



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

September 2021

October 31, 2021

Alberta Environment and Parks

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

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

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of September 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. The Wembley-Portable station was decommissioned at the end of the month for movement.

Continuous Monitoring:

Seven (7) Stations including Henry Pirker (Grande Prairie), Evergreen Park, Smoky Heights, Beaverlodge, Valleyview, Donnelly and Wembley-Portable (Station decommissioned at end of month for redeployment).
Detailed Summaries are included in the report

Calibration and Data Submission:

Monthly report, hourly data and calibration reports for September 2021 were submitted to the ETS data system.

Table A. PAZA members with Facility Operating Approvals

Company	Facility	LSD	EPEA Approval No.
Advantage Oil & Gas Ltd.	Glacier	05-02-076-13-W6	262479-00-00
Alberta Power (2000) Ltd. (an ATCO company)	Sturgeon	SW-06-069-21-W5	10283-02-02
ATCO Power Canada	Poplar Hill	11-19-073-08-W6	67774-01-01
ATCO Power Canada	Valleyview	SW-06-069-21-W5	147709-01-01
AltaGas Ltd.	Pouce Coupe	03-03-081-13-W6	247673-00-00
	Ante Creek	02-26-068-25-W5	266694-00-00
	Gordondale	02-26-068-25-W5	287474-00-00
Apache Canada Ltd.	House Mountain	01-08-070-10-W5	10137-02-02
Birchcliff Energy Ltd.	Pouce Coupe	03-22-078-12-W6	252529-00-00
Canadian Natural Resources Limited	Bonanza	11-25-081-11-W6	00000029-01-00
	Progress/Gordondale	01-01-077-10-W6	00010036-02-00
	Gold Creek	13-26-067-05-W6	00010446-02-00
	Teepee Creek	SE-2-074-04-W6	00001635-02-00
	Sturgeon/Valleyview	02-02-069-22-W5	1633-02-00
Canfor Forest Products	Grande Prairie	SW-23-071-06-W6	152645-01-00
Conocophillips Canada Energy Partnership	Wembley	06-19-073-08-W6	00000212-01-00
Encana Corporation	Sexsmith	04-08-075-07-W6	00010002-01-00
Enerplus Resources	Pouce Coupe	SW-06-069-21-W5	1464-02-03
Exshaw Oil Corporation	Spirit River	03-10-077-07-W6	344521-00-00
Grande Prairie Generation Inc.	Northern Prairie Power Project	04-19-073-08-W6	00238762-00-00
Inception Exploration Ltd.	Gold Creek	03-26-069-05-W6	00335317-00-02
KANATA Energy Group Ltd.	Valhalla	13-21-076-09-W6	00017620-02-02
Long Run Exploration	Eaglesham	01-25-076-01-W6	00241532-00-00
	Kakut	14-12-075-03-W6	00248469-00-00
	Donnelly	06-01-077-21-W5	00000087-02-00
	Puskwaskau	03-26-074-01-W6	00017524-01-00
Longview Oil Corp.	Sunset House	06-22-070-20-W5	138884-01-00
NorthRiver Midstream Inc.	Fourth Creek	16-11-082-09-W6	00000263-01-00
	Gordondale	11-26-079-09-W6	00011495-01-01
	Pouce Coupe/Bonanza	03-23-080-13-W6	00070203-01-01
Penn West Petroleum Ltd.	Tangent	13-29-080-23-W5	00001746-02-00
	Pouce Coupe	16-07-078-11-W6	00000614-01-00
Petrus Resources	Rycroft	08-25-077-06-W6	11351-02-00
	Spirit River	08-34-077-06-W6	11096-02-00
Strathcona Resources Ltd.	Jayar Sour Gas Processing Plant	06-08-062-03 W6	3612040
Suncor Energy Inc.	Progress	07-22-078-09-W6	00011428-02-00
Tidewater Midstream and Infrastructure Ltd.	Pipestone Sour Gas Plant	NW-35-70-9 W6	00403309-00-00
Veresen Energy	Hythe Brainard	11-18-074-12-W6	00010910-02-00
Weyerhaeuser Canada	Grande Prairie Pulp and Wood Plant	01-14-070-05-W6	00000113-02-00

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

There was one reading above the AAAQG (1hr PM_{2.5}), results are summarized below:

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

Reference Number	Pollutant	Station	Date	From MST	To MST	Hour avg µg/m ³	WS km/h	WD degrees
381039	PM _{2.5}	Smoky Heights	25-Sept-21	21:00	22:00	107.9	8.6	267.4

Operational times less than 90 percent:

No operational times less than 90%.

Air Incidents

None were reported

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 three passives at Girouxville that were deployed for two months due to inaccessible road in August / September
- There were 17 duplicate sites sampled in the month of September
 - Seven SO₂ duplicates located at Webber Creek, Sylvester, Flyingshot, Sunset House, Guy, Duvernay 2, Jayar 5 (Camp); RPD ranging from 0% to 138% (2 fails, Duvernay2 & Sylvester)
 - One O₃ duplicate at Crooked Creek; RPD at 3%
 - Five NO₂ duplicates at Hythe, Wembley, Wanham, Deer Mountain, Jayar 3 (Bone Yard); RPD ranging from 0% to 26% (no fails)
 - Four H₂S duplicates, Guy, Girouxville 4, Duvernay 2, Jayar 5 (Camp); RPD ranging from 0% to 1% (no fails)
- 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.

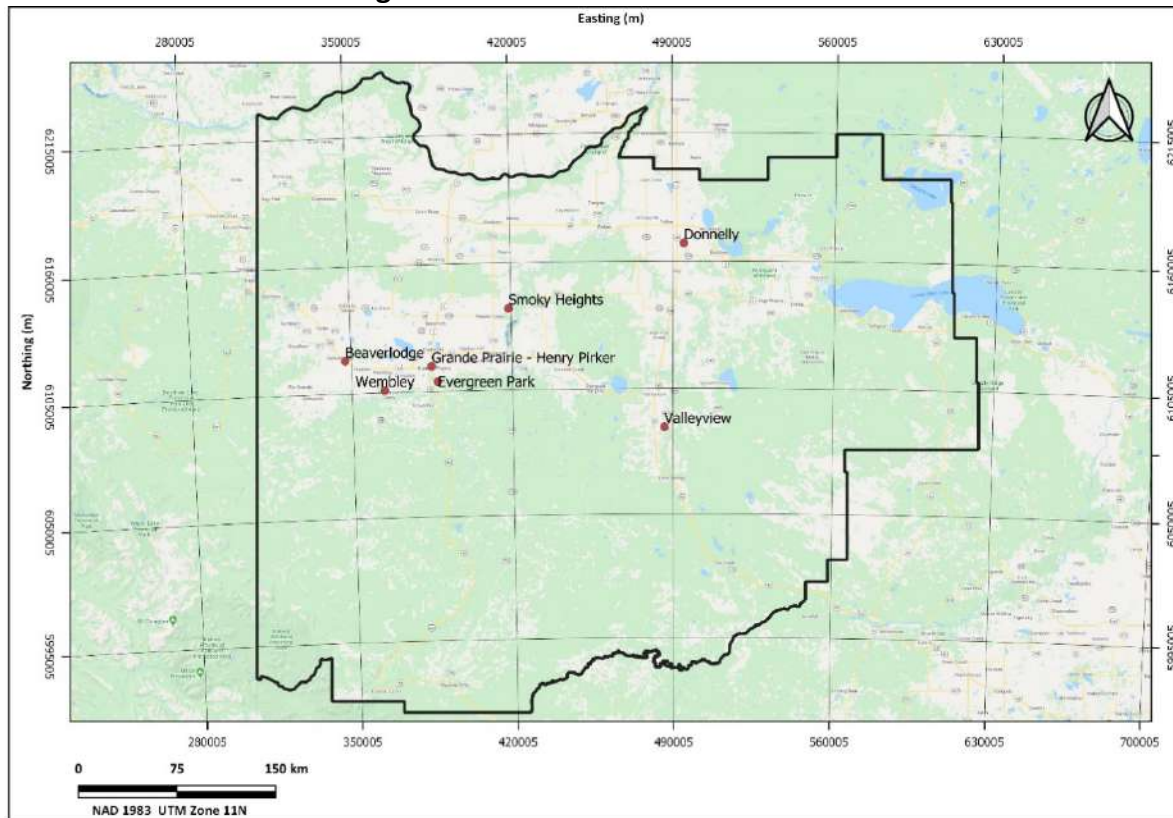


Mandeep Dhaliwal, B.Sc., P.Chem.
Program Manager

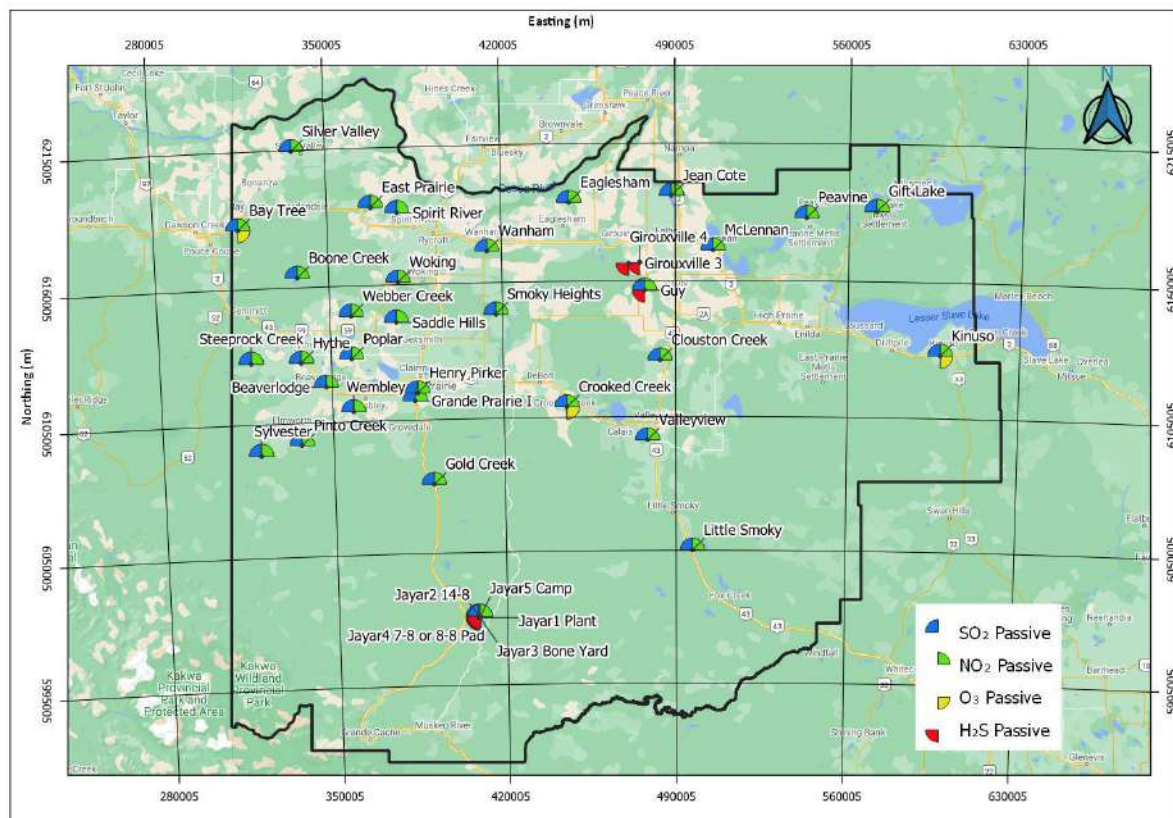
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PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 September 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 - September 2021 Beaverlodge Station Report

Parameter	September			Operational	Max	1-hour		24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid			Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	0.4	0.0	94.9%	99.7%	12.3	-	Sep-17 09:00	2.8	-	Sep-17	-	-	-	Sep 07, 2021	
NO ₂ (ppb)	2.8	0.2	94.9%	99.7%	22.1	159	Sep-28 07:00	9.0	-	Sep-17	0	-	-	Sep 07, 2021	
NO _x (ppb)	3.2	0.3	94.9%	99.7%	23.7	-	Sep-17 09:00	11.8	-	Sep-17	-	-	-	Sep 07, 2021	
O ₃ (ppb)	28.7	3.7	95.0%	99.9%	50.5	76	Sep-25 13:00	43.6	-	Sep-25	0	-	-	Sep 07, 2021	
PM _{2.5} (µg/m³)	1.9	0.0	99.0%	99.4%	26.4	80	Sep-25 21:00	5.6	29	Sep-10	0	-	0	Sep 08, 2021	
SO ₂ (ppb)	0.2	0.0	95.0%	99.7%	2.8	172	Sep-26 03:00	0.8	48	Sep-26	0	-	0	Sep 08, 2021	
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
Temp (°C)	11.3	1.3	100.0%	100.0%	23.9										
RH (%)	64.8	25.2	100.0%	100.0%	99.9										
WS (km/hr)	11.7	0.2	100.0%	100.0%	55.3										
WD (deg)	258	2.2	100.0%	100.0%	358.4	Average Wind Direction		258	WSW						

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	zero/span not run on Sept 22, ran later in morning as manual span check (2 hrs removed)
O ₃	Thermo	49IQ	zero/span did run on Sept 22, but ran later in morning as well during manual span check (1 hr removed)
PM _{2.5}	Sharp	5030	removal and replacement of Sharp was flagged as maintenance on Sept 21 (4 hrs removed)
SO ₂	Thermo	43i-TLE	zero/span not run on Sept 22, ran later in morning as manual span check (2 hrs removed)
Met Equip	MetOne	50.5	No Operational Issues noted

1.2 Evergreen Park Air Monitoring Station

PAZA - September 2021 Evergreen Park Station Report

September 2021 Average, Min, and Max Report															
Parameter	September				1-hour			24-hour			Exceedance				Calibration
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date
PM _{2.5} (µg/m³)	2.4	0.0	97.9%	98.6%	25.4	80	Sep-13 18:00	6.6	29	Sep-13	0	-	0	-	Sep-22-2021
SO ₂ (ppb)	0.2	0.0	95.3%	99.9%	5.7	172	Sep-15 06:00	0.9	48	Sep-15	0	-	0	0	Sep-22-2021
TRS (ppb)	0.2	0.0	95.3%	99.9%	3.9	-	Sep-17 01:00	0.4	-	Sep-13	-	-	-	-	Sep-22-2021
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
Temp (°C)	11.3	-2.1	99.7%	99.7%	25.5										
RH (%)	68.5	24.8	99.7%	99.7%	97.8										
WS (km/hr)	4.0	0.1	100.0%	100.0%	15.8										
WD (deg)	256	2.0	100.0%	100.0%	358.7										
Average Wind Direction						256		WSW							

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Thermo	TEOM AB	Excessive negative spikes of PM2.5 resulted in 5hrs removed (Sept 13,14,16,24)
SO ₂	TECO	43i	Sept 17 span removed for SO ₂ and TRS due to missing data of zero, flagged as invalid (1hr)
TRS	TECO	43C	Sept 17 span removed for SO ₂ and TRS due to missing data of zero, flagged as invalid (1hr)
Met Equip	Gil/RMYoung	MetPak/RMY86004	Excessive negative spikes of ET/RH (Sept 6, 30) resulted in 2hrs removed

1.3 Grande Prairie - Henry Pirkler Air Monitoring Station

PAZA - September 2021 Henry Pirkler Station Report

September															1-hour			8-hour / 24-hour			Exceedance				Calibration
Parameter	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date										
NO (ppb)	1.2	0.0	95.0%	100.0%	21.7	-	Sep-03 08:00	3.7	-	Sep-29	-	-	-	-	Sep 01, 2021										
NO ₂ (ppb)	5.8	0.8	95.0%	100.0%	29.8	159	Sep-29 22:00	12.0	-	Sep-29	0	-	-	-	Sep 01, 2021										
NO _x (ppb)	7.1	1.0	95.0%	100.0%	37.8	-	Sep-29 22:00	15.8	-	Sep-29	-	-	-	-	Sep 01, 2021										
O ₃ (ppb)	22.5	0.6	95.3%	100.0%	45.5	76	Sep-25 14:00	32.9	-	Sep-06	0	-	-	-	Sep 01, 2021										
PM _{2.5} (µg/m³)	2.4	0.0	99.4%	100.0%	58.7	80	Sep-04 00:00	10.8	29	Sep-03	0	-	0	-	Sep 03, 2021										
SO ₂ (ppb)	0.3	0.0	95.3%	100.0%	6.5	172	Sep-13 05:00	1.4	48	Sep-13	0	-	0	0	Sep 01, 2021										
H ₂ S (ppb)	0.1	0.0	95.3%	100.0%	1.5	10	Sep-17 02:00	0.2	3	Sep-02	0	-	0	-	Sep 03, 2021										
CH ₄ (ppm)	2.0	1.9	95.3%	100.0%	3.3	-	Sep-04 22:00	2.2	-	Sep-04	-	-	-	-	Sep 02, 2021										
THC (ppm)	2.0	1.9	95.3%	100.0%	3.3	-	Sep-04 22:00	2.2	-	Sep-04	-	-	-	-	Sep 02, 2021										
NMHC (ppm)	0.0	0.0	95.3%	100.0%	0.2	-	Sep-13 21:00	0.0	-	Sep-13	-	-	-	-	Sep 02, 2021										
CO (ppm)	0.2	0.1	95.3%	100.0%	0.5	13	Sep-03 23:00	0.2	5	Sep-03	0	0	-	-	Sep 02, 2021										
	Average	Minimum	Valid	Operational	Maximum																				
Temp (°C)	12.3	0.6	99.6%	100.0%	25.5	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%																			
RH (%)	62.2	23.4	99.6%	100.0%	90.1																				
SR (W/m²)	112.2	0.0	99.6%	100.0%	577.6																				
WS (km/hr)	7.6	0.1	99.6%	100.0%	31.4																				
WD (deg)	250	3.2	99.6%	100.0%	359.2	Average Wind Direction250WSW																			

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42IQ	No Operational issues noted during the month
O ₃	TECO	49I	No Operational issues noted during the month
PM _{2.5}	Sharp	5030	No Operational issues noted during the month
SO ₂	TEI	43I-TLE	No Operational issues noted during the month
H ₂ S	TEI	450i	No Operational issues noted during the month
THC/CH ₄ /NMHC	TEI	55i	No Operational issues noted during the month
CO	TEI	48I-TLE	No Operational issues noted during the month
Met Equip	MetOne	50.5	No Operational issues noted during the month

1.4 Smoky Heights Air Monitoring Station

PAZA - September 2021 Smoky Heights Station Report

AAR - September 2021 Oremy Heights Station Report															
September				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)	3.3	0.0	99.4%	100.0%	107.9	80	Sep-25 21:00	10.9	29	Sep-25	1	-	0	-	Sep 20, 2021
SO ₂ (ppb)	0.3	0.0	95.3%	100.0%	3.1	172	Sep-15 05:00	0.6	48	Sep-16	0	-	0	0	Sep 20, 2021
TRS (ppb)	0.2	0.0	95.3%	100.0%	1.2	-	Sep-09 23:00	0.3	-	Sep-27	-	-	-	-	Sep 20, 2021
	Average	Minimum	Valid	Operational	Maximum	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction249WNW									
Temp (°C)	11.2	-1.1	100.0%	100.0%	23.7										
WS (km/hr)	13.7	0.1	100.0%	100.0%	54.2										
WD (deg)	249	0.8	100.0%	100.0%	359.1										

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Sharp	5030	No Operational issues noted; one reading above AAAQG on Sept 25, 21:00-22:00
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 - September 2021 Valleyview Station Report

AAR - September 2021 Valleyview Station Report															
September				1-hour				24-hour			Exceedance				Calibration
Parameter	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date
SO ₂ (ppb)	0.1	0.0	95.3%	100.0%	2.0	172	Sep-27 10:00	0.3	48	Sep-27	0	-	0	0	Sep 09, 2021
H ₂ S (ppb)	0.1	0.0	95.3%	100.0%	4.5	10	Sep-01 10:00	0.5	3	Sep-01	0	-	0	-	Sep 09, 2021
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	11.5	0.0	99.7%	100.0%	27.0	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	76.7	30.1	99.7%	100.0%	100.2										
WS (km/hr)	3.8	0.1	99.7%	100.0%	19.2										
WD (deg)	254	1.1	99.7%	100.0%	358.1										
						Average Wind Direction254NW									

Update Summary:

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

1.6 Donnelly Air Monitoring Station

PAZA - September 2021 Donnelly Station Report

A2A - September 2021 Donnelly Station Report															
September					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	95.4%	100.0%	1.3	172	Sep-29 04:00	0.3	48	Sep-07	0	-	0	0	Sep 16, 2021
H ₂ S (ppb)	0.1	0.0	95.1%	100.0%	0.8	10	Sep-10 09:00	0.3	3	Sep-27	0	-	0	-	Sep 16, 2021
Average		Minimum	Valid	Operational	Maximum										
Temp (°C)	12.2	1.6	100.0%	100.0%	24.4	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction248WSW									
WS (km/hr)	13.4	0.3	100.0%	100.0%	45.9										
WD (deg)	248	23.0	100.0%	100.0%	351.7										

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 - September 2021 Wembley Station Report

September					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)	0.4	0.0	92.9%	97.9%	5.9	-	Sep-17 13:00	1.6	-	Sep-17	-	-	-	-	Sep 29, 2021
NO ₂ (ppb)	2.1	0.0	92.9%	97.9%	10.5	159	Sep-08 05:00	6.3	-	Sep-17	0	-	-	-	Sep 29, 2021
NO _x (ppb)	2.5	0.1	92.9%	97.9%	15.2	-	Sep-08 05:00	8.0	-	Sep-17	-	-	-	-	Sep 29, 2021
O ₃ (ppb)	24.7	2.2	93.5%	98.1%	43.7	76	Sep-25 13:00	36.1	-	Sep-06	0	-	-	-	Sep 30, 2021
PM _{2.5} (µg/m³)	1.2	0.0	97.1%	97.9%	9.5	80	Sep-21 19:00	3.3	29	Sep-04	0	-	0	-	Sep 29, 2021
SO ₂ (ppb)	0.2	0.0	93.1%	98.1%	2.3	172	Sep-18 15:00	0.5	48	Sep-17	0	-	0	0	Sep 29, 2021
TRS (ppb)	0.3	0.0	90.4%	95.0%	2.5	-	Sep-26 20:00	1.0	-	Sep-26	-	-	-	-	Sep 29, 2021
CH ₄ (ppm)	2.0	1.9	90.7%	95.3%	2.3	-	Sep-17 12:00	2.1	-	Sep-17	-	-	-	-	Sep 29, 2021
THC (ppm)	2.0	1.9	90.7%	95.3%	2.3	-	Sep-17 12:00	2.1	-	Sep-17	-	-	-	-	Sep 29, 2021
NMHC (ppm)	0.0	0.0	90.7%	95.3%	0.0	-	Sep-29 12:00	0.0	-	Sep-01	-	-	-	-	Sep 29, 2021
Average		Minimum	Valid	Operational	Maximum										
Temp (°C)	11.3	-2.0	97.8%	97.8%	24.8	Note: Valid hours must be greater than 75% Operational hours must be greater than 90% Average Wind Direction263W									
WS (km/hr)	7.2	0.2	97.8%	97.8%	27.2										
WD (deg)	263	0.7	97.8%	97.8%	358.8										

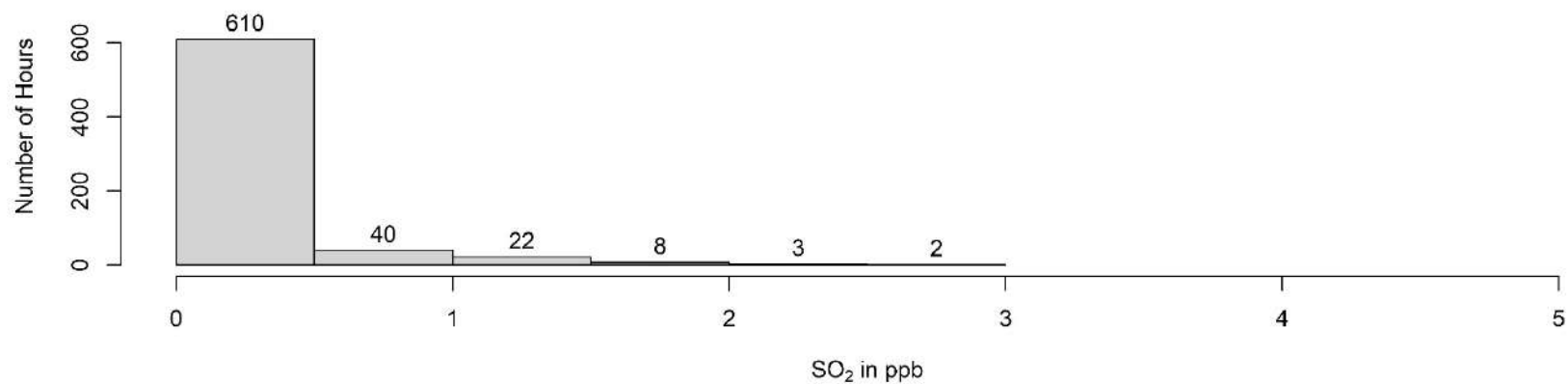
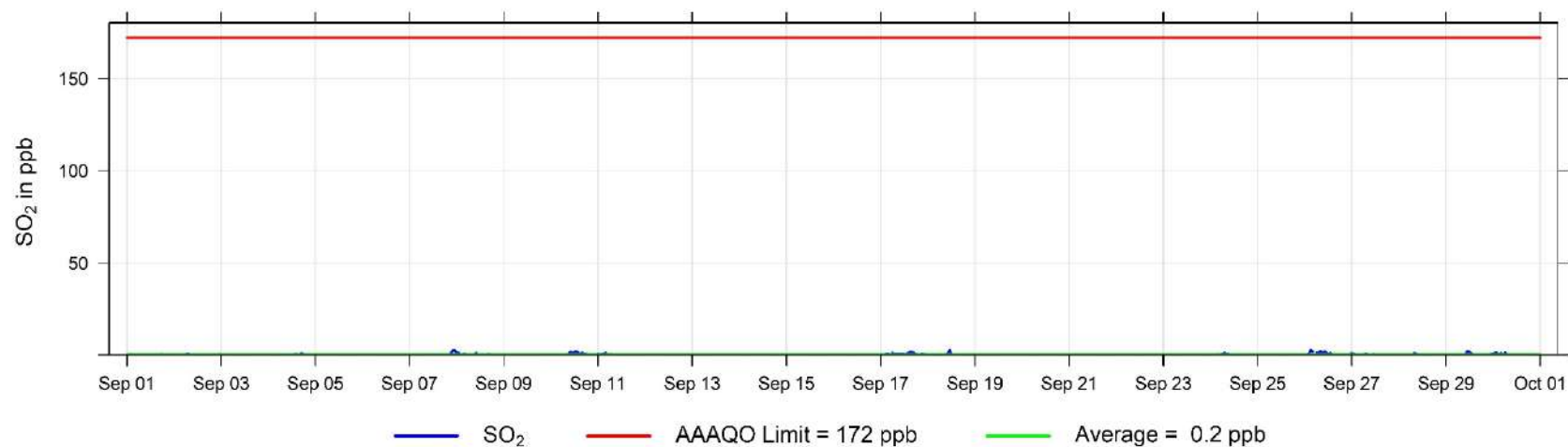
Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42I	Power failure Sept 21 (2hrs); Equipment removal Sept 30 (13hrs not in service)
O ₃	TEI	49I	Power failure Sept 21 (1hr); Equipment removal Sept 30 (13hrs not in service)
PM _{2.5}	Thermo	TEOM AB	Power failure Sept 21 (2hr); Equipment removal Sept 30 (13hrs not in service)
SO ₂	TEI	43I	Power failure Sept 21 (1hr); Equipment removal Sept 30 (13hrs not in service)
TRS	TEI	43I	Power failure Sept 21 (1hr); Equipment removal Sept 29 (35hrs not in service)
THC/CH ₄ /NMHC	TEI	55I-A3PHAA	Power failure Sept 21 (2hrs); Equipment removal Sept 29 (32hrs not in service)
Met Equip	MetOne	50.5	Power failure Sept 21 (1hr); Equipment removal Sept 30 (13hrs not in service)

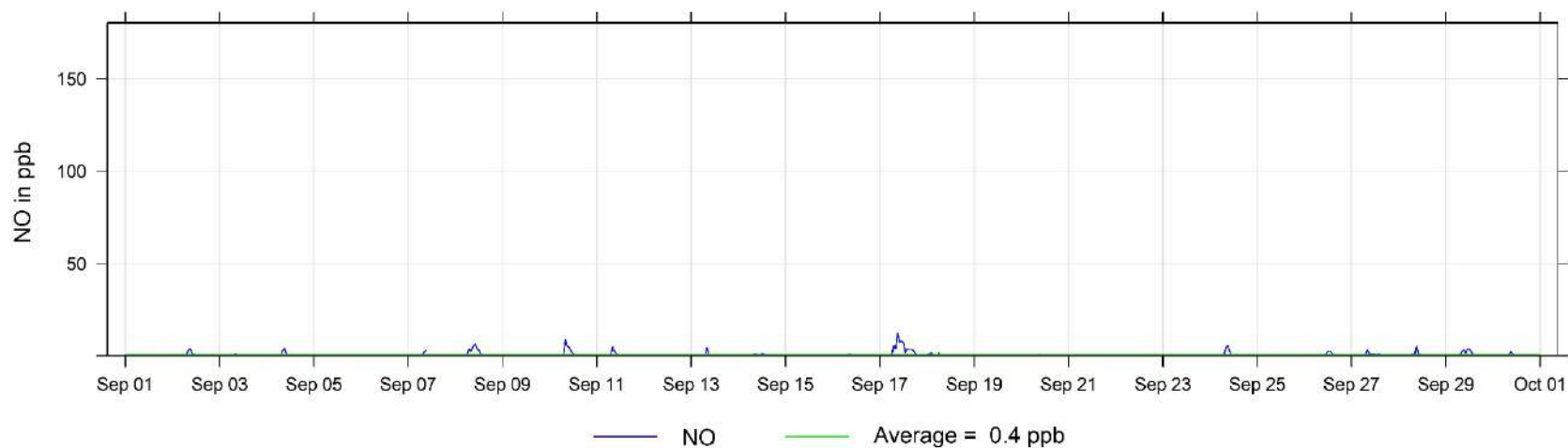
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

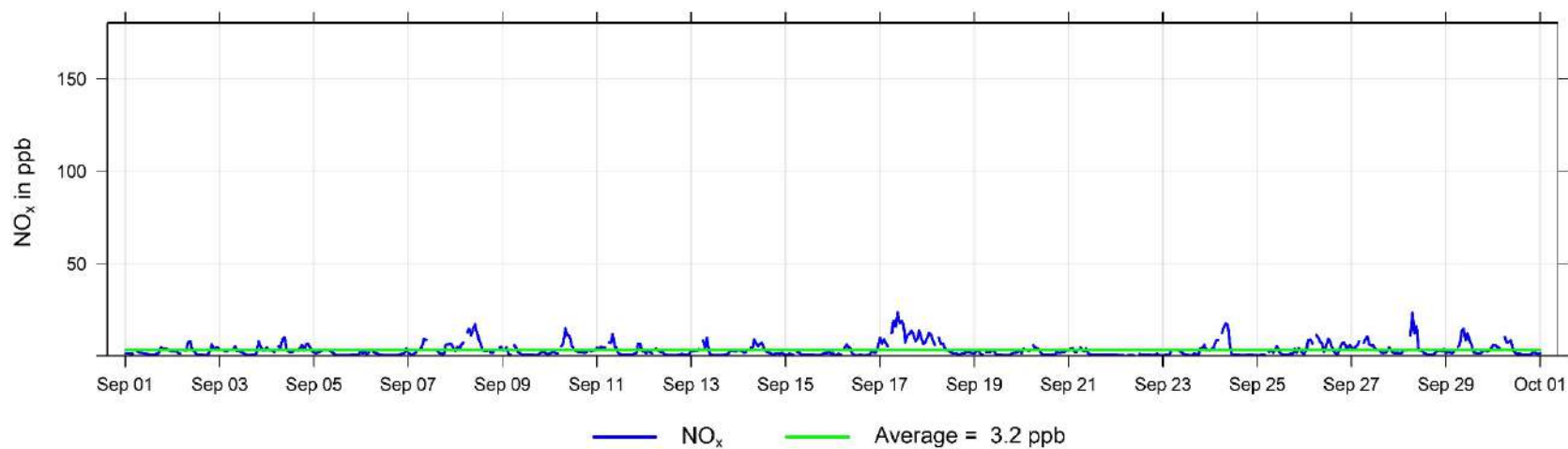
September Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



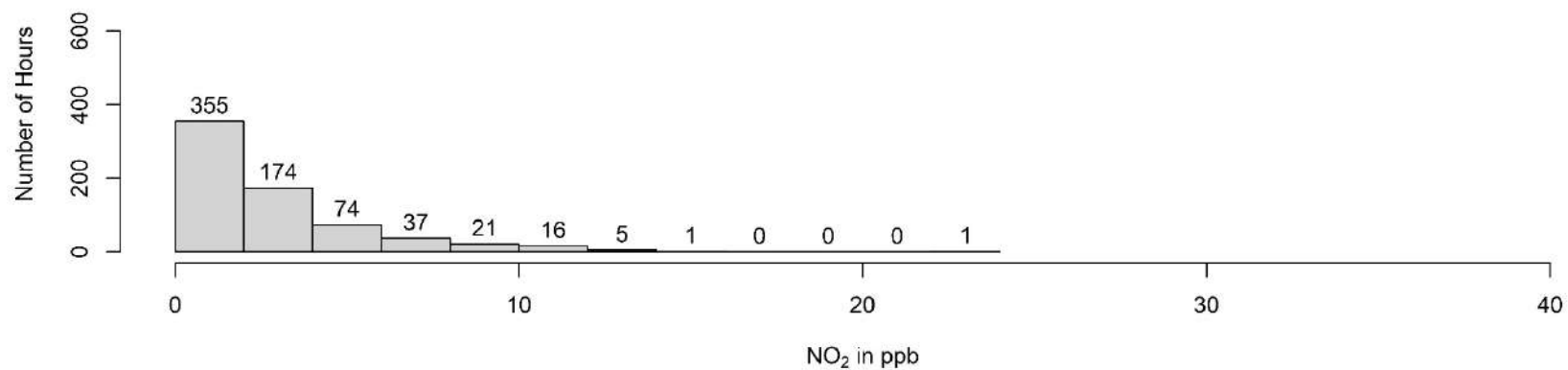
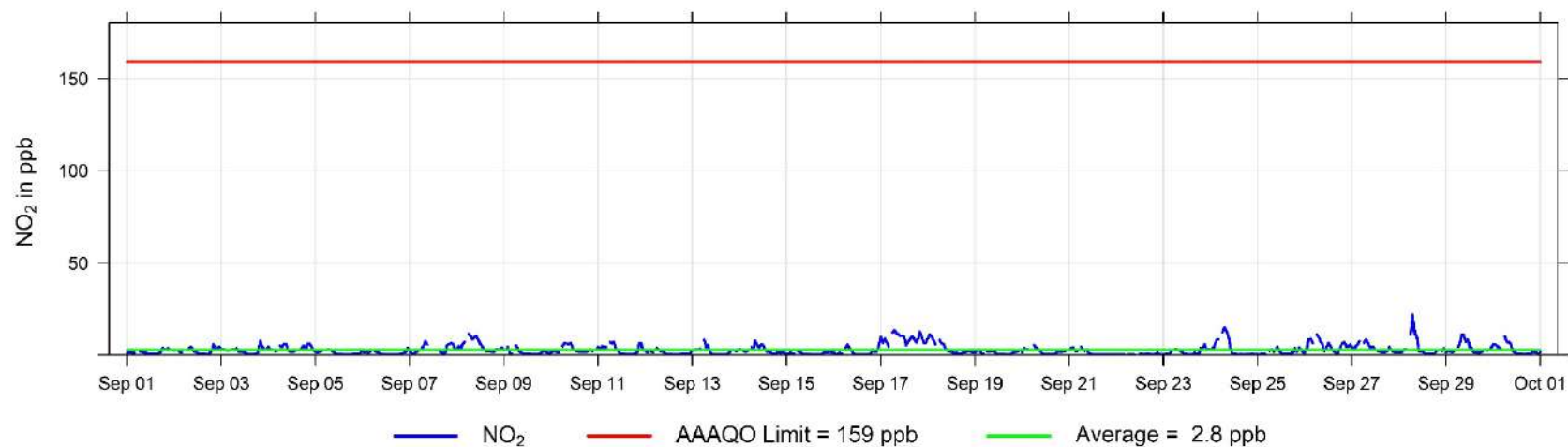
September Hourly Concentration Readings of NO (in ppb) at Beaverlodge



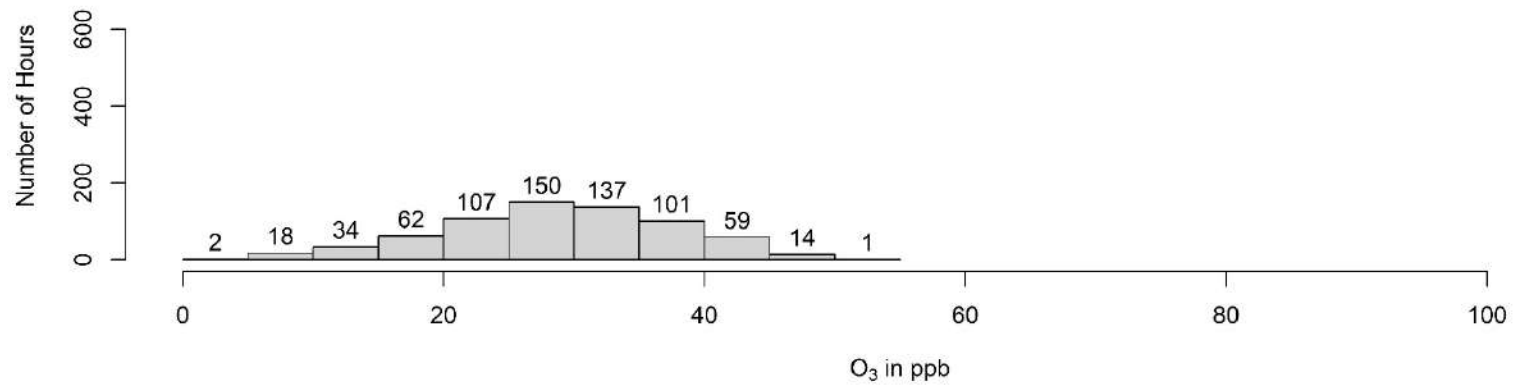
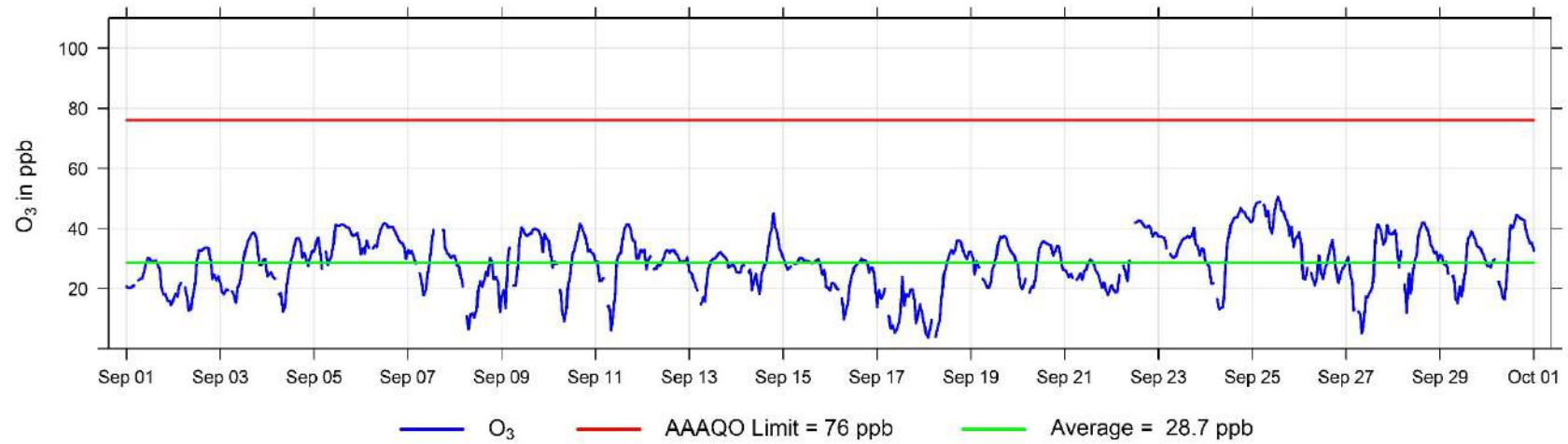
September Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



