



# **Peace Airshed Zone Association**

## **Ambient Air Monitoring Network Summary**

**Ambient Air Quality Monitoring Program**

**Monthly Report**

**November 2023**

December 31, 2023

**Alberta Environment and Protected Areas**

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

Subject: **Peace Airshed Zone Association (PAZA)  
November 2023 Ambient Air Quality Monitoring Report**

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Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of November 2023.

The representative of the Person Responsible for this monitoring program is:

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This report was prepared by Dr. Kevin McCullum, P.Eng., and reviewed by Mandeep Dhaliwal.

PAZA has retained the services of WSP Canada Inc. to conduct continuous ambient monitoring and Dr. Kevin McCullum, P.Eng. 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 Milner station is being reported under the PAZA Monthly report.

**Continuous Monitoring:**

Eight (8) Stations including Henry Pirker (Grande Prairie), Dunes, Smoky Heights, Beaverlodge, Valleyview, Fox Creek, Poplar-Portable and Milner.  
Detailed Summaries are included in the report.

**Calibration and Data Submission:**

Monthly report, hourly data and calibration reports for November 2023 were submitted to the ETS data system.

**Table A. PAZA members with Facility Operating Approvals**

<b>Company</b>	<b>Facility</b>	<b>LSD</b>	<b>EPEA Approval No.</b>
Advantage Oil & Gas Ltd.	Glacier	05-02-076-13-W6	00262479-00-00
Alberta Power (2000) Ltd. (an ATCO company)	Sturgeon	SW-06-069-21-W5	00010283-02-02
ATCO Power Canada	Poplar Hill	11-19-073-08-W6	00067774-01-01
ATCO Power Canada	Valleyview	SW-06-069-21-W5	00147709-01-01
AltaGas Ltd.	Pouce Coupe	03-03-081-13-W6	00247673-00-00
	Ante Creek	02-26-068-25-W5	00266694-00-00
	Gordondale	02-26-068-25-W5	00287474-00-00
Apache Canada Ltd.	House Mountain	01-08-070-10-W5	00010137-02-02
Birchcliff Energy Ltd.	Pouce Coupe	03-22-078-12-W6	00252529-00-00
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	00001633-02-00
Canfor Forest Products	Grande Prairie	SW-23-071-06-W6	00152645-01-00
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	00001464-02-03
Exshaw Oil Corporation	Spirit River	03-10-077-07-W6	00344521-00-00
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	00138884-01-00
Milner Power Limited Partnership	H.R. Milner thermal electric power plant	SE-15-058-08-W6	00009814-03-03
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
Pembina Pipeline Corporation	Kakwa River	08-13-063-05 W6	00335342-01-00
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	00011351-02-00
	Spirit River	08-34-077-06-W6	00011096-02-00
Strathcona Resources Ltd.	Jayar Sour Gas Processing Plant	06-08-062-03 W6	03612040-00-00
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:

- Three PM<sub>2.5</sub> 1hr readings above AAAQG (80 µg/m<sup>3</sup>) as follows:

Site	Reference Number	Date	From MST	To MST	Average (µg/m <sup>3</sup> )	WS km/hr	WD degrees
Smoky Heights	422625	Nov-30-2023	15:00	16:00	87.1	2.5	279
Smoky Heights	422625	Nov-30-2023	16:00	17:00	82.9	3.6	359
Poplar	421646	Nov-04-2023	06:00	07:00	89.5	10.3	100

- One 24-hr reading above the daily PM<sub>2.5</sub> AAAQO (29 µg/m<sup>3</sup>) as follows:

Site	Reference Number	Date	Day average (µg/m <sup>3</sup> )	WS km/hr	WD degrees
Poplar	421646	Nov-4-2023	29.8	11.8	91

- There were two dustfall readings above the AAAQG during the month
  - Milner Pipeline at 297.9 > 158 mg/100cm<sup>2</sup>/30day (reference 423404)
  - Milner Wanyandie at 69.8 > 53 mg/100cm<sup>2</sup>/30day (reference 423405)

### Operational times less than 90 percent:

Poplar CH<sub>4</sub>/NMHC are not in operation.

All other instruments were in operation >90% during the month.

### Air Incidents

None were reported.

### Deviations from Authorized Monitoring Methods

None were reported.

### Passive Monitoring

- 52 Stations throughout the PAZA zone
  - Passive sample analyses were performed by Bureau Veritas Laboratories
- There were 20 duplicates sampled in the month of November.
  - Eight SO<sub>2</sub> duplicates located at Boone Creek, Wembley, Jean Cote, Little Smoky, Duvernay 2, Kakwa 1, Milner Wanyandie, Jayar5 Camp
  - RPD ranging from 13% to 40% (no fail)
  - Milner Wanyandie duplicate consisted of both less than detection (<0.1ppb)
- One O<sub>3</sub> duplicate located at Bay Tree
  - RPD 18% (no fails)
- Seven NO<sub>2</sub> duplicates at Forth Creek, Beaverlodge, McLennan, East Prairie, Kakwa 2, Milner Bridge, Jayar4 7-8 or 8-8 Pad
  - RPD ranging from 0% to 48% (no fail)
- Four H<sub>2</sub>S duplicates at Duvernay 2, Girouxville 3, Kakwa 4, Jayar1 Plant
  - RPD 26% to 36% (no fail)
  - Kakwa 4 duplicate consisted of both less than detection (<0.02ppb)
  - Jayar1 Plant consisted of one sample <0.02ppb and other at 0.48ppb

### Dustfall Monitoring

- Five Stations collected Total Dustfall and Fixed Dustfall
- There was one duplicate sampled collected for each in the month of November.
  - RPD ranged from 6% to 20%
- Total dustfall ranged from 45.6 to 297.9 mg/100cm<sup>2</sup>/30day.
- There were two readings above the AAAQG during the month
  - Milner Pipeline at 297.9 > 158 mg/100cm<sup>2</sup>/30day (reference 423404)
  - Milner Wanyandie at 69.8 > 53 mg/100cm<sup>2</sup>/30day (reference 423405)

I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization, and reporting requirements.

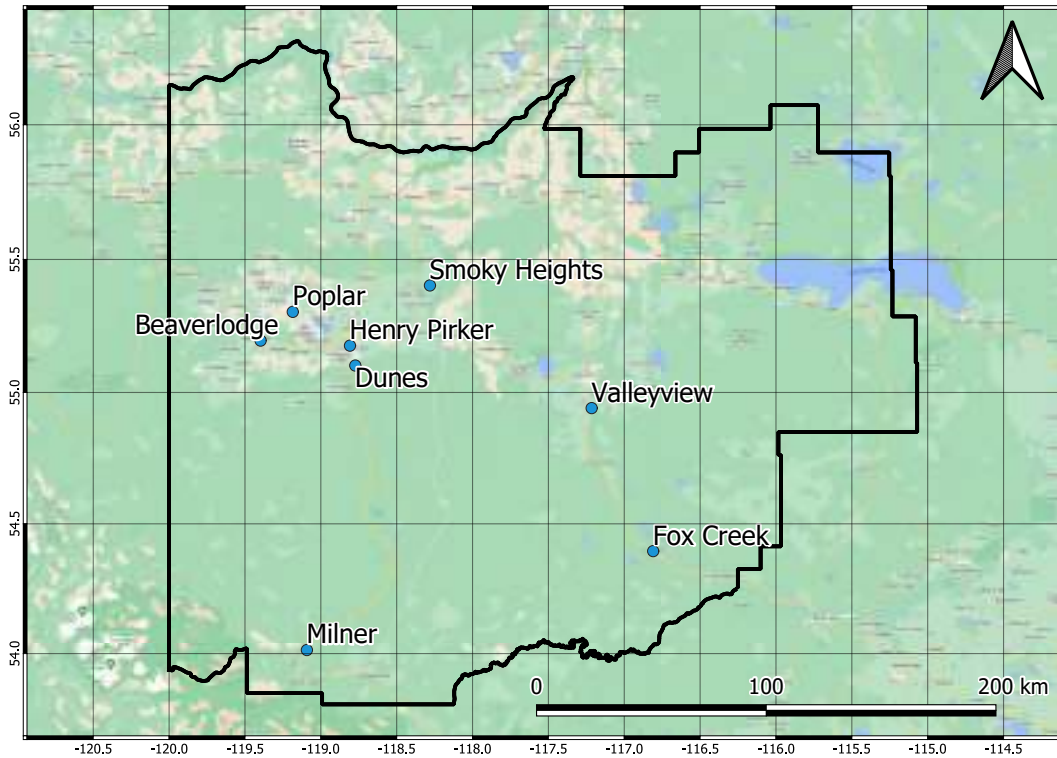
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Program Manager

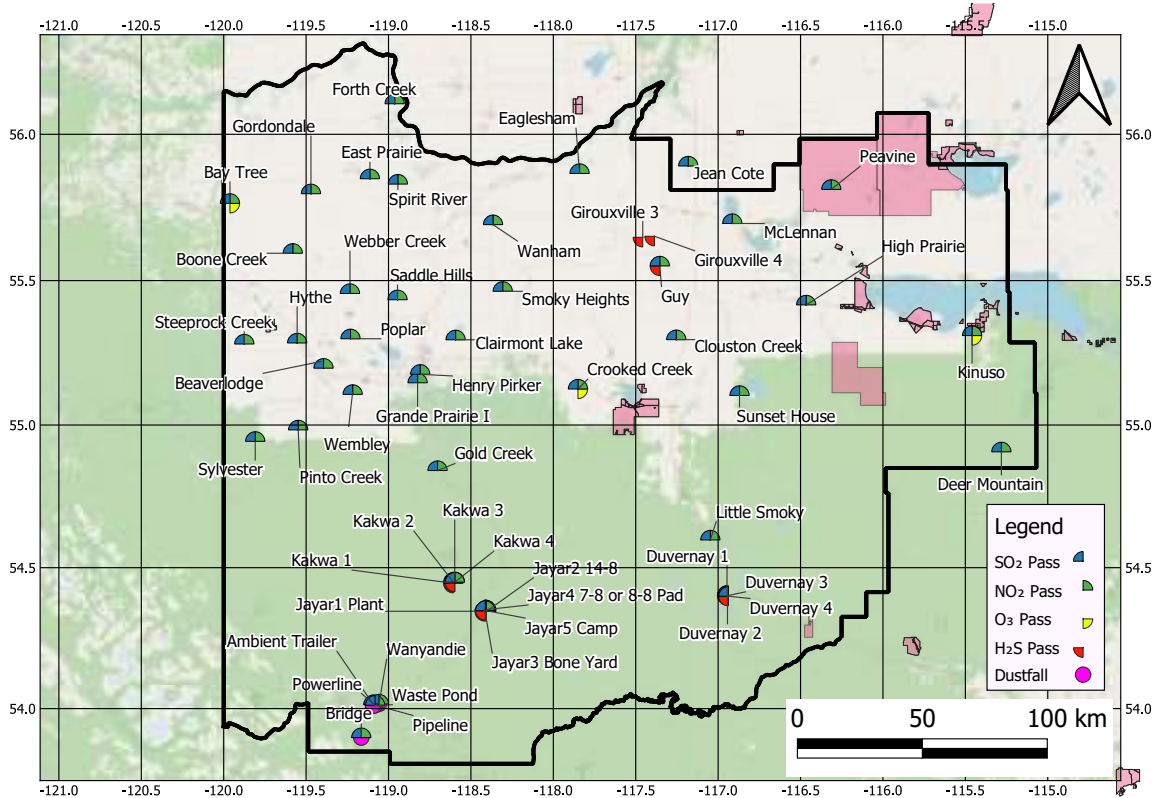
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## PAZA Continuous Monitoring Station Locations



## PAZA Passive Monitoring Station Locations



# 1 November 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 - November 2023 Beaverlodge Station Report

Parameter	November				Max	1-hour		24-hour		Exceedance			Calibration Date	
	Average	Minimum	Valid	Operational		Objective	Max Day and Time	Max	Objective	Max Day	1hr	3hr		24hr
NO (ppb)	0.7	0.0	91.7%	96.4%	21.1	-	Nov-19 11:00	2.6	-	Nov-01	-	-	-	Nov 02, 2023
NO <sub>x</sub> (ppb)	4.6	0.2	91.7%	96.4%	21.2	159	Nov-18 21:00	10.9	-	Nov-01	0	-	-	Nov 02, 2023
NO <sub>2</sub> (ppb)	5.5	0.2	91.7%	96.4%	29.8	-	Nov-19 11:00	15.5	-	Nov-01	-	-	-	Nov 02, 2023
O <sub>3</sub> (ppb)	24.1	0.1	91.8%	96.4%	40.0	78	Nov-08 15:00	36.8	-	Nov-18	0	-	-	Nov 02, 2023
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	8.3	0.2	96.1%	96.4%	34.7	80	Nov-04 10:00	25.1	25	Nov-04	0	0	0	Nov 03, 2023
SO <sub>2</sub> (ppb)	0.6	0.0	91.8%	96.4%	15.0	172	Nov-06 06:00	4.5	48	Nov-06	0	0	0	Nov 03, 2023
Average														
Temp (°C)	0.8	-12.5	92.0%	92.0%	13.0	<p>Note: Valid hours must be greater than 75% Operational hours must be greater than 90%</p> <p>Average Wind Direction: 254 WSW</p>								
RH (%)	66.3	33.3	96.4%	96.4%	99.9									
WS (km/hr)	9.9	0.1	96.4%	96.4%	50.9									
WD (deg)	254	1.3	96.4%	96.4%	358.0									

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO <sub>2</sub> /NO <sub>x</sub>	Thermo	42IQ	Nov 7-8 power failure (26hrs)
O <sub>3</sub>	Thermo	49IQ	Nov 7-8 power failure (26hrs)
PM <sub>2.5</sub>	API	T640	Nov 7-8 power failure (26hrs)
SO <sub>2</sub>	Thermo	43-TLE	Nov 7-8 power failure (26hrs)
Met Equip	MetOne	50.5	Nov 7-8 power failure (26hrs); Daily drop starting Aug 5, removed every day 04:21-04:43 (28hrs); Nov 3 extreme data shifts (3hrs removed)

## 1.2 Dunes Air Monitoring Station

PAZA - November 2023 Dunes Station Report

Parameter	November				Max	1-hour		24-hour		Exceedance			Calibration Date	
	Average	Minimum	Valid	Operational		Objective	Max Day and Time	Max	Objective	Max Day	1hr	3hr		24hr
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	5.7	0.5	99.9%	100.0%	70.5	80	Nov-29 19:00	25.7	25	Nov-30	0	0	0	Nov-06-2023
SO <sub>2</sub> (ppb)	0.4	0.0	95.3%	100.0%	7.3	172	Nov-06 06:00	1.2	48	Nov-06	0	0	0	Nov-06-2023
TR5 (ppb)	0.3	0.0	93.1%	100.0%	4.3	-	Nov-07 05:00	0.7	-	Nov-07	-	-	-	Nov-06-2023
Average														
Temp (°C)	0.1	-15.4	100.0%	100.0%	11.7	<p>Note: Valid hours must be greater than 75% Operational hours must be greater than 90%</p> <p>Average Wind Direction: 251 WSW</p>								
RH (%)	66.3	26.8	100.0%	100.0%	99.9									
WS (km/hr)	3.4	0.0	100.0%	100.0%	12.9									
WD (deg)	251	3.4	100.0%	100.0%	354.7									

Update Summary:

Parameter	Make	Model	Equipment summary
PM <sub>2.5</sub>	Thermo	SHARP 5030	No Operational issues noted
SO <sub>2</sub>	Thermo	43i	No Operational issues noted
TR5	Thermo	43i	No Operational issues noted
Met Equip	Gil/Young	MetPak/RMY88004	No Operational issues noted



### 1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - November 2023 Henry Pirker Station Report

Parameter	November				1-hour			8-hour / 24-hour			Exceedance				Calibration Date	
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d		
NO (ppb)	9.2	0.0	94.9%	100.0%	125.1	-	Nov-25 10:00	45.6	-	Nov-30	-	-	-	-	Nov 01, 2023	
NO <sub>2</sub> (ppb)	11.7	1.2	94.9%	100.0%	19.9	150	Nov-25 09:00	21.9	-	Nov-30	0	-	-	-	Nov 01, 2023	
NO <sub>x</sub> (ppb)	21.1	1.5	94.9%	100.0%	162.6	-	Nov-25 09:00	65.9	-	Nov-30	-	-	-	-	Nov 01, 2023	
O <sub>3</sub> (ppb)	16.7	0.0	95.3%	100.0%	37.7	76	Nov-16 14:00	31.6	-	Nov-27	0	-	-	-	Nov 01, 2023	
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	9.0	0.6	99.0%	100.0%	47.1	80	Nov-30 22:00	25.6	25	Nov-04	0	-	0	-	Nov 03, 2023	
SO <sub>2</sub> (ppb)	0.6	0.0	95.1%	100.0%	25.2	172	Nov-05 11:00	2.7	48	Nov-03	0	-	0	0	Nov 03, 2023	
H <sub>2</sub> S (ppb)	0.2	0.0	95.1%	100.0%	1.8	30	Nov-07 10:00	0.6	3	Nov-30	0	-	0	-	Nov 03, 2023	
CH <sub>4</sub> (ppm)	2.2	2.0	80.7%	91.1%	2.5	-	Nov-19 11:00	2.4	-	Nov-29	-	-	-	-	Nov 05, 2023	
THC (ppm)	2.2	2.0	80.7%	91.1%	2.5	-	Nov-19 11:00	2.4	-	Nov-29	-	-	-	-	Nov 05, 2023	
NMHC (ppm)	0.0	0.0	80.7%	91.1%	0.3	-	Nov-25 09:00	0.0	-	Nov-23	-	-	-	-	Nov 05, 2023	
CO (ppm)	0.5	0.1	93.3%	100.0%	1.5	11	Nov-26 13:00	0.4	3	Nov-28	0	0	-	-	Nov 02, 2023	
<b>Average</b>	<b>Minimum</b>	<b>Valid</b>	<b>Operational</b>	<b>Maximum</b>												
Temp (°C)	-0.5	-14.8	100.0%	100.0%	11.2	<div style="border: 1px solid black; padding: 5px;"> <b>Note:</b> Valid hours must be greater than 75%                      Operational hours must be greater than 90%                 </div>										
PH (%)	66.5	32.8	100.0%	100.0%	87.4											
SR (W/m <sup>2</sup> )	26.7	0.0	100.0%	100.0%	268.6	<div style="border: 1px solid black; padding: 5px;"> <b>Average Wind Direction</b>      250      WSW                 </div>										
WS (km/hr)	6.0	0.1	100.0%	100.0%	31.9											
WD (deg)	250	1.0	100.0%	100.0%	356.9											

**Update Summary:**

Parameter	Make	Model	Equipment summary
NO/NO <sub>2</sub> /NO <sub>x</sub>	Thermo	42i	No operational issues
O <sub>3</sub>	TECO	49i	No operational issues
PM <sub>2.5</sub>	API	T540	No operational issues
SO <sub>2</sub>	Thermo	43i-TLE	No operational issues
H <sub>2</sub> S	TEI	450i	No operational issues
THC/CH <sub>4</sub> /NMHC	TEI	59i	after October 31 couldn't ignite the analyzer, Cal Nov 1, with different ignitor, chromatograph windows issue, left to condition overnight; Started Cal Nov2, after the analyzer dropped readings to zero resulting in data removed to Cal on Nov 3, with rotor replaced, readings appeared good, THC baseline had drops, resulted in another Cal Nov 8 to clean lines and replace actuator (30hrs removed, 30hrs maintenance)
CO	Thermo	48i-TLE	No operational issues
Met Equip	MetOne	50.5	No operational issues

### 1.4 Smoky Heights Air Monitoring Station

PAZA - November 2023 Smoky Heights Station Report

Parameter	November				1-hour			24-hour			Exceedance				Calibration Date	
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d		
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	8.7	0.0	93.6%	99.7%	87.1	80	Nov-30 18:00	27.9	25	Nov-30	2	-	0	-	Nov 15, 2023	
SO <sub>2</sub> (ppb)	0.5	0.0	95.0%	99.7%	3.3	172	Nov-01 12:00	0.8	48	Nov-01	0	-	0	0	Nov 15, 2023	
TRs (ppb)	0.2	0.0	95.0%	99.7%	0.6	-	Nov-10 04:00	0.5	-	Nov-29	-	-	-	-	Nov 15, 2023	
<b>Average</b>	<b>Minimum</b>	<b>Valid</b>	<b>Operational</b>	<b>Maximum</b>												
Temp (°C)	-0.6	-16.4	99.7%	99.7%	10.4	<div style="border: 1px solid black; padding: 5px;"> <b>Note:</b> Valid hours must be greater than 75%                      Operational hours must be greater than 90%                 </div>										
WS (km/hr)	12.1	0.3	99.7%	99.7%	55.1											
WD (deg)	248	1.5	99.7%	99.7%	358.9	<div style="border: 1px solid black; padding: 5px;"> <b>Average Wind Direction</b>      248      WNW                 </div>										

**Update Summary:**

Parameter	Make	Model	Equipment summary
PM <sub>2.5</sub>	Sharp	5030	Power failure Nov 9, 2hrs removed, Nov 30, 2x 1hr readings above AAAGG
SO <sub>2</sub>	TECO	43i	Power failure Nov 9, 2hrs removed
TRs	TEI	43i/APSAA	Power failure Nov 9, 2hrs removed
Met Equip	MetOne	50.5	Power failure Nov 9, 2hrs removed

## 1.5 Valleyview Air Monitoring Station

PAZA - November 2023 Valleyview Station Report

Parameter	November				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	5hr	24hr	30d	
SO <sub>2</sub> (ppb)	0.1	0.0	95.3%	100.0%	2.4	172	Nov-27 18:00	0.5	48	Nov-28	0	-	0	0	Nov 17, 2023
H <sub>2</sub> S (ppb)	0.1	0.0	95.3%	100.0%	1.3	38	Nov-07 09:00	0.2	3	Nov-08	0	-	0	-	Nov 17, 2023
	<b>Average</b>	<b>Minimum</b>	<b>Valid</b>	<b>Operational</b>	<b>Maximum</b>										
Temp (°C)	-0.3	-16.8	100.0%	100.0%	14.3	<div style="border: 1px solid black; padding: 5px;"> <p>Note: Valid hours must be greater than 75% Operational hours must be greater than 50%</p> </div>									
RH (%)	74.1	52.3	100.0%	100.0%	98.7										
WS (km/hr)	3.4	0.1	100.0%	100.0%	18.8										
WD (deg)	236	0.3	100.0%	100.0%	359.0										
					<b>Average Wind Direction</b>										

**Update Summary:**

Parameter	Make	Model	Equipment summary
SO <sub>2</sub>	TEI	43-AF5CB	No Operational issues noted
H <sub>2</sub> S	TEI	450-AP4AA / 43C	No Operational issues noted
Mkt Equip	RMYoung	RMYS6004	No Operational issues noted

## 1.6 Fox Creek Air Monitoring Station

PAZA - November 2023 Fox Creek Station Report

Parameter	November				1-hour			8-hour / 24-hour			Exceedance				Calibration Date		
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	5hr	24hr	30d			
NO (ppb)	10.4	0.0	94.9%	100.0%	71.9	-	Nov-25 08:00	22.4	-	Nov-28	-	-	-	-	Nov 21, 2023		
NO <sub>x</sub> (ppb)	10.8	0.2	94.9%	100.0%	55.5	159	Nov-29 15:00	16.9	-	Nov-28	0	-	-	-	Nov 21, 2023		
NO <sub>y</sub> (ppb)	21.3	0.2	94.9%	100.0%	97.6	-	Nov-25 08:00	39.5	-	Nov-28	-	-	-	-	Nov 21, 2023		
O <sub>3</sub> (ppb)	17.4	0.2	93.3%	100.0%	43.0	78	Nov-06 15:00	26.3	-	Nov-11	0	-	-	-	Nov 21, 2023		
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	6.5	0.6	99.7%	100.0%	61.3	80	Nov-26 01:00	16.8	25	Nov-28	0	-	0	-	Nov 22, 2023		
NO <sub>2</sub> (ppb)	0.4	0.0	95.1%	100.0%	3.0	172	Nov-19 13:00	1.1	48	Nov-28	0	-	0	0	Nov 22, 2023		
H <sub>2</sub> S (ppb)	0.2	0.0	95.3%	100.0%	0.8	38	Nov-20 10:00	0.4	3	Nov-30	0	-	0	-	Nov 22, 2023		
	<b>Average</b>	<b>Minimum</b>	<b>Valid</b>	<b>Operational</b>	<b>Maximum</b>												
Temp (°C)	0.5	-16.5	100.0%	100.0%	15.8	<div style="border: 1px solid black; padding: 5px;"> <p>Note: Valid hours must be greater than 75% Operational hours must be greater than 50%</p> </div>											
WS (km/hr)	4.9	0.1	100.0%	100.0%	23.5												
WD (deg)	224	2.0	100.0%	100.0%	359.4												
					<b>Average Wind Direction</b>											224	SW

**Update Summary:**

Parameter	Make	Model	Equipment summary
NO/NO <sub>2</sub> /NO <sub>x</sub>	Thermo	42IQ	No operational issues
O <sub>3</sub>	TECO	49I	No operational issues
PM <sub>2.5</sub>	API	T640	No operational issues
SO <sub>2</sub>	TEI	43I-TLE	No operational issues
H <sub>2</sub> S	TEI	450I	No operational issues
Mkt Equip	MktDrei	50.5	No operational issues

## 1.7 Poplar Air Monitoring Station

PAZA - November 2023 Poplar Station Report

Parameter	November				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	1.4	0.0	94.3%	96.2%	29.1	-	Nov-06 10:00	9.4	-	Nov-06	-	-	-	-	Nov 21, 2023
NO <sub>2</sub> (ppb)	3.0	0.4	94.3%	96.2%	23.3	150	Nov-01 18:00	11.8	-	Nov-30	0	-	-	-	Nov 21, 2023
NO <sub>x</sub> (ppb)	8.5	0.5	94.3%	96.2%	42.9	-	Nov-30 20:00	20.8	-	Nov-06	-	-	-	-	Nov 21, 2023
O <sub>3</sub> (ppb)	21.3	0.0	94.6%	99.3%	39.9	78	Nov-16 10:00	37.1	-	Nov-16	0	-	-	-	Nov 21, 2023
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	8.4	0.2	99.0%	100.0%	89.0	80	Nov-04 07:00	29.9	29	Nov-04	1	-	1	-	Nov 21, 2023
SO <sub>2</sub> (ppb)	3.6	0.0	95.3%	100.0%	34.3	172	Nov-28 16:00	3.4	48	Nov-24	0	-	0	0	Nov 21, 2023
TRS (ppb)	0.7	0.5	94.9%	99.9%	16.0	-	Nov-29 02:00	1.7	-	Nov-29	-	-	-	-	Nov 22, 2023
OH (ppm)	removed Dec 12, 2022														
THC (ppm)	2.5	1.9	95.1%	99.9%	3.7	-	Nov-18 12:00	2.8	-	Nov-30	-	-	-	-	Nov 22, 2023
NMHC (ppm)	removed Dec 12, 2022														
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	-0.8	-17.1	100.0%	100.0%	9.6										
WS (km/hr)	12.8	0.3	99.0%	99.9%	51.4										
WD (deg)	272	1.3	99.9%	99.9%	357.1										

Note: Valid hours must be greater than 75%  
Operational hours must be greater than 50%

Average Wind Direction: 272 W

### Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO <sub>2</sub> /NO <sub>x</sub>	TEI	421	Nov 23 second calibration for data verification flagged as maintenance this
O <sub>3</sub>	TEI	481	Nov 21 work at station resulted in 1hr maintenance due to effect on readings; Nov 23 second calibration for data verification flagged as maintenance this
PM <sub>2.5</sub>	API	T640	No issues noted; Nov 4, 1hr above AAQGS and 24hr above AAQGS
SO <sub>2</sub>	TEI	431	No issues noted
TRS	TEI	431	Nov 21 work at station resulted in 1hr maintenance due to effect on readings
THC	TEI	551 / 511-LT	OH, NMHC not in service; Nov 21 work at station resulted in 1hr maintenance due to effect on readings
Met Equip	MetOne	50.5	Nov 6 wind speed froze at 180km/hr for short period, 1hr removed

## 1.8 Milner Air Monitoring Station

PAZA - November 2023 Milner Station Report

Parameter	November				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	0.7	0.0	95.0%	100.0%	25.3	-	Nov-19 12:00	4.6	-	Nov-04	-	-	-	-	Nov 07, 2023
NO <sub>2</sub> (ppb)	2.9	0.0	95.0%	100.0%	18.2	150	Nov-04 07:00	6.9	-	Nov-18	0	-	-	-	Nov 07, 2023
NO <sub>x</sub> (ppb)	4.8	0.0	95.0%	100.0%	41.9	-	Nov-19 12:00	12.6	-	Nov-18	-	-	-	-	Nov 07, 2023
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	4.9	0.5	99.7%	100.0%	47.9	80	Nov-21 11:00	8.2	29	Nov-26	0	-	0	-	Nov 07, 2023
	Average	Minimum	Valid	Operational	Maximum										
WS (km/hr)	9.1	0.0	100.0%	100.0%	35.9										
WD (deg)	258	3.1	100.0%	100.0%	399.9										

Note: Valid hours must be greater than 75%  
Operational hours must be greater than 50%

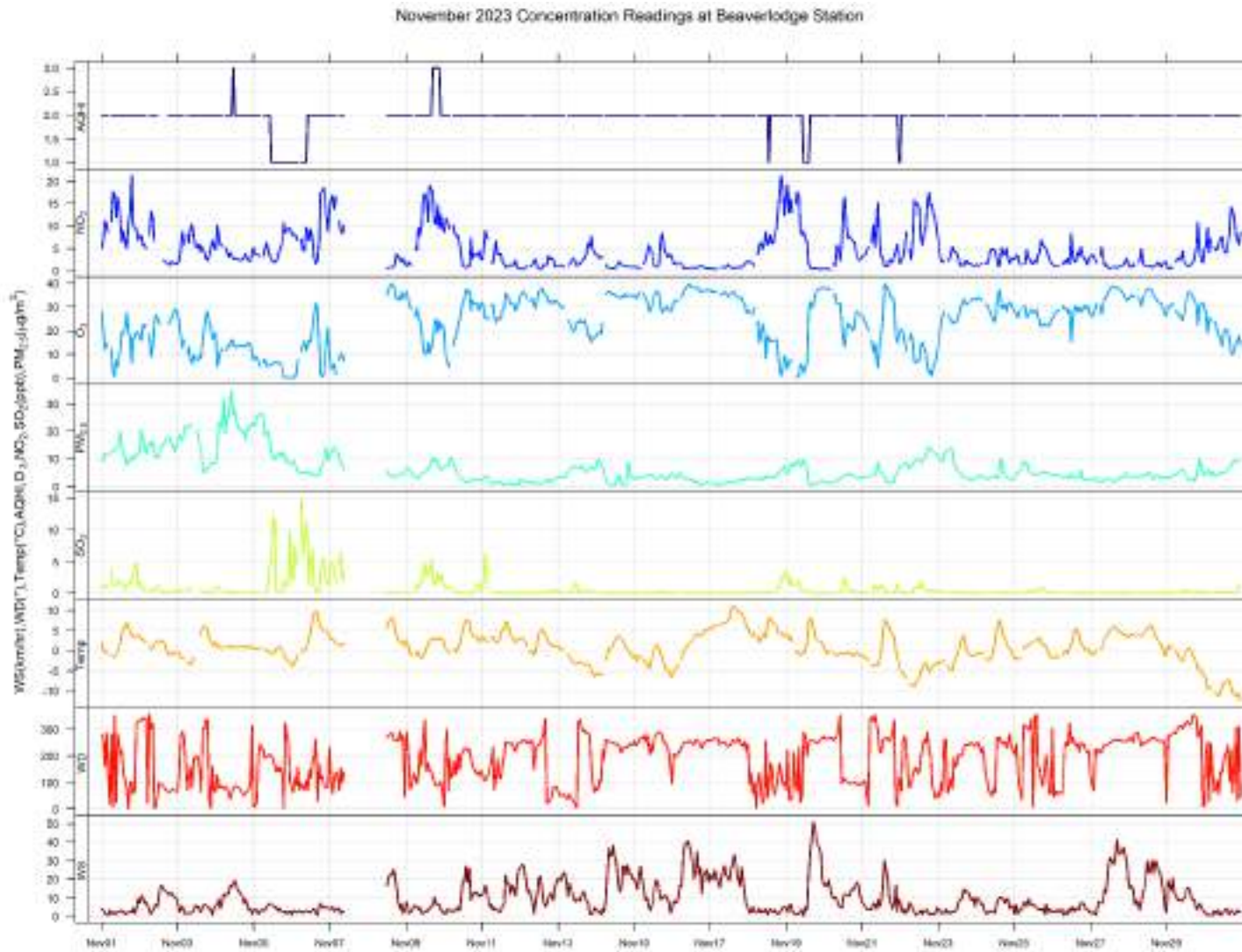
Average Wind Direction: 258 WSW

### Update Summary:

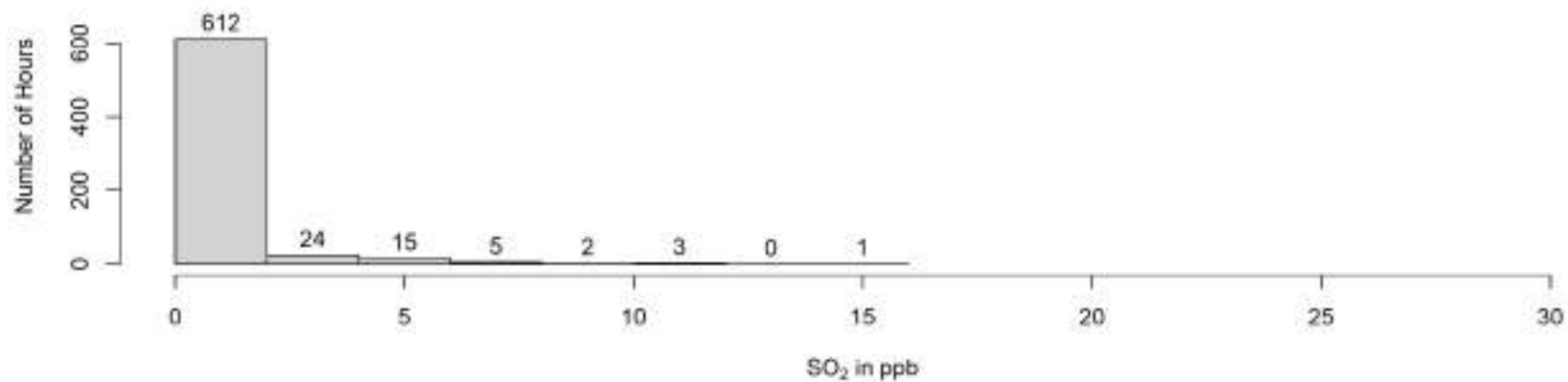
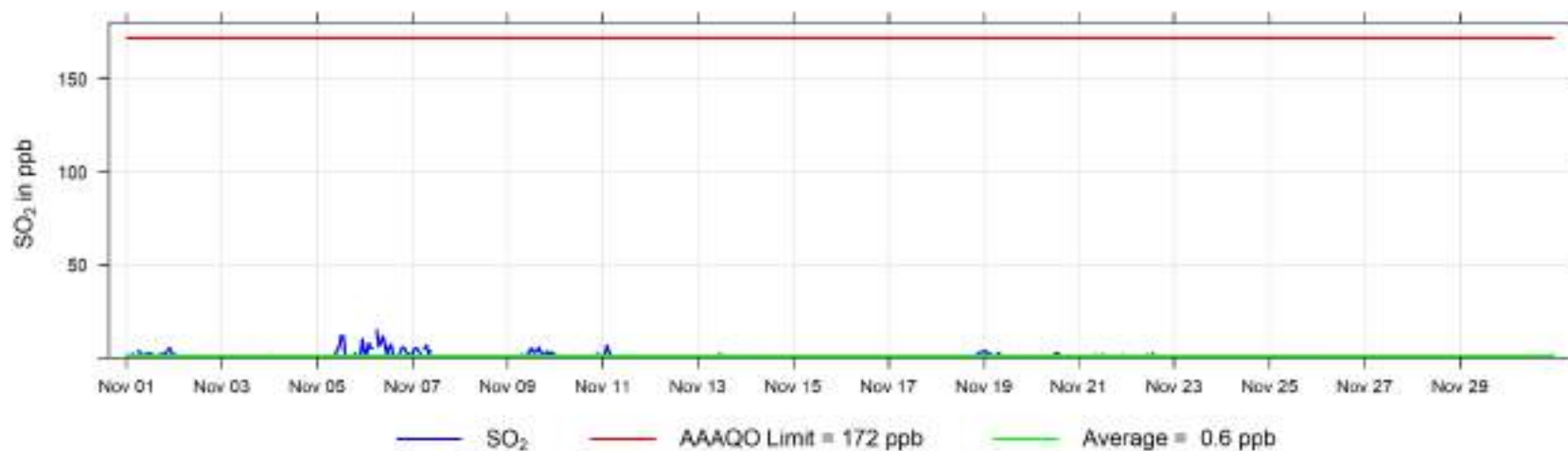
Parameter	Make	Model	Equipment summary
NO/NO <sub>2</sub> /NO <sub>x</sub>	Thermo	421	Analyzer issue with automatic zeros, calibration good, data analyzed using calibrator zeros
PM <sub>2.5</sub>	API	T640	No Operational issues noted
Met Equip	MetOne	50.5	No Operational issues noted

## 2 Beaverlodge Charts

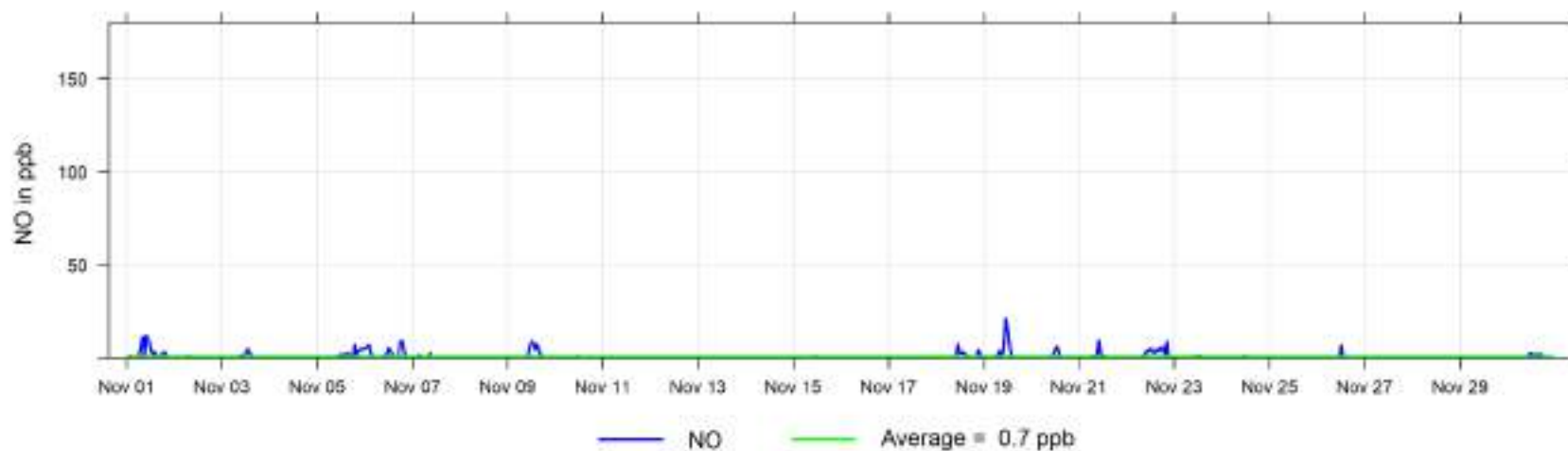
The following pages include the charts and histograms for Beaverlodge Station



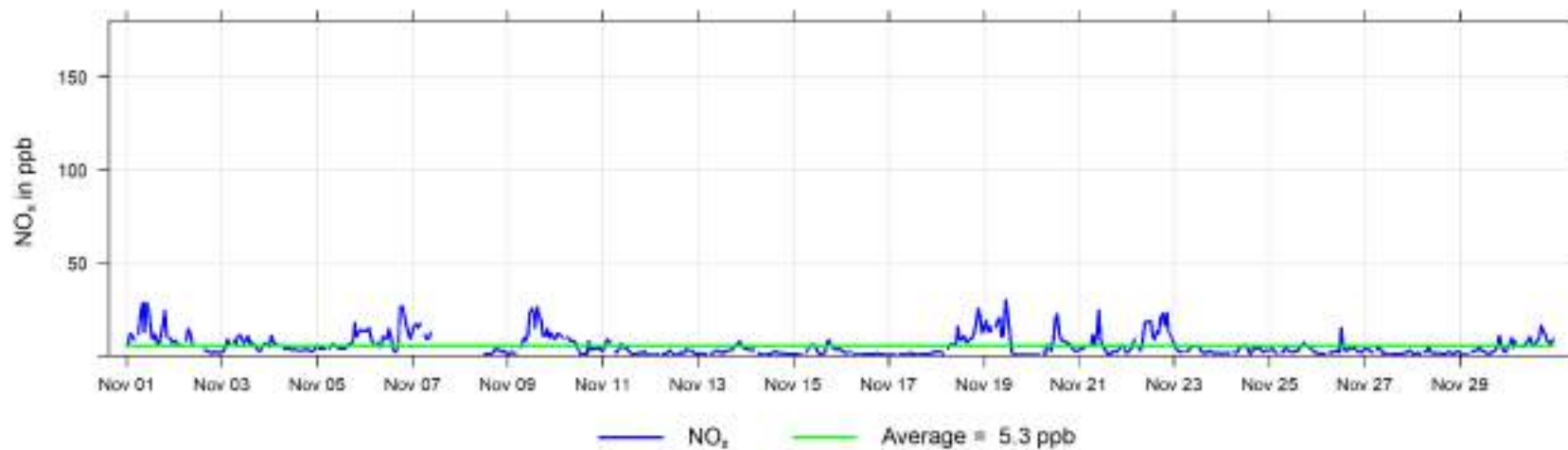
November 2023 Hourly Concentration Readings of SO<sub>2</sub> (in ppb) at Beaverlodge



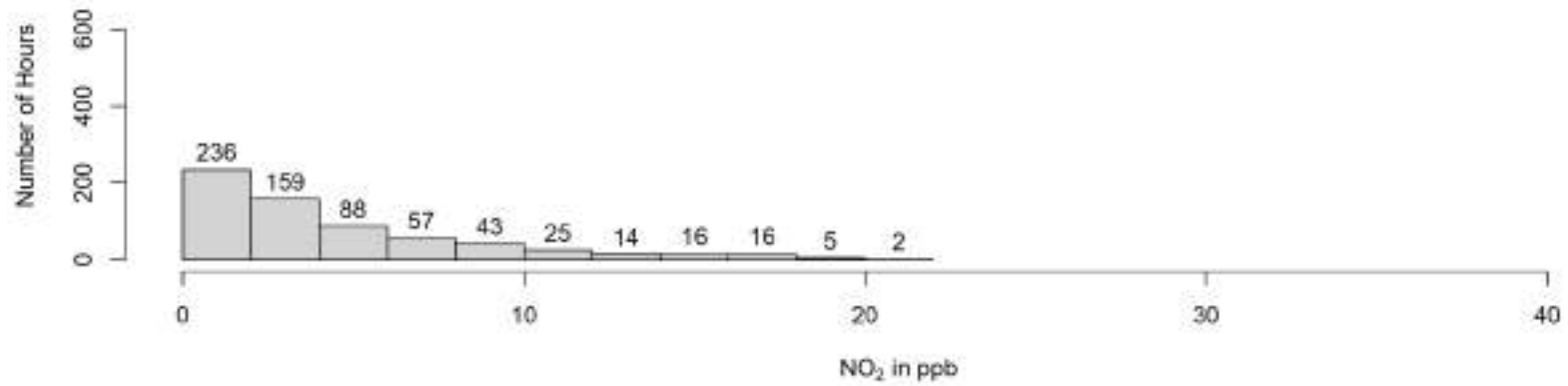
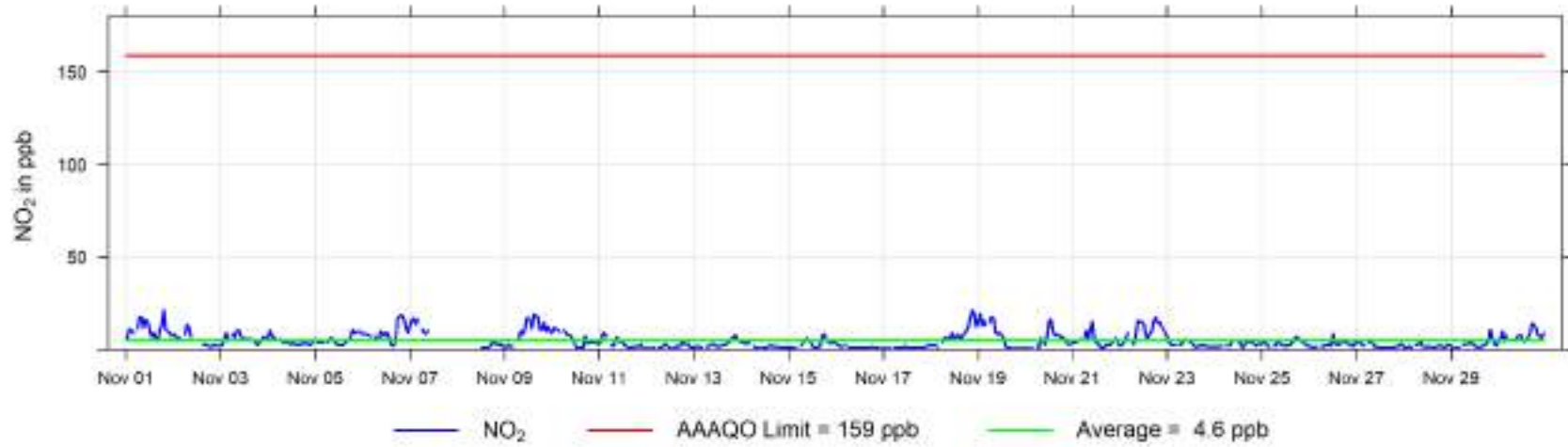
November 2023 Hourly Concentration Readings of NO (in ppb) at Beaverlodge



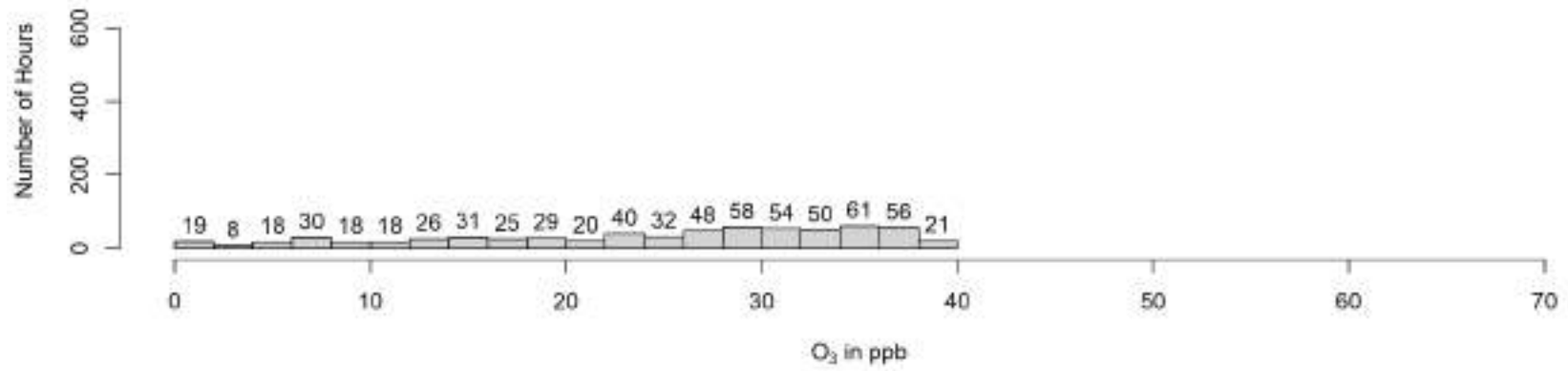
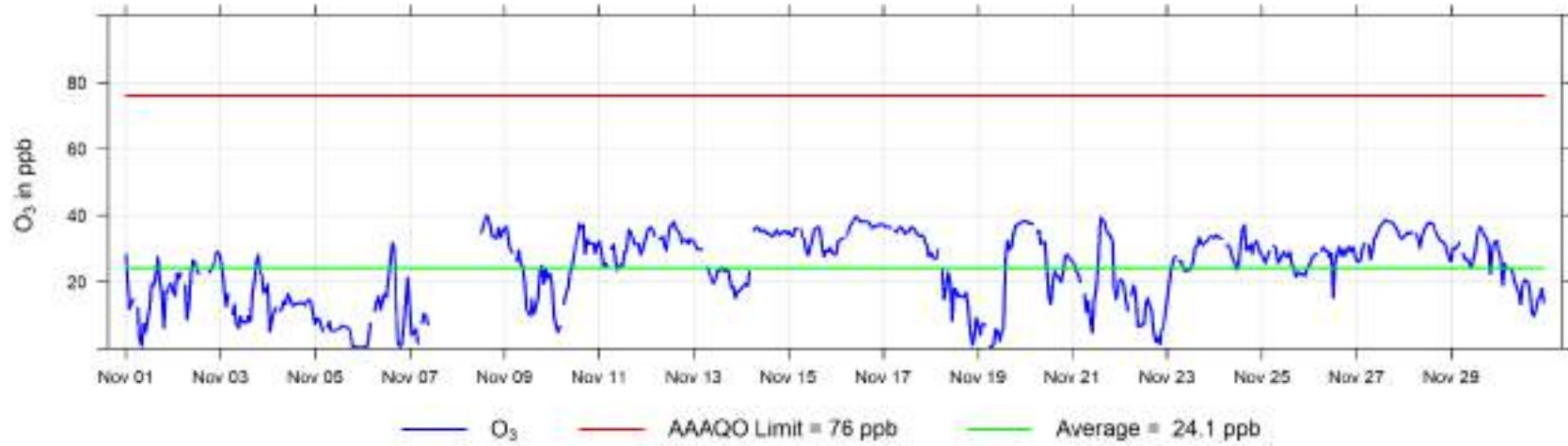
November 2023 Hourly Concentration Readings of NO<sub>x</sub> (in ppb) at Beaverlodge



November 2023 Hourly Concentration Readings of NO<sub>2</sub> (in ppb) at Beaverlodge

