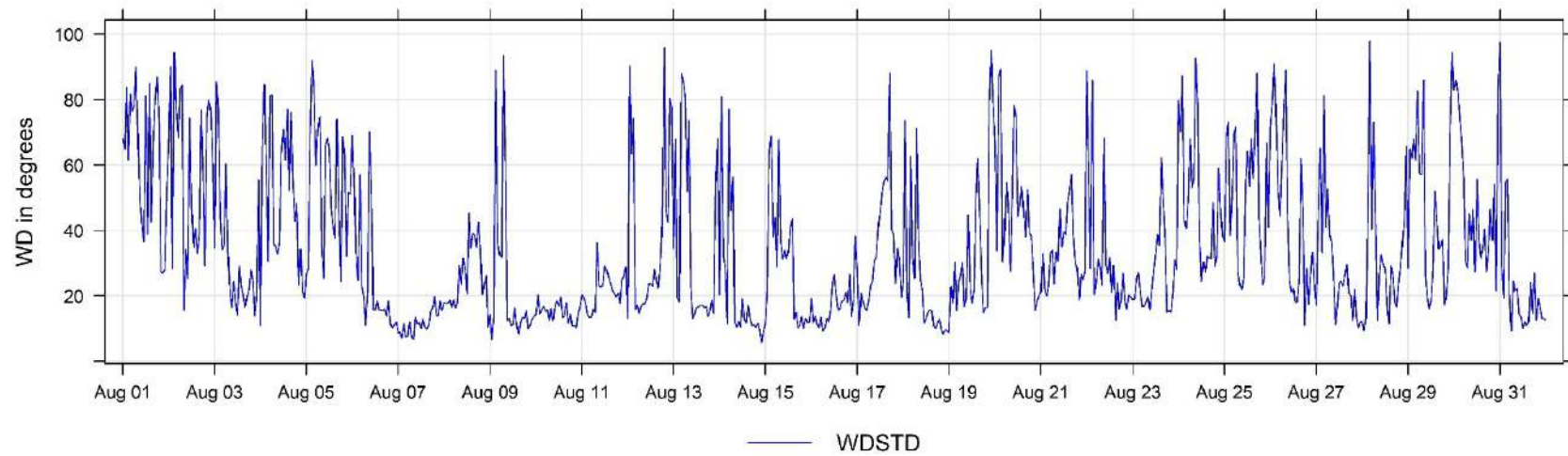
August Hourly Readings of Wind Speed (in km/hr) at Evergreen Park

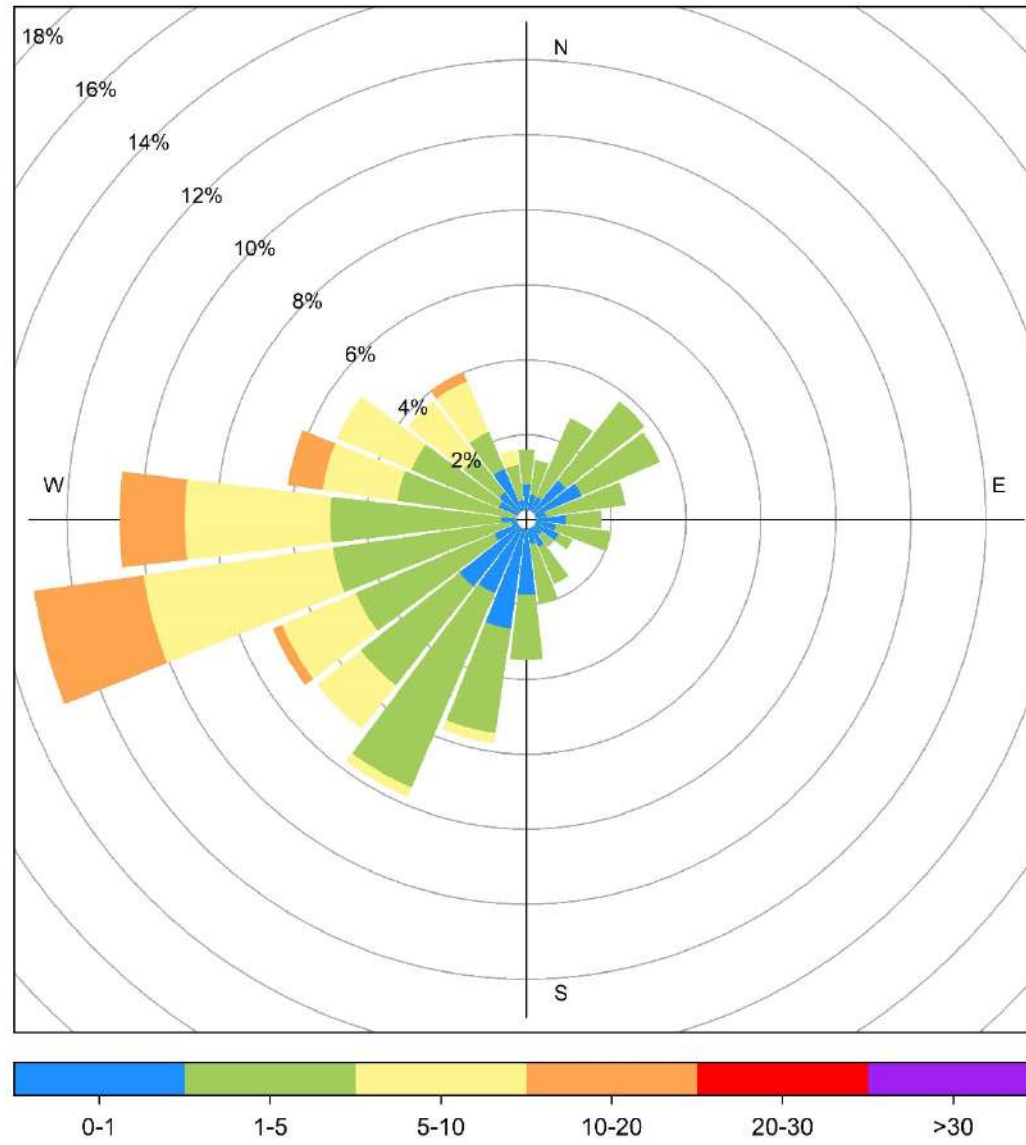


August Hourly Readings of Wind Direction (in degrees) at Evergreen Park



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



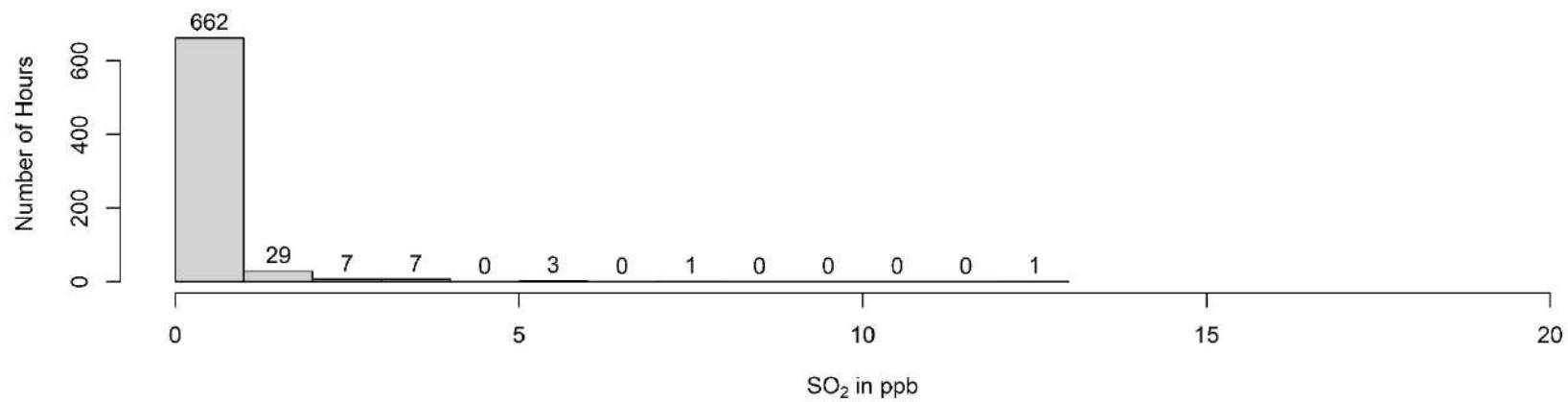
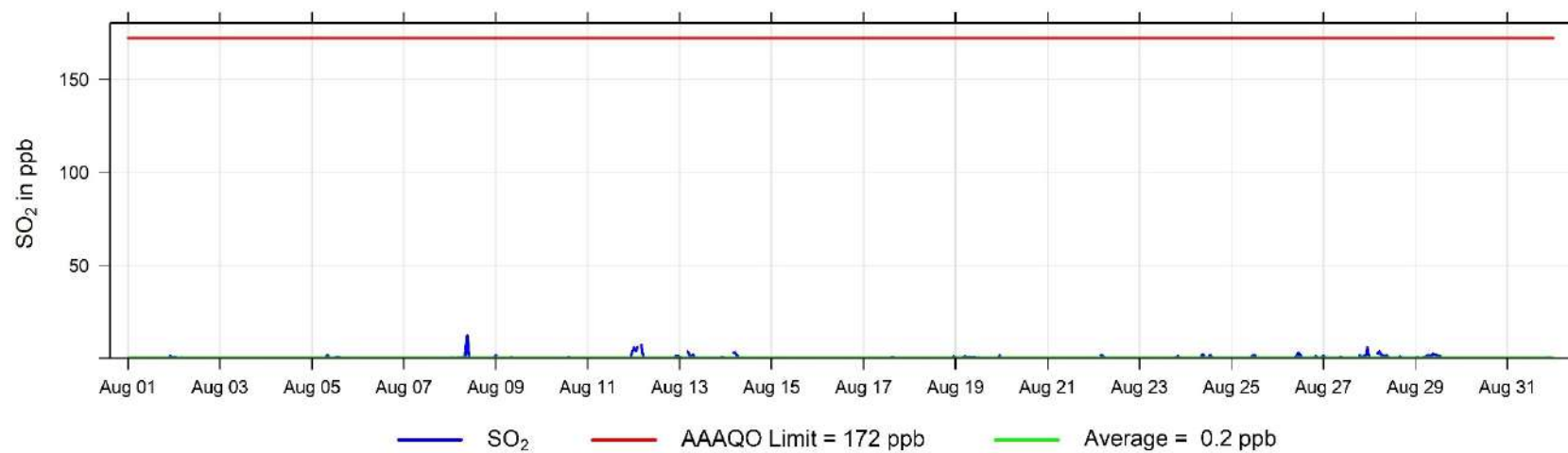


Evergreen Park August Wind Rose, wind speed in km/hr

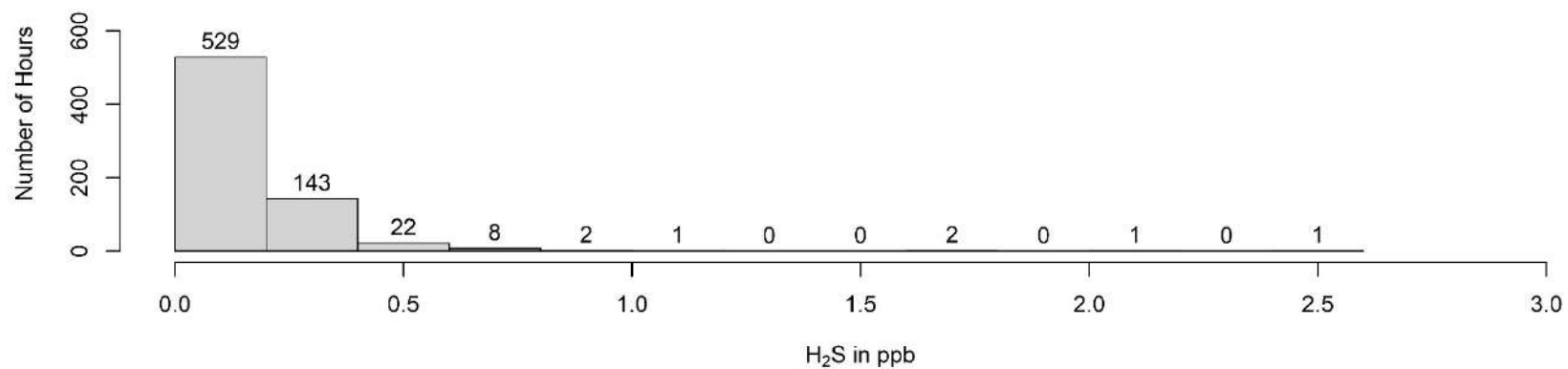
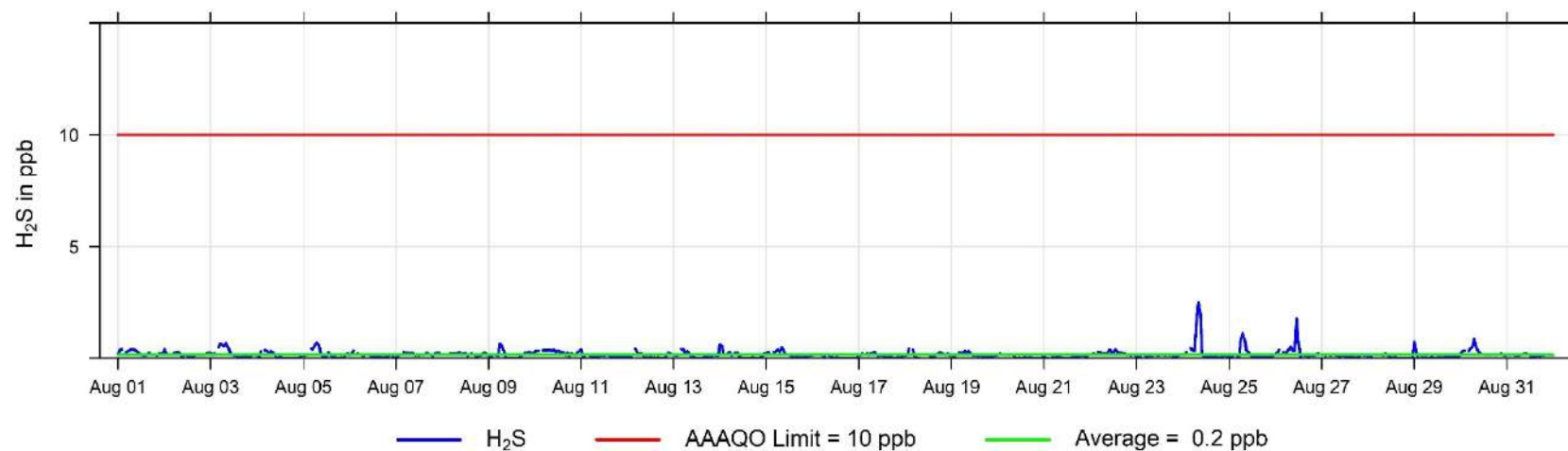
4 Grande Prairie - Henry Pirker Charts

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

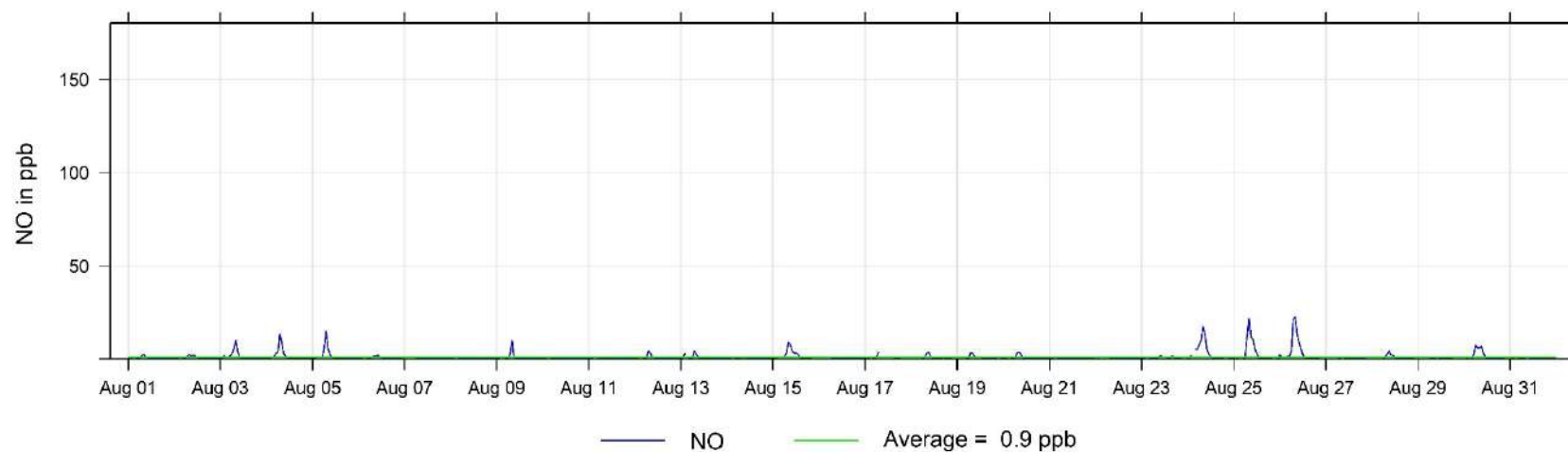
August Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



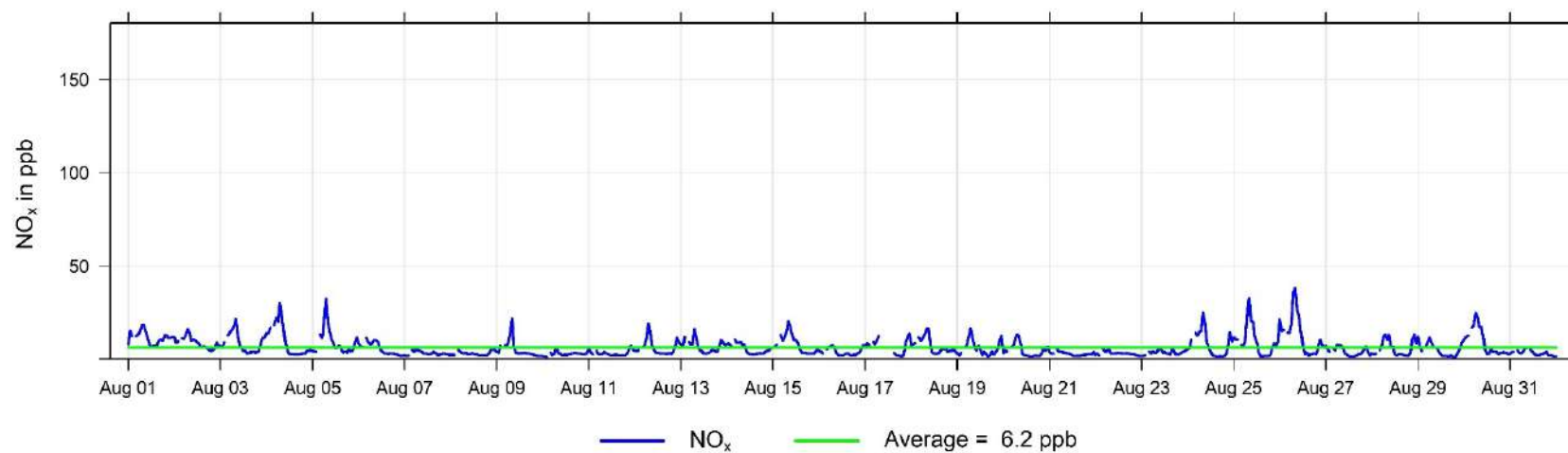
August Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



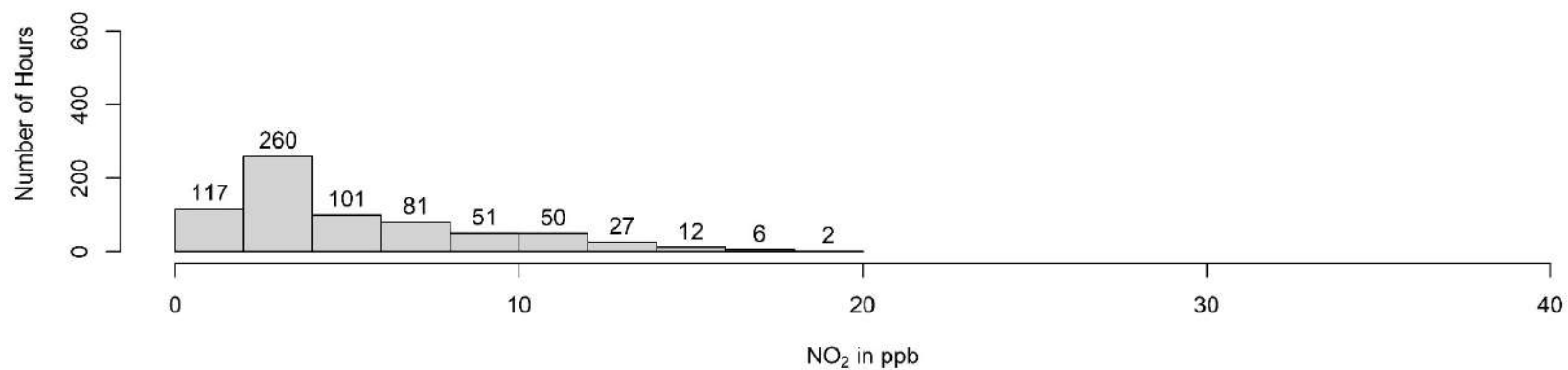
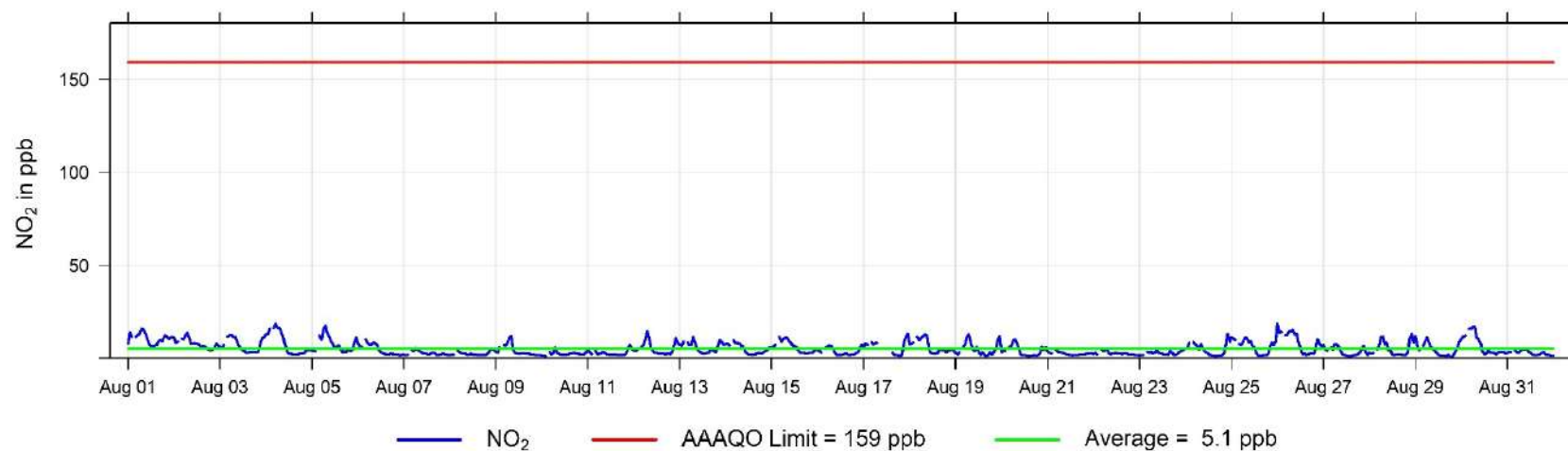
August Hourly Concentration Readings of NO (in ppb) at Henry Pirker



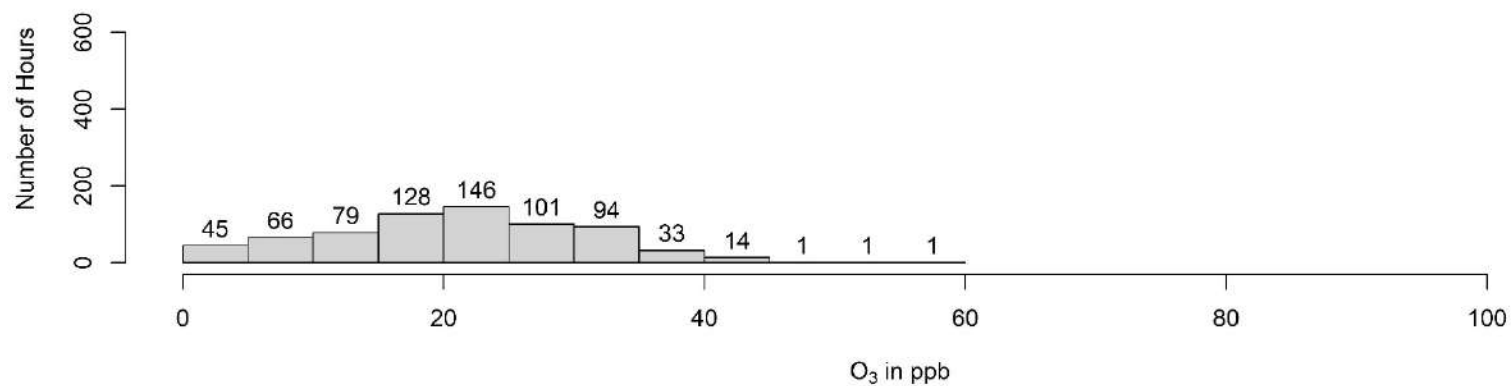
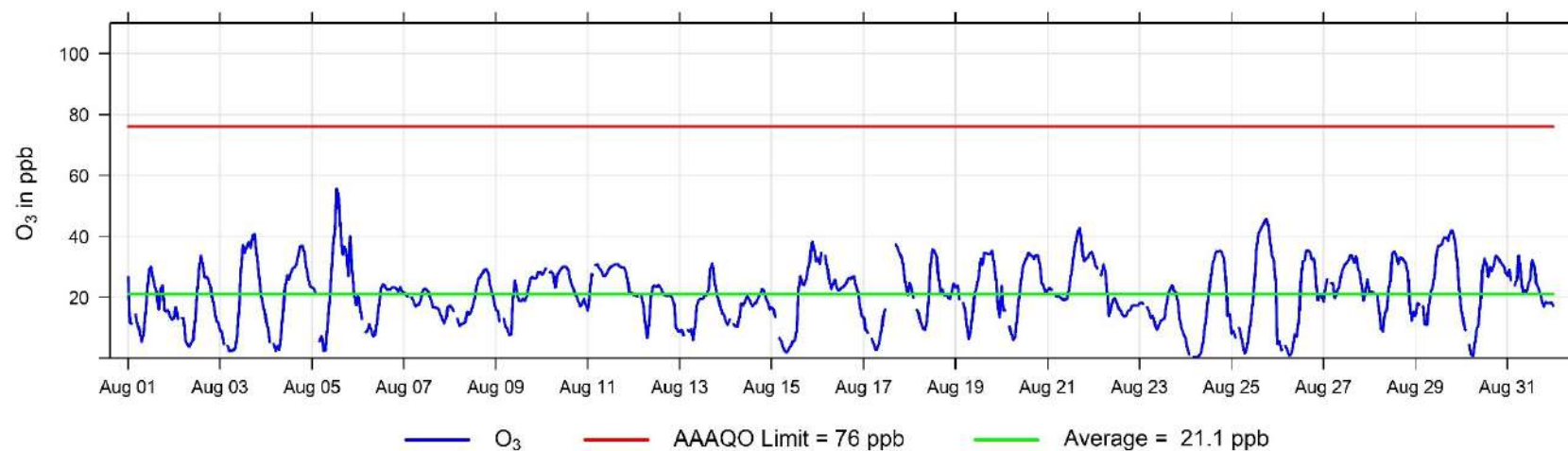
August Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



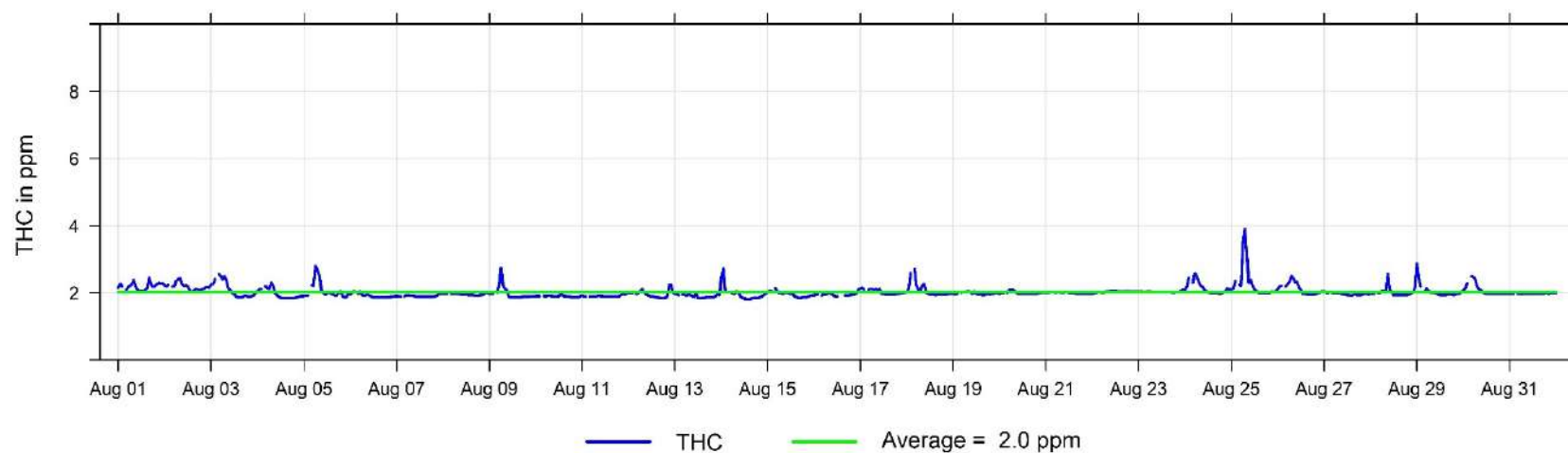
August Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker



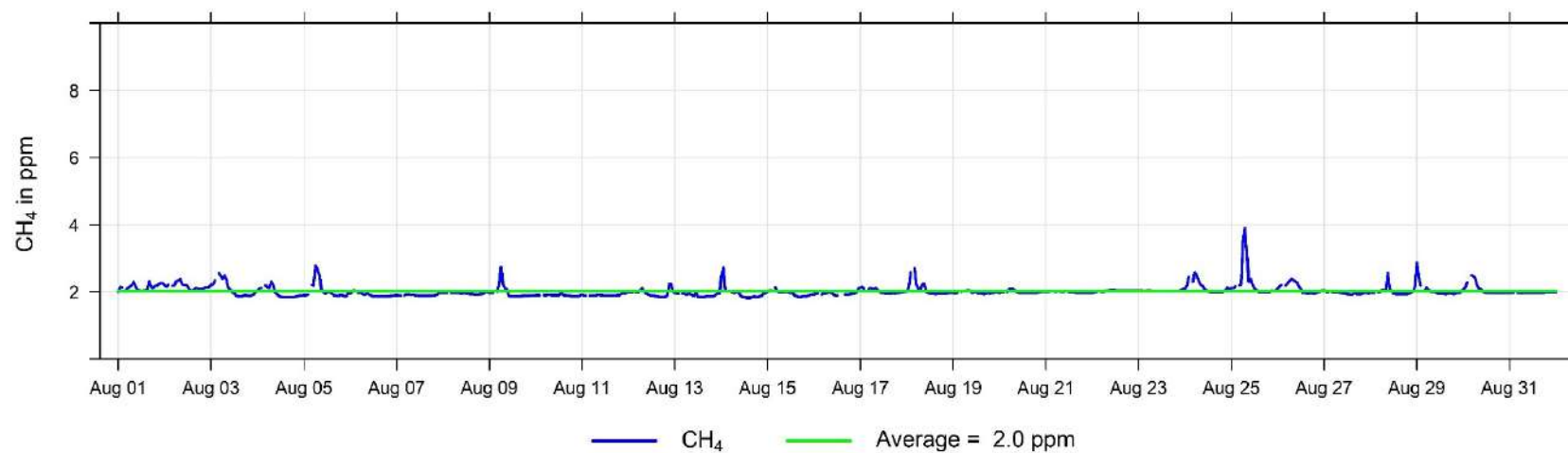
August Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