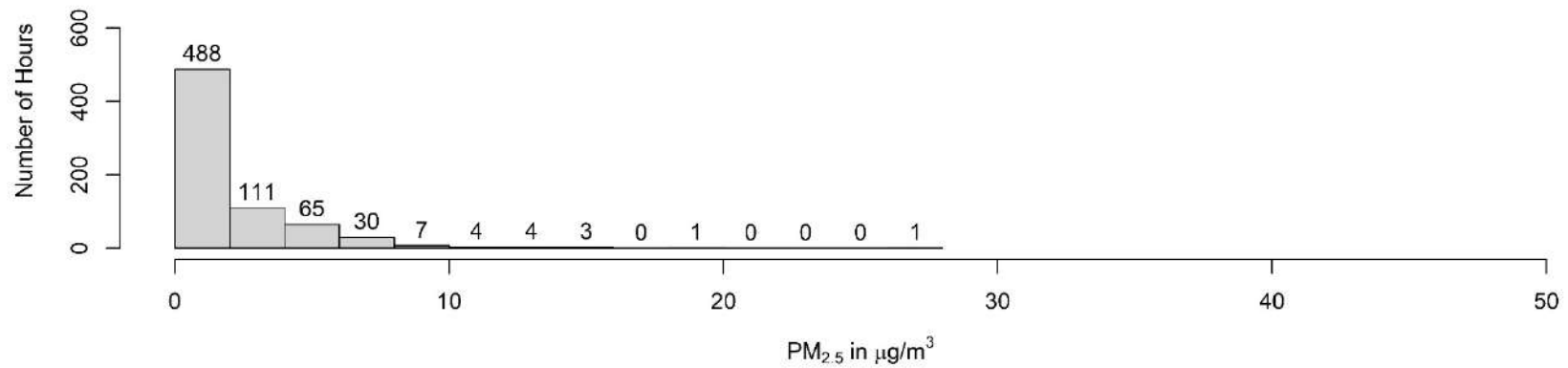
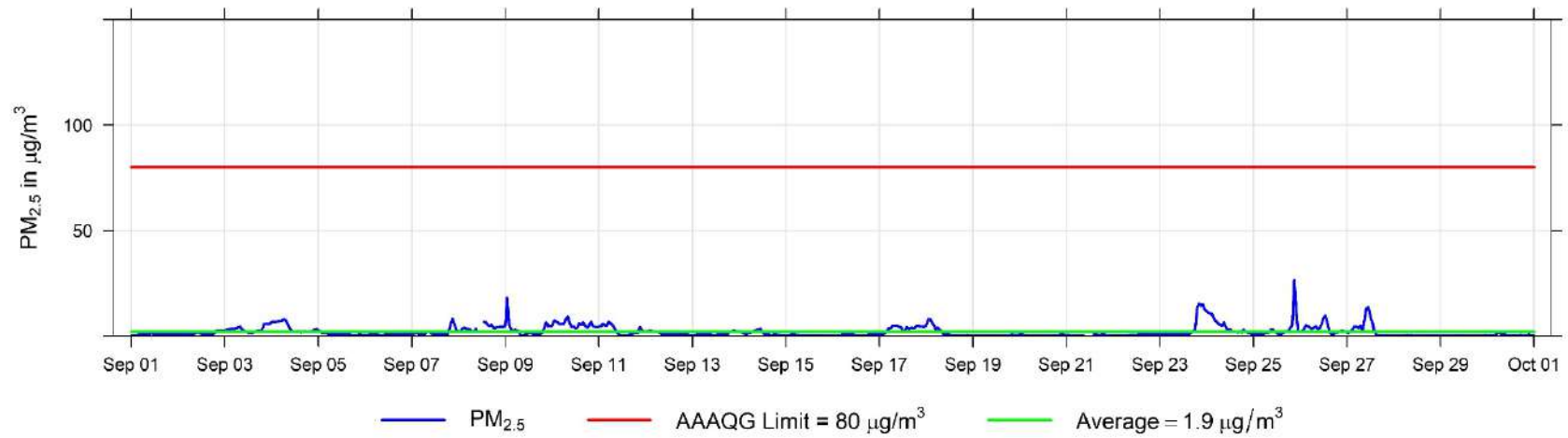
September Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge



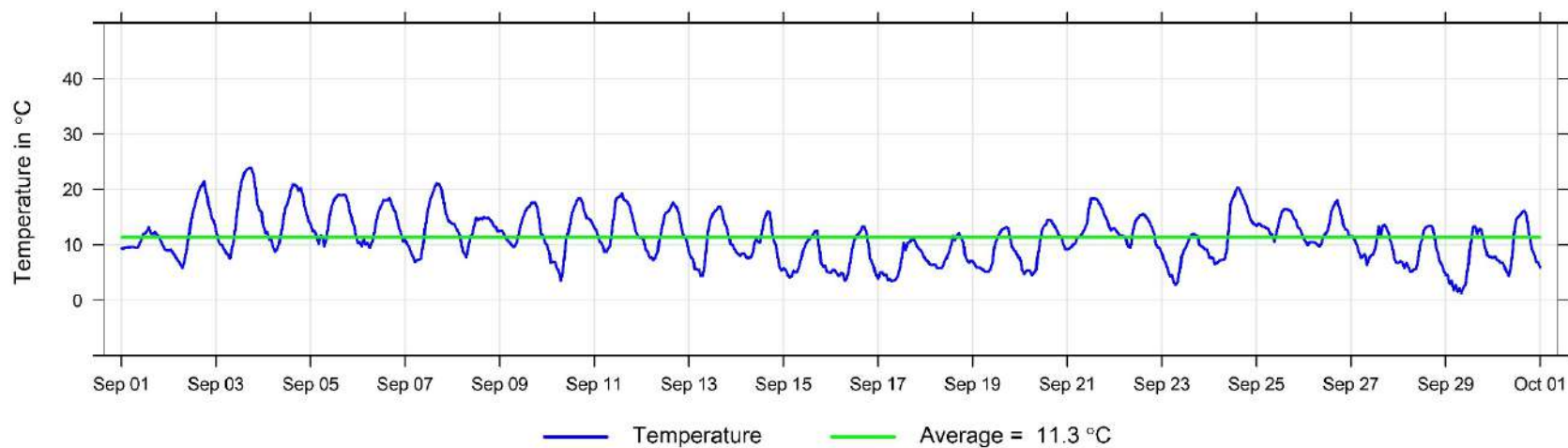
September Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



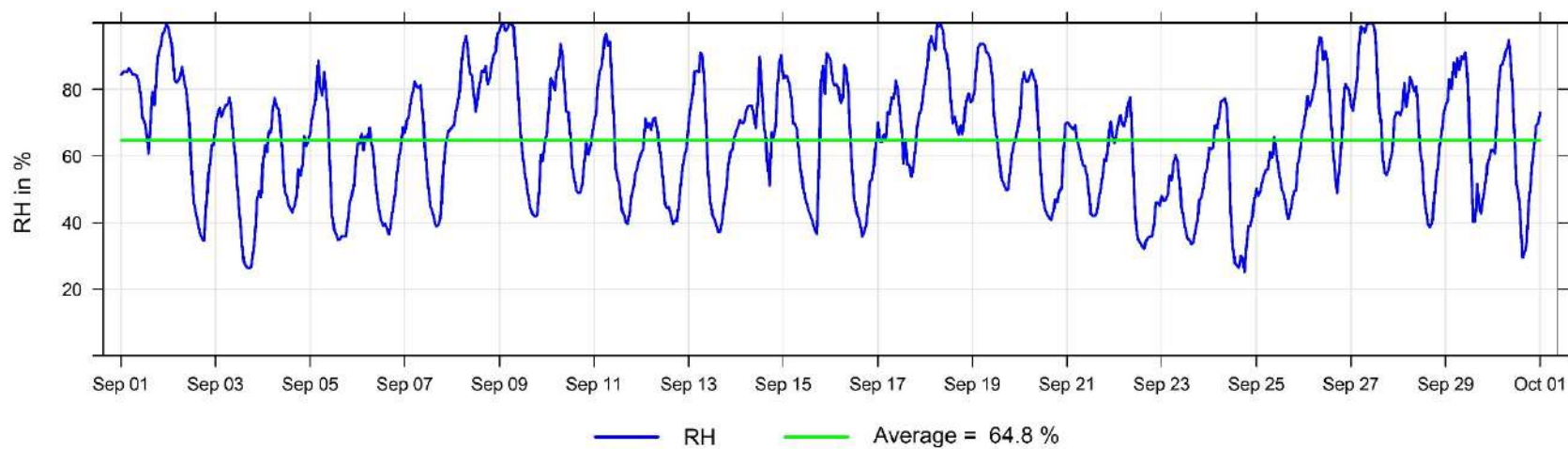
September Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



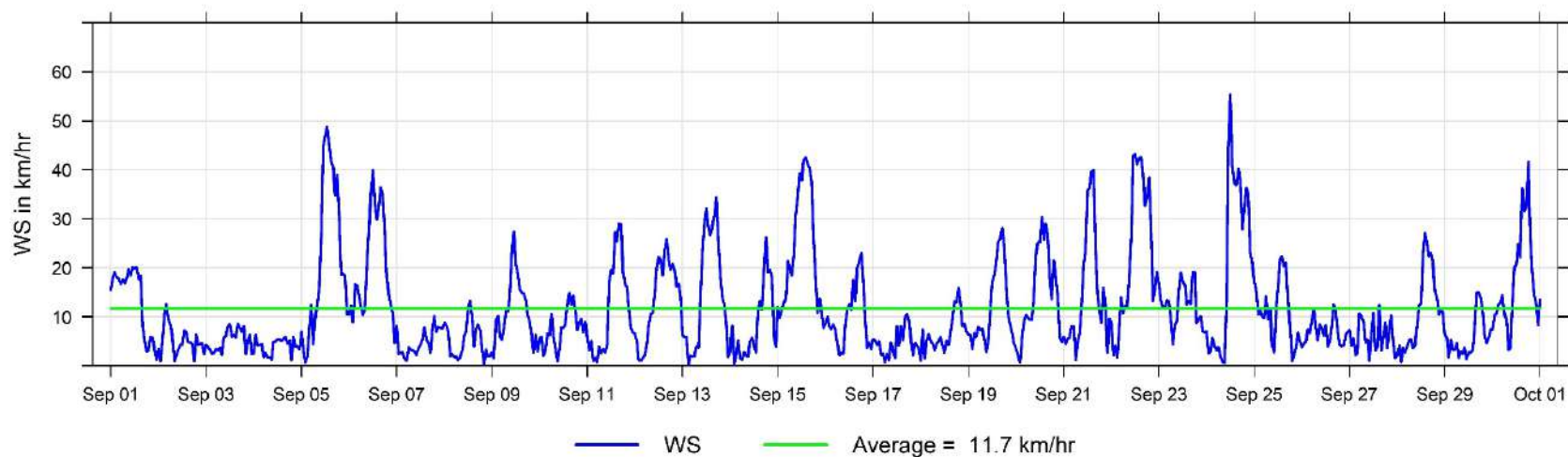
September Hourly Temperature Readings (in °C) at Beaverlodge



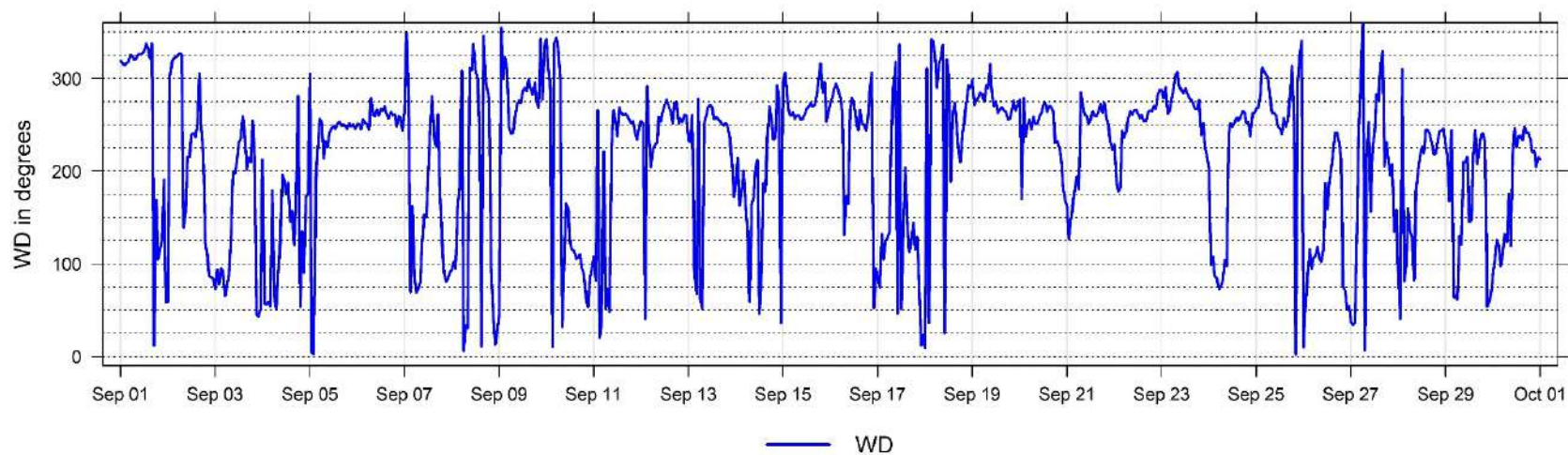
September Hourly Readings of Relative Humidity (in %) at Beaverlodge



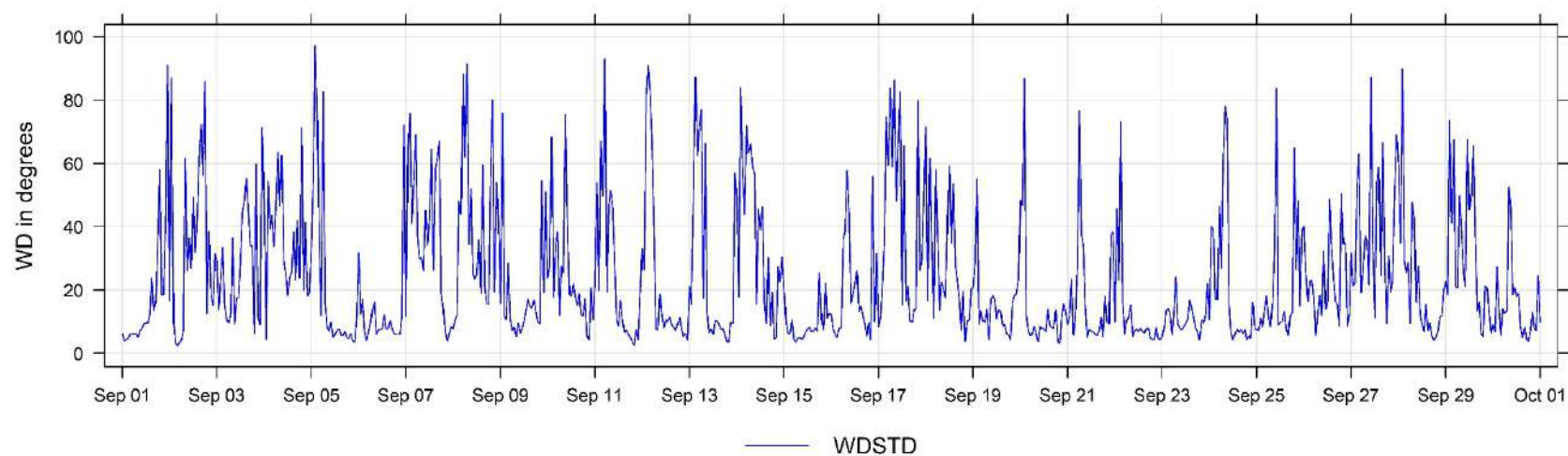
September Hourly Readings of Wind Speed (in km/hr) at Beaverlodge

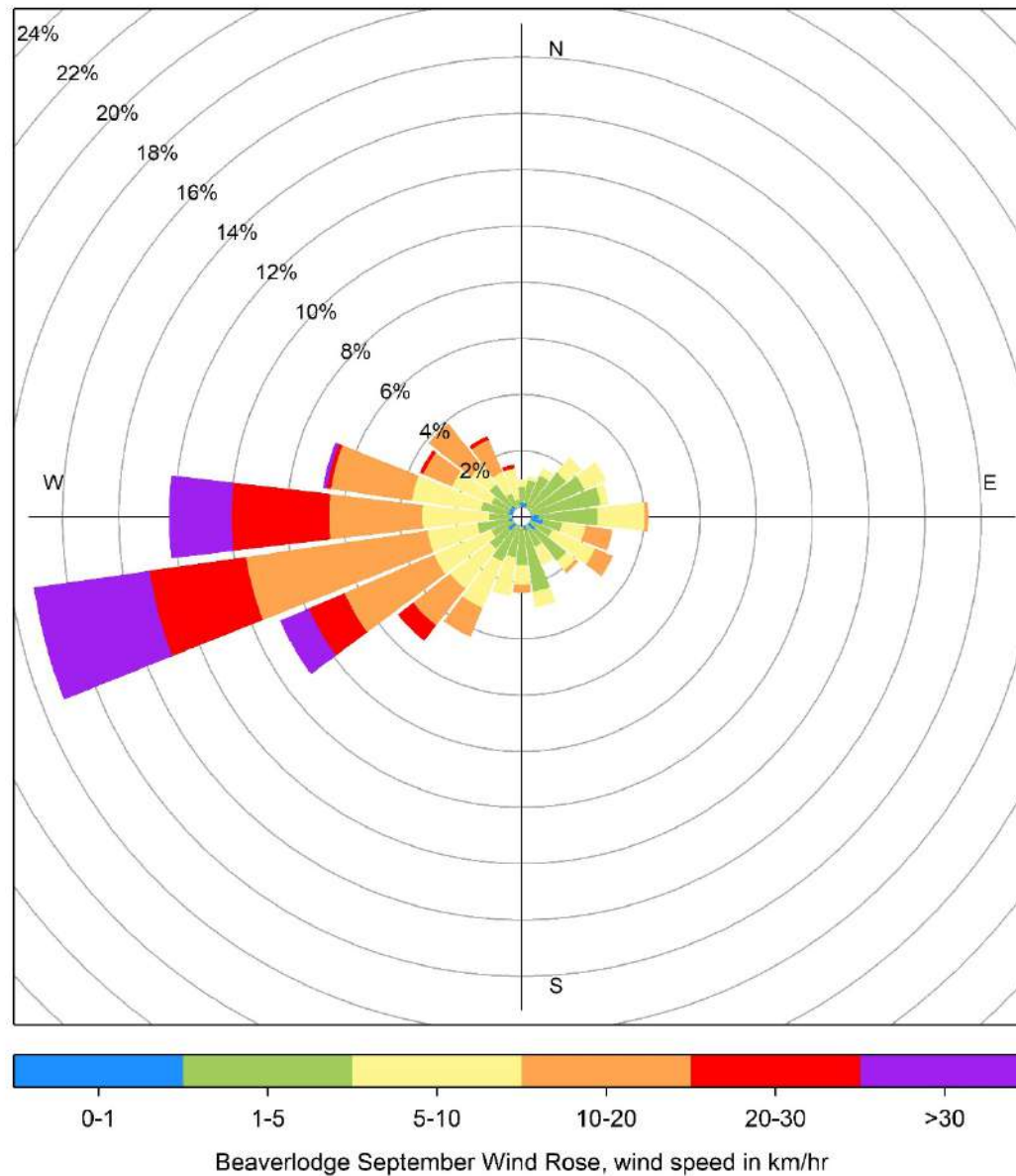


September Hourly Readings of Wind Direction (in degrees) at Beaverlodge



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

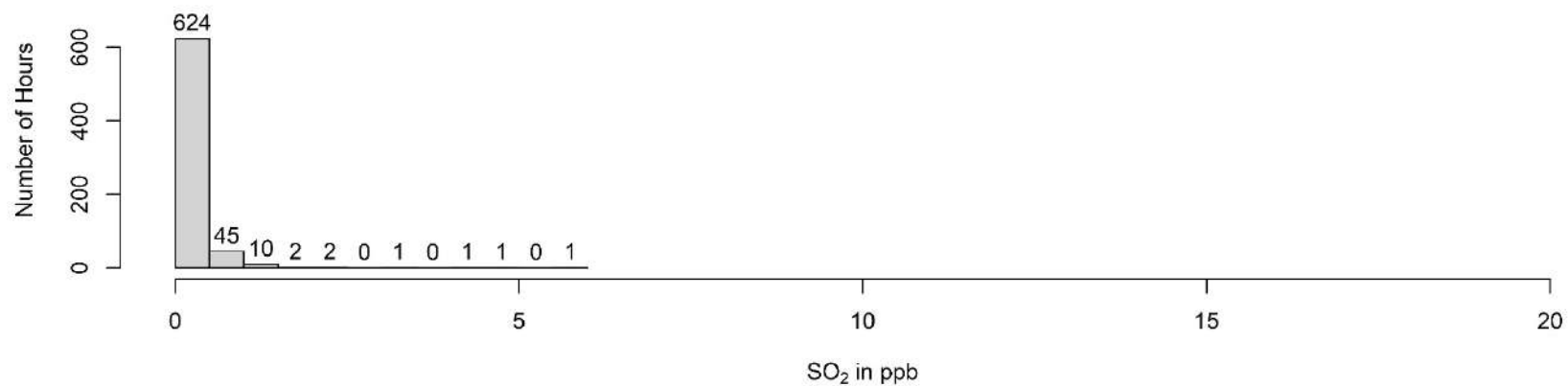
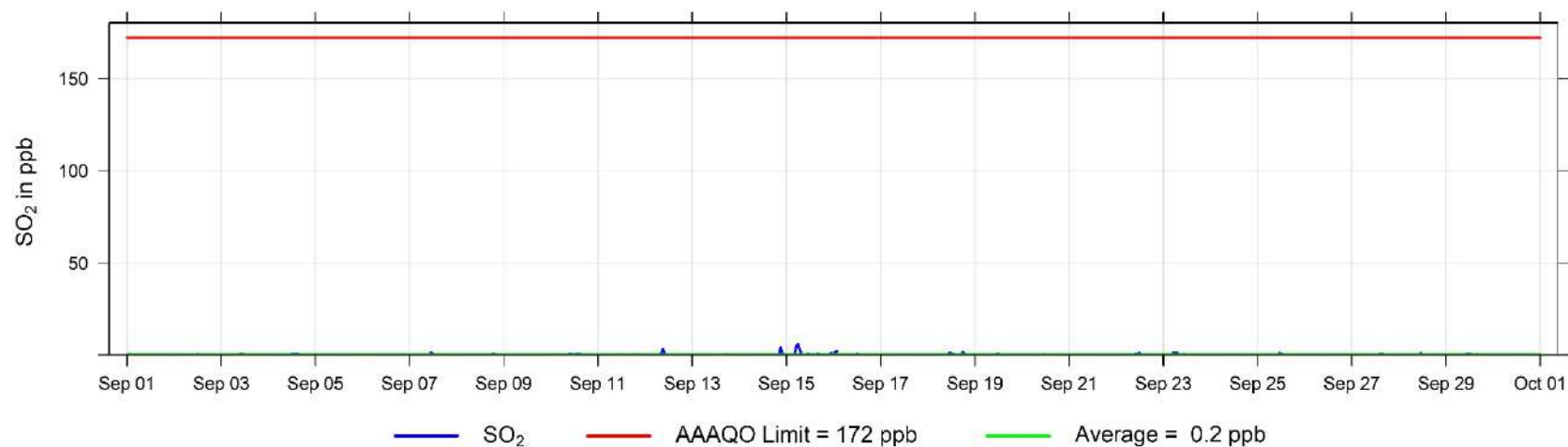




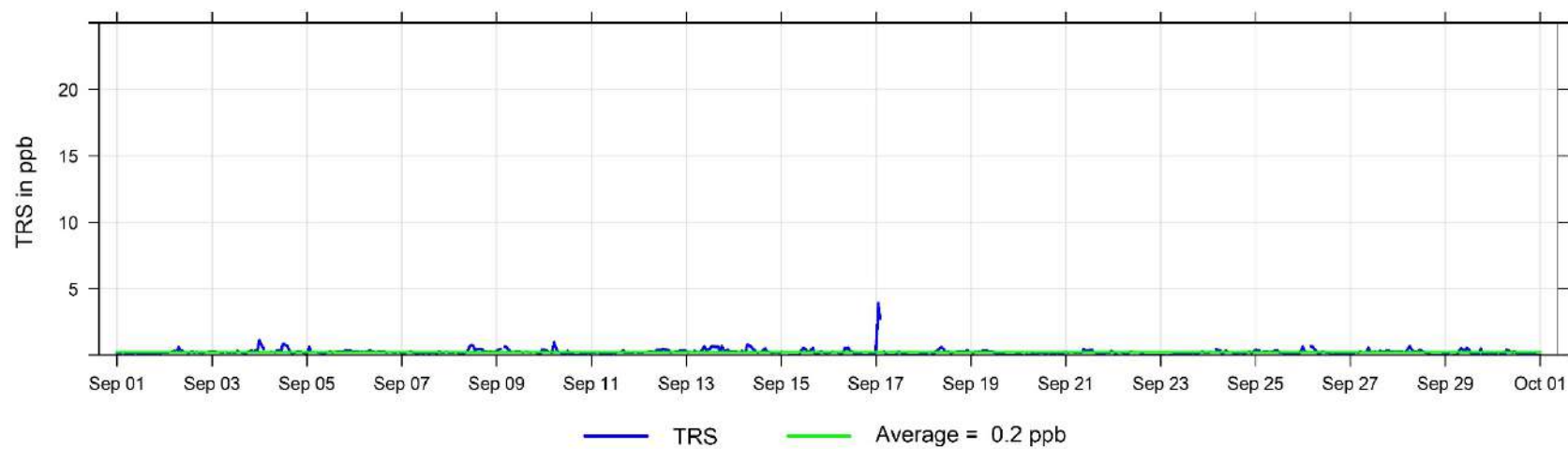
3 Evergreen Park Charts

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

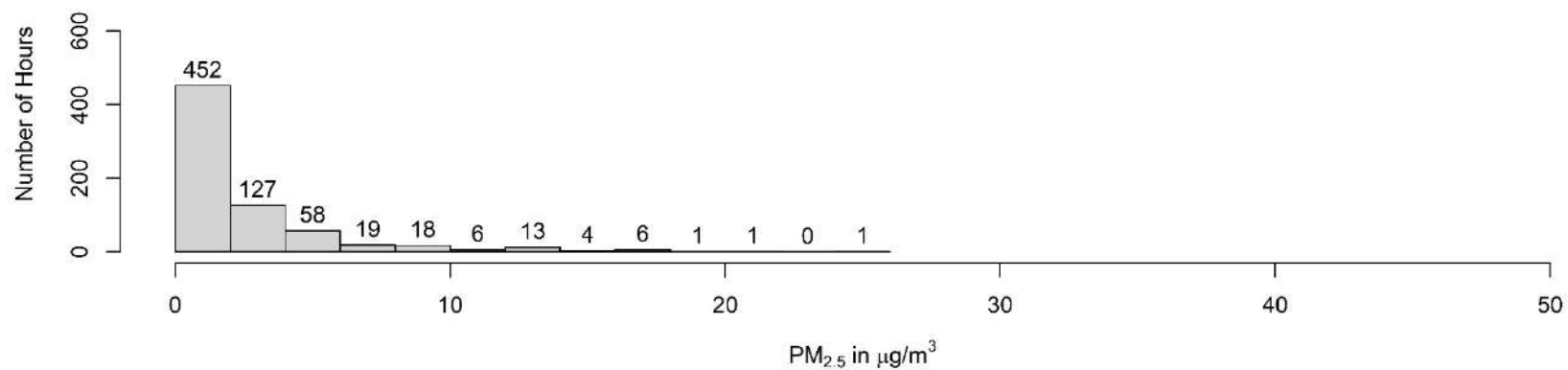
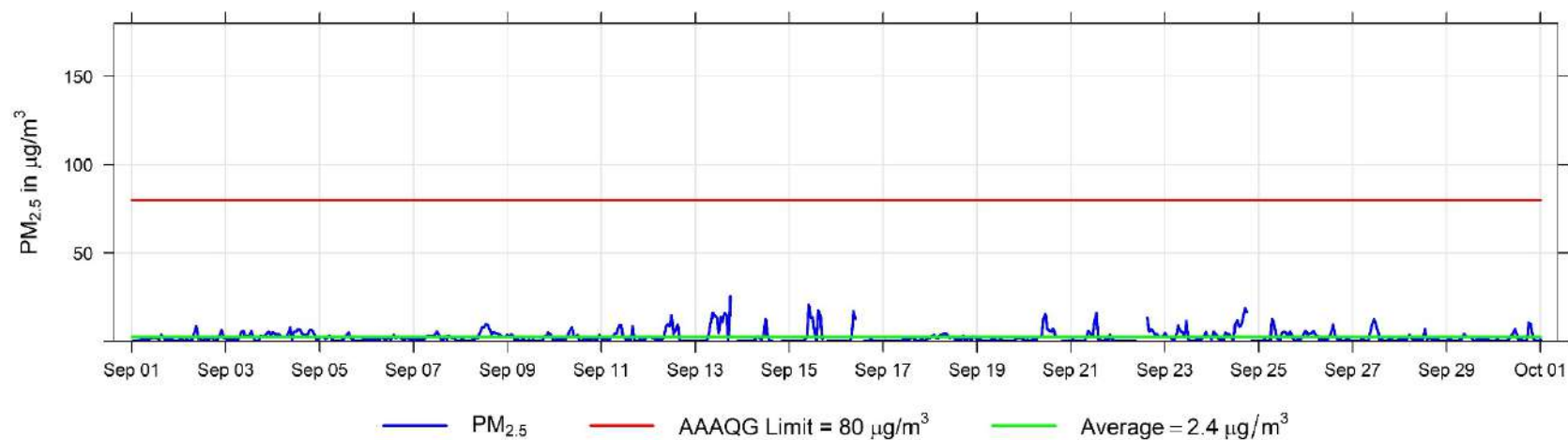
September Hourly Concentration Readings of SO₂ (in ppb) at Evergreen Park



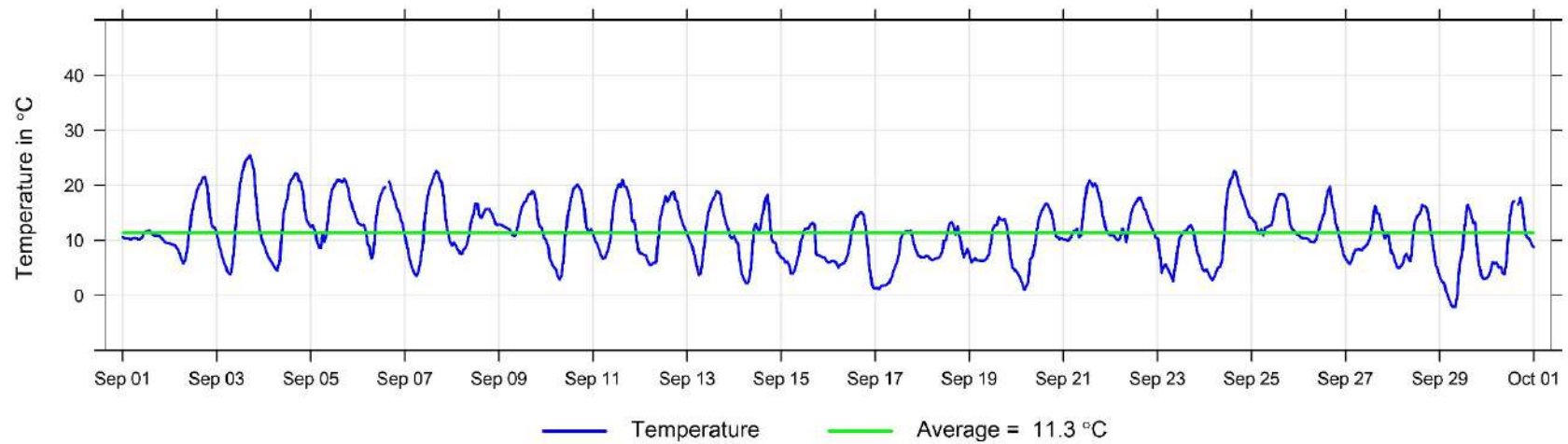
September Hourly Concentration Readings of TRS (in ppb) at Evergreen Park



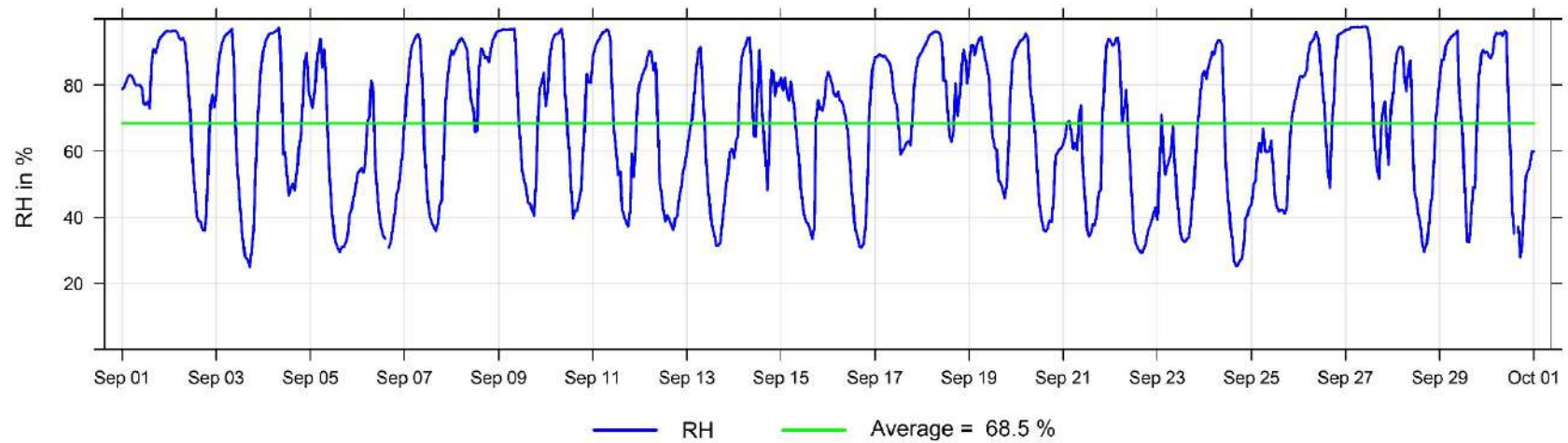
September Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Evergreen Park



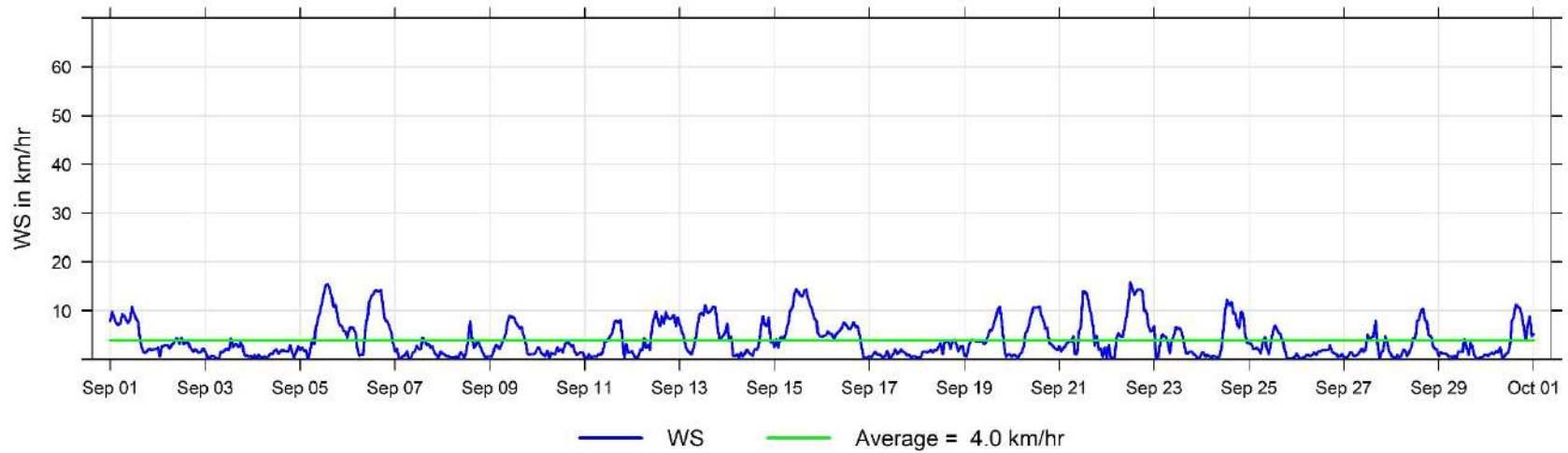
September Hourly Temperature Readings (in °C) at Evergreen Park



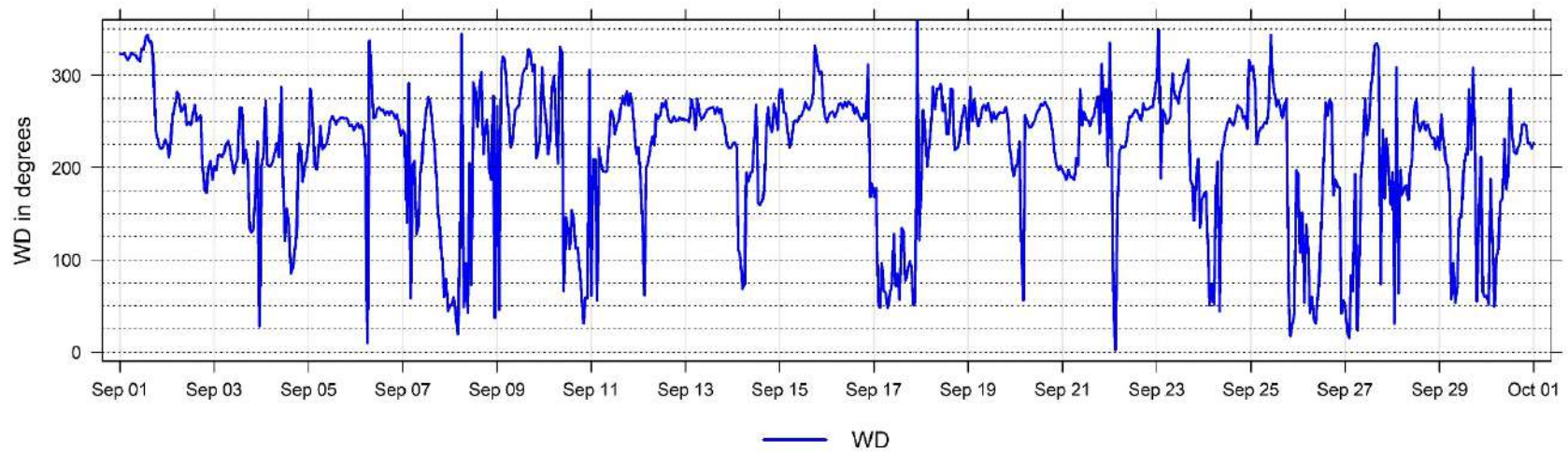
September Hourly Readings of Relative Humidity (in %) at Evergreen Park