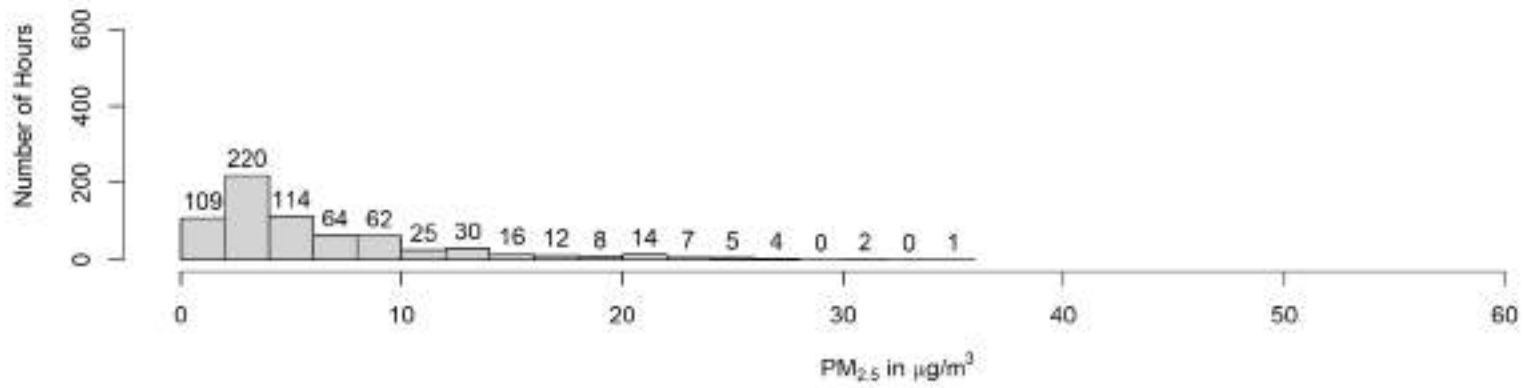
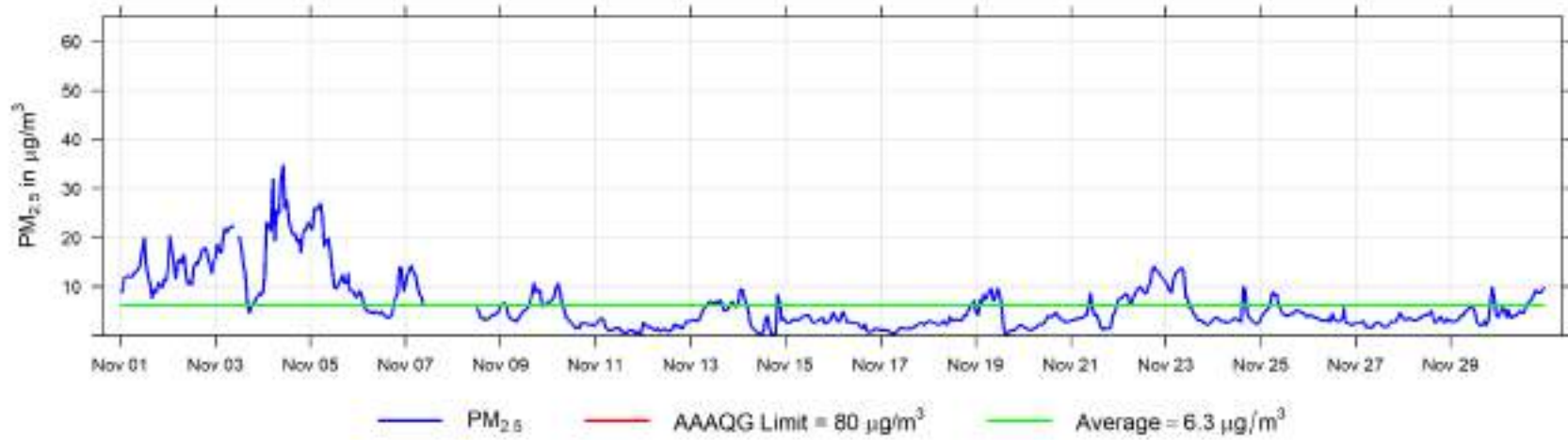


November 2023 Hourly Concentration Readings of O<sub>3</sub> (in ppb) at Beaverlodge

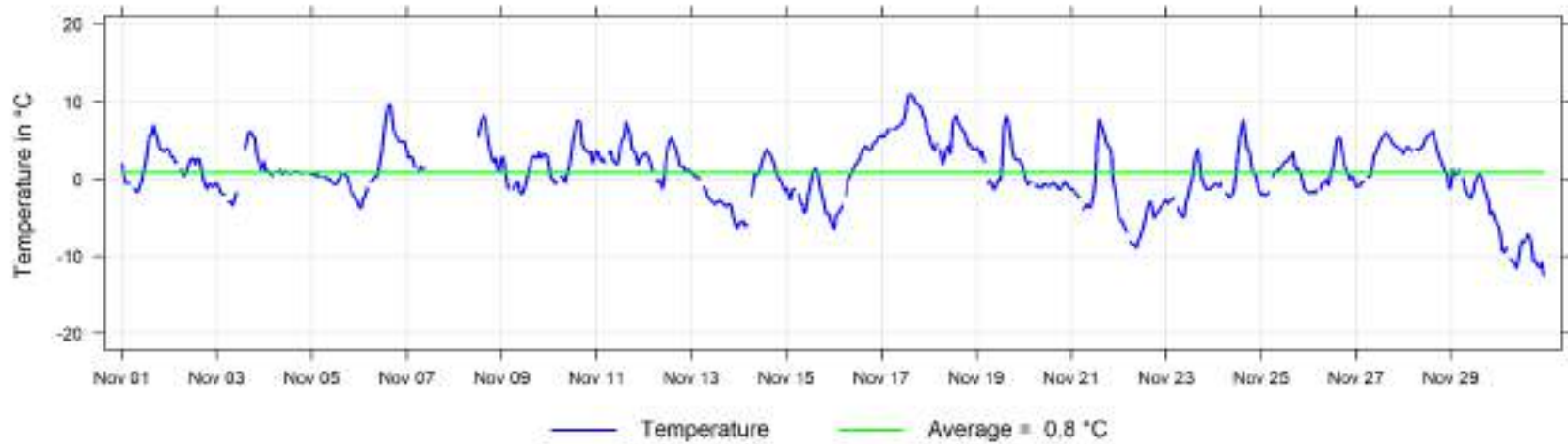




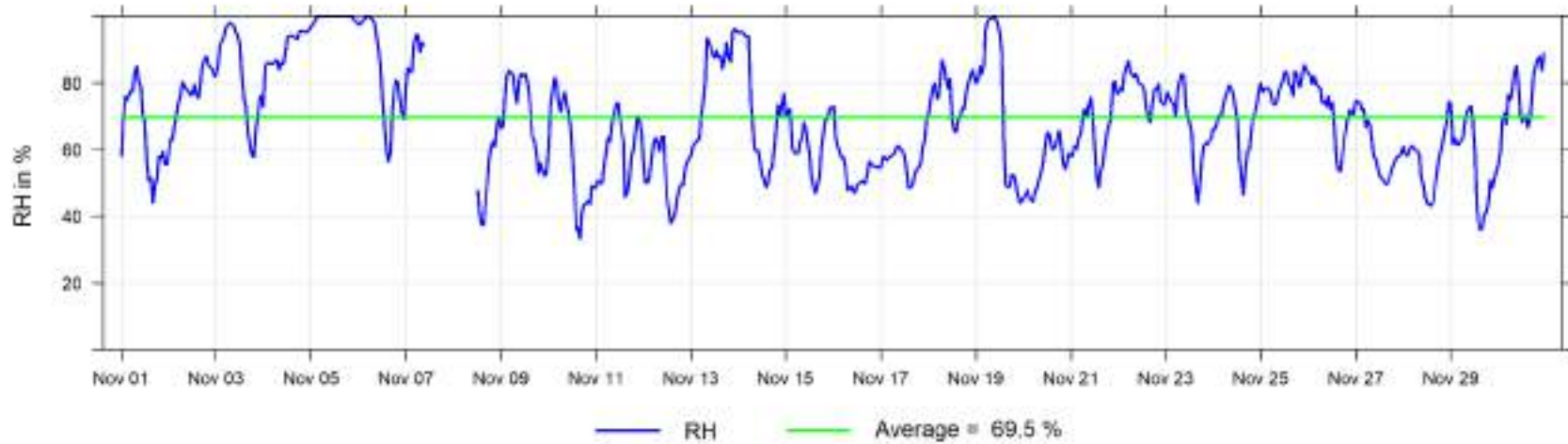
November 2023 Hourly Concentration Readings of PM<sub>2.5</sub> in  $\mu\text{g}/\text{m}^3$  at Beaverlodge



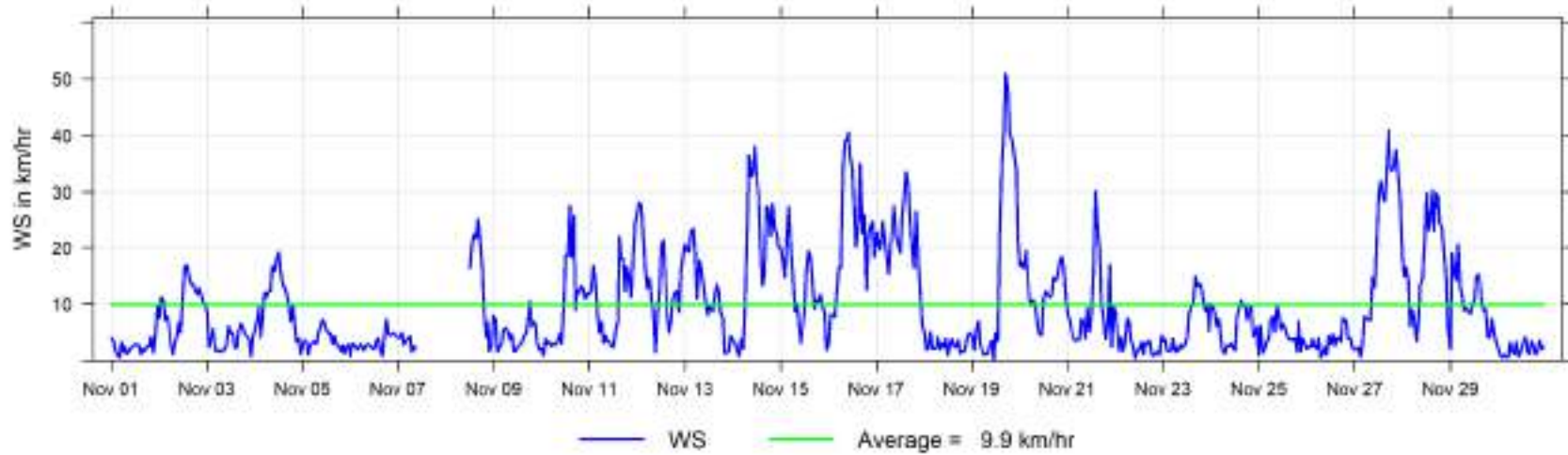
November 2023 Hourly Temperature Readings (in °C) at Beaverlodge



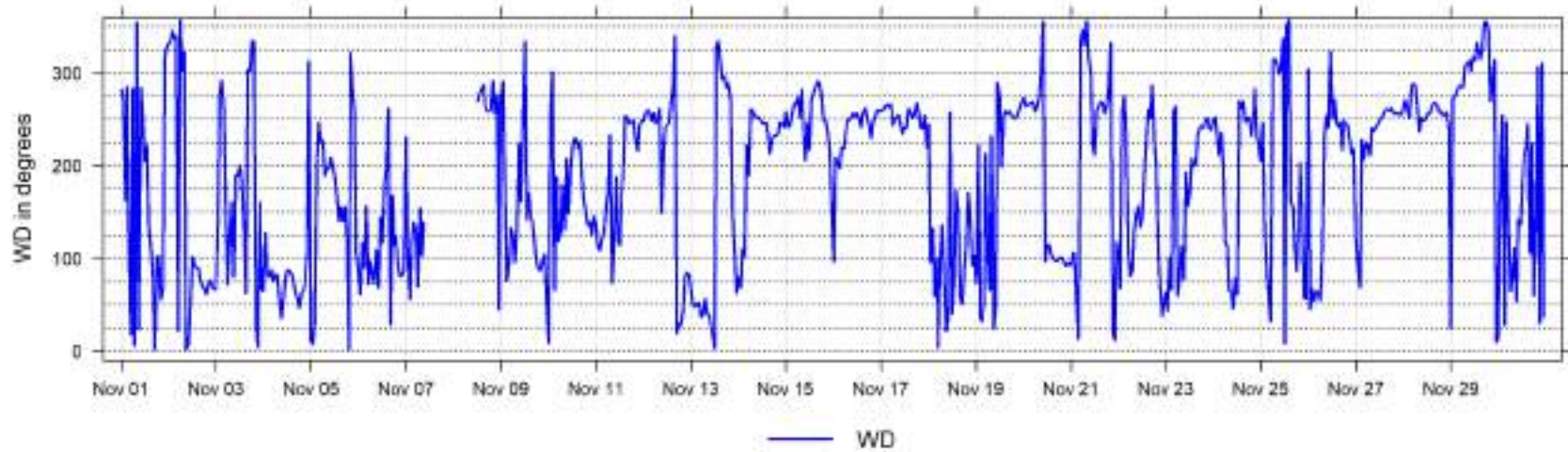
November 2023 Hourly Readings of Relative Humidity (in %) at Beaverlodge



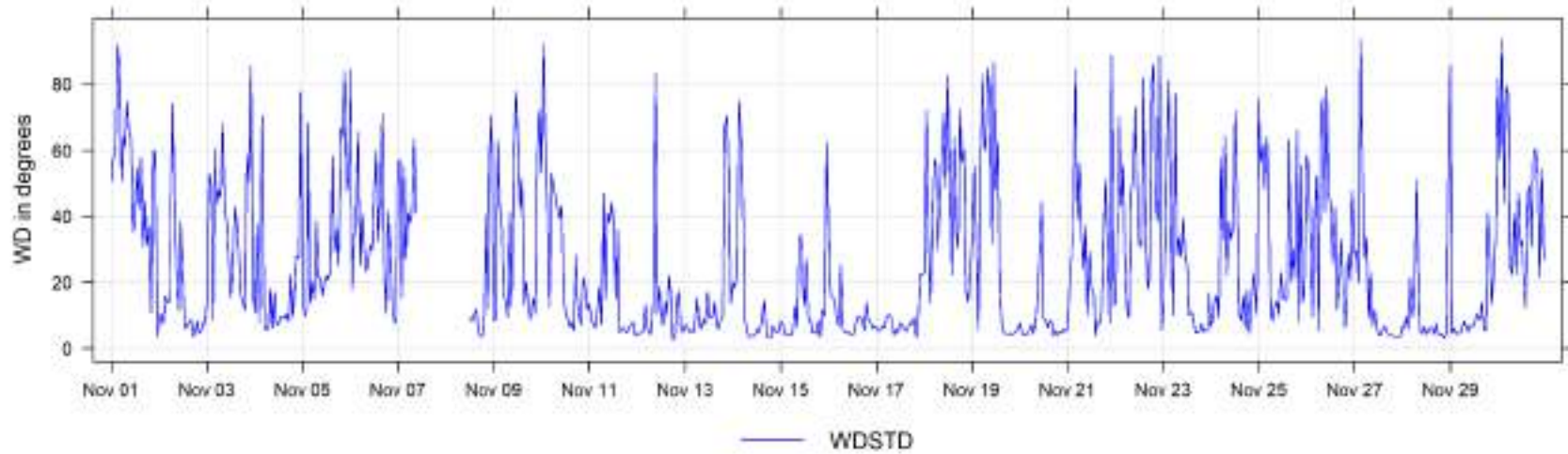
November 2023 Hourly Readings of Wind Speed (in km/hr) at Beaverlodge

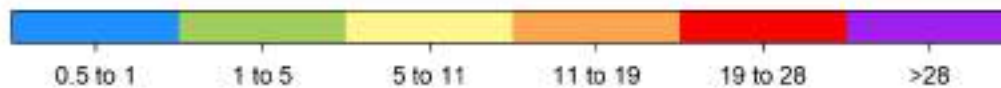
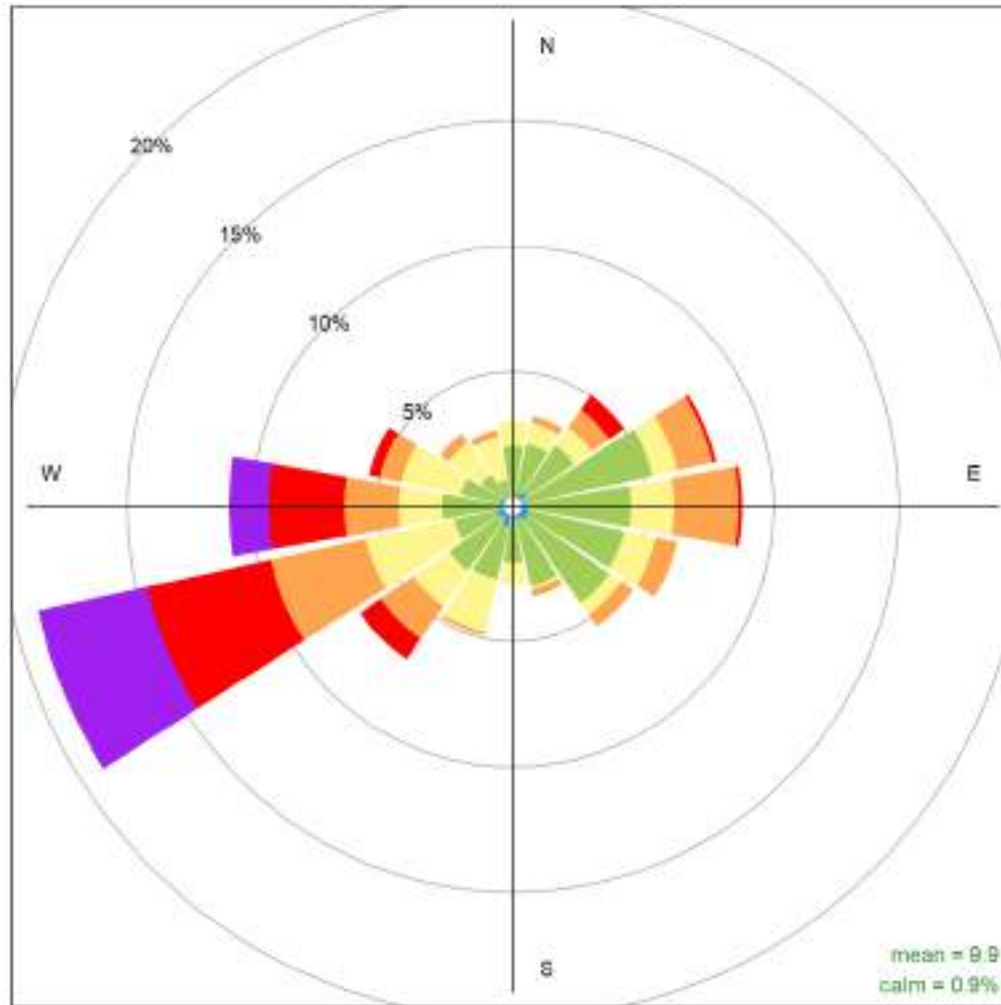


November 2023 Hourly Readings of Wind Direction (in degrees) at Beaverlodge



November 2023 Hourly Readings of Wind Direction Standard Deviation (in degrees) at Beaverlodge

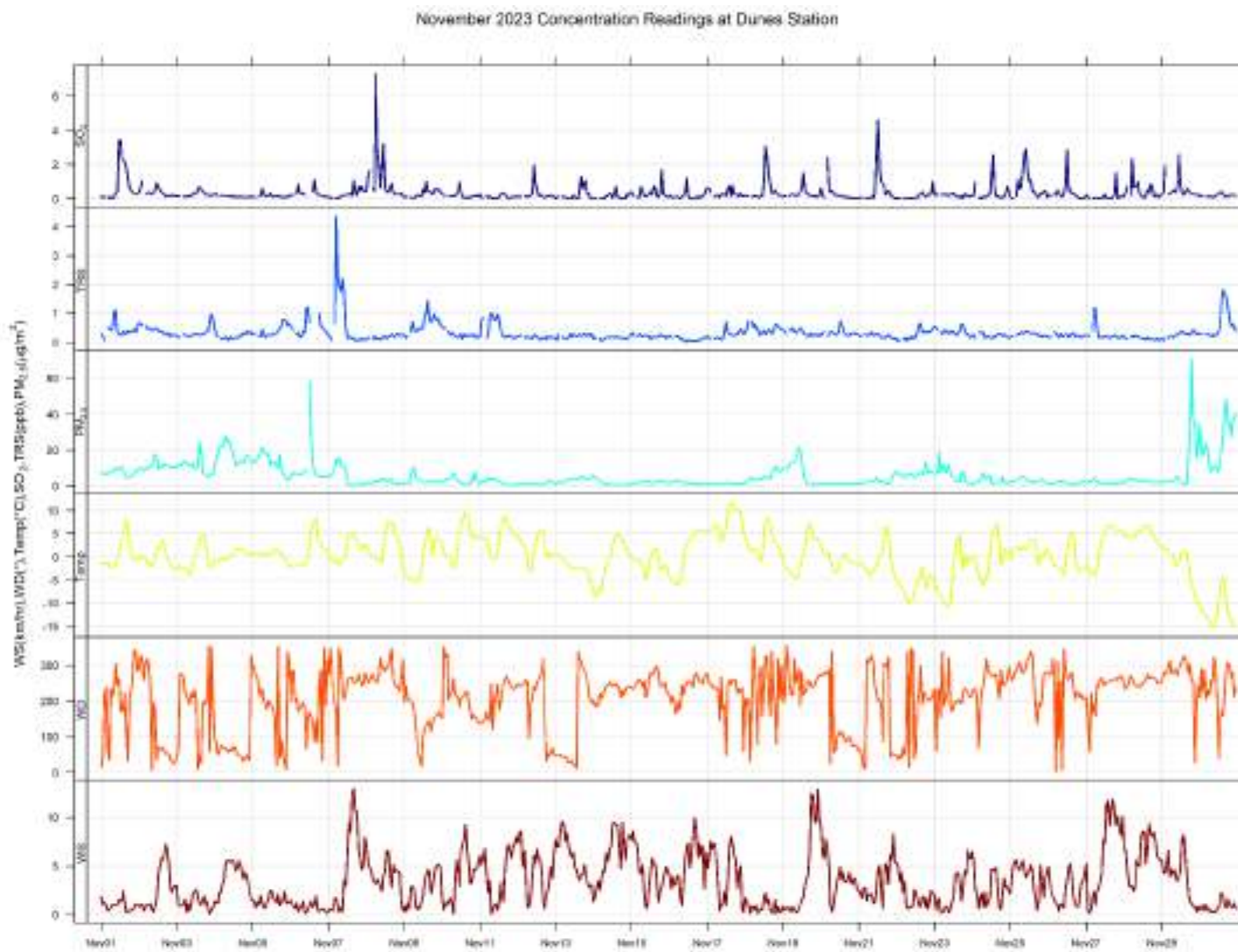




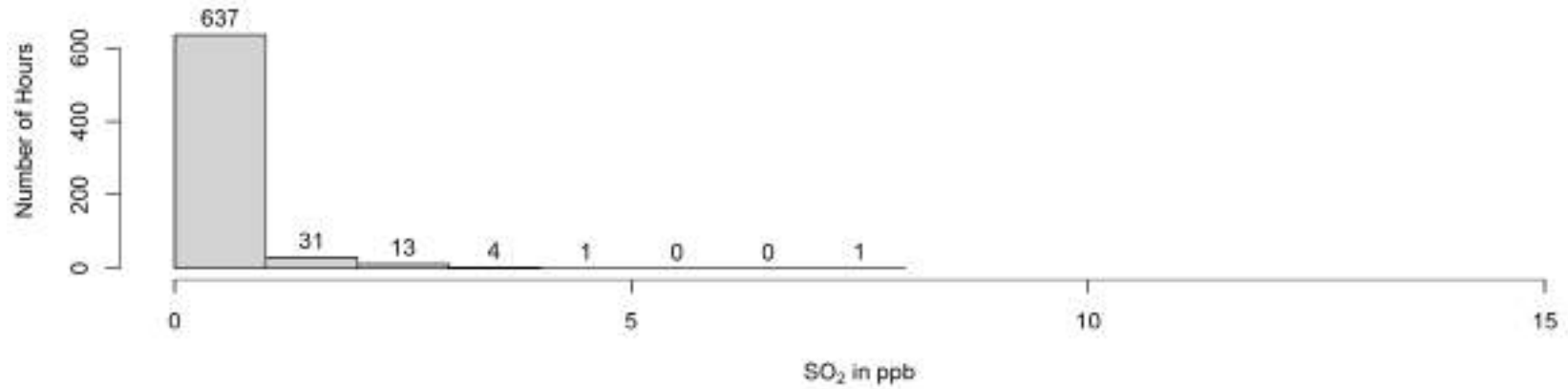
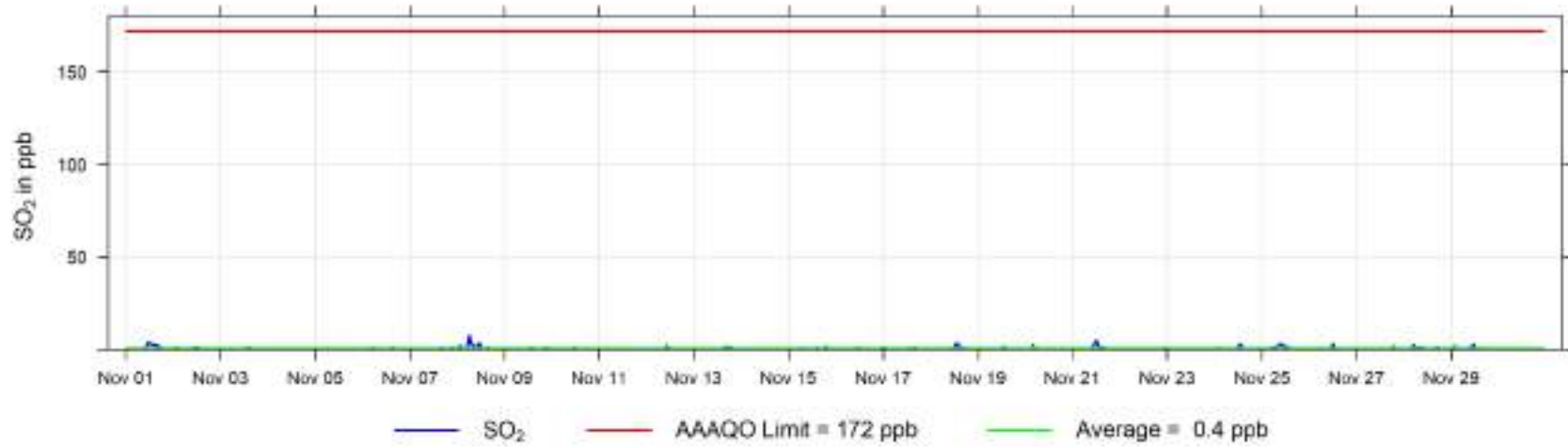
Beaverlodge November 2023 Wind Rose, wind speed in km/hr  
**Frequency of counts by wind direction (%)**

### 3 Dunes Charts

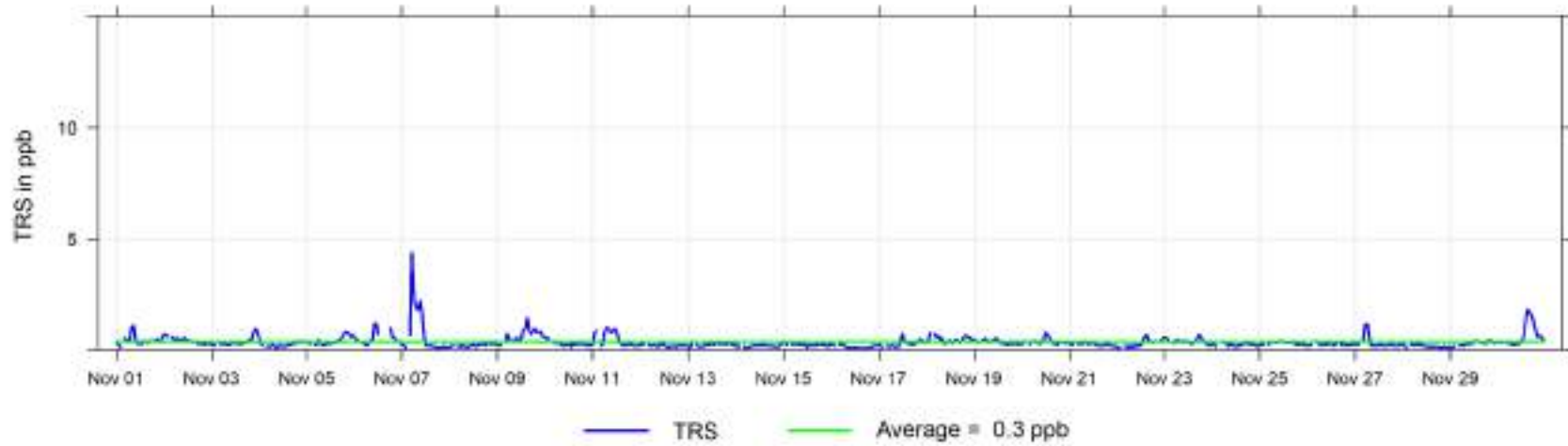
The following pages include the charts and histograms for Dunes Station



November 2023 Hourly Concentration Readings of SO<sub>2</sub> (in ppb) at Dunes

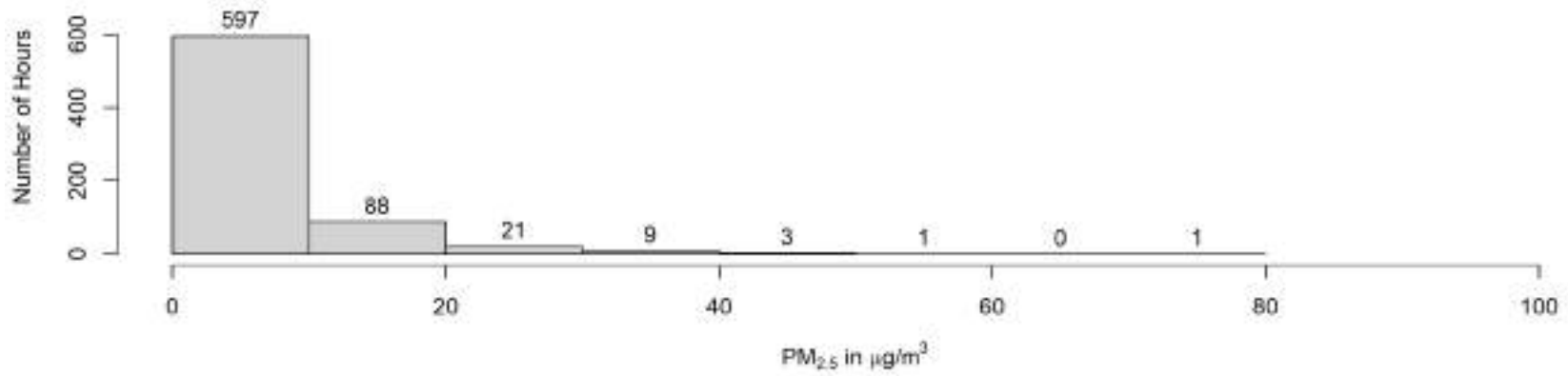
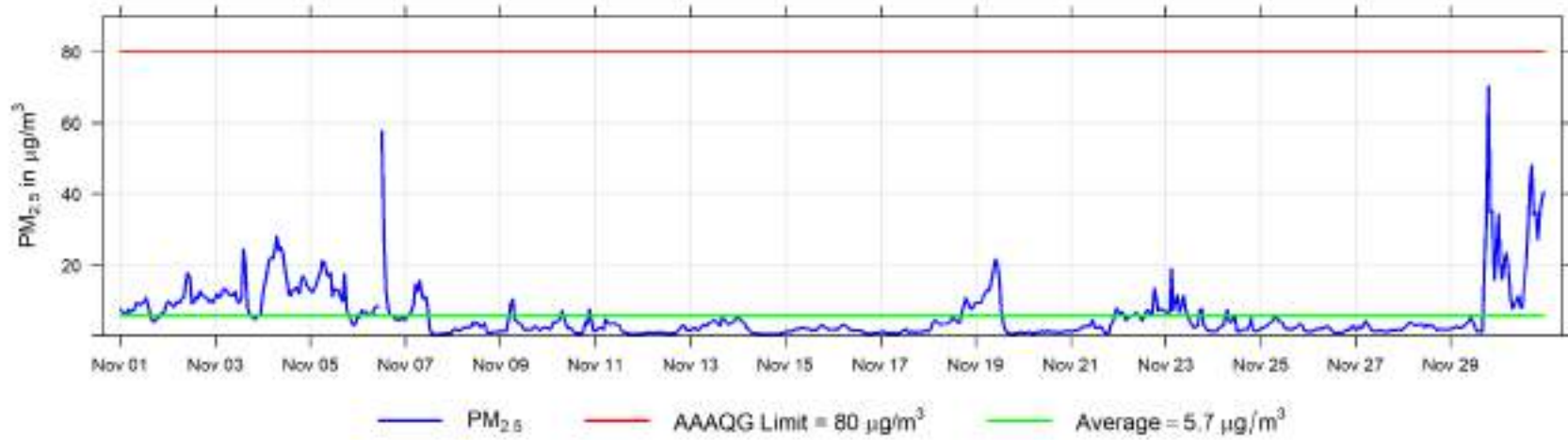


November 2023 Hourly Concentration Readings of TRS (in ppb) at Dunes

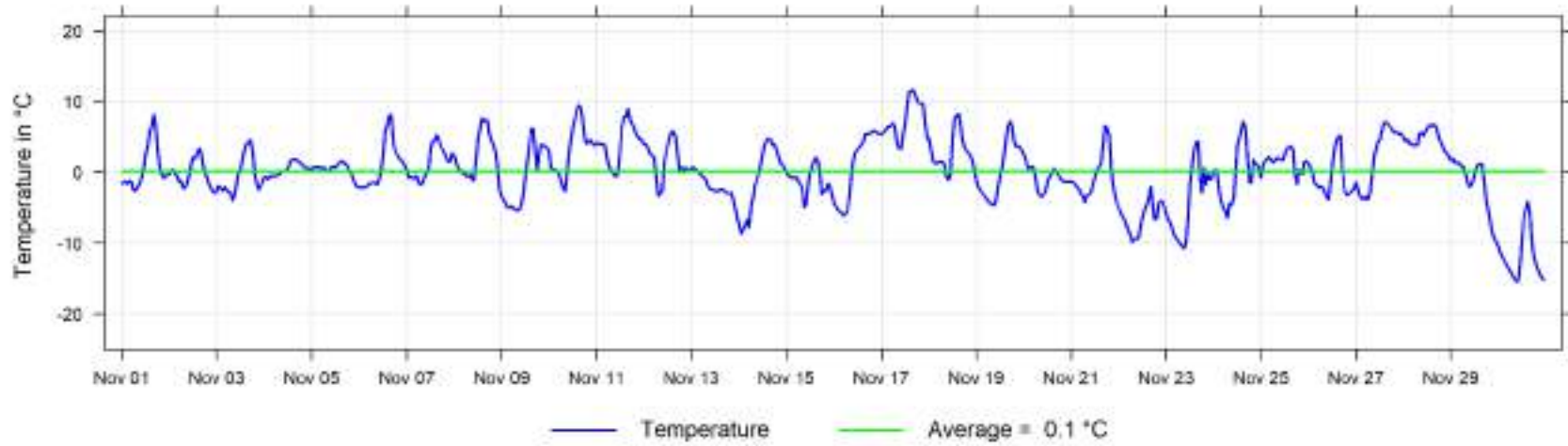




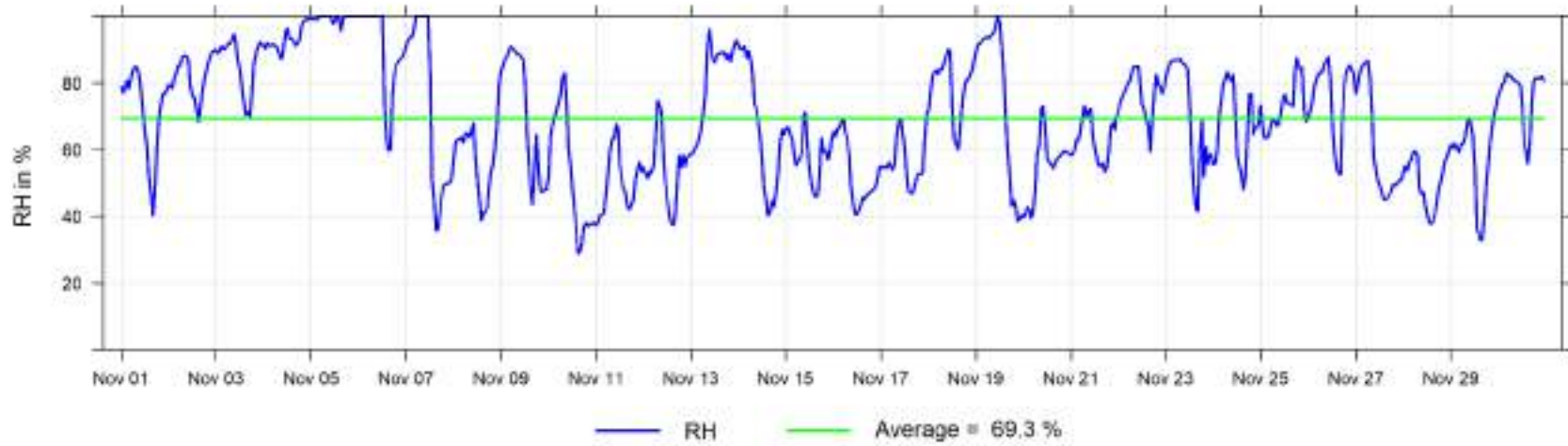
November 2023 Hourly Concentration Readings of PM<sub>2.5</sub> in  $\mu\text{g}/\text{m}^3$  at Dunes



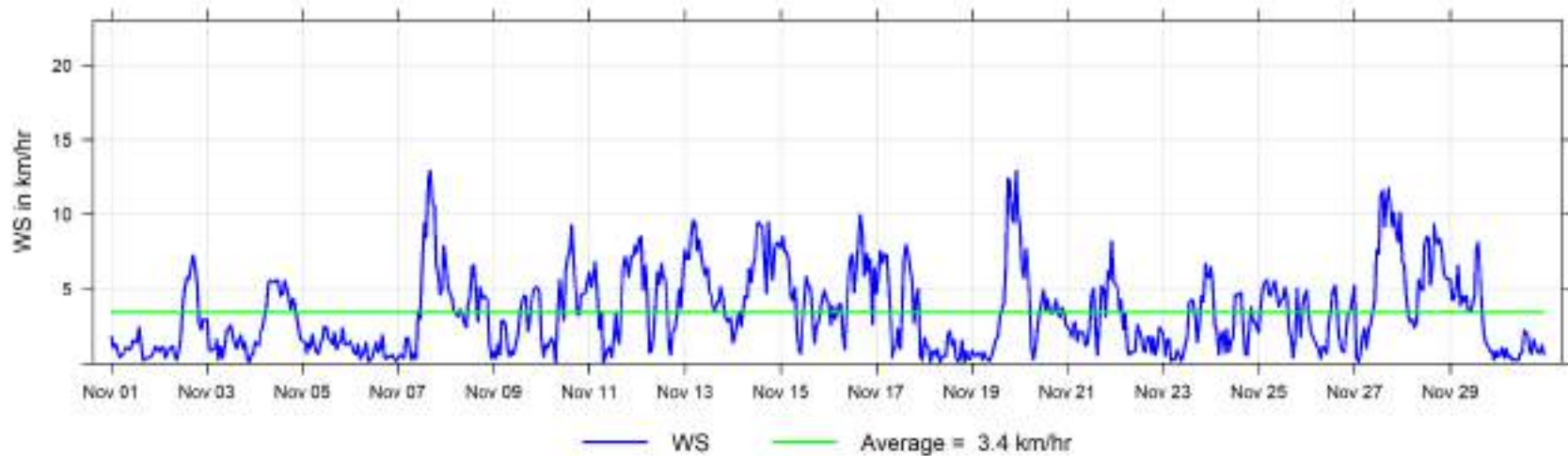
November 2023 Hourly Temperature Readings (in °C) at Dunes



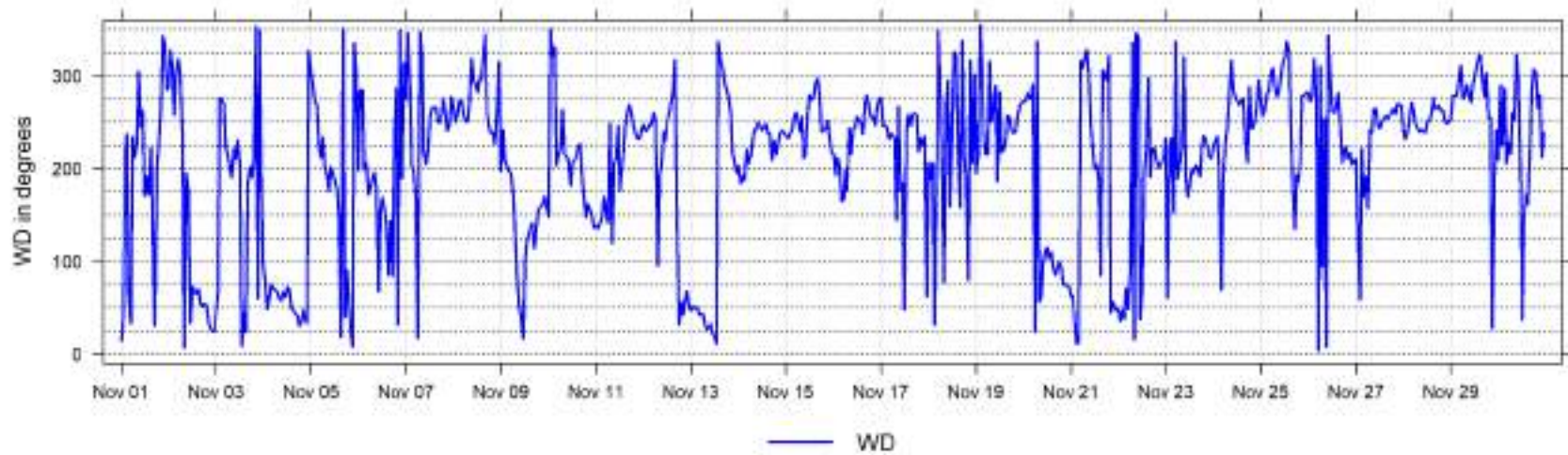
November 2023 Hourly Readings of Relative Humidity (in %) at Dunes



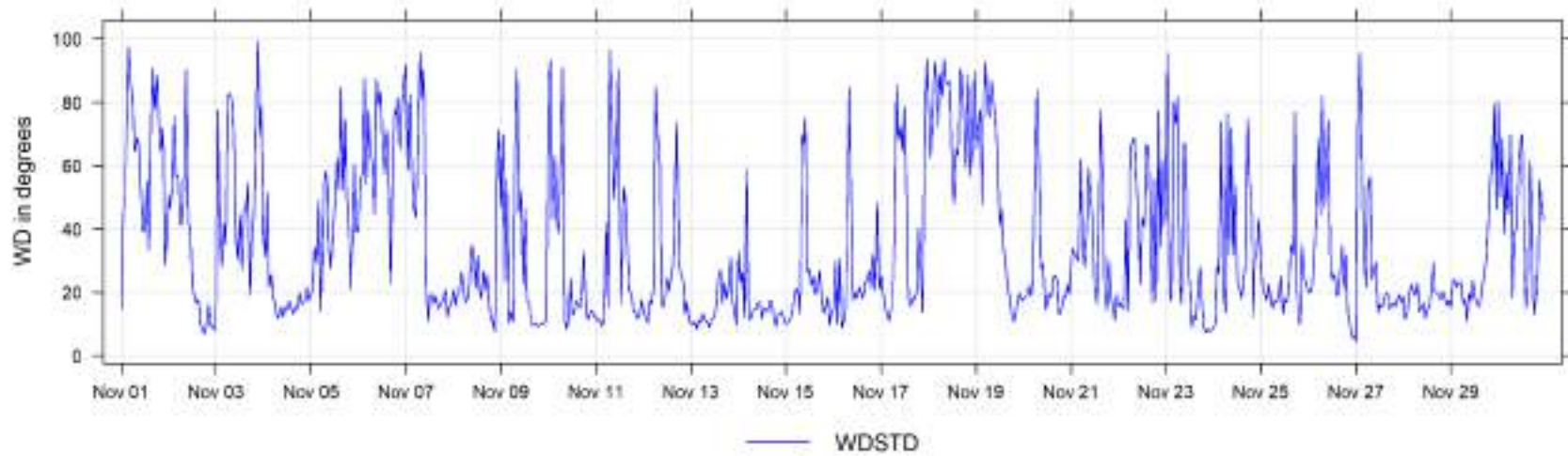
November 2023 Hourly Readings of Wind Speed (in km/hr) at Dunes

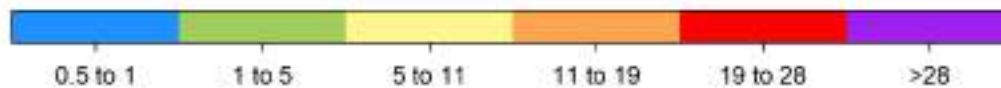
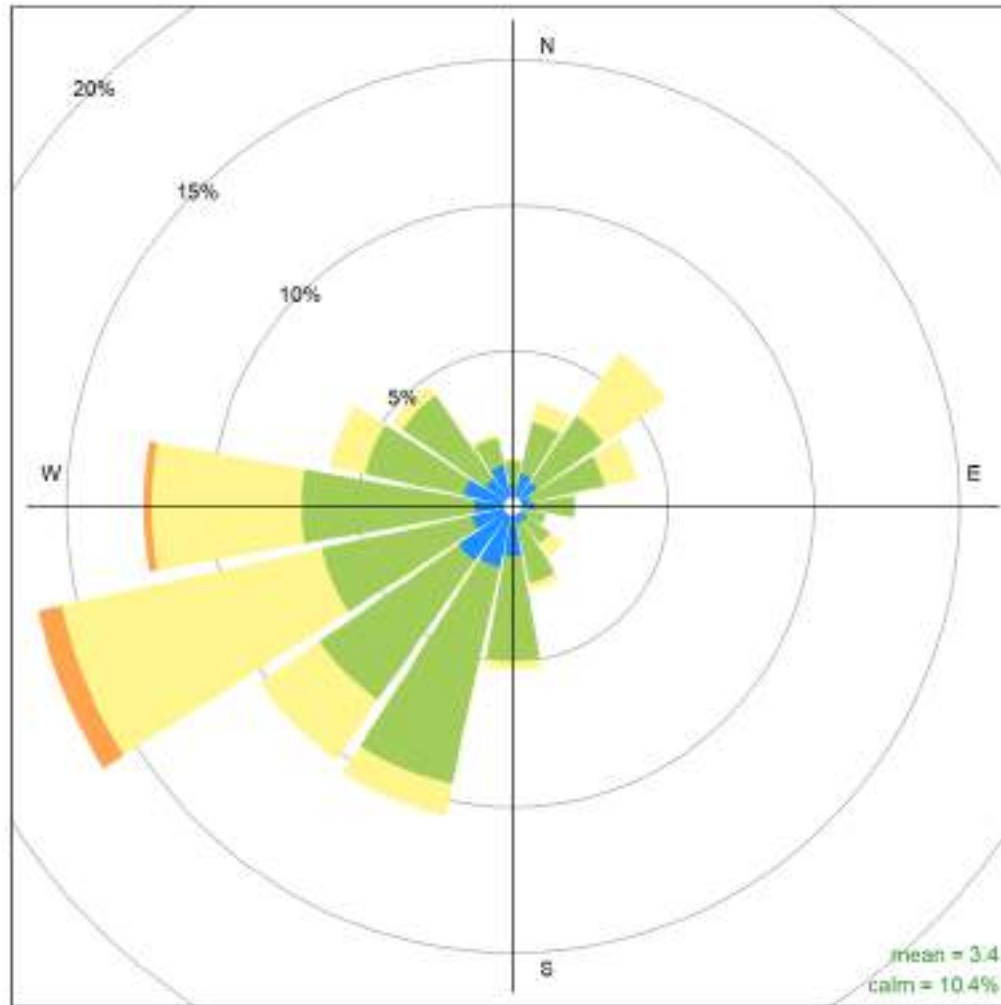


November 2023 Hourly Readings of Wind Direction (in degrees) at Dunes



November 2023 Hourly Readings of Wind Direction Standard Deviation (in degrees) at Dunes



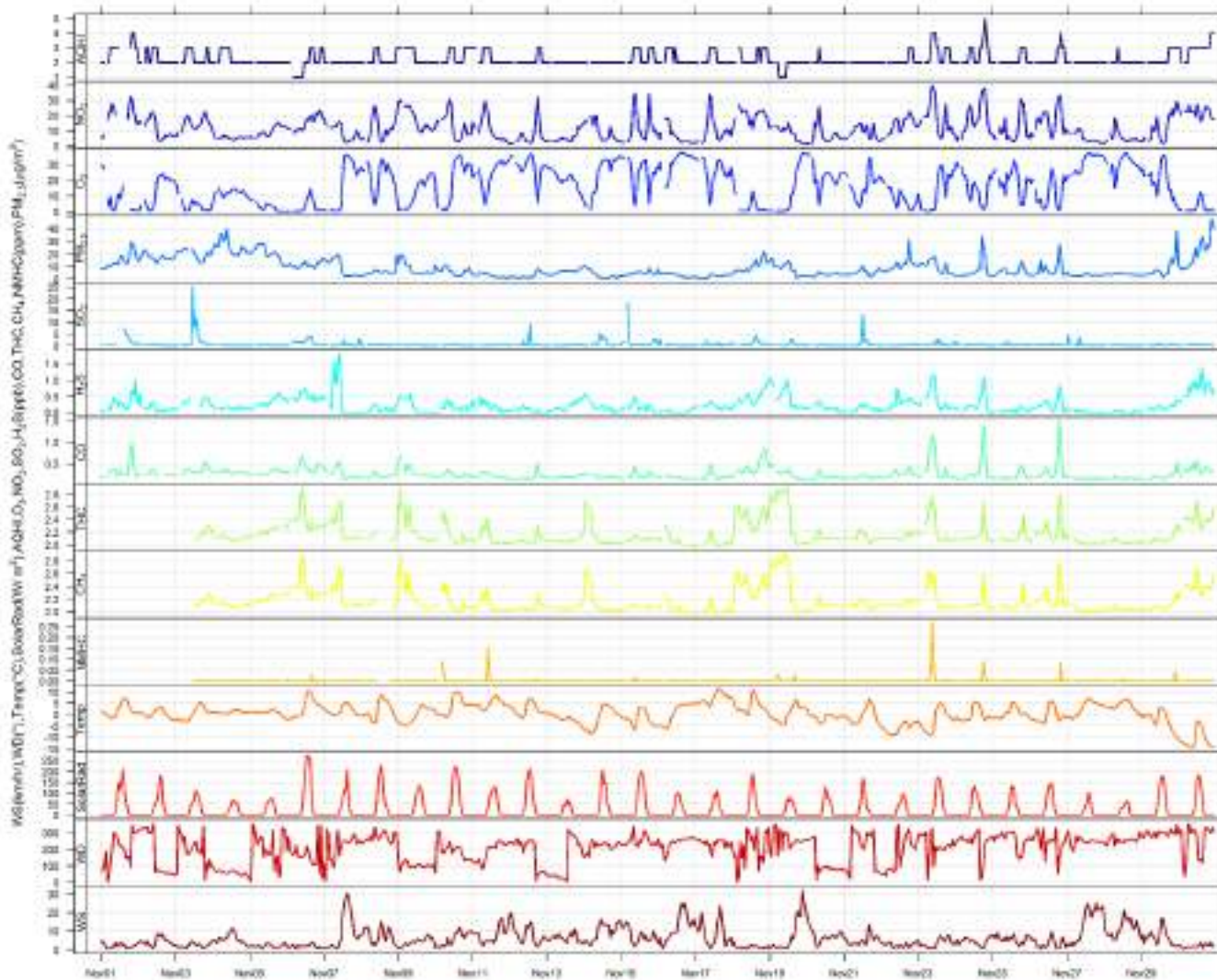


Dunes November 2023 Wind Rose, wind speed in km/hr  
**Frequency of counts by wind direction (%)**

