



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

May 2021

June 30, 2021

Alberta Environment and Parks

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

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

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of May 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 May 2021 were submitted to the ETS data system.

Table A. PAZA members with Facility Operating Approvals

Company	Facility	LSD	EPEA Approval No.
Advantage Oil & Gas Ltd.	Glacier	05-02-076-13-W6	262479-00-00
Alberta Power (2000) Ltd. (an ATCO company)	Sturgeon	SW-06-069-21-W5	10283-02-02
ATCO Power Canada	Poplar Hill	11-19-073-08-W6	67774-01-01
ATCO Power Canada	Valleyview	SW-06-069-21-W5	147709-01-01
AltaGas Ltd.	Pouce Coupe	03-03-081-13-W6	247673-00-00
	Ante Creek	02-26-068-25-W5	266694-00-00
	Gordondale	02-26-068-25-W5	287474-00-00
Apache Canada Ltd.	House Mountain	01-08-070-10-W5	10137-02-02
Birchcliff Energy Ltd.	Pouce Coupe	03-22-078-12-W6	252529-00-00
Canadian Natural Resources Limited	Bonanza	11-25-081-11-W6	00000029-01-00
	Progress/Gordondale	01-01-077-10-W6	00010036-02-00
	Gold Creek	13-26-067-05-W6	00010446-02-00
	Teepee Creek	SE-2-074-04-W6	00001635-02-00
	Sturgeon/Valleyview	02-02-069-22-W5	1633-02-00
Canfor Forest Products	Grande Prairie	SW-23-071-06-W6	152645-01-00
Conocophillips Canada Energy Partnership	Wembley	06-19-073-08-W6	00000212-01-00
Devon Canada	NW Belloy (Dunvegan)	16-36-079-03-W6	00009810-02-00
	Eaglesham (South)	02-14-077-25-W5	00047669-01-00
	North Normanville	03-36-079-23-W5	00047455-01-00
	West Culp	05-34-078-25-W6	00136284-00-00
	Cecil	08-15-084-08-W6	00010032-02-00
Encana Corporation	Sexsmith	04-08-075-07-W6	00010002-01-00
Enerplus Resources	Pouce Coupe	SW-06-069-21-W5	1464-02-03
Exshaw Oil Corporation	Spirit River	03-10-077-07-W6	344521-00-00
Grande Prairie Generation Inc.	Northern Prairie Power Project	04-19-073-08-W6	00238762-00-00
Inception Exploration Ltd.	Gold Creek	03-26-069-05-W6	00335317-00-02
Long Run Exploration	Eaglesham	01-25-076-01-W6	00241532-00-00
	Kakut	14-12-075-03-W6	00248469-00-00
	Donnelly	06-01-077-21-W5	00000087-02-00
	Puskwaskau	03-26-074-01-W6	00017524-01-00
Longview Oil Corp.	Sunset House	06-22-070-20-W5	138884-01-00
Penn West Petroleum Ltd.	Tangent	13-29-080-23-W5	00001746-02-00
	Pouce Coupe	16-07-078-11-W6	00000614-01-00
Petrus Resources	Rycroft	08-25-077-06-W6	11351-02-00
	Spirit River	08-34-077-06-W6	11096-02-00
NorthRiver Midstream Inc.	Fourth Creek	16-11-082-09-W6	00000263-01-00
	Gordondale	11-26-079-09-W6	00011495-01-01
	Pouce Coupe/Bonanza	03-23-080-13-W6	00070203-01-01
Suncor Energy Inc.	Progress	07-22-078-09-W6	00011428-02-00
Strathcona Resources Ltd.	Jayar Sour Gas Processing Plant	06-08-062-03 W6	3612040
KANATA Energy Group Ltd.	Valhalla	13-21-076-09-W6	00017620-02-02
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 readings above the AAAQO or AAAQG

Operational times less than 90 percent:

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

Air Incidents

None were reported to PAZA

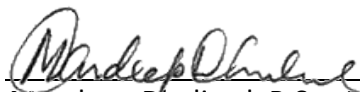
Deviations from Authorized Monitoring Methods

None to report.

Passive Monitoring

- 45 Stations throughout the PAZA zone
 - Passive sample analyses were performed by Bureau Veritas Laboratories
- There were 13 duplicate sites sampled in the month of May
 - SO₂ duplicates at Sylvester, Shaftesbury, Wembley, Puskwaskau, Fox Creek 2, Jayar1 Plant; RPD ranging from 13% to 83% (5 fails)
 - There were no O₃ duplicates
 - NO₂ duplicates at Poplar, Pinto Creek, Smoky Heights, Guy, Jayar3 Bone Yard stations; RPD ranging from 0% to 58% (1 fail)
 - H₂S duplicates Jayar1 Plant, Fox Creek 2 stations; RPD ranging from 0% to 27%
- The following field notes were listed of potential issues.
 - Site G4 (Girouxville 4) – Sample tore apart on collection. (Birds?)
 - Site Jayar1 Plant – pole was knocked over, fixed
- 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.

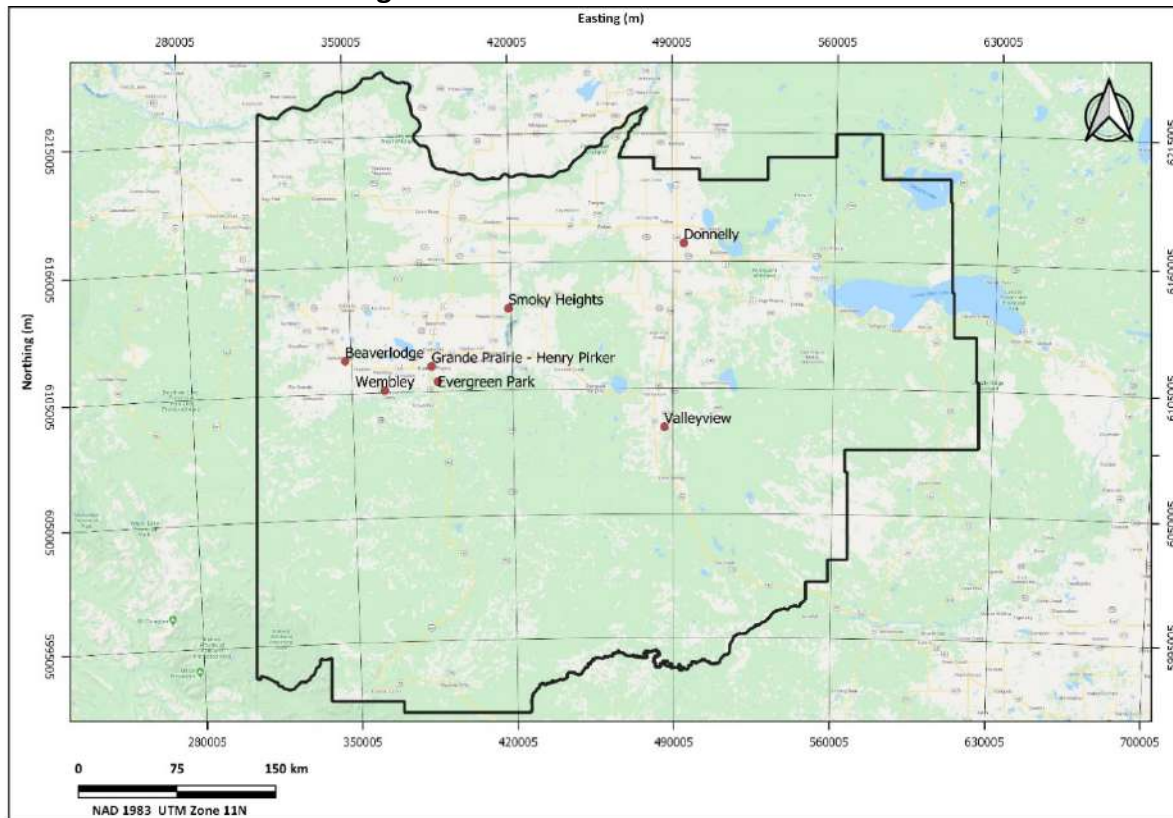


Mandeep Dhaliwal, B.Sc., P.Chem.
Program Manager

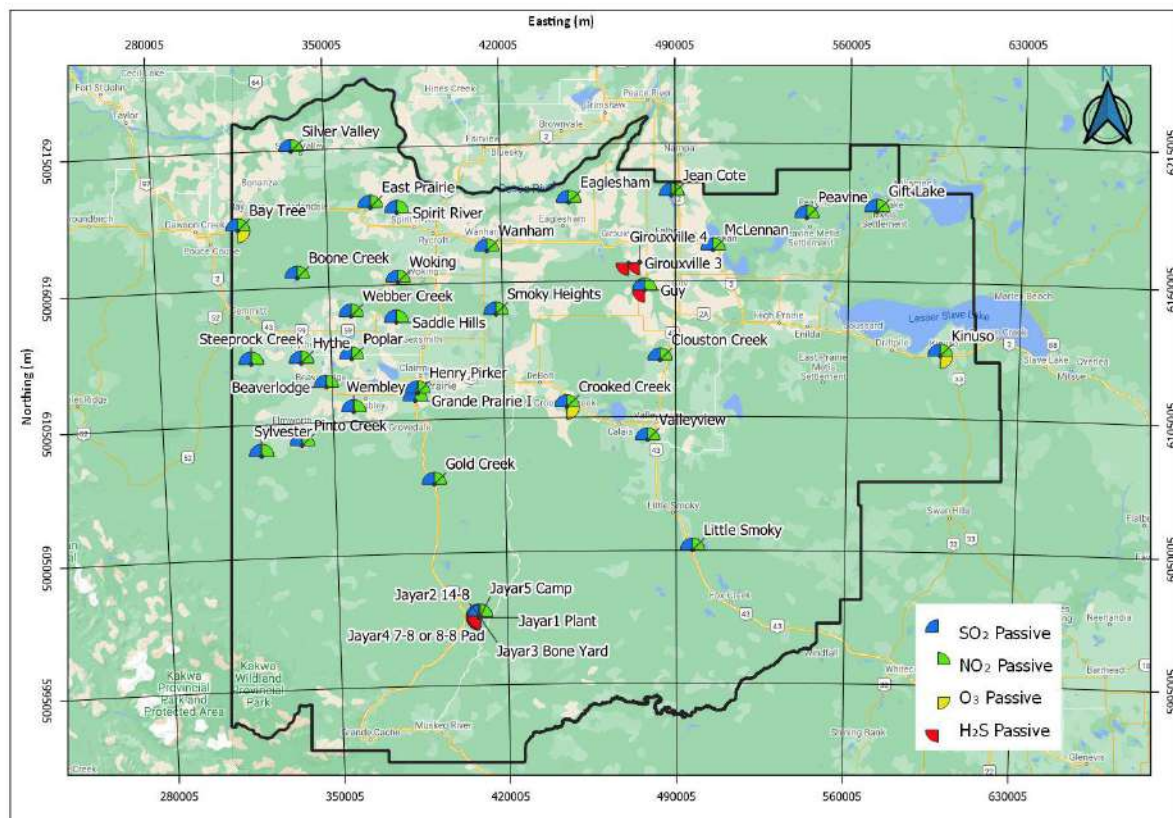
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PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 May 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 - May 2021 Beaverlodge Station Report

Parameter	May		Valid	Operational	Max	1-hour		24-hour		Exceedance				Calibration
	Average	Minimum				Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d
NO (ppb)	0.2	0.0	94.8%	99.6%	8.3	-	May-20 07:00	0.9	-	May-20	-	-	-	May 03, 2021
NO ₂ (ppb)	1.7	0.2	94.8%	99.6%	9.6	159	May-20 07:00	3.1	-	May-27	0	-	-	May 03, 2021
NO _x (ppb)	1.9	0.3	94.8%	99.6%	18.0	-	May-20 07:00	3.6	-	May-03	-	-	-	May 03, 2021
O ₃ (ppb)	34.0	9.6	93.3%	98.1%	54.3	76	May-23 20:00	42.7	-	May-13	0	-	-	May 03, 2021
PM _{2.5} (µg/m³)	3.7	0.6	99.7%	100.0%	14.0	80	May-07 04:00	5.6	29	May-07	0	-	0	May 04, 2021
SO ₂ (ppb)	0.3	0.0	95.2%	100.0%	9.5	172	May-06 09:00	1.7	48	May-06	0	-	0	May 04, 2021
	Average	Minimum	Valid	Operational	Maximum									
Temp (°C)	10.5	-0.5	100.0%	100.0%	23.1	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%								
RH (%)	55.0	15.5	100.0%	100.0%	100.0									
WS (km/hr)	11.9	0.1	100.0%	100.0%	37.9									
WD (deg)	276	0.2	100.0%	100.0%	359.9	Average Wind Direction276W								

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	No Operational issues noted during the month; 3 hours of maintenance as a result of GPT for ozone calibration
O ₃	Thermo	49i	Maintenance performed on ozone analyzer May 4th and May 6th the scrubber was replaced
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 - May 2021 Evergreen Park Station Report

May					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	
PM _{2.5} (µg/m³)	2.3	0.0	99.3%	100.0%	22.6	80	May-31 14:00	6.1	29	May-31	0	-	0	-	May-19-2021	
SO ₂ (ppb)	0.2	0.0	95.2%	100.0%	3.7	172	May-10 21:00	0.9	48	May-10	0	-	0	0	May-19-2021	
TRS (ppb)	0.5	0.0	95.2%	100.0%	3.4	-	May-17 06:00	0.8	-	May-05	-	-	-	-	May-19-2021	
	Average	Minimum	Valid	Operational	Maximum											
Temp (°C)	11.1	-2.2	99.9%	100.0%	24.7	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%										
RH (%)	54.5	11.7	99.9%	100.0%	97.2											
WS (km/hr)	3.9	0.0	99.9%	100.0%	14.4											
WD (deg)	258	3.9	99.9%	100.0%	359.3											
Average Wind Direction										258	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	Gill/RMYoung	MetPak/RMY86004	No Operational issues noted during the month

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - May 2021 Henry Pirker Station Report

Parameter	May			Operational	Max	1-hour		8-hour / 24-hour		Max Day	Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective		1hr	8hr	24hr	30d	
NO (ppb)	0.6	0.0	91.7%	96.9%	18.6	-	May-11 07:00	2.4	-	May-11	-	-	-	-	May 26, 2021
NO ₂ (ppb)	3.6	0.4	91.7%	96.9%	23.2	159	May-14 06:00	7.1	-	May-11	0	-	-	-	May 26, 2021
NO _x (ppb)	4.3	0.3	91.7%	96.9%	39.0	-	May-11 07:00	9.6	-	May-11	-	-	-	-	May 26, 2021
O ₃ (ppb)	32.3	4.0	95.3%	100.0%	53.9	76	May-06 18:00	41.7	-	May-13	0	-	-	-	May 27, 2021
PM _{2.5} (µg/m ³)	2.6	0.0	99.5%	100.0%	39.6	80	May-06 17:00	5.6	29	May-14	0	-	0	-	May 03, 2021
SO ₂ (ppb)	0.2	0.0	95.2%	100.0%	12.8	172	May-10 12:00	0.8	48	May-10	0	-	0	0	May 26, 2021
H ₂ S (ppb)	0.1	0.0	95.3%	100.0%	2.3	10	May-24 06:00	0.4	3	May-24	0	-	0	-	May 04, 2021
CH ₄ (ppm)	2.0	1.9	91.8%	96.5%	2.4	-	May-09 07:00	2.1	-	May-02	-	-	-	-	May 03, 2021
THC (ppm)	2.0	1.9	91.8%	96.5%	2.4	-	May-09 07:00	2.1	-	May-02	-	-	-	-	May 03, 2021
NMHC (ppm)	0.0	0.0	91.8%	96.5%	0.1	-	May-04 01:00	0.0	-	May-04	-	-	-	-	May 03, 2021
CO (ppm)	0.2	0.1	95.3%	100.0%	0.3	13	May-11 06:00	0.2	5	May-22	0	0	-	-	May 04, 2021
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
Temp (°C)	12.0	-0.7	100.0%	100.0%	25.4										
RH (%)	51.1	11.2	100.0%	100.0%	88.6										
SR (W/m ²)	185.2	0.0	100.0%	100.0%	809.8										
WS (km/hr)	7.6	0.1	100.0%	100.0%	24.3										
WD (deg)	263	1.3	100.0%	100.0%	357.8	Average Wind Direction 263 W									

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	Several hours (23 hours) of maintenance and equipment required removed for service
O ₃	TECO	49i	No Operational issues noted during the month
PM _{2.5}	Sharp	5030	No Operational issues noted during the month
SO ₂	TEI	43i-TLE	No Operational issues noted during the month
H ₂ S	TEI	450i	No Operational issues noted during the month
THC/CH ₄ /NMHC	TEI	55i	Several hours (26 hours) of maintenance required for replacement of zero air generator
CO	TEI	48i-TLE	No Operational issues noted during the month
Met Equip	MetOne	50.5	No Operational issues noted during the month

1.4 Smoky Heights Air Monitoring Station

PAZA - May 2021 Smoky Heights Station Report

Parameter	May			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)	2.3	0.0	99.7%	100.0%	44.1	80	May-27 16:00	5.7	29	May-23	0	-	0	-	May 07, 2021
SO ₂ (ppb)	0.2	0.0	95.3%	100.0%	5.2	172	May-08 20:00	0.9	48	May-08	0	-	0	0	May 07, 2021
TRS (ppb)	0.1	0.0	95.2%	100.0%	0.9	-	May-05 05:00	0.2	-	May-01	-	-	-	-	May 07, 2021
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
Temp (°C)	11.0	-1.1	100.0%	100.0%	24.0										
WS (km/hr)	11.6	0.5	100.0%	100.0%	38.2										
WD (deg)	250	1.8	100.0%	100.0%	359.8										
						Average Wind Direction 250 WNW									

Update Summary:

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

1.5 Valleyview Air Monitoring Station

PAZA - May 2021 Valleyview Station Report

A2A - May 2021 Valleyview Station Report																
May				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	95.2%	100.0%	0.7	172	May-26 04:00	0.3	48	May-26	0	-	0	0	May 17, 2021	
H ₂ S (ppb)	0.1	0.0	89.4%	94.0%	0.7	10	May-06 05:00	0.2	3	May-06	0	-	0	-	May 17, 2021	
Average		Minimum	Valid	Operational	Maximum											
Temp (°C)	11.6	-1.5	100.0%	100.0%	25.8	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%										
RH (%)	60.8	14.8	100.0%	100.0%	100.2											
WS (km/hr)	4.6	0.1	99.9%	99.9%	15.1	Average Wind Direction227NW										
WD (deg)	227	0.3	99.9%	99.9%	359.0											

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	Unstable readings were removed at end of month and the second calibration for H ₂ S was flagged as maintenance
Met Equip	RMYoung	RMY86004	No Operational issues noted during the month; A one hour period of extreme wind was flagged not valid

1.6 Donnelly Air Monitoring Station

PAZA - May 2021 Donnelly Station Report

AZA - May 2021 Donnelly Station Report																
May					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%	0.8	172	May-03 11:00	0.3	48	May-03	0	-	0	0	May 12, 2021	
H ₂ S (ppb)	0.1	0.0	95.3%	100.0%	1.4	10	May-02 06:00	0.3	3	May-02	0	-	0	-	May 12, 2021	
Average		Minimum	Valid	Operational	Maximum											
Temp (°C)	11.3	-1.7	100.0%	100.0%	24.8	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction202SSW										
WS (km/hr)	11.0	0.7	100.0%	100.0%	29.8											
WD (deg)	202	0.3	100.0%	100.0%	360.0											

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 - May 2021 Wembley Station Report

May					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	95.0%	100.0%	8.1	-	May-24 20:00	0.9	-	May-03	-	-	-	-	May 21, 2021
NO ₂ (ppb)	1.8	0.1	95.0%	100.0%	23.1	159	May-05 23:00	4.1	-	May-06	0	-	-	-	May 21, 2021
NO _x (ppb)	2.1	0.0	95.0%	100.0%	28.7	-	May-05 23:00	4.6	-	May-06	-	-	-	-	May 21, 2021
O ₃ (ppb)	32.9	6.0	95.2%	100.0%	54.9	76	May-06 18:00	42.6	-	May-13	0	-	-	-	May 21, 2021
PM _{2.5} (µg/m³)	1.4	0.0	98.9%	100.0%	10.5	80	May-07 05:00	3.8	29	May-24	0	-	0	-	May 20, 2021
SO ₂ (ppb)	0.3	0.0	95.0%	100.0%	8.8	172	May-02 11:00	0.9	48	May-08	0	-	0	0	May 21, 2021
TRS (ppb)	0.3	0.1	95.2%	100.0%	0.8	-	May-27 00:00	0.5	-	May-19	-	-	-	-	May 20, 2021
CH ₄ (ppm)	2.0	1.9	95.3%	100.0%	2.2	-	May-03 05:00	2.0	-	May-03	-	-	-	-	May 20, 2021
THC (ppm)	2.0	1.9	95.3%	100.0%	3.0	-	May-16 19:00	2.0	-	May-03	-	-	-	-	May 20, 2021
NMHC (ppm)	0.0	0.0	95.3%	100.0%	1.1	-	May-16 19:00	0.1	-	May-16	-	-	-	-	May 20, 2021
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	10.9	-1.6	100.0%	100.0%	23.9	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
WS (km/hr)	8.6	0.6	100.0%	100.0%	25.7										
WD (deg)	295	2.0	100.0%	100.0%	358.8	Average Wind Direction295WNW									

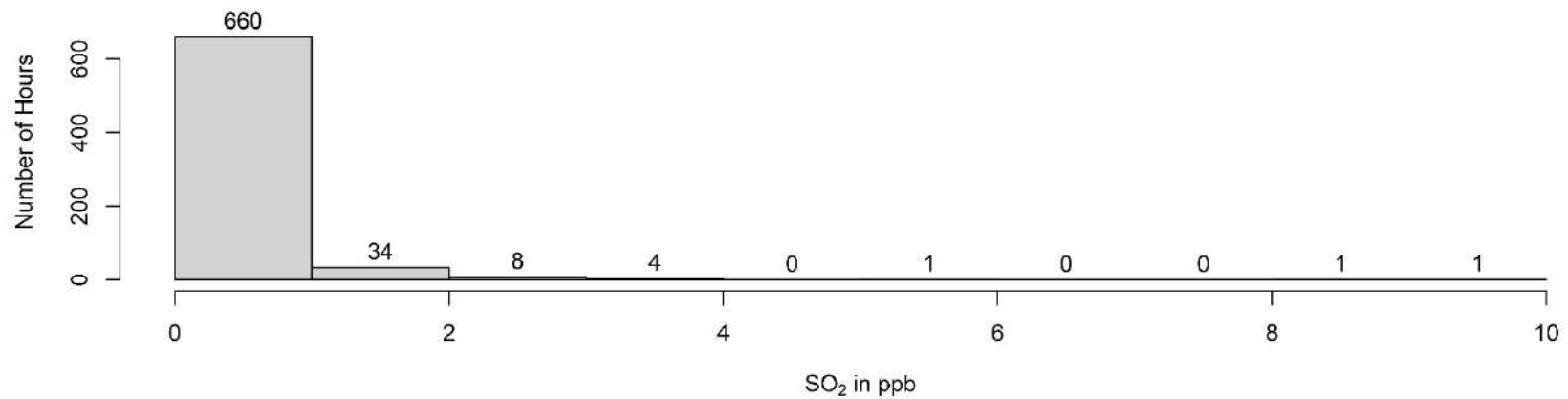
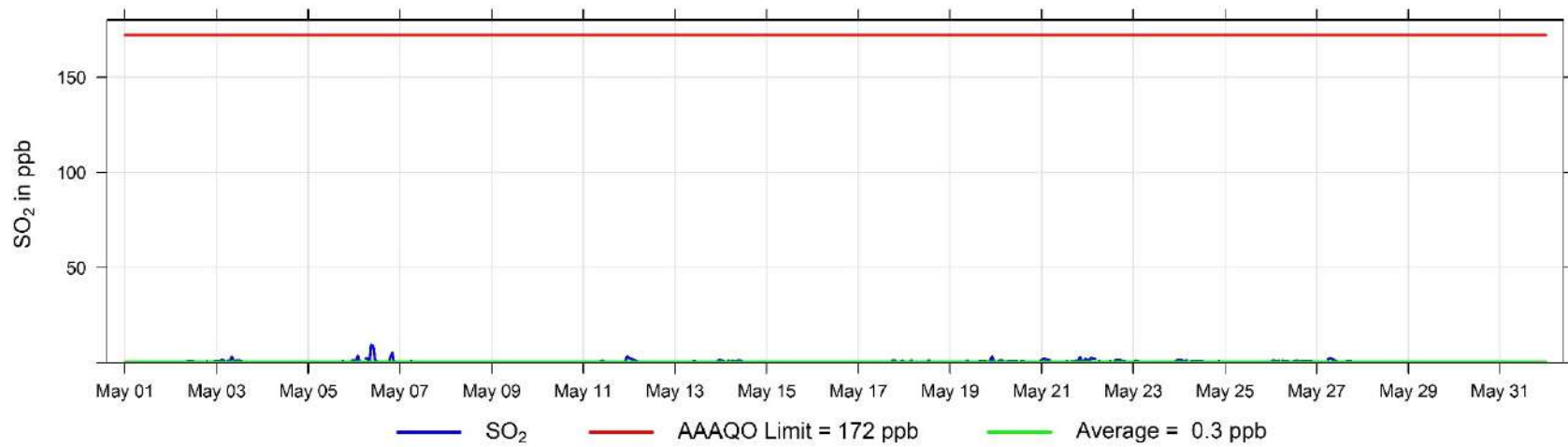
Update Summary:

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	No Operational issues noted
SO ₂	TEI	43I	No Operational issues noted
TRS	TEI	43I	No Operational issues noted
THC/CH ₄ /NMHC	TEI	55I-A3PHAA	No Operational issues noted
Met Equip	MetOne	50.5	No Operational issues noted

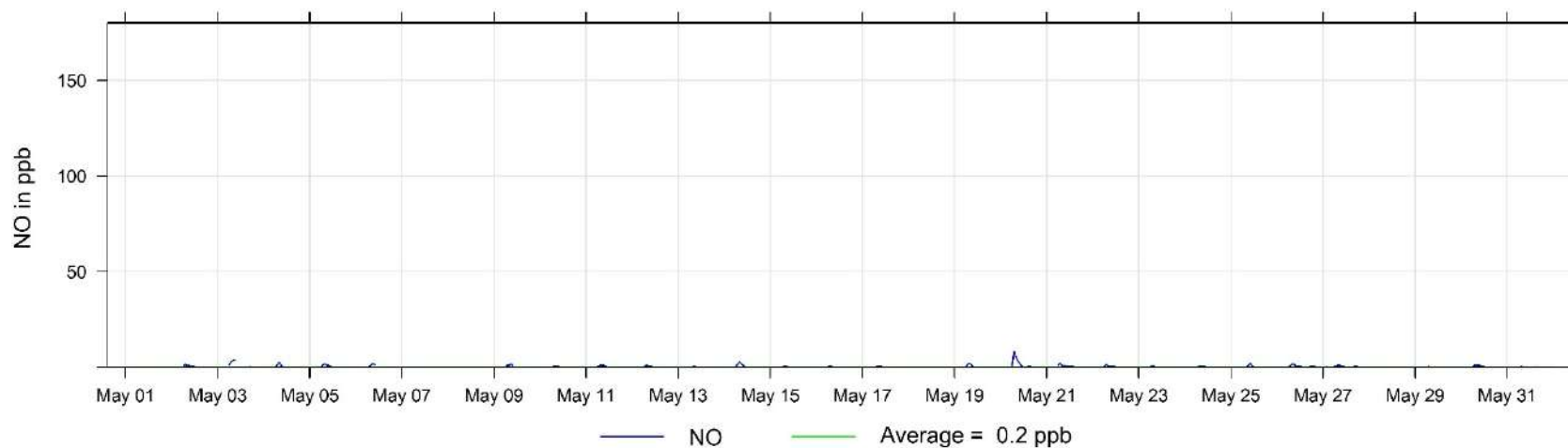
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

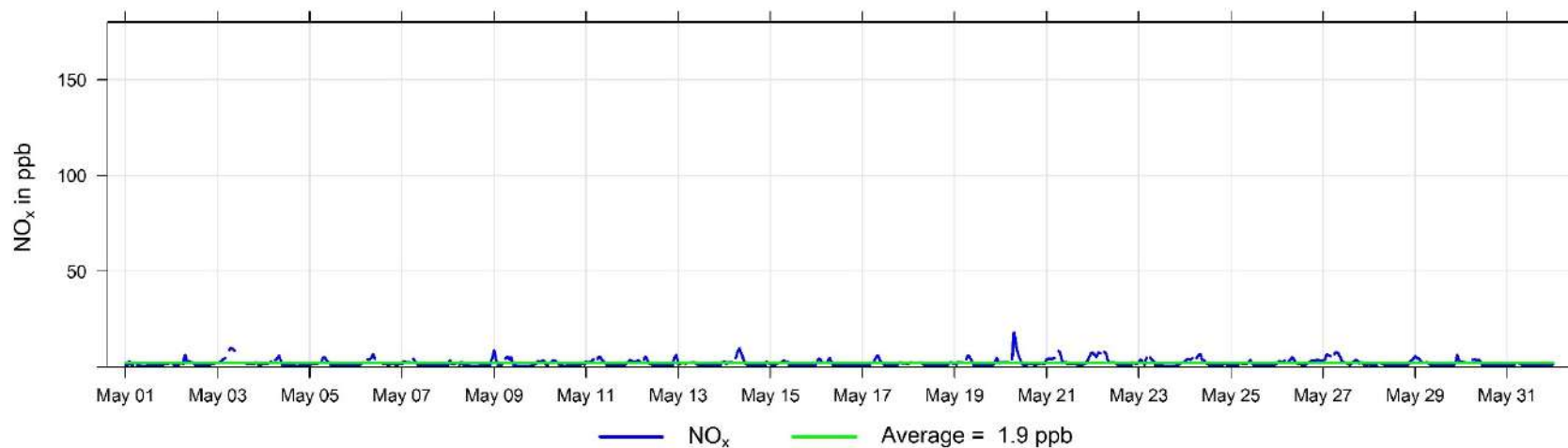
May Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



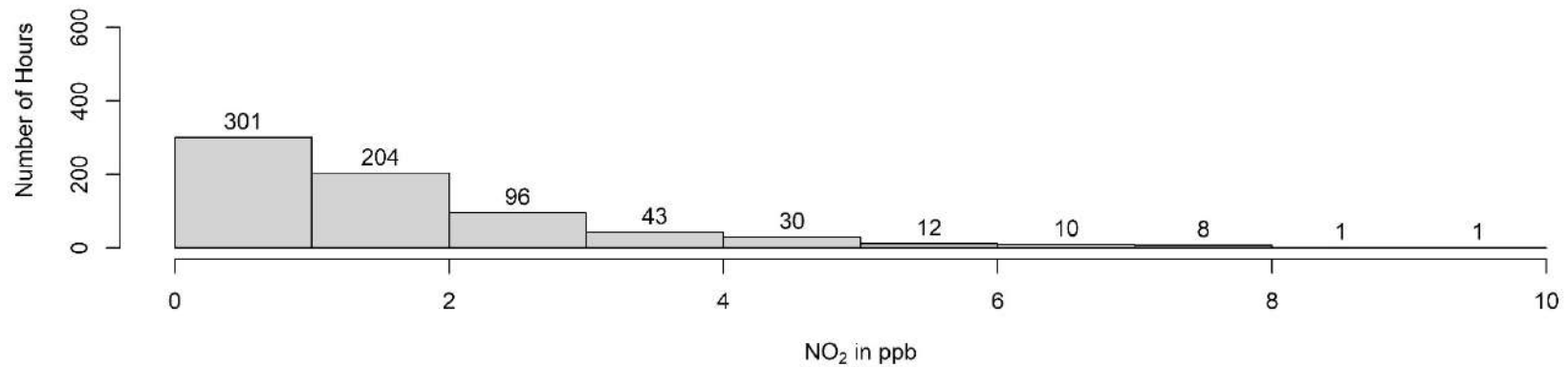
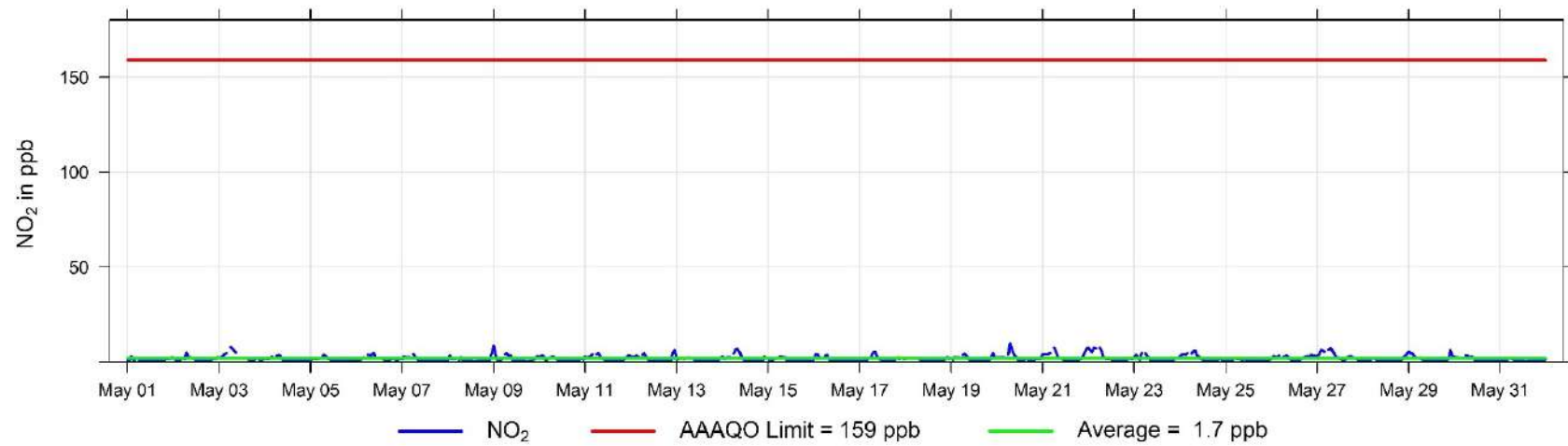
May Hourly Concentration Readings of NO (in ppb) at Beaverlodge



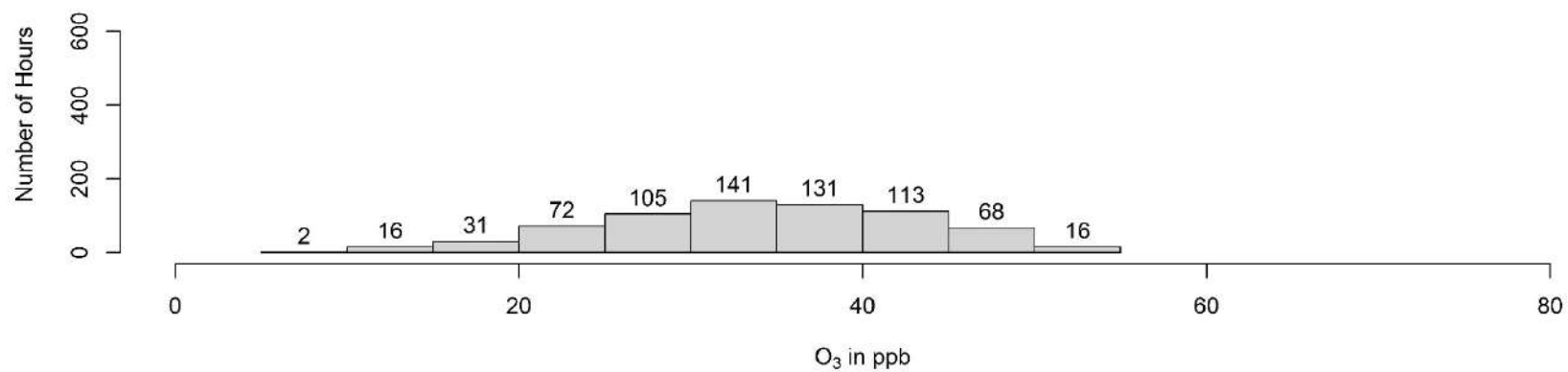
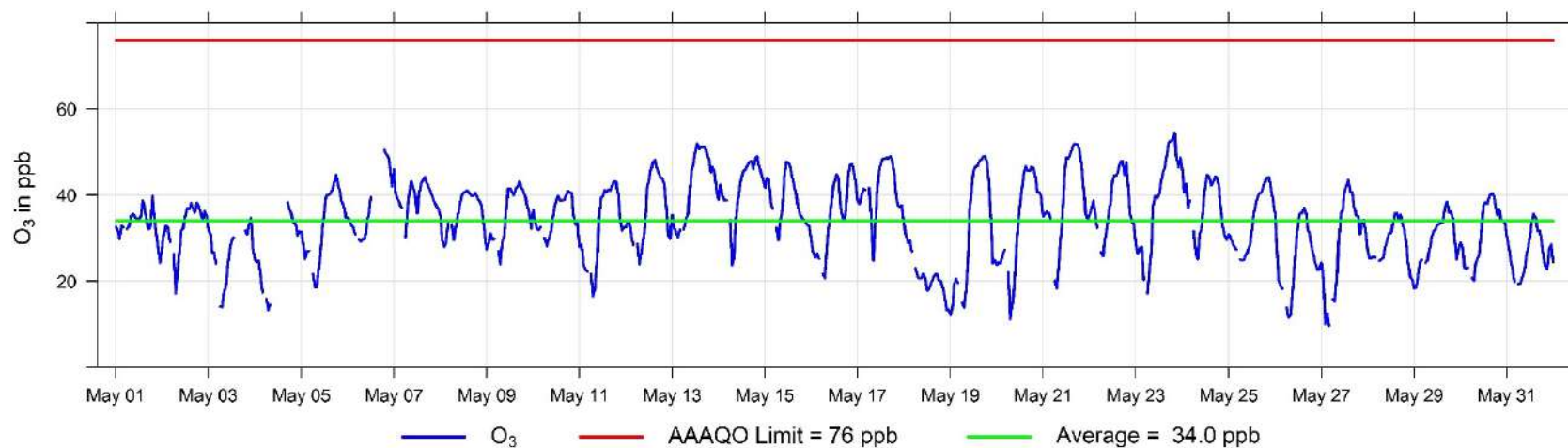
May Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



