



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

August 2023

September 30, 2023

Alberta Environment and Parks

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

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

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

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

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Program Manager
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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, Donnelly (station was decommissioned for move), Poplar-Portable and Milner.
Detailed Summaries are included in the report.

Calibration and Data Submission:

Monthly report, hourly data and calibration reports for August 2023 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	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:

- 160 PM_{2.5} 1hr readings above AAAQG and 38 PM_{2.5} 24hr readings above AAAQO

1-hr readings above the PM_{2.5} AAAQG (80 µg/m³) was recorded as:

Site	Reference Number	Date	From MST	To MST	Average (µg/m ³)	WS km/hr	WD degrees
Beaverlodge	418444	Aug-24-2023	10:00	11:00	101.0	6.2	299
Beaverlodge	418444	Aug-24-2023	11:00	12:00	110.9	6.6	306
Beaverlodge	418444	Aug-24-2023	12:00	13:00	107.8	5.4	271
Beaverlodge	418444	Aug-24-2023	13:00	14:00	99.3	5.8	262
Beaverlodge	418872	Aug-28-2023	03:00	04:00	83.3	3.6	101
Beaverlodge	418872	Aug-28-2023	04:00	05:00	90.3	3.5	75
Beaverlodge	418872	Aug-28-2023	05:00	06:00	95.6	3.7	83
Beaverlodge	418872	Aug-28-2023	06:00	07:00	99.4	3.7	103
Beaverlodge	418872	Aug-28-2023	07:00	08:00	94.8	4.1	122
Beaverlodge	418872	Aug-28-2023	08:00	09:00	85.2	2.8	125
Beaverlodge	418872	Aug-28-2023	14:00	15:00	99.2	12.8	253
Beaverlodge	418872	Aug-28-2023	15:00	16:00	122.8	15.2	256
Beaverlodge	418872	Aug-28-2023	16:00	17:00	110.8	11.7	254
Beaverlodge	418872	Aug-28-2023	17:00	18:00	112.3	6.8	240
Beaverlodge	418872	Aug-28-2023	18:00	19:00	118.3	8.0	266
Beaverlodge	418872	Aug-28-2023	19:00	20:00	119.6	5.0	286
Beaverlodge	418872	Aug-28-2023	20:00	21:00	115.0	2.3	69
Beaverlodge	418872	Aug-28-2023	21:00	22:00	110.9	3.2	81
Beaverlodge	418872	Aug-28-2023	22:00	23:00	95.0	4.8	64
Beaverlodge	418872	Aug-29-2023	23:00	00:00	80.1	2.4	104
Beaverlodge	418872	Aug-29-2023	16:00	17:00	81.3	7.6	48
Beaverlodge	418872	Aug-29-2023	17:00	18:00	121.1	6.3	38
Beaverlodge	418872	Aug-29-2023	18:00	19:00	129.3	4.5	61
Beaverlodge	418872	Aug-29-2023	19:00	20:00	120.8	5.1	46
Beaverlodge	418872	Aug-29-2023	20:00	21:00	122.5	3.8	5
Beaverlodge	418872	Aug-29-2023	21:00	22:00	122.8	3.3	0
Beaverlodge	418872	Aug-29-2023	22:00	23:00	118.2	5.6	359
Beaverlodge	418872	Aug-30-2023	23:00	00:00	117.6	3.9	349
Beaverlodge	418872	Aug-30-2023	00:00	01:00	112.9	1.6	73
Beaverlodge	418872	Aug-30-2023	01:00	02:00	117.2	4.1	55
Beaverlodge	418872	Aug-30-2023	02:00	03:00	100.8	4.7	48
Beaverlodge	418872	Aug-30-2023	03:00	04:00	94.8	2.4	75
Beaverlodge	418872	Aug-30-2023	04:00	05:00	88.0	5.5	38
Beaverlodge	418872	Aug-30-2023	06:00	07:00	82.1	3.3	28
Beaverlodge	418872	Aug-30-2023	07:00	08:00	85.7	2.0	245
Beaverlodge	418872	Aug-30-2023	08:00	09:00	82.9	2.2	216
Beaverlodge	418872	Aug-30-2023	09:00	10:00	92.8	2.9	188
Beaverlodge	418872	Aug-30-2023	10:00	11:00	107.0	7.4	275
Beaverlodge	418872	Aug-30-2023	11:00	12:00	117.8	15.7	282
Beaverlodge	418872	Aug-30-2023	12:00	13:00	110.2	18.4	282
Beaverlodge	418872	Aug-30-2023	13:00	14:00	102.9	19.5	283
Beaverlodge	418872	Aug-30-2023	14:00	15:00	102.6	20.1	272
Beaverlodge	418872	Aug-30-2023	15:00	16:00	92.7	23.2	274
Dunes	418445	Aug-24-2023	15:00	16:00	108.8	4.3	203
Dunes	418445	Aug-24-2023	16:00	17:00	92.1	3.6	203
Dunes	418445	Aug-24-2023	17:00	18:00	85.7	2.7	188
Dunes	418445	Aug-24-2023	18:00	19:00	80.8	2.9	171

Site	Reference Number	Date	From MST	To MST	Average ($\mu\text{g}/\text{m}^3$)	WS km/hr	WD degrees
Dunes	418445	Aug-24-2023	20:00	21:00	80.6	3.2	166
Dunes	418445	Aug-24-2023	21:00	22:00	83.1	3.9	170
Dunes	418873	Aug-29-2023	22:00	23:00	92.9	0.5	292
Dunes	418873	Aug-30-2023	23:00	00:00	92.1	0.5	258
Dunes	418873	Aug-30-2023	00:00	01:00	136.5	1.3	233
Dunes	418873	Aug-30-2023	01:00	02:00	126.9	0.7	4
Dunes	418873	Aug-30-2023	02:00	03:00	101.1	1.1	275
Henry Pirker	418446	Aug-24-2023	10:00	11:00	88.6	6.2	290
Henry Pirker	418446	Aug-24-2023	11:00	12:00	95.8	7.9	287
Henry Pirker	418446	Aug-24-2023	12:00	13:00	106.3	6.5	290
Henry Pirker	418446	Aug-24-2023	13:00	14:00	109.9	2.5	263
Henry Pirker	418446	Aug-24-2023	14:00	15:00	103.0	3.9	184
Henry Pirker	418446	Aug-24-2023	15:00	16:00	80.9	5.5	192
Henry Pirker	418872	Aug-28-2023	15:00	16:00	93.6	8.3	231
Henry Pirker	418872	Aug-28-2023	16:00	17:00	111.0	7.1	221
Henry Pirker	418872	Aug-28-2023	17:00	18:00	112.4	4.3	193
Henry Pirker	418872	Aug-28-2023	18:00	19:00	108.2	4.6	154
Henry Pirker	418872	Aug-28-2023	19:00	20:00	108.7	5.2	143
Henry Pirker	418872	Aug-28-2023	20:00	21:00	113.5	4.9	149
Henry Pirker	418872	Aug-28-2023	21:00	22:00	114.1	3.8	149
Henry Pirker	418872	Aug-28-2023	22:00	23:00	115.6	1.3	115
Henry Pirker	418872	Aug-29-2023	23:00	00:00	110.7	2.1	127
Henry Pirker	418872	Aug-29-2023	00:00	01:00	110.8	0.8	83
Henry Pirker	418872	Aug-29-2023	01:00	02:00	113.6	0.9	164
Henry Pirker	418872	Aug-29-2023	02:00	03:00	109.4	0.2	113
Henry Pirker	418872	Aug-29-2023	03:00	04:00	103.8	0.7	147
Henry Pirker	418872	Aug-29-2023	04:00	05:00	97.8	0.3	167
Henry Pirker	418872	Aug-29-2023	05:00	06:00	84.0	0.7	260
Henry Pirker	418872	Aug-29-2023	15:00	16:00	89.5	2.5	214
Henry Pirker	418872	Aug-29-2023	16:00	17:00	126.1	4.4	270
Henry Pirker	418872	Aug-29-2023	17:00	18:00	143.1	4.9	311
Henry Pirker	418872	Aug-29-2023	18:00	19:00	187.4	3.1	315
Henry Pirker	418872	Aug-29-2023	19:00	20:00	213.6	0.6	46
Henry Pirker	418872	Aug-29-2023	20:00	21:00	216.5	0.8	331
Henry Pirker	418872	Aug-29-2023	21:00	22:00	219.1	2.2	299
Henry Pirker	418872	Aug-29-2023	22:00	23:00	227.2	1.7	316
Henry Pirker	418872	Aug-30-2023	23:00	00:00	212.8	2.0	290
Henry Pirker	418872	Aug-30-2023	00:00	01:00	201.2	3.5	254
Henry Pirker	418872	Aug-30-2023	01:00	02:00	160.6	2.7	295
Henry Pirker	418872	Aug-30-2023	02:00	03:00	165.8	2.5	301
Henry Pirker	418872	Aug-30-2023	03:00	04:00	161.0	2.1	306
Henry Pirker	418872	Aug-30-2023	04:00	05:00	137.0	2.0	303
Henry Pirker	418872	Aug-30-2023	05:00	06:00	123.1	2.6	291
Henry Pirker	418872	Aug-30-2023	06:00	07:00	95.8	3.2	293
Henry Pirker	418872	Aug-30-2023	07:00	08:00	87.4	1.9	271
Henry Pirker	418872	Aug-30-2023	09:00	10:00	86.9	8.2	238
Henry Pirker	418872	Aug-30-2023	10:00	11:00	104.5	10.3	255
Henry Pirker	418872	Aug-30-2023	11:00	12:00	109.6	10.3	274
Henry Pirker	418872	Aug-30-2023	12:00	13:00	111.1	11.6	272
Henry Pirker	418872	Aug-30-2023	13:00	14:00	109.5	12.8	272
Henry Pirker	418872	Aug-30-2023	14:00	15:00	101.9	14.2	263
Henry Pirker	418872	Aug-30-2023	15:00	16:00	93.6	14.6	272