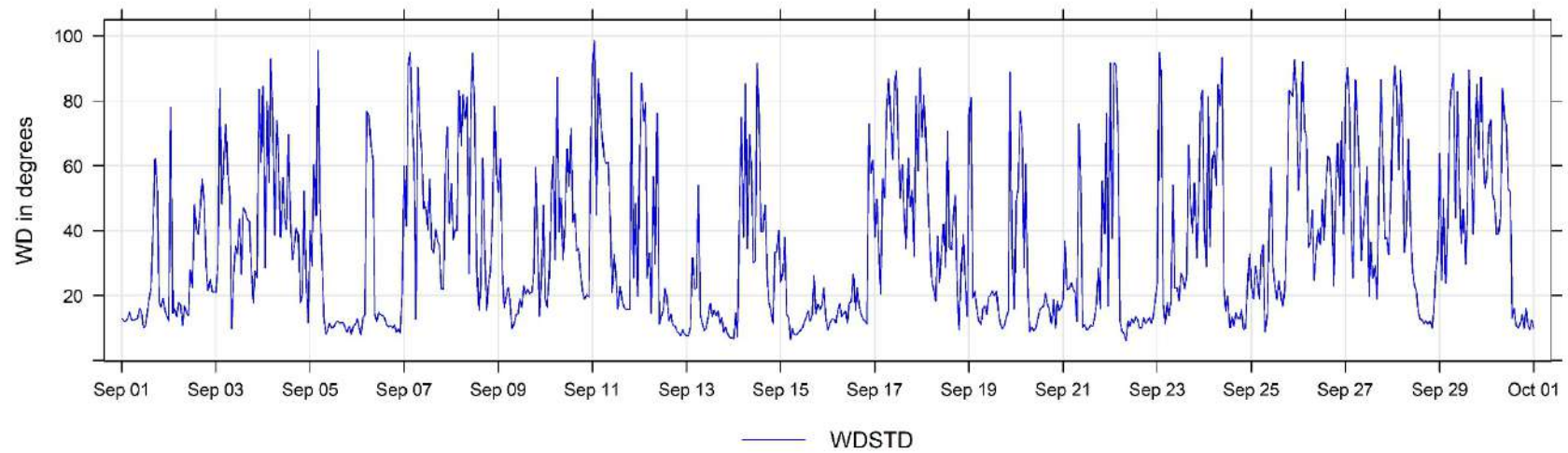
September Hourly Readings of Wind Speed (in km/hr) at Evergreen Park



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



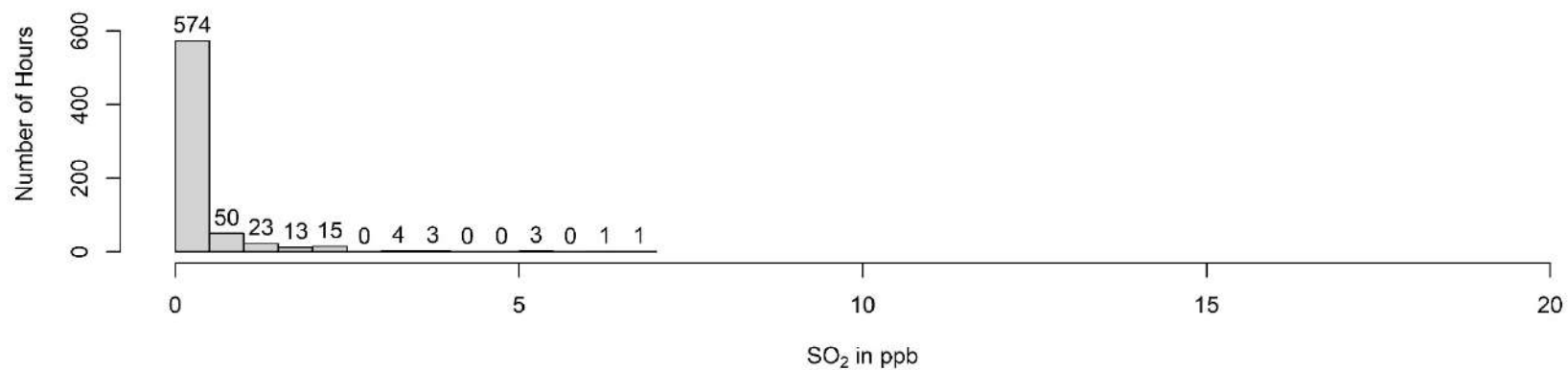
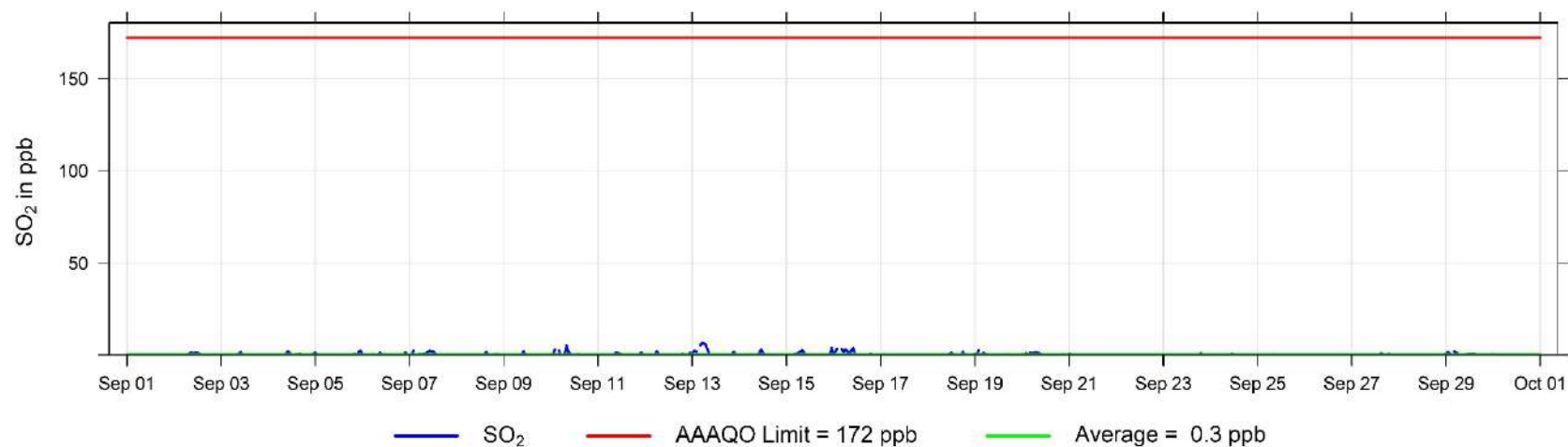
September Hourly Readings of Wind Direction Standard Deviation (in degrees) at Evergreen Park



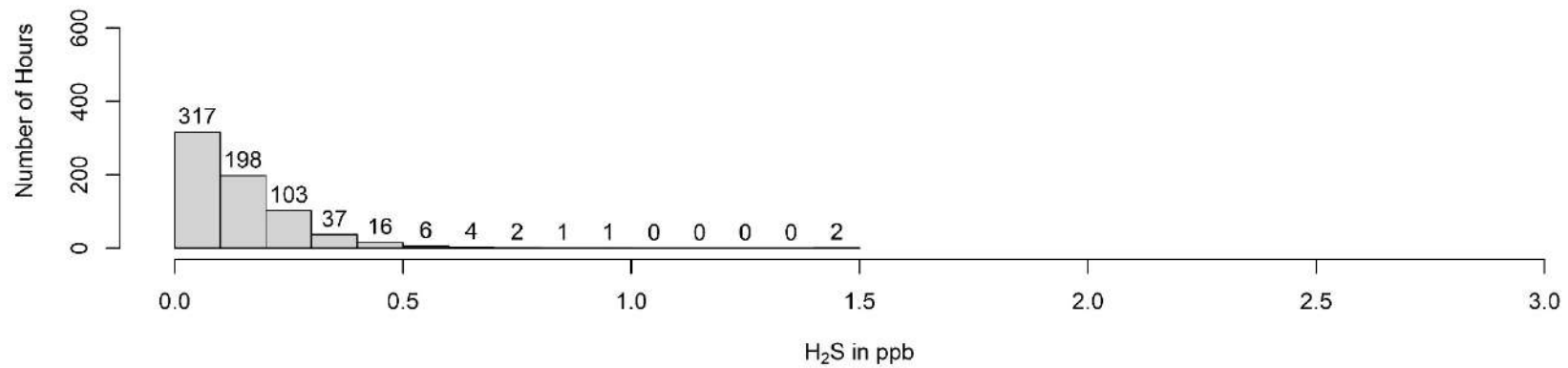
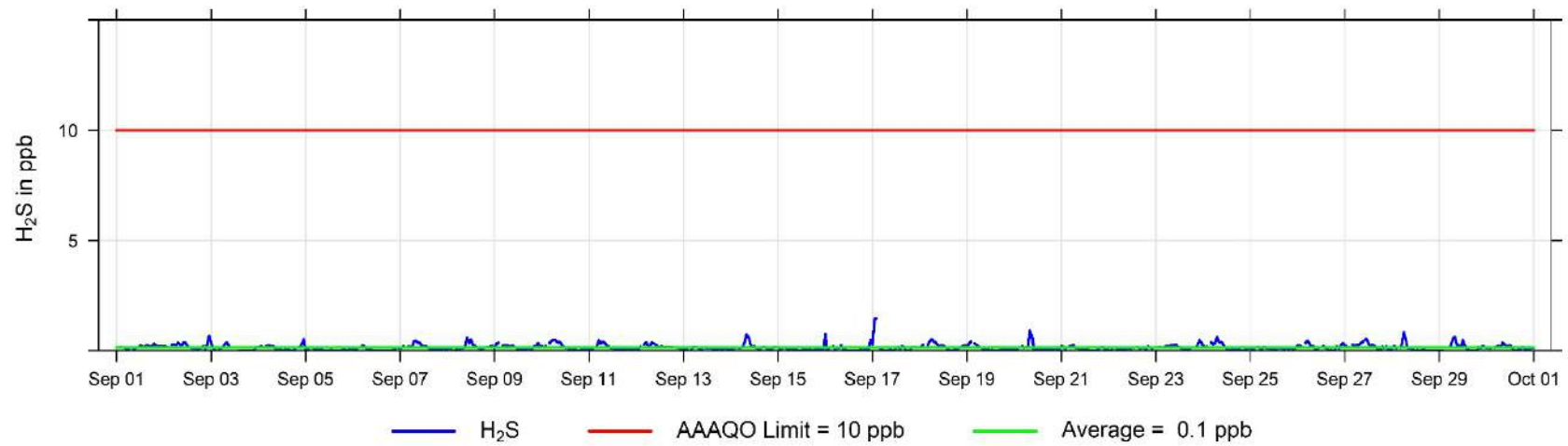
4 Grande Prairie - Henry Pirker Charts

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

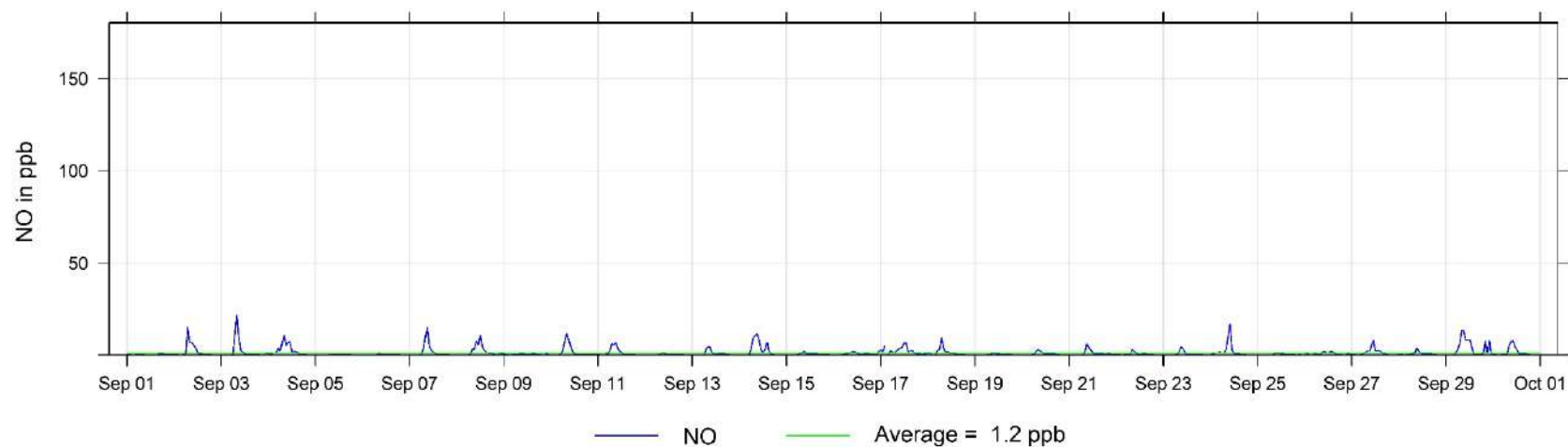
September Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



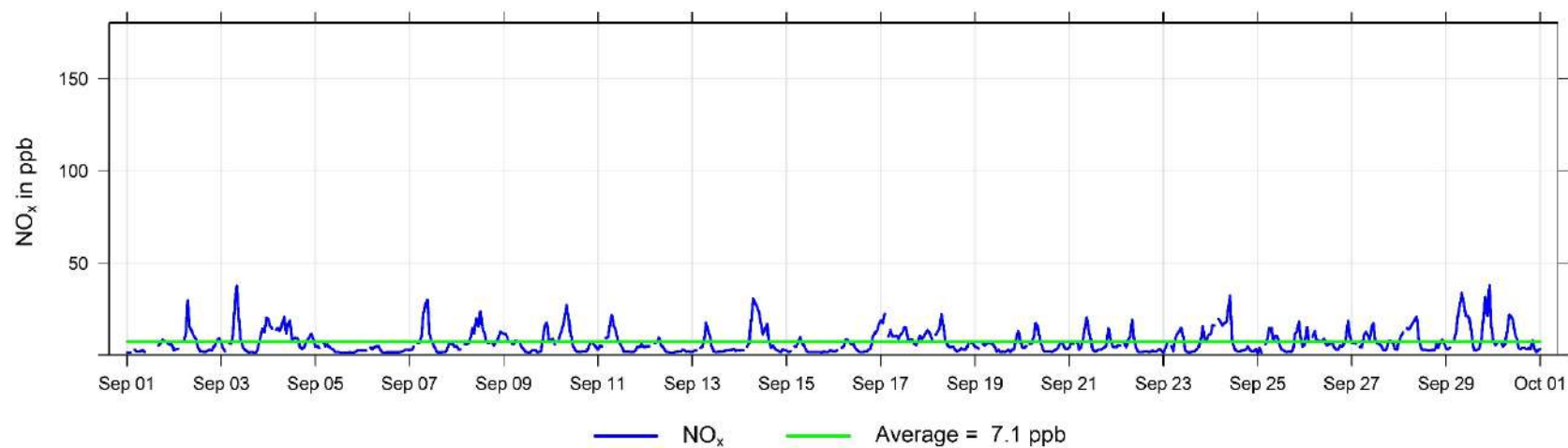
September Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



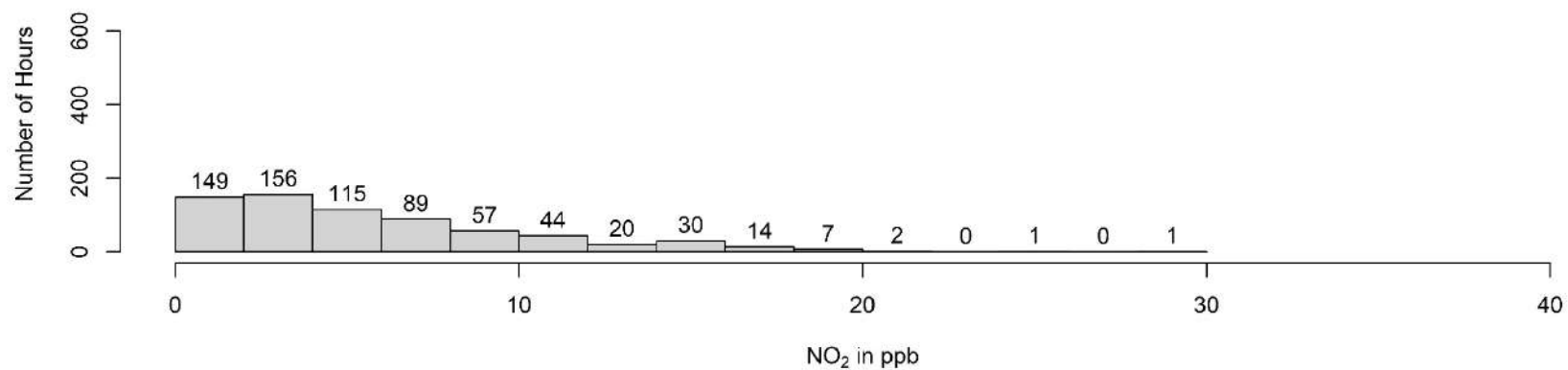
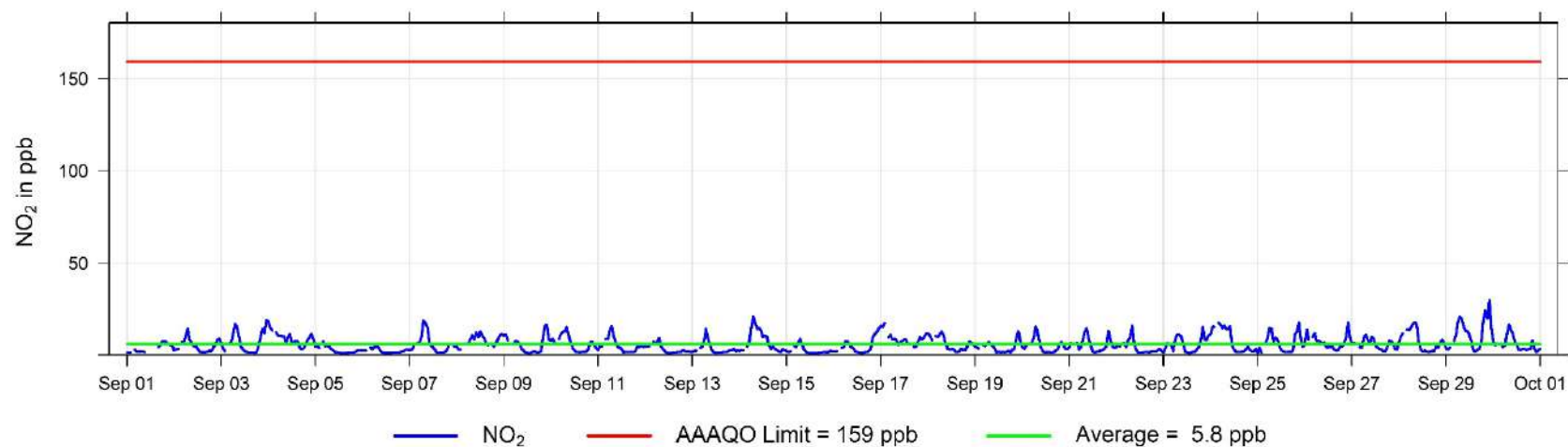
September Hourly Concentration Readings of NO (in ppb) at Henry Pirker



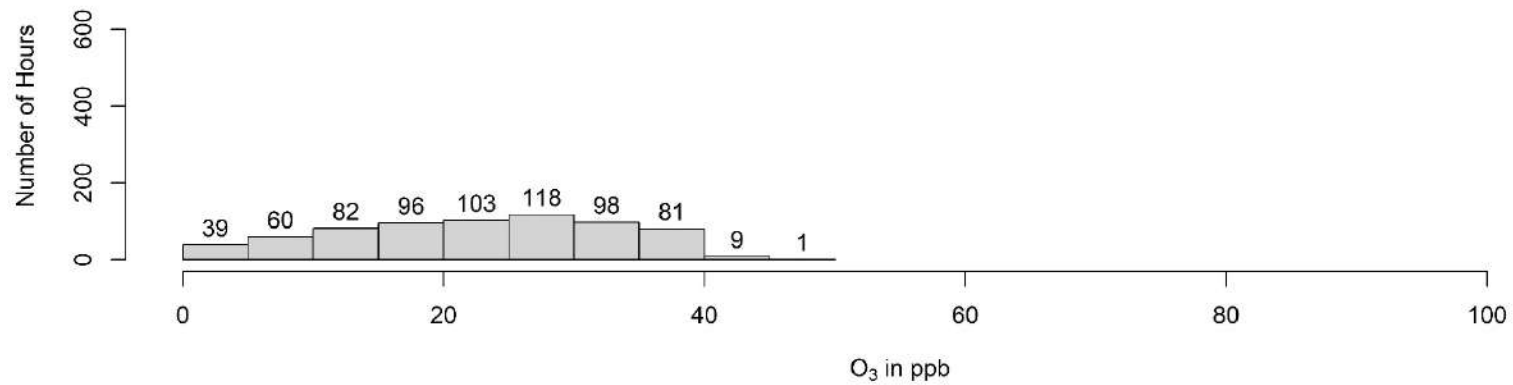
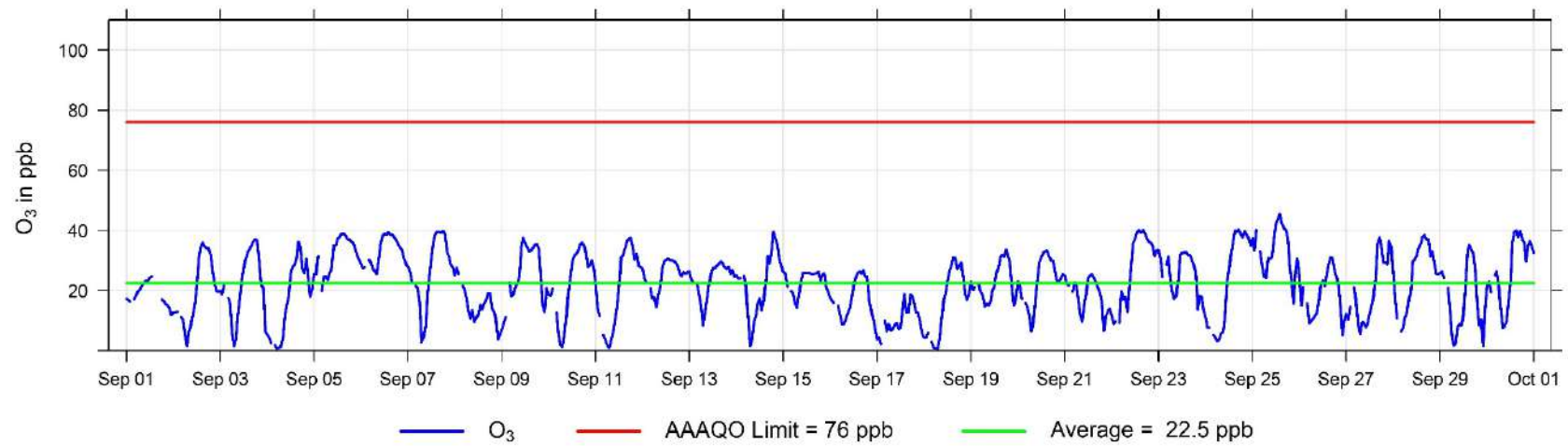
September Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



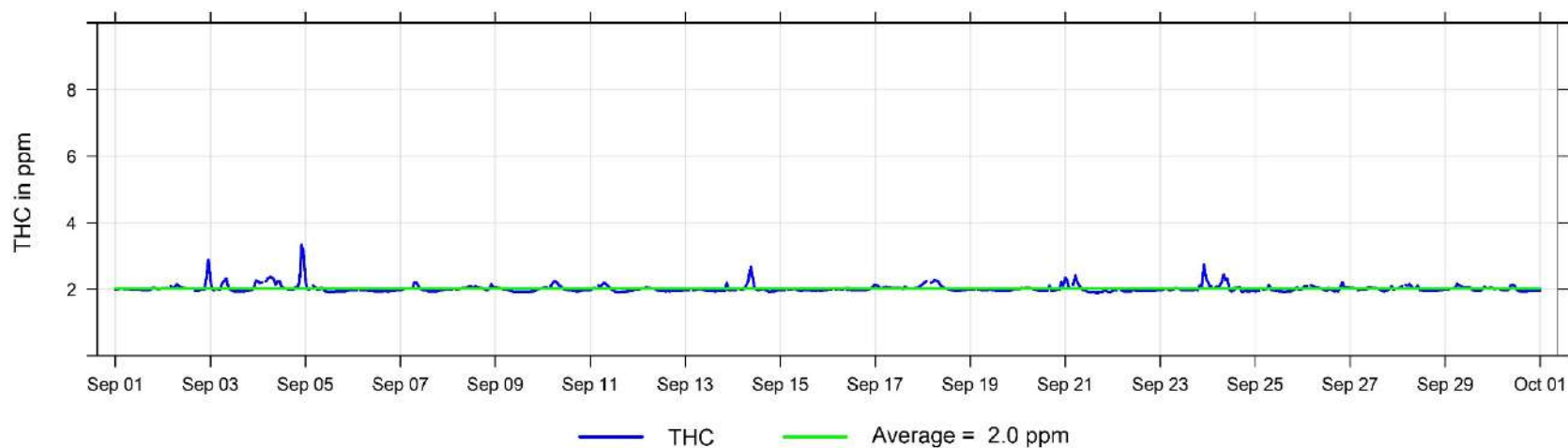
September Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker



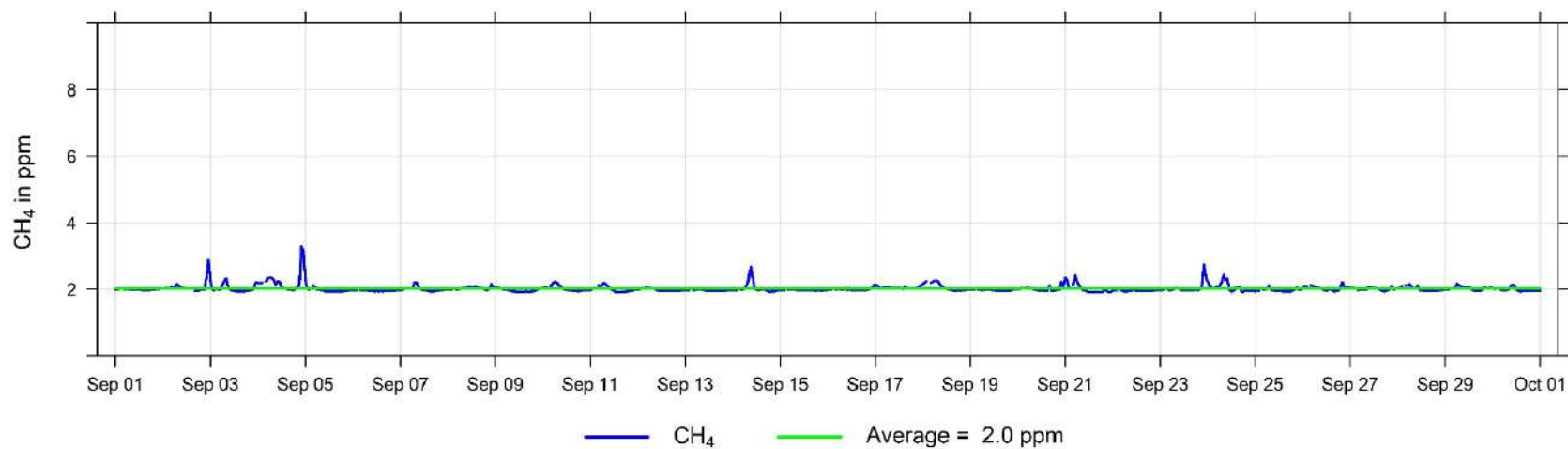
September Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



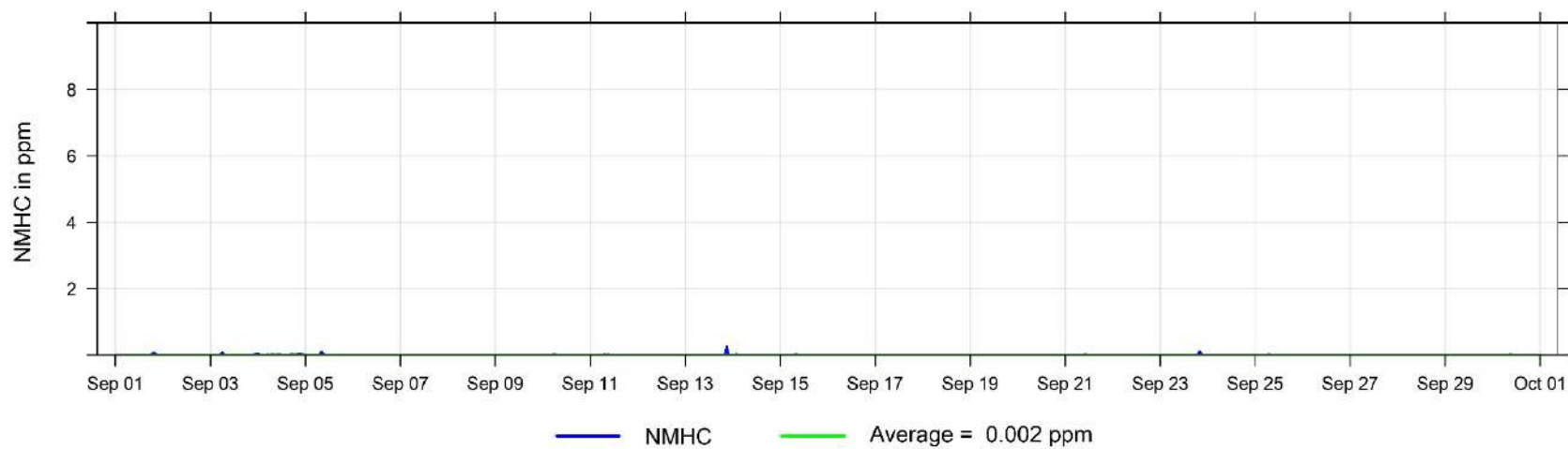
September Hourly Concentration Readings of THC (in ppm) at Henry Pirker



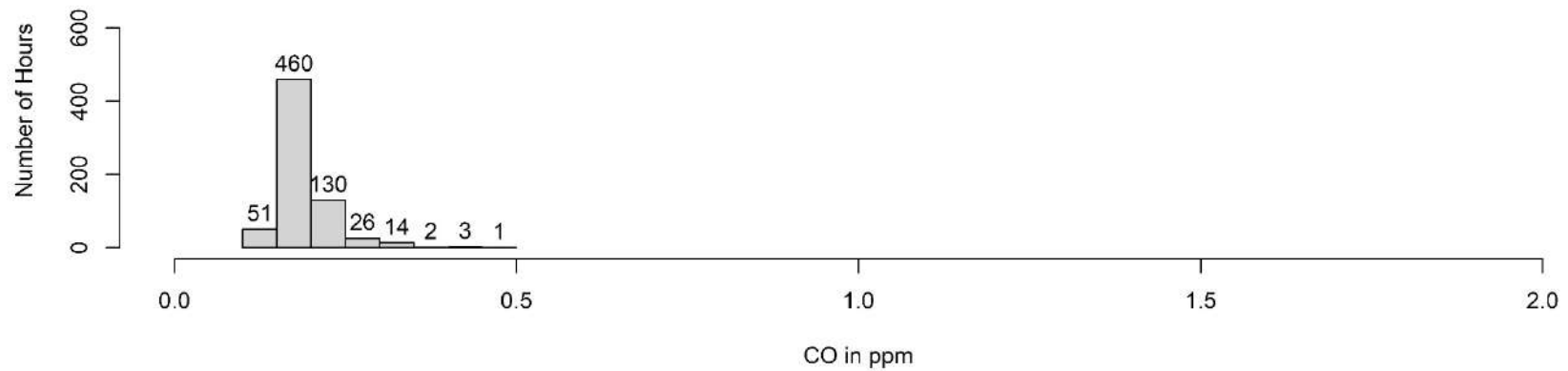
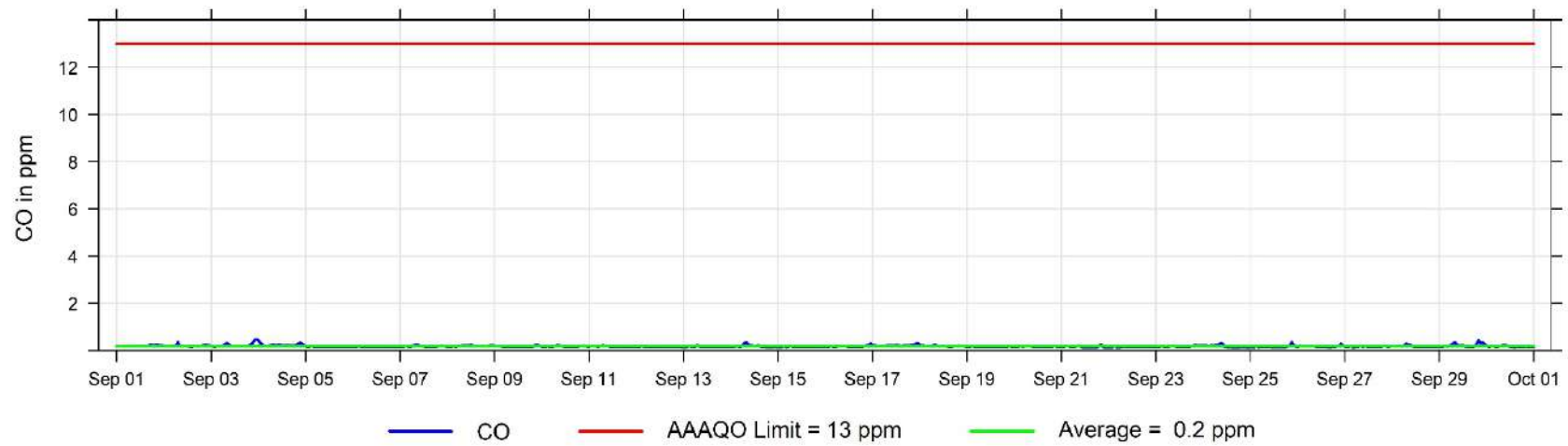
September Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



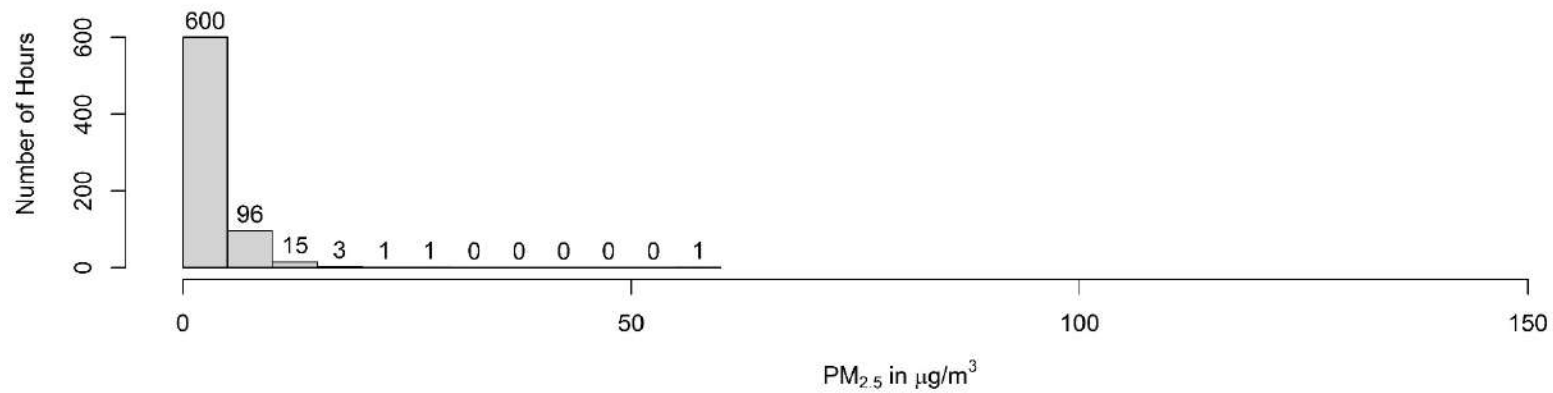
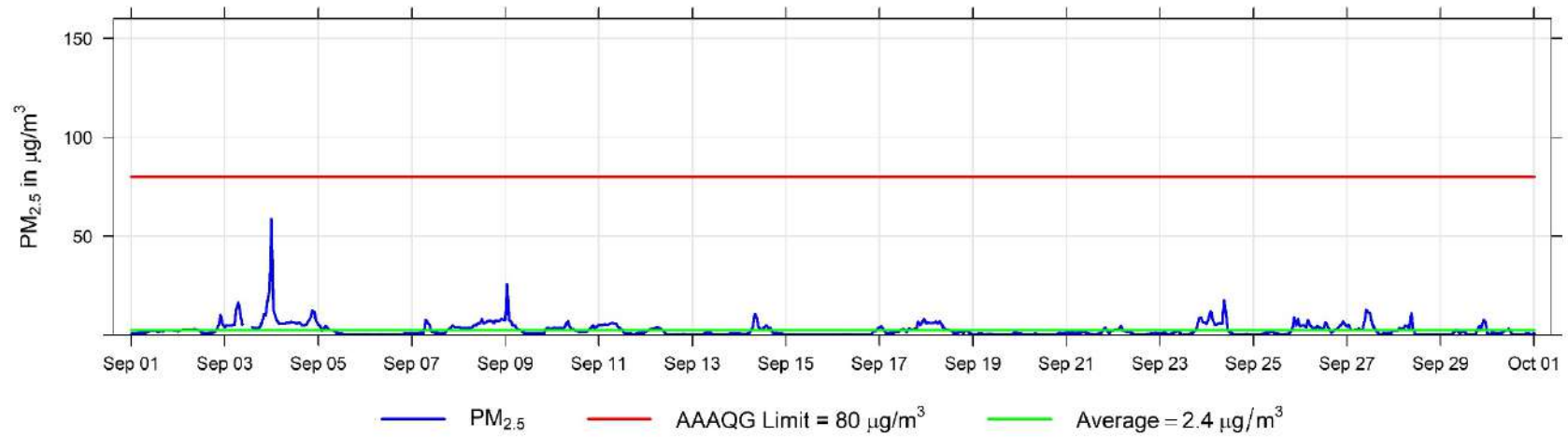
September Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