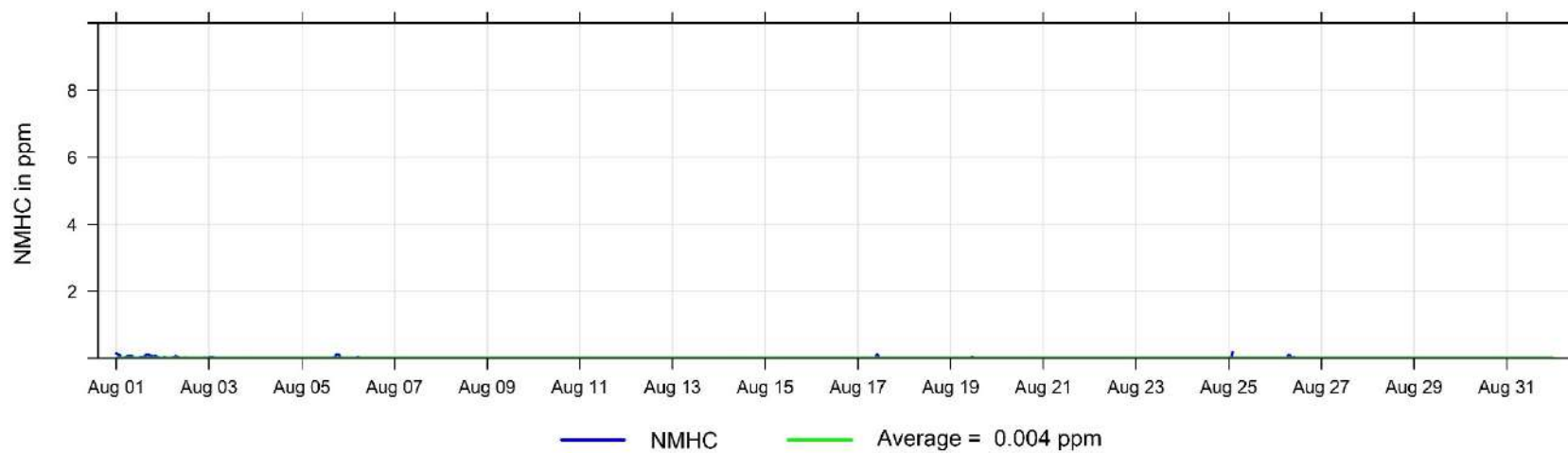
August Hourly Concentration Readings of THC (in ppm) at Henry Pirker



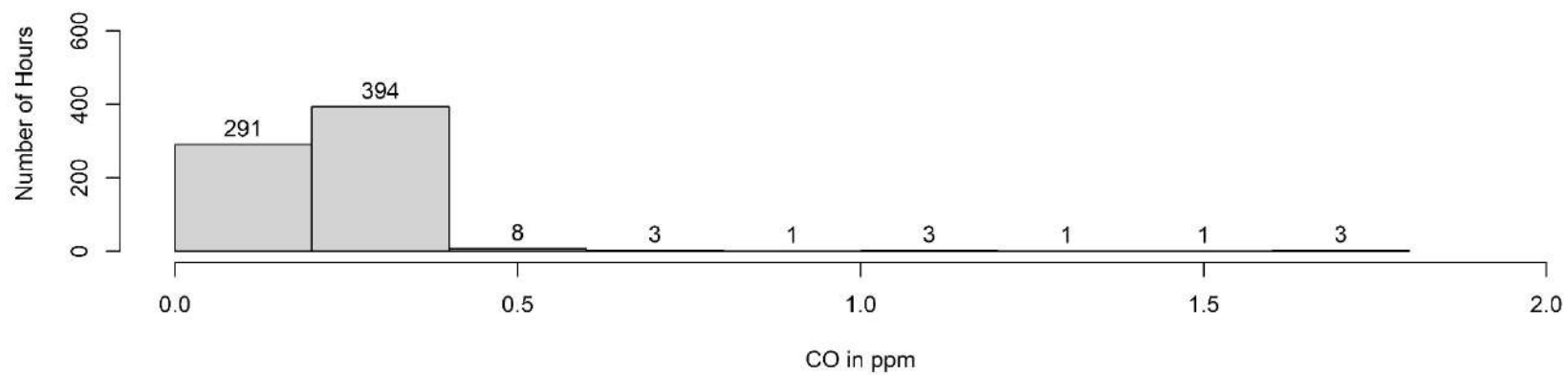
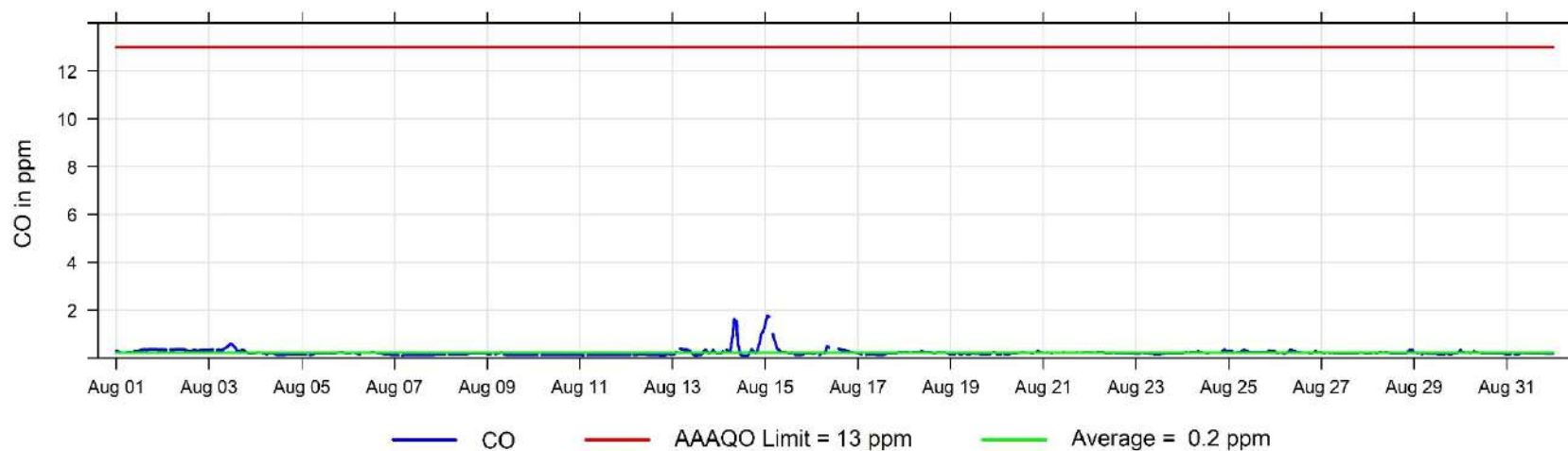
August Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



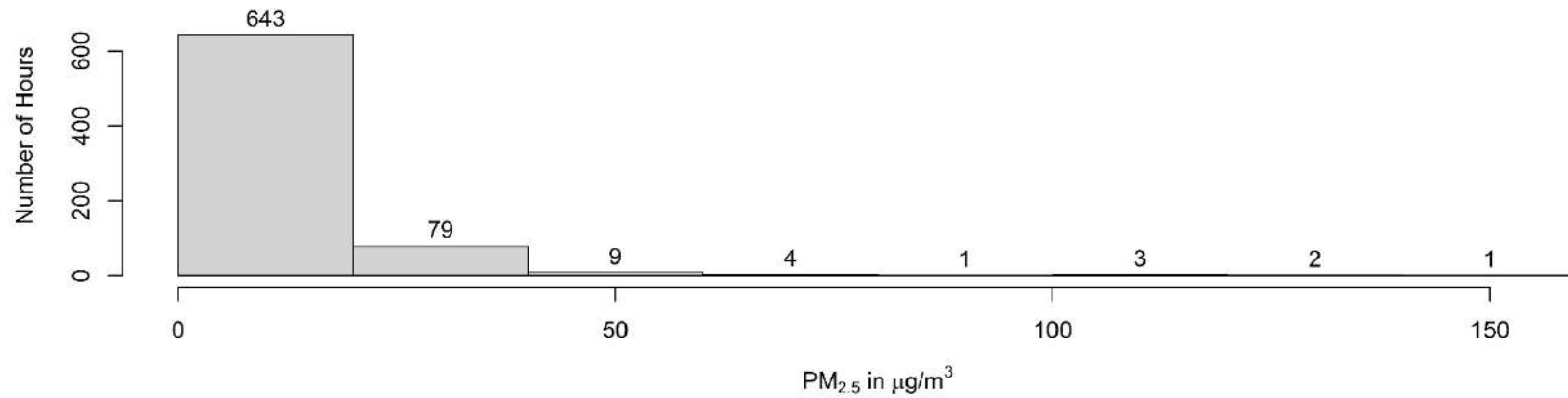
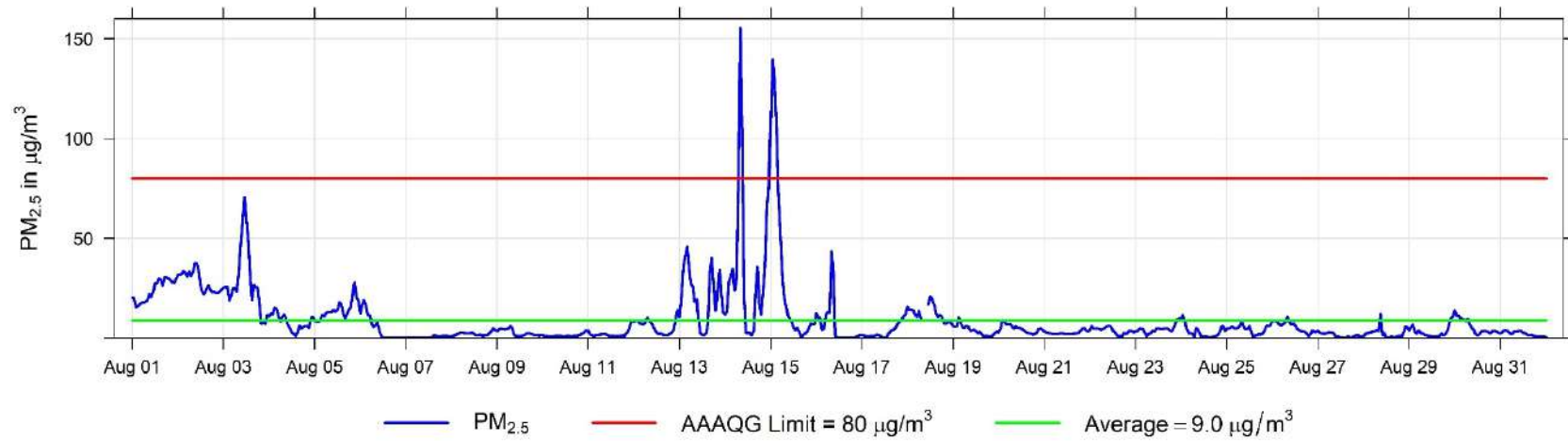
August Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



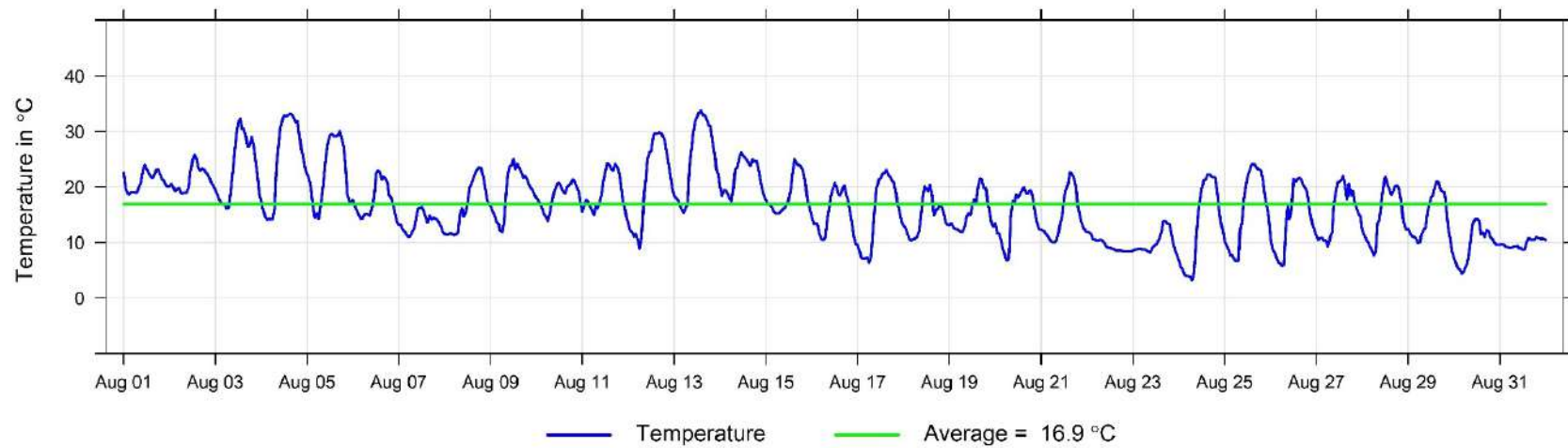
August Hourly Concentration Readings of CO (in ppm) at Henry Pirker



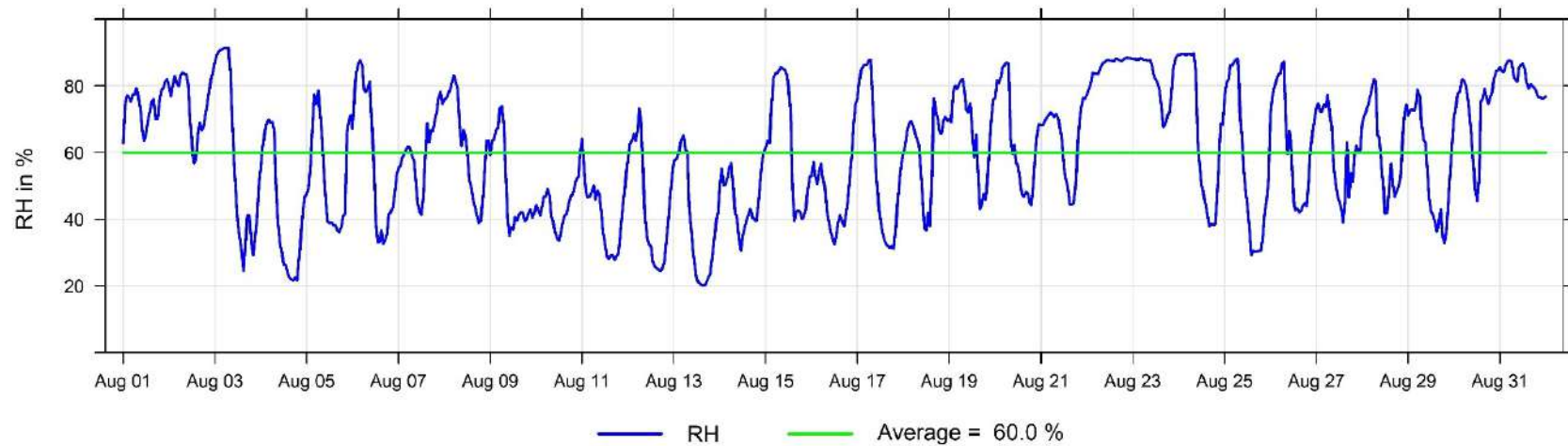
August Hourly Concentration Readings of PM_{2.5} in µg/m³ at Henry Pirker



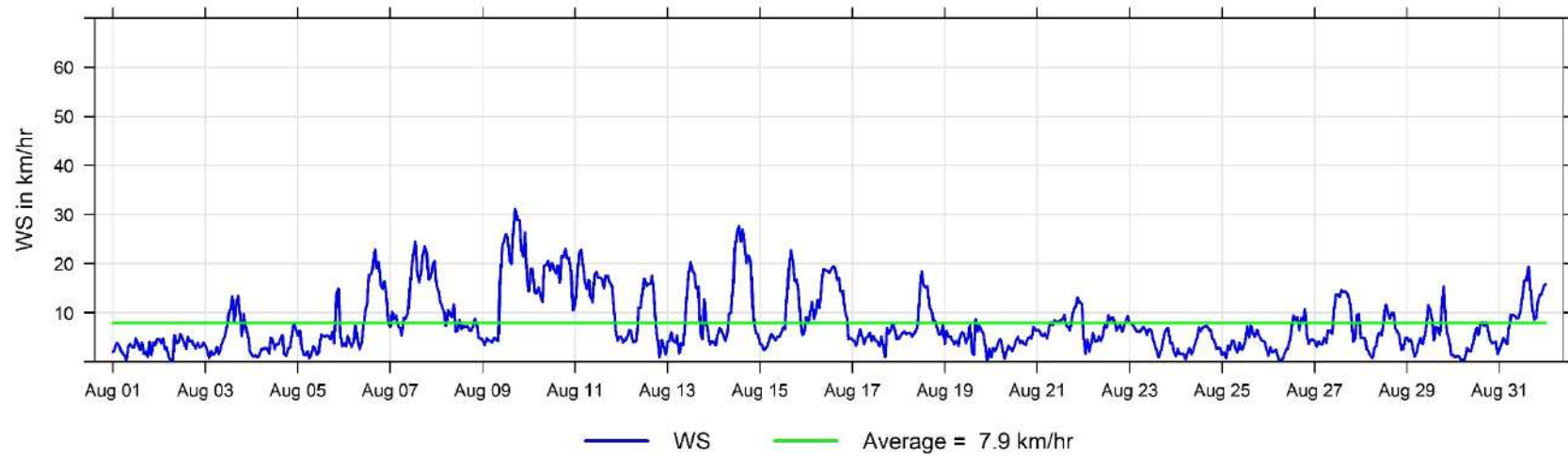
August Hourly Temperature Readings (in °C) at Henry Pirker



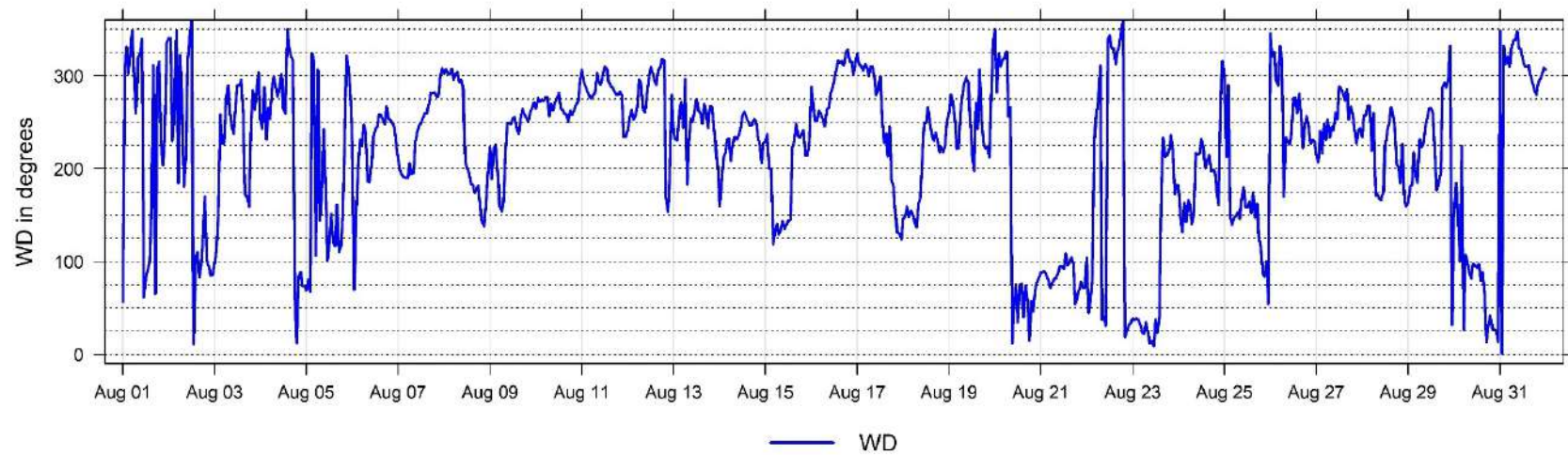
August Hourly Readings of Relative Humidity (in %) at Henry Pirker



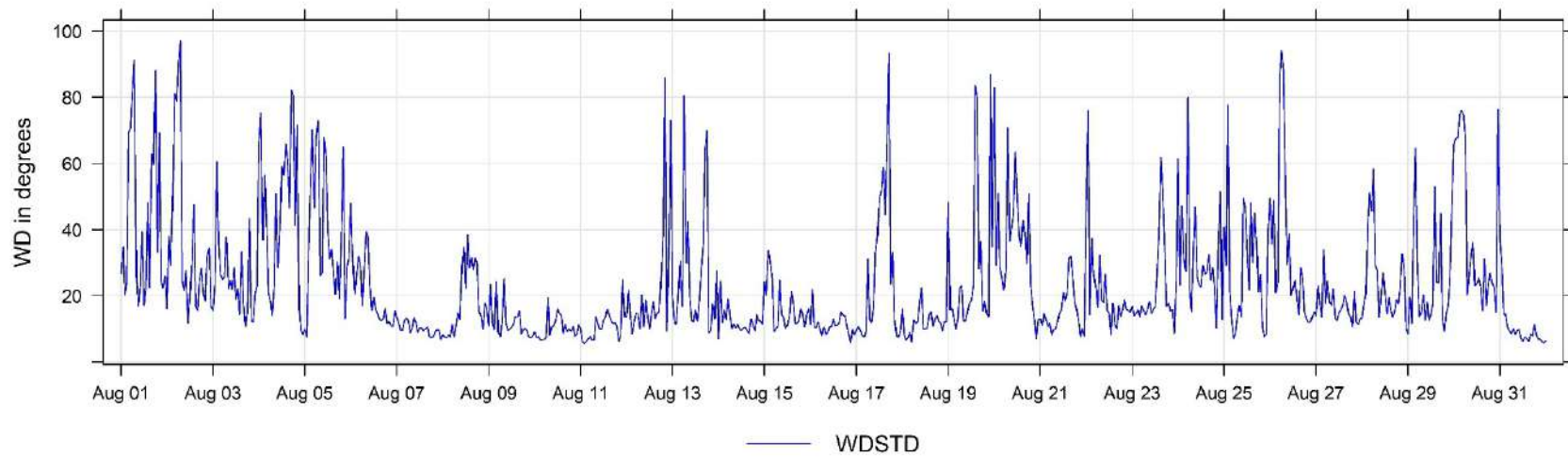
August Hourly Readings of Wind Speed (in km/hr) at Henry Pirker

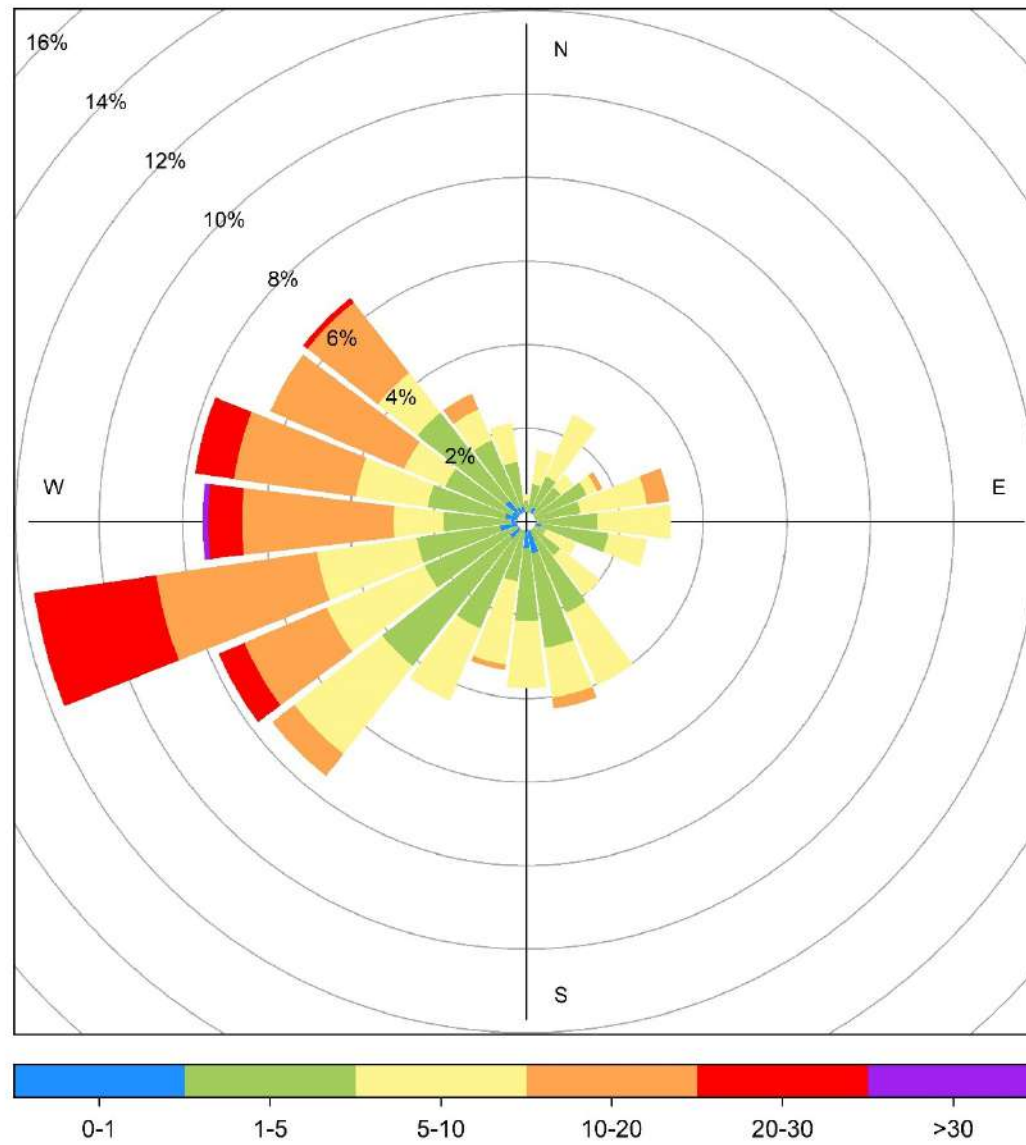


August Hourly Readings of Wind Direction (in degrees) at Henry Pirker



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



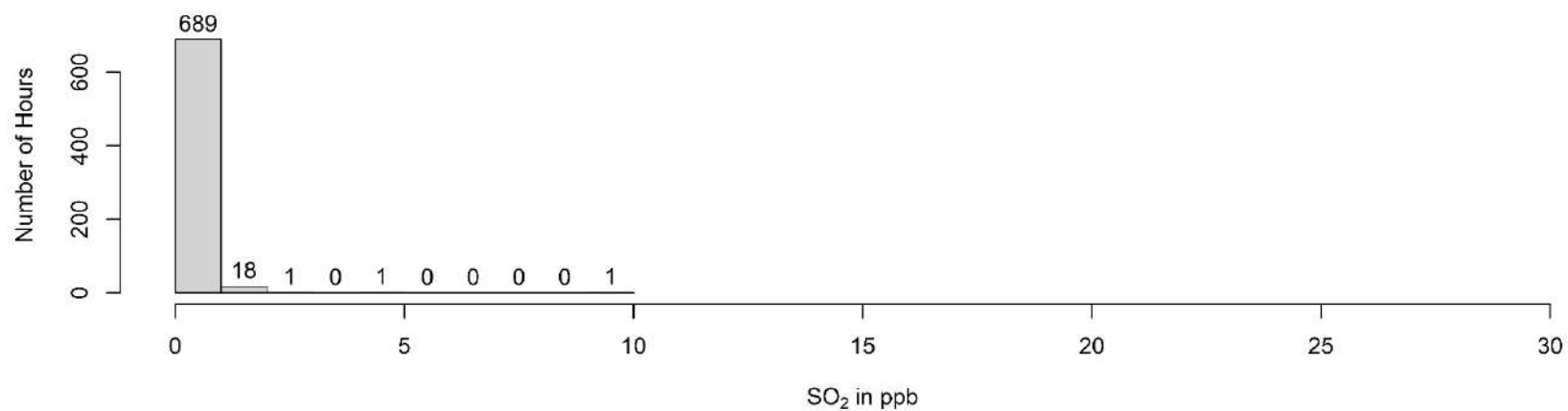
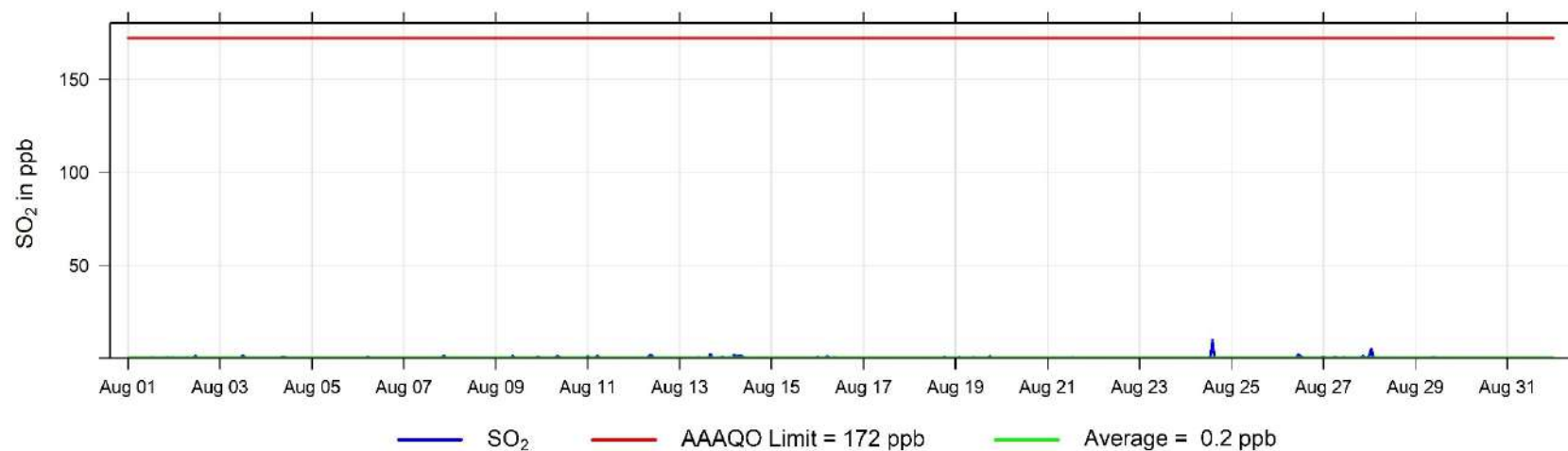