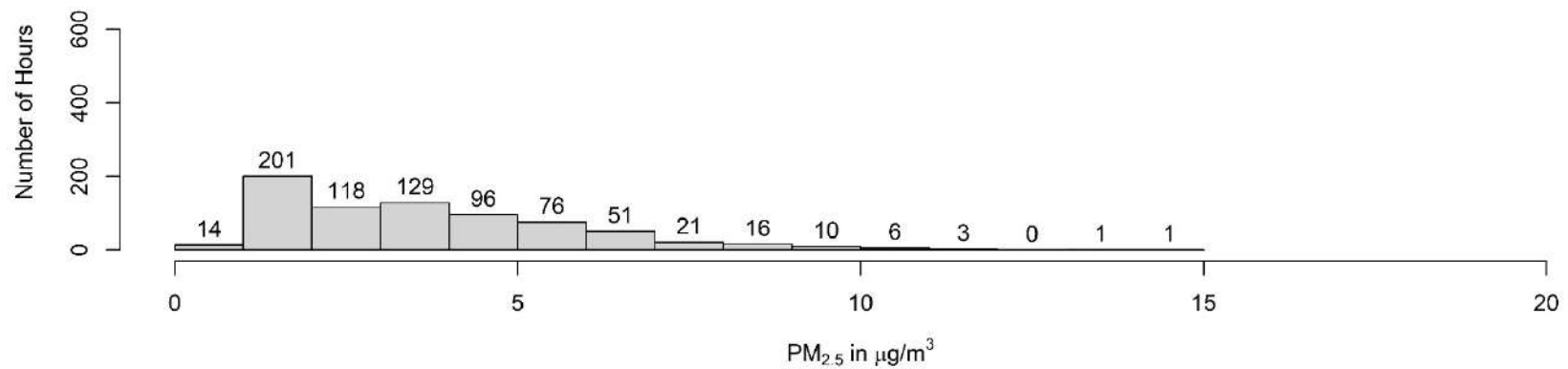
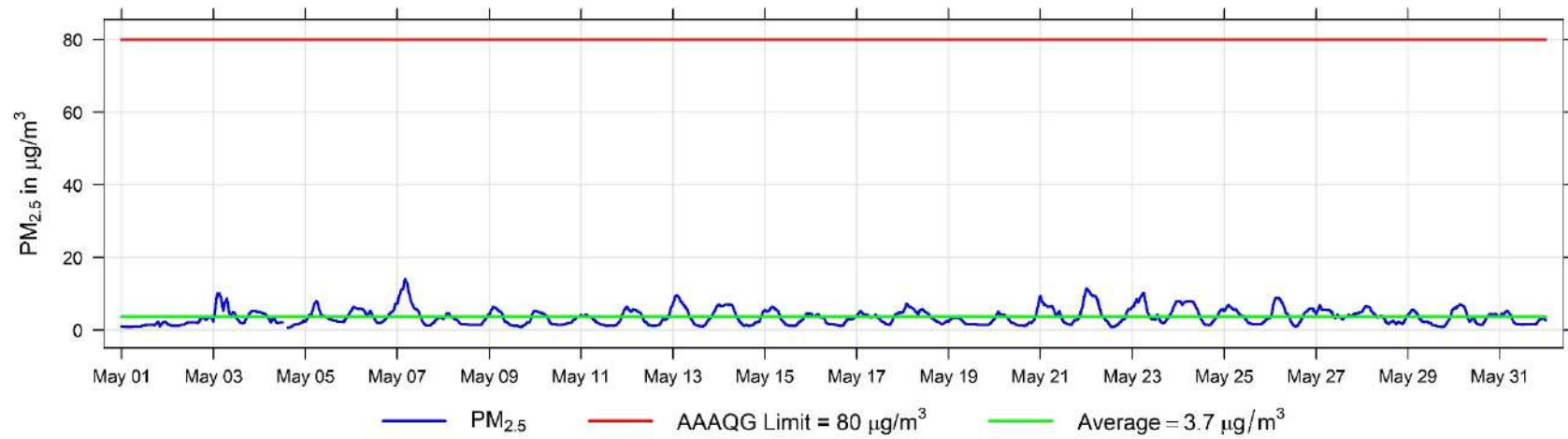
May Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge



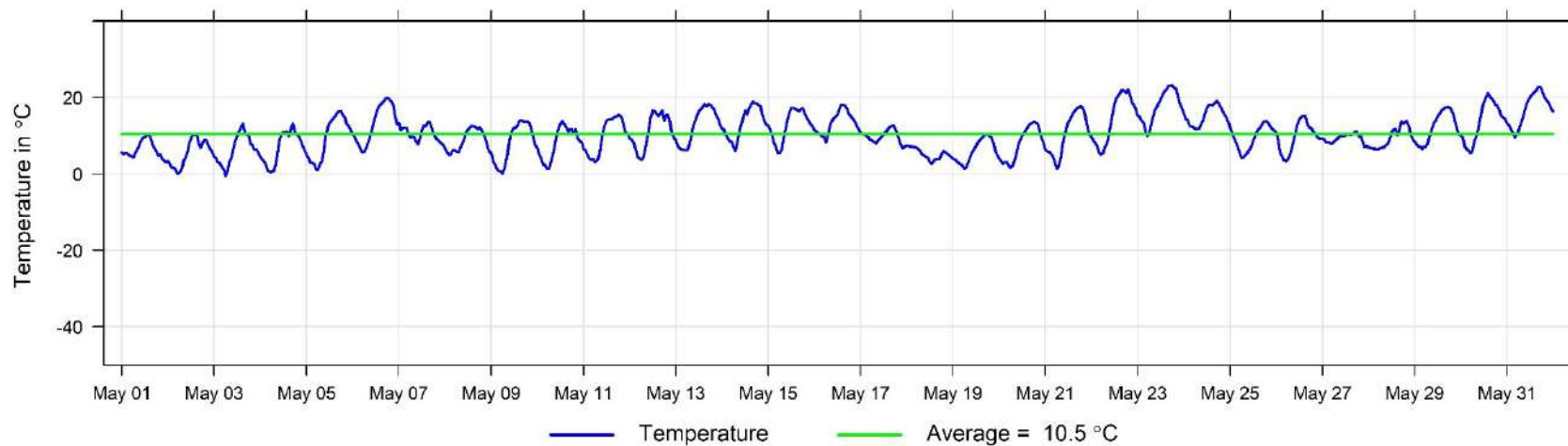
May Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



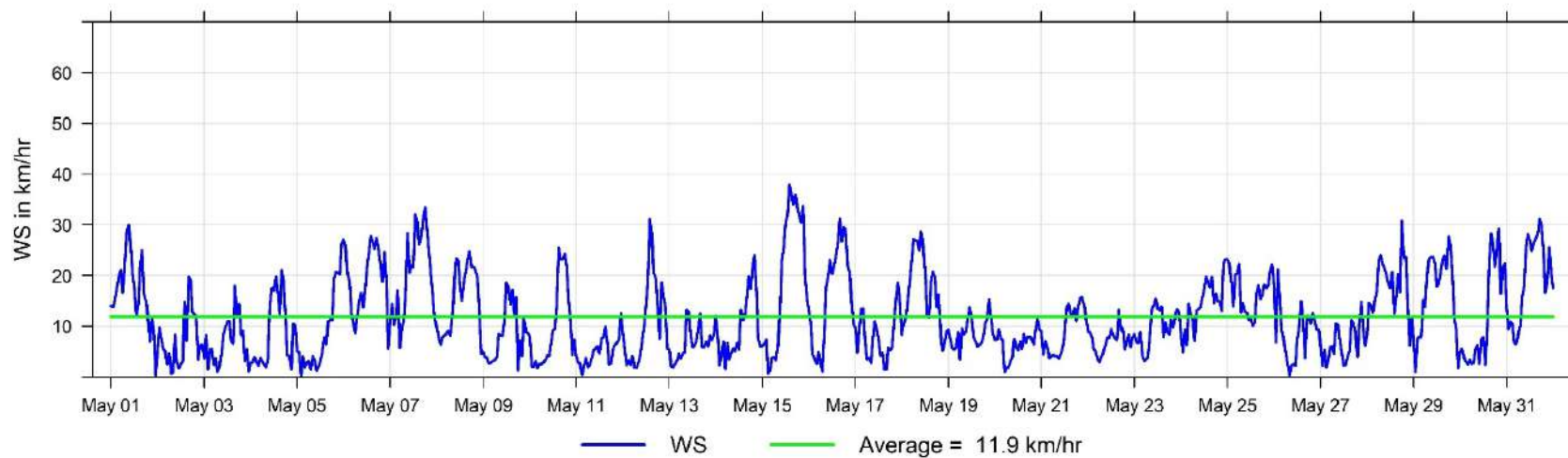
May Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



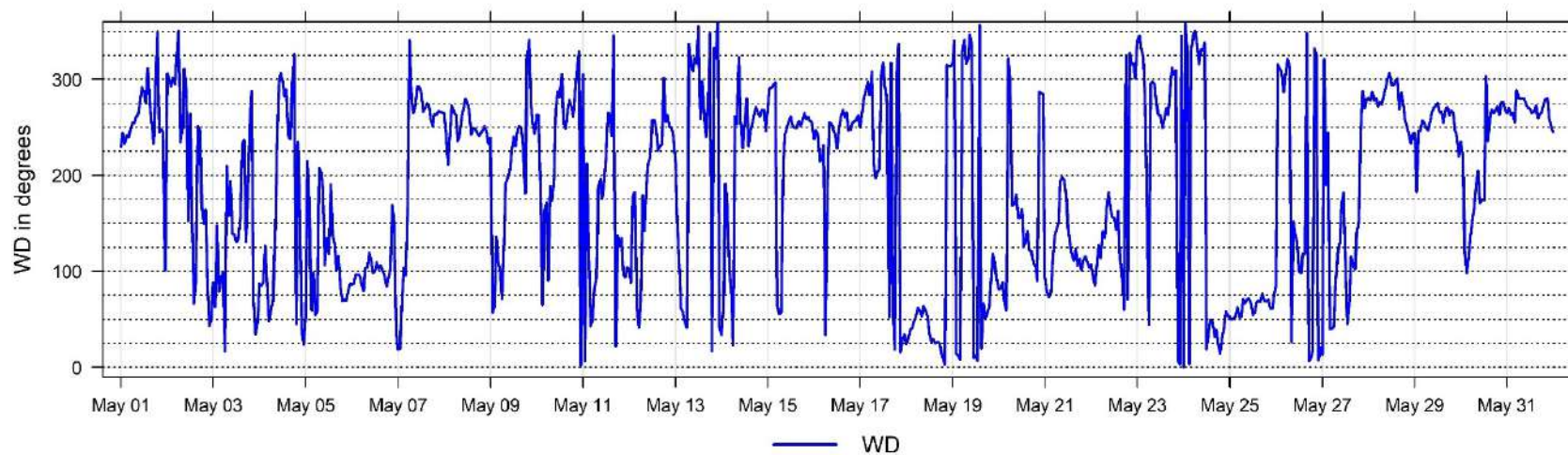
May Hourly Temperature Readings (in °C) at Beaverlodge



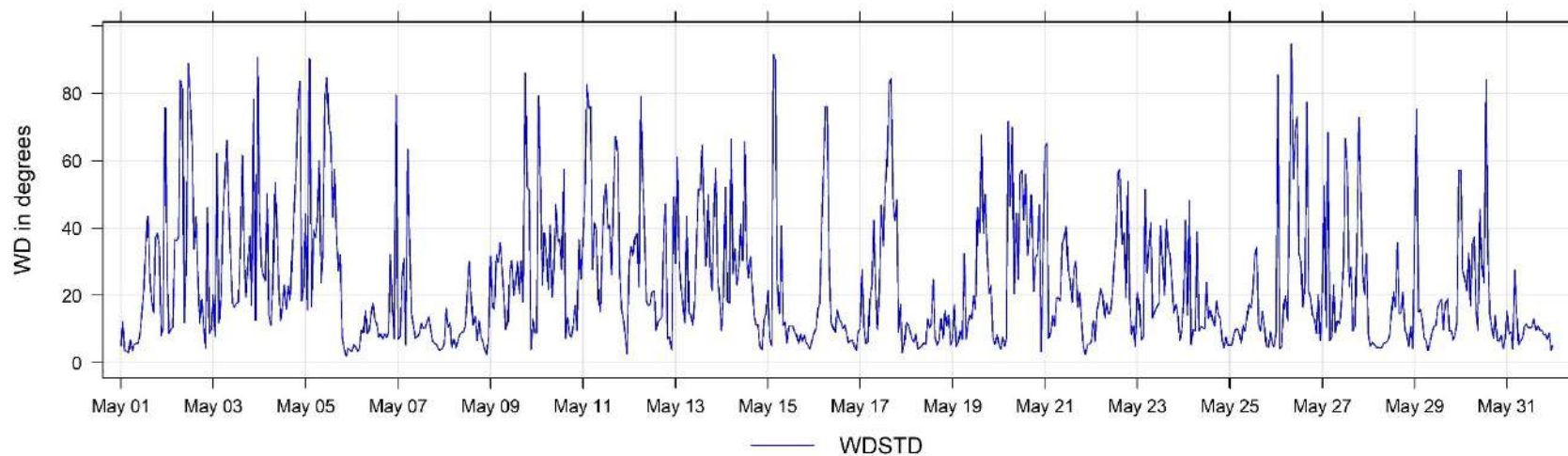
May Hourly Readings of Wind Speed (in km/hr) at Beaverlodge

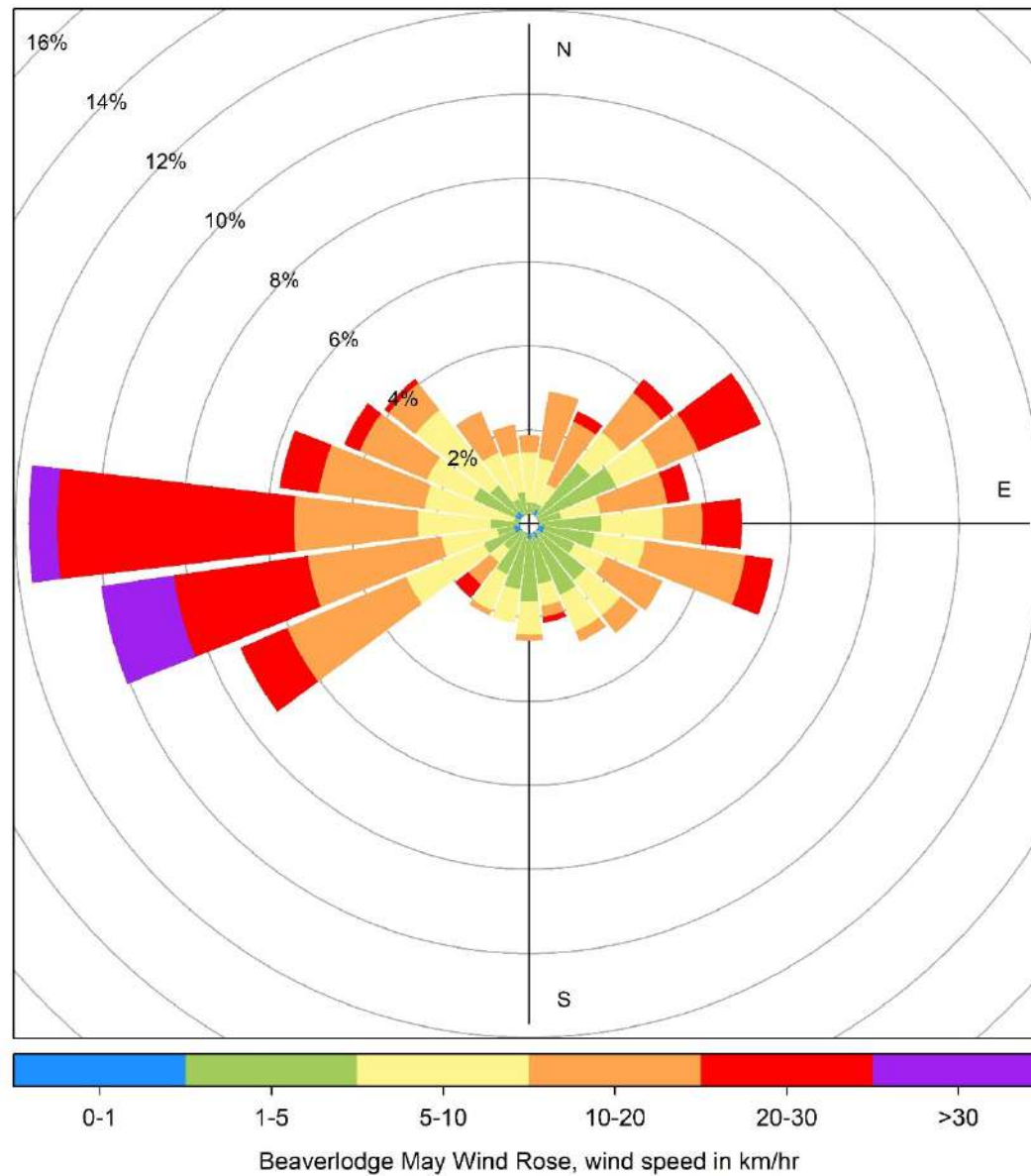


May Hourly Readings of Wind Direction (in degrees) at Beaverlodge



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

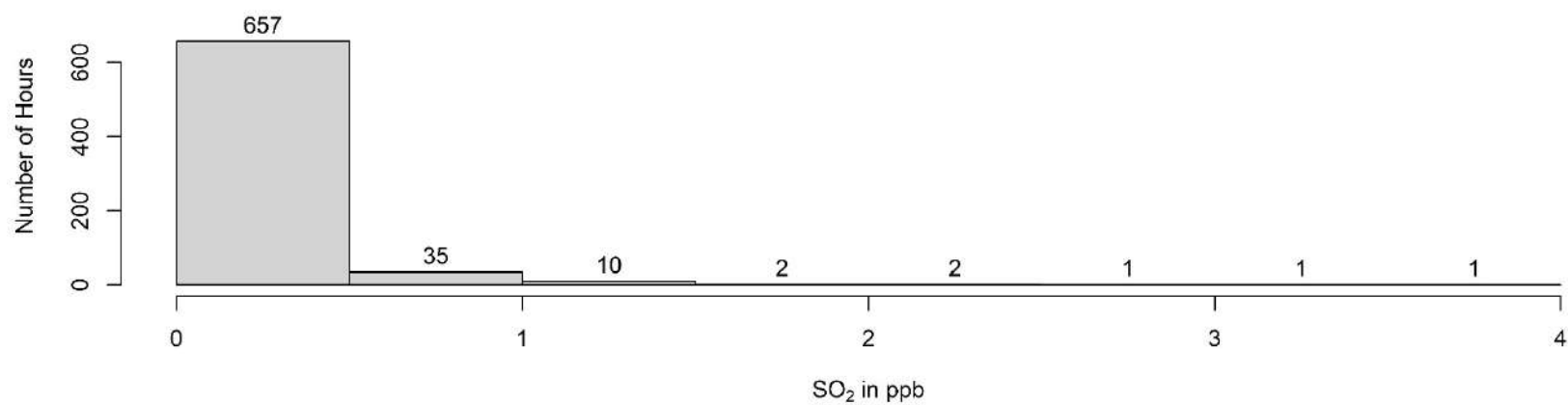
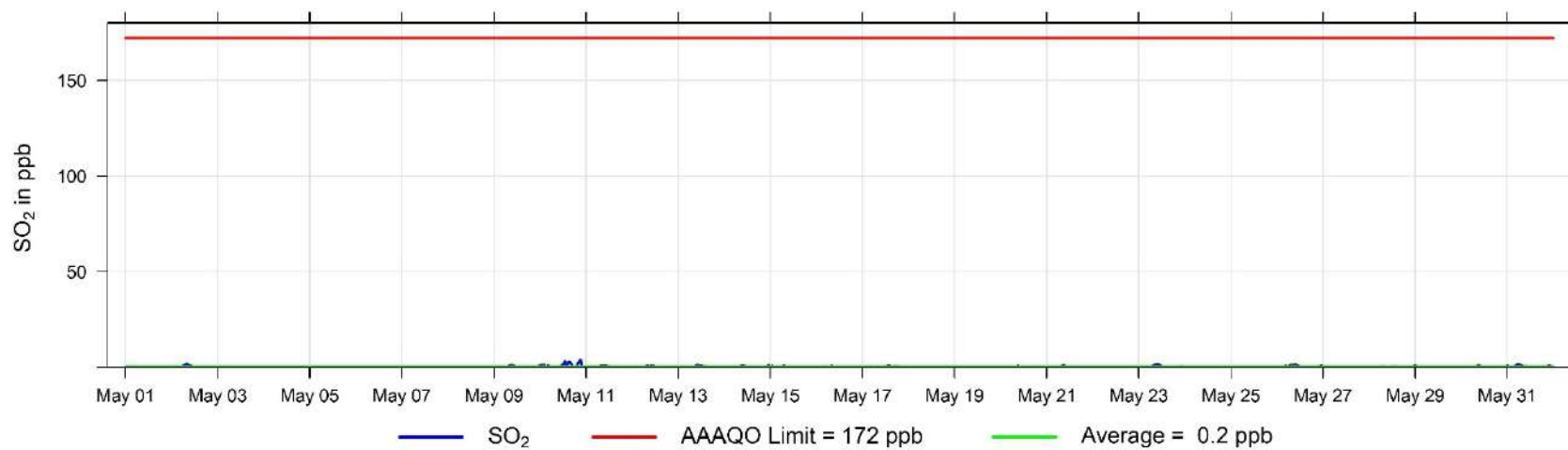




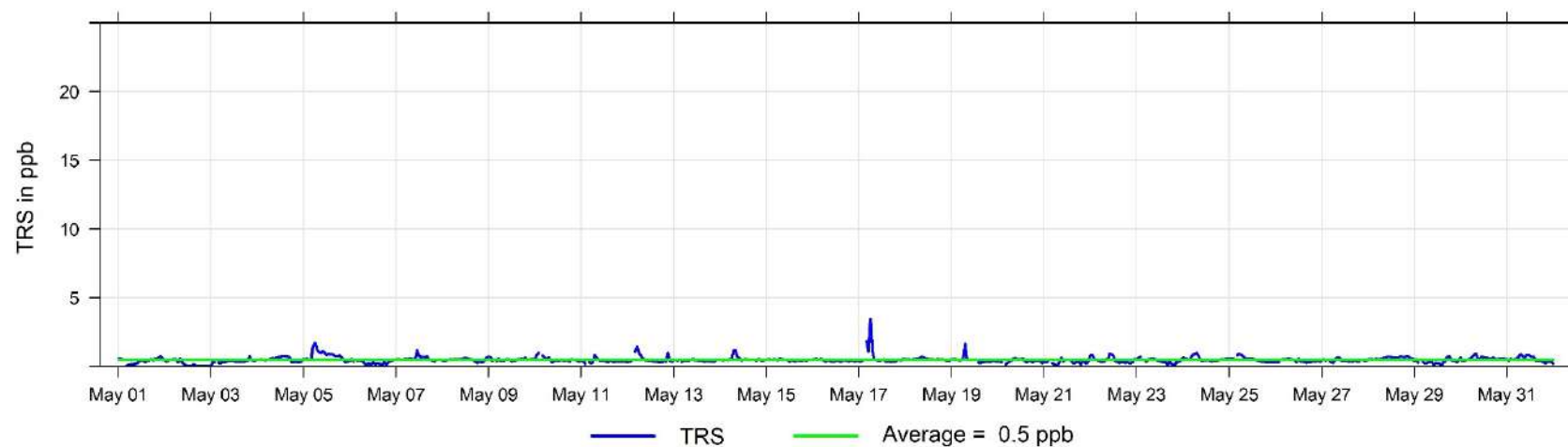
3 Evergreen Park Charts

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

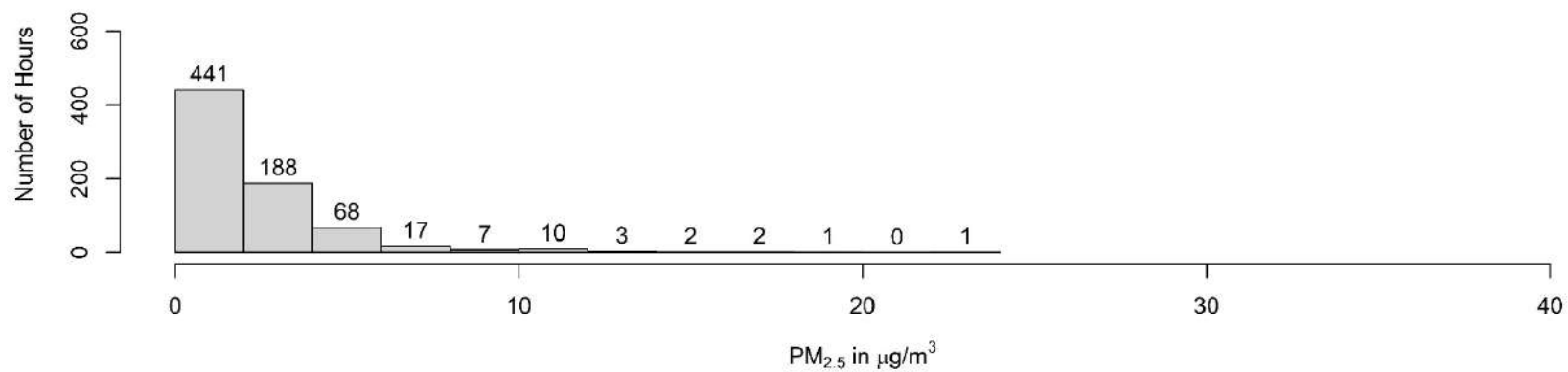
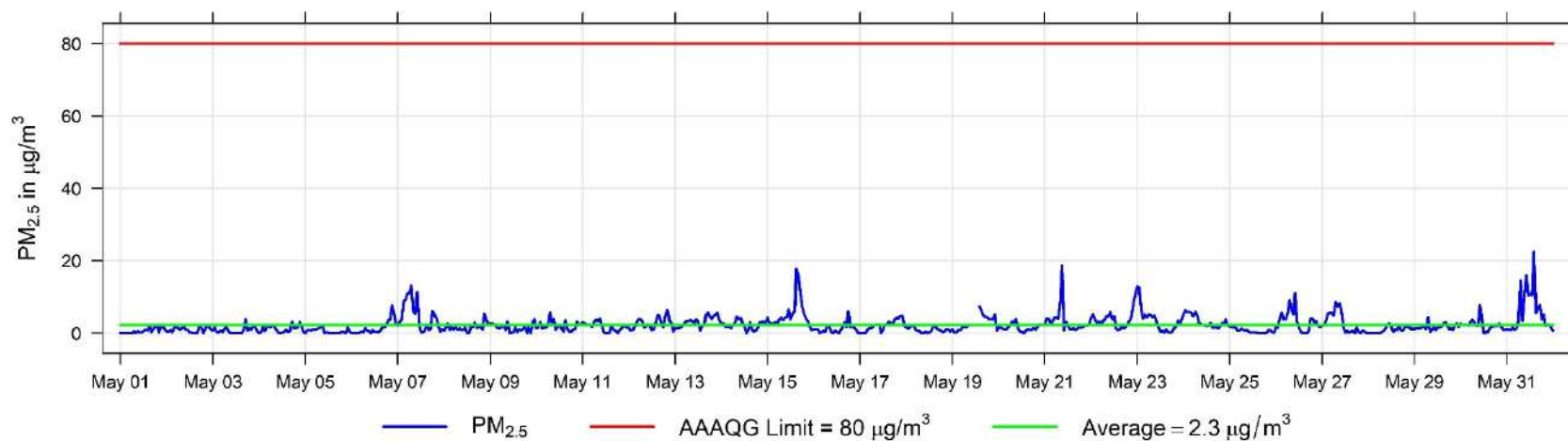
May Hourly Concentration Readings of SO₂ (in ppb) at Evergreen Park



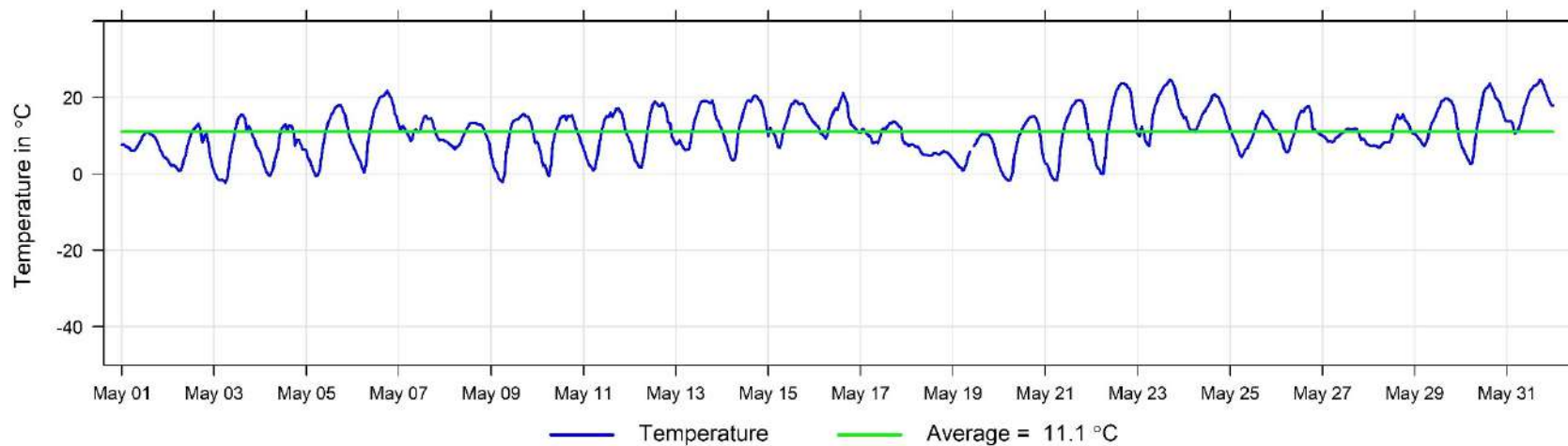
May Hourly Concentration Readings of TRS (in ppb) at Evergreen Park



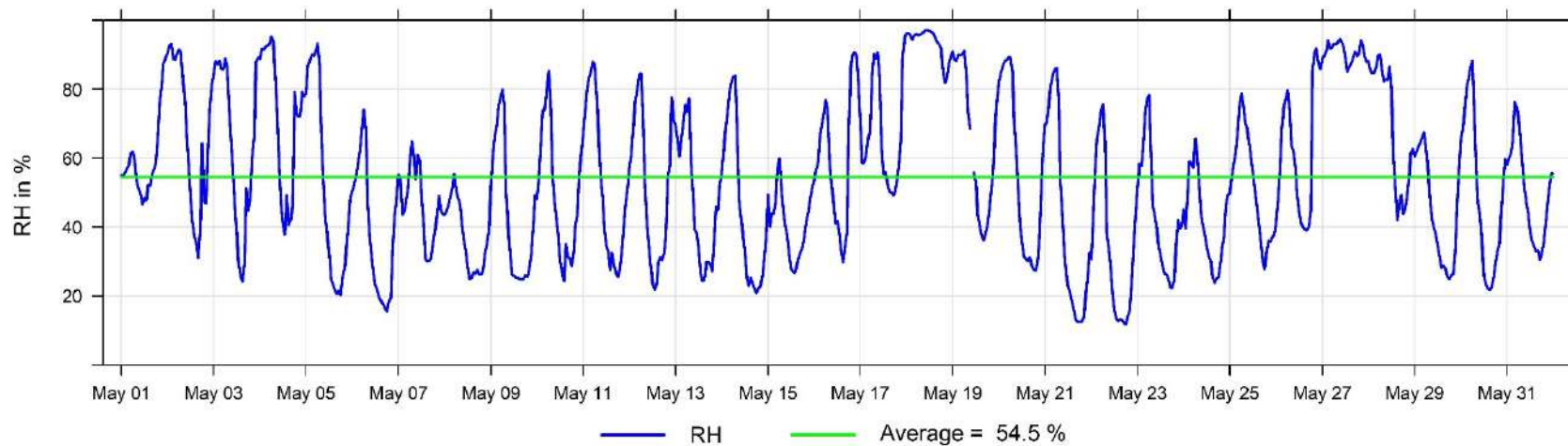
May Hourly Concentration Readings of PM_{2.5} in µg/m³ at Evergreen Park



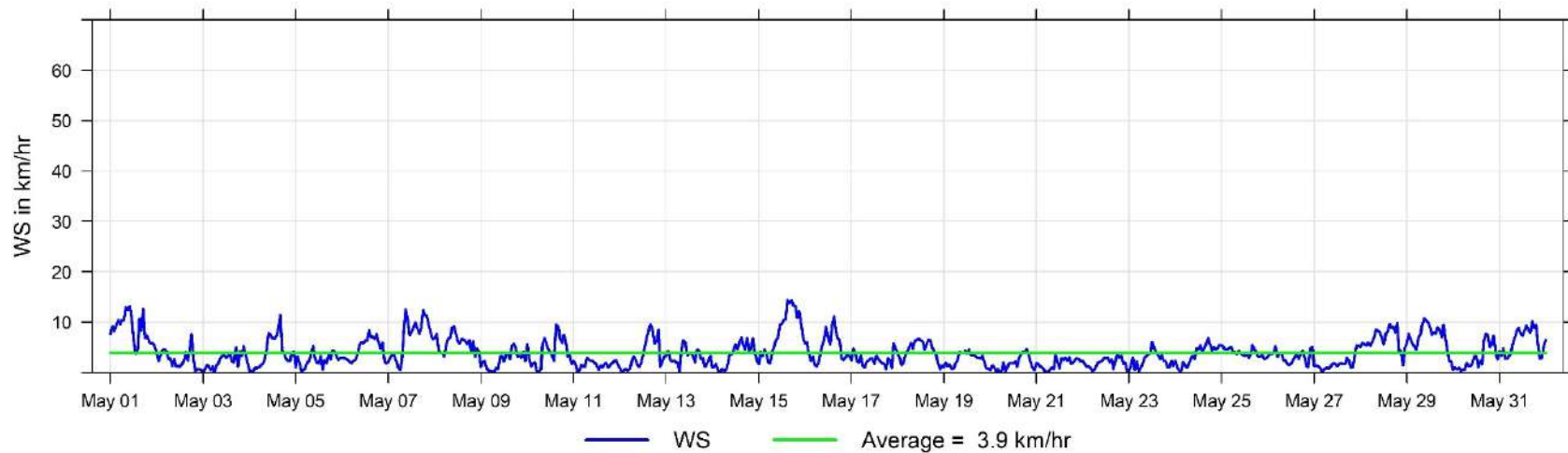
May Hourly Temperature Readings (in °C) at Evergreen Park



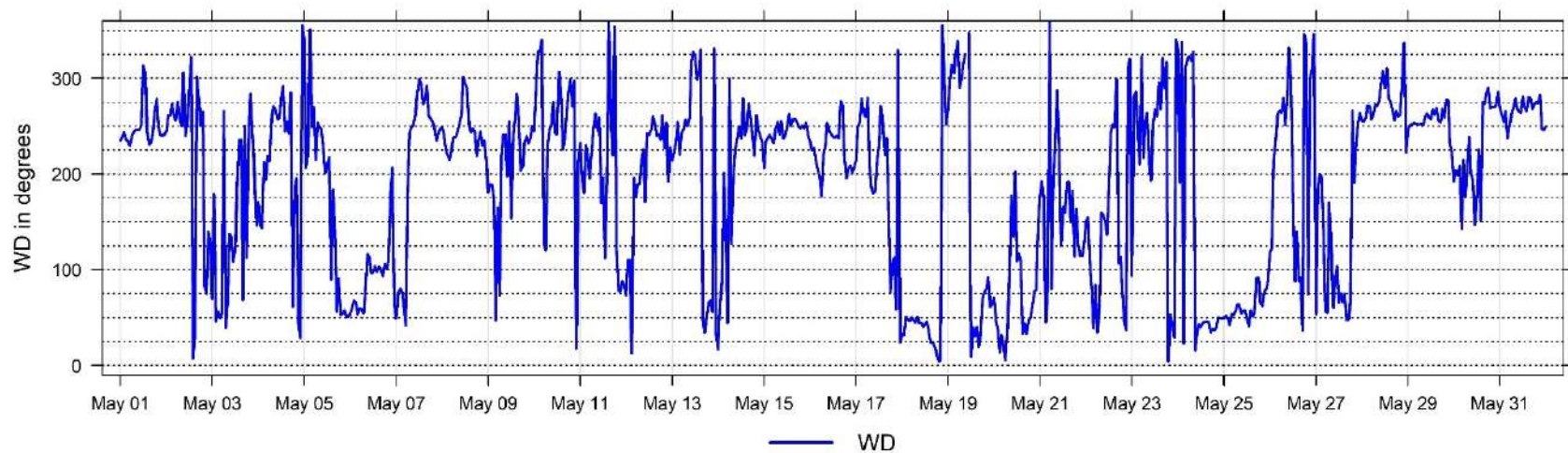
May Hourly Readings of Relative Humidity (in %) at Evergreen Park



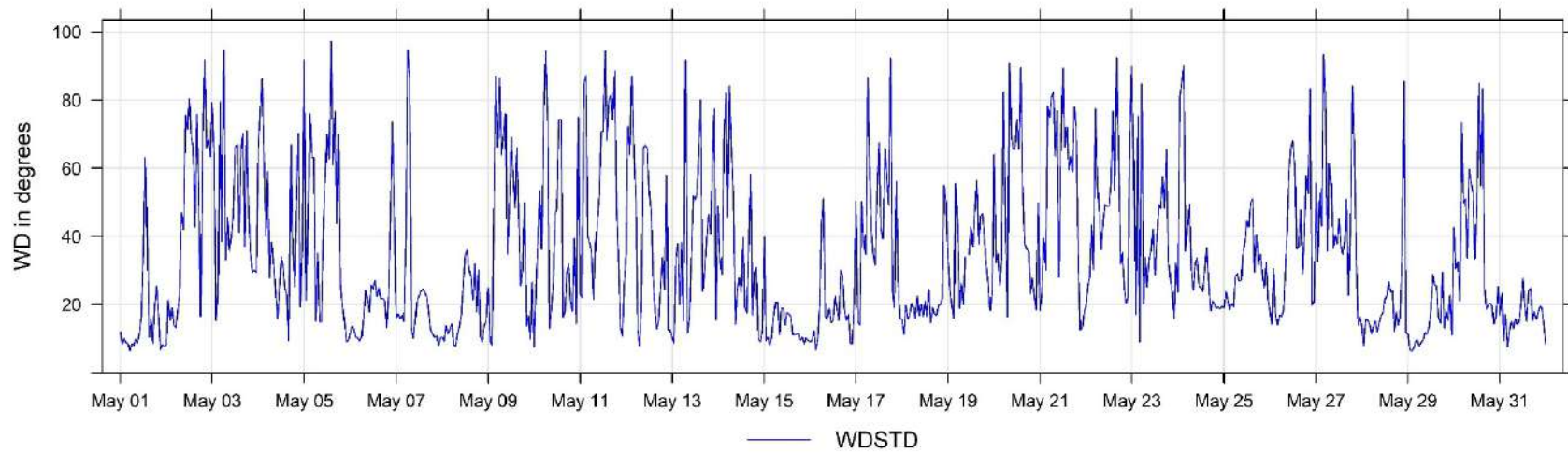
May Hourly Readings of Wind Speed (in km/hr) at Evergreen Park