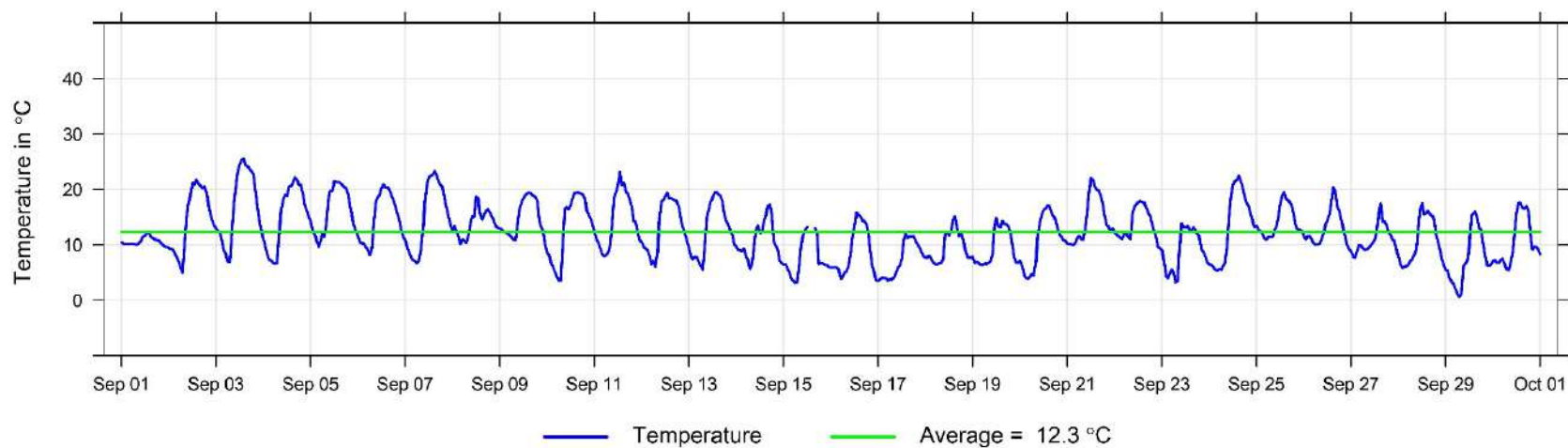
September Hourly Concentration Readings of CO (in ppm) at Henry Pirker



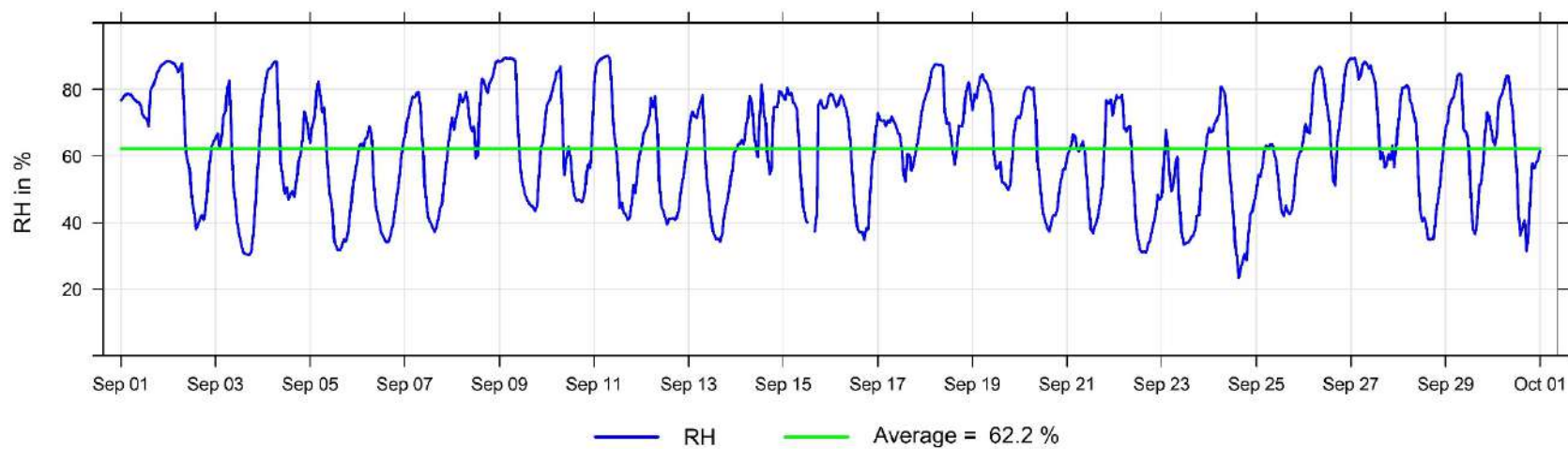
September Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker



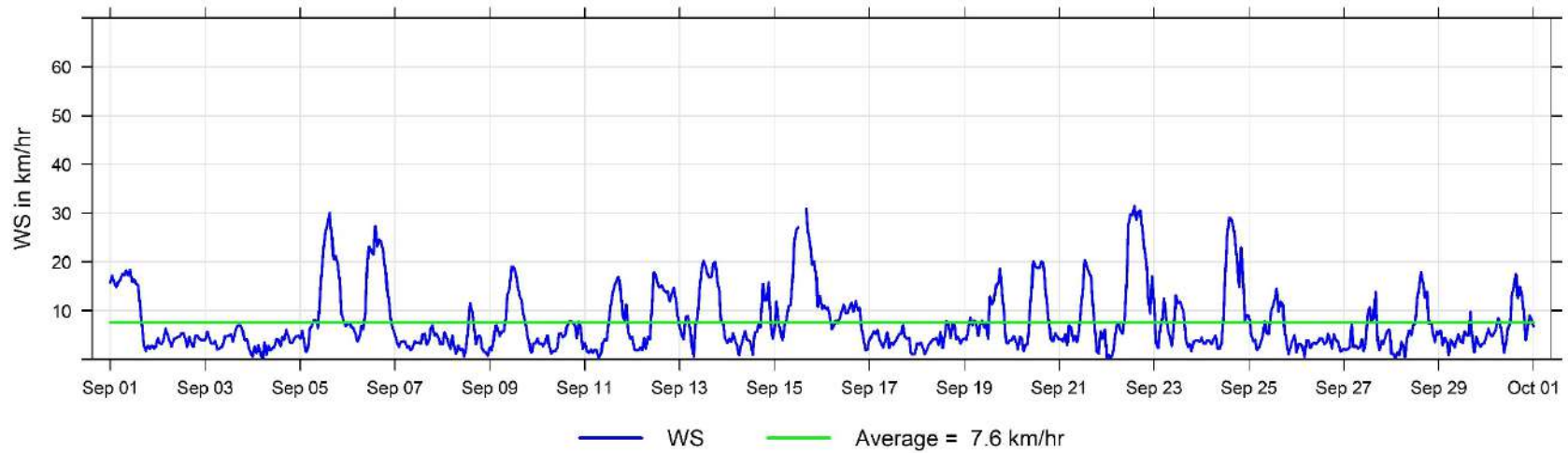
September Hourly Temperature Readings (in °C) at Henry Pirker



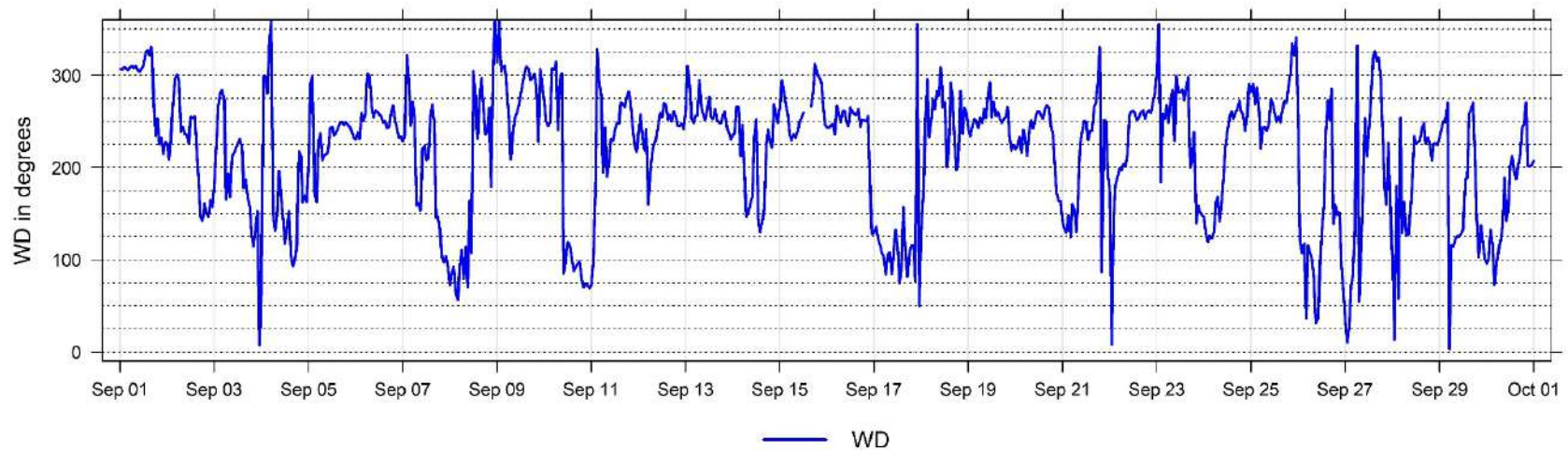
September Hourly Readings of Relative Humidity (in %) at Henry Pirker



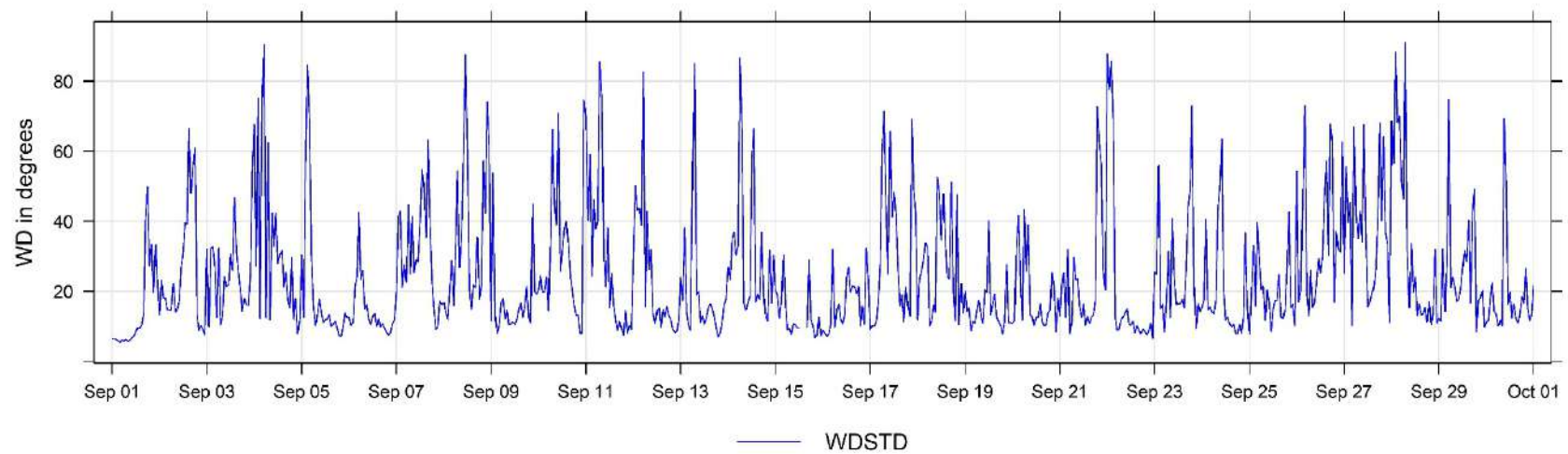
September Hourly Readings of Wind Speed (in km/hr) at Henry Pirker



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



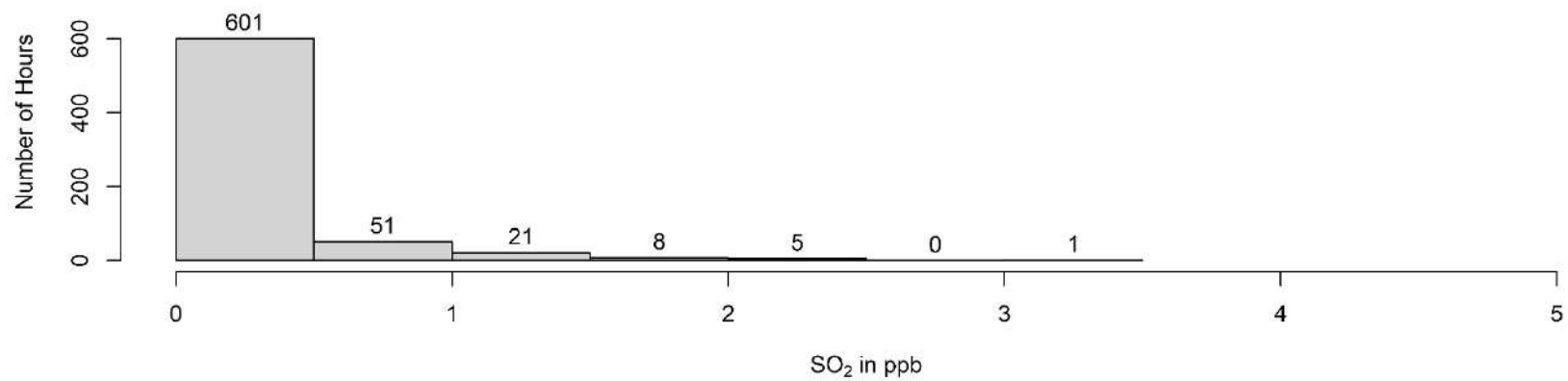
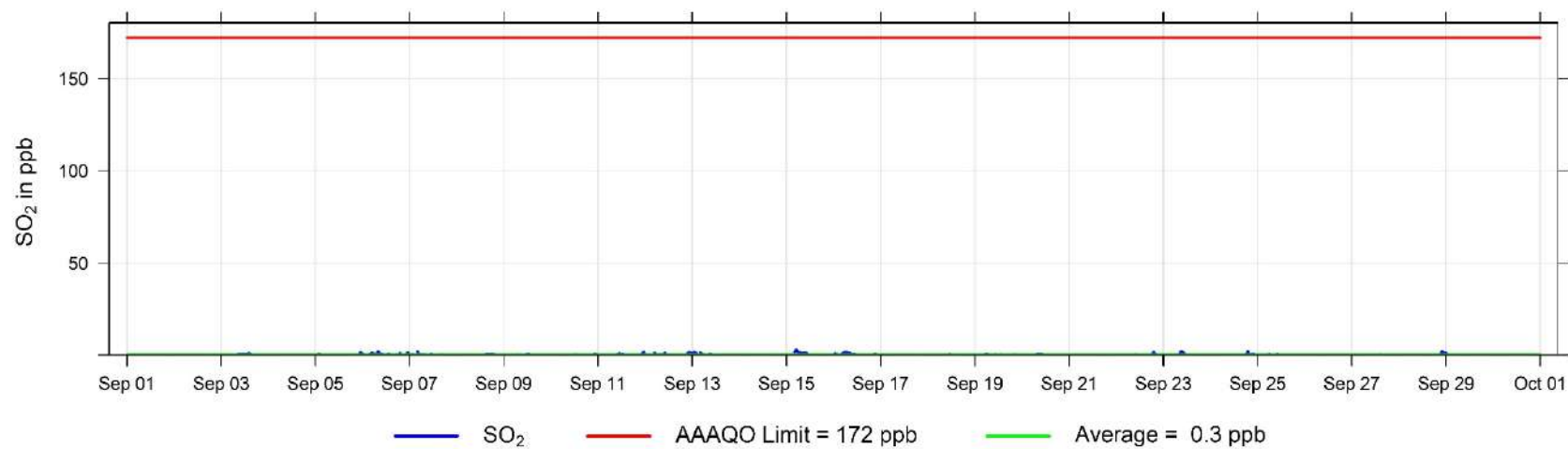
September Hourly Readings of Wind Direction Standard Deviation (in degrees) at Henry Pirker



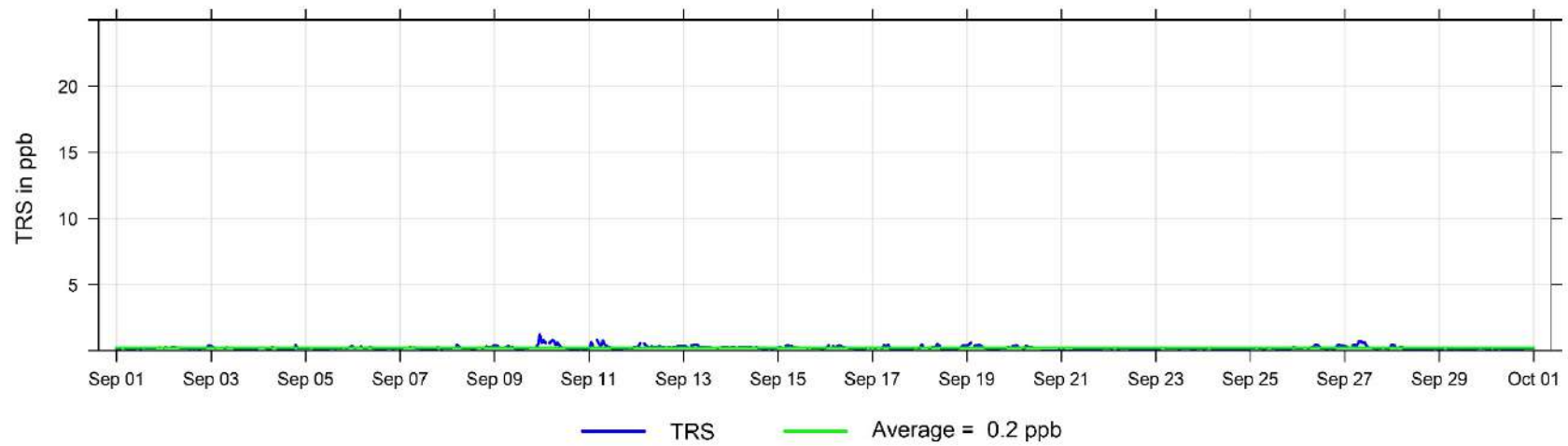
5 Smoky Heights Charts

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

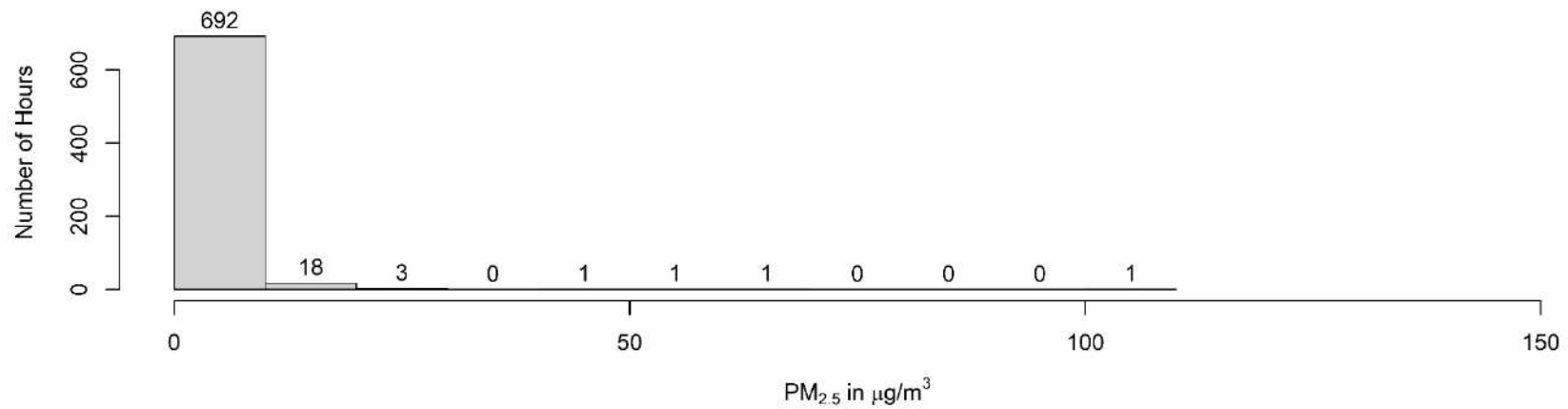
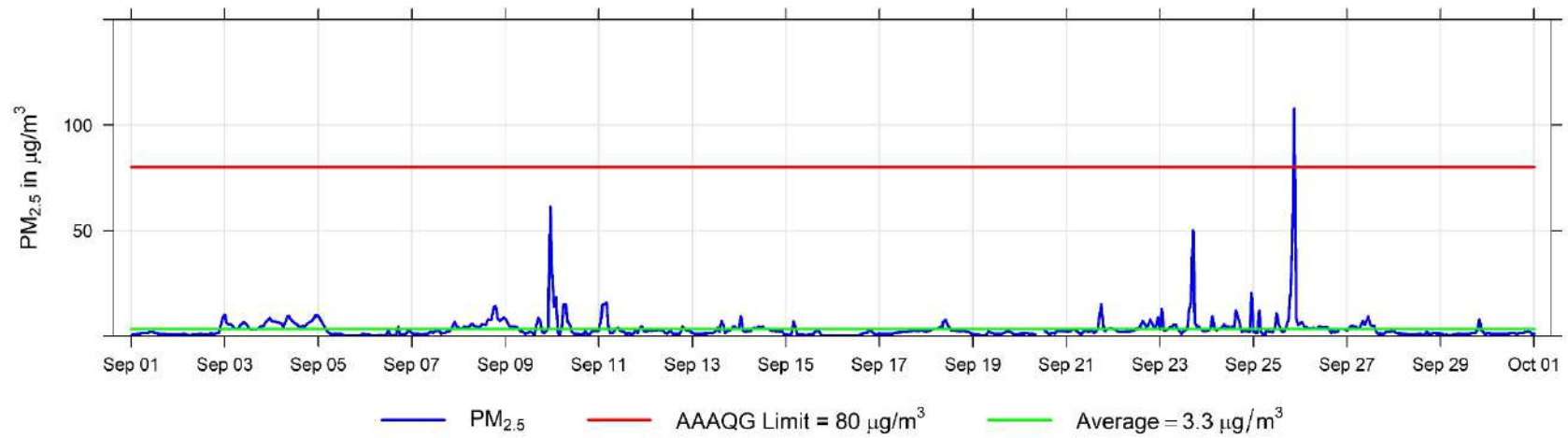
September Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



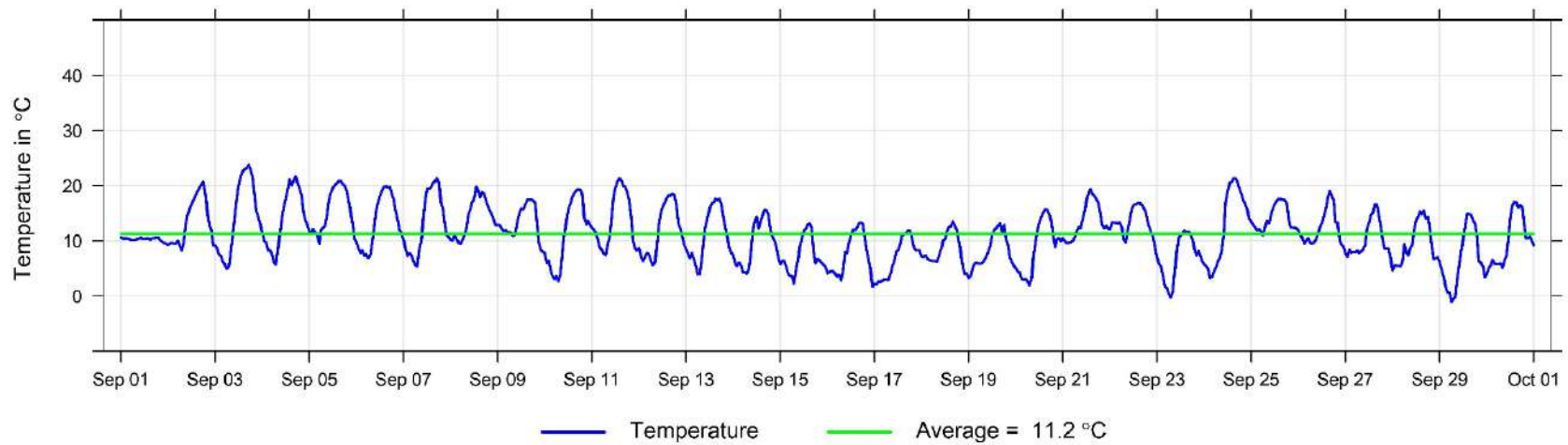
September Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



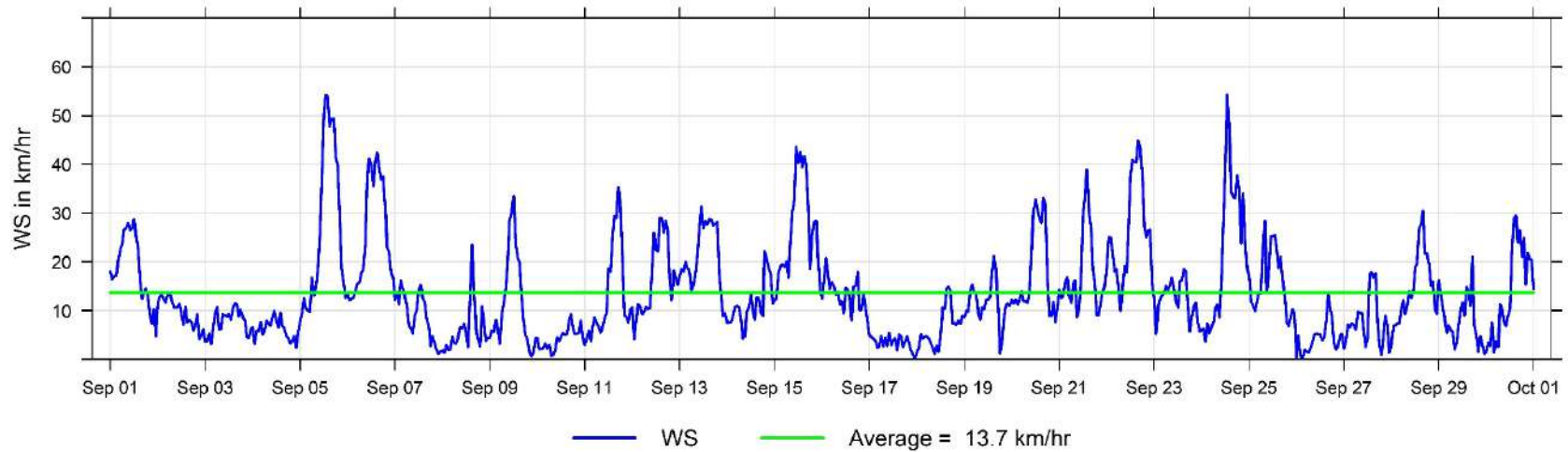
September Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Smoky Heights



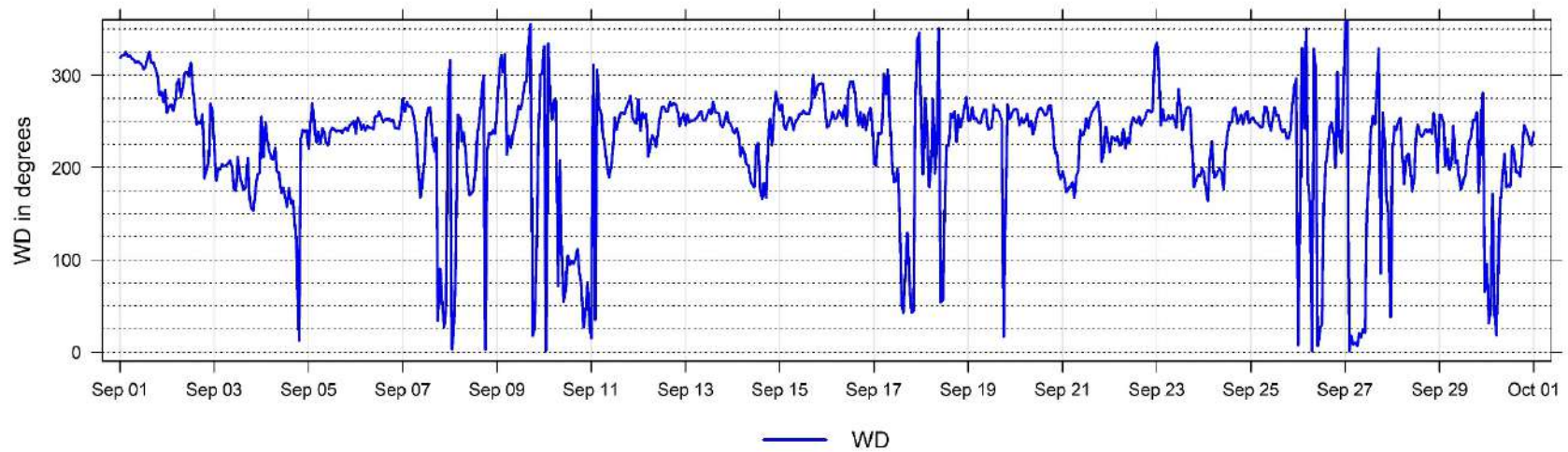
September Hourly Temperature Readings (in °C) at Smoky Heights



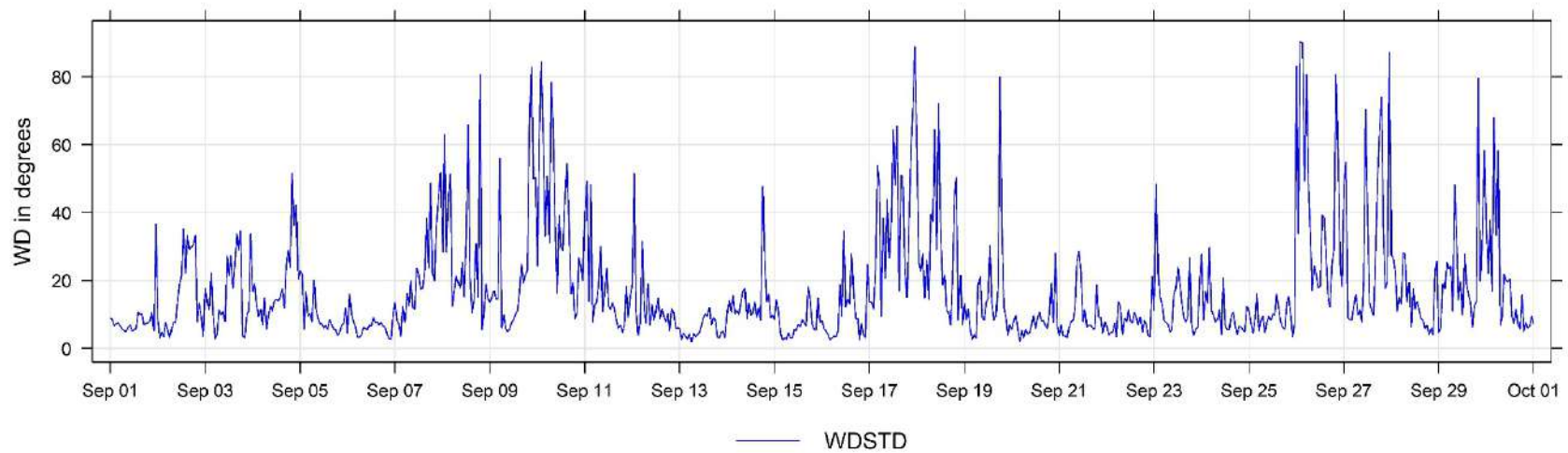
September Hourly Readings of Wind Speed (in km/hr) at Smoky Heights



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



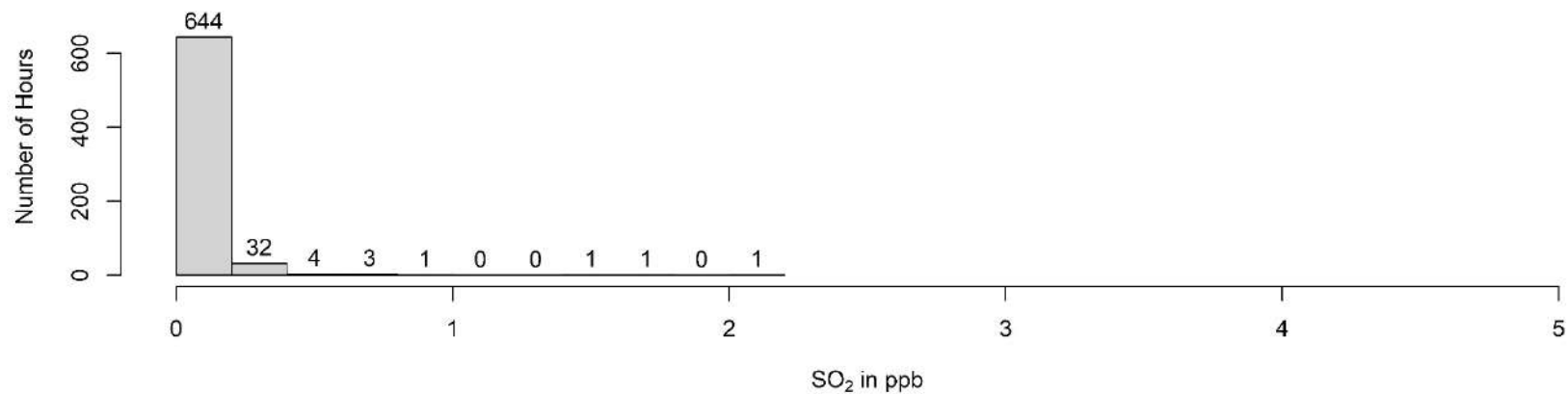
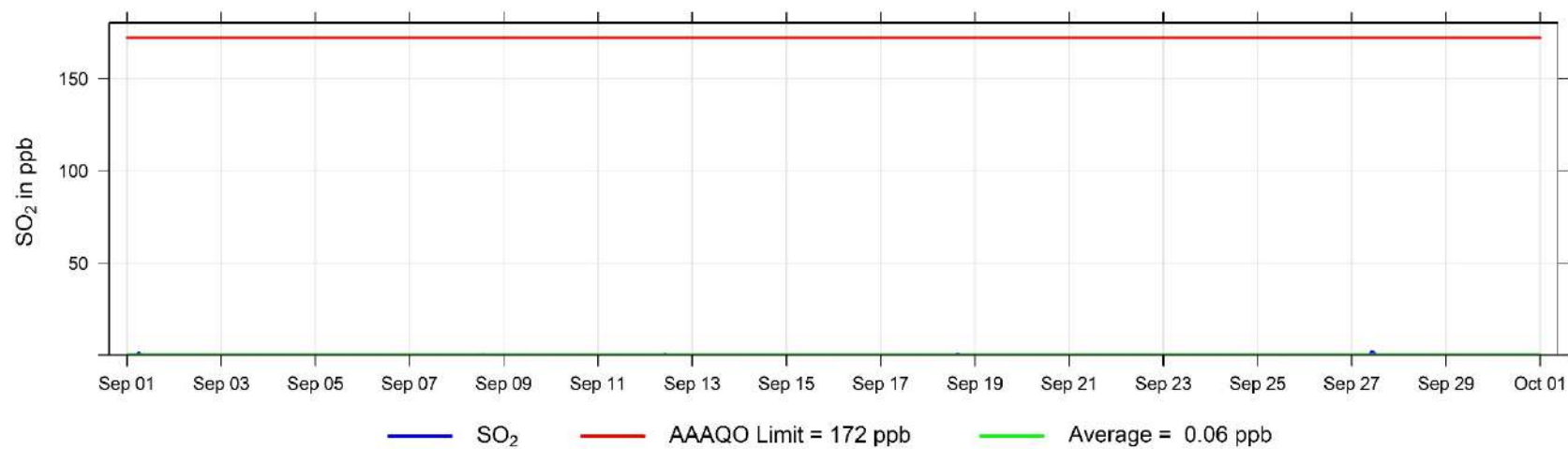
September Hourly Readings of Wind Direction Standard Deviation (in degrees) at Smoky Heights



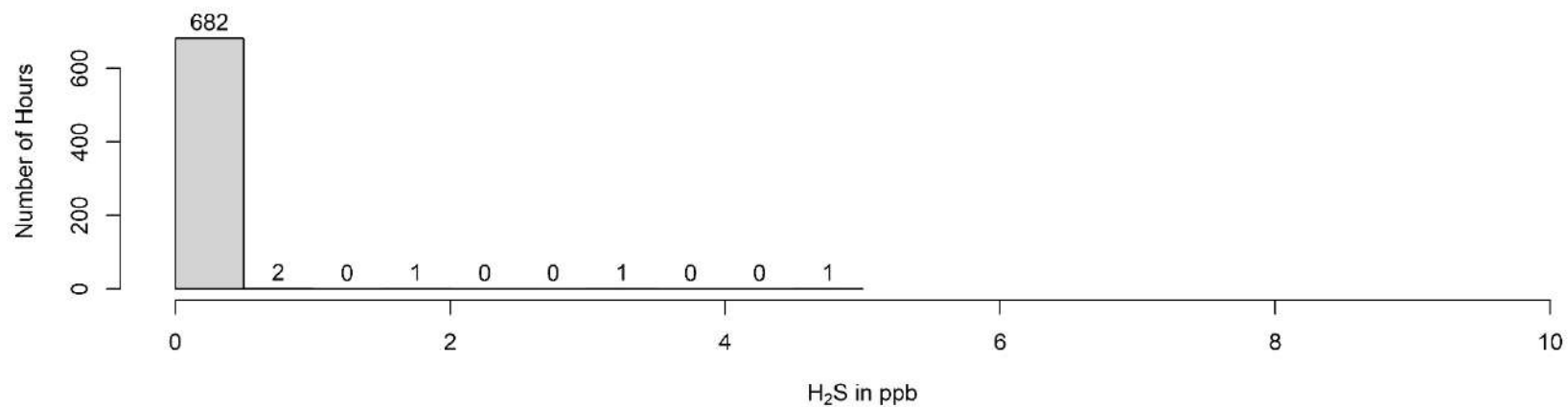
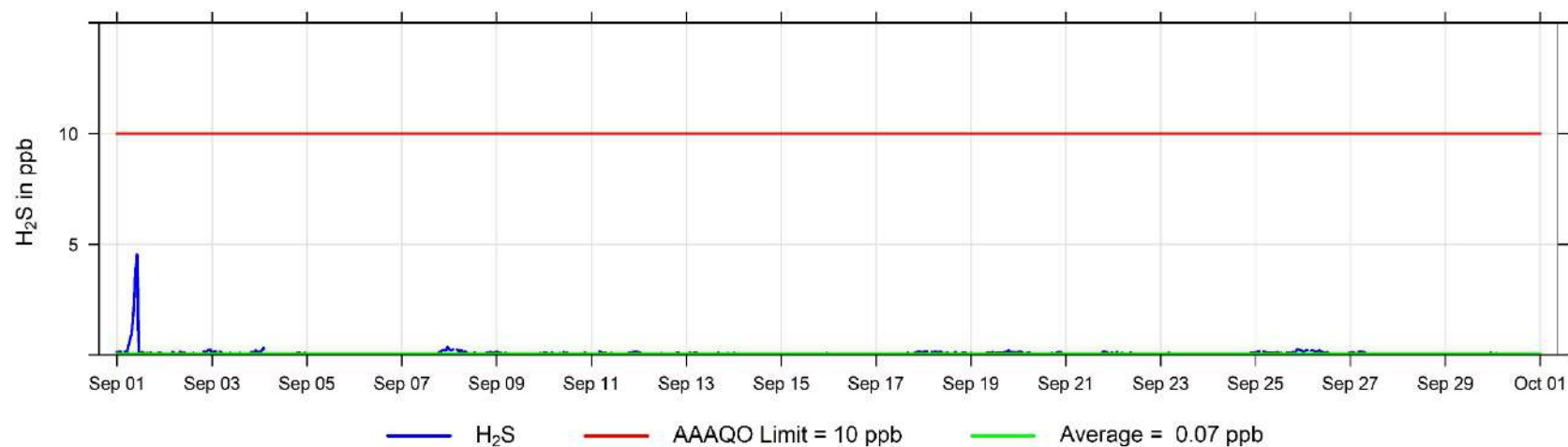
6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