Henry Pirker August Wind Rose, wind speed in km/hr

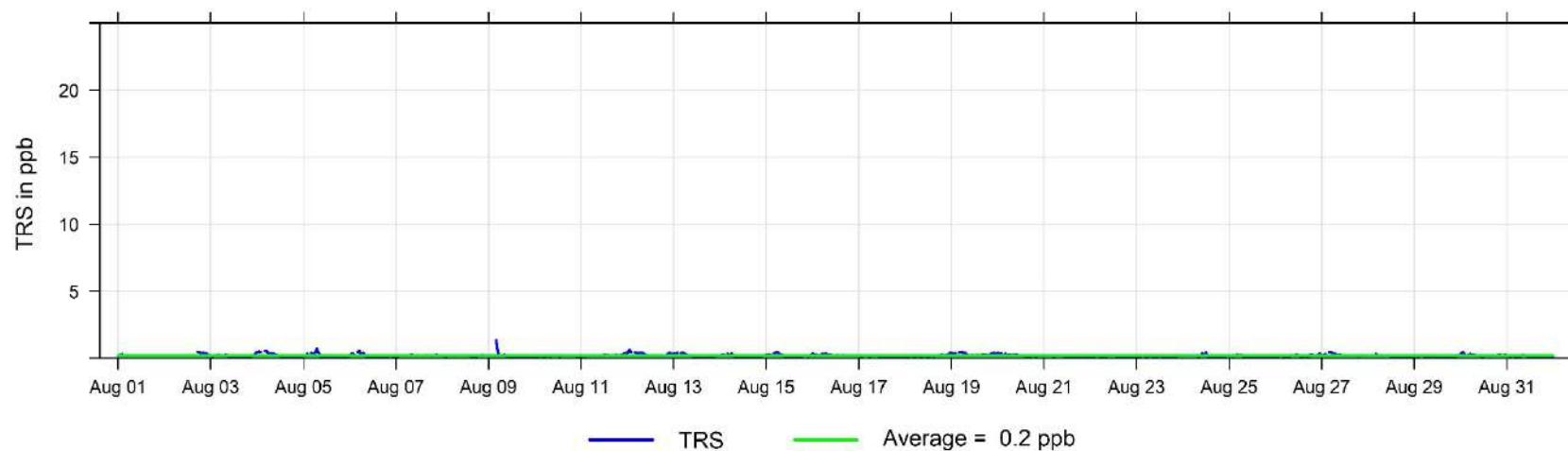
5 Smoky Heights Charts

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

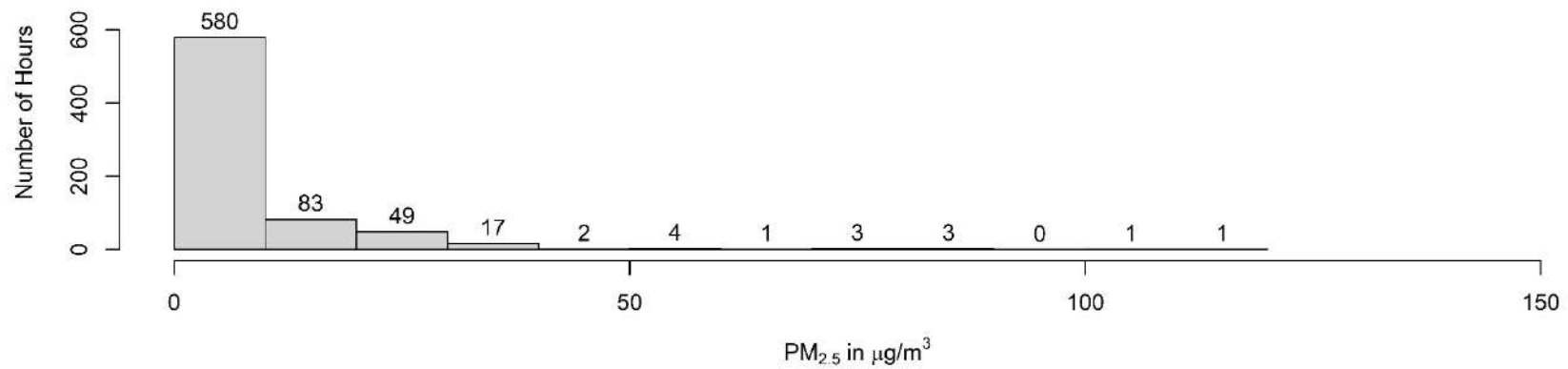
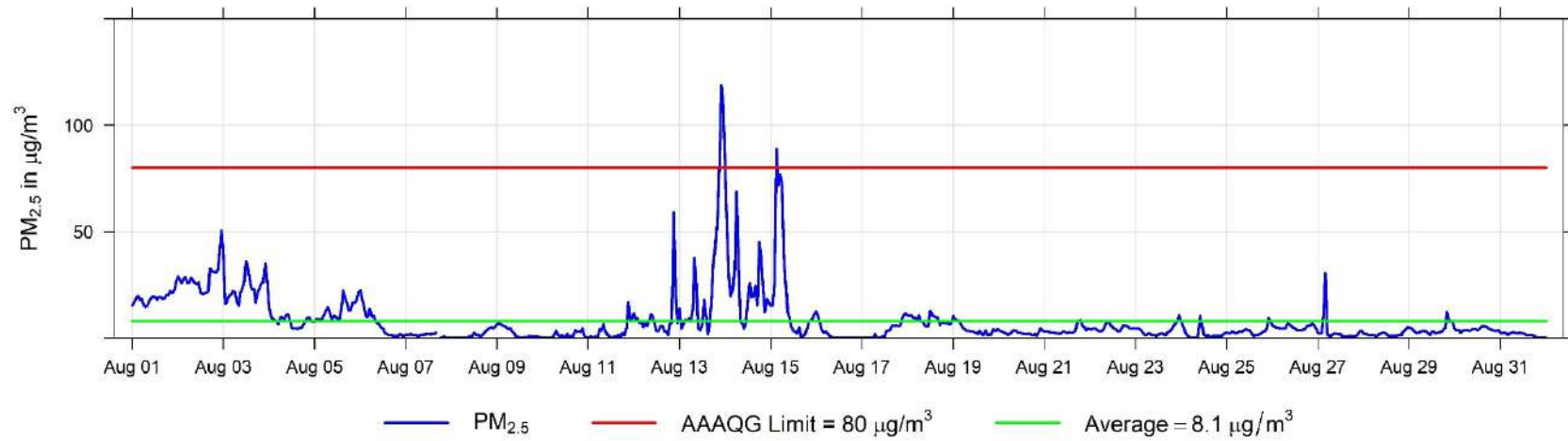
August Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



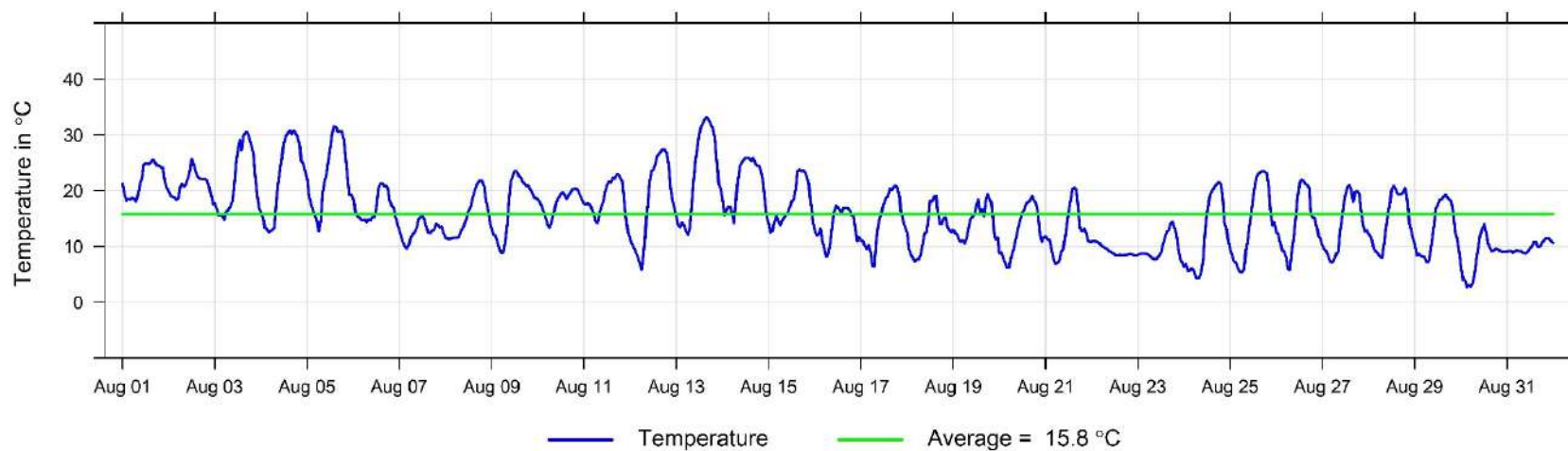
August Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



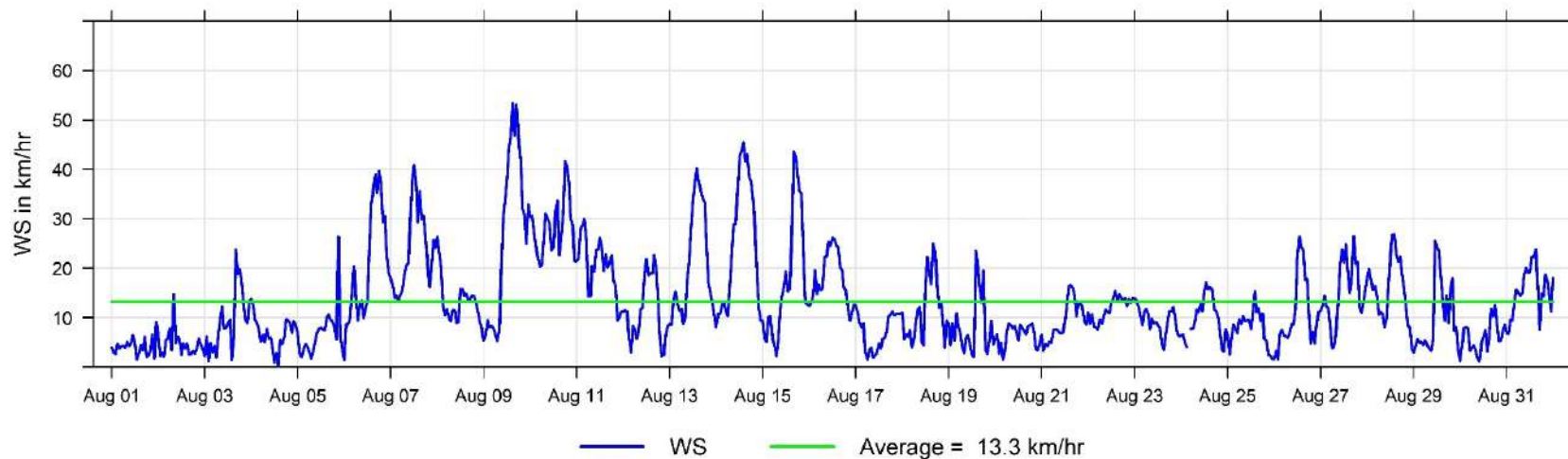
August Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Smoky Heights



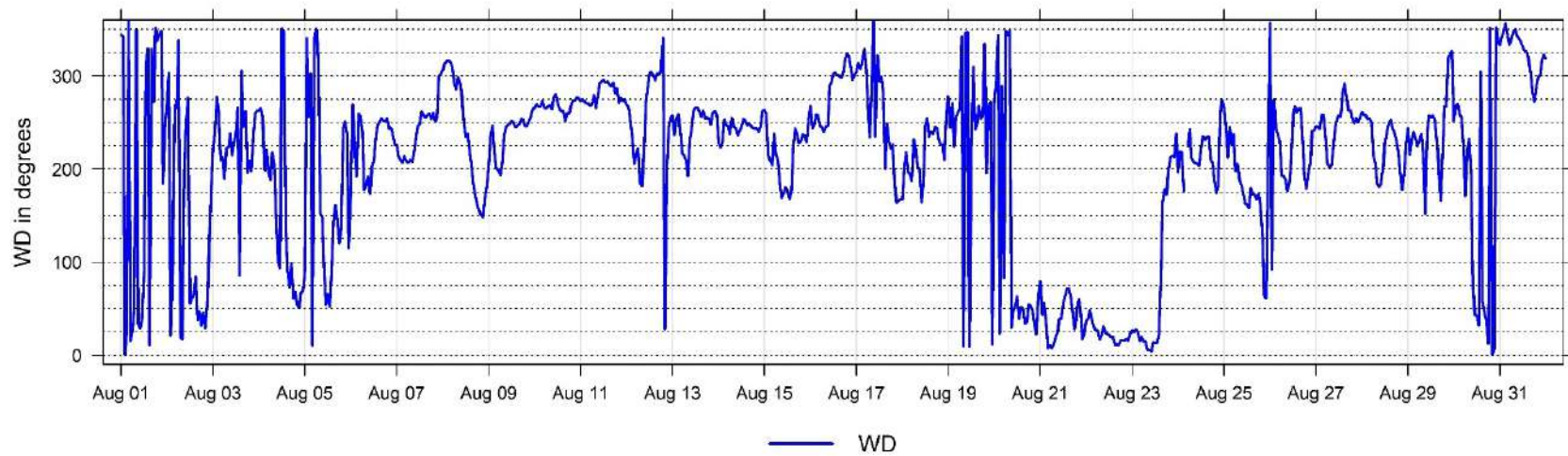
August Hourly Temperature Readings (in °C) at Smoky Heights



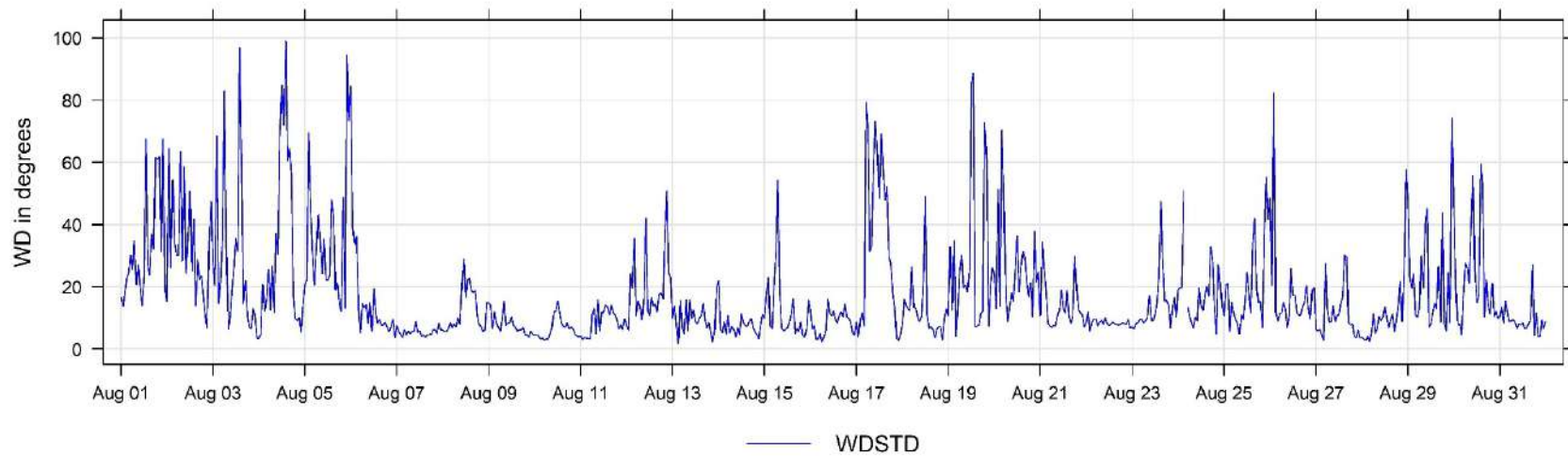
August Hourly Readings of Wind Speed (in km/hr) at Smoky Heights



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



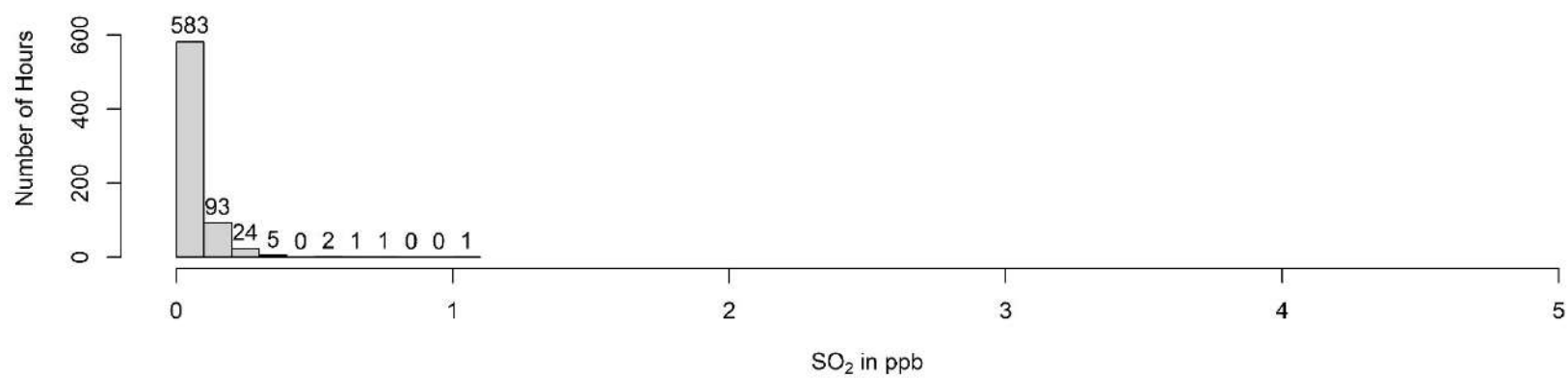
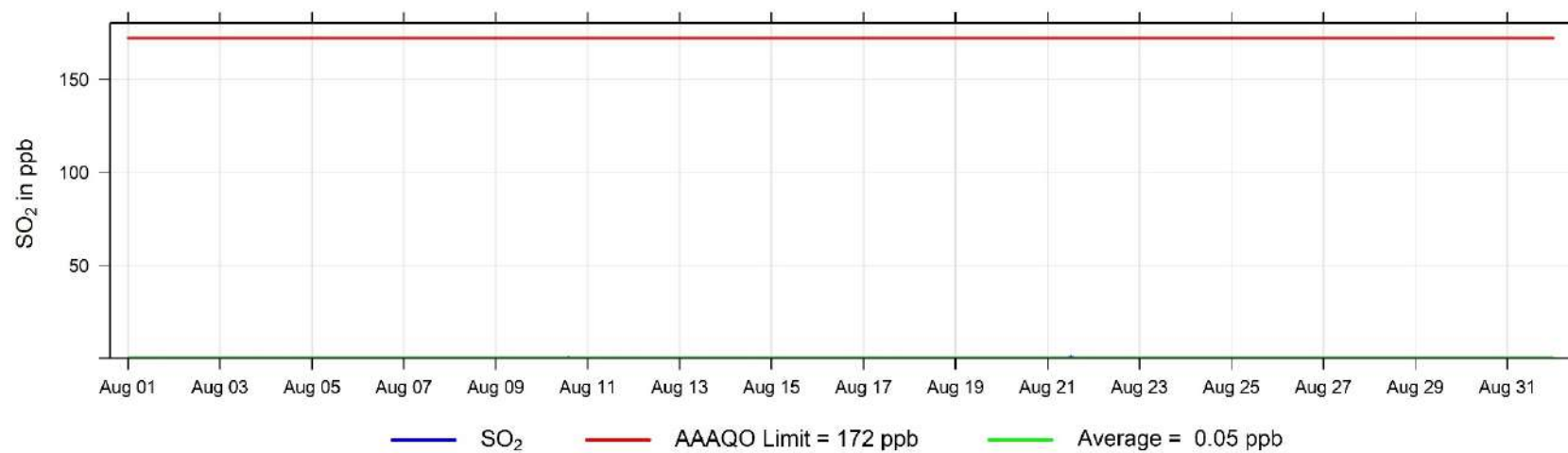
August Hourly Readings of Wind Direction Standard Deviation (in degrees) at Smoky Heights



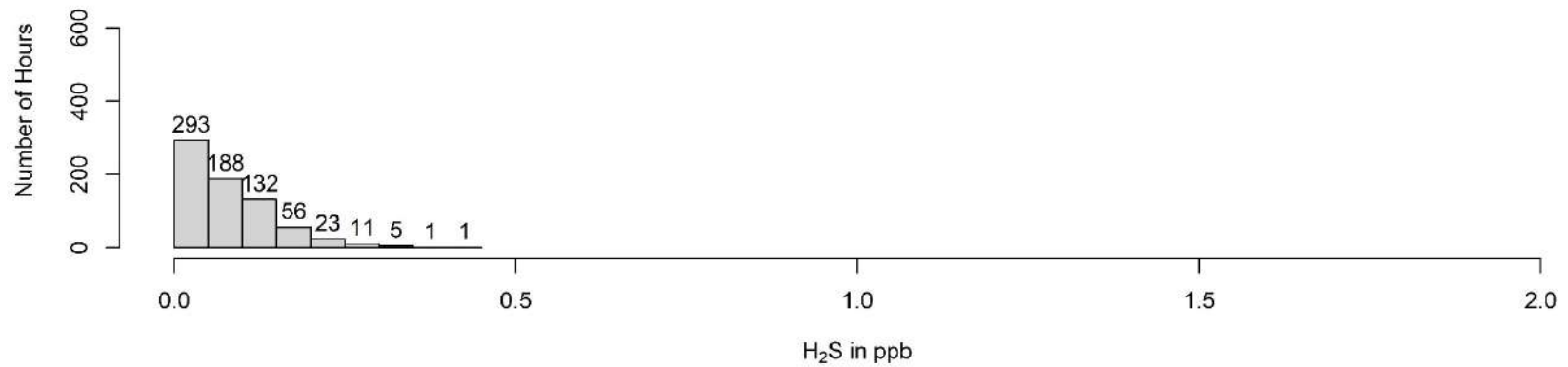
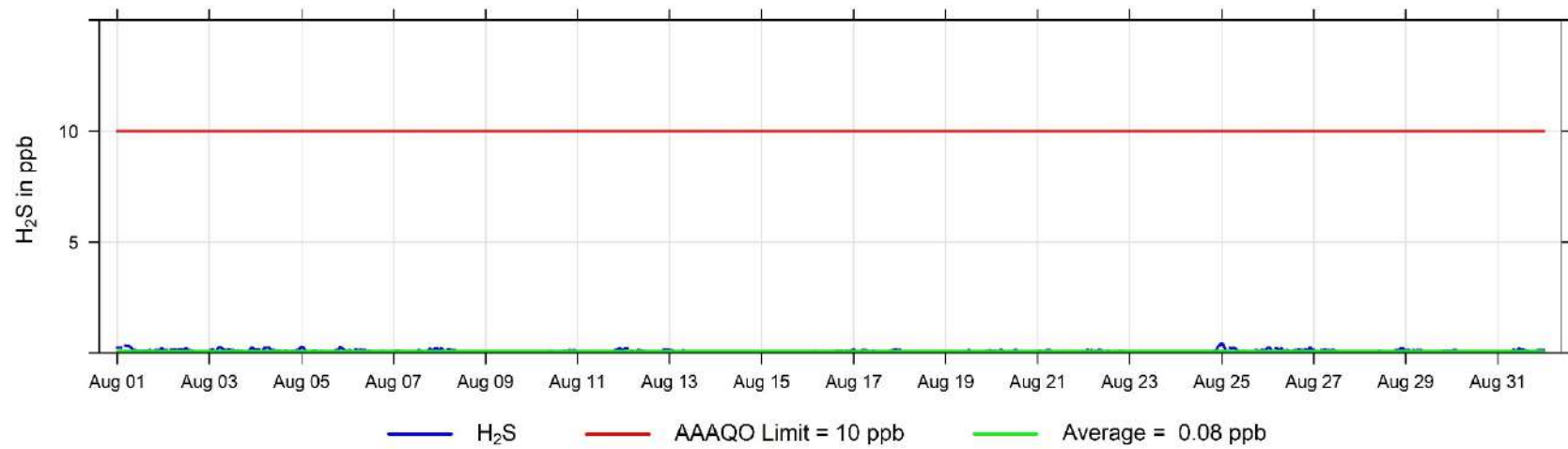
6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

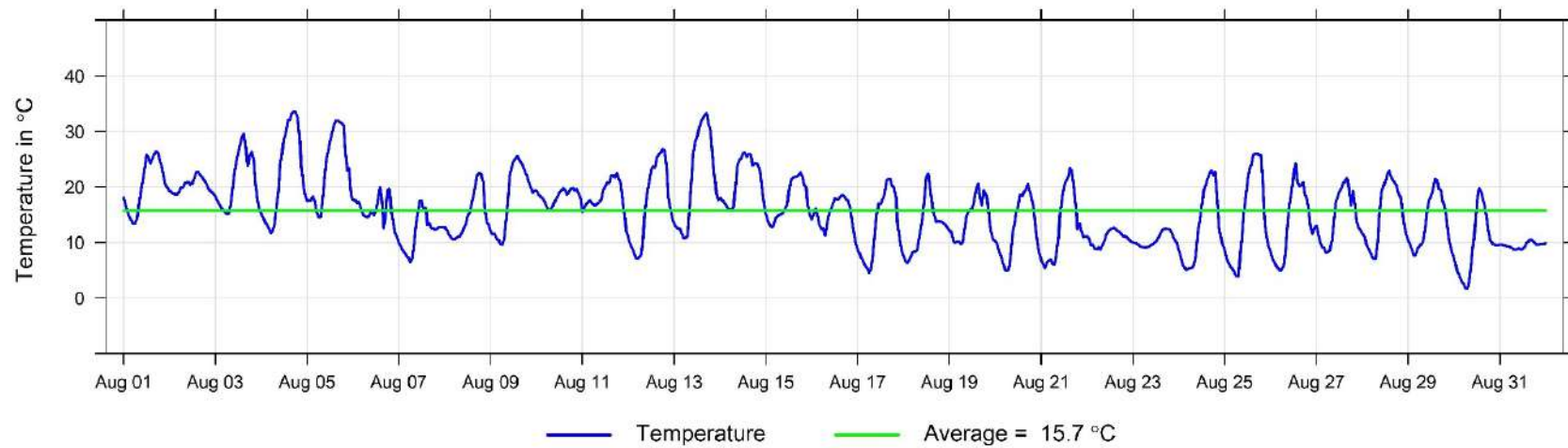
August Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



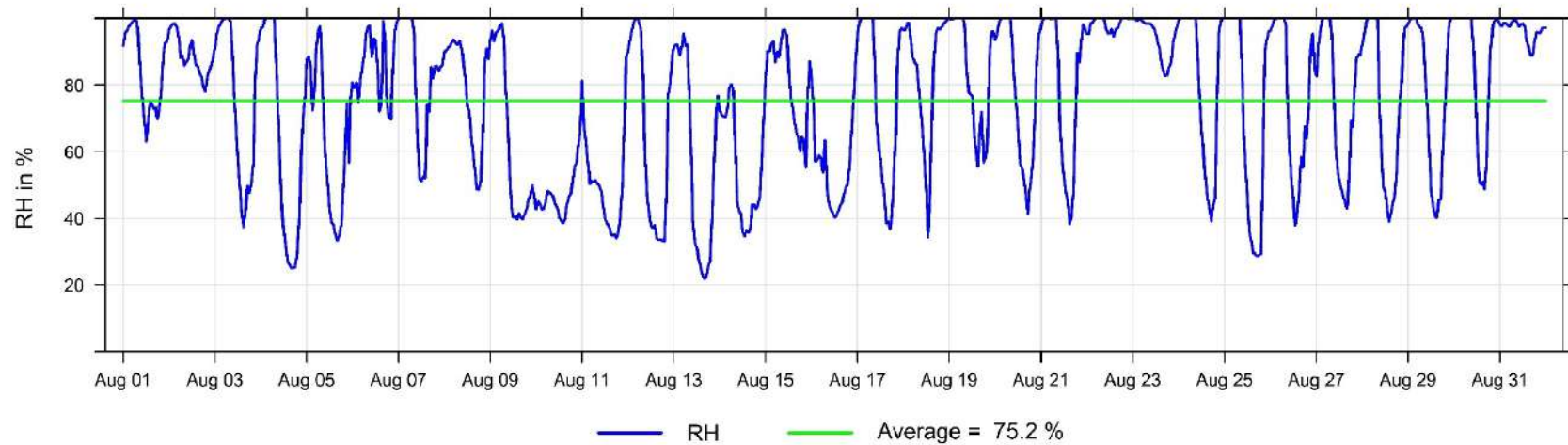
August Hourly Concentration Readings of H₂S (in ppb) at Valleyview



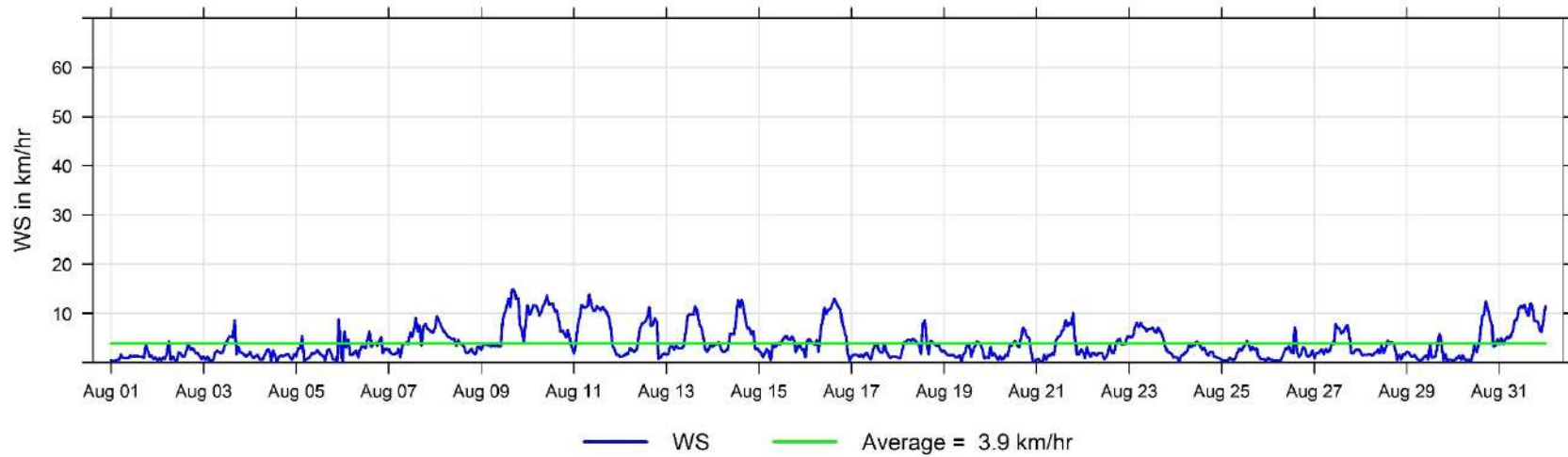
August Hourly Temperature Readings (in °C) at Valleyview



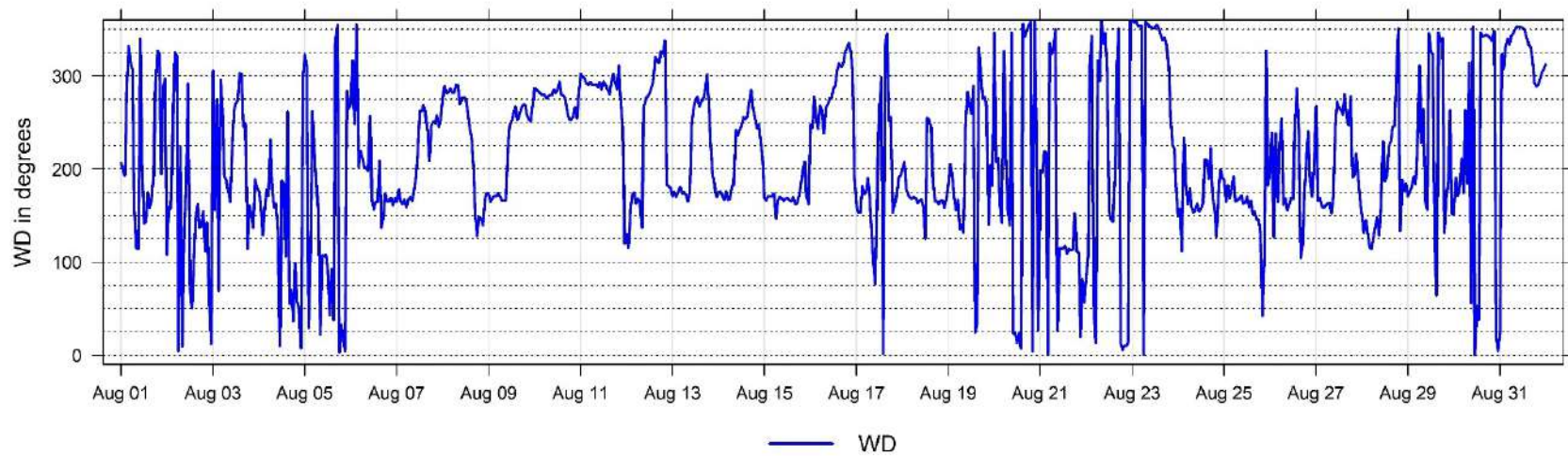
August Hourly Readings of Relative Humidity (in %) at Valleyview