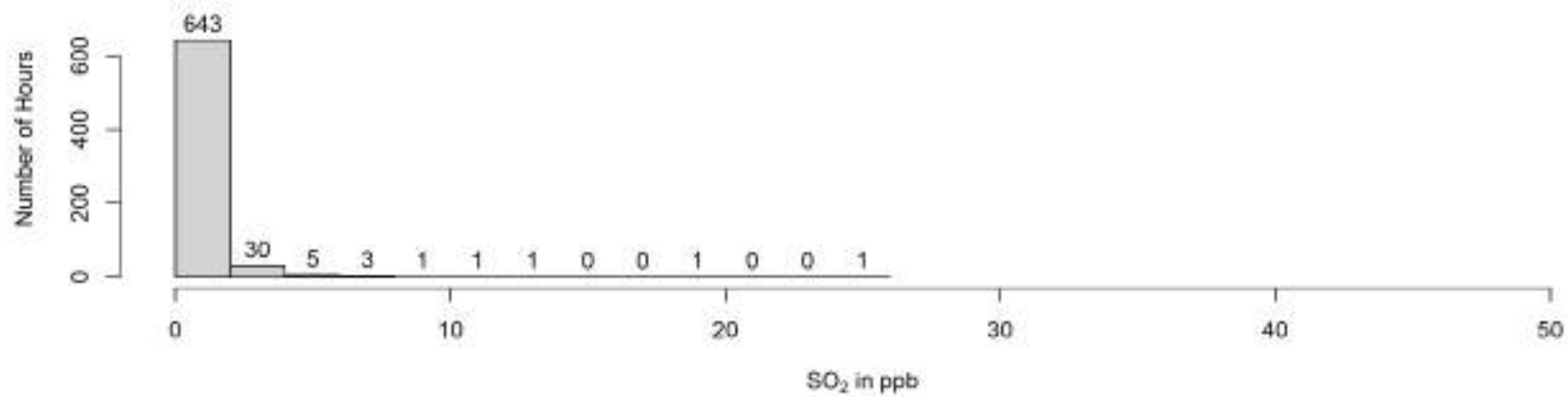
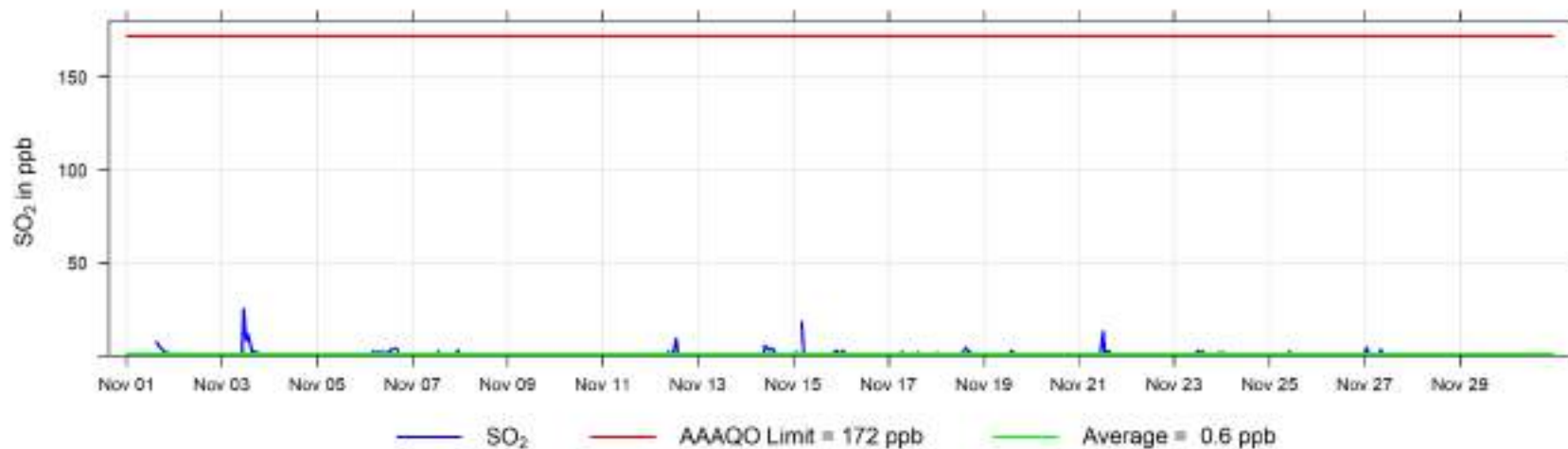
## 4 Grande Prairie - Henry Pirker Charts

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

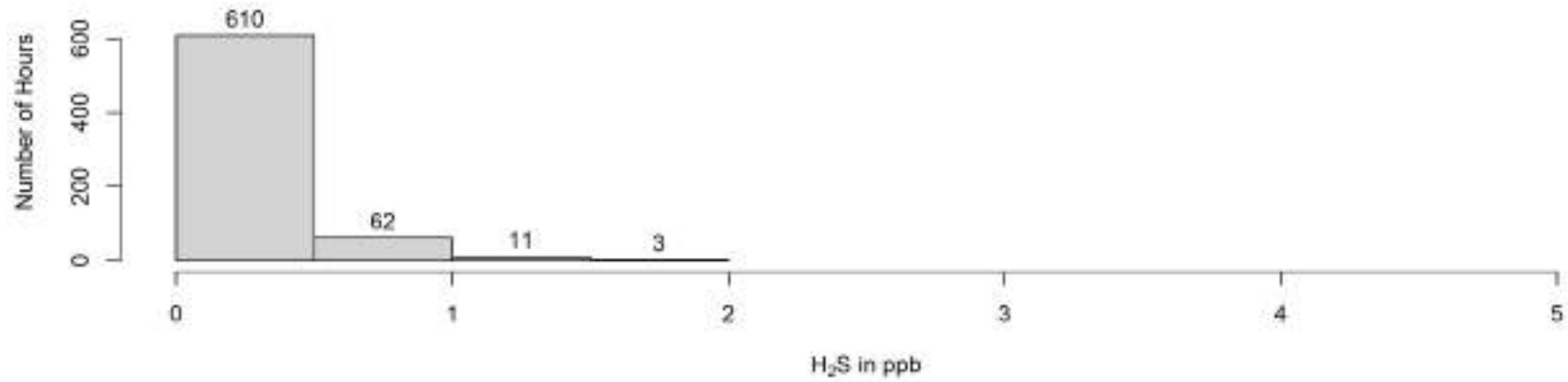
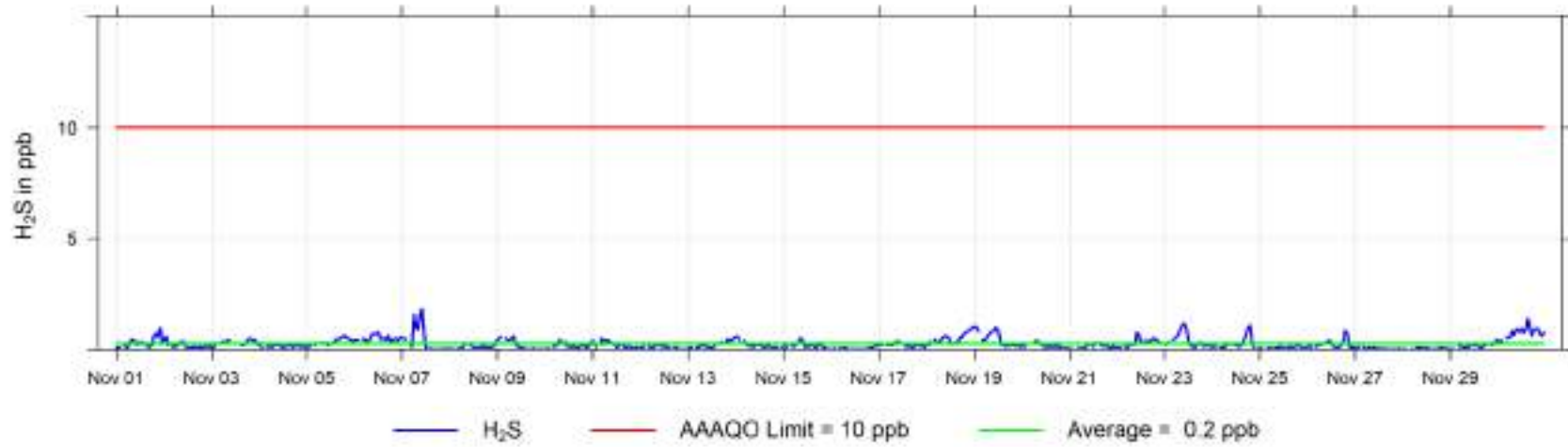
November 2023 Concentration Readings at Henry Pirker Station



November 2023 Hourly Concentration Readings of SO<sub>2</sub> (in ppb) at Henry Pirker

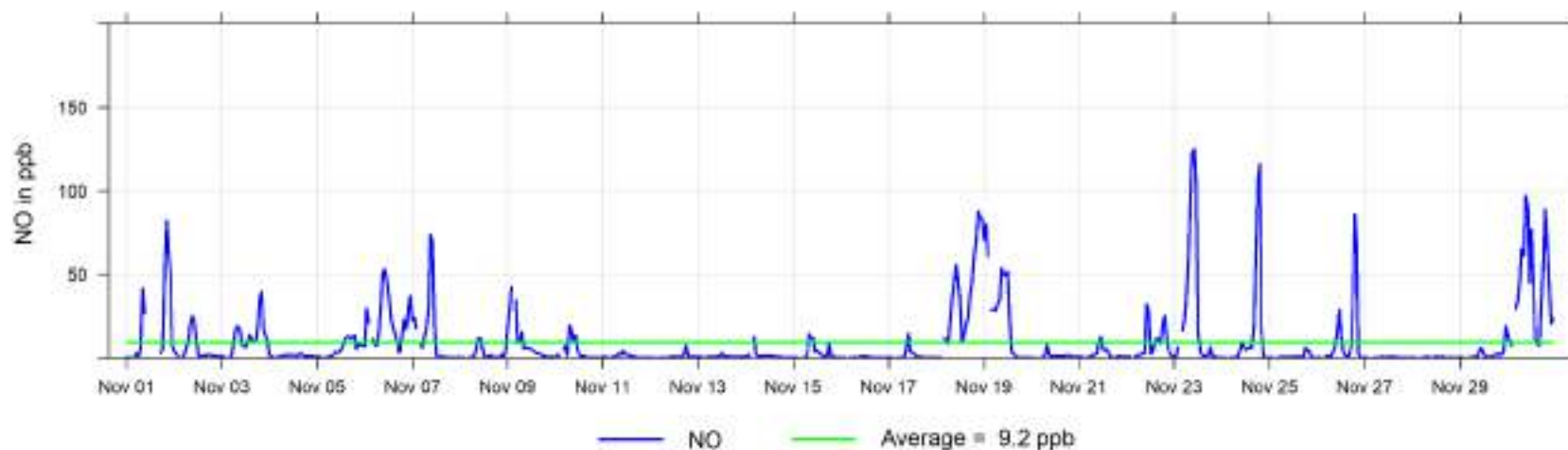


November 2023 Hourly Concentration Readings of H<sub>2</sub>S (in ppb) at Henry Pirker

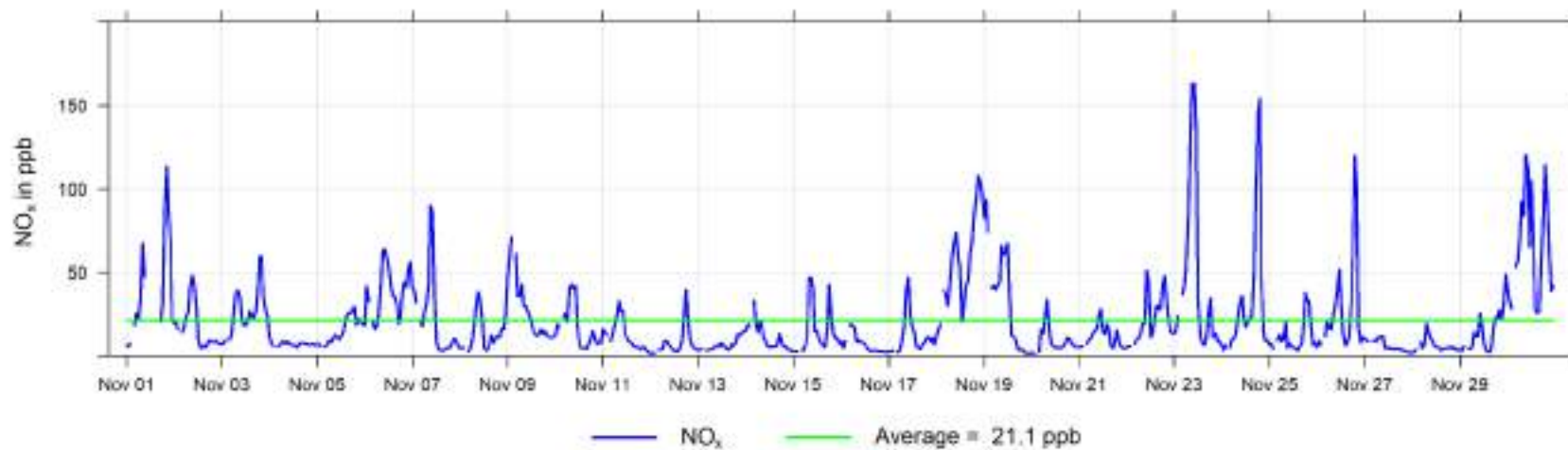




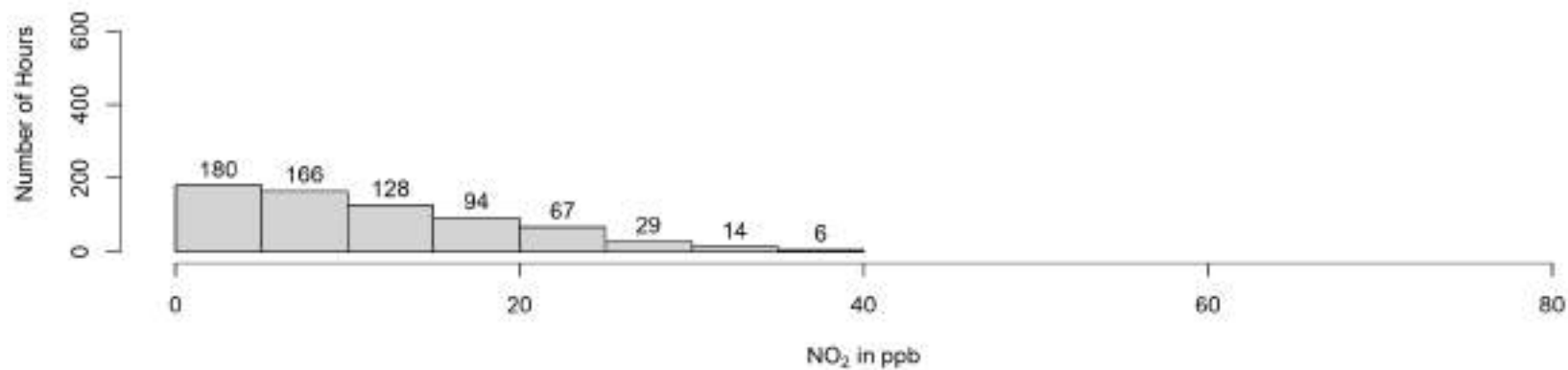
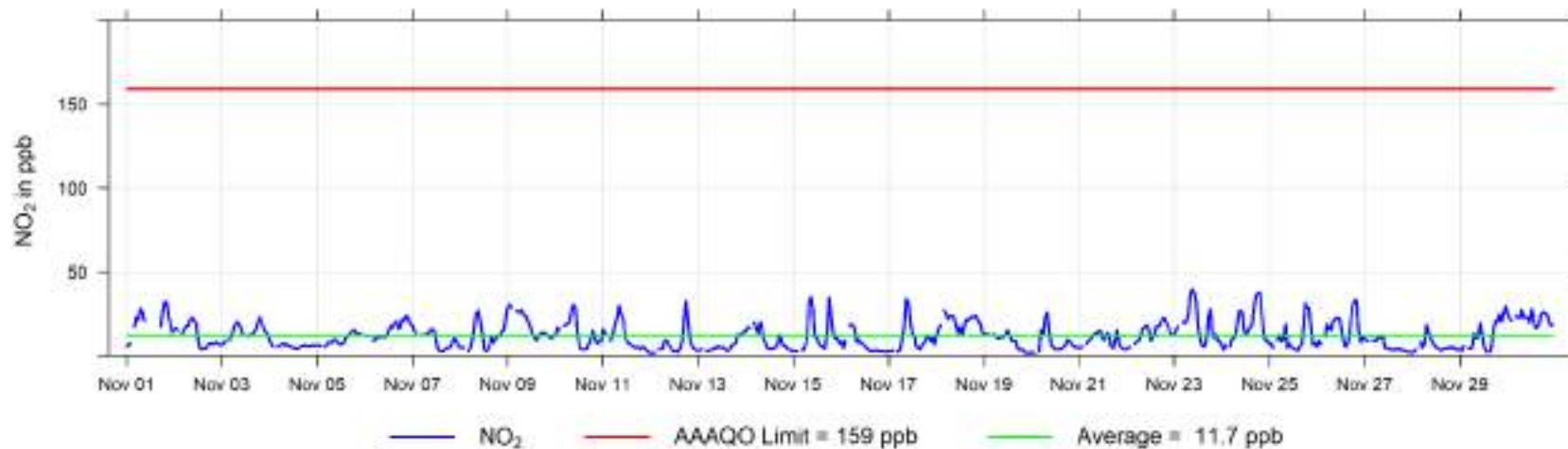
November 2023 Hourly Concentration Readings of NO (in ppb) at Henry Pirker



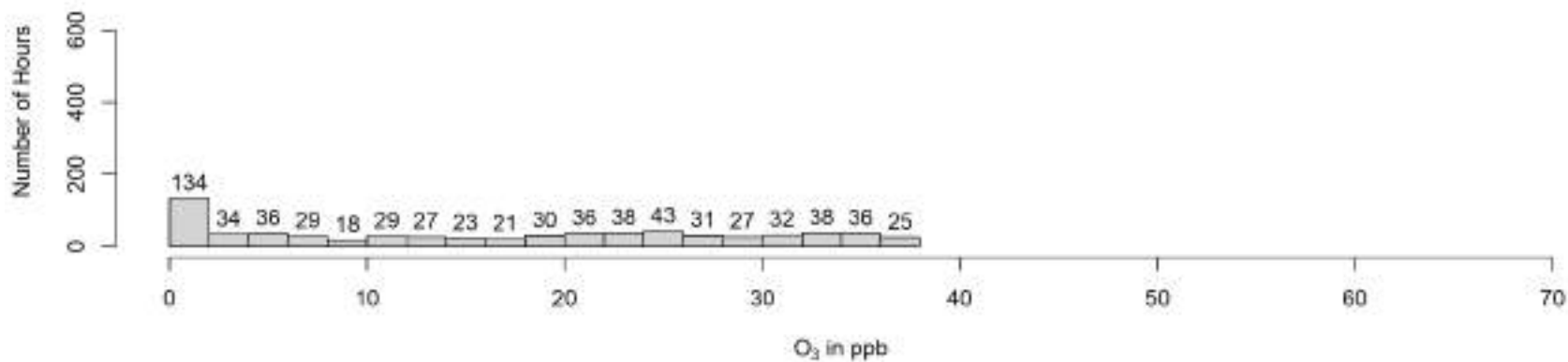
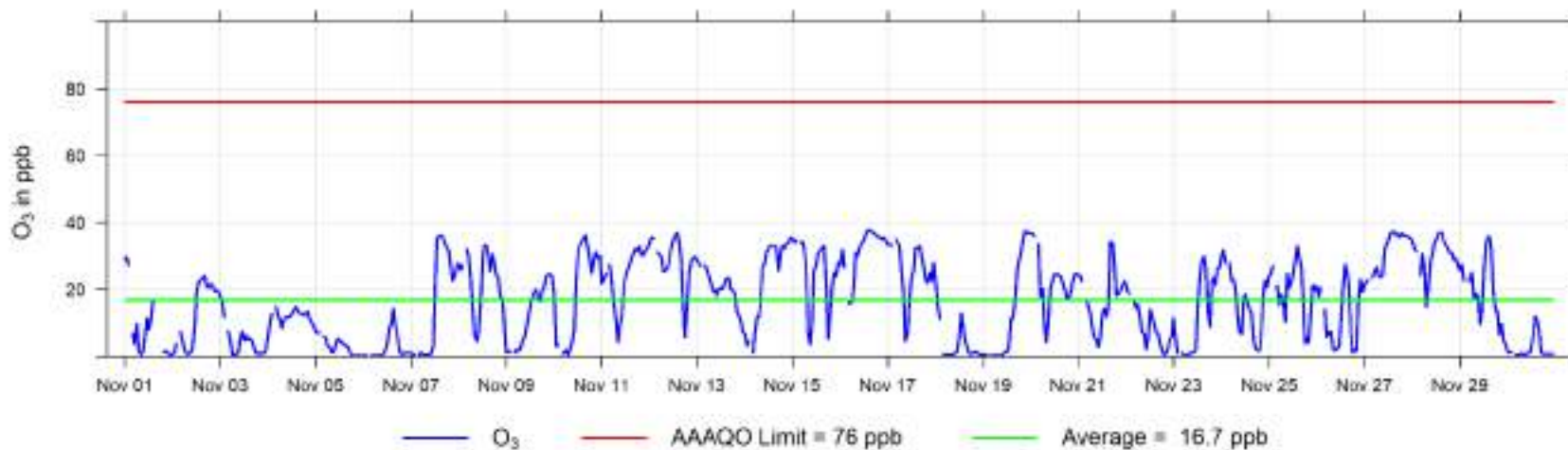
November 2023 Hourly Concentration Readings of NO<sub>x</sub> (in ppb) at Henry Pirker



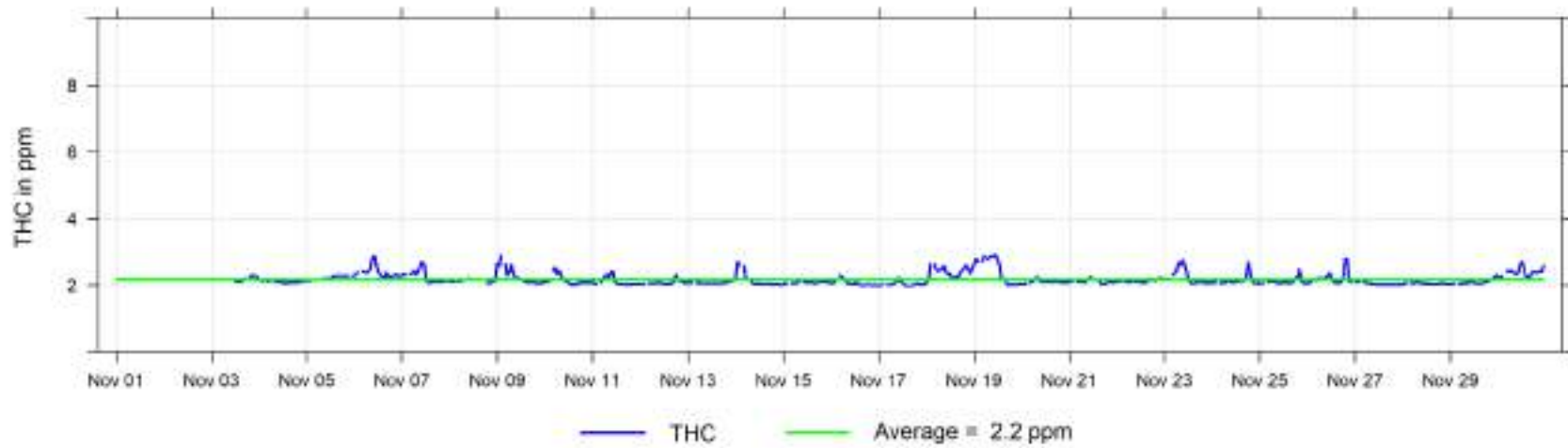
November 2023 Hourly Concentration Readings of NO<sub>2</sub> (in ppb) at Henry Pirker



November 2023 Hourly Concentration Readings of O<sub>3</sub> (in ppb) at Henry Pirker



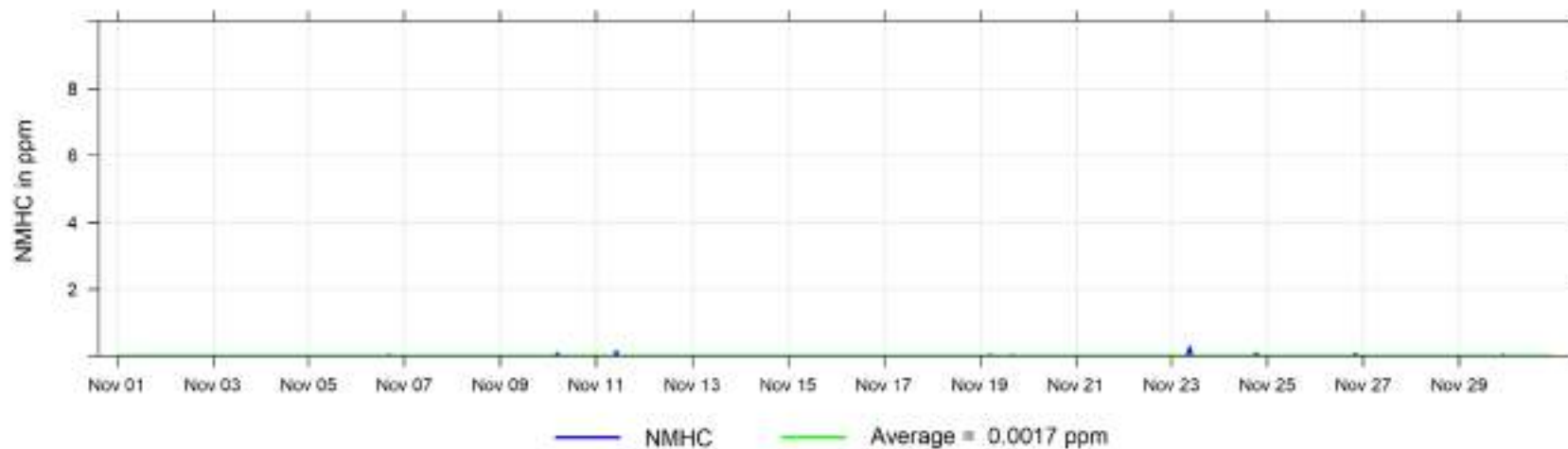
November 2023 Hourly Concentration Readings of THC (in ppm) at Henry Pirker



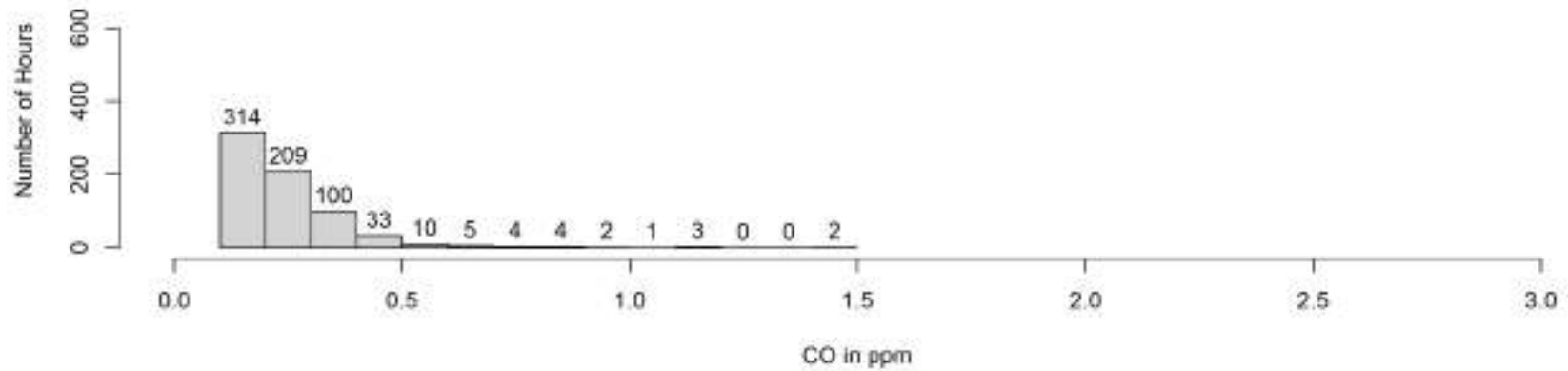
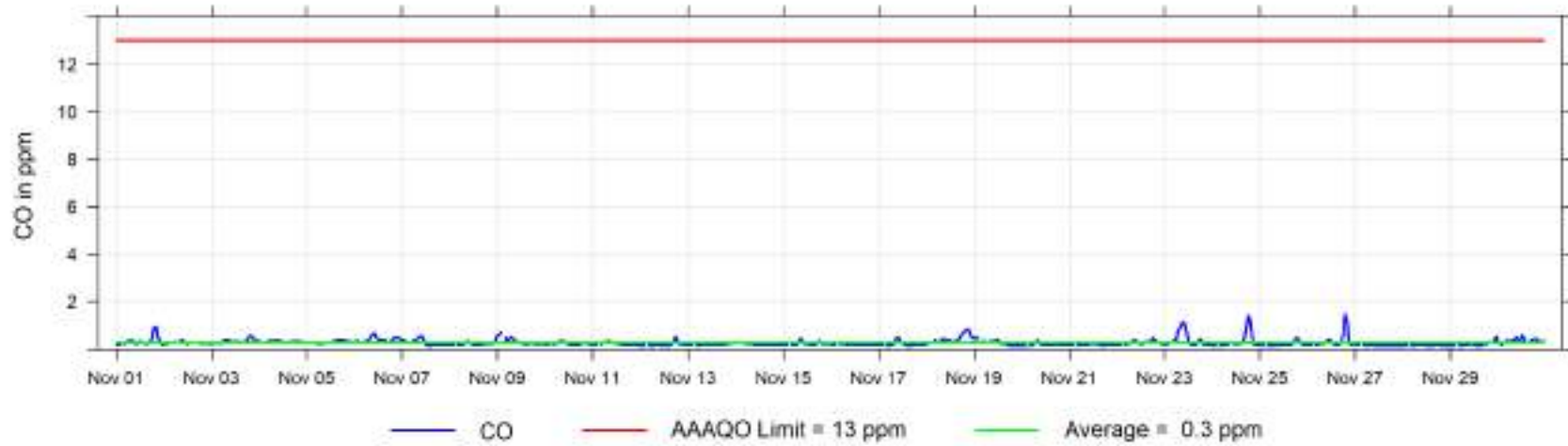
November 2023 Hourly Concentration Readings of CH<sub>4</sub> (in ppm) at Henry Pirker



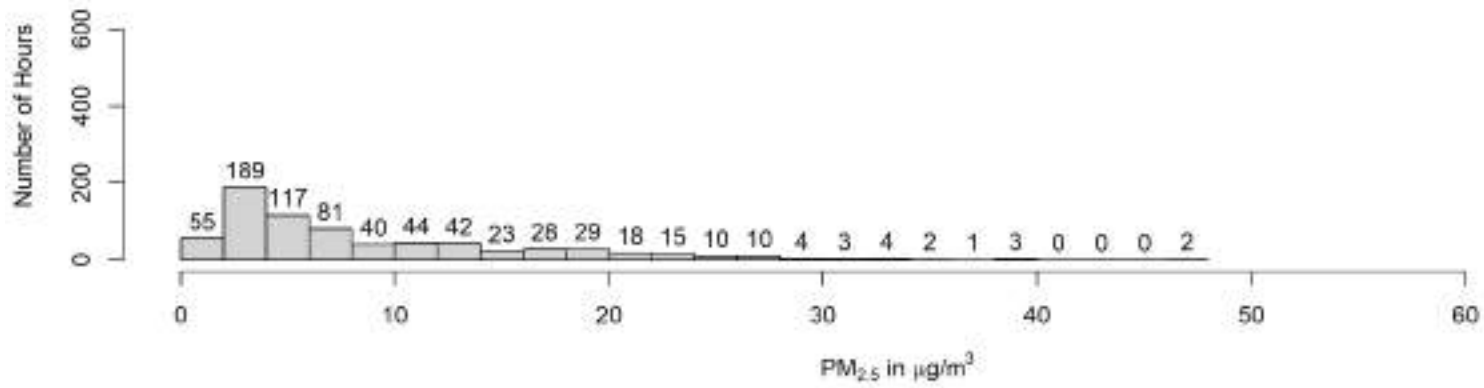
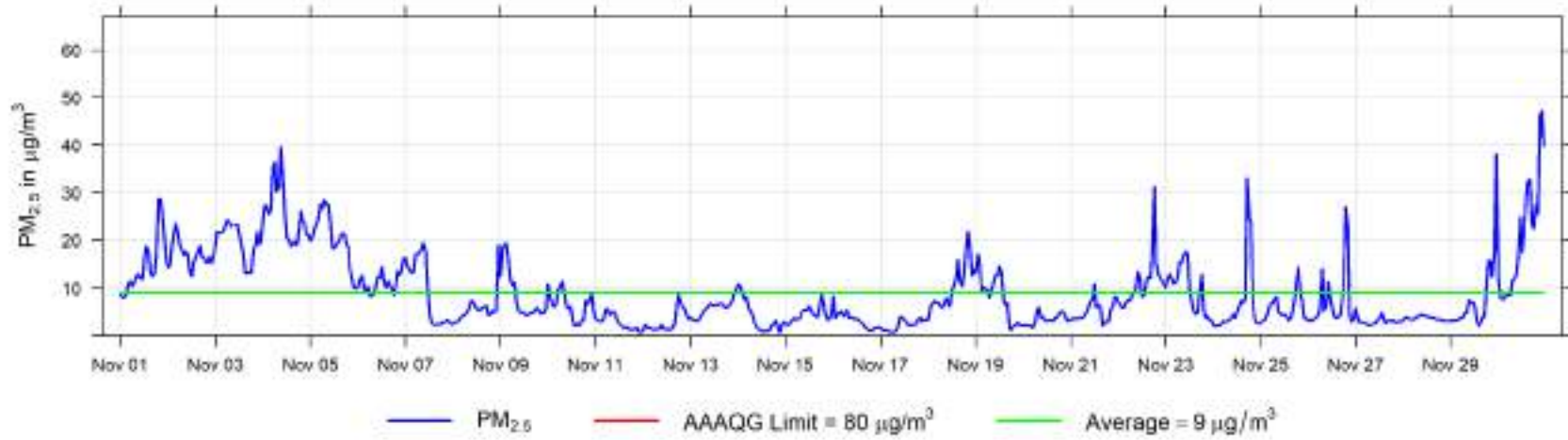
November 2023 Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



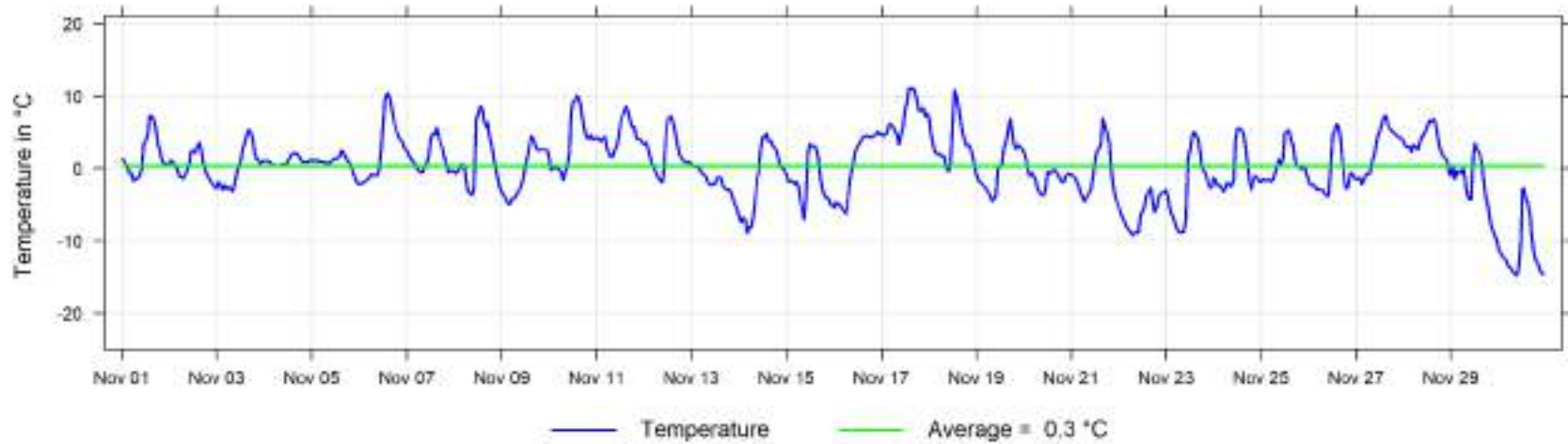
November 2023 Hourly Concentration Readings of CO (in ppm) at Henry Pirker



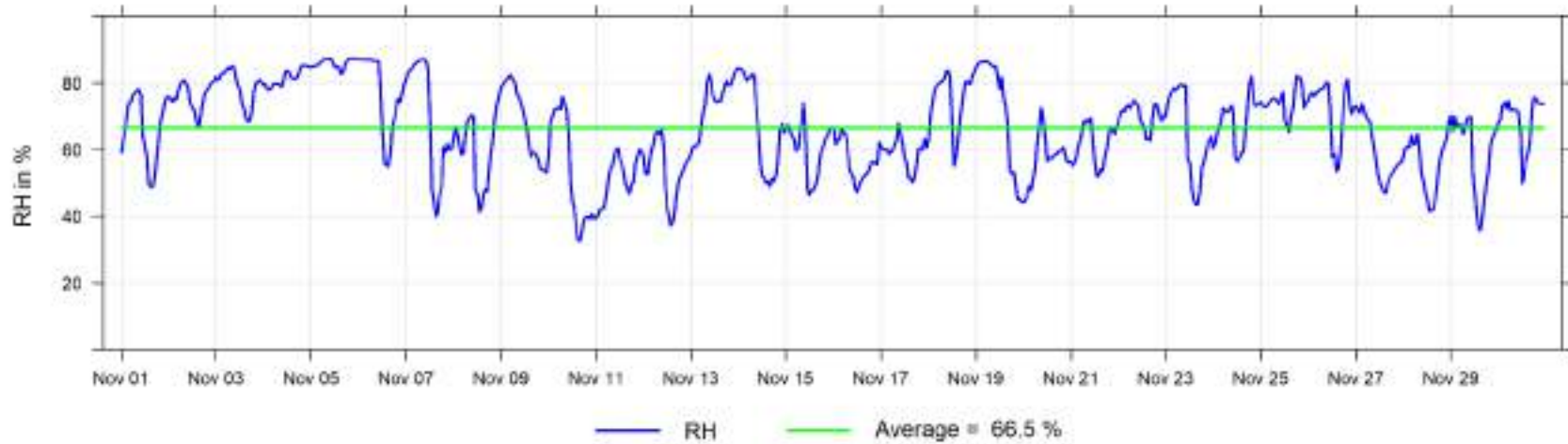
November 2023 Hourly Concentration Readings of PM<sub>2.5</sub> in  $\mu\text{g}/\text{m}^3$  at Henry Pirker



November 2023 Hourly Temperature Readings (in °C) at Henry Pirker

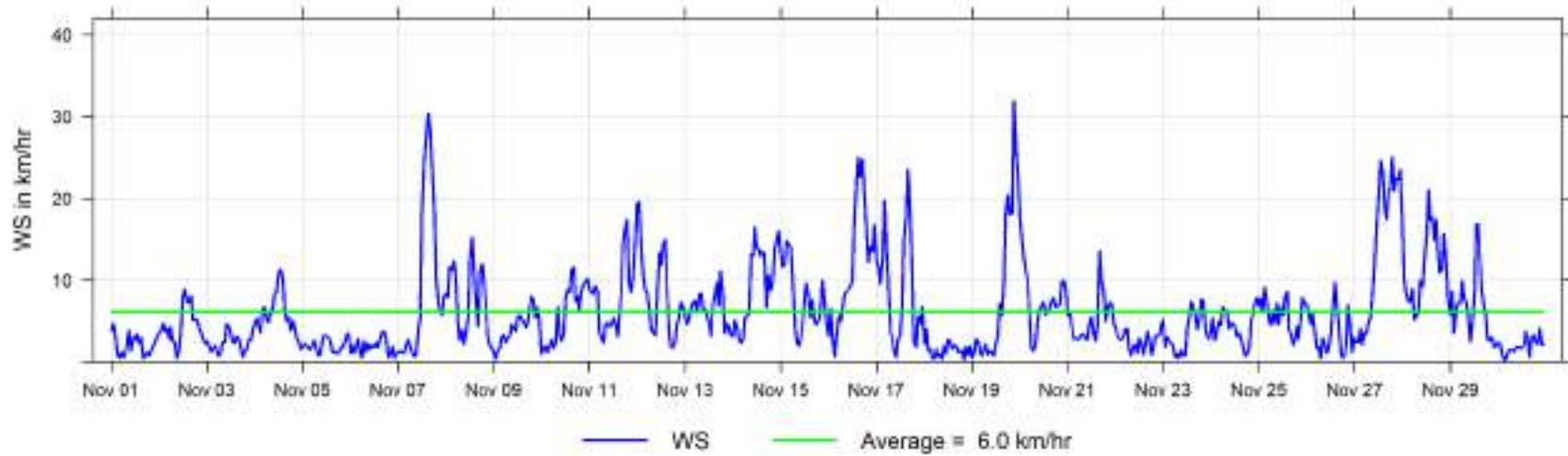


November 2023 Hourly Readings of Relative Humidity (in %) at Henry Pirker

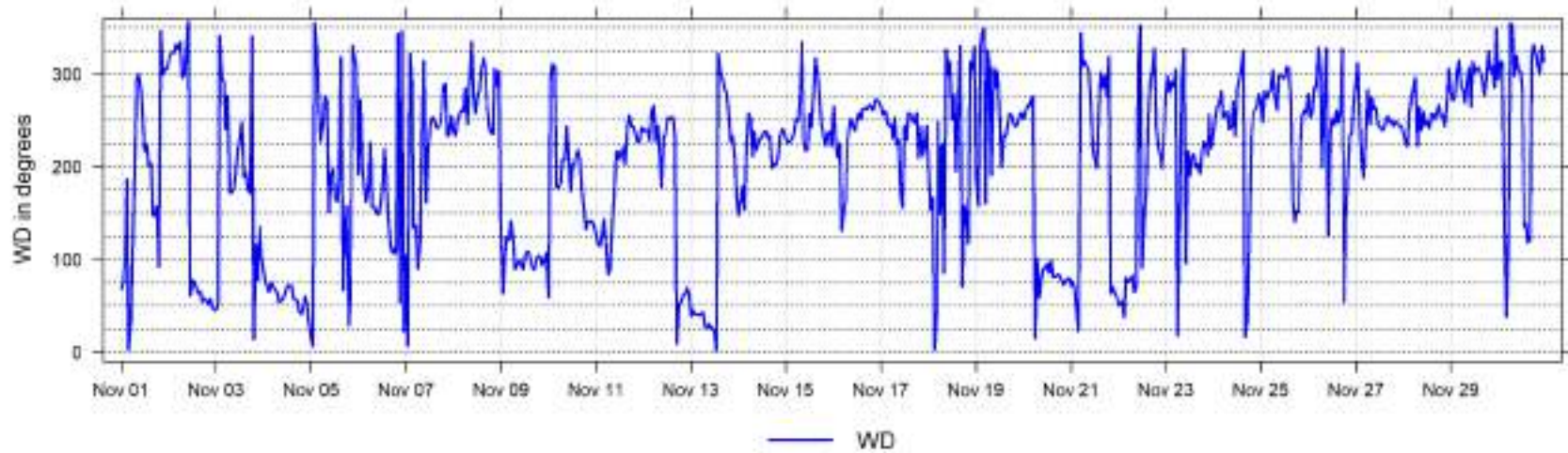




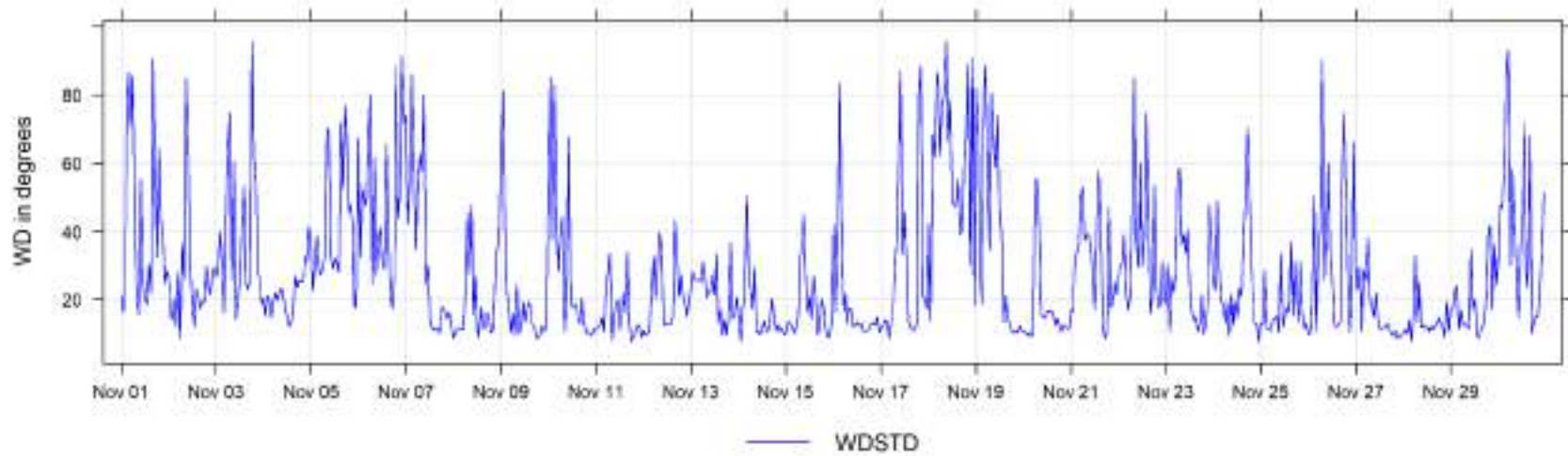
November 2023 Hourly Readings of Wind Speed (in km/hr) at Henry Pirker

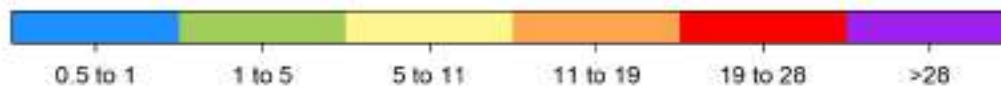


November 2023 Hourly Readings of Wind Direction (in degrees) at Henry Pirker



November 2023 Hourly Readings of Wind Direction Standard Deviation (in degrees) at Henry Pirker

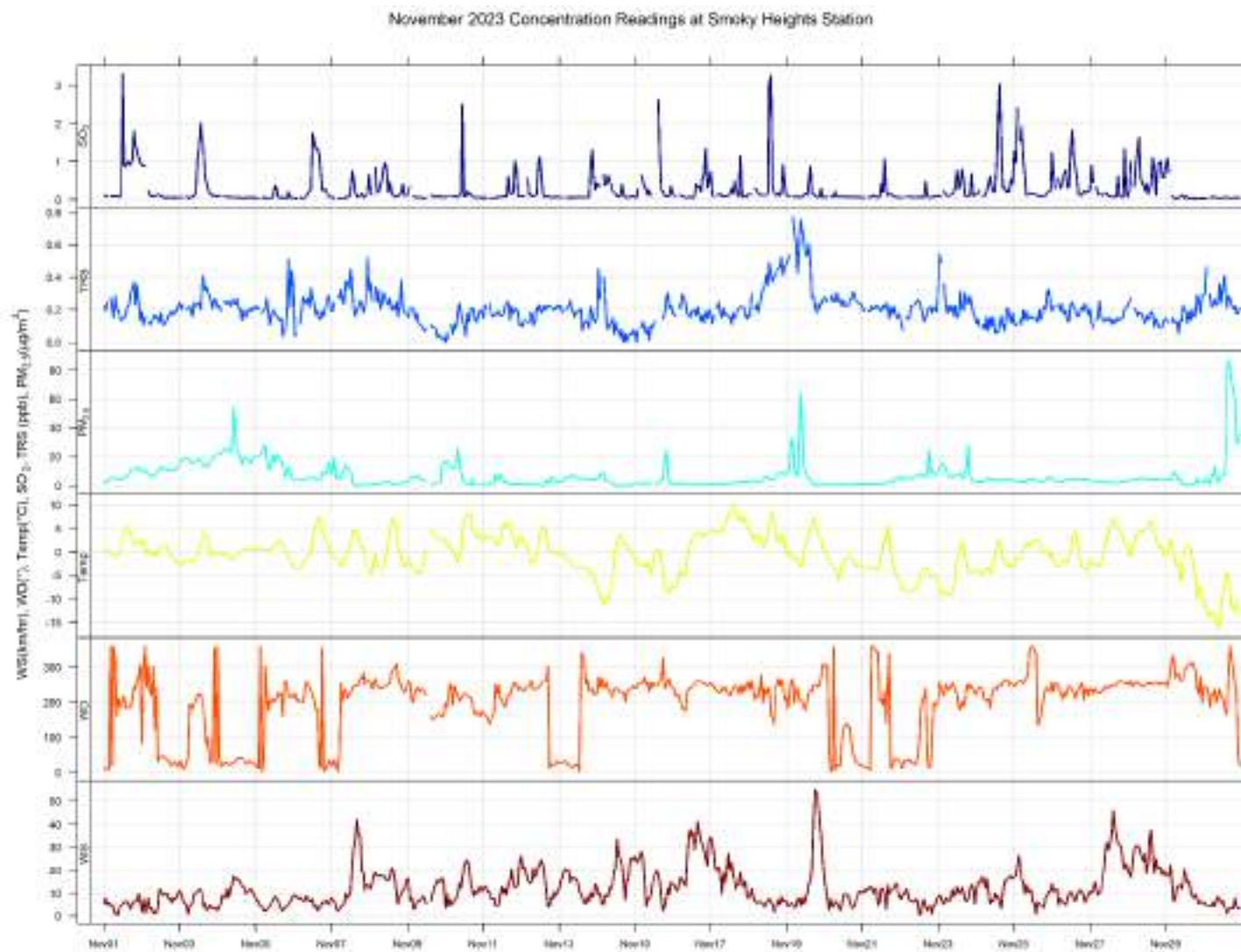




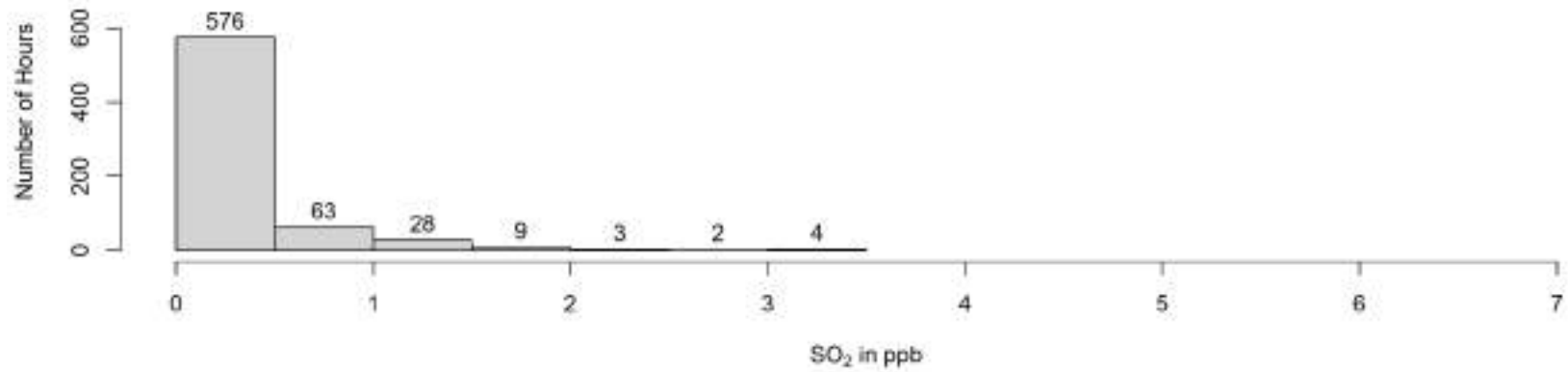
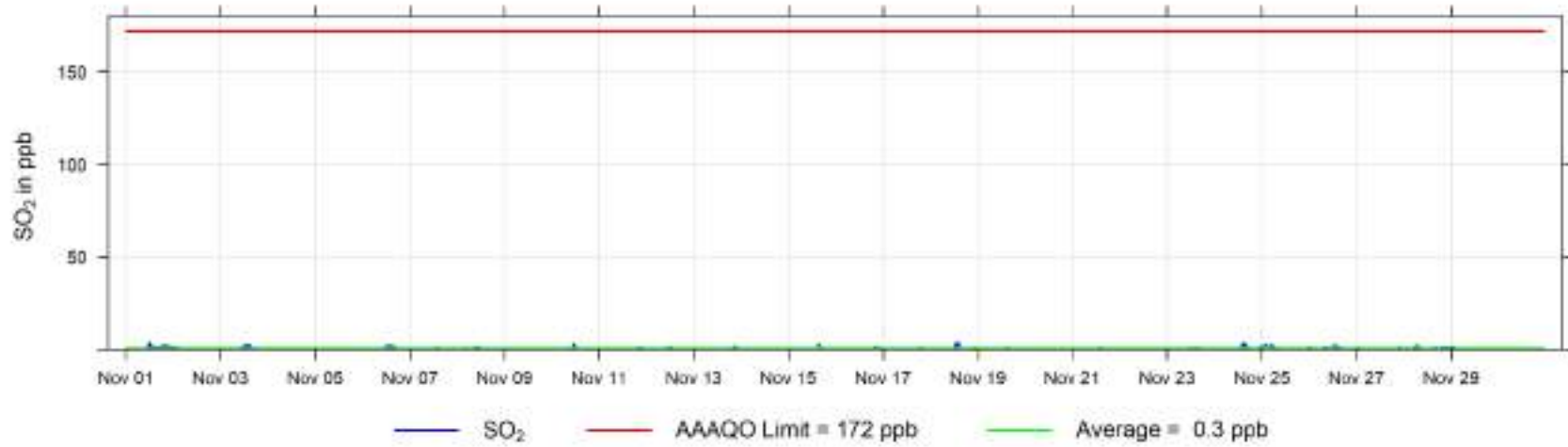
Henry Pirker November 2023 Wind Rose, wind speed in km/hr  
**Frequency of counts by wind direction (%)**