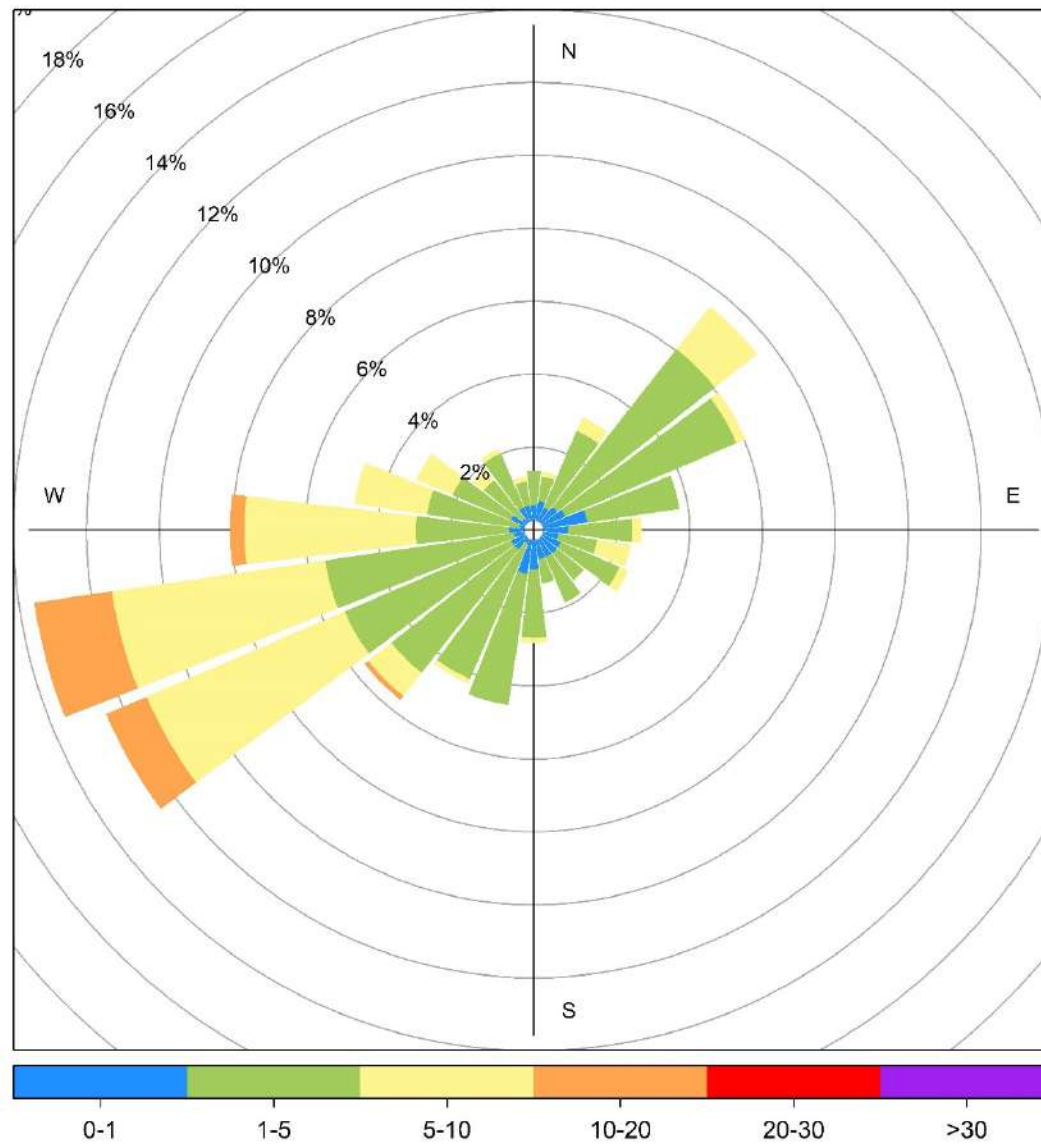


May Hourly Readings of Wind Direction (in degrees) at Evergreen Park



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



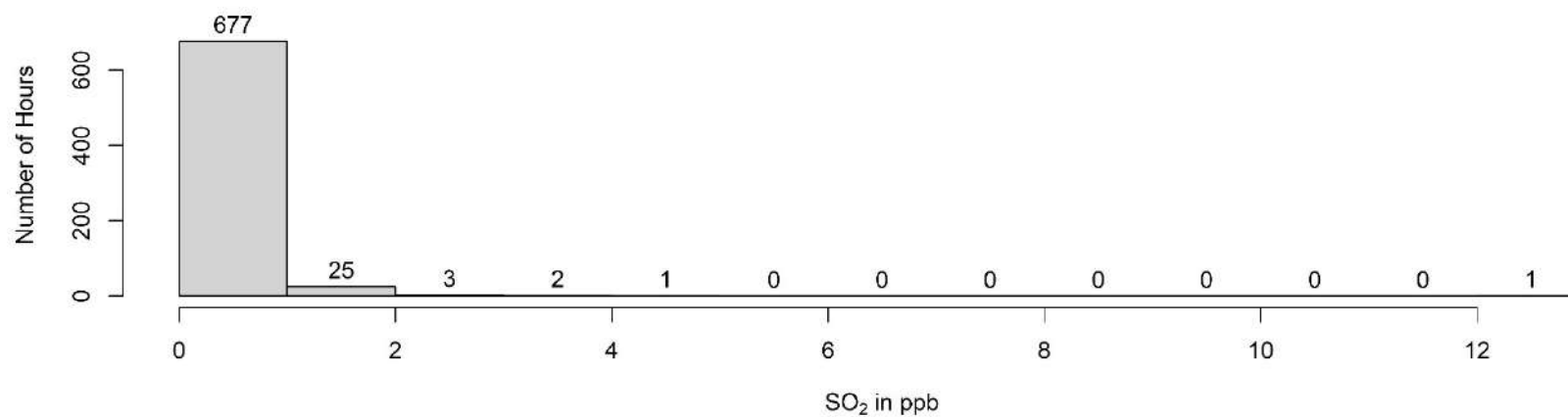
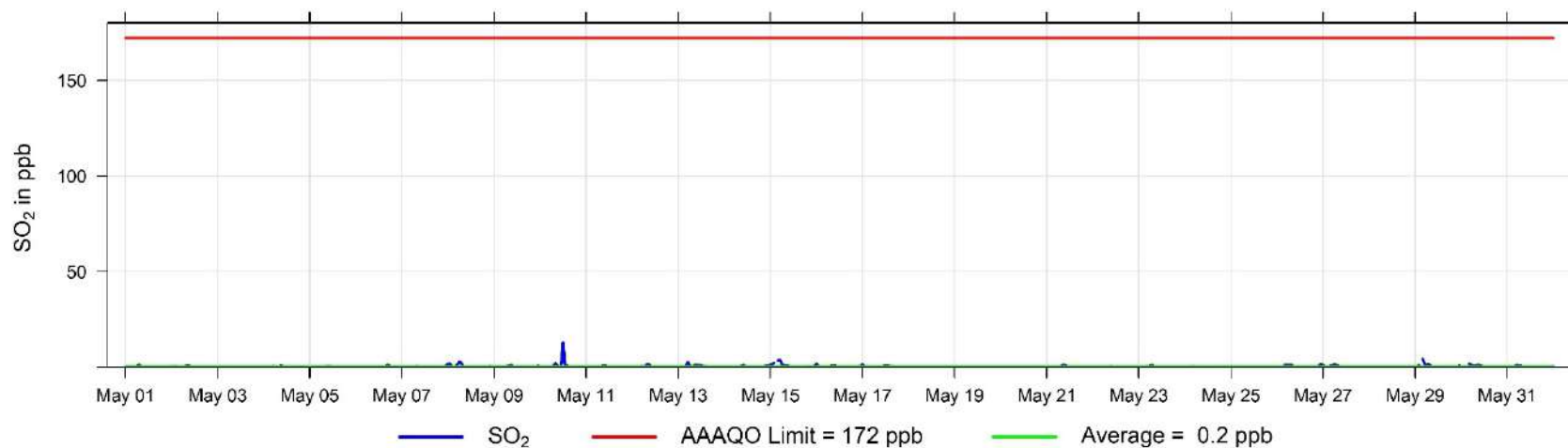


Evergreen Park May Wind Rose, wind speed in km/hr

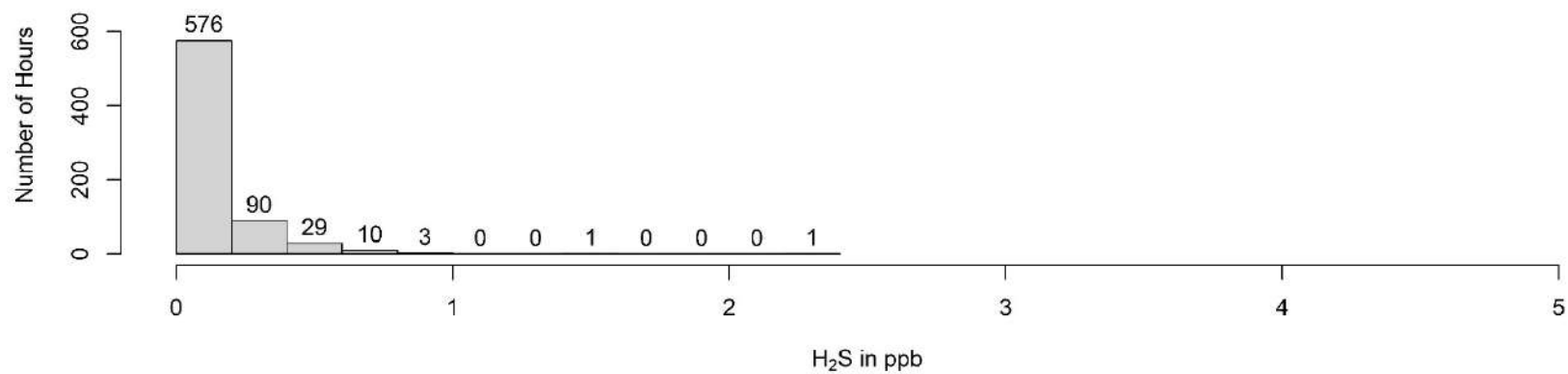
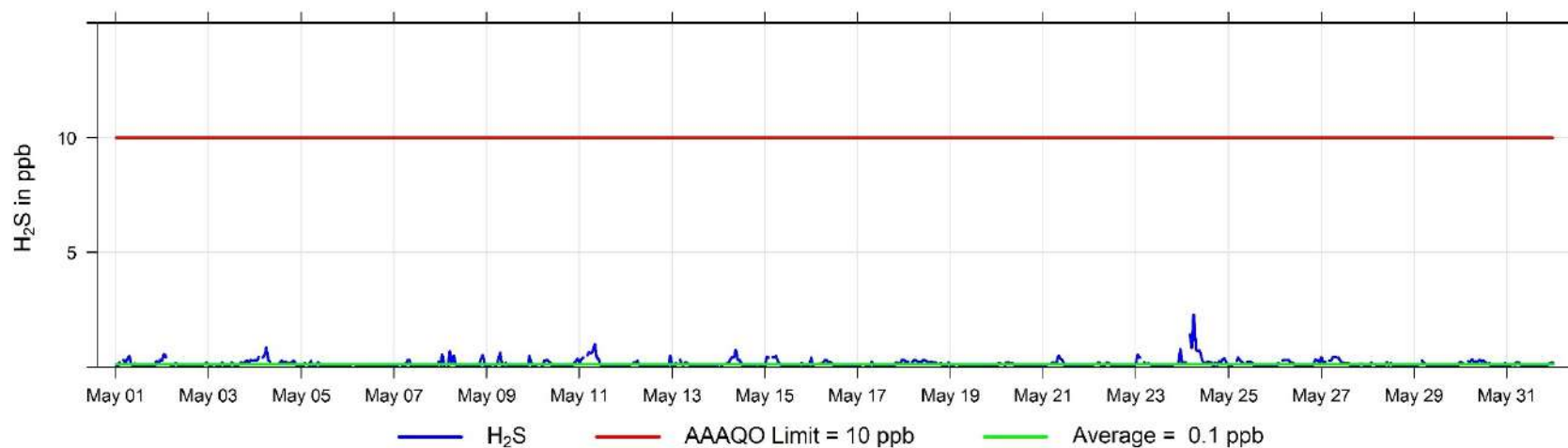
4 Grande Prairie - Henry Pirker Charts

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

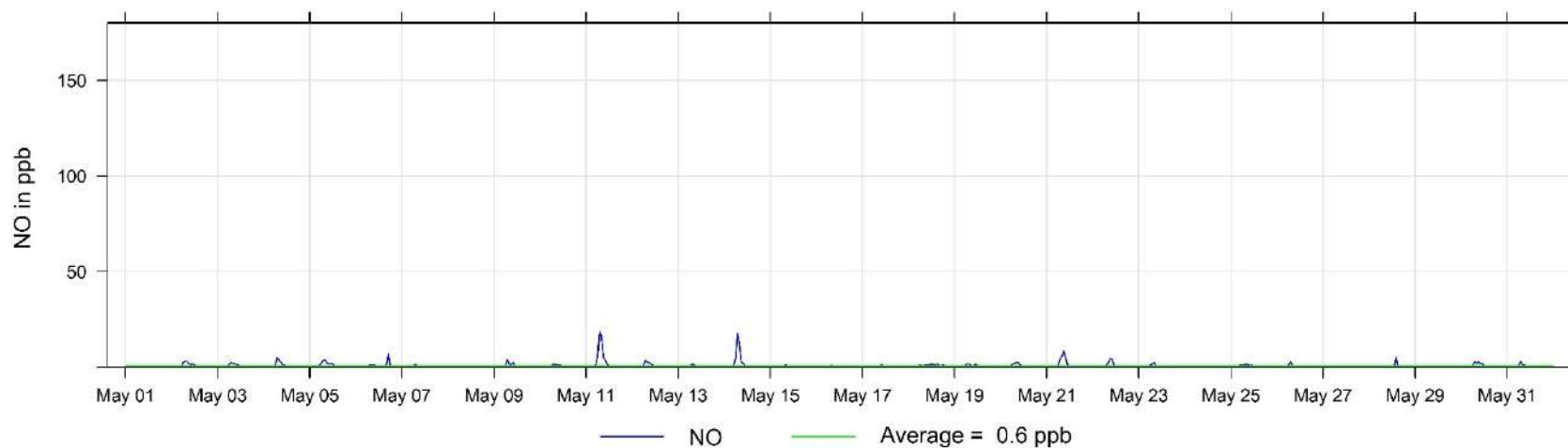
May Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



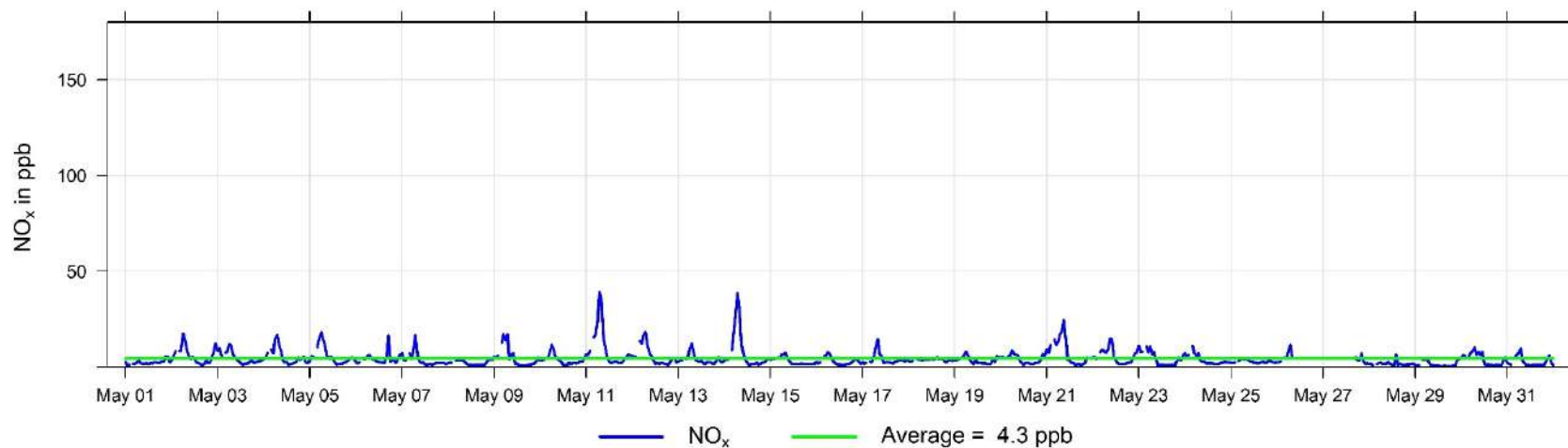
May Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



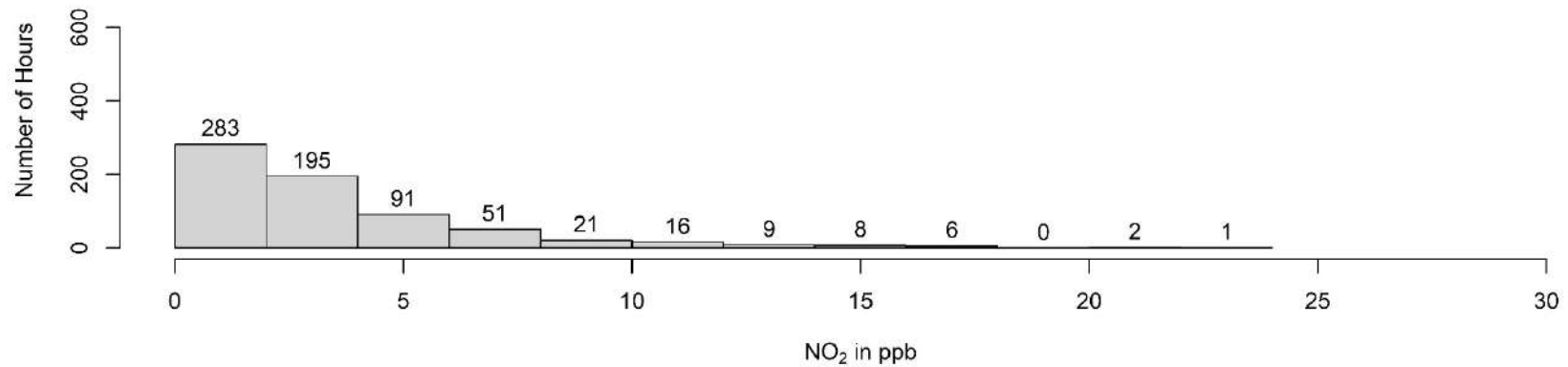
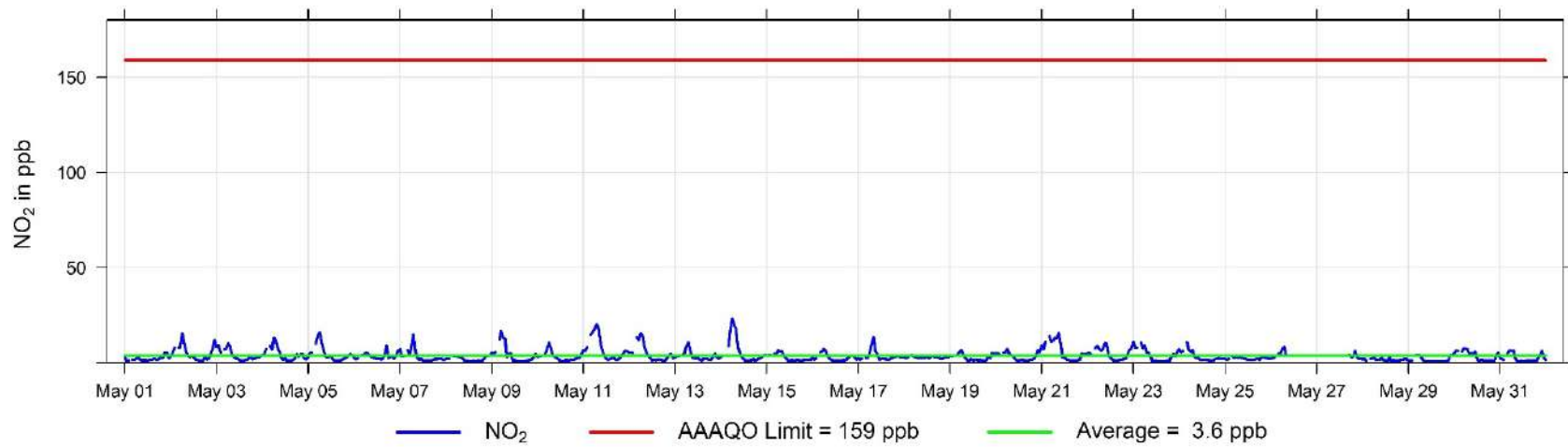
May Hourly Concentration Readings of NO (in ppb) at Henry Pirker



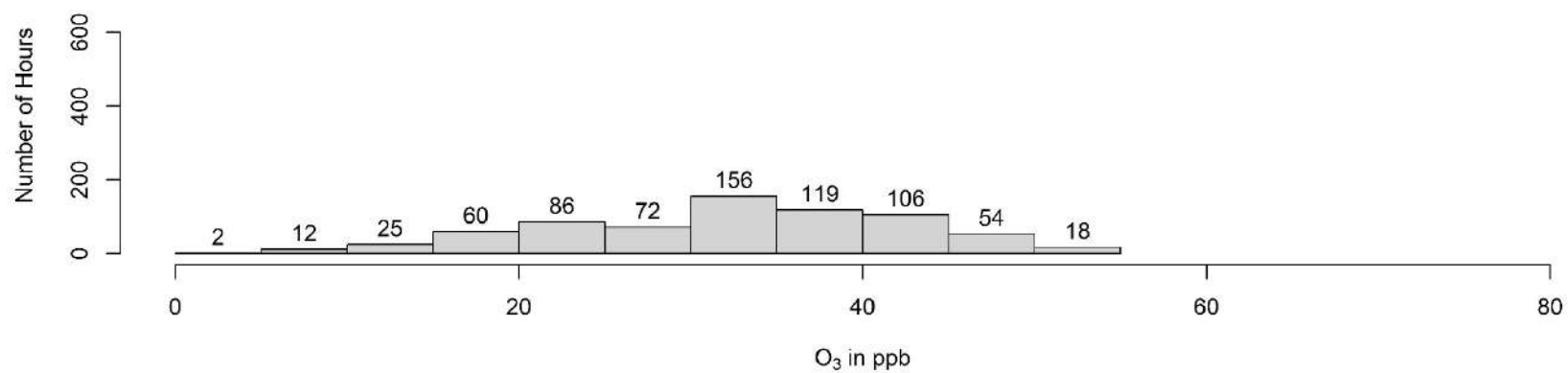
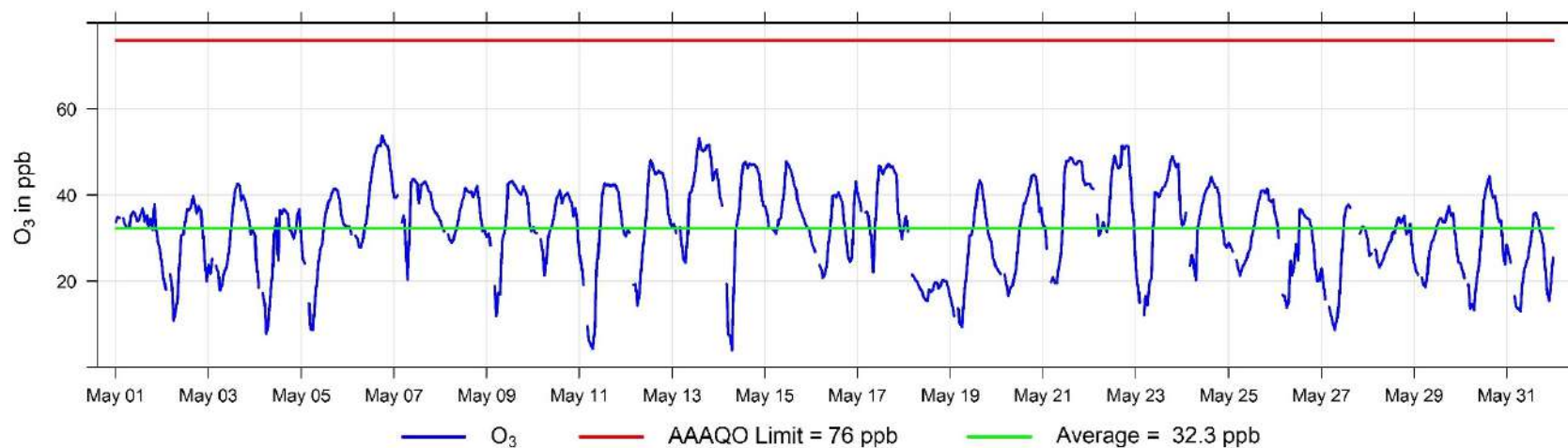
May Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



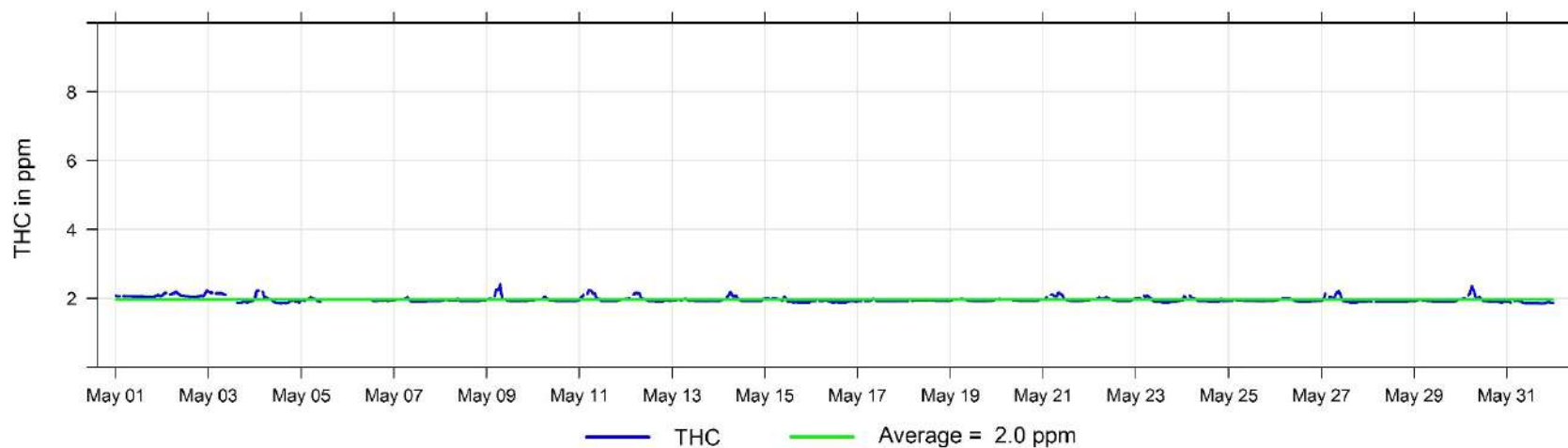
May Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker



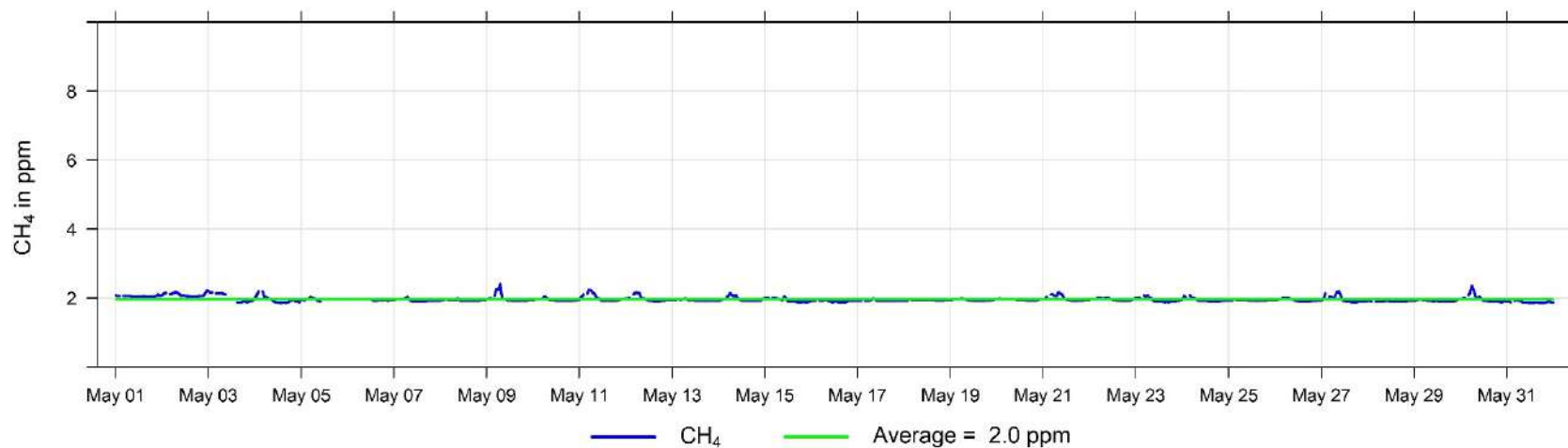
May Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



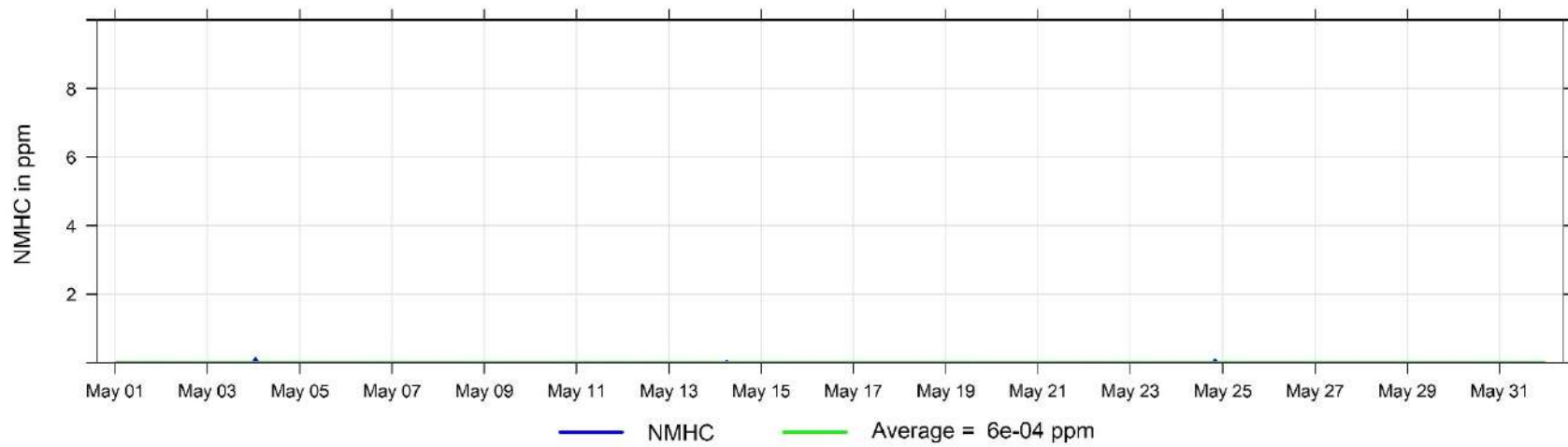
May Hourly Concentration Readings of THC (in ppm) at Henry Pirker



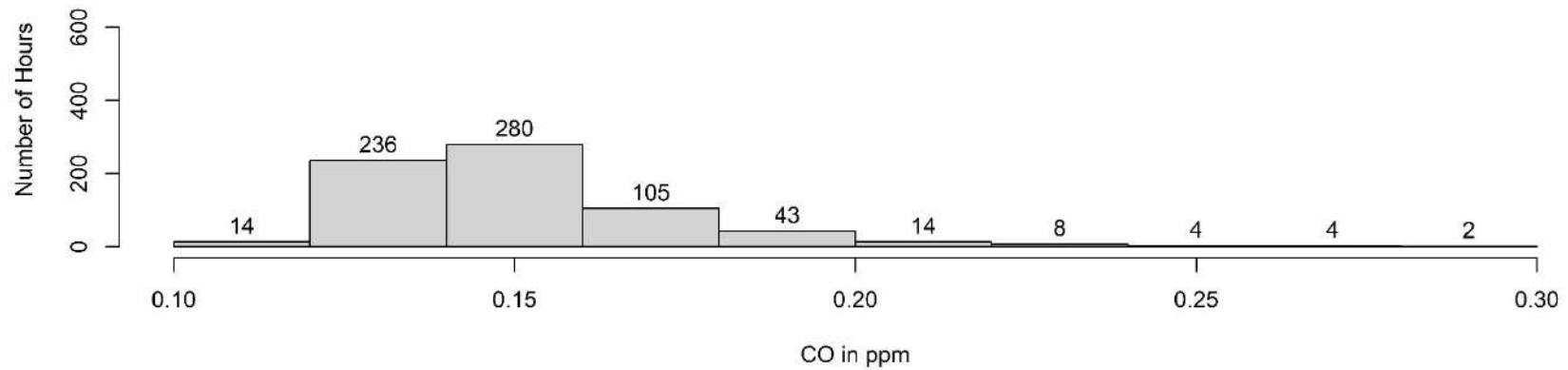
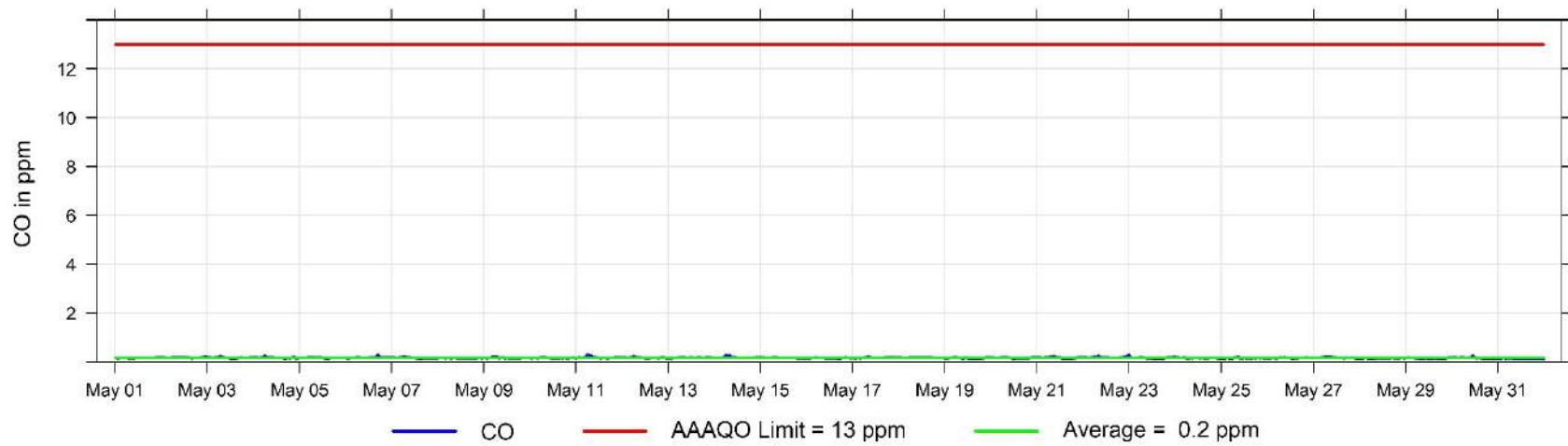
May Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



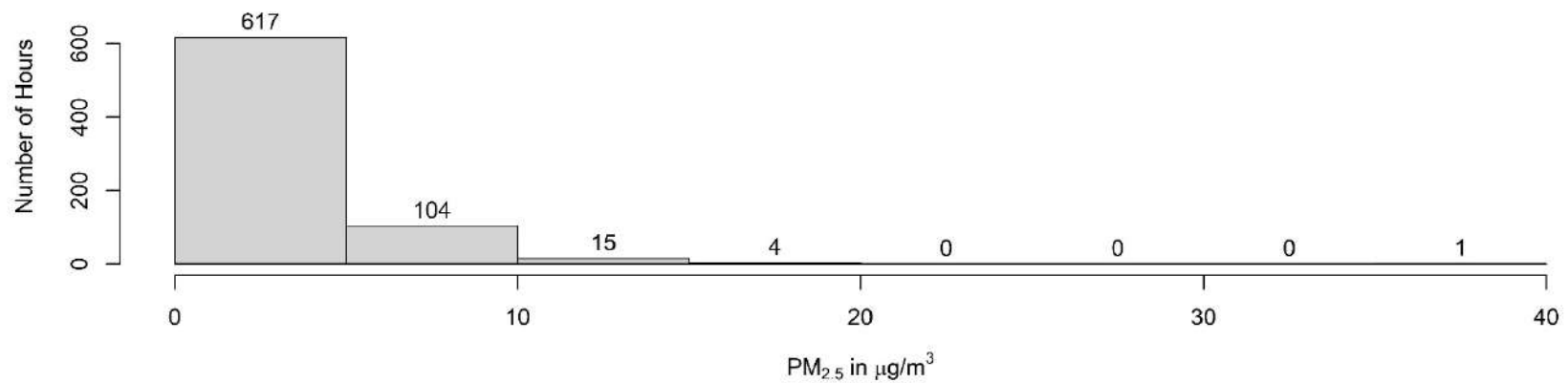
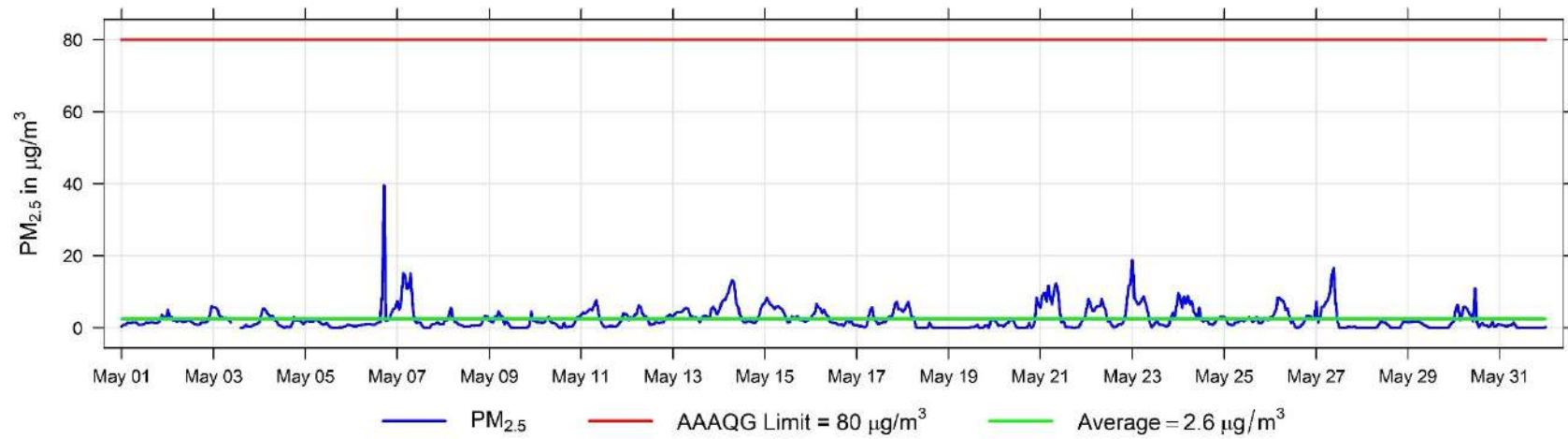
May Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



