



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

July 2020

August 31, 2020

Alberta Environment and Parks

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

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

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

Table A. PAZA members with Facility Operating Approvals

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

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

There were no exceedances of the AAAQO or AAAQG in July 2020

Operational times less than 90 percent:

The HC analyzer at Henry Pirker station had operational issues that resulted in the HC analyzer having an **operational time** less than 90% for THC/CH₄/NMHC in July 2020, this was reported to AEP under reference number 370894. There were no **valid times** less than 75% in July 2020.

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 eight duplicate sites sampled in the month of July with RPD all less than 50% except two NO₂ and one SO₂ duplicate (results 0.1 to 0.3ppb)
 - For sulphur dioxide duplicates at Woking, Sylvester, and Kinuso stations
 - For ozone duplicate at Bay Tree station
 - For nitrogen dioxide duplicates at Silver Valley, Steeprock Creek, and East Prairie stations
 - For hydrogen sulphide duplicate at Girouxville 4 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.



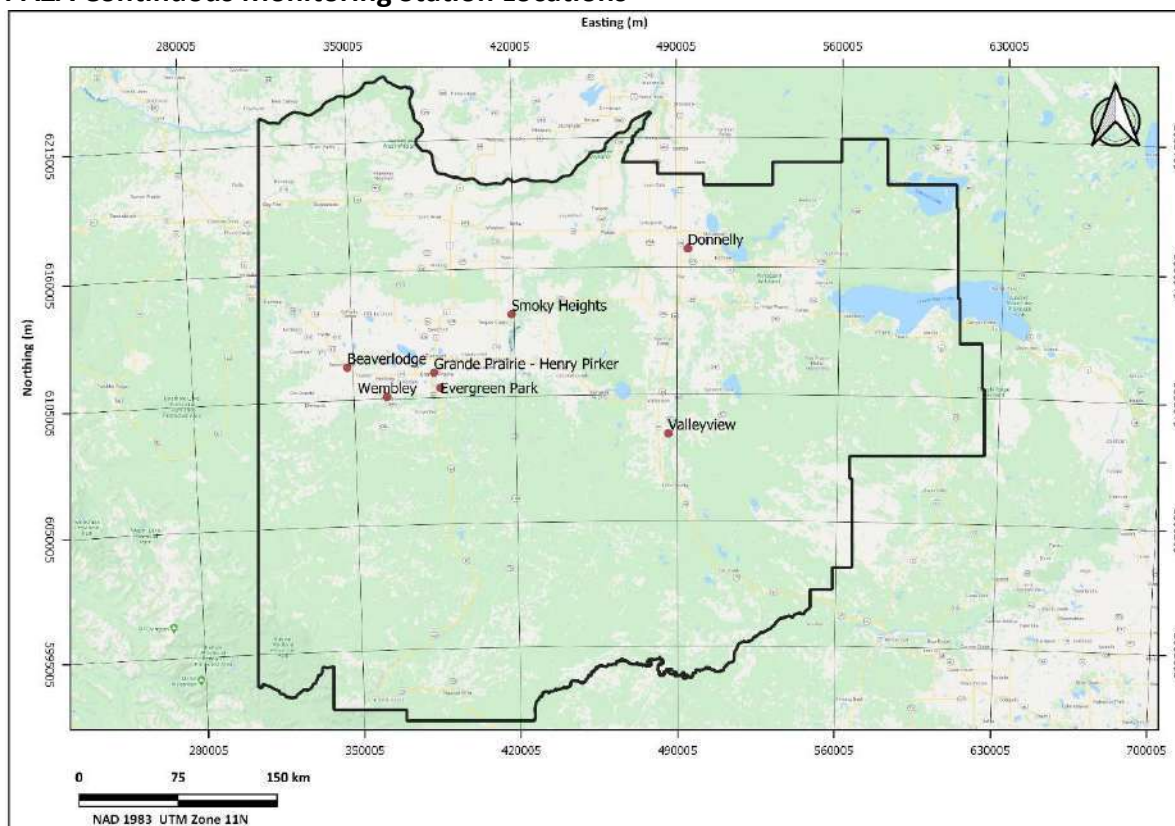
Mandeep Dhaliwal, B.Sc., P.Chem.

Program Manager

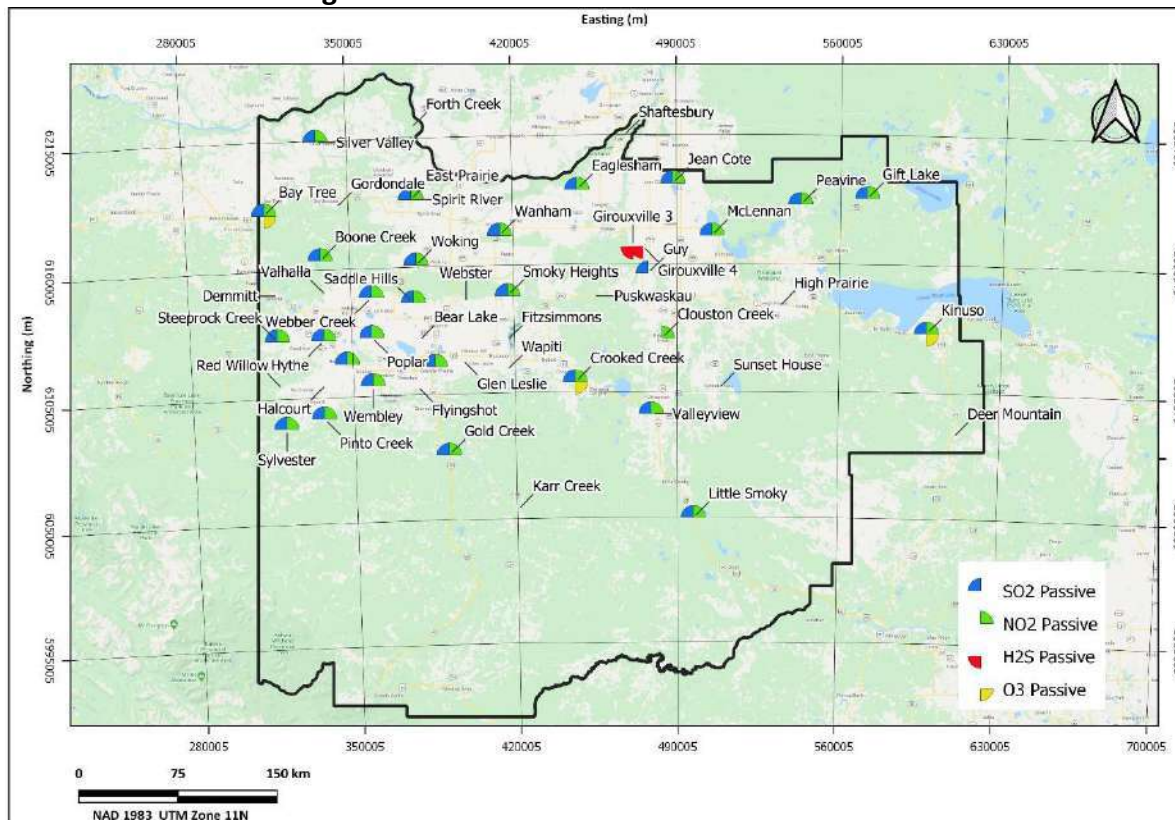
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PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 July 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 - July 2020 Beaverlodge Station Report

Parameter	July			Operational	Max	1-hour		24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
NO (ppb)	0.3	0.0	95.0%	100.0%	5.0	-	Jul-29 06:00	0.6	-	Jul-23	-	-	-	-	Jul 08, 2020
NO ₂ (ppb)	1.4	0.3	95.0%	100.0%	8.6	159	Jul-30 06:00	2.8	-	Jul-30	0	-	-	-	Jul 08, 2020
NO _x (ppb)	1.7	0.2	95.0%	100.0%	13.2	-	Jul-29 06:00	3.2	-	Jul-29	-	-	-	-	Jul 08, 2020
O ₃ (ppb)	19.3	1.2	95.4%	100.0%	42.4	76	Jul-27 17:00	27.9	-	Jul-31	0	-	-	-	Jul 08, 2020
PM _{2.5} (µg/m ³)	3.6	0.5	99.7%	100.0%	15.9	80	Jul-31 22:00	8.9	29	Jul-31	0	-	0	-	Jul 09, 2020
SO ₂ (ppb)	0.1	0.0	95.3%	100.0%	5.7	172	Jul-11 08:00	0.6	48	Jul-11	0	-	0	0	Jul 09, 2020
Temp (°C)	15.9	8.3	100.0%	100.0%	30.7	<div>Note: Valid hours must be greater than 75%</div> <div>Operational hours must be greater than 90%</div>									
RH (%)	69.6	26.7	100.0%	100.0%	100.0										
WS (km/hr)	11.5	0.3	100.0%	100.0%	35.2										
WD (deg)	270	0.0	100.0%	100.0%	359.0										
										Average Wind Direction		270	W		

Update Summary:

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

1.2 Evergreen Park Air Monitoring Station

PAZA - July 2020 Evergreen Park Station Report

Parameter	July			Operational	Max	1-hour		24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
PM _{2.5} (µg/m ³)	3.1	0.0	99.7%	100.0%	27.4	80	Jul-15 18:00	6.2	29	Jul-27	0	-	0	-	Jul-03-2020
SO ₂ (ppb)	0.2	0.0	95.4%	100.0%	10.1	172	Jul-28 10:00	1.1	48	Jul-28	0	-	0	0	Jul-03-2020
TRS (ppb)	0.4	0.0	95.3%	100.0%	1.8	-	Jul-31 06:00	0.8	-	Jul-26	-	-	-	-	Jul-03-2020
Temp (°C)	16.7	7.0	100.0%	100.0%	32.5	<div>Note: Valid hours must be greater than 75%</div> <div>Operational hours must be greater than 90%</div>									
RH (%)	68.9	26.0	100.0%	100.0%	98.6										
WS (km/hr)	4.3	0.0	100.0%	100.0%	13.1										
WD (deg)	255	2.0	100.0%	100.0%	354.7										
										Average Wind Direction		255	WSW		

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted during the month
SO ₂	TECO	43i	No Operational issues noted during the month
TRS	TECO	43C	No Operational issues noted during the month
Met Equip	GI/Young	MetPak/RMY86004	No Operational issues noted during the month

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - July 2020 Henry Pirker Station Report

Parameter	July			Operational	1-hour			8-hour / 24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid		Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	0.5	0.0	95.0%	99.9%	8.0	-	Jul-22 08:00	1.5	-	Jul-27	-	-	-	-	Jul 28, 2020
NO ₂ (ppb)	2.9	0.4	95.0%	99.9%	15.4	159	Jul-22 23:00	5.7	-	Jul-27	0	-	-	-	Jul 28, 2020
NO _x (ppb)	3.5	0.4	95.0%	99.9%	17.9	-	Jul-27 06:00	7.3	-	Jul-27	-	-	-	-	Jul 28, 2020
O ₃ (ppb)	20.0	1.1	95.2%	99.9%	62.5	76	Jul-27 14:00	28.0	-	Jul-11	0	-	-	-	Jul 28, 2020
PM _{2.5} (µg/m ³)	3.3	0.3	99.5%	99.9%	18.0	80	Jul-29 23:00	9.2	29	Jul-28	0	-	0	-	Jul 27, 2020
SO ₂ (ppb)	0.1	0.0	94.8%	99.9%	6.5	172	Jul-03 01:00	0.4	48	Jul-03	0	-	0	0	Jul 28, 2020
H ₂ S (ppb)	0.2	0.0	95.2%	99.9%	1.5	10	Jul-23 04:00	0.3	3	Jul-27	0	-	0	-	Jul 29, 2020
CH ₄ (ppm)	2.1	1.9	78.3%	82.7%	5.4	-	Jul-23 02:00	2.1	-	Jul-09	-	-	-	-	Jul 29, 2020
THC (ppm)	2.1	1.9	78.3%	82.7%	5.4	-	Jul-23 02:00	2.1	-	Jul-09	-	-	-	-	Jul 29, 2020
NMHC (ppm)	0.0	0.0	78.3%	82.7%	0.0	-	Jul-04 09:00	0.0	-	Jul-25	-	-	-	-	Jul 29, 2020
CO (ppm)	0.1	0.0	95.2%	99.9%	0.4	13	Jul-15 09:00	0.1	5	Jul-31	0	0	-	-	Jul 27, 2020
<div> <div>Average</div> <div>Minimum</div> <div>Valid</div> <div>Operational</div> <div>Maximum</div> </div>															
Temp (°C)	17.4	9.1	99.9%	99.9%	33.0	<div>Note: Valid hours must be greater than 75%</div> <div>Operational hours must be greater than 90%</div>									
RH (%)	63.0	23.6	99.9%	99.9%	90.2										
SR (W/m ²)	184.8	0.0	99.9%	99.9%	787.3										
WS (km/hr)	8.3	0.3	99.9%	99.9%	24.7										
WD (deg)	263	0.2	99.9%	99.9%	359.1	<div>Average Wind Direction</div> <div>263 W</div>									

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	No Operational issues noted during the month, aside from one hour of data removed due to power loss on July 24
O ₃	TECO	49i	No Operational issues noted during the month, aside from one hour of data removed due to power loss on July 24
PM _{2.5}	Sharp	5030	No Operational issues noted during the month, aside from one hour of data removed due to power loss on July 24
SO ₂	TEI	43i-TLE	No Operational issues noted during the month, aside from one hour of data removed due to power loss on July 24
H ₂ S	TEI	450i	No Operational issues noted during the month, aside from one hour of data removed due to power loss on July 24
THC/CH ₄ /NMHC	TEI	55i	Issues with span and zeros resulted in three removal calibrations and three install calibrations (July 23, 24, 27); hydrogen cylinder replaced; one hour of data removed due to power loss on July 24 ; Data invalidated due to unstable response
CO	TEI	48i-TLE	No Operational issues noted during the month, aside from one hour of data removed due to power loss on July 24
Met Equip	MetOne	50.5	No Operational issues noted during the month, aside from one hour of data removed due to power loss on July 24

1.4 Smoky Heights Air Monitoring Station

PAZA - July 2020 Smoky Heights Station Report

Parameter	July			Operational	1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid		Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
PM _{2.5} (µg/m ³)	3.5	0.0	99.7%	100.0%	21.1	80	Jul-14 15:00	7.0	29	Jul-14	0	-	0	-	Jul 06, 2020
SO ₂ (ppb)	0.5	0.0	95.4%	100.0%	9.2	172	Jul-04 04:00	1.4	48	Jul-04	0	-	0	0	Jul 06, 2020
TRS (ppb)	0.3	0.0	95.3%	100.0%	2.1	-	Jul-09 06:00	0.5	-	Jul-29	-	-	-	-	Jul 06, 2020
<div> <div>Average</div> <div>Minimum</div> <div>Valid</div> <div>Operational</div> <div>Maximum</div> </div>															
Temp (°C)	16.2	7.3	100.0%	100.0%	32.1	<div>Note: Valid hours must be greater than 75%</div> <div>Operational hours must be greater than 90%</div>									
WS (km/hr)	12.3	0.7	100.0%	100.0%	35.9										
WD (deg)	255	0.5	100.0%	100.0%	359.6	<div>Average Wind Direction</div> <div>255 WNW</div>									

Update Summary:

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

1.5 Valleyview Air Monitoring Station

PAZA - July 2020 Valleyview Station Report

AZR - July 2020 Valleyview Station Report																
Parameter	July			Operational	Max	1-hour			24-hour			Exceedance				Calibration
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date	
SO ₂ (ppb)	0.1	0.0	95.3%	100.0%	1.4	172	Jul-15 09:00	0.2	48	Jul-08	0	-	0	0	Jul 16, 2020	
H ₂ S (ppb)	0.1	0.0	95.3%	100.0%	1.8	10	Jul-11 02:00	0.2	3	Jul-31	0	-	0	-	Jul 16, 2020	
	Average	Minimum	Valid	Operational	Maximum	<div>Note: Valid hours must be greater than 75% Operational hours must be greater than 90%</div> <div>Average Wind Direction280NW</div>										
Temp (°C)	16.8	5.8	100.0%	100.0%	33.9											
RH (%)	75.3	27.9	100.0%	100.0%	100.2											
WS (km/hr)	3.7	0.1	100.0%	100.0%	13.9											
WD (deg)	280	0.1	100.0%	100.0%	359.8											

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	TEI	431-APSCB	No Operational issues noted during the month
H ₂ S	TEI	4501-APHAA	No Operational issues noted during the month
Met Equip	RMYoung	RMY86004	No Operational issues noted during the month

1.6 Donnelly Air Monitoring Station

PAZA - July 2020 Donnelly Station Report

FAZA - July 2020 Donnelly Station Report															
Parameter	July			Operational	Max	1-hour		Max	24-hour		Exceedance				Calibration
	Average	Minimum	Valid			Objective	Max Day and Time		Objective	Max Day	1hr	8hr	24hr	30d	Date
SO ₂ (ppb)	0.1	0.0	94.9%	99.5%	2.5	172	Jul-04 08:00	0.5	48	Jul-04	0	-	0	0	Jul 13, 2020
H ₂ S (ppb)	0.1	0.0	94.8%	99.5%	2.0	10	Jul-31 04:00	0.4	3	Jul-31	0	-	0	-	Jul 13, 2020
	Average	Minimum	Valid	Operational	Maximum	<div>Note: Valid hours must be greater than 75%</div> <div>Operational hours must be greater than 90%</div> <div>Average Wind Direction255WSW</div>									
Temp (°C)	16.7	8.7	99.5%	99.5%	31.4										
WS (km/hr)	10.5	0.5	99.5%	99.5%	32.0										
WD (deg)	255	1.8	99.5%	99.5%	359.6										

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	Teco	43i	No Operational issues noted during the month; a power issue resulted in four hours lost July 28
H ₂ S	Thermo	45C	No Operational issues noted during the month; a power issue resulted in four hours lost July 28
Met Equip	RMYoung	5103	No Operational issues noted during the month; a power issue resulted in four hours lost July 28

1.7 Wembley Air Monitoring Station

PAZA - July 2020 Wembley Station Report

July					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)	0.2	0.0	95.2%	100.0%	2.4	-	Jul-05 07:00	0.5	-	Jul-27	-	-	-	-	Jul 21, 2020	
NO ₂ (ppb)	1.2	0.1	95.2%	100.0%	7.1	159	Jul-30 04:00	2.5	-	Jul-30	0	-	-	-	Jul 21, 2020	
NO _x (ppb)	1.4	0.0	95.2%	100.0%	9.0	-	Jul-30 04:00	2.9	-	Jul-30	-	-	-	-	Jul 21, 2020	
O ₃ (ppb)	20.3	2.8	95.4%	100.0%	48.0	76	Jul-27 19:00	25.5	-	Jul-31	0	-	-	-	Jul 21, 2020	
PM _{2.5} (µg/m³)	1.4	0.0	99.5%	99.7%	9.4	80	Jul-20 11:00	5.6	29	Jul-31	0	-	0	-	Jul 20, 2020	
SO ₂ (ppb)	0.2	0.0	95.4%	100.0%	19.9	172	Jul-29 09:00	1.4	48	Jul-29	0	-	0	0	Jul 21, 2020	
TRS (ppb)	0.2	0.0	91.8%	96.4%	0.6	-	Jul-31 08:00	0.3	-	Jul-30	-	-	-	-	Jul 17, 2020	
CH ₄ (ppm)	1.9	1.7	95.3%	100.0%	2.6	-	Jul-27 05:00	1.9	-	Jul-30	-	-	-	-	Jul 20, 2020	
THC (ppm)	1.9	1.7	95.3%	100.0%	2.6	-	Jul-27 05:00	1.9	-	Jul-30	-	-	-	-	Jul 20, 2020	
NMHC (ppm)	0.0	0.0	95.3%	100.0%	0.0	-	Jul-11 15:00	0.0	-	Jul-12	-	-	-	-	Jul 20, 2020	
					Average	Minimum	Valid	Operational	Maximum	<div>Note: Valid hours must be greater than 75% Operational hours must be greater than 90%</div> <div>Average Wind Direction289WNW</div>						
Temp (°C)	16.4	7.0	100.0%	100.0%	31.4											
WS (km/hr)	8.3	0.1	100.0%	100.0%	28.7											
WD (deg)	289	1.4	100.0%	100.0%	359.5											

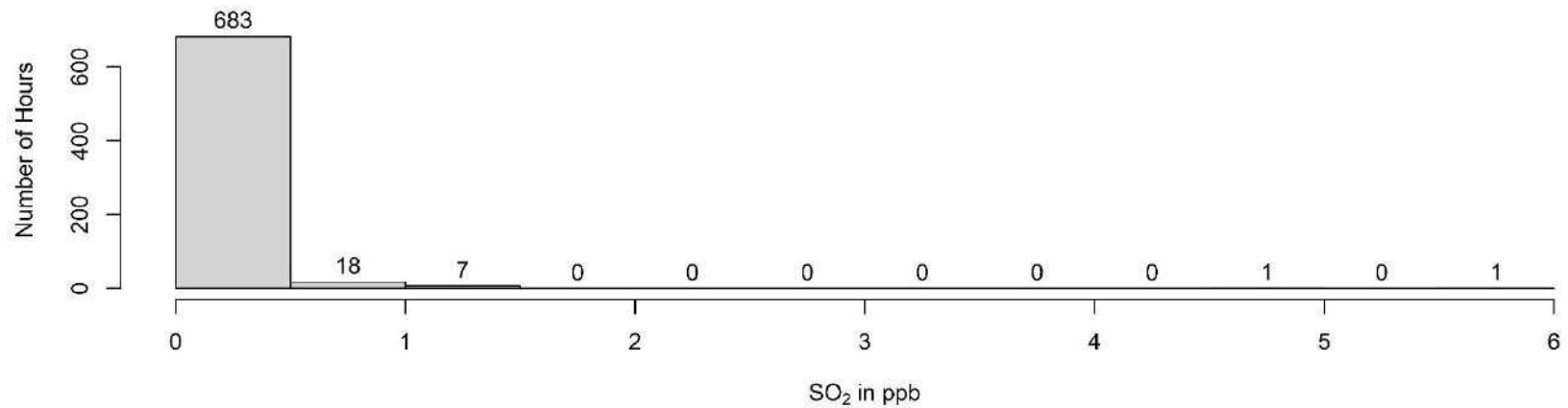
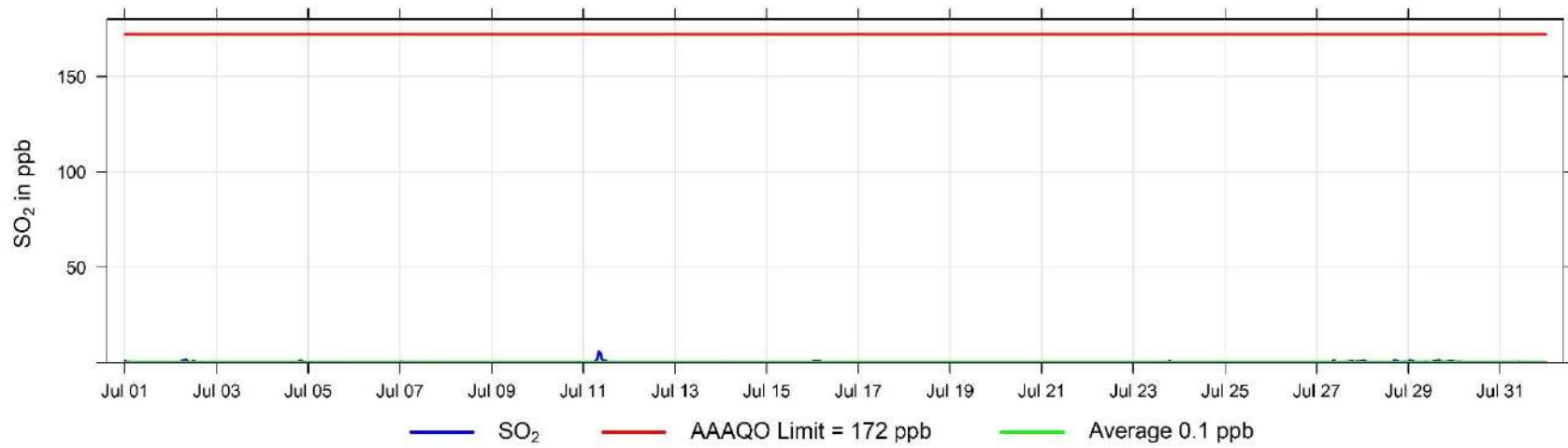
Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42i	No Operational issues noted during the month
O ₃	TEI	49i	No Operational issues noted during the month
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted during the month; 2 hrs removed due to extreme positive and negative swing July 23
SO ₂	TEI	43i	No Operational issues noted during the month
TRS	TEI	43i	Two removal calibrations and one install calibration flagged as maintenance July 16 and 17
THC/CH ₄ /NMHC	TEI	551-A3PHAA	No Operational issues noted during the month
Met Equip	MetOne	50.5	No Operational issues noted during the month

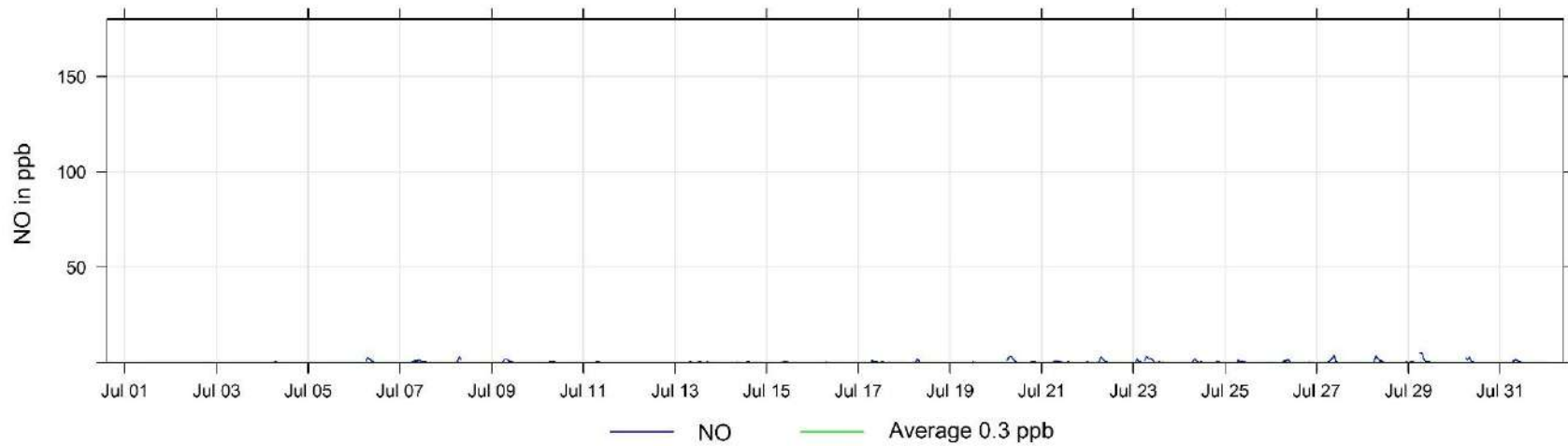
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

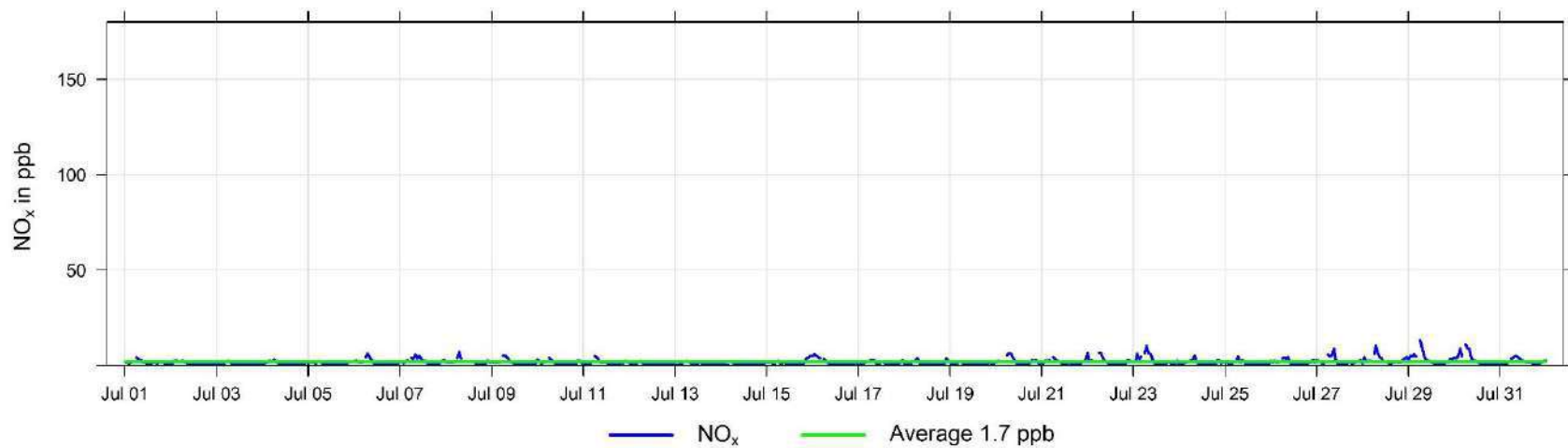
July Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



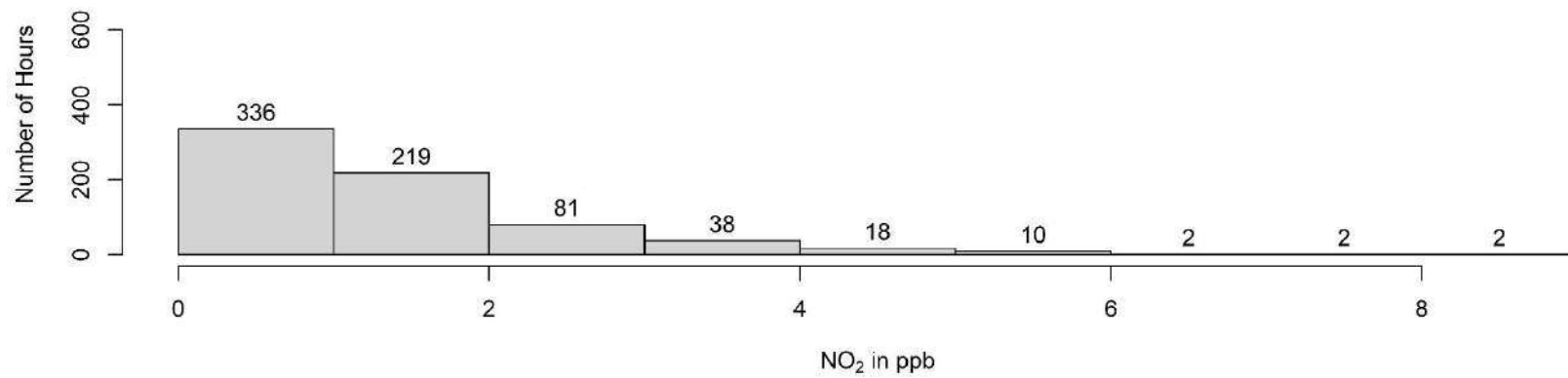
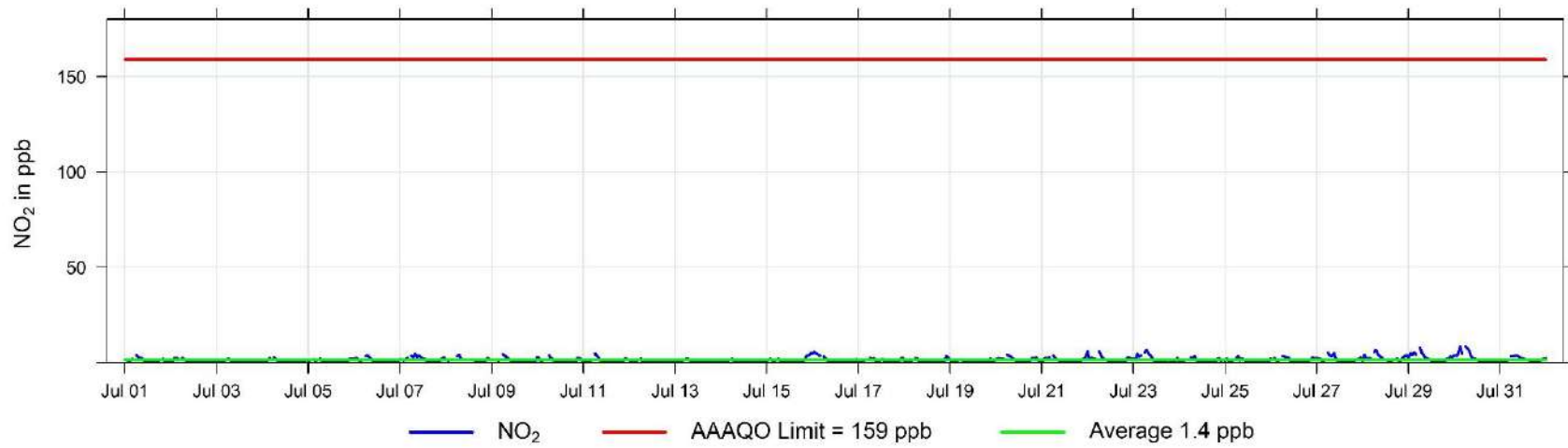
July Hourly Concentration Readings of NO (in ppb) at Beaverlodge



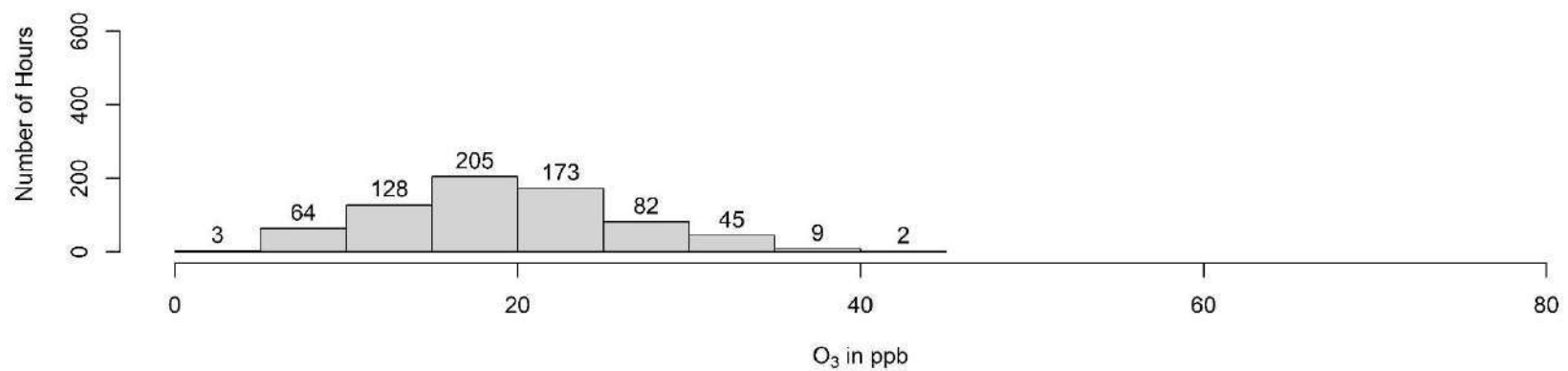
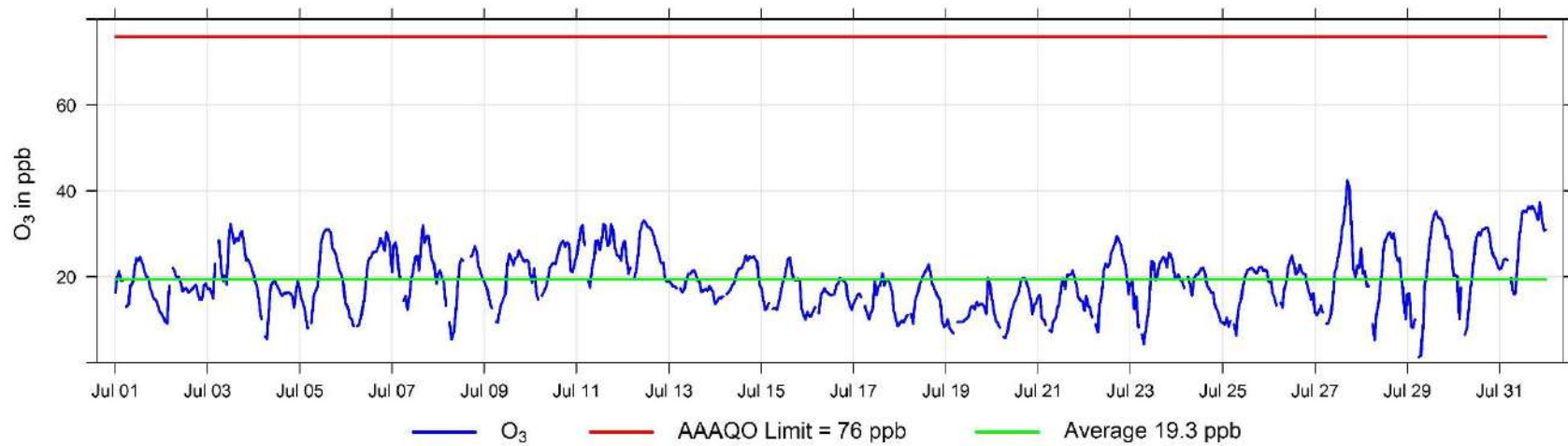
July Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