## 5 Smoky Heights Charts

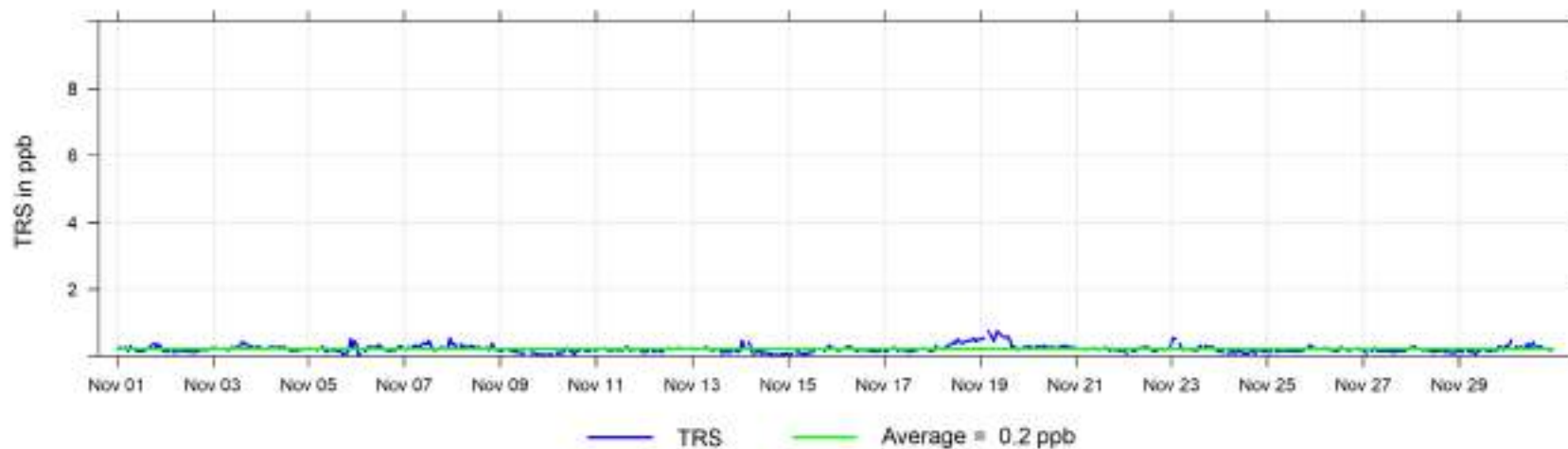
The following pages include the charts and histograms for Smoky Heights Station



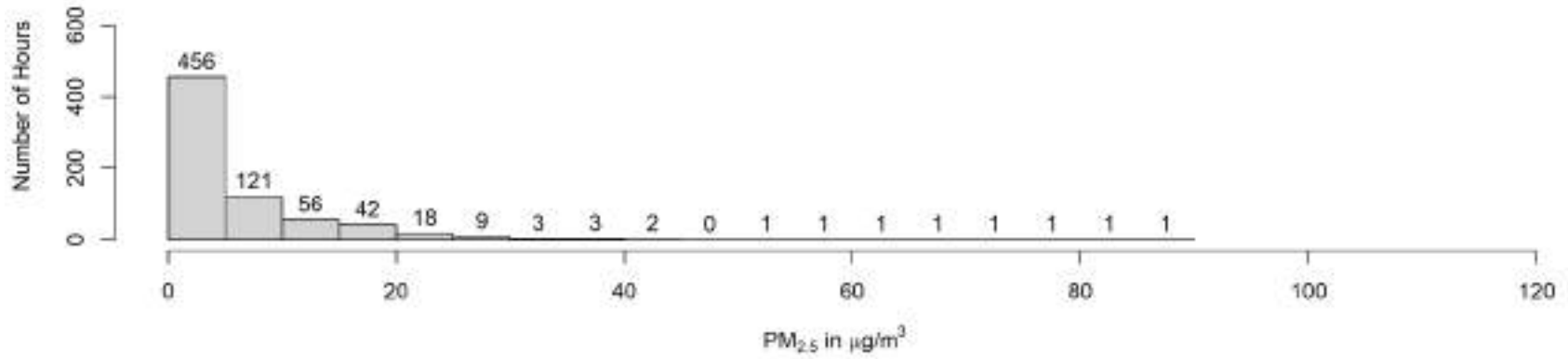
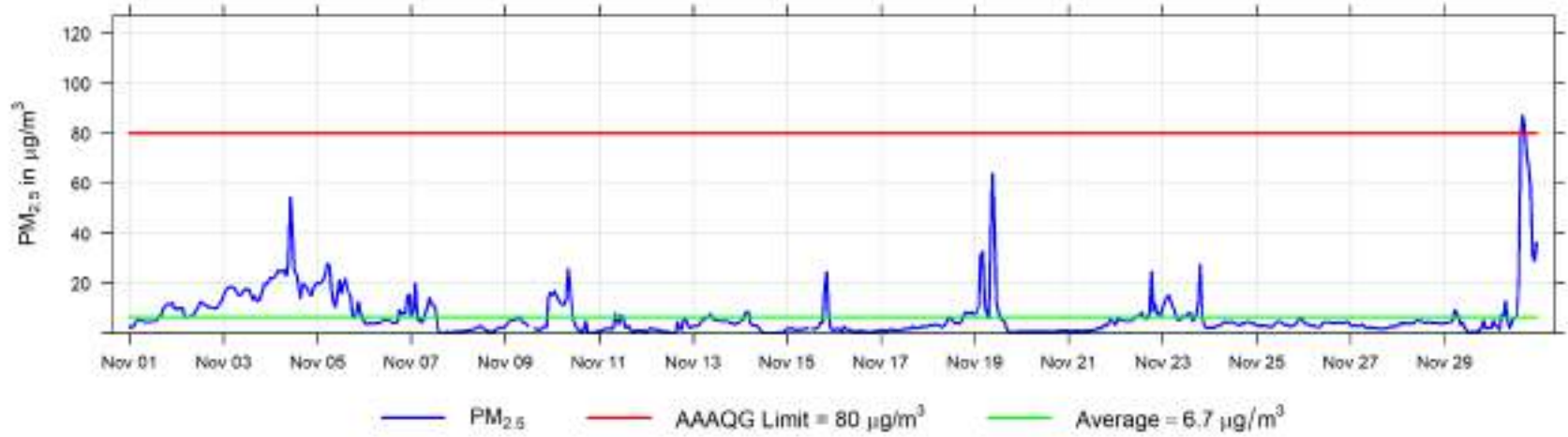
November 2023 Hourly Concentration Readings of SO<sub>2</sub> (in ppb) at Smoky Heights



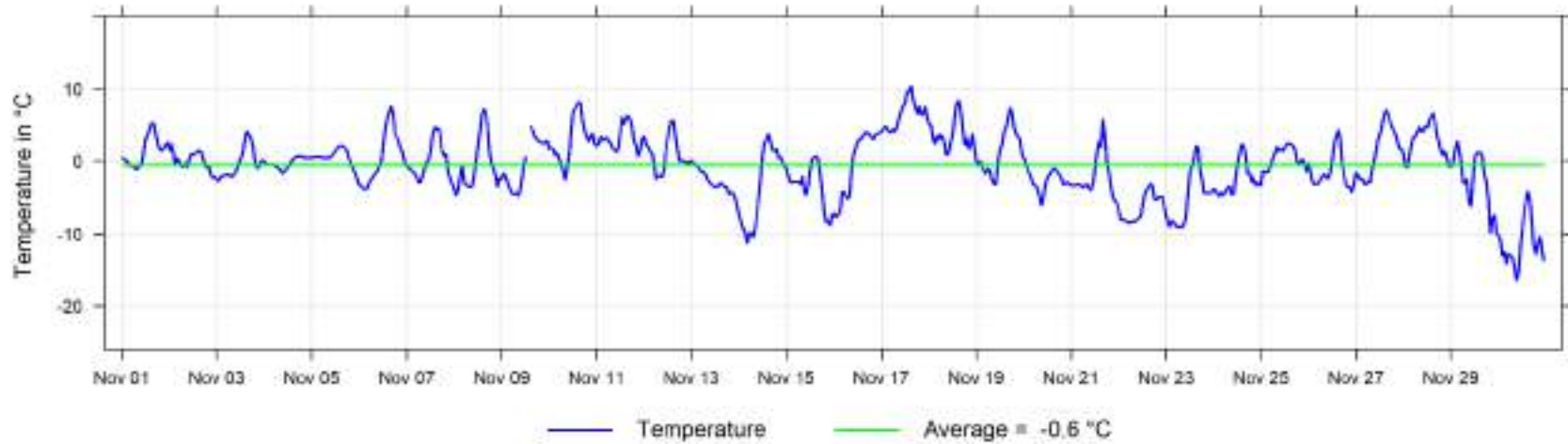
November 2023 Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



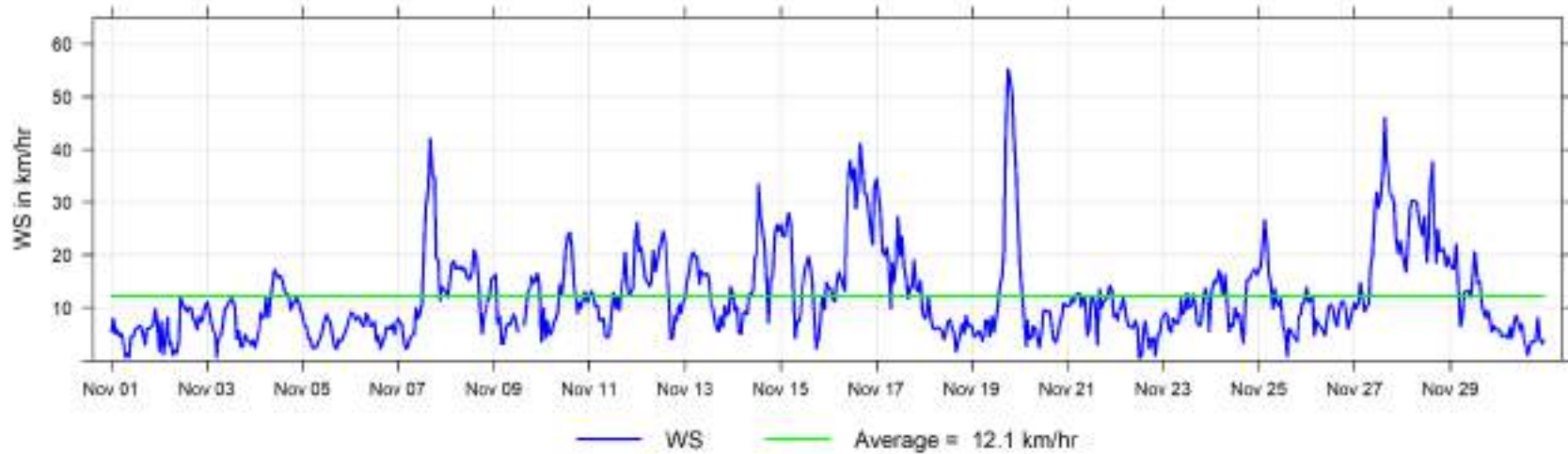
November 2023 Hourly Concentration Readings of PM<sub>2.5</sub> in  $\mu\text{g}/\text{m}^3$  at Smoky Heights



November 2023 Hourly Temperature Readings (in °C) at Smoky Heights

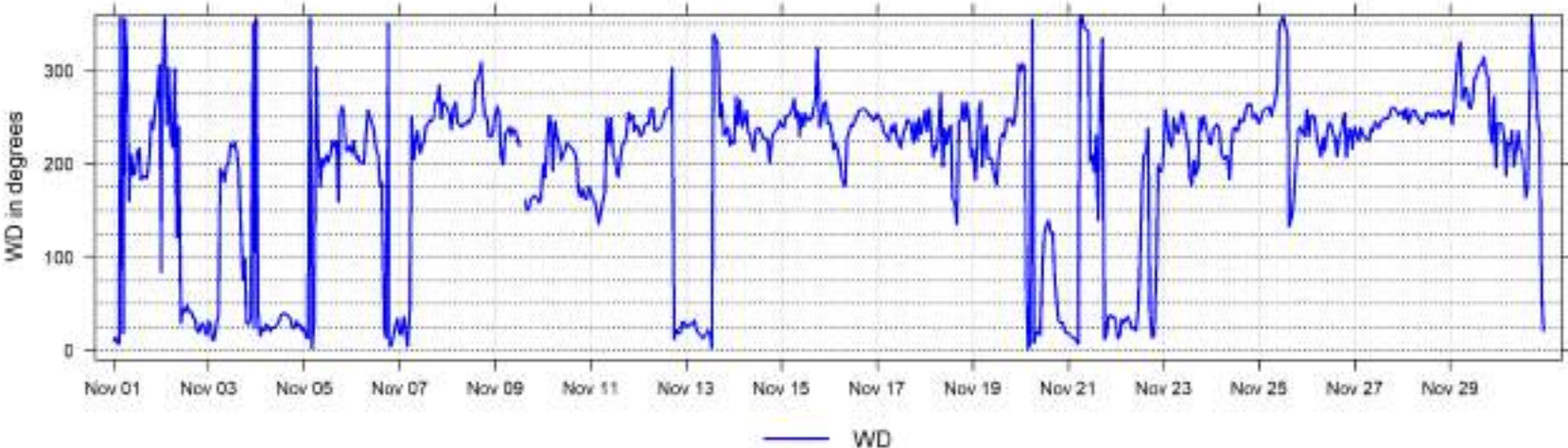


November 2023 Hourly Readings of Wind Speed (in km/hr) at Smoky Heights

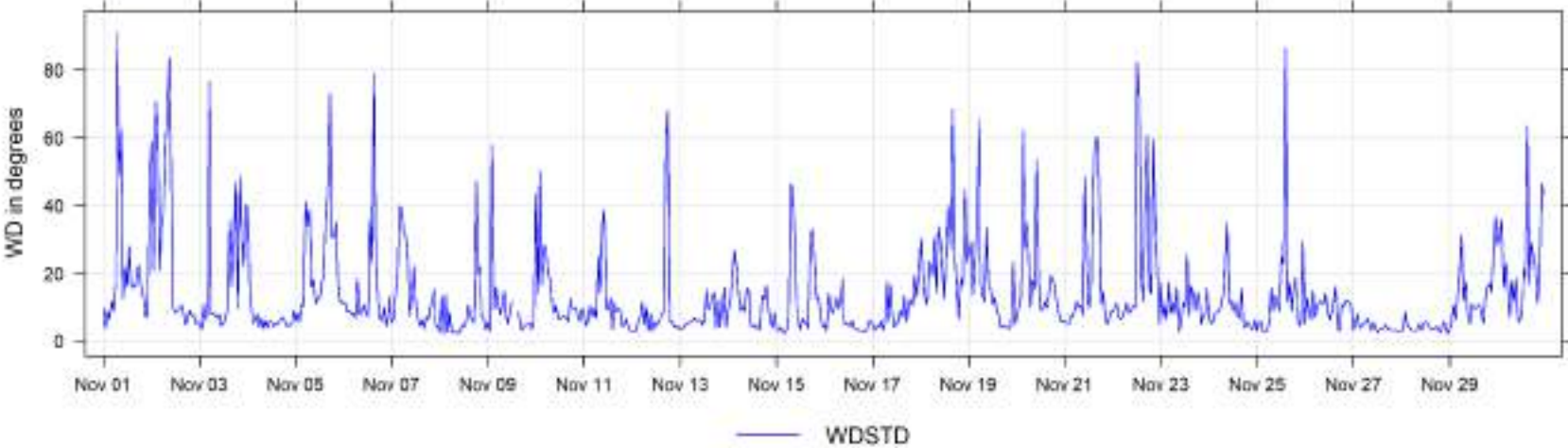


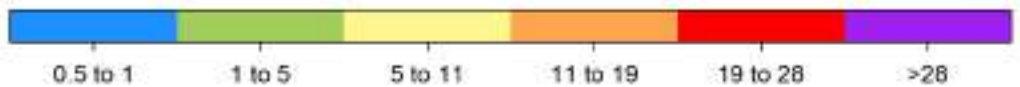
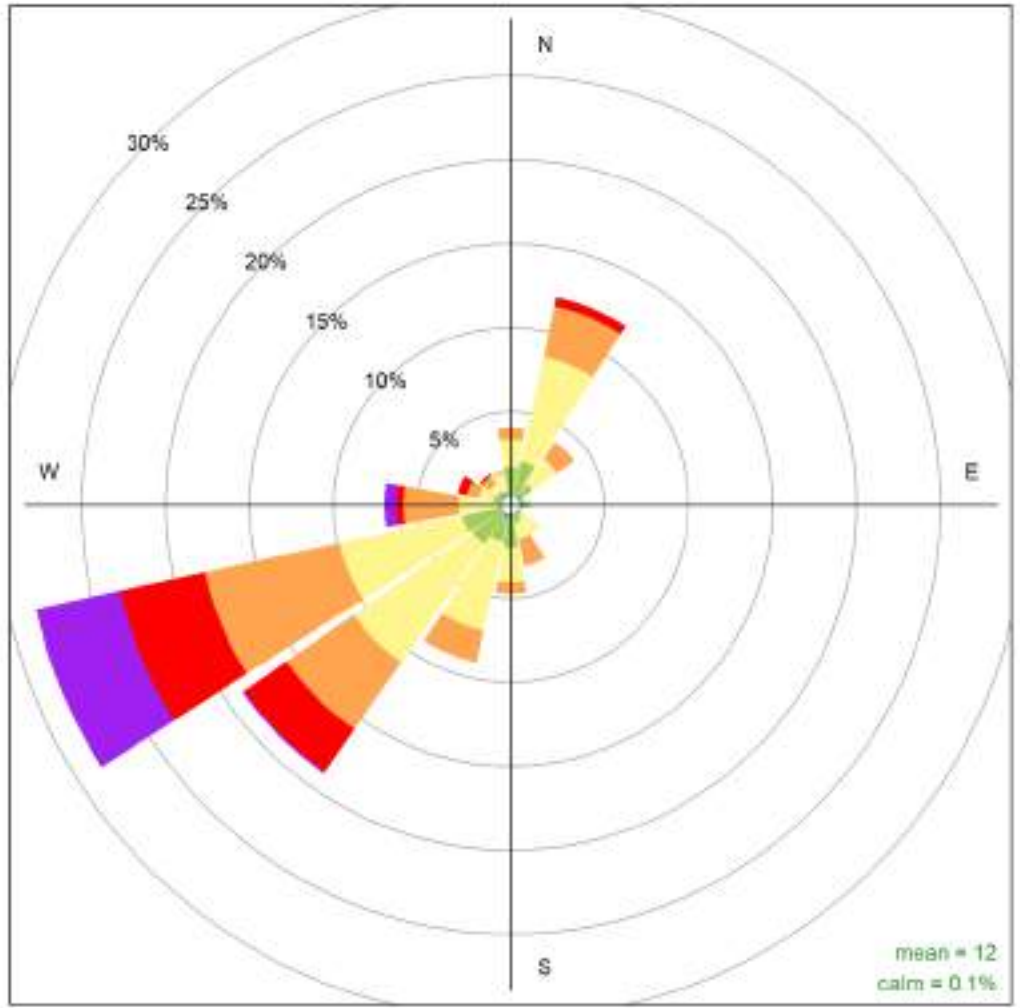


**November 2023 Hourly Readings of Wind Direction (in degrees) at Smoky Heights**



**November 2023 Hourly Readings of Wind Direction Standard Deviation (in degrees) at Smoky Heights**

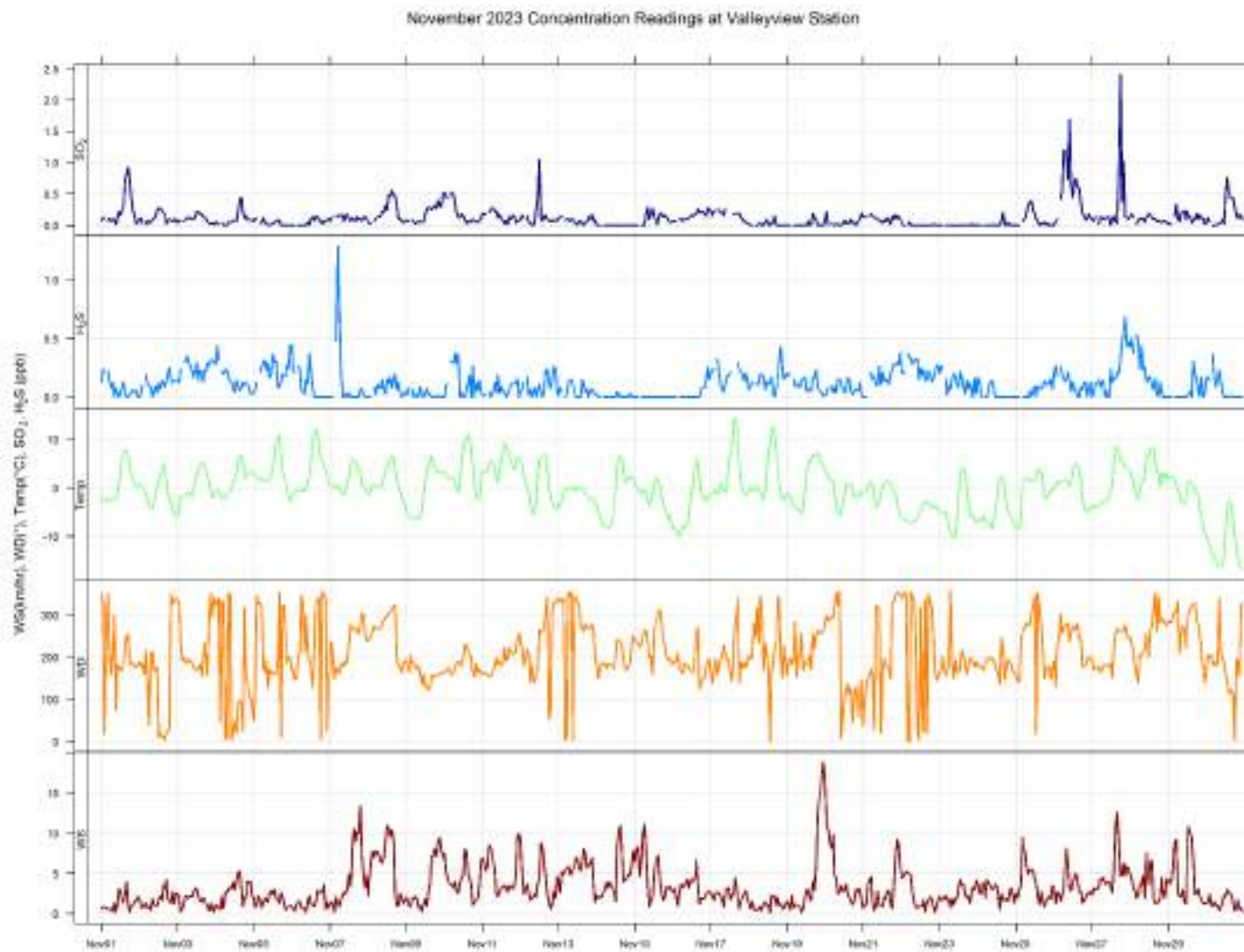




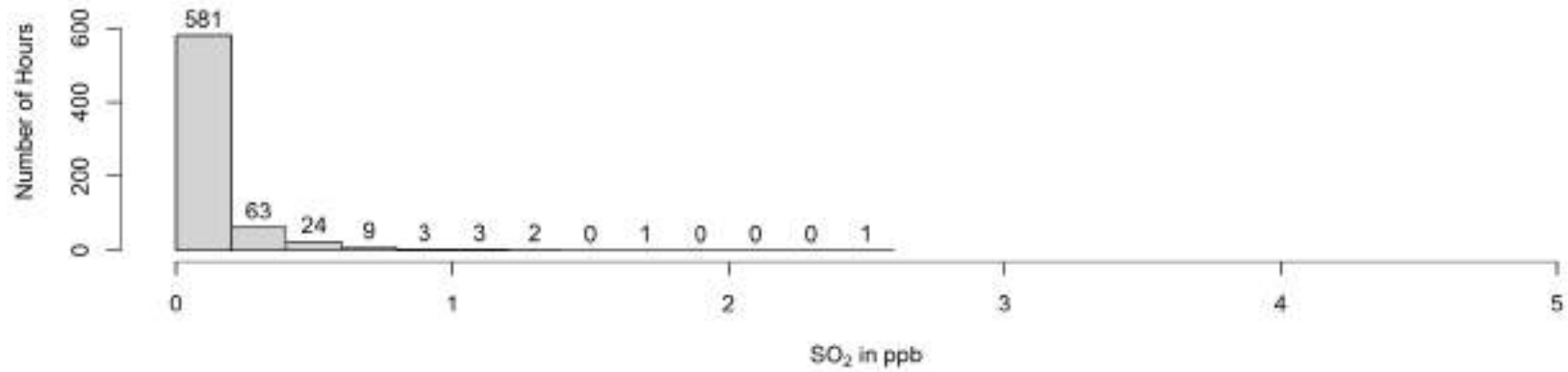
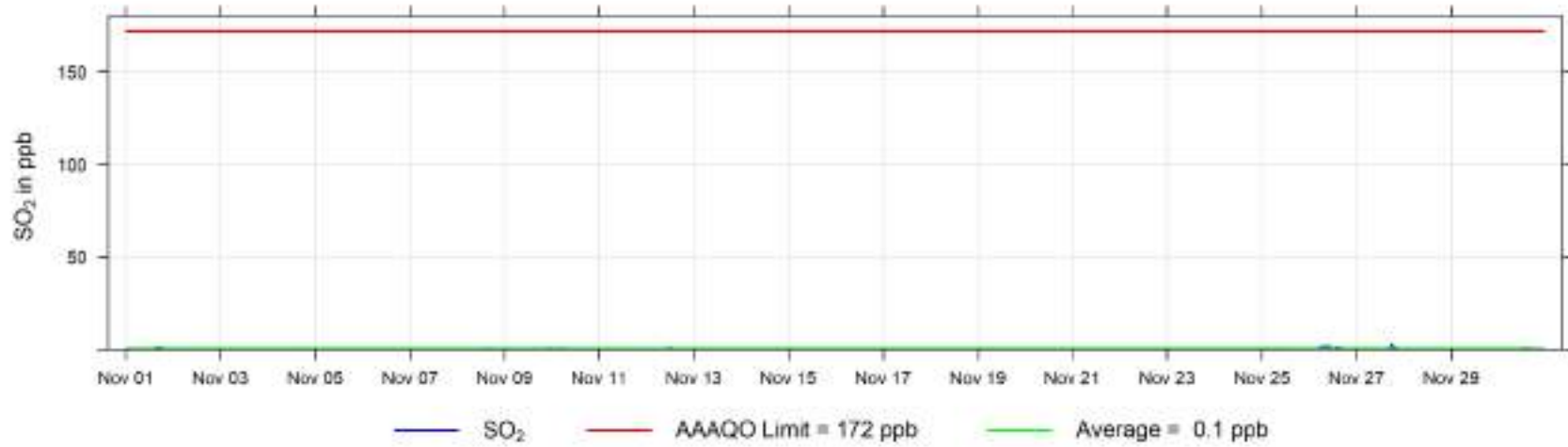
Smoky Heights November 2023 Wind Rose, wind speed in km/hr  
**Frequency of counts by wind direction (%)**

## 6 Valleyview Charts

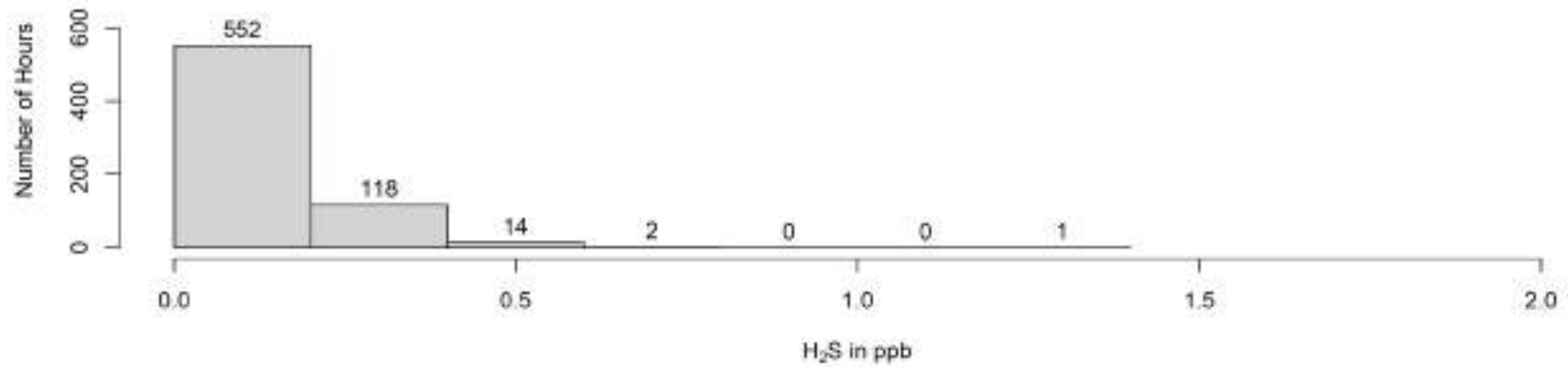
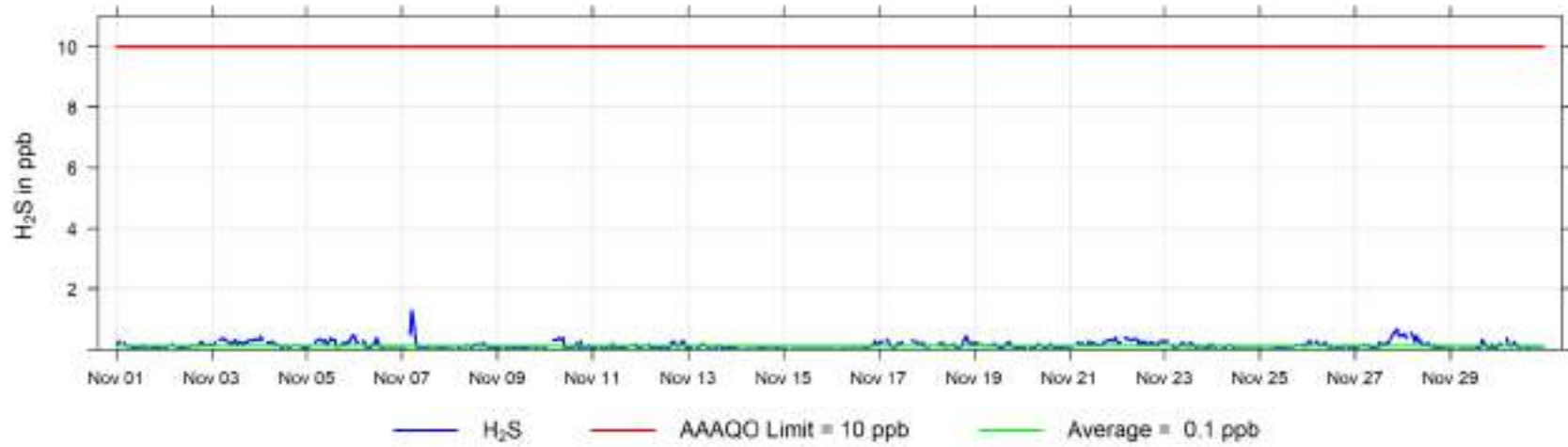
The following pages include the charts and histograms for Valleyview Station



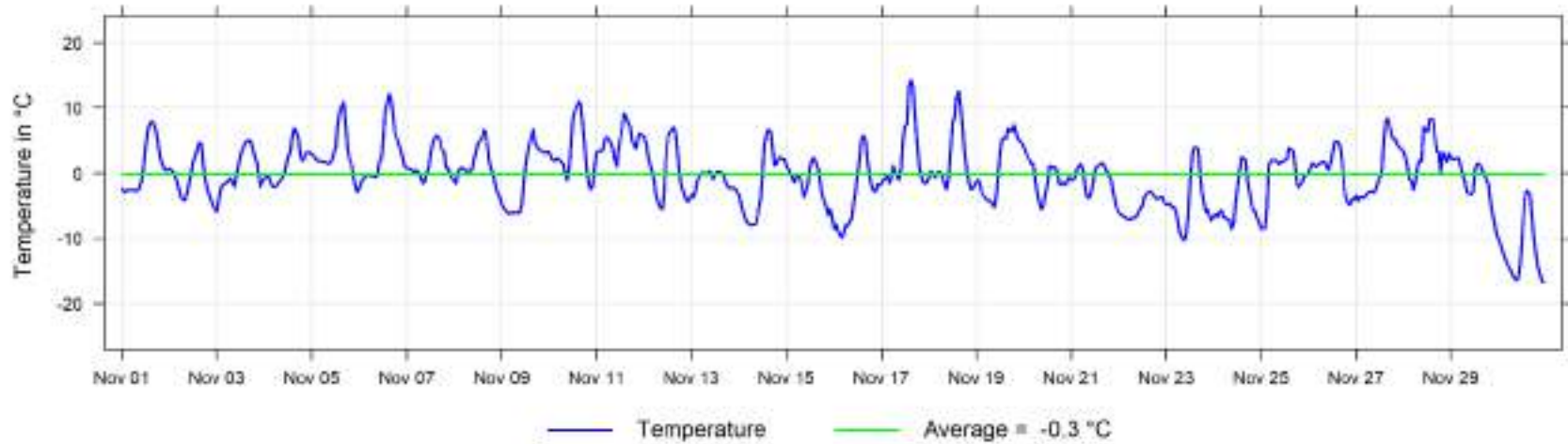
November 2023 Hourly Concentration Readings of SO<sub>2</sub> (in ppb) at Valleyview



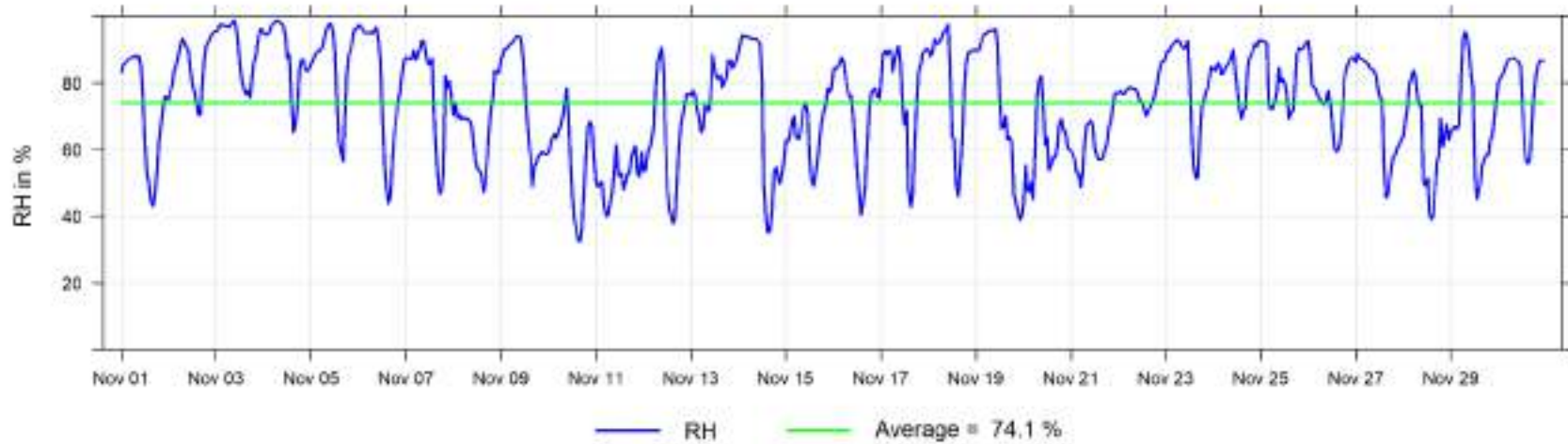
November 2023 Hourly Concentration Readings of H<sub>2</sub>S (in ppb) at Valleyview



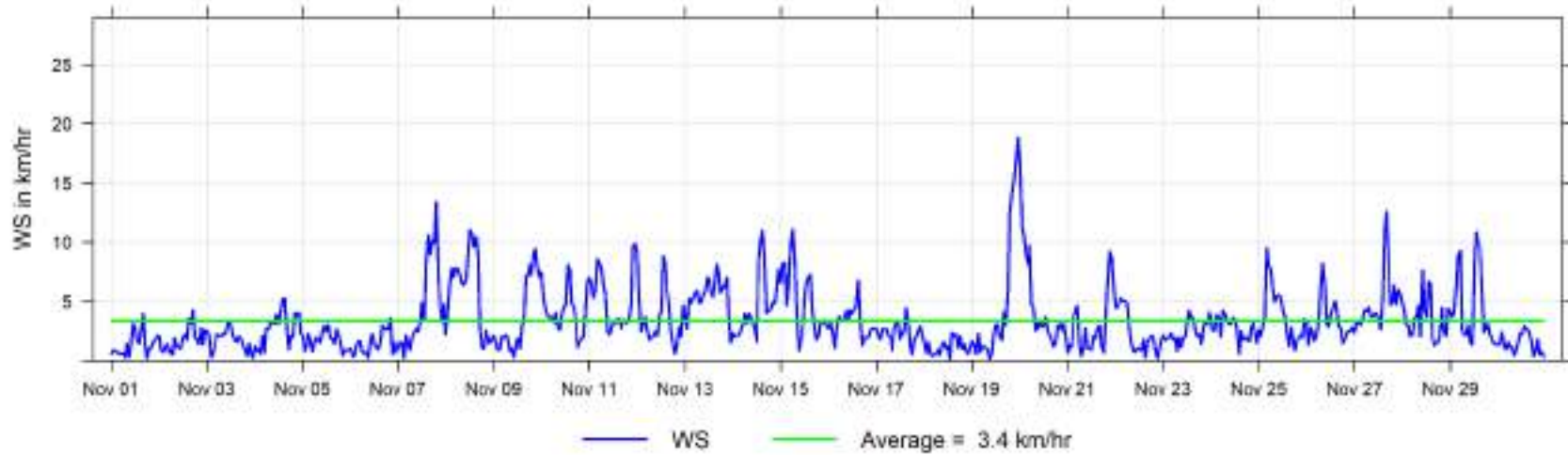
November 2023 Hourly Temperature Readings (in °C) at Valleyview



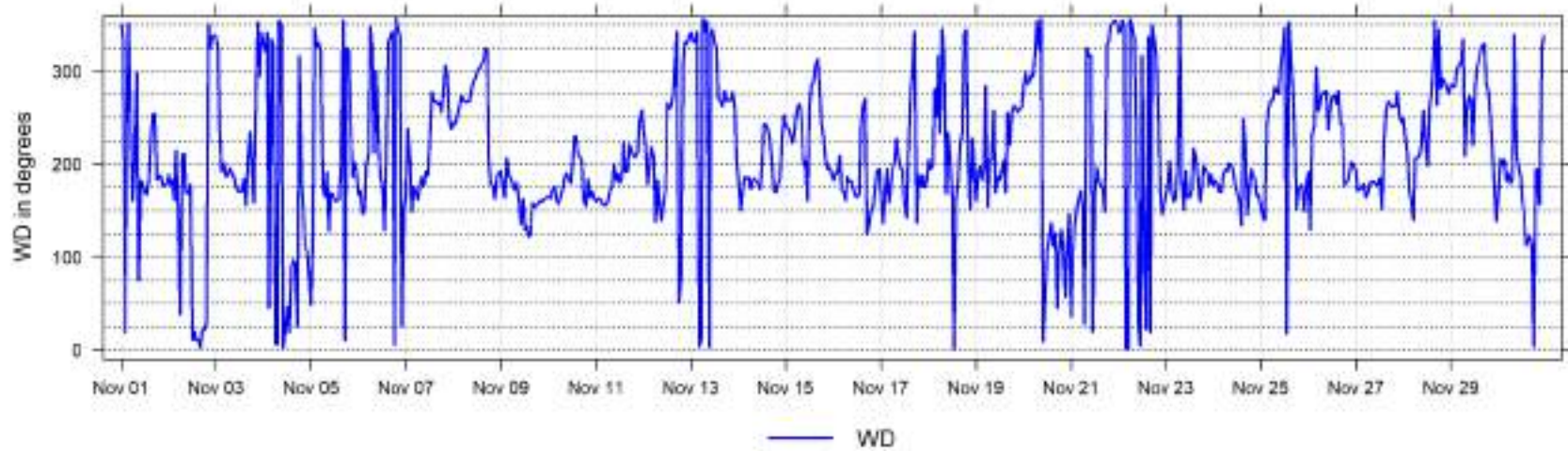
November 2023 Hourly Readings of Relative Humidity (in %) at Valleyview



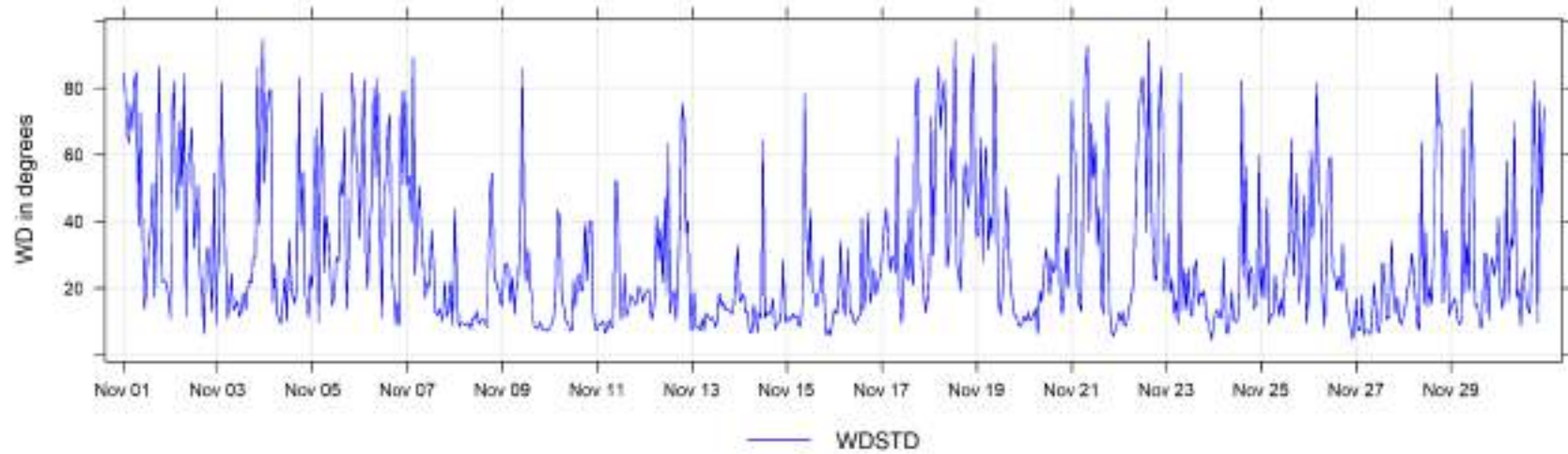
November 2023 Hourly Readings of Wind Speed (in km/hr) at Valleyview



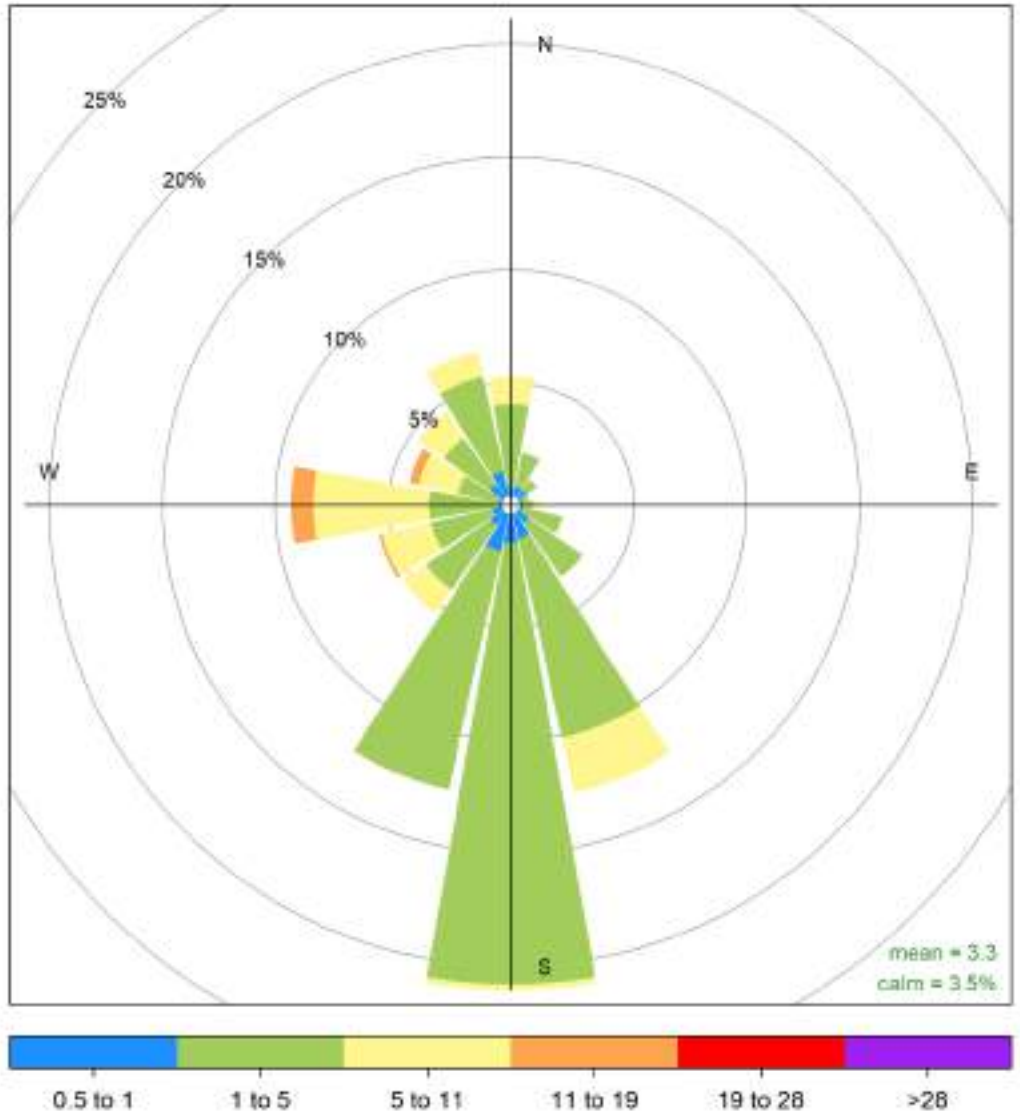
November 2023 Hourly Readings of Wind Direction (in degrees) at Valleyview



November 2023 Hourly Readings of Wind Direction Standard Deviation (in degrees) at Valleyview