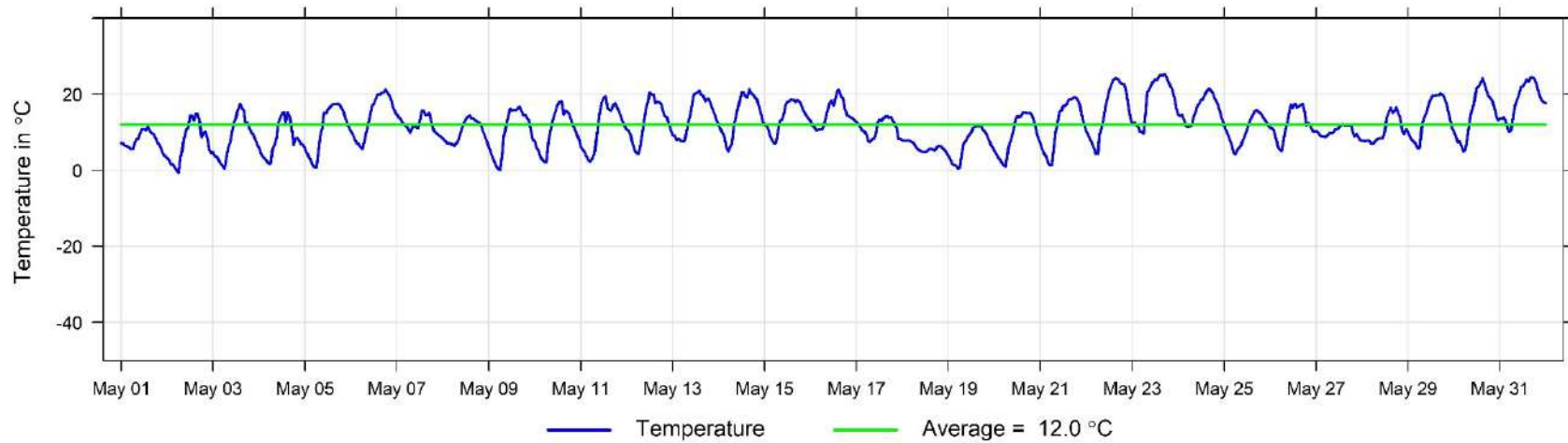
May Hourly Concentration Readings of CO (in ppm) at Henry Pirker



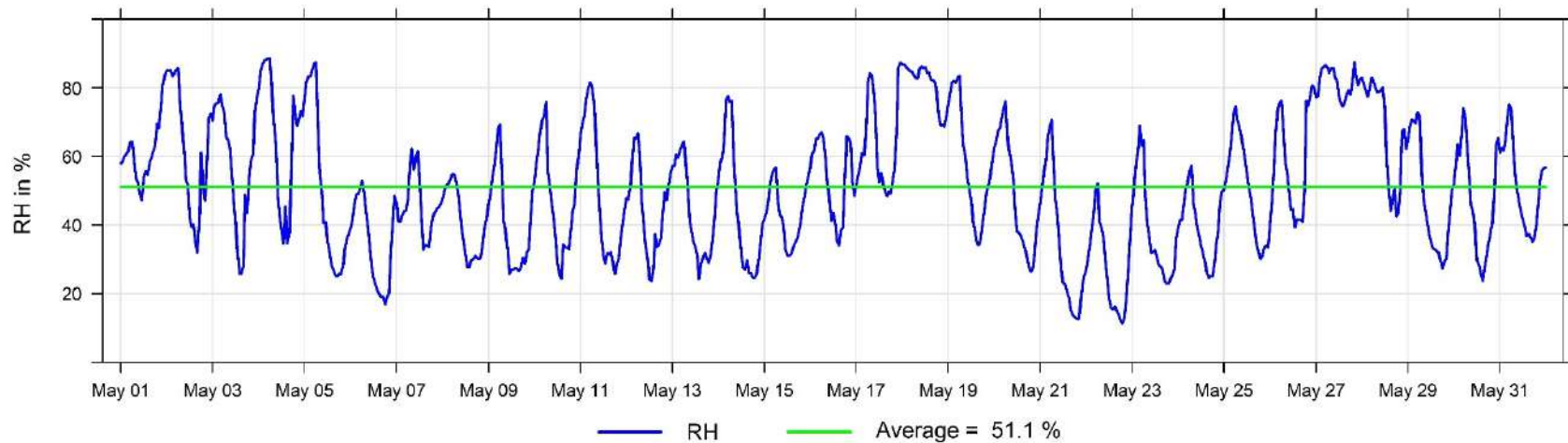
May Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker



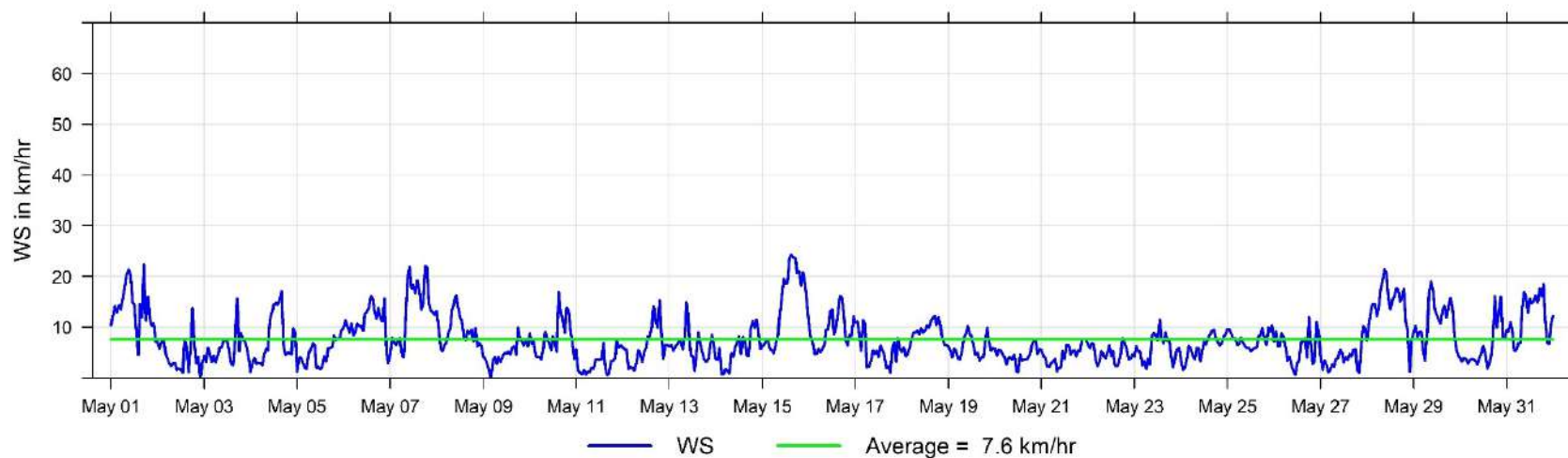
May Hourly Temperature Readings (in °C) at Henry Pirker



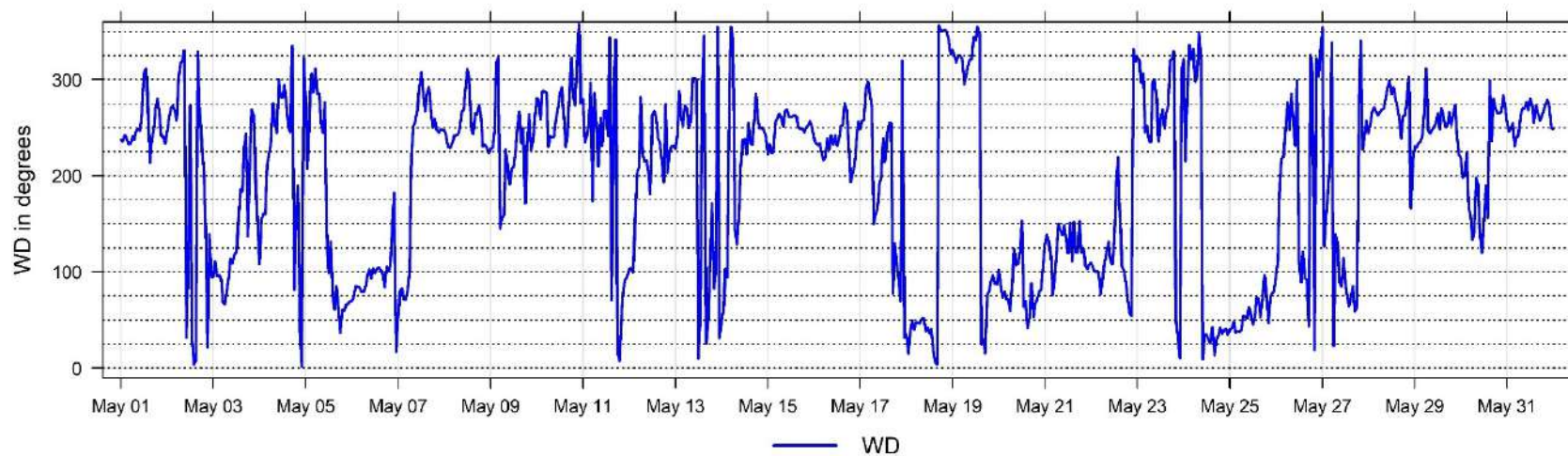
May Hourly Readings of Relative Humidity (in %) at Henry Pirker



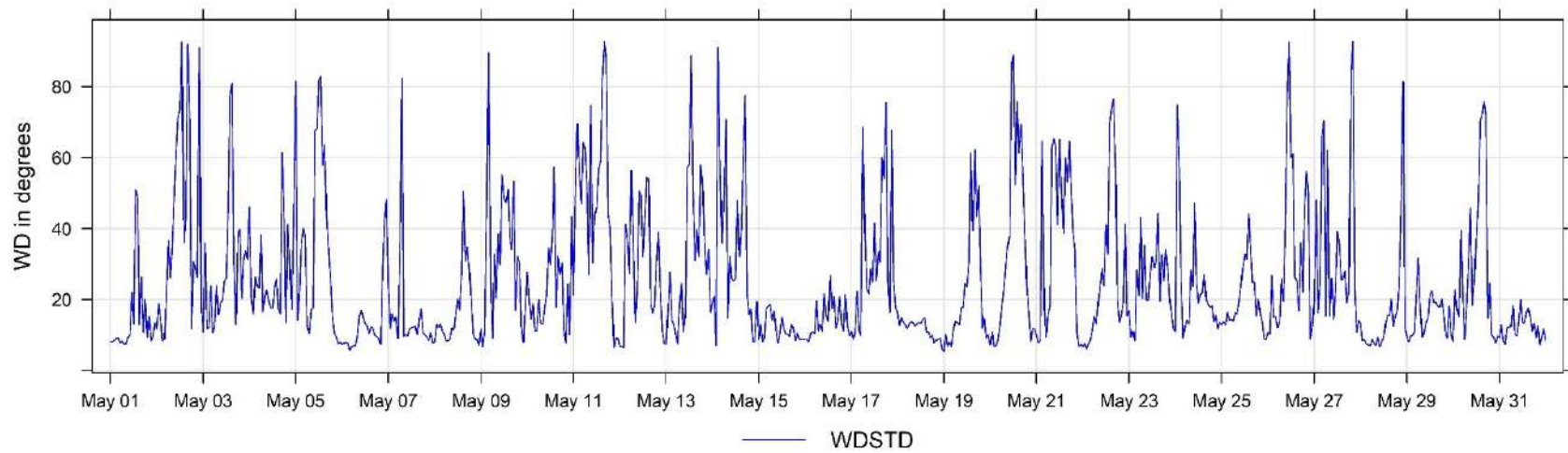
May Hourly Readings of Wind Speed (in km/hr) at Henry Pirker

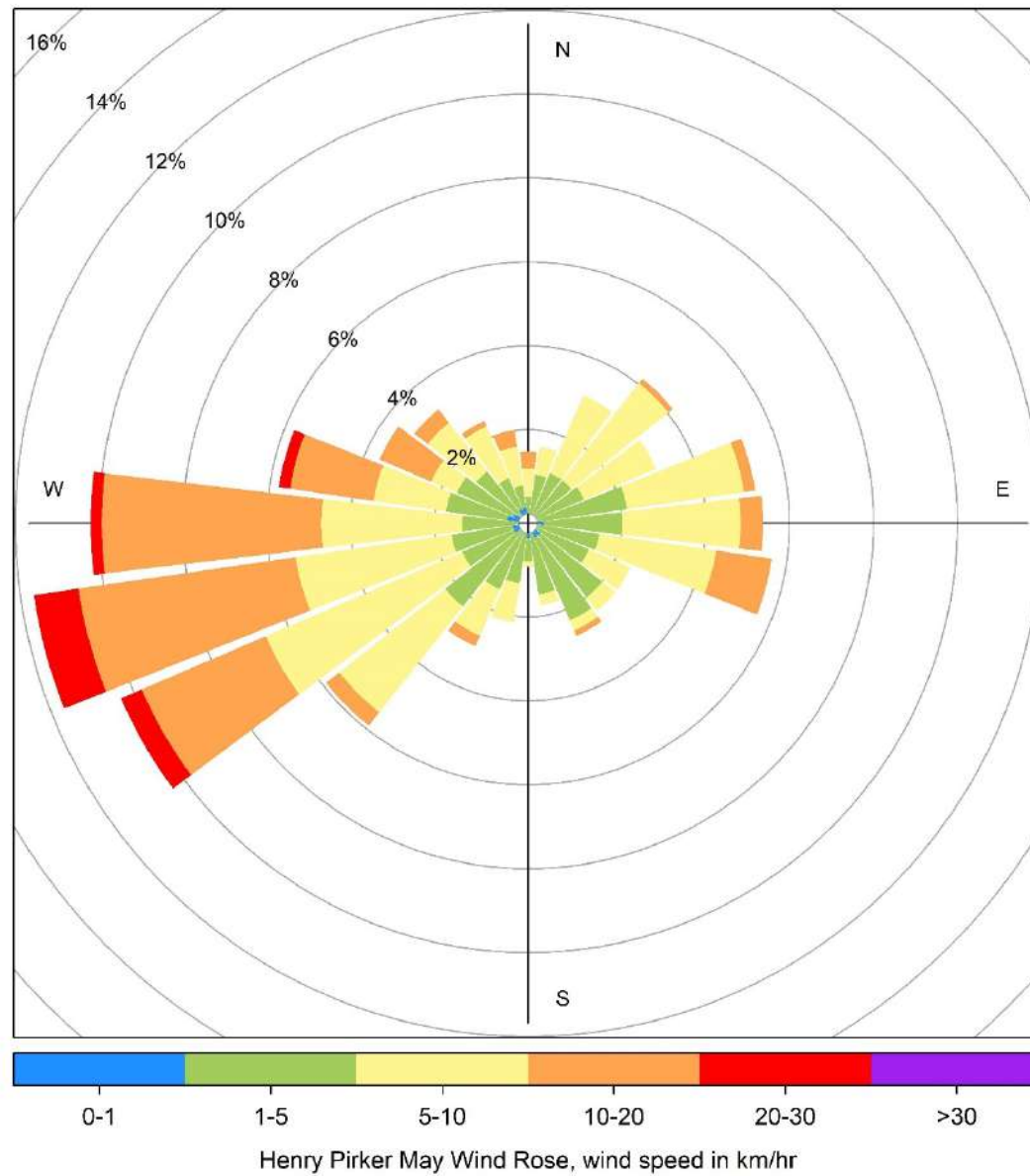


May Hourly Readings of Wind Direction (in degrees) at Henry Pirker



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

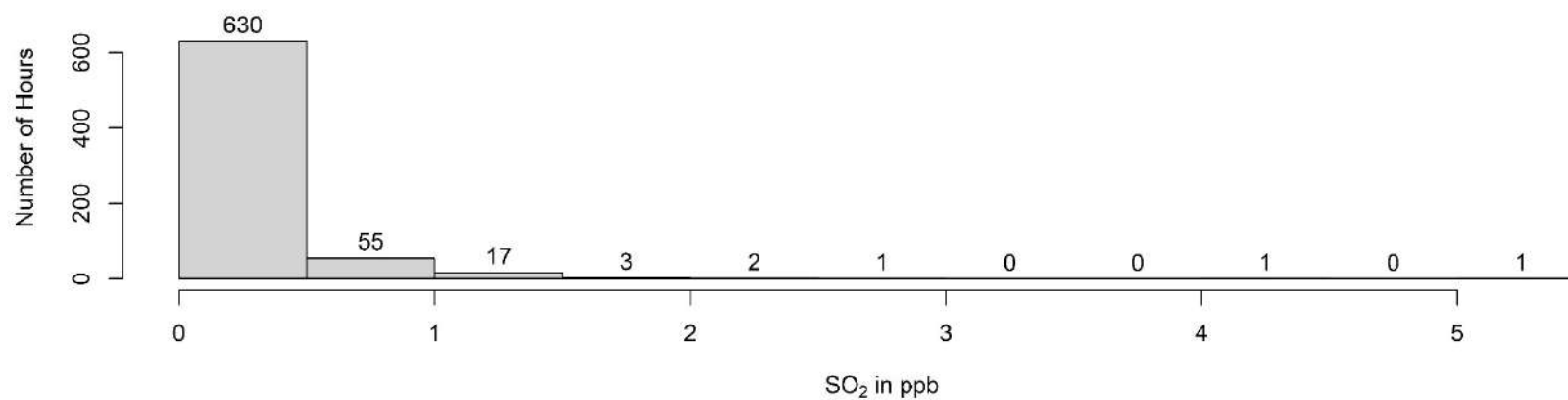
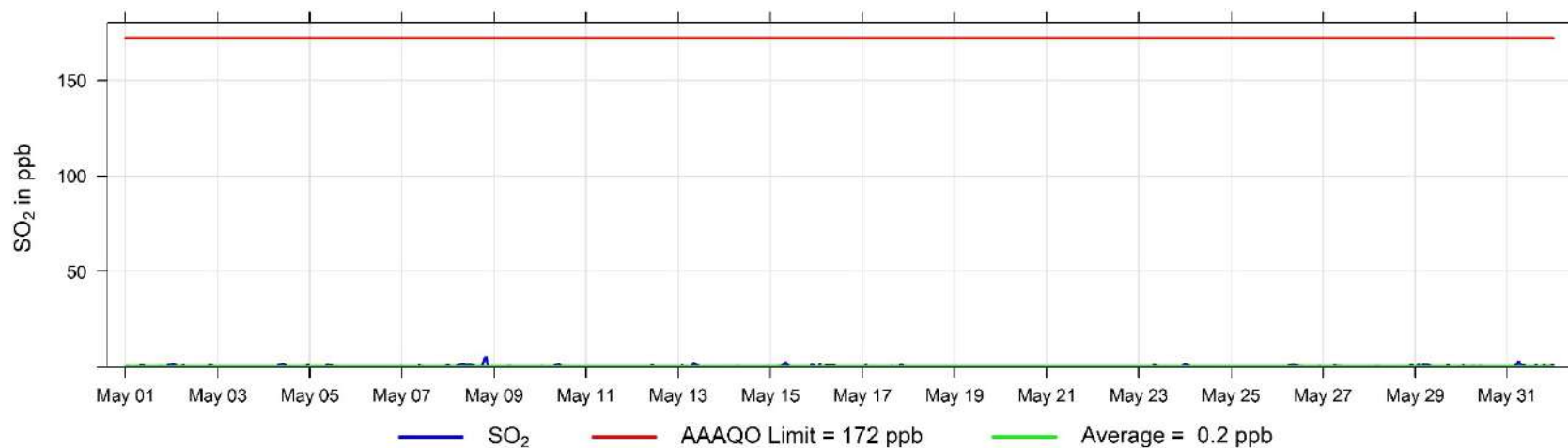




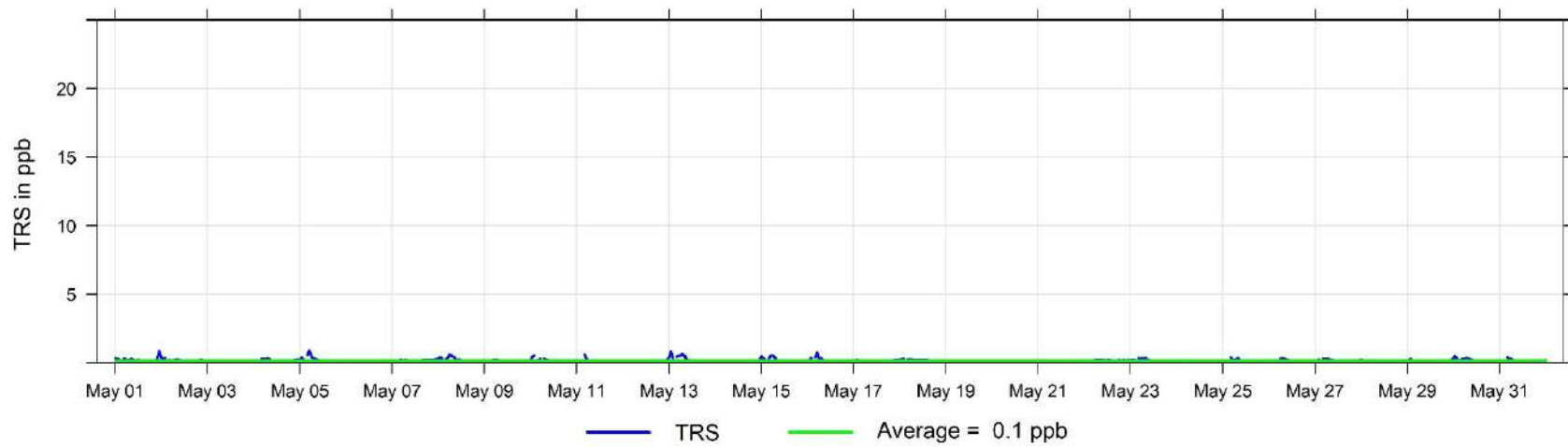
5 Smoky Heights Charts

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

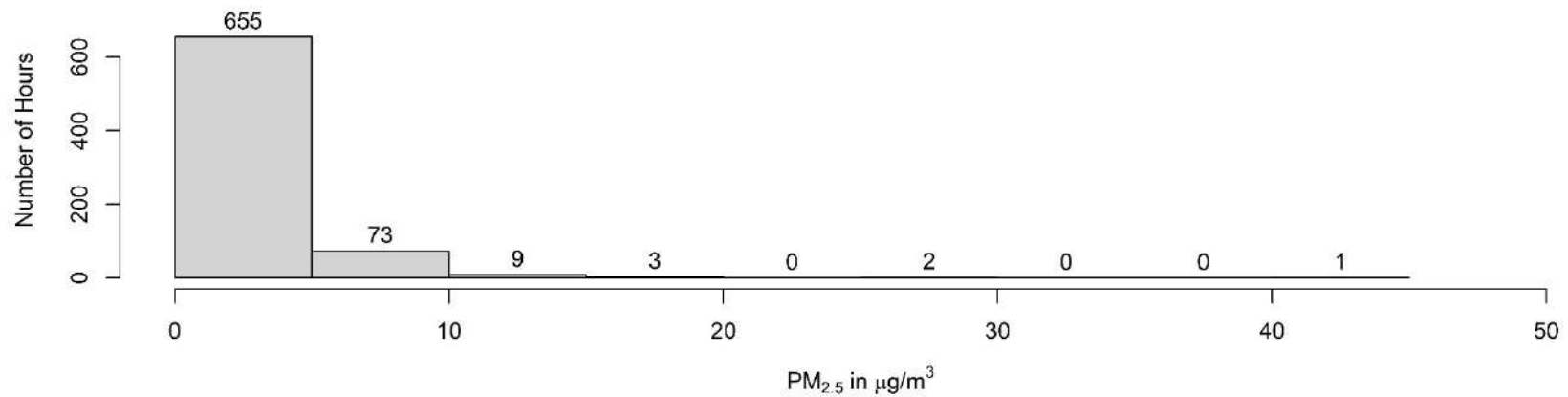
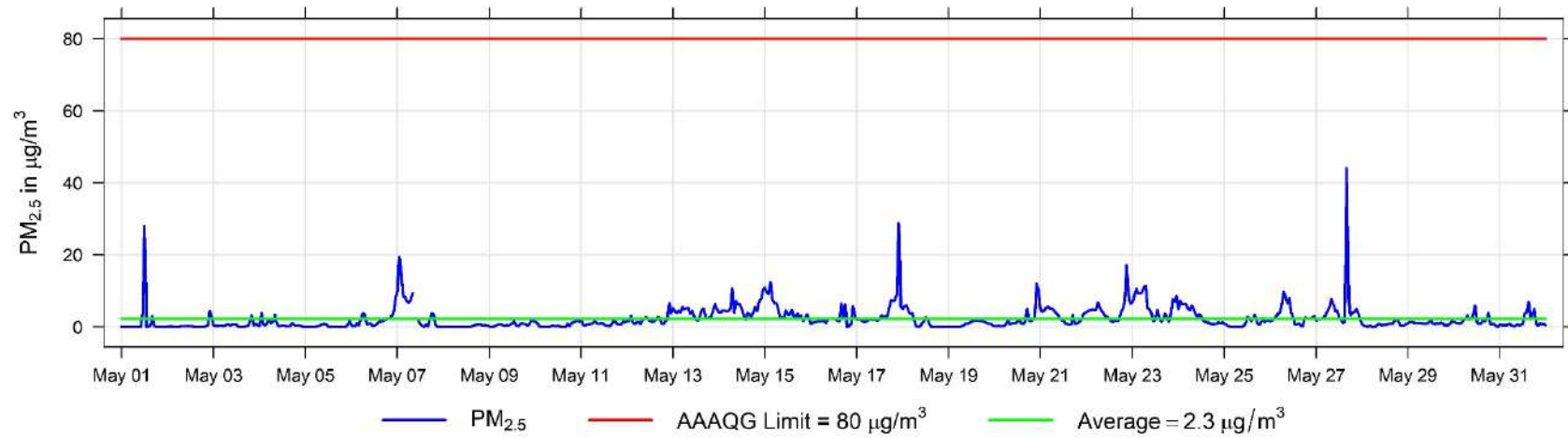
May Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



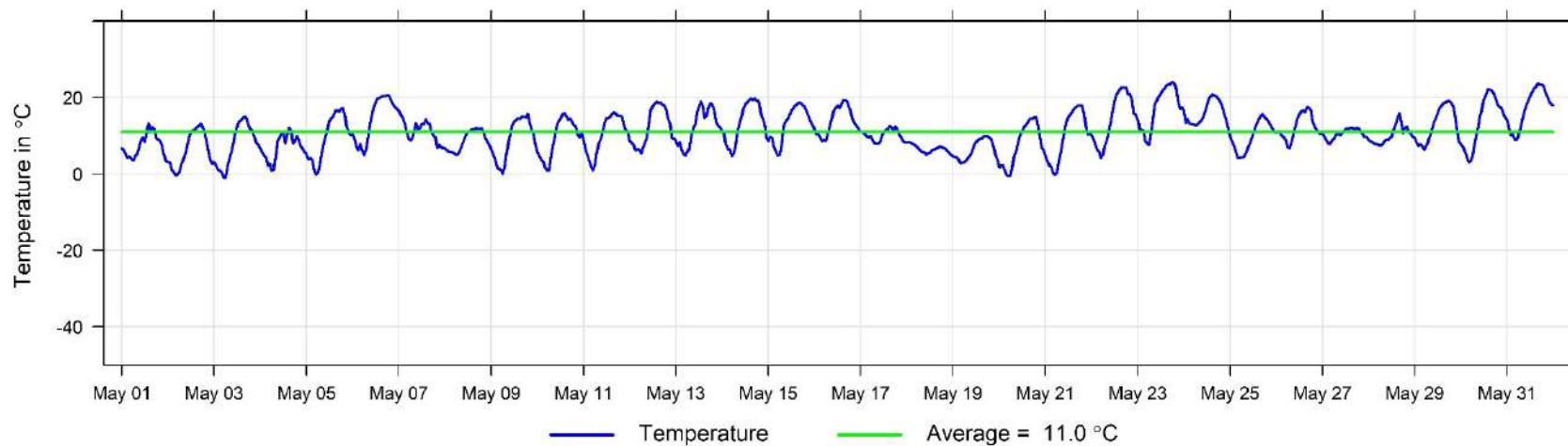
May Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



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



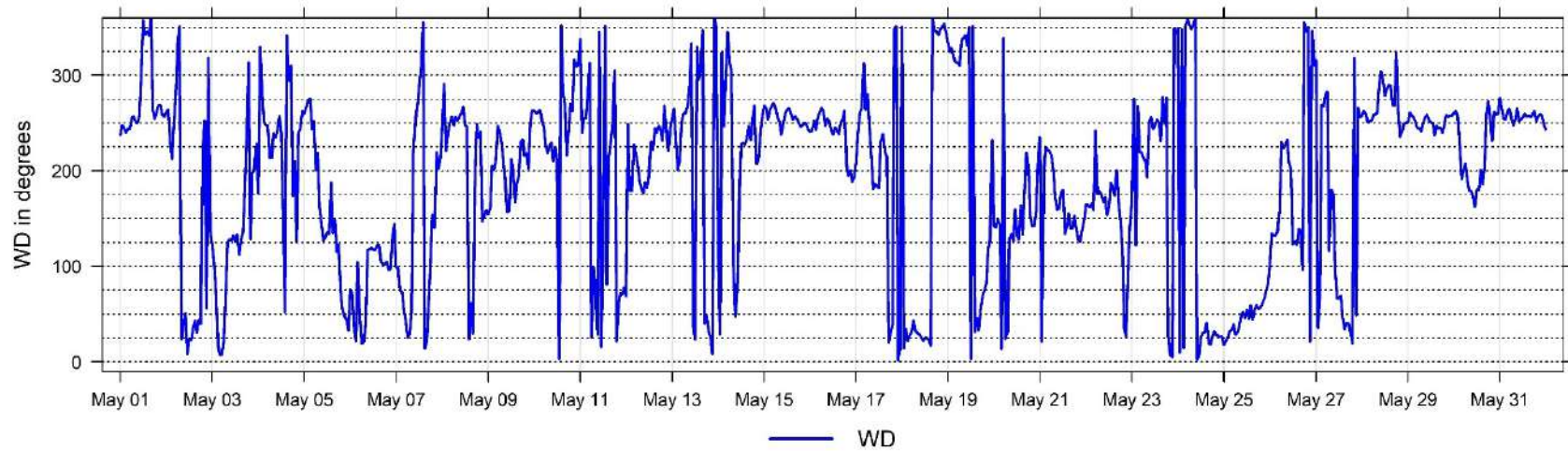
May Hourly Temperature Readings (in °C) at Smoky Heights



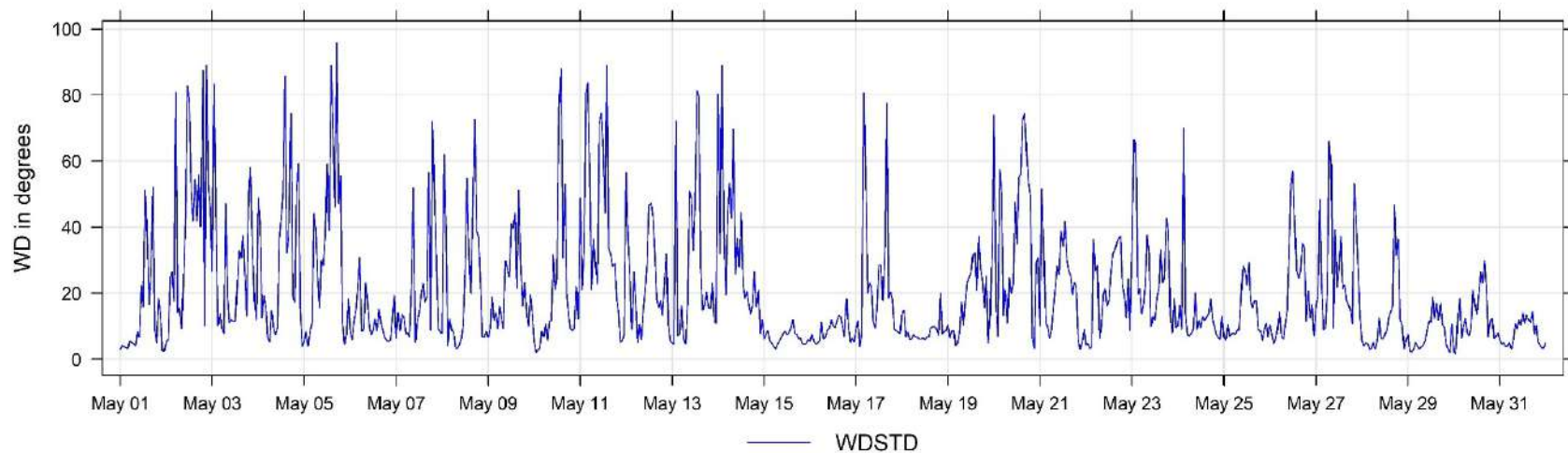
May Hourly Readings of Wind Speed (in km/hr) at Smoky Heights

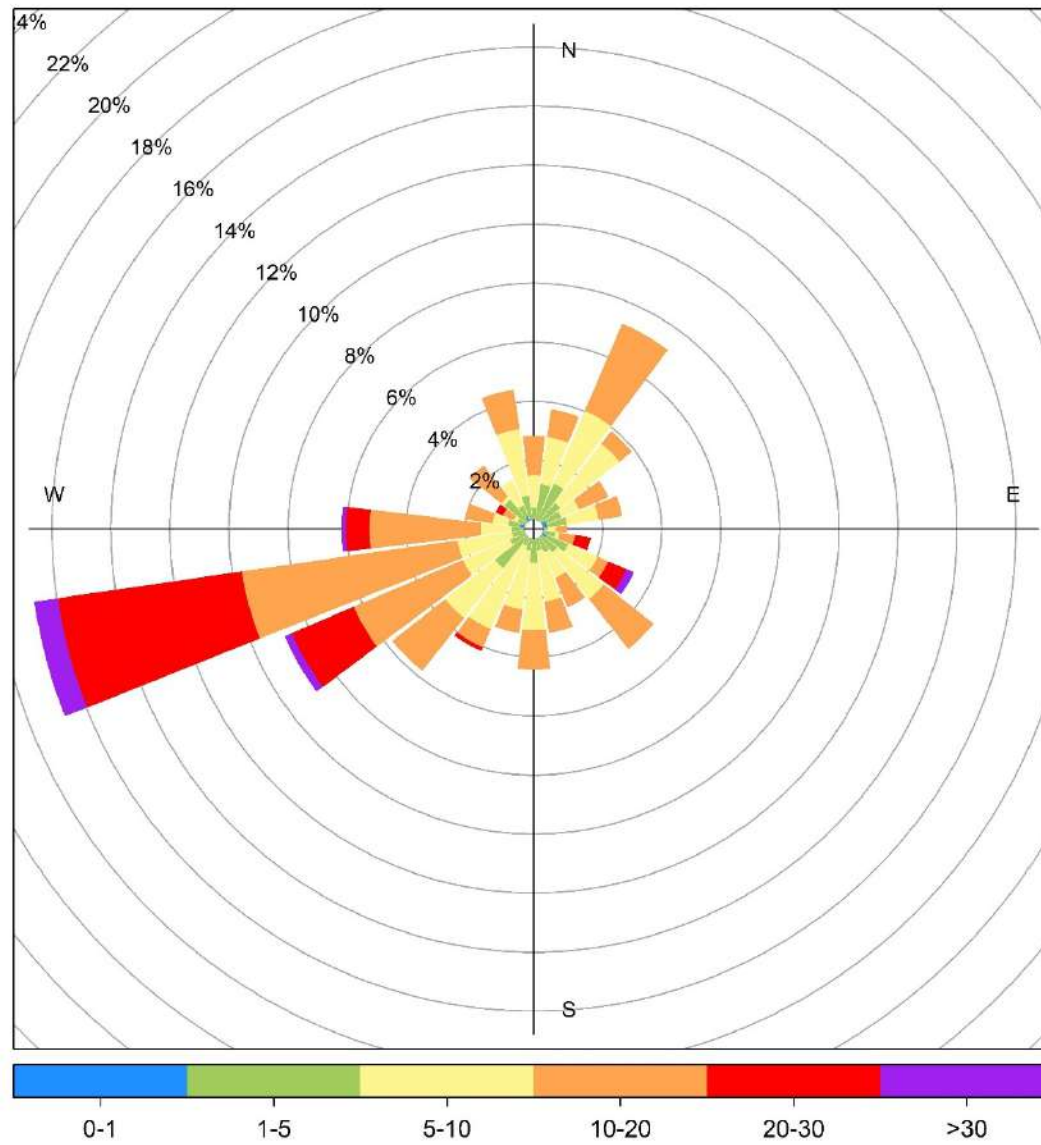


May Hourly Readings of Wind Direction (in degrees) at Smoky Heights



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



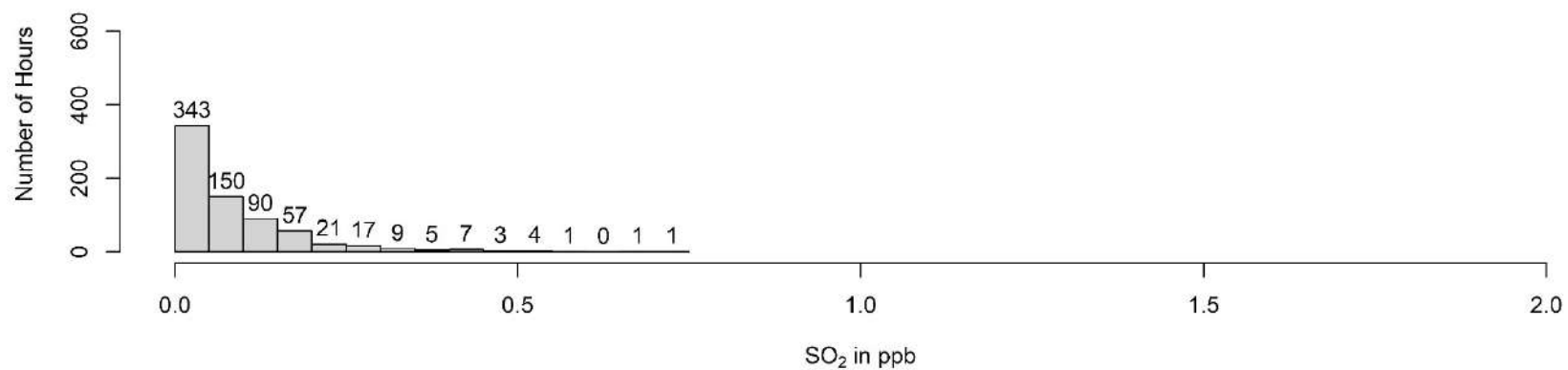
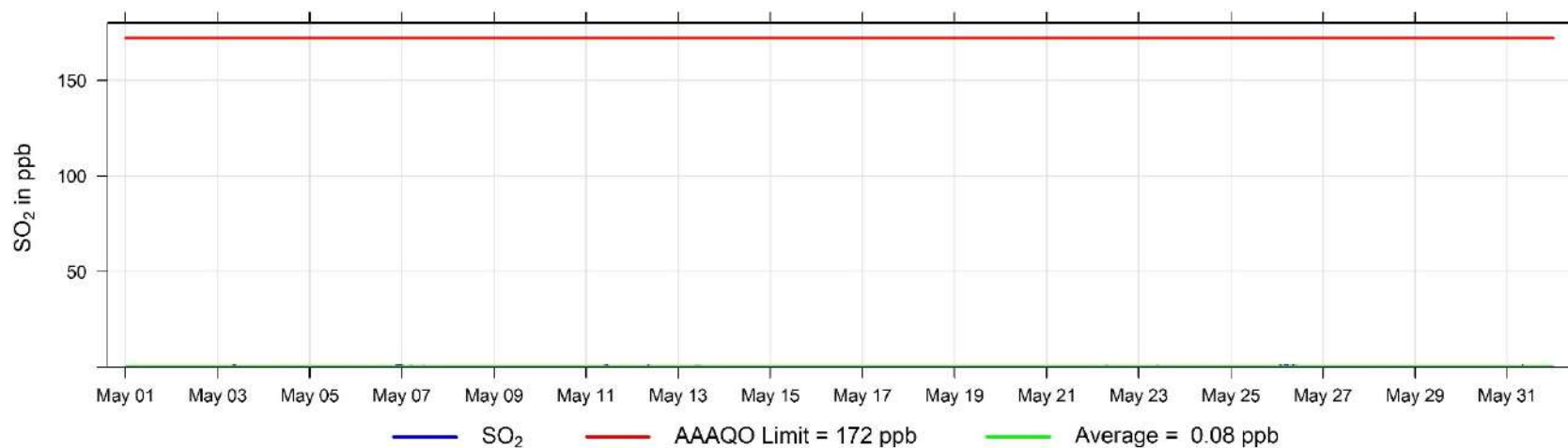