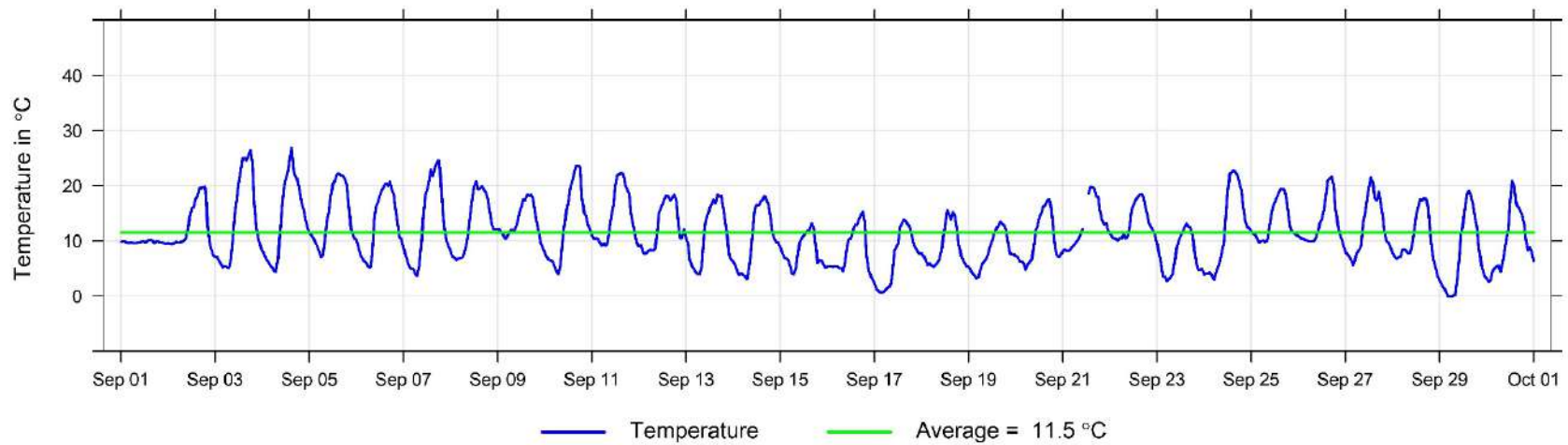
September Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



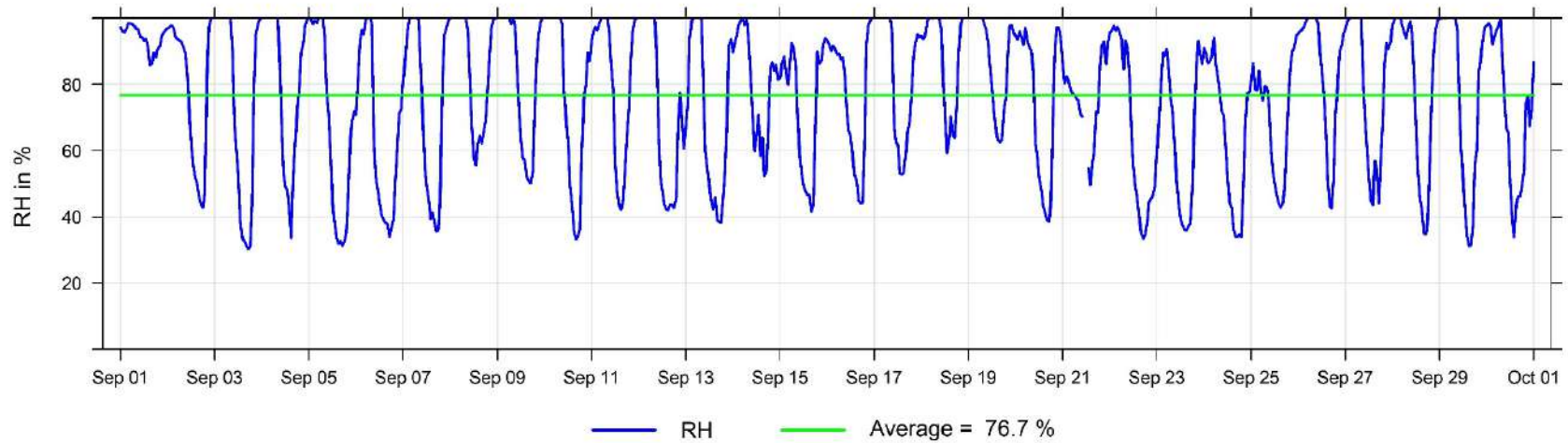
September Hourly Concentration Readings of H₂S (in ppb) at Valleyview



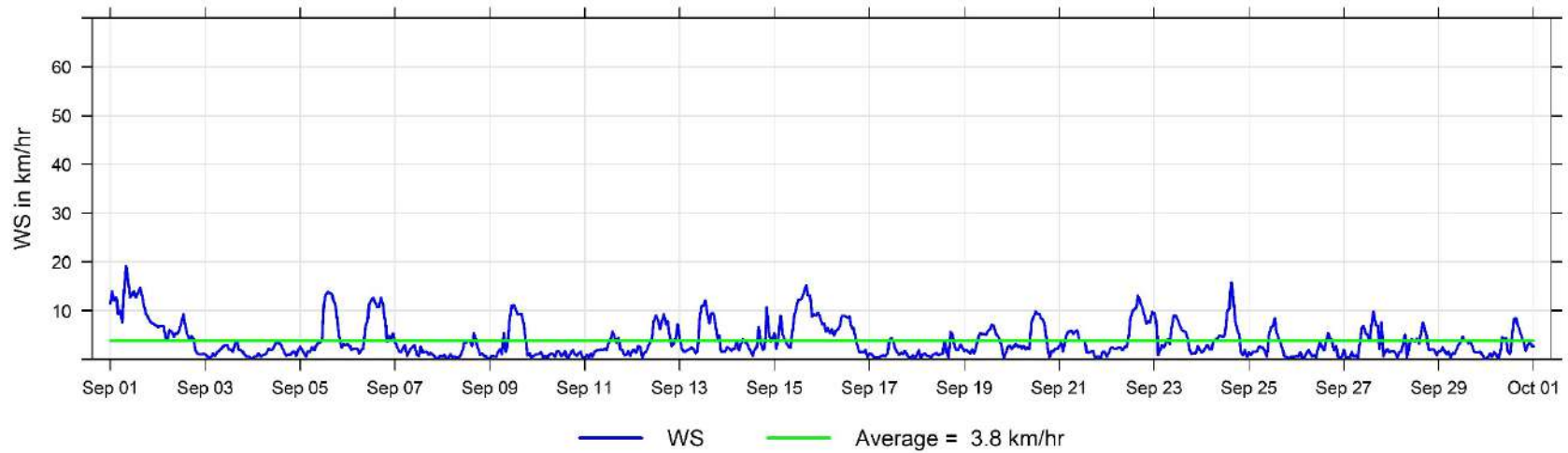
September Hourly Temperature Readings (in °C) at Valleyview



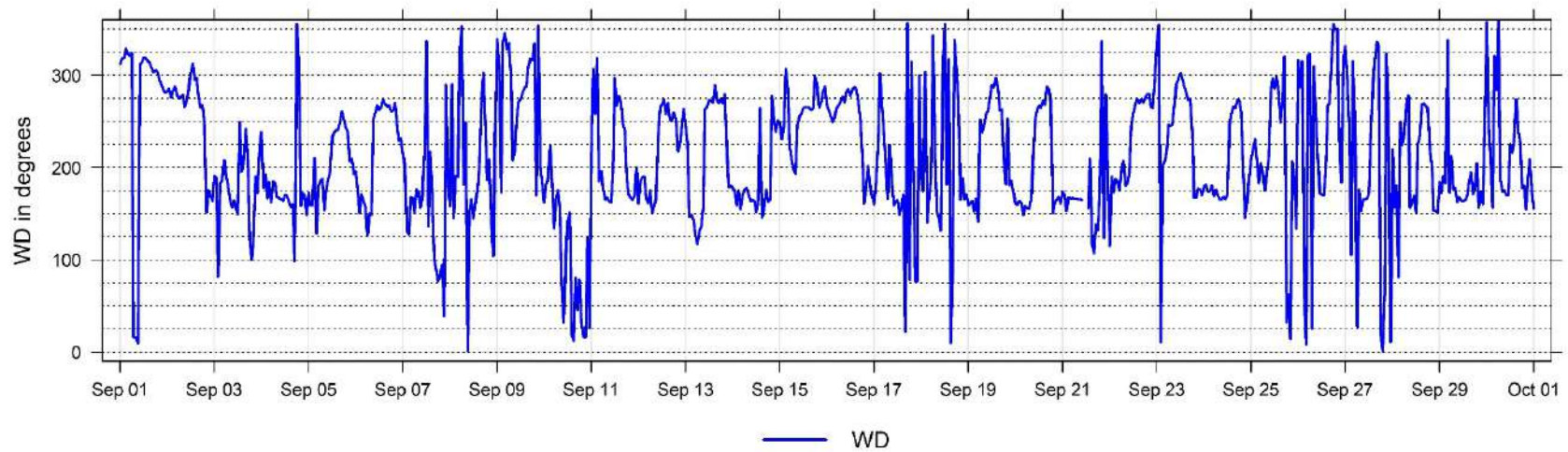
September Hourly Readings of Relative Humidity (in %) at Valleyview



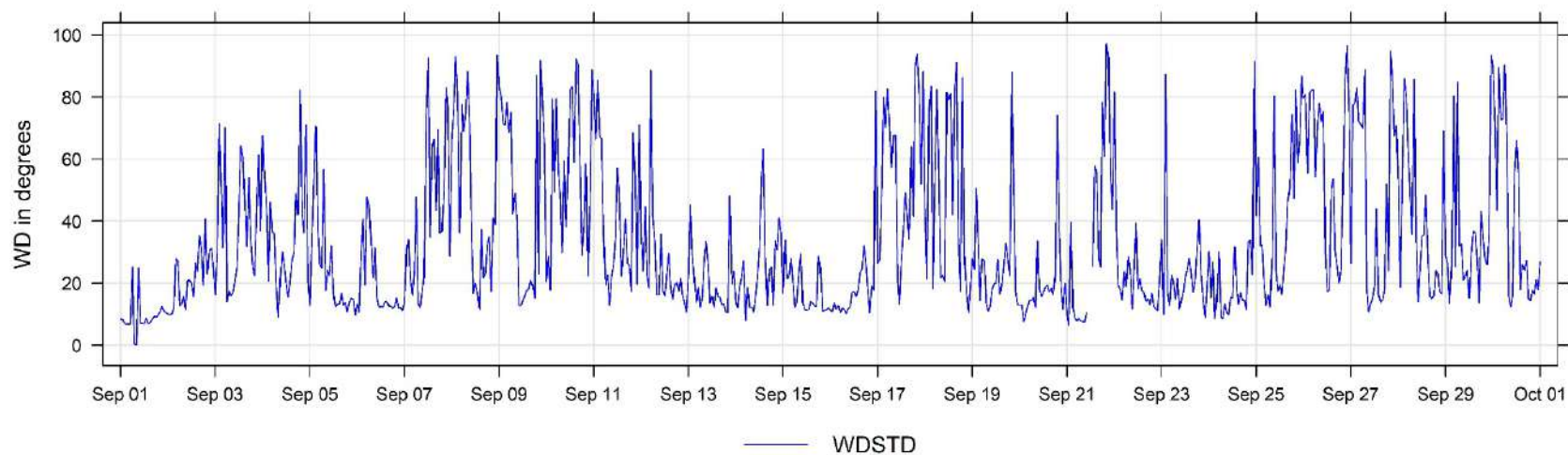
September Hourly Readings of Wind Speed (in km/hr) at Valleyview

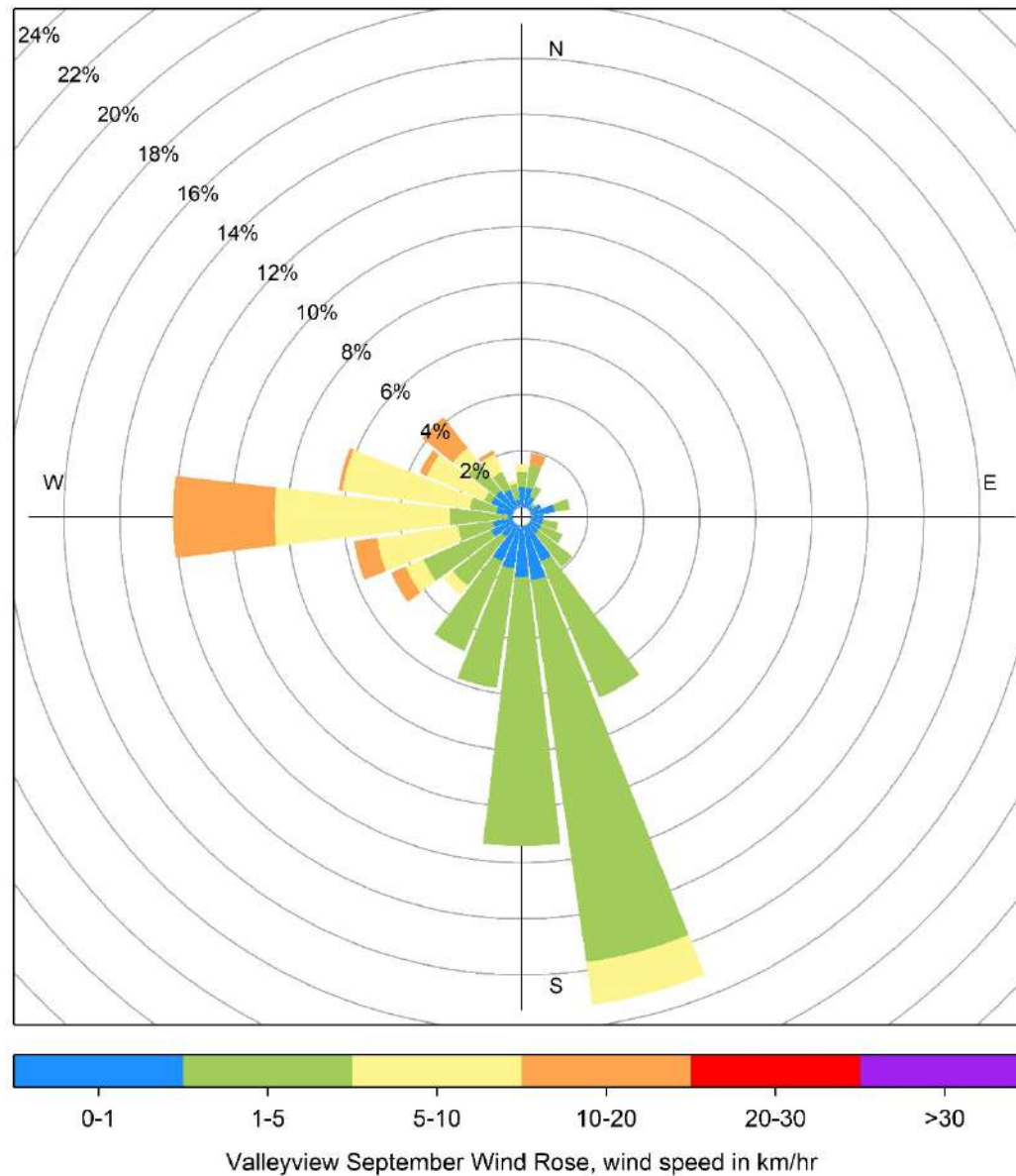


September Hourly Readings of Wind Direction (in degrees) at Valleyview



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

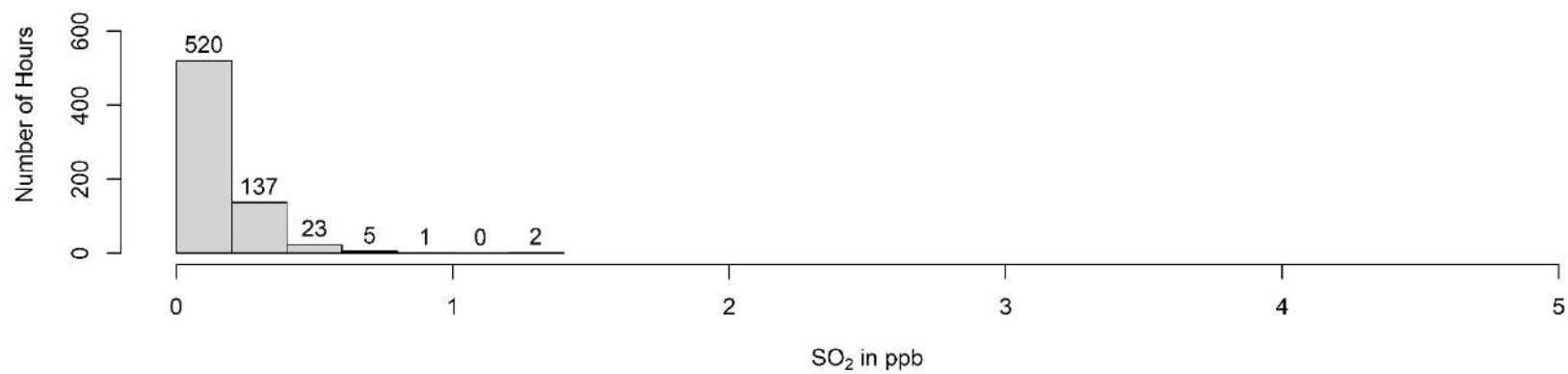
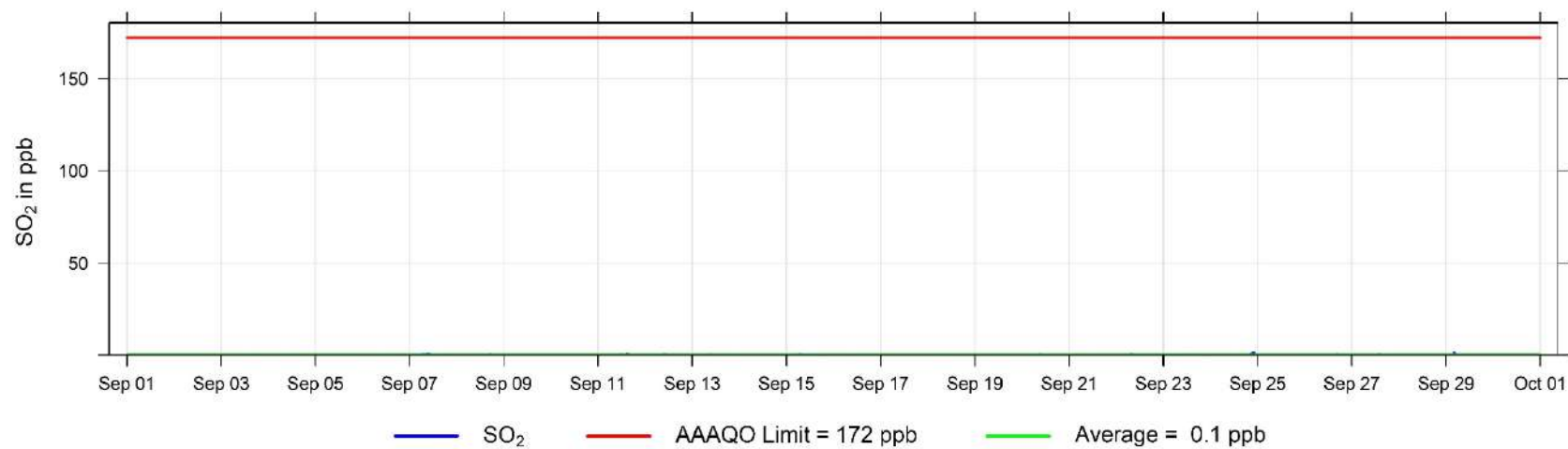




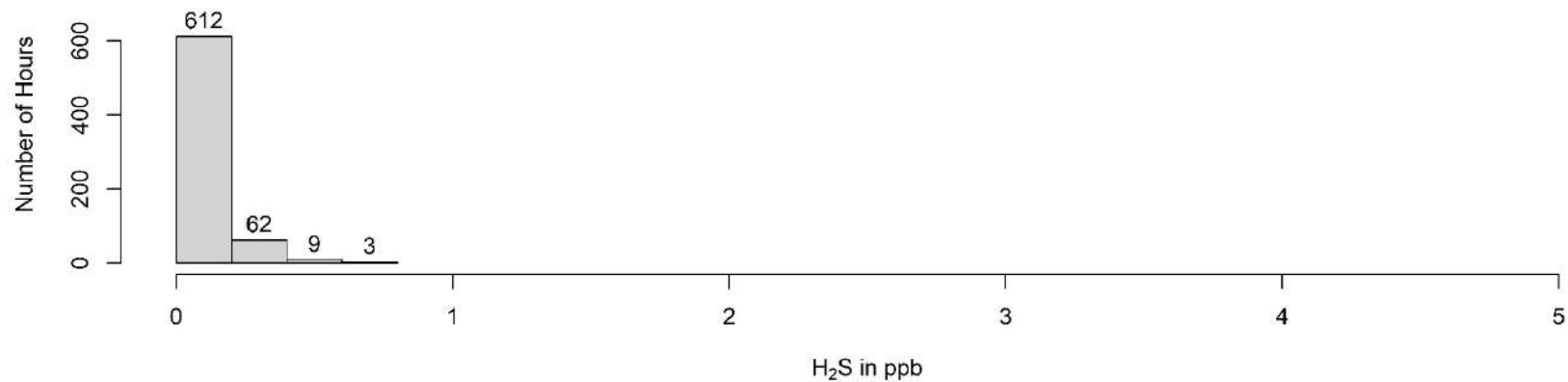
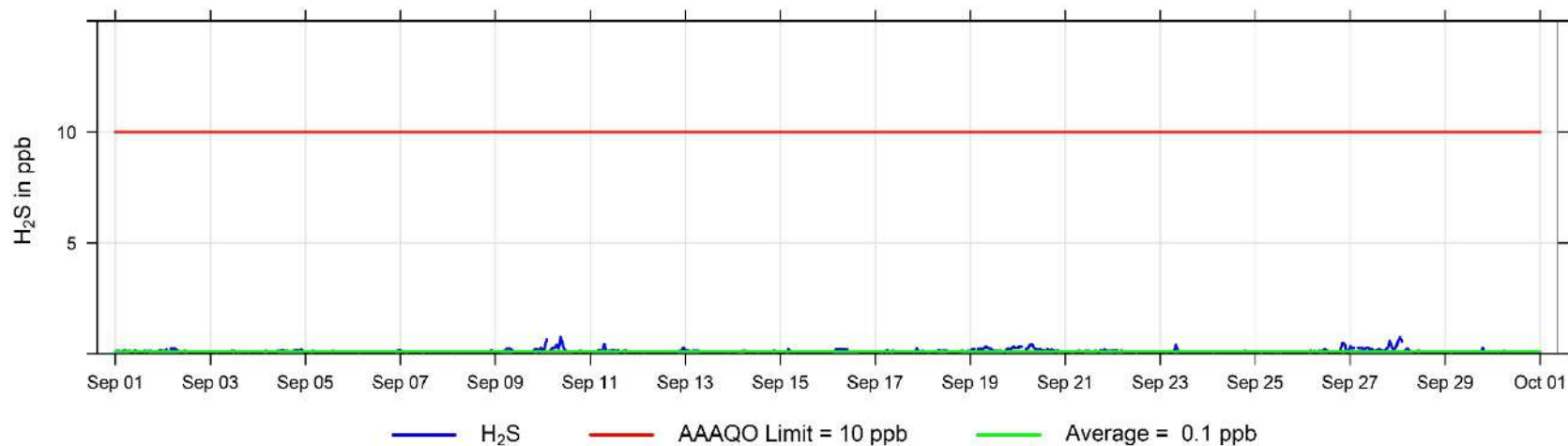
7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

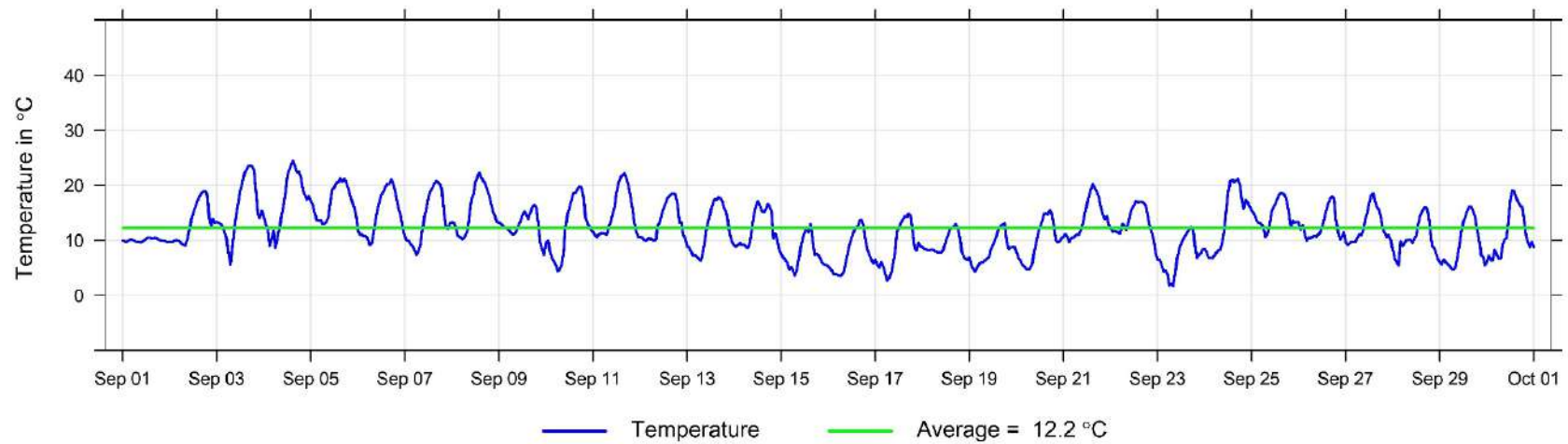
September Hourly Concentration Readings of SO₂ (in ppb) at Donnelly



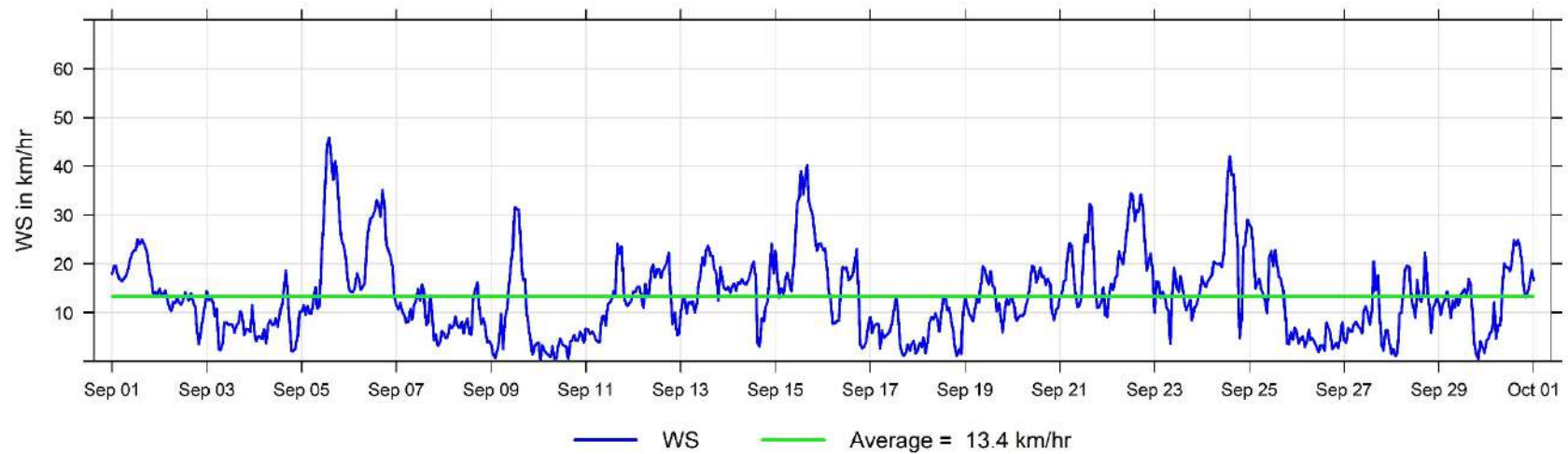
September Hourly Concentration Readings of H₂S (in ppb) at Donnelly



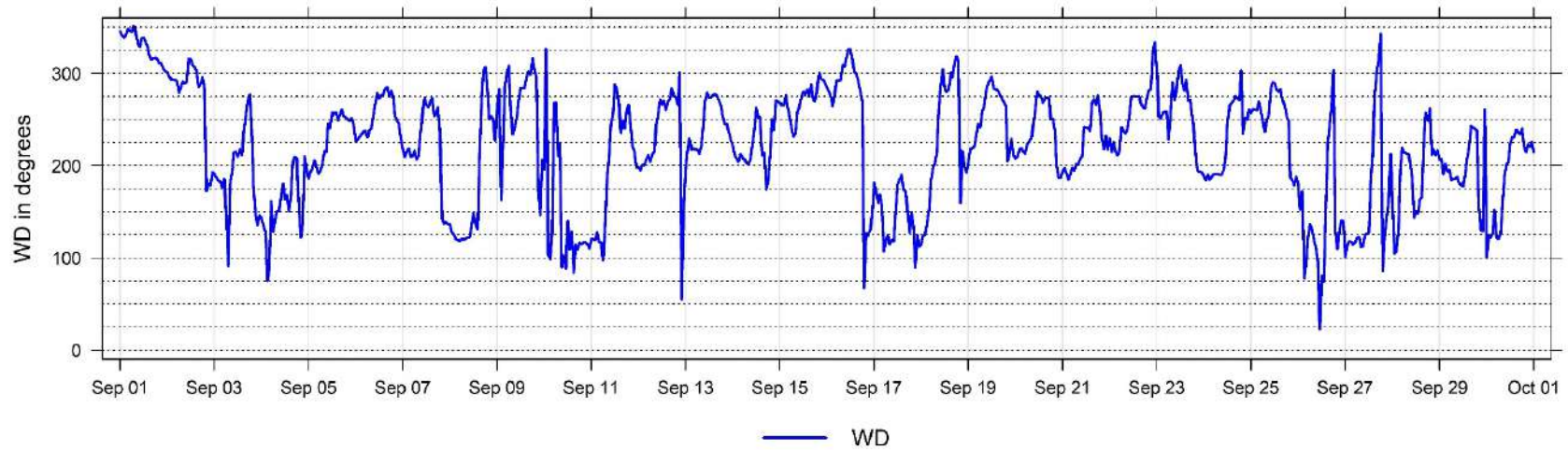
September Hourly Temperature Readings (in °C) at Donnelly



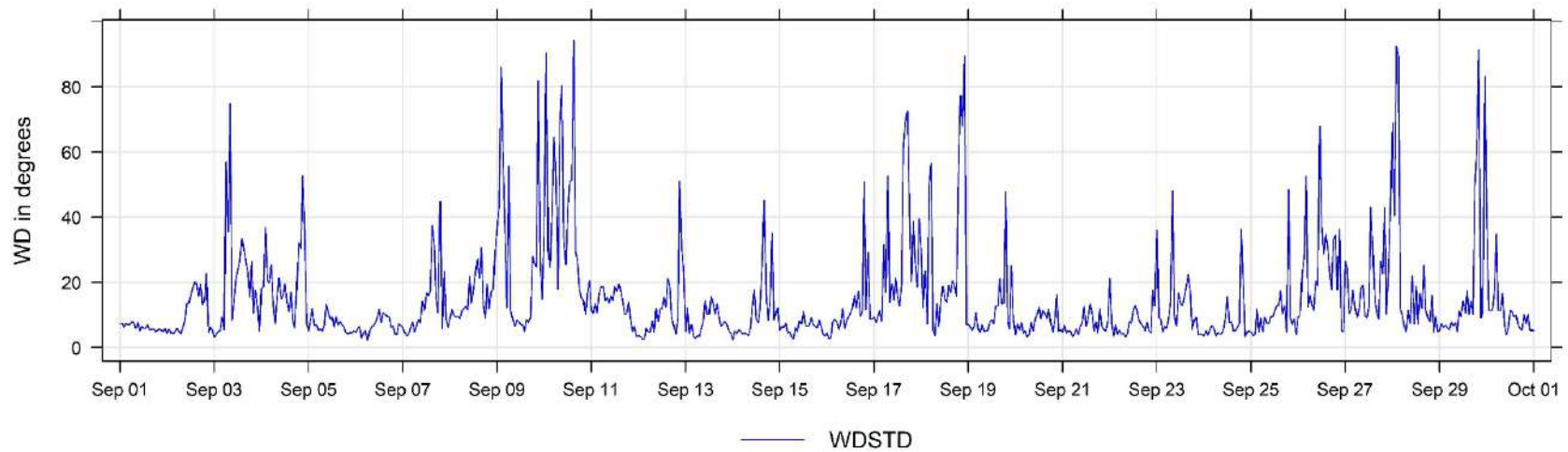
September Hourly Readings of Wind Speed (in km/hr) at Donnelly

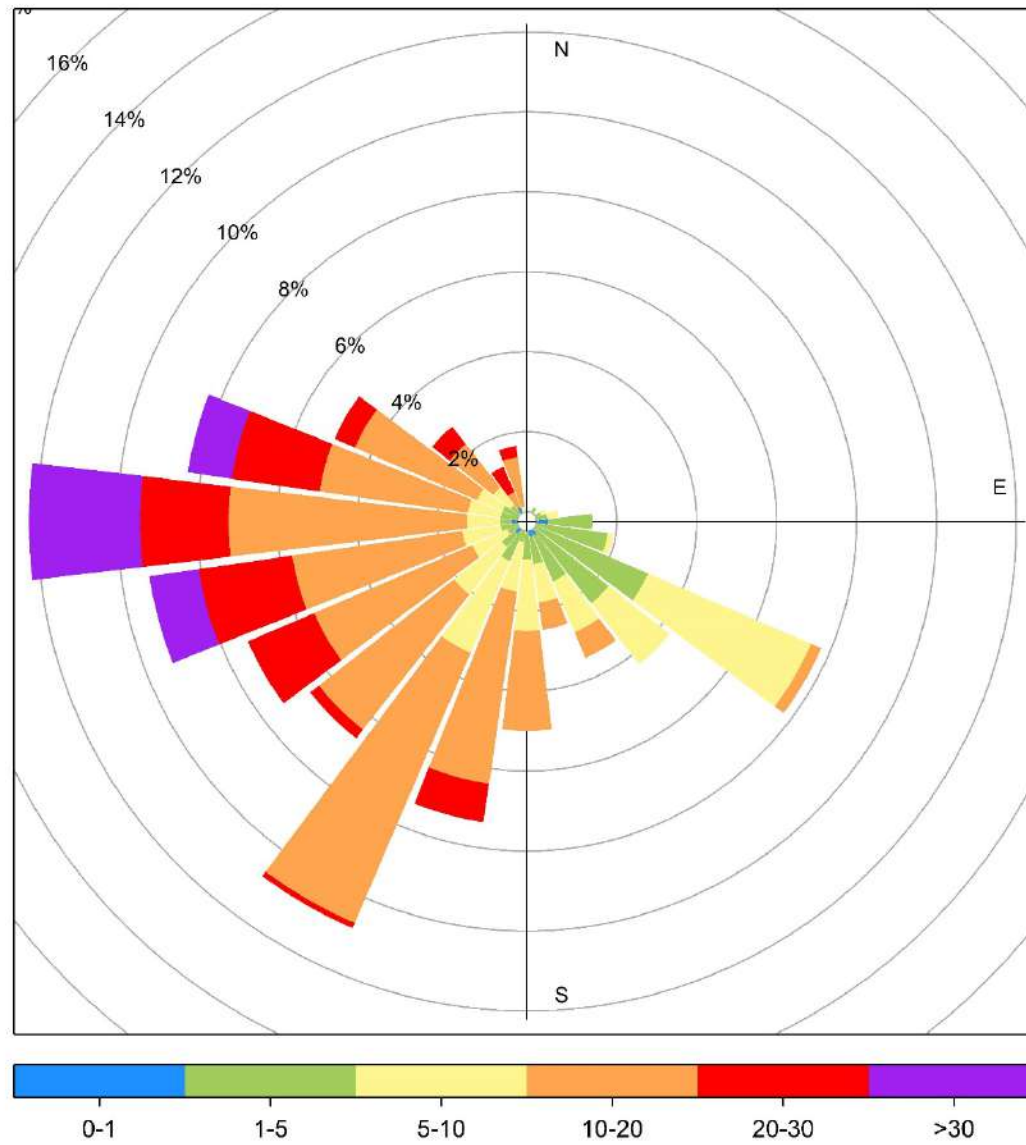


September Hourly Readings of Wind Direction (in degrees) at Donnelly



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



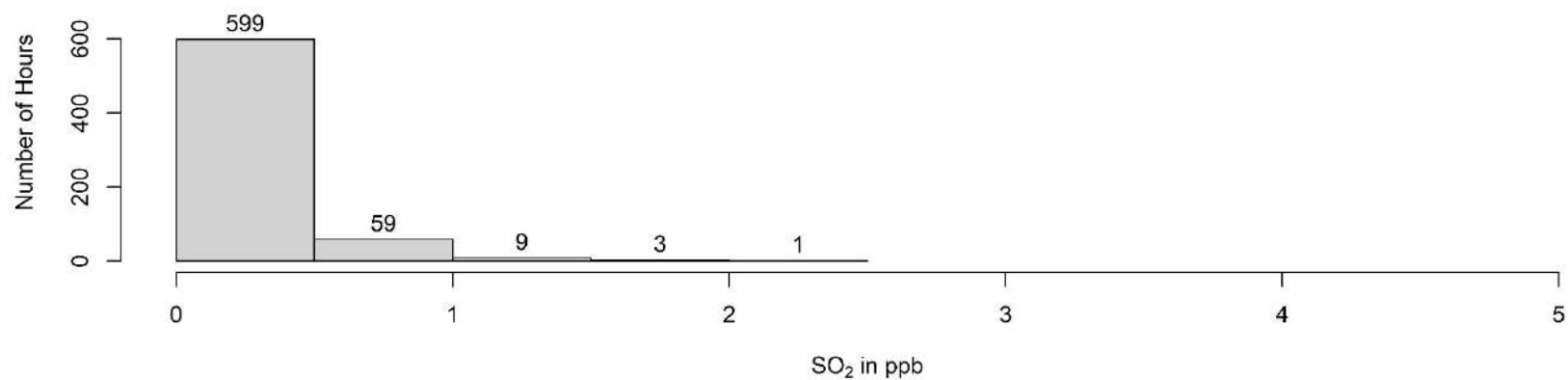
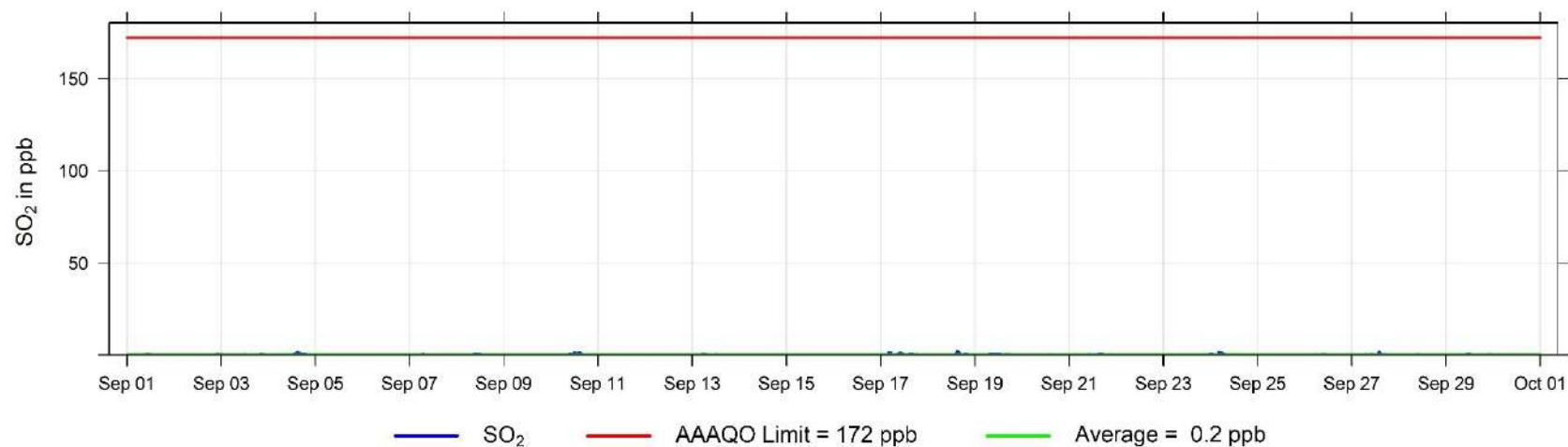