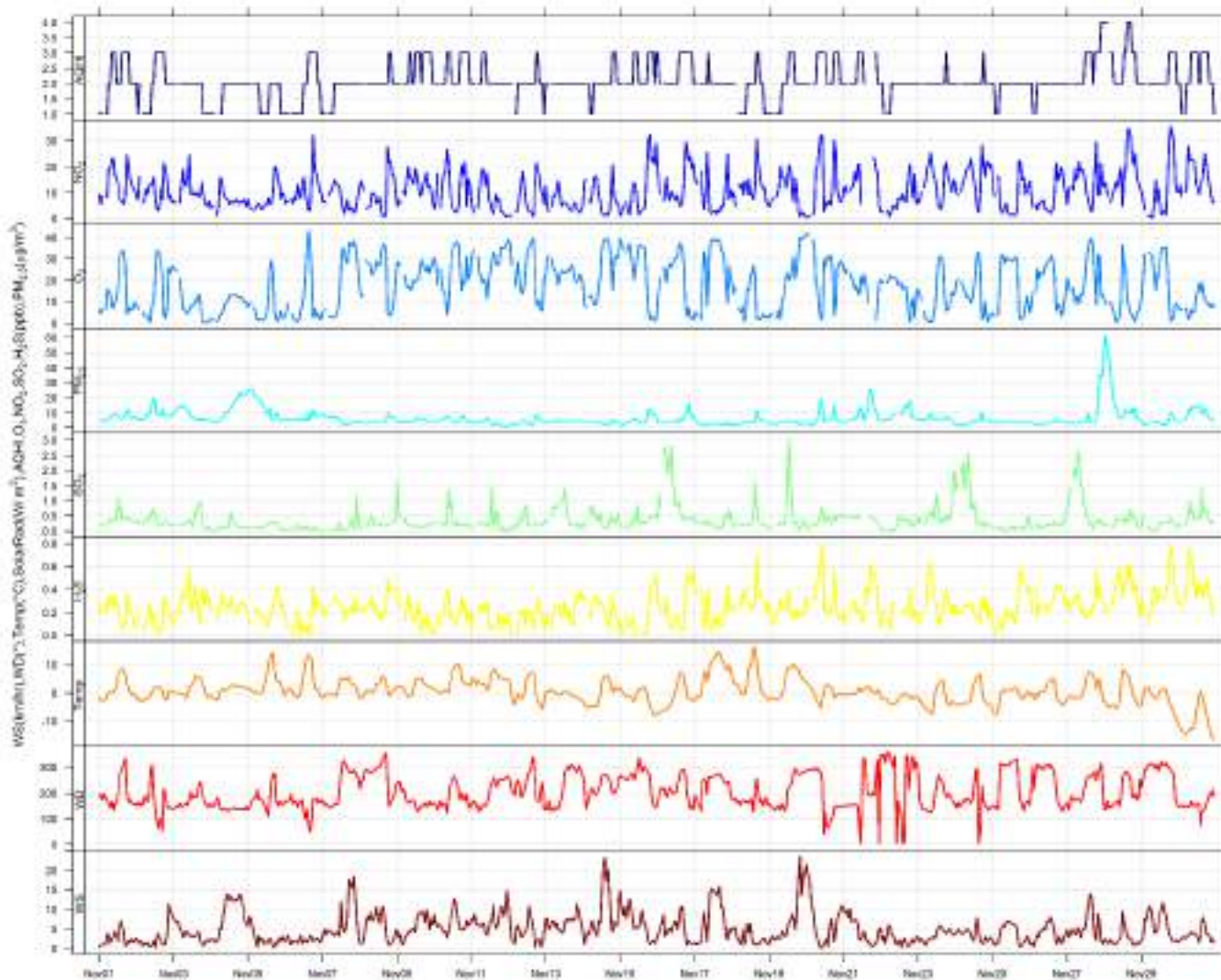




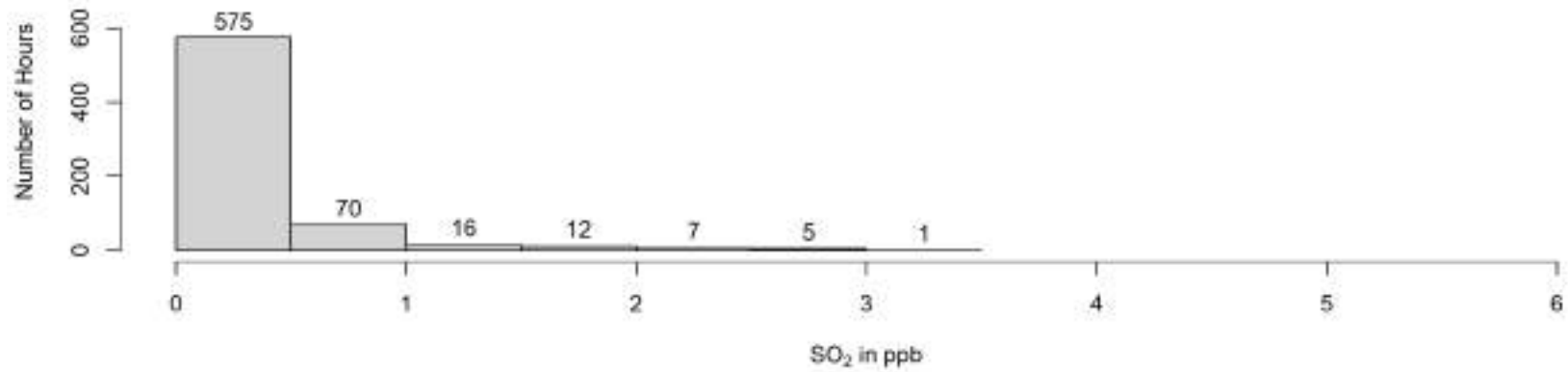
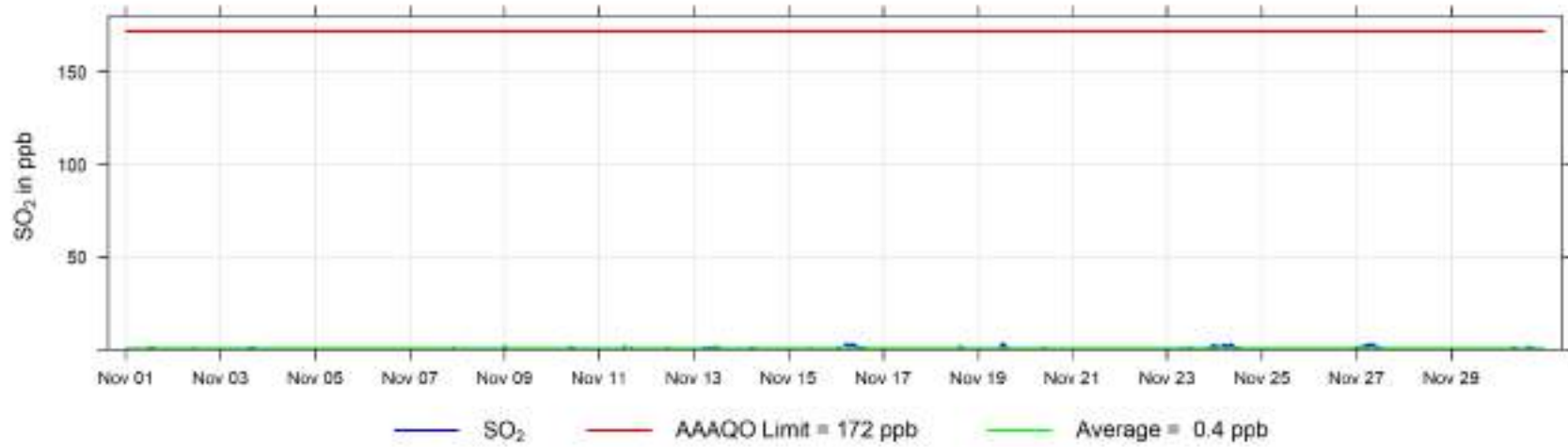
## 7 Fox Creek Charts

The following pages include the charts and histograms for Fox Creek Station

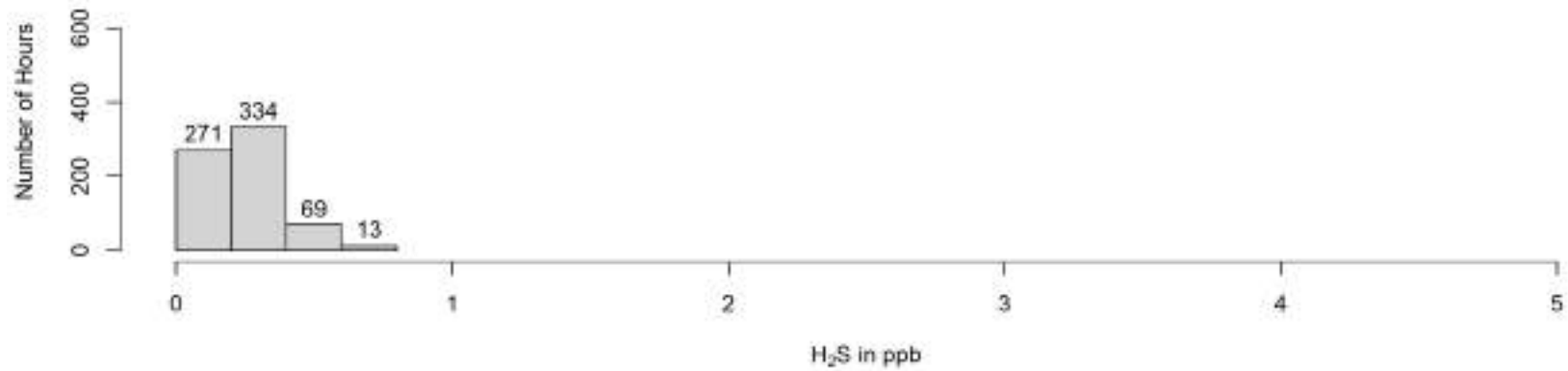
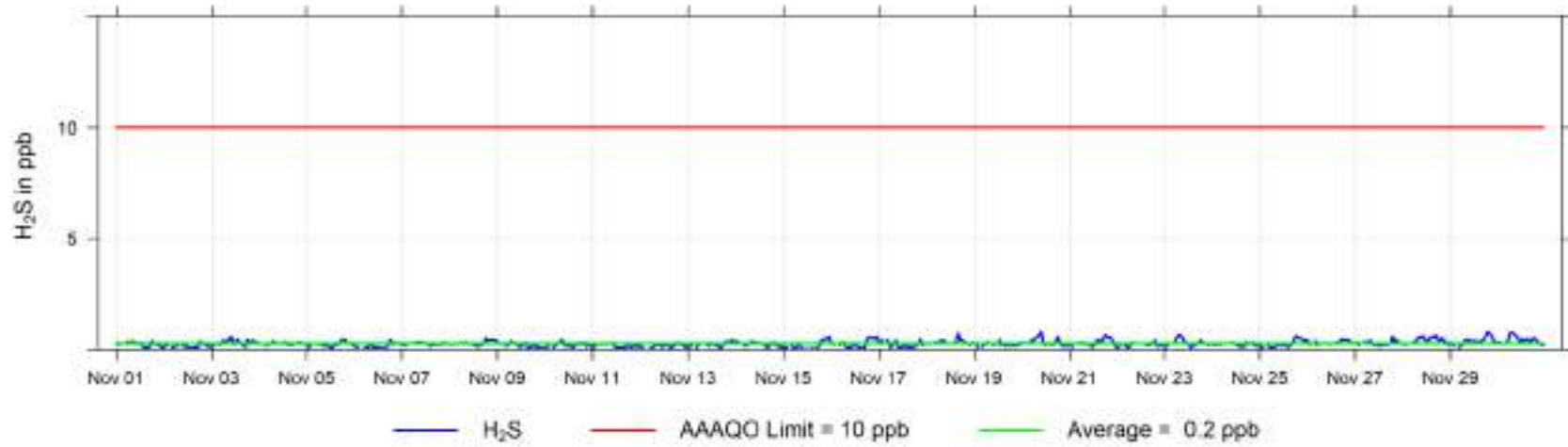
November 2023 Concentration Readings at Fox Creek Station



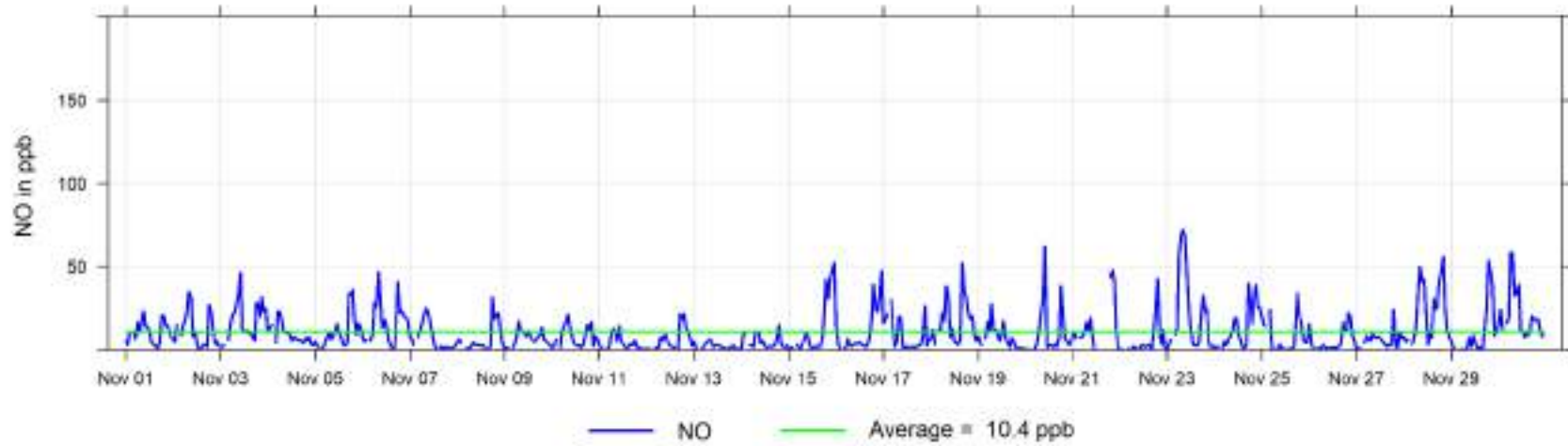
November 2023 Hourly Concentration Readings of SO<sub>2</sub> (in ppb) at Fox Creek



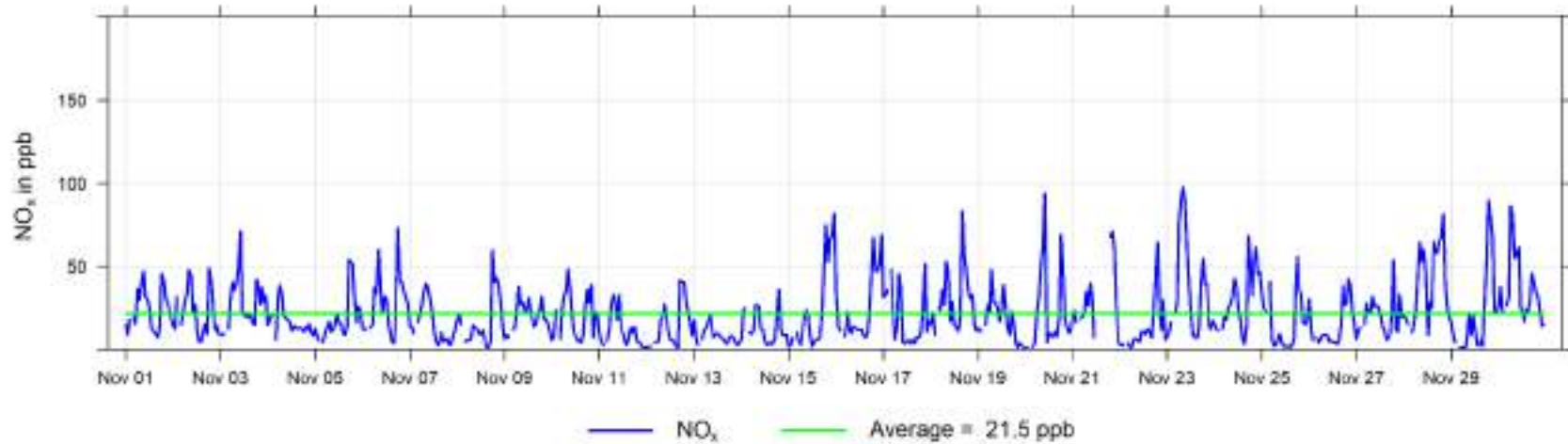
November 2023 Hourly Concentration Readings of H<sub>2</sub>S (in ppb) at Fox Creek



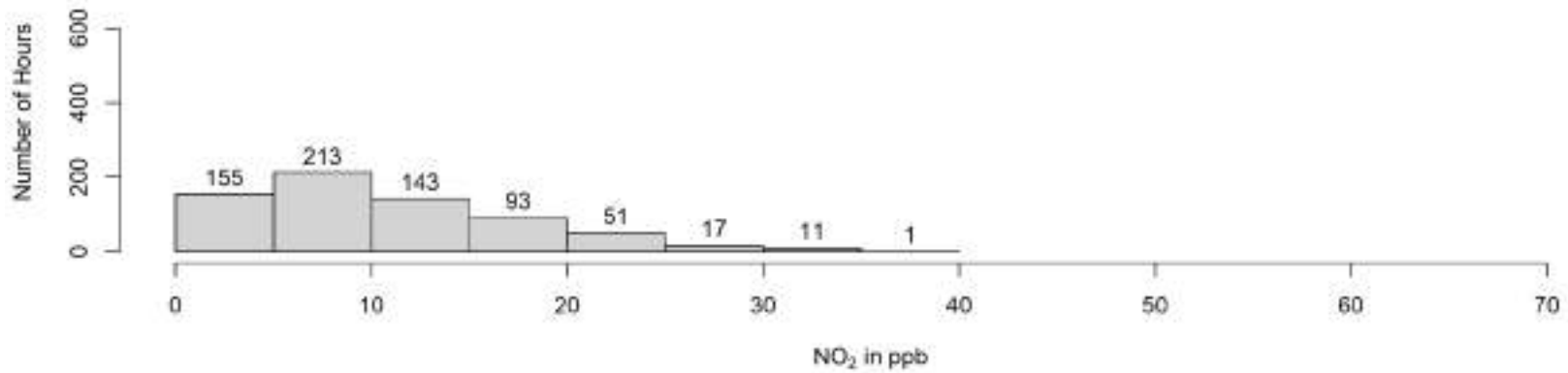
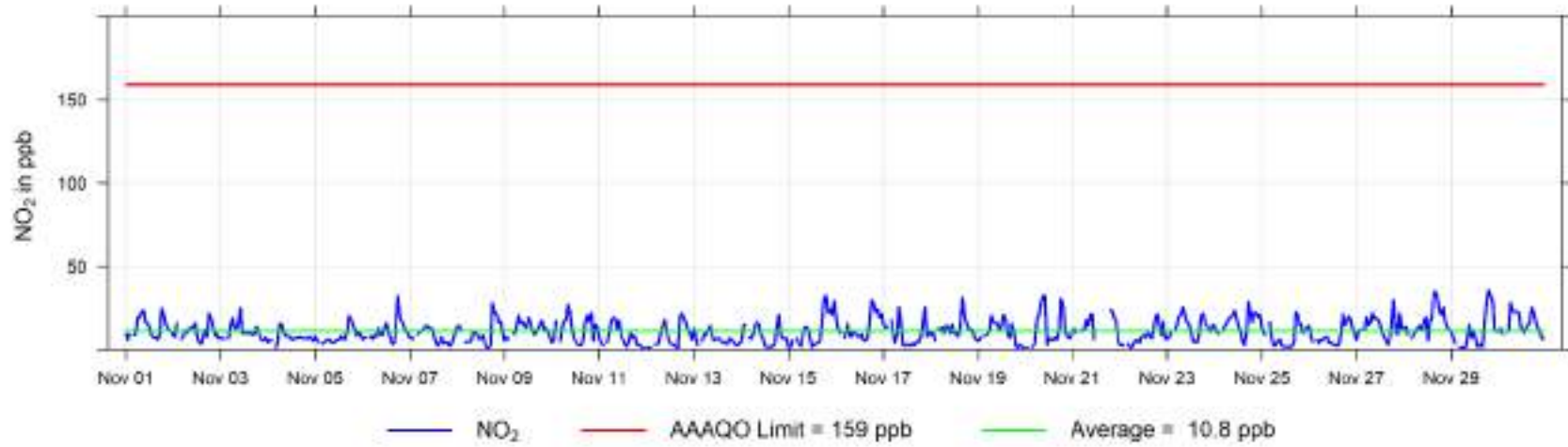
November 2023 Hourly Concentration Readings of NO (in ppb) at Fox Creek



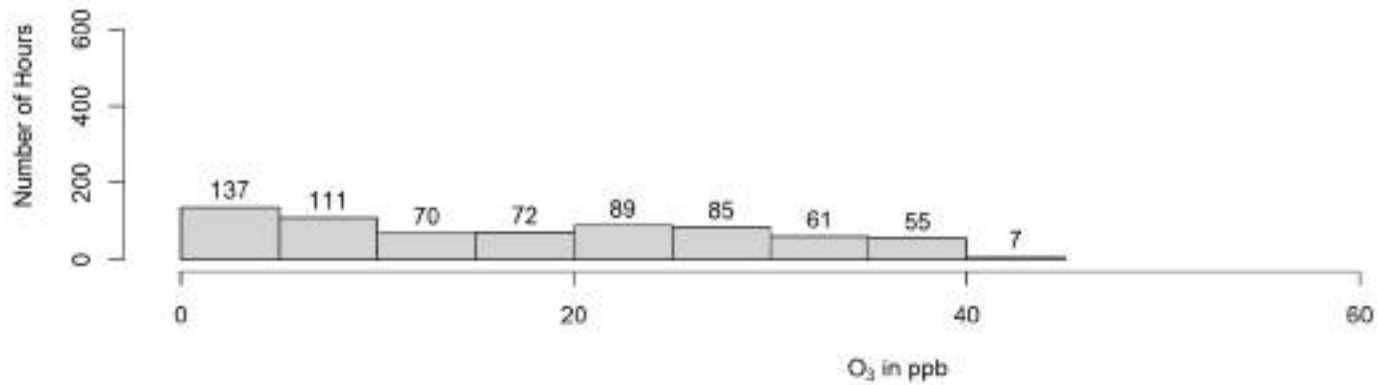
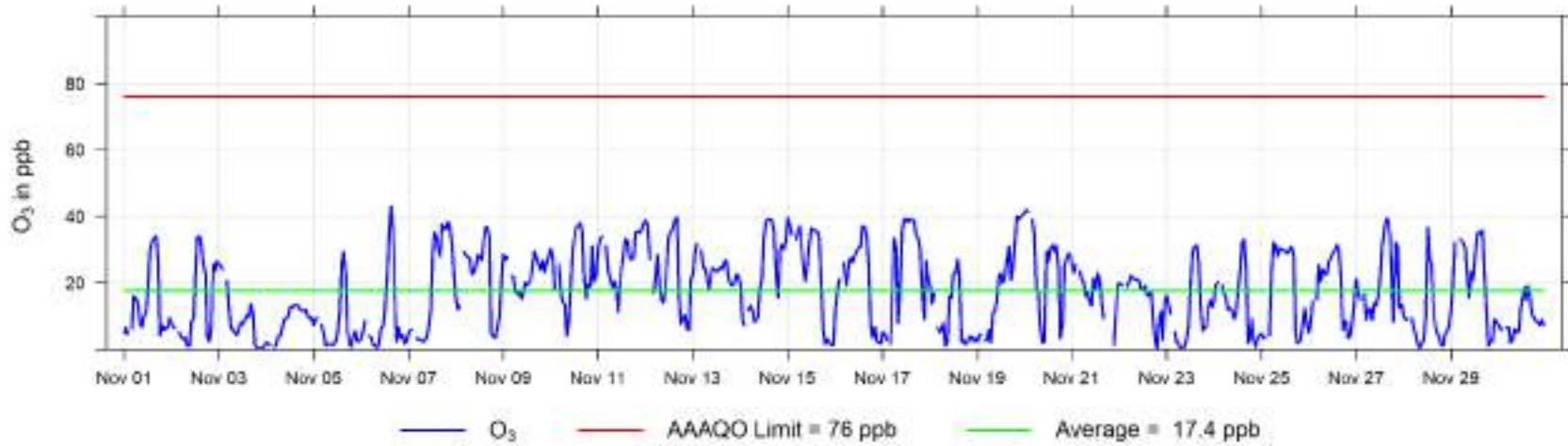
November 2023 Hourly Concentration Readings of NO<sub>x</sub> (in ppb) at Fox Creek



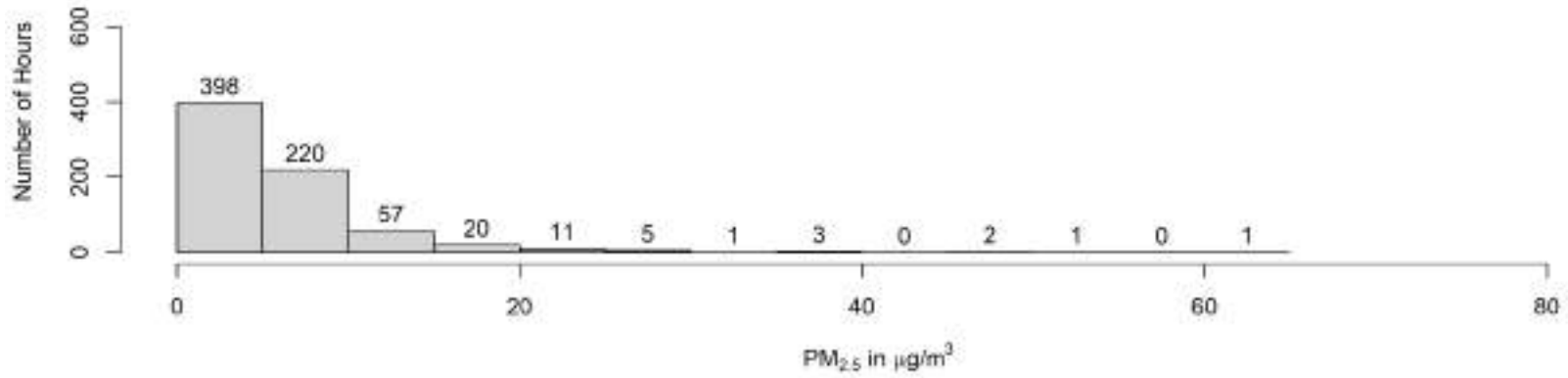
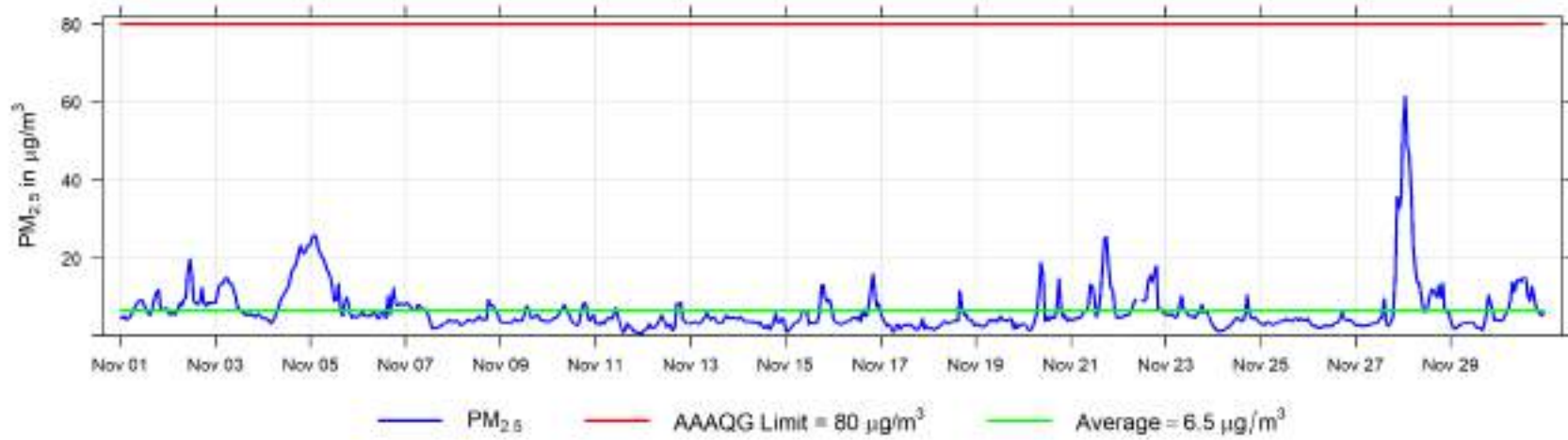
November 2023 Hourly Concentration Readings of NO<sub>2</sub> (in ppb) at Fox Creek



November 2023 Hourly Concentration Readings of O<sub>3</sub> (in ppb) at Fox Creek

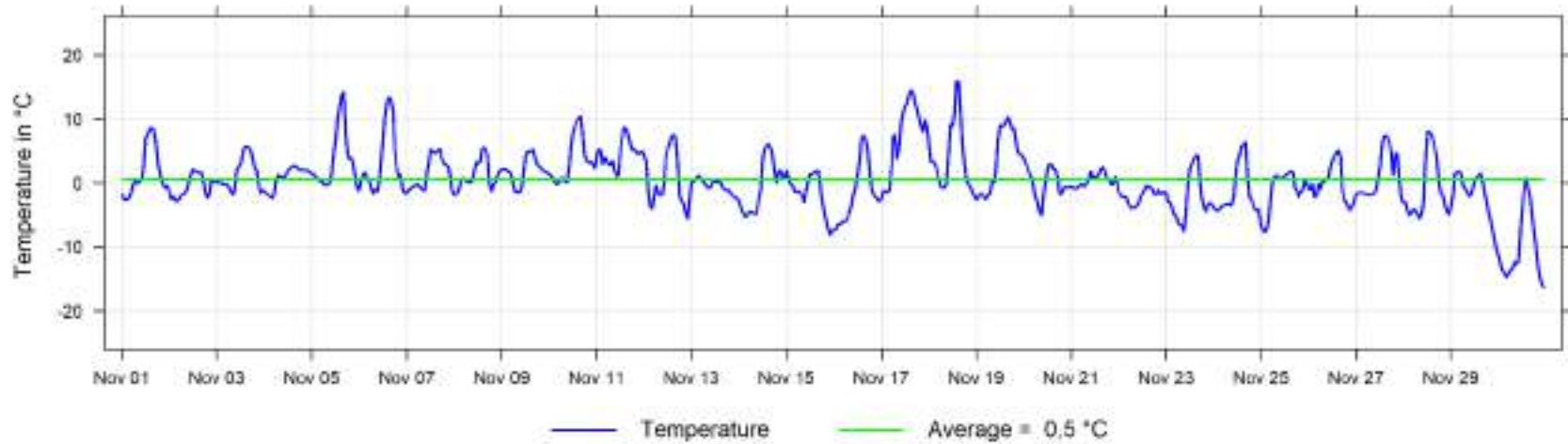


November 2023 Hourly Concentration Readings of PM<sub>2.5</sub> in  $\mu\text{g}/\text{m}^3$  at Fox Creek

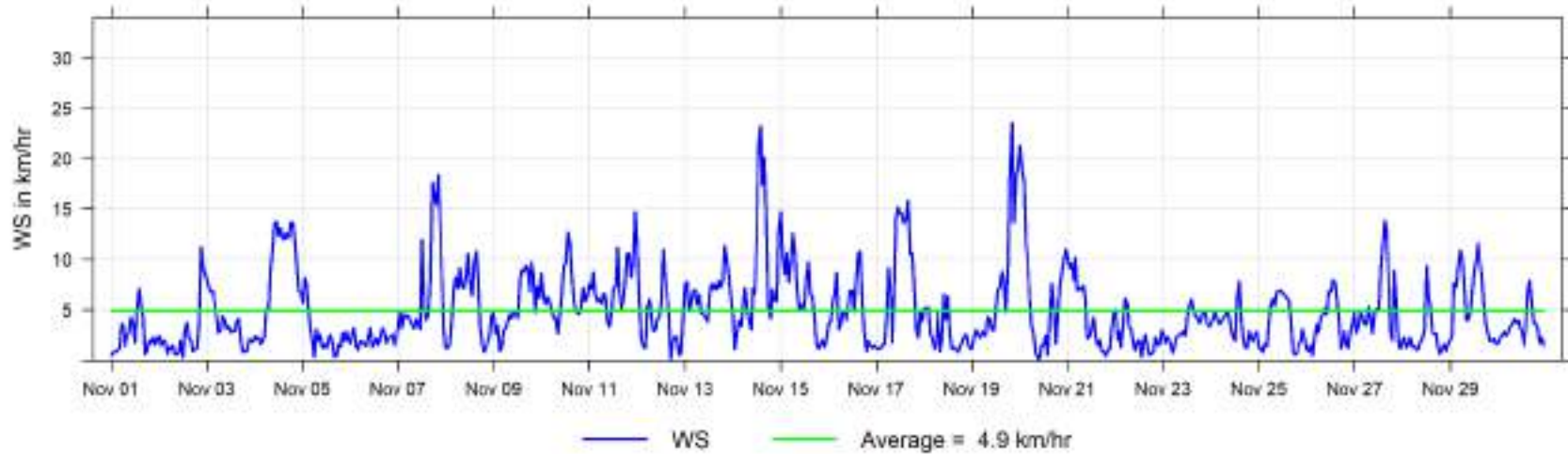




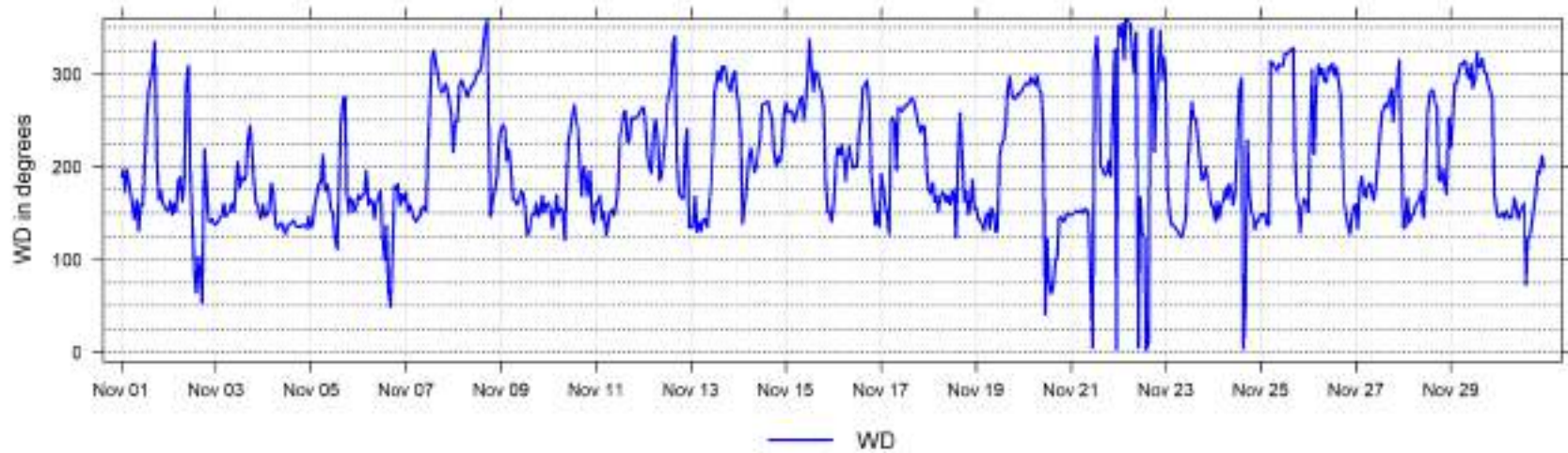
November 2023 Hourly Temperature Readings (in °C) at Fox Creek



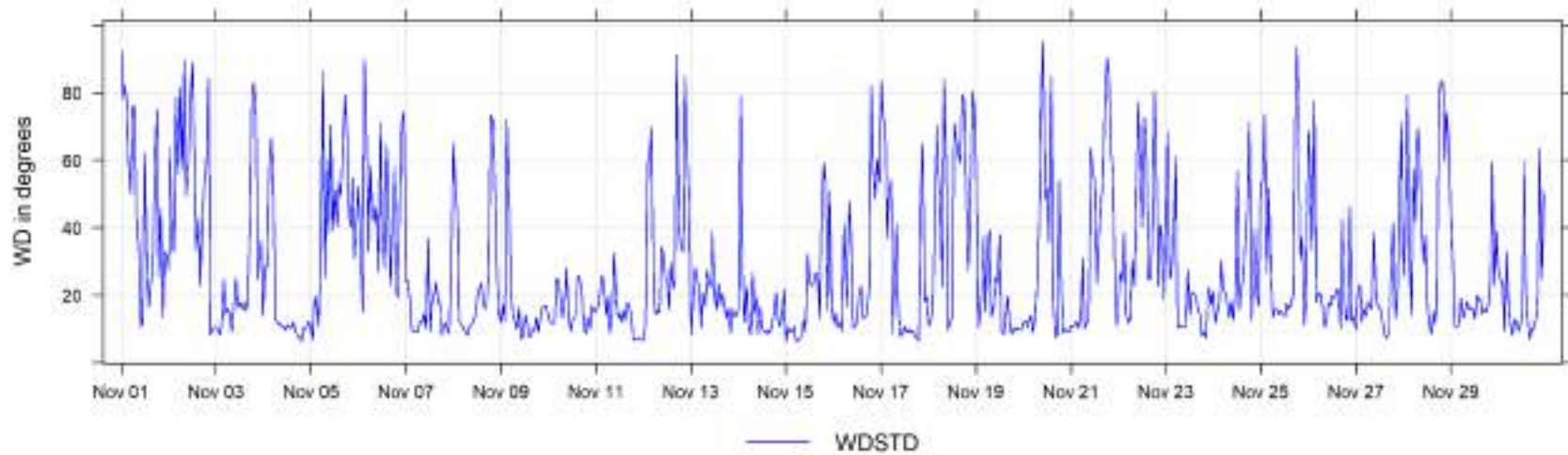
November 2023 Hourly Readings of Wind Speed (in km/hr) at Fox Creek

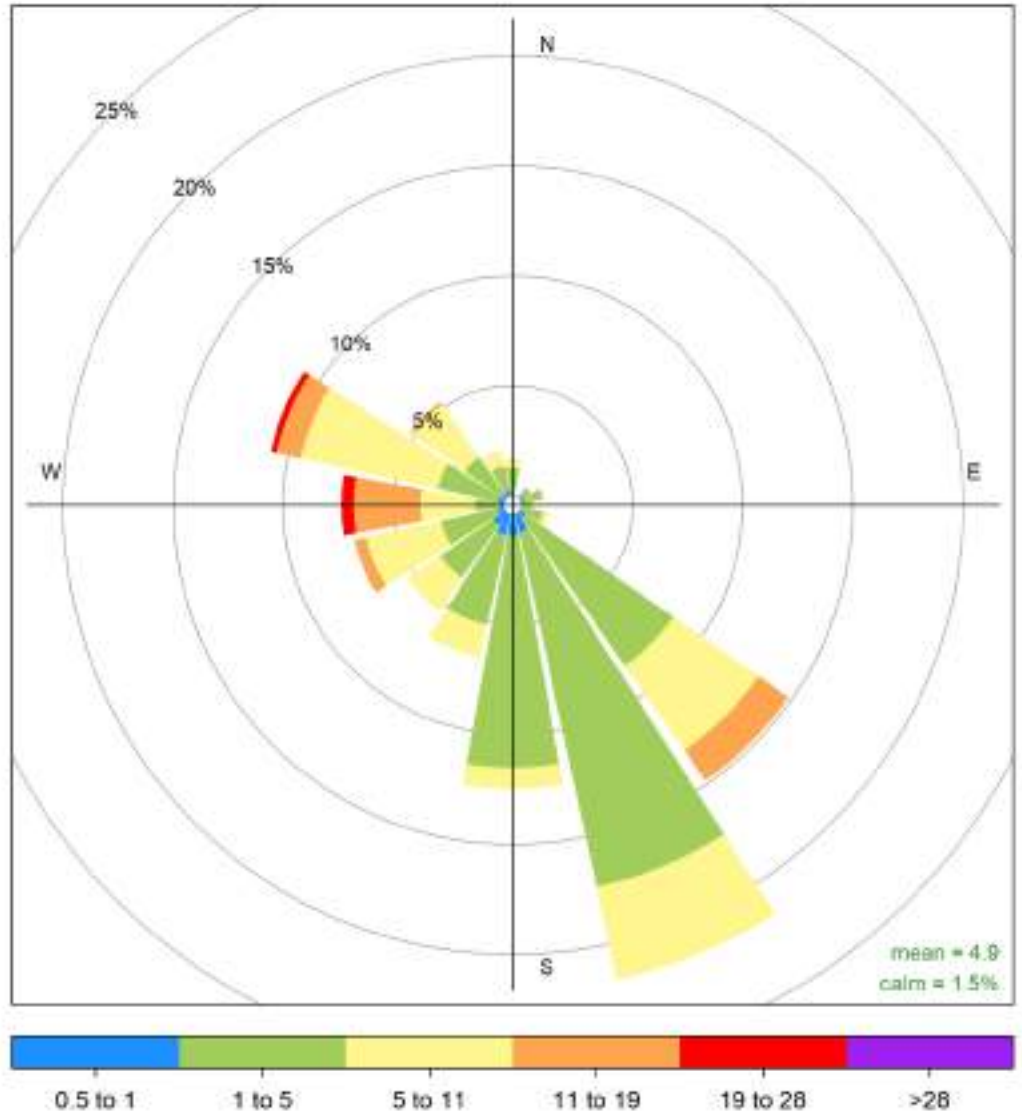


**November 2023 Hourly Readings of Wind Direction (in degrees) at Fox Creek**



**November 2023 Hourly Readings of Wind Direction Standard Deviation (in degrees) at Fox Creek**

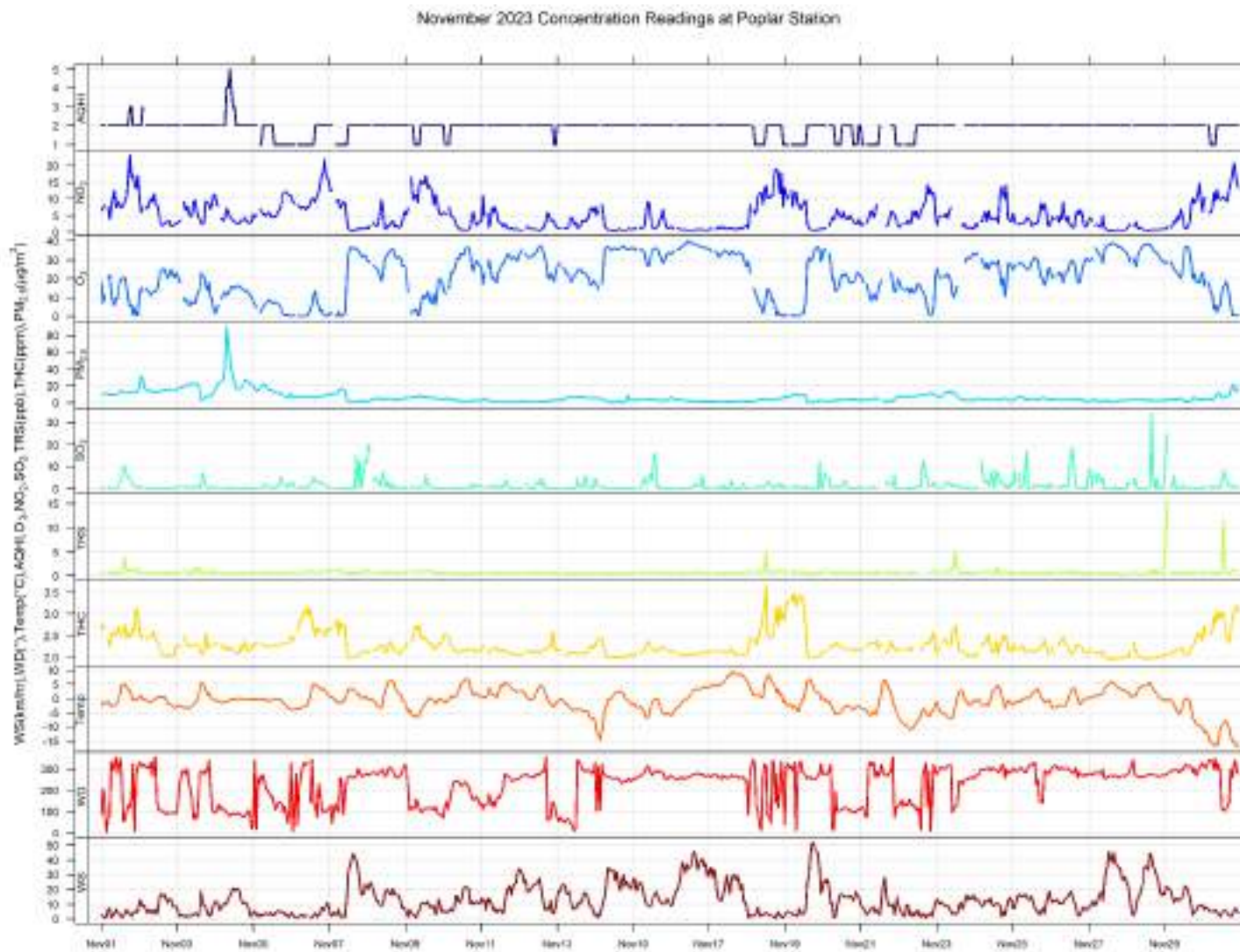




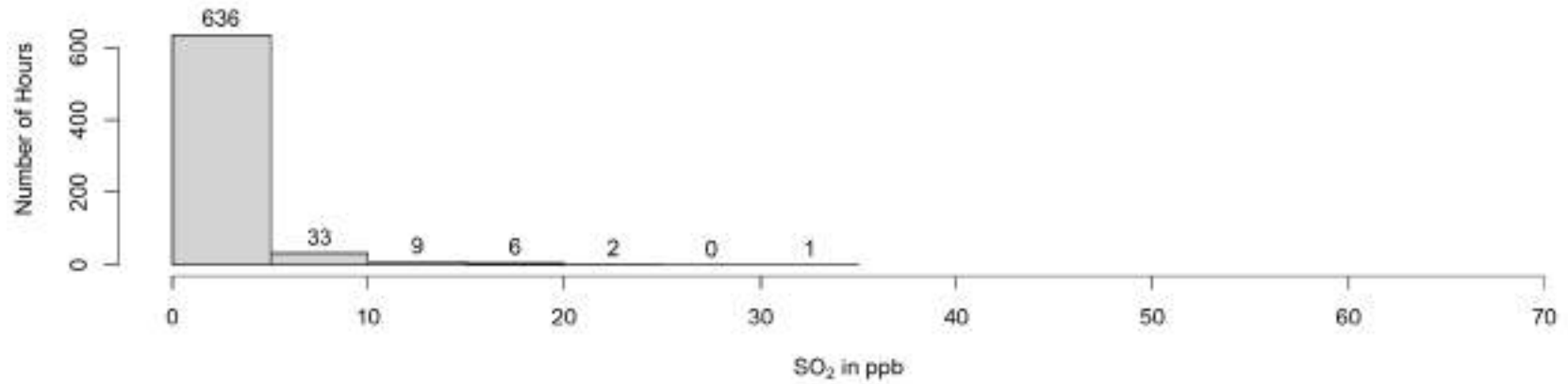
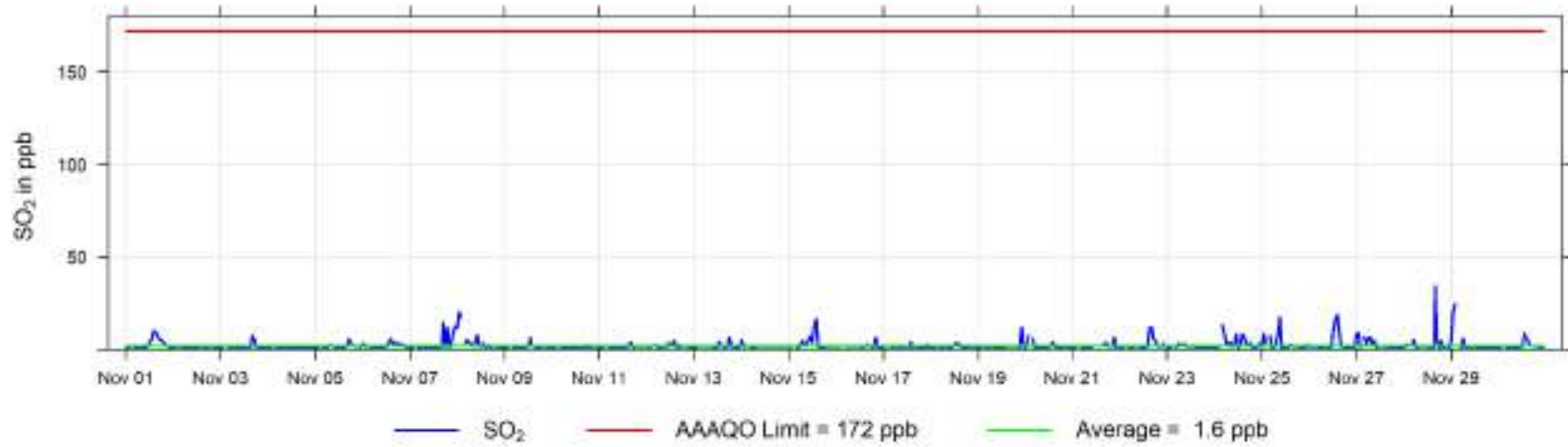
Fox Creek November 2023 Wind Rose, wind speed in km/hr  
**Frequency of counts by wind direction (%)**

## 8 Poplar (Portable) Charts

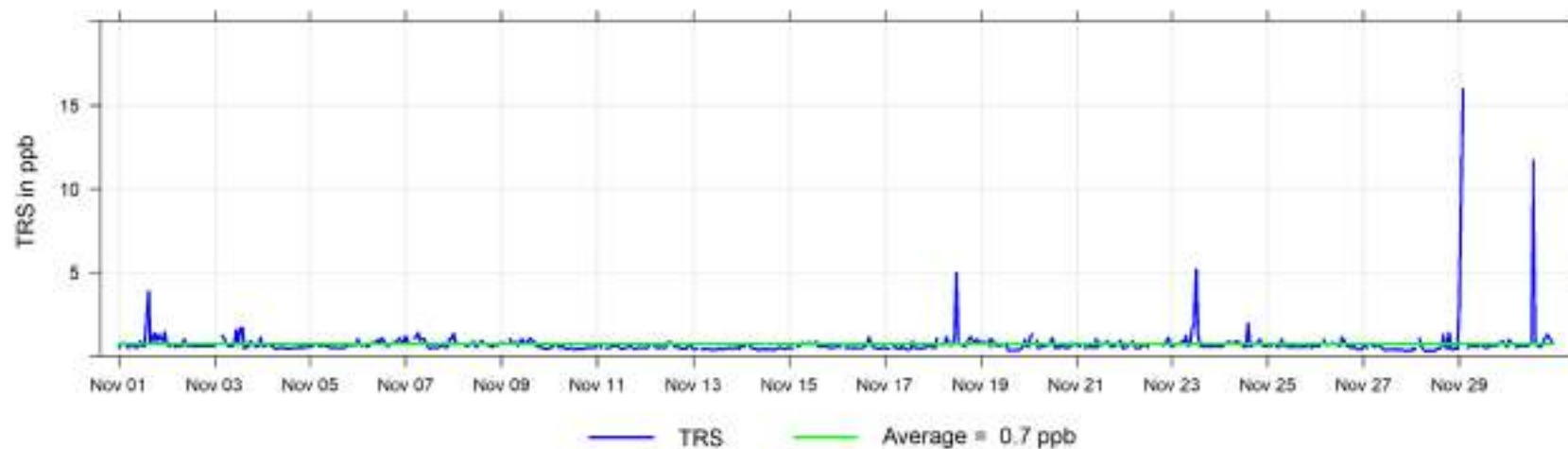
The following pages include the charts and histograms for Poplar Portable Station