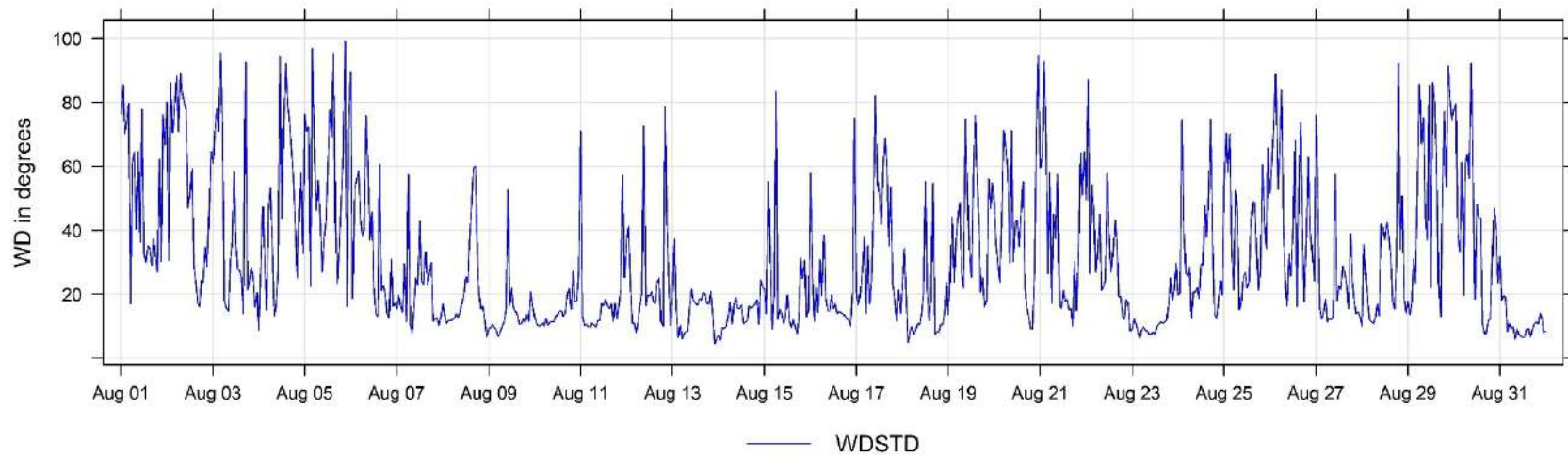
August Hourly Readings of Wind Speed (in km/hr) at Valleyview

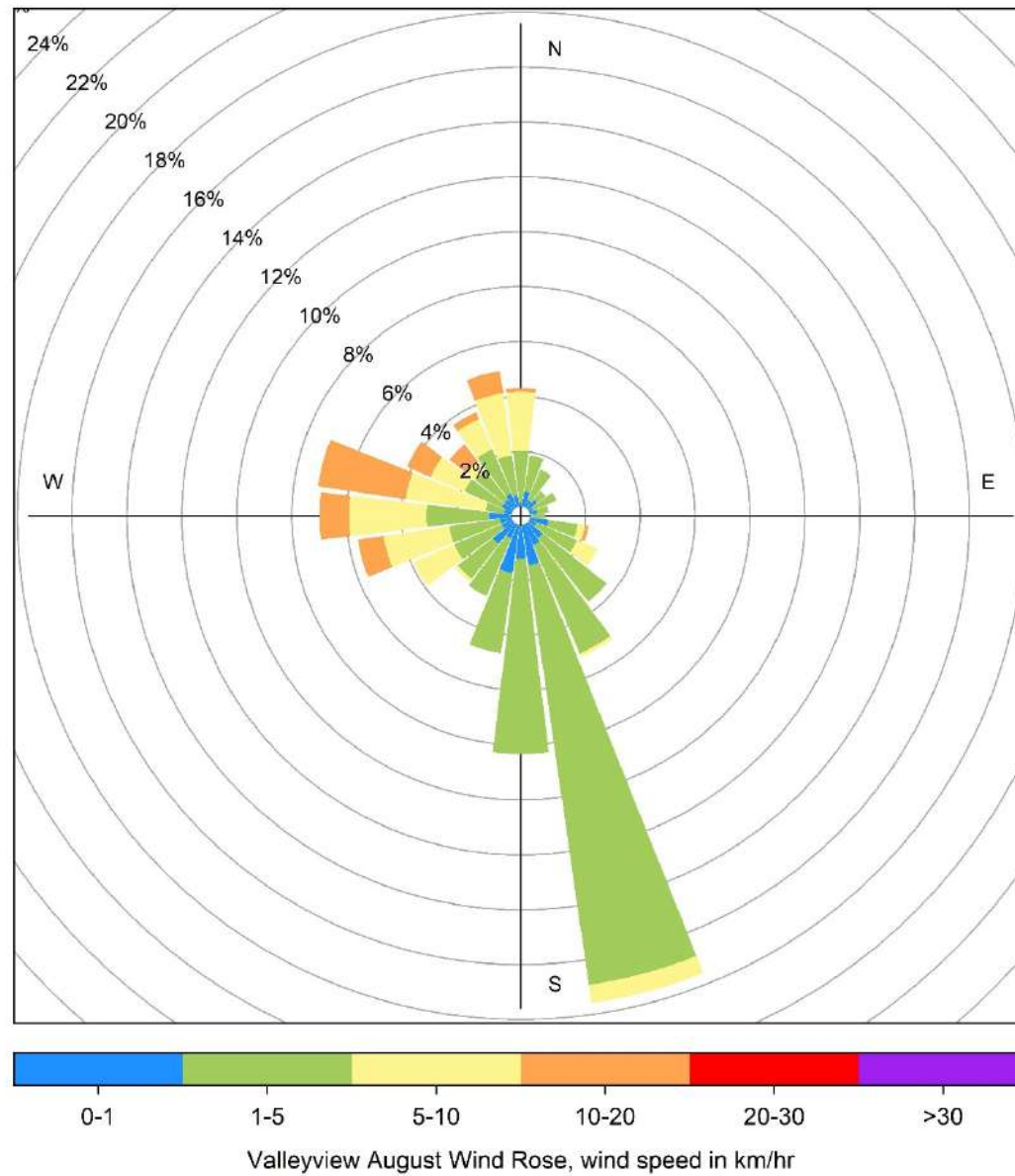


August Hourly Readings of Wind Direction (in degrees) at Valleyview



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

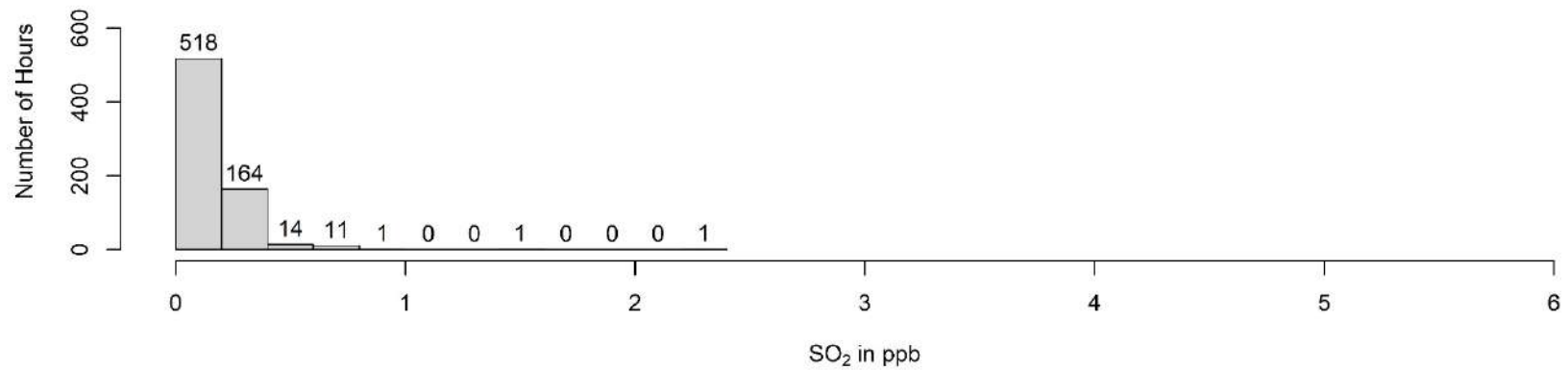
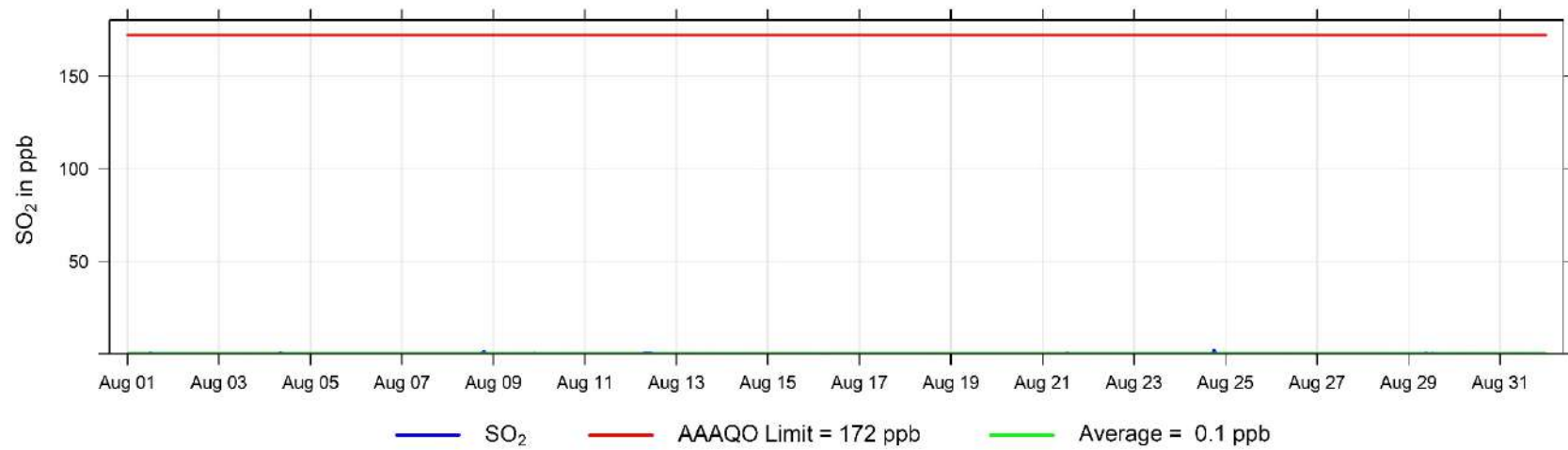




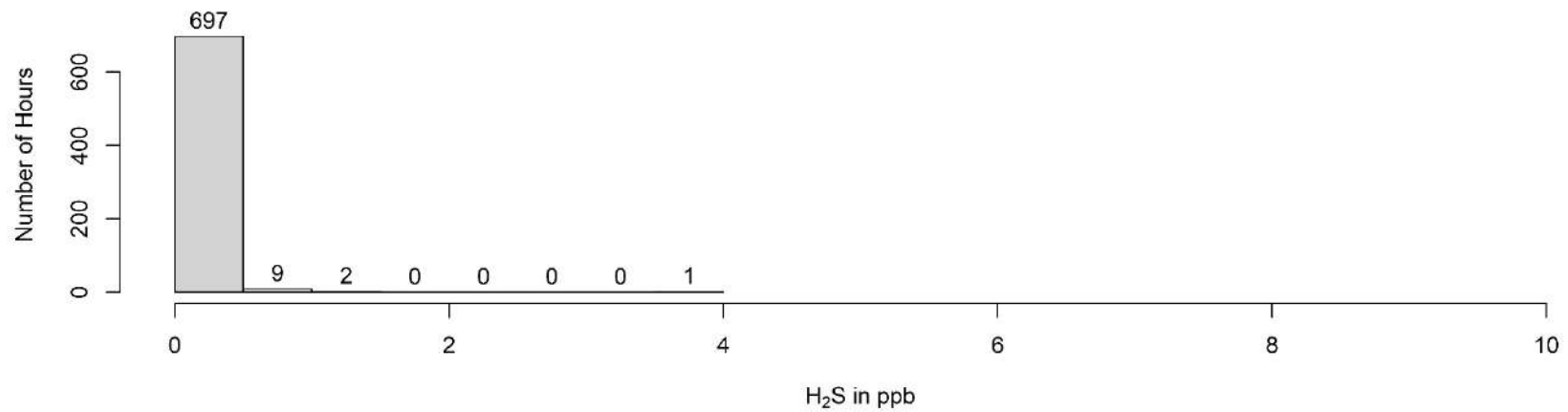
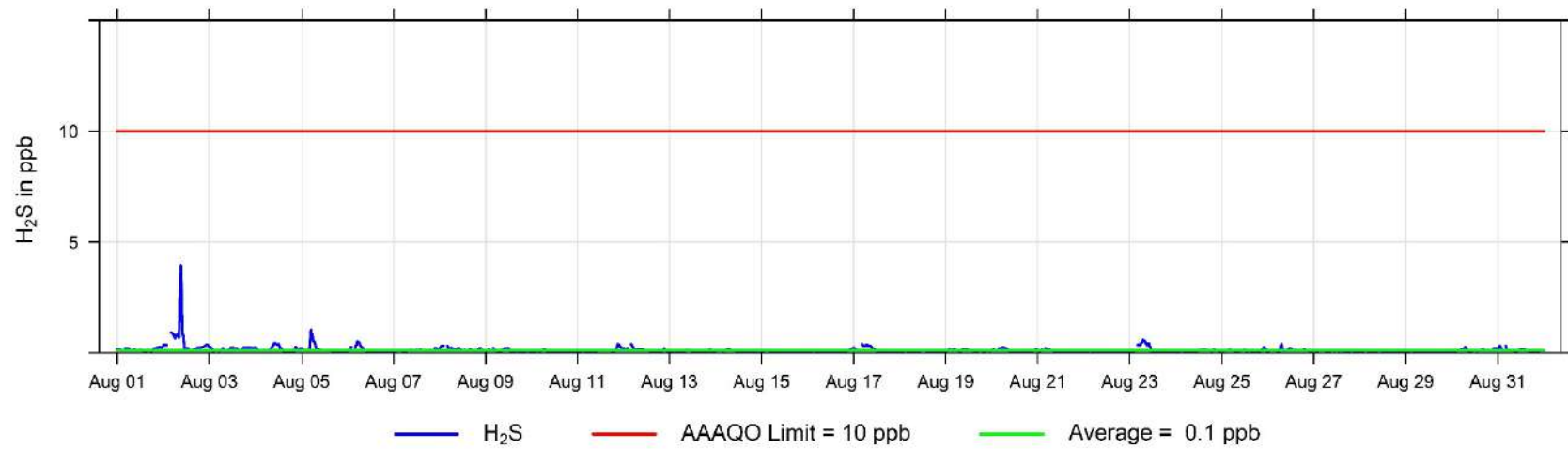
7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

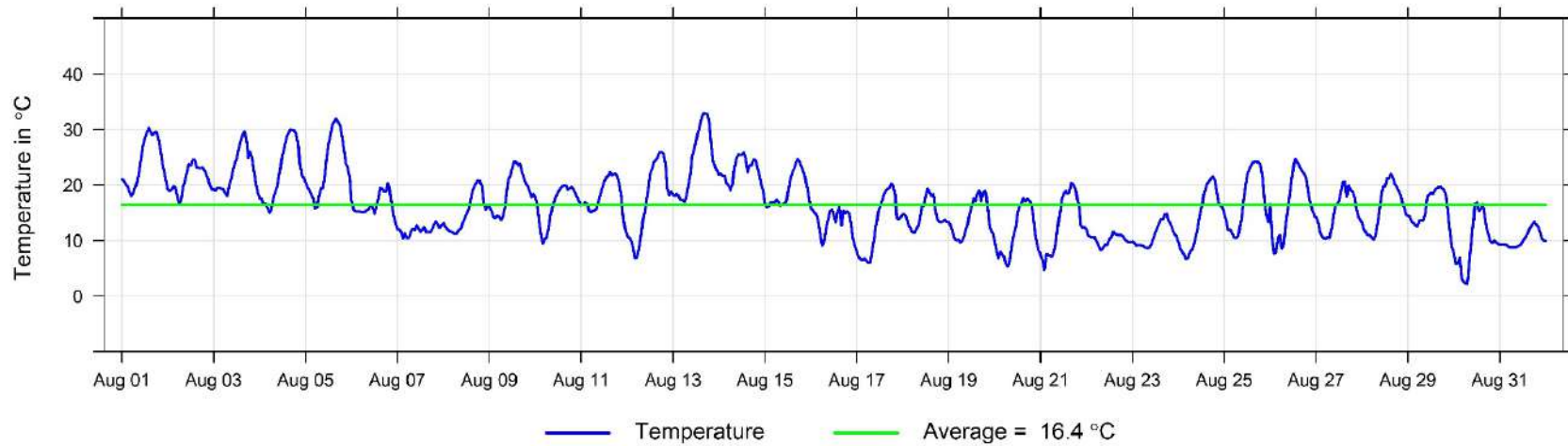
August Hourly Concentration Readings of SO₂ (in ppb) at Donnelly



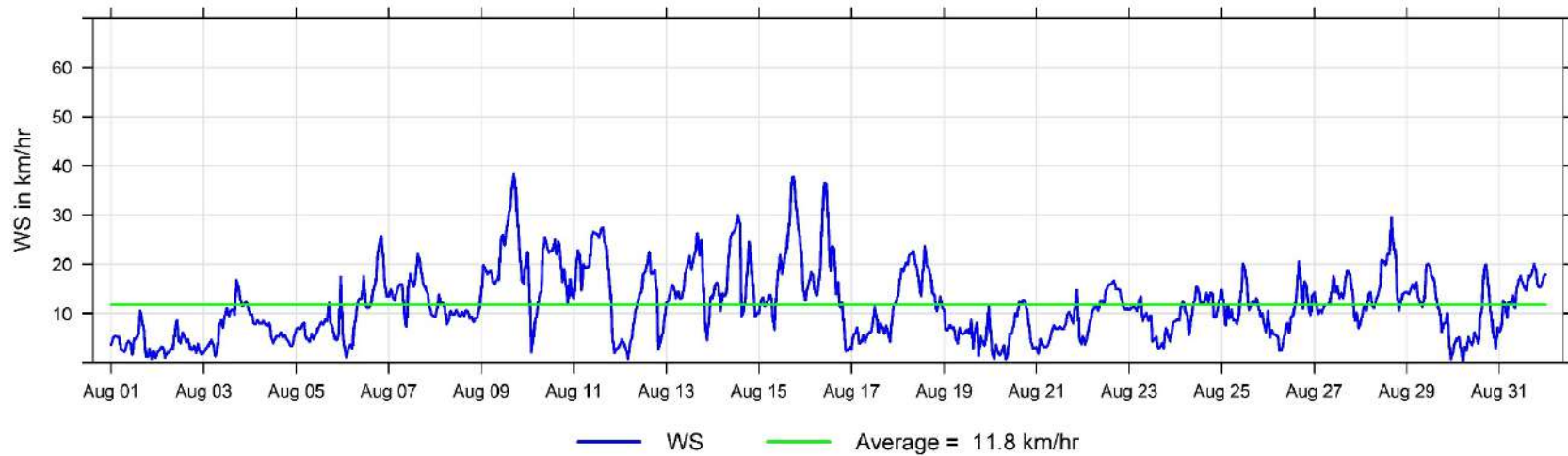
August Hourly Concentration Readings of H₂S (in ppb) at Donnelly



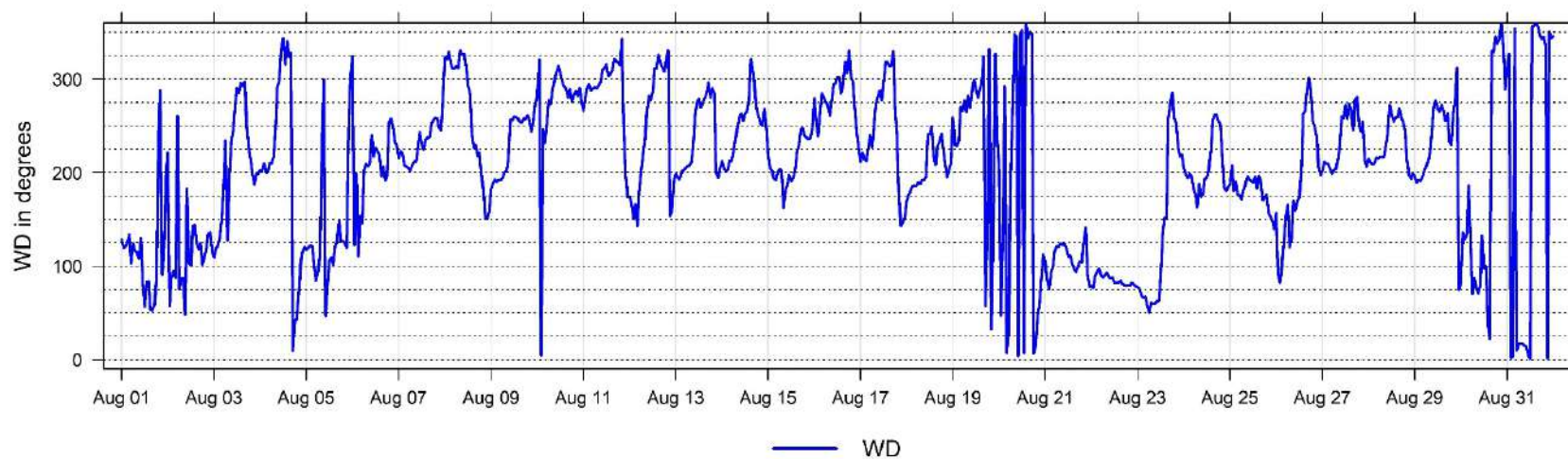
August Hourly Temperature Readings (in °C) at Donnelly



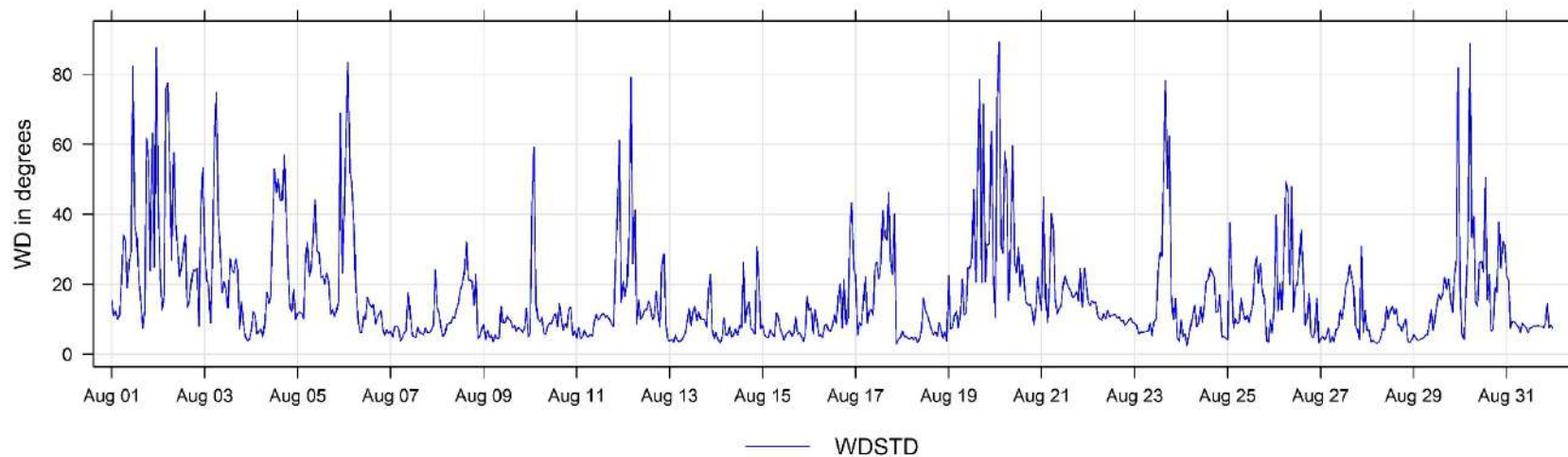
August Hourly Readings of Wind Speed (in km/hr) at Donnelly

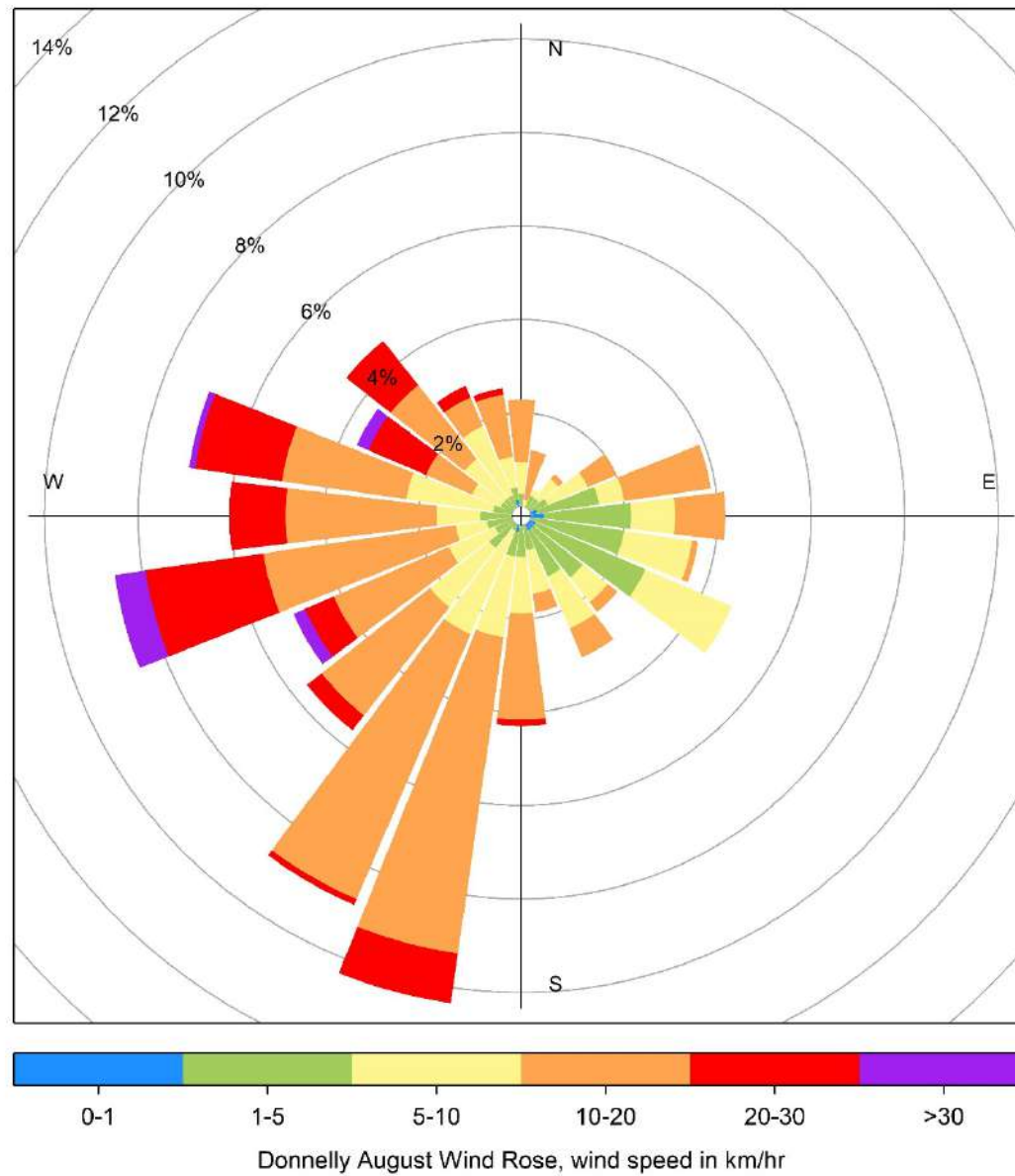


August Hourly Readings of Wind Direction (in degrees) at Donnelly



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

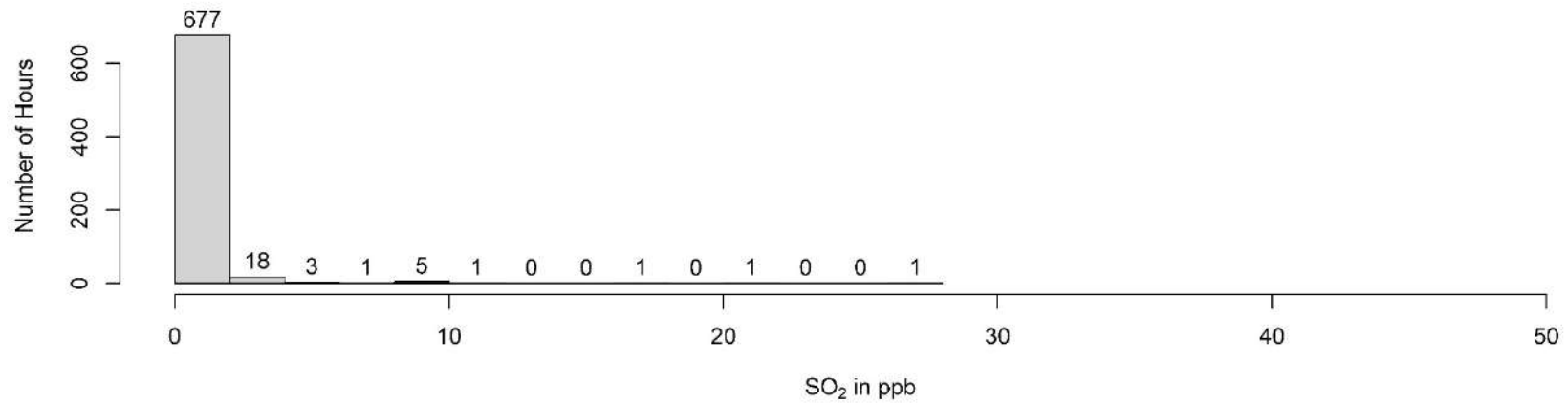
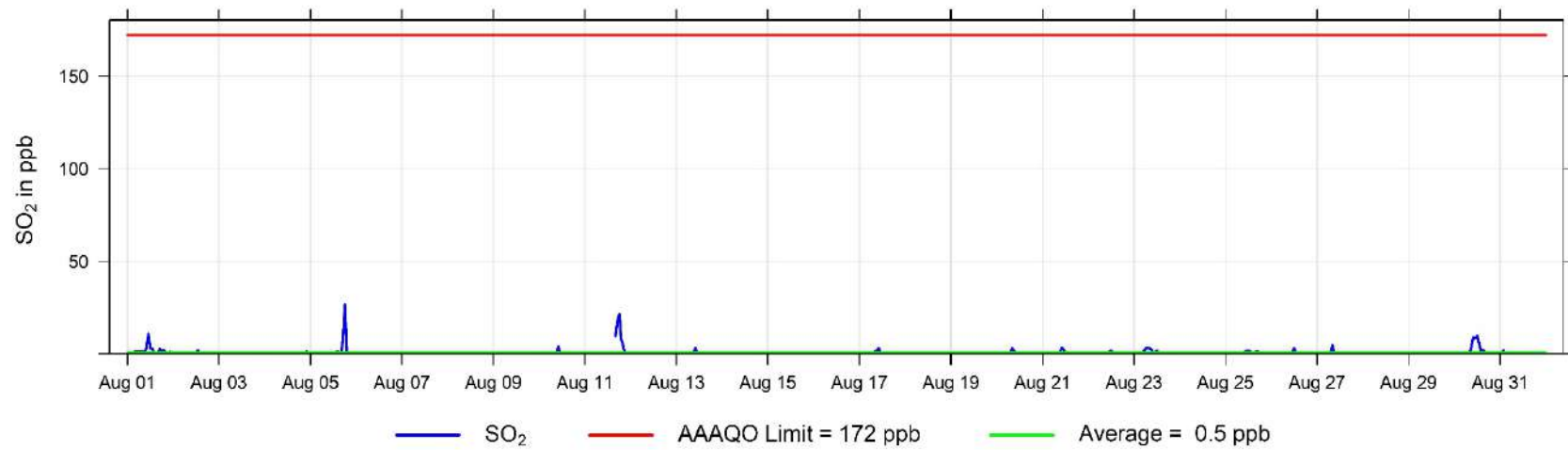