Donnelly September Wind Rose, wind speed in km/hr

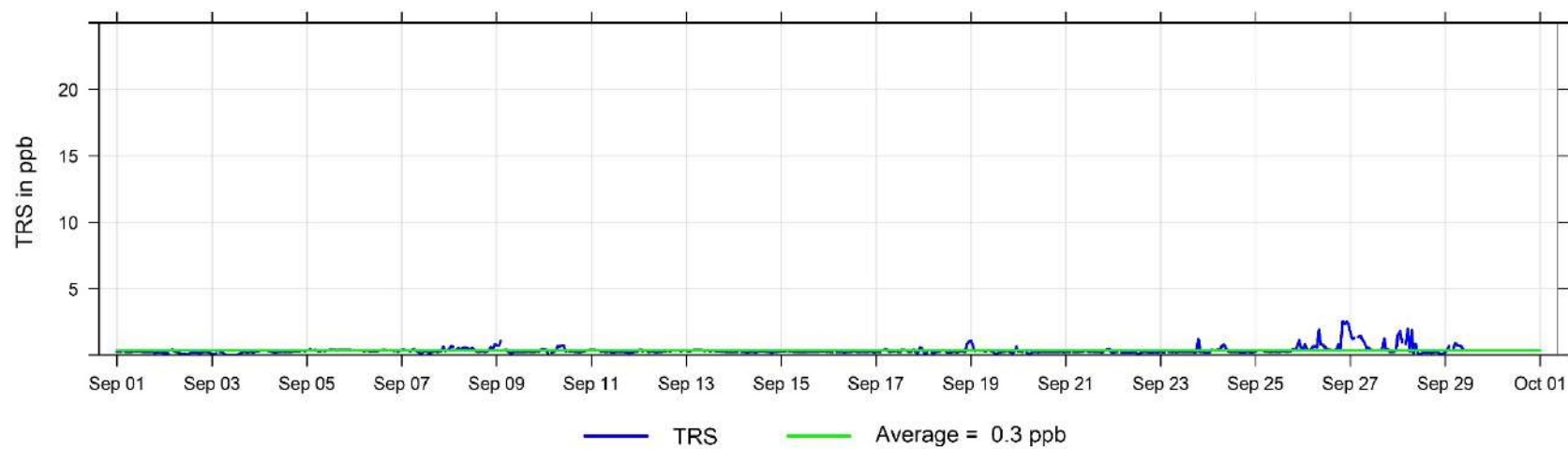
8 Wembley (Portable) Charts

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

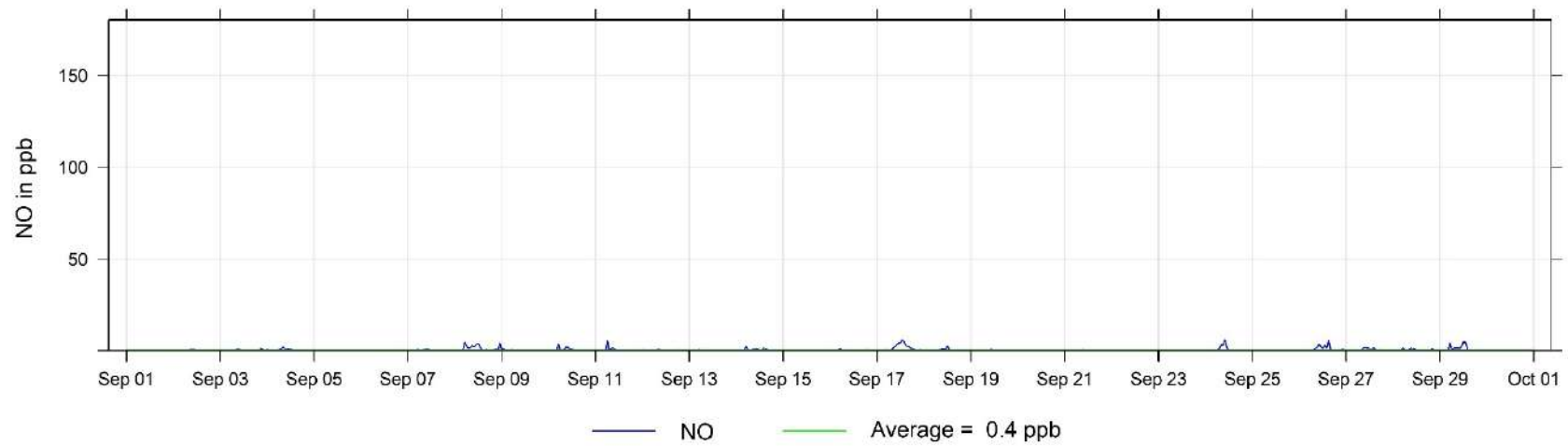
September Hourly Concentration Readings of SO₂ (in ppb) at Wembley



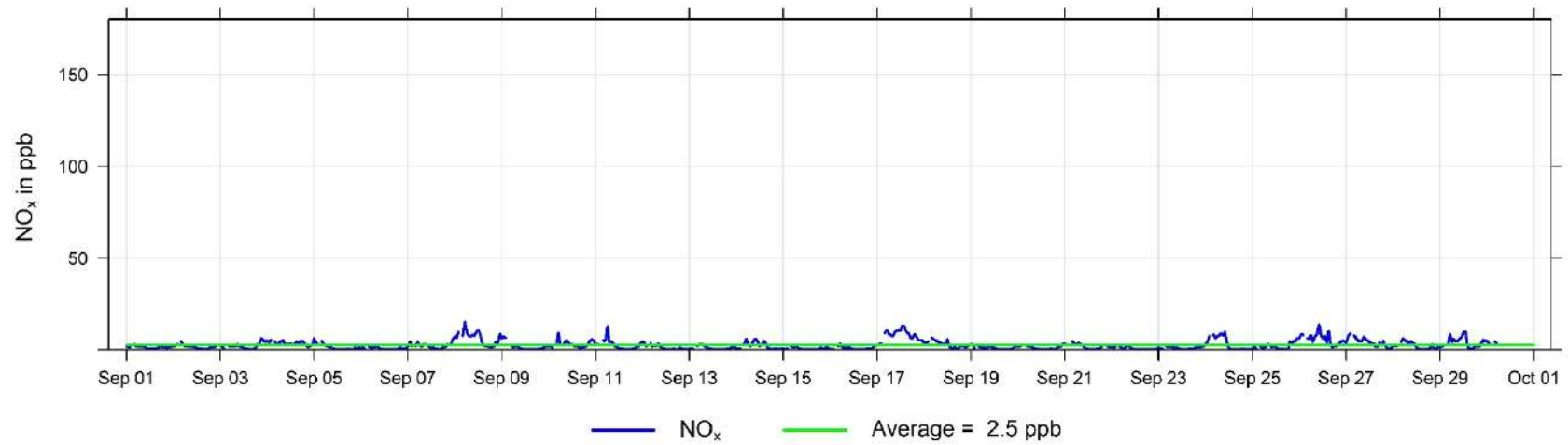
September Hourly Concentration Readings of TRS (in ppb) at Wembley



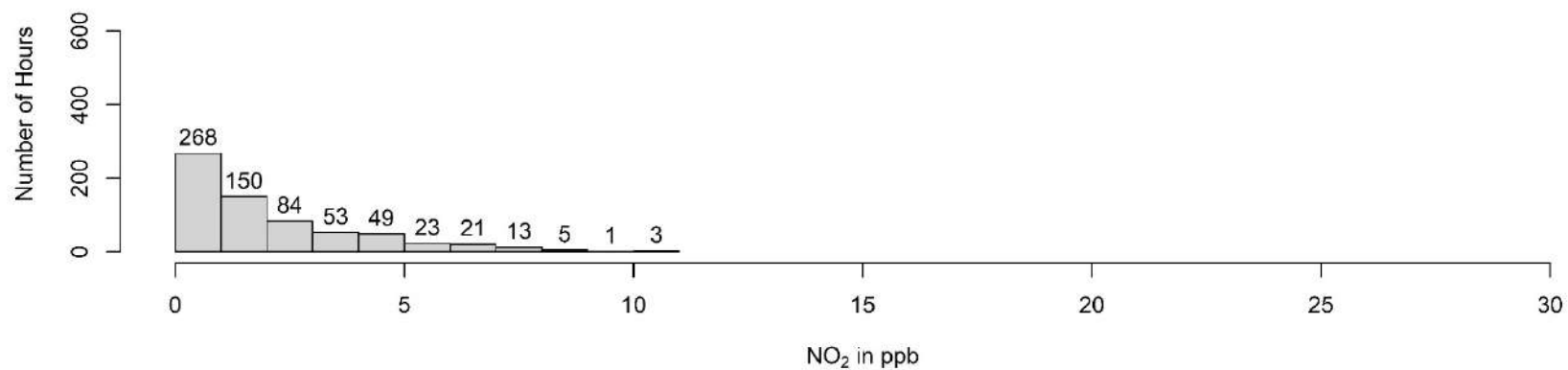
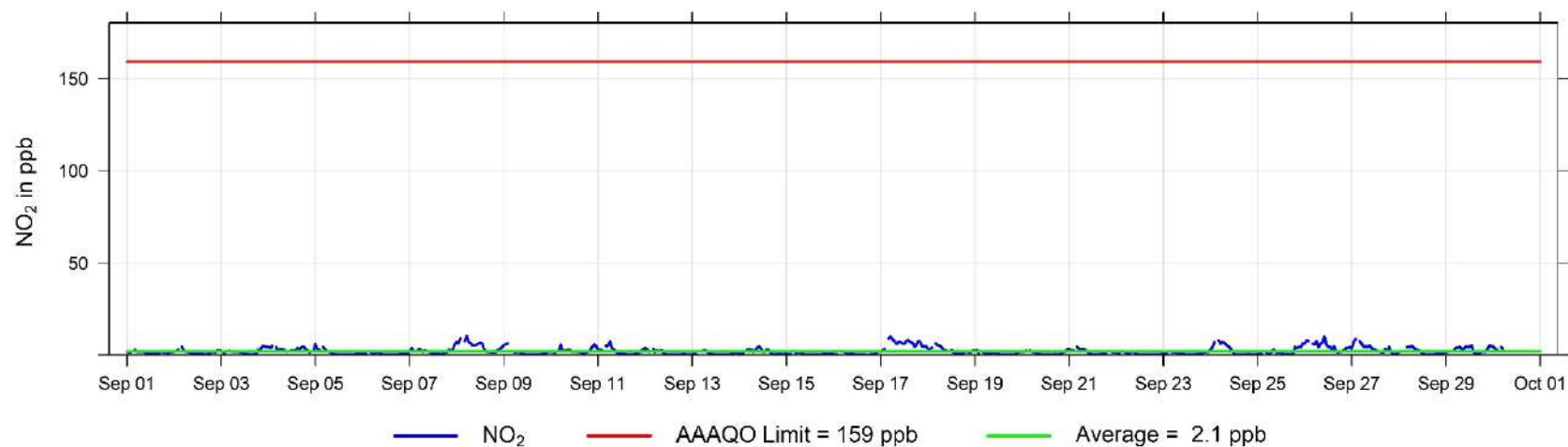
September Hourly Concentration Readings of NO (in ppb) at Wembley



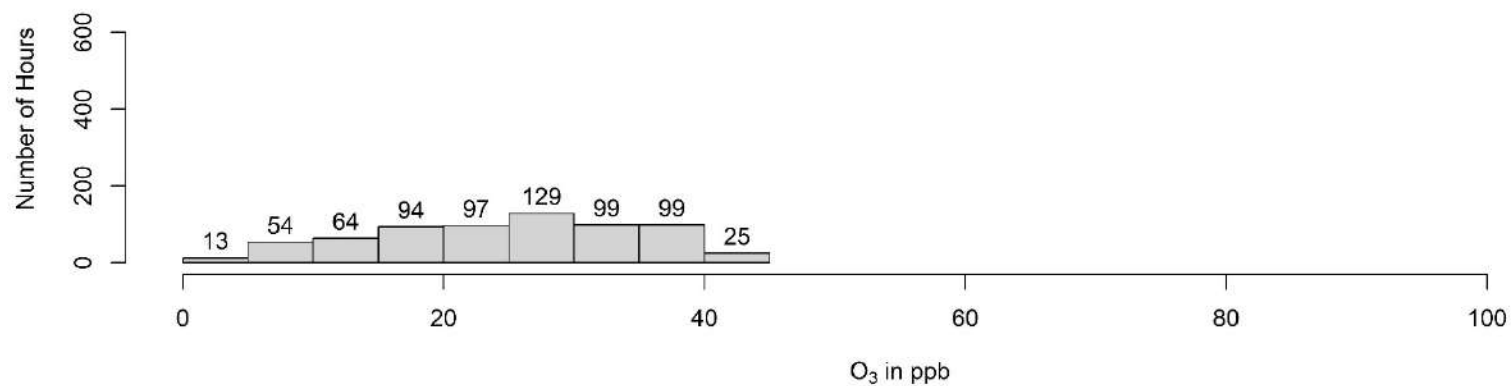
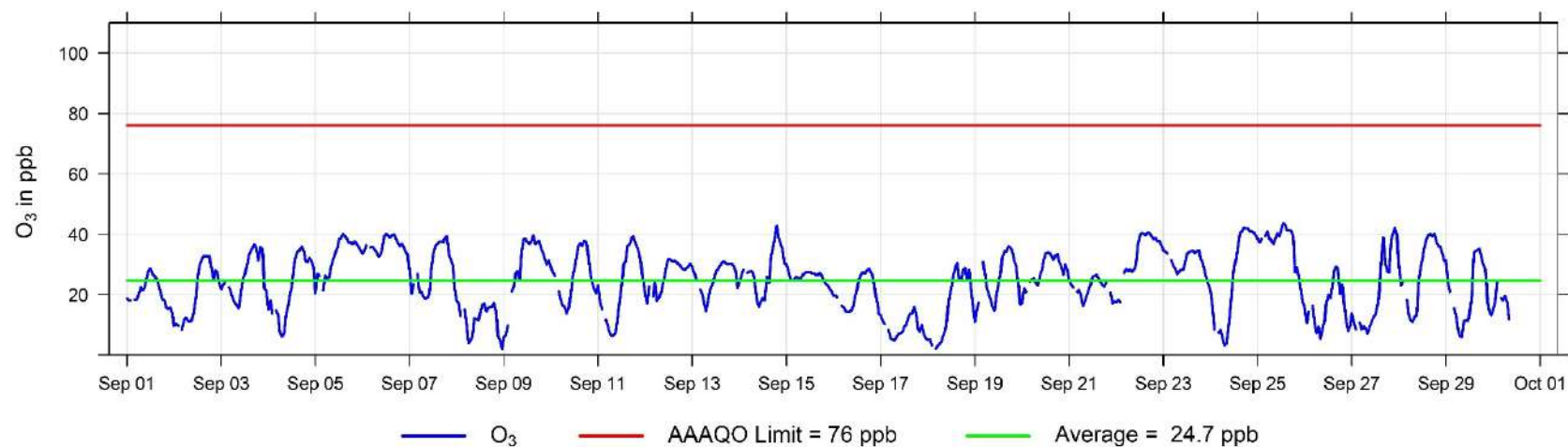
September Hourly Concentration Readings of NO_x (in ppb) at Wembley



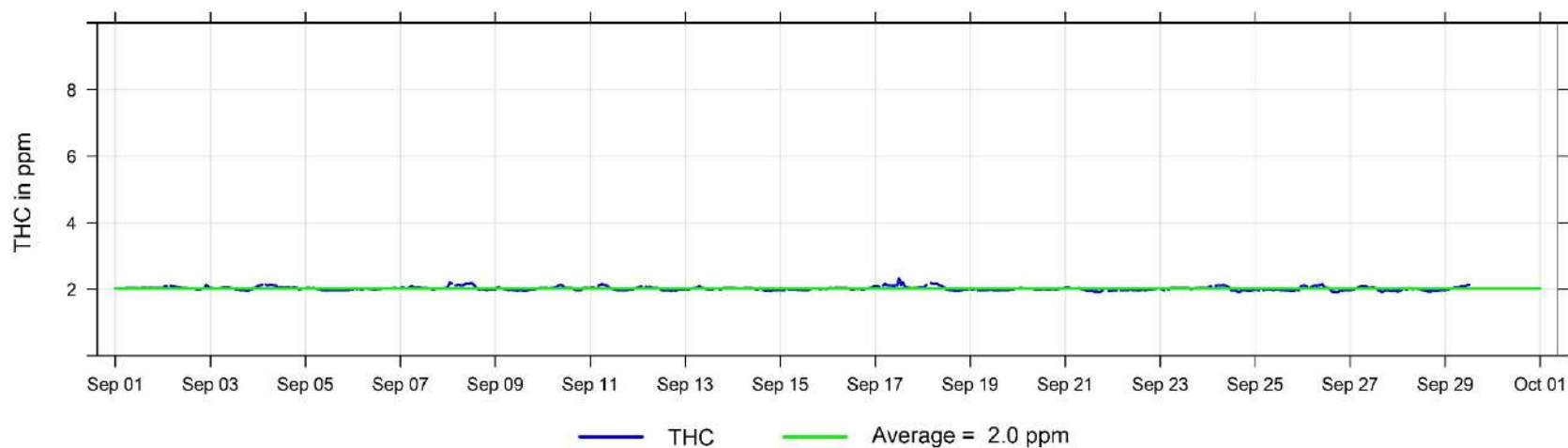
September Hourly Concentration Readings of NO₂ (in ppb) at Wembley



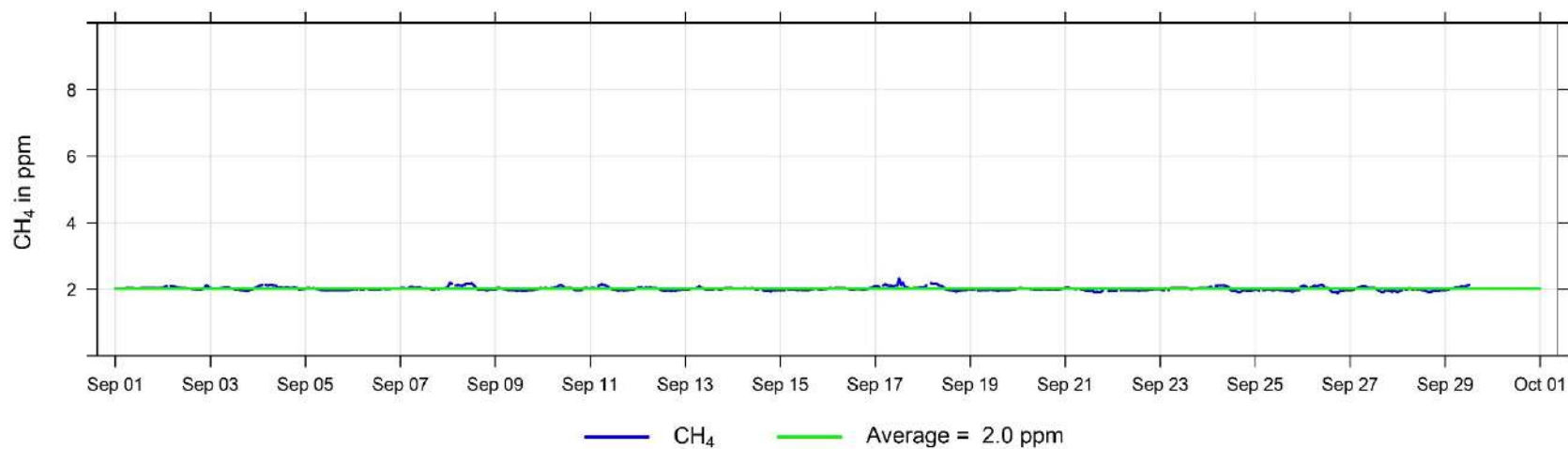
September Hourly Concentration Readings of O₃ (in ppb) at Wembley



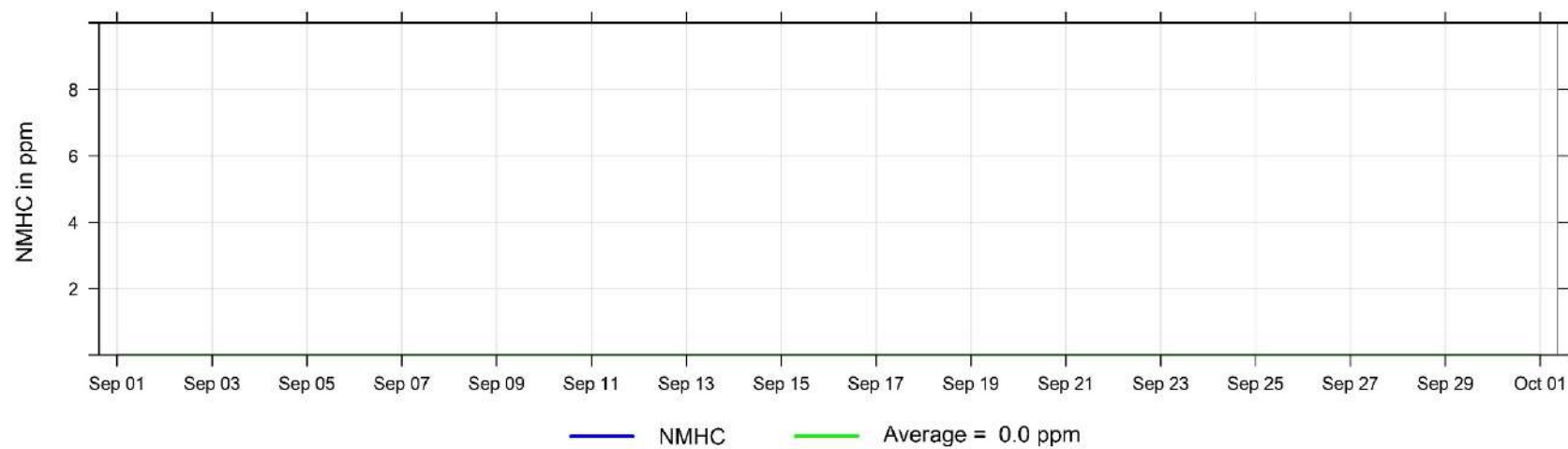
September Hourly Concentration Readings of THC (in ppm) at Wembley



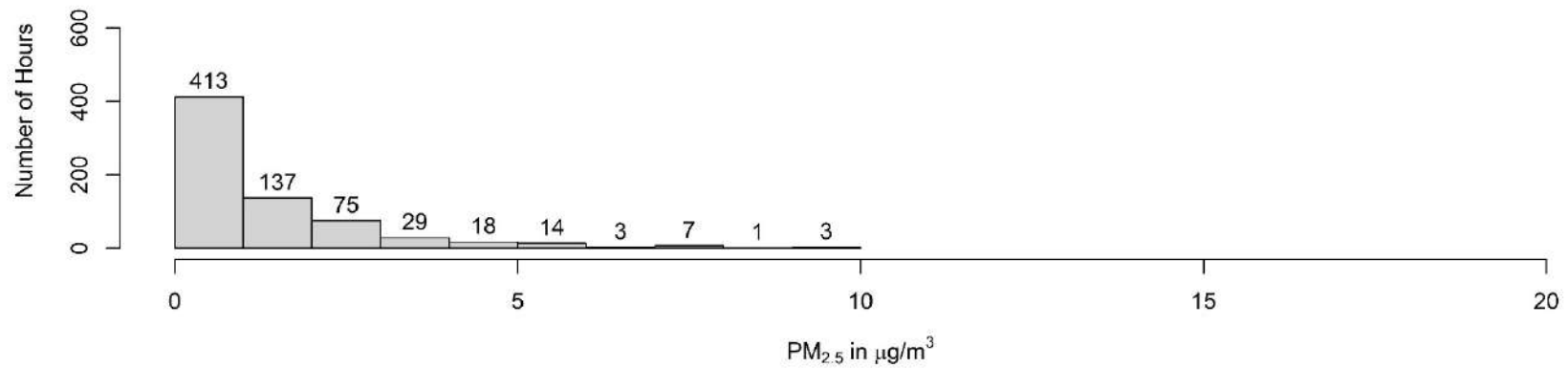
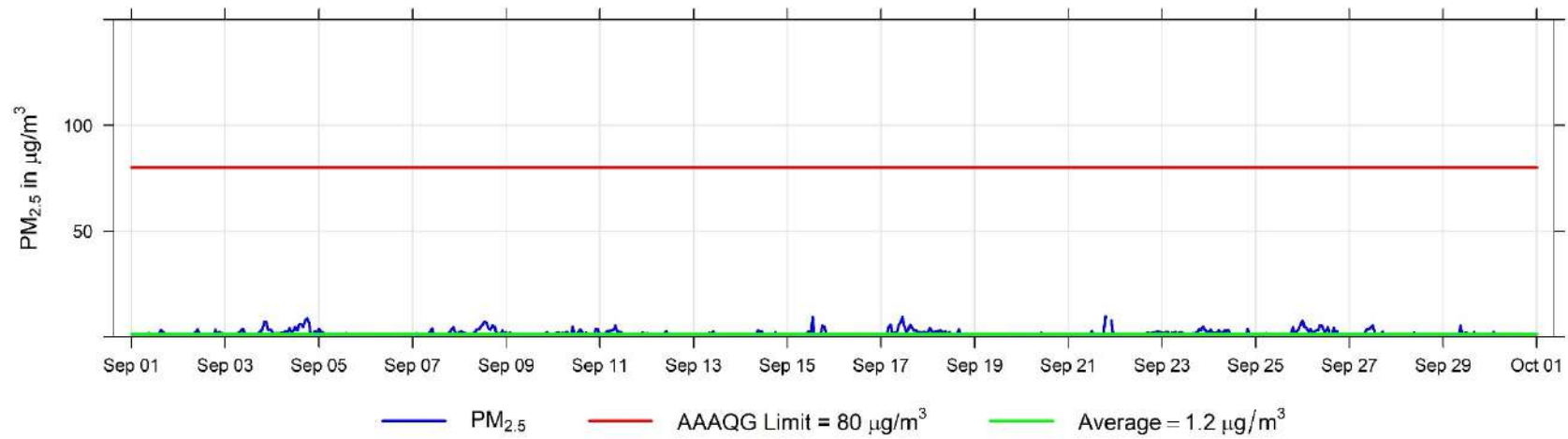
September Hourly Concentration Readings of CH₄ (in ppm) at Wembley



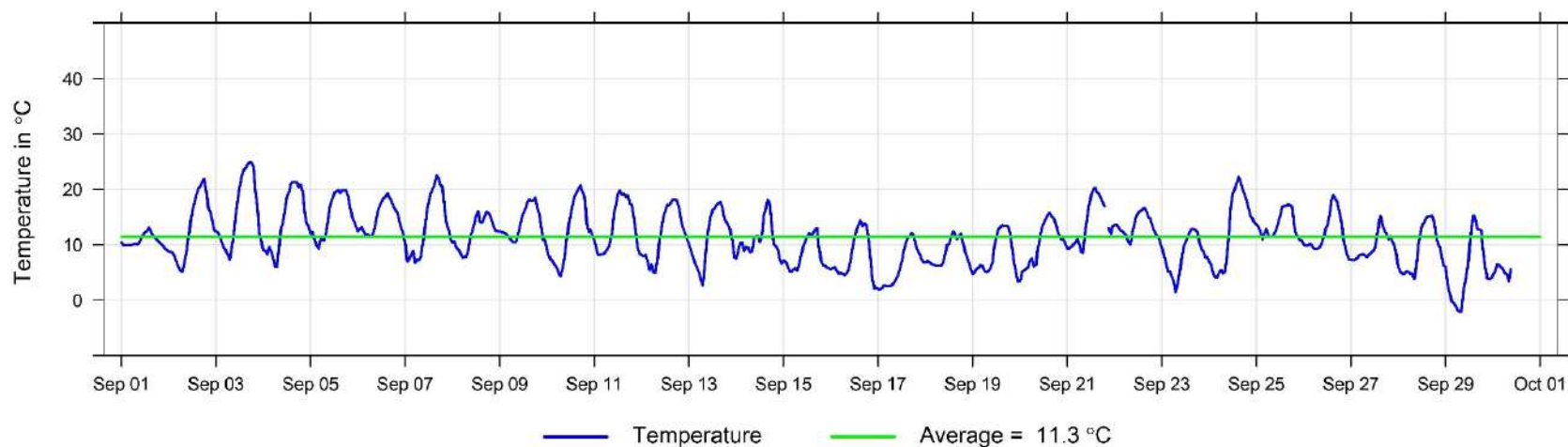
September Hourly Concentration Readings of NMHC (in ppm) at Wembley



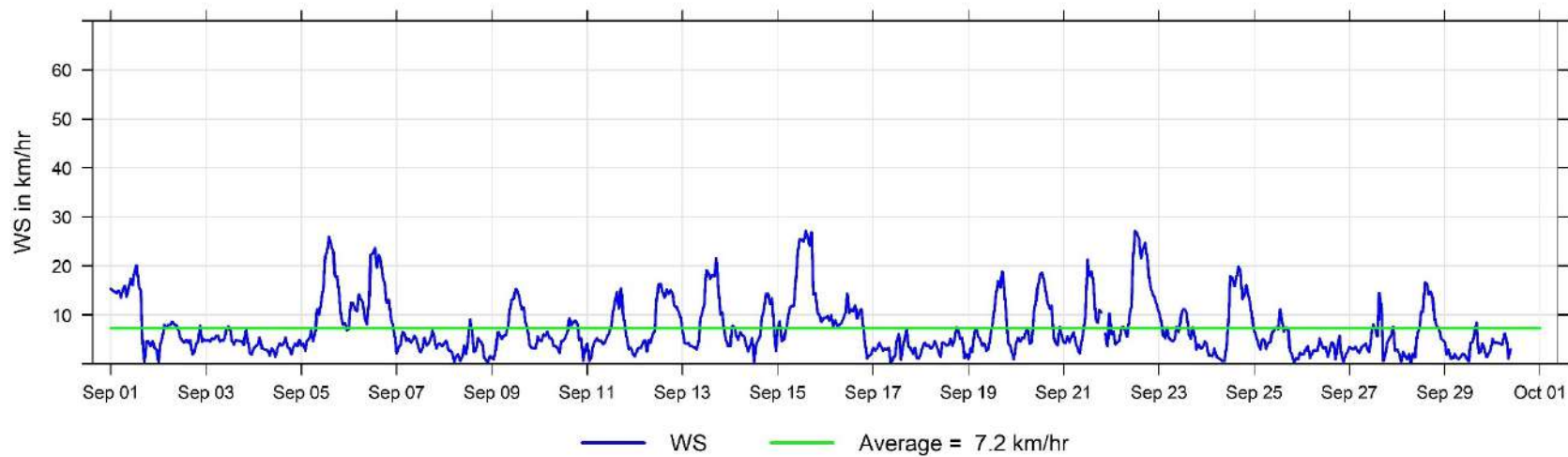
September Hourly Concentration Readings of PM_{2.5} in µg/m³ at Wembley



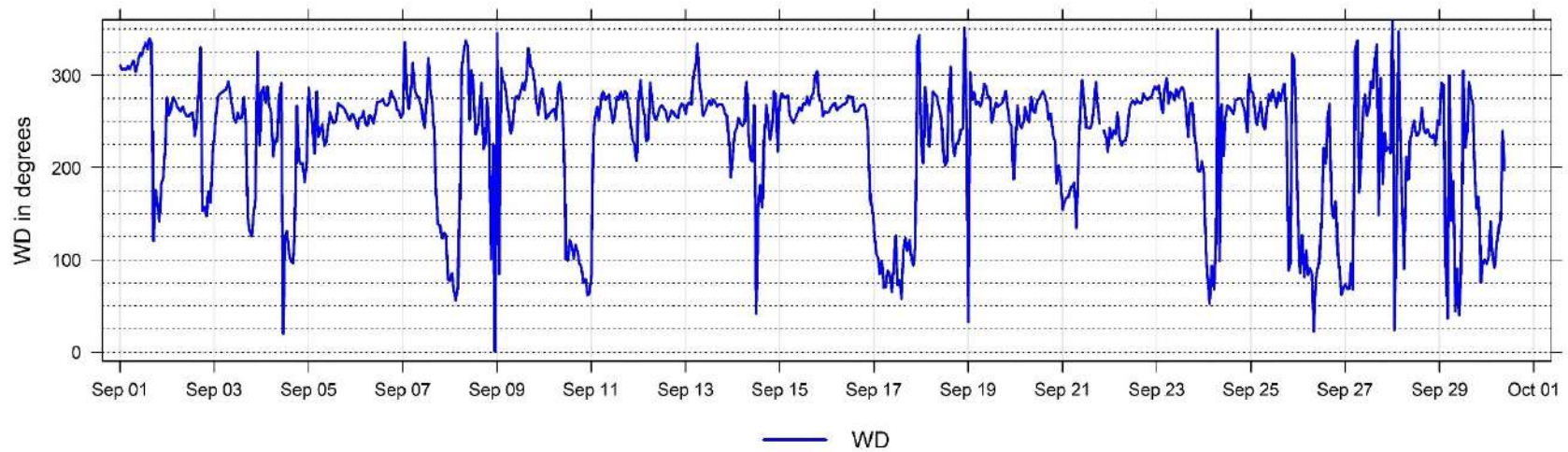
September Hourly Temperature Readings (in °C) at Wembley



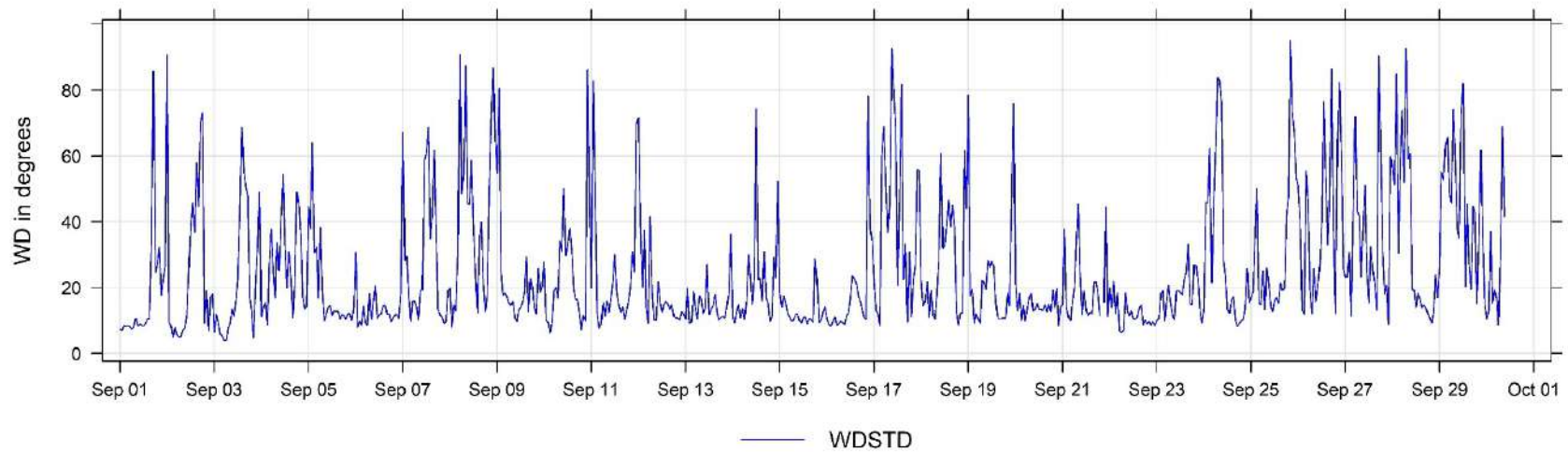
September Hourly Readings of Wind Speed (in km/hr) at Wembley