November 2023 Hourly Concentration Readings of SO<sub>2</sub> (in ppb) at Poplar



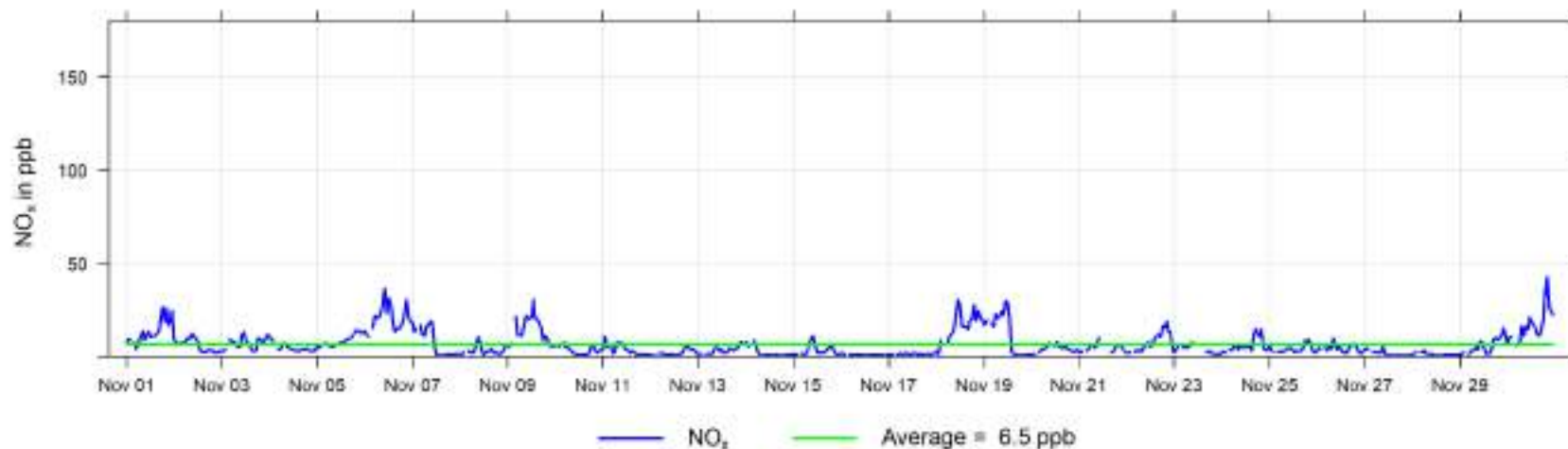
November 2023 Hourly Concentration Readings of TRS (in ppb) at Poplar



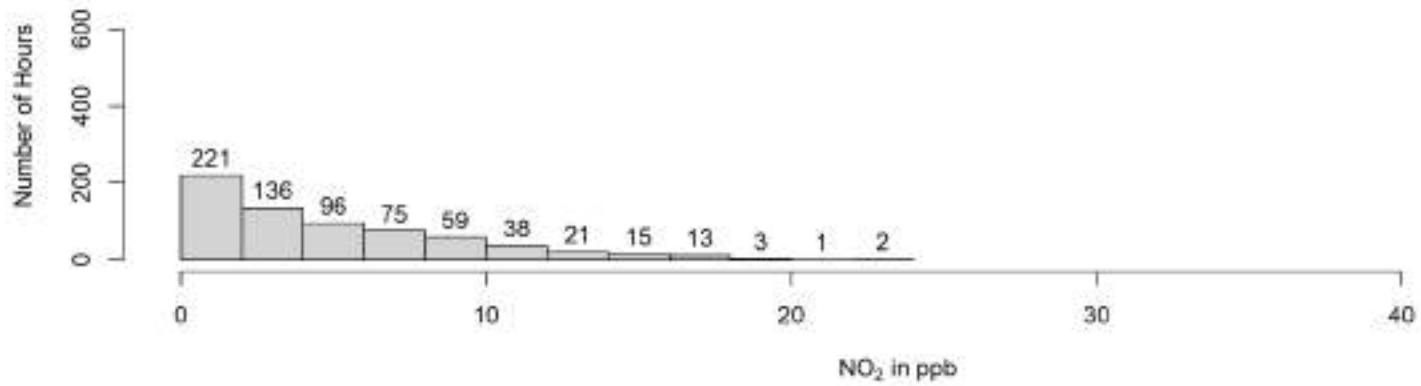
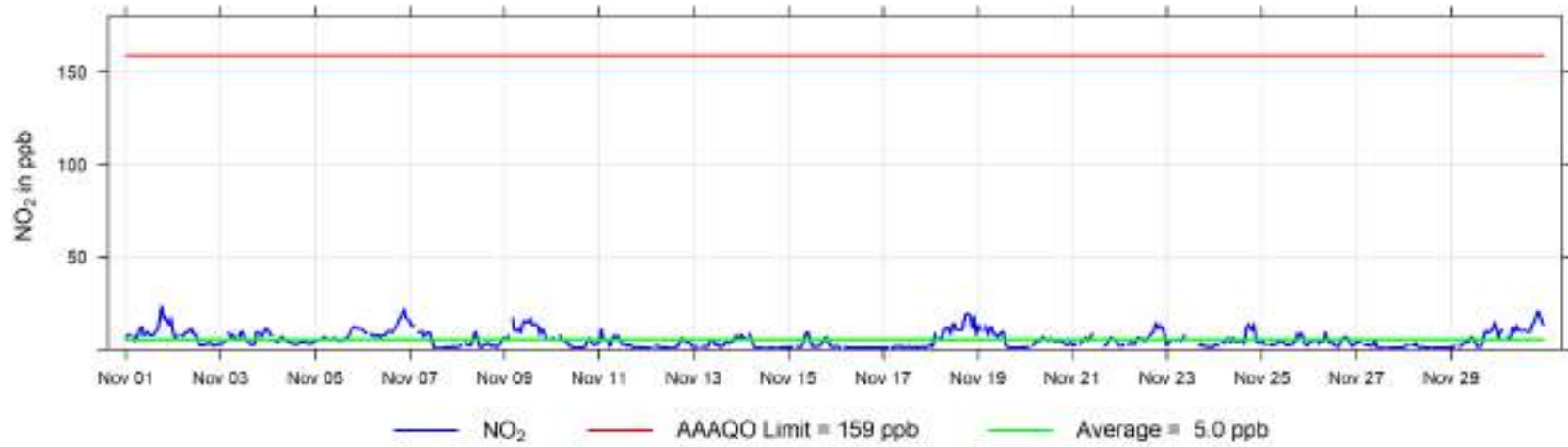
November 2023 Hourly Concentration Readings of NO (in ppb) at Poplar



November 2023 Hourly Concentration Readings of NO<sub>x</sub> (in ppb) at Poplar

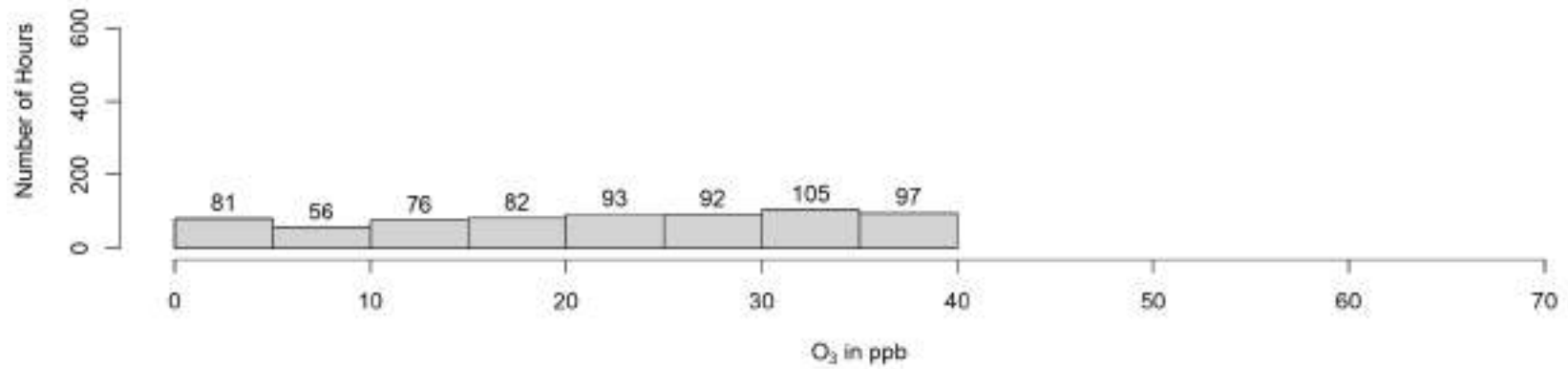
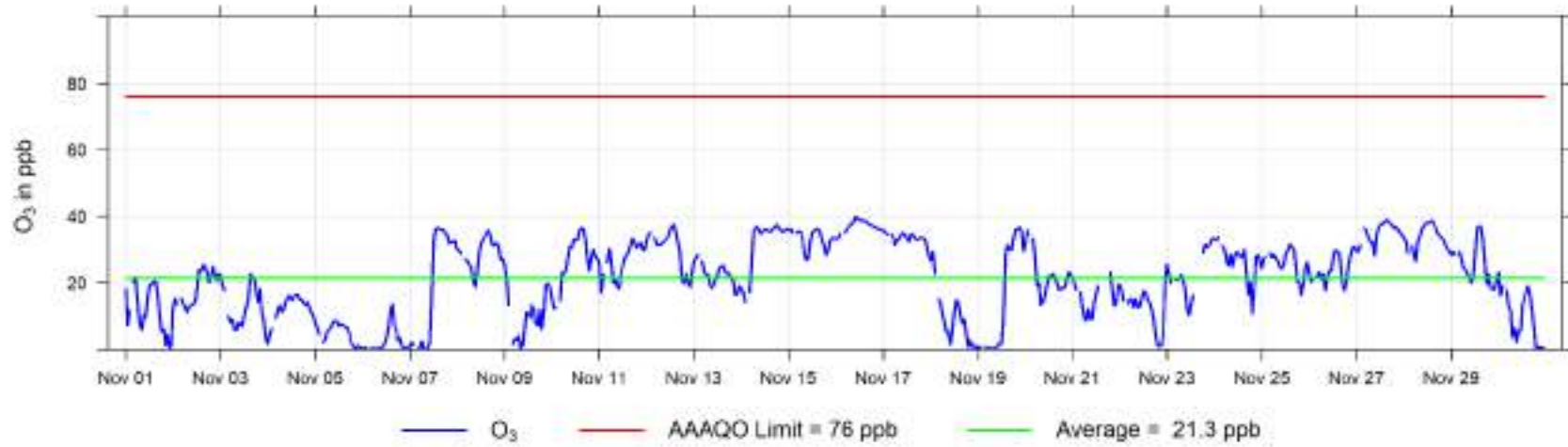


November 2023 Hourly Concentration Readings of NO<sub>2</sub> (in ppb) at Poplar

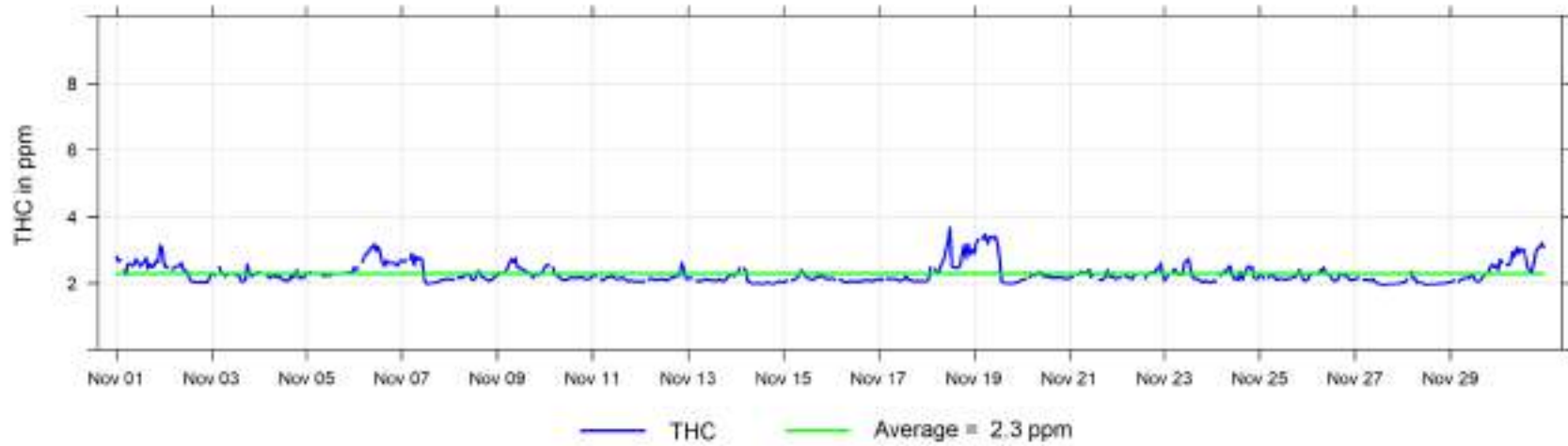




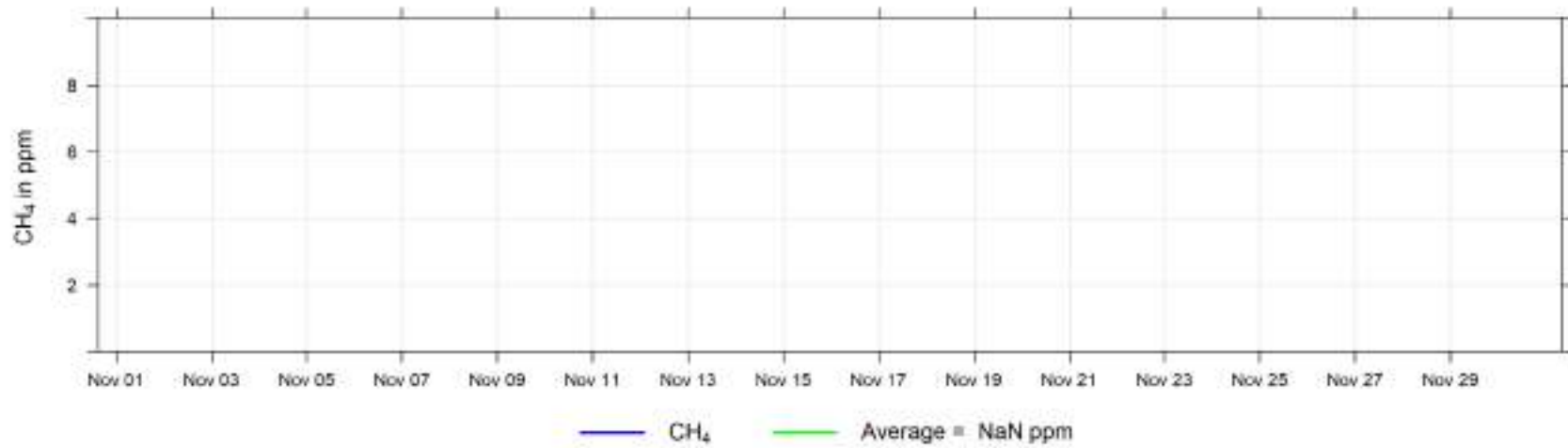
November 2023 Hourly Concentration Readings of O<sub>3</sub> (in ppb) at Poplar



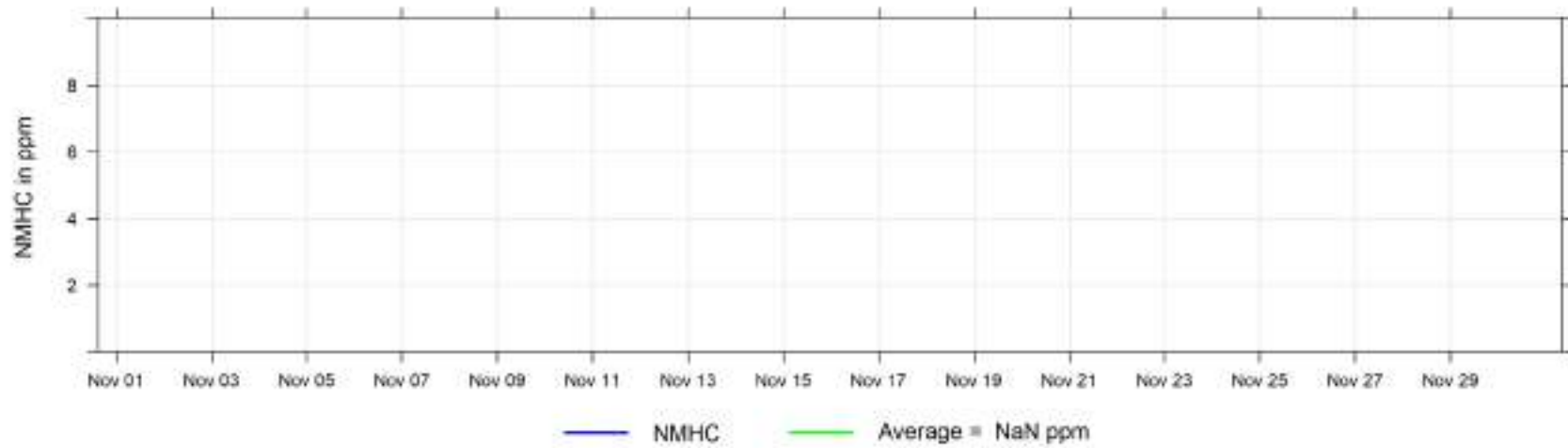
November 2023 Hourly Concentration Readings of THC (in ppm) at Poplar



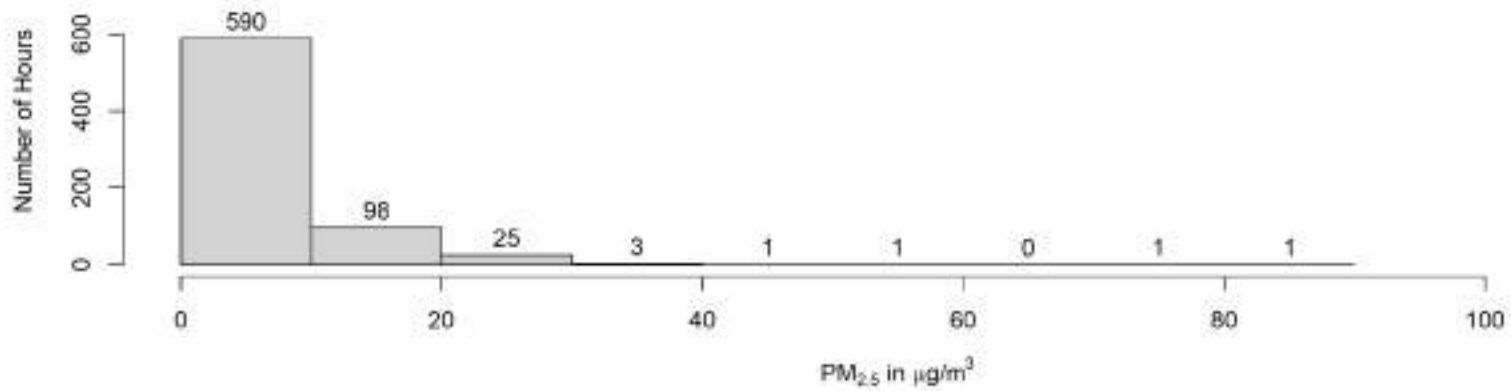
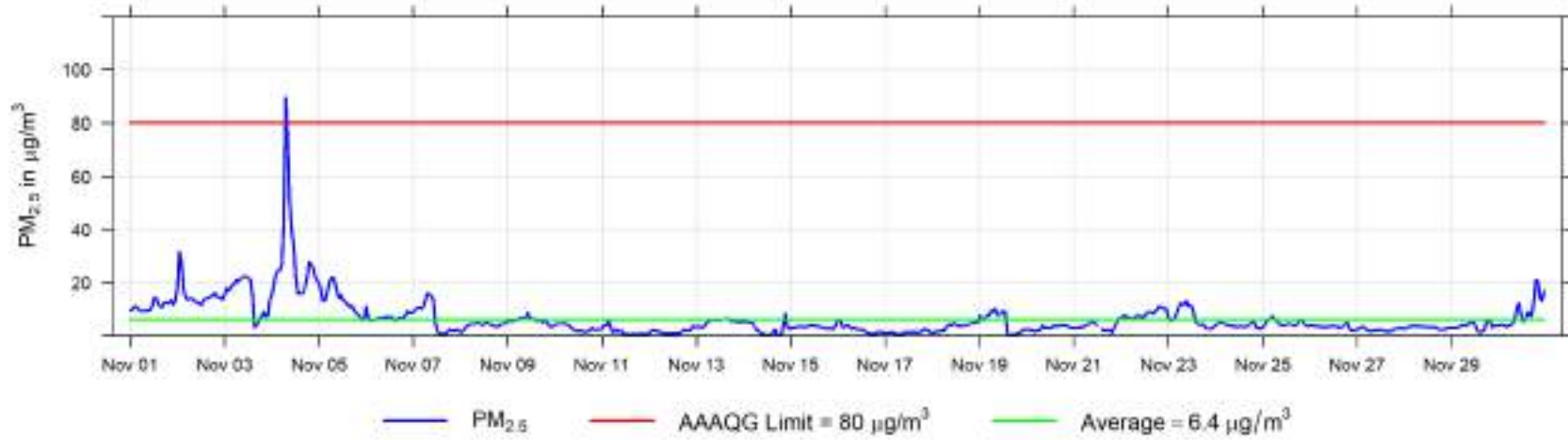
November 2023 Hourly Concentration Readings of CH<sub>4</sub> (in ppm) at Poplar



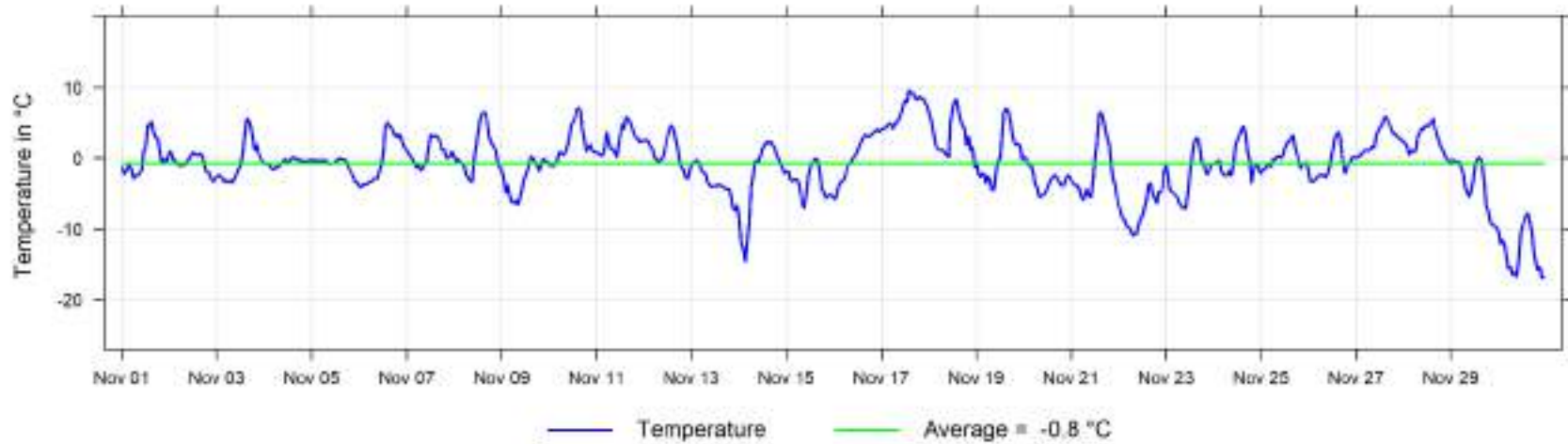
November 2023 Hourly Concentration Readings of NMHC (in ppm) at Poplar



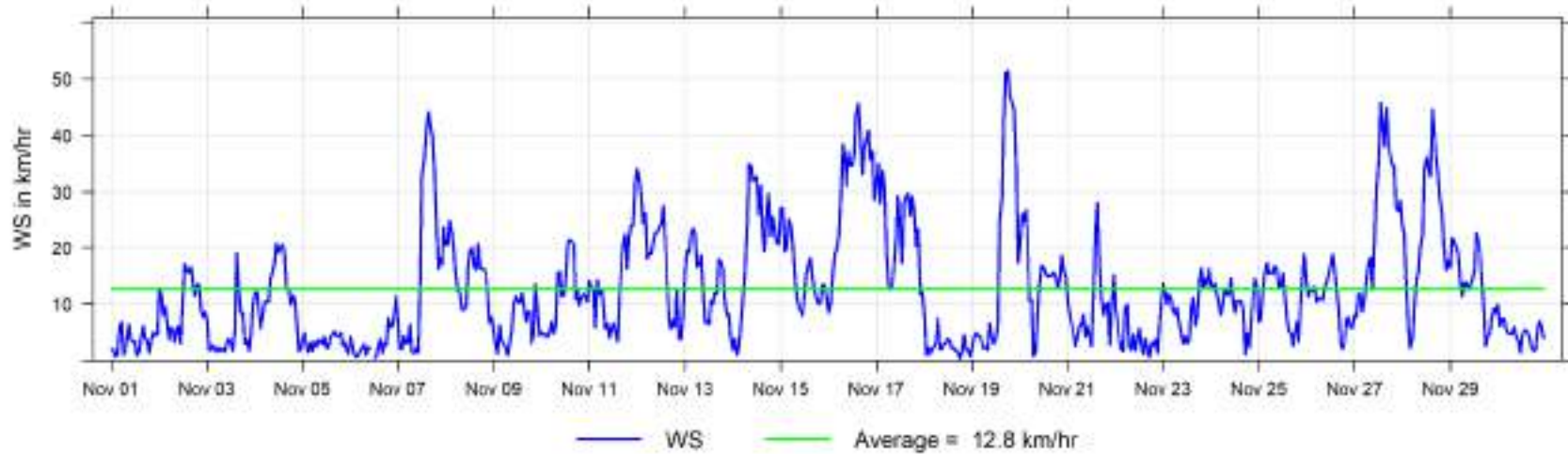
November 2023 Hourly Concentration Readings of PM<sub>2.5</sub> in  $\mu\text{g}/\text{m}^3$  at Poplar



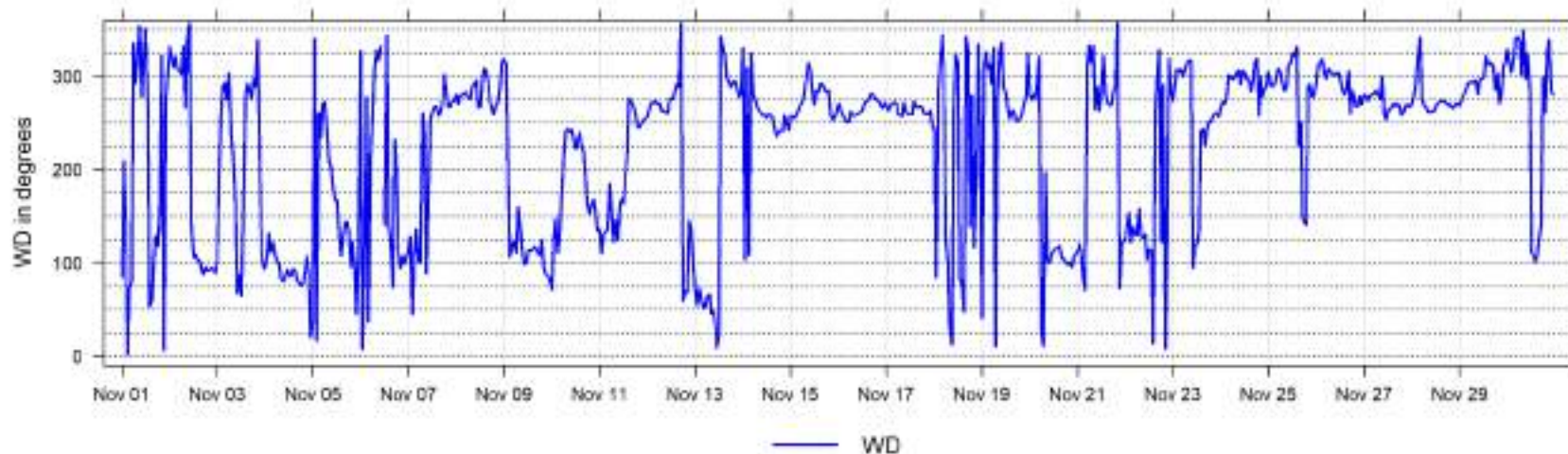
November 2023 Hourly Temperature Readings (in °C) at Poplar



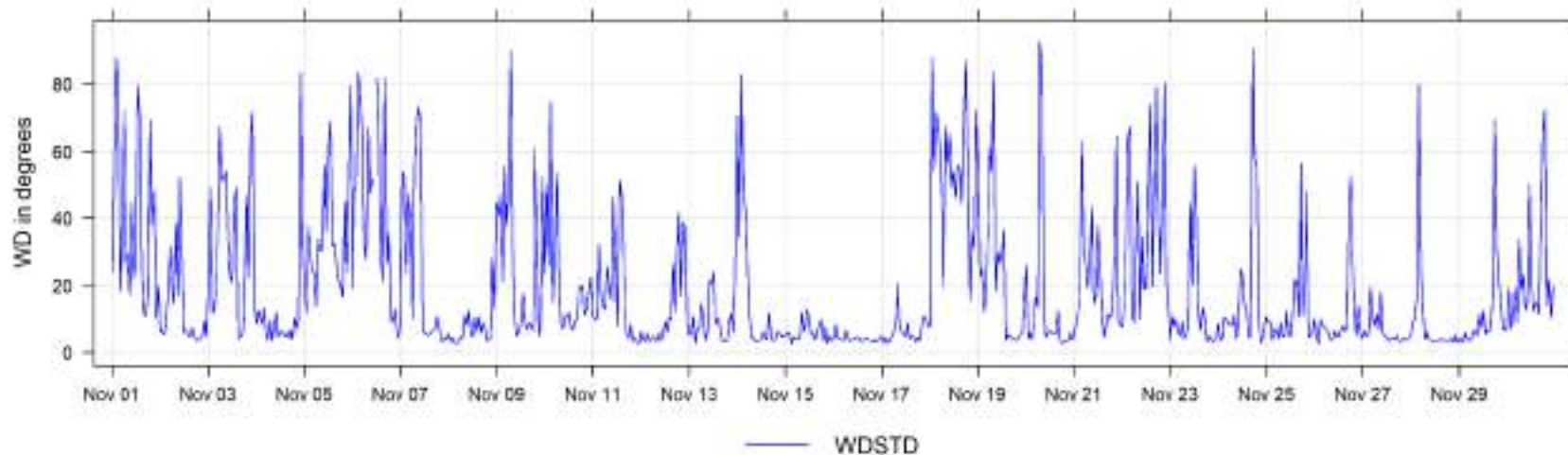
November 2023 Hourly Readings of Wind Speed (in km/hr) at Poplar

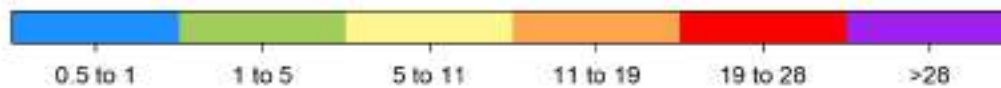
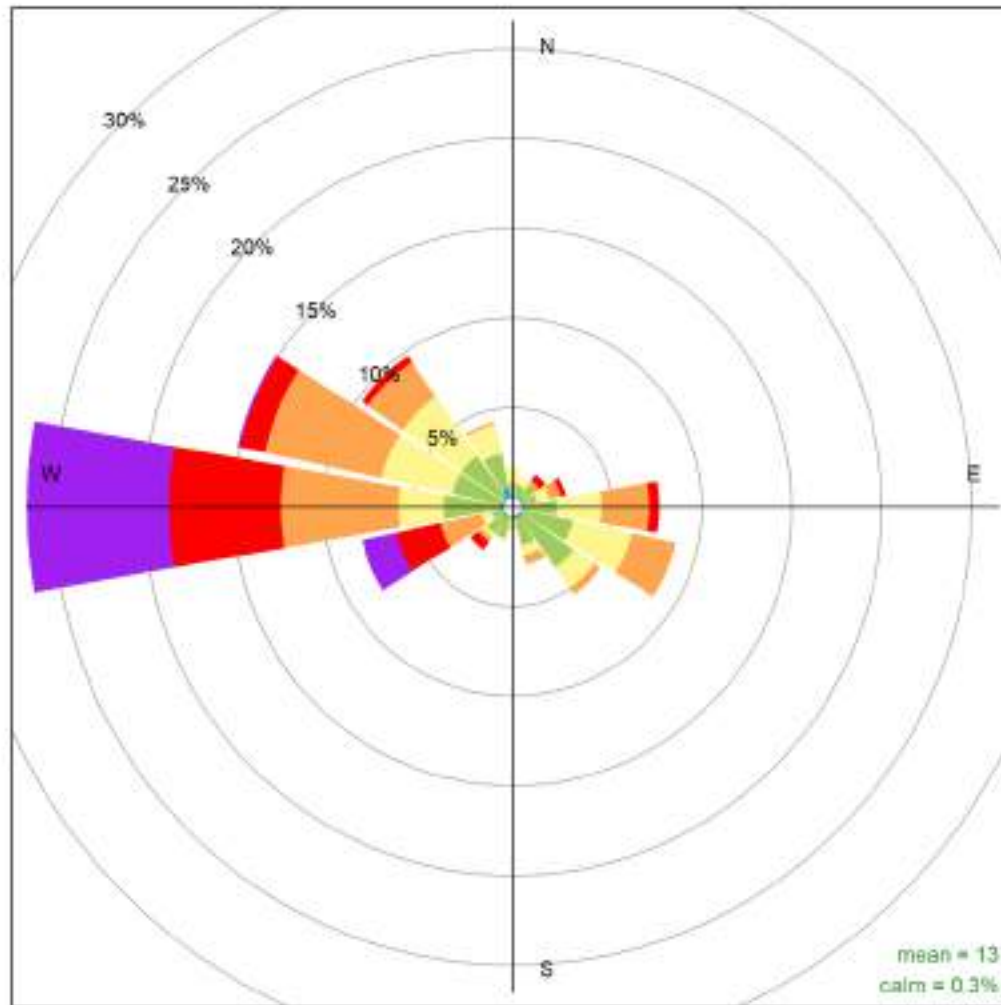


November 2023 Hourly Readings of Wind Direction (in degrees) at Poplar



November 2023 Hourly Readings of Wind Direction Standard Deviation (in degrees) at Poplar

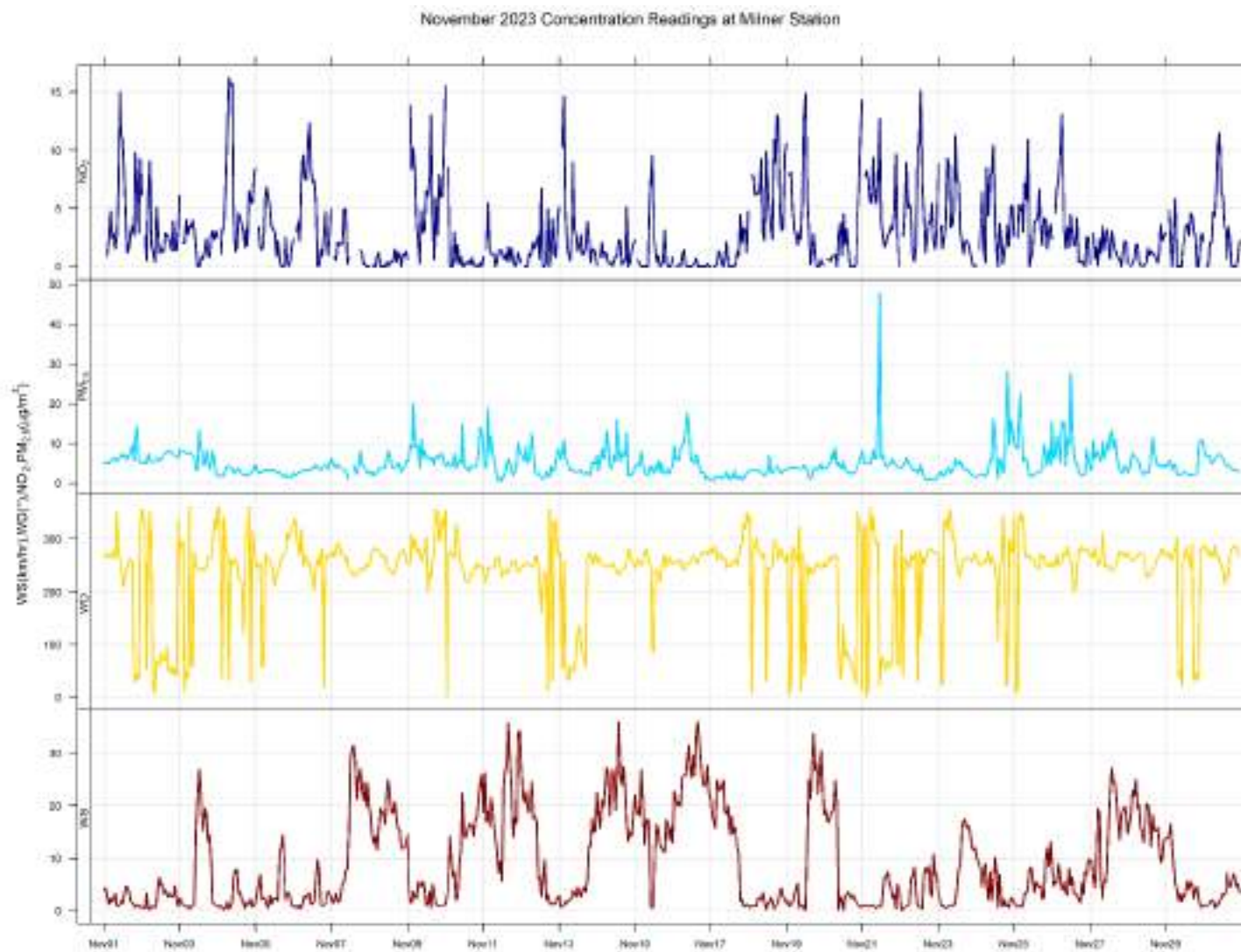




Poplar November 2023 Wind Rose, wind speed in km/hr  
**Frequency of counts by wind direction (%)**

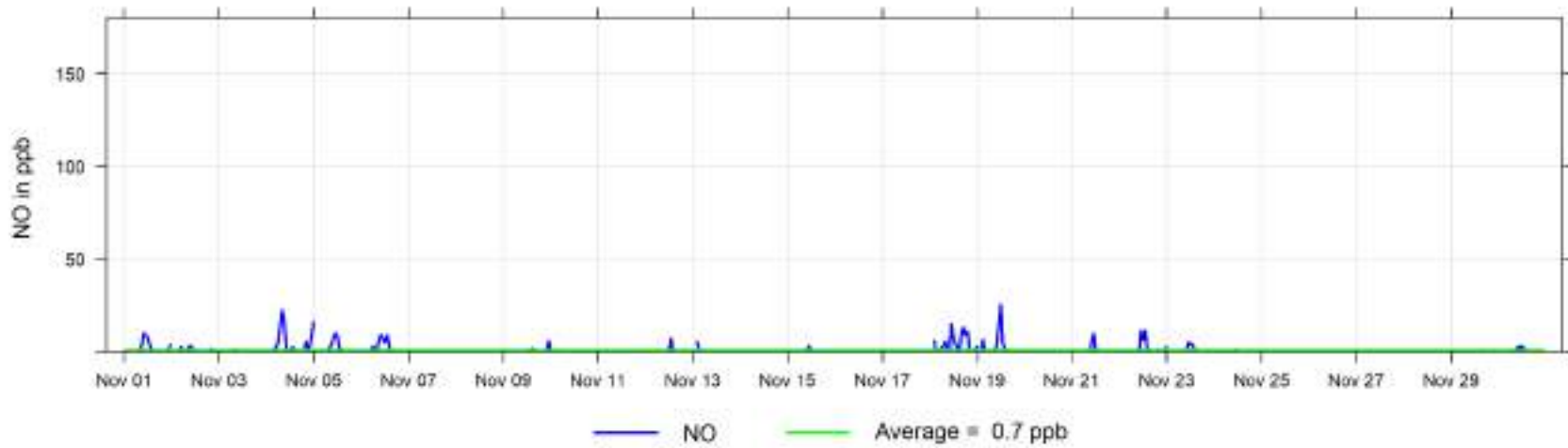
## 9 Milner Charts

The following pages include the charts and histograms for Milner Station

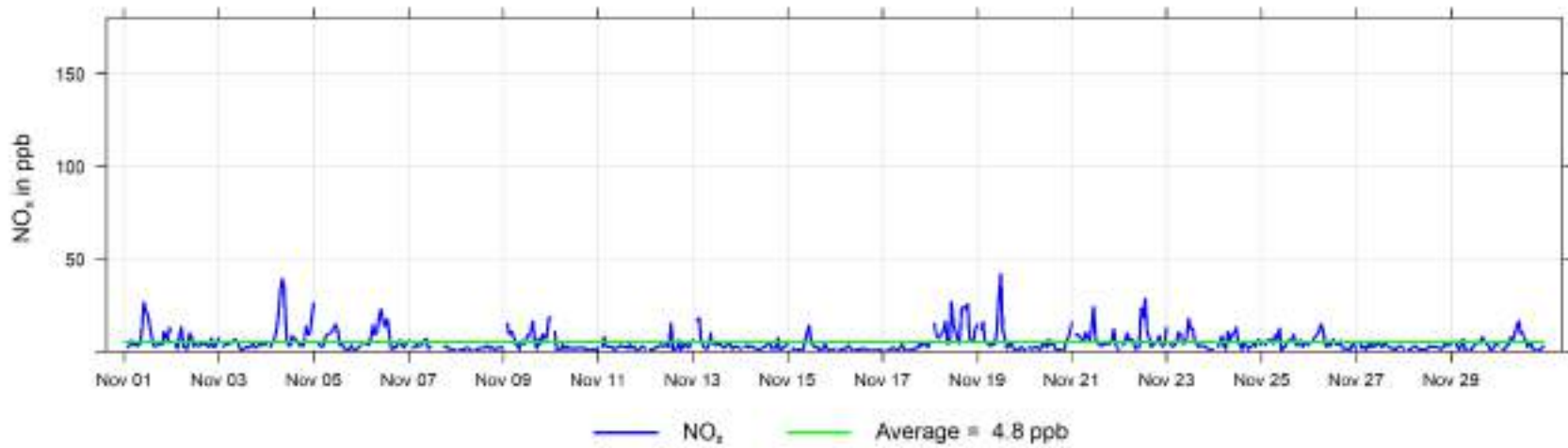




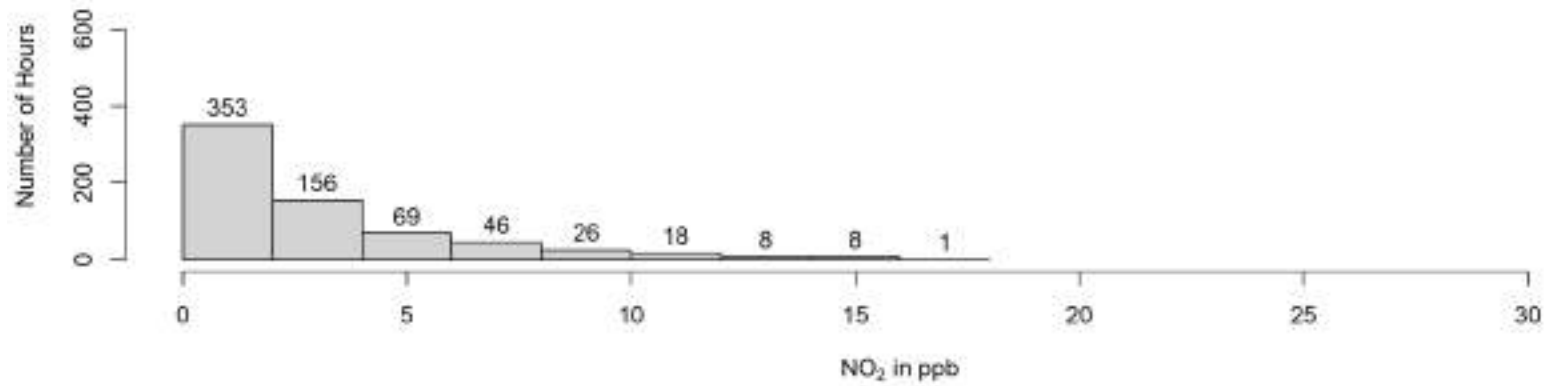
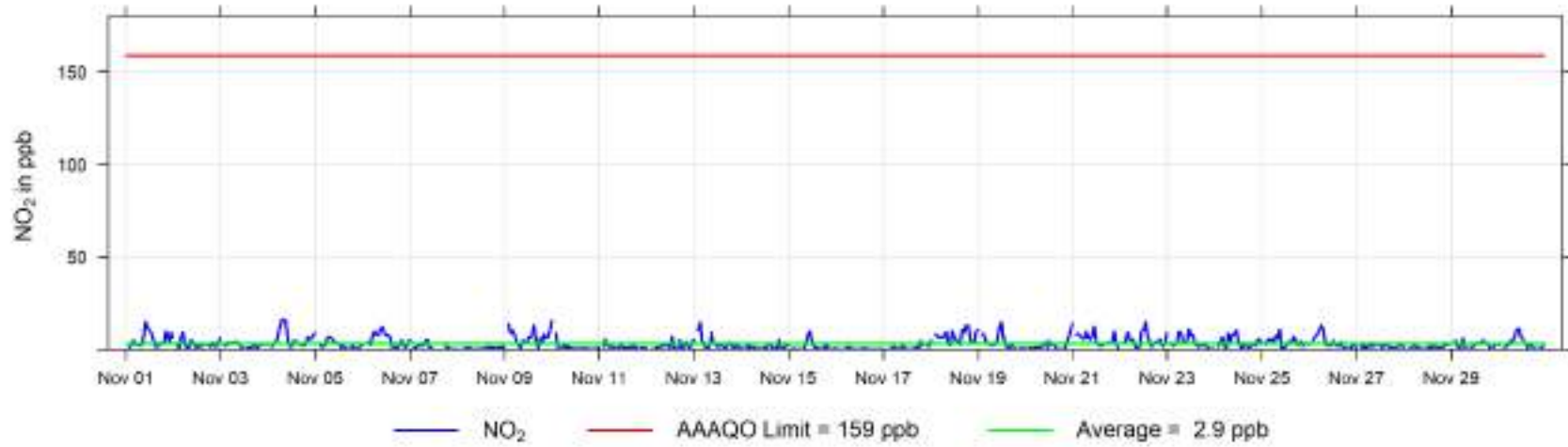
November 2023 Hourly Concentration Readings of NO (in ppb) at Milner



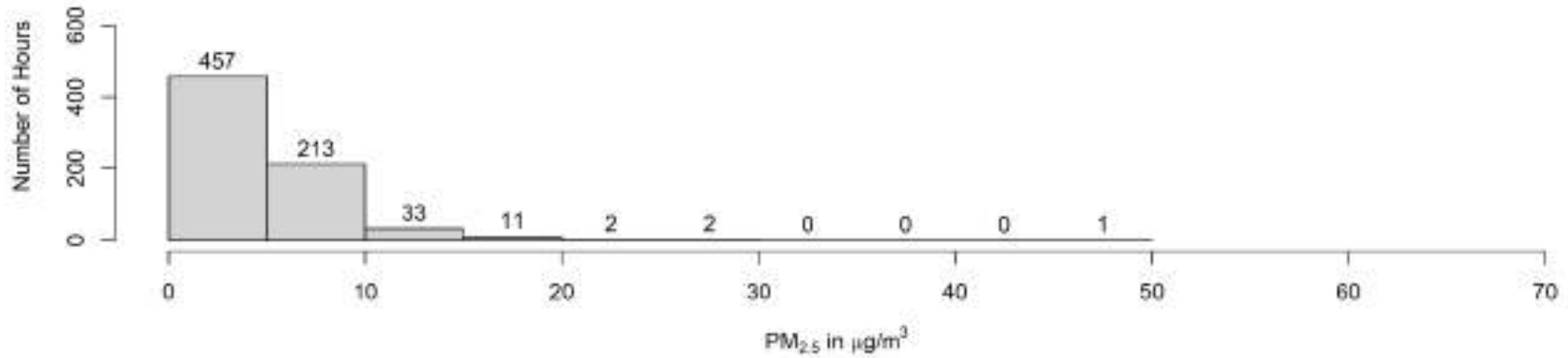
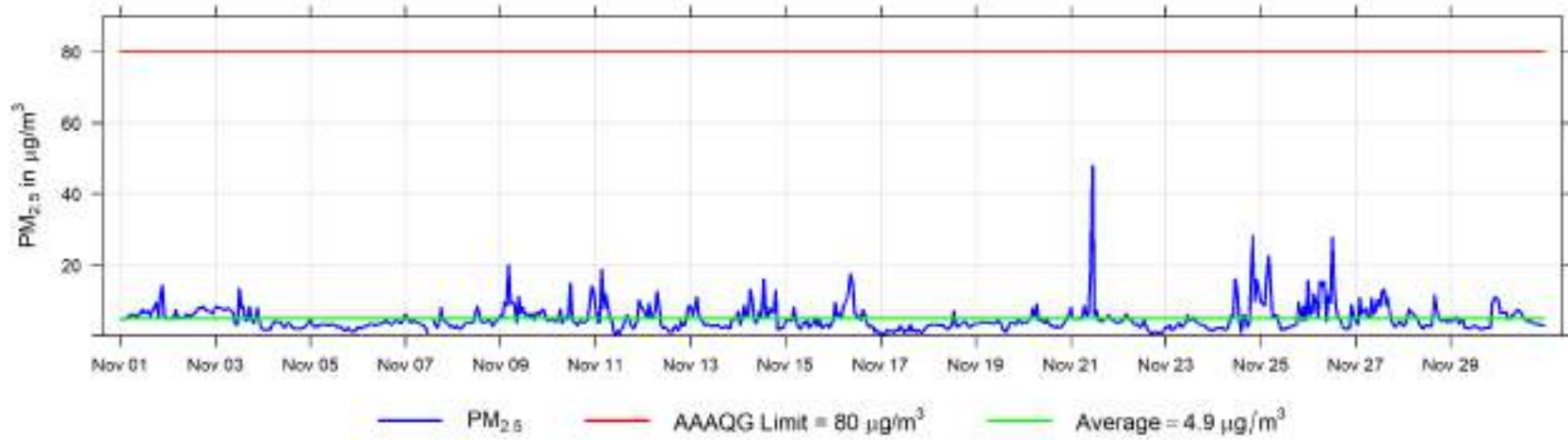
November 2023 Hourly Concentration Readings of NO<sub>x</sub> (in ppb) at Milner