Site	Reference Number	Date	From MST	To MST	Average ($\mu\text{g}/\text{m}^3$)	WS km/hr	WD degrees
Henry Pirker	418872	Aug-30-2023	16:00	17:00	91.5	15.6	257
Milner	417820	Aug-07-2023	07:00	08:00	96.4	0.4	232
Milner	418170	Aug-17-2023	14:00	15:00	90.8	20.7	235
Milner	418452	Aug-21-2023	03:00	04:00	81.4	0.1	293
Milner	418452	Aug-22-2023	02:00	03:00	95.0	3.1	257
Milner	418875	Aug-28-2023	16:00	17:00	89.5	0.2	64
Milner	418875	Aug-30-2023	12:00	13:00	81.5	5.3	236
Milner	418875	Aug-30-2023	13:00	14:00	89.4	3.2	239
Milner	418875	Aug-30-2023	14:00	15:00	93.7	0.8	101
Milner	418875	Aug-30-2023	15:00	16:00	87.6	1.2	260
Poplar	418877	Aug-29-2023	15:00	16:00	84.7	7.2	332
Poplar	418877	Aug-29-2023	16:00	17:00	104.0	6.1	315
Poplar	418877	Aug-29-2023	17:00	18:00	96.7	1.6	15
Poplar	418877	Aug-29-2023	18:00	19:00	103.1	2.4	125
Poplar	418877	Aug-29-2023	19:00	20:00	123.9	1.7	273
Poplar	418877	Aug-29-2023	20:00	21:00	120.5	3.7	275
Poplar	418877	Aug-29-2023	21:00	22:00	92.6	4.8	313
Poplar	418877	Aug-29-2023	22:00	23:00	101.7	7.3	329
Poplar	418877	Aug-30-2023	23:00	00:00	92.9	5.4	326
Poplar	418877	Aug-30-2023	00:00	01:00	81.6	4.5	336
Smoky Heights	418448	Aug-24-2023	05:00	06:00	87.2	9.3	323
Smoky Heights	418448	Aug-24-2023	06:00	07:00	121.4	12.8	300
Smoky Heights	418448	Aug-24-2023	07:00	08:00	123.0	9.0	312
Smoky Heights	418448	Aug-24-2023	08:00	09:00	112.4	2.8	347
Smoky Heights	418448	Aug-24-2023	09:00	10:00	126.8	1.0	19
Smoky Heights	418448	Aug-24-2023	10:00	11:00	137.0	1.5	112
Smoky Heights	418448	Aug-24-2023	11:00	12:00	133.9	3.8	156
Smoky Heights	418448	Aug-24-2023	12:00	13:00	161.5	4.1	185
Smoky Heights	418448	Aug-24-2023	13:00	14:00	171.5	6.8	203
Smoky Heights	418448	Aug-24-2023	14:00	15:00	121.7	9.5	204
Smoky Heights	418874	Aug-28-2023	18:00	19:00	88.6	5.6	164
Smoky Heights	418874	Aug-28-2023	19:00	20:00	110.6	2.8	181
Smoky Heights	418874	Aug-28-2023	20:00	21:00	117.5	2.9	218
Smoky Heights	418874	Aug-28-2023	21:00	22:00	110.3	5.5	232
Smoky Heights	418874	Aug-28-2023	22:00	23:00	98.5	5.6	229
Smoky Heights	418874	Aug-29-2023	00:00	01:00	82.0	6.5	241
Smoky Heights	418874	Aug-29-2023	01:00	02:00	85.4	6.3	220
Smoky Heights	418874	Aug-29-2023	02:00	03:00	89.7	7.1	220
Smoky Heights	418874	Aug-29-2023	03:00	04:00	93.1	8.1	245
Smoky Heights	418874	Aug-29-2023	18:00	19:00	115.9	1.1	292
Smoky Heights	418874	Aug-29-2023	19:00	20:00	110.4	3.9	316
Smoky Heights	418874	Aug-29-2023	20:00	21:00	117.8	4.5	324
Smoky Heights	418874	Aug-29-2023	21:00	22:00	106.2	5.2	303
Smoky Heights	418874	Aug-29-2023	22:00	23:00	112.2	6.3	277
Smoky Heights	418874	Aug-30-2023	23:00	00:00	219.7	7.8	270
Smoky Heights	418874	Aug-30-2023	00:00	01:00	211.0	4.0	231
Smoky Heights	418874	Aug-30-2023	01:00	02:00	175.8	7.6	194
Smoky Heights	418874	Aug-30-2023	02:00	03:00	181.4	5.6	210
Smoky Heights	418874	Aug-30-2023	03:00	04:00	166.4	8.0	199
Smoky Heights	418874	Aug-30-2023	04:00	05:00	155.4	8.2	197
Smoky Heights	418874	Aug-30-2023	05:00	06:00	119.6	4.8	209
Smoky Heights	418874	Aug-30-2023	11:00	12:00	83.4	6.9	218

Site	Reference Number	Date	From MST	To MST	Average ($\mu\text{g}/\text{m}^3$)	WS km/hr	WD degrees
Smoky Heights	418874	Aug-30-2023	12:00	13:00	119.0	6.1	250
Smoky Heights	418874	Aug-30-2023	13:00	14:00	232.3	7.2	286
Smoky Heights	418874	Aug-30-2023	14:00	15:00	228.0	9.1	294
Smoky Heights	418874	Aug-30-2023	15:00	16:00	201.7	9.4	300
Smoky Heights	418874	Aug-30-2023	16:00	17:00	149.9	8.7	300
Smoky Heights	418874	Aug-30-2023	17:00	18:00	133.2	4.2	278
Smoky Heights	418874	Aug-30-2023	18:00	19:00	108.9	8.2	237
Smoky Heights	418874	Aug-31-2023	20:00	21:00	86.4	10.7	272
Smoky Heights	418874	Aug-31-2023	21:00	22:00	115.7	12.0	271

24-hr readings above the daily PM_{2.5} AAAQO ($29 \mu\text{g}/\text{m}^3$) as:

Site	Reference Number	Date	Day average ($\mu\text{g}/\text{m}^3$)	WS km/hr	WD degrees
Beaverlodge	418444	August 24, 2023	58.3	8.0	304
Beaverlodge	418444	August 25, 2023	47.8	5.1	141
Beaverlodge	418444	August 26, 2023	38.7	8.4	254
Beaverlodge	418444	August 27, 2023	57.3	4.9	195
Beaverlodge	418872	August 28, 2023	91.3	5.7	215
Beaverlodge	418872	August 29, 2023	73.8	4.1	64
Beaverlodge	418872	August 30, 2023	77.0	10.5	272
Dunes	418445	August 24, 2023	55.9	3.9	253
Dunes	418445	August 25, 2023	29.3	1.8	168
Dunes	418445	August 27, 2023	33.5	3.1	221
Dunes	418873	August 28, 2023	52.0	1.9	194
Dunes	418873	August 29, 2023	57.8	1.5	203
Dunes	418873	August 30, 2023	55.0	3.6	272
Henry Pirker	418446	August 24, 2023	63.2	6.0	277
Henry Pirker	418446	August 25, 2023	43.9	3.1	154
Henry Pirker	418446	August 26, 2023	37.9	6.8	250
Henry Pirker	418446	August 27, 2023	49.5	5.0	225
Henry Pirker	418872	August 28, 2023	84.0	4.2	205
Henry Pirker	418872	August 29, 2023	114.4	2.4	232
Henry Pirker	418872	August 30, 2023	93.7	9.1	260
Henry Pirker	418872	August 31, 2023	34.4	8.8	274
Milner	418170	August 17, 2023	48.0	13.7	252
Milner	418452	August 21, 2023	30.8	2.2	63
Milner	418875	August 28, 2023	41.1	3.0	254
Milner	418875	August 30, 2023	54.2	1.9	261
Poplar	418447	August 24, 2023	37.4	8.2	291
Poplar	418447	August 27, 2023	38.0	9.9	271
Poplar	418877	August 28, 2023	57.7	6.2	259
Poplar	418877	August 29, 2023	71.3	4.6	319
Poplar	418877	August 30, 2023	51.5	16.6	285
Smoky Heights	418448	August 24, 2023	83.0	7.8	258
Smoky Heights	418448	August 25, 2023	29.7	7.0	174

Site	Reference Number	Date	Day average ($\mu\text{g}/\text{m}^3$)	WS km/hr	WD degrees
Smoky Heights	418448	August 26, 2023	33.2	11.3	245
Smoky Heights	418448	August 27, 2023	37.0	11.6	226
Smoky Heights	418874	August 28, 2023	69.3	9.9	215
Smoky Heights	418874	August 29, 2023	77.9	6.9	224
Smoky Heights	418874	August 30, 2023	110.8	10.8	241
Smoky Heights	418874	August 31, 2023	32.7	15.0	264

Operational times less than 90 percent:

Poplar CH₄/NMHC are not in operation.
 All other instruments were in operation >90% during the month.

Air Incidents

Wildfires resulted in elevated particulate and ozone throughout the month.

Deviations from Authorized Monitoring Methods

None were reported.

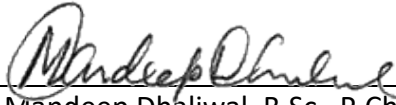
Passive Monitoring

- 52 Stations throughout the PAZA zone
 - Passive sample analyses were performed by Bureau Veritas Laboratories
- There were no field notes recorded
- There were 20 duplicates sampled in the month of August.
- Eight SO₂ duplicates located at Boone Creek, Beaverlodge, McLennan, Henry Pirker, Duvernay 3, Kakwa 1, Milner Bridge, Jayar1 Plant
 - RPD ranging from 0% to 67% (one fail, Milner Bridge values were 0.1 and 0.2 ppb)
 - Kakwa 3 sample was recorded at 11.0 ppb, right at the limit for the 30d AAAQG
- One O₃ duplicate located at Kinuso
 - RPD 30% (no fails)
- Seven NO₂ duplicates at Spirit River, Hythe, Grande Prairie I, Jean Cote, Kakwa 2, Milner Powerline, Jayar5 Camp
 - RPD ranging from 3% to 64% (one fail at Spirit River values were 0.9 and 1.8 ppb)
- Four H₂S duplicates, Girouxville 4, Duvernay 3, Kakwa 4, Jayar4 7-8 or 8-8 Pad
 - RPD 8% to 35% (no fails)

Dustfall Monitoring

- Five Stations collected Total Dustfall and Fixed Dustfall
- There was one duplicate sampled collected for each in the month of August.
 - RPD ranged from 8% to 22%
- Total dustfall ranged from 20.6 to 151.4 mg/100cm²/30day.
- There were no readings above the AAAQG during the month.