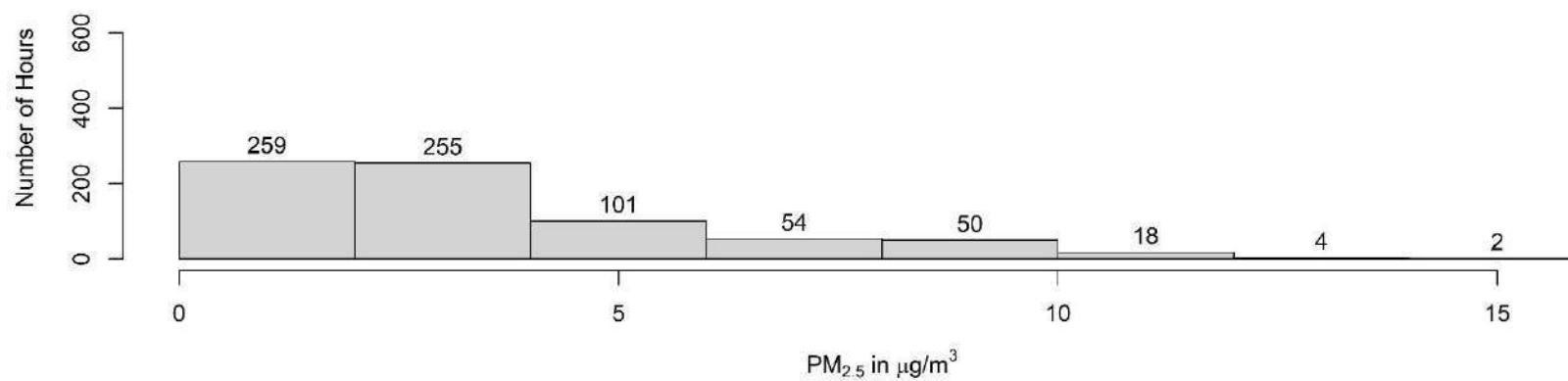
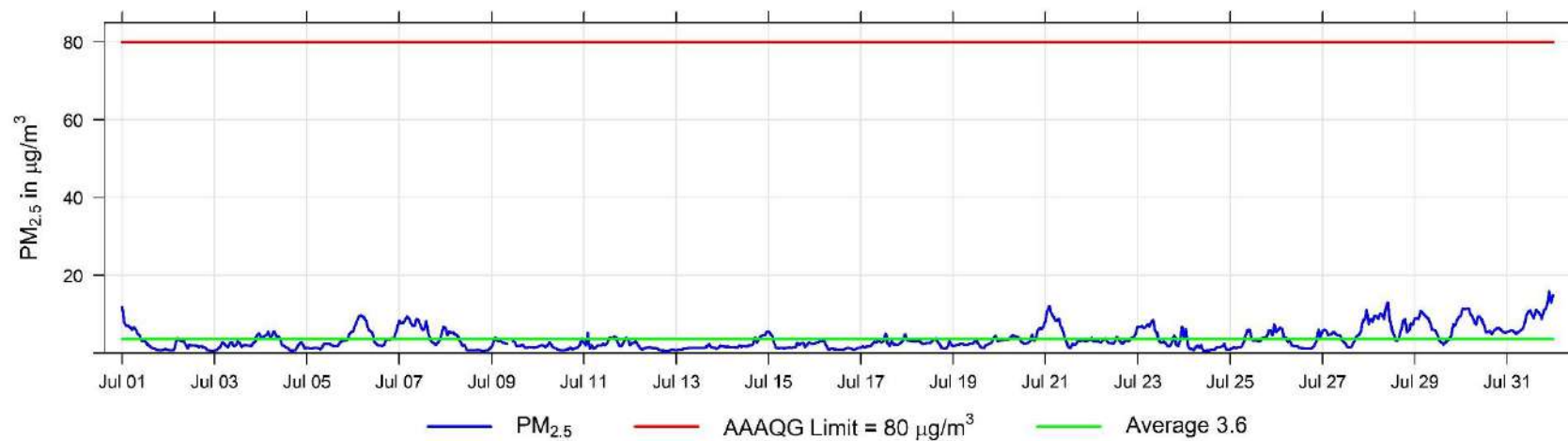
July Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge



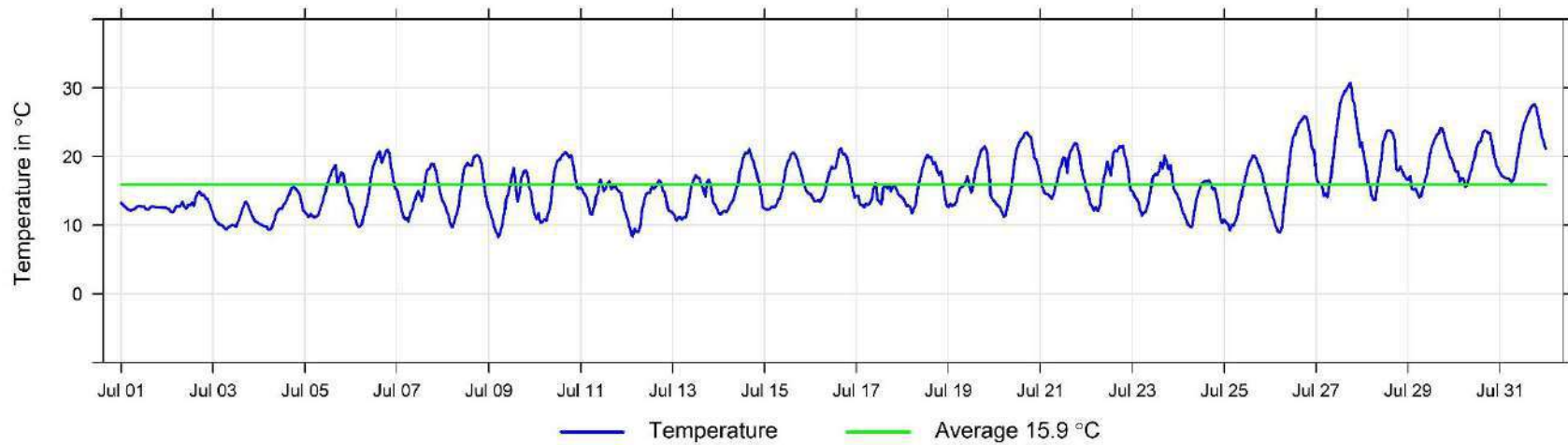
July Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



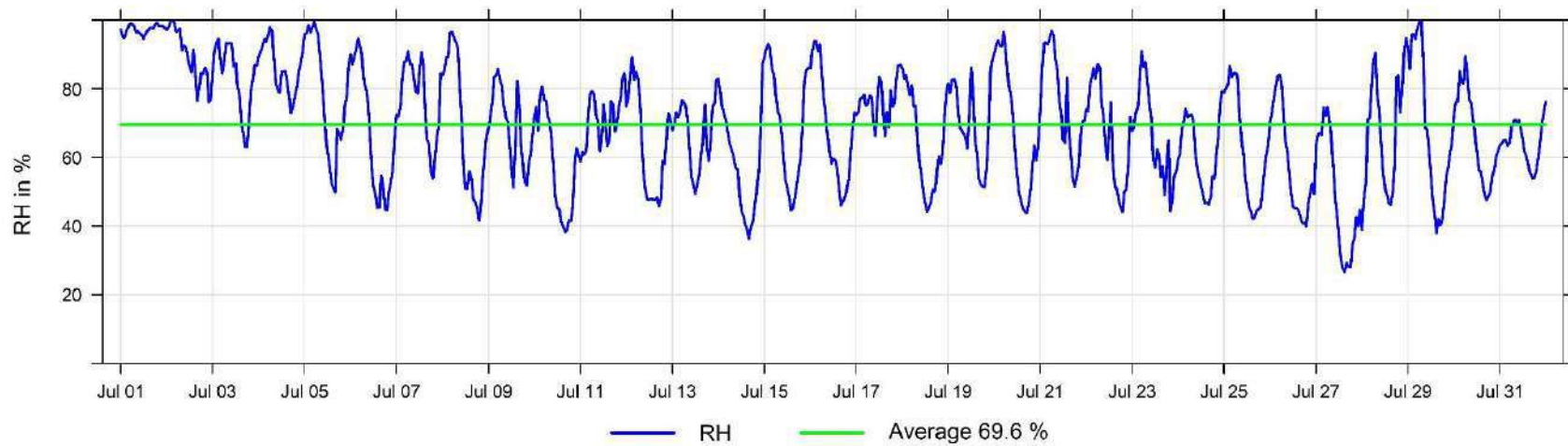
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



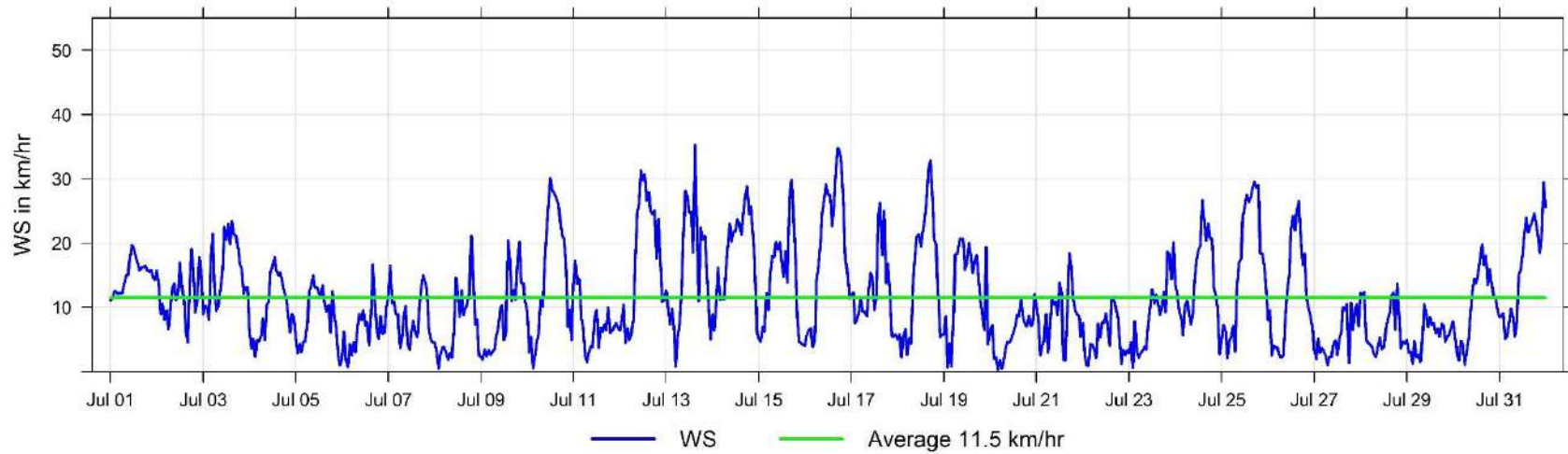
July Hourly Temperature Readings (in °C) at Beaverlodge



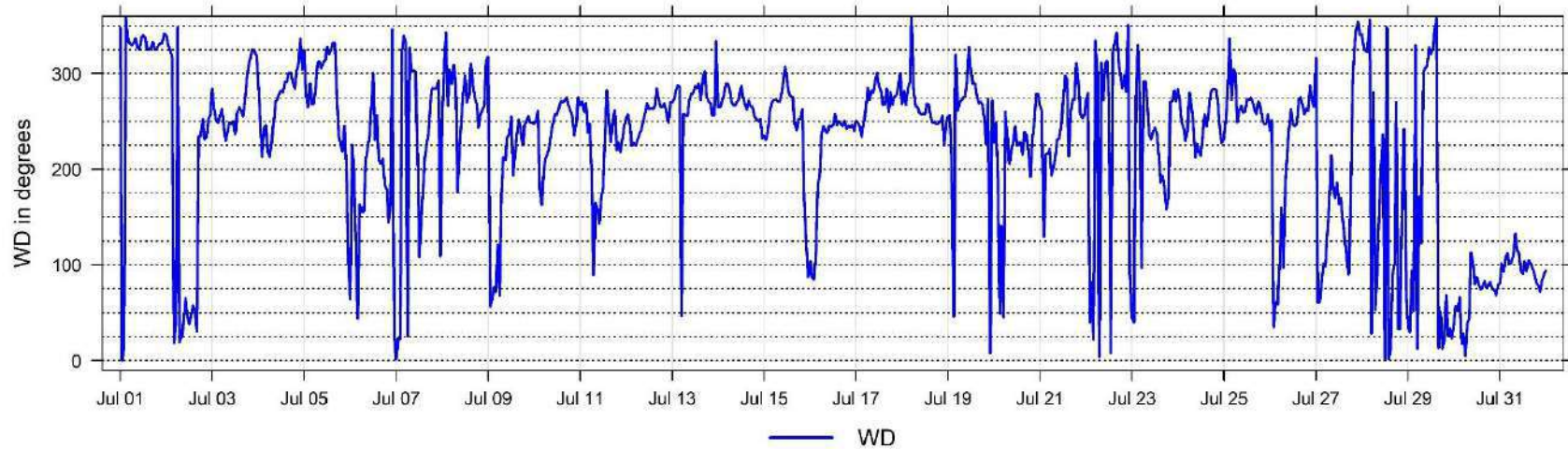
July Hourly Readings of Relative Humidity (in %) at Beaverlodge



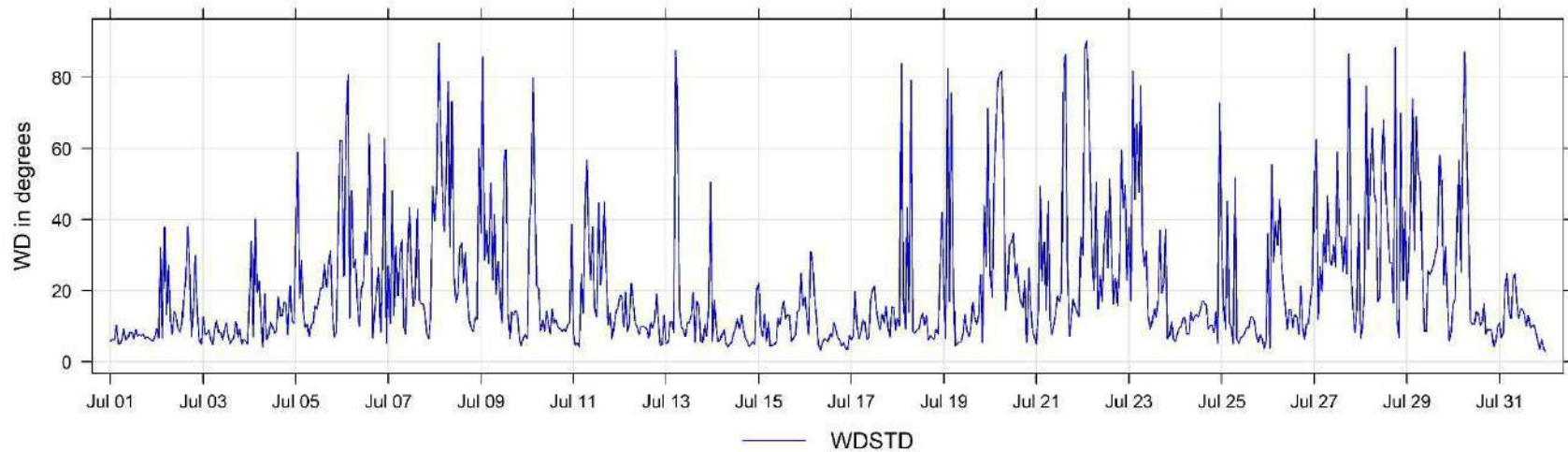
July Hourly Readings of Wind Speed (in km/hr) at Beaverlodge



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



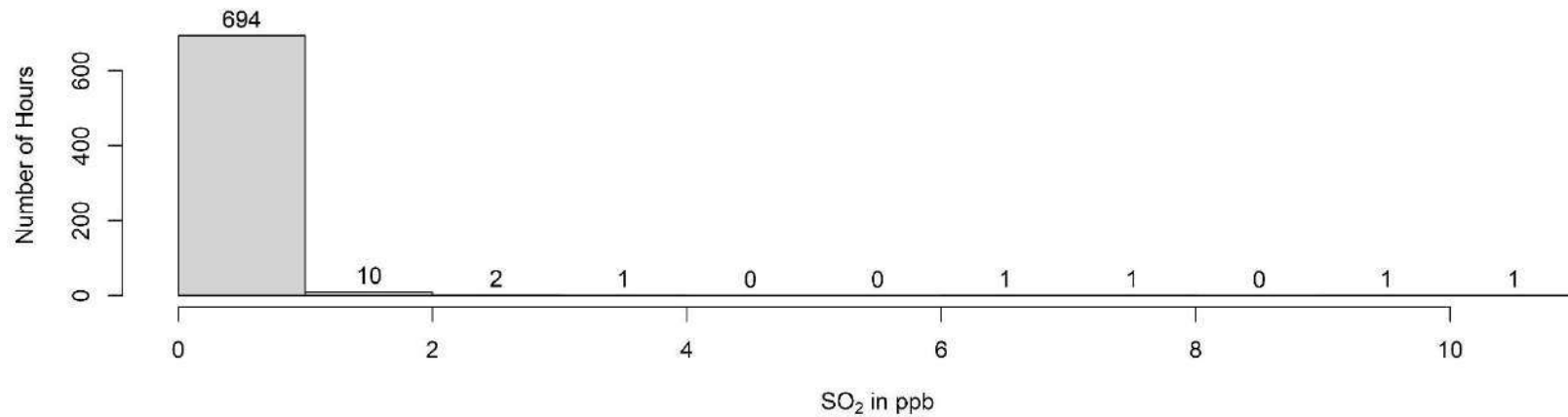
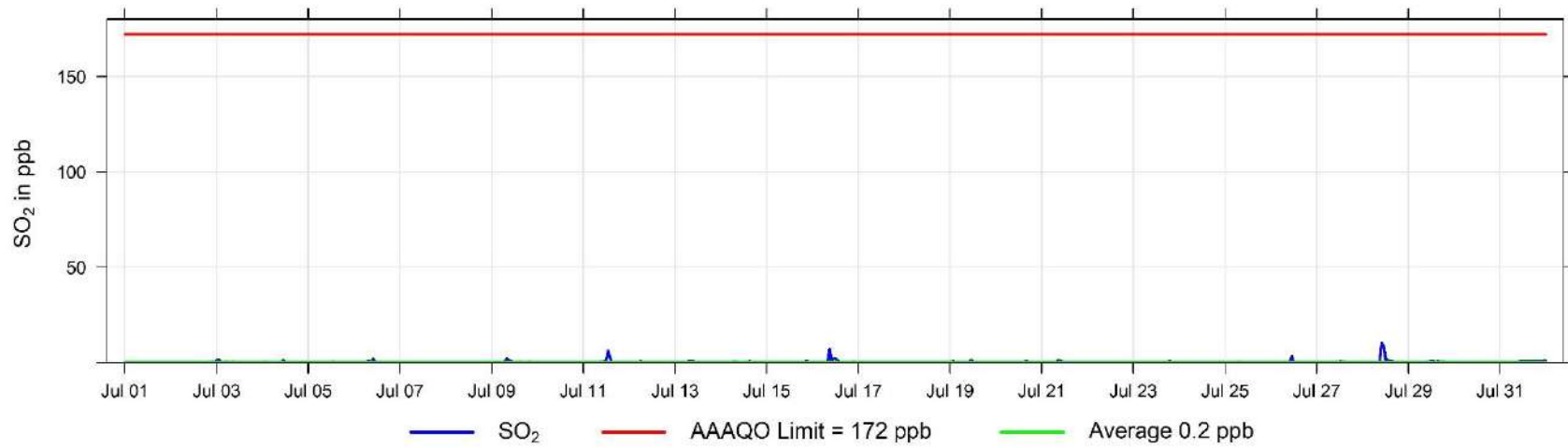
July Hourly Readings of Wind Direction Standard Deviation (in degrees) at Beaverlodge



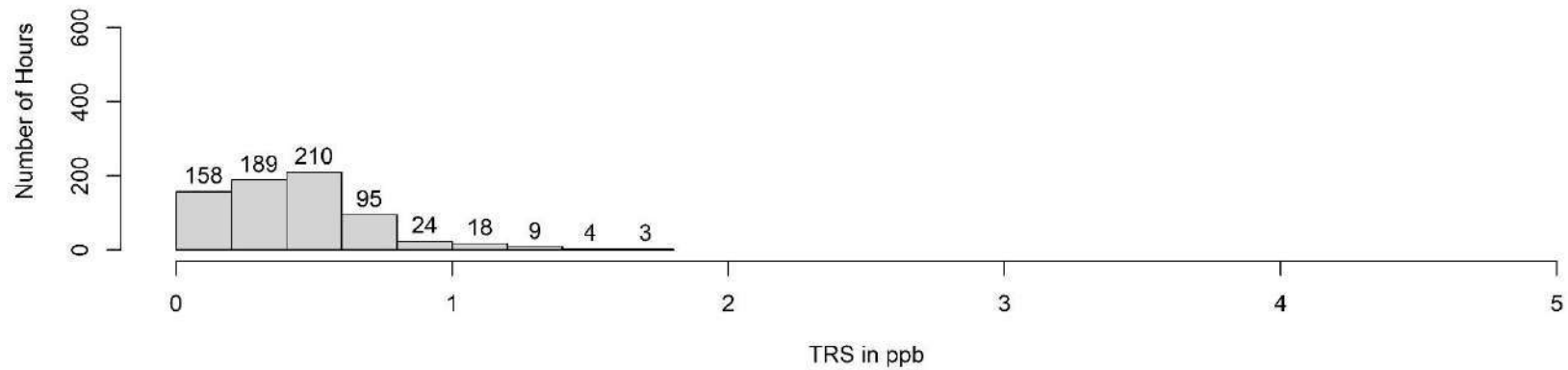
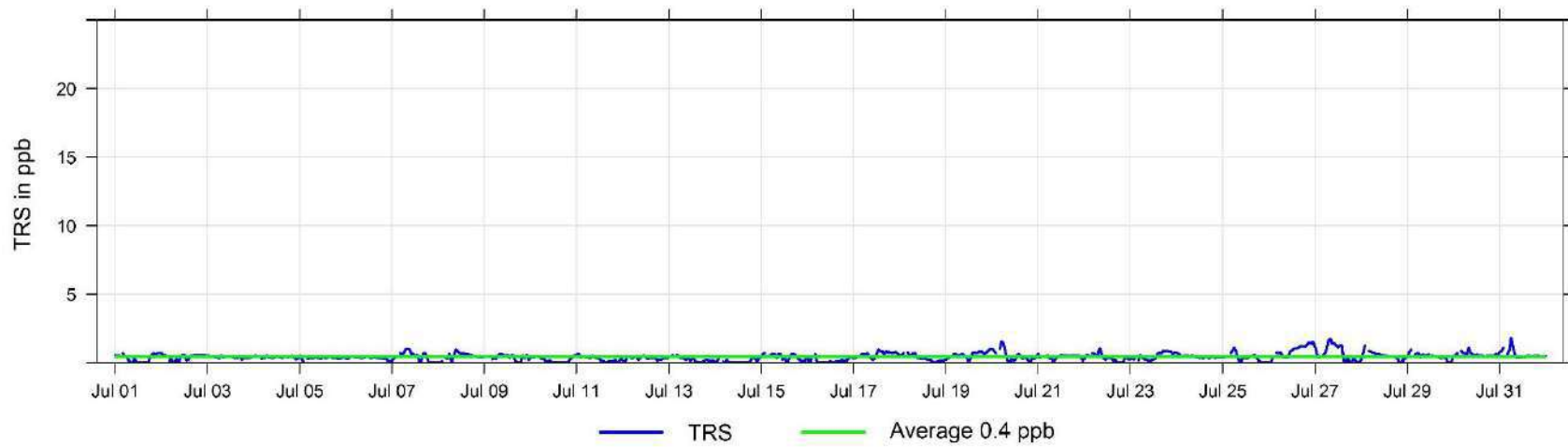
3 Evergreen Park Charts

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

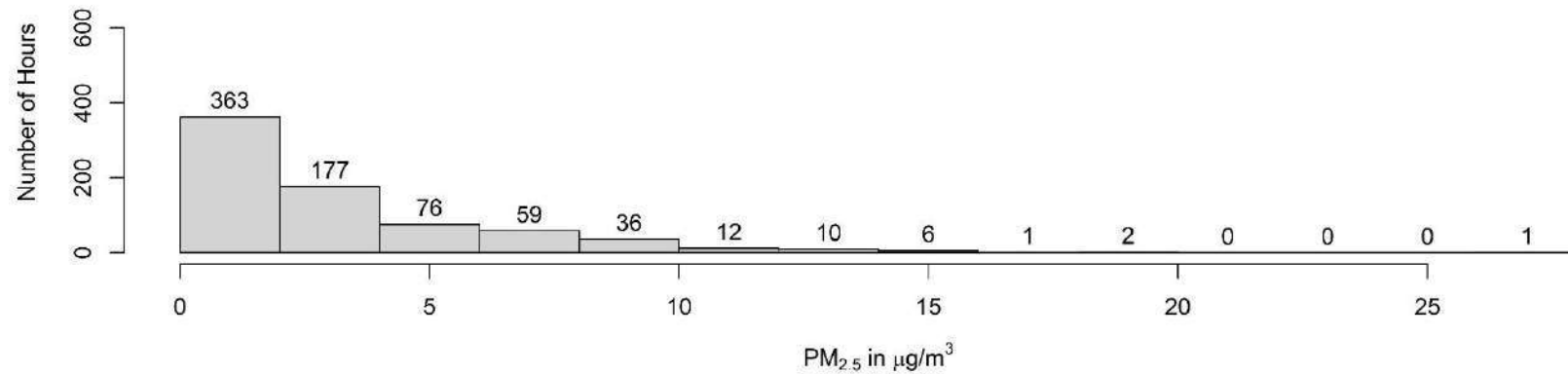
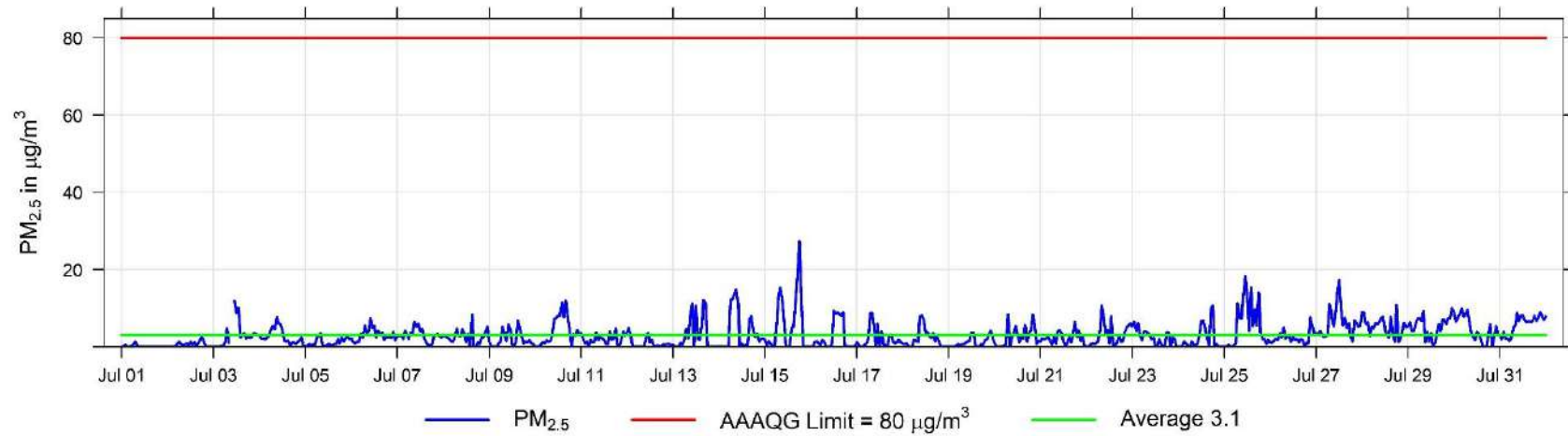
July Hourly Concentration Readings of SO₂ (in ppb) at Evergreen Park



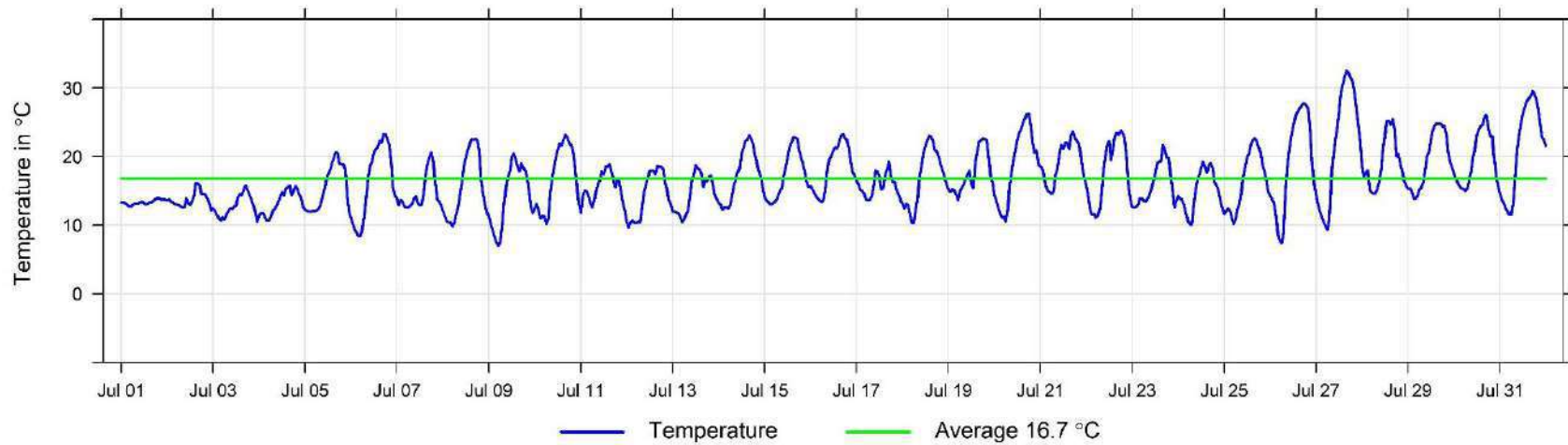
July Hourly Concentration Readings of TRS (in ppb) at Evergreen Park



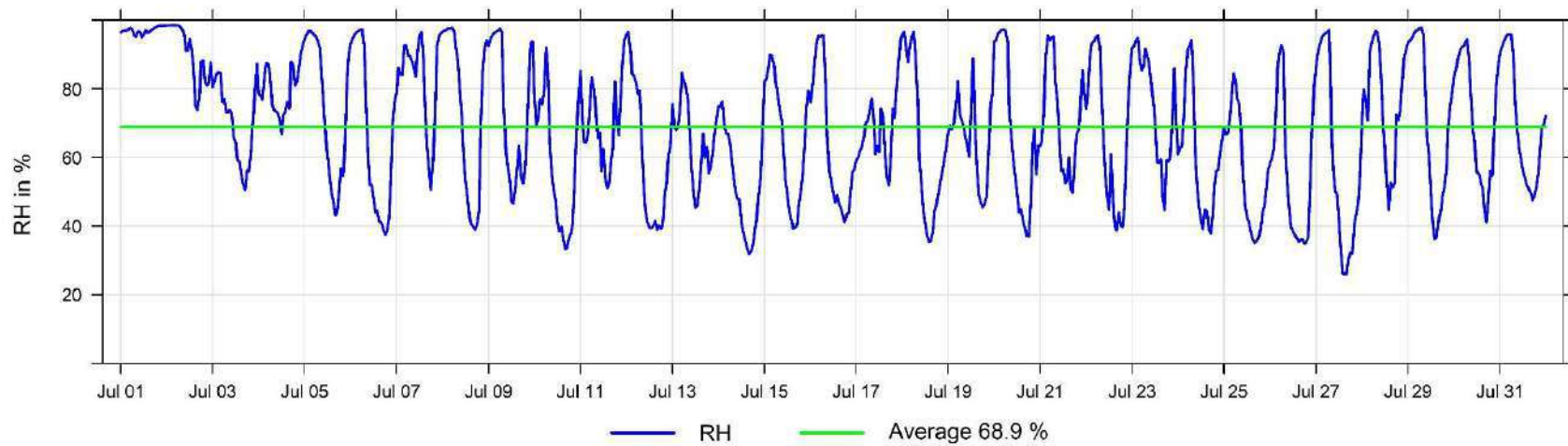
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Evergreen Park



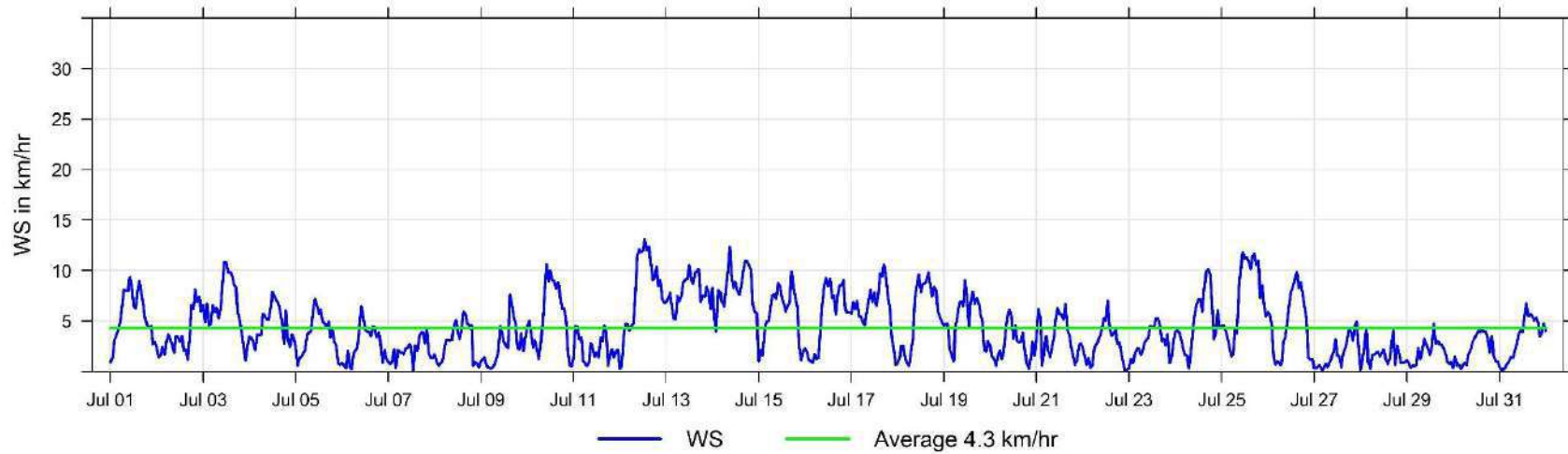
July Hourly Temperature Readings (in °C) at Evergreen Park



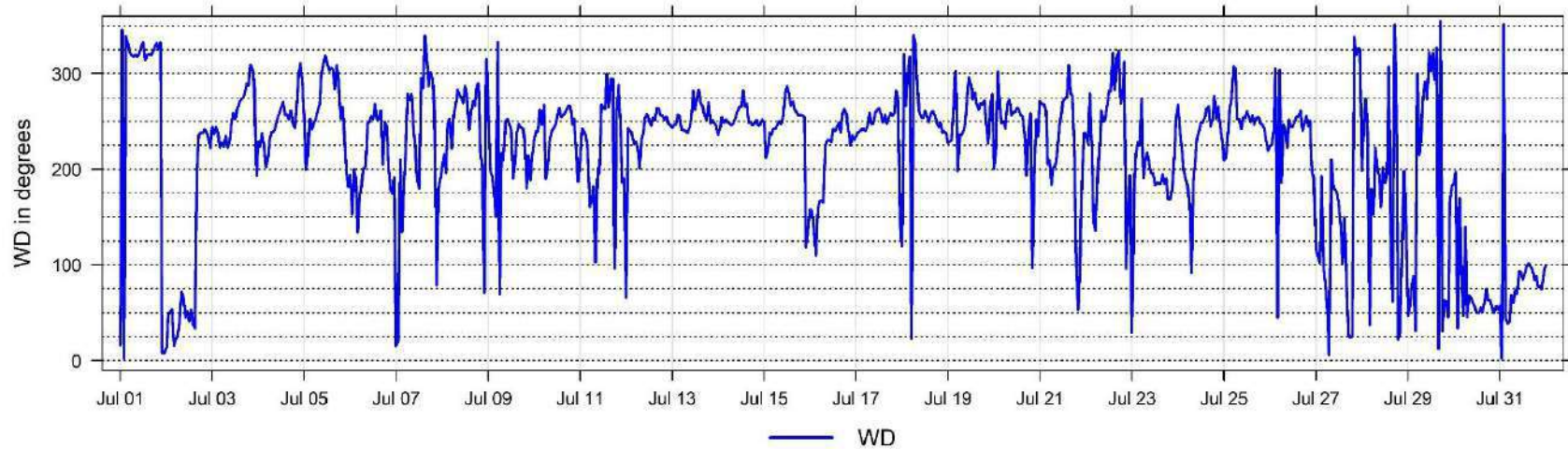
July Hourly Readings of Relative Humidity (in %) at Evergreen Park



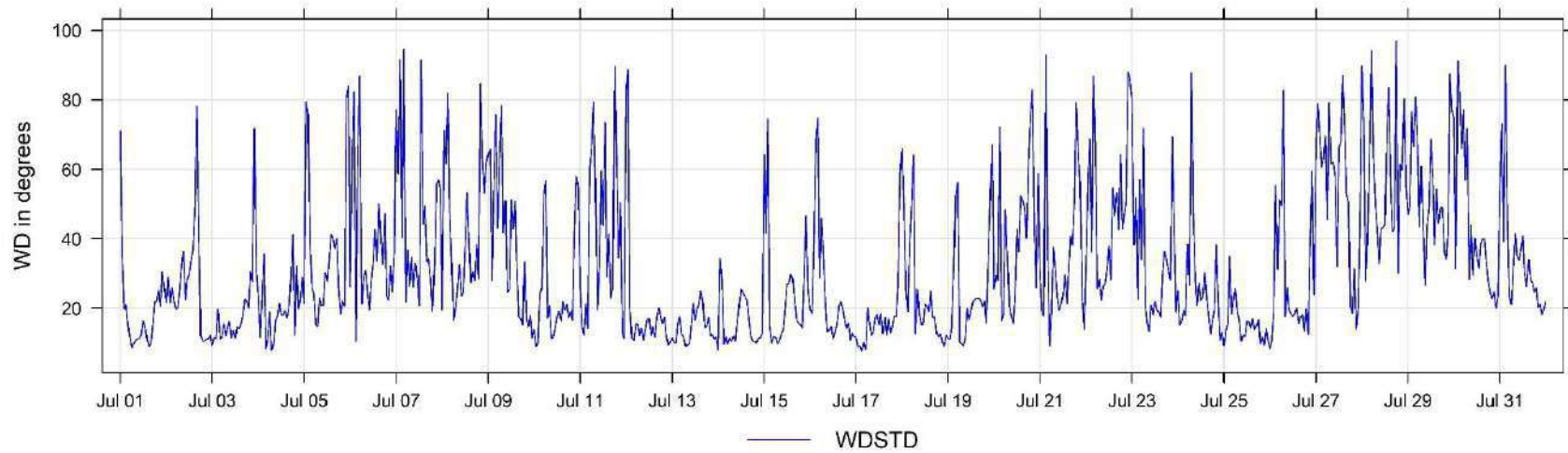
July Hourly Readings of Wind Speed (in km/hr) at Evergreen Park