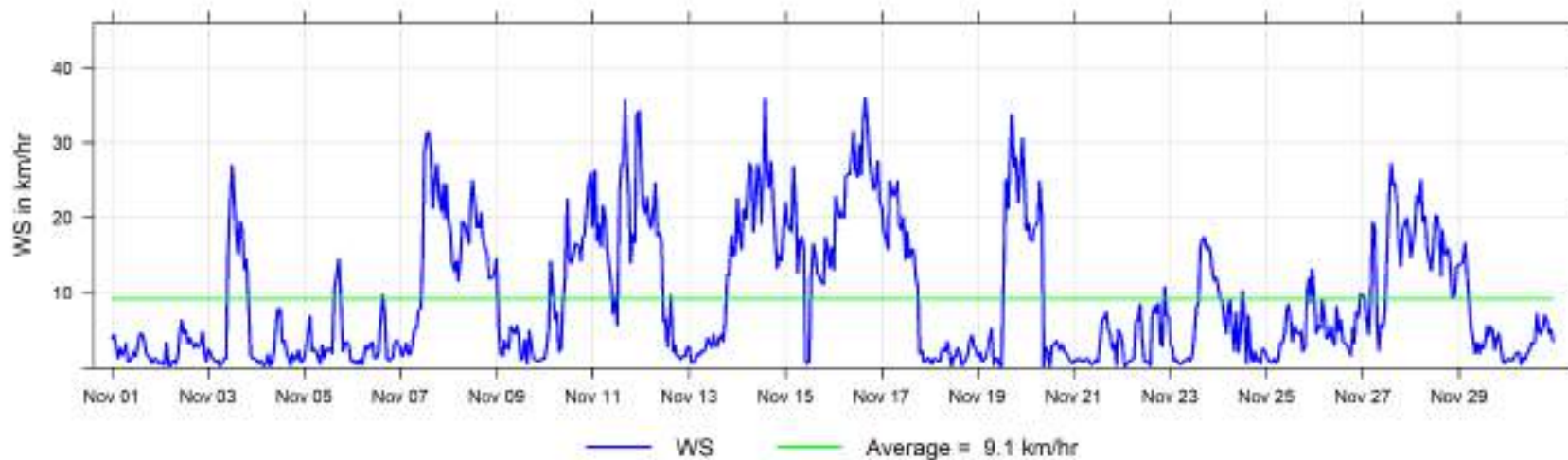
November 2023 Hourly Concentration Readings of NO<sub>2</sub> (in ppb) at Milner



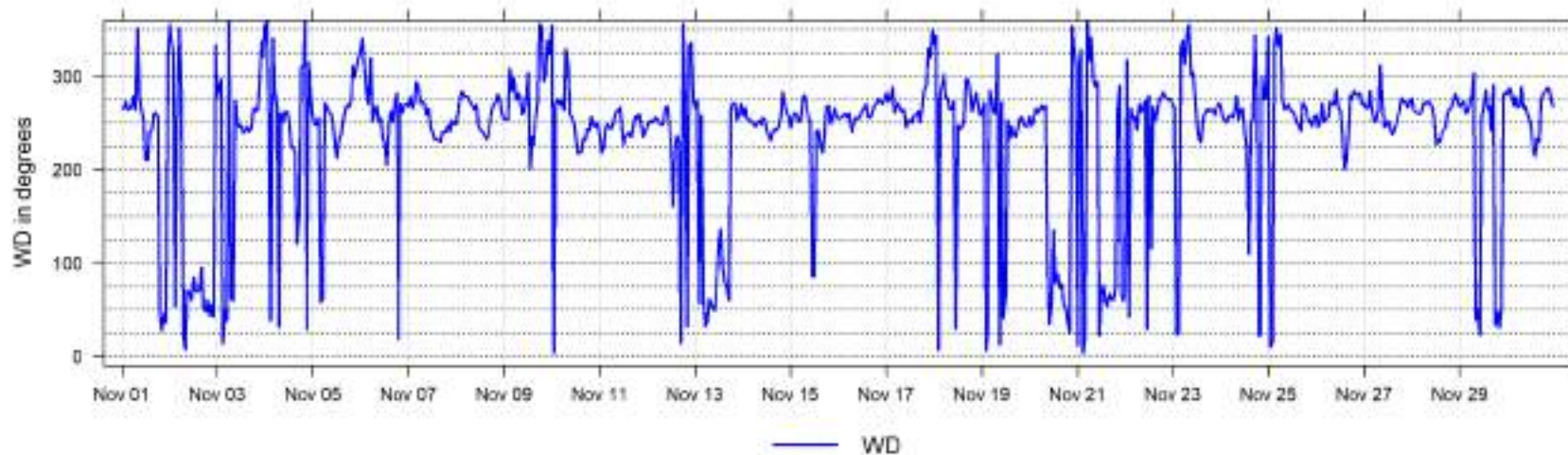
November 2023 Hourly Concentration Readings of PM<sub>2.5</sub> in  $\mu\text{g}/\text{m}^3$  at Milner



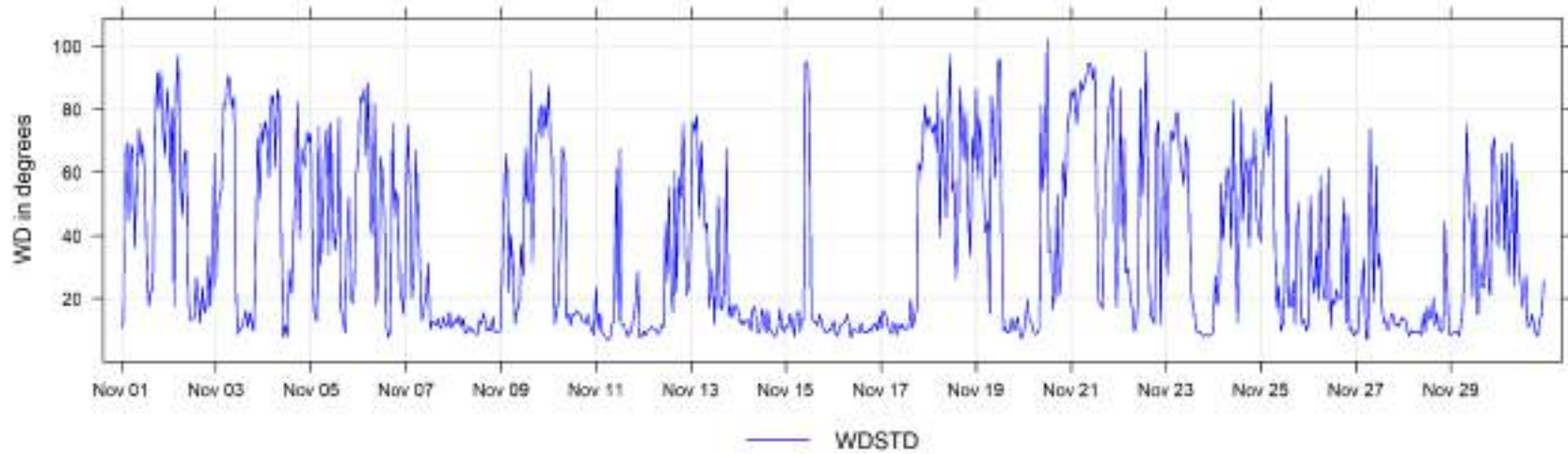
November 2023 Hourly Readings of Wind Speed (in km/hr) at Milner

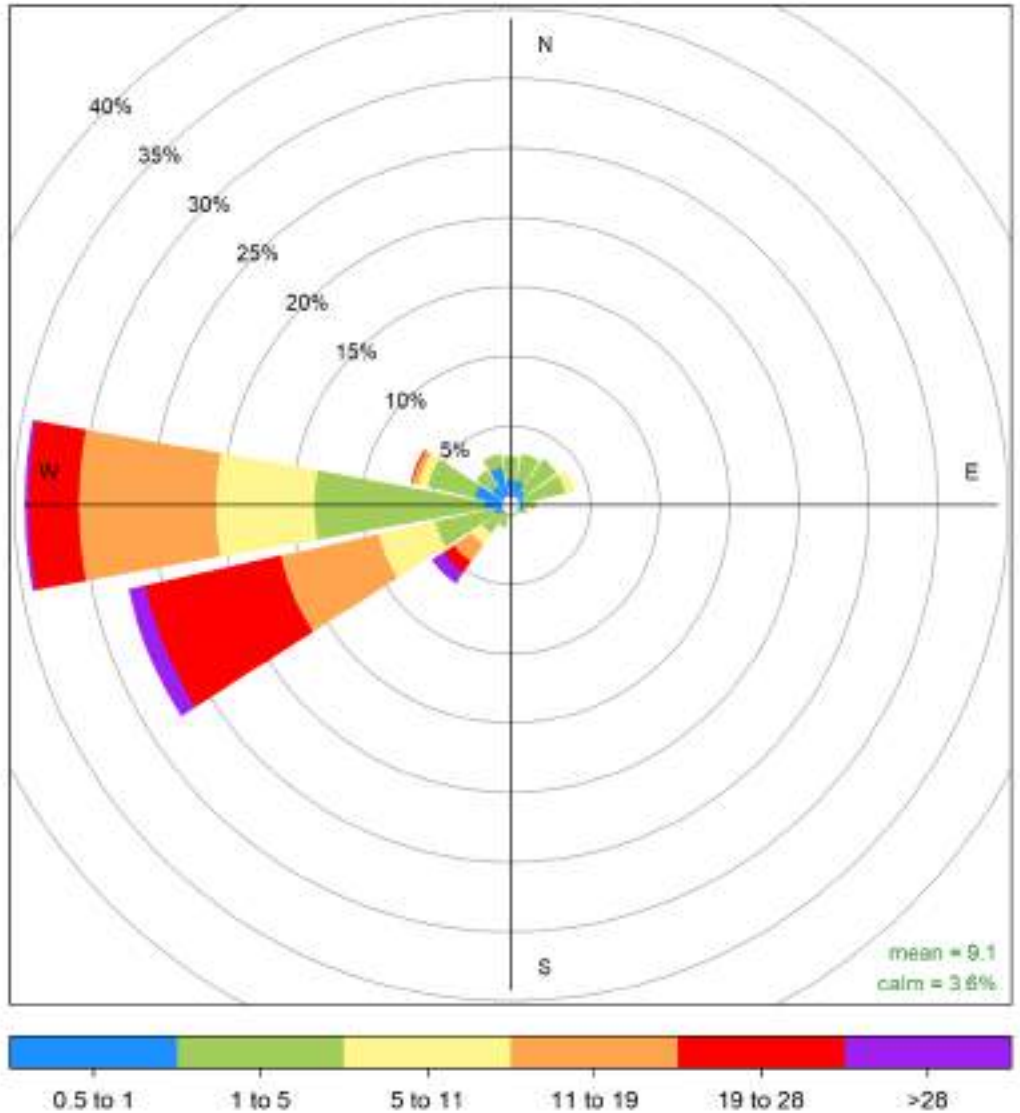


November 2023 Hourly Readings of Wind Direction (in degrees) at Milner



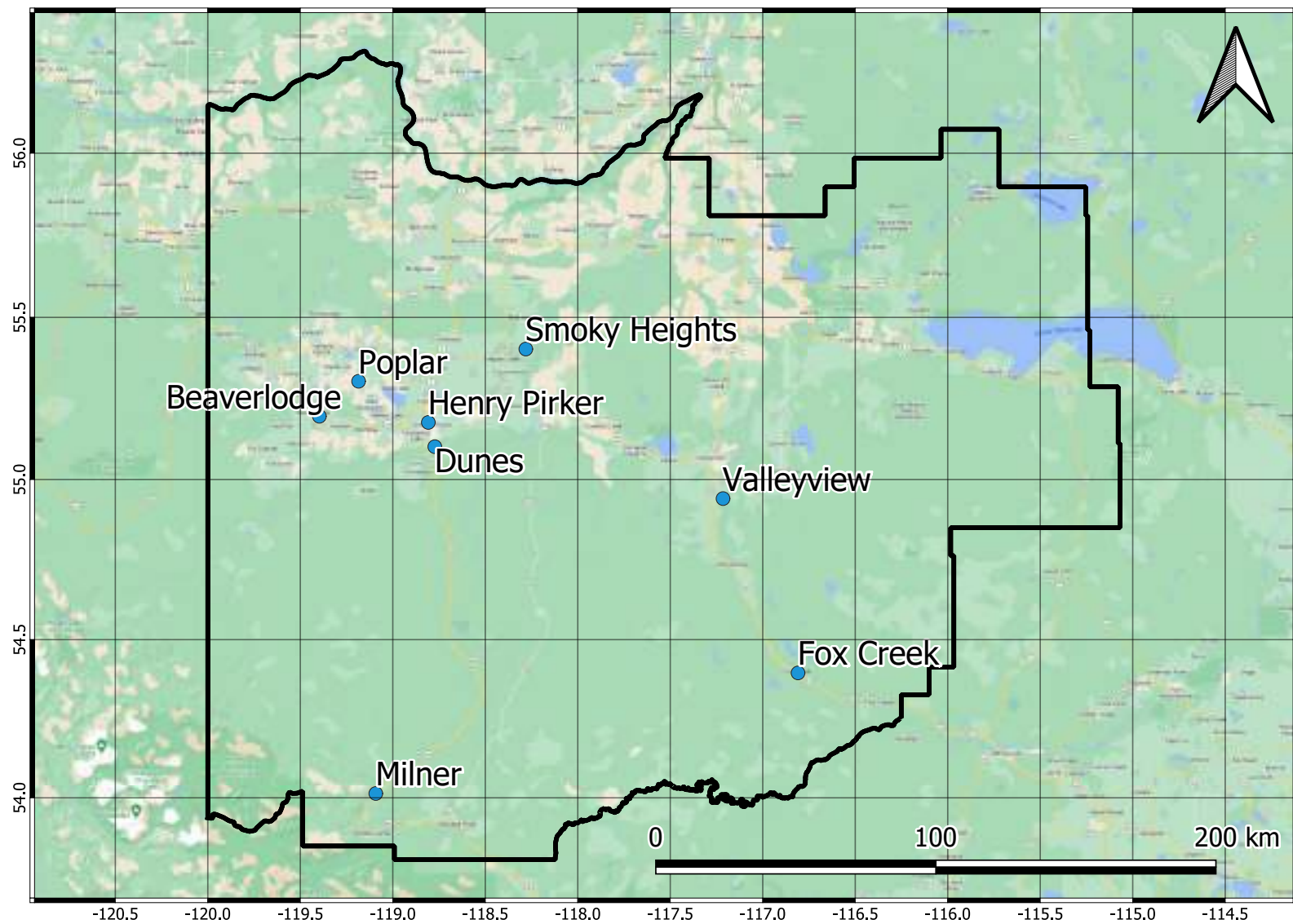
November 2023 Hourly Readings of Wind Direction Standard Deviation (in degrees) at Milner



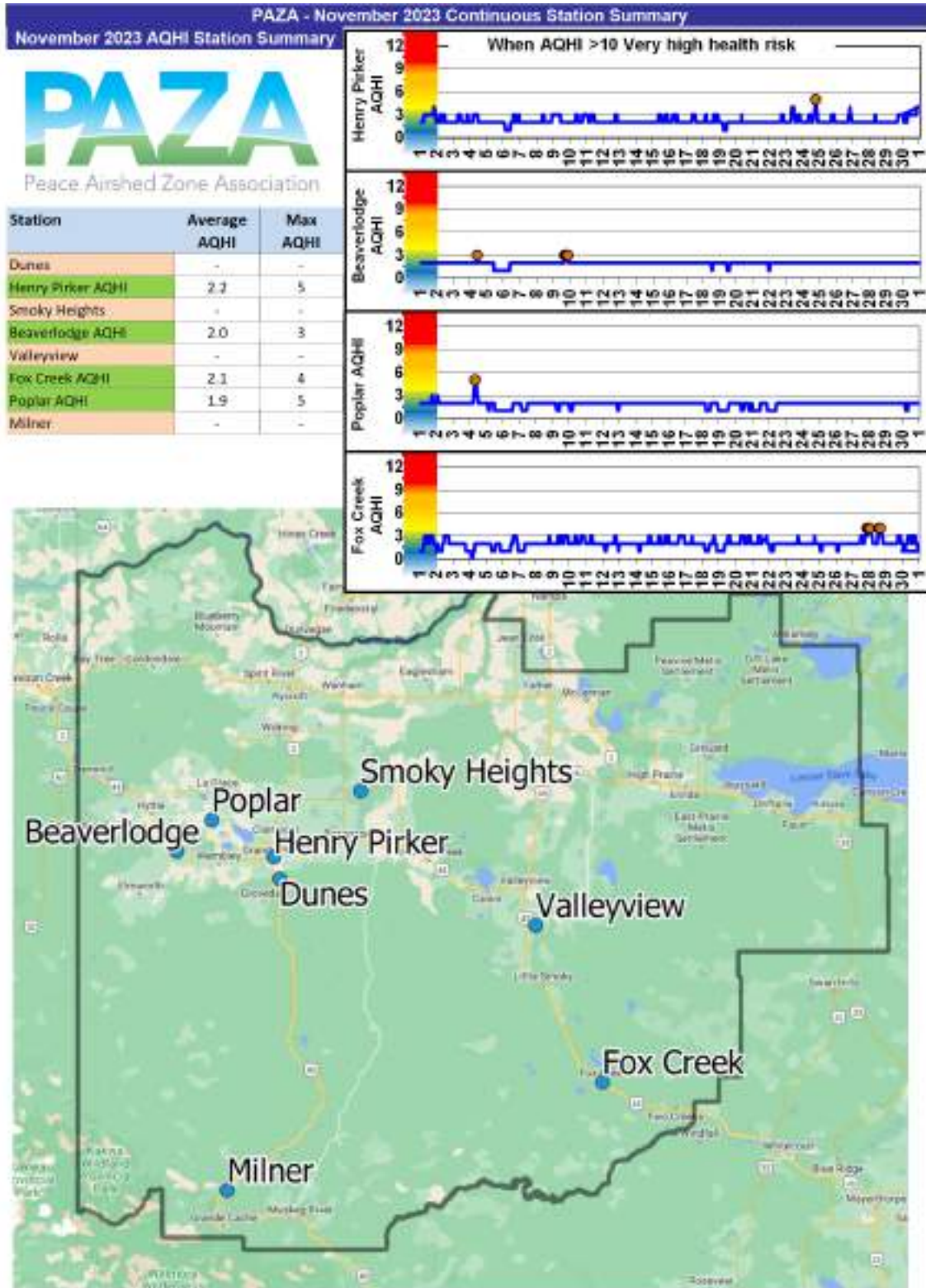


Milner November 2023 Wind Rose, wind speed in km/hr  
**Frequency of counts by wind direction (%)**

## 10 Concentration Summaries and Roses for PAZA

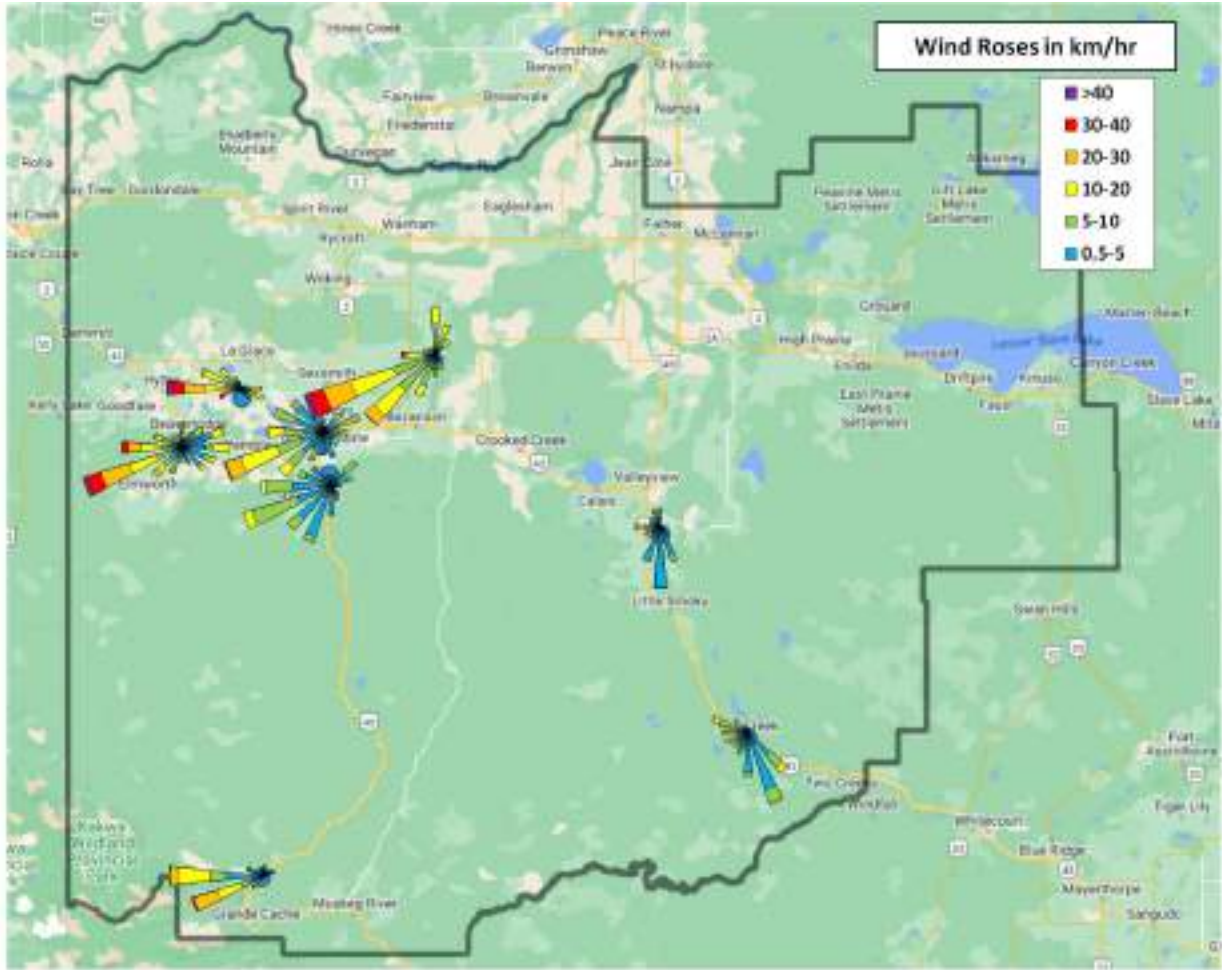


## 10.1 Air Quality Health Index (AQHI) Plots



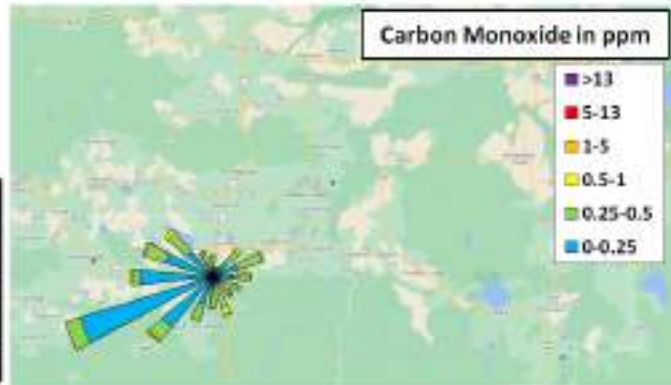


## 10.2 Wind Roses



## 10.3 Carbon Monoxide (CO) Plots

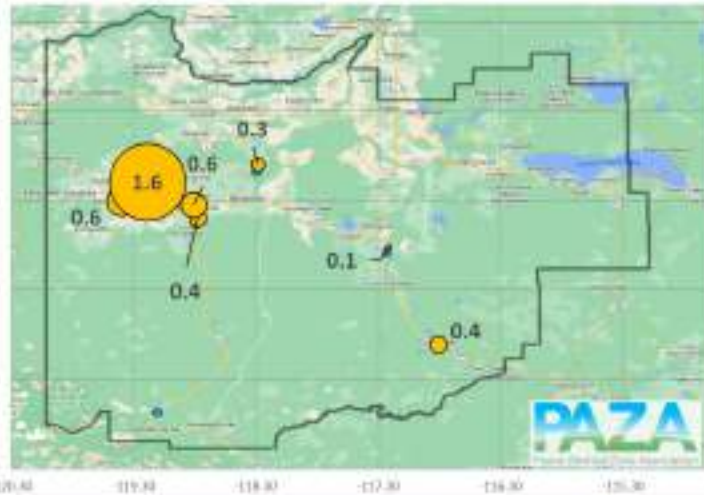
November 2023 CO Station Summary		
Station	Avg (ppm)	Max (ppm)
Henry Pirker CO	0.26	1.50



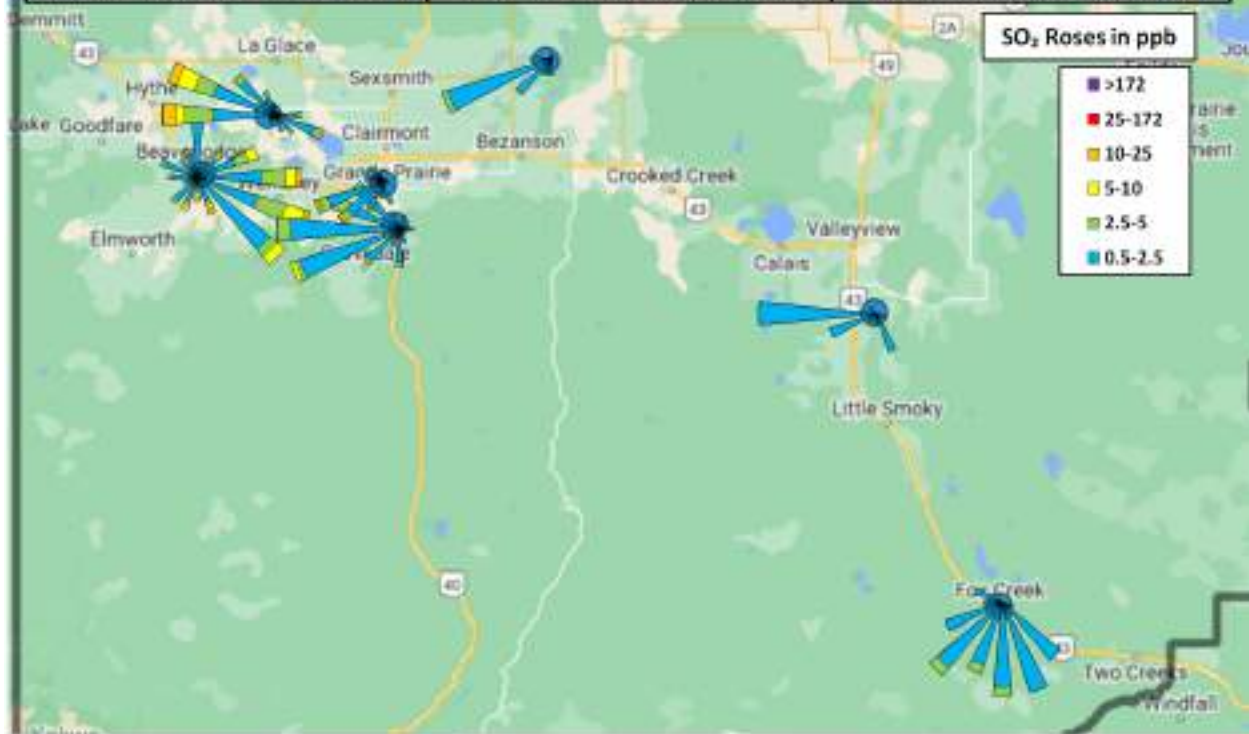
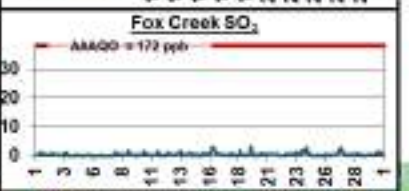
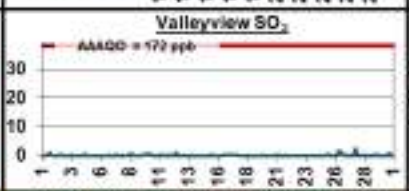
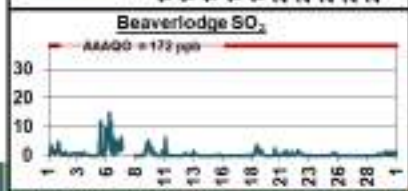
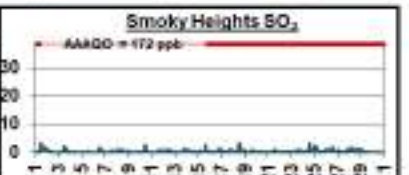
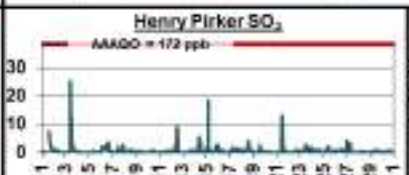
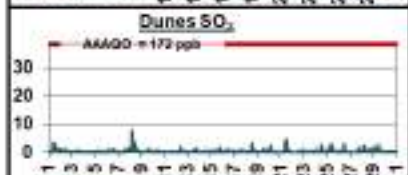
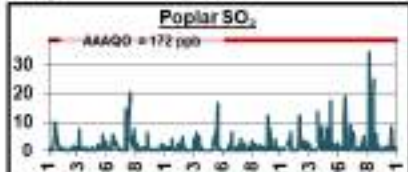
## 10.4 Sulphur Dioxide (SO<sub>2</sub>) Plots

November 2023 SO<sub>2</sub> Station Summary

Station	Avg (ppb)	Max (ppb)
Dunes SO <sub>2</sub>	0.4	7.3
Henry Pirkler SO <sub>2</sub>	0.6	25.2
Smoky Heights SO <sub>2</sub>	0.3	3.3
Beaverlodge SO <sub>2</sub>	0.6	15.0
Valleyview SO <sub>2</sub>	0.1	2.4
Fox Creek SO <sub>2</sub>	0.4	3.0
Poplar SO <sub>2</sub>	1.6	34.3
Milner SO <sub>2</sub>	-	-



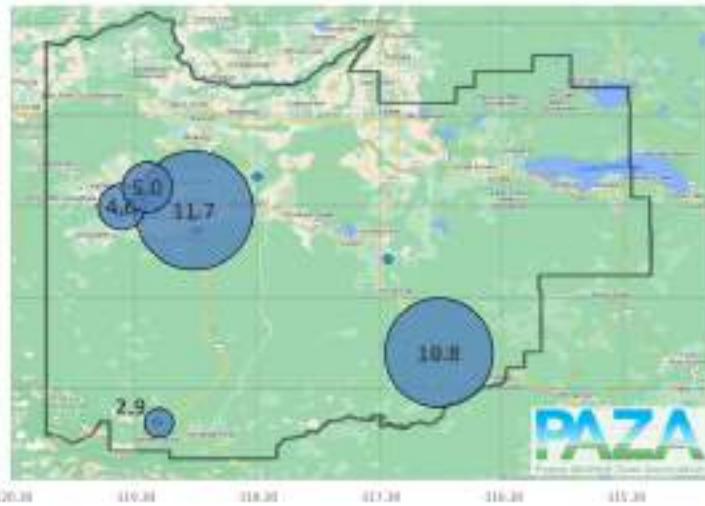
Sulphur Dioxide in ppb



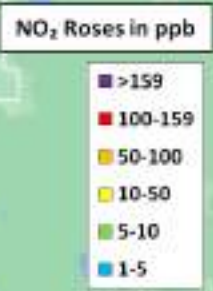
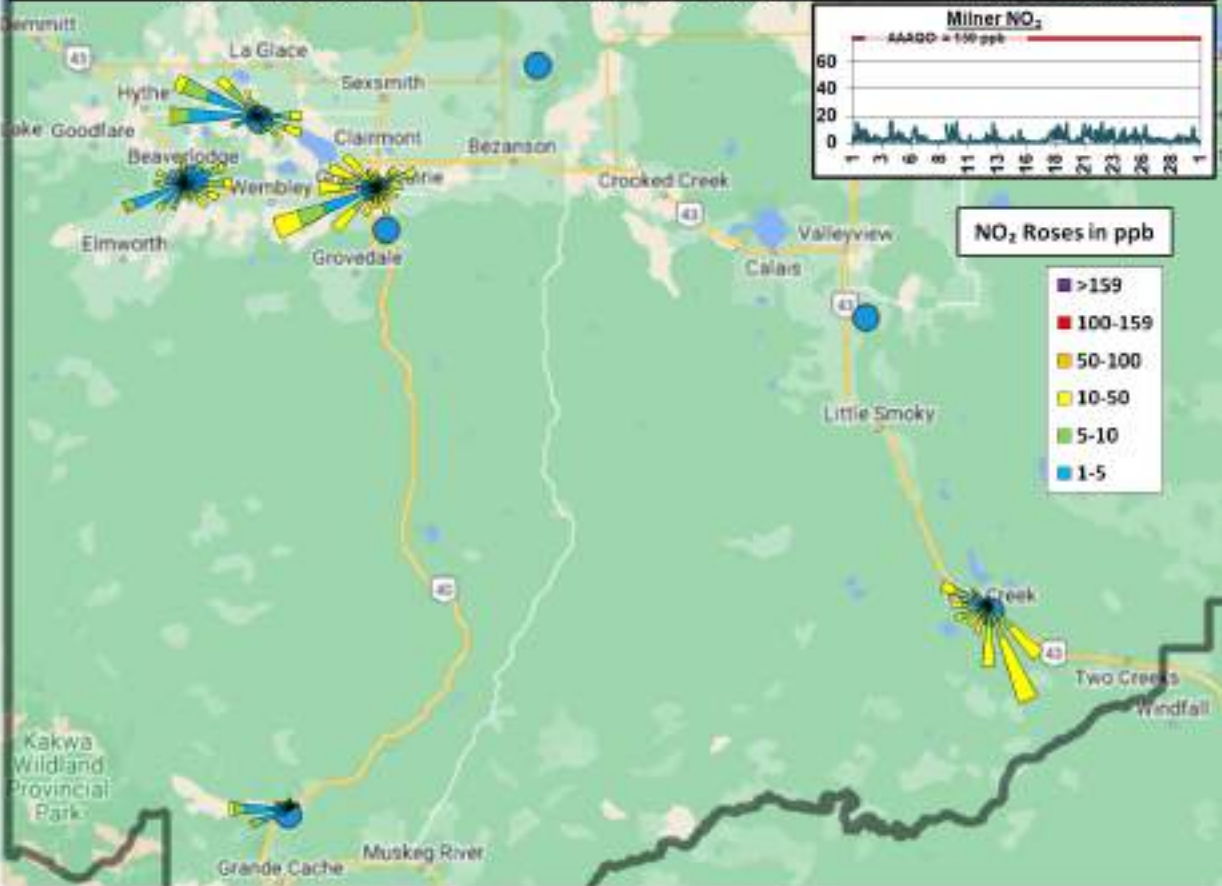
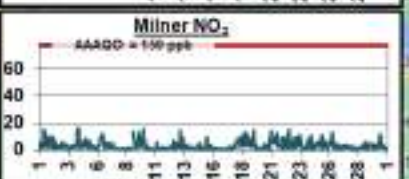
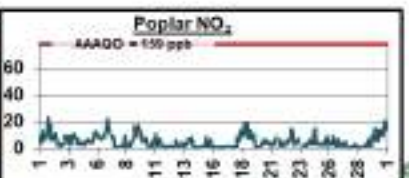
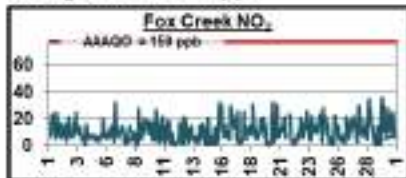
## 10.5 Nitrogen Dioxide (NO<sub>2</sub>) Plots

November 2023 NO<sub>2</sub> Station Summary

Station	Avg (ppb)	Max (ppb)
Dunes NO <sub>2</sub>	-	-
Henry Parker NO <sub>2</sub>	11.7	39.9
Smoky Heights NO <sub>2</sub>	-	-
Beaverlodge NO <sub>2</sub>	4.6	21.2
Valleyview NO <sub>2</sub>	-	-
Fox Creek NO <sub>2</sub>	10.8	35.5
Poplar NO <sub>2</sub>	5.0	23.3
Milner NO <sub>2</sub>	2.9	16.2

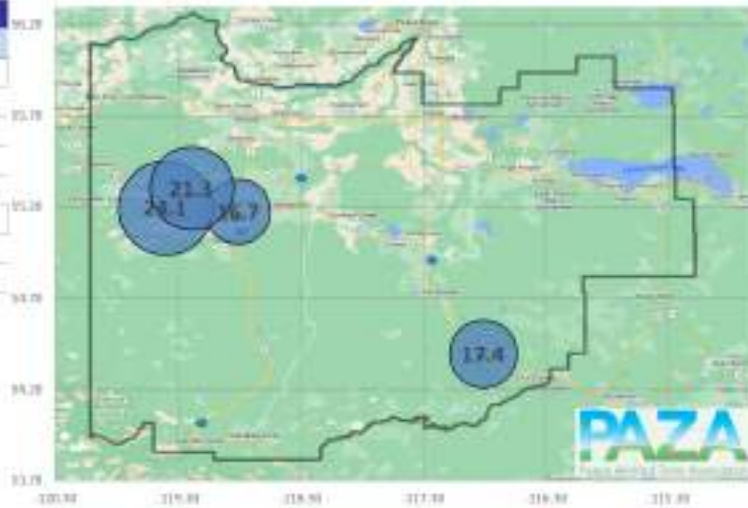


Nitrogen Dioxide in ppb

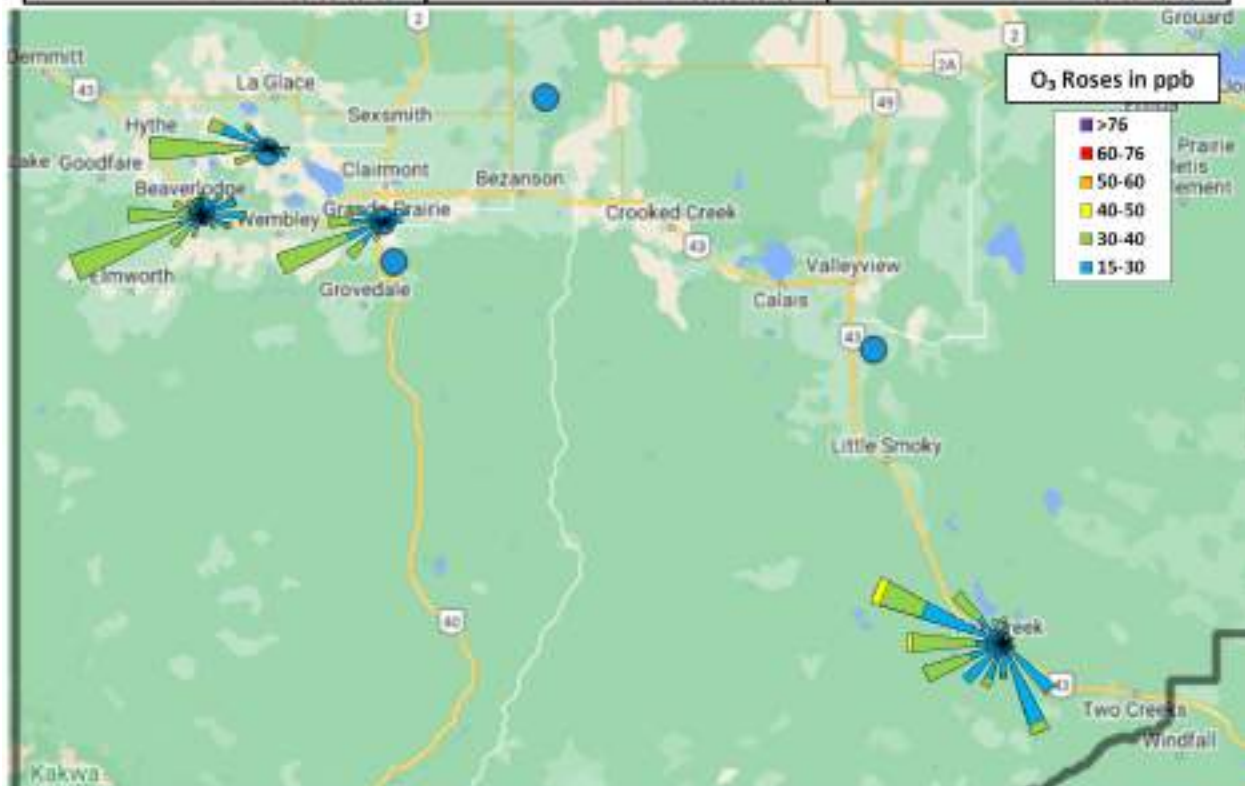
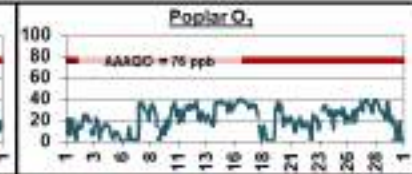
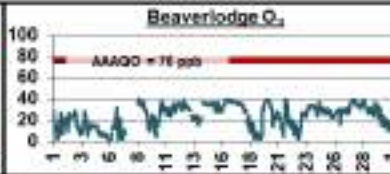
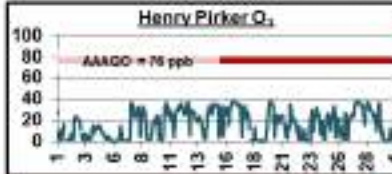
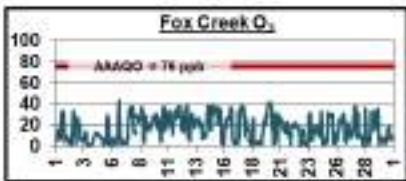


## 10.6 Ozone (O<sub>3</sub>) Plots

November 2023 O <sub>3</sub> Station Summary		
Station	Avg (ppb)	Max (ppb)
Dunes O <sub>3</sub>	-	-
Henry Pirkler O <sub>3</sub>	16.7	37.7
Smoky Heights O <sub>3</sub>	-	-
Beaverlodge O <sub>3</sub>	24.1	40.0
Valleyview O <sub>3</sub>	-	-
Fox Creek O <sub>3</sub>	17.4	43.0
Poplar O <sub>3</sub>	21.3	39.9
Milner O <sub>3</sub>	-	-



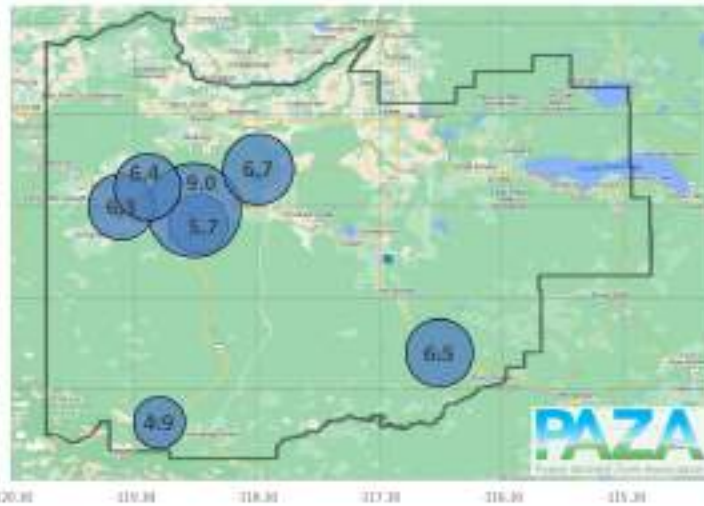
Ozone in ppb



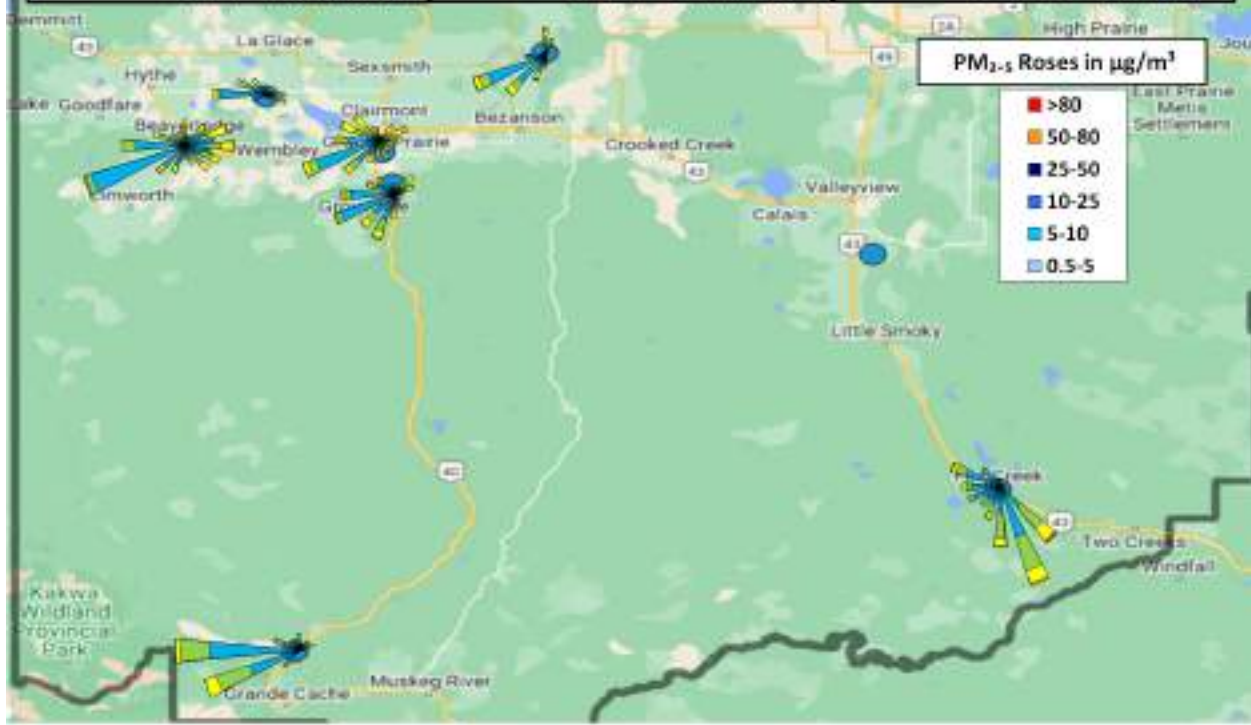
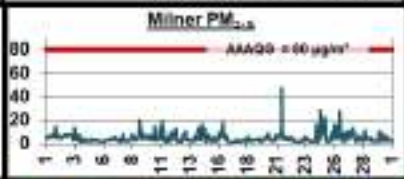
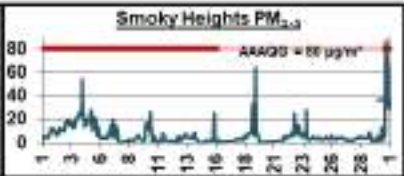
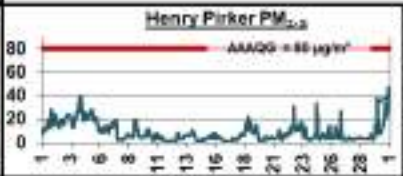
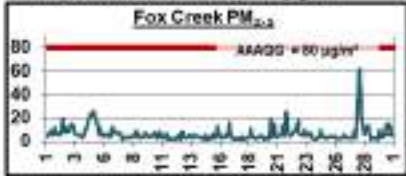
## 10.7 Fine Particulate Matter (PM<sub>2.5</sub>) Plots

November 2023 PM<sub>2.5</sub> Station Summary

Station	Avg µg/m <sup>3</sup>	Max µg/m <sup>3</sup>
Dunes PM <sub>2.5</sub>	5.7	70.5
Henry Piker PM <sub>2.5</sub>	9.0	47.1
Smoky Heights PM <sub>2.5</sub>	6.7	87.1
Beaverlodge PM <sub>2.5</sub>	6.3	34.7
Valleyview PM <sub>2.5</sub>	-	-
Fox Creek PM <sub>2.5</sub>	6.5	61.5
Poplar PM <sub>2.5</sub>	6.4	89.5
Milner PM <sub>2.5</sub>	4.9	47.9



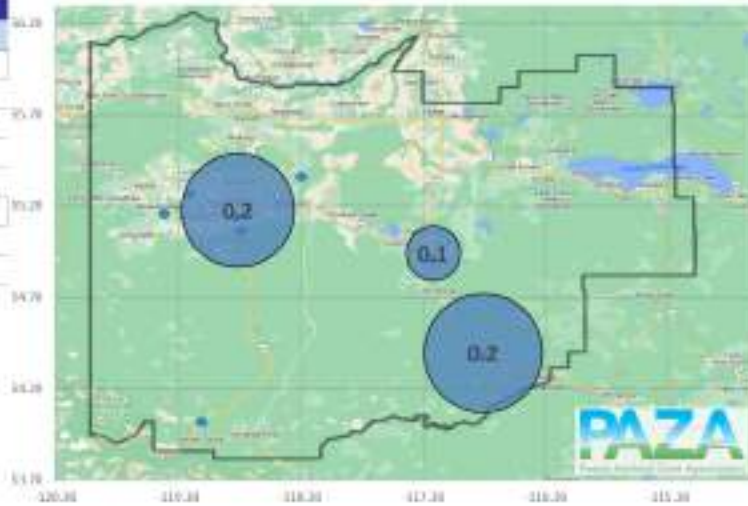
Fine Particulate Matter in µg/m<sup>3</sup>



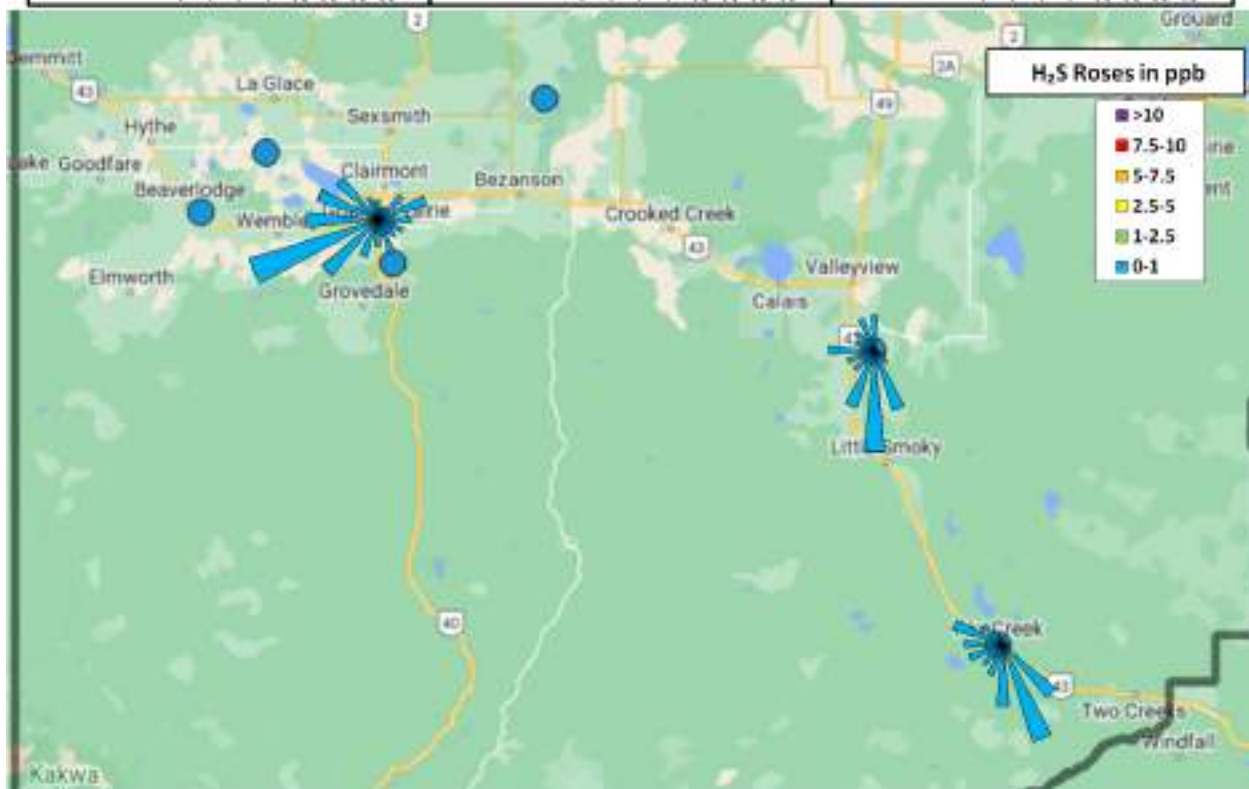
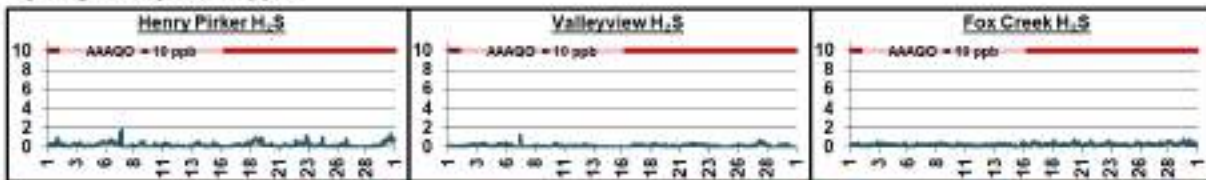
## 10.8 Hydrogen Sulphide (H<sub>2</sub>S) Plots