Smoky Heights May Wind Rose, wind speed in km/hr

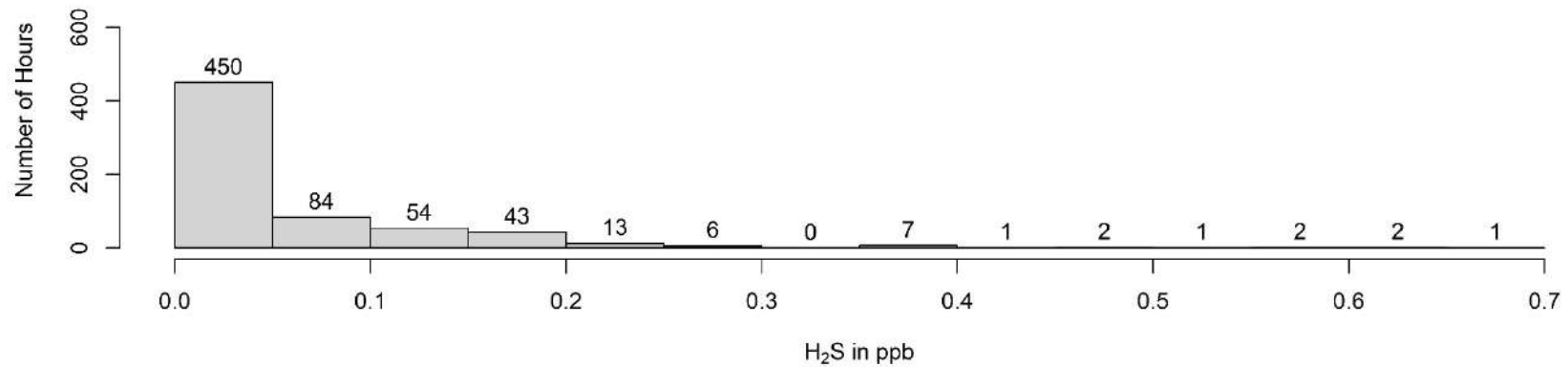
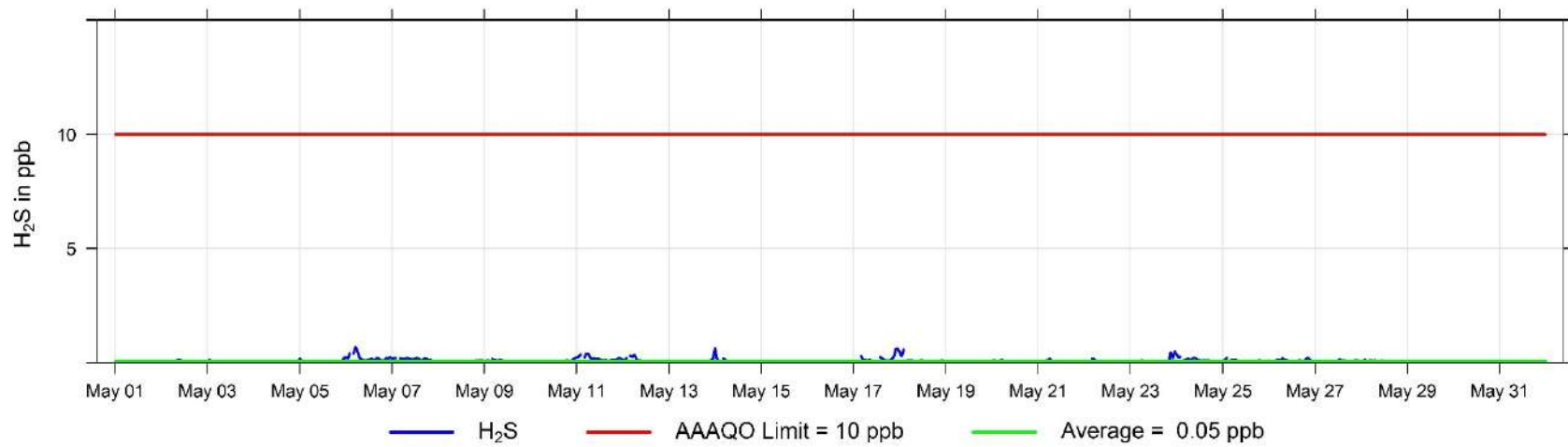
6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

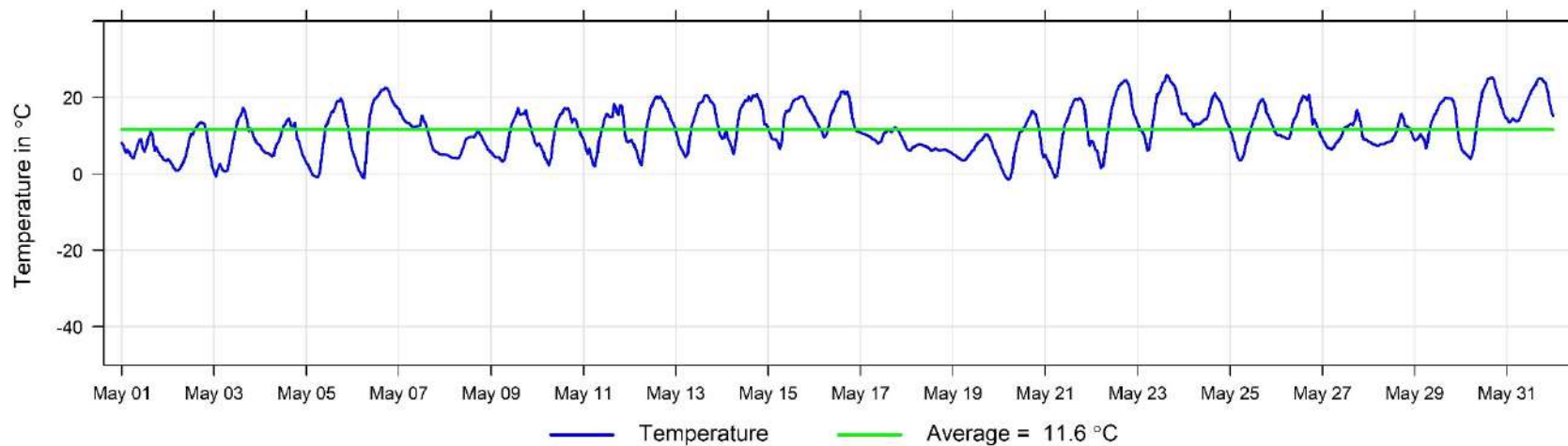
May Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



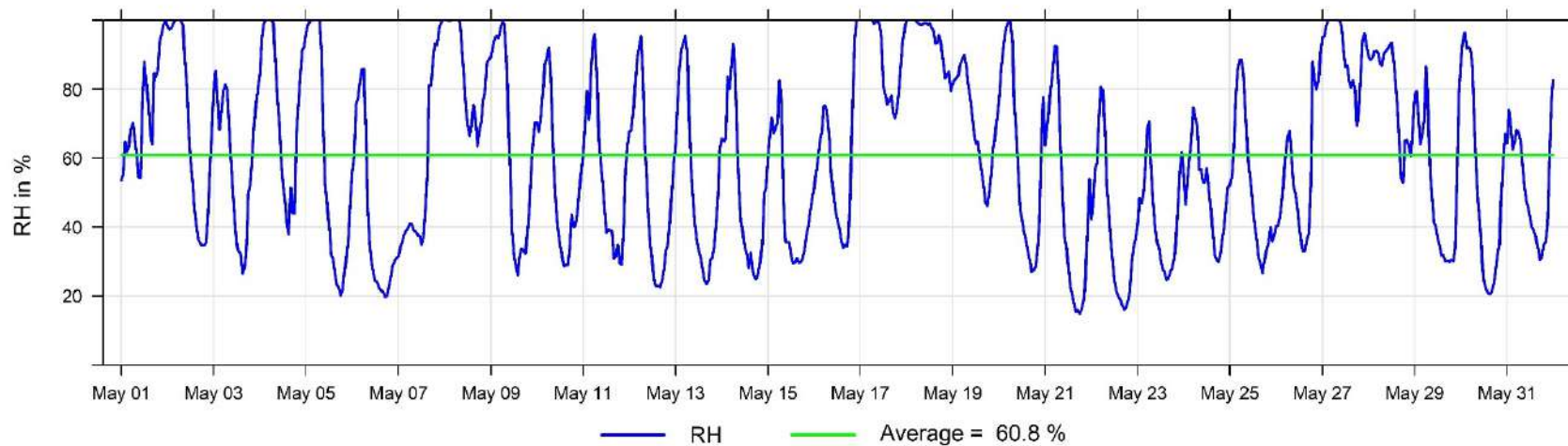
May Hourly Concentration Readings of H₂S (in ppb) at Valleyview



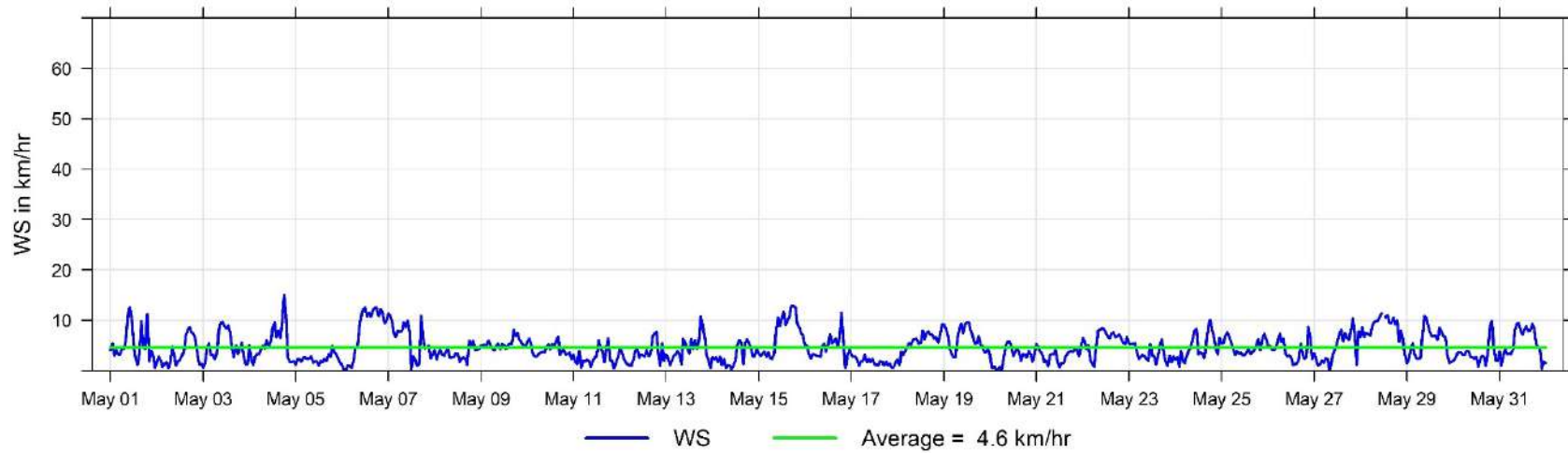
May Hourly Temperature Readings (in °C) at Valleyview



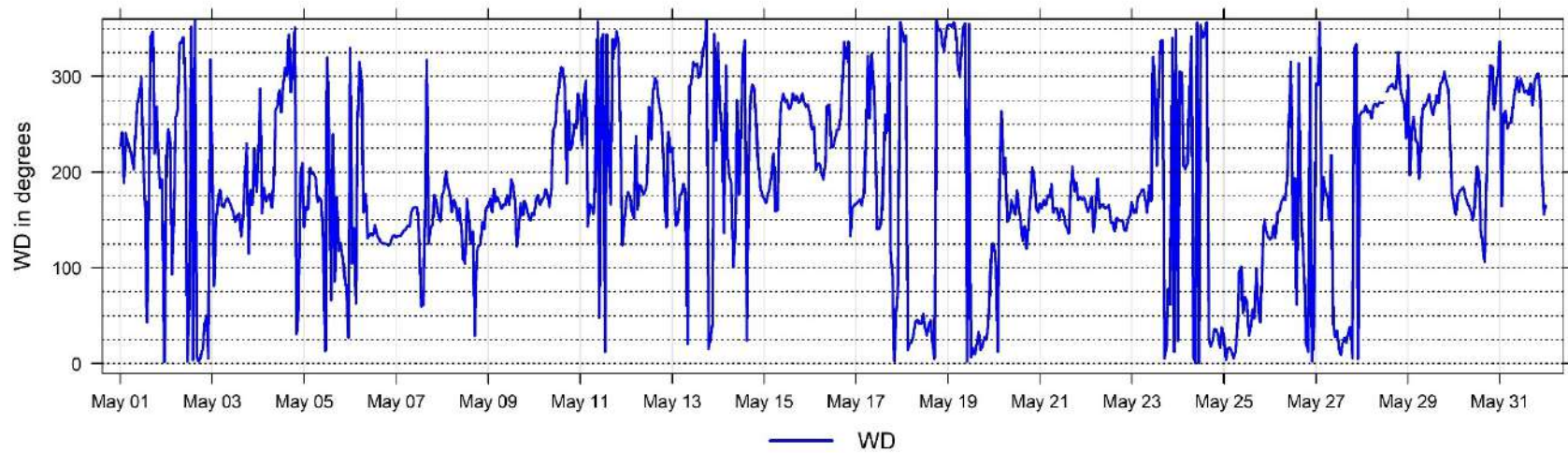
May Hourly Readings of Relative Humidity (in %) at Valleyview



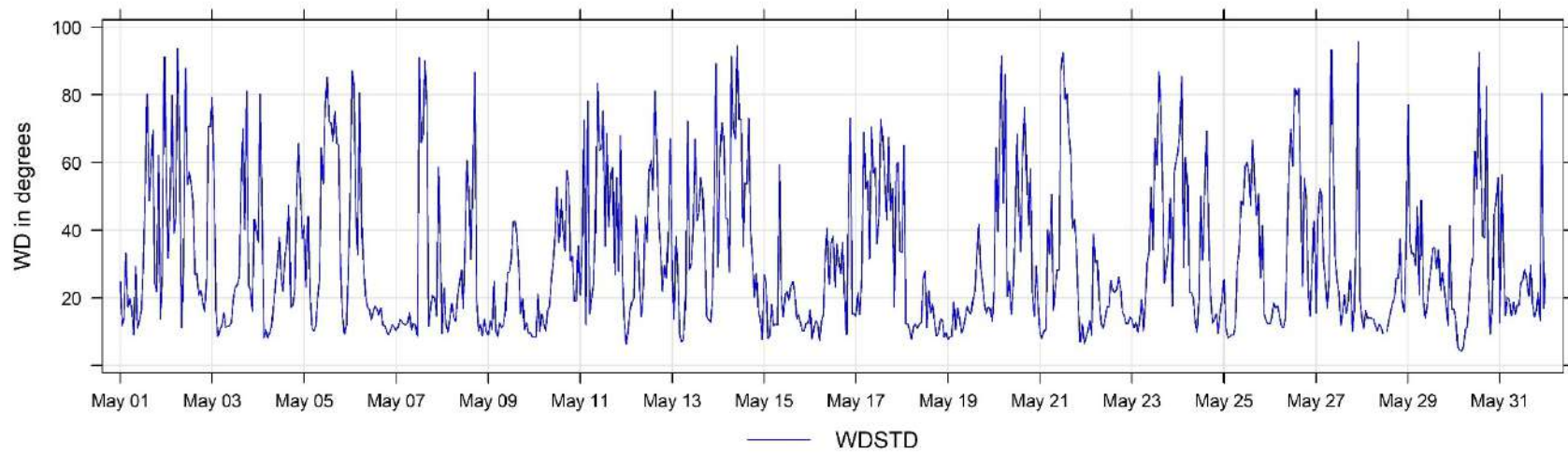
May Hourly Readings of Wind Speed (in km/hr) at Valleyview



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



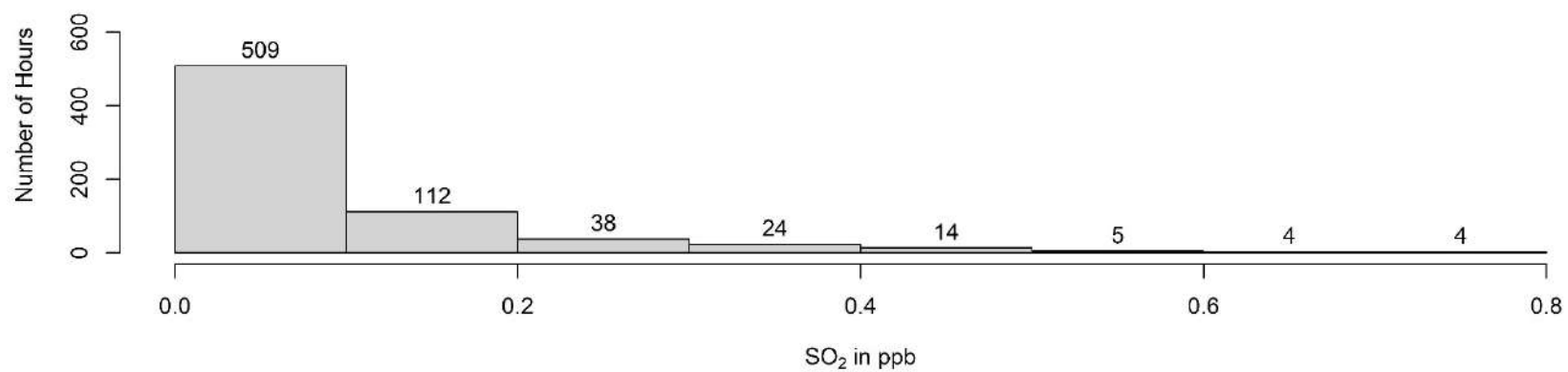
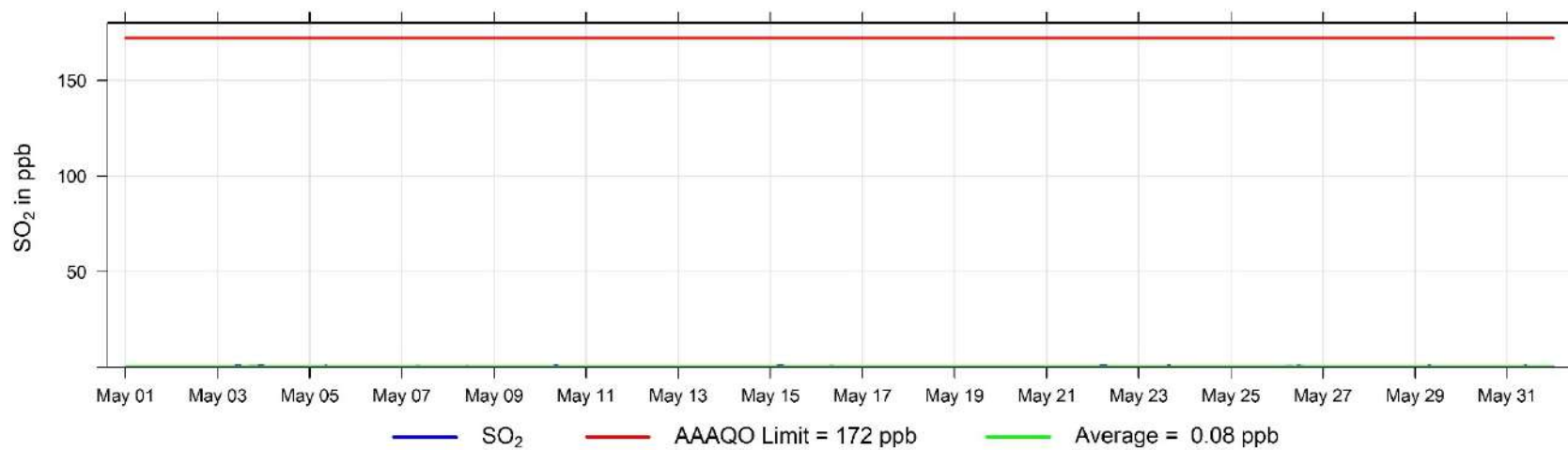
May Hourly Readings of Wind Direction Standard Deviation (in degrees) at Valleyview



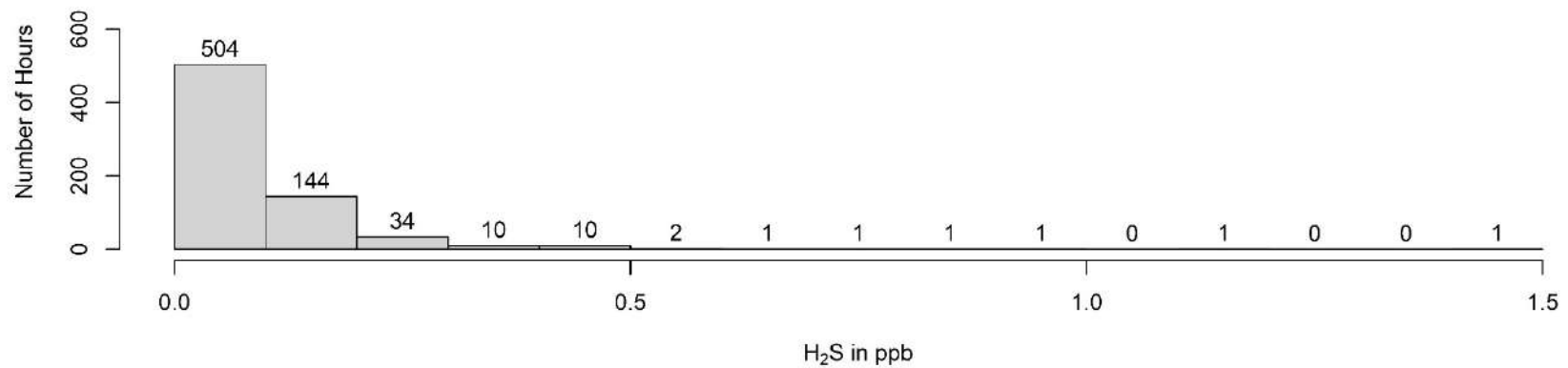
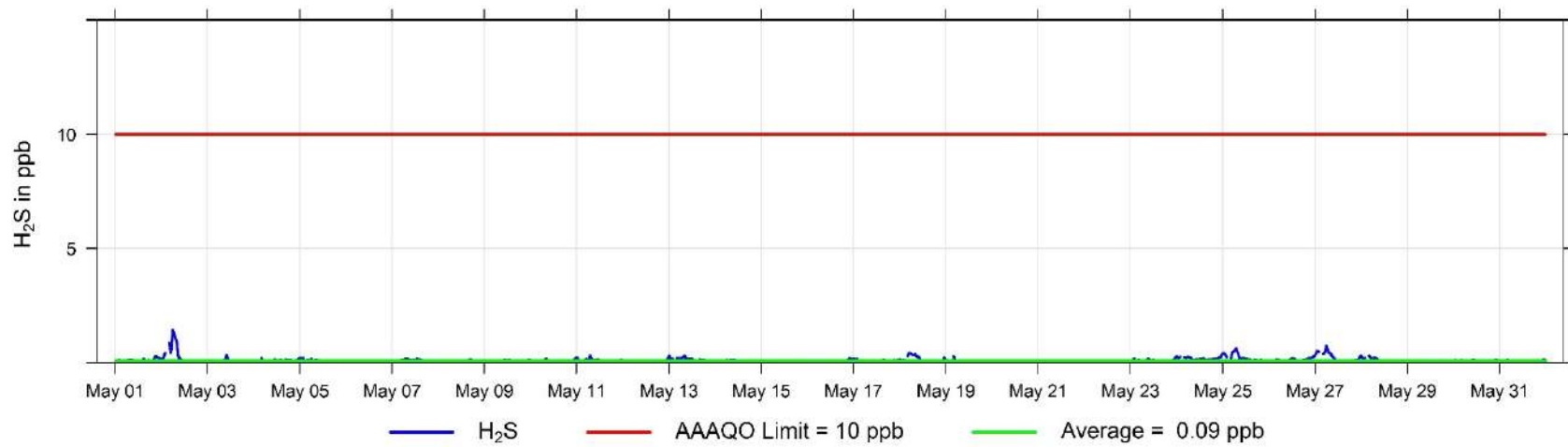
7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

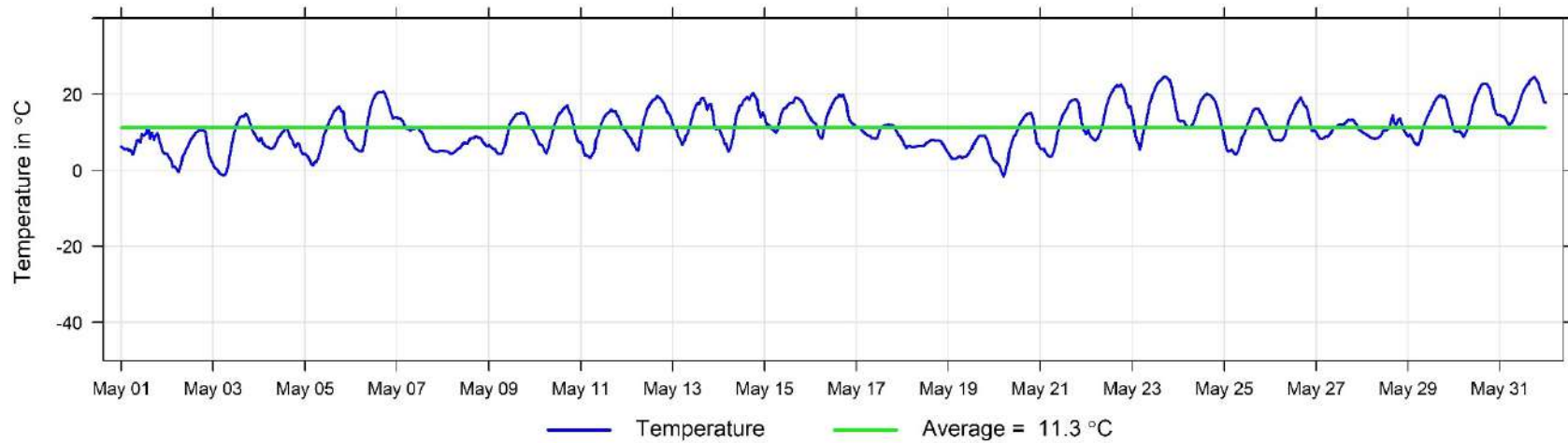
May Hourly Concentration Readings of SO₂ (in ppb) at Donnelly



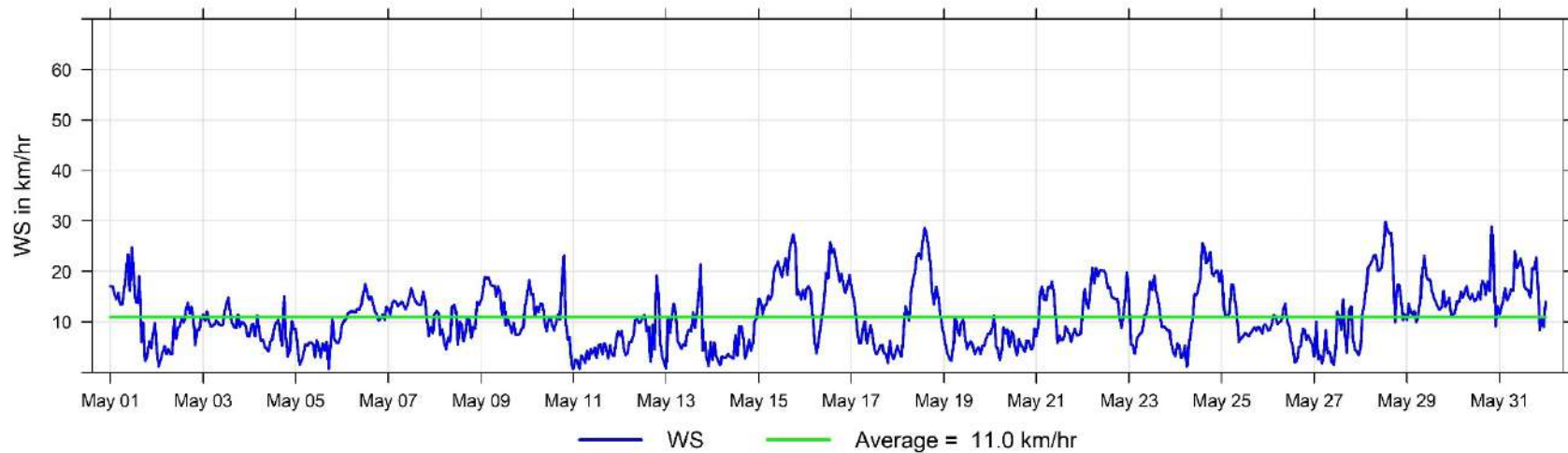
May Hourly Concentration Readings of H₂S (in ppb) at Donnelly



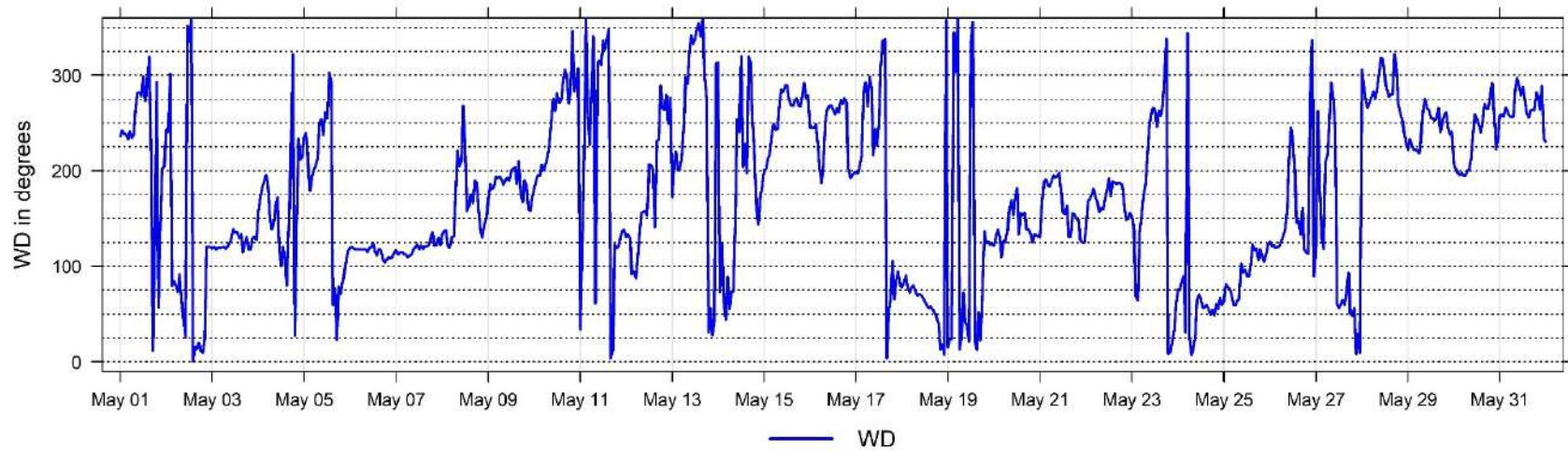
May Hourly Temperature Readings (in °C) at Donnelly



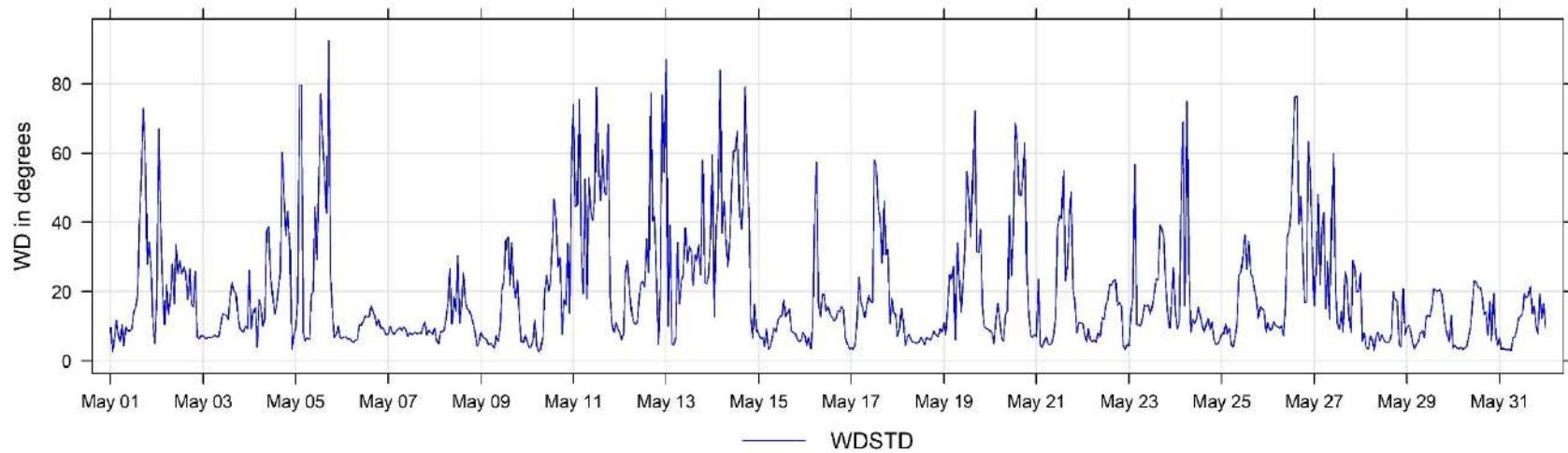
May Hourly Readings of Wind Speed (in km/hr) at Donnelly



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



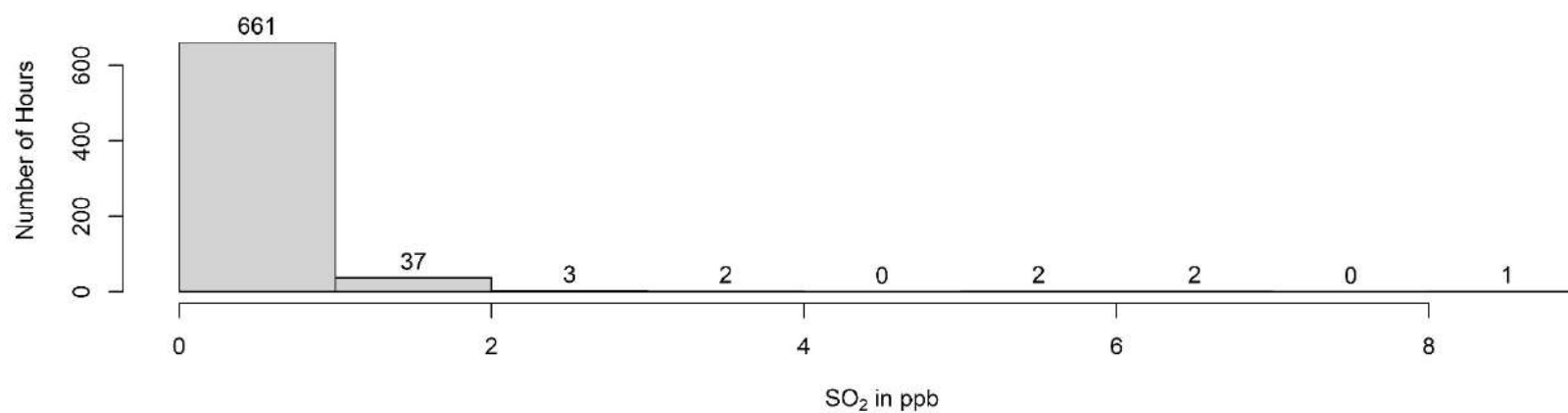
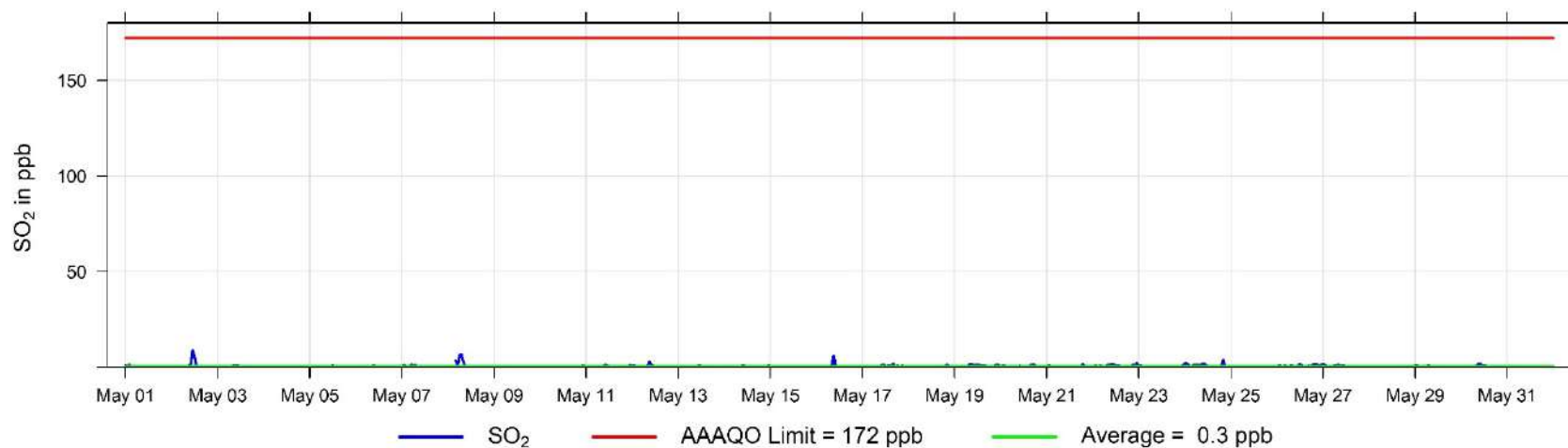
May Hourly Readings of Wind Direction Standard Deviation (in degrees) at Donnelly