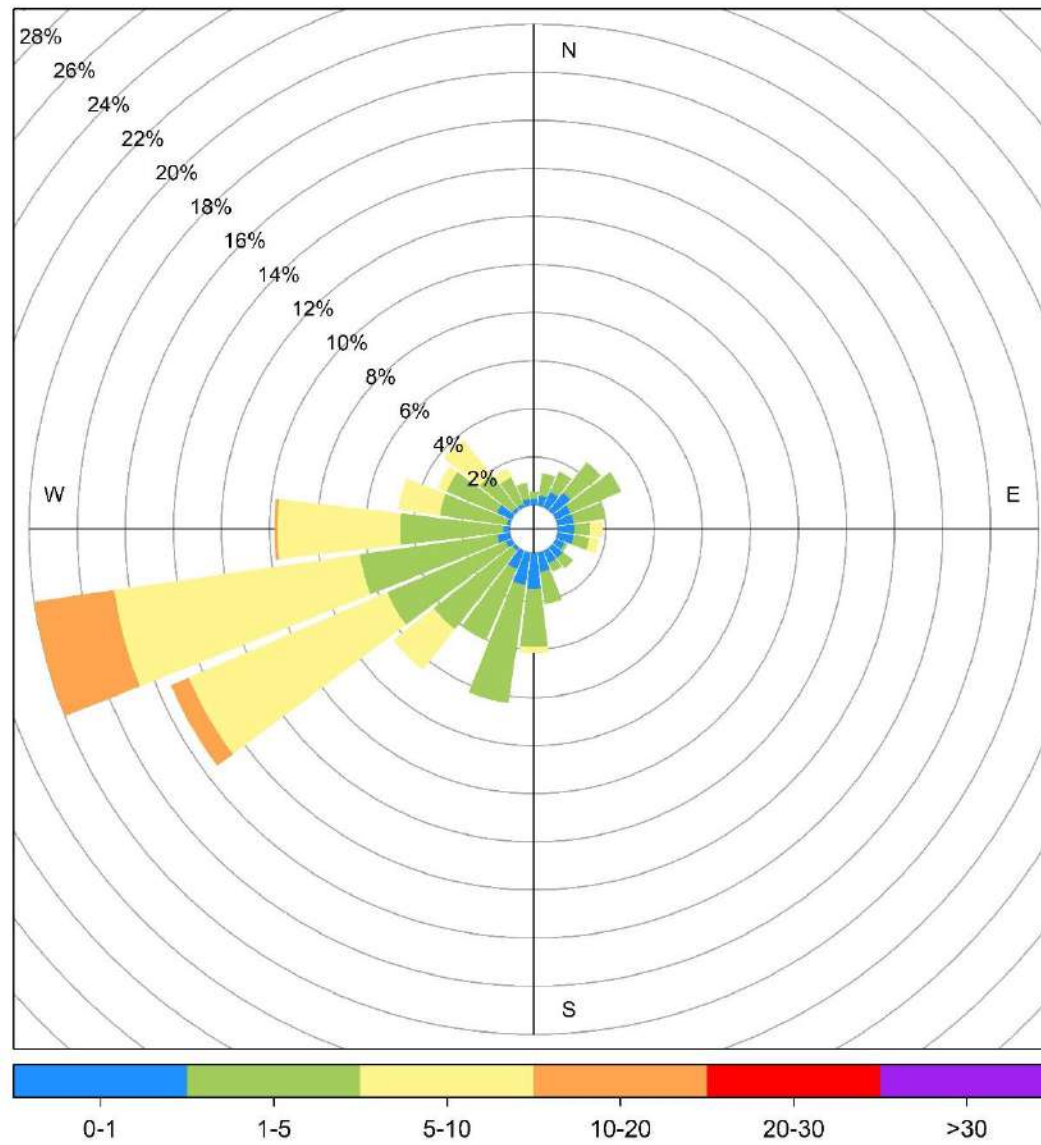


July Hourly Readings of Wind Direction (in degrees) at Evergreen Park



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



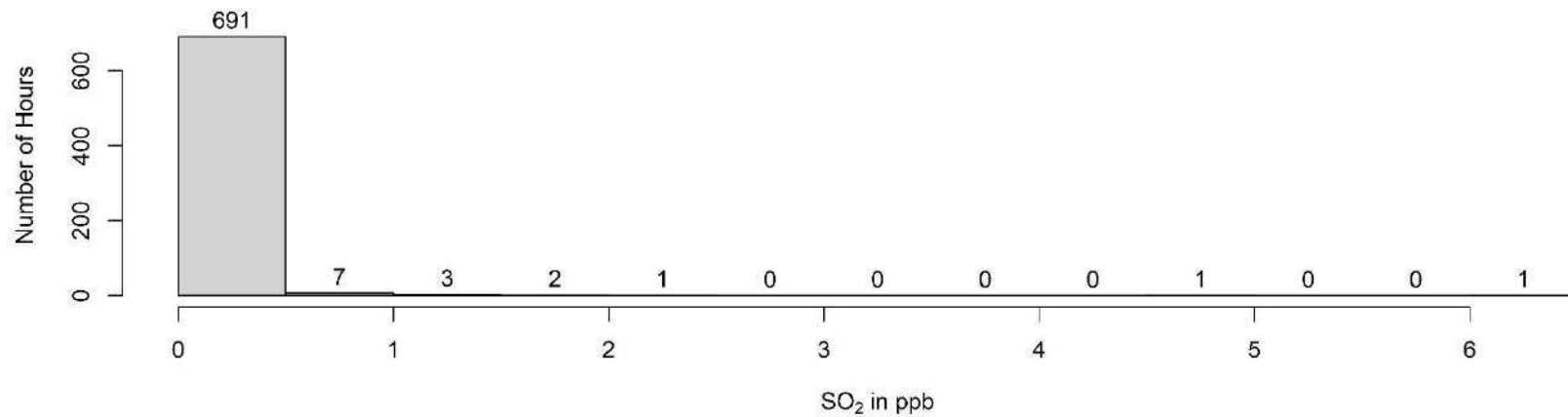
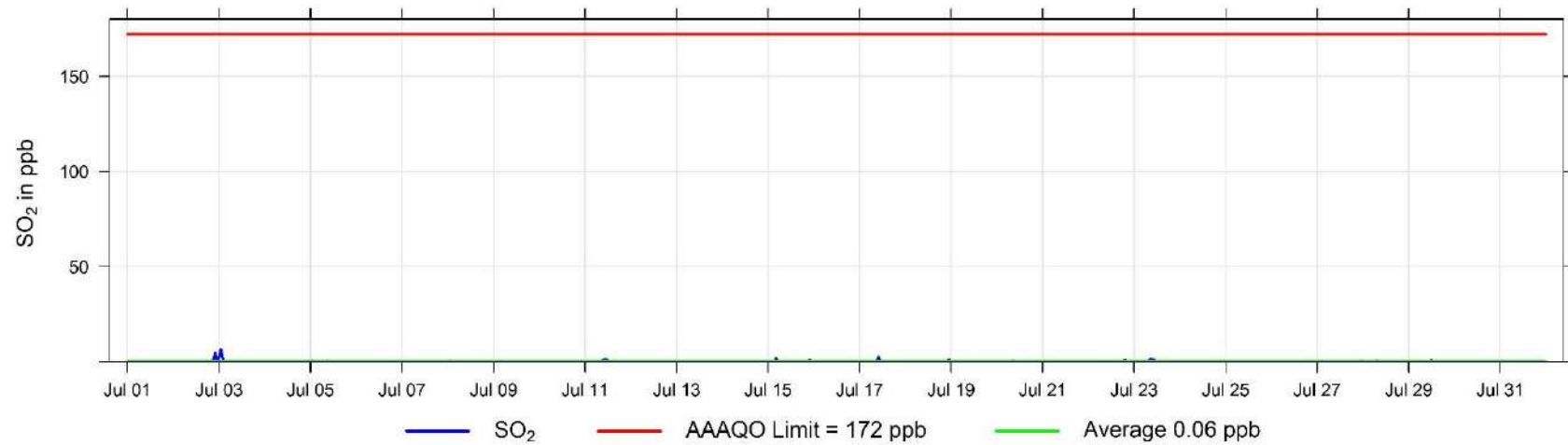


Evergreen Park July Wind Rose, wind speed in km/hr

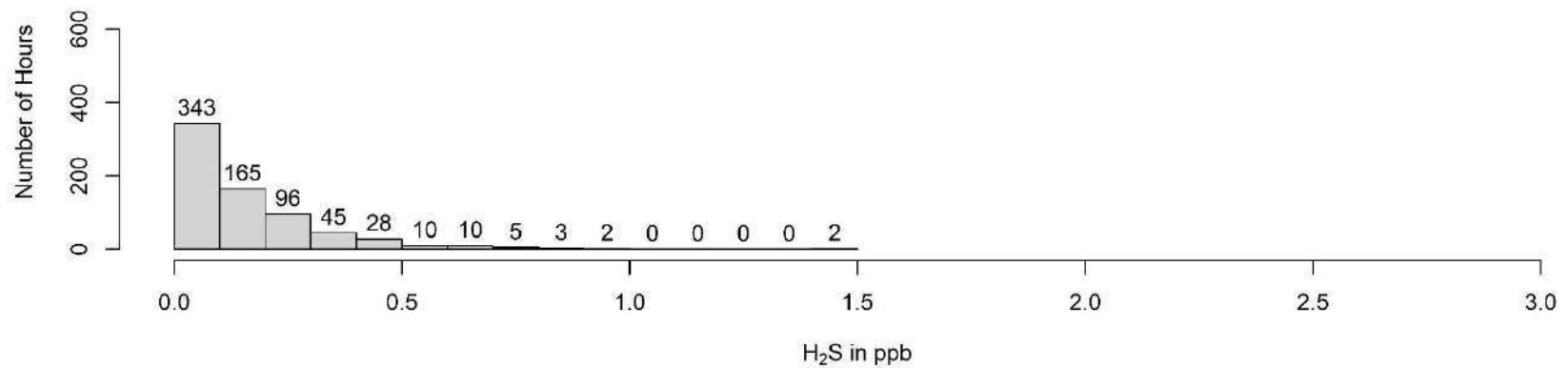
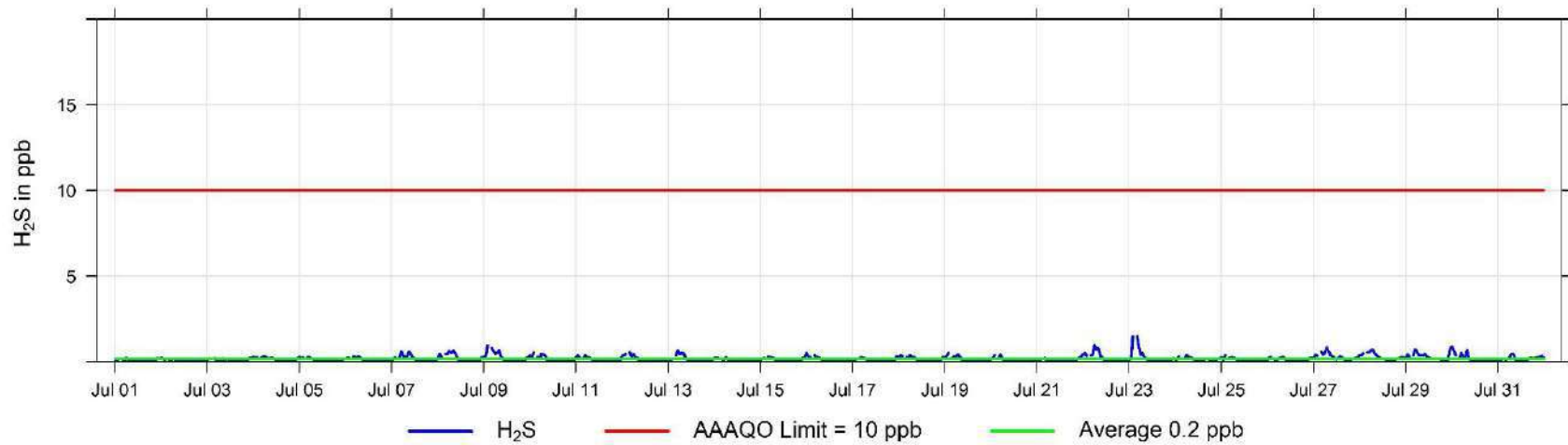
4 Grande Prairie - Henry Pirker Charts

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

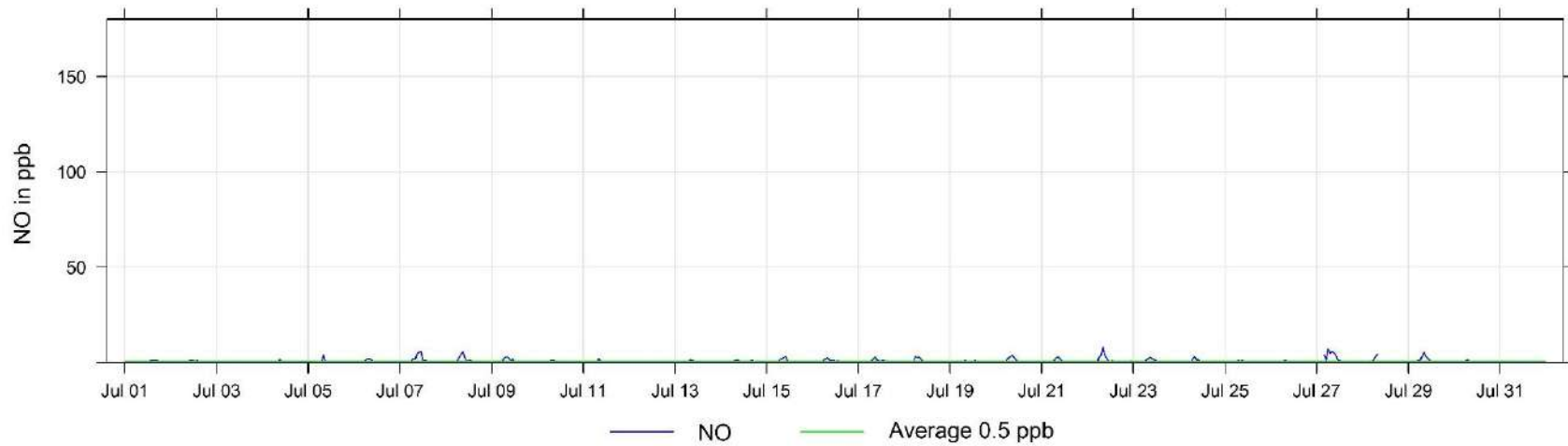
July Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



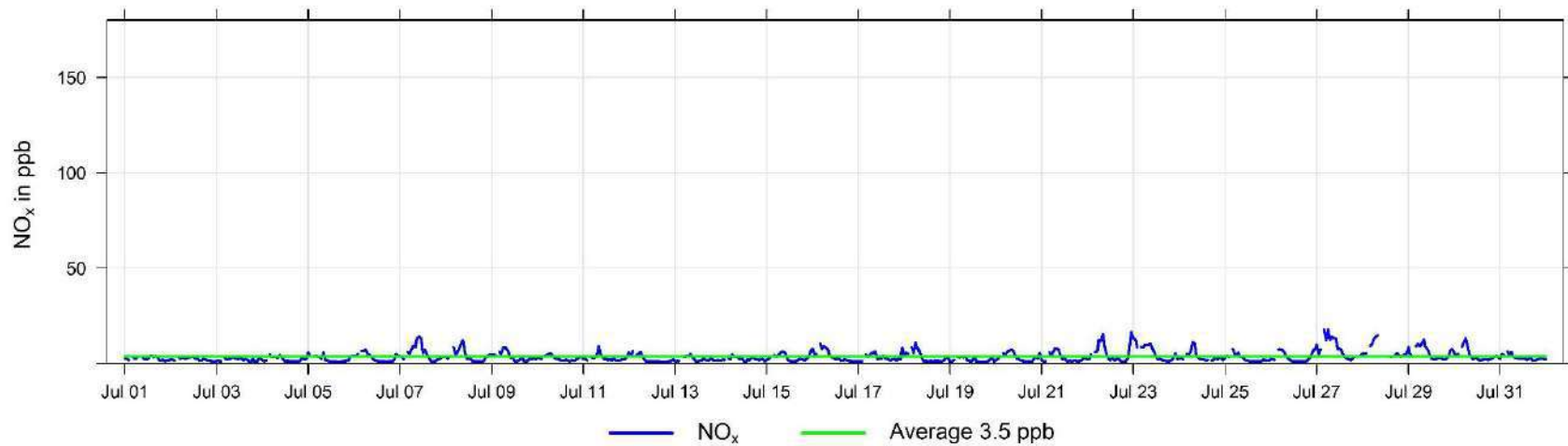
July Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



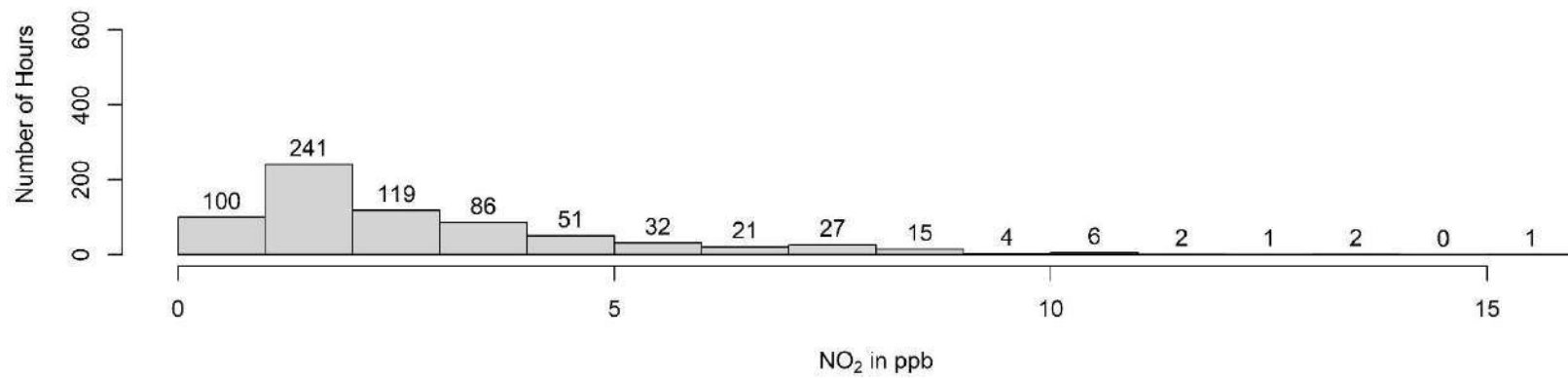
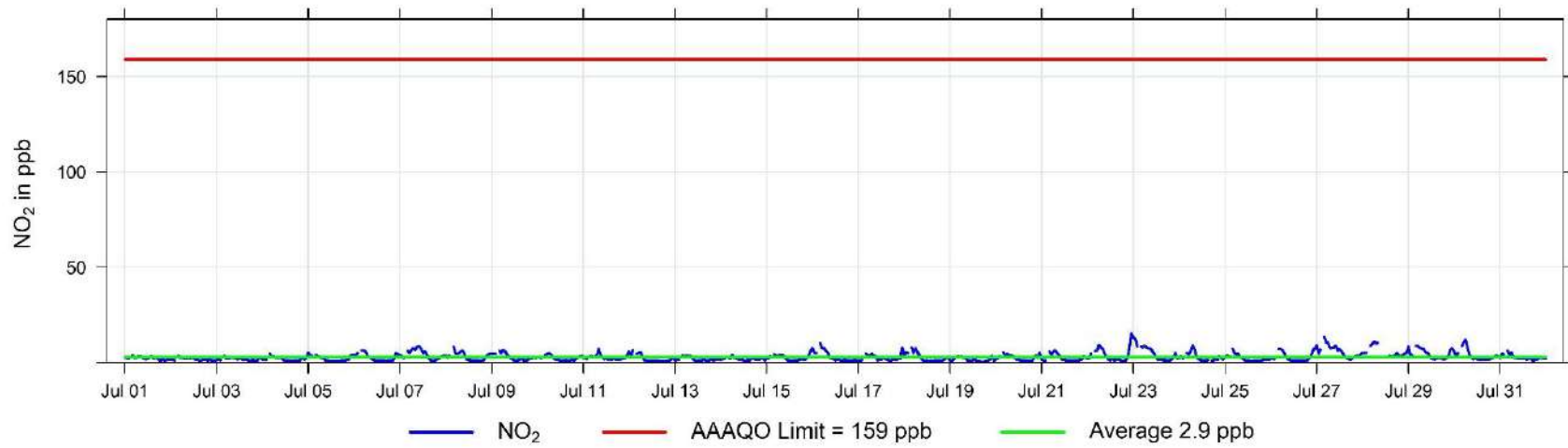
July Hourly Concentration Readings of NO (in ppb) at Henry Pirker



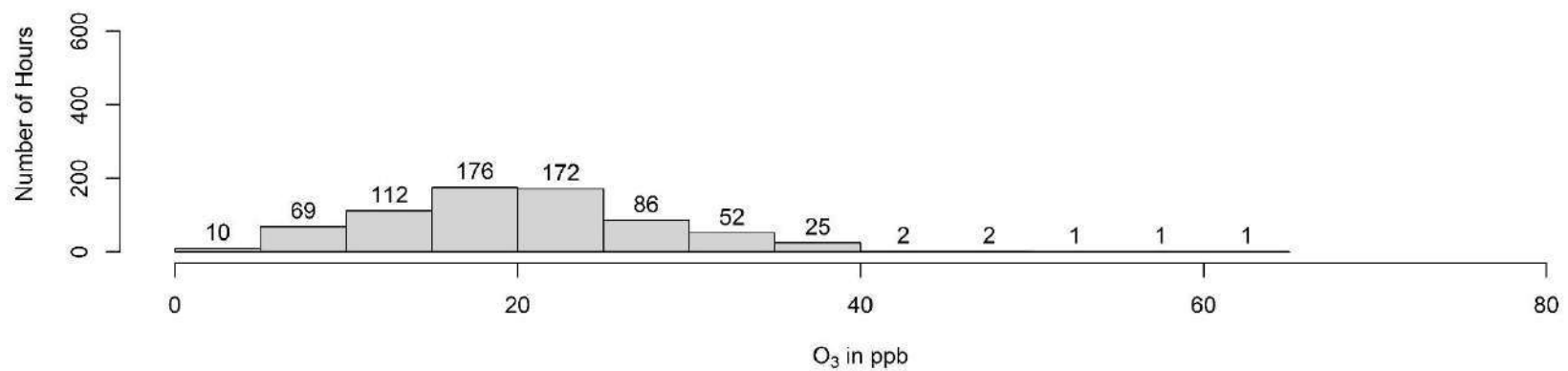
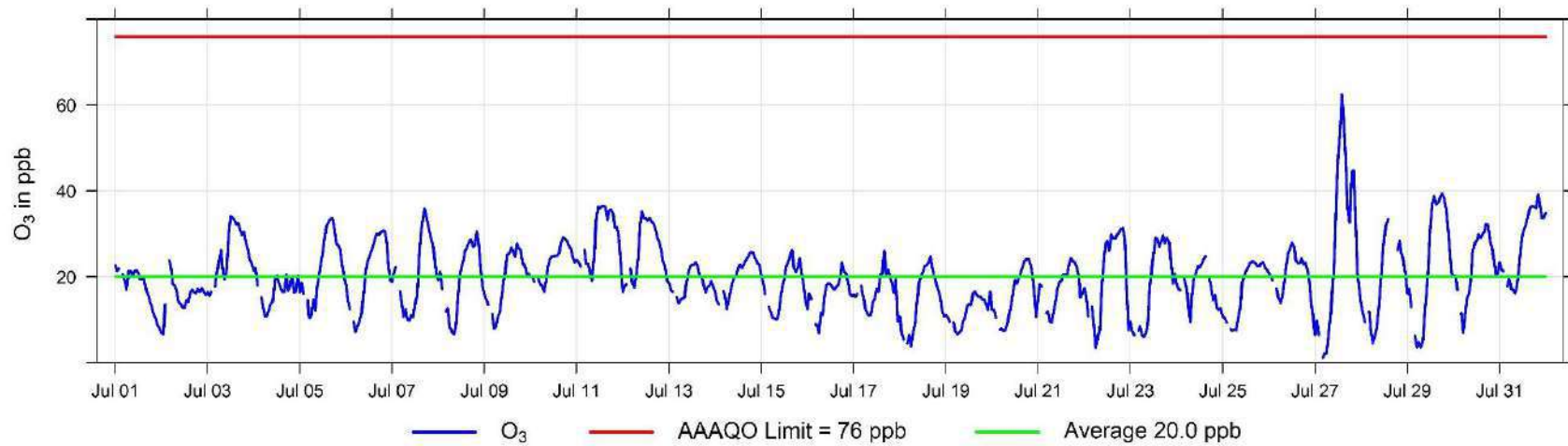
July Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



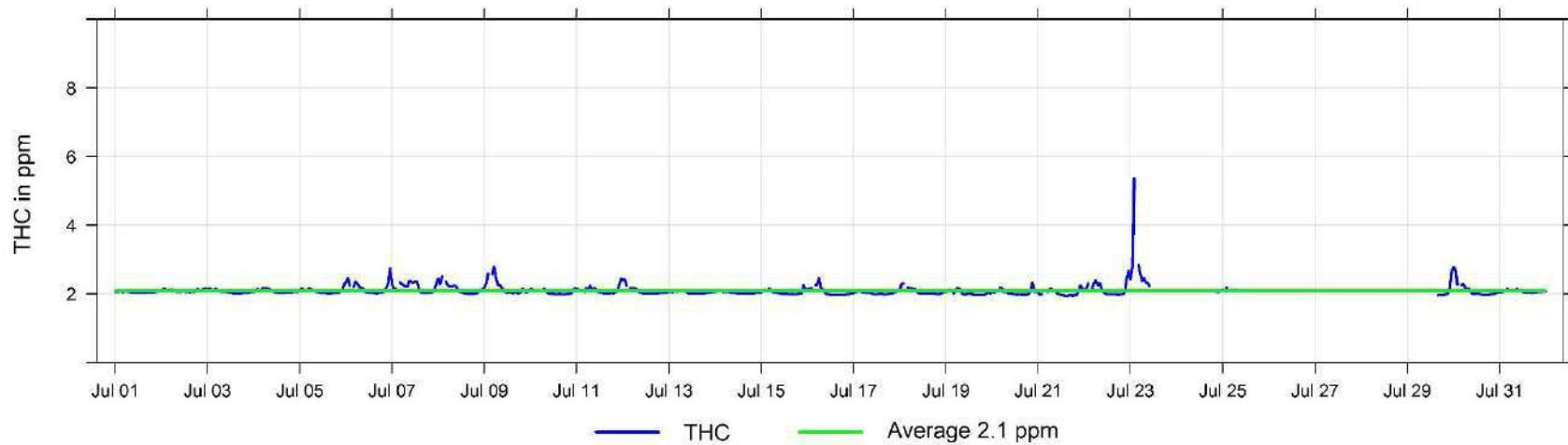
July Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker



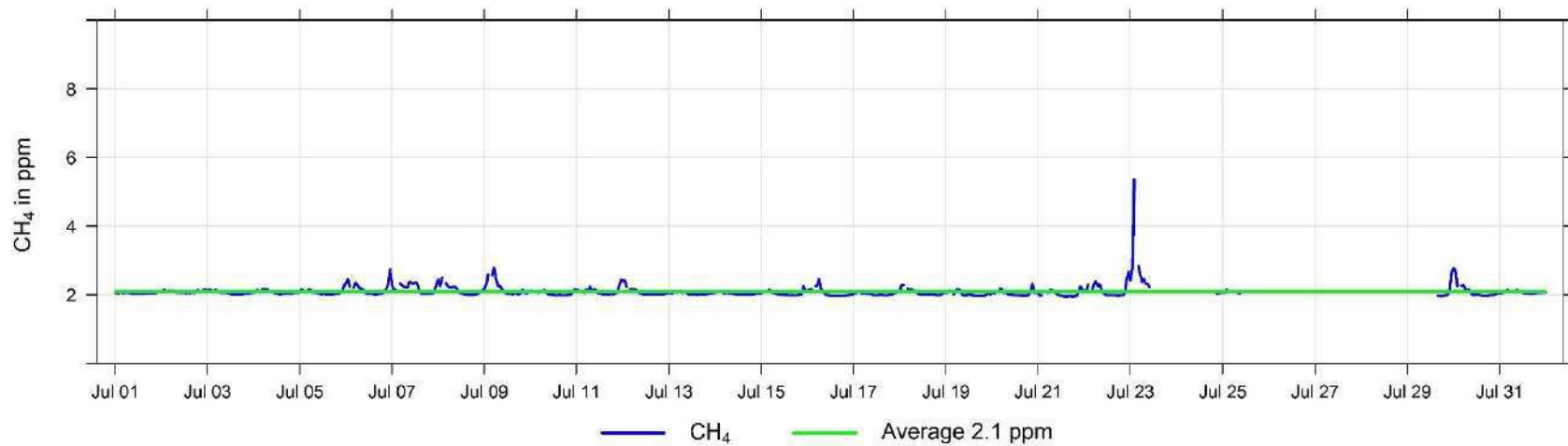
July Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



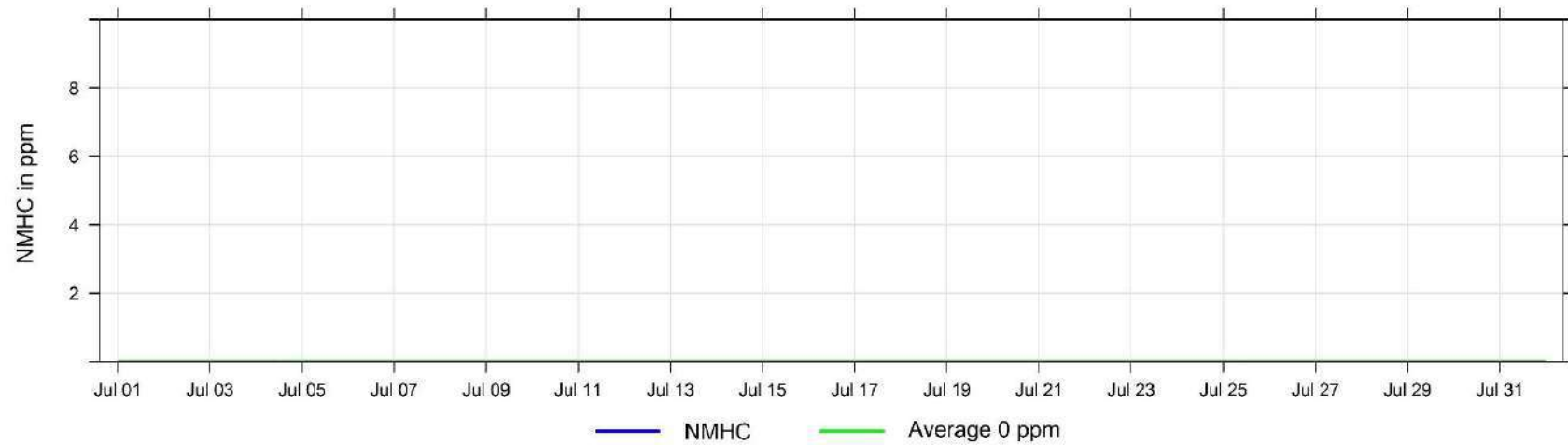
July Hourly Concentration Readings of THC (in ppm) at Henry Pirker



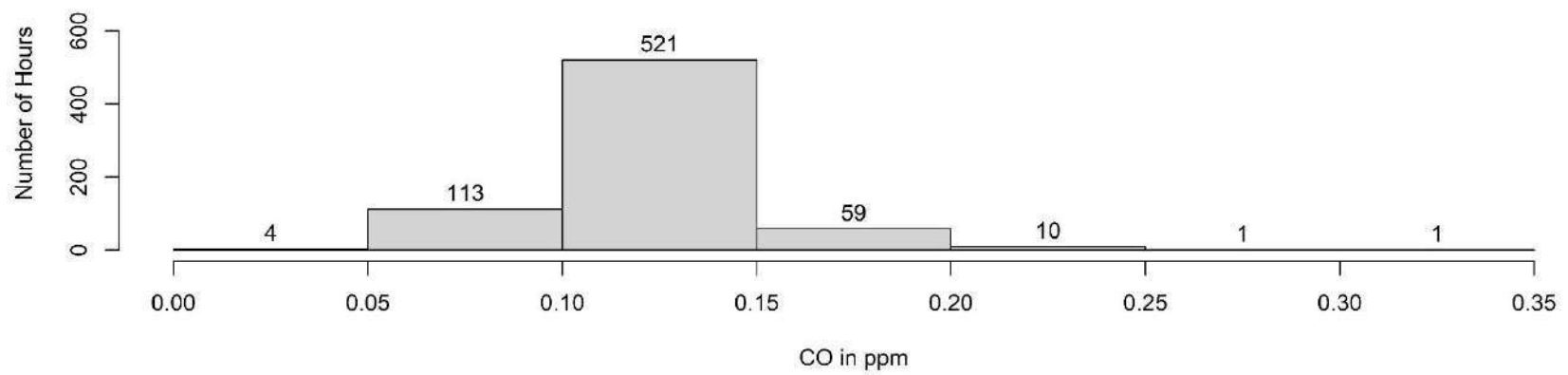
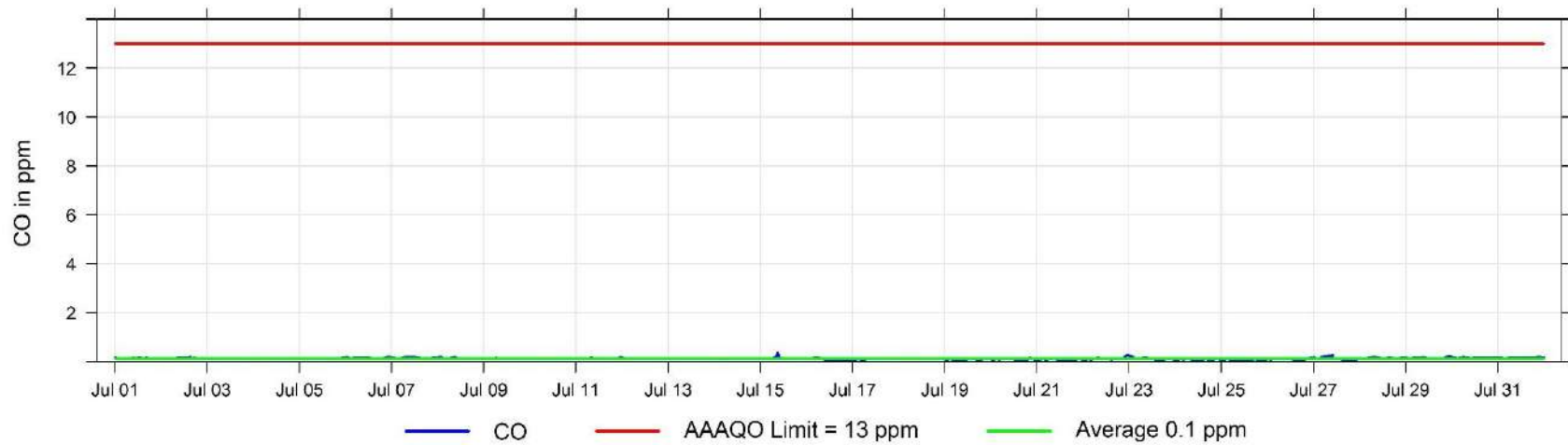
July Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



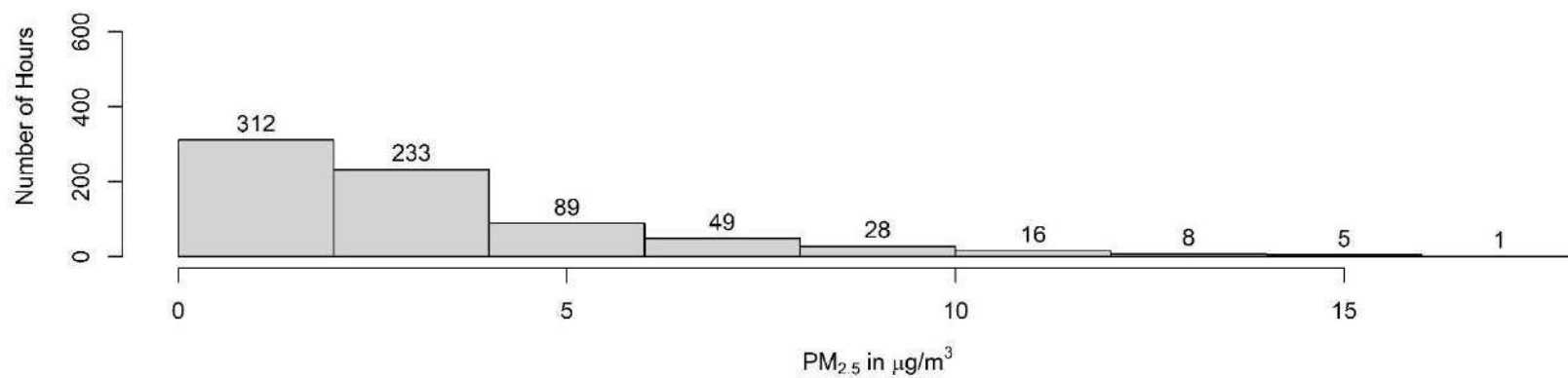
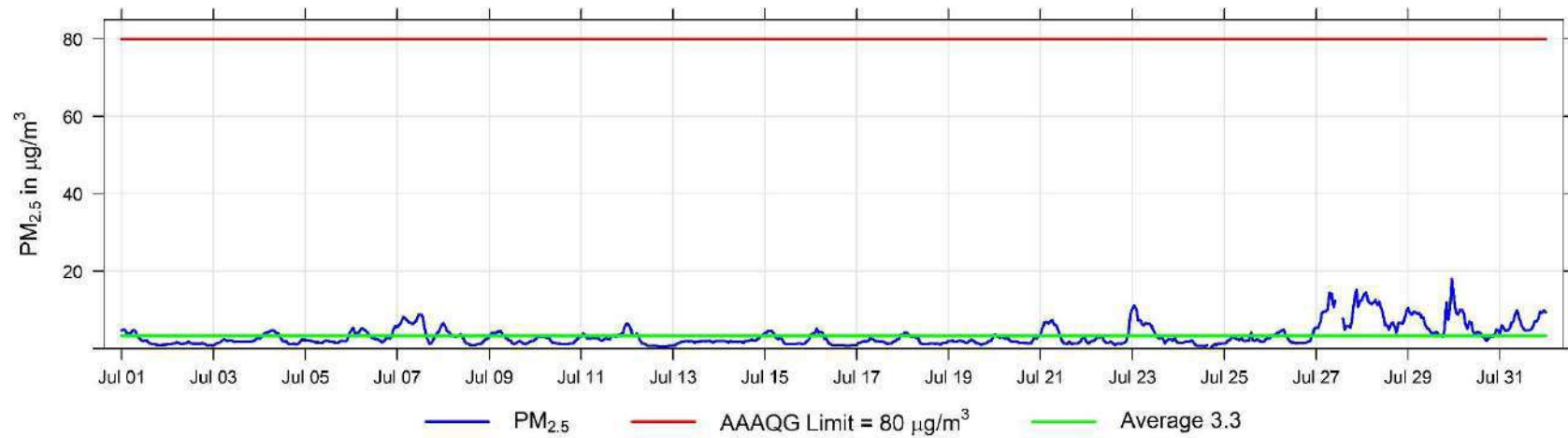
July Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