November 2023 H<sub>2</sub>S Station Summary

Station	Avg (ppb)	Max (ppb)
Dunes H <sub>2</sub> S	-	-
Henry Pirkler H <sub>2</sub> S	0.2	1.8
Smoky Heights H <sub>2</sub> S	-	-
Beaverlodge H <sub>2</sub> S	-	-
Valleyview H <sub>2</sub> S	0.1	1.3
Fox Creek H <sub>2</sub> S	0.2	0.8
Poplar H <sub>2</sub> S	-	-
Milner H <sub>2</sub> S	-	-



Hydrogen Sulphide in ppb

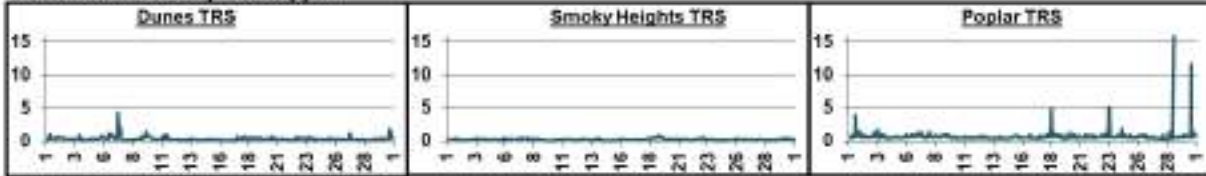


## 10.9 Total Reduced Sulphur (TRS) Plots

November 2023 TRS Station Summary		
Station	Avg (ppb)	Max (ppb)
Dunes TRS	0.3	4.3
Henry Pirkler TRS	-	-
Smoky Heights TRS	0.2	0.8
Beaverlodge TRS	-	-
Valleyview TRS	-	-
Fox Creek TRS	-	-
Poplar TRS	0.7	16.0
Milner TRS	-	-



Total Reduced Sulphur in ppb



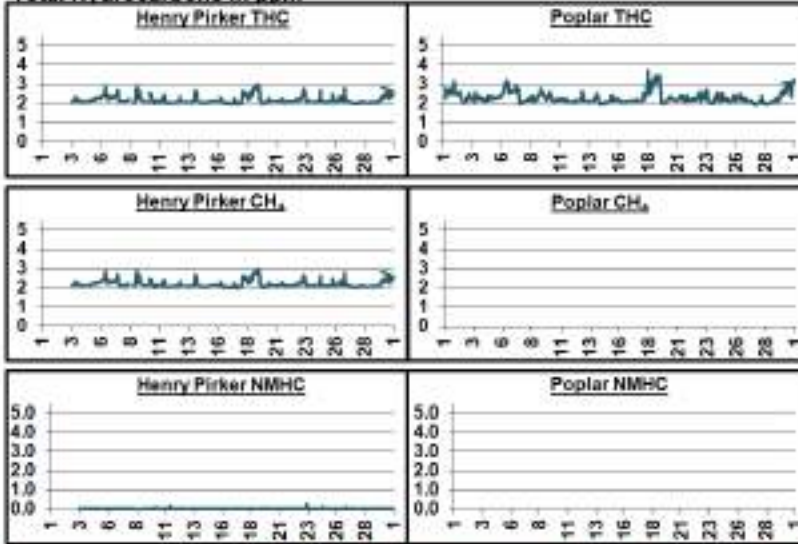
TRS Roses in ppb



## 10.10 Total Hydrocarbon (THC) Plots

November 2023 THC Station Summary						
Station	Total Hydrocarbons		Methane		Non-Methane HCs	
	Avg (ppm)	Max (ppm)	Avg (ppm)	Max (ppm)	Avg (ppm)	Max (ppm)
Dunes THC	-	-	-	-	-	-
Henry Pirkler THC	2.2	2.9	2.2	2.9	0.0	0.3
Smoky Heights THC	-	-	-	-	-	-
Beaveridge THC	-	-	-	-	-	-
Valleyview THC	-	-	-	-	-	-
Fox Creek THC	-	-	-	-	-	-
Poplar THC	2.3	3.7	-	-	-	-

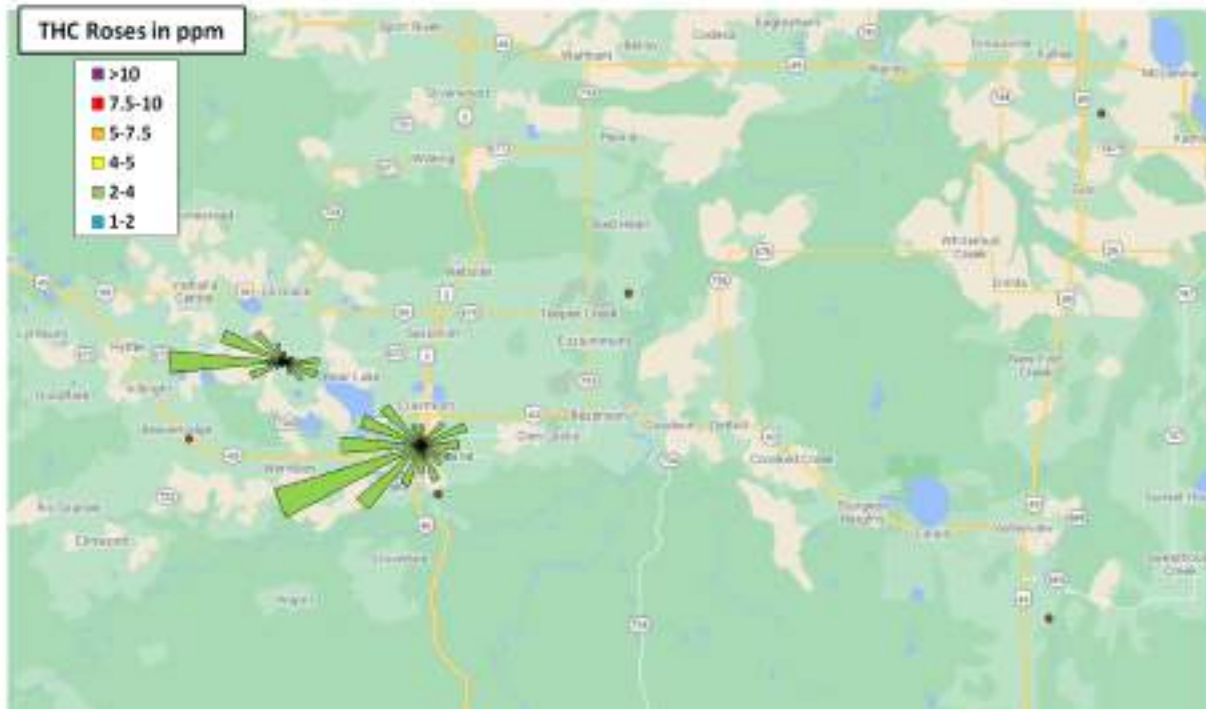
### Total Hydrocarbons in ppm



Total Hydrocarbons (THC)

Methane (CH<sub>4</sub>)

Non-Methane Hydrocarbons (NMHC)

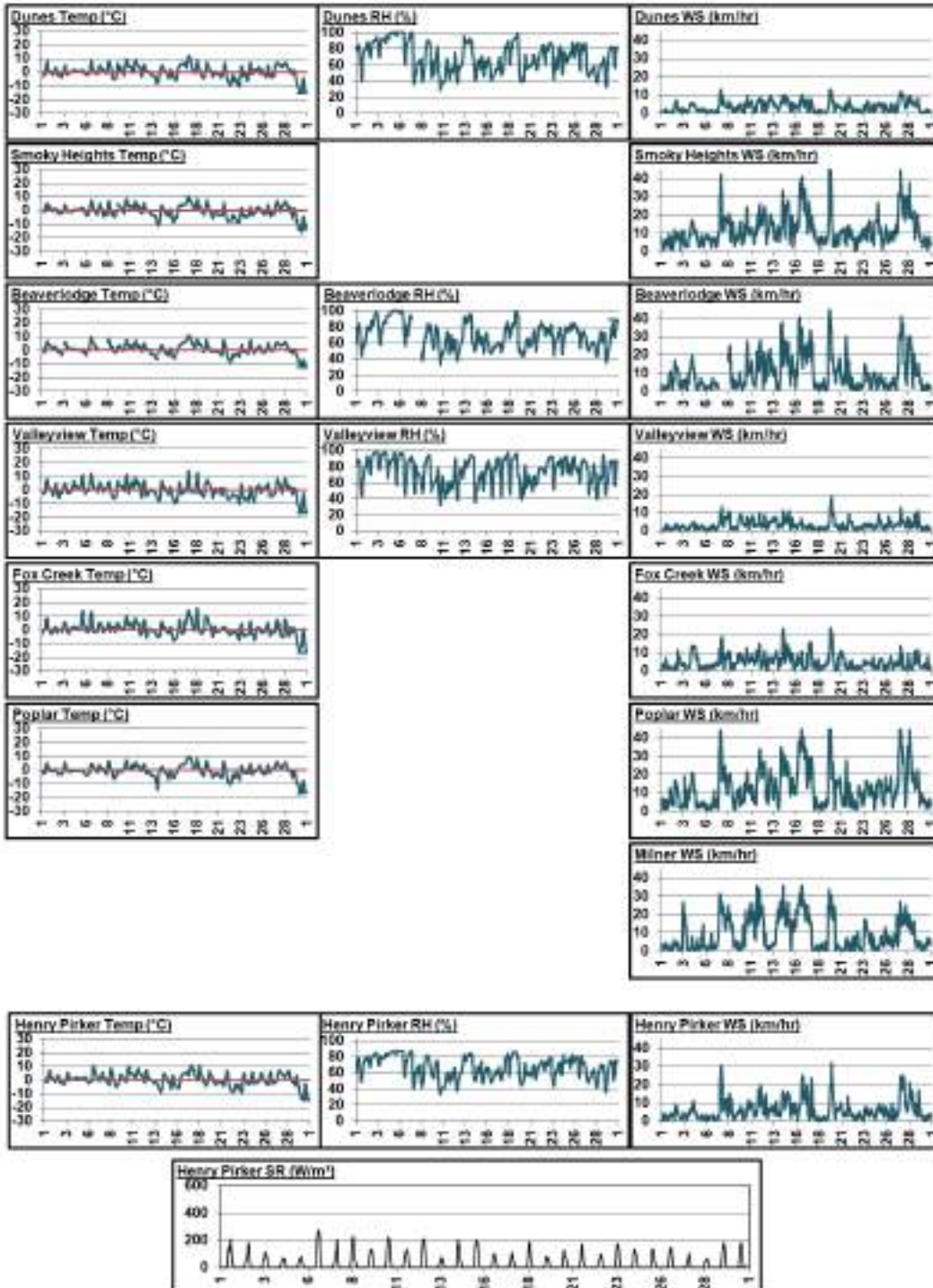




## 10.11 Meteorology Summary

November 2023 Meteorological Summary						
Station	Temp (°C)	RH (%)	SR (W/m <sup>2</sup> )	WS (km/hr)	WD (deg)	WD
Dunes	0.1	69.3	-	3.4	251	WSW
Henry Parker	0.3	66.5	25.7	6.0	250	WSW
Smoky Heights	-0.6	-	-	12.1	248	WSW
Beaverlodge	0.8	69.5	-	9.9	254	WSW
Valleyview	-0.3	74.1	-	3.4	236	SW
Fox Creek	0.5	-	-	4.9	224	WSW
Poplar	-0.8	-	-	12.8	272	W
Milner	-	-	-	9.1	256	WSW

Temp (°C) Outside Temperature  
 RH (%) Relative Humidity  
 SR (W/m<sup>2</sup>) Solar Radiation  
 WS (km/hr) Wind Speed  
 WD (deg) Wind Direction  
 WD Wind Direction



## 11 Passive Monitoring Data

### Peace Airshed Zone Association - PAZA Passive Stations for November 2023

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
<b>Duplicates</b>						
2a	Bay Tree		<b>24.5</b>			13-16-078-13 W6M
2b	Bay Tree		<b>29.3</b>			
3a	Forth Creek			<b>1.0</b>		04-13-082-07 W6M
3b	Forth Creek			<b>0.9</b>		
5a	Boone Creek	<b>0.4</b>				01-23-076-11 W6M
5b	Boone Creek	<b>0.4</b>				
16a	Beaverlodge			<b>2.7</b>		15-36-071-10 W6M
16b	Beaverlodge			<b>2.9</b>		
24a	Wembley	<b>0.7</b>				12-31-070-08 W6M
24b	Wembley	<b>0.9</b>				
35a	Jean Cote	<b>0.1</b>				12-35-079-21 W5M
35b	Jean Cote	<b>0.2</b>				
40a	McLennan			<b>1.2</b>		03-29-077-19 W5M
40b	McLennan			<b>1.2</b>		
46a	Little Smoky	<b>0.1</b>				12-01-065-21 W5M
46b	Little Smoky	<b>0.2</b>				
50a	East Prairie			<b>1.7</b>		11-13-079-08 W6M
50b	East Prairie			<b>1.6</b>		
D2a	Duvernay 2	<b>0.3</b>			<b>0.32</b>	04-33-062-20 W5M
D2b	Duvernay 2	<b>0.2</b>			<b>0.25</b>	
G3a	Girouxville 3				<b>0.14</b>	14-02-077-23 W5M
G3b	Girouxville 3				<b>0.21</b>	
K2a	Kakwa 2			<b>6.4</b>		08-13-063-05 W6M
K2b	Kakwa 2			<b>6.6</b>		
K1a	Kakwa 1	<b>0.3</b>				01-13-063-05 W6M
K1b	Kakwa 1	<b>0.2</b>				
K4a	Kakwa 4				<b>&lt;0.02</b>	06-18-063-04 W6M
K4b	Kakwa 4				<b>&lt;0.02</b>	
M5a	Milner Bridge			<b>2.1</b>		08-06-057-08 W6M
M5b	Milner Bridge			<b>2.1</b>		
M7a	Milner Wanyandie	<b>&lt;0.1</b>				11-13-058-08 W6M
M7b	Milner Wanyandie	<b>&lt;0.1</b>				
J4a	Jayar4 7-8 or 8-8 Pad			<b>1.8</b>		10-08-062-03 W6M
J4b	Jayar4 7-8 or 8-8 Pad			<b>1.1</b>		
J5a	Jayar5 Camp	<b>0.2</b>				11-08-062-03 W6M
J5b	Jayar5 Camp	<b>0.3</b>				
J1a	Jayar1 Plant				<b>&lt;0.02</b>	06-08-062-03 W6M
J1b	Jayar1 Plant				<b>0.48</b>	

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
2	Bay Tree	0.1	26.9	1.5	-	13-16-078-13 W6M
3	Forth Creek	0.3	-	0.9	-	04-13-082-07 W6M
5	Boone Creek	0.4	-	1.0	-	01-23-076-11 W6M
7	Steepprock Creek	0.3	-	0.8	-	09-35-072-13 W6M
9	Spirit River	0.3	-	1.5	-	08-12-079-07 W6M
11	Webber Creek	0.3	-	3.7	-	09-36-074-09 W6M
12	Hythe	0.3	-	1.7	-	14-36-072-11 W6M
14	Sylvester	0.1	-	0.8	-	08-06-069-12 W6M
16	Beaverlodge	0.5	-	2.8	-	15-36-071-10 W6M
17	Poplar	0.5	-	2.8	-	13-06-073-08 W6M
18	Saddle Hills	0.3	-	1.2	-	04-25-074-07 W6M
19	Wanham	0.4	-	1.4	-	16-22-077-03 W6M
21	Eaglesham	0.1	-	0.8	-	16-21-079-25 W5M
24	Wembley	0.8	-	2.2	-	12-31-070-08 W6M
25	Pinto Creek	0.1	-	0.9	-	04-24-069-11 W6M
27	Grande Prairie I	0.7	-	7.1	-	08-15-071-06 W6M
29	Smoky Heights	0.4	-	1.9	-	04-06-075-02 W6M
30	Fitzsimmons	0.2	-	1.9	-	15-36-072-03 W6M
32	Gold Creek	0.1	-	4.7	-	06-33-067-05 W6M
35	Jean Cote	0.2	-	1.2	-	12-35-079-21 W5M
36	Guy	0.2	-	0.1	0.0	03-04-076-22 W5M
37	Crooked Creek	0.2	22.1	2.1	-	16-01-071-26 W5M
39	Clouston Creek	0.2	-	1.2	-	12-01-073-22 W5M
40	McLennan	0.2	-	1.2	-	03-29-077-19 W5M
42	Sunset House	0.3	-	1.1	-	05-32-070-19 W5M
44	Peavine	0.1	-	1.3	-	03-05-079-15 W5M
46	Little Smoky	0.2	-	5.2	-	12-01-065-21 W5M
47	Kinuso	0.1	33.1	1.0	-	12-10-073-10 W5M
48	Deer Mountain	0.1	-	0.9	-	15-22-068-09 W5M
49	Henry Pirker	0.7	-	7.1	-	17-26-071-06 W6M
50	East Prairie	0.2	-	1.6	-	11-13-079-08 W6M
D1	Duvernay 1	0.3	-	-	0.28	04-33-062-20 W5M
D2	Duvernay 2	0.2	-	-	0.28	04-33-062-20 W5M
D3	Duvernay 3	1.0	-	-	0.33	04-33-062-20 W5M
D4	Duvernay 4	0.4	-	-	0.34	04-33-062-20 W5M
G3	Girouxville 3	-	-	-	0.18	14-02-077-23 W5M
G4	Girouxville 4	-	-	-	0.14	04-08-077-22 W5M
K1	Kakwa 1	0.3	-	3.4	<0.02	01-13-063-05 W6M
K2	Kakwa 2	1.0	-	6.5	<0.02	08-13-063-05 W6M
K3	Kakwa 3	3.3	-	8.9	0.66	12-18-063-04 W6M
K4	Kakwa 4	3.1	-	11.6	<0.02	06-18-063-04 W6M
M1	Milner Pipeline	<0.1	-	3.0	-	12-14-058-08 W6M
M2	Milner Bridge	<0.1	-	2.1	-	08-06-057-08 W6M
M3	Milner Wanyandie	<0.1	-	1.3	-	11-13-058-08 W6M
M4	Milner Ambient Trailer	<0.1	-	2.8	-	09-15-058-08 W6M
M5	Milner Powerline	<0.1	-	6.5	-	06-14-058-08 W6M
J1	Jayar1 Plant	0.1	-	1.8	NA	06-08-062-03 W6M
J2	Jayar2 14-8	0.9	-	3.1	0.10	07-08-062-03 W6M
J3	Jayar3 Bone Yard	1.3	-	1.6	0.23	14-08-062-03 W6M
J4	Jayar4 7-8 or 8-8 Pad	0.3	-	1.5	0.16	10-08-062-03 W6M
J5	Jayar5 Camp	0.3	-	5.4	0.09	11-08-062-03 W6M

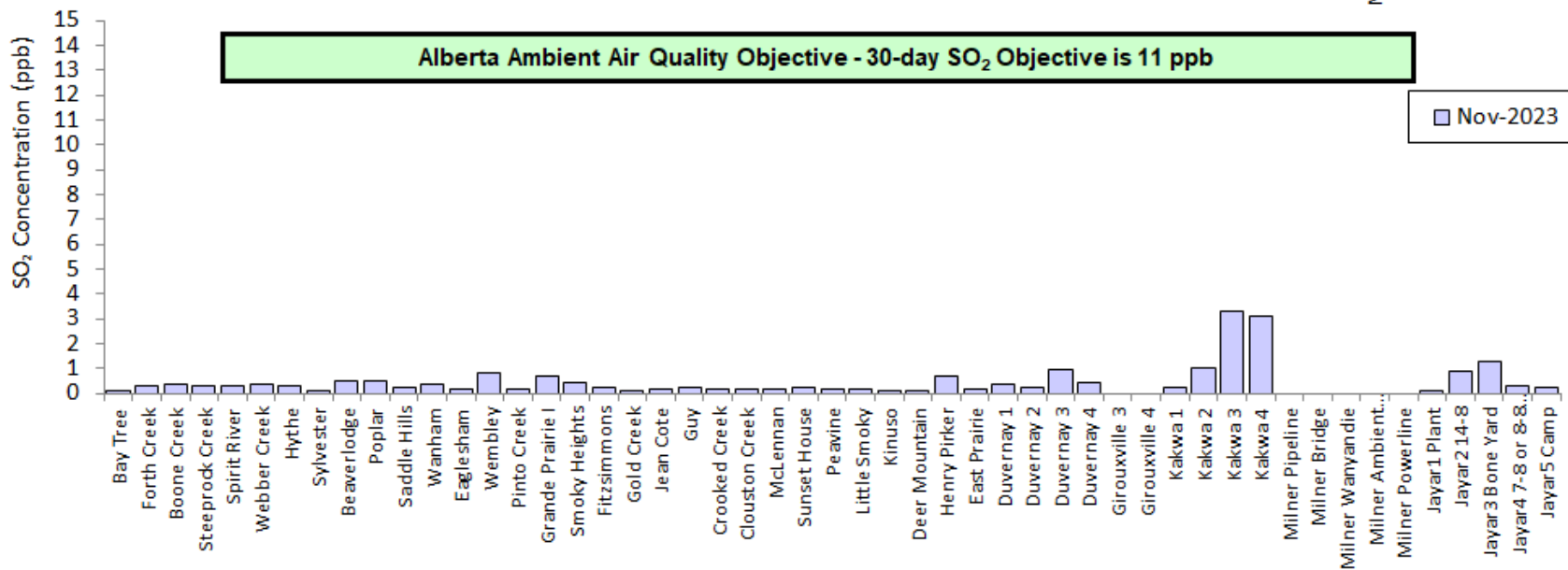
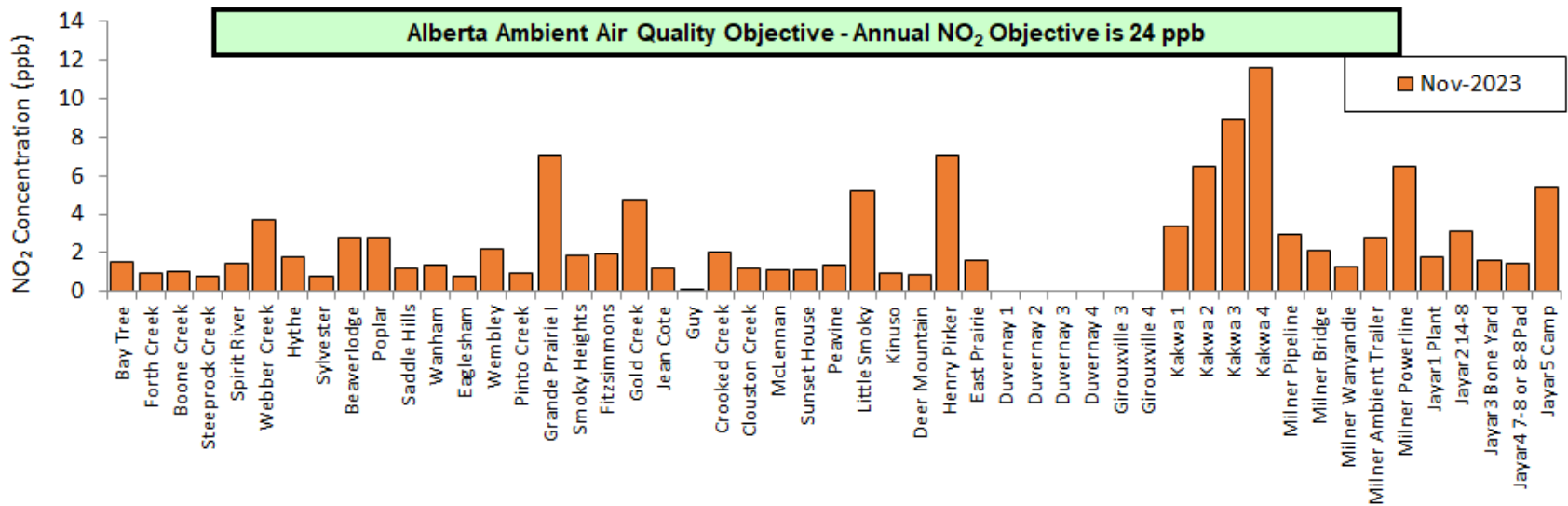
Note: Duplicate Jayar1 Plant consisted of one sample <0.02ppb and other at 0.48ppb, average duplicate listed as “NA”

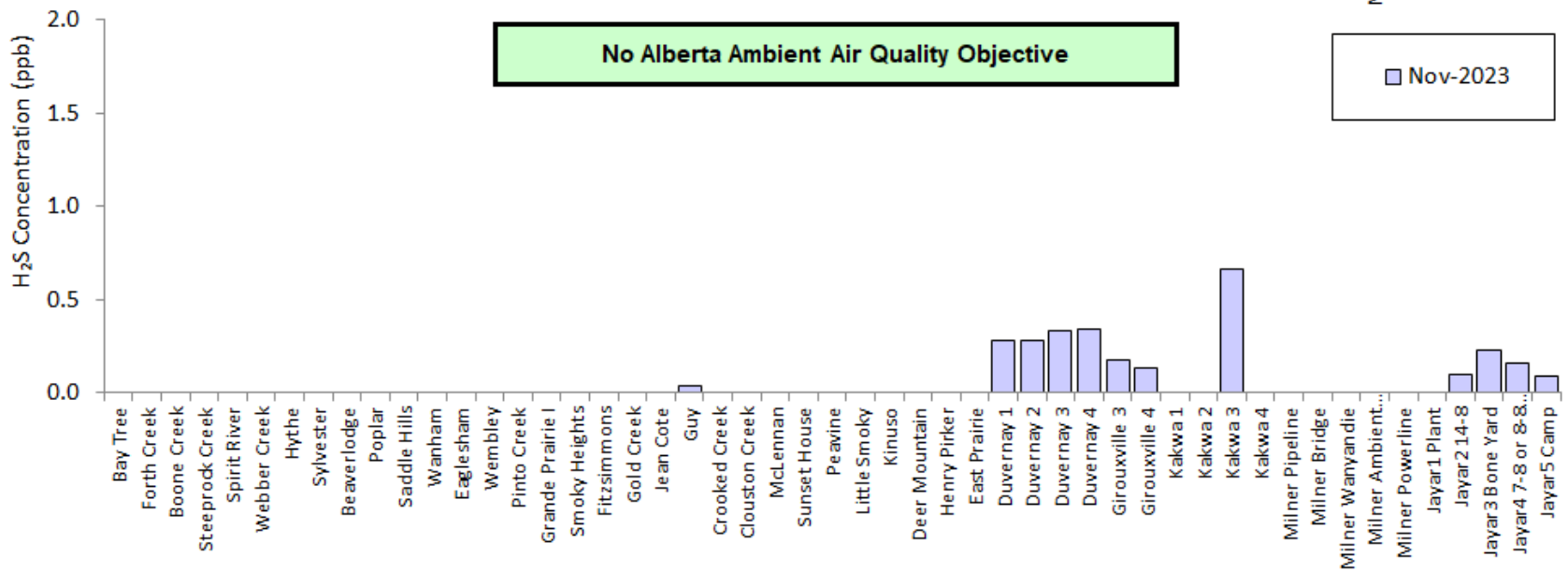
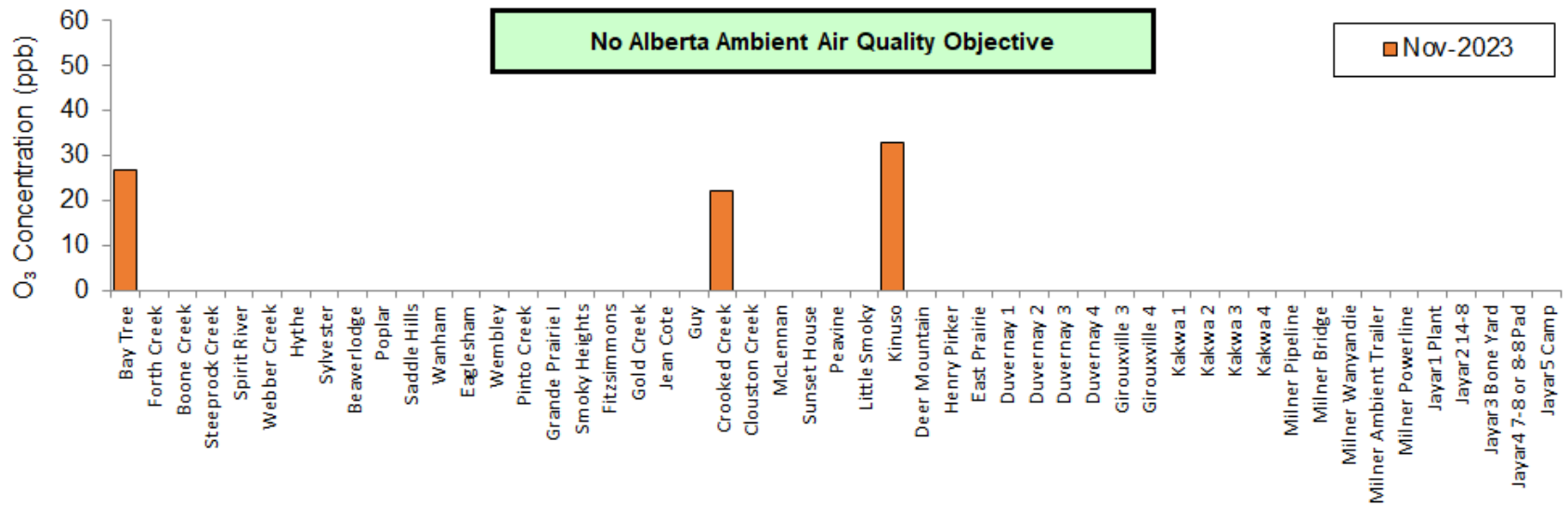
### Passive Summary for November 2023

Stats	Sulphur Dioxide SO <sub>2</sub> ppb	Ozone O <sub>3</sub> ppb	Nitrogen Dioxide NO <sub>2</sub> ppb	Hydrogen Sulphide H <sub>2</sub> S ppb
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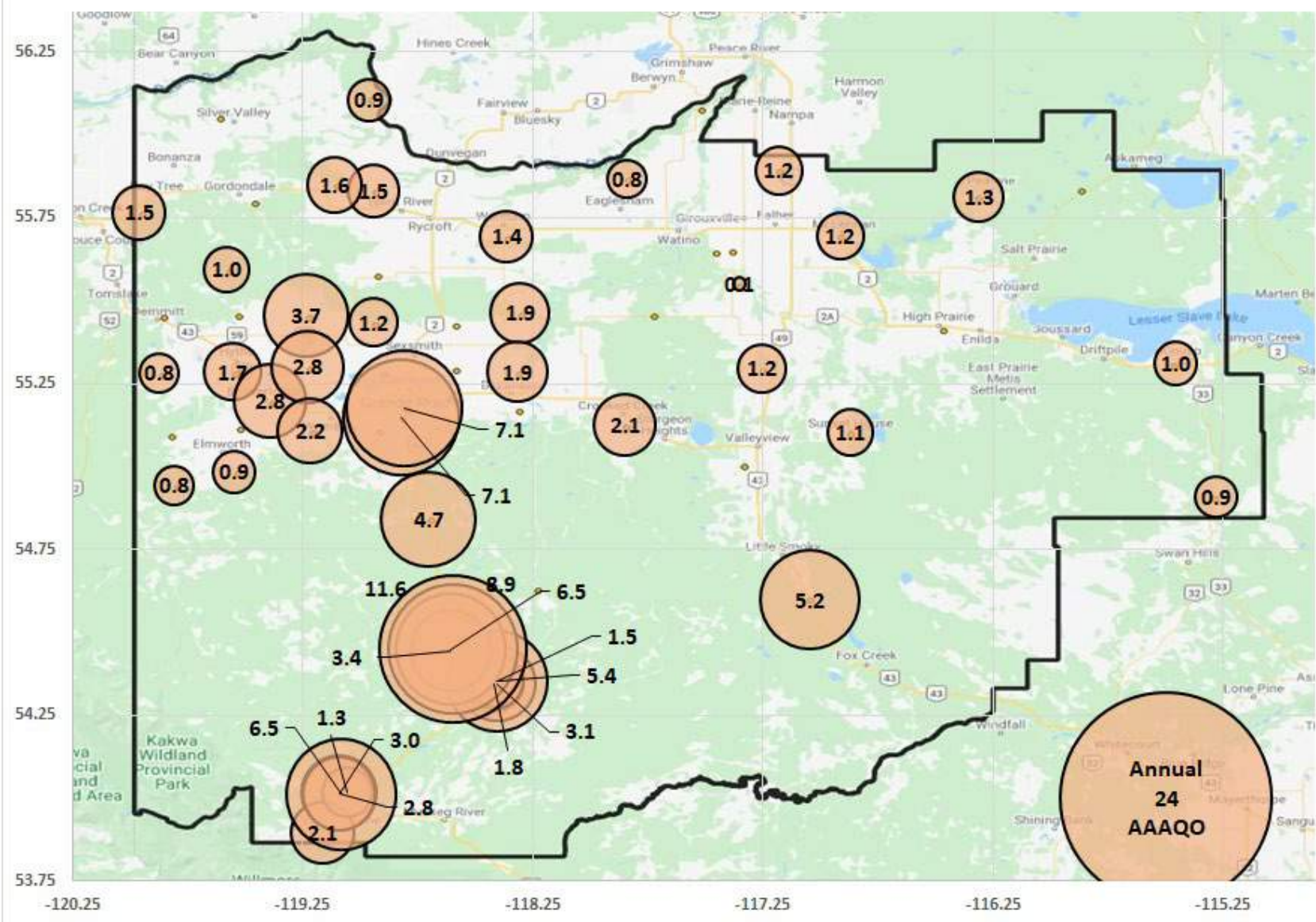
Passive Summary for November 2023 (PAZA)				
<b>Mean</b>	0.5	27.4	2.7	0.2
<b>Standard Deviation</b>	0.7	5.5	2.5	0.2
<b>Minimum</b>	0.1	22.1	0.1	0.0
	Sylvester (#14)	Crooked Creek (#37)	Guy (#36)	Guy (#36)
<b>Maximum</b>	3.3	33.1	11.6	0.7
	Kakwa 3 (#K3)	Kinuso (#47)	Kakwa 4 (#K4)	Kakwa 3 (#K3)

Continuous and Passive Monitoring Comparison				
<b>PAZA Beaverlodge Station</b>	<b>0.6</b>	<b>24.1</b>	<b>4.6</b>	<b>-</b>
<b>Beaverlodge Passive (#16)</b>	<b>0.5</b>	<b>-</b>	<b>2.8</b>	<b>-</b>
<b>PAZA Henry Pirker Station</b>	<b>0.6</b>	<b>16.7</b>	<b>11.7</b>	<b>0.2</b>
<b>Henry Pirker passive (#49)</b>	<b>0.7</b>	<b>-</b>	<b>7.1</b>	<b>-</b>
<b>Milner Station</b>	<b>-</b>	<b>-</b>	<b>2.9</b>	<b>-</b>
<b>Milner passive</b>	<b>&lt;0.1</b>	<b>-</b>	<b>2.8</b>	<b>-</b>

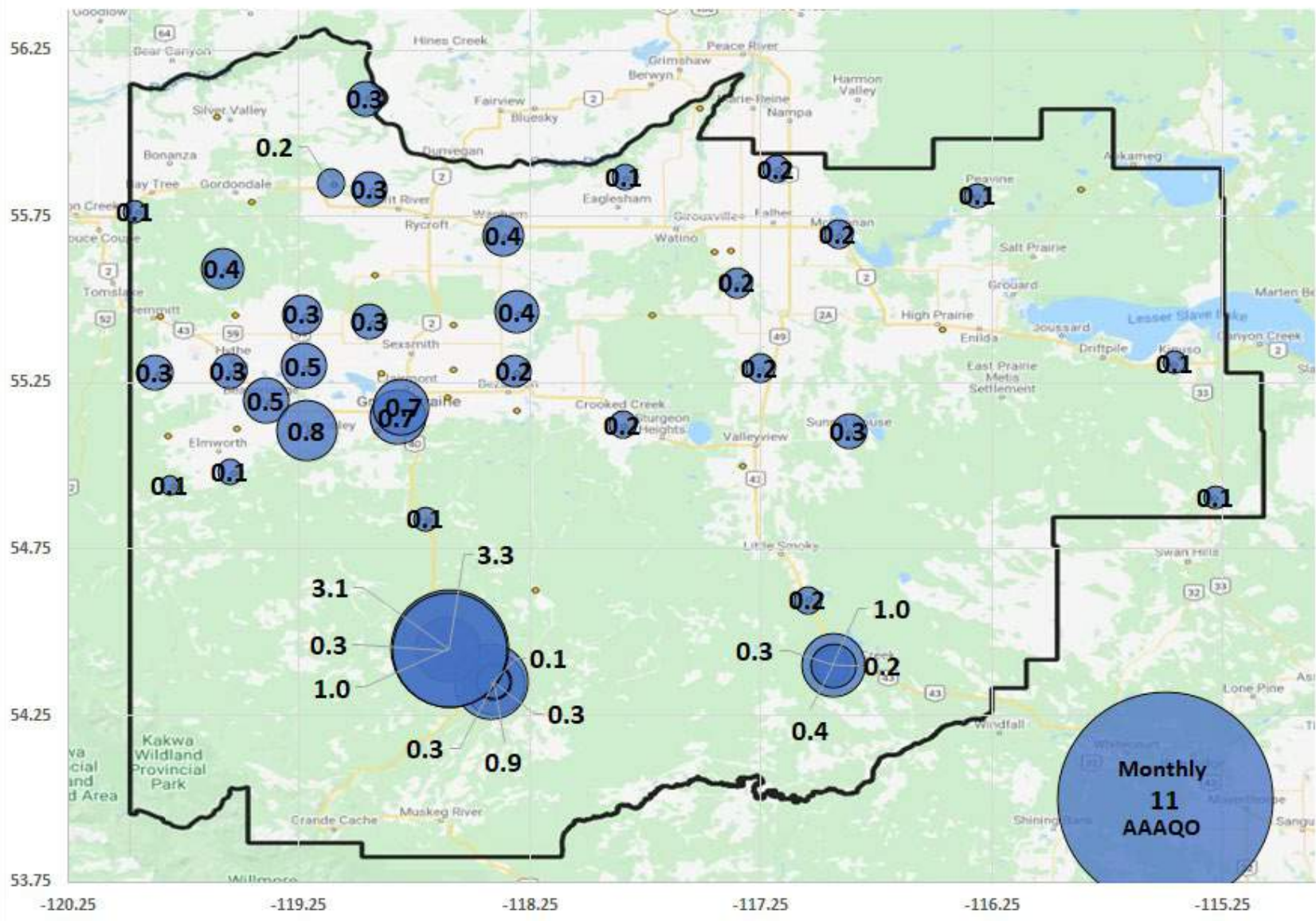




### NO<sub>2</sub> Monthly Average (units in ppb)

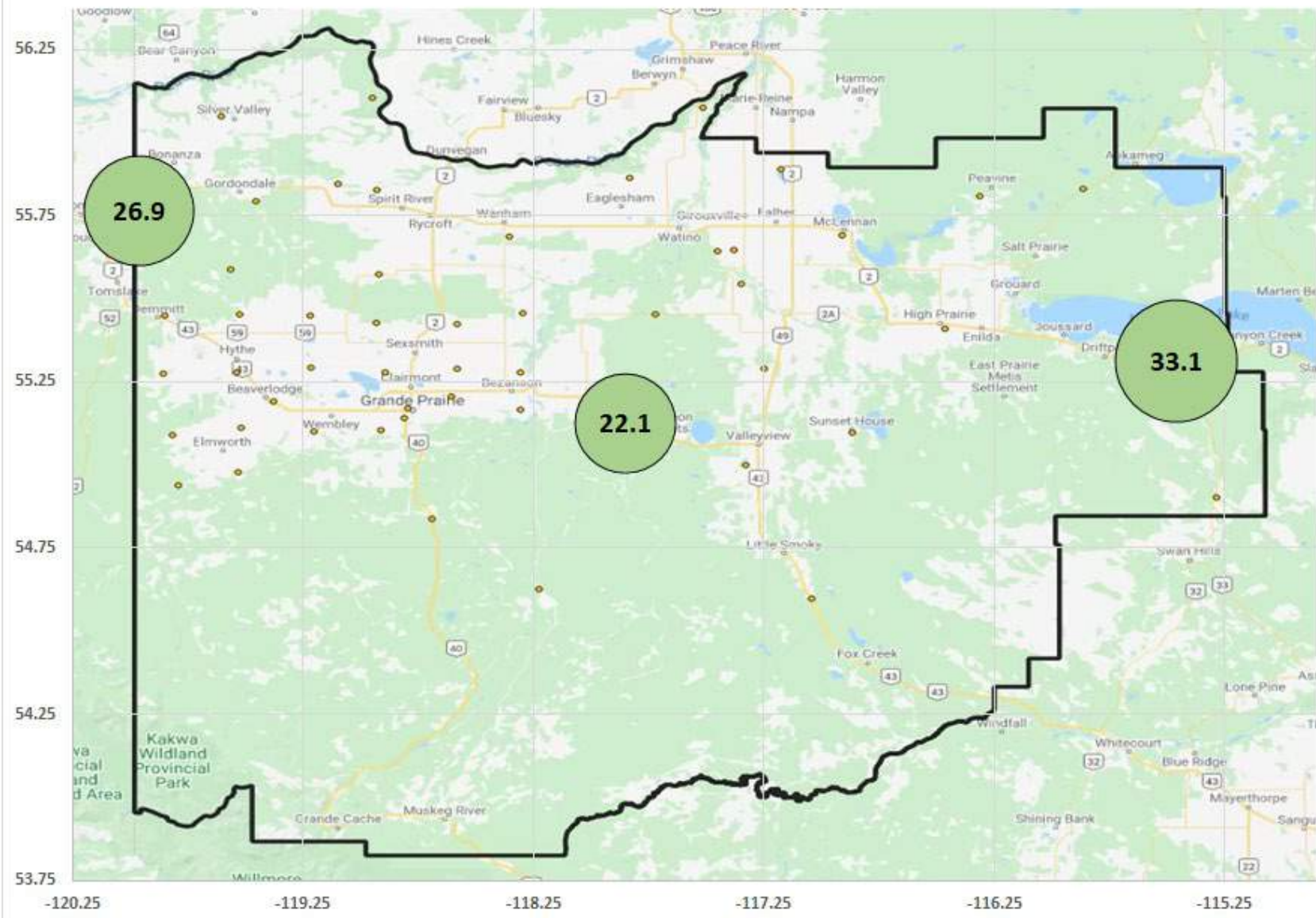


### SO<sub>2</sub> Monthly Average (units in ppb)

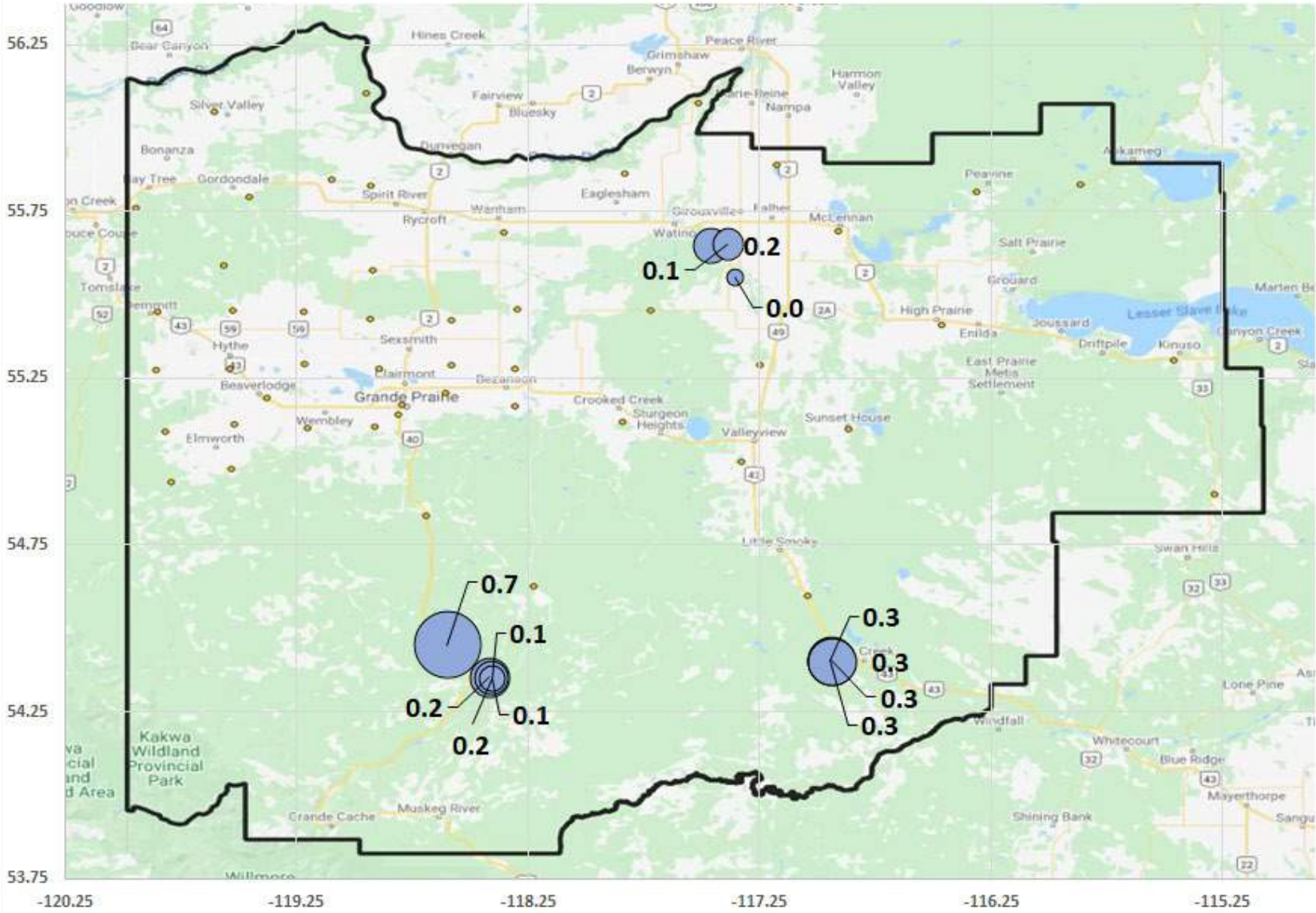




### O<sub>3</sub> Monthly Average (units in ppb)



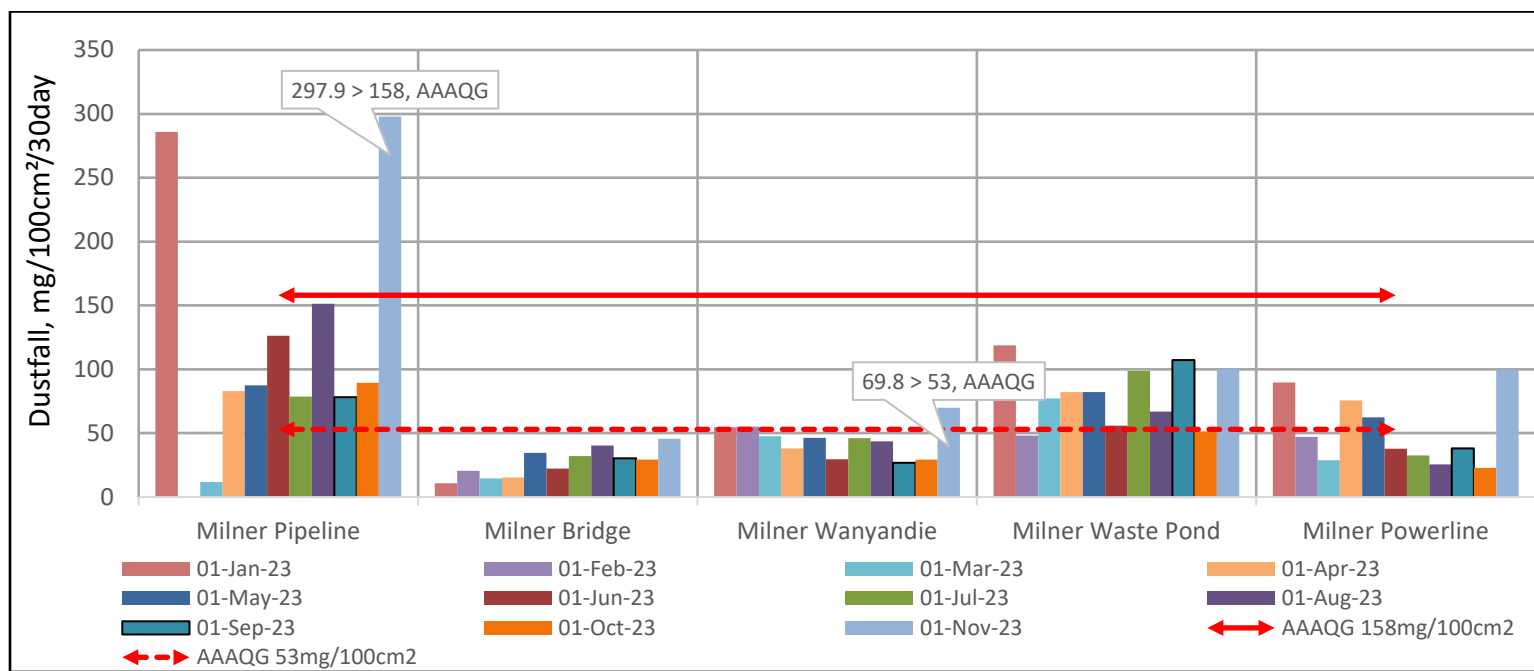
### H<sub>2</sub>S Monthly Average (units in ppb)



## 12 Dustfall Monitoring Data

**Milner Dustfall Samples November 2023**

Exposure Month	Year	Sample	Total Dustfall (30 day) mg/100cm <sup>2</sup> /30day	Fixed Dustfall (30 day) mg/100cm <sup>2</sup> /30day	Exposure days	Field Notes
November	2023	Milner Pipeline	297.9	108.7	29	> 158 AAAQG (ref 423404)
November	2023	Milner Bridge	45.6	19.4	29	
November	2023	Milner Wanyandie	69.8	34.9	29	> 53 AAAQG (ref 423405)
November	2023	Milner Waste Pond	100.3	24.3	29	
November	2023	Milner Powerline	99.6	55.5	29	
November	2023	Milner Powerline Dup	94.2	45.6	29	RPD= 6% / 20%



## End of Report



# Peace Airshed Zone Association

## Ambient Air Monitoring Report

November 2023