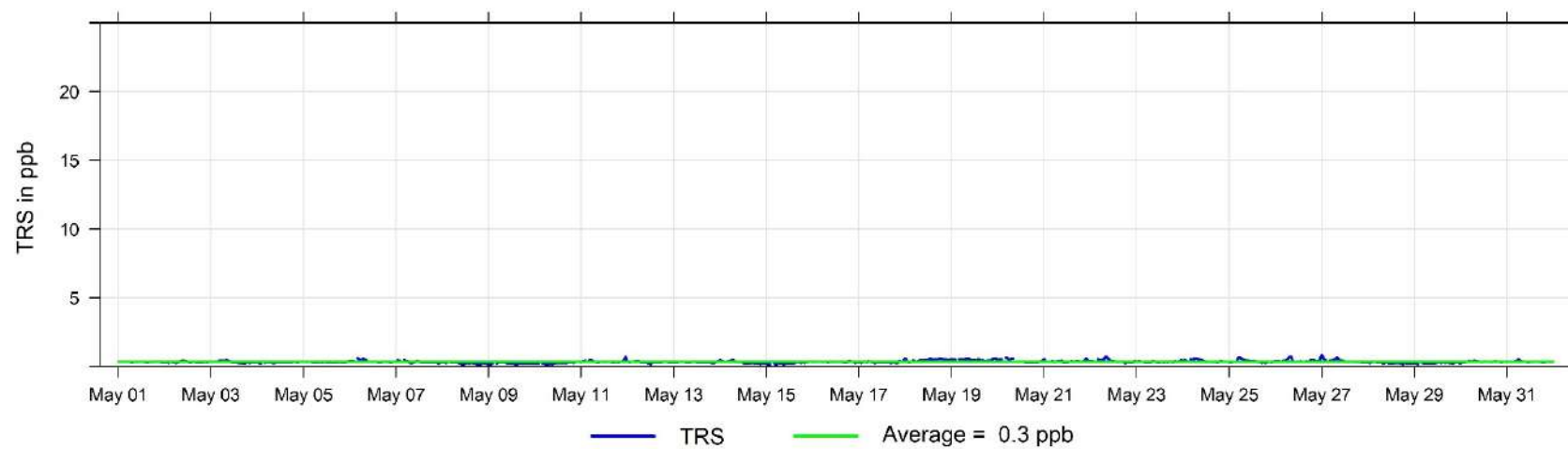
8 Wembley (Portable) Charts

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

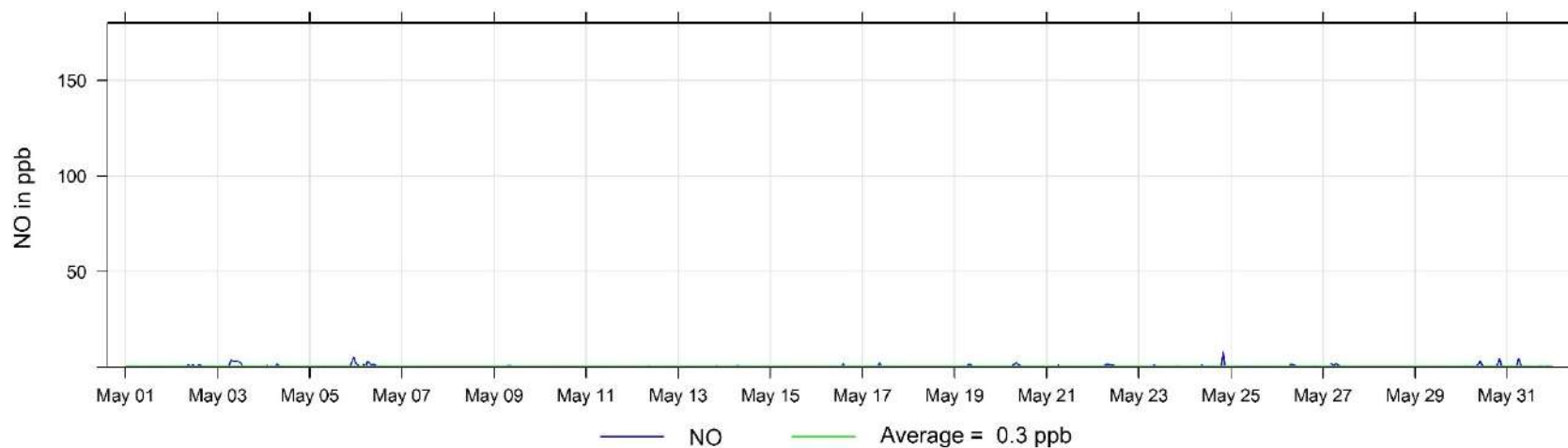
May Hourly Concentration Readings of SO₂ (in ppb) at Wembley



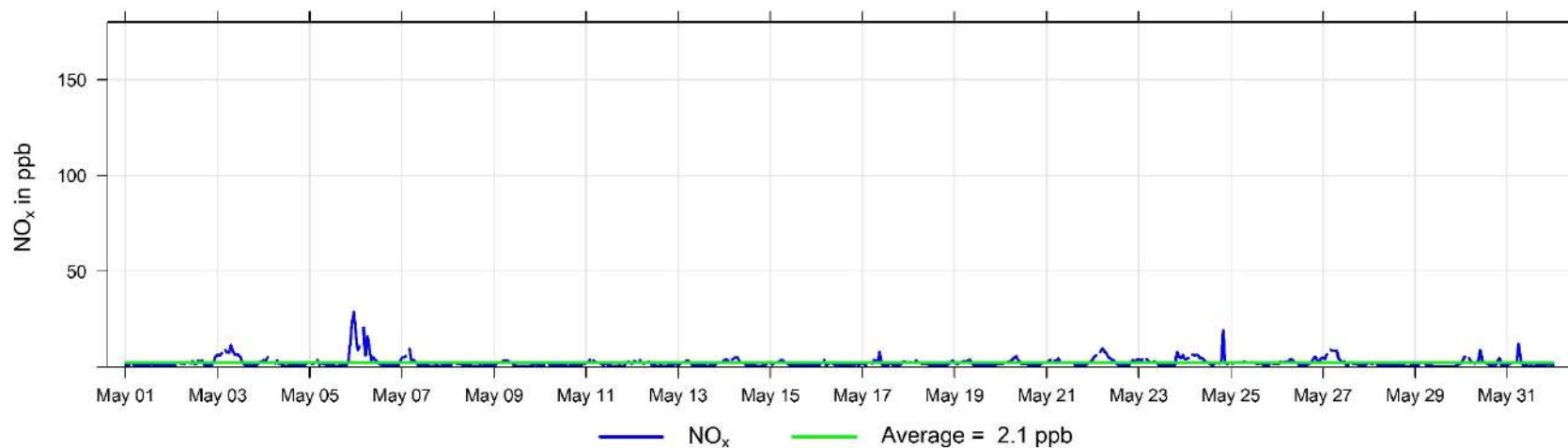
May Hourly Concentration Readings of TRS (in ppb) at Wembley



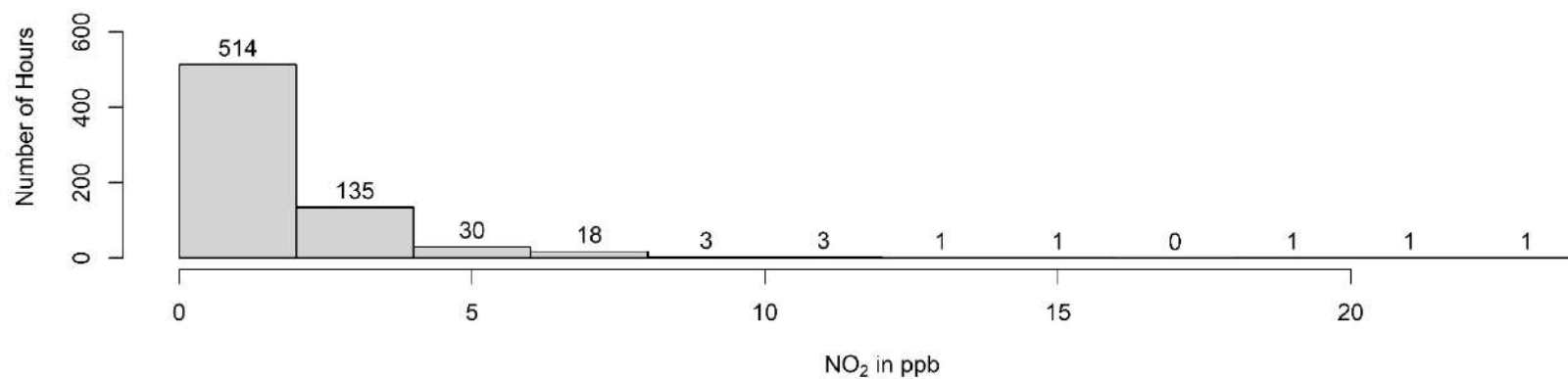
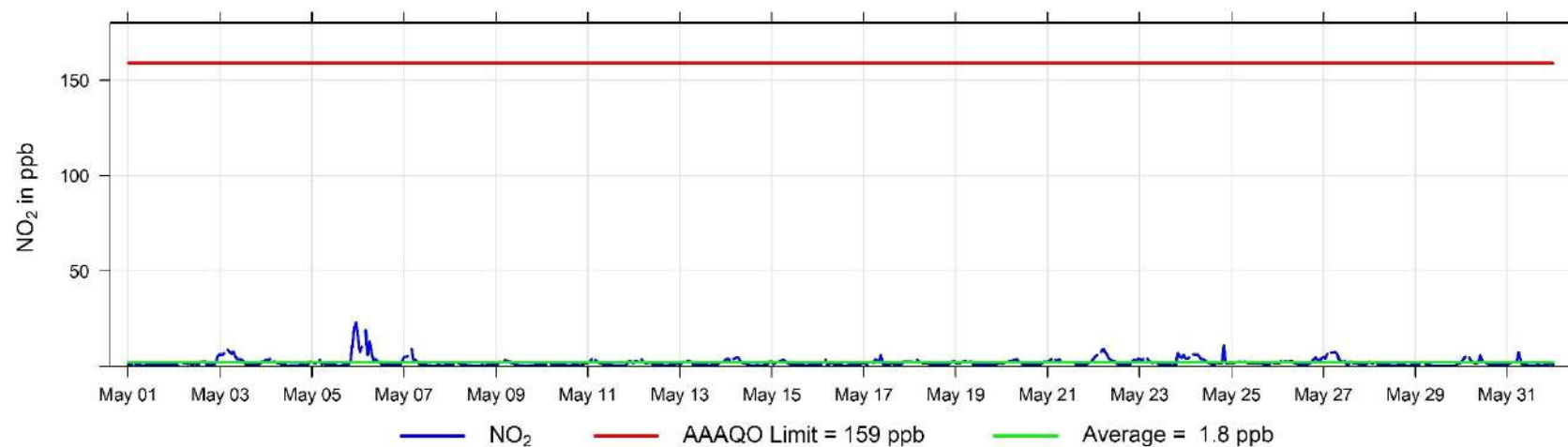
May Hourly Concentration Readings of NO (in ppb) at Wembley



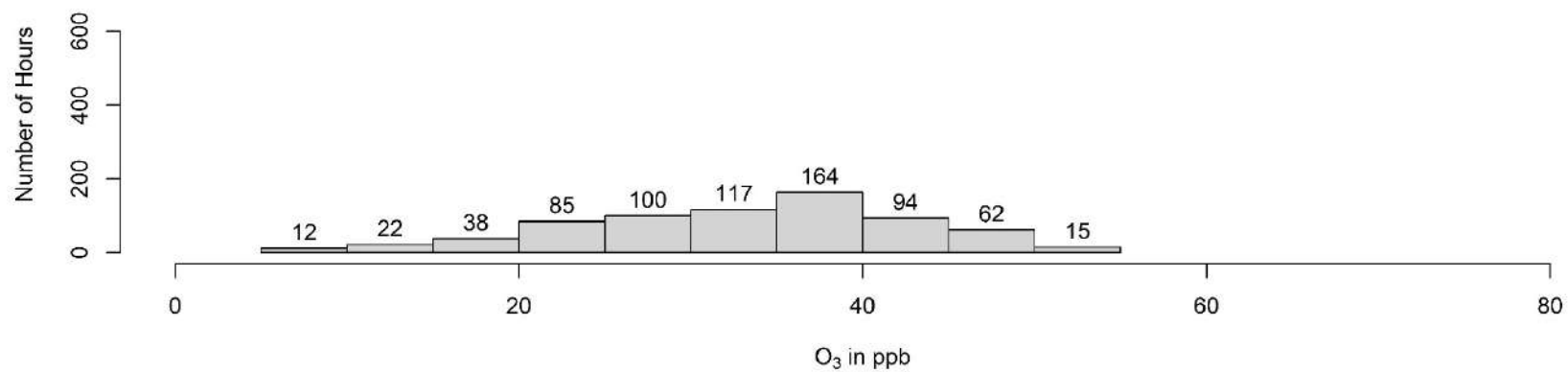
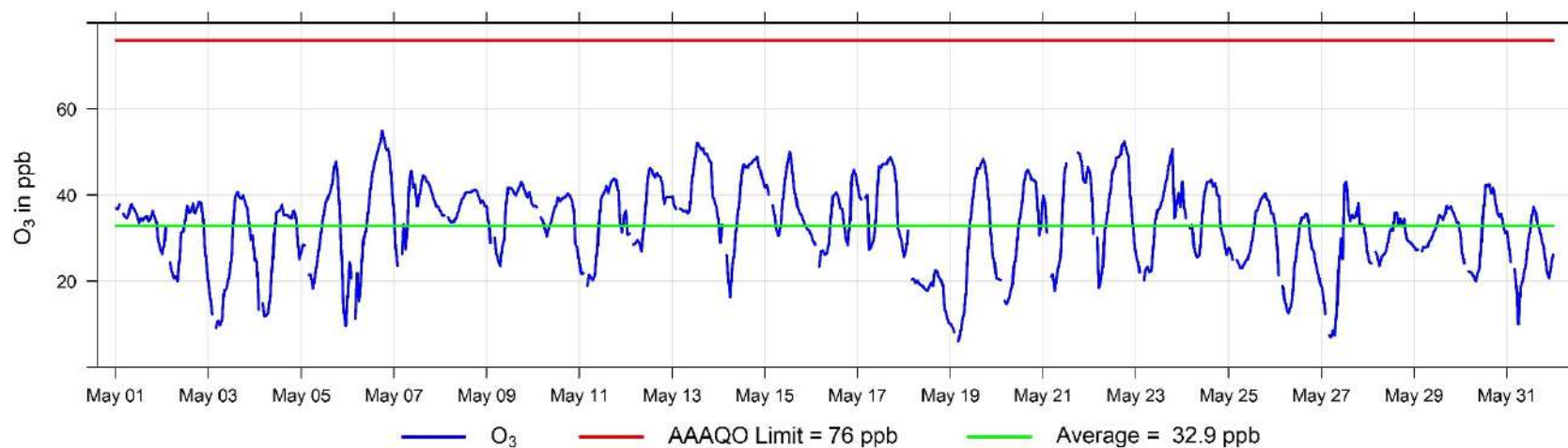
May Hourly Concentration Readings of NO_x (in ppb) at Wembley



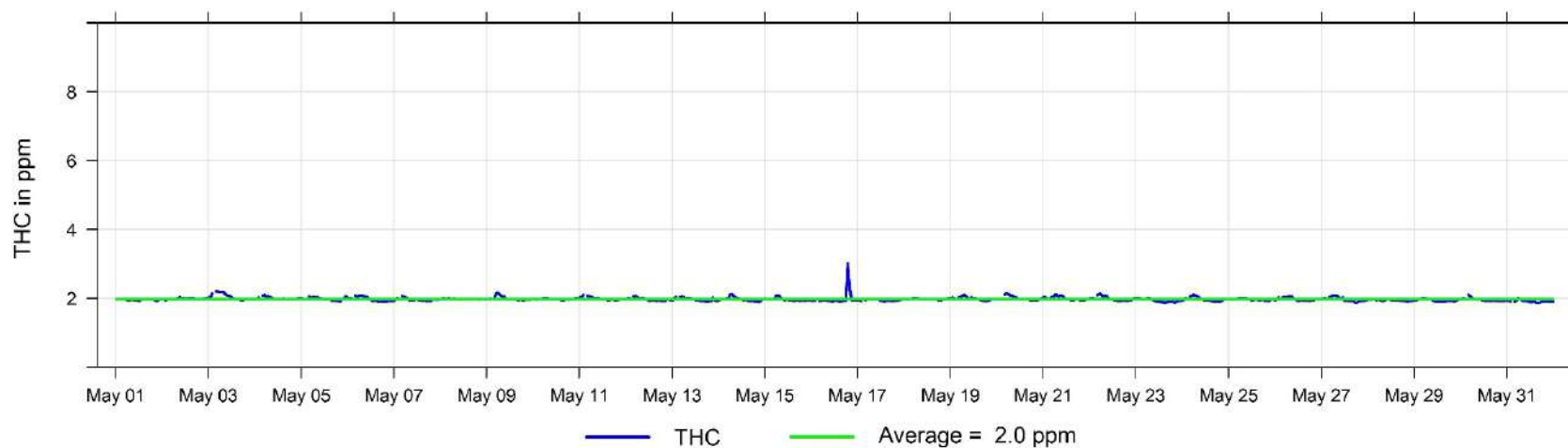
May Hourly Concentration Readings of NO₂ (in ppb) at Wembley



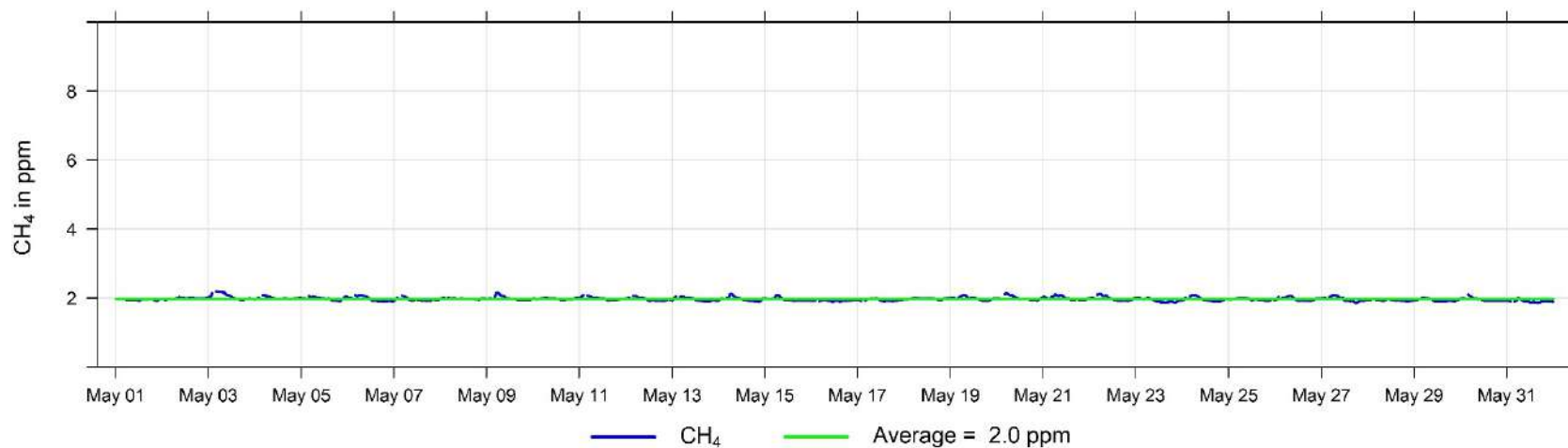
May Hourly Concentration Readings of O₃ (in ppb) at Wembley



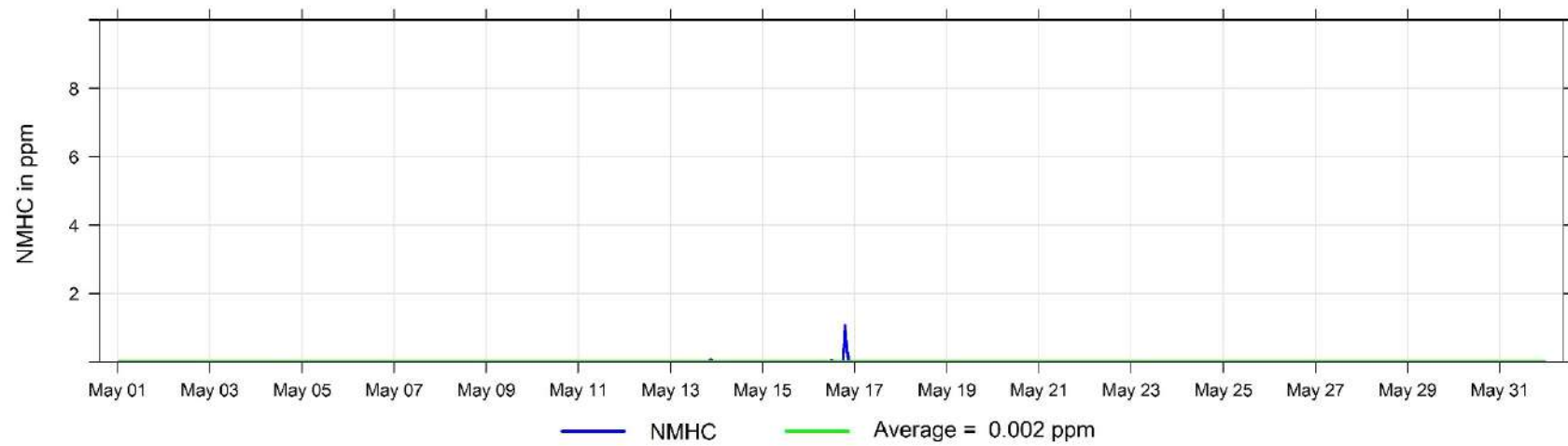
May Hourly Concentration Readings of THC (in ppm) at Wembley



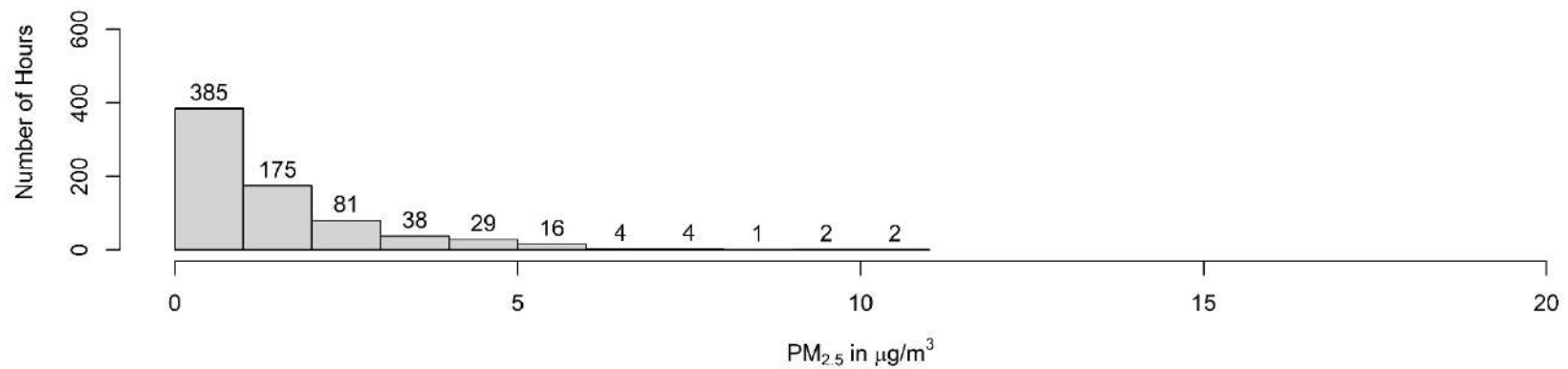
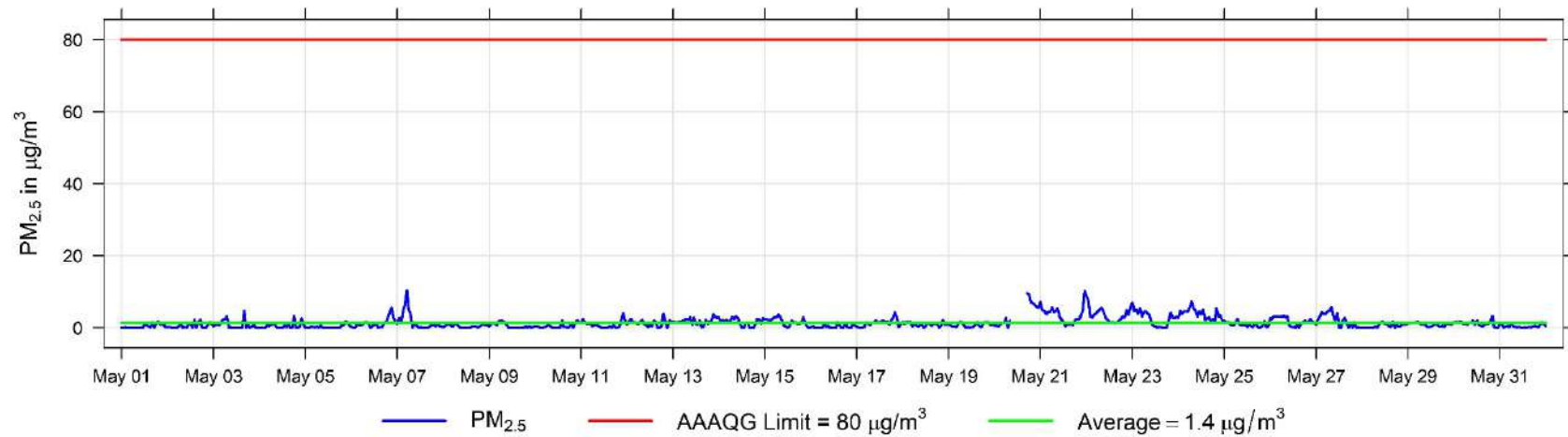
May Hourly Concentration Readings of CH₄ (in ppm) at Wembley



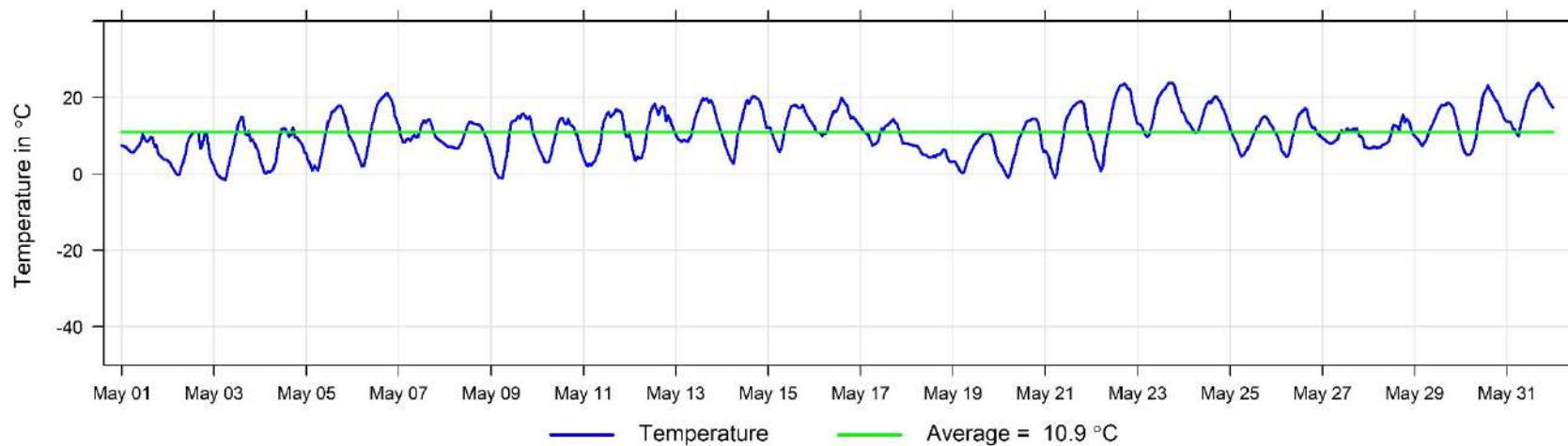
May Hourly Concentration Readings of NMHC (in ppm) at Wembley



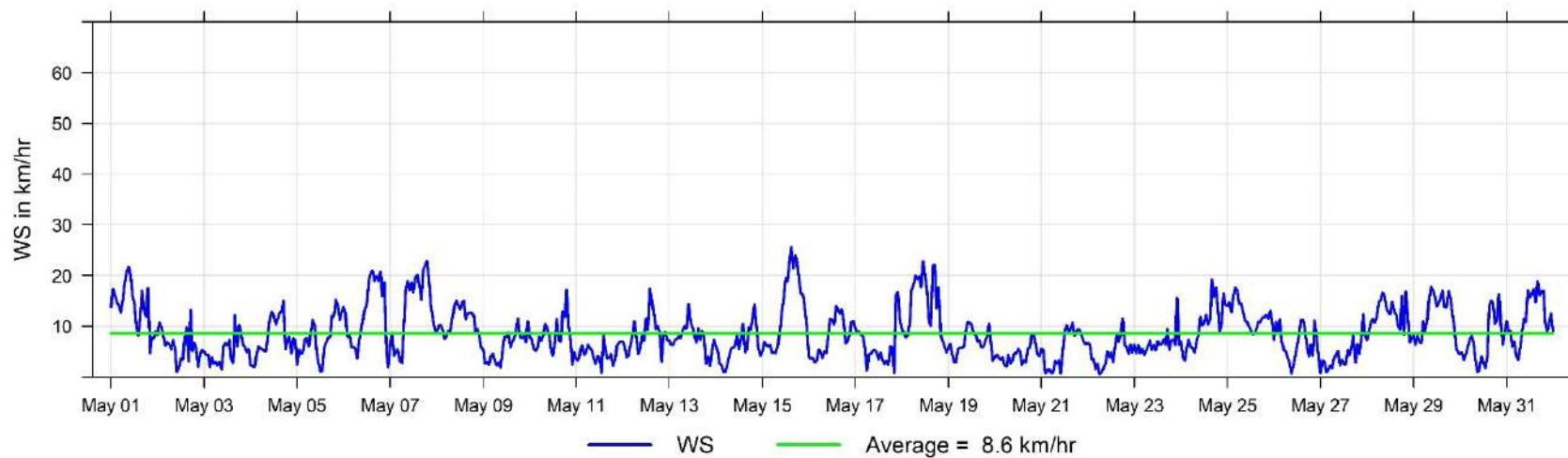
May Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Wembley



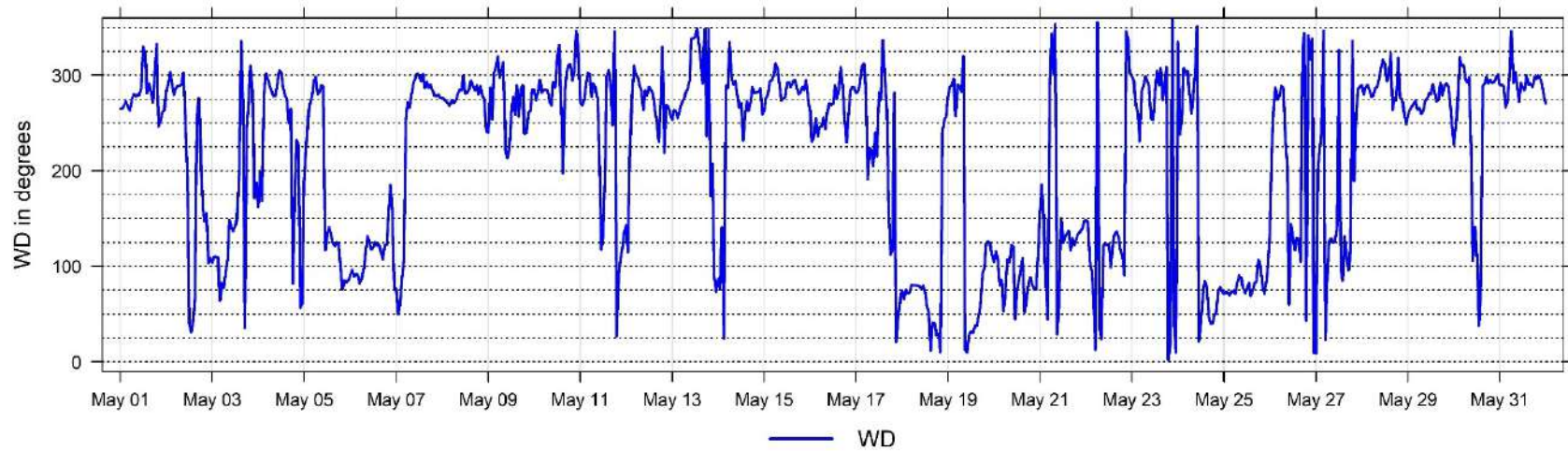
May Hourly Temperature Readings (in °C) at Wembley



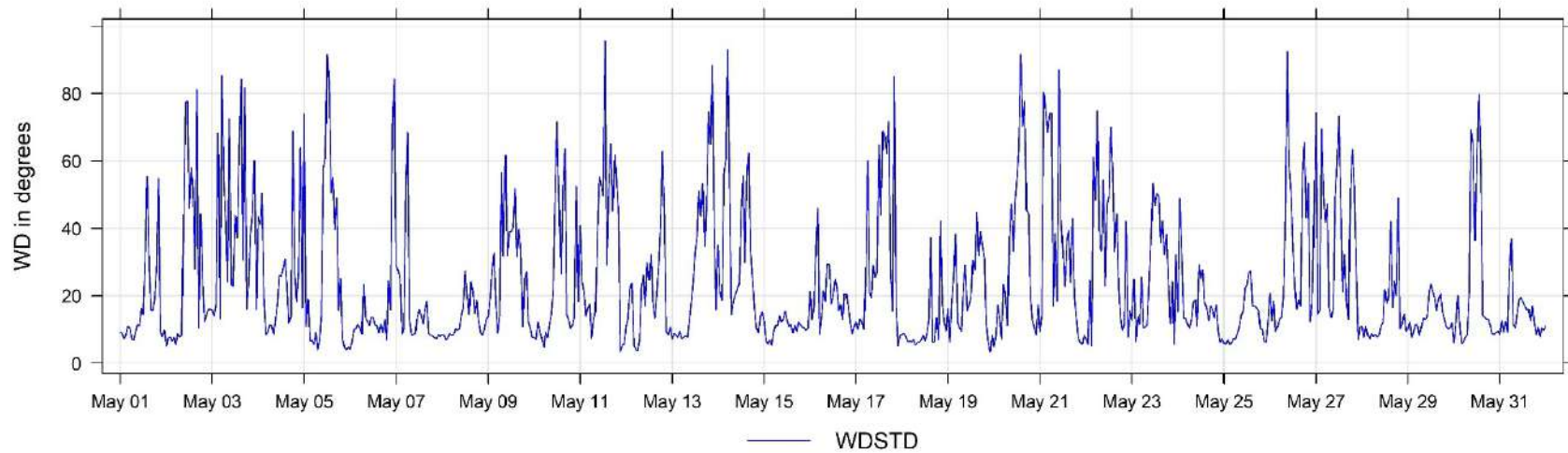
May Hourly Readings of Wind Speed (in km/hr) at Wembley

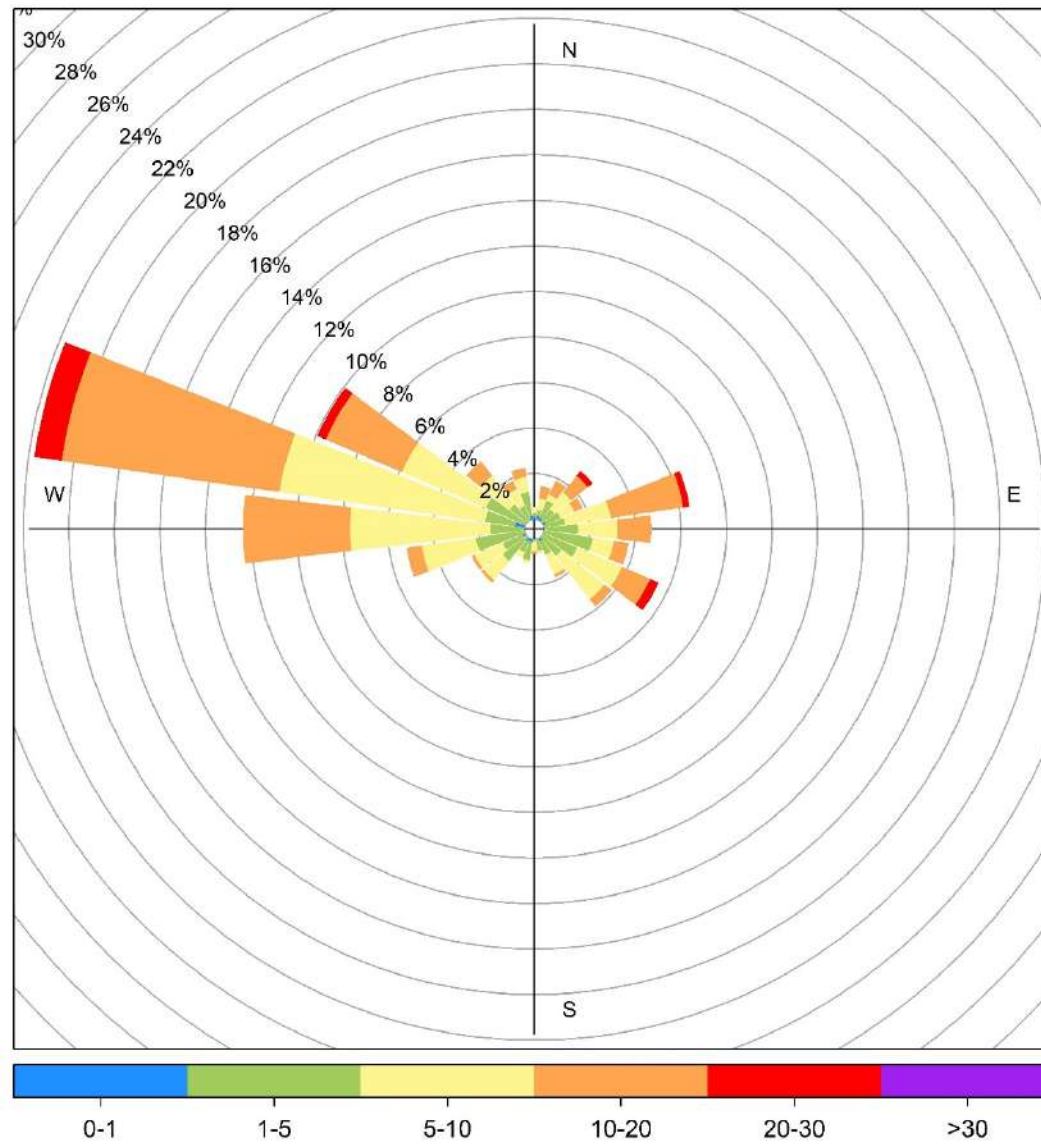


May Hourly Readings of Wind Direction (in degrees) at Wembley



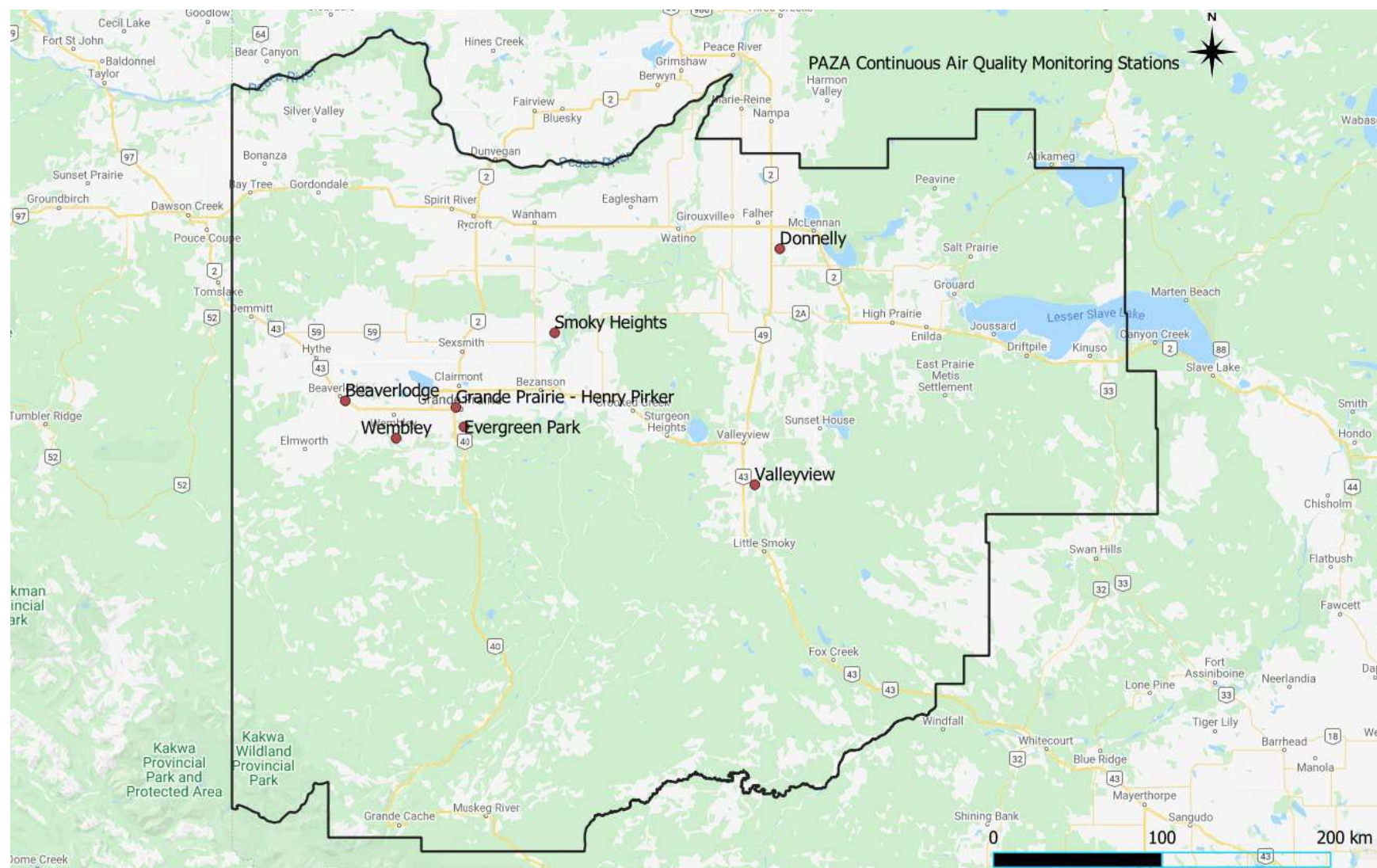
May Hourly Readings of Wind Direction Standard Deviation (in degrees) at Wembley