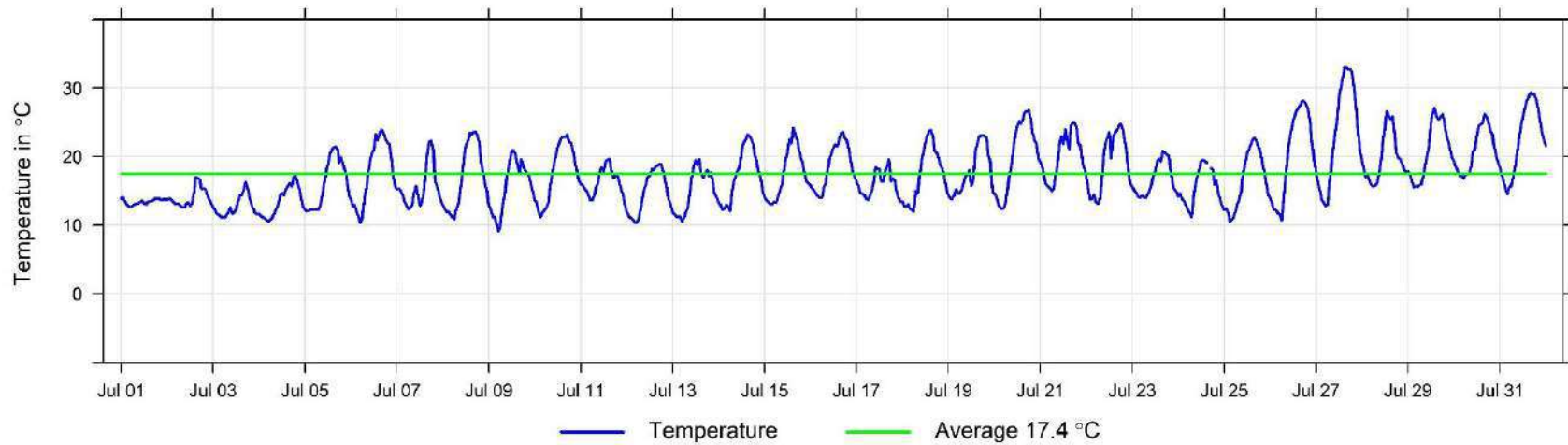
July Hourly Concentration Readings of CO (in ppm) at Henry Pirker



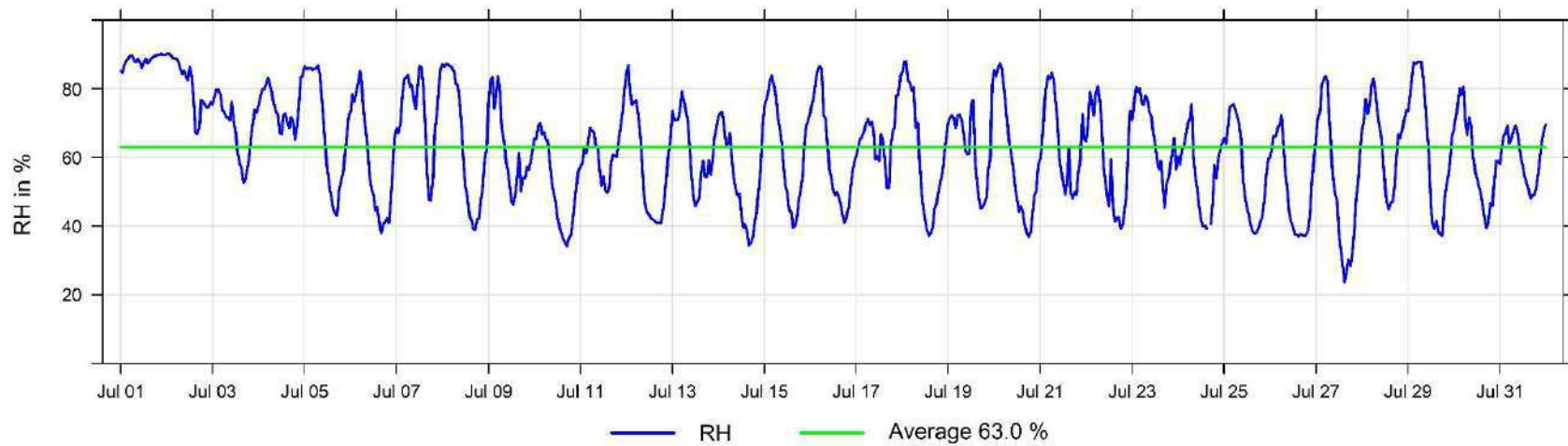
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker



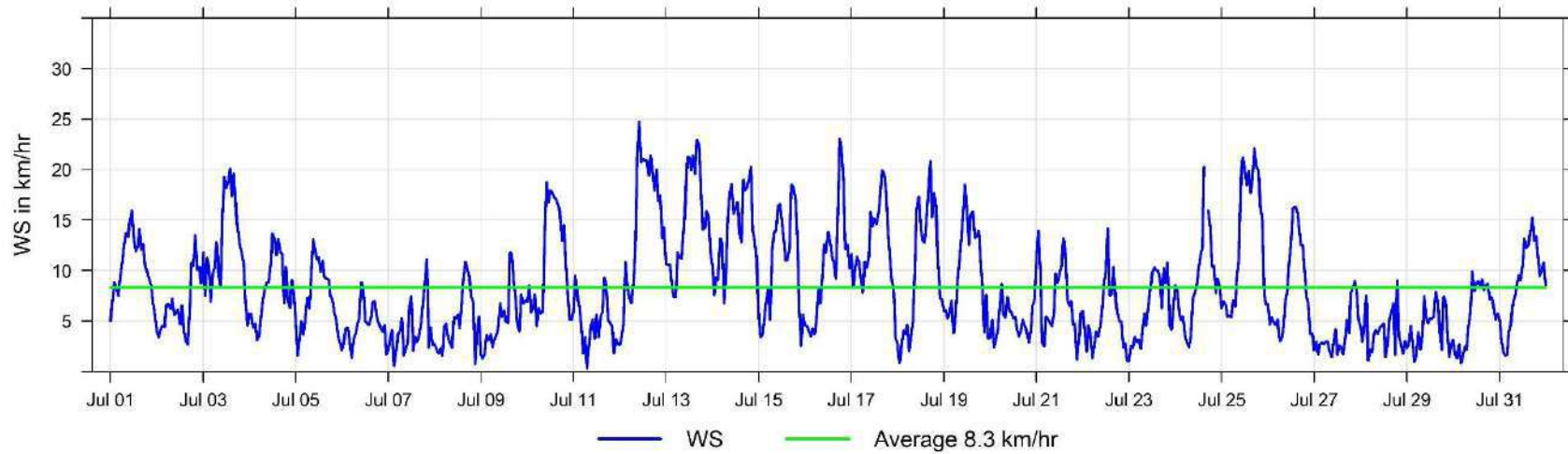
July Hourly Temperature Readings (in °C) at Henry Pirker



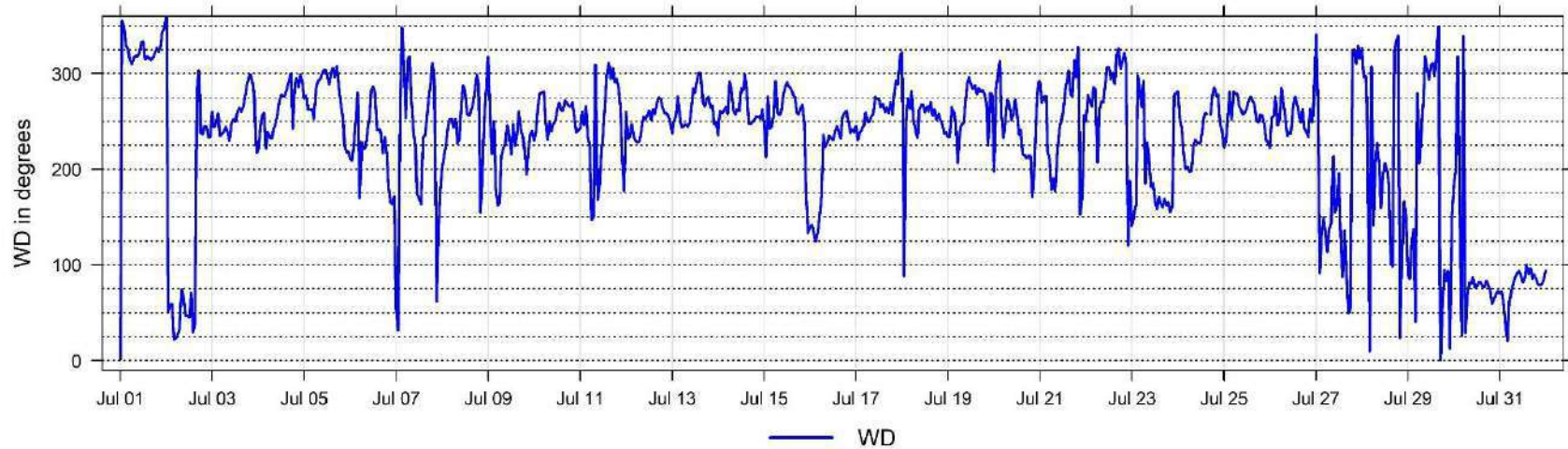
July Hourly Readings of Relative Humidity (in %) at Henry Pirker



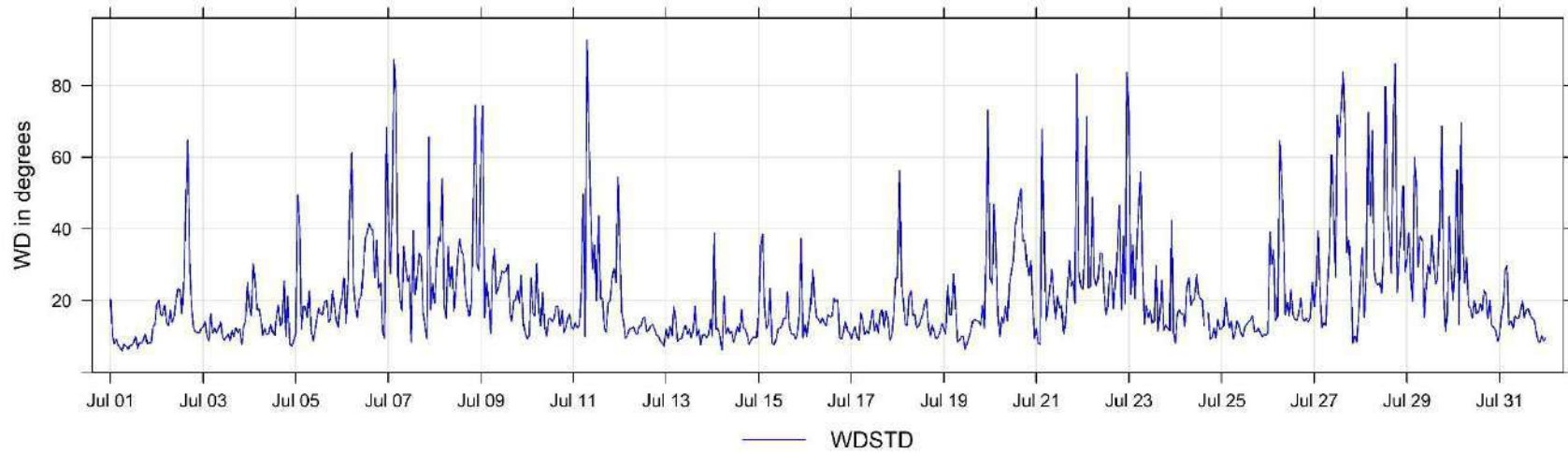
July Hourly Readings of Wind Speed (in km/hr) at Henry Pirker

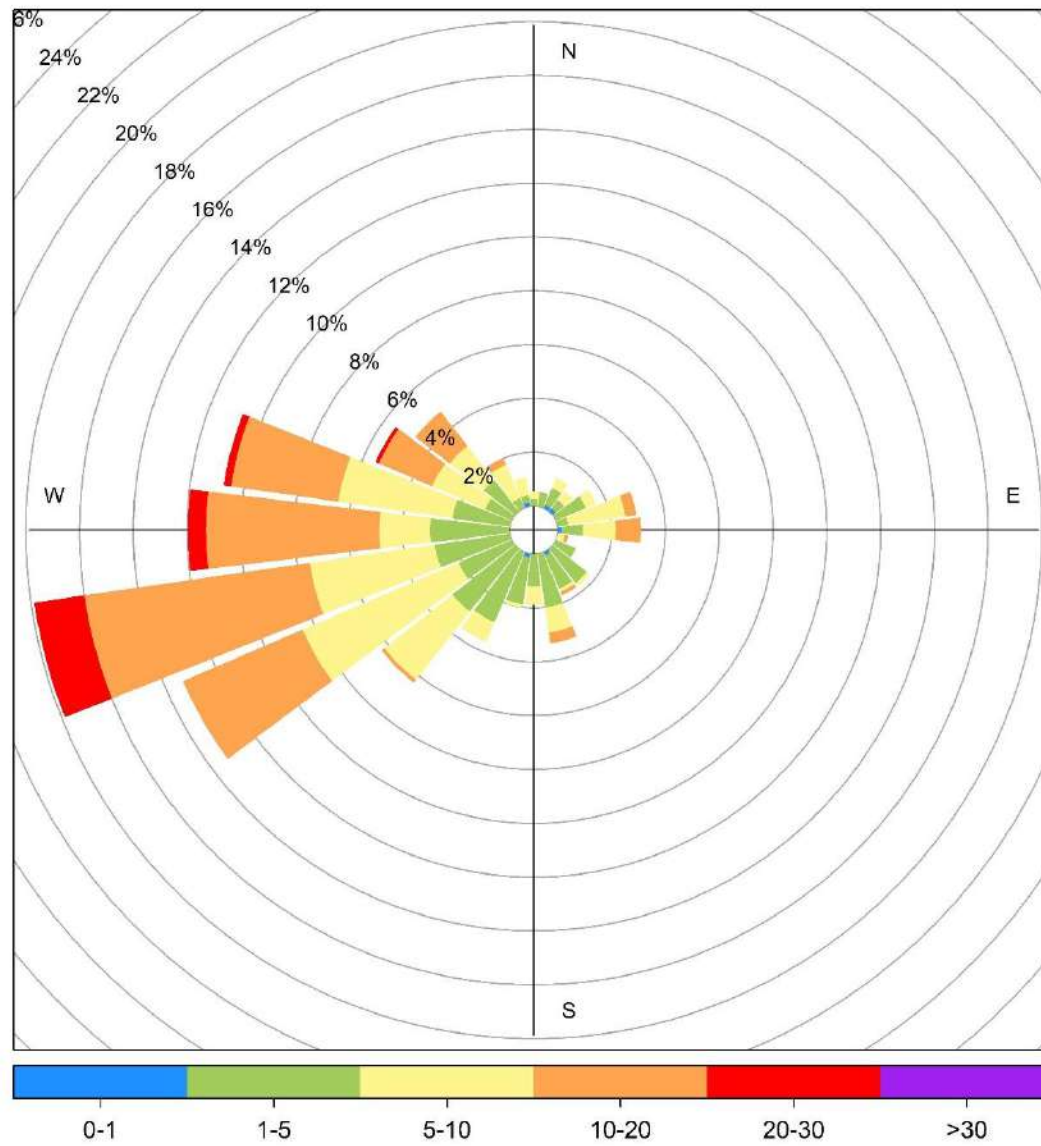


July Hourly Readings of Wind Direction (in degrees) at Henry Pirker



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



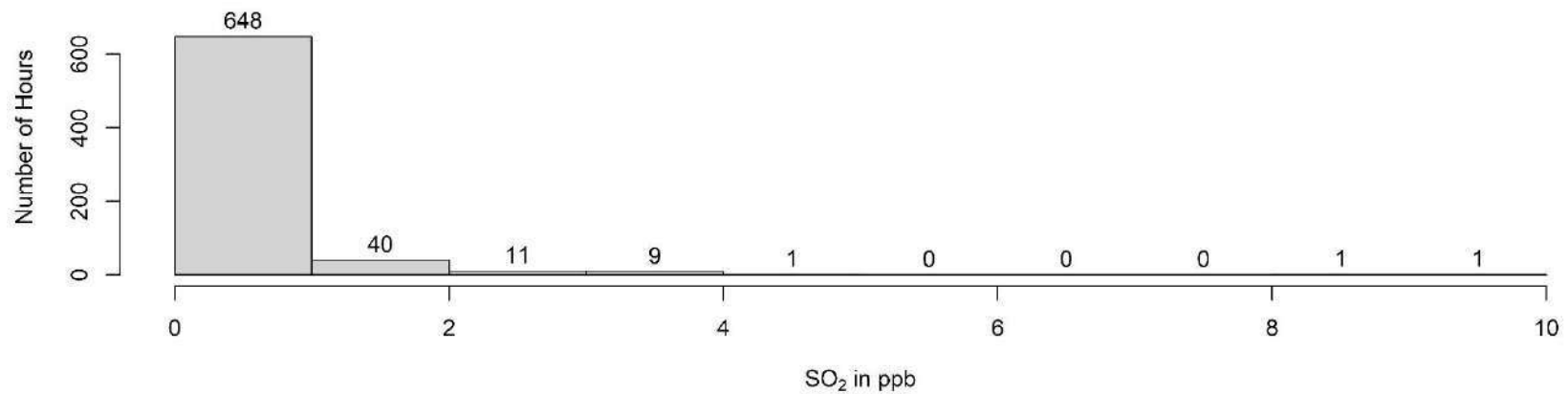
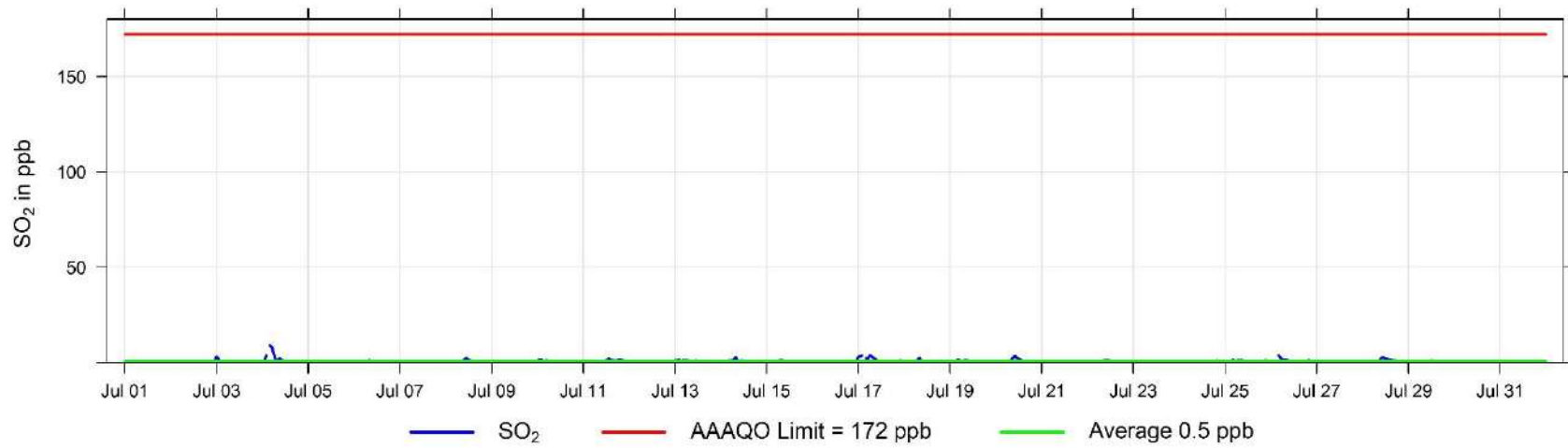


Henry Pirker July Wind Rose, wind speed in km/hr

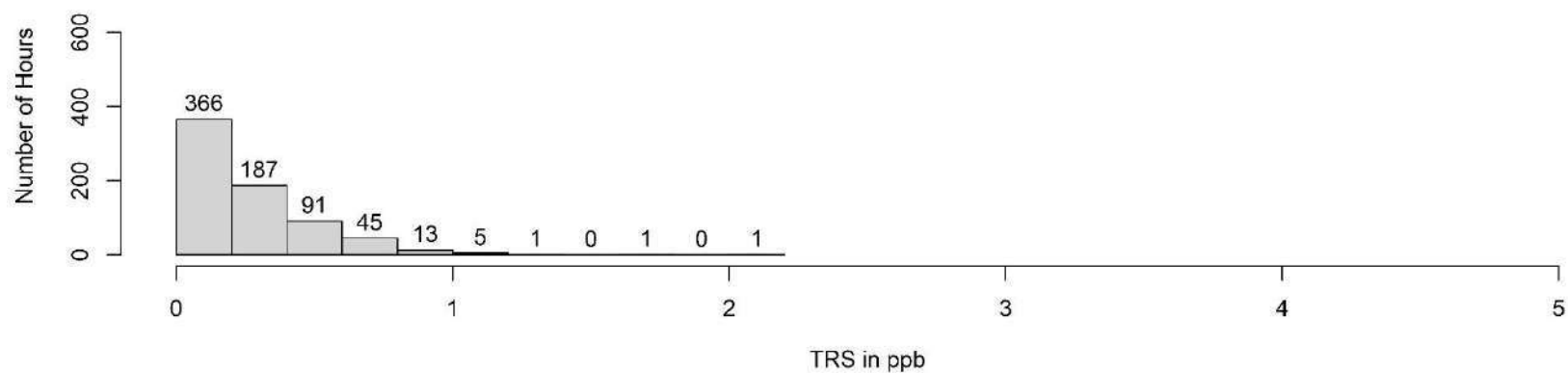
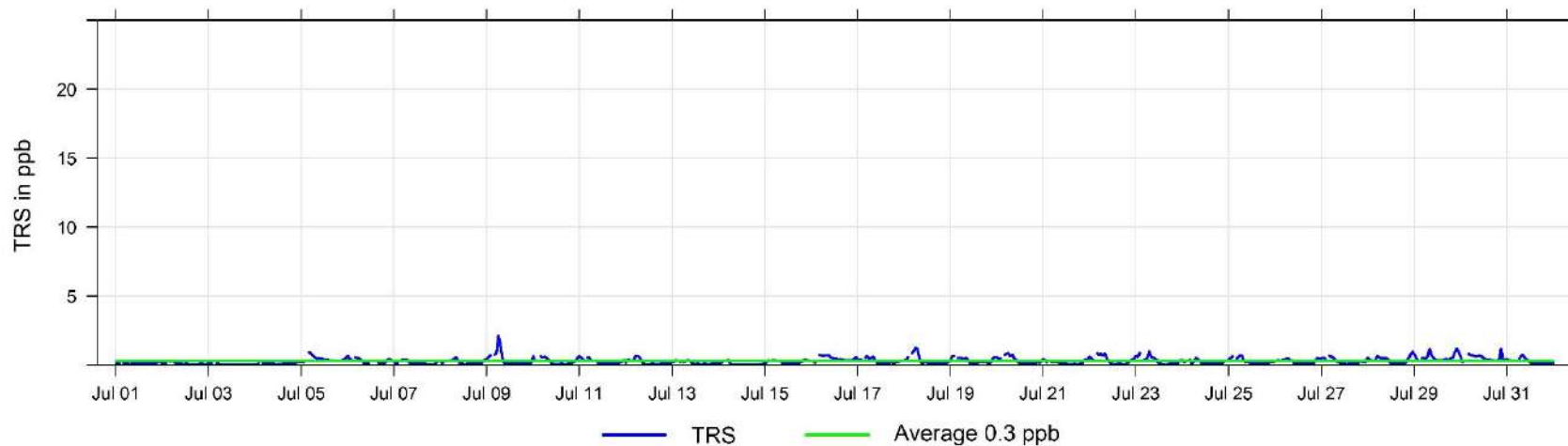
5 Smoky Heights Charts

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

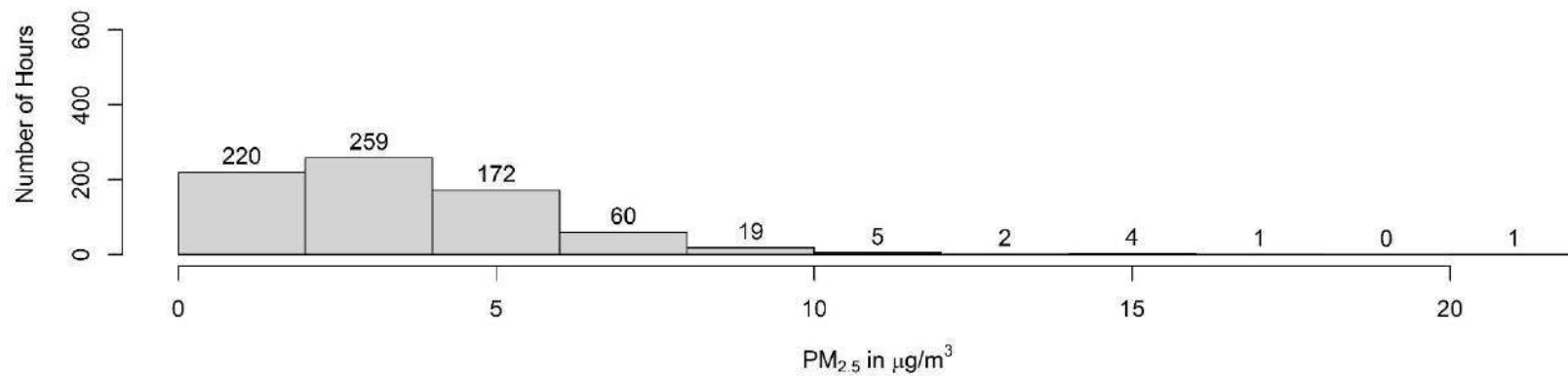
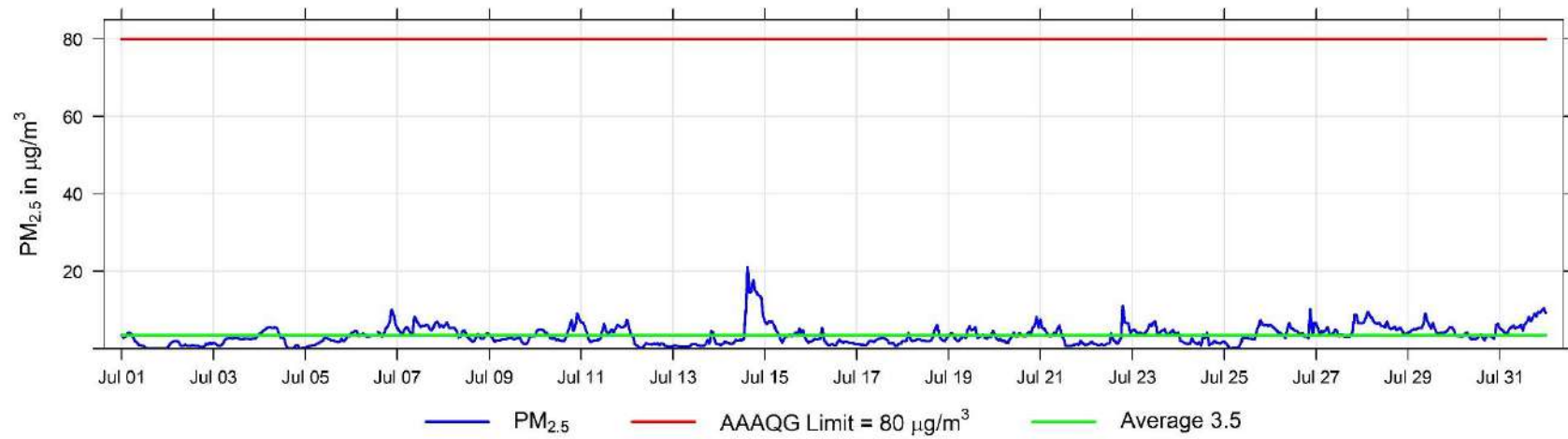
July Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



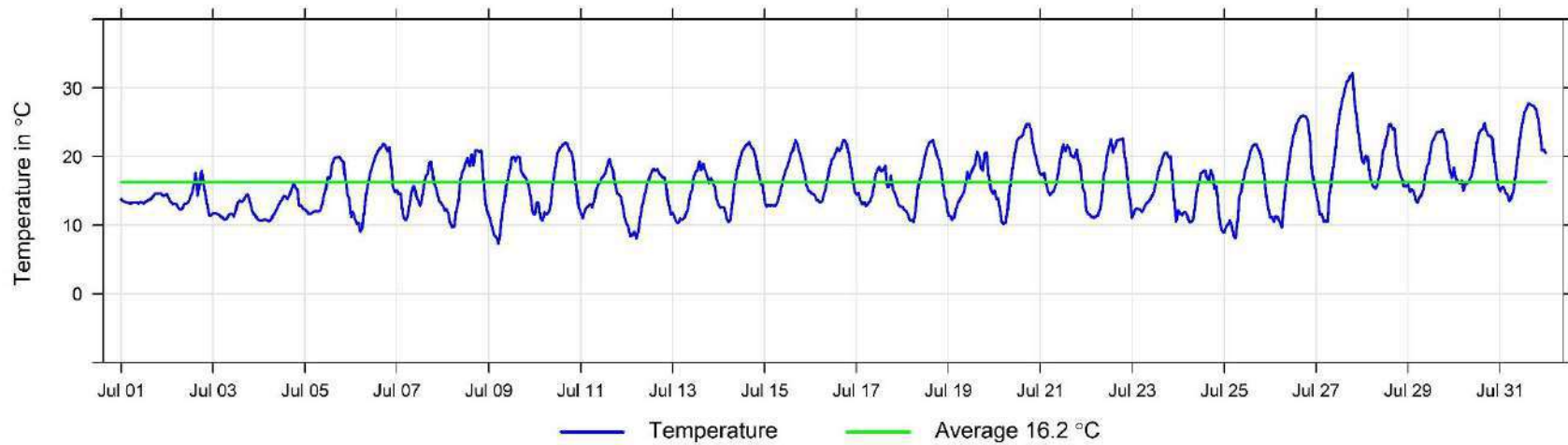
July Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



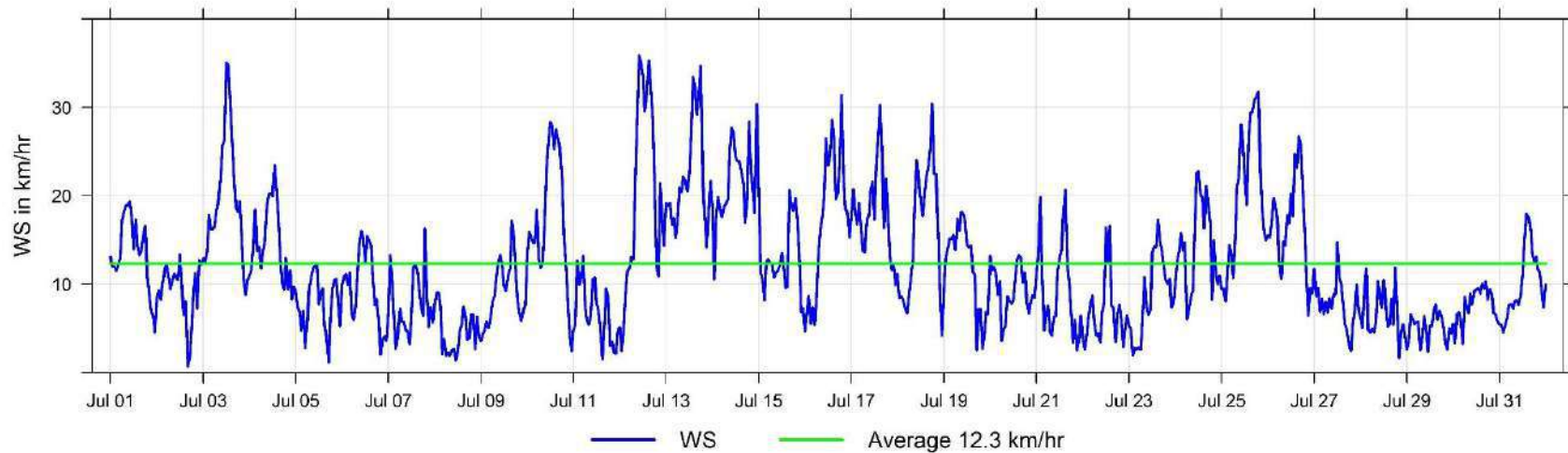
Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Smoky Heights



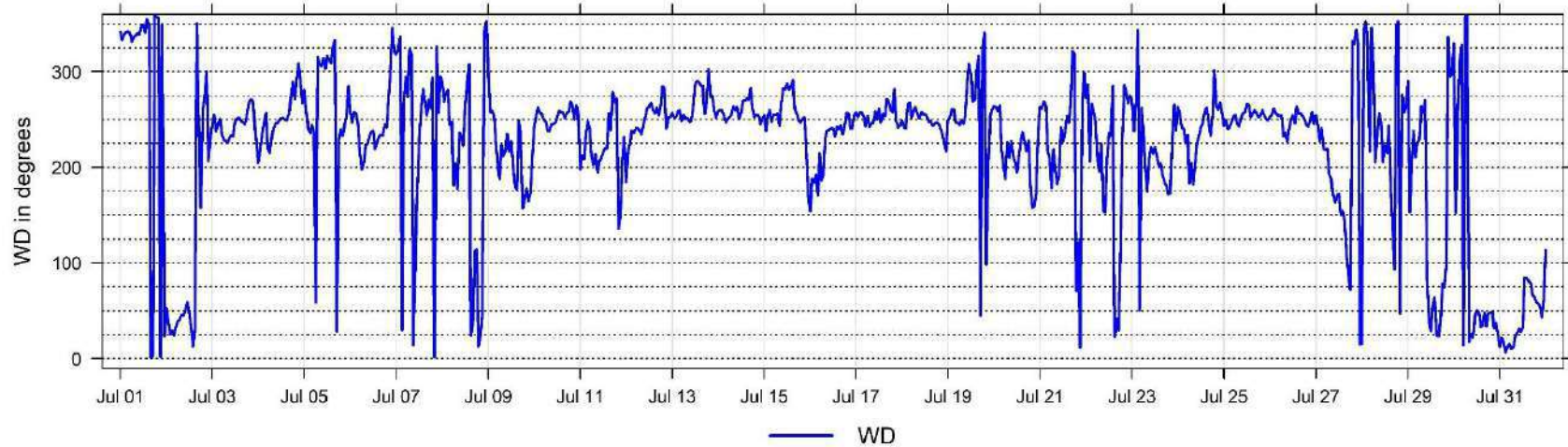
July Hourly Temperature Readings (in °C) at Smoky Heights



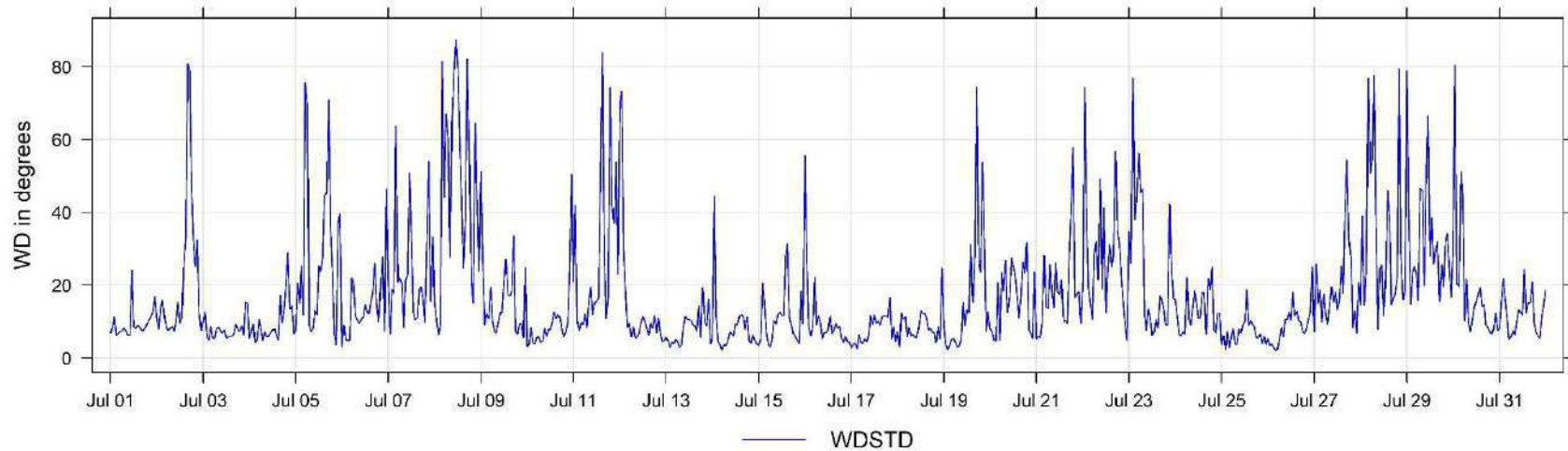
July Hourly Readings of Wind Speed (in km/hr) at Smoky Heights