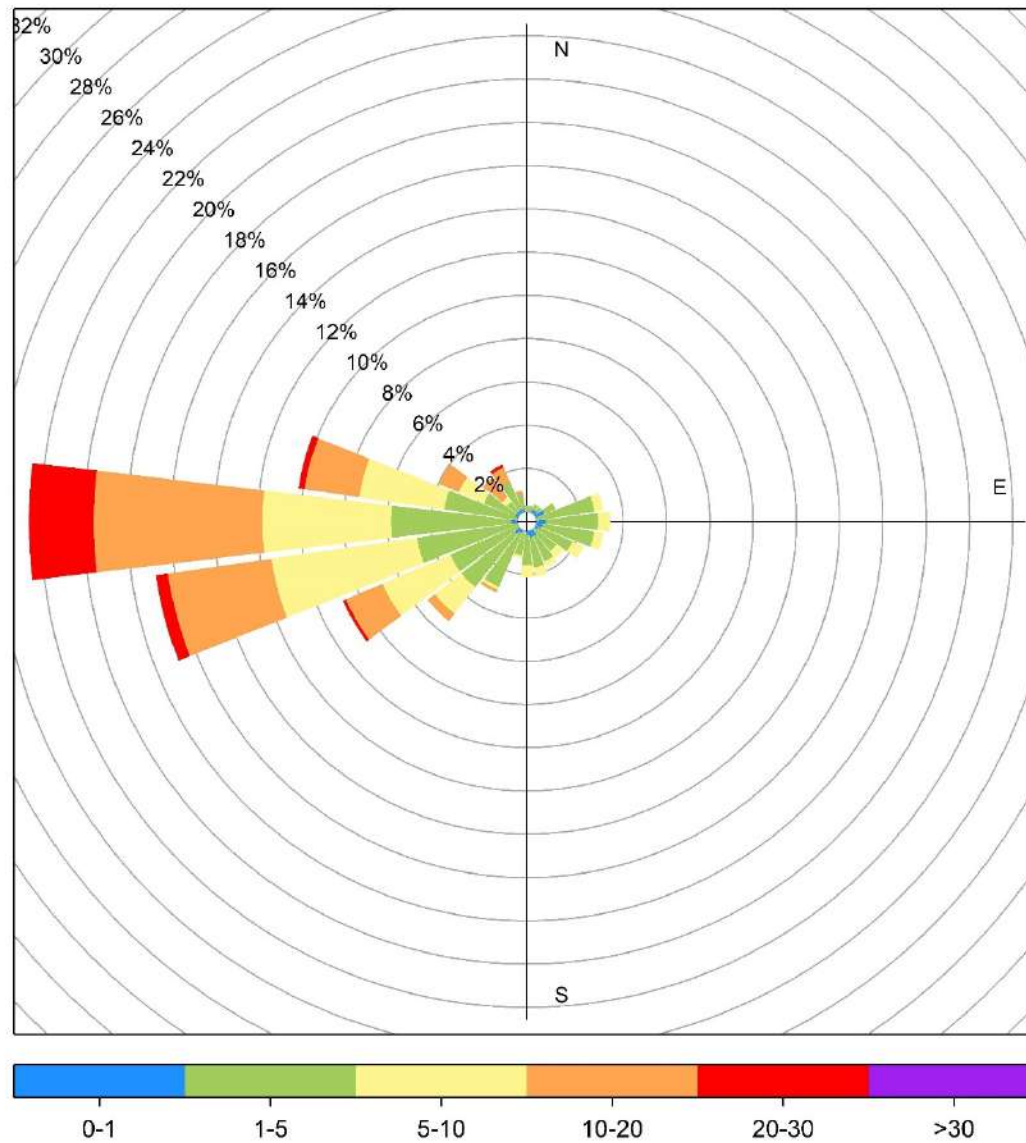


September Hourly Readings of Wind Direction (in degrees) at Wembley



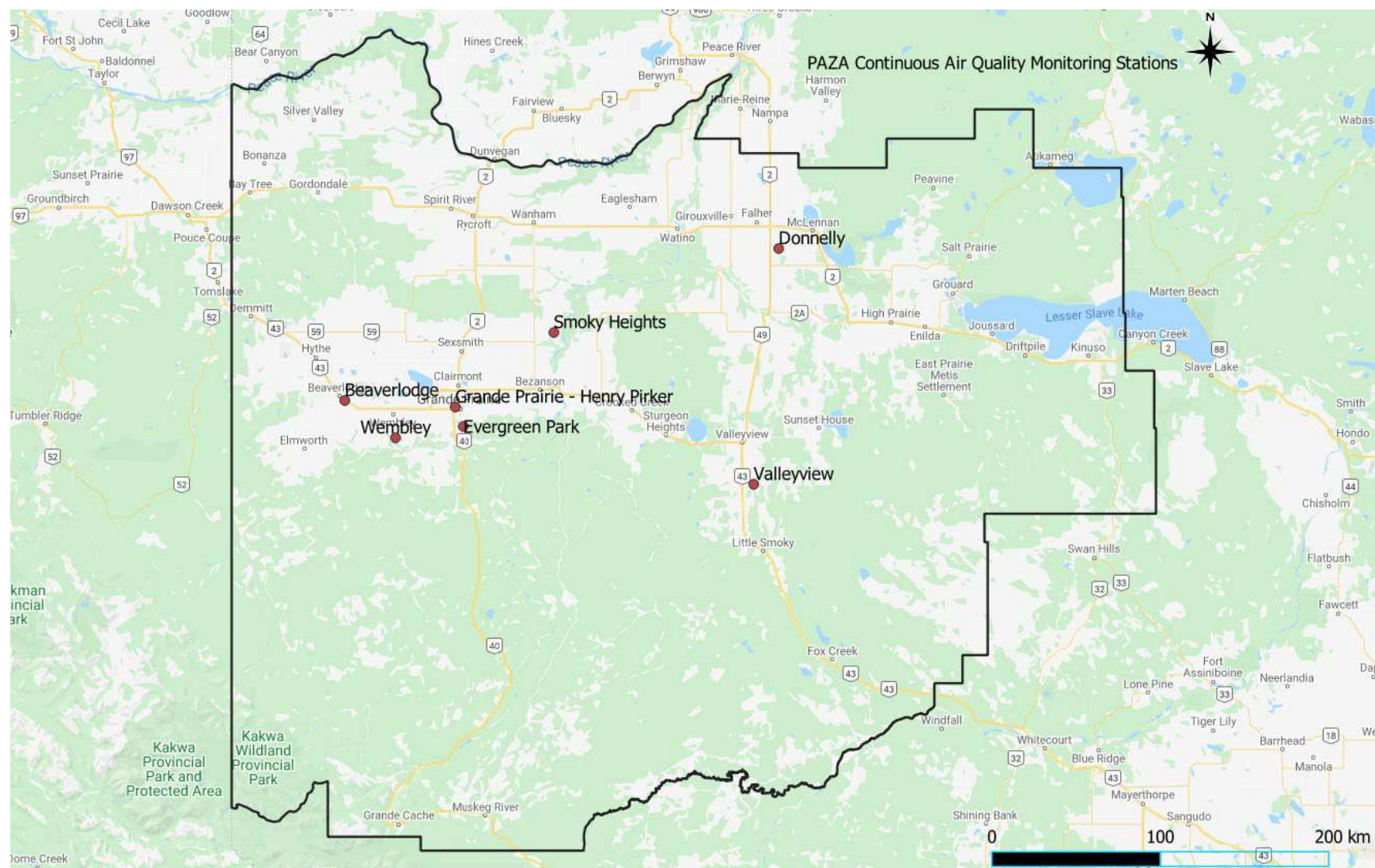
September Hourly Readings of Wind Direction Standard Deviation (in degrees) at Wembley





Wembley September Wind Rose, wind speed in km/hr

9 Concentration Summaries and Roses for PAZA

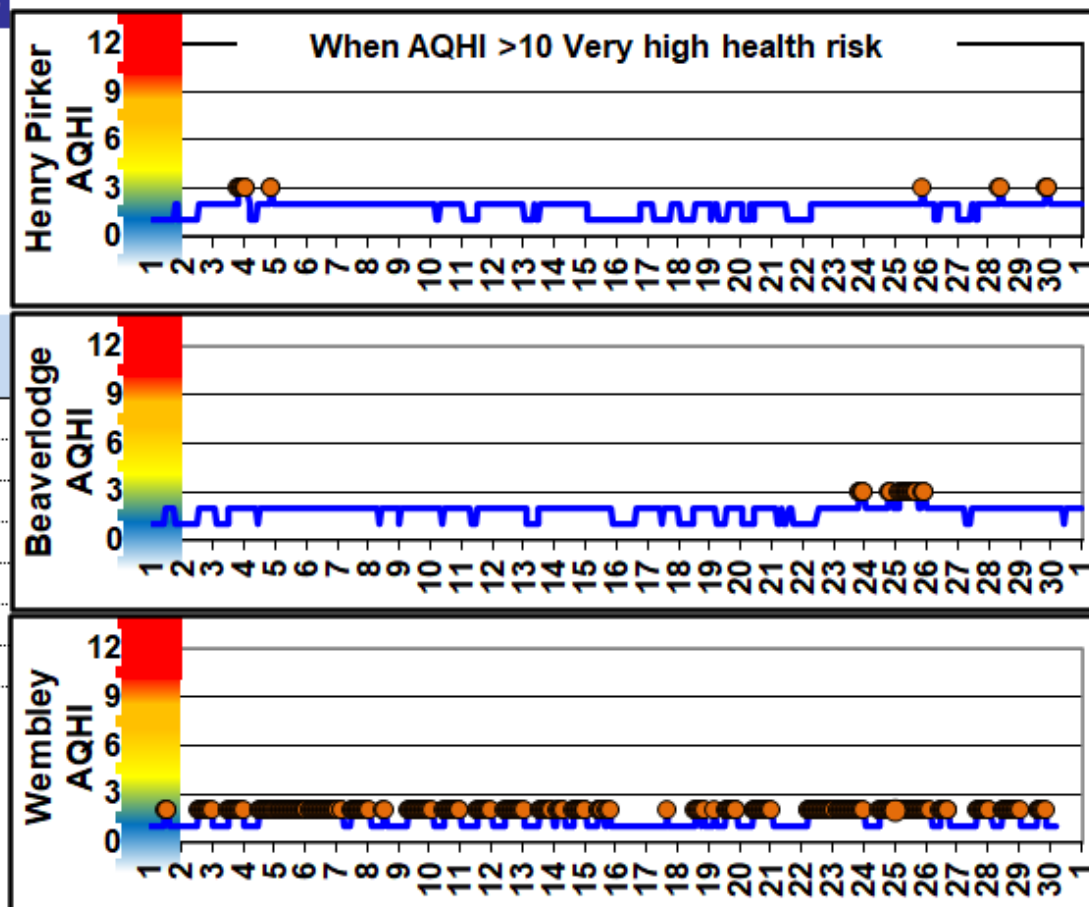


9.1 Air Quality Health Index (AQHI) Plots

September 2021 AQHI Station Summary

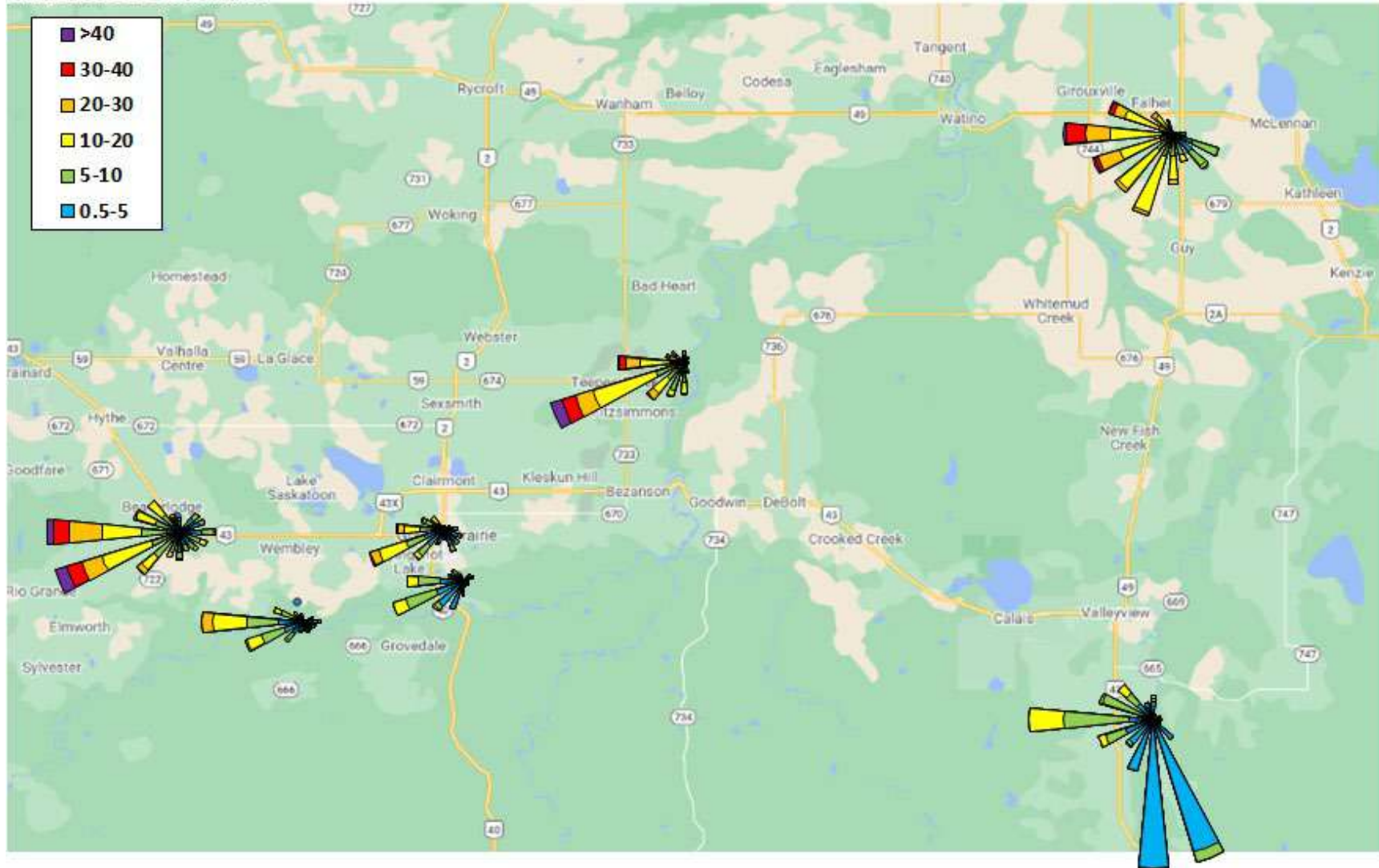


Station	Average AQHI	Max AQHI
Evergreen Park	-	-
Henry Pirker AQHI	1.8	3
Smoky Heights	-	-
Beaverlodge AQHI	1.9	3
Valleyview	-	-
Donnelly	-	-
Wembley AQHI	1.5	2



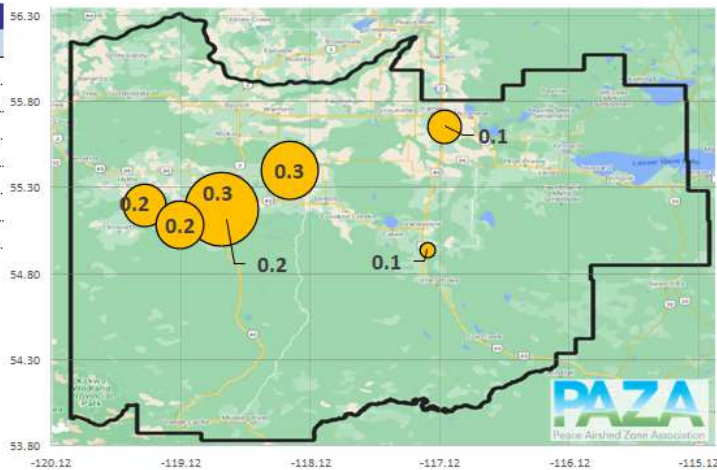
9.2 Wind Roses

Wind Roses in km/hr

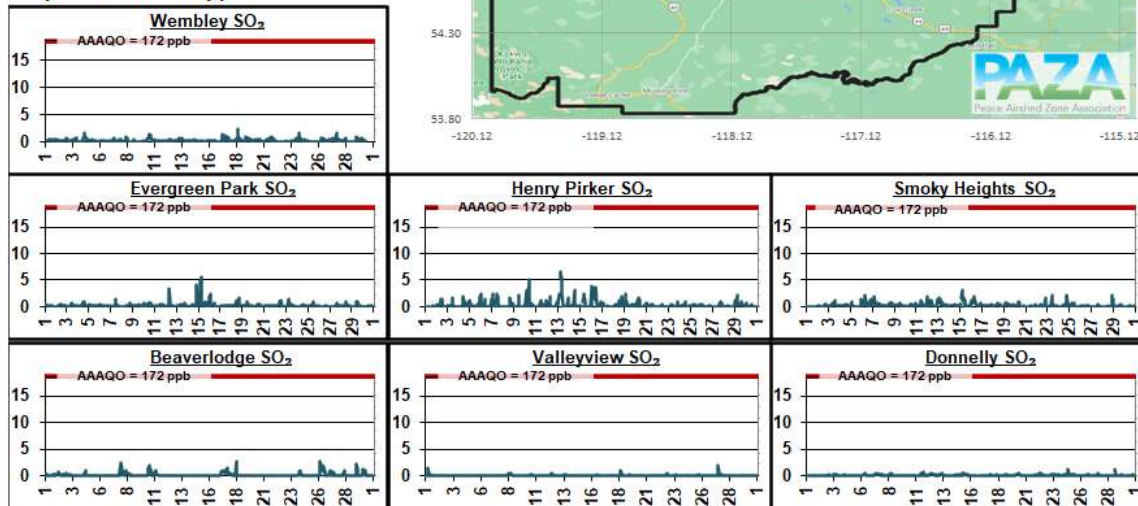


9.3 Sulphur Dioxide (SO₂) Plots

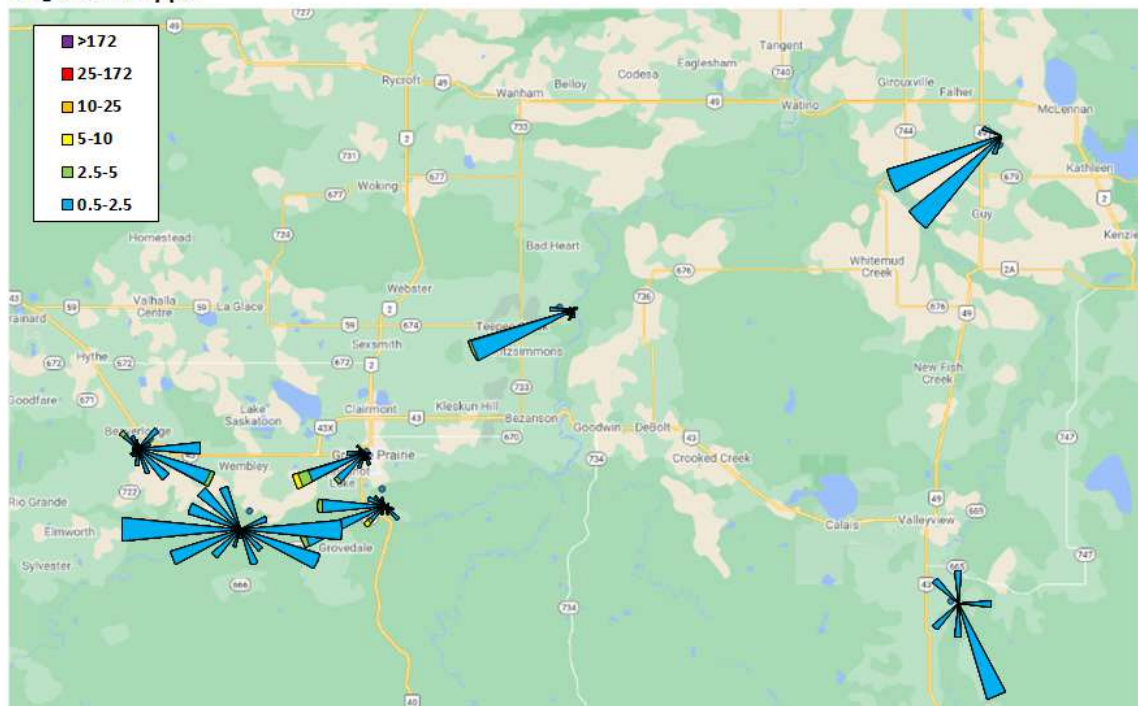
September 2021 SO ₂ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park SO ₂	0.2	5.7
Henry Pirker SO ₂	0.3	6.5
Smoky Heights SO ₂	0.3	3.1
Beaverlodge SO ₂	0.2	2.8
Valleyview SO ₂	0.1	2.0
Donnelly SO ₂	0.1	1.3
Wembley SO ₂	0.2	2.3



Sulphur Dioxide in ppb



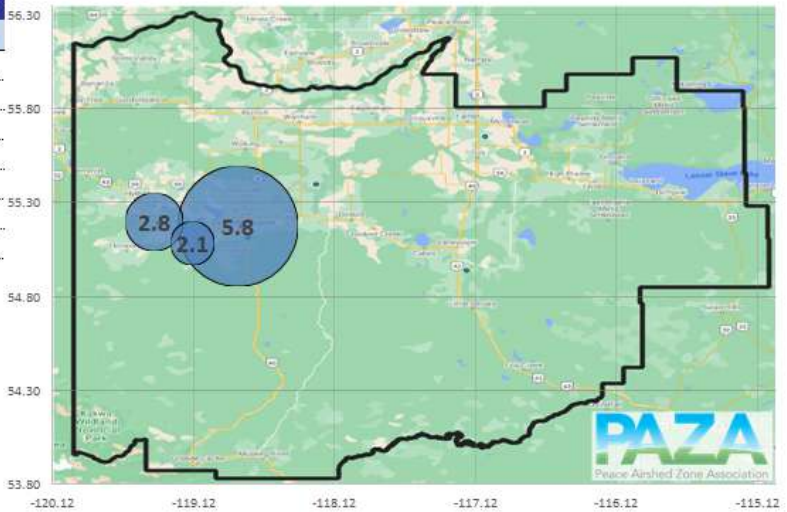
SO₂ Roses in ppb



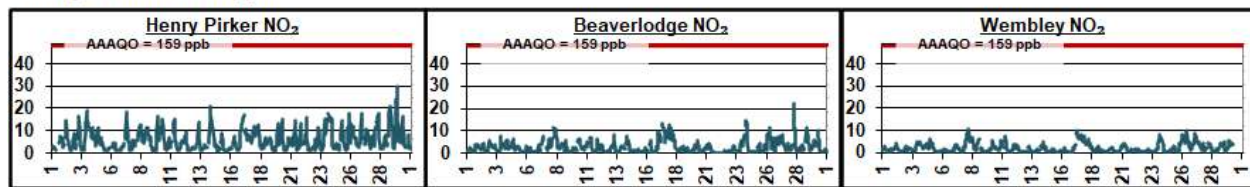
9.4 Nitrogen Dioxide (NO₂) Plots

September 2021 NO₂ Station Summary

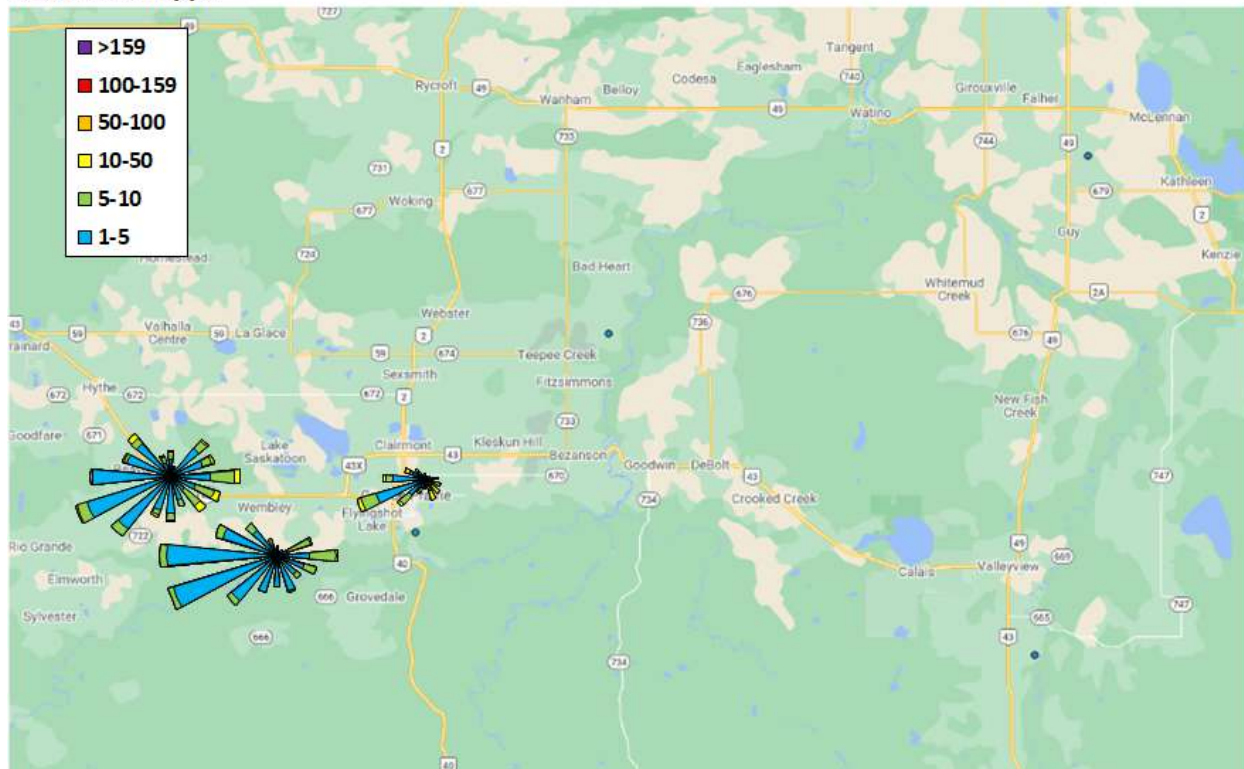
Station	Avg (ppb)	Max (ppb)
Evergreen Park NO ₂	-	-
Henry Pirkler NO ₂	5.8	29.8
Smoky Heights NO ₂	-	-
Beaverlodge NO ₂	2.8	22.1
Valleyview NO ₂	-	-
Donnelly NO ₂	-	-
Wembley NO ₂	2.1	10.5



Nitrogen Dioxide in ppb

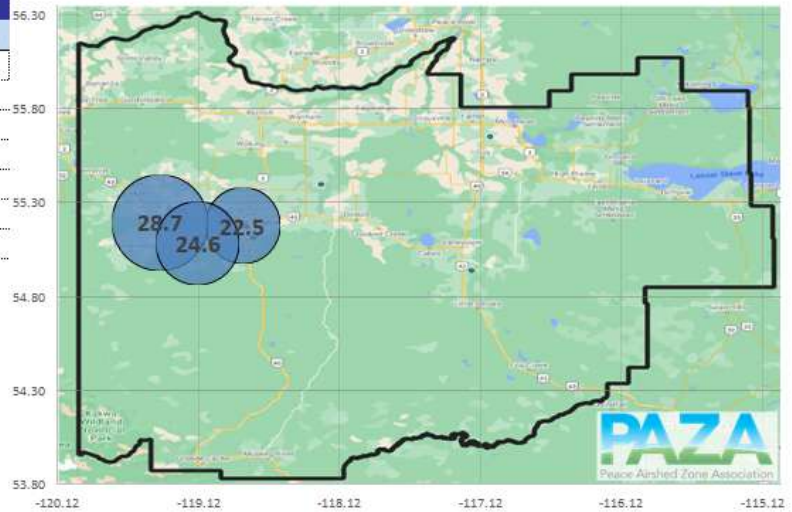


NO₂ Roses in ppb

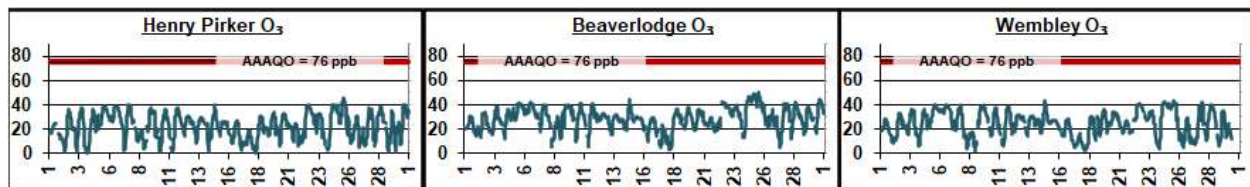


9.5 Ozone (O₃) Plots

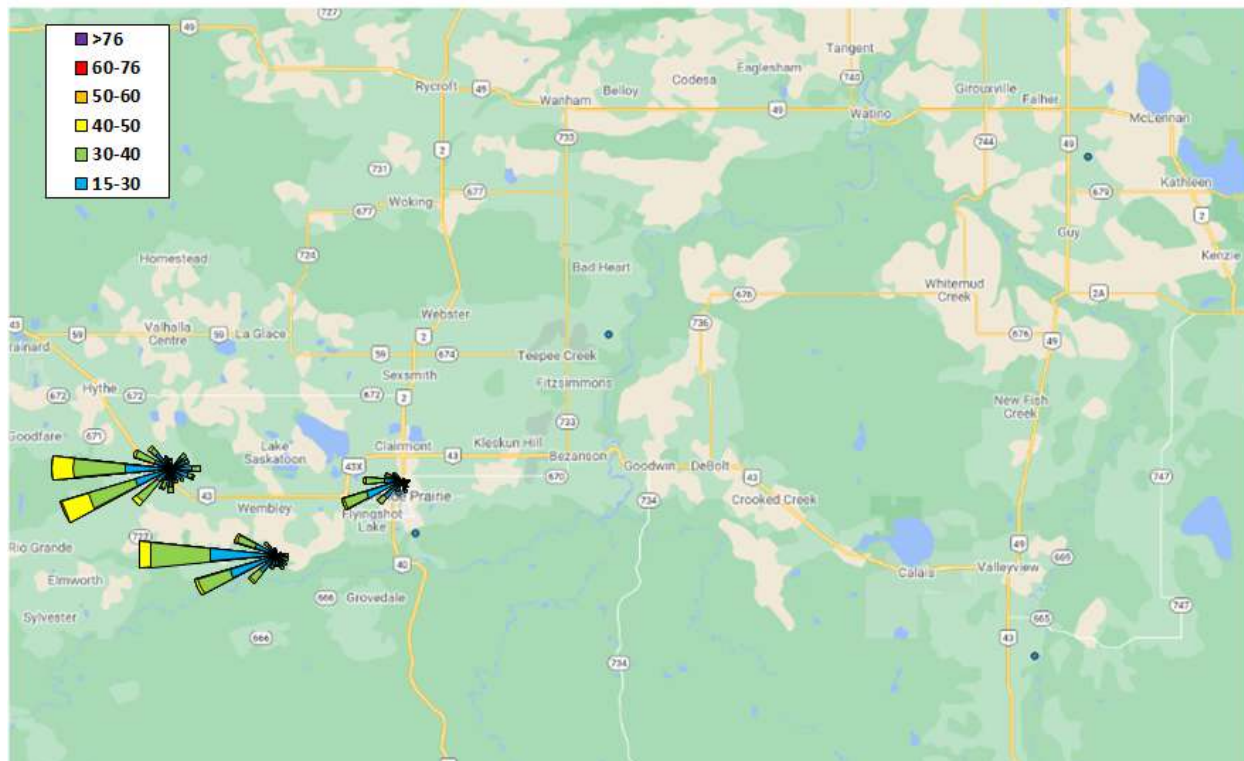
September 2021 O ₃ Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park O ₃	-	-
Henry Pirker O ₃	22.5	45.5
Smoky Heights O ₃	-	-
Beaverlodge O ₃	28.7	50.5
Valleyview O ₃	-	-
Donnelly O ₃	-	-
Wembley O ₃	24.6	43.7



Ozone in ppb



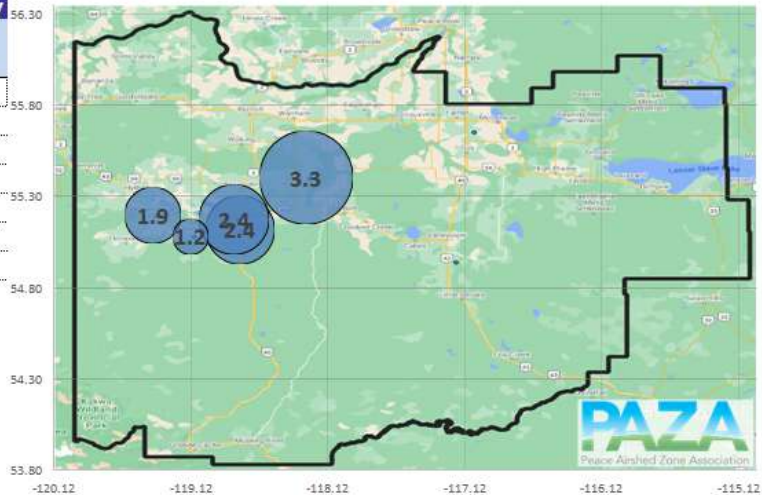
O₃ Roses in ppb



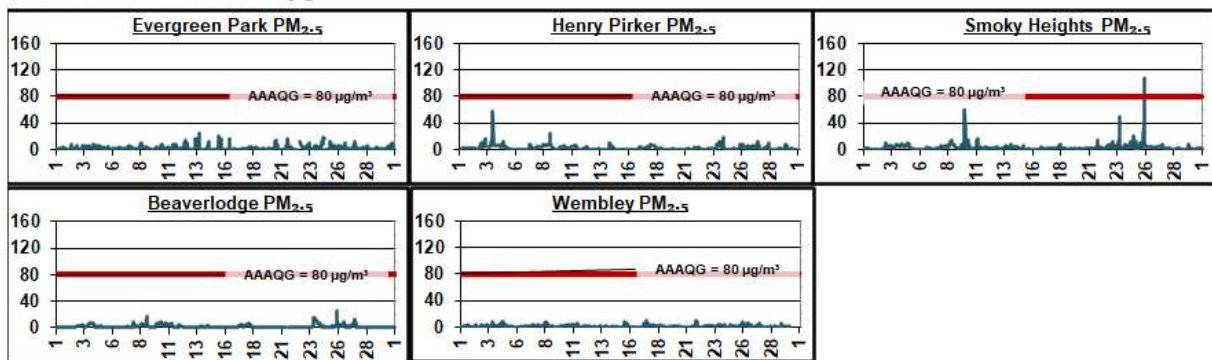
9.6 Fine Particulate Matter (PM_{2.5}) Plots

September 2021 PM_{2.5} Station Summary

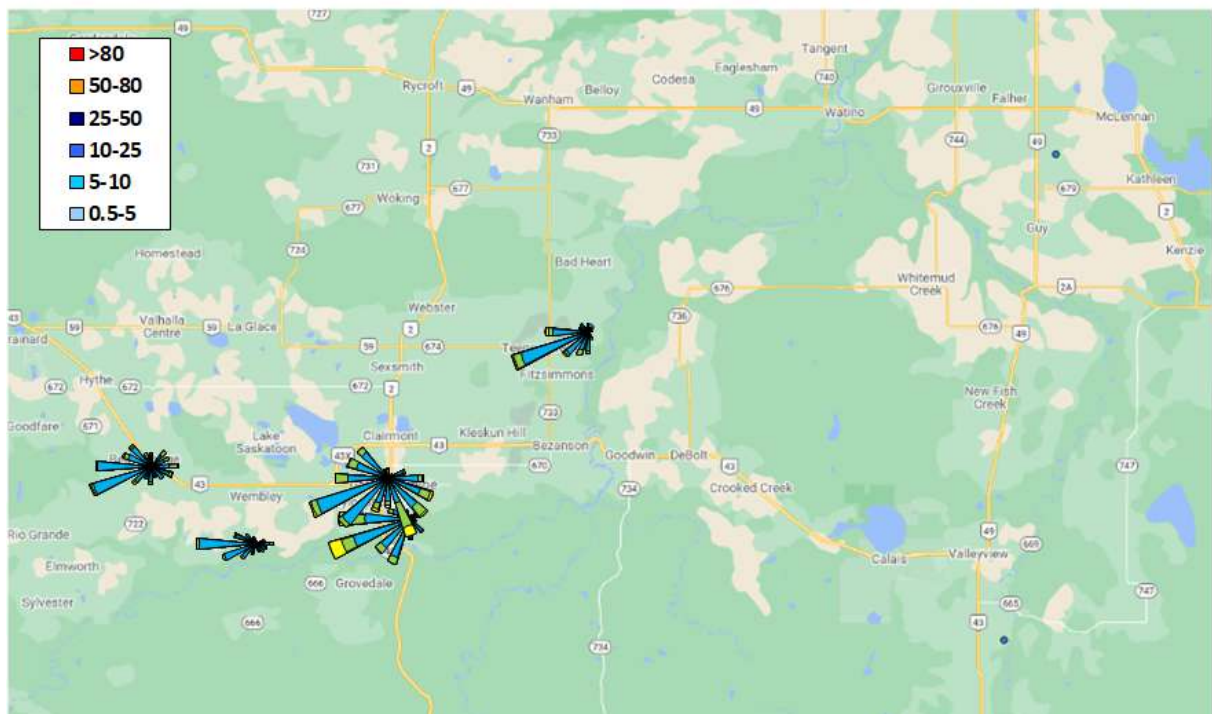
Station	Avg µg/m ³	Max µg/m ³
Evergreen Park PM _{2.5}	2.4	25.4
Henry Pirkler PM _{2.5}	2.4	58.7
Smoky Heights PM _{2.5}	3.3	107.9
Beaverlodge PM _{2.5}	1.9	26.4
Valleyview PM _{2.5}	-	-
Donnelly PM _{2.5}	-	-
Wembley PM _{2.5}	1.2	9.5



Fine Particulate Matter in µg/m³



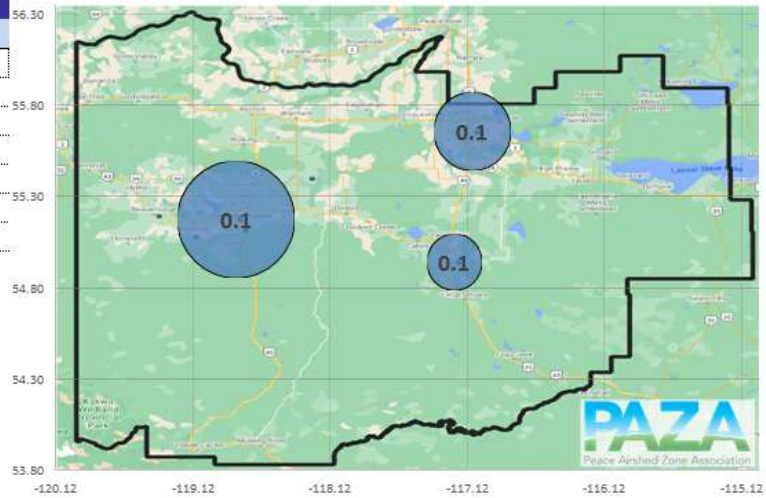
PM_{2.5} Roses in µg/m³



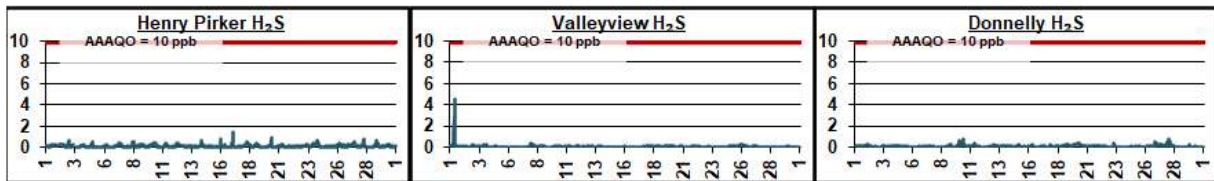
9.7 Hydrogen Sulphide (H₂S) Plots

September 2021 H₂S Station Summary

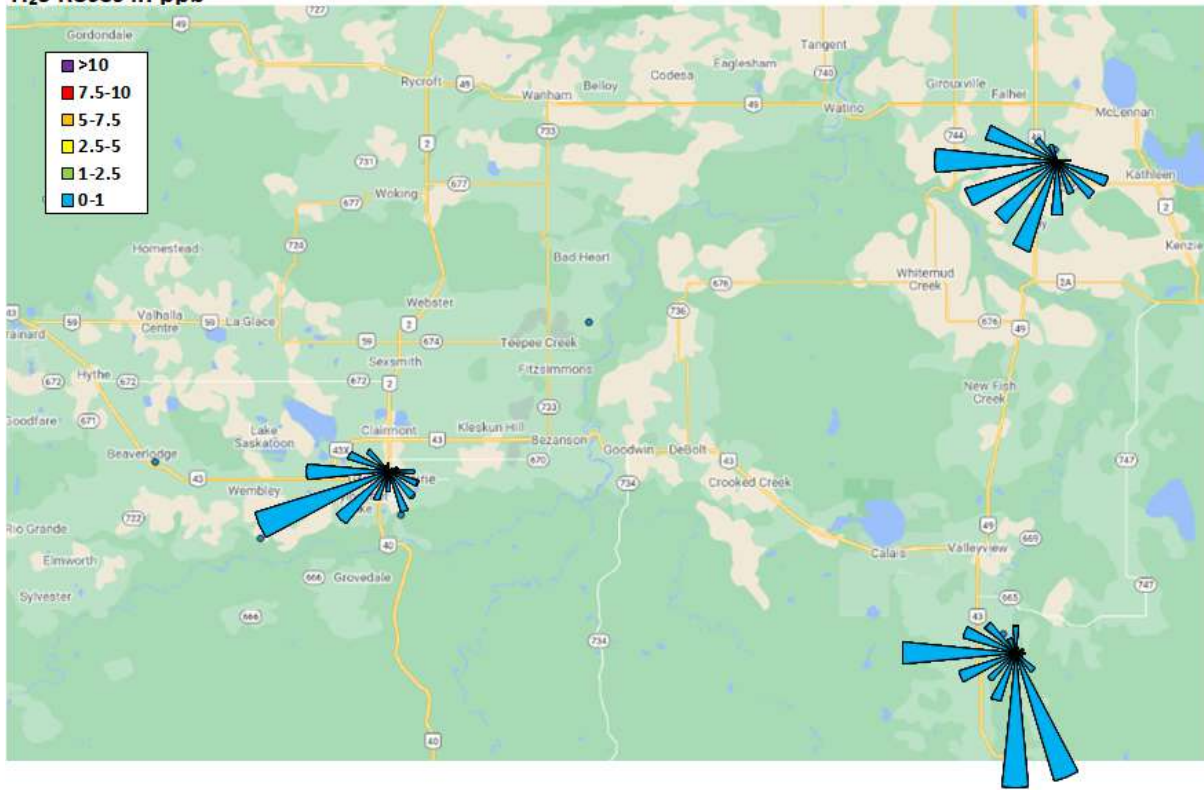
Station	Avg (ppb)	Max (ppb)
Evergreen Park H ₂ S	-	-
Henry Pirkler H ₂ S	0.1	1.5
Smoky Heights H ₂ S	-	-
Beaverlodge H ₂ S	-	-
Valleyview H ₂ S	0.1	4.5
Donnelly H ₂ S	0.1	0.8
Wembley H ₂ S	-	-