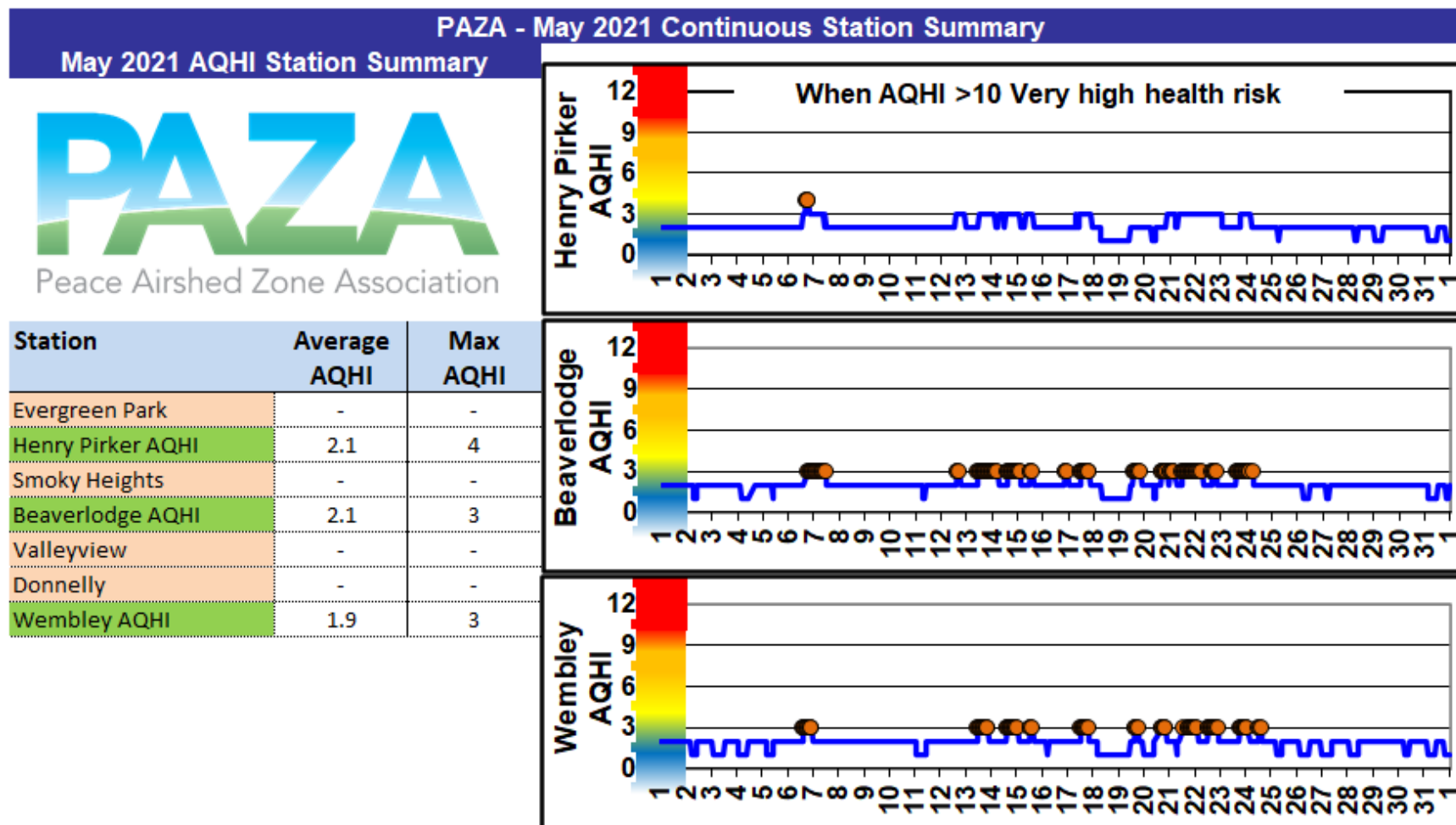


Wembley May Wind Rose, wind speed in km/hr

9 Concentration Summaries and Roses for PAZA

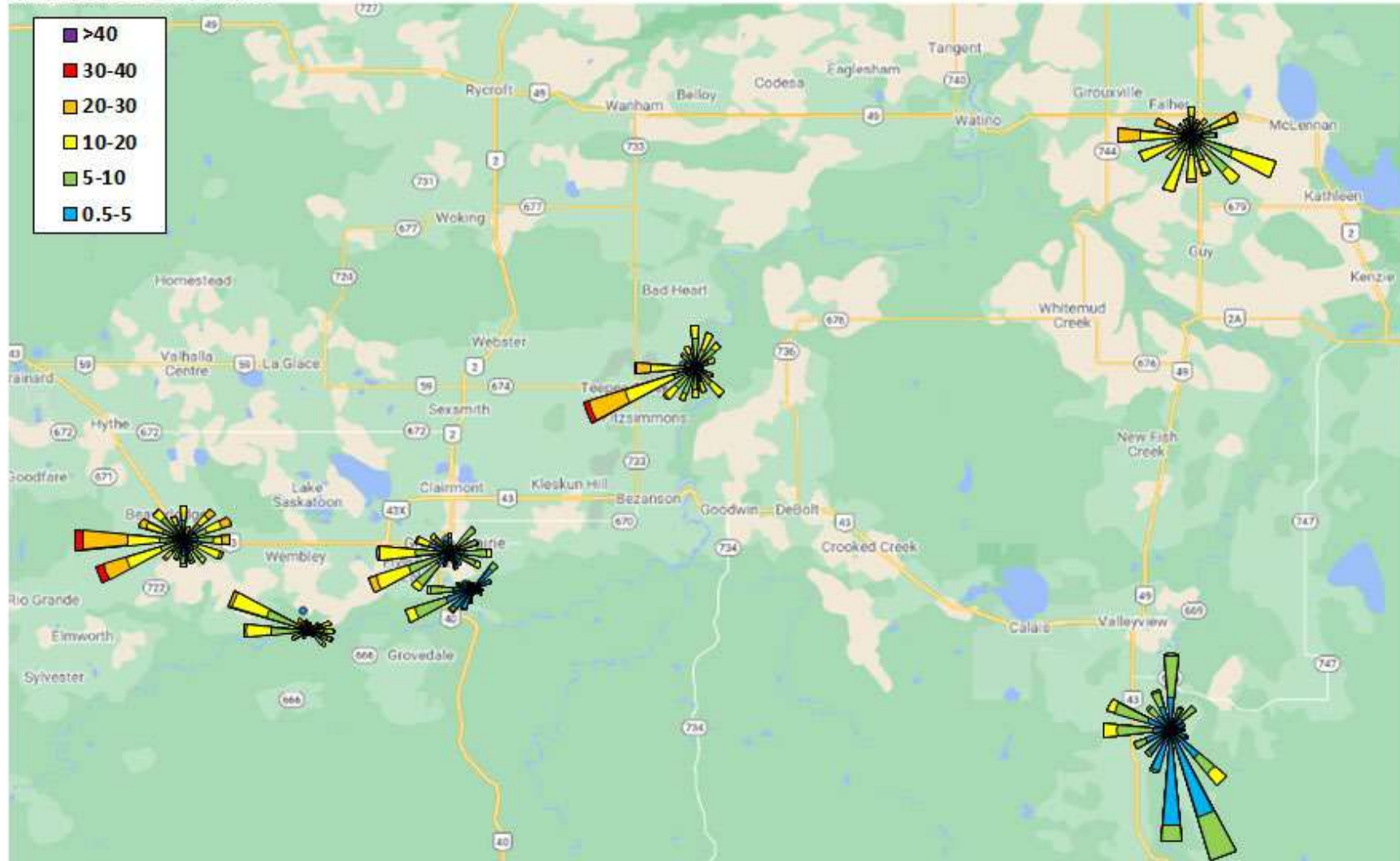


9.1 Air Quality Health Index (AQHI) Plots



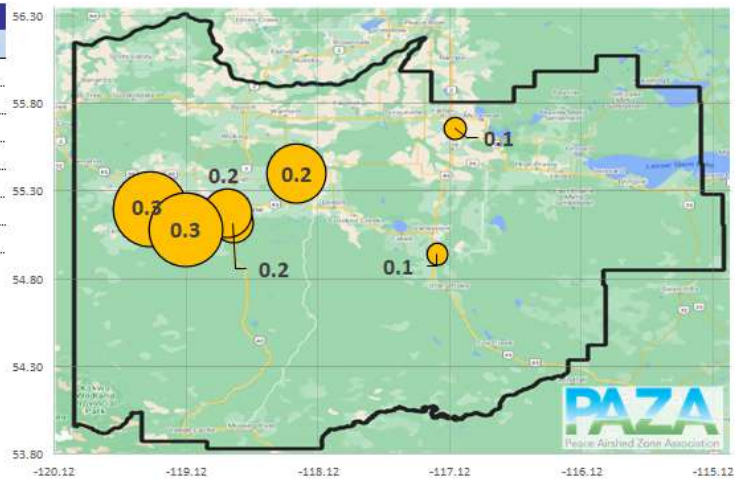
9.2 Wind Roses

Wind Roses in km/hr

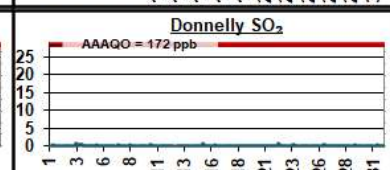
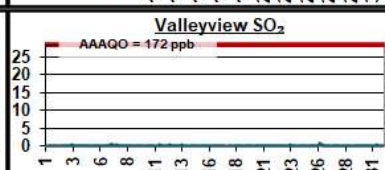
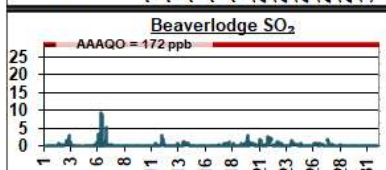
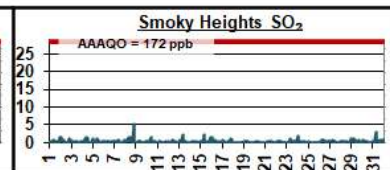
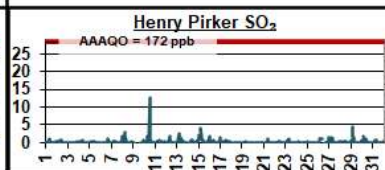
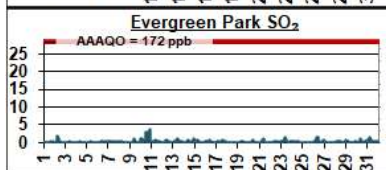
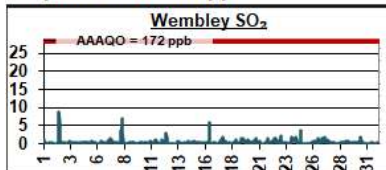


9.3 Sulphur Dioxide (SO₂) Plots

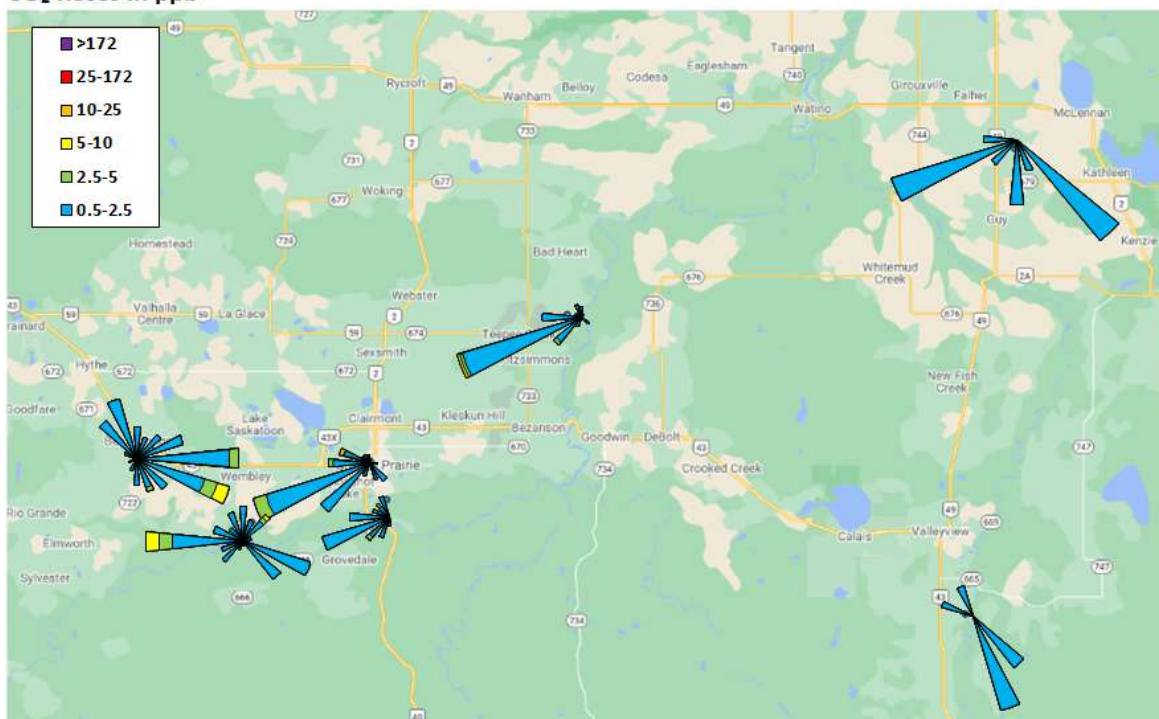
May 2021 SO ₂ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park SO ₂	0.2	3.7
Henry Pirkler SO ₂	0.2	12.8
Smoky Heights SO ₂	0.2	5.2
Beaverlodge SO ₂	0.3	9.5
Valleyview SO ₂	0.1	0.7
Donnelly SO ₂	0.1	0.8
Wembley SO ₂	0.3	8.8



Sulphur Dioxide in ppb

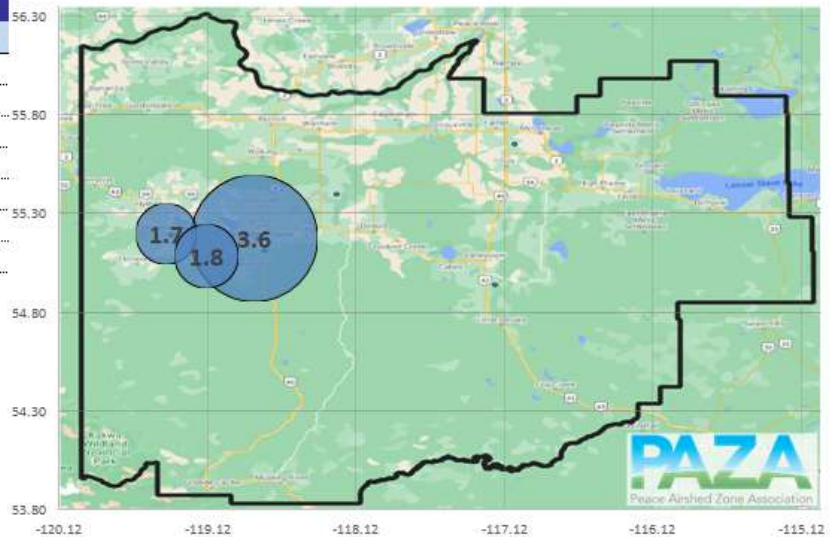


SO₂ Roses in ppb

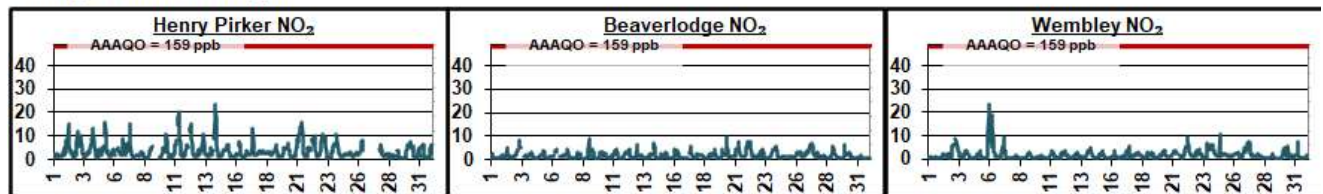


9.4 Nitrogen Dioxide (NO₂) Plots

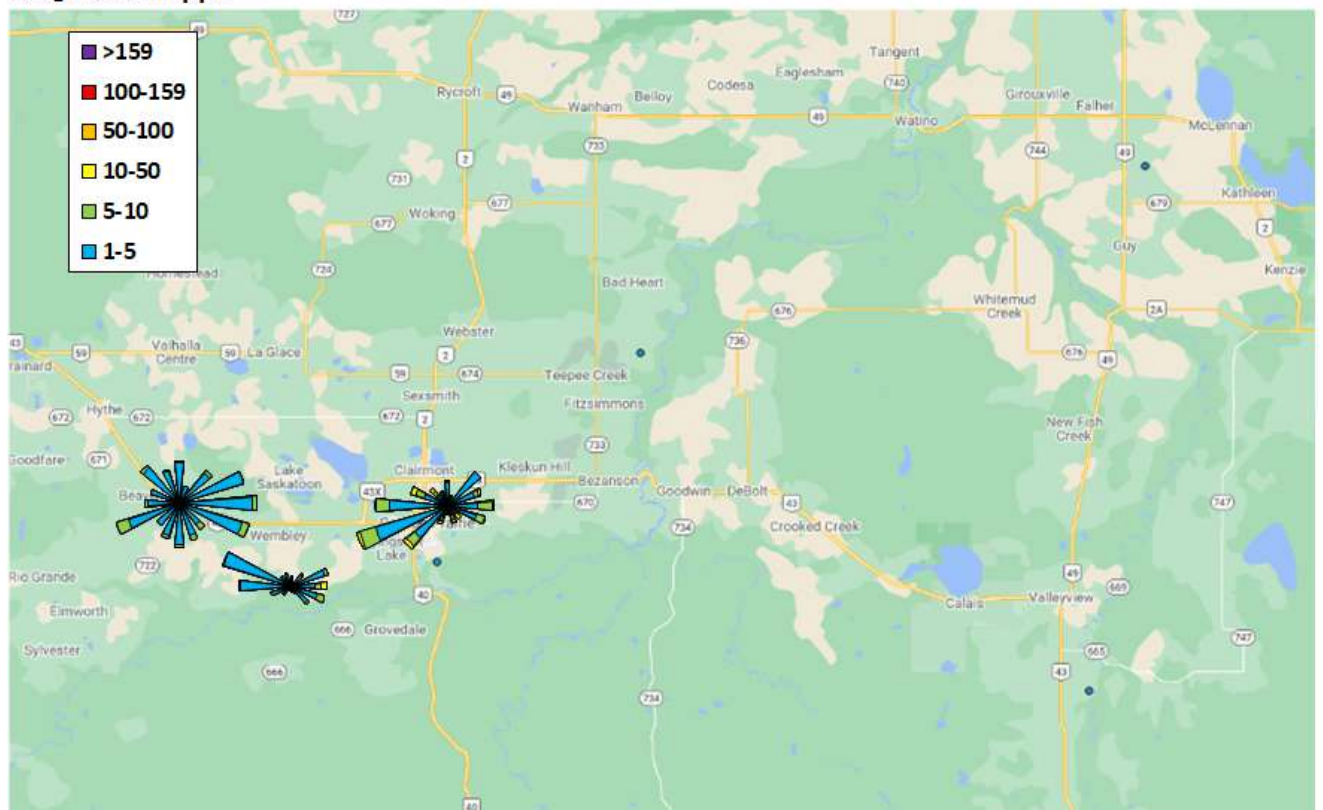
May 2021 NO ₂ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park NO ₂	-	-
Henry Pirker NO ₂	3.6	23.2
Smoky Heights NO ₂	-	-
Beaverlodge NO ₂	1.7	9.6
Valleyview NO ₂	-	-
Donnelly NO ₂	-	-
Wembley NO ₂	1.8	23.1



Nitrogen Dioxide in ppb

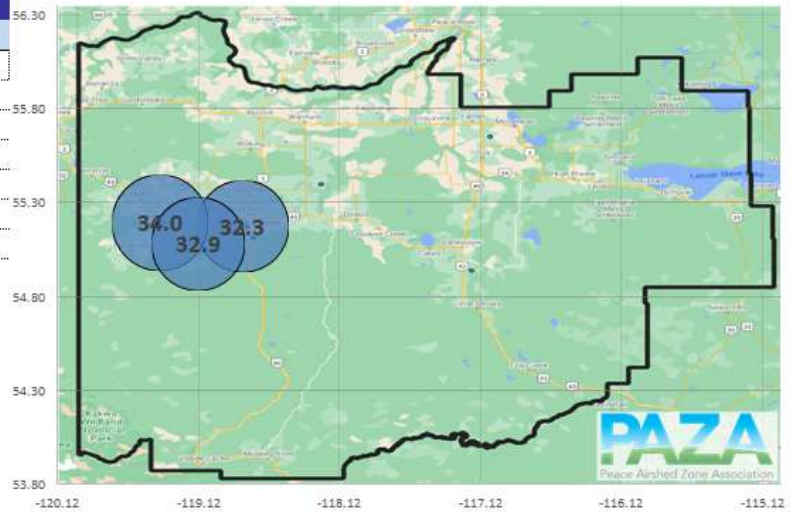


NO₂ Roses in ppb

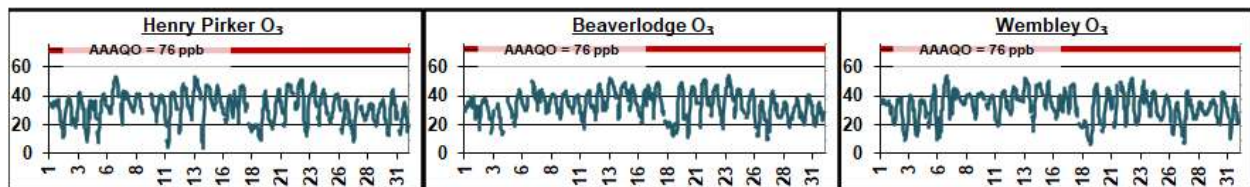


9.5 Ozone (O₃) Plots

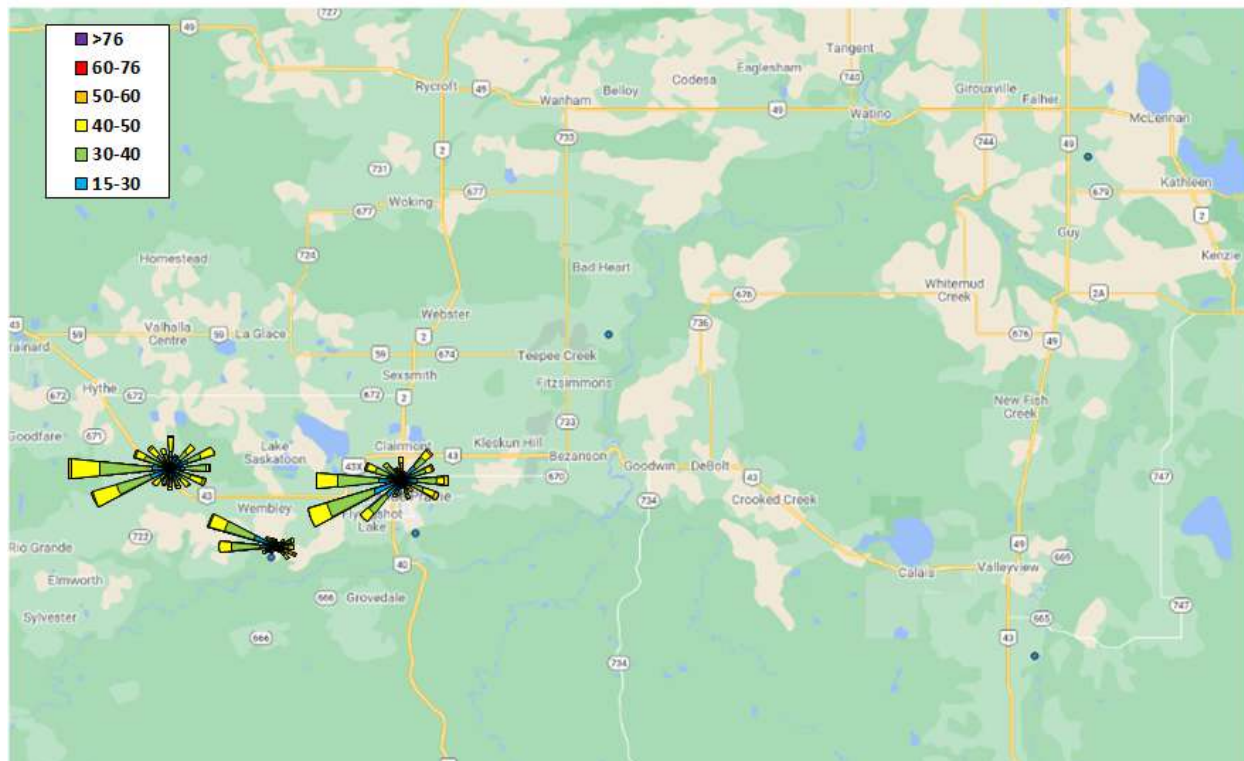
May 2021 O ₃ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park O ₃	-	-
Henry Pirker O ₃	32.3	53.9
Smoky Heights O ₃	-	-
Beaverlodge O ₃	34.0	54.3
Valleyview O ₃	-	-
Donnelly O ₃	-	-
Wembley O ₃	32.9	54.9



Ozone in ppb

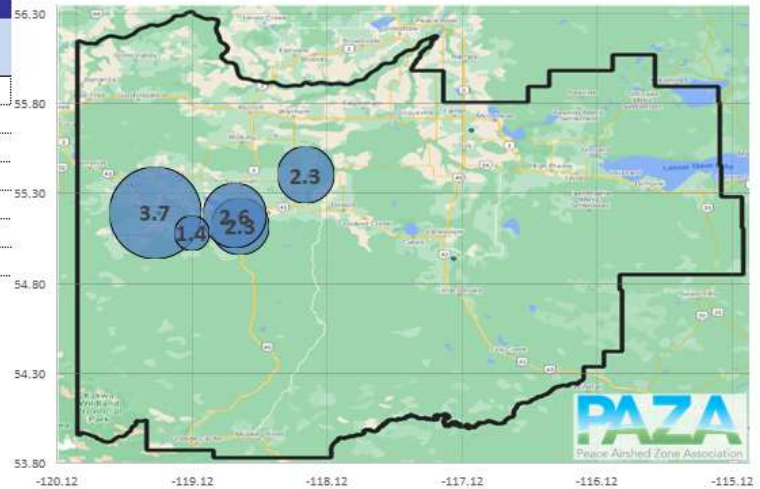


O₃ Roses in ppb

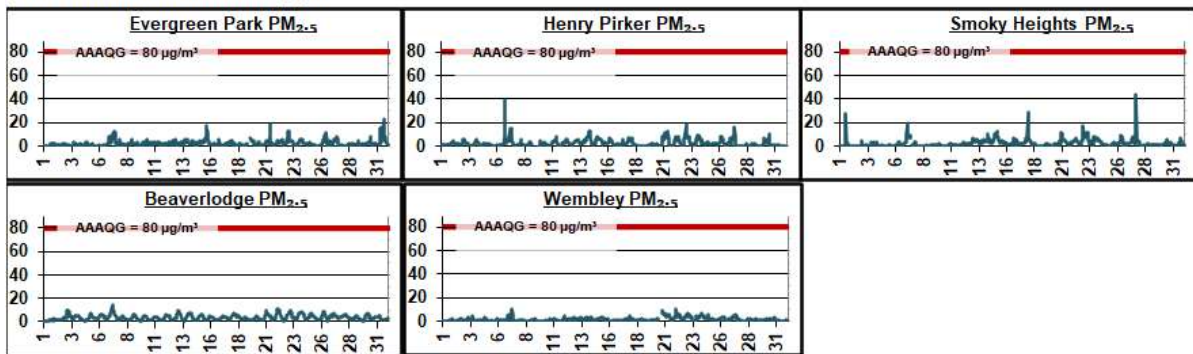


9.6 Fine Particulate Matter (PM_{2.5}) Plots

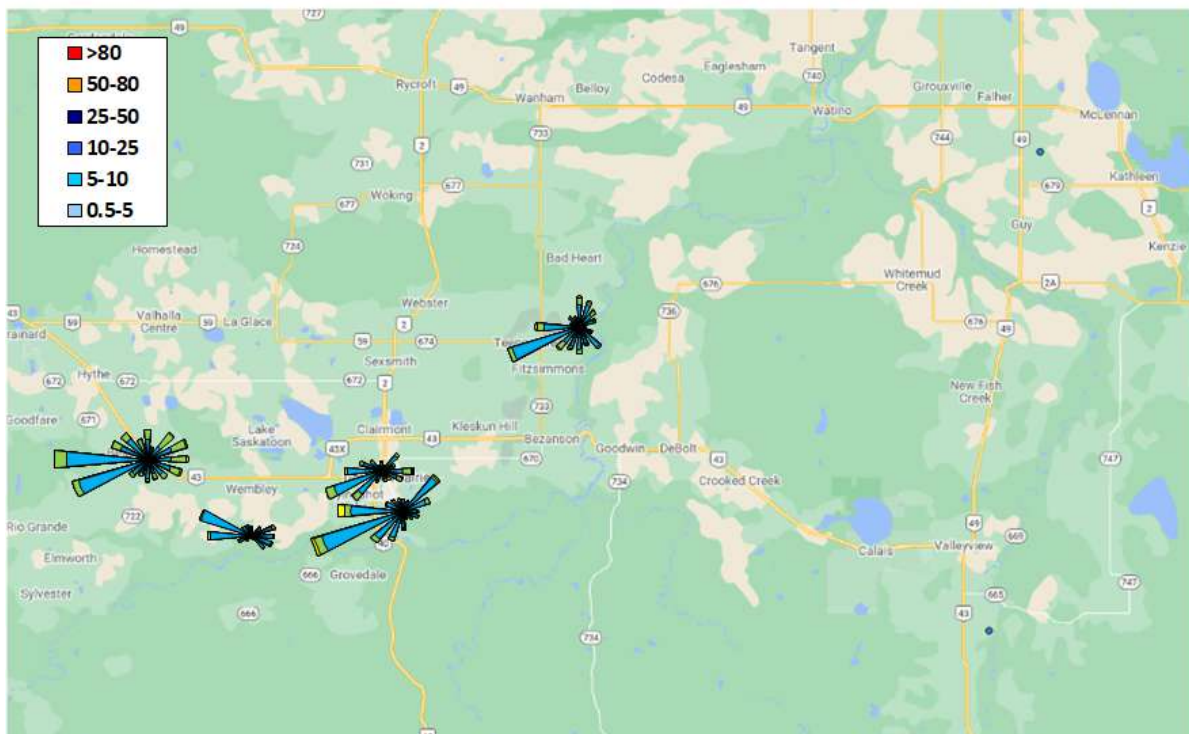
May 2021 PM _{2.5} Station Summary		
Station	Avg µg/m ³	Max µg/m ³
Evergreen Park PM _{2.5}	2.3	22.6
Henry Pirker PM _{2.5}	2.6	39.6
Smoky Heights PM _{2.5}	2.3	44.1
Beaverlodge PM _{2.5}	3.7	14.0
Valleyview PM _{2.5}	-	-
Donnelly PM _{2.5}	-	-
Wembley PM _{2.5}	1.4	10.5



Fine Particulate Matter in µg/m³



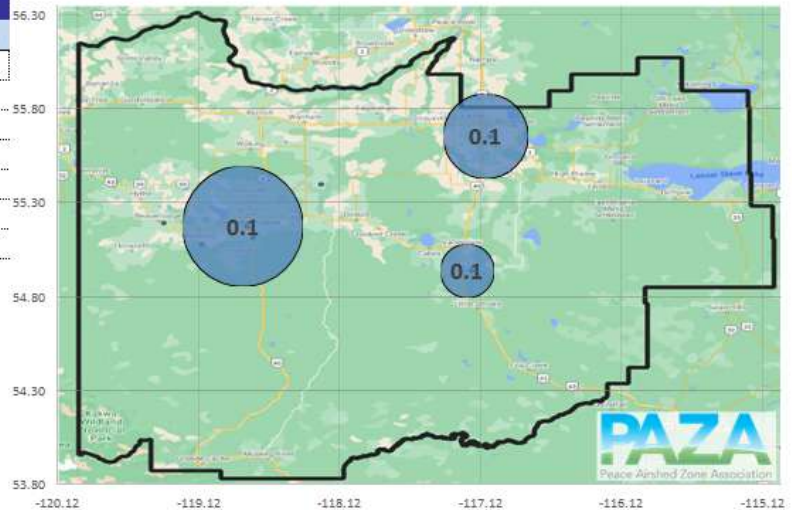
PM_{2.5} Roses in µg/m³



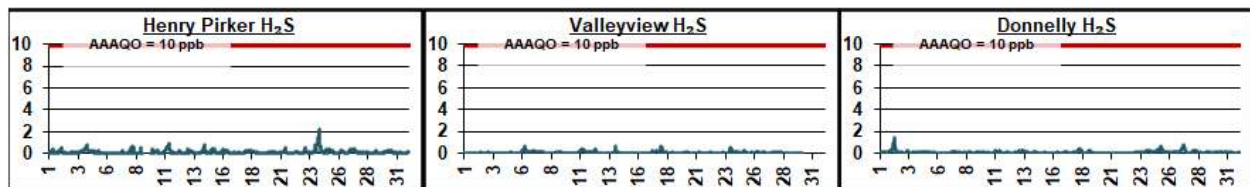
9.7 Hydrogen Sulphide (H₂S) Plots

May 2021 H₂S Station Summary

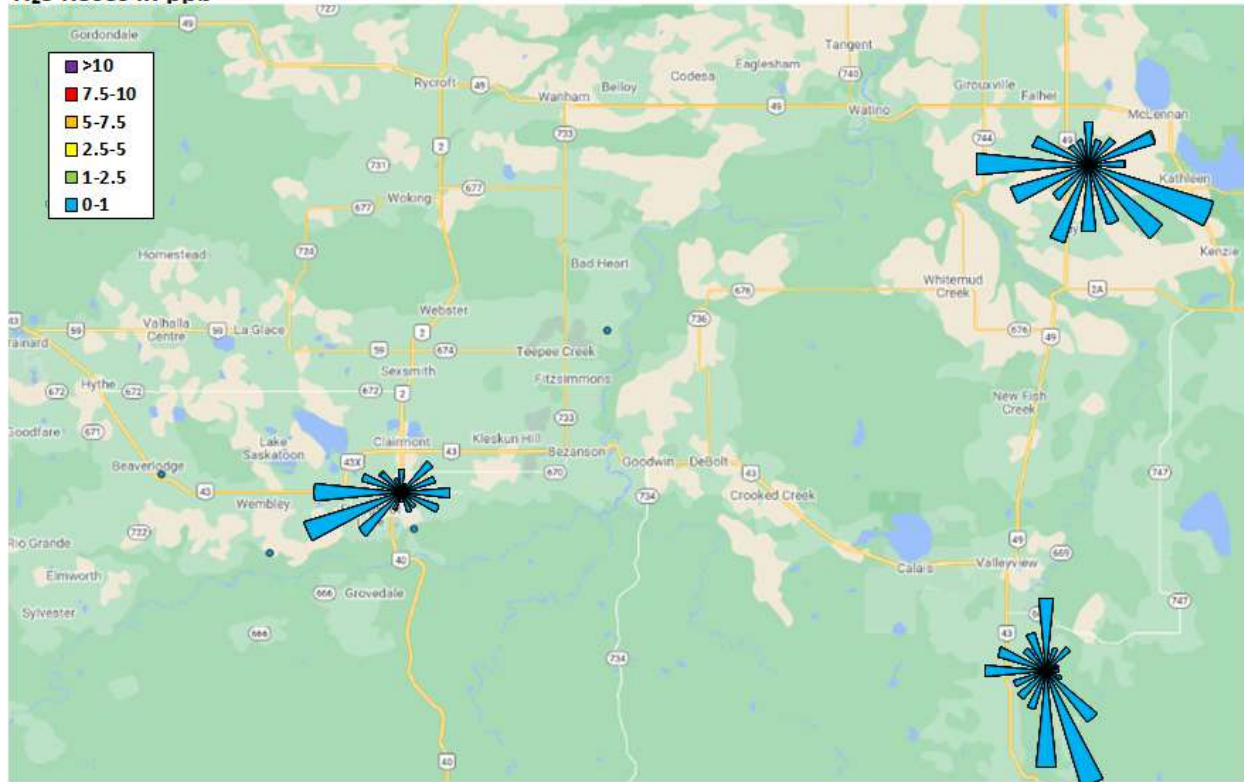
Station	Avg (ppb)	Max (ppb)
Evergreen Park H ₂ S	-	-
Henry Pirker H ₂ S	0.1	2.3
Smoky Heights H ₂ S	-	-
Beaverlodge H ₂ S	-	-
Valleyview H ₂ S	0.1	0.7
Donnelly H ₂ S	0.1	1.4
Wembley H ₂ S	-	-