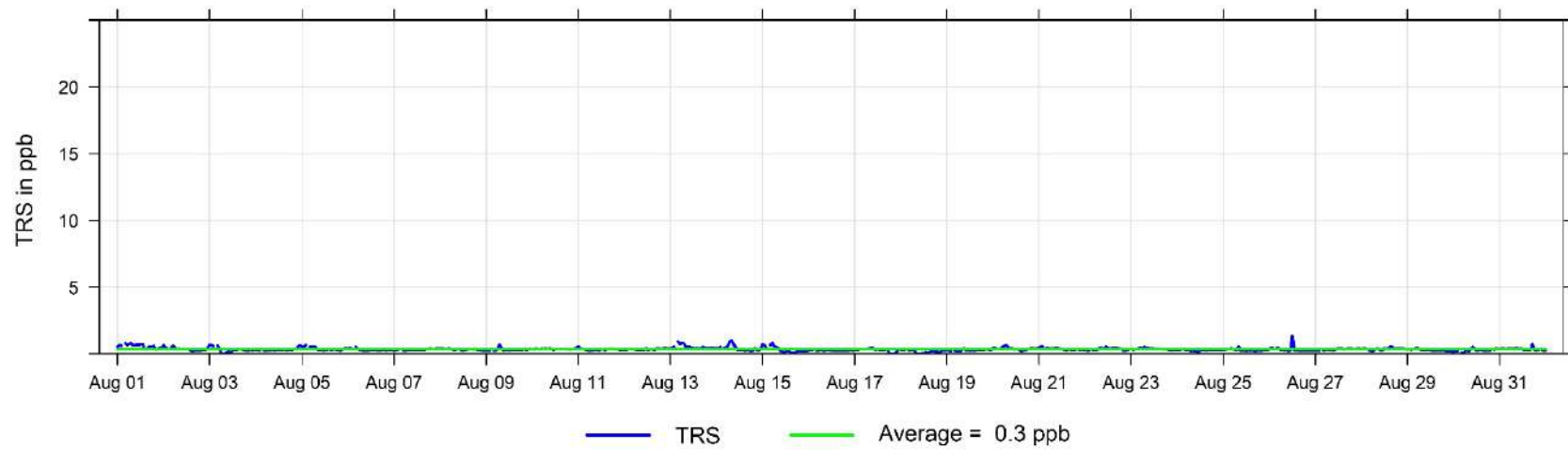
8 Wembley (Portable) Charts

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

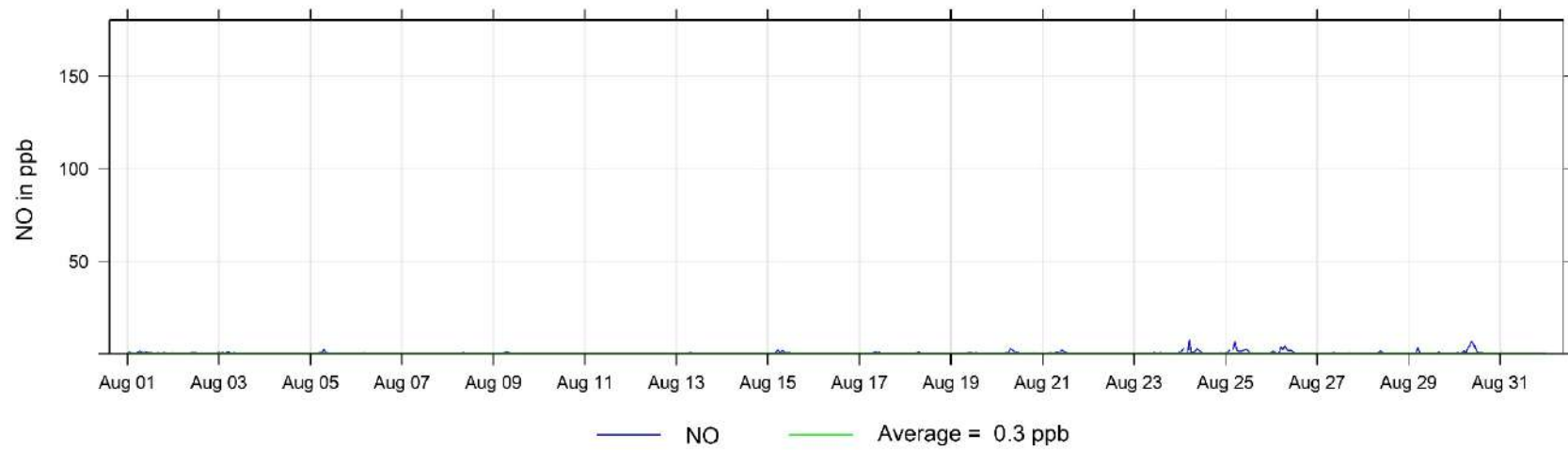
August Hourly Concentration Readings of SO₂ (in ppb) at Wembley



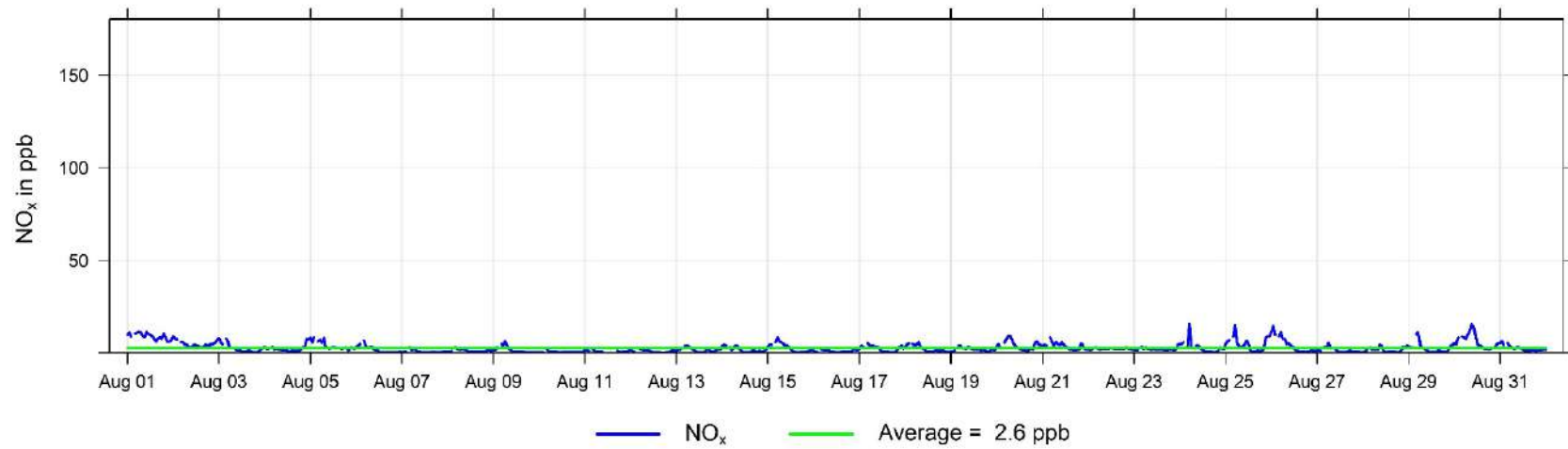
August Hourly Concentration Readings of TRS (in ppb) at Wembley



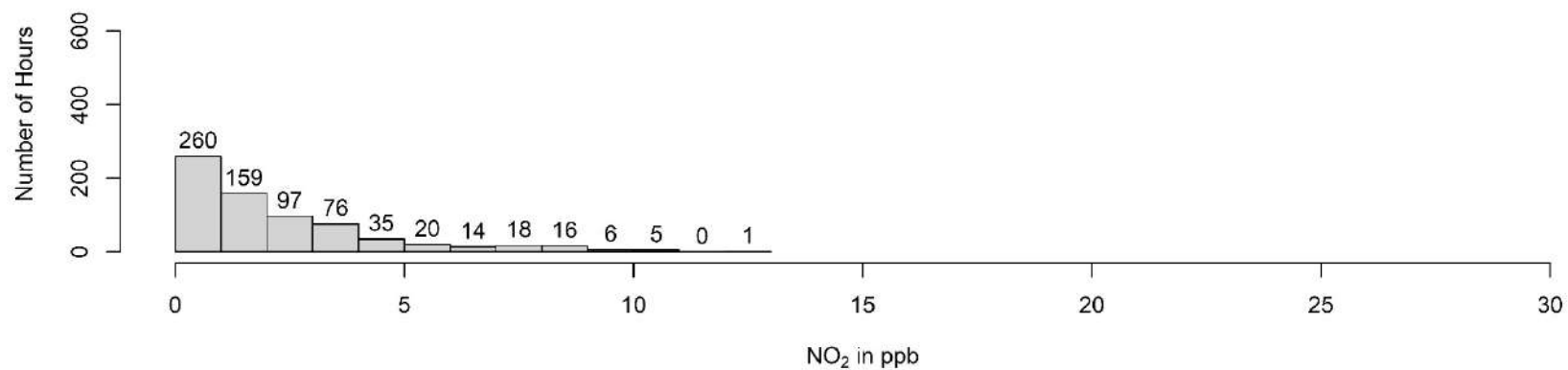
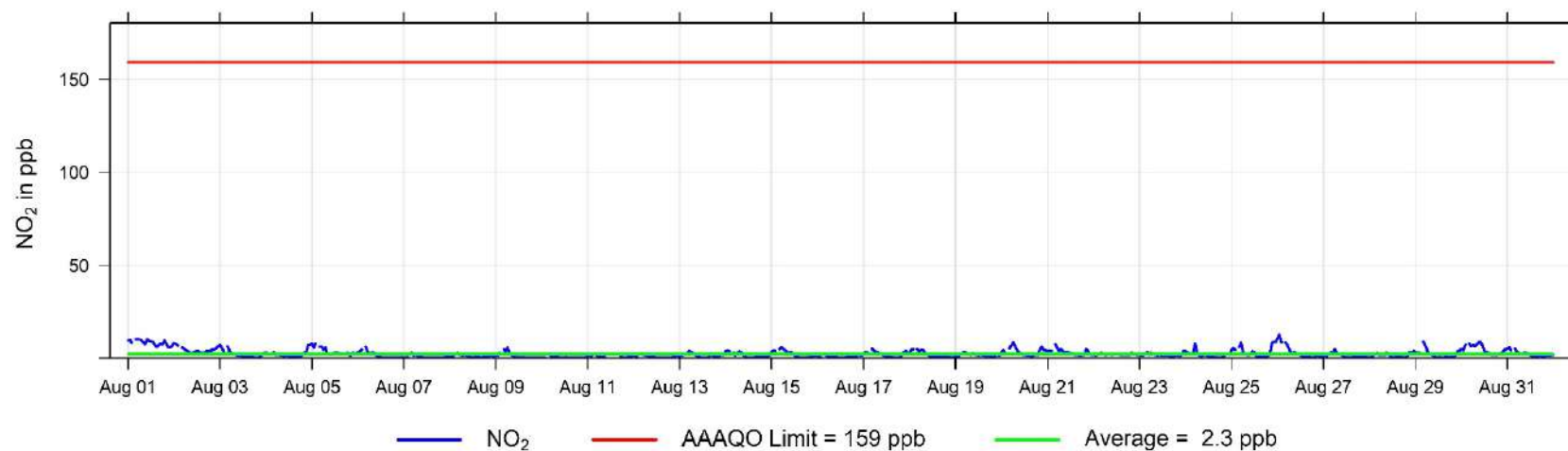
August Hourly Concentration Readings of NO (in ppb) at Wembley



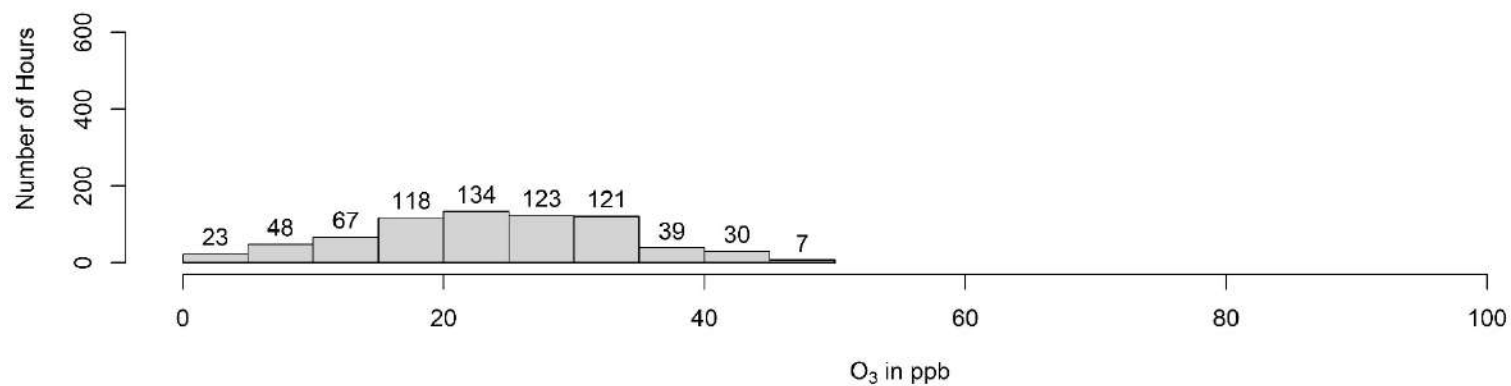
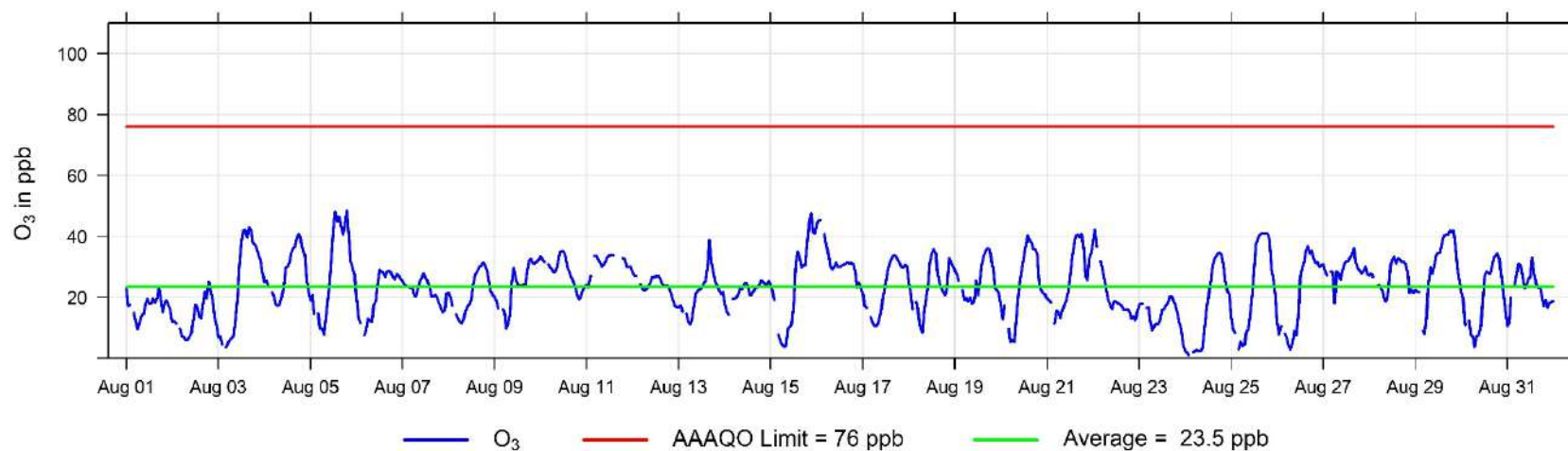
August Hourly Concentration Readings of NO_x (in ppb) at Wembley



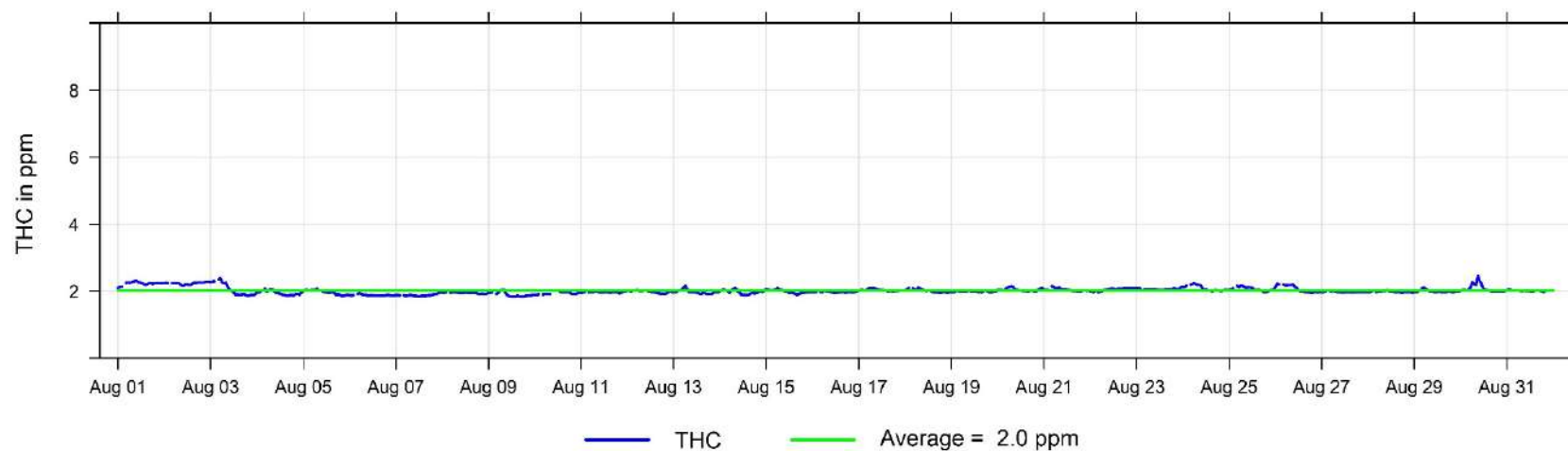
August Hourly Concentration Readings of NO₂ (in ppb) at Wembley



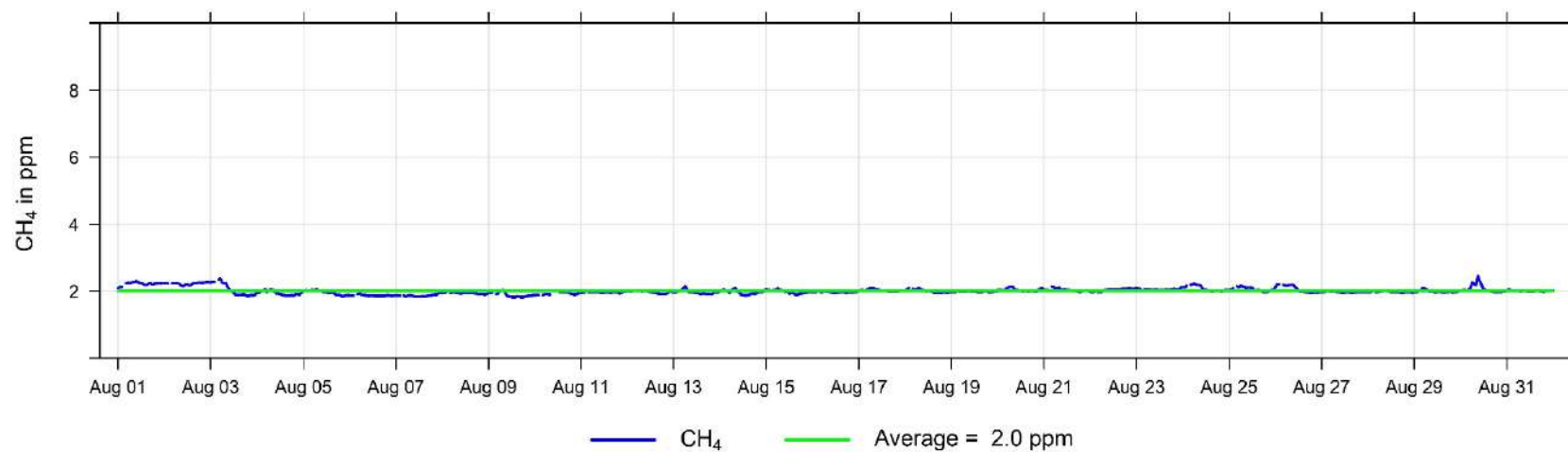
August Hourly Concentration Readings of O₃ (in ppb) at Wembley



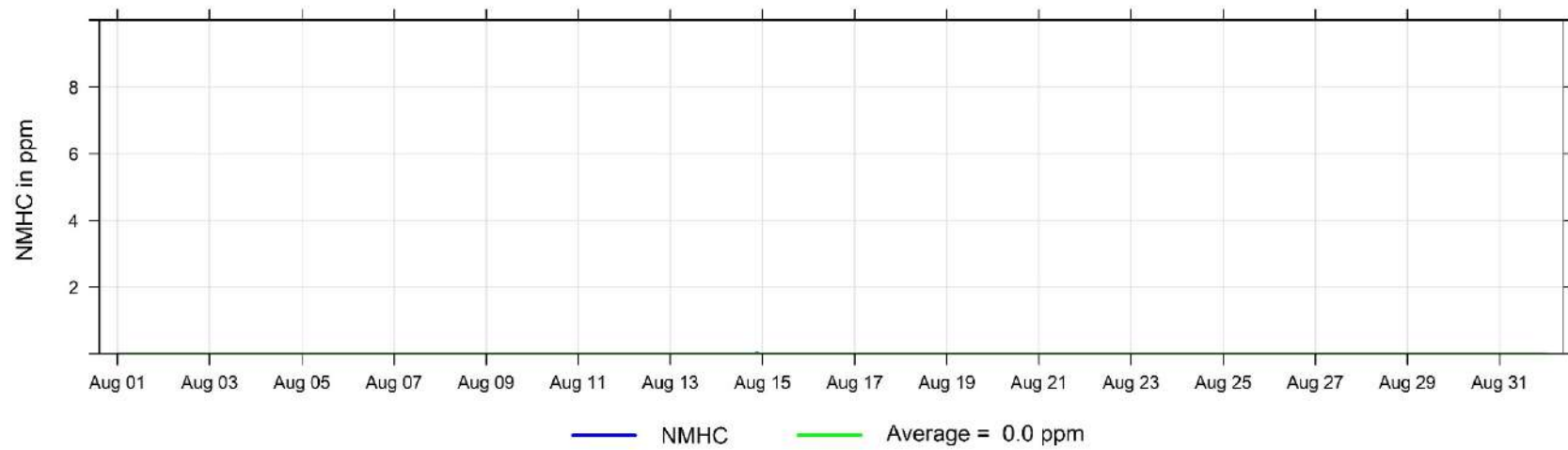
August Hourly Concentration Readings of THC (in ppm) at Wembley



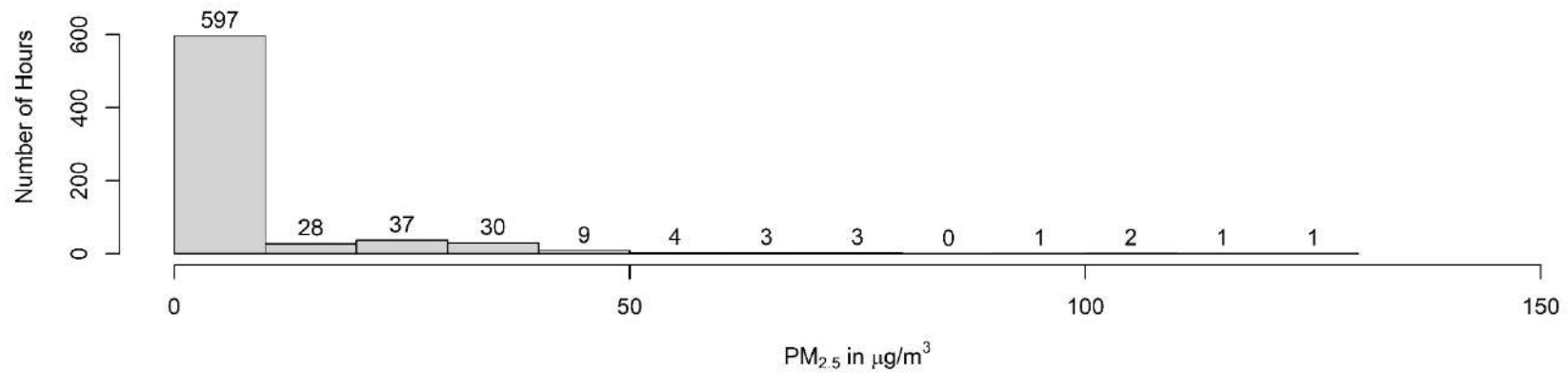
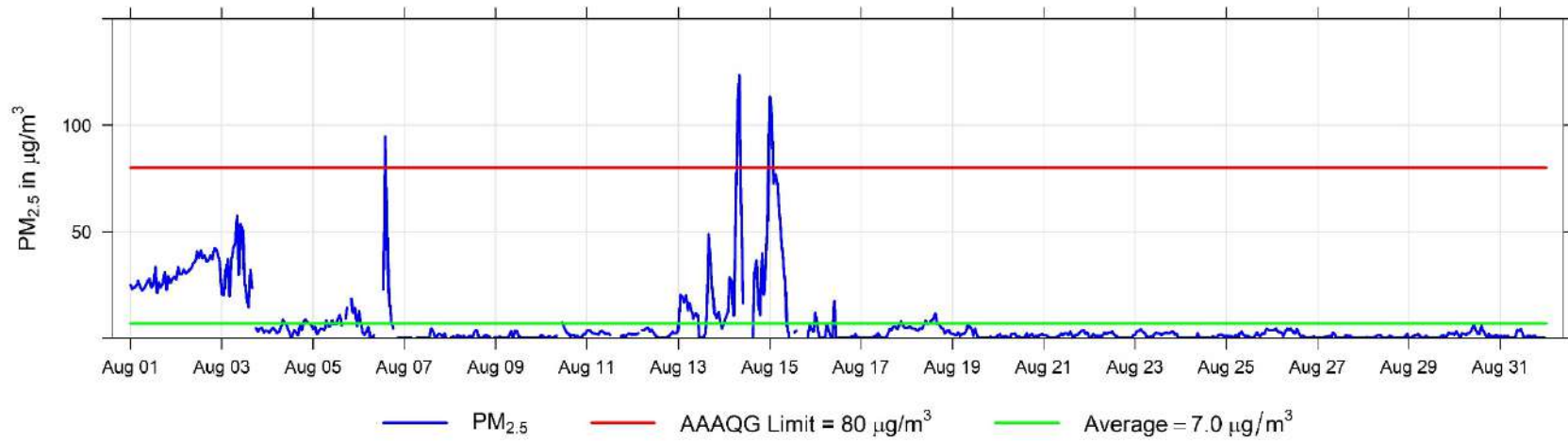
August Hourly Concentration Readings of CH₄ (in ppm) at Wembley



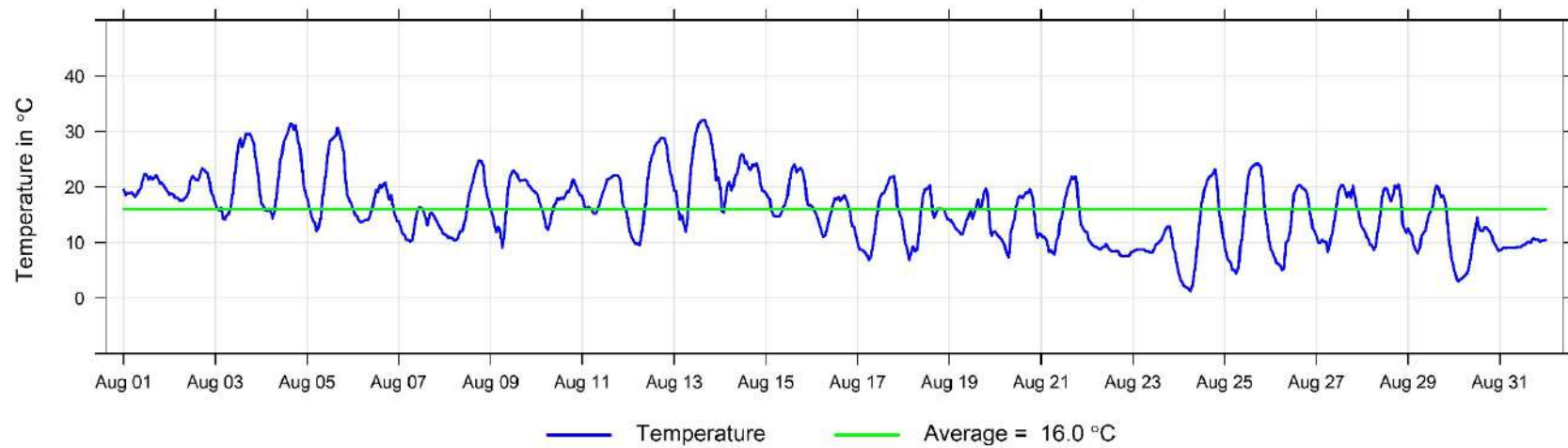
August Hourly Concentration Readings of NMHC (in ppm) at Wembley



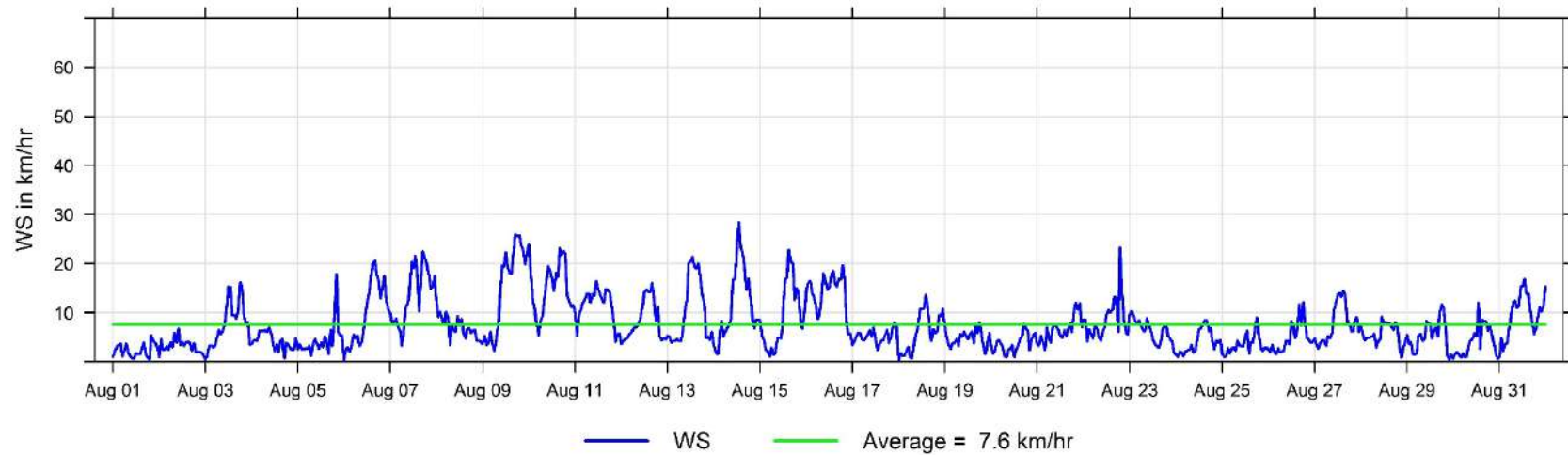
August Hourly Concentration Readings of PM_{2.5} in µg/m³ at Wembley