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

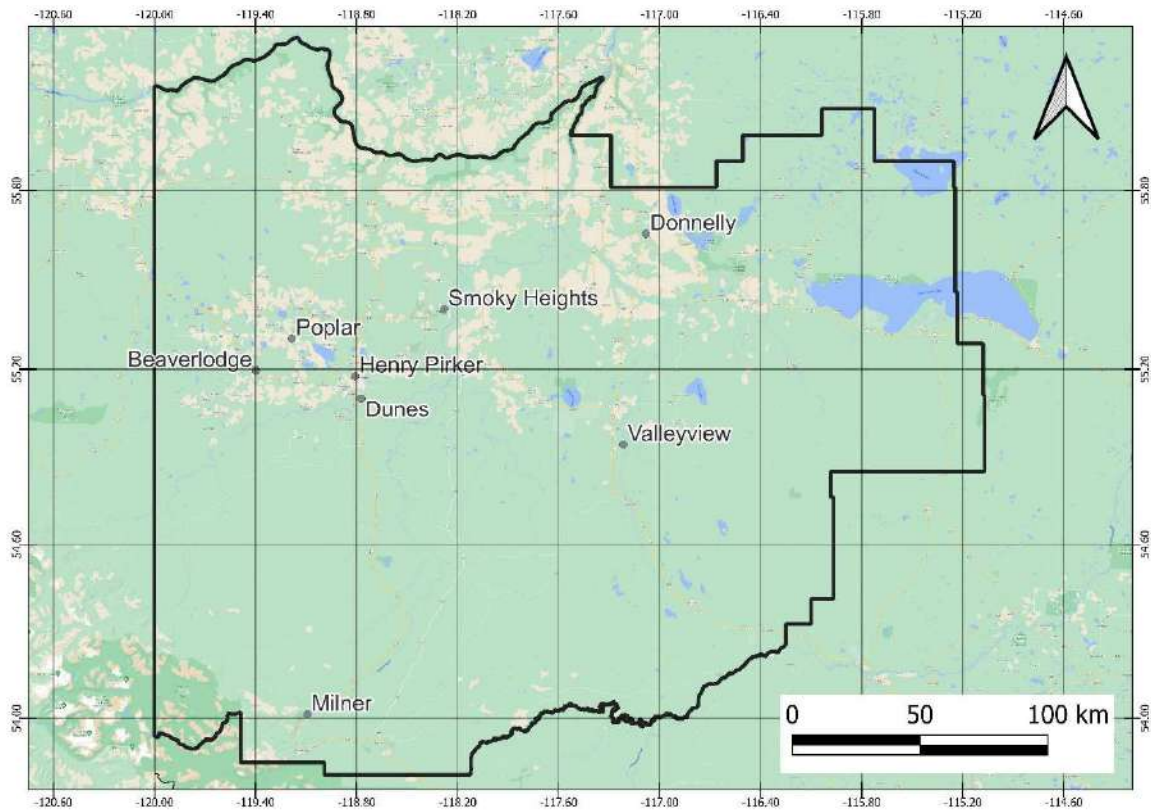


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Program Manager

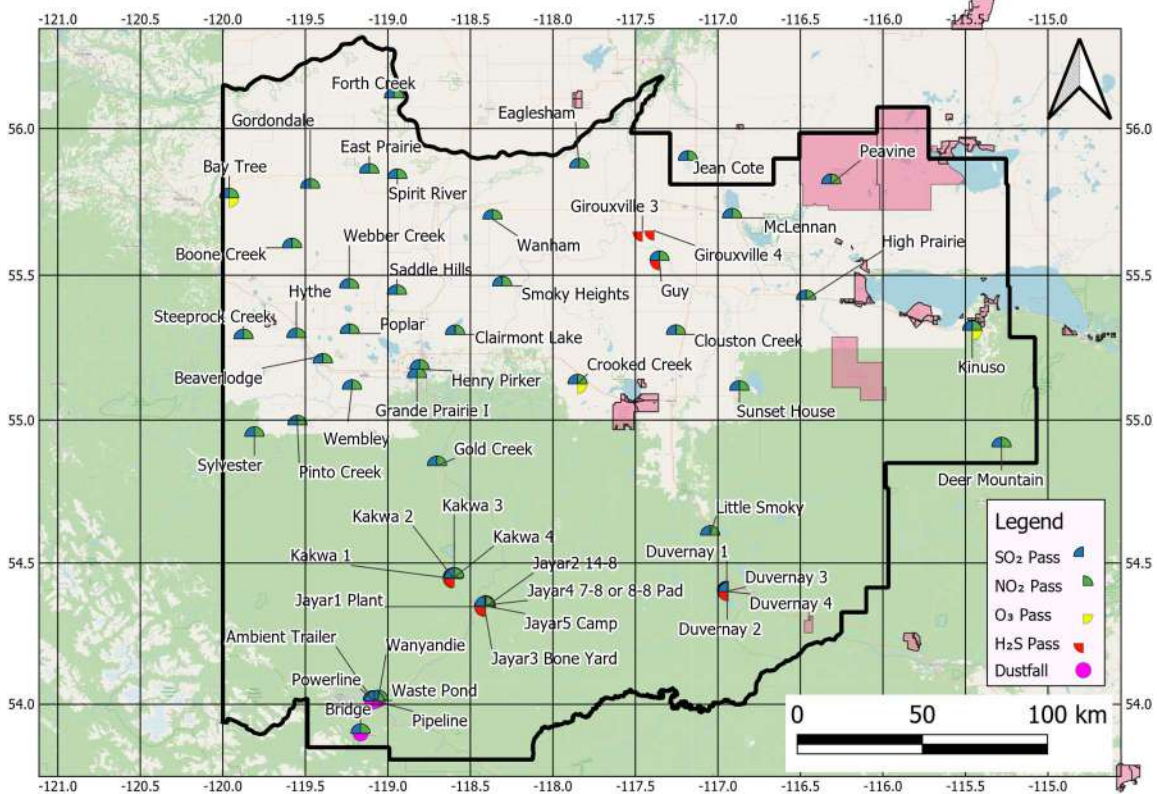
TABLE OF CONTENTS

1	AUGUST MONTHLY STATION SUMMARIES.....	2
1.1	Beaverlodge Air Monitoring Station	2
1.2	Dunes Air Monitoring Station	2
1.3	Grande Prairie - Henry Pirker Air Monitoring Station.....	3
1.4	Smoky Heights Air Monitoring Station	3
1.5	Valleyview Air Monitoring Station	4
1.6	Donnelly Air Monitoring Station – Decommissioned for move.....	4
1.7	Poplar Air Monitoring Station.....	4
1.8	Milner Air Monitoring Station.....	5
2	BEAVERLODGE CHARTS.....	6
3	DUNES CHARTS	16
4	GRANDE PRAIRIE - HENRY PIRKER CHARTS.....	24
5	SMOKY HEIGHTS CHARTS.....	38
6	VALLEYVIEW CHARTS	45
7	DONNELLY CHARTS – STATION DECOMMISSIONED	52
8	POPLAR (PORTABLE) CHARTS.....	53
9	MILNER CHARTS.....	64
10	CONCENTRATION SUMMARIES AND ROSES FOR PAZA	70
10.1	Air Quality Health Index (AQHI) Plots	71
10.2	Wind Roses	72
10.3	Carbon Monoxide (CO) Plots	72
10.4	Sulphur Dioxide (SO ₂) Plots.....	73
10.5	Nitrogen Dioxide (NO ₂) Plots	74
10.6	Ozone (O ₃) Plots.....	75
10.7	Fine Particulate Matter (PM _{2.5}) Plots.....	76
10.8	Hydrogen Sulphide (H ₂ S) Plots.....	77
10.9	Total Reduced Sulphur (TRS) Plots.....	78
10.10	Total Hydrocarbon (THC) Plots	79
10.11	Meteorology Summary	80
11	PASSIVE MONITORING DATA.....	81
12	DUSTFALL MONITORING DATA.....	90
13	END OF REPORT	91

PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 August Monthly Station Summaries

The following summaries are for the equipment and data results from the continuous ambient monitoring network

1.1 Beaverlodge Air Monitoring Station

PAZA - August 2023 Beaverlodge Station Report

Parameter	August				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	0.3	0.0	94.6%	99.6%	13.4	-	Aug-30 08:00	1.2	-	Aug-30	-	-	-	-	Aug 01, 2023
NO ₂ (ppb)	2.6	0.3	94.6%	99.6%	12.7	159	Aug-29 21:00	5.9	-	Aug-22	0	-	-	-	Aug 01, 2023
NO _x (ppb)	3.0	0.3	94.6%	99.6%	19.6	-	Aug-30 09:00	6.9	-	Aug-22	-	-	-	-	Aug 01, 2023
O ₃ (ppb)	26.6	1.5	94.9%	99.6%	60.1	76	Aug-06 18:00	39.0	-	Aug-06	0	-	-	-	Aug 01, 2023
PM _{2.5} (µg/m ³)	24.3	1.1	92.2%	93.3%	129.3	80	Aug-29 19:00	91.3	29	Aug-28	43	-	7	-	Aug 09, 2023
SO ₂ (ppb)	0.4	0.0	94.9%	99.6%	7.6	172	Aug-21 22:00	1.4	48	Aug-21	0	-	0	0	Aug 02, 2023
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	16.9	4.7	96.5%	96.5%	28.8	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div> <div style="border: 1px solid black; padding: 5px;"> Average Wind Direction 269 W </div>									
RH (%)	65.3	18.5	99.6%	99.6%	99.9										
WS (km/hr)	9.8	0.3	99.6%	99.6%	43.1										
WD (deg)	269	0.1	99.6%	99.6%	359.8										

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	Aug 1 power failure (3hrs)
O ₃	Thermo	49iQ	Aug 1 power failure (3hrs)
PM _{2.5}	Sharp	5030	Aug 1 power failure (3hrs); Data flatlined (25hrs); removal of Sharp Aug 8, install of T640 Aug 9 (22hrs between); 43hrs above AAAQG + 7days above AAAQO due to wildfires
SO ₂	Thermo	43i-TLE	Aug 1 power failure (3hrs)
Met Equip	MetOne	50.5	Aug 1 power failure (3hrs); ET had daily drops starting Aug 9 (23hrs removed)

1.2 Dunes Air Monitoring Station

PAZA - August 2023 Dunes Station Report

Parameter	August				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
PM _{2.5} (µg/m ³)	16.3	0.1	98.3%	98.7%	136.5	80	Aug-30 01:00	57.8	29	Aug-29	11	-	6	-	Aug-24-2023
SO ₂ (ppb)	0.3	0.0	95.3%	100.0%	9.0	172	Aug-31 10:00	1.1	48	Aug-12	0	-	0	0	Aug-24-2023
TRS (ppb)	0.3	0.0	95.2%	100.0%	2.3	-	Aug-20 11:00	0.5	-	Aug-24	-	-	-	-	Aug-24-2023
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	16.7	4.7	99.7%	100.0%	30.1	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div> <div style="border: 1px solid black; padding: 5px;"> Average Wind Direction 256 WSW </div>									
RH (%)	68.6	18.1	99.7%	100.0%	99.9										
WS (km/hr)	3.5	0.1	99.7%	100.0%	13.4										
WD (deg)	256	1.0	99.7%	100.0%	359.3										

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Thermo	TEOM AB	Data flatlined and maintenance (10hrs); 11hrs above AAAQG + 6 days above AAAQO due to wildfires
SO ₂	TECO	43i	No Operational issues noted
TRS	TECO	43C	No Operational issues noted
Met Equip	Gil/RMYoung	MetPak/RMY86004	No Operational issues noted

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - August 2023 Henry Pirker Station Report