Hydrogen Sulphide in ppb

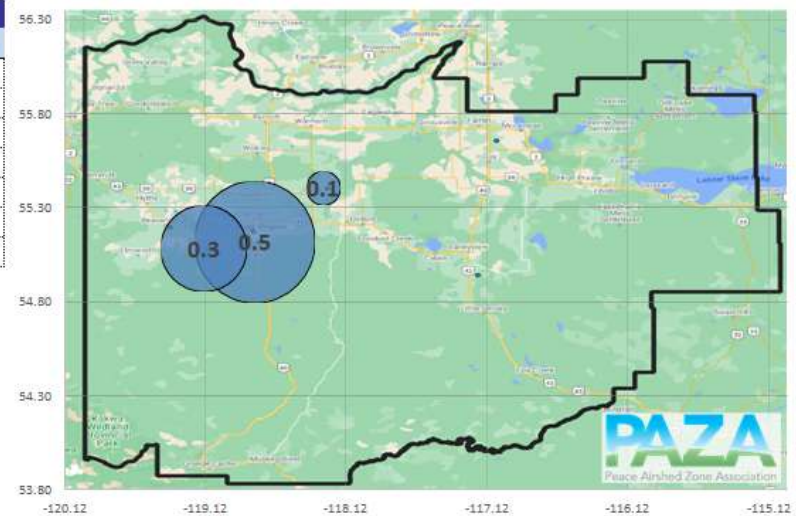


H₂S Roses in ppb

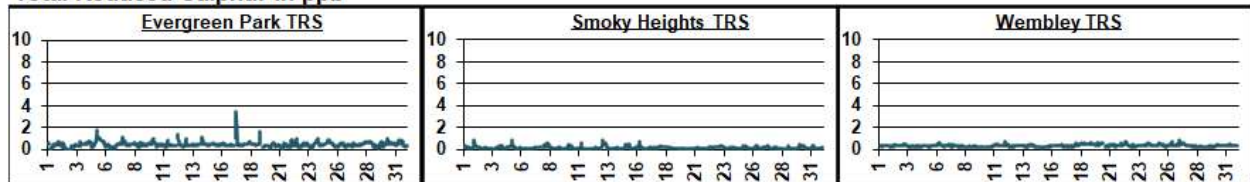


9.8 Total Reduced Sulphur (TRS) Plots

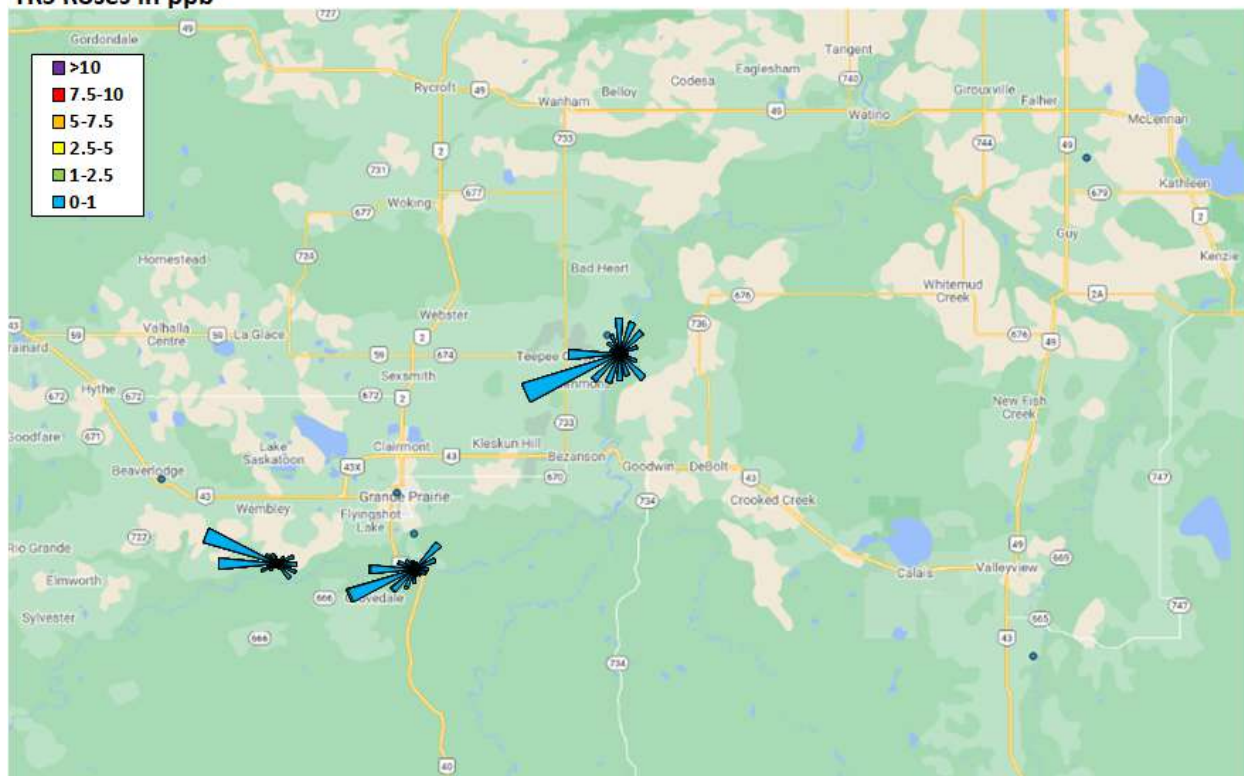
May 2021 TRS Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park TRS	0.5	3.4
Henry Pirker TRS	-	-
Smoky Heights TRS	0.1	0.9
Beaverlodge TRS	-	-
Valleyview TRS	-	-
Donnelly TRS	-	-
Wembley TRS	0.3	0.8



Total Reduced Sulphur in ppb



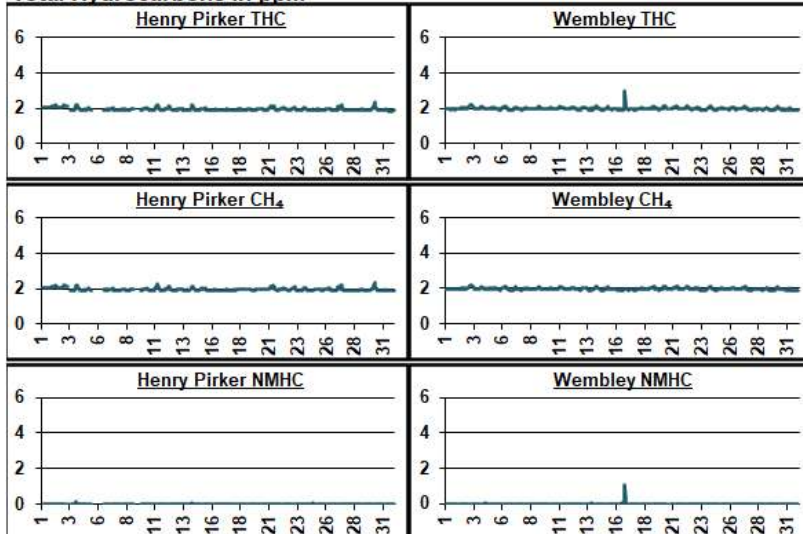
TRS Roses in ppb



9.9 Total Hydrocarbon (THC) Plots

May 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	2.4	2.4	2.4	0.1	0.1
Smoky Heights THC	-	-	-	-	-	-
Beaverlodge THC	-	-	-	-	-	-
Valleyview THC	-	-	-	-	-	-
Donnelly THC	-	-	-	-	-	-
Wembley THC	2.0	3.0	2.2	2.2	1.1	1.1

Total Hydrocarbons in ppm

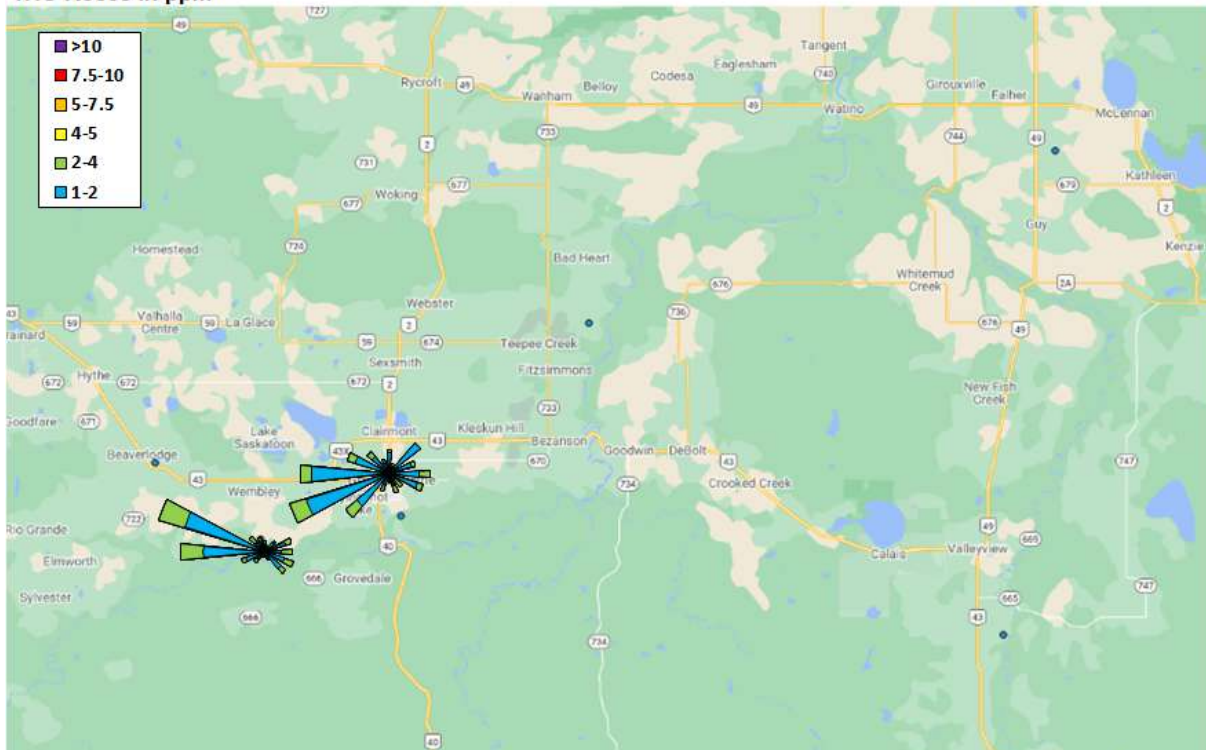


Total Hydrocarbons (THC)

Methane (CH₄)

Non-Methane Hydrocarbons (NMHC)

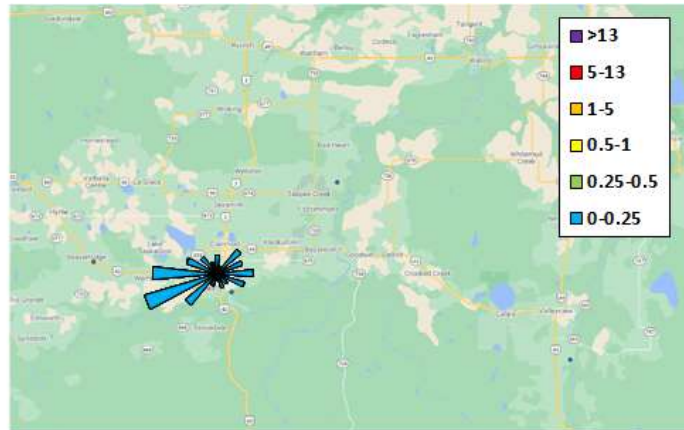
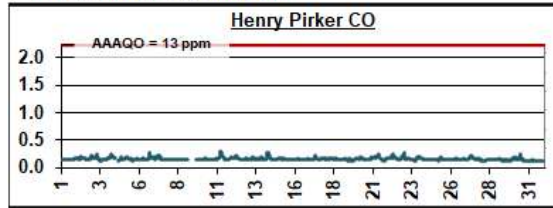
THC Roses in ppm



9.10 Carbon Monoxide (CO) Plots

May 2021 CO Station Summary		
Station	Avg (ppm)	Max (ppm)
Henry Pirkler CO	0.16	0.30

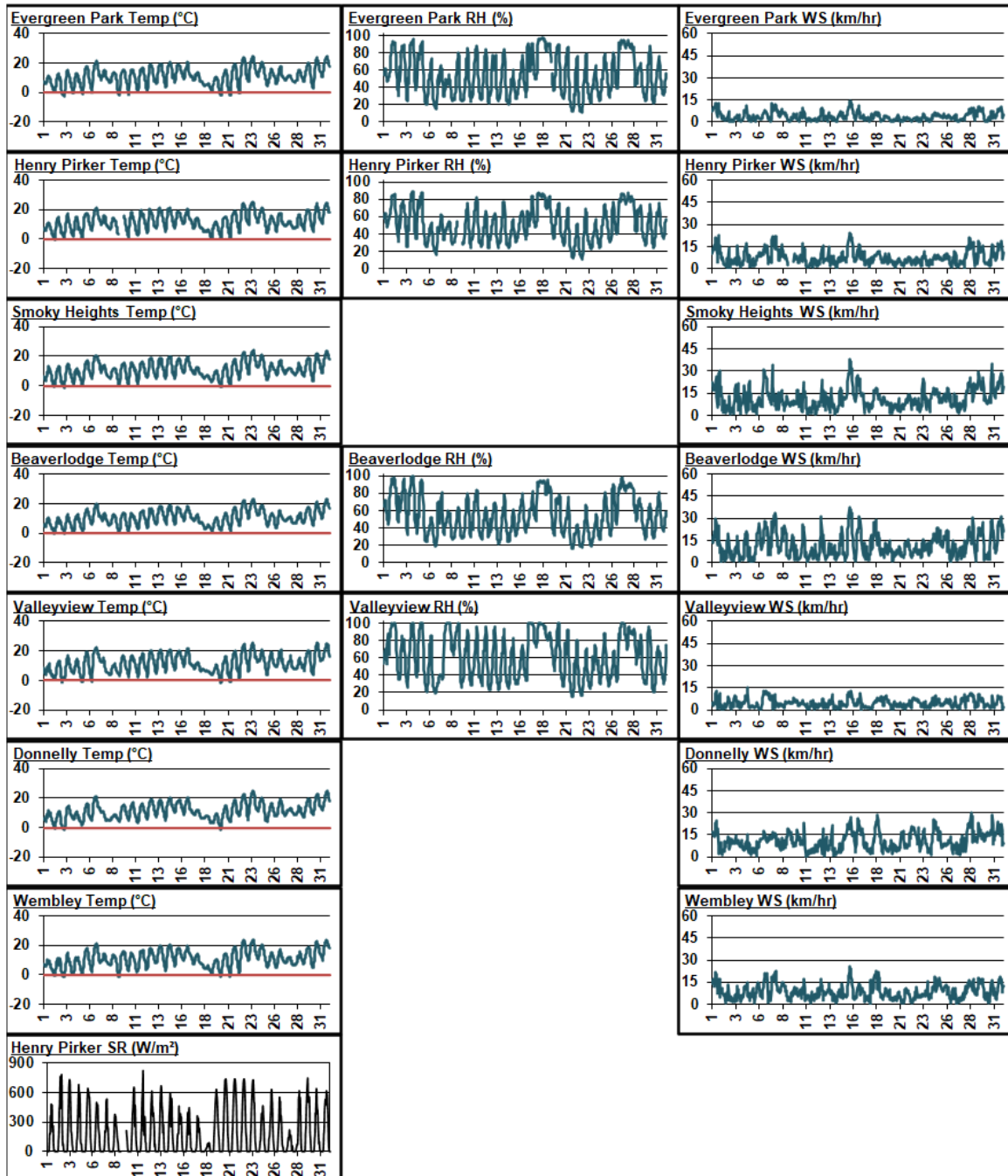
Carbon Monoxide in ppm



9.11 Meteorology Summary

May 2021 Meteorological Summary						
Station	Temp (°C)	RH (%)	SR (W/m ²)	WS (km/hr)	WD (deg)	WD
Evergreen Park	11.1	54.5	-	3.9	258.2	WSW
Henry Pirkner	12.0	51.2	183.6	7.7	264	WSW
Smoky Heights	11.0	-	-	11.6	250	WSW
Beaverlodge	10.5	55.0	-	11.9	276	W
Valleyview	11.6	60.8	-	4.6	227	WSW
Donnelly	11.3	-	-	11.0	202	SW
Wembley	10.9	-	-	8.6	295	WNW

Temp (°C) Outside Temperature
 RH (%) Relative Humidity
 SR (W/m²) Solar Radiation
 WS (km/hr) Wind Speed
 WD (deg) Wind Direction
 WD Wind Direction



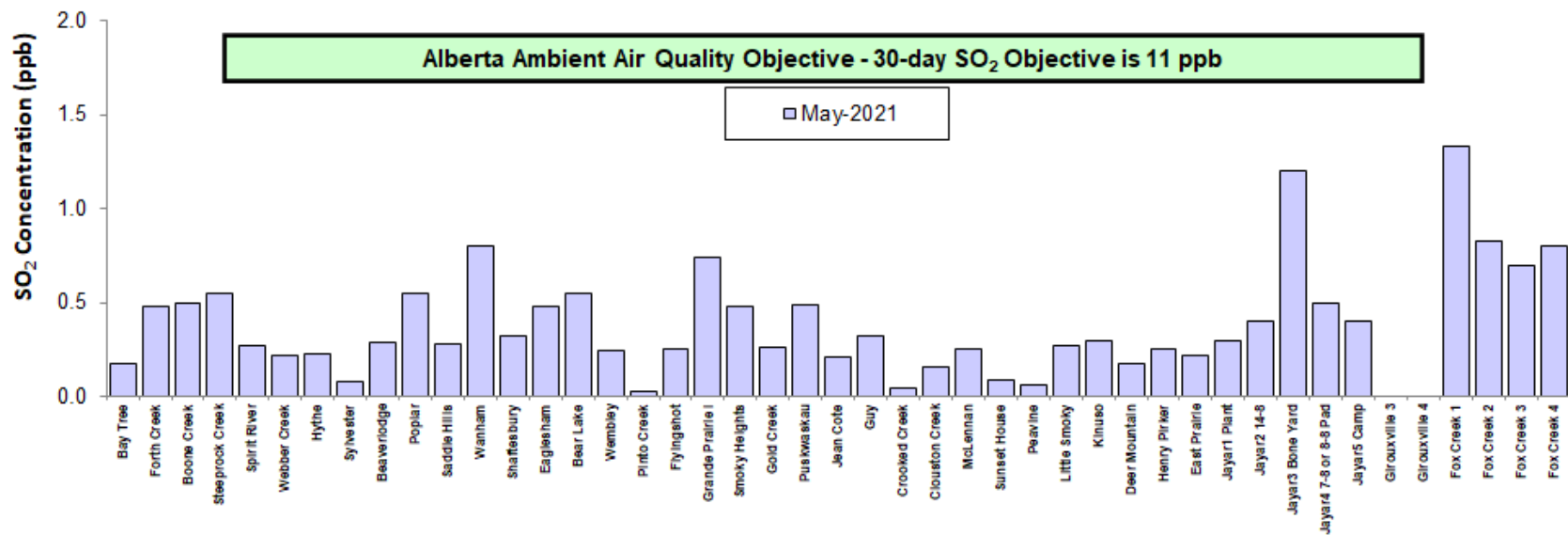
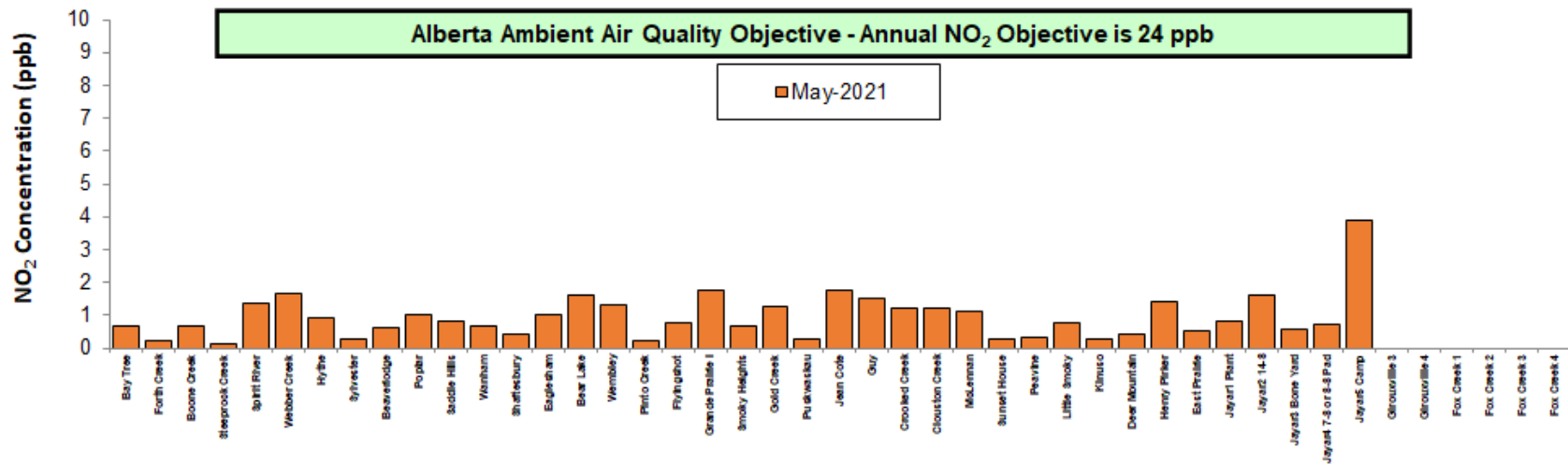
10 Passive Monitoring Data

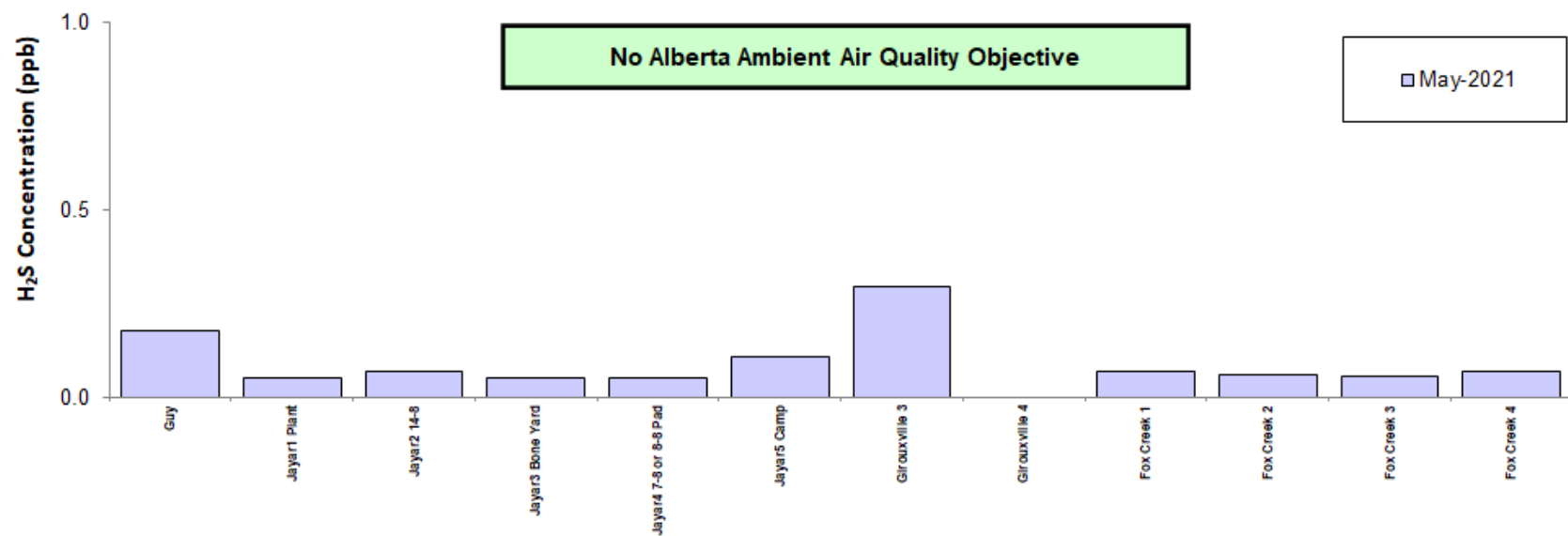
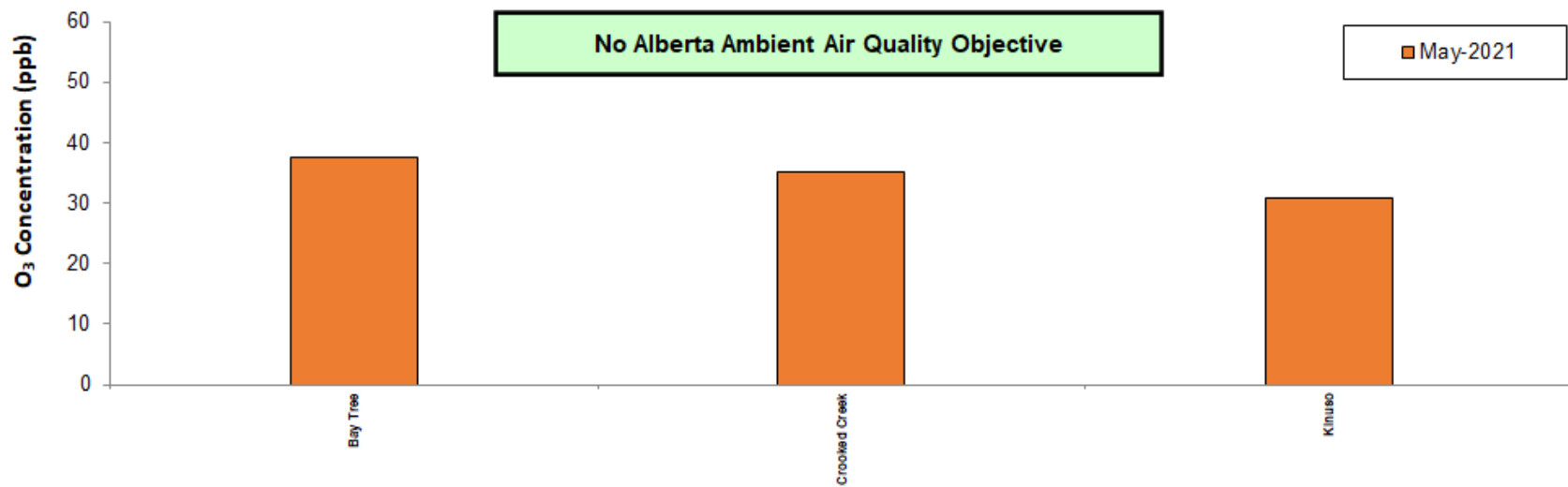
Peace Airshed Zone Association - PAZA Passive Stations for May 2021

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
Duplicates						
14a	Sylvester	0.1				
14b	Sylvester	0.1				
17a	Poplar			1.0		
17b	Poplar			1.0		
20a	Shaftesbury	0.2				
20b	Shaftesbury	0.4				
24a	Wembley	0.2				
24b	Wembley	0.3				
25a	Pinto Creek			0.3		
25b	Pinto Creek			0.2		
29a	Smoky Heights			0.9		
29b	Smoky Heights			0.5		
34a	Puskwaskau	0.3				
34b	Puskwaskau	0.7				
36a	Guy			1.5		
36b	Guy			1.5		
G4a	Girouxville 4					
G4b	Girouxville 4					
FC2a	Fox Creek 2	1.2			0.1	
FC2b	Fox Creek 2	0.5			0.1	
J1a	Jayar1 Plant	0.4			0.1	
J1b	Jayar1 Plant	0.2			0.1	
J3a	Jayar3 Bone Yard			0.5		
J3b	Jayar3 Bone Yard			0.6		
2	Bay Tree	0.2	37.5	0.7	-	13-16-078-13 W6M
3	Forth Creek	0.5	-	0.2	-	04-13-082-07 W6M
5	Boone Creek	0.5	-	0.7	-	01-23-076-11 W6M
7	Steeprock Creek	0.5	-	0.1	-	09-35-072-13 W6M
9	Spirit River	0.3	-	1.4	-	08-12-079-07 W6M
11	Webber Creek	0.2	-	1.7	-	09-36-074-09 W6M
12	Hythe	0.2	-	0.9	-	14-36-072-11 W6M
14	Sylvester	0.1	-	0.3	-	08-06-069-12 W6M
16	Beaverlodge	0.3	-	0.6	-	15-36-071-10 W6M
17	Poplar	0.5	-	1.0	-	13-06-073-08 W6M
18	Saddle Hills	0.3	-	0.8	-	04-25-074-07 W6M
19	Wanham	0.8	-	0.7	-	16-22-077-03 W6M
20	Shaftesbury	0.3	-	0.4	-	04-03-082-23 W5M
21	Eaglesham	0.5	-	1.0	-	16-21-079-25 W5M
23	Bear Lake	0.5	-	1.6	-	15-31-072-06 W6M
24	Wembley	0.2	-	1.3	-	12-31-070-08 W6M
25	Pinto Creek	0.0	-	0.2	-	04-24-069-11 W6M
26	Flyingshot	0.2	-	0.8	-	15-36-070-07 W6M
27	Grande Prairie I	0.7	-	1.7	-	08-15-071-06 W6M
29	Smoky Heights	0.5	-	0.7	-	04-06-075-02 W6M
32	Gold Creek	0.3	-	1.3	-	06-33-067-05 W6M
34	Puskwaskau	0.5	-	0.3	-	15-35-074-25 W5M
35	Jean Cote	0.2	-	1.8	-	12-35-079-21 W5M
36	Guy	0.3	-	1.5	0.2	03-04-076-22 W5M
37	Crooked Creek	0.0	35.1	1.2	-	16-01-071-26 W5M
39	Clouston Creek	0.2	-	1.2	-	12-01-073-22 W5M
40	McLennan	0.3	-	1.1	-	03-29-077-19 W5M
42	Sunset House	0.1	-	0.3	-	05-32-070-19 W5M
44	Peavine	0.1	-	0.3	-	03-05-079-15 W5M
46	Little Smoky	0.3	-	0.8	-	12-01-065-21 W5M
47	Kinuso	0.3	30.9	0.2	-	12-10-073-10 W5M
48	Deer Mountain	0.2	-	0.4	-	15-22-068-09 W5M
49	Henry Pirkar	0.2	-	1.4	-	17-26-071-06 W6M
50	East Prairie	0.2	-	0.5	-	11-13-079-08 W6M
57	Jayar1 Plant	0.3	-	0.8	0.1	06-08-062-03 W6M
58	Jayar2 14-8	0.4	-	1.6	0.1	07-08-062-03 W6M
59	Jayar3 Bone Yard	1.2	-	0.6	0.1	14-08-062-03 W6M
60	Jayar4 7-8 or 8-8 Pad	0.5	-	0.7	0.1	10-08-062-03 W6M
61	Jayar5 Camp	0.4	-	3.9	0.1	11-08-062-03 W6M
G3	Girouxville 3	-	-	-	0.3	14-02-077-23 W5M
G4	Girouxville 4	-	-	-	damaged	04-08-077-22 W5M
FC1	Fox Creek 1	1.3	-	-	0.1	
FC2	Fox Creek 2	0.8	-	-	0.1	
FC3	Fox Creek 3	0.7	-	-	0.1	
FC4	Fox Creek 4	0.8	-	-	0.1	

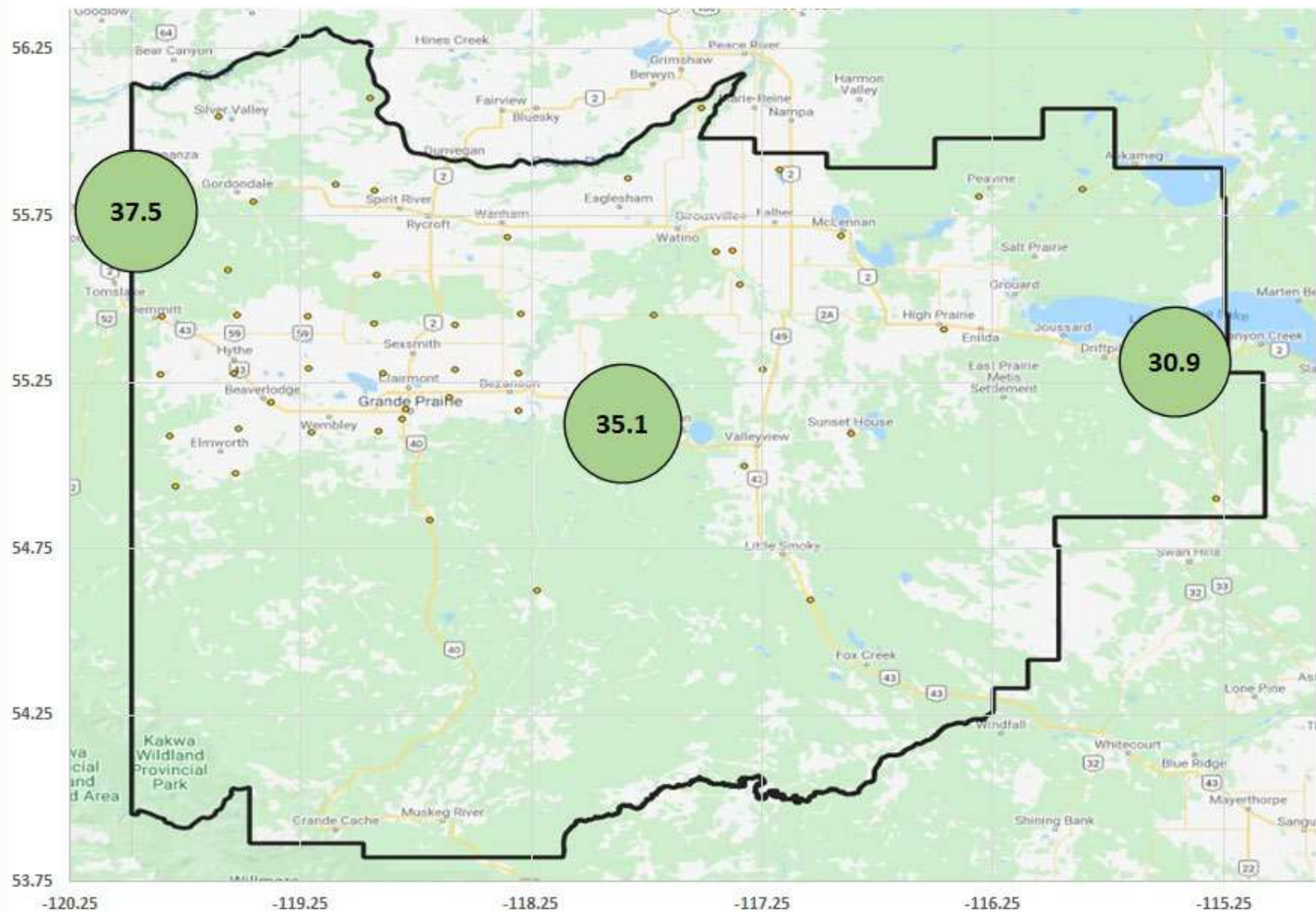
Passive Summary for May 2021

Stats	Sulphur Dioxide SO ₂	Ozone O ₃	Nitrogen Dioxide NO ₂	Hydrogen Sulphide H ₂ S
	ppb	ppb	ppb	ppb
Passive Summary for May 2021 (PAZA)				
Mean	0.3	34.5	0.9	0.1
Standard Deviation	0.2	3.3	0.7	0.1
Minimum	0.0	30.9	0.1	0.1
	Pinto Creek (#25)	Kinuso (#47)	Steepprock Creek (#7)	Jayar1 Plant (#57)
Maximum	1.2	37.5	3.9	0.3
	Jayar3 Bone Yard (#59)	Bay Tree (#2)	Jayar5 Camp (#61)	Girouxville 3 (#G3)
Continuous and Passive Monitoring Comparision				
PAZA Beaverlodge Station	0.3	34.0	9.6	-
Beaverlodge Passive (#16)	0.3	-	0.6	-
PAZA Henry Pirker Station	0.2	32.3	23.2	0.1
Henry Pirker passive (#49)	0.2	-	1.4	-

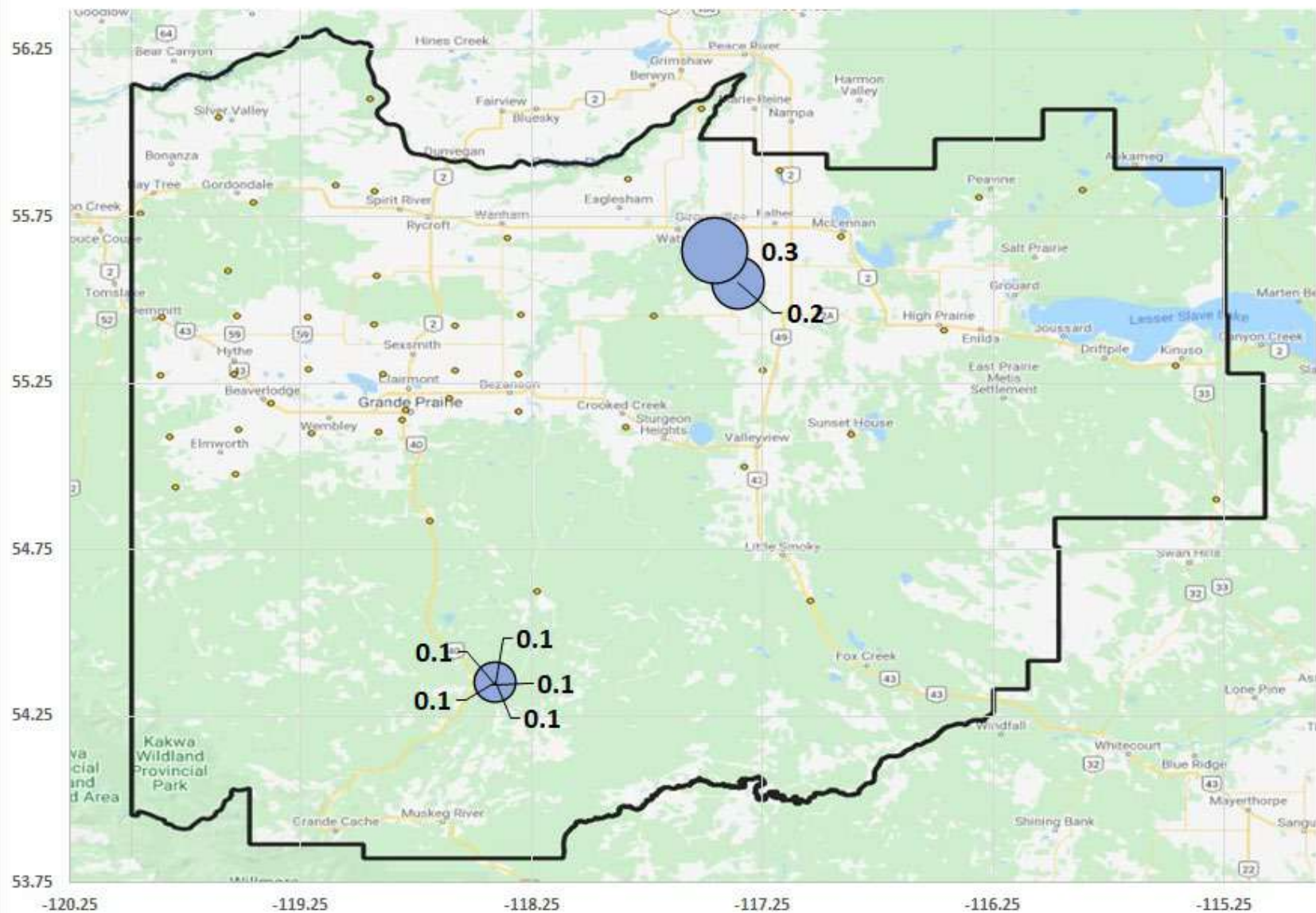




O₃ Monthly Average (units in ppb)



H₂S Monthly Average (units in ppb)



End of Report



Peace Airshed Zone Association

Ambient Air Monitoring Report

May 2021