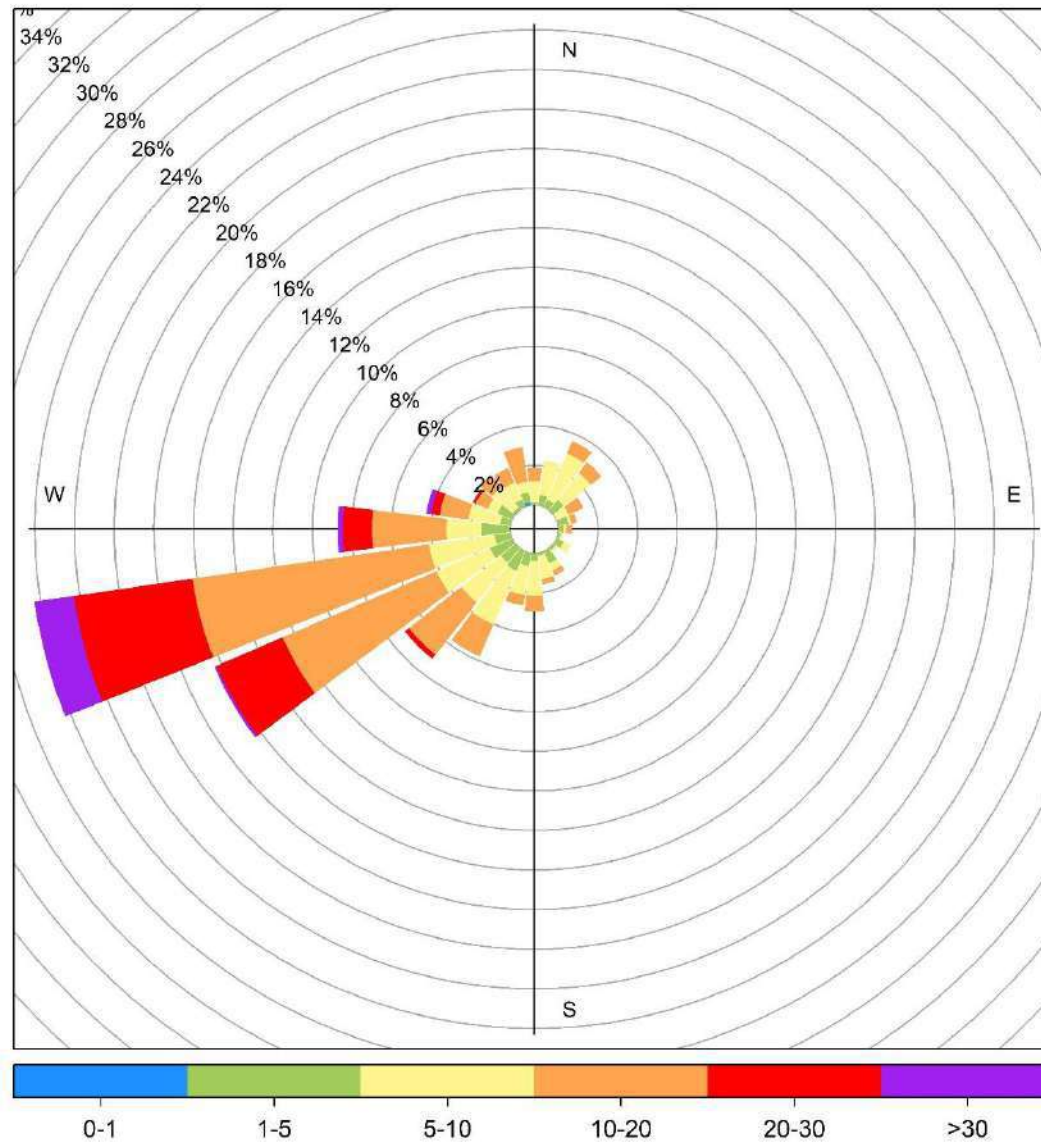


July Hourly Readings of Wind Direction (in degrees) at Smoky Heights



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



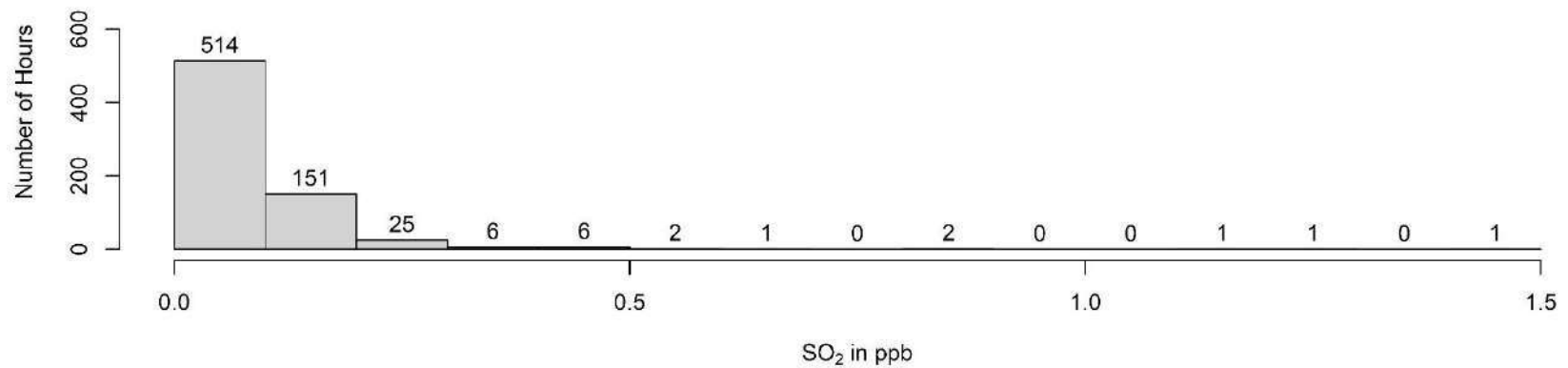
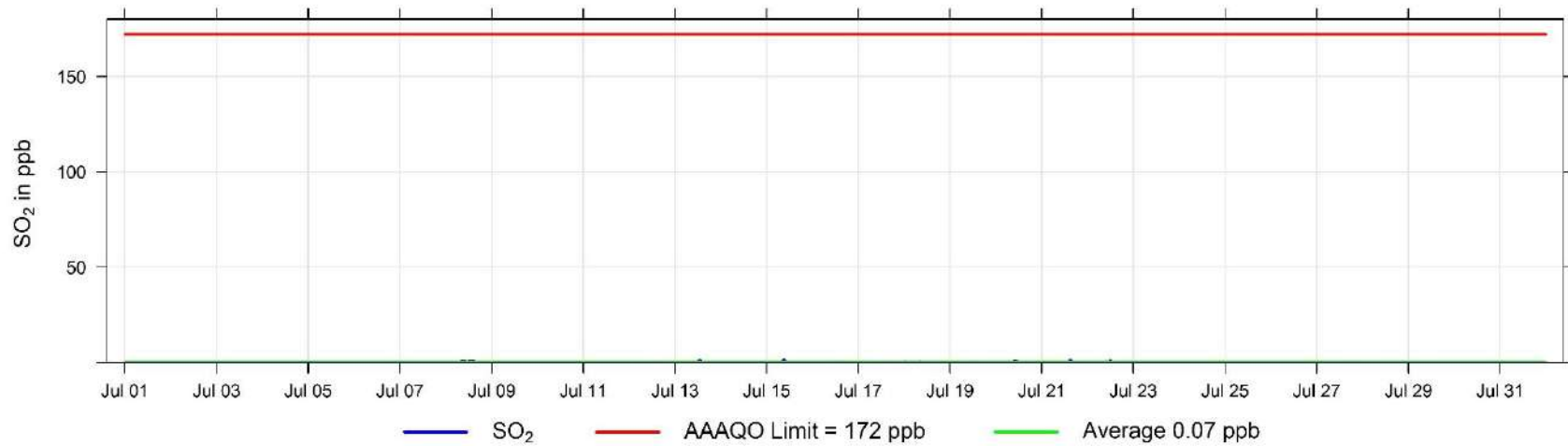


Smoky Heights July Wind Rose, wind speed in km/hr

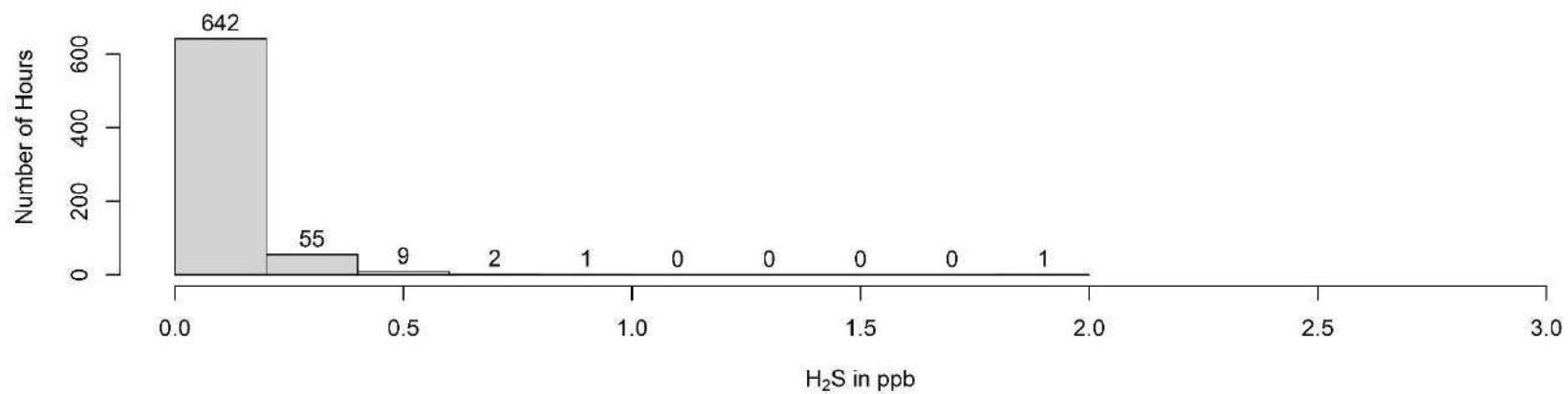
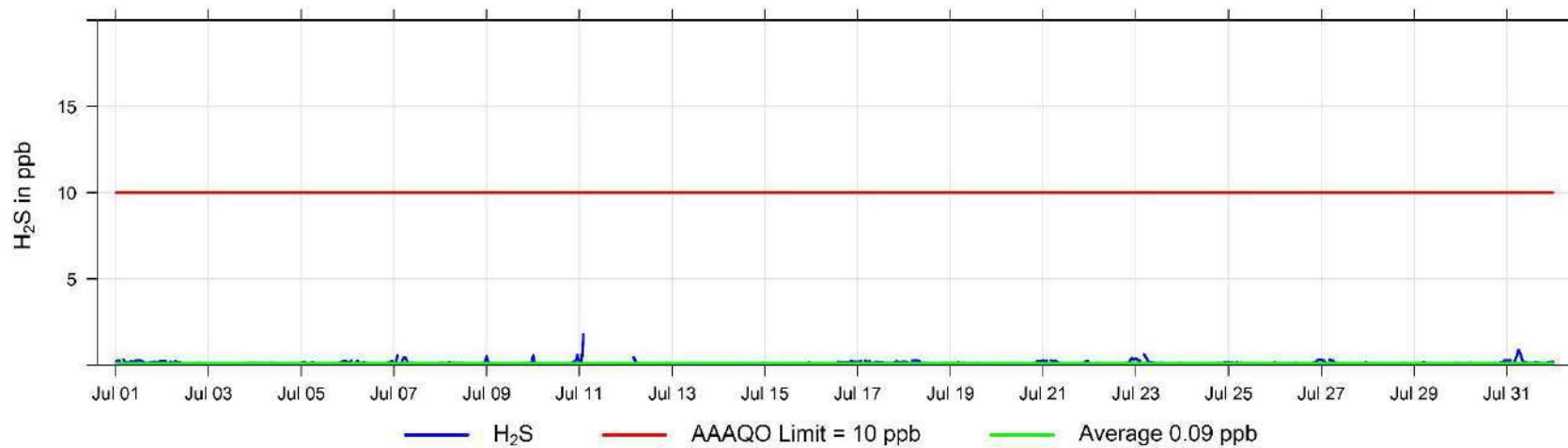
6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

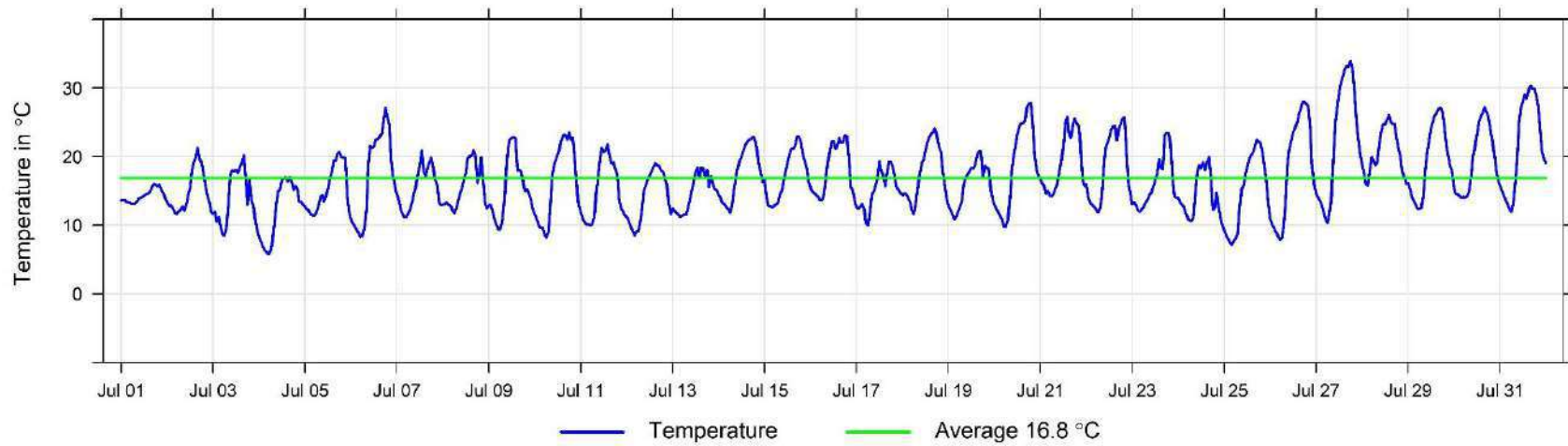
July Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



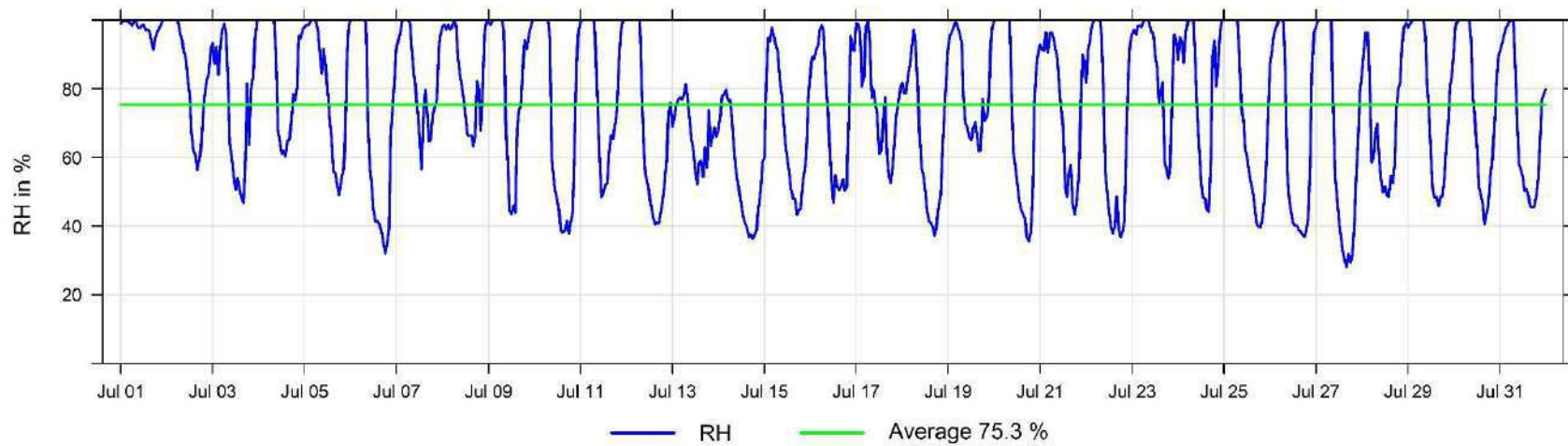
July Hourly Concentration Readings of H₂S (in ppb) at Valleyview



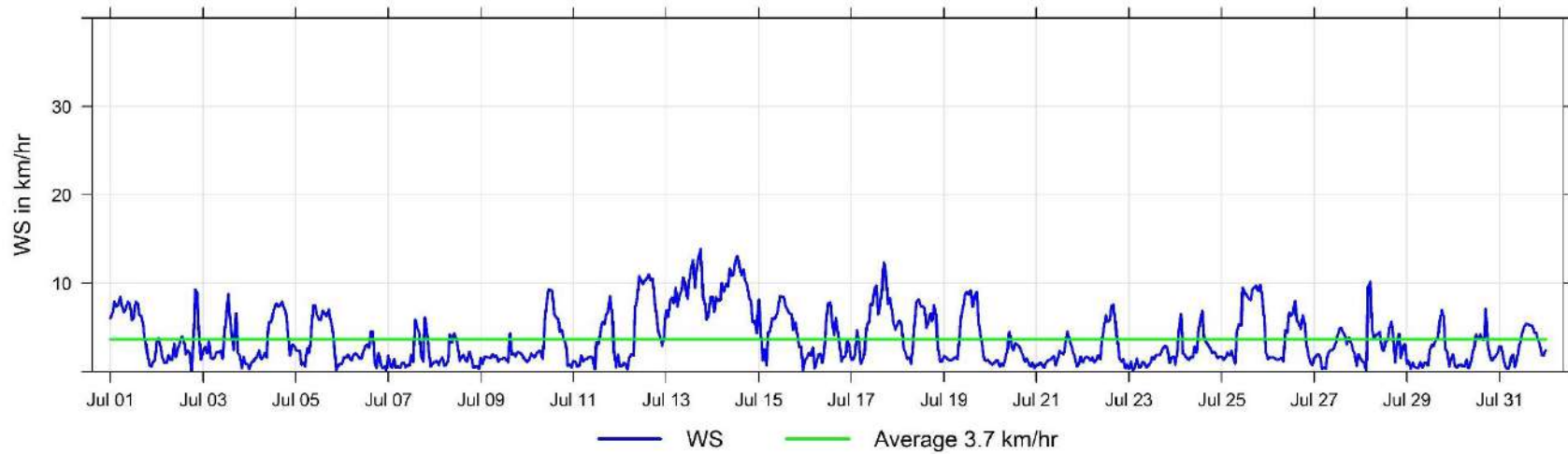
July Hourly Temperature Readings (in °C) at Valleyview



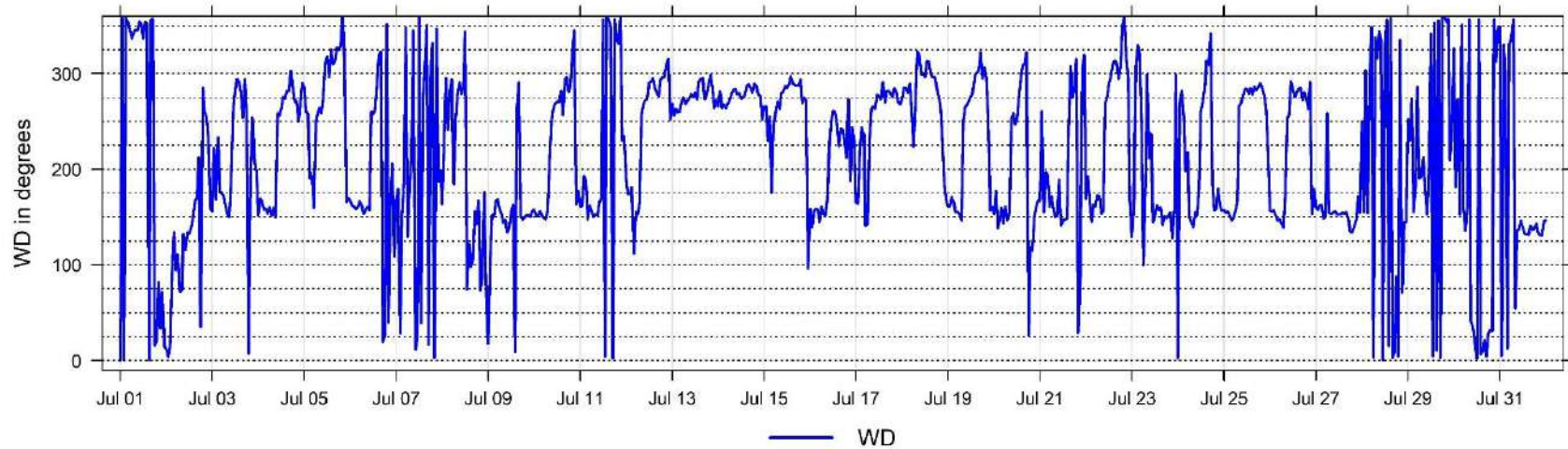
July Hourly Readings of Relative Humidity (in %) at Valleyview



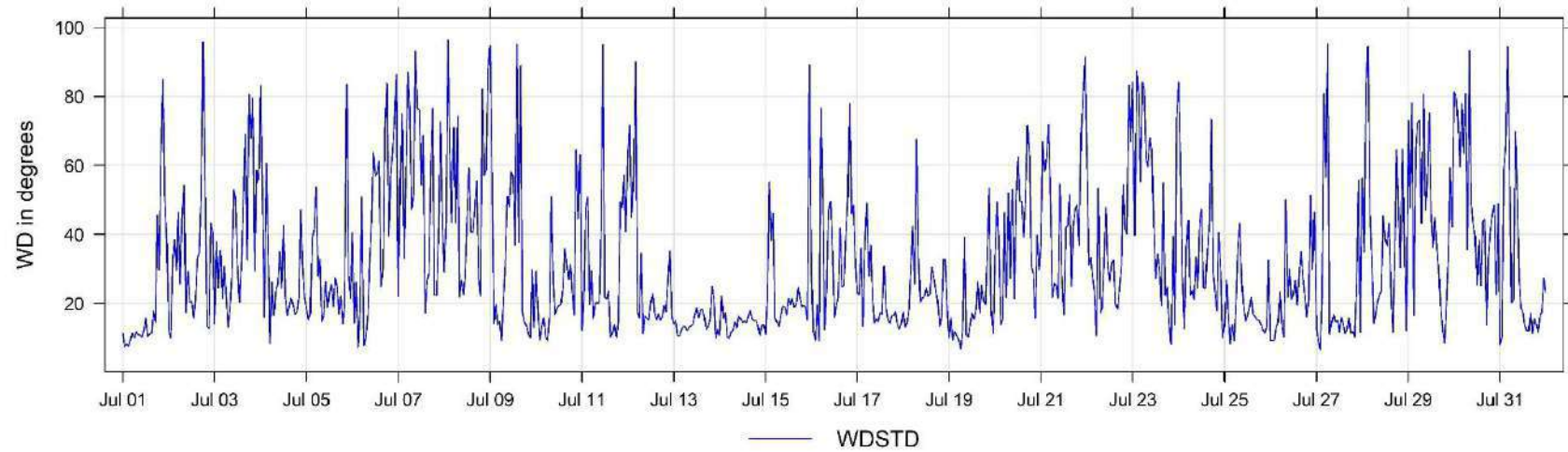
July Hourly Readings of Wind Speed (in km/hr) at Valleyview

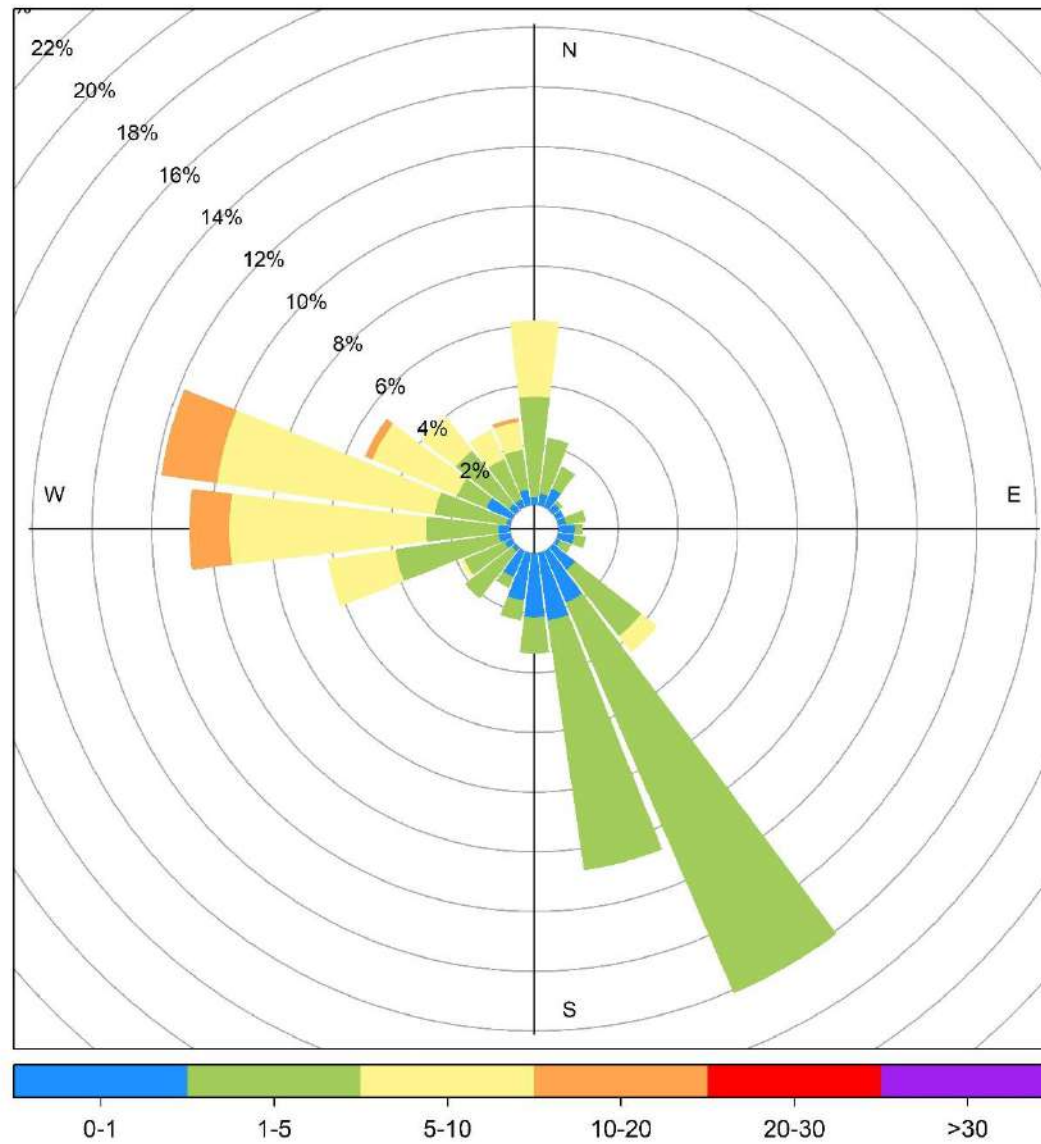


July Hourly Readings of Wind Direction (in degrees) at Valleyview



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



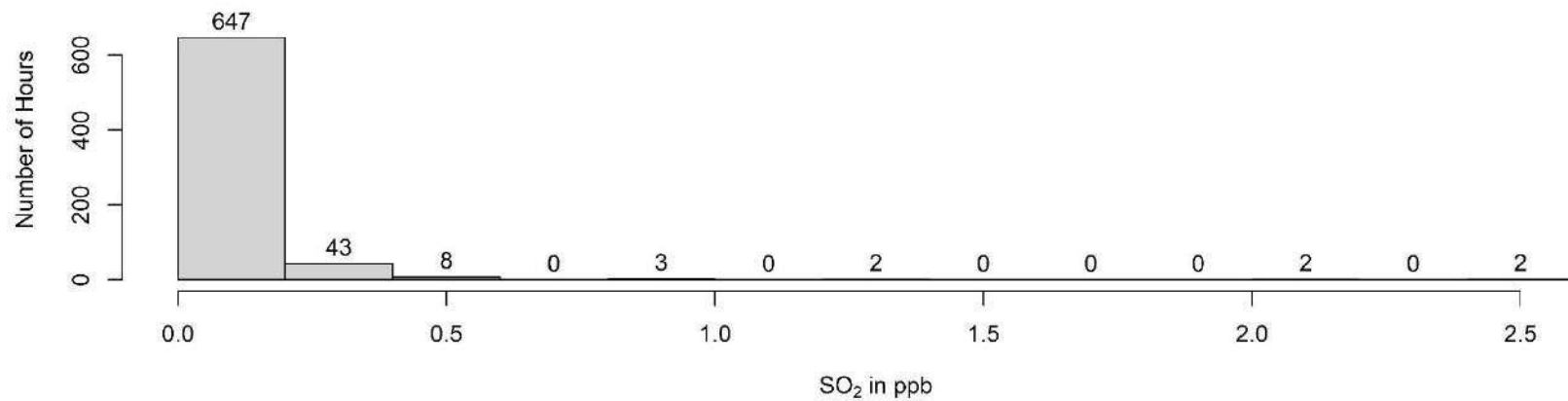
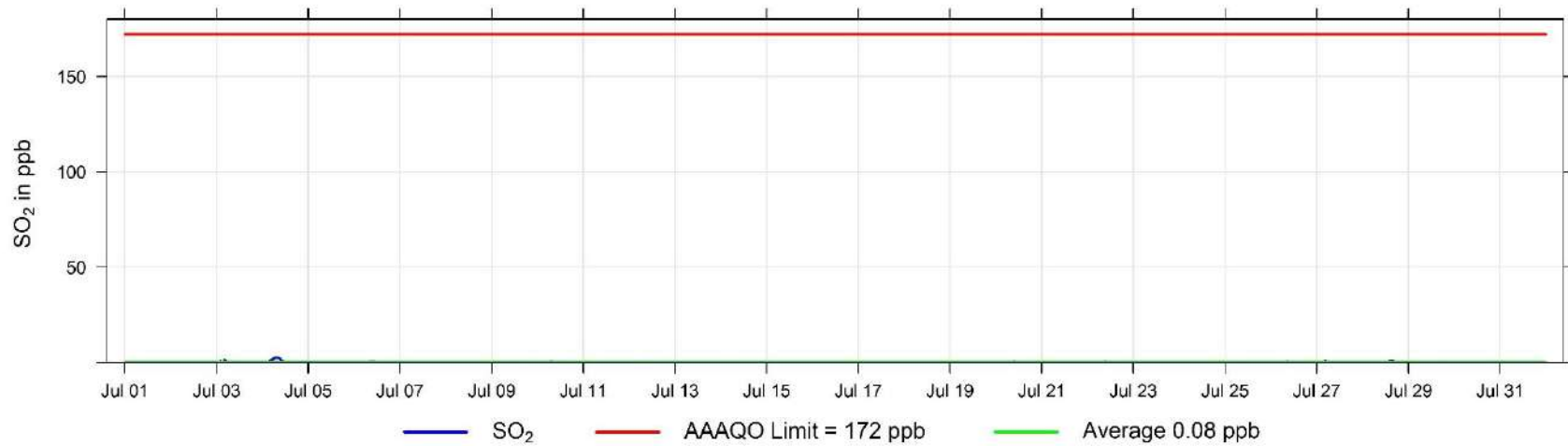


Valleyview July Wind Rose, wind speed in km/hr

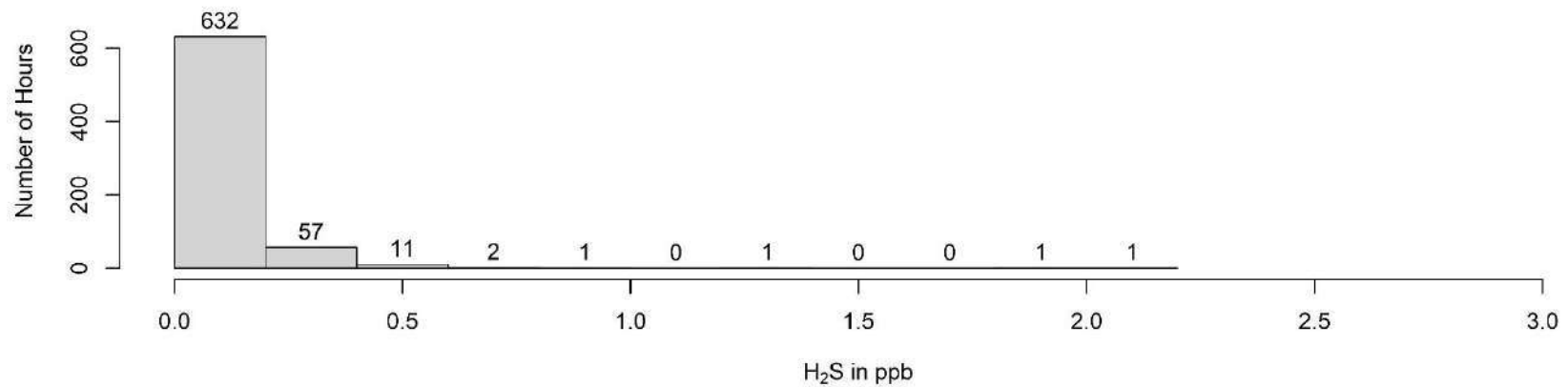
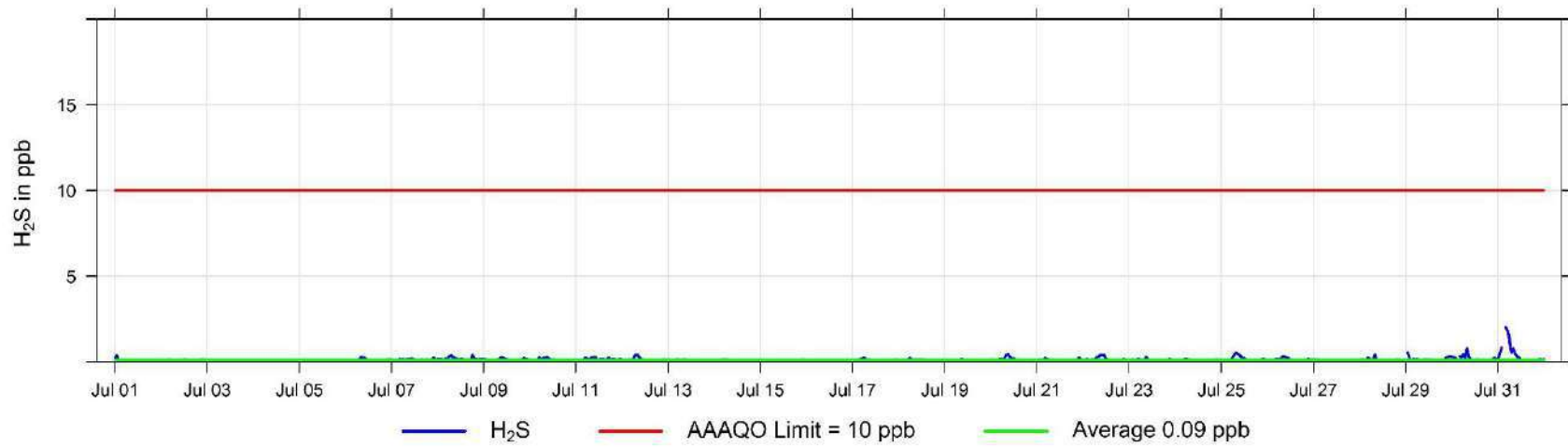
7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

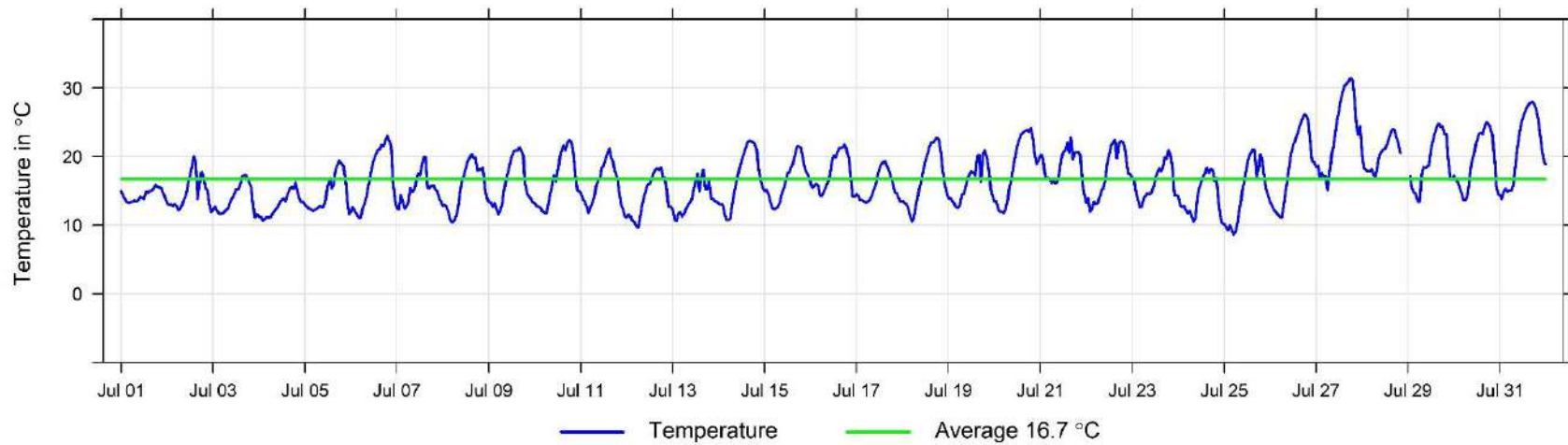
July Hourly Concentration Readings of SO₂ (in ppb) at Donnelly



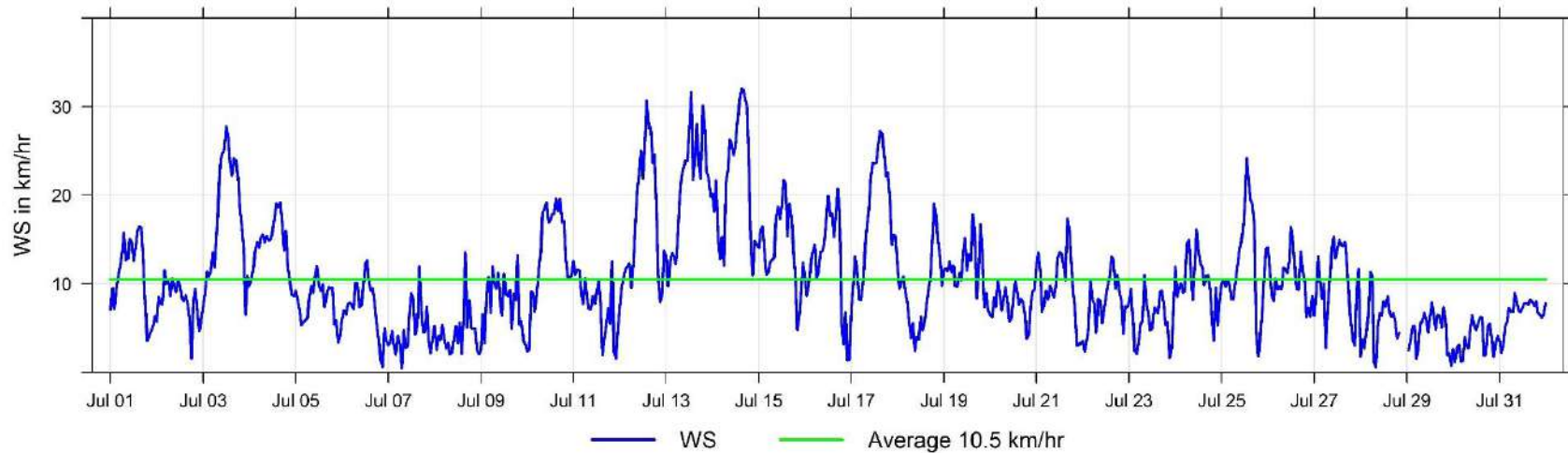
July Hourly Concentration Readings of H₂S (in ppb) at Donnelly