Parameter	August				1-hour			8-hour / 24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	2.3	0.0	94.9%	99.9%	79.5	-	Aug-20 04:00	9.6	-	Aug-20	-	-	-	-	Aug 08, 2023
NO ₂ (ppb)	5.9	0.6	94.9%	99.9%	32.5	159	Aug-20 04:00	12.5	-	Aug-29	0	-	-	-	Aug 08, 2023
NO _x (ppb)	8.2	0.7	94.9%	99.9%	112.3	-	Aug-20 04:00	18.8	-	Aug-29	-	-	-	-	Aug 08, 2023
O ₃ (ppb)	24.1	0.4	95.2%	99.9%	59.9	76	Aug-29 17:00	30.6	-	Aug-17	0	-	-	-	Aug 09, 2023
PM _{2.5} (µg/m ³)	24.7	2.1	99.7%	99.9%	227.2	80	Aug-29 23:00	114.4	29	Aug-29	46	-	8	-	Aug 04, 2023
SO ₂ (ppb)	0.4	0.0	91.1%	96.2%	8.9	172	Aug-27 04:00	1.2	48	Aug-31	0	-	0	0	Aug 09, 2023
H ₂ S (ppb)	0.2	0.0	95.0%	99.9%	2.2	10	Aug-27 04:00	0.5	3	Aug-30	0	-	0	-	Aug 04, 2023
CH ₄ (ppm)	2.1	1.9	94.0%	98.7%	3.1	-	Aug-28 20:00	2.3	-	Aug-28	-	-	-	-	Aug 03, 2023
THC (ppm)	2.1	1.9	94.0%	98.7%	3.1	-	Aug-28 20:00	2.3	-	Aug-28	-	-	-	-	Aug 03, 2023
NMHC (ppm)	0.0	0.0	94.0%	98.7%	0.1	-	Aug-29 21:00	0.0	-	Aug-29	-	-	-	-	Aug 03, 2023
CO (ppm)	0.3	0.1	95.2%	99.9%	1.4	13	Aug-29 21:00	0.7	5	Aug-29	0	0	-	-	Aug 03, 2023
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	17.9	6.2	99.9%	99.9%	29.6										
RH (%)	62.1	18.9	99.9%	99.9%	89.8										
SR (W/m ²)	158.5	0.0	99.9%	99.9%	670.2										
WS (km/hr)	7.1	0.2	99.9%	99.9%	30.6										
WD (deg)	256	0.8	99.9%	99.9%	359.7										
	Average Wind Direction		256		WSW										

Note: Valid hours must be greater than 75%
Operational hours must be greater than 90%

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42IQ	Aug 10 DAS failure (1hr)
O ₃	TECO	49I	Aug 10 DAS failure (1hr)
PM _{2.5}	API	T640	Aug 10 DAS failure (1hr); 46 hrs above AAAQG + 8 days above AAAQO due to wildfires
SO ₂	TEI	43I-TLE	Removal Cal Aug 8 (failed), 8hrs removed to good span; data removed between stabilize period (14hrs) and install maintenance (5hrs); Aug 10 DAS failure (1hr)
H ₂ S	TEI	450i	Aug 10 DAS failure (1hr)
THC/CH ₄ /NMHC	TEI	55i	Aug 10 DAS failure (1hr); hydrogen cylinder ran out Aug 31 (9hrs removed)
CO	TEI	48I-TLE	Aug 10 DAS failure (1hr)
Met Equip	MetOne	50.5	Aug 10 DAS failure (1hr)

1.4 Smoky Heights Air Monitoring Station

PAZA - August 2023 Smoky Heights Station Report

Parameter	August				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
PM _{2.5} (µg/m ³)	22.5	1.6	98.4%	98.8%	232.3	80	Aug-30 14:00	110.8	29	Aug-30	41	-	8	-	Aug 28, 2023
SO ₂ (ppb)	0.3	0.0	94.1%	98.8%	3.9	172	Aug-28 09:00	0.9	48	Aug-28	0	-	0	0	Aug 28, 2023
TRS (ppb)	-	0.0	94.1%	98.8%	1.0	-	Aug-01 07:00	0.5	-	Aug-30	-	-	-	-	Aug 28, 2023
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	16.5	5.9	98.5%	98.8%	28.5										
WS (km/hr)	10.8	0.3	98.5%	98.8%	41.9										
WD (deg)	254	0.4	98.5%	98.8%	359.7										
	Average Wind Direction		254		WNW										

Note: Valid hours must be greater than 75%
Operational hours must be greater than 90%

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Sharp	5030	DAS failure (Aug 6-7, 9hrs); 41hrs above AAAQG + 8 days above AAAQO due to wildfires
SO ₂	TECO	43i	DAS failure (Aug 6-7, 9hrs)
TRS	TEI	43I APSAA	DAS failure (Aug 6-7, 9hrs)
Met Equip	MetOne	50.5	DAS failure (Aug 6-7, 9hrs)

1.5 Valleyview Air Monitoring Station

PAZA - August 2023 Valleyview Station Report

Parameter	August				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
SO ₂ (ppb)	0.1	0.0	95.2%	100.0%	2.1	172	Aug-31 11:00	0.3	48	Aug-31	0	-	0	0	Aug 23, 2023
H ₂ S (ppb)	-	0.0	95.3%	100.0%	0.7	10	Aug-26 22:00	0.2	3	Aug-26	0	-	0	-	Aug 23, 2023
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	16.6	3.0	100.0%	100.0%	32.1	<div style="border: 1px solid black; padding: 5px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div>									
RH (%)	75.9	27.6	100.0%	100.0%	100.2										
WS (km/hr)	3.2	0.1	100.0%	100.0%	13.6										
WD (deg)	263	0.3	100.0%	100.0%	358.5										
	Average Wind Direction														

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	TEI	43i-APSCB	No Operational issues noted
H ₂ S	TEI	450i-APHA / 43C	No Operational issues noted
Met Equip	RMYoung	RMY86004	No Operational issues noted

1.6 Donnelly Air Monitoring Station – Decommissioned for move

1.7 Poplar Air Monitoring Station

PAZA - August 2023 Poplar Station Report

Parameter	August				1-hour			24-hour			Exceedance				Calibration Date		
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d			
NO (ppb)	0.6	0.0	93.3%	98.1%	11.8	-	Aug-29 08:00	1.9	-	Aug-29	-	-	-	-	Aug 18, 2023		
NO ₂ (ppb)	3.1	0.2	93.3%	98.1%	18.9	159	Aug-29 21:00	8.0	-	Aug-29	0	-	-	-	Aug 18, 2023		
NO _x (ppb)	3.8	0.2	93.3%	98.1%	21.5	-	Aug-29 21:00	10.0	-	Aug-29	-	-	-	-	Aug 18, 2023		
O ₃ (ppb)	24.7	0.8	94.0%	98.5%	55.0	76	Aug-25 18:00	32.6	-	Aug-17	0	-	-	-	Aug 18, 2023		
PM _{2.5} (µg/m ³)	15.4	0.0	96.9%	97.2%	123.9	80	Aug-29 20:00	71.3	29	Aug-29	10	-	5	-	Aug 27, 2023		
SO ₂ (ppb)	0.8	0.0	93.4%	98.1%	13.1	172	Aug-12 09:00	1.5	48	Aug-30	0	-	0	0	Aug 18, 2023		
TRS (ppb)	0.3	0.0	90.9%	95.6%	4.0	-	Aug-15 00:00	0.5	-	Aug-29	-	-	-	-	Aug 10, 2023		
CH ₄ (ppm)	removed Dec 12, 2022																
THC (ppm)	2.1	1.8	92.2%	96.6%	3.4	-	Aug-06 05:00	2.4	-	Aug-29	-	-	-	-	Aug 10, 2023		
NMHC (ppm)	removed Dec 12, 2022																
	Average	Minimum	Valid	Operational	Maximum												
Temp (°C)	16.2	2.9	98.5%	98.5%	29.4	<div style="border: 1px solid black; padding: 5px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div>											
WS (km/hr)	11.4	0.1	98.5%	98.5%	39.1												
WD (deg)	282	1.0	98.5%	98.5%	359.5												
	Average Wind Direction															282	WNW

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42i	DAS failure (Aug 7-8, 9hrs); power failure (Aug 29, 2hrs); maintenance Aug 17 (manual spans, 3hrs)
O ₃	TEI	49i	DAS failure (Aug 7-8, 9hrs); power failure (Aug 29, 2hrs)
PM _{2.5}	Thermo	TEOM AB	DAS failure (Aug 7-8, 9hrs); power failure (Aug 29, 2hrs); negative drift (8hrs); maintenance (2hrs)
SO ₂	TEI	43i	DAS failure (Aug 7-8, 9hrs); power failure (Aug 29, 2hrs); maintenance Aug 17 (manual spans, 3hrs)
TRS	TEI	43i	DAS failure (Aug 7-8, 9hrs); power failure (Aug 29, 2hrs); TRS removal cal (Aug 10, passed), oxidizer swap and install cal Aug 11 (16hrs between removed), 6hrs maintenance (install cal)
THC	TEI	55i / 51ii-LT	CH ₄ , NMHC not in service; DAS failure (Aug 7-8, 9hrs); power failure (Aug 29, 2hrs); Hydrogen cylinder empty (13hrs) + 1hr maintenance
Met Equip	MetOne	50.5	DAS failure (Aug 7-8, 9hrs); power failure (Aug 29, 2hrs)

1.8 Milner Air Monitoring Station

PAZA - August 2023 Milner Station Report

Parameter	August				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
NO (ppb)	-	0.0	89.8%	95.0%	13.5	-	Aug-25 07:00	1.7	-	Aug-02	-	-	-	-	Aug 29, 2023
NO ₂ (ppb)	-	0.0	89.8%	95.0%	7.3	159	Aug-12 19:00	0.7	-	Aug-12	0	-	-	-	Aug 29, 2023
NO _x (ppb)	-	0.0	89.8%	95.0%	18.1	-	Aug-02 06:00	2.6	-	Aug-02	-	-	-	-	Aug 29, 2023
PM _{2.5} (µg/m ³)	18.6	0.0	90.1%	91.1%	96.4	80	Aug-07 08:00	54.2	29	Aug-30	9	-	4	-	Aug 29, 2023
	Average	Minimum	Valid	Operational	Maximum										
WS (km/hr)	4.9	0.0	100.0%	100.0%	22.5	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
WD (deg)	242	0.1	100.0%	100.0%	359.4										
Average Wind Direction								242		WSW					