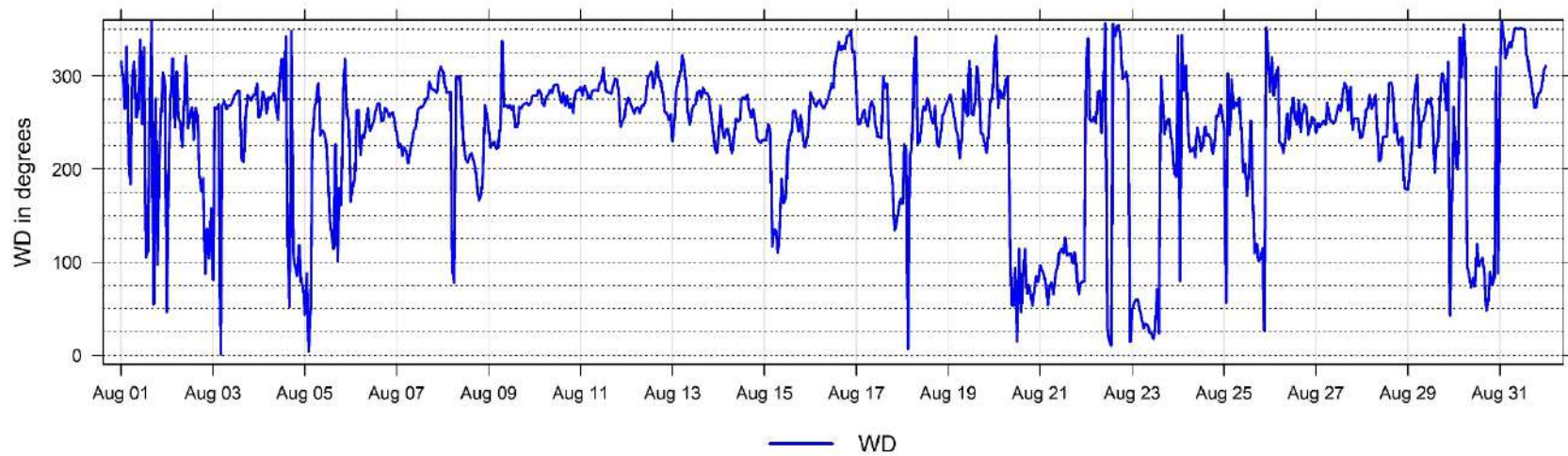
August Hourly Temperature Readings (in °C) at Wembley



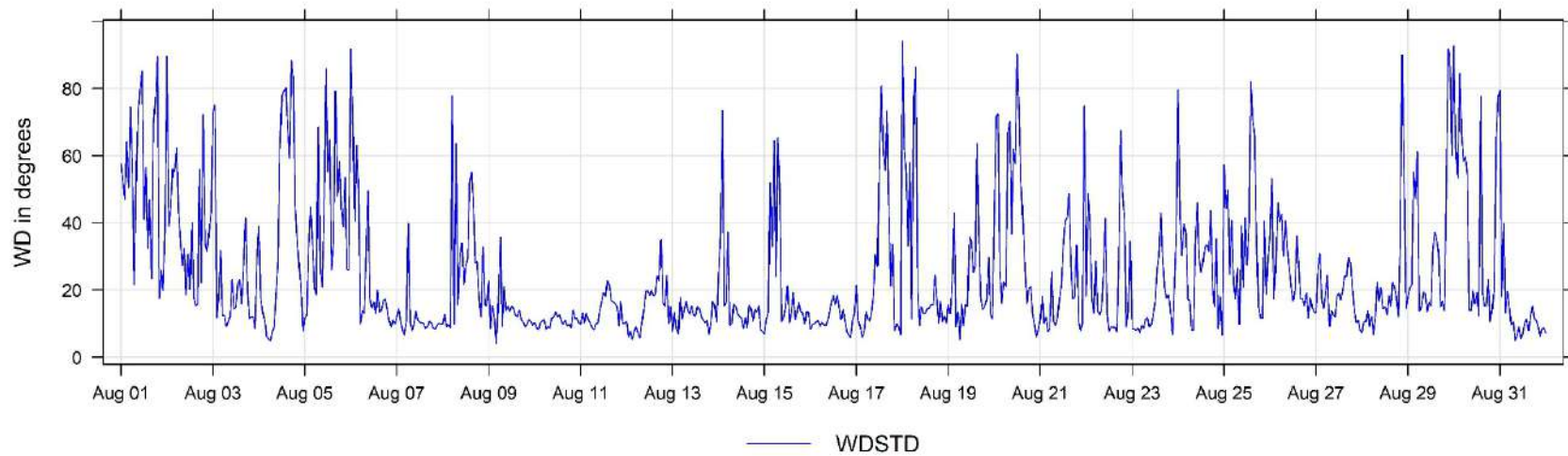
August Hourly Readings of Wind Speed (in km/hr) at Wembley

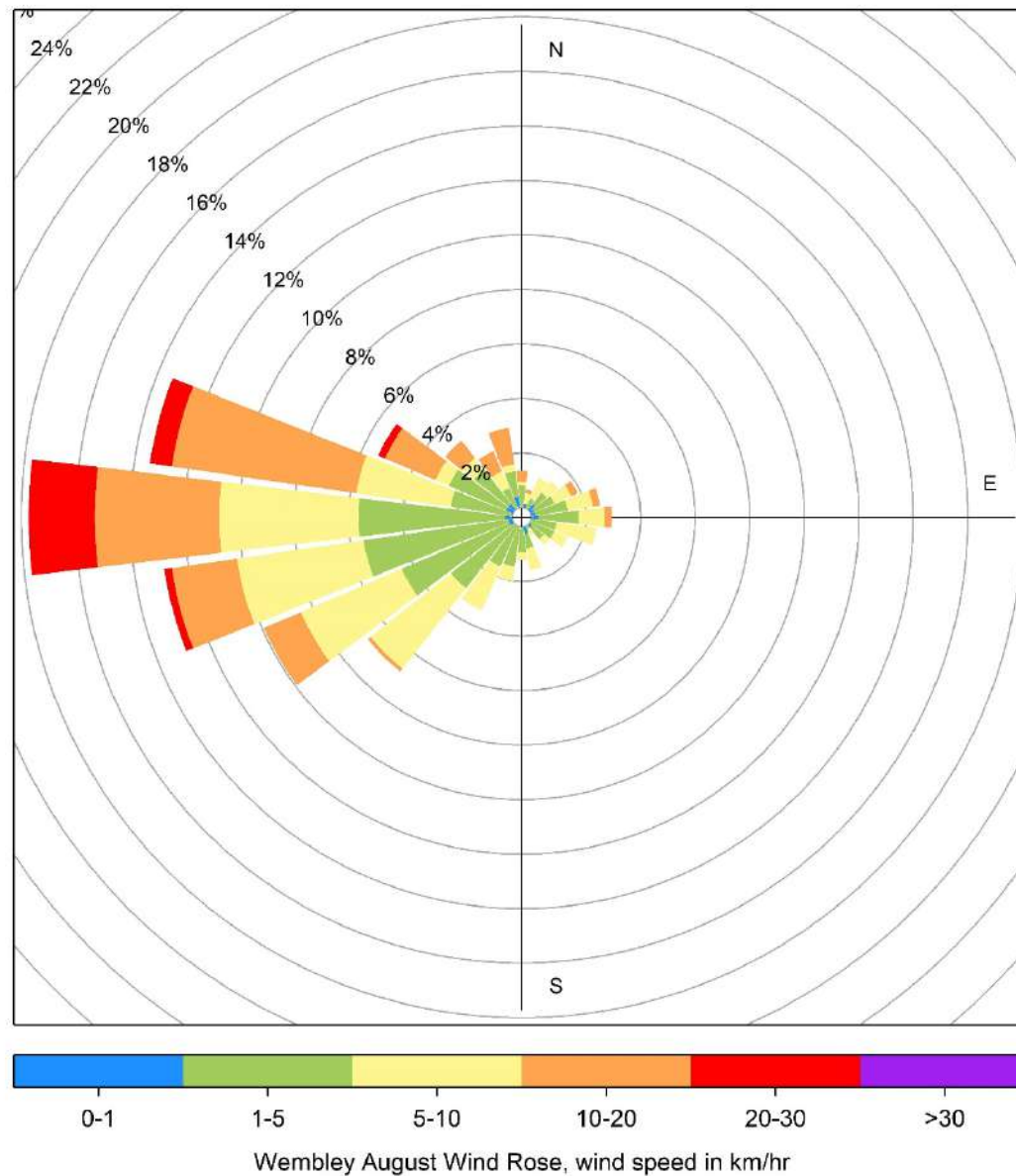


August Hourly Readings of Wind Direction (in degrees) at Wembley

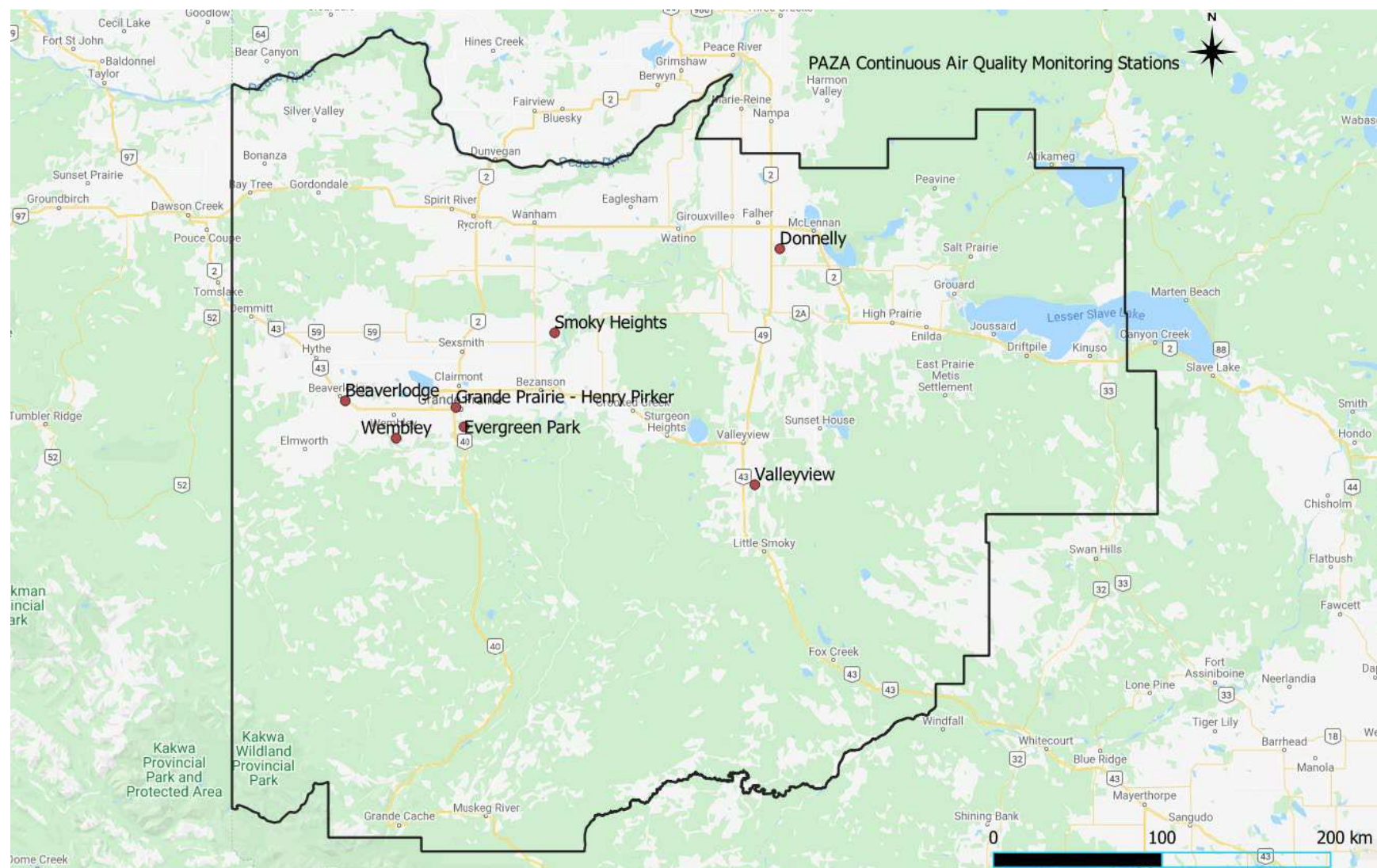


August Hourly Readings of Wind Direction Standard Deviation (in degrees) at Wembley

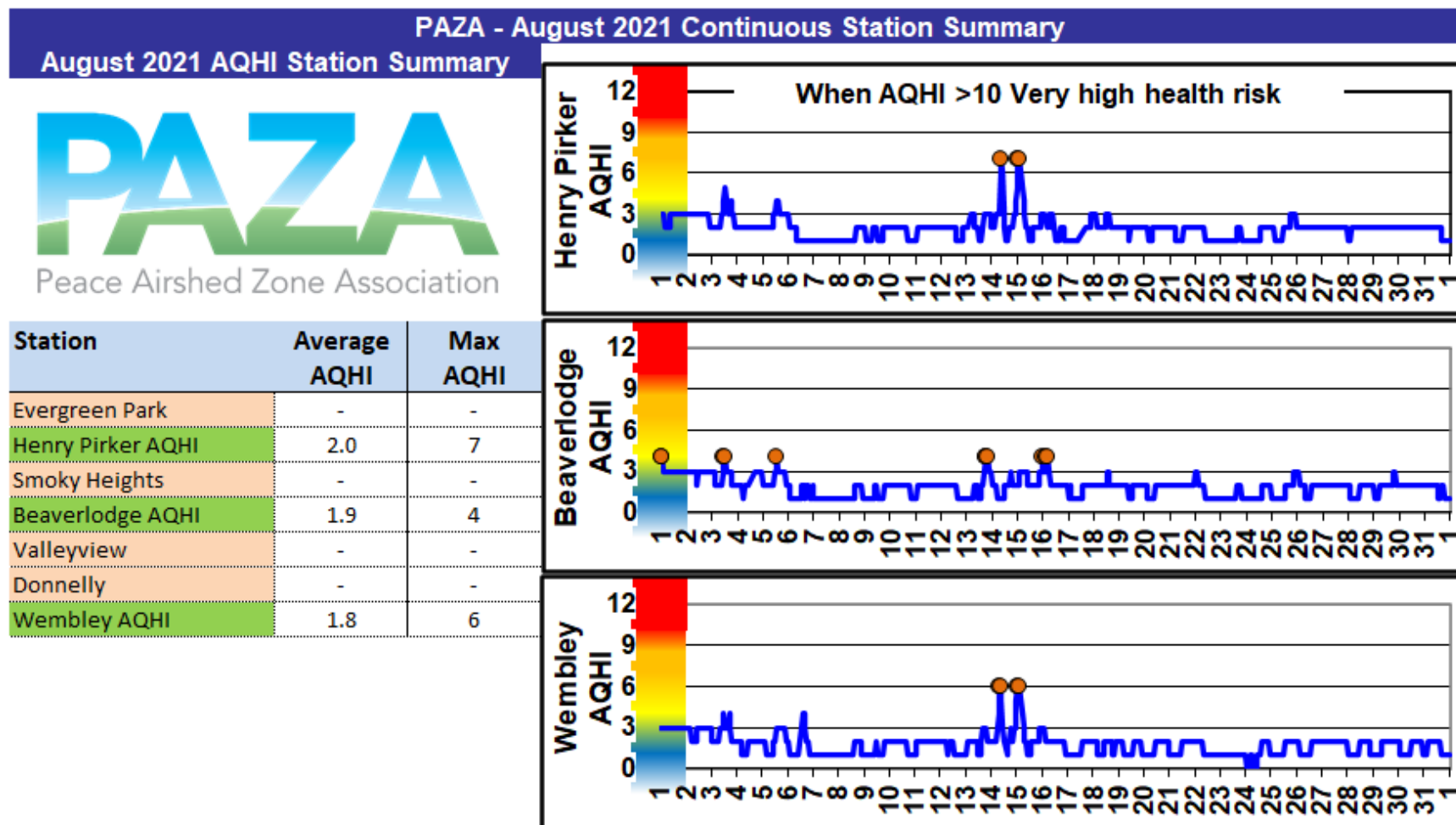




9 Concentration Summaries and Roses for PAZA

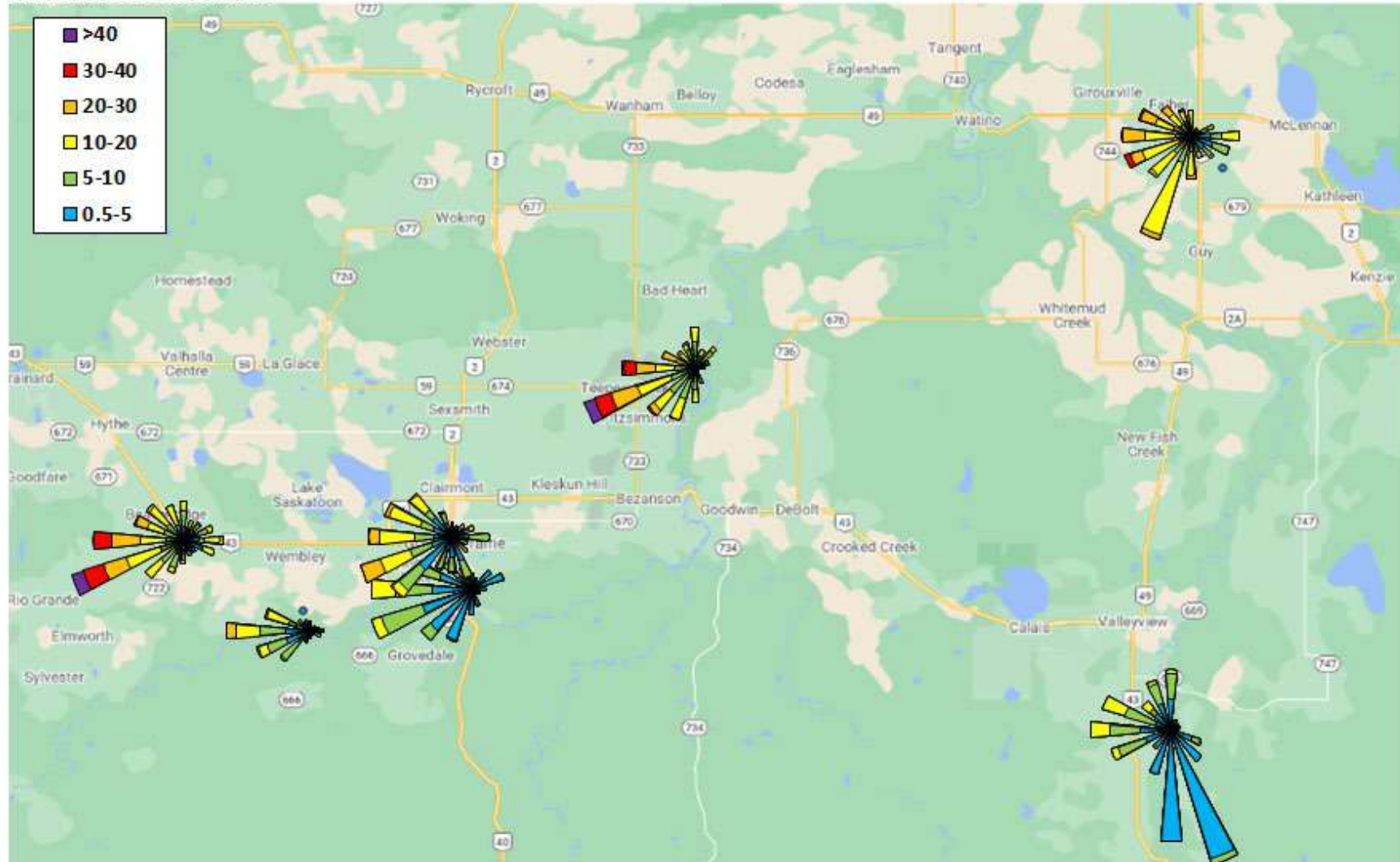


9.1 Air Quality Health Index (AQHI) Plots



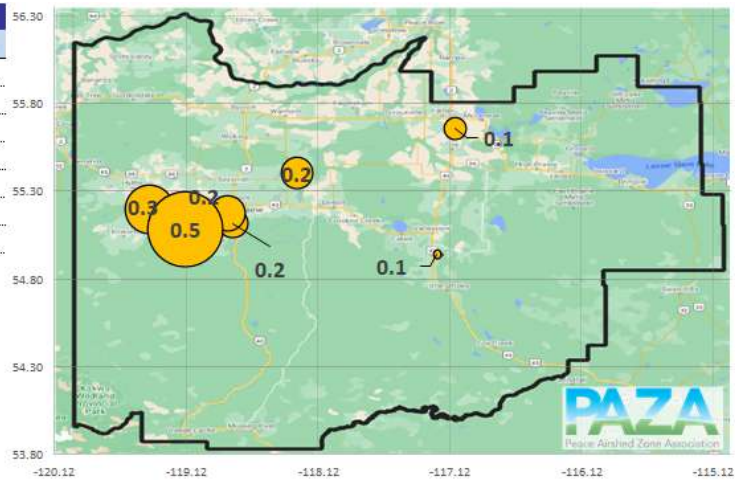
9.2 Wind Roses

Wind Roses in km/hr

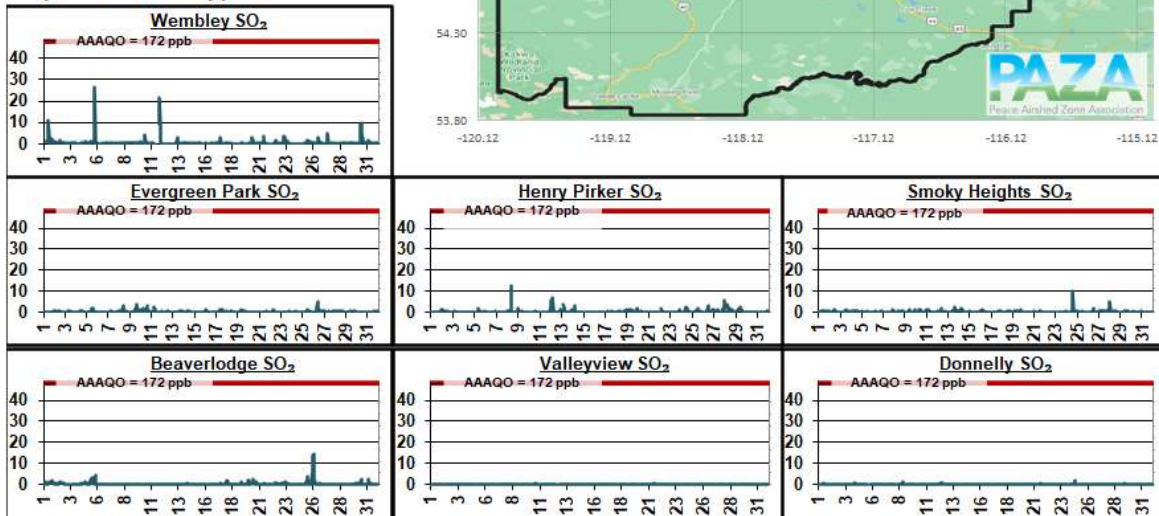


9.3 Sulphur Dioxide (SO₂) Plots

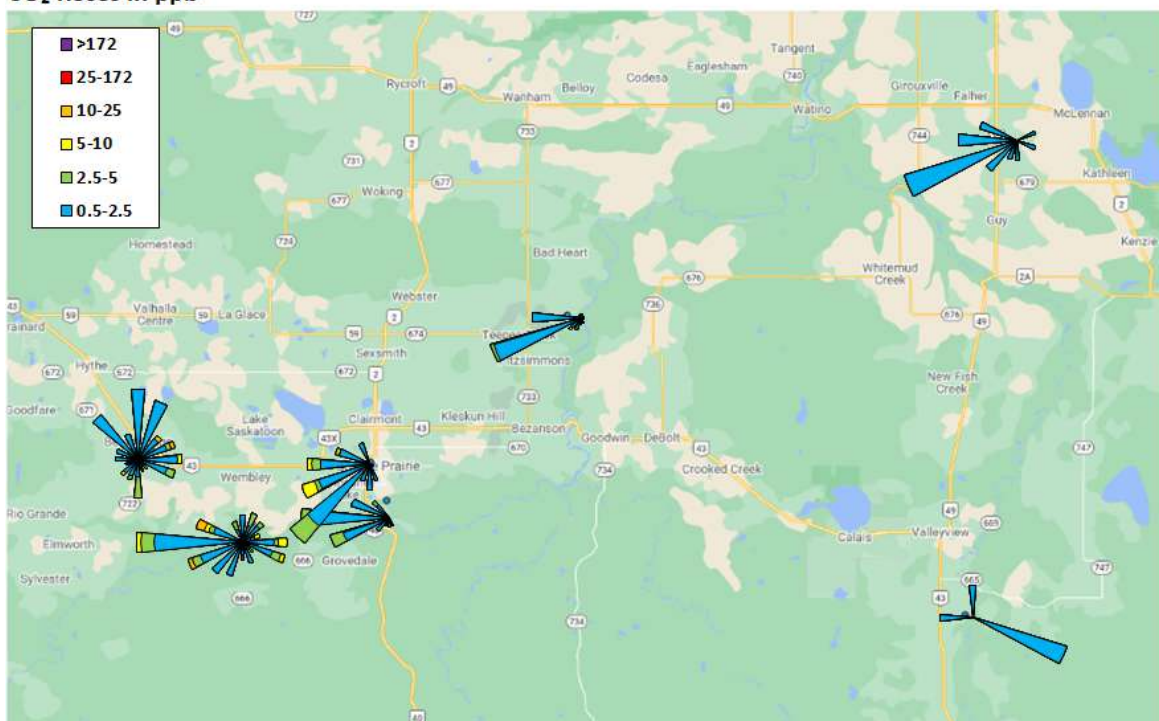
August 2021 SO ₂ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park SO ₂	0.2	4.9
Henry Pirkers SO ₂	0.2	12.4
Smoky Heights SO ₂	0.2	9.8
Beaverlodge SO ₂	0.3	14.7
Valleyview SO ₂	0.1	1.0
Donnelly SO ₂	0.1	2.3
Wembley SO ₂	0.5	26.6



Sulphur Dioxide in ppb

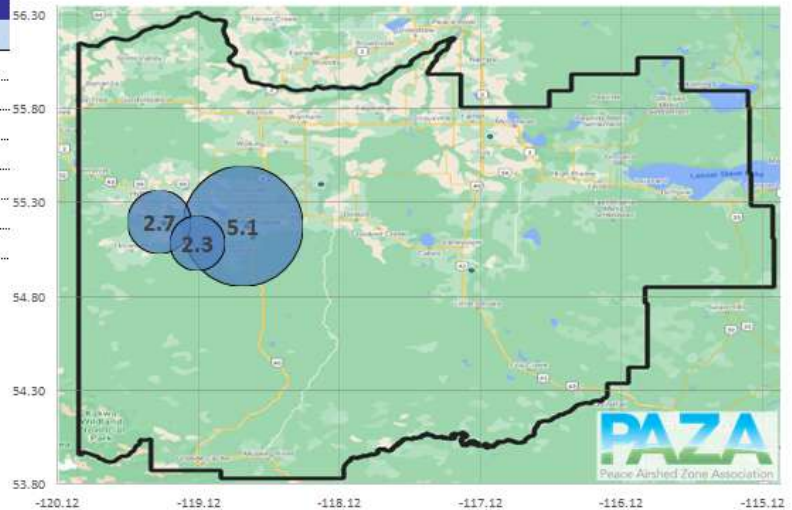


SO₂ Roses in ppb

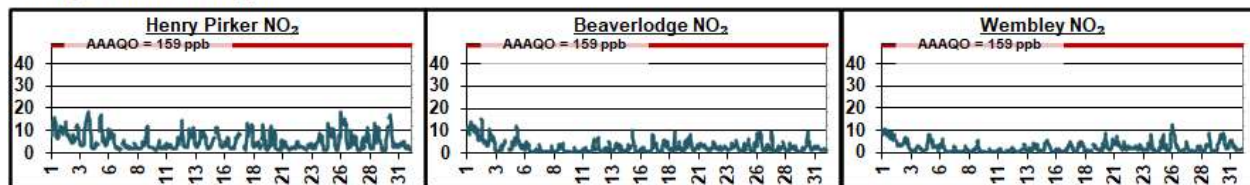


9.4 Nitrogen Dioxide (NO₂) Plots

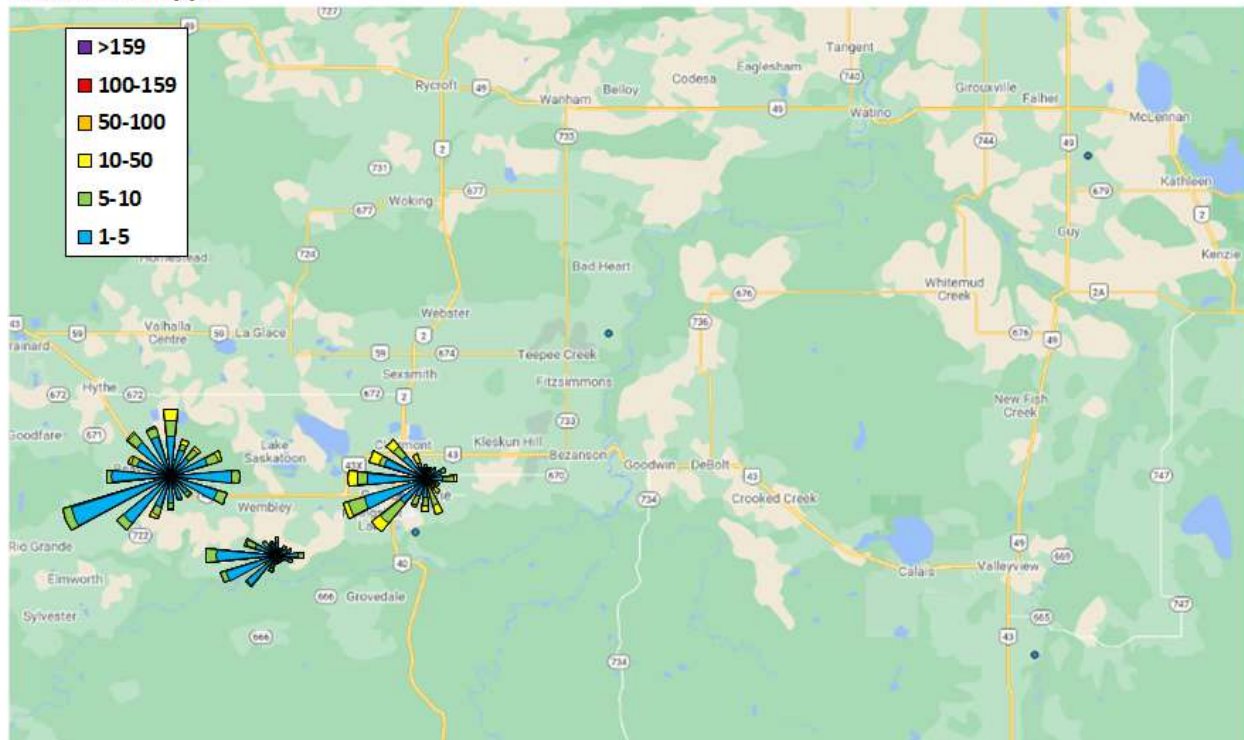
August 2021 NO ₂ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park NO ₂	-	-
Henry Pirker NO ₂	5.1	18.5
Smoky Heights NO ₂	-	-
Beaverlodge NO ₂	2.7	15.5
Valleyview NO ₂	-	-
Donnelly NO ₂	-	-
Wembley NO ₂	2.3	12.8