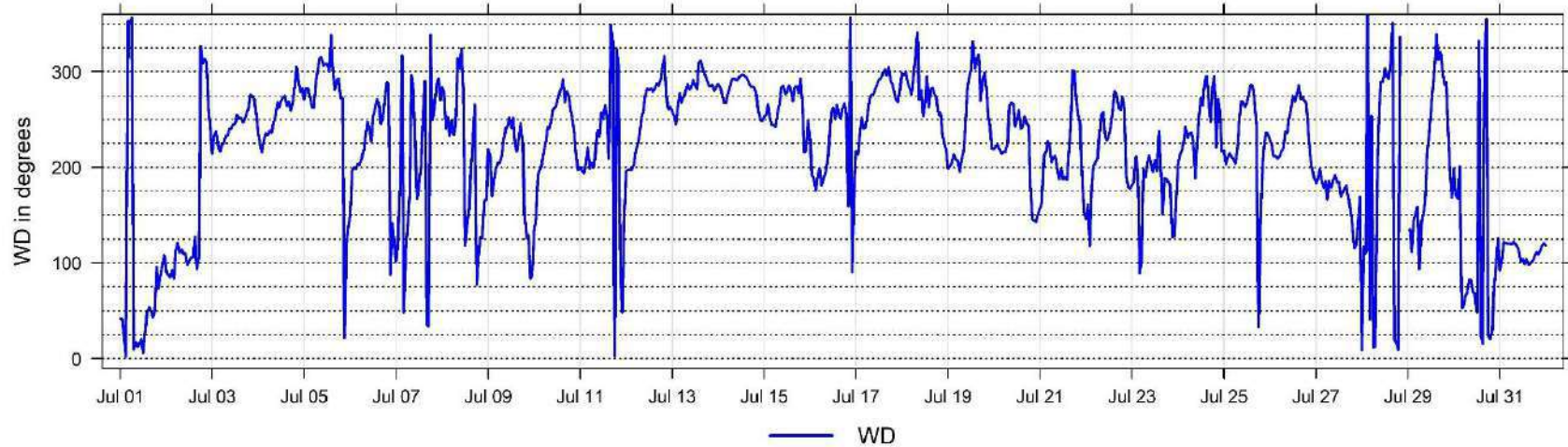
July Hourly Temperature Readings (in °C) at Donnelly



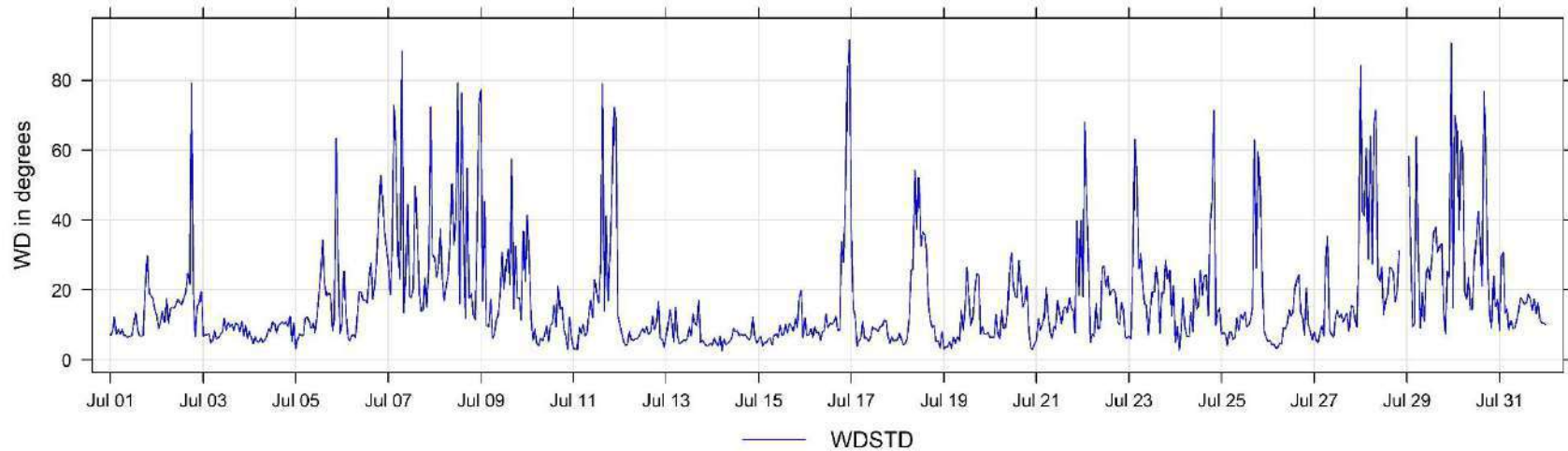
July Hourly Readings of Wind Speed (in km/hr) at Donnelly

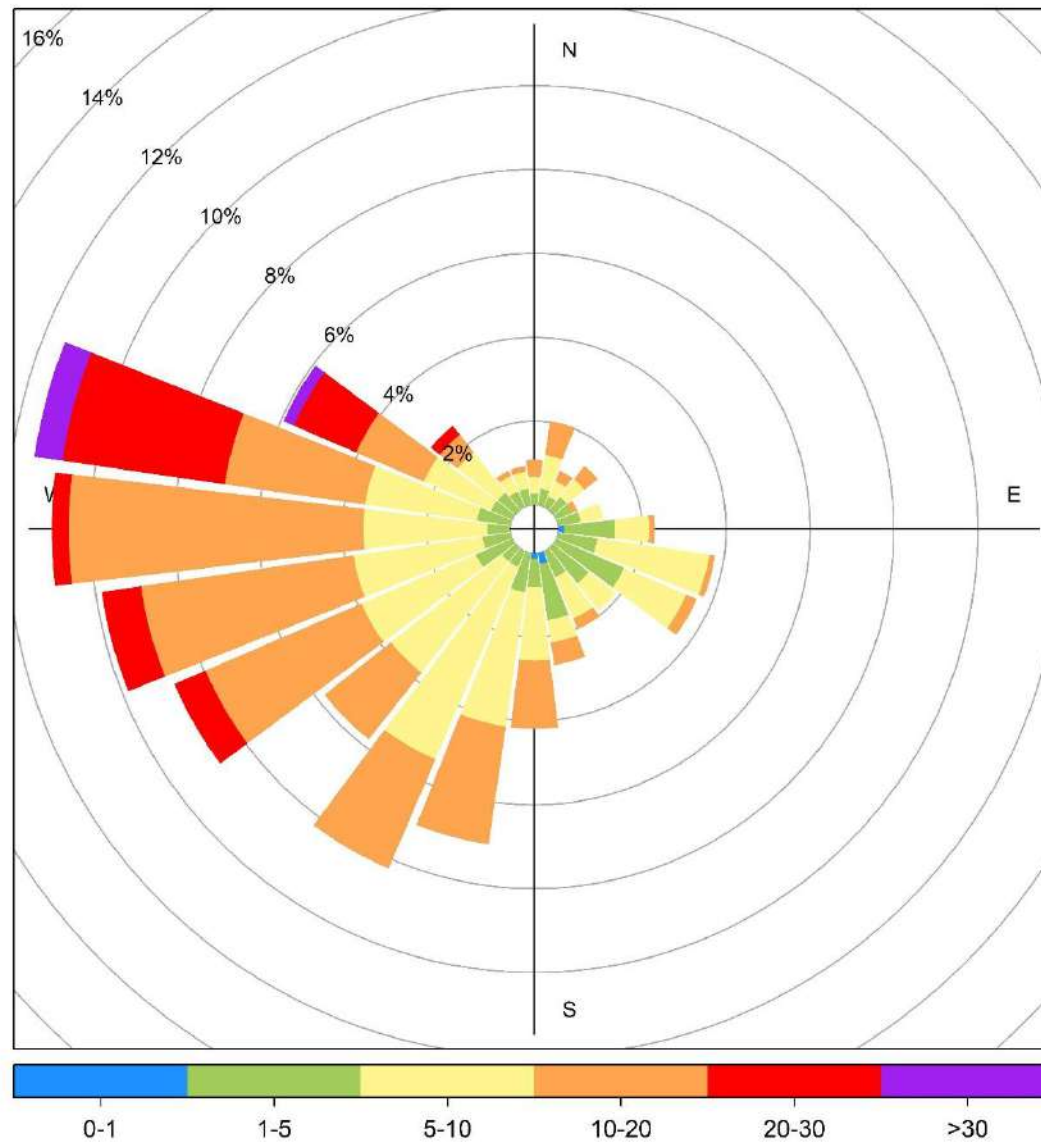


July Hourly Readings of Wind Direction (in degrees) at Donnelly



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



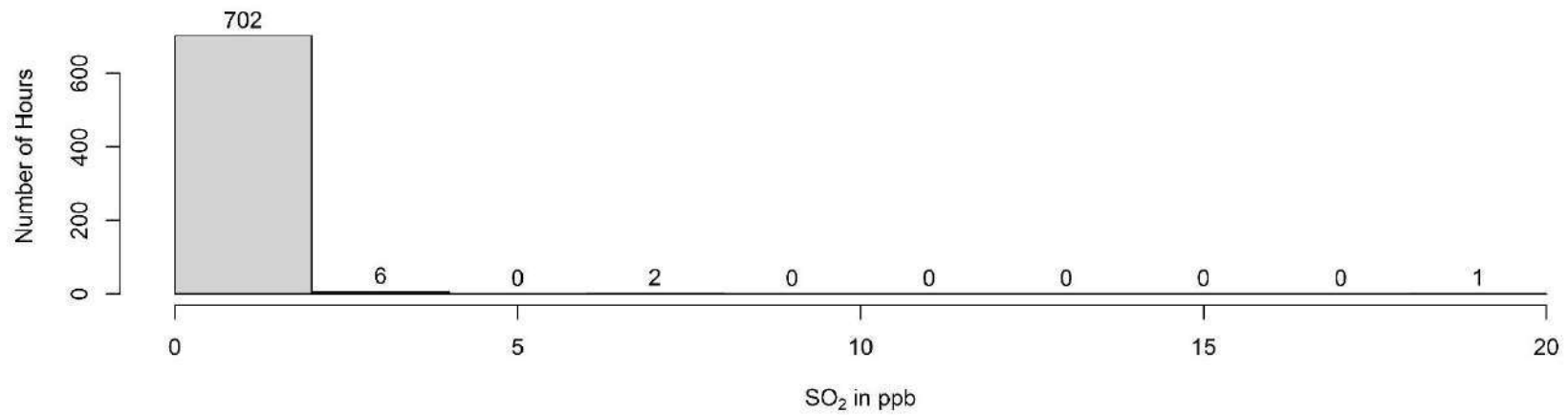
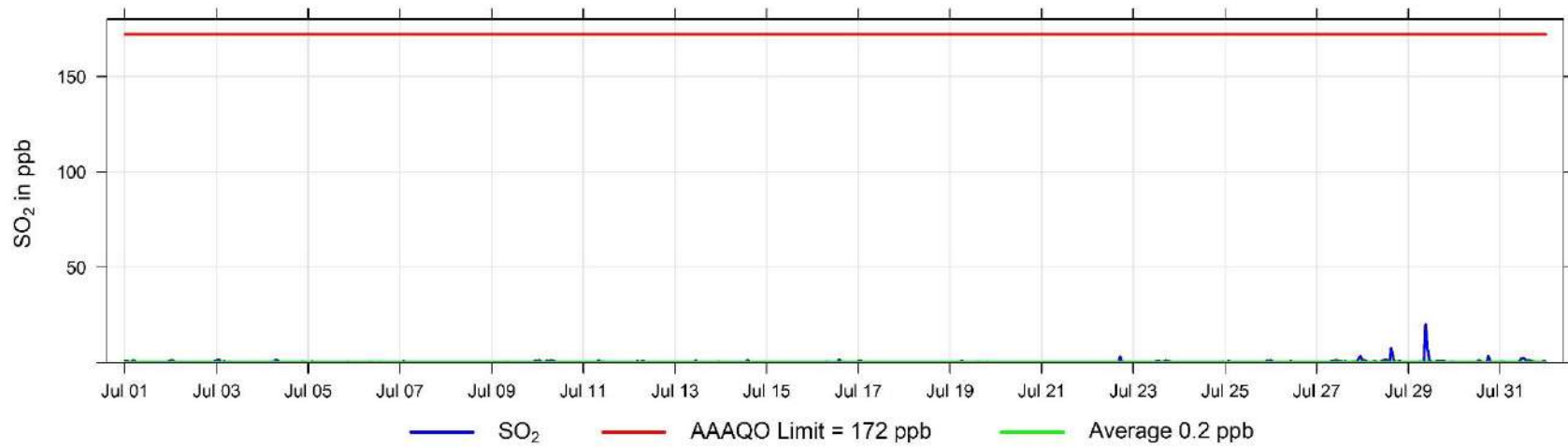


Donnelly July Wind Rose, wind speed in km/hr

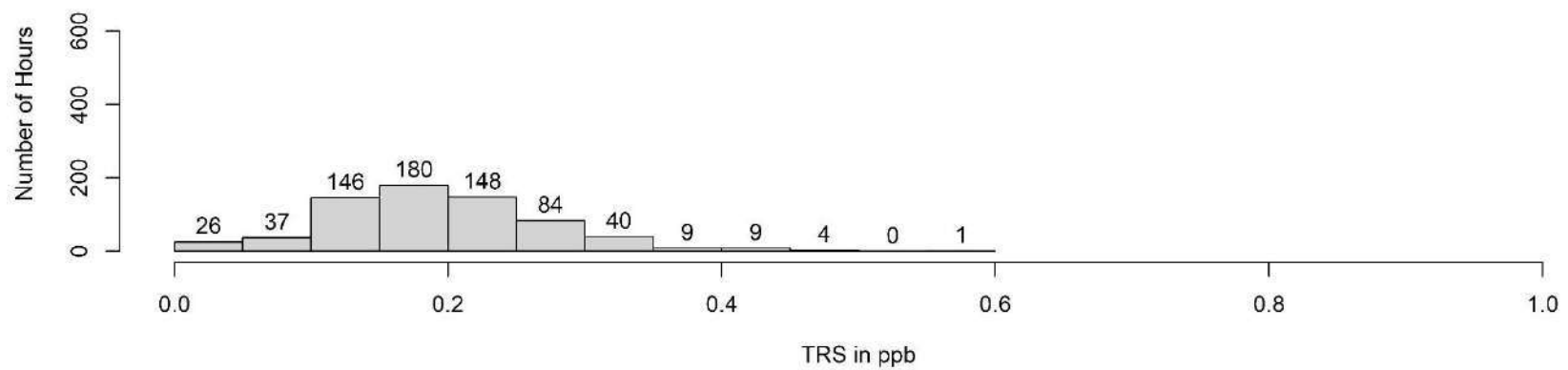
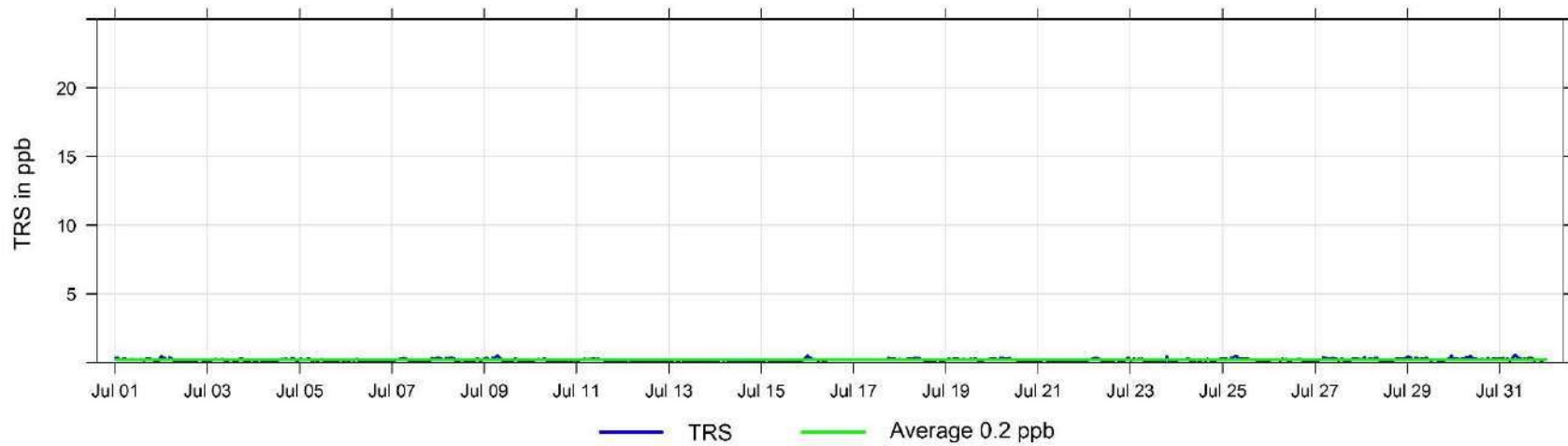
8 Wembley (Portable) Charts

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

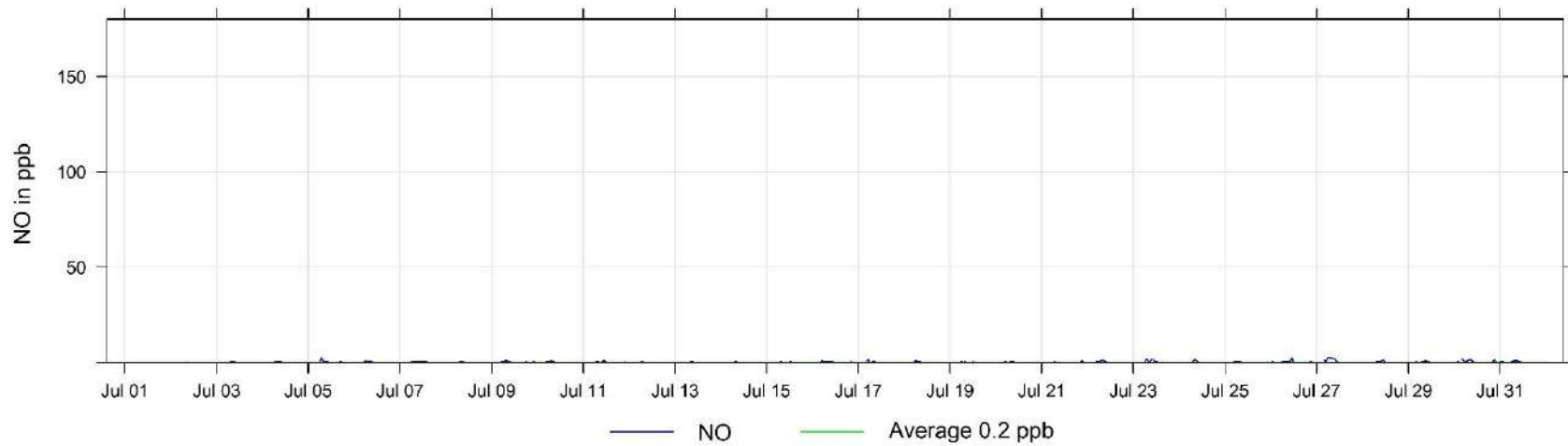
July Hourly Concentration Readings of SO₂ (in ppb) at Wembley



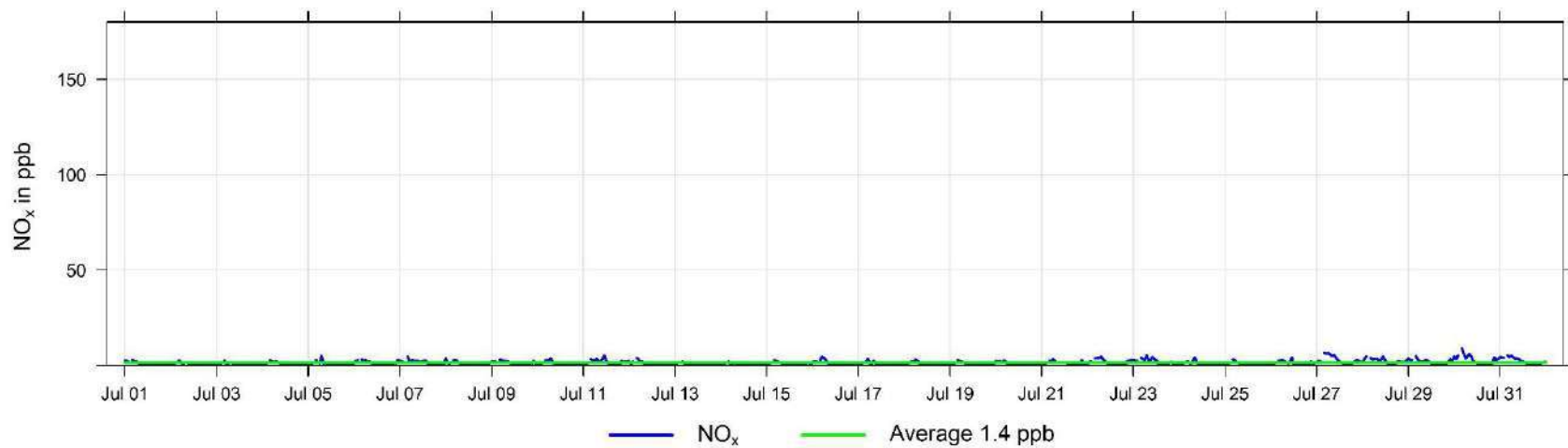
July Hourly Concentration Readings of TRS (in ppb) at Wembley



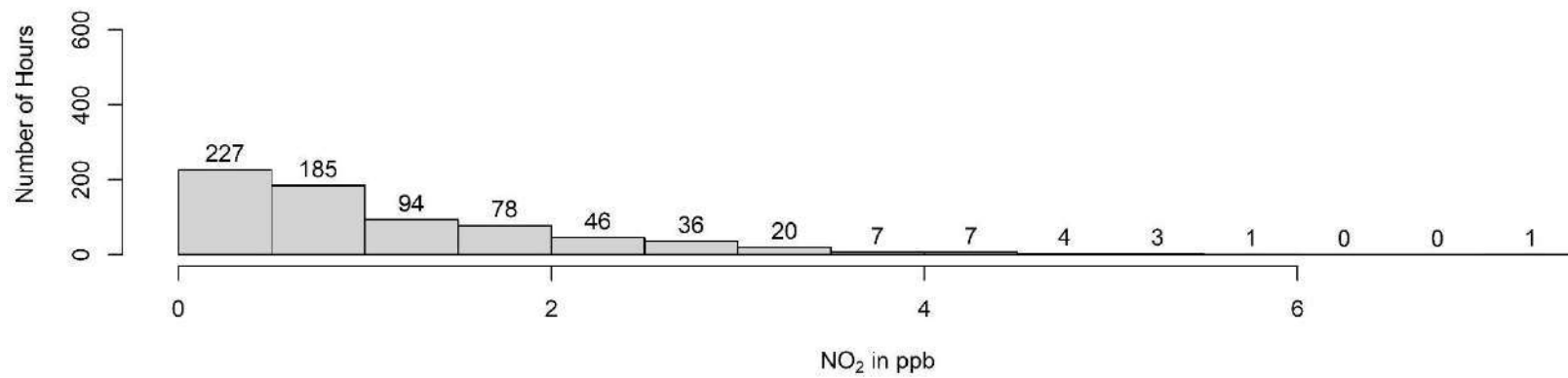
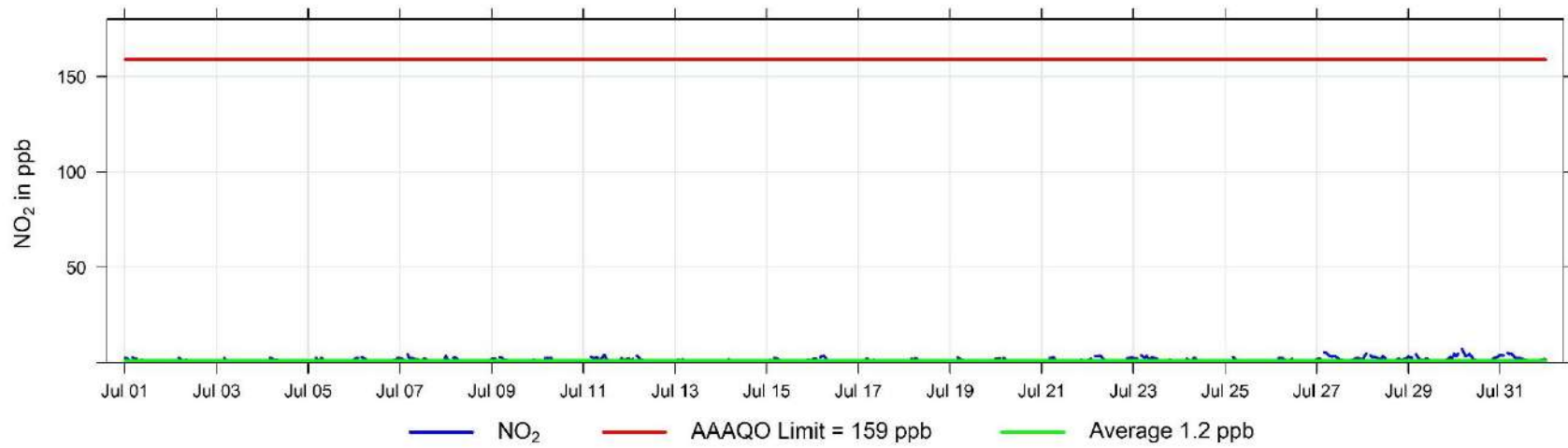
July Hourly Concentration Readings of NO (in ppb) at Wembley



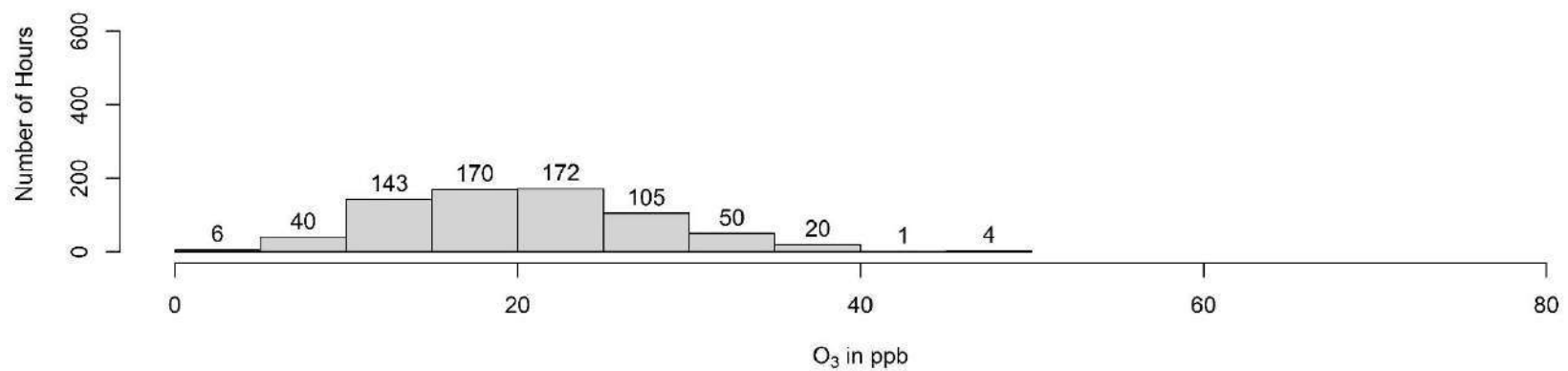
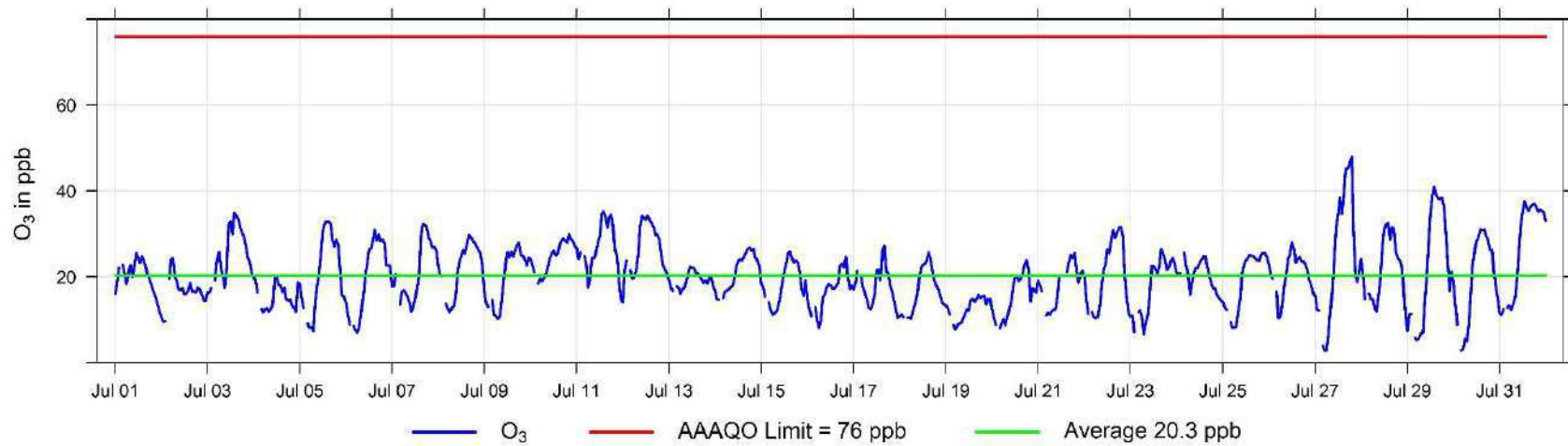
July Hourly Concentration Readings of NO_x (in ppb) at Wembley



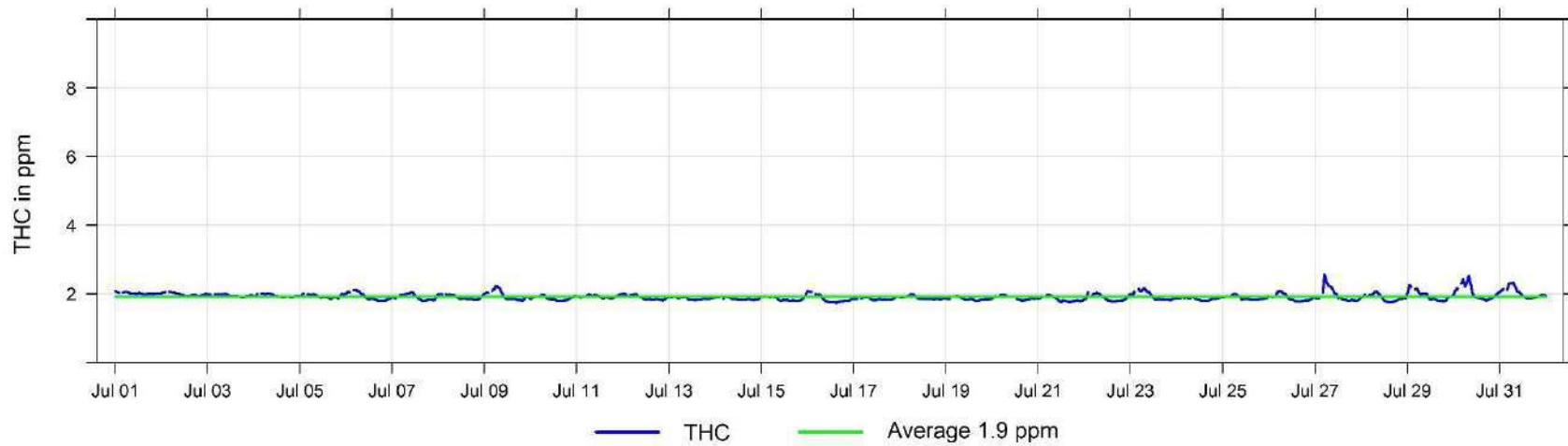
July Hourly Concentration Readings of NO₂ (in ppb) at Wembley



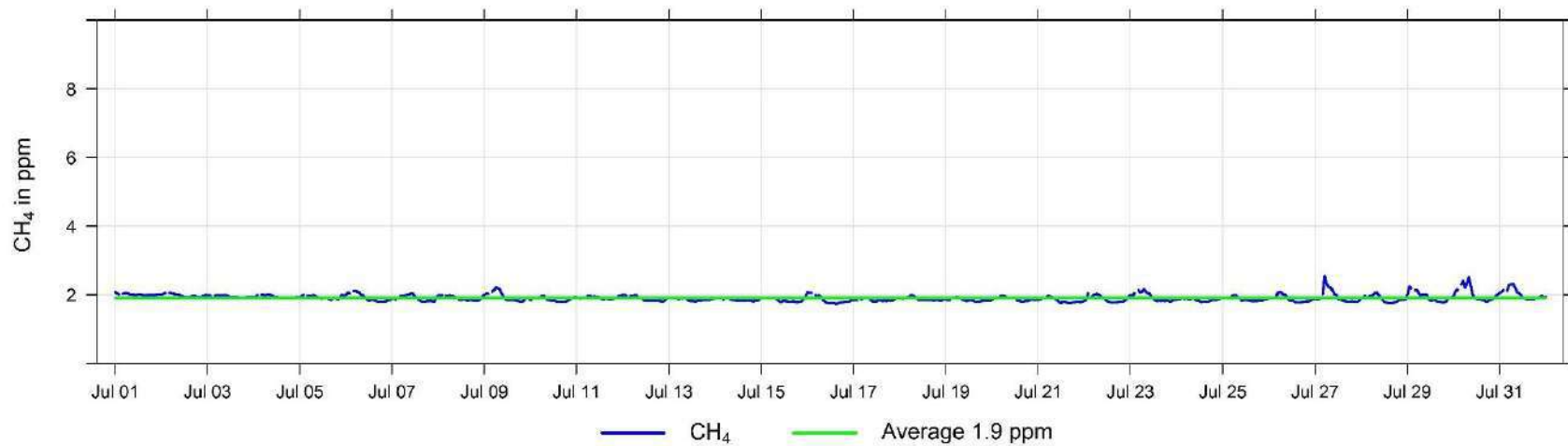
July Hourly Concentration Readings of O₃ (in ppb) at Wembley



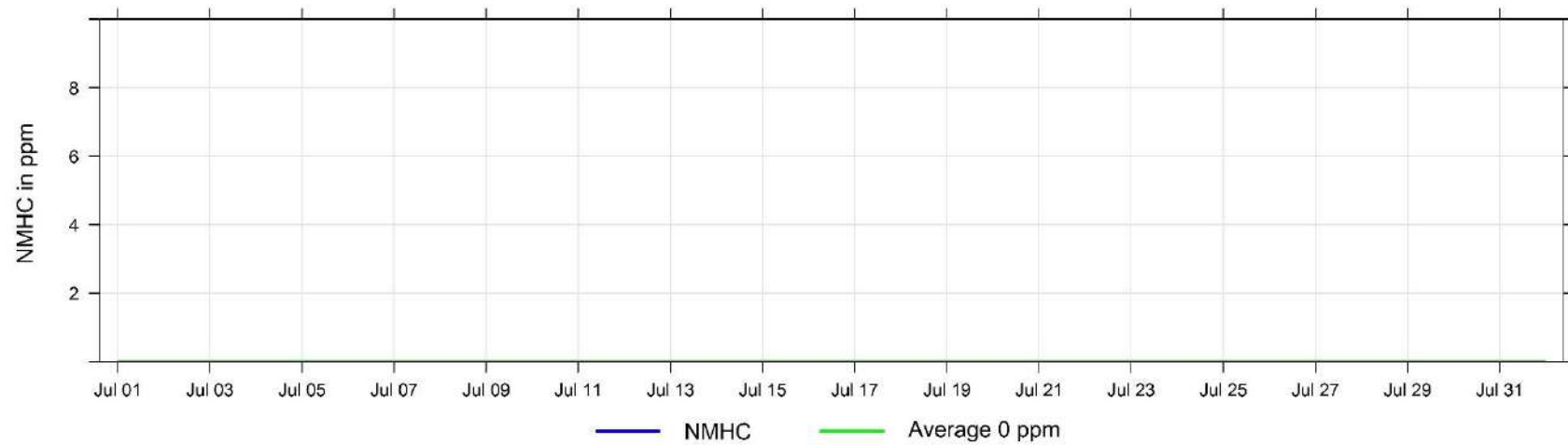
July Hourly Concentration Readings of THC (in ppm) at Wembley



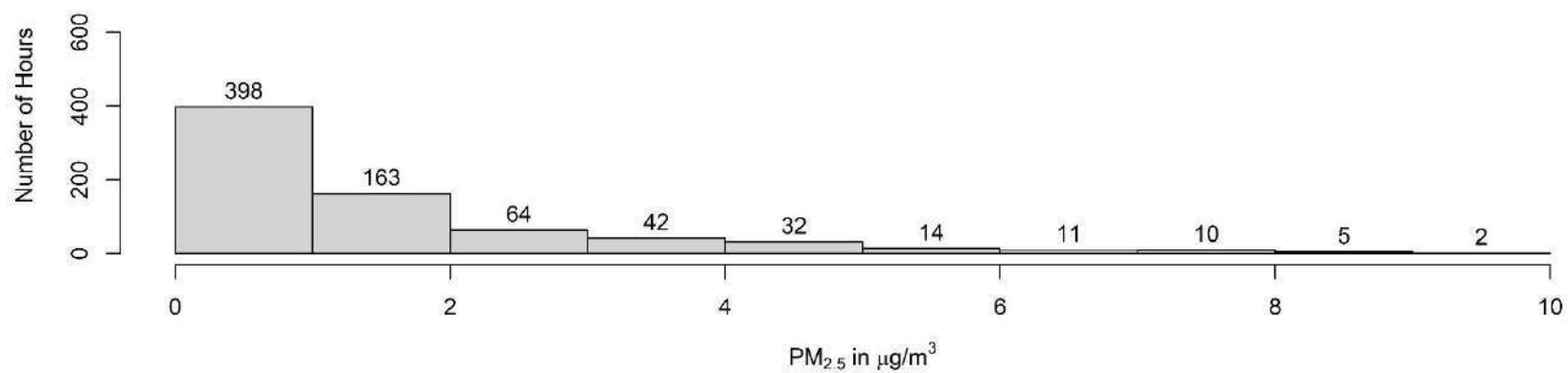
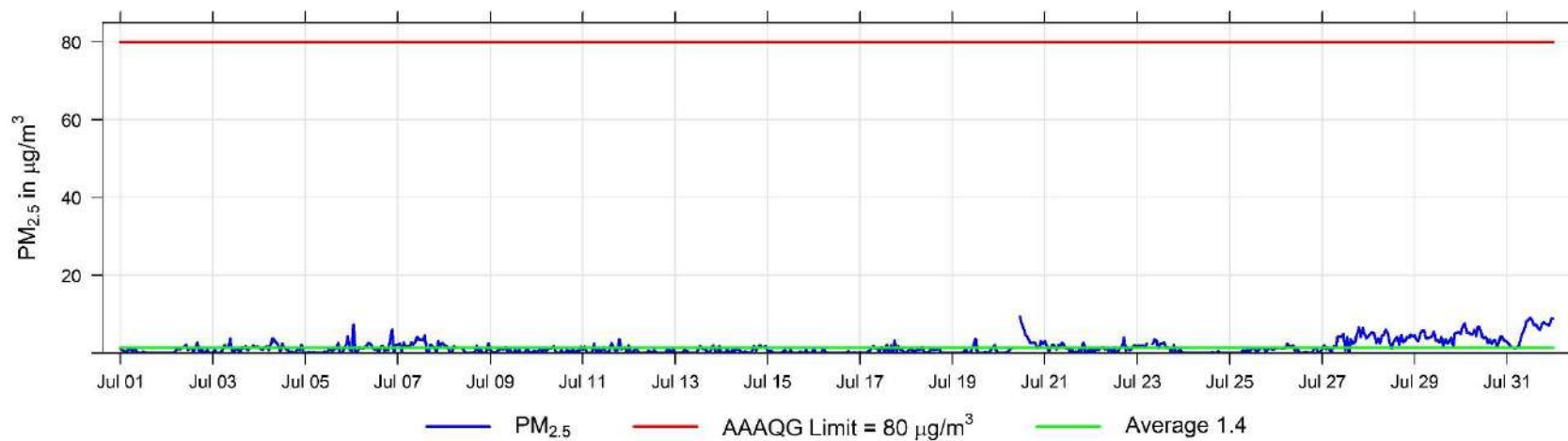
July Hourly Concentration Readings of CH₄ (in ppm) at Wembley