Hydrogen Sulphide in ppb

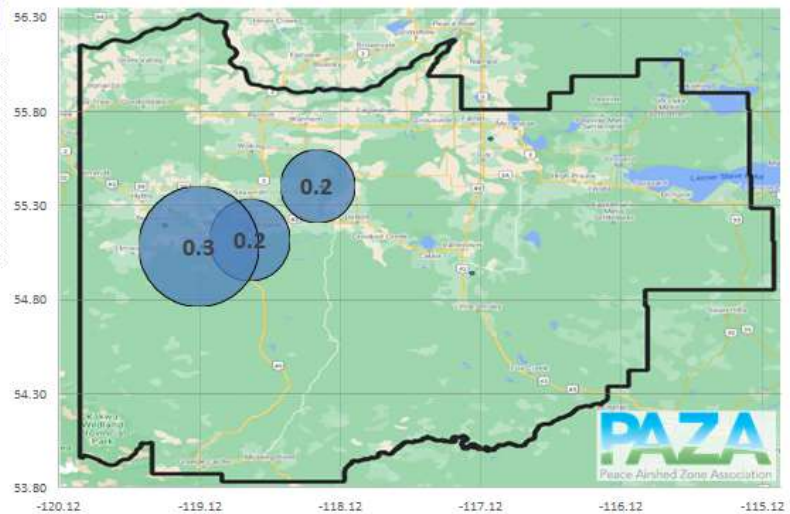


H₂S Roses in ppb

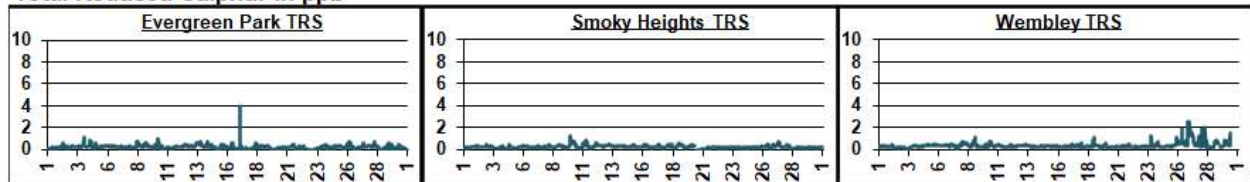


9.8 Total Reduced Sulphur (TRS) Plots

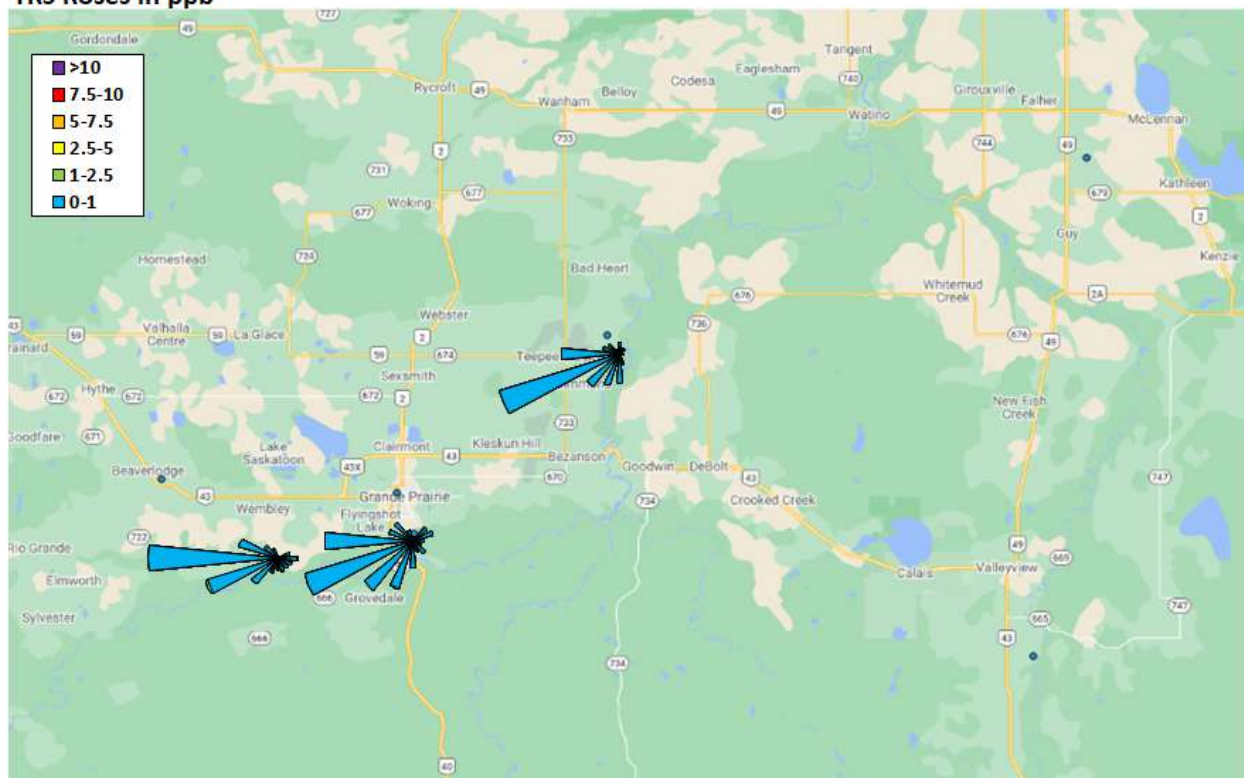
September 2021 TRS Station Summary		
Station	Avg (ppb)	Max (ppb)
Evergreen Park TRS	0.2	3.9
Henry Pirkler TRS	-	-
Smoky Heights TRS	0.2	1.2
Beaverlodge TRS	-	-
Valleyview TRS	-	-
Donnelly TRS	-	-
Wembley TRS	0.3	2.5



Total Reduced Sulphur in ppb



TRS Roses in ppb

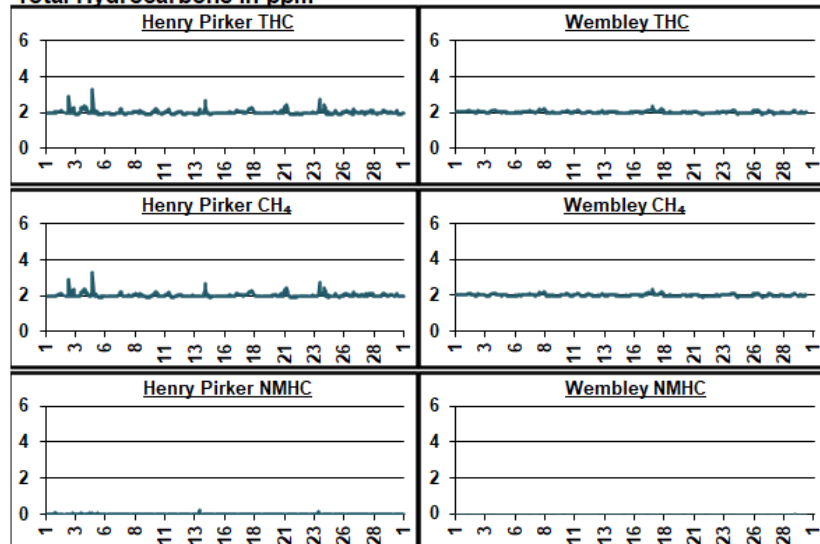


9.9 Total Hydrocarbon (THC) Plots

September 2021 THC Station Summary

Station	Total Hydrocarbons		Methane		Non-Methane HCs	
	Avg (ppm)	Max (ppm)	Avg (ppm)	Max (ppm)	Avg (ppm)	Max (ppm)
Evergreen Park THC	-	-	-	-	-	-
Henry Pirker THC	2.0	3.3	2.0	3.3	0.0	0.2
Smoky Heights THC	-	-	-	-	-	-
Beaverlodge THC	-	-	-	-	-	-
Valleyview THC	-	-	-	-	-	-
Donnelly THC	-	-	-	-	-	-
Wembley THC	2.0	2.3	2.0	2.3	0.0	0.0

Total Hydrocarbons in ppm



Total Hydrocarbons (THC)

Methane (CH₄)

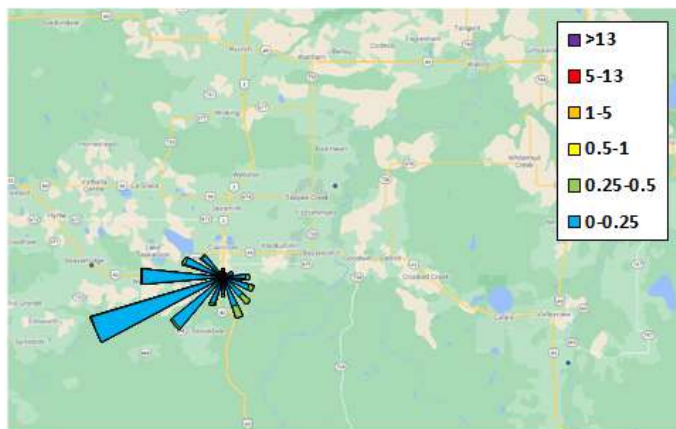
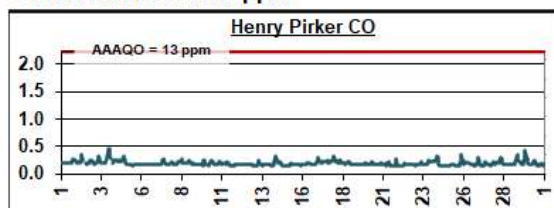
Non-Methane Hydrocarbons (NMHC)

9.10 Carbon Monoxide (CO) Plots

September 2021 CO Station Summary

Station	Avg (ppm)	Max (ppm)
Henry Pirker CO	0.19	0.47

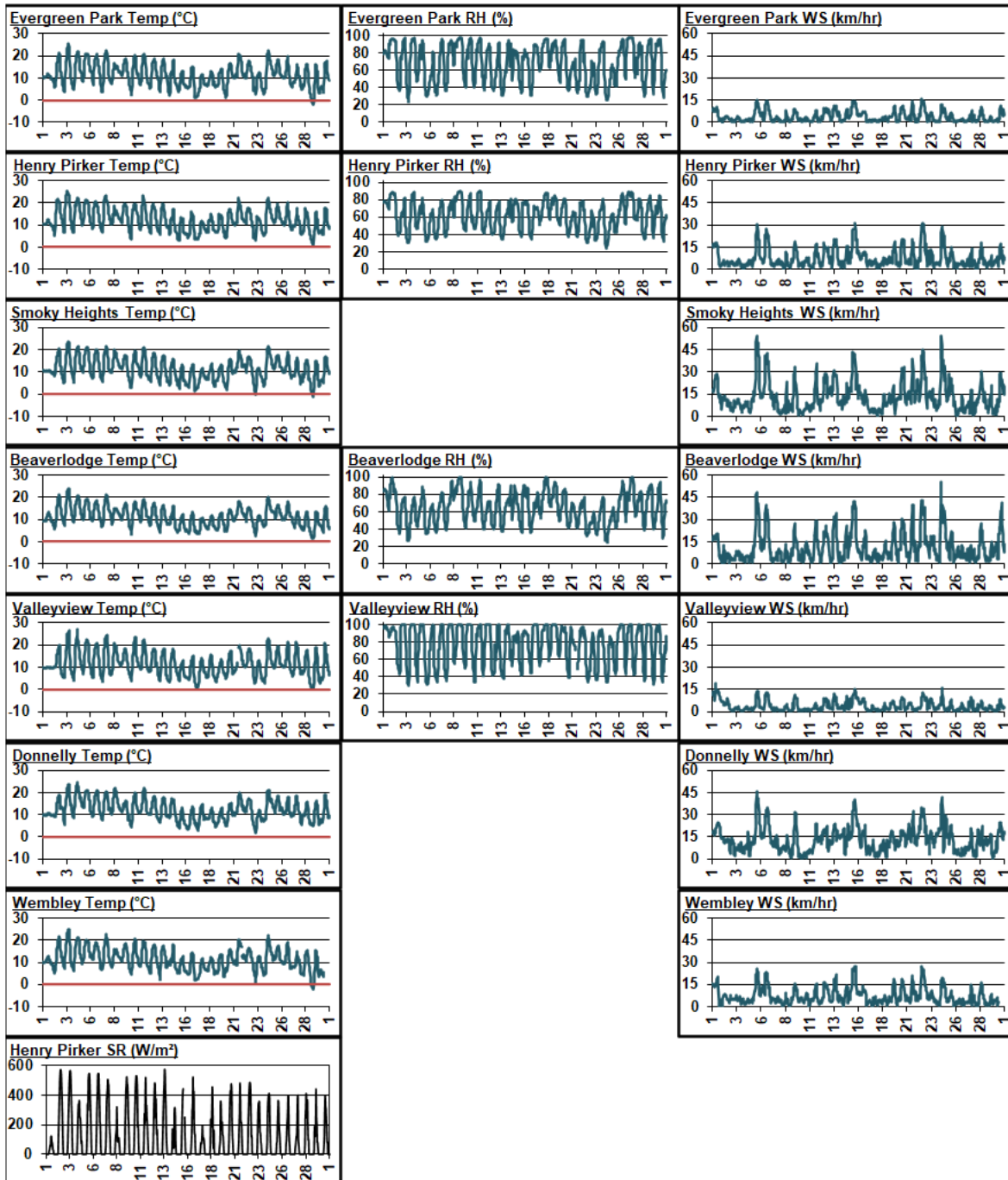
Carbon Monoxide in ppm



9.11 Meteorology Summary

September 2021 Meteorological Summary						
Station	Temp (°C)	RH (%)	SR (W/m²)	WS (km/hr)	WD (deg)	WD
Evergreen Park	11.3	68.5	-	4.0	255.9	WSW
Henry Pirkner	12.3	62.2	112.2	7.6	250	WSW
Smoky Heights	11.2	-	-	13.7	249	WSW
Beaverlodge	11.3	64.8	-	11.7	258	WSW
Valleyview	11.5	76.7	-	3.8	254	WSW
Donnelly	12.2	-	-	13.4	248	WSW
Wembley	11.3	-	-	7.2	263	W

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



10 Passive Monitoring Data

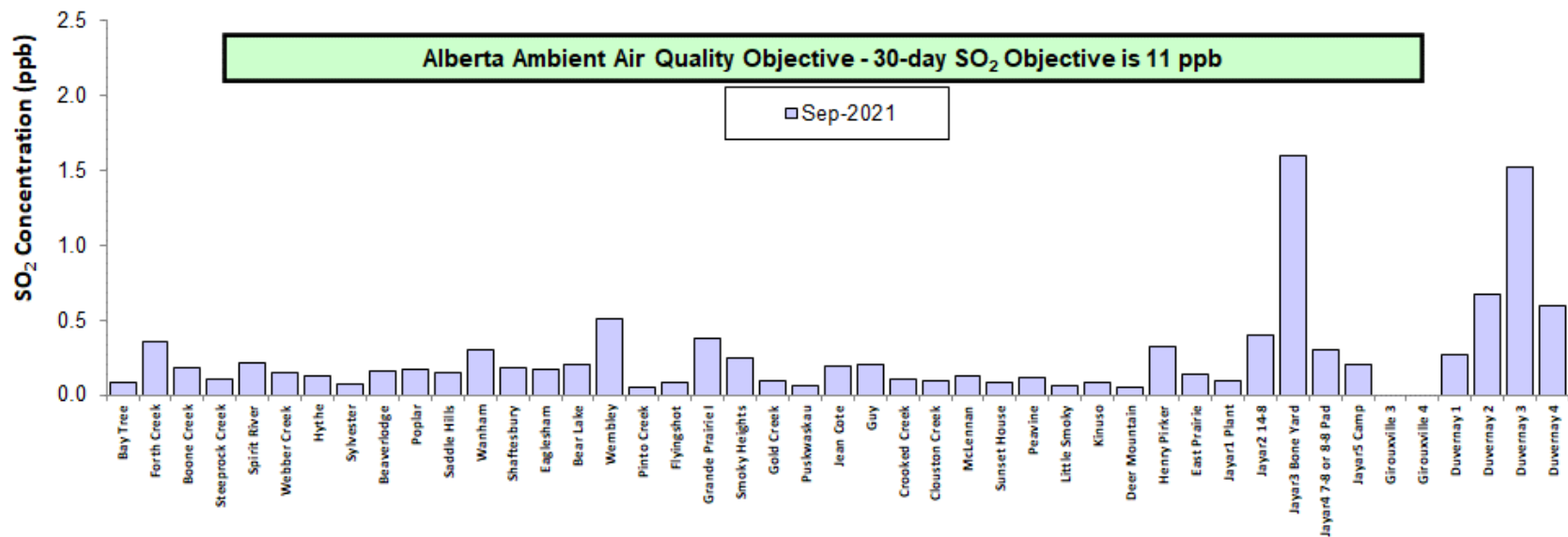
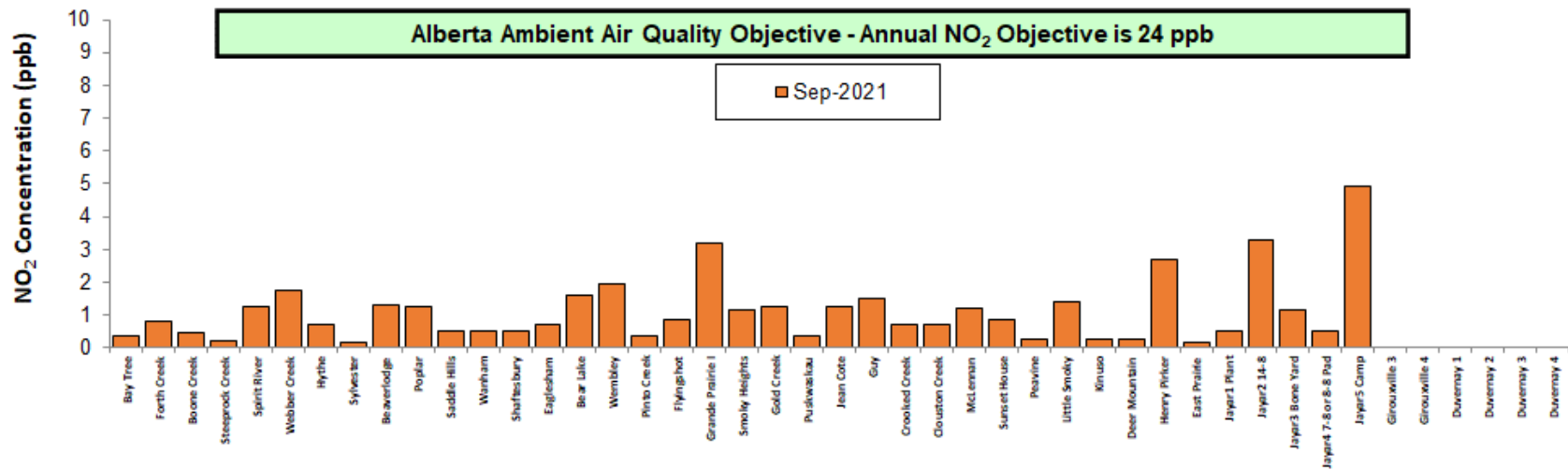
Peace Airshed Zone Association - PAZA Passive Stations for September 2021

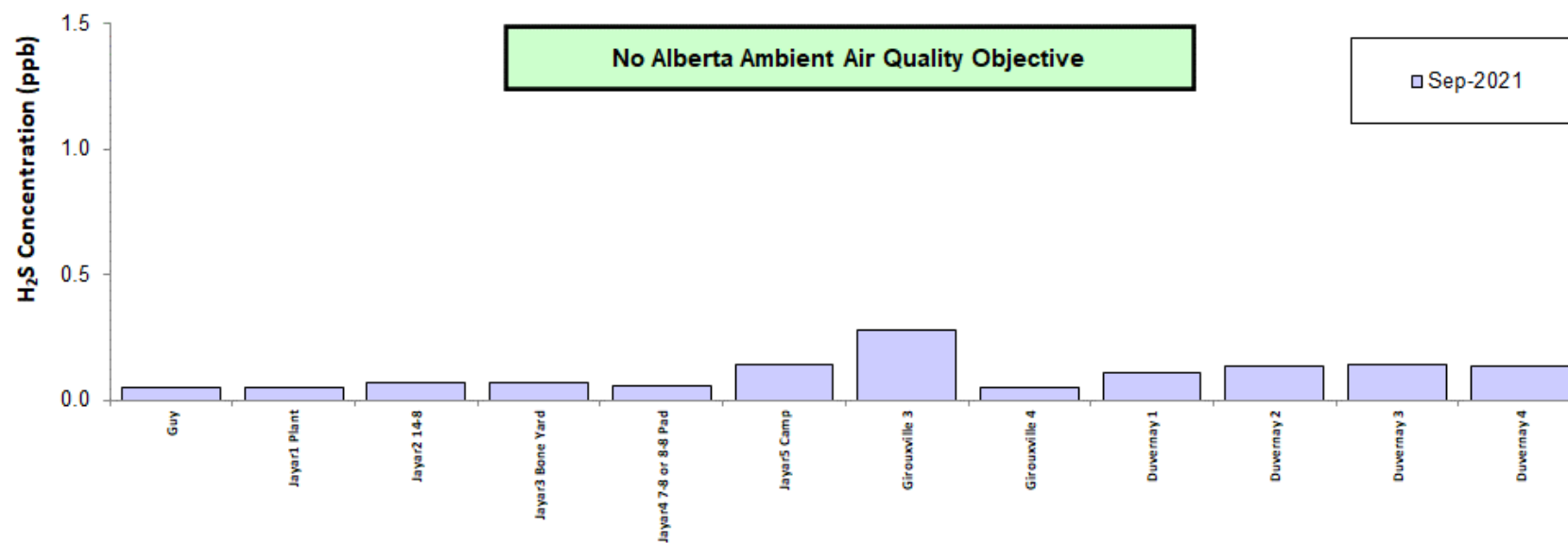
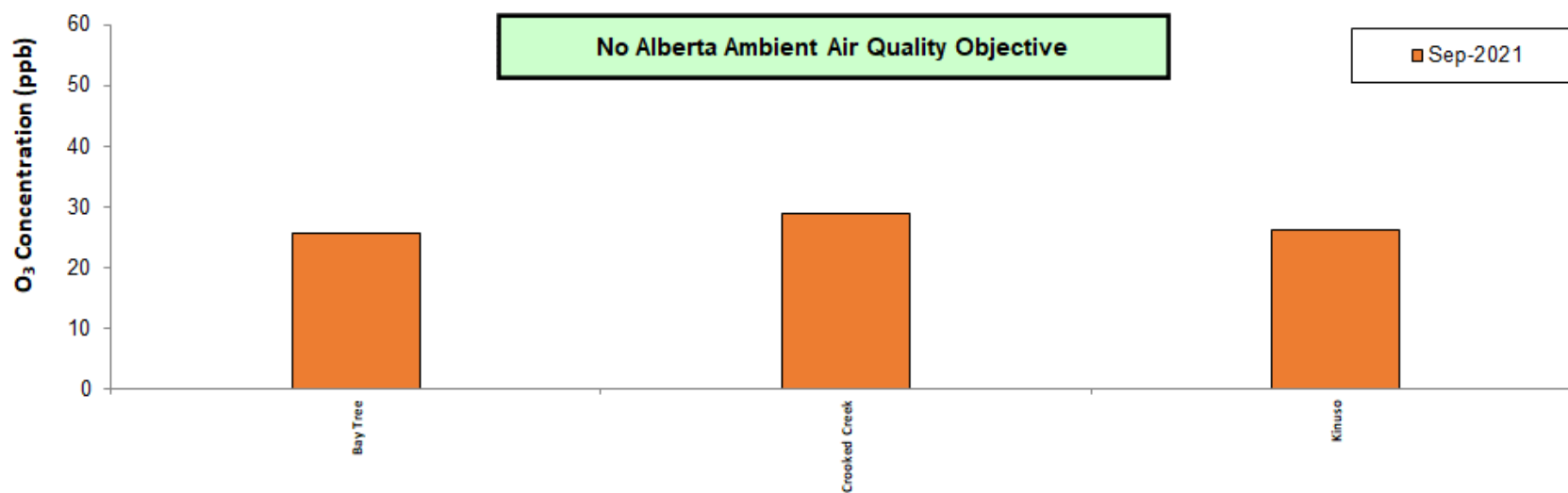
Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
Duplicates						
11a	Webber Creek	0.1				
11b	Webber Creek	0.2				
12a	Hythe			0.7		
12b	Hythe			0.7		
14a	Sylvester	0.1				
14b	Sylvester	0.0				
19a	Wanham			0.5		
19b	Wanham			0.6		
24a	Wembley			2.0		
24b	Wembley			1.9		
26a	Flyingshot	0.2				
26b	Flyingshot	0.2				
36a	Guy	0.1			0.1	
36b	Guy	0.1			0.1	
37a	Crooked Creek		28.4			
37b	Crooked Creek		29.3			
42a	Sunset House	0.1				
42b	Sunset House	0.1				
48a	Deer Mountain			0.3		
48b	Deer Mountain			0.2		
G4a	Girouxville 4				0.1	
G4b	Girouxville 4				0.1	
D2a	Duvernay 2	0.2			0.1	
D2b	Duvernay 2	1.1			0.1	
J3a	Bone Yard			1.3		
J3b	Bone Yard			1.0		
J5a	Camp	0.2			0.1	
J5b	Camp	0.2			0.1	

2	Bay Tree	0.1	25.8	0.4	-	13-16-078-13 W6M
3	Forth Creek	0.4	-	0.8	-	04-13-082-07 W6M
5	Boone Creek	0.2	-	0.5	-	01-23-076-11 W6M
7	Steepprock Creek	0.1	-	0.2	-	09-35-072-13 W6M
9	Spirit River	0.2	-	1.3	-	08-12-079-07 W6M
11	Webber Creek	0.2	-	1.8	-	09-36-074-09 W6M
12	Hythe	0.1	-	0.7	-	14-36-072-11 W6M
14	Sylvester	0.1	-	0.2	-	08-06-069-12 W6M
16	Beaverlodge	0.2	-	1.3	-	15-36-071-10 W6M
17	Poplar	0.2	-	1.3	-	13-06-073-08 W6M
18	Saddle Hills	0.2	-	0.5	-	04-25-074-07 W6M
19	Wanham	0.3	-	0.5	-	16-22-077-03 W6M
20	Shaftesbury	0.2	-	0.5	-	04-03-082-23 W5M
21	Eaglesham	0.2	-	0.7	-	16-21-079-25 W5M
23	Bear Lake	0.2	-	1.6	-	15-31-072-06 W6M
24	Wembley	0.5	-	1.9	-	12-31-070-08 W6M
25	Pinto Creek	0.1	-	0.4	-	04-24-069-11 W6M
26	Flyingshot	0.1	-	0.9	-	15-36-070-07 W6M
27	Grande Prairie I	0.4	-	3.2	-	08-15-071-06 W6M
29	Smoky Heights	0.3	-	1.2	-	04-06-075-02 W6M
32	Gold Creek	0.1	-	1.2	-	06-33-067-05 W6M
34	Puskwaskau	0.1	-	0.4	-	15-35-074-25 W5M
35	Jean Cote	0.2	-	1.3	-	12-35-079-21 W5M
36	Guy	0.2	-	1.5	0.1	03-04-076-22 W5M
37	Crooked Creek	0.1	28.9	0.7	-	16-01-071-26 W5M
39	Clouston Creek	0.1	-	0.7	-	12-01-073-22 W5M
40	McLennan	0.1	-	1.2	-	03-29-077-19 W5M
42	Sunset House	0.1	-	0.9	-	05-32-070-19 W5M
44	Peavine	0.1	-	0.3	-	03-05-079-15 W5M
46	Little Smoky	0.1	-	1.4	-	12-01-065-21 W5M
47	Kinuso	0.1	26.2	0.3	-	12-10-073-10 W5M
48	Deer Mountain	0.0	-	0.3	-	15-22-068-09 W5M
49	Henry Pirker	0.3	-	2.7	-	17-26-071-06 W6M
50	East Prairie	0.1	-	0.2	-	11-13-079-08 W6M
57	Jayar1 Plant	0.1	-	0.5	0.1	06-08-062-03 W6M
58	Jayar2 14-8	0.4	-	3.3	0.1	07-08-062-03 W6M
59	Jayar3 Bone Yard	1.6	-	1.2	0.1	14-08-062-03 W6M
60	Jayar4 7-8 or 8-8 Pad	0.3	-	0.5	0.1	10-08-062-03 W6M
61	Jayar5 Camp	0.2	-	4.9	0.1	11-08-062-03 W6M
G3	Girouxville 3	-	-	-	0.3	14-02-077-23 W5M
G4	Girouxville 4	-	-	-	0.1	04-08-077-22 W5M
D1	Duvernay 1	0.3	-	-	0.1	
D2	Duvernay 2	0.7	-	-	0.1	
D3	Duvernay 3	1.5	-	-	0.1	
D4	Duvernay 4	0.6	-	-	0.1	

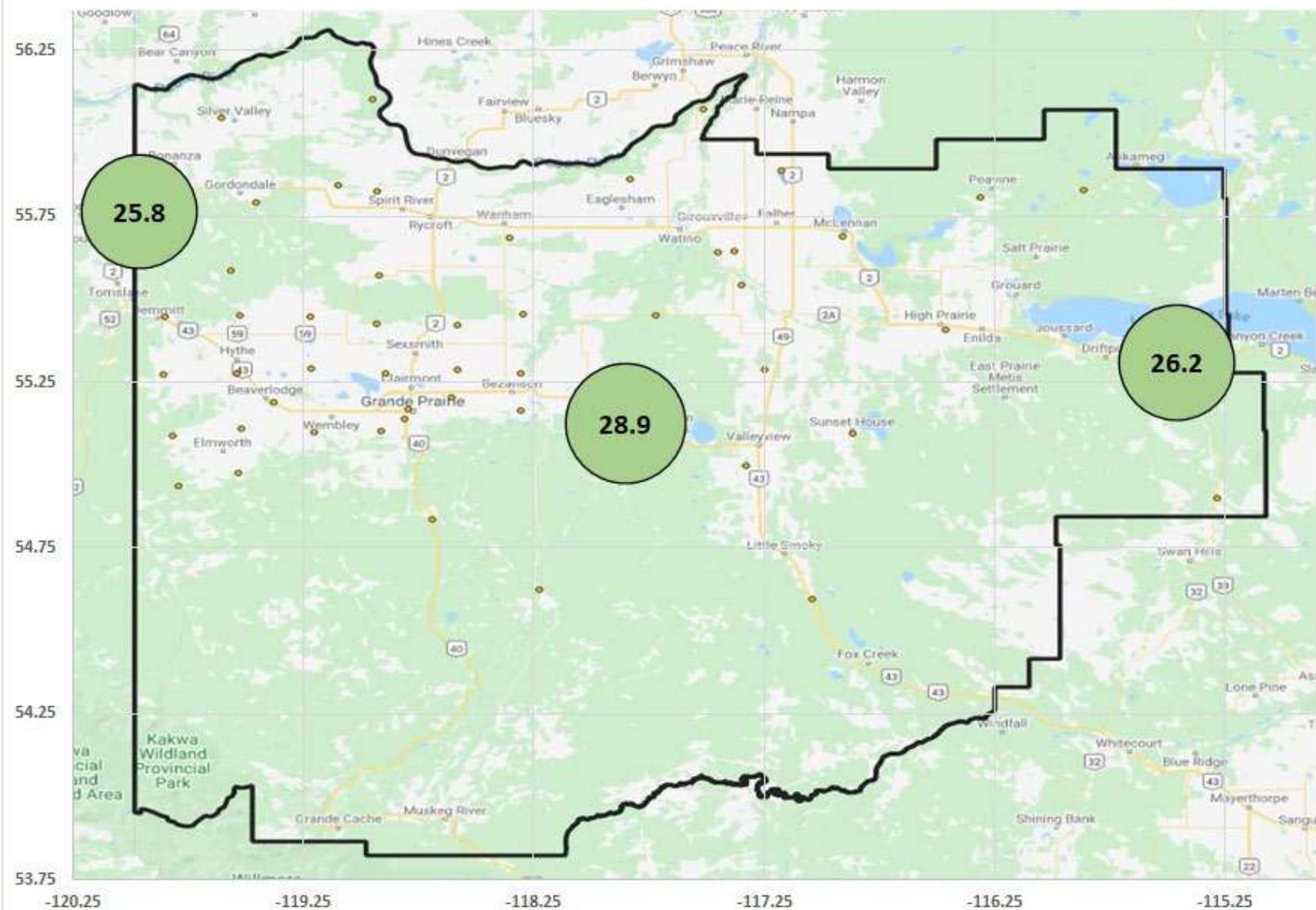
Passive Summary for September 2021

Stats	Sulphur Dioxide SO ₂	Ozone O ₃	Nitrogen Dioxide NO ₂	Hydrogen Sulphide H ₂ S
	ppb	ppb	ppb	ppb
Passive Summary for August 2021 (PAZA)				
Mean	0.2	27.0	1.1	0.1
Standard Deviation	0.3	1.6	1.0	0.1
Minimum	0.0	25.8	0.2	0.1
	Deer Mountain (#48)	Bay Tree (#2)	Sylvester (#14)	Guy (#36)
Maximum	1.6	28.9	4.9	0.3
	Jayar3 Bone Yard (#59)	Crooked Creek (#37)	Jayar5 Camp (#61)	Girouxville 3 (#G3)
Continuous and Passive Monitoring Comparison				
PAZA Beaverlodge Station	0.2	28.7	22.1	-
Beaverlodge Passive (#16)	0.2	-	1.3	-
PAZA Henry Pirker Station	0.3	22.5	29.8	0.1
Henry Pirker passive (#49)	0.3	-	2.7	-

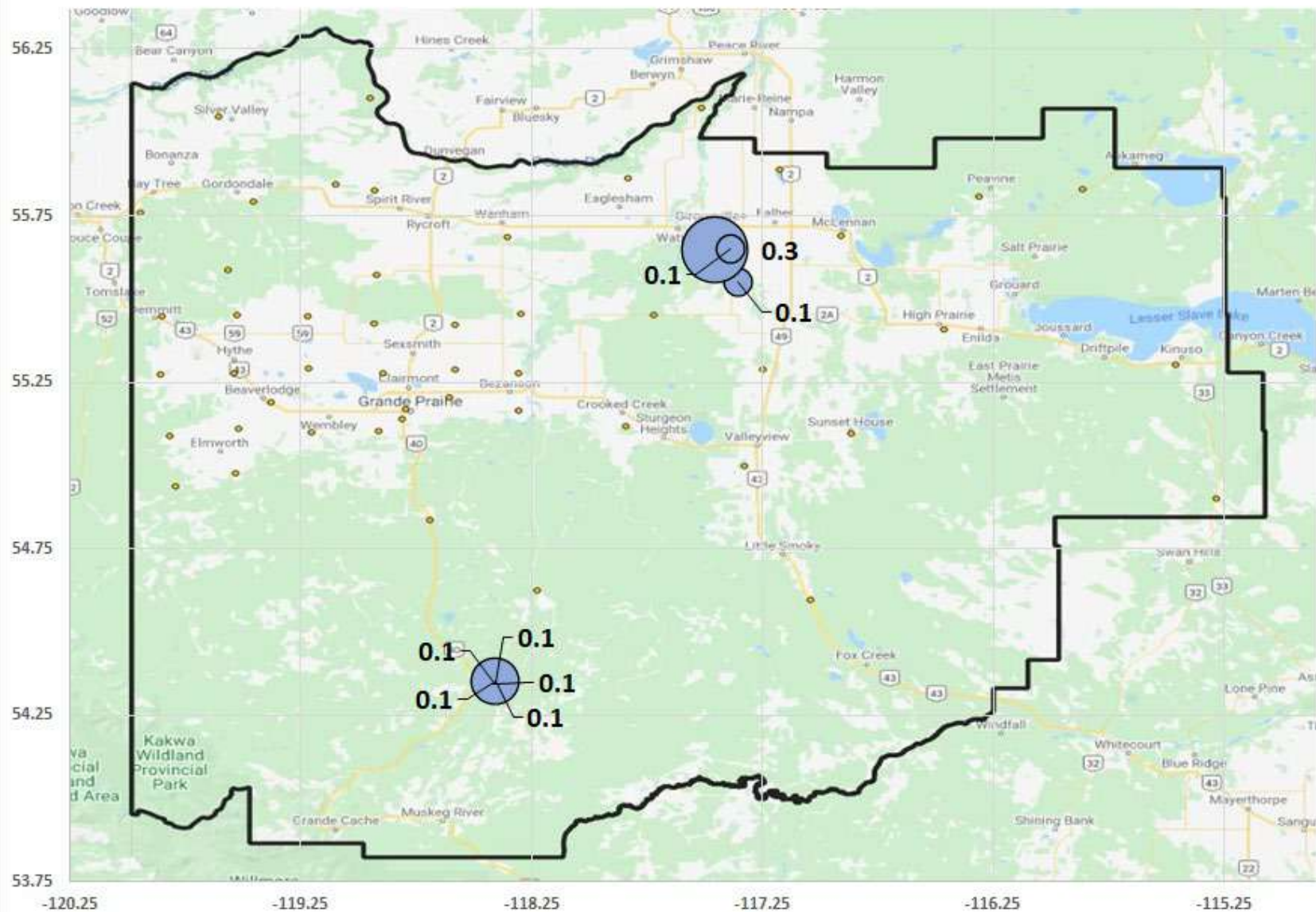




O₃ Monthly Average (units in ppb)



H₂S Monthly Average (units in ppb)



End of Report



Peace Airshed Zone Association

Ambient Air Monitoring Report

September 2021