Nitrogen Dioxide in ppb

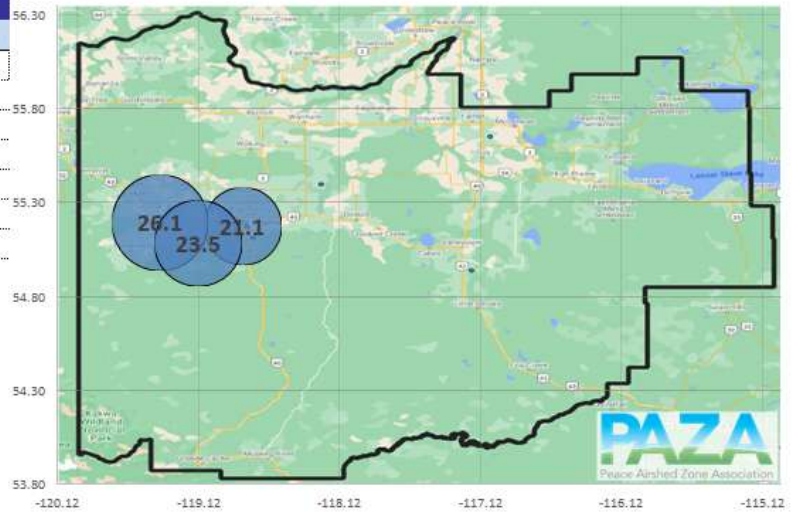


NO₂ Roses in ppb

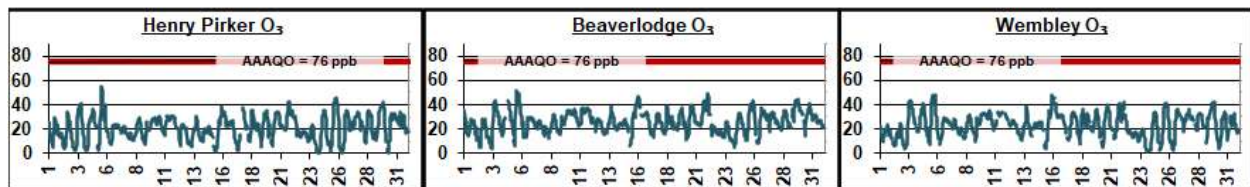


9.5 Ozone (O₃) Plots

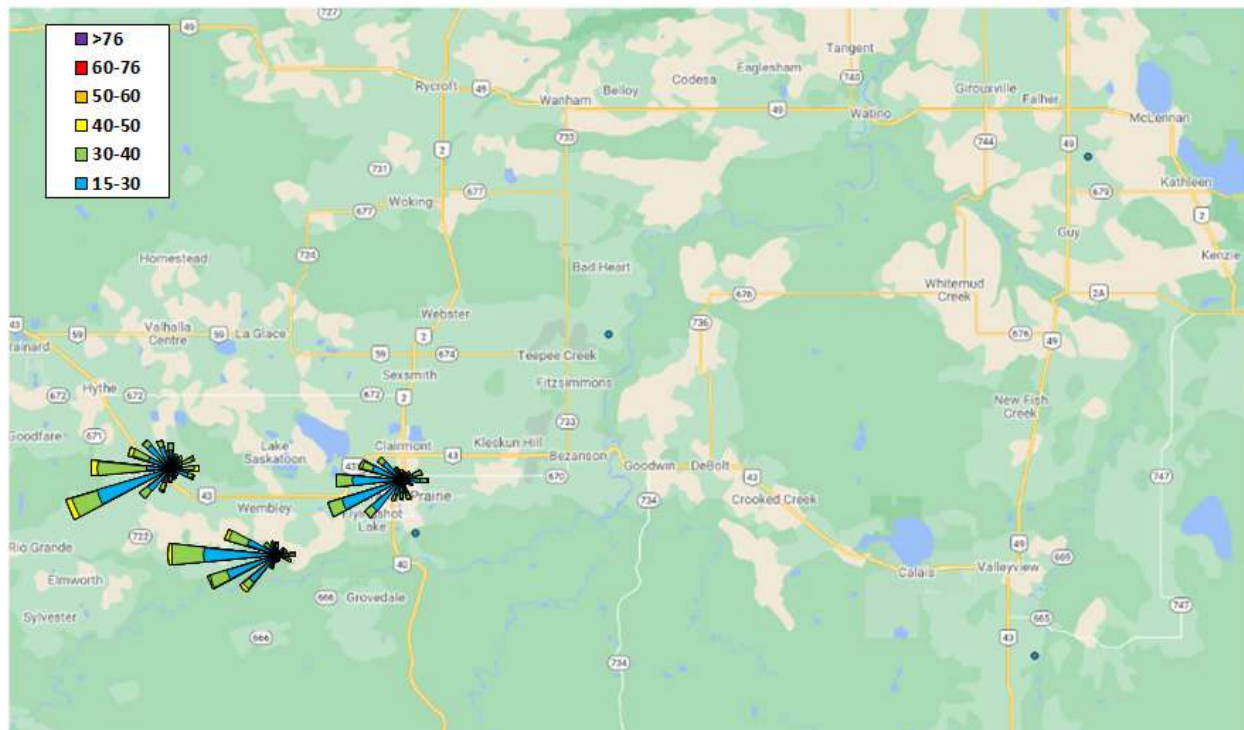
August 2021 O ₃ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park O ₃	-	-
Henry Pirker O ₃	21.1	55.8
Smoky Heights O ₃	-	-
Beaverlodge O ₃	26.1	51.8
Valleyview O ₃	-	-
Donnelly O ₃	-	-
Wembley O ₃	23.5	48.4



Ozone in ppb



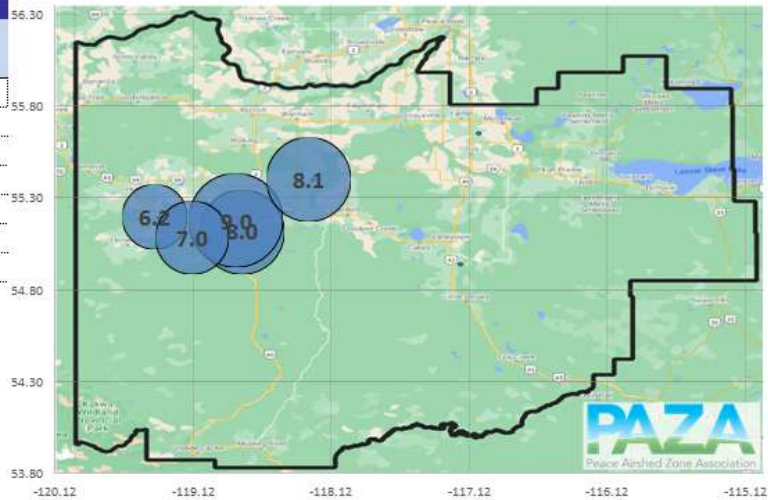
O₃ Roses in ppb



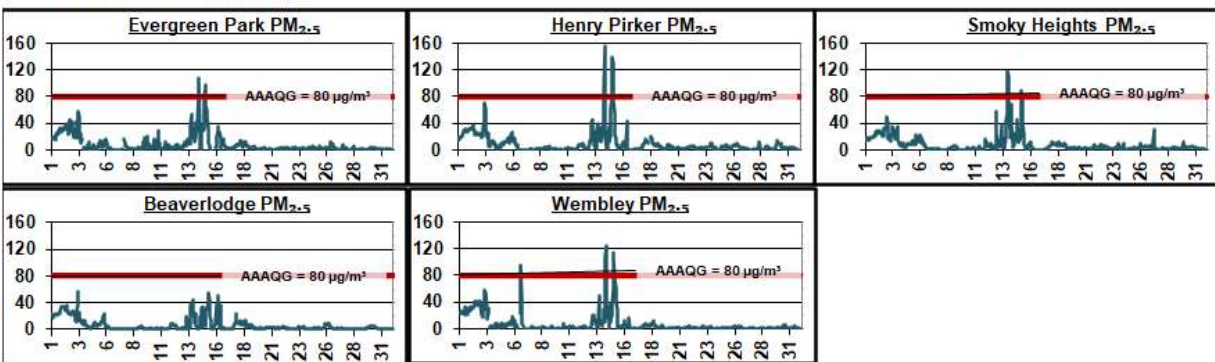
9.6 Fine Particulate Matter (PM_{2.5}) Plots

August 2021 PM_{2.5} Station Summary

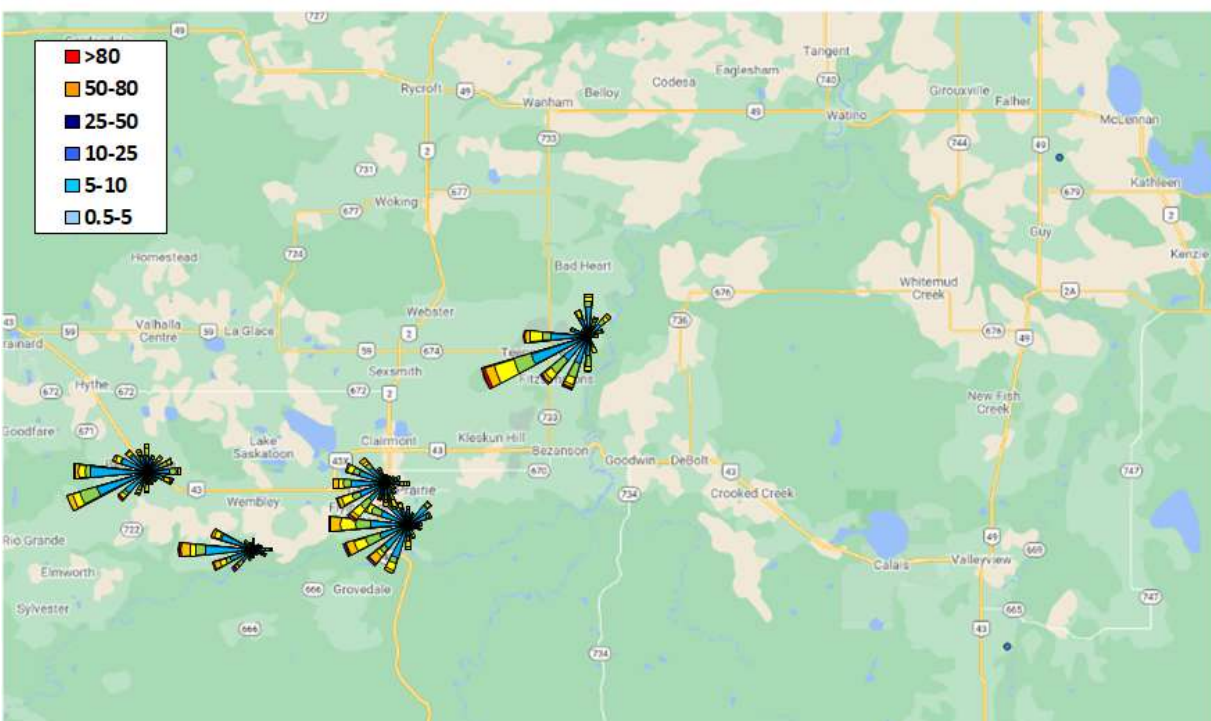
Station	Avg µg/m ³	Max µg/m ³
Evergreen Park PM _{2.5}	8.0	108.4
Henry Pirker PM _{2.5}	9.0	155.2
Smoky Heights PM _{2.5}	8.1	118.9
Beaverlodge PM _{2.5}	6.2	56.0
Valleyview PM _{2.5}	-	-
Donnelly PM _{2.5}	-	-
Wembley PM _{2.5}	7.0	123.5



Fine Particulate Matter in µg/m³



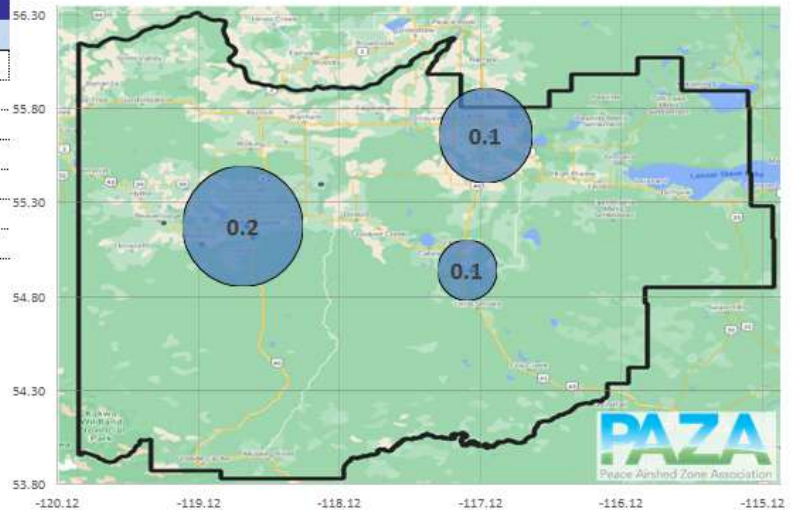
PM_{2.5} Roses in µg/m³



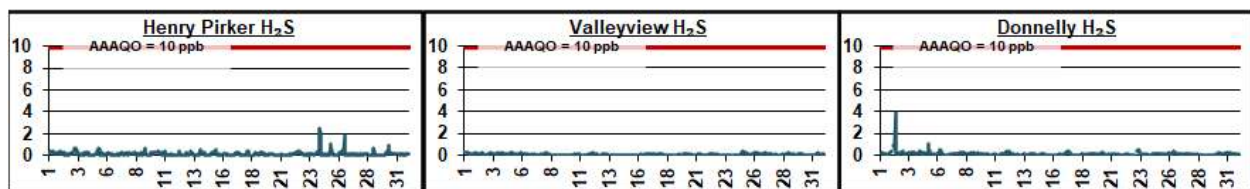
9.7 Hydrogen Sulphide (H₂S) Plots

August 2021 H₂S Station Summary

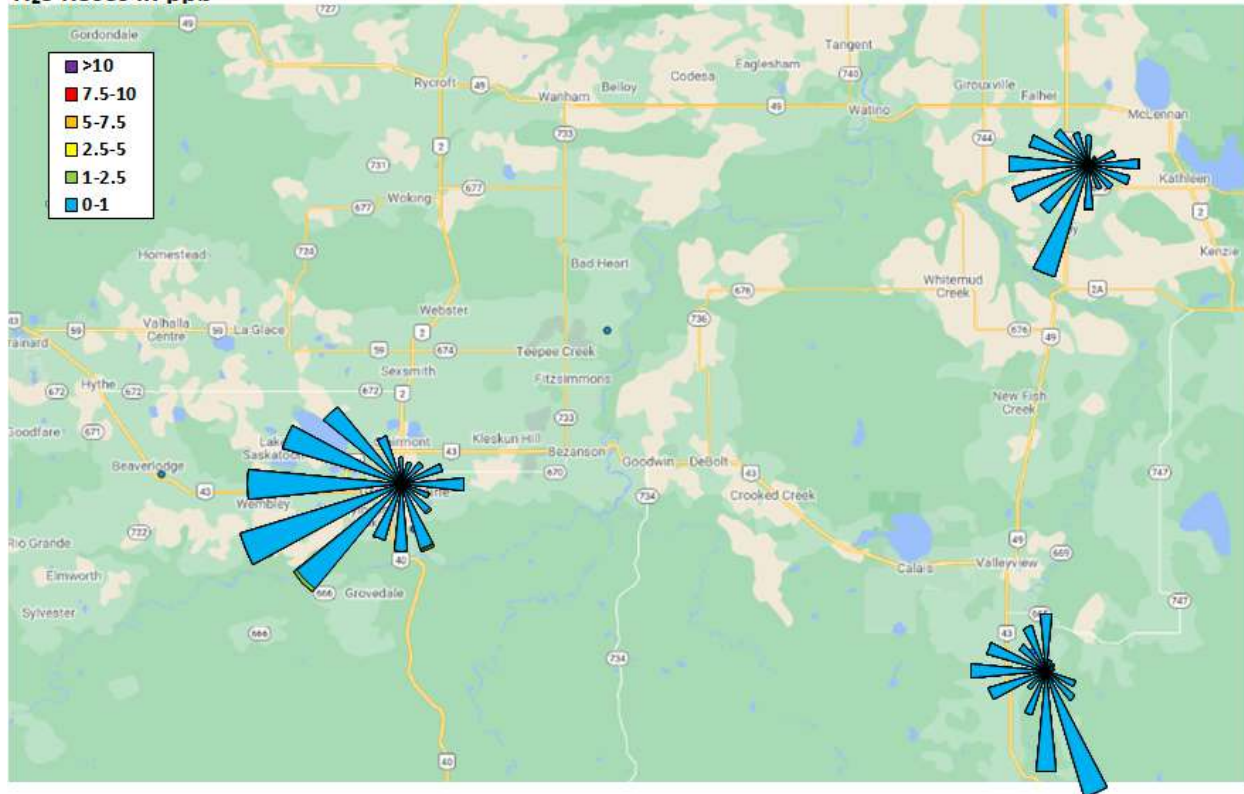
Station	Avg (ppb)	Max (ppb)
Evergreen Park H ₂ S	-	-
Henry Pirker H ₂ S	0.2	2.5
Smoky Heights H ₂ S	-	-
Beaverlodge H ₂ S	-	-
Valleyview H ₂ S	0.1	0.4
Donnelly H ₂ S	0.1	3.9
Wembley H ₂ S	-	-



Hydrogen Sulphide in ppb

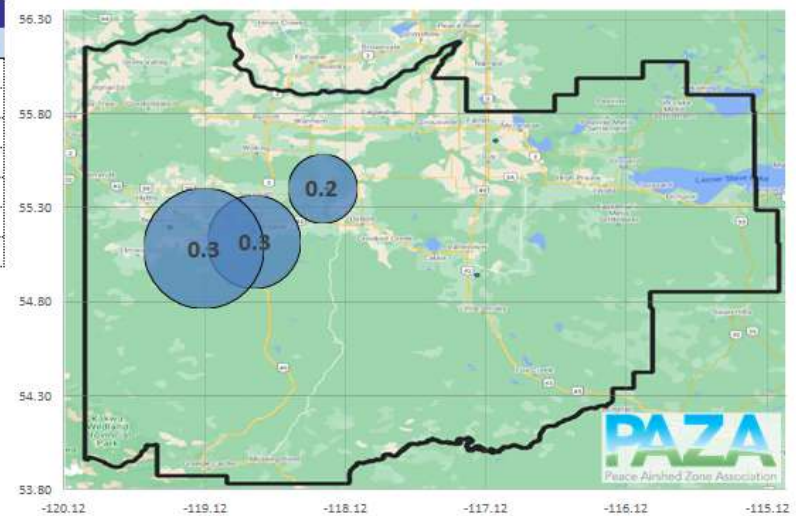


H₂S Roses in ppb

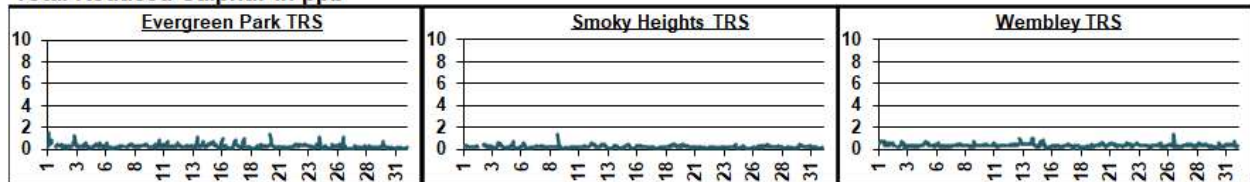


9.8 Total Reduced Sulphur (TRS) Plots

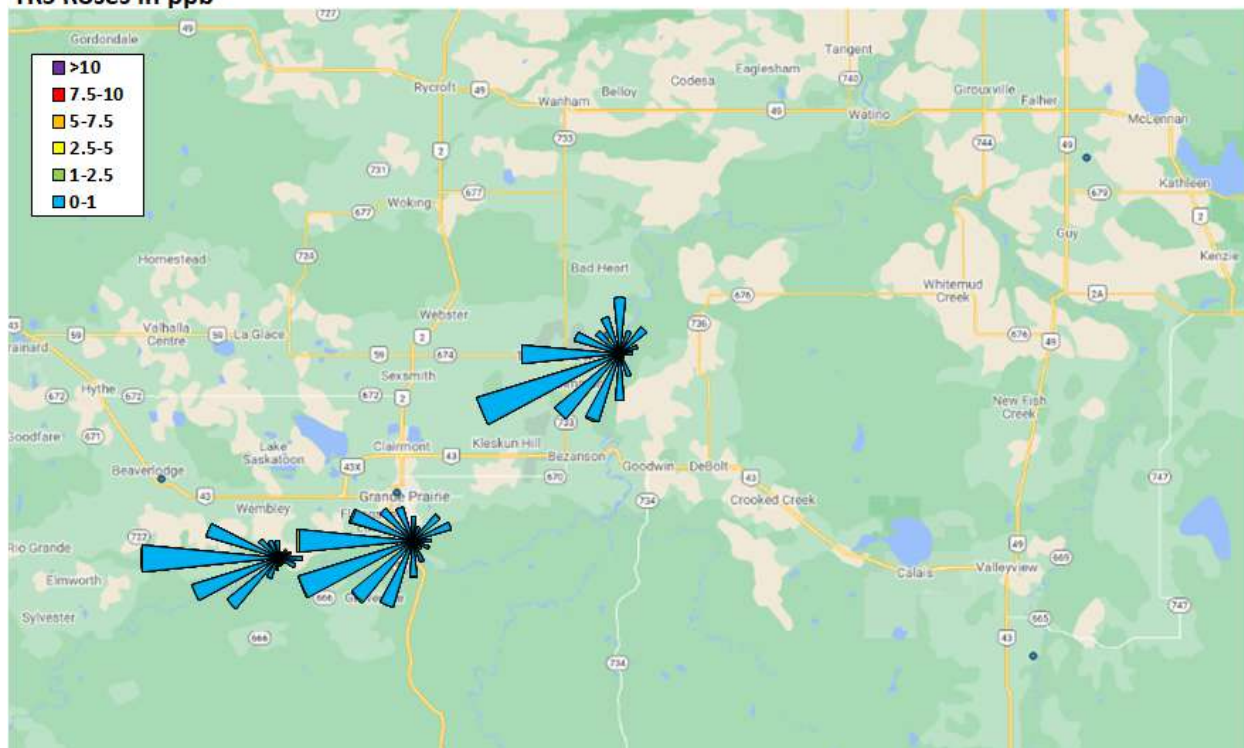
August 2021 TRS Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park TRS	0.3	1.5
Henry Pirkner TRS	-	-
Smoky Heights TRS	0.2	1.3
Beaverlodge TRS	-	-
Valleyview TRS	-	-
Donnelly TRS	-	-
Wembley TRS	0.3	1.4



Total Reduced Sulphur in ppb



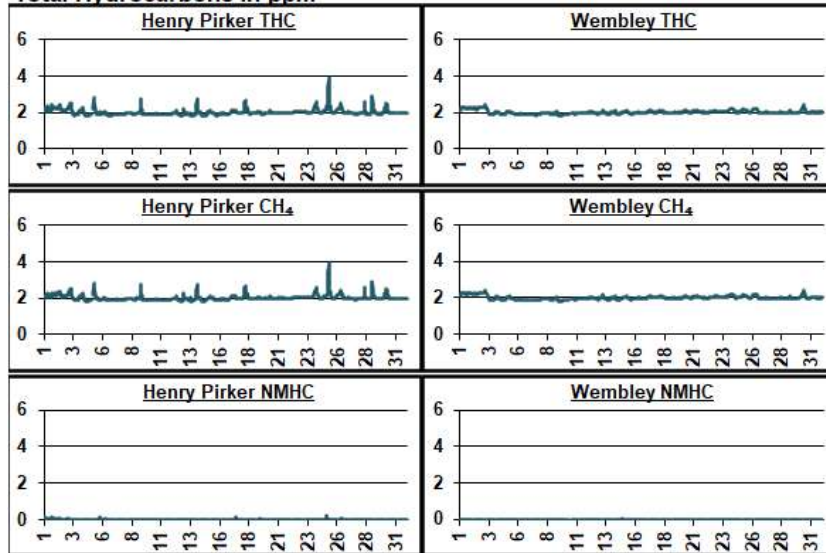
TRS Roses in ppb



9.9 Total Hydrocarbon (THC) Plots

August 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	2.0	3.9	3.9	3.9	0.2	0.2
Smoky Heights THC	-	-	-	-	-	-
Beaverlodge THC	-	-	-	-	-	-
Valleyview THC	-	-	-	-	-	-
Donnelly THC	-	-	-	-	-	-
Wembley THC	2.0	2.5	2.4	2.4	0.0	0.0

Total Hydrocarbons in ppm

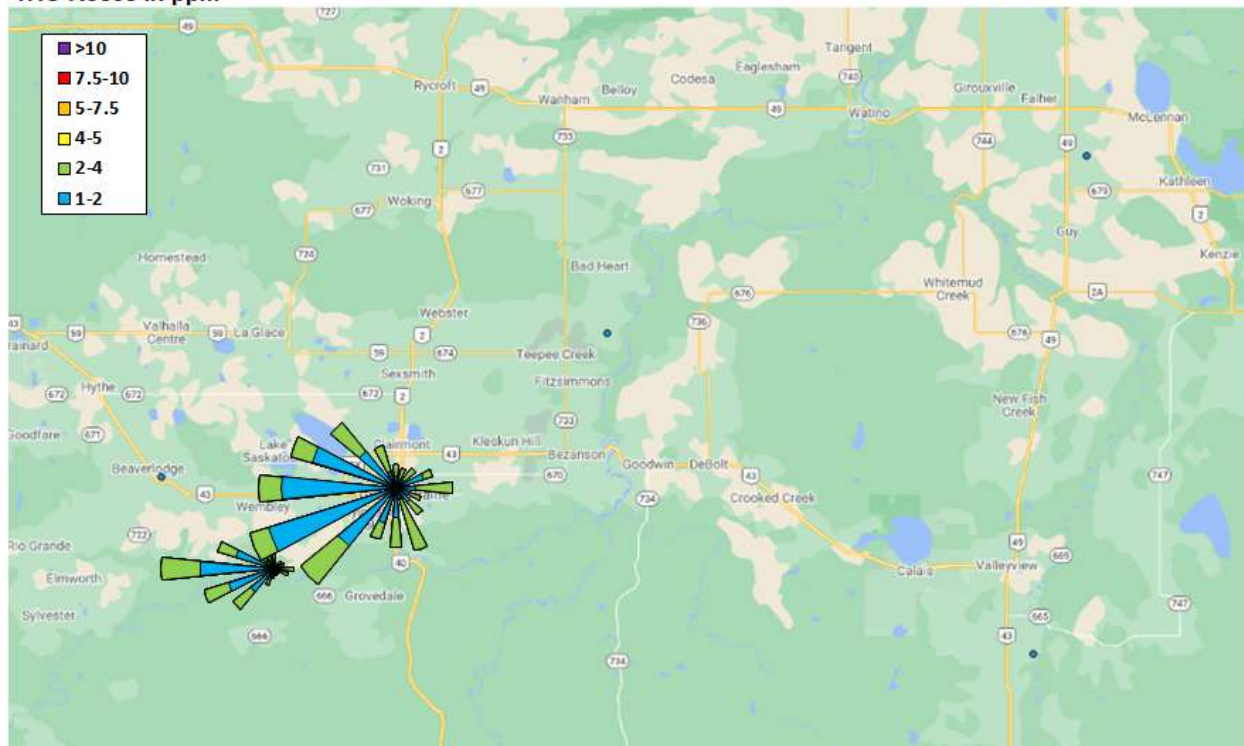


Total Hydrocarbons (THC)

Methane (CH₄)

Non-Methane Hydrocarbons (NMHC)

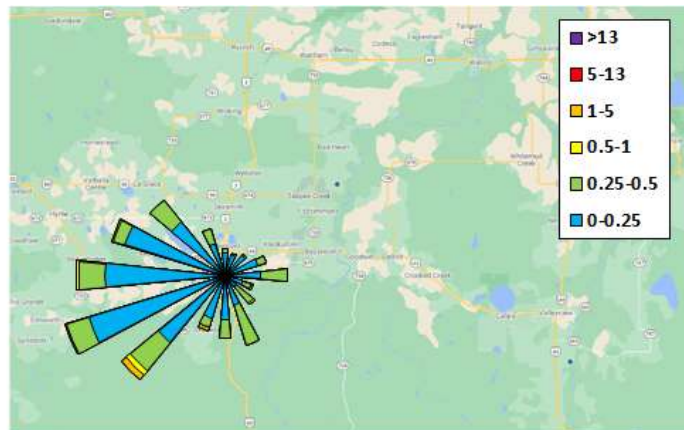
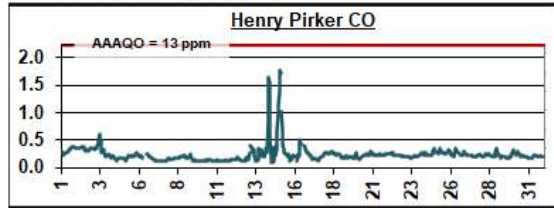
THC Roses in ppm



9.10 Carbon Monoxide (CO) Plots

August 2021 CO Station Summary		
Station	Avg (ppm)	Max (ppm)
Henry Pirkner CO	0.24	1.79

Carbon Monoxide in ppm



9.11 Meteorology Summary

August 2021 Meteorological Summary						
Station	Temp (°C)	RH (%)	SR (W/m ²)	WS (km/hr)	WD (deg)	WD
Evergreen Park	15.8	66.4	-	3.8	267.1	W
Henry Pirkner	16.9	60.0	133.1	7.9	263	W
Smoky Heights	15.8	-	-	13.3	257	WSW
Beaverlodge	15.8	63.5	-	12.3	269	W
Valleyview	15.7	75.2	-	3.9	269	W
Donnelly	16.4	-	-	11.8	246	WSW
Wembley	16.0	-	-	7.6	272	W