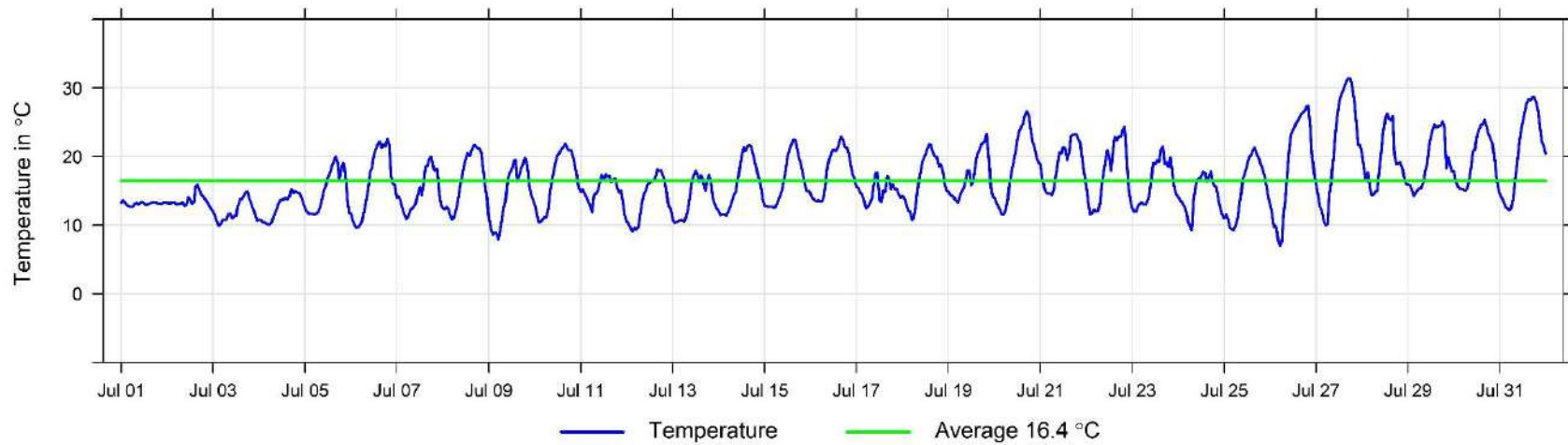
July Hourly Concentration Readings of NMHC (in ppm) at Wembley



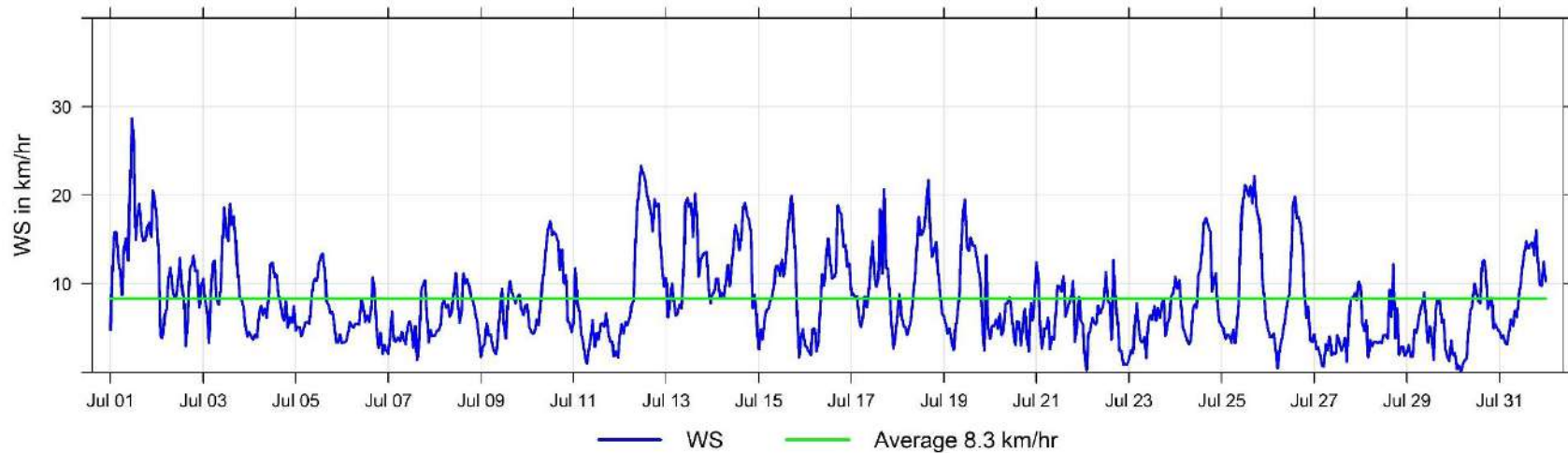
Hourly Concentration Readings of PM_{2.5} in µg/m³ at Wembley



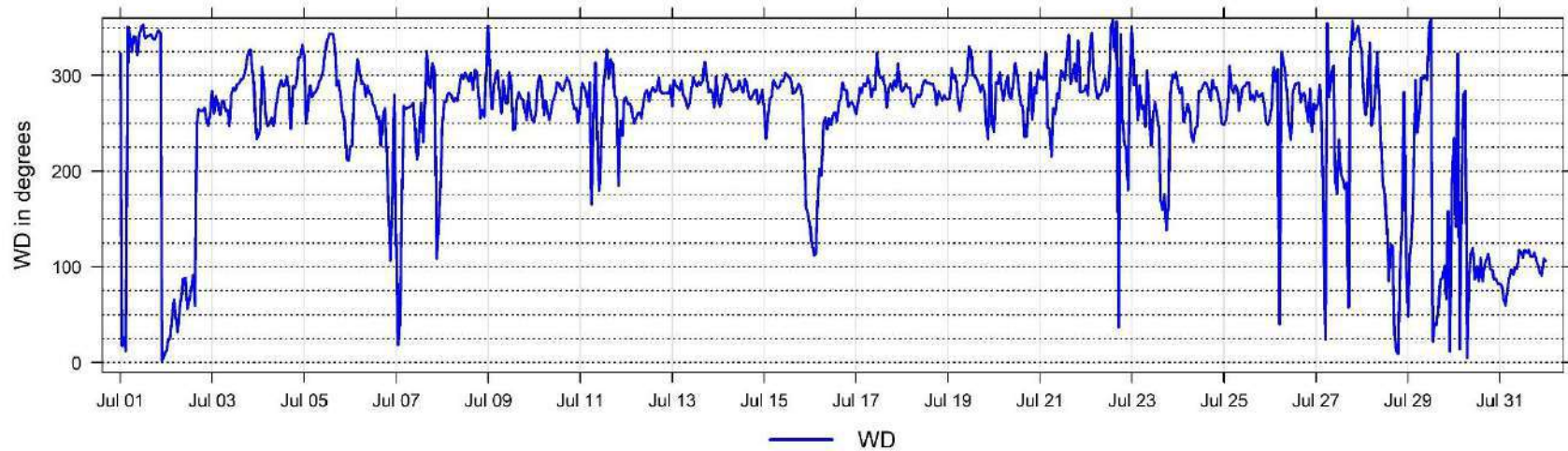
July Hourly Temperature Readings (in °C) at Wembley



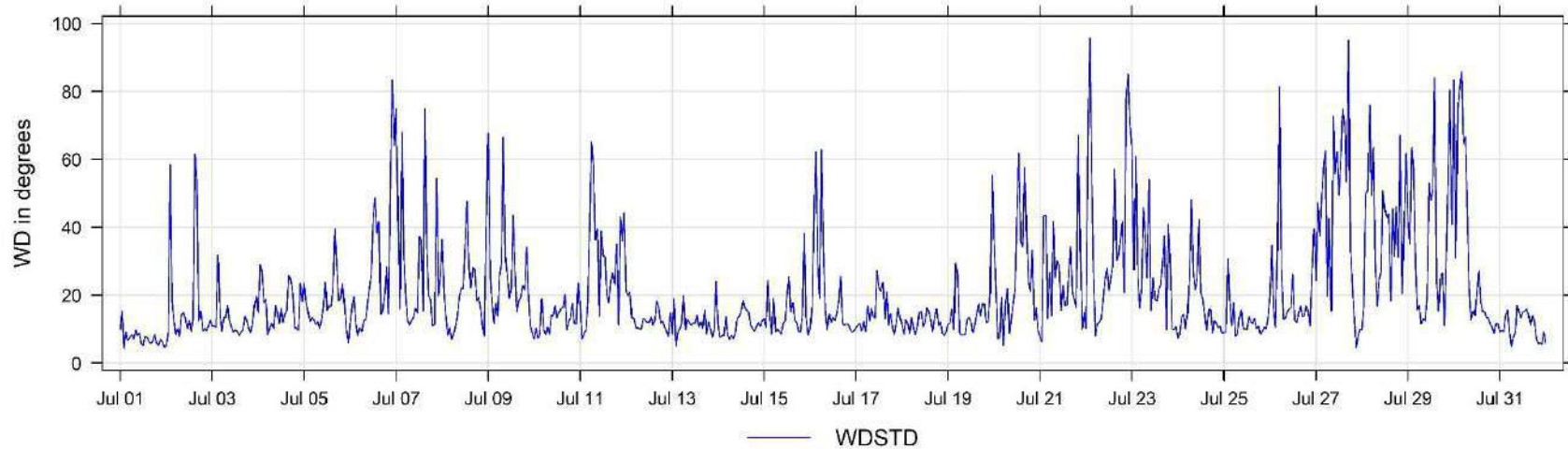
July Hourly Readings of Wind Speed (in km/hr) at Wembley

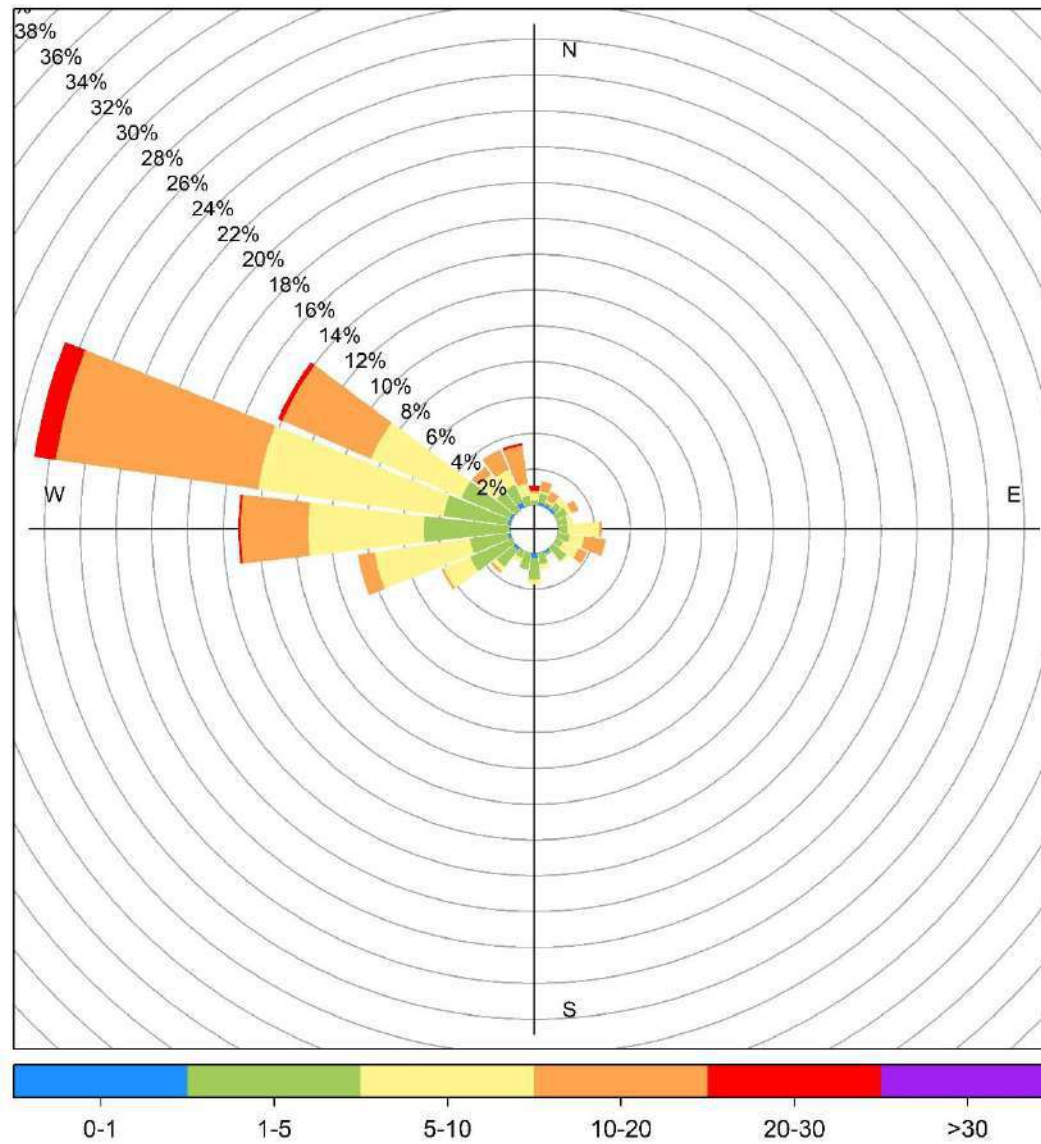


July Hourly Readings of Wind Direction (in degrees) at Wembley



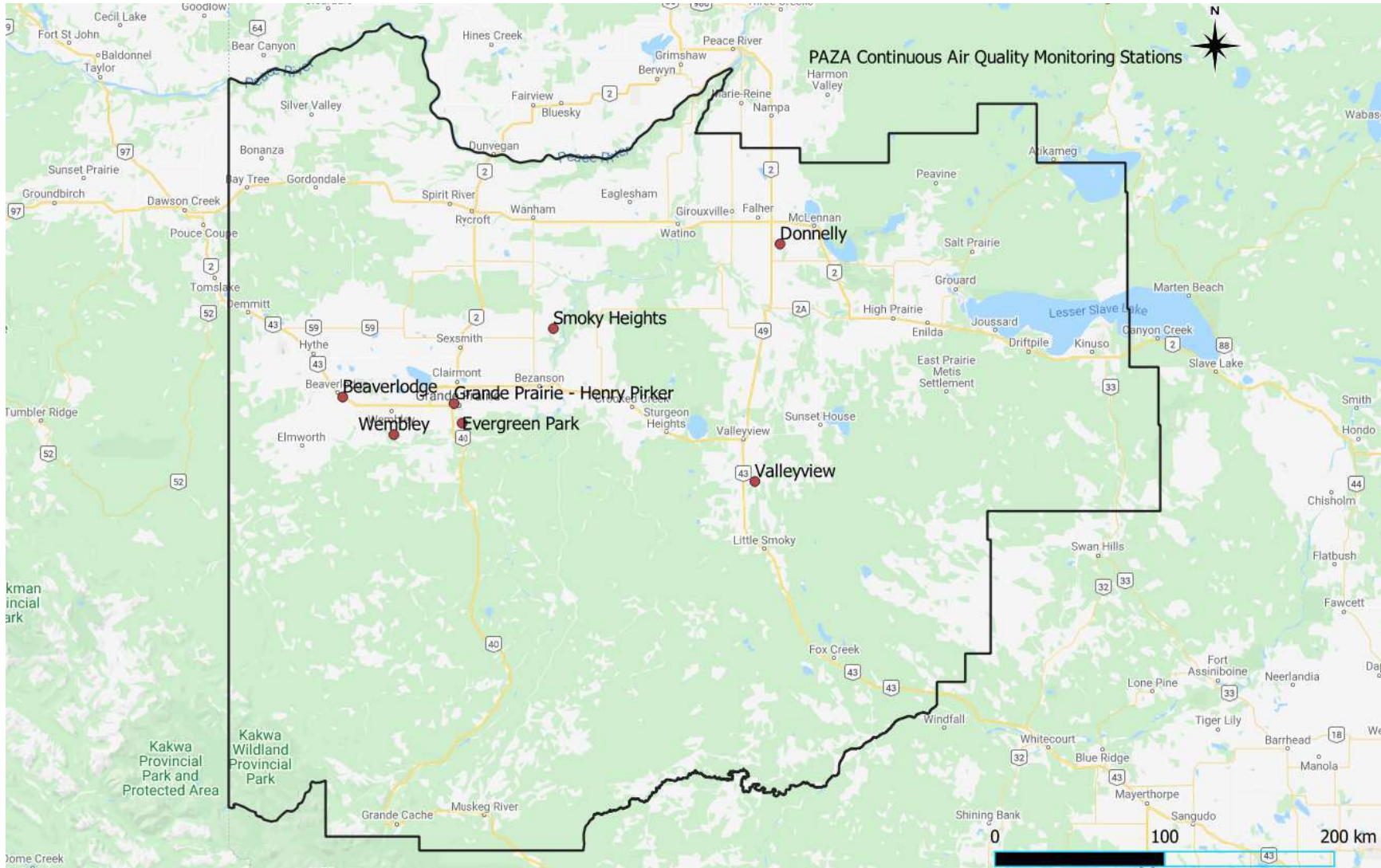
July Hourly Readings of Wind Direction Standard Deviation (in degrees) at Wembley





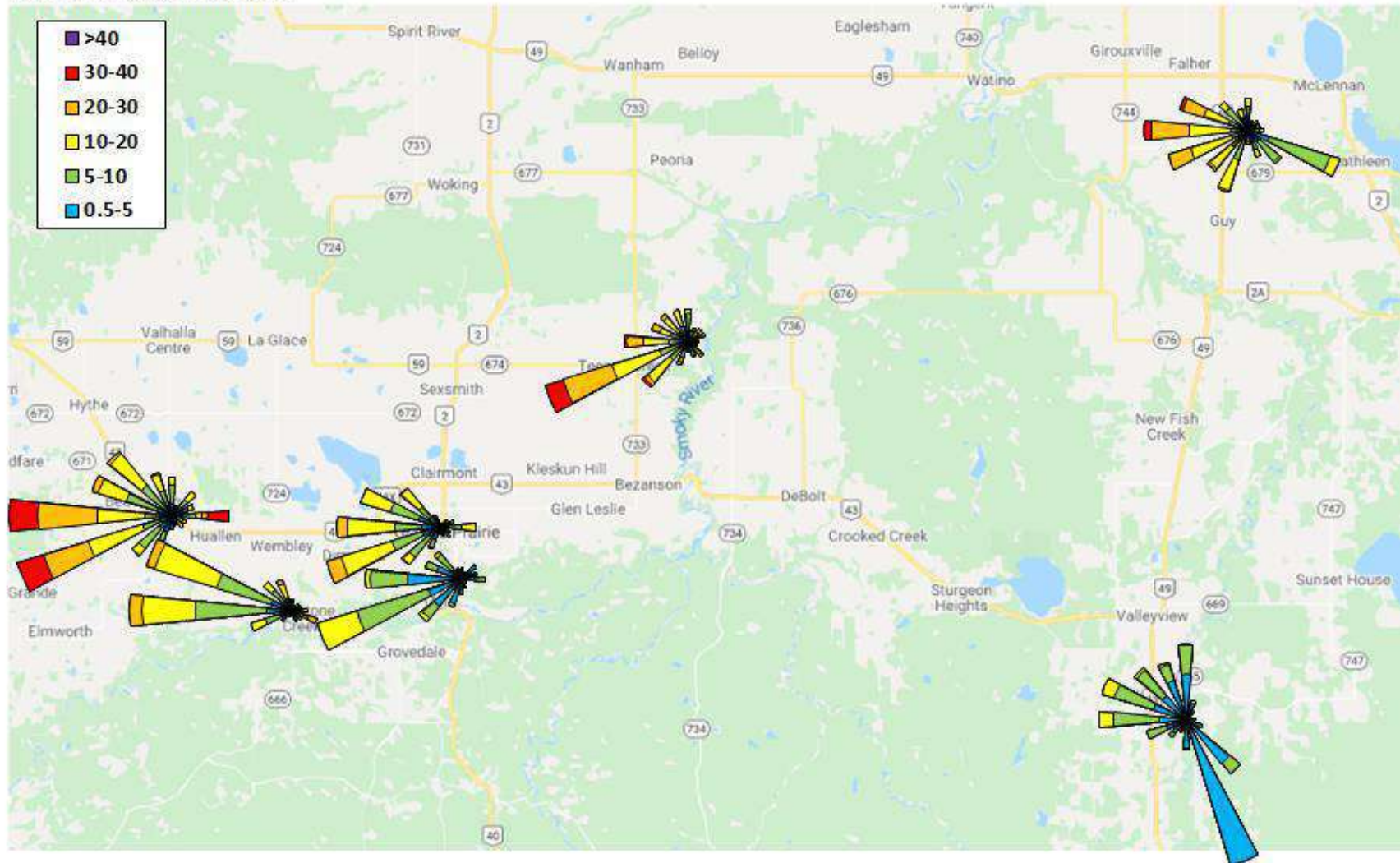
Wembley July Wind Rose, wind speed in km/hr

9



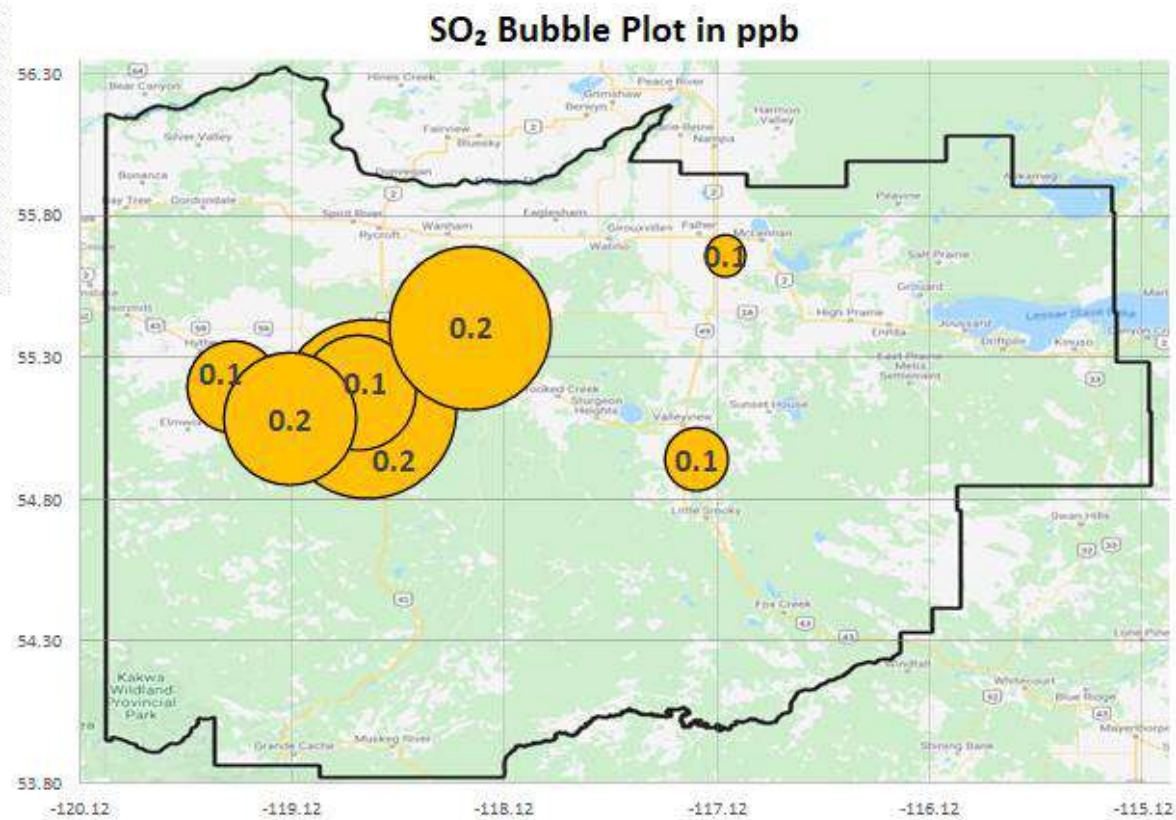
9.1 Wind Roses

Wind Roses in km/hr

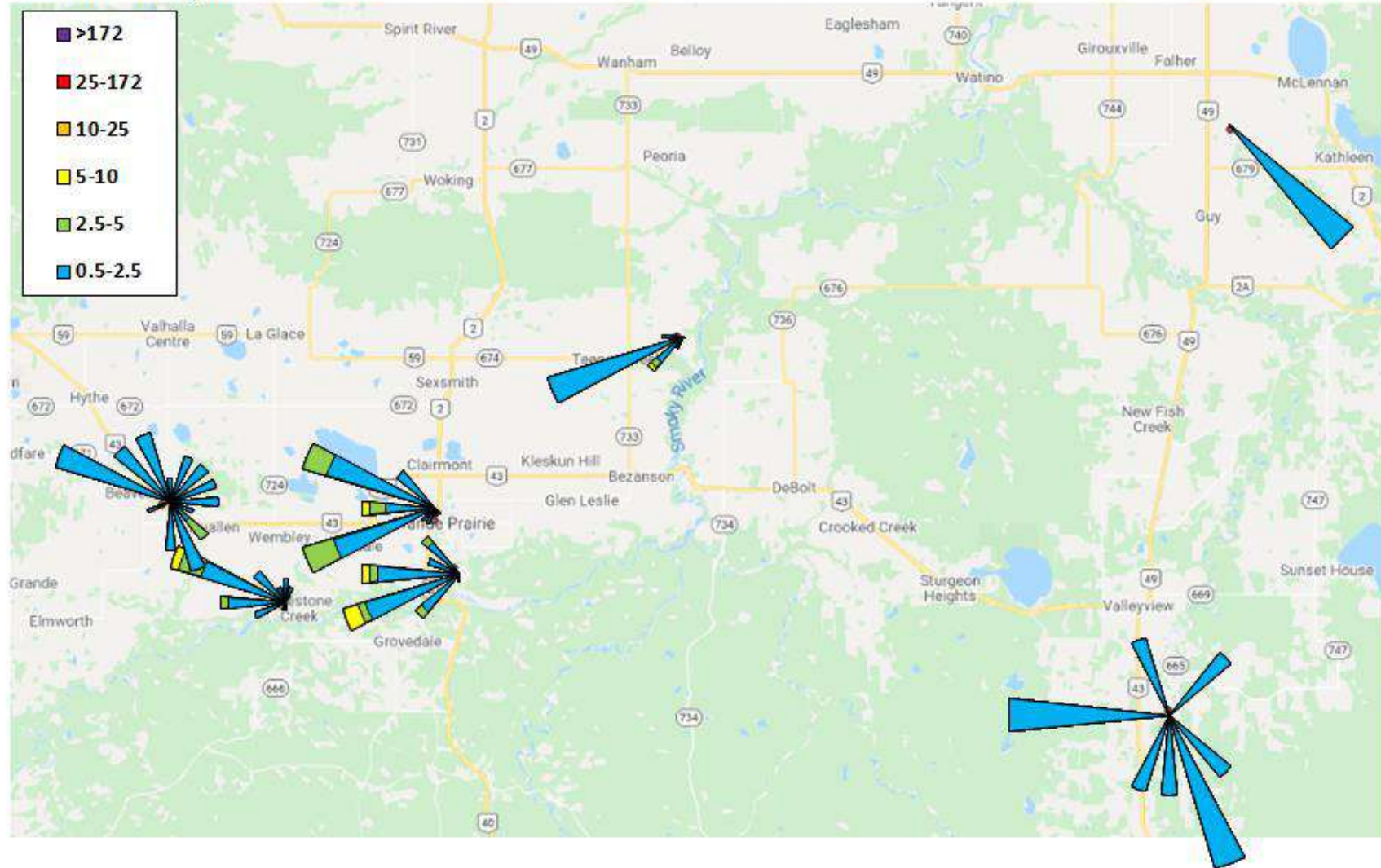


9.2 Sulphur Dioxide Plots

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

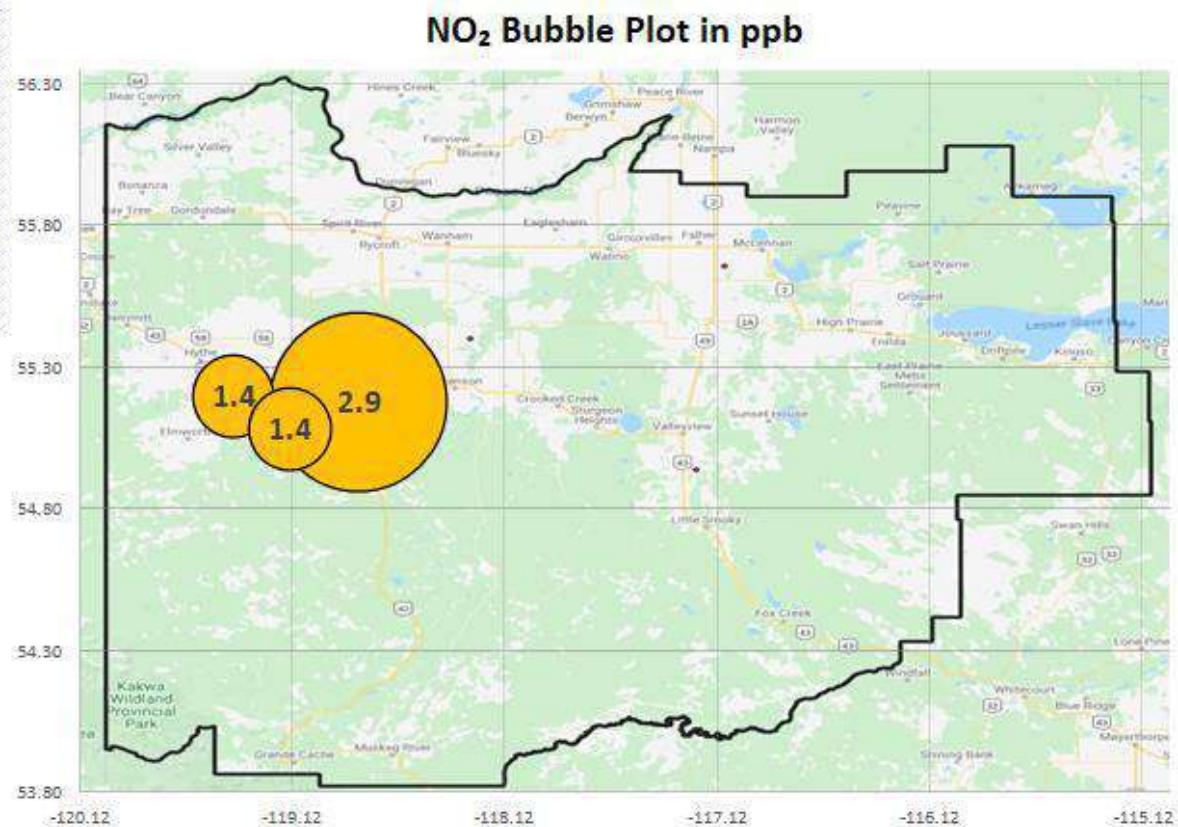


SO₂ Roses in ppb



9.3 Nitrogen Dioxide Plots

July 2020 NO ₂ Summary	
Station	Avg (ppb)
Evergreen Park	-
Henry Pirker	2.9
Smoky Heights	-
Beaverlodge	1.4
Valleyview	-
Donnelly	-
Wembley	1.4



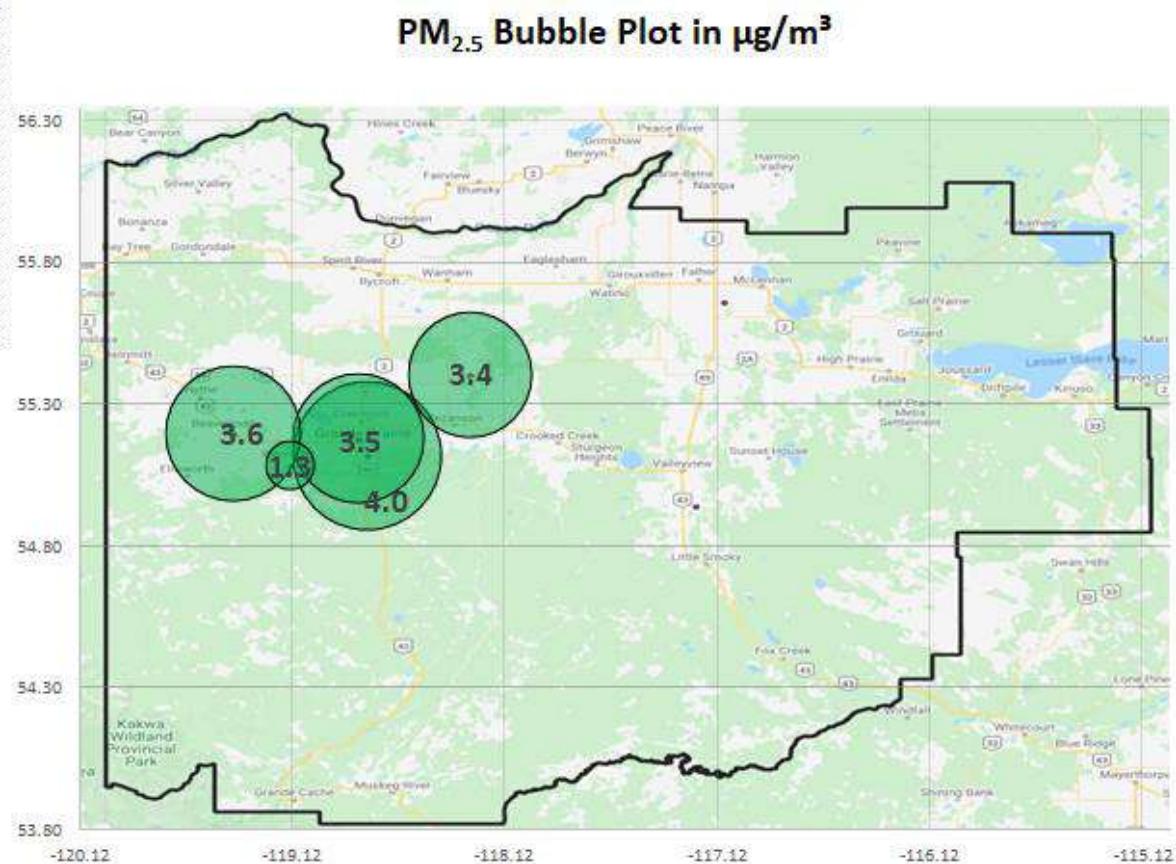
The map displays the distribution of 1000-hour workers across census tracts in the Peace River region. The legend indicates the following ranges:

- >159
- 100-159
- 50-100
- 30-50
- 20-30
- 2-20

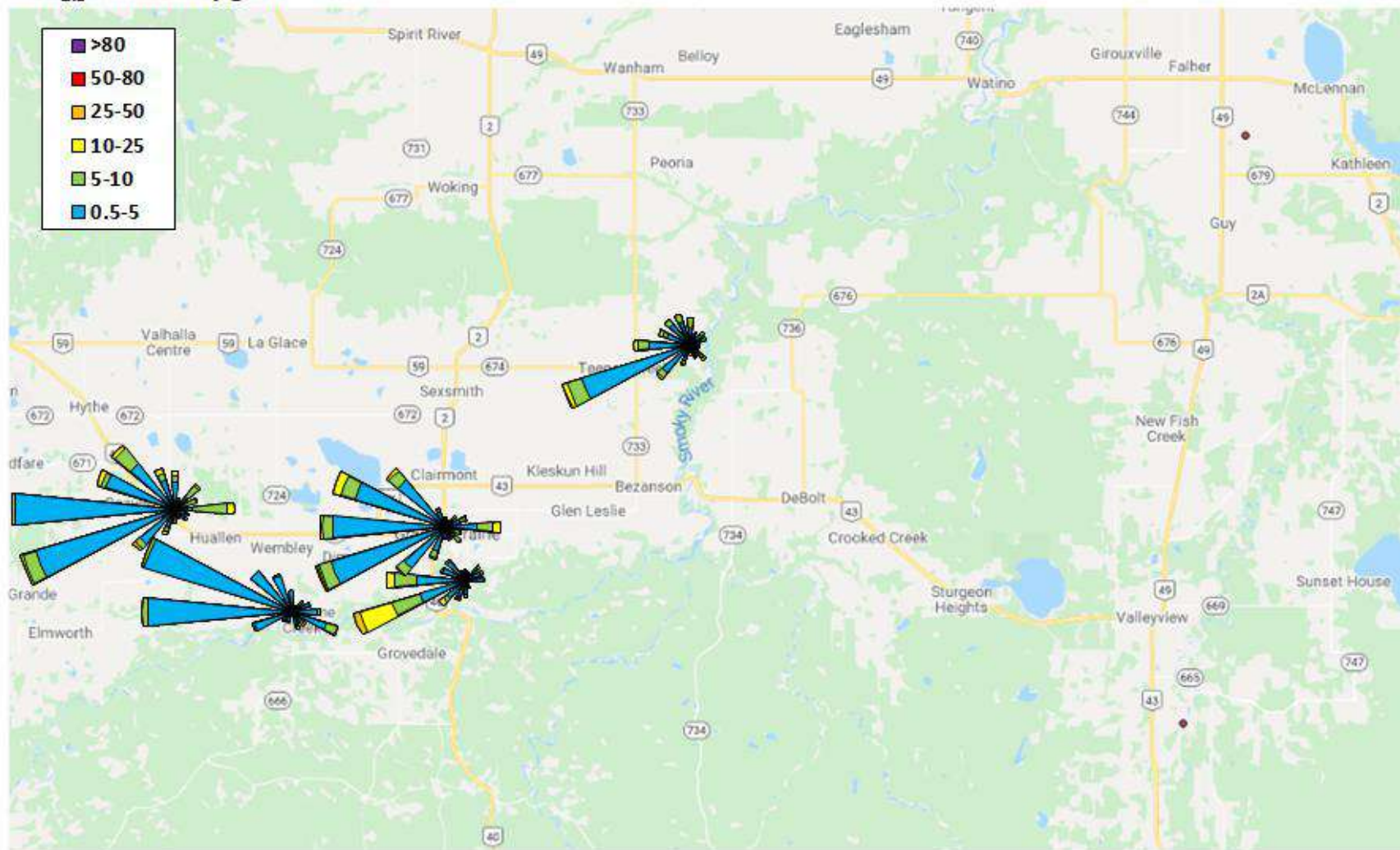
The map shows a high concentration of workers in the western part of the region, particularly around the Peace River and near the border with Alberta. The map also shows major roads, water bodies, and various communities.