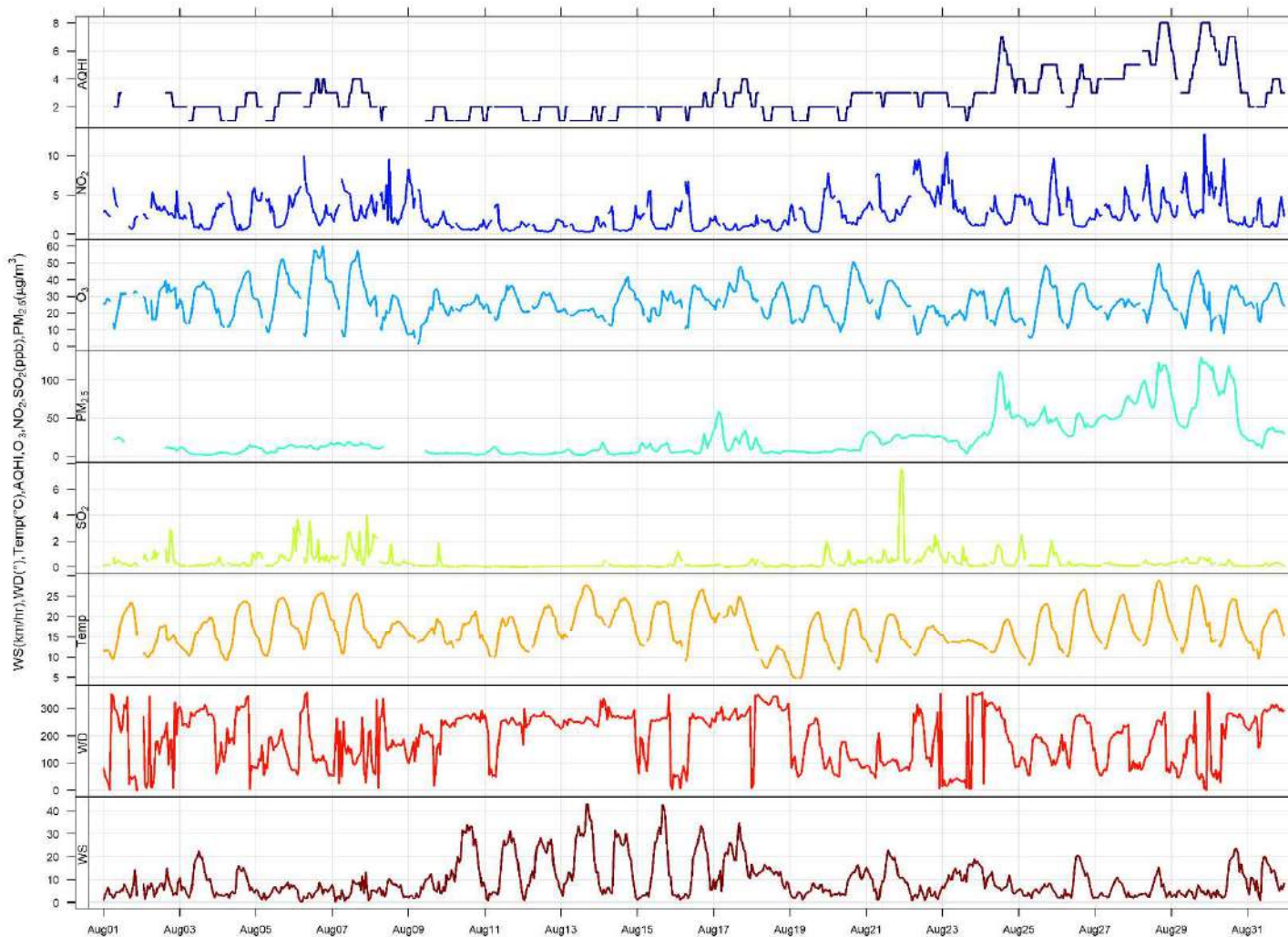
Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	Double span each day, one set removed (26hrs); unstable data (10hrs) following calibration
PM _{2.5}	TEOM	AB	Excessive negative drift (66hrs); 9hrs above AAAQG + 4 days above AAAQO;
Met Equip	MetOne	50.5	No Operational issues noted

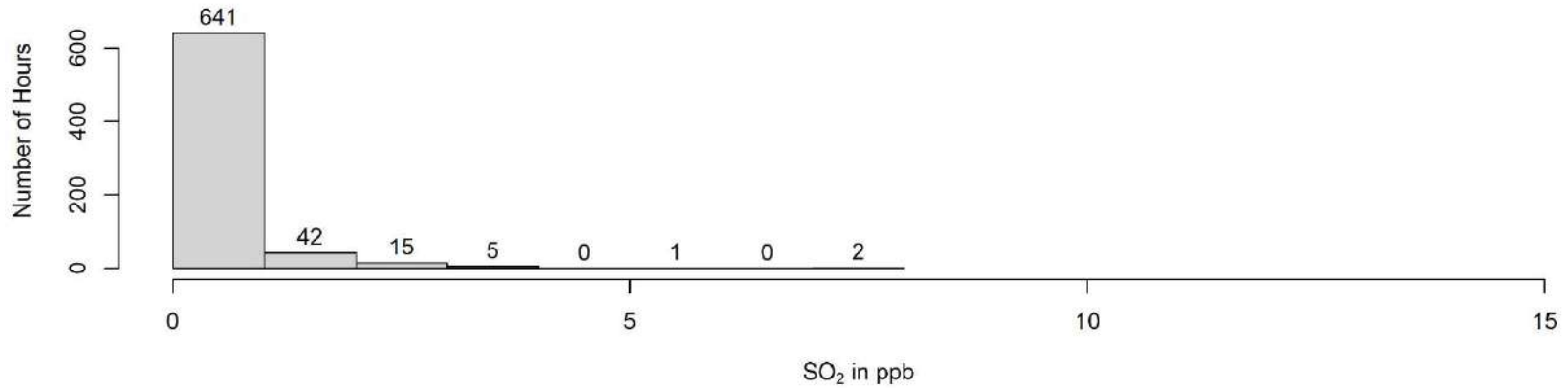
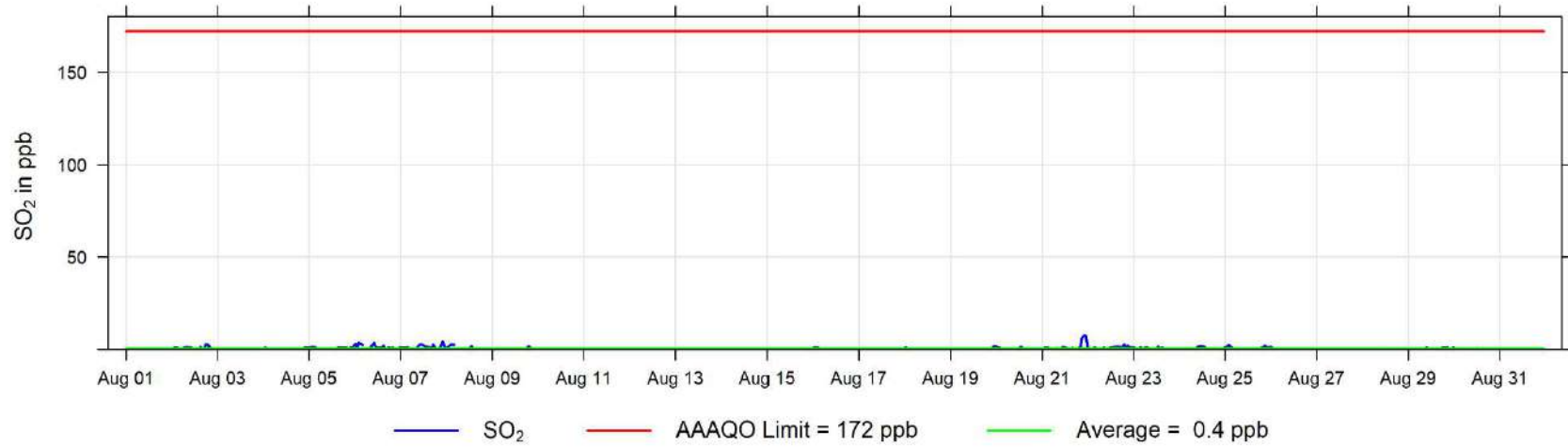
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

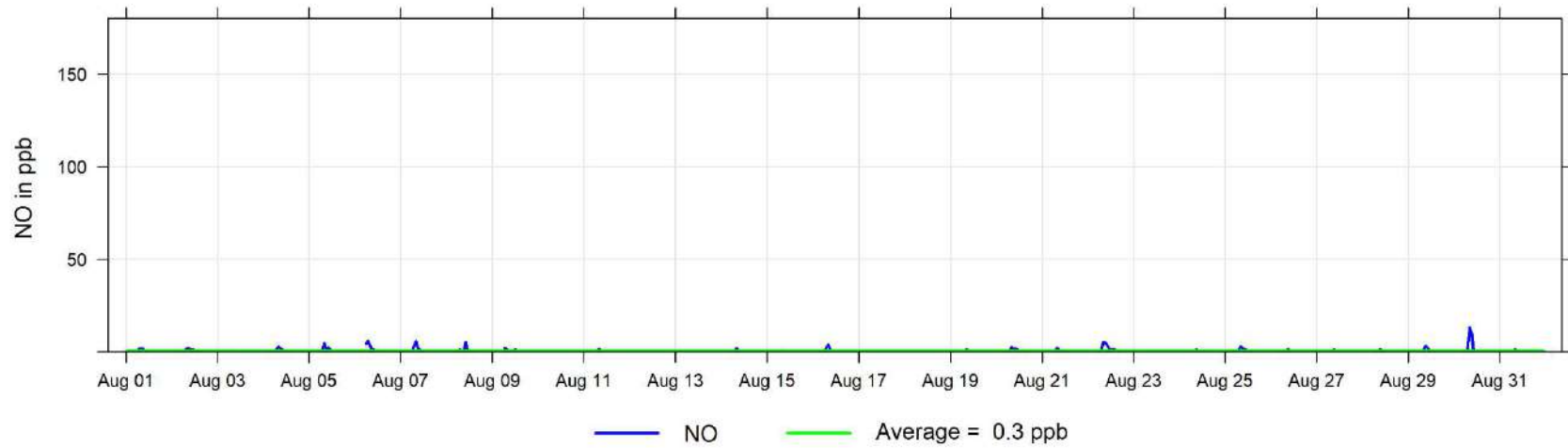
August 2023 Concentration Readings at Beaverlodge Station



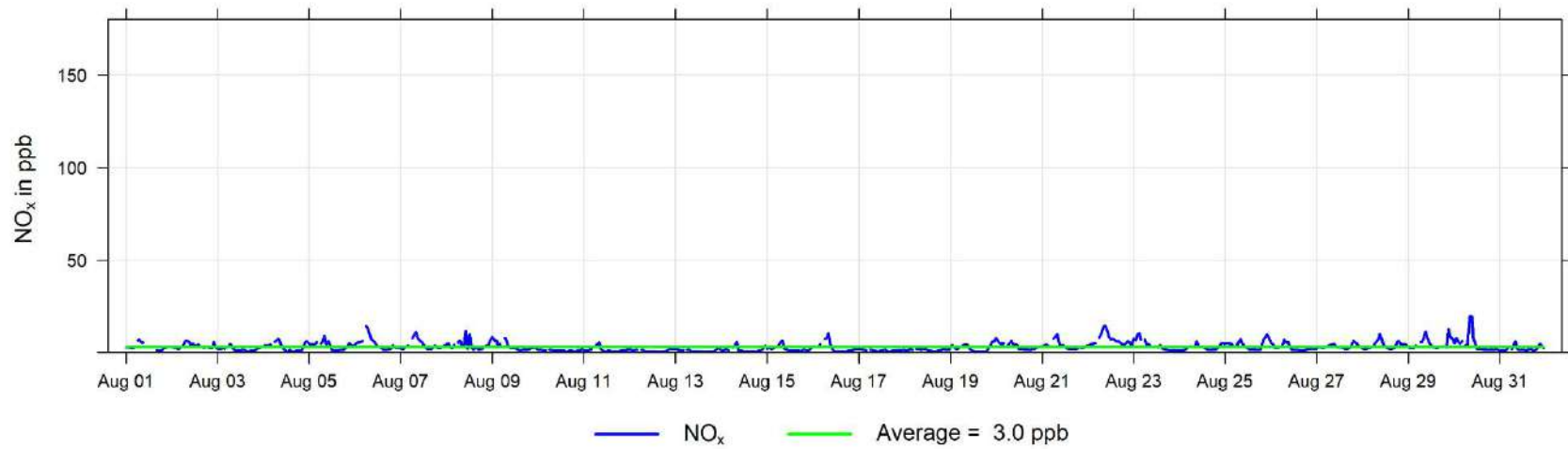
August 2023 Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



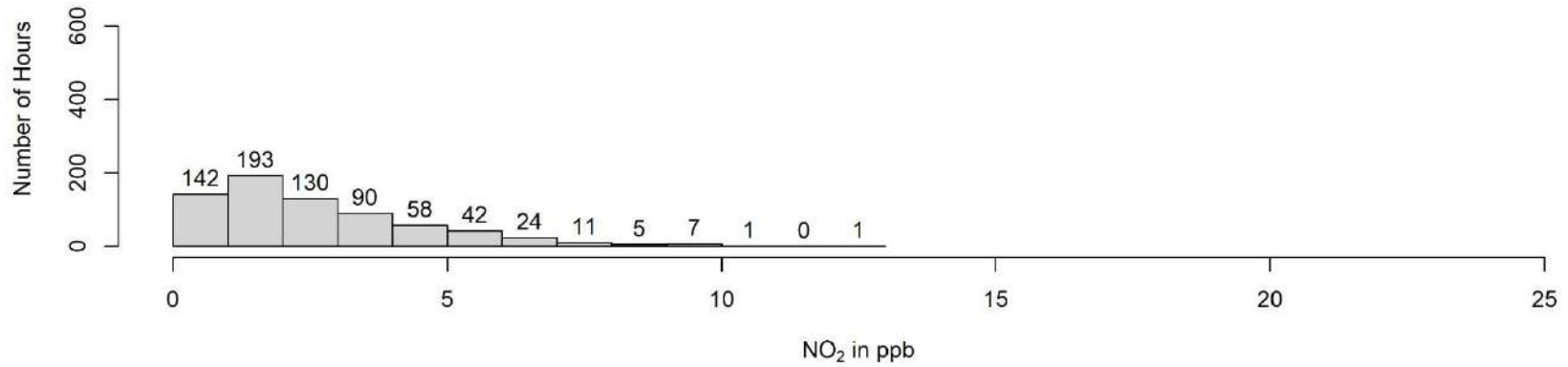
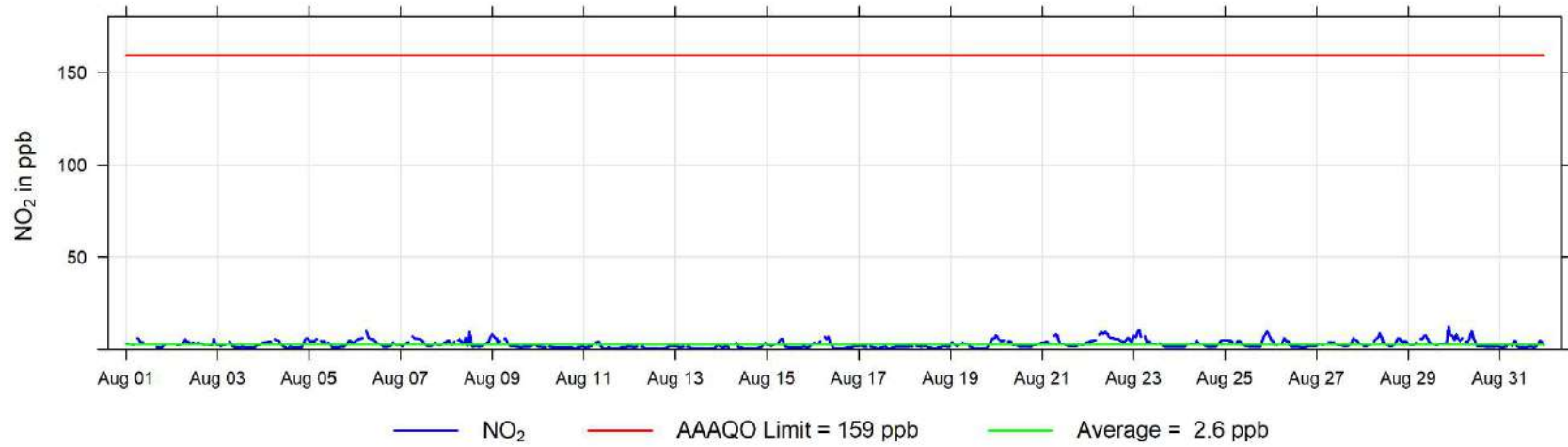
August 2023 Hourly Concentration Readings of NO (in ppb) at Beaverlodge



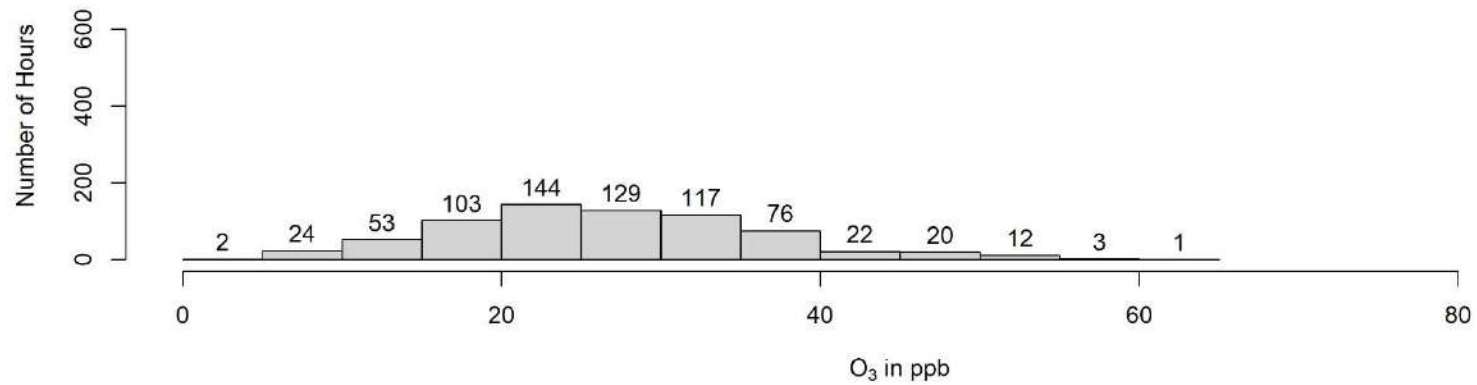
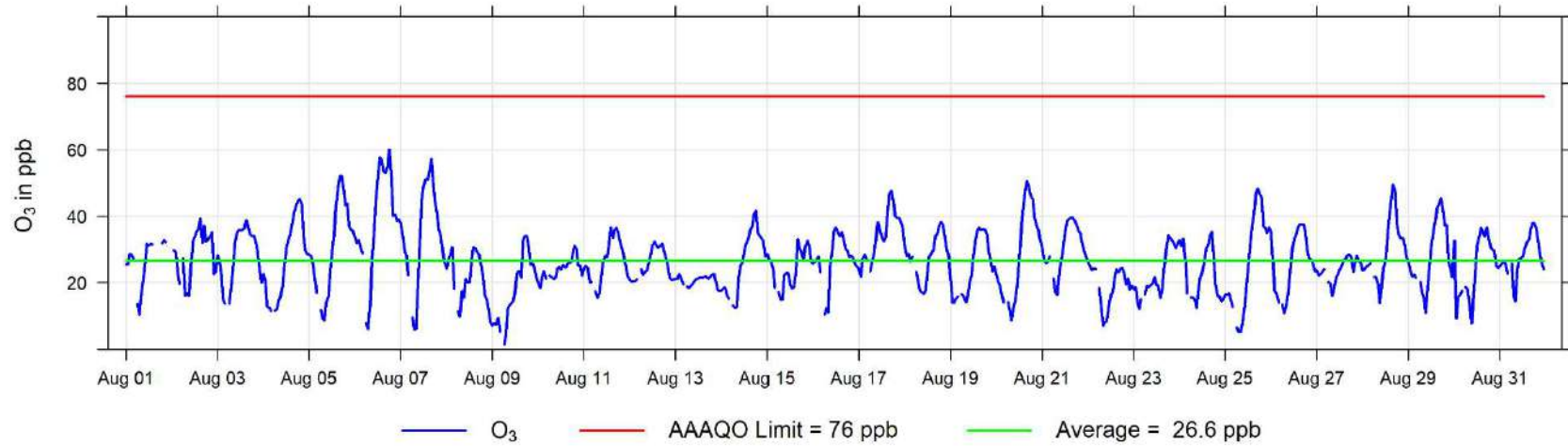
August 2023 Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



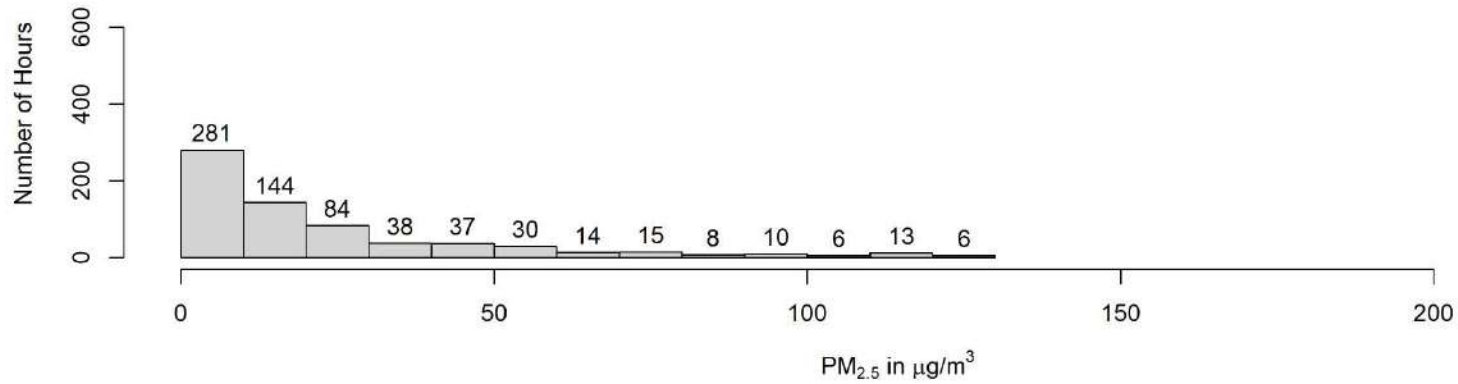
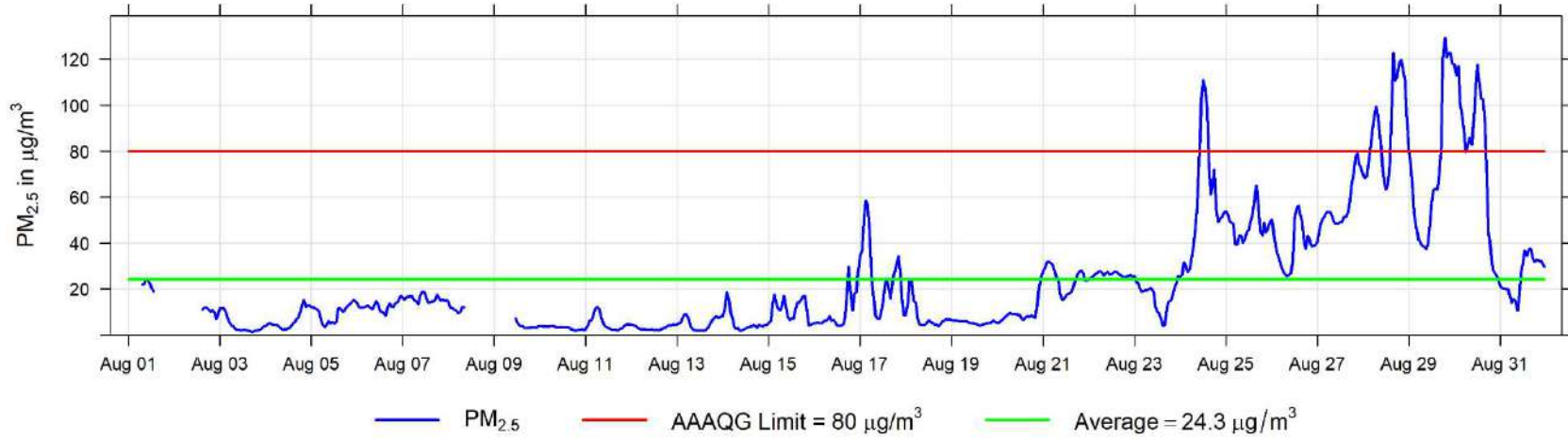
August 2023 Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge



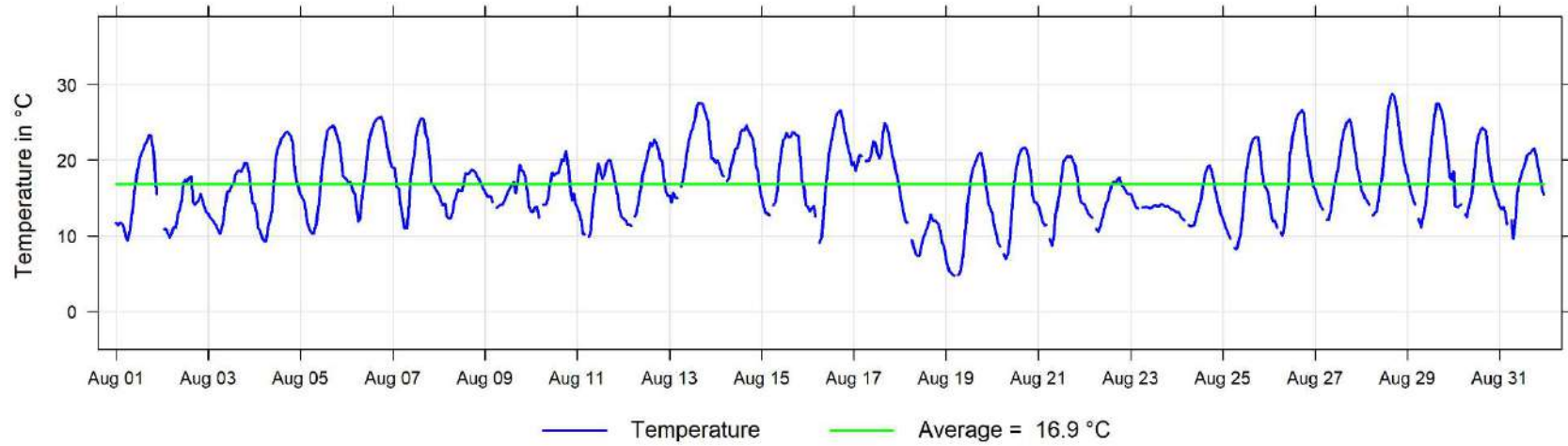
August 2023 Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



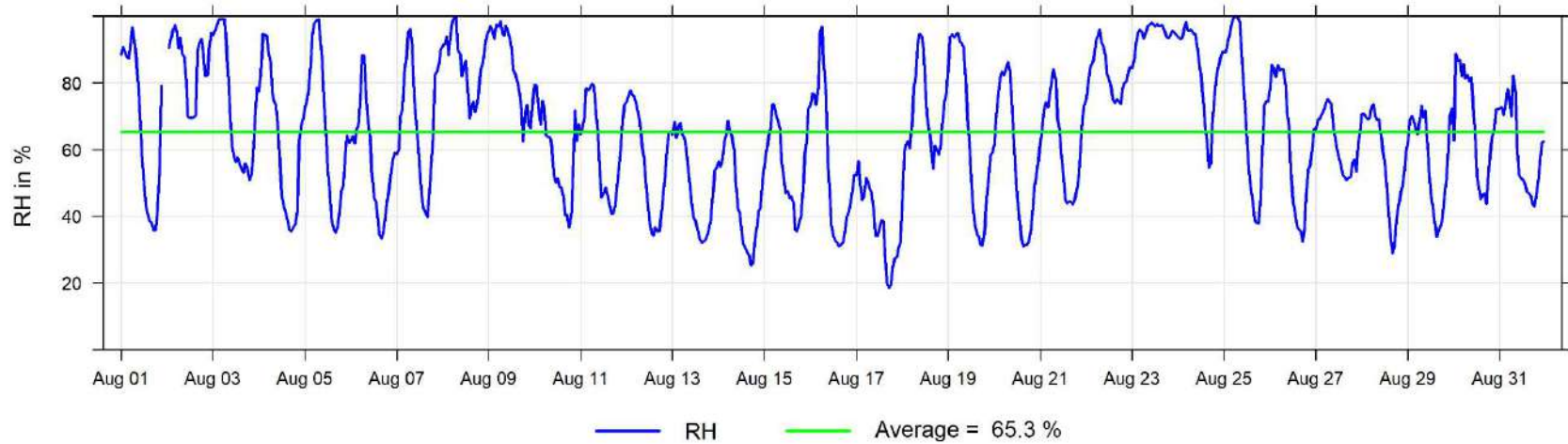
August 2023 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



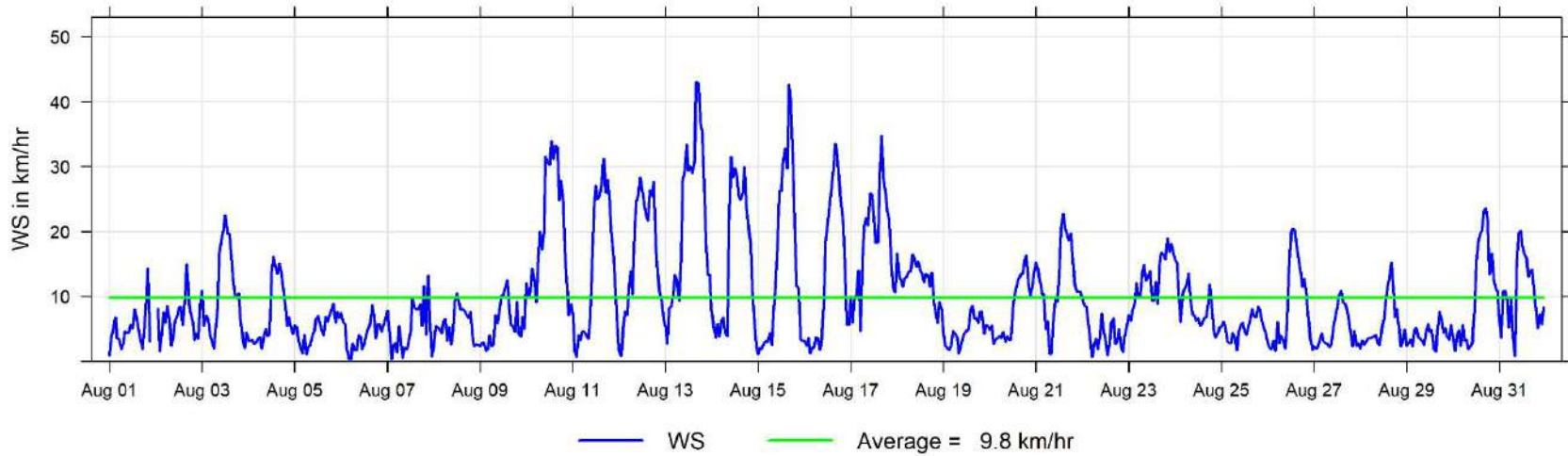
August 2023 Hourly Temperature Readings (in °C) at Beaverlodge



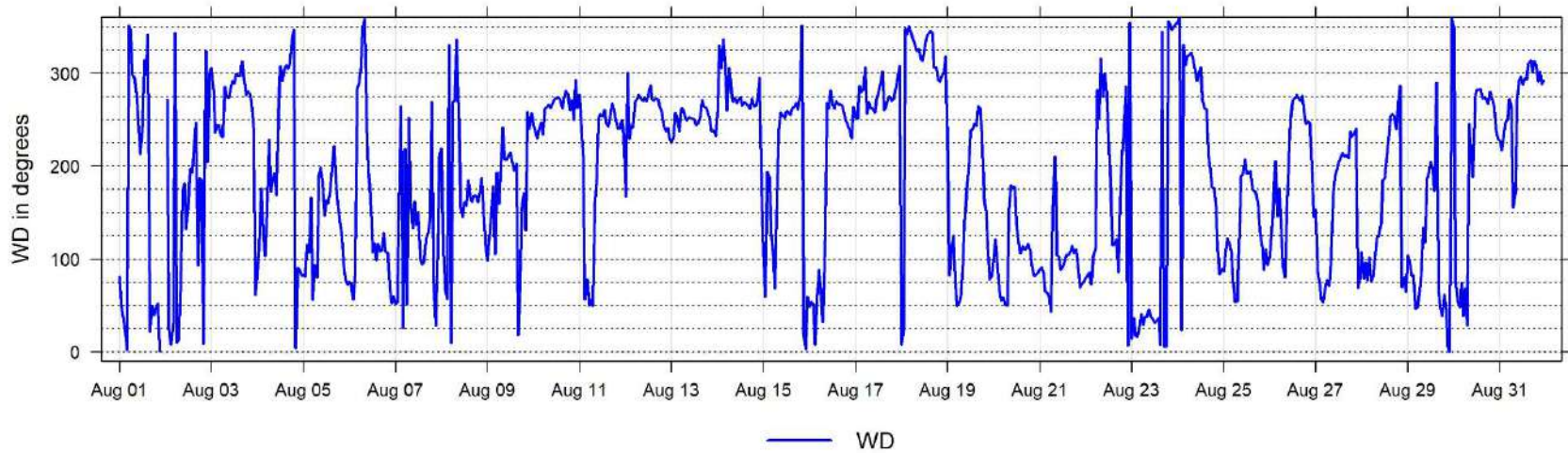
August 2023 Hourly Readings of Relative Humidity (in %) at Beaverlodge



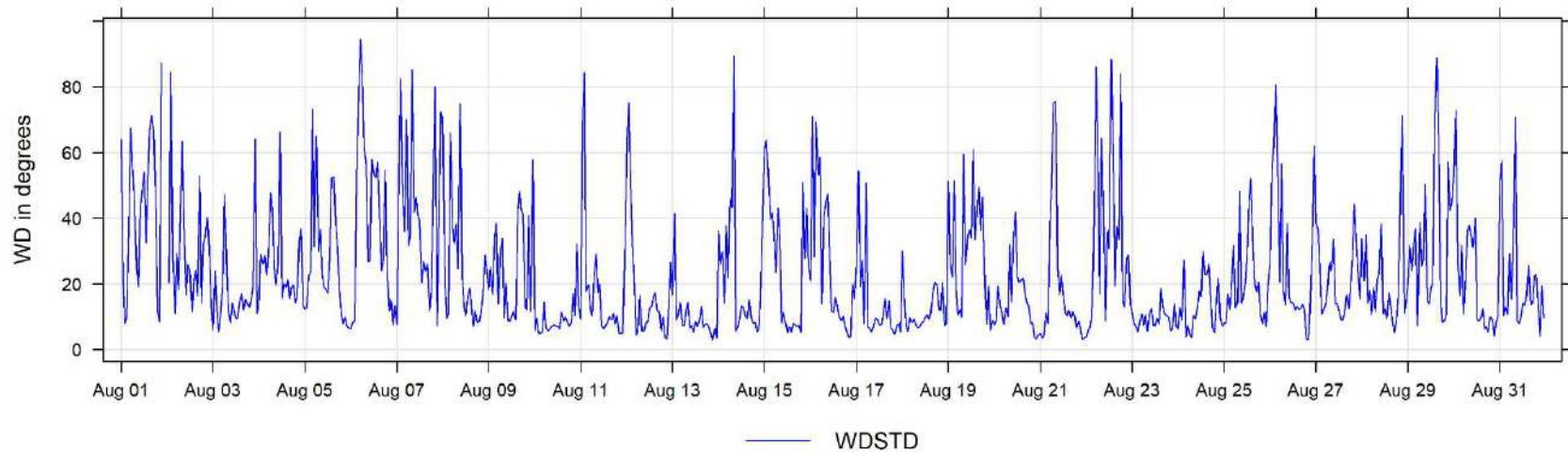
August 2023 Hourly Readings of Wind Speed (in km/hr) at Beaverlodge

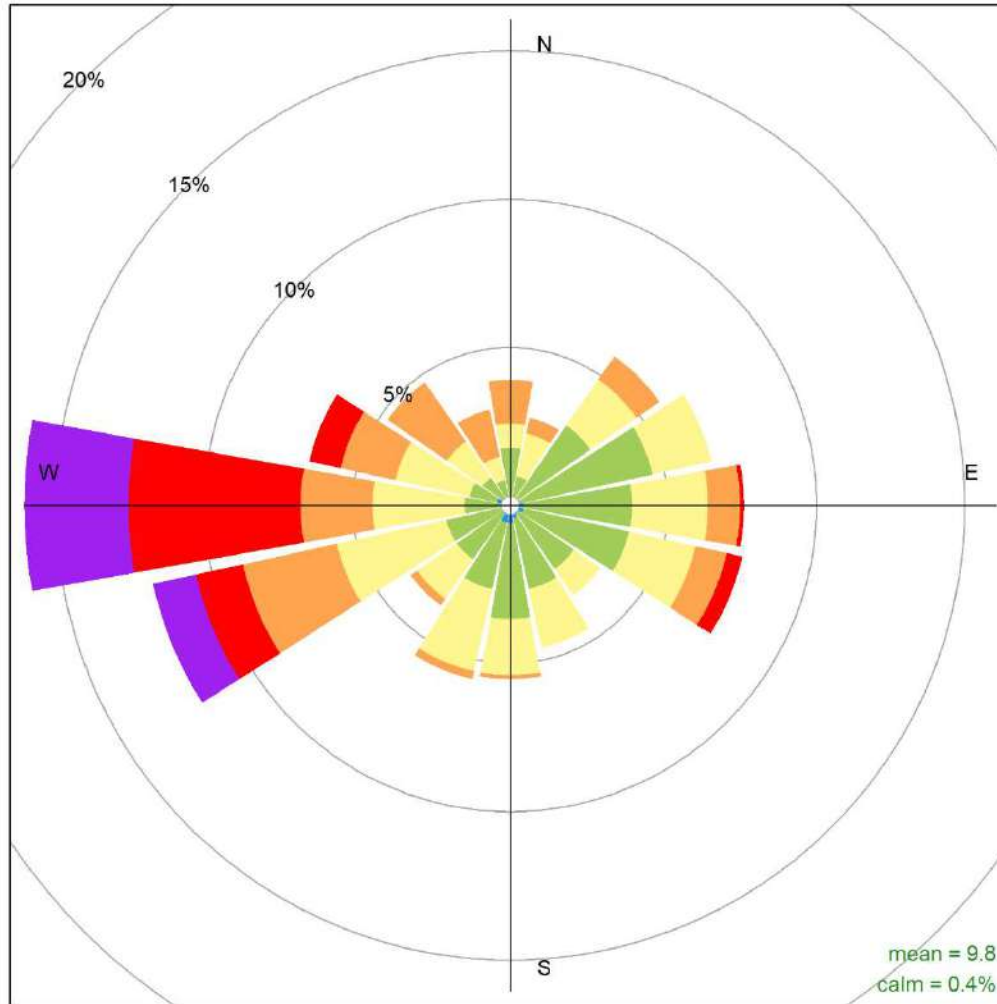


August 2023 Hourly Readings of Wind Direction (in degrees) at Beaverlodge



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

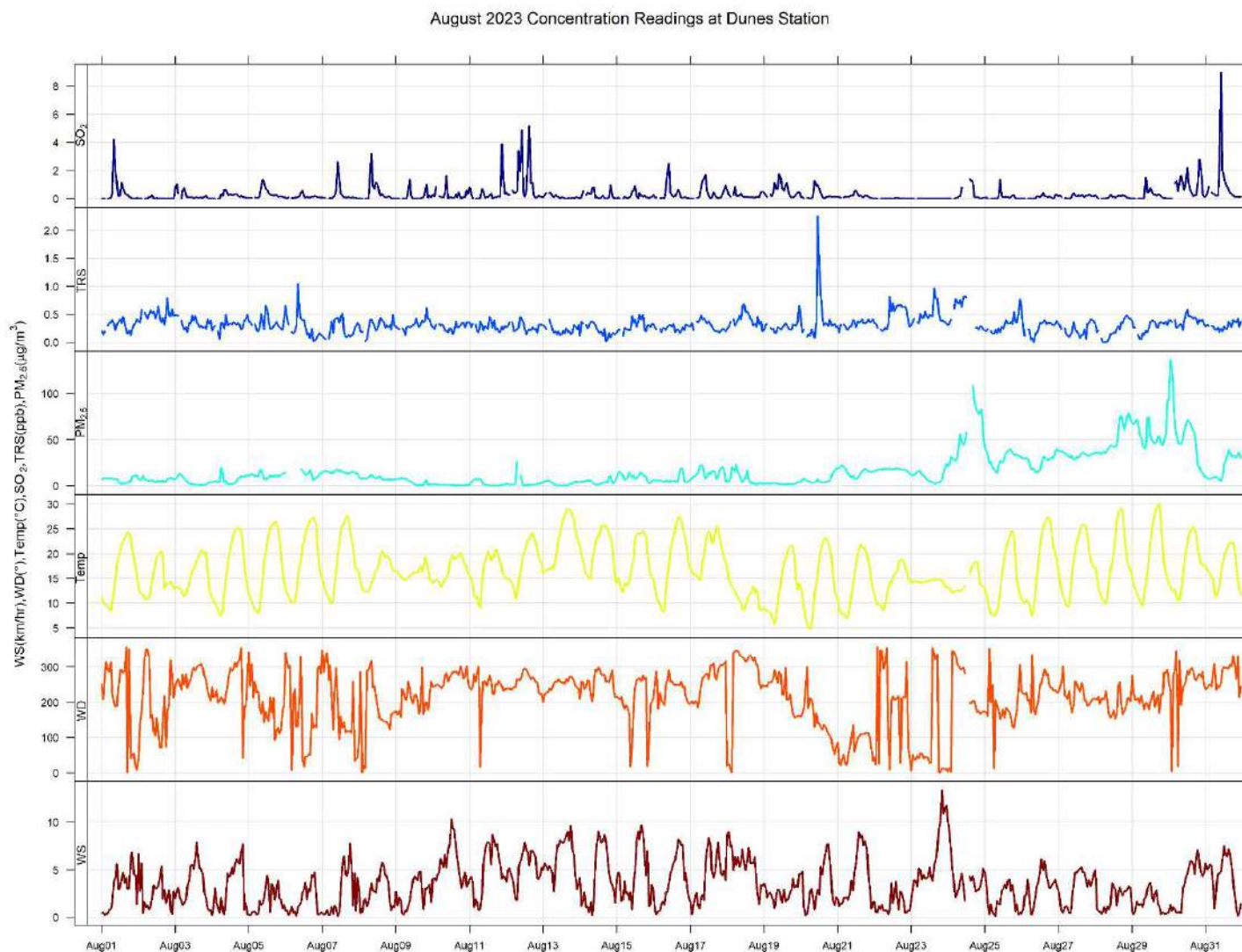