Temp (°C) Outside Temperature

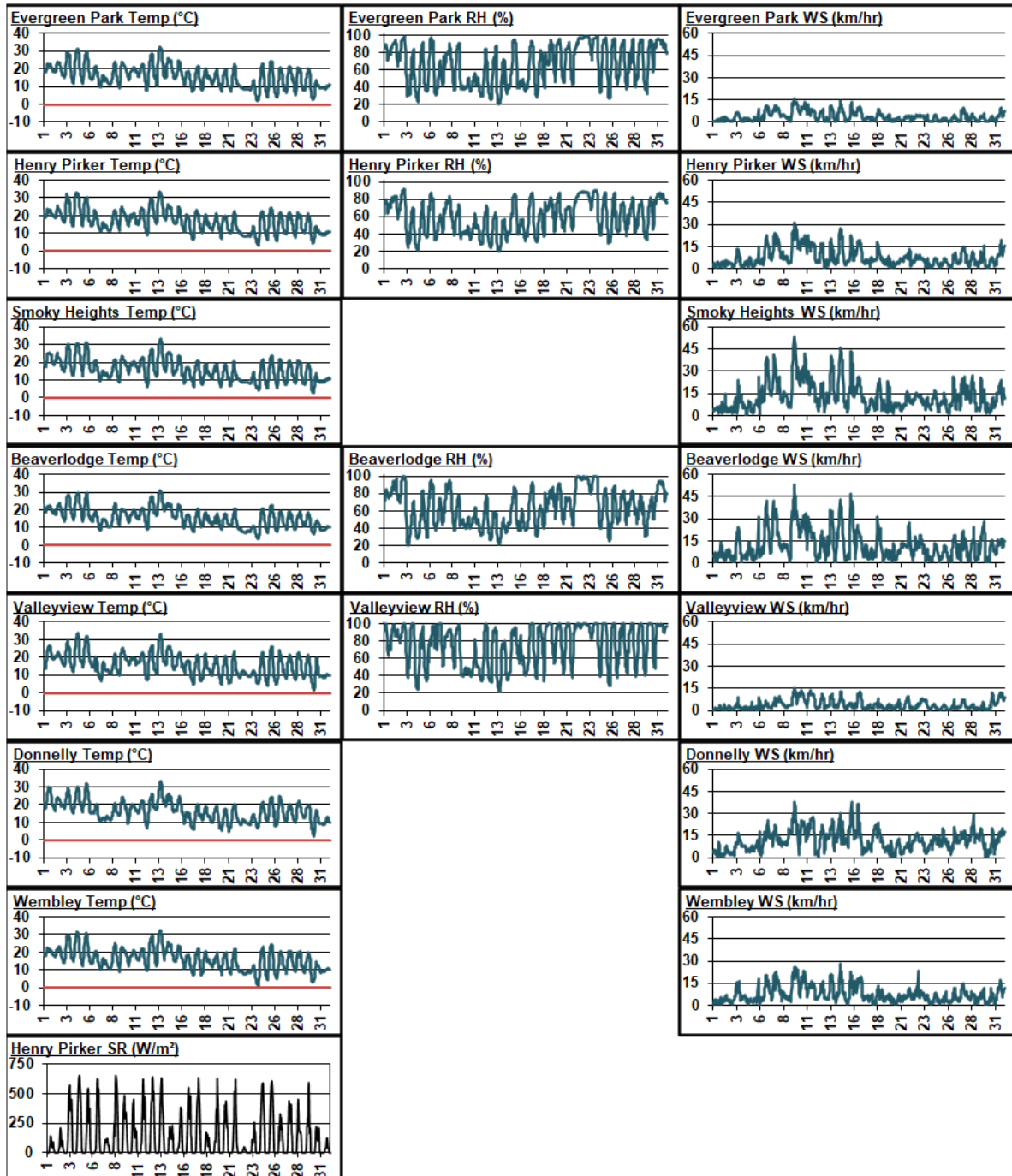
RH (%) Relative Humidity

SR (W/m²) Solar Radiation

WS (km/hr) Wind Speed

WD (deg) Wind Direction

WD Wind Direction



10 Passive Monitoring Data

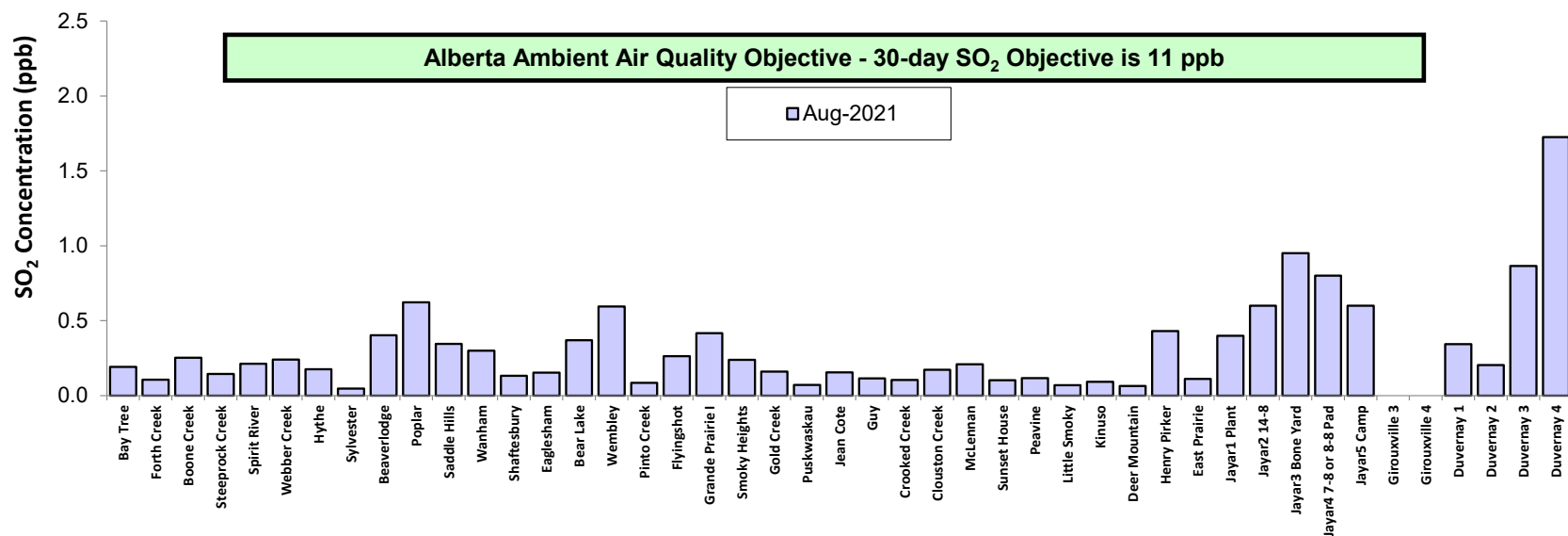
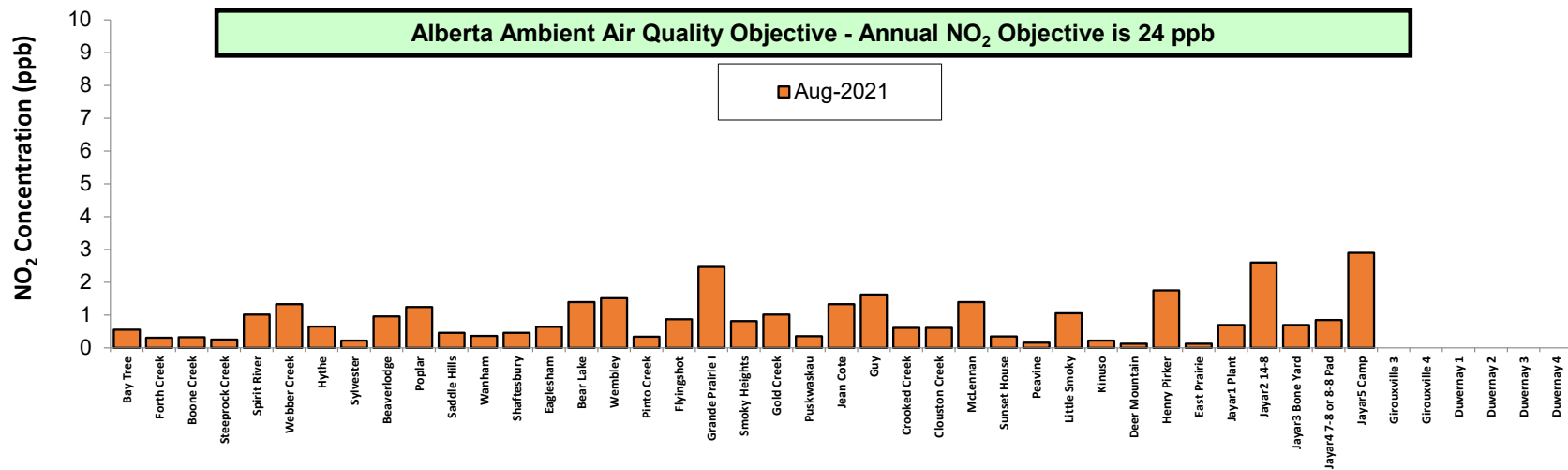
Peace Airshed Zone Association - PAZA Passive Stations for August 2021

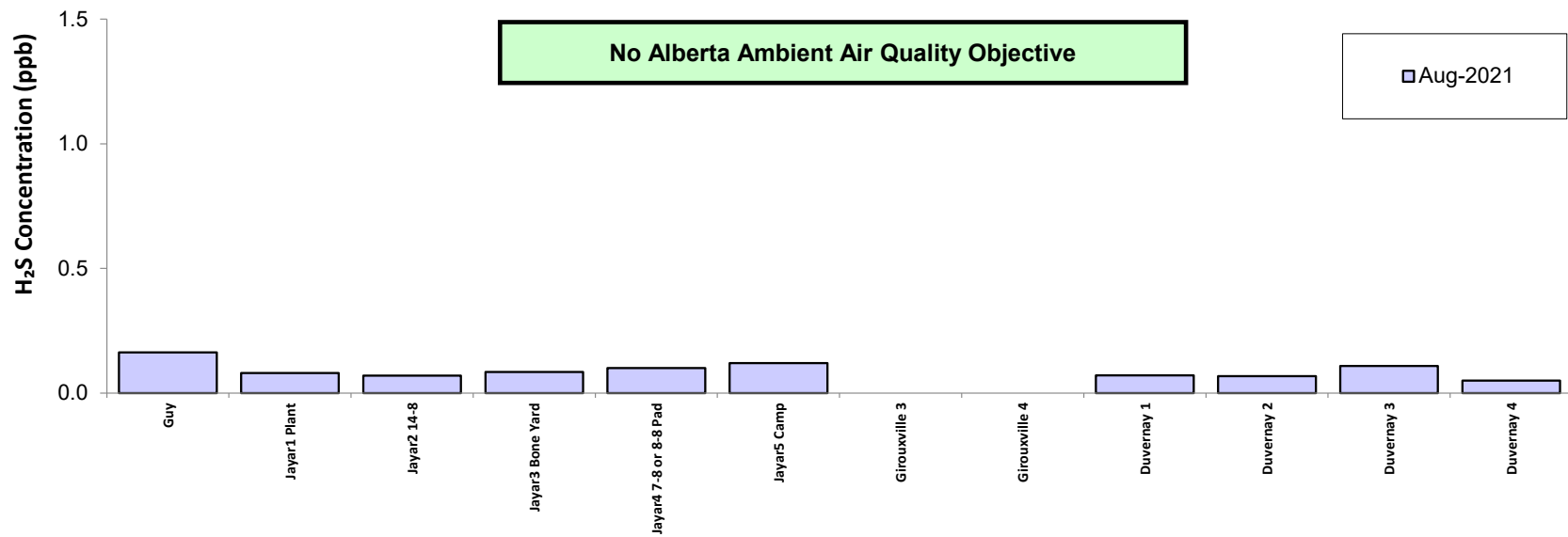
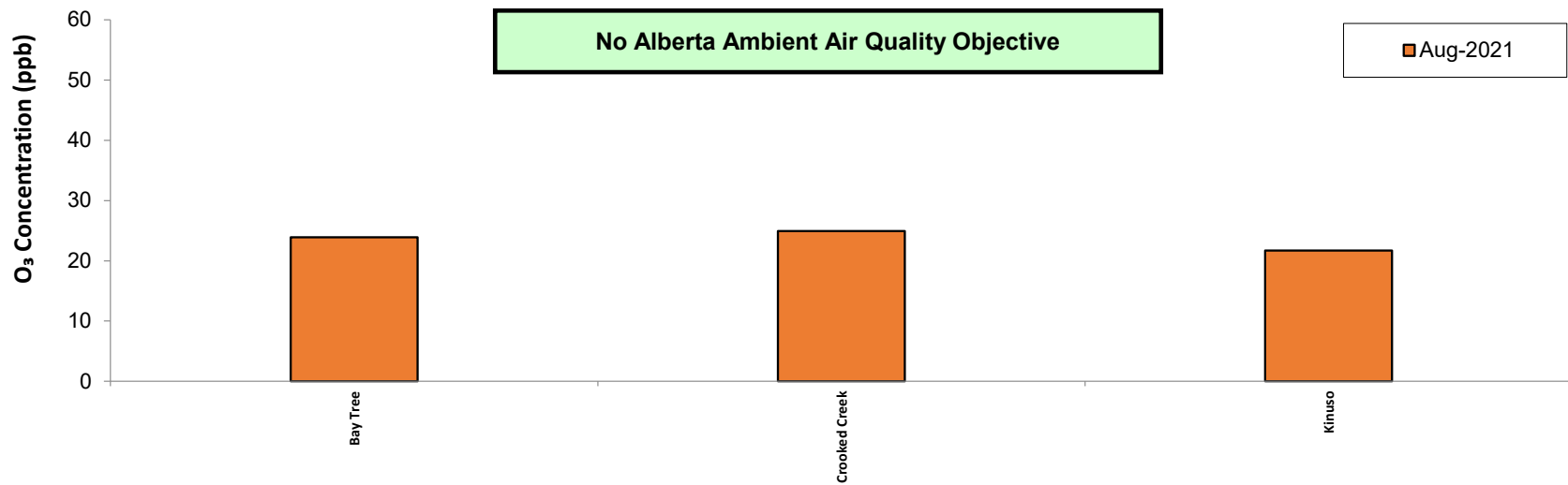
Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
Duplicates						
2a	Bay Tree		25.2			
2b	Bay Tree		22.6			
3a	Forth Creek	0.1				
3b	Forth Creek	0.1				
5a	Boone Creek			0.3		
5b	Boone Creek			0.3		
7a	Steeprock Creek			0.3		
7b	Steeprock Creek			0.2		
17a	Poplar	0.6				
17b	Poplar	0.6				
18a	Saddle Hills					
18b	Saddle Hills					
27a	Grande Prairie I	0.4				
27b	Grande Prairie I	0.4				
37a	Crooked Creek			0.5		
37b	Crooked Creek			0.7		
47a	Kinuso	0.1				
47b	Kinuso	0.1				
50a	East Prairie			0.1		
50b	East Prairie			0.1		
D4a	Duvernay 4	1.4			0.1	
D4b	Duvernay 4	2.0			0.1	
J4a	7-8 or 8-8 Pad			1.0		
J4b	7-8 or 8-8 Pad			0.7		
J3a	Bone Yard	0.9			0.1	
J3b	Bone Yard	1.0			0.1	

2	Bay Tree	0.2	23.9	0.6	-	13-16-078-13 W6M
3	Forth Creek	0.1	-	0.3	-	04-13-082-07 W6M
5	Boone Creek	0.3	-	0.3	-	01-23-076-11 W6M
7	Steeprock Creek	0.1	-	0.3	-	09-35-072-13 W6M
9	Spirit River	0.2	-	1.0	-	08-12-079-07 W6M
11	Webber Creek	0.2	-	1.3	-	09-36-074-09 W6M
12	Hythe	0.2	-	0.7	-	14-36-072-11 W6M
14	Sylvester	0.0	-	0.2	-	08-06-069-12 W6M
16	Beaverlodge	0.4	-	1.0	-	15-36-071-10 W6M
17	Poplar	0.6	-	1.2	-	13-06-073-08 W6M
18	Saddle Hills	0.3	-	0.5	-	04-25-074-07 W6M
19	Wanham	0.3	-	0.4	-	16-22-077-03 W6M
20	Shaftesbury	0.1	-	0.5	-	04-03-082-23 W5M
21	Eaglesham	0.2	-	0.6	-	16-21-079-25 W5M
23	Bear Lake	0.4	-	1.4	-	15-31-072-06 W6M
24	Wembley	0.6	-	1.5	-	12-31-070-08 W6M
25	Pinto Creek	0.1	-	0.3	-	04-24-069-11 W6M
26	Flyingshot	0.3	-	0.9	-	15-36-070-07 W6M
27	Grande Prairie I	0.4	-	2.5	-	08-15-071-06 W6M
29	Smoky Heights	0.2	-	0.8	-	04-06-075-02 W6M
32	Gold Creek	0.2	-	1.0	-	06-33-067-05 W6M
34	Puskwaskau	0.1	-	0.4	-	15-35-074-25 W5M
35	Jean Cote	0.2	-	1.3	-	12-35-079-21 W5M
36	Guy	0.1	-	1.6	0.2	03-04-076-22 W5M
37	Crooked Creek	0.1	24.9	0.6	-	16-01-071-26 W5M
39	Clouston Creek	0.2	-	0.6	-	12-01-073-22 W5M
40	McLennan	0.2	-	1.4	-	03-29-077-19 W5M
42	Sunset House	0.1	-	0.3	-	05-32-070-19 W5M
44	Peavine	0.1	-	0.2	-	03-05-079-15 W5M
46	Little Smoky	0.1	-	1.1	-	12-01-065-21 W5M
47	Kinuso	0.1	21.7	0.2	-	12-10-073-10 W5M
48	Deer Mountain	0.1	-	0.1	-	15-22-068-09 W5M
49	Henry Pirker	0.4	-	1.8	-	17-26-071-06 W6M
50	East Prairie	0.1	-	0.1	-	11-13-079-08 W6M
57	Jayar1 Plant	0.4	-	0.7	0.1	06-08-062-03 W6M
58	Jayar2 14-8	0.6	-	2.6	0.1	07-08-062-03 W6M
59	Jayar3 Bone Yard	1.0	-	0.7	0.1	14-08-062-03 W6M
60	Jayar4 7-8 or 8-8 Pad	0.8	-	0.9	0.1	10-08-062-03 W6M
61	Jayar5 Camp	0.6	-	2.9	0.1	11-08-062-03 W6M
G3	Girouxville 3	-	-	-	-	14-02-077-23 W5M
G4	Girouxville 4	-	-	-	-	04-08-077-22 W5M
D1	Duvernay 1	0.3	-	-	0.1	
D2	Duvernay 2	0.2	-	-	0.1	
D3	Duvernay 3	0.9	-	-	0.1	
D4	Duvernay 4	1.7	-	-	0.1	

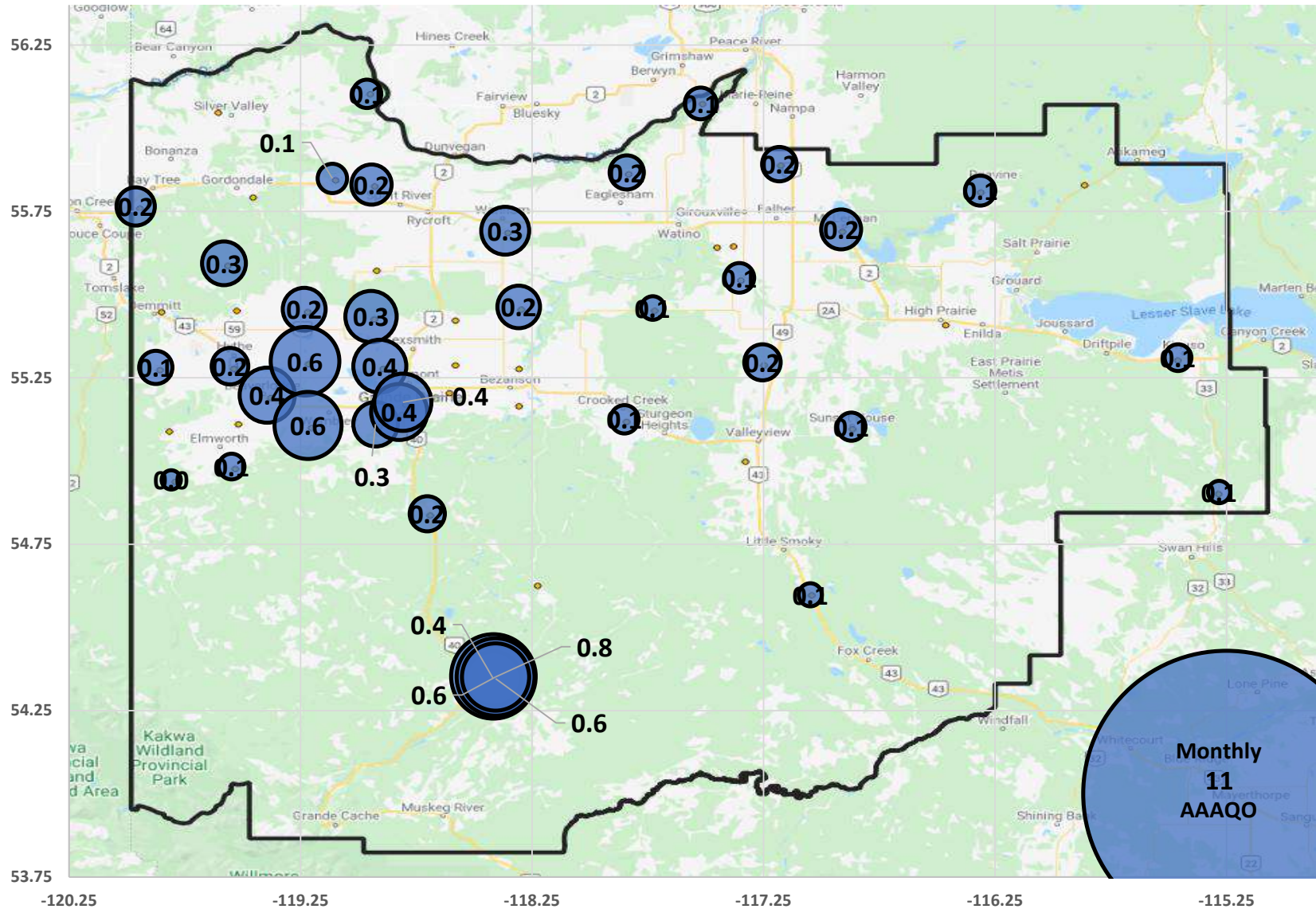
Passive Summary for August 2021

Stats	Sulphur Dioxide SO ₂	Ozone O ₃	Nitrogen Dioxide NO ₂	Hydrogen Sulphide H ₂ S
	ppb	ppb	ppb	ppb
Passive Summary for August 2021 (PAZA)				
Mean	0.3	23.5	0.9	0.1
Standard Deviation	0.2	1.7	0.7	0.0
Minimum	0.0	21.7	0.1	0.1
Maximum	Sylvester (#14)	Kinuso (#47)	Deer Mountain (#48)	Jayar2 14-8 (#58)
	1.0	24.9	2.9	0.2
	Jayar3 Bone Yard (#59)	Crooked Creek (#37)	Jayar5 Camp (#61)	Guy (#36)
Continuous and Passive Monitoring Comparison				
PAZA Beaverlodge Station	0.3	26.1	15.5	-
Beaverlodge Passive (#16)	0.4	-	1.0	-
PAZA Henry Pirker Station	0.2	21.1	18.5	0.2
Henry Pirker passive (#49)	0.4	-	1.8	-

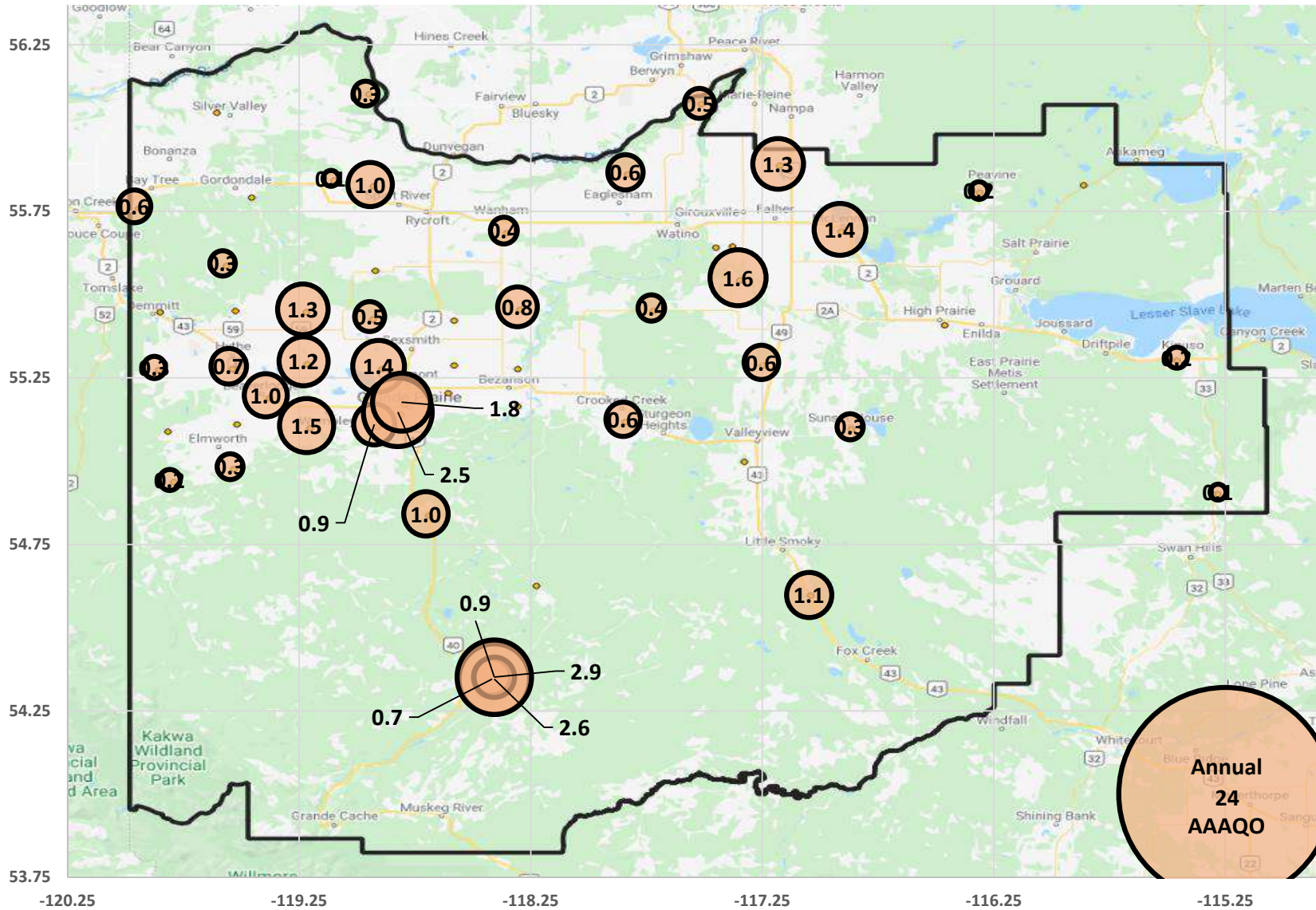




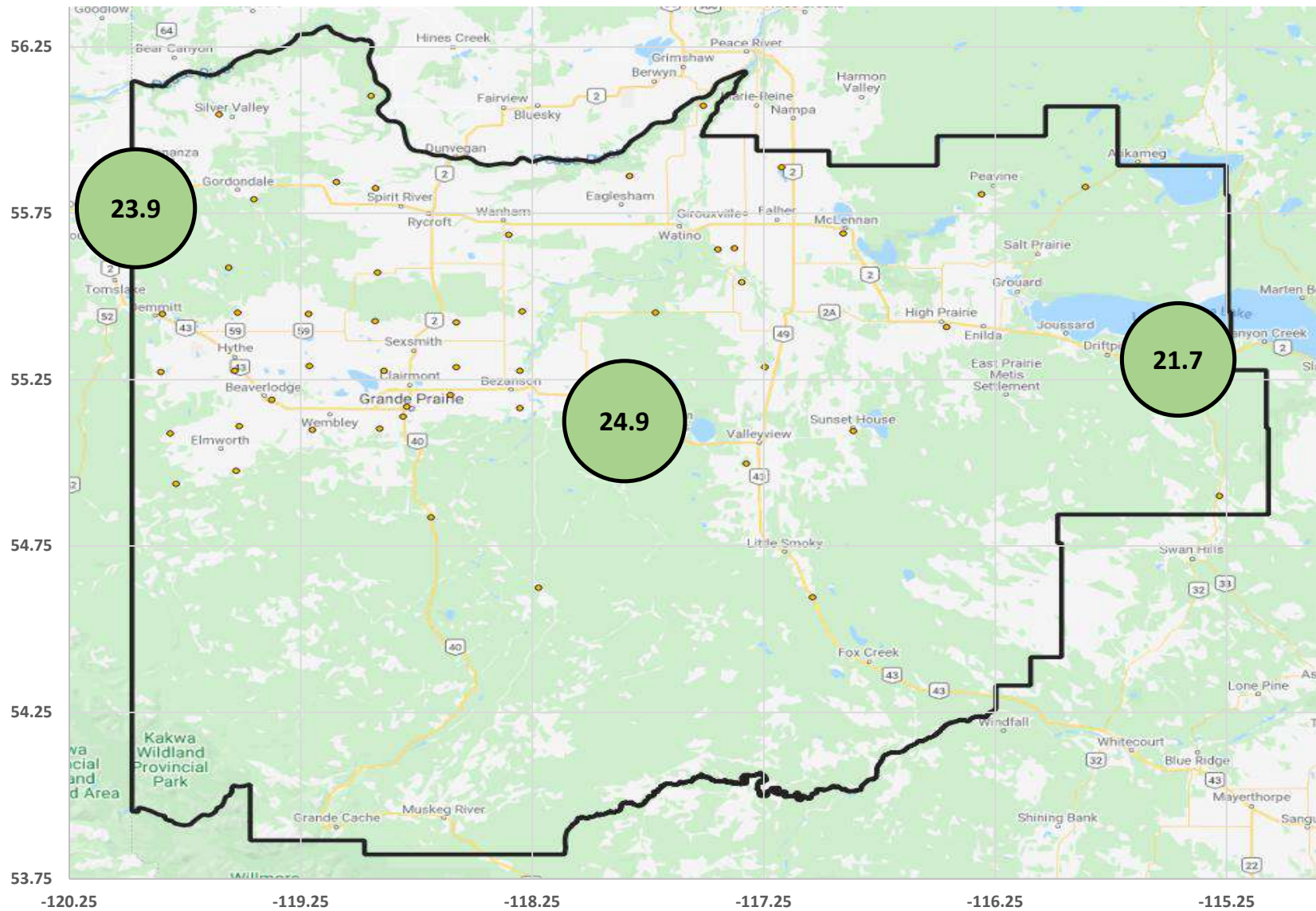
SO₂ Monthly Average (units in ppb)



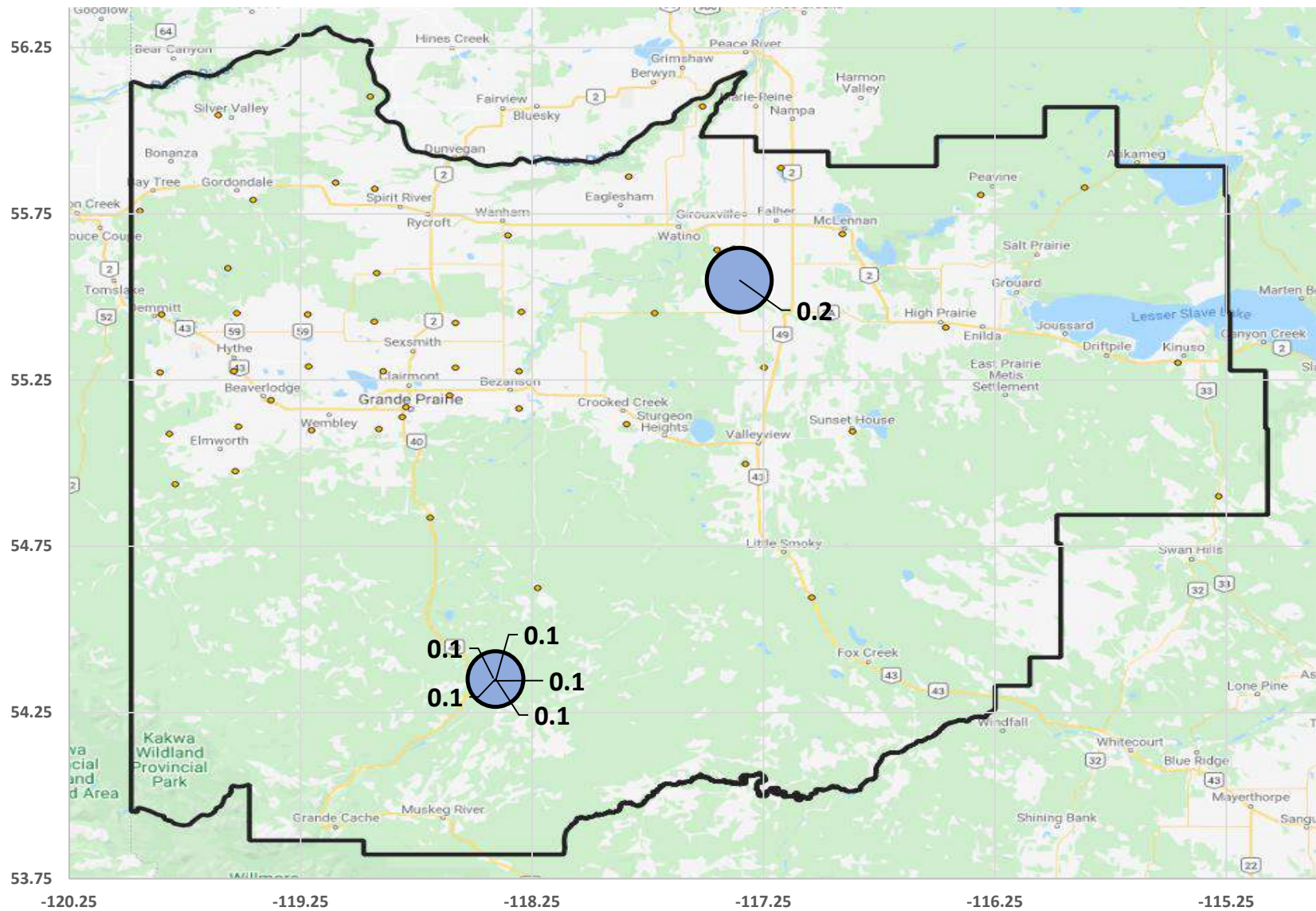
NO₂ Monthly Average (units in ppb)



O₃ Monthly Average (units in ppb)



H₂S Monthly Average (units in ppb)



End of Report



Peace Airshed Zone Association

Ambient Air Monitoring Report

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