9.4 Fine Particulate Matter (PM_{2.5}) Plots

Station	Avg (µg/m³)
Evergreen Park	4.0
Henry Pirkler	3.5
Smoky Heights	3.4
Beaverlodge	3.6
Valleyview	-
Donnelly	-
Wembley	1.3

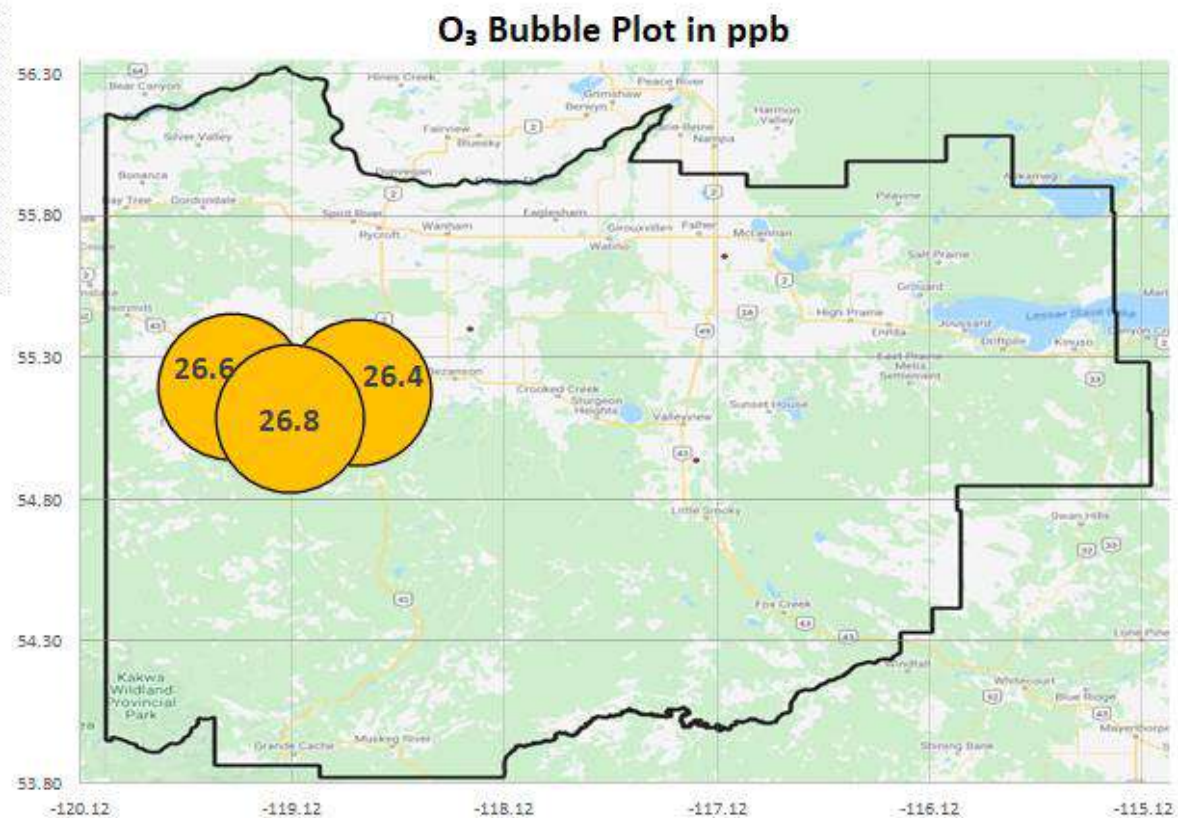


PM_{2.5} Roses in µg/m³

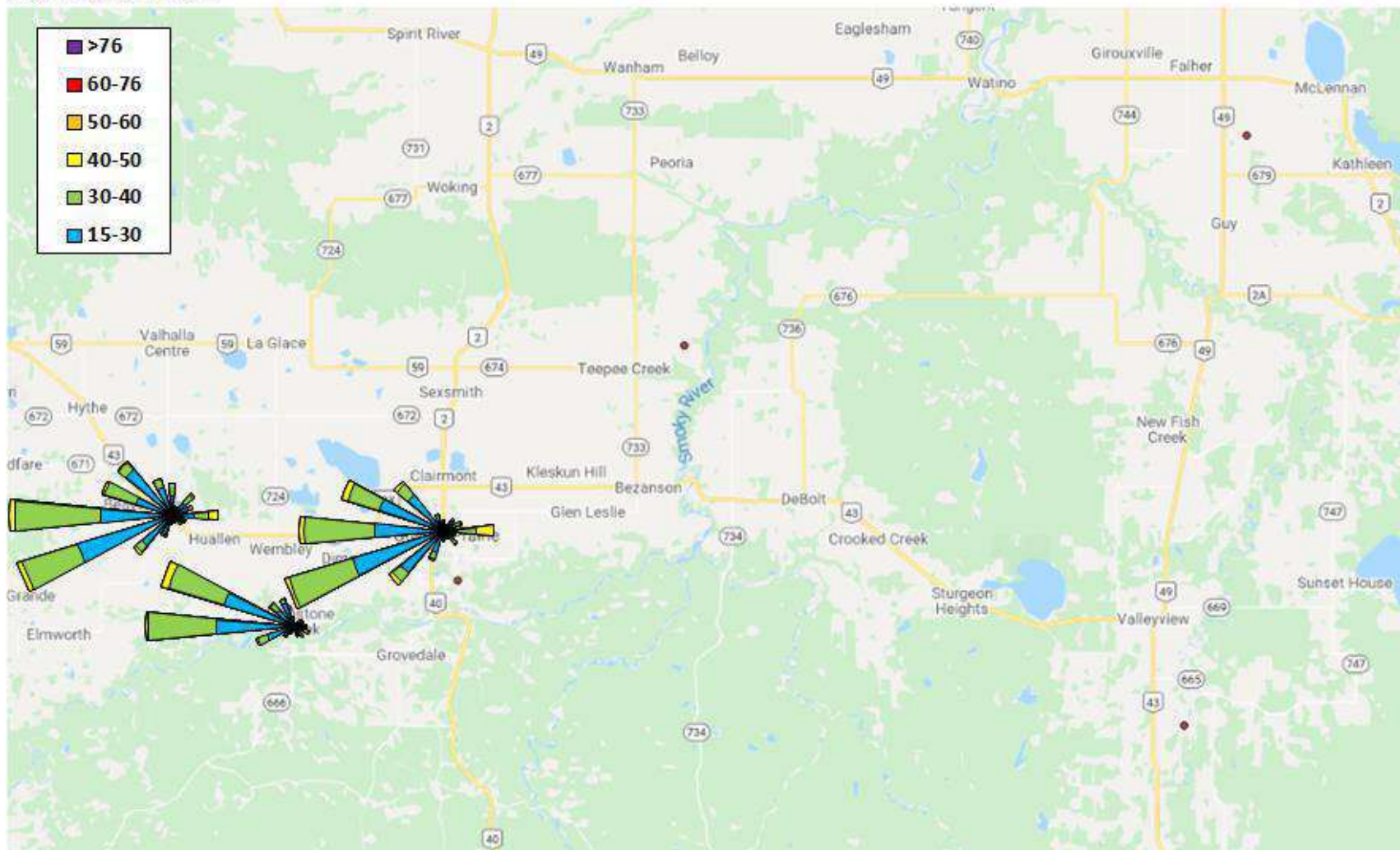


9.5 Ozone (O₃) Plots

July 2020 O ₃ Summary	
Station	Avg (ppb)
Evergreen Park	-
Henry Pirker	26.4
Smoky Heights	-
Beaverlodge	26.6
Valleyview	-
Donnelly	-
Wembley	26.8



O₃ Roses in ppb



10 Passive Monitoring Data

Peace Airshed Zone Association - PAZA Passive Stations for July 2020

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
Duplicates						
1a	Silver Valley			0.6		
1b	Silver Valley			0.5		
2a	Bay Tree		23.0			
2b	Bay Tree		20.6			
7a	Steepprock Creek			0.1		
7b	Steepprock Creek			0.2		
10a	Woking	0.4				
10b	Woking	0.3				
14a	Sylvester	0.2				
14b	Sylvester	0.1				
47a	Kinuso	0.2				
47b	Kinuso	0.2				
50a	East Prairie			0.1		
50b	East Prairie			0.3		
64a	Girouxville 4				0.6	
64b	Girouxville 4				0.5	

1	Silver Valley	0.2	-	0.6	-	08-27-081-11 W6M
2	Bay Tree	0.1	21.8	0.3	-	13-16-078-13 W6M
5	Boone Creek	0.2	-	0.4	-	01-23-076-11 W6M
7	Steepprock Creek	0.2	-	0.1	-	09-35-072-13 W6M
9	Spirit River	0.2	-	1.0	-	08-12-079-07 W6M
10	Woking	0.3	-	0.6	-	01-13-076-07 W6M
11	Webber Creek	0.2	-	1.8	-	09-36-074-09 W6M
12	Hythe	0.2	-	0.6	-	14-36-072-11 W6M
14	Sylvester	0.1	-	0.7	-	08-06-069-12 W6M
16	Beaverlodge	0.2	-	1.1	-	15-36-071-10 W6M
17	Poplar	0.3	-	0.9	-	13-06-073-08 W6M
18	Saddle Hills	0.5	-	0.5	-	04-25-074-07 W6M
19	Wanham	0.3	-	0.4	-	16-22-077-03 W6M
21	Eaglesham	0.2	-	0.5	-	16-21-079-25 W5M
24	Wembley	0.3	-	1.2	-	12-31-070-08 W6M
25	Pinto Creek	0.1	-	0.5	-	04-24-069-11 W6M
27	Grande Prairie I	0.2	-	1.6	-	08-15-071-06 W6M
29	Smoky Heights	0.4	-	0.9	-	04-06-075-02 W6M
32	Gold Creek	0.2	-	1.2	-	06-33-067-05 W6M
35	Jean Cote	0.3	-	0.5	-	12-35-079-21 W5M
36	Guy	0.2	-	0.5	0.2	03-04-076-22 W5M
37	Crooked Creek	0.2	24.5	0.4	-	16-01-071-26 W5M
39	Clouston Creek	0.1	-	0.3	-	12-01-073-22 W5M
40	McLennan	0.3	-	1.0	-	03-29-077-19 W5M
41	Valleyview	0.2	-	0.4	-	09-30-069-22 W5M
44	Peavine	0.2	-	0.1	-	03-05-079-15 W5M
45	Gift Lake	0.1	-	0.1	-	10-07-079-12 W5M
46	Little Smoky	0.1	-	0.7	-	12-01-065-21 W5M
47	Kinuso	0.2	27.0	0.2	-	12-10-073-10 W5M
49	Henry Pirker	0.2	-	1.7	-	17-26-071-06 W6M
50	East Prairie	0.0	-	0.2	-	11-13-079-08 W6M
63	Girouxville 3	-	-	-	0.5	14-02-077-23 W5M
64	Girouxville 4	-	-	-	0.6	04-08-077-22 W5M

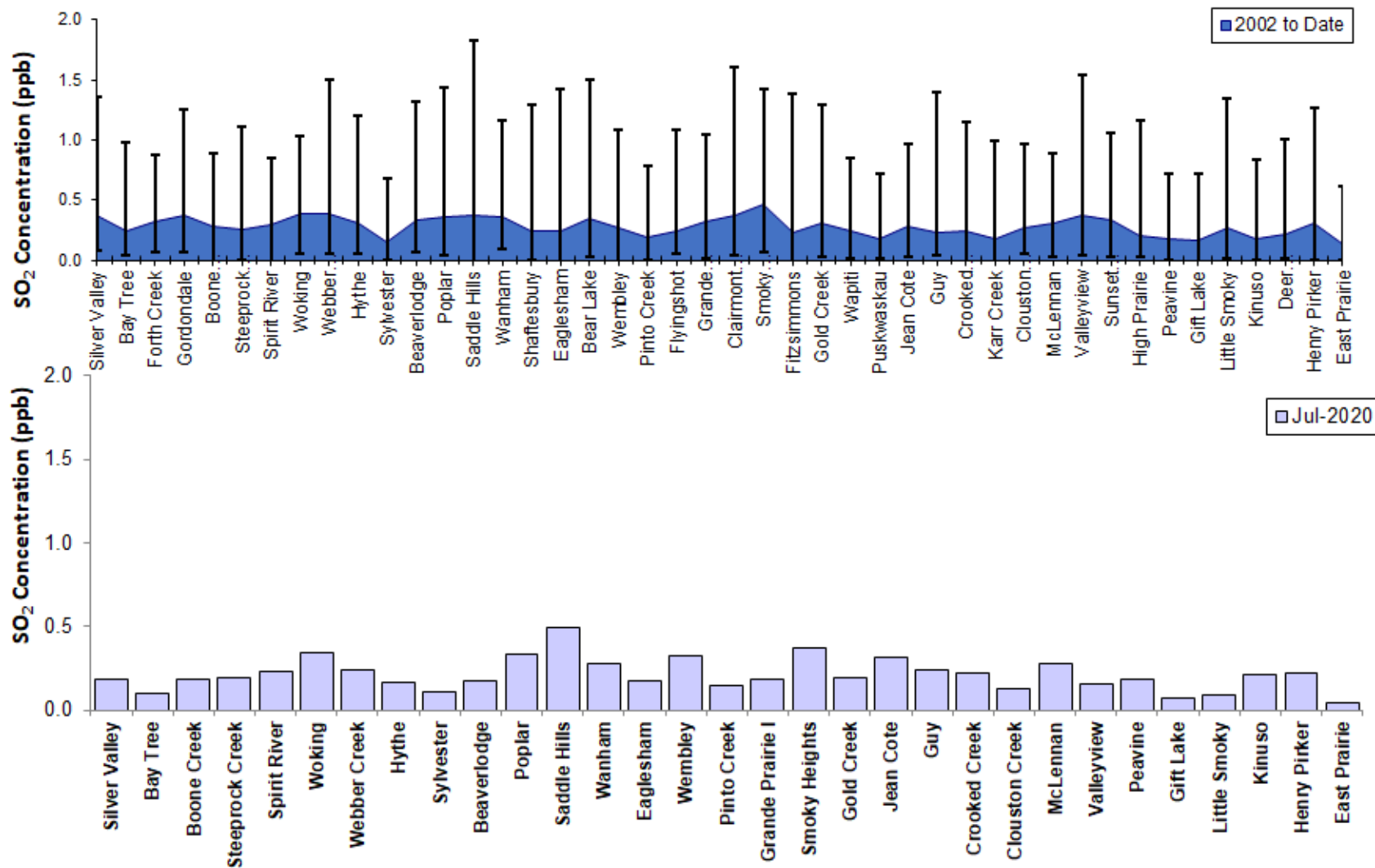
Passive Summary for July 2020

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

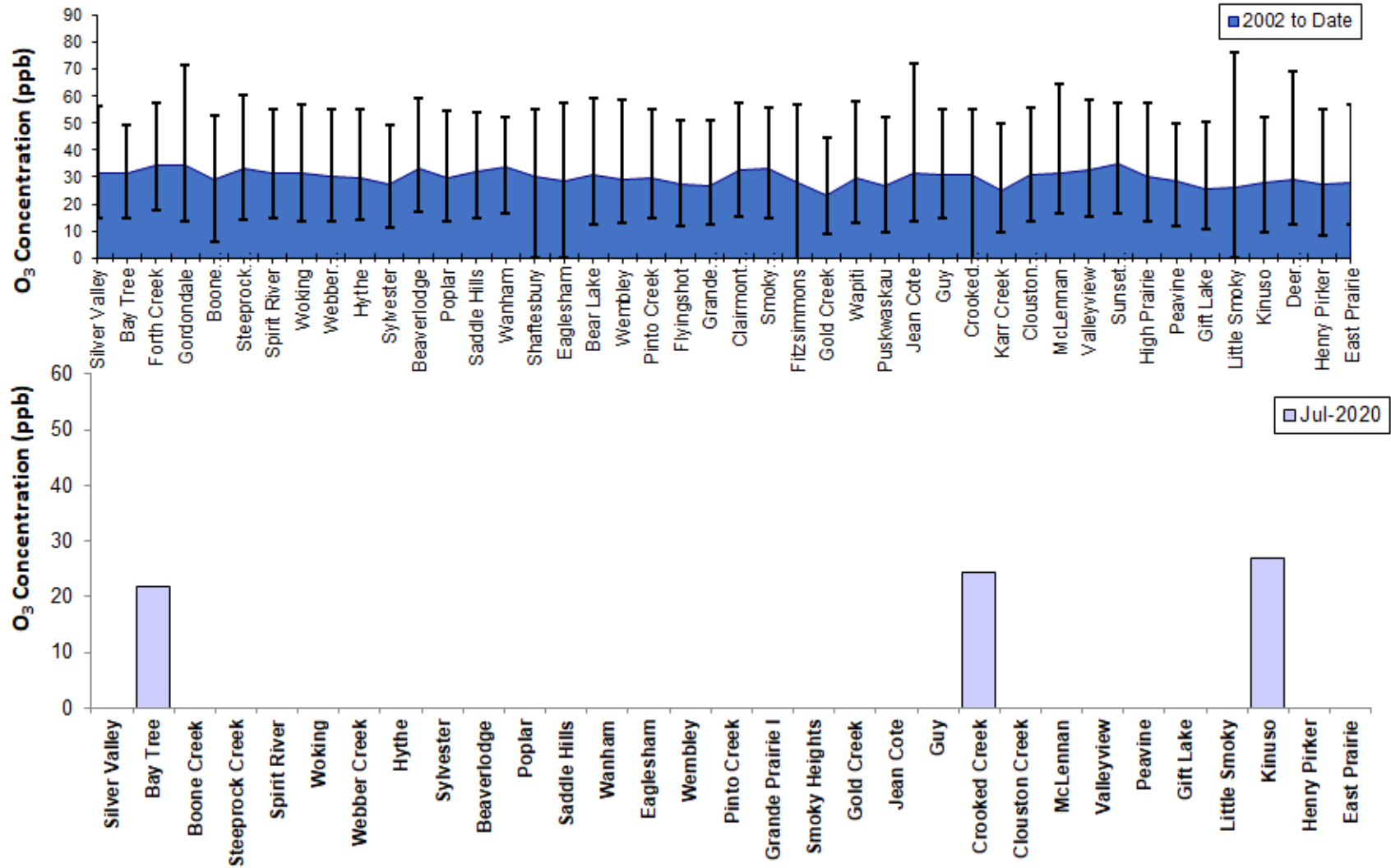
Passive Summary for July 2020 (PAZA)				
Mean	0.2	24.4	0.7	0.4
Standard Deviation	0.1	2.6	0.5	0.2
Minimum	0.0	21.8	0.1	0.2
	East Prairie (#50)	Bay Tree (#2)	Peavine (#44)	Guy (#36)
Maximum	0.5	27.0	1.8	0.6
	Saddle Hills (#18)	Kinuso (#47)	Webber Creek (#11)	Girouxville 4 (#64)

Continuous and Passive Monitoring Comparision				
PAZA Beaverlodge Station	0.1	26.6	1.4	-
Beaverlodge Passive (#16)	0.2	-	1.1	-
PAZA Henry Pirker Station	0.1	20.0	2.9	0.2
Henry Pirker passive (#49)	0.2	-	1.7	-

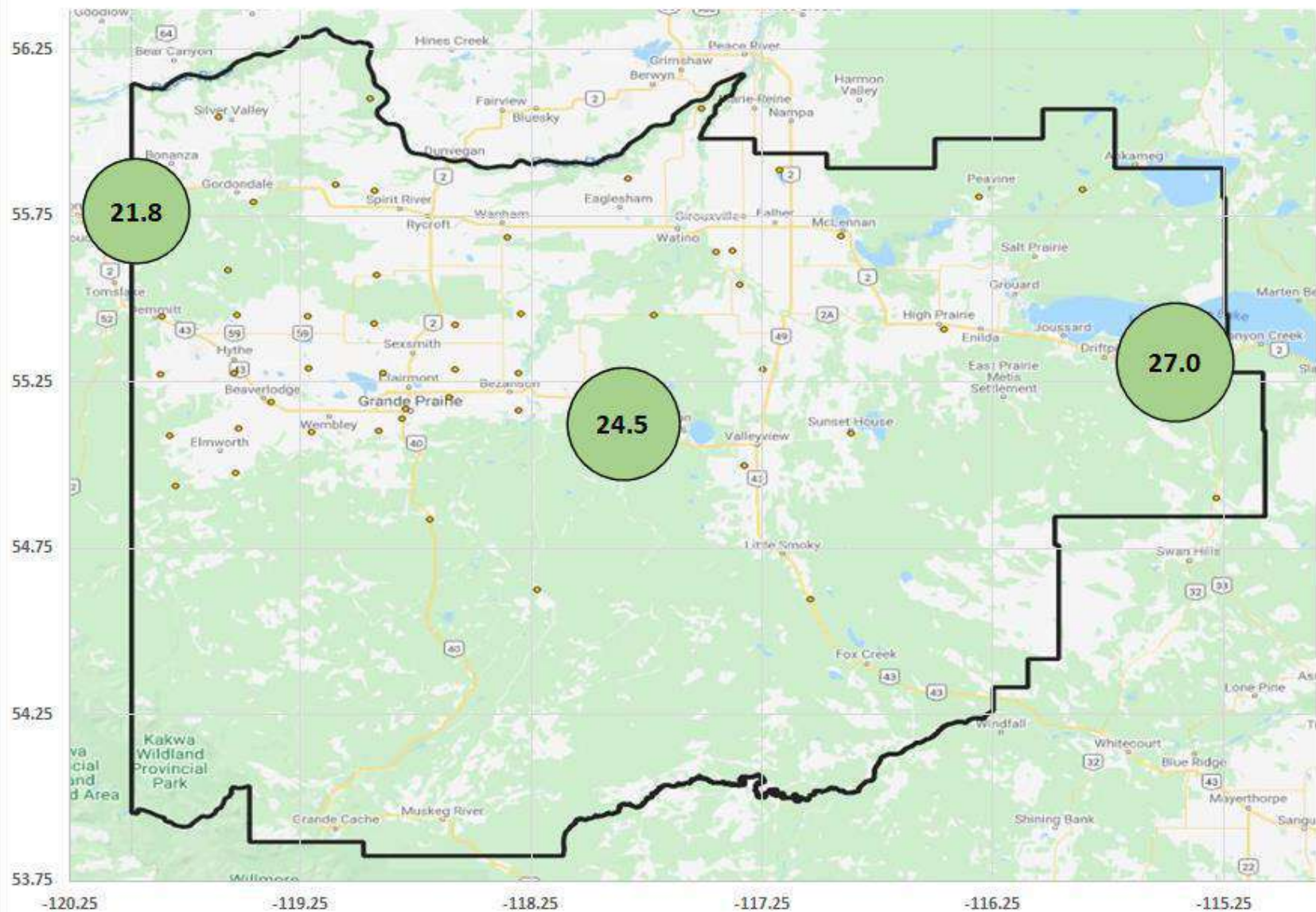
Alberta Ambient Air Quality Objective - 30-day SO₂ Objective is 11 ppb



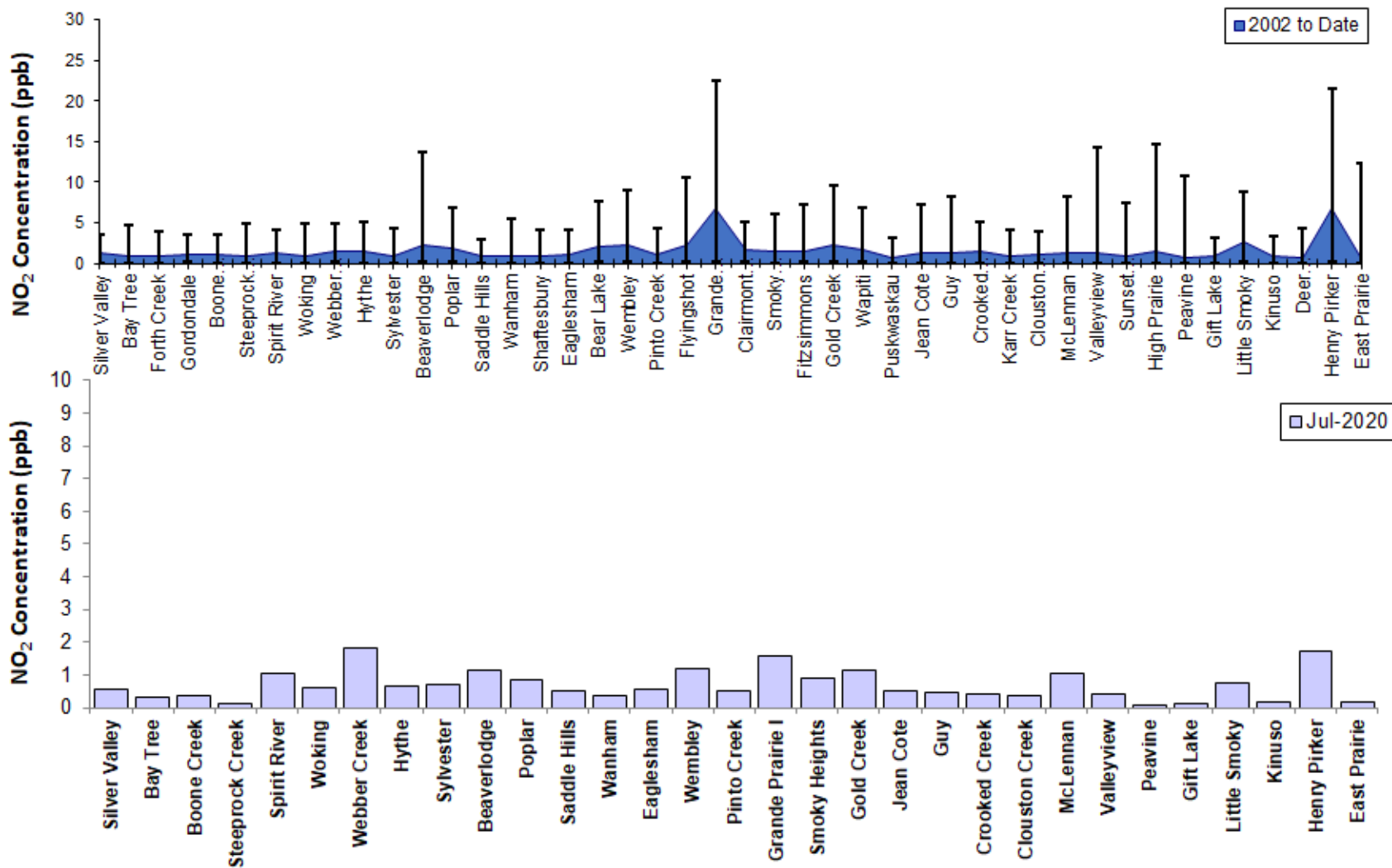
No Monthly or Annual Alberta Ambient Air Quality Objective for O₃



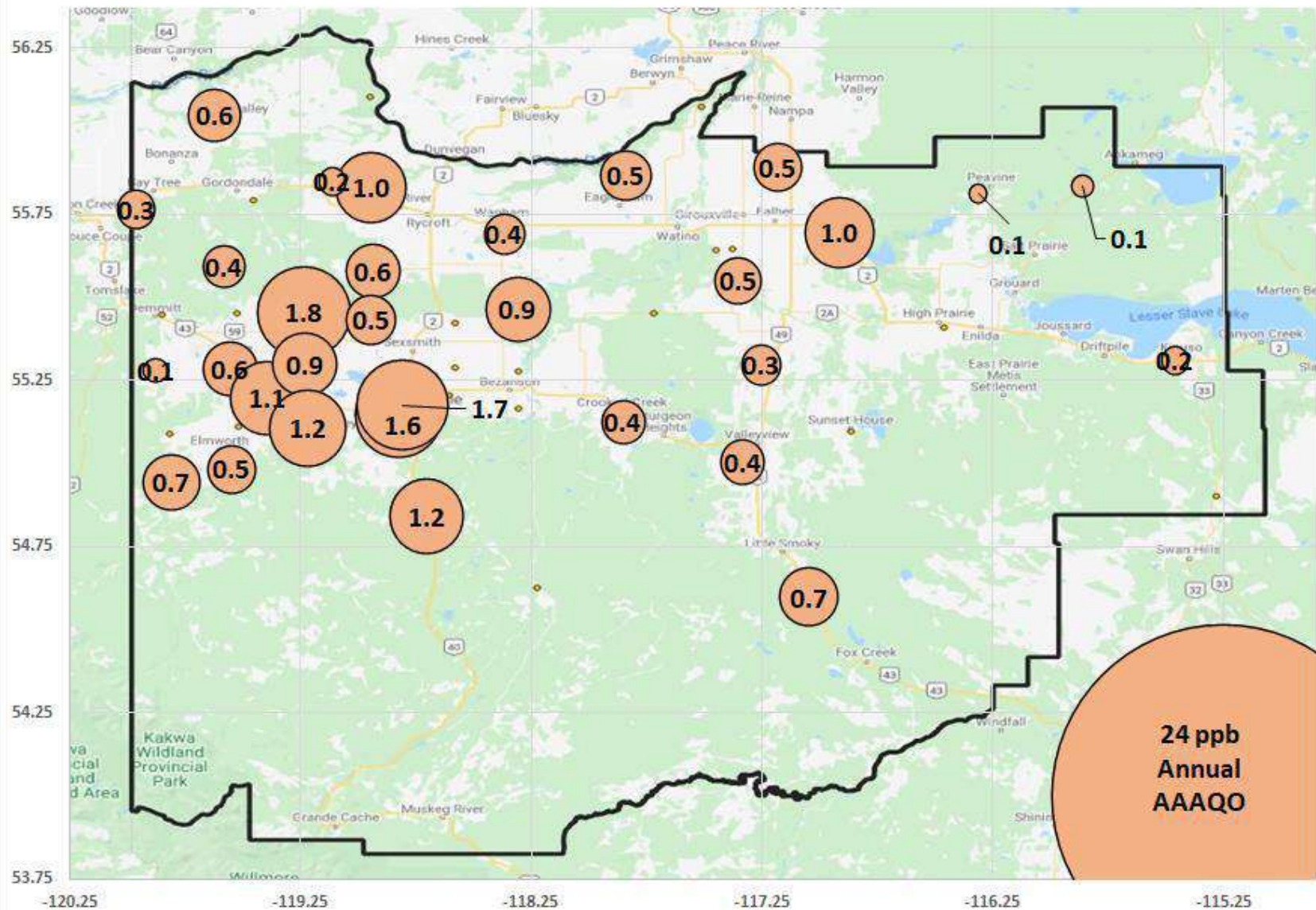
O₃ Monthly Average (units in ppb)



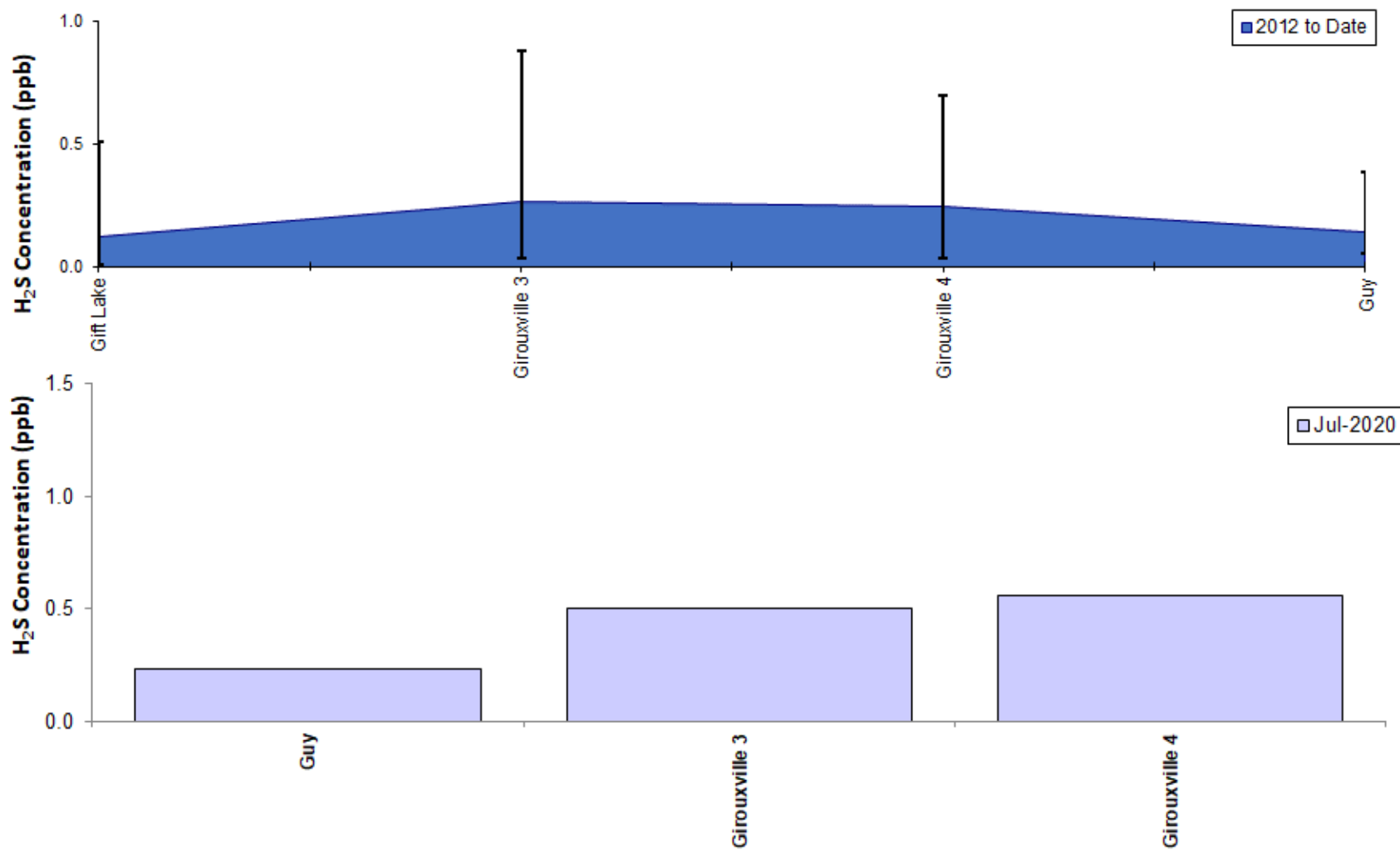
Alberta Ambient Air Quality Objective - Annual NO₂ Objective is 24 ppb



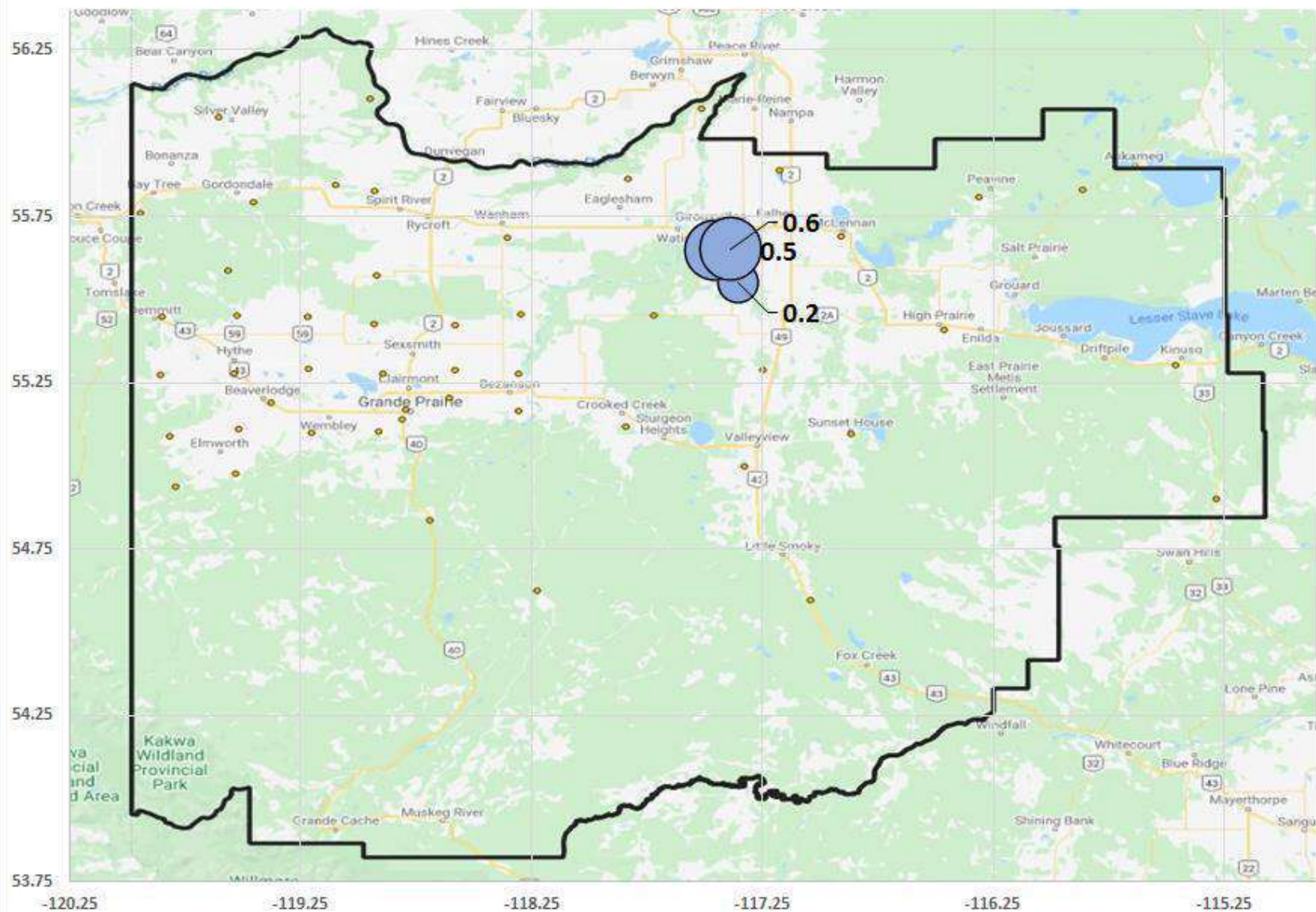
NO₂ Monthly Average (units in ppb)



No Monthly or Annual Alberta Ambient Air Quality Objective for H₂S



H₂S Monthly Average (units in ppb)



End of Report



Peace Airshed Zone Association

Ambient Air Monitoring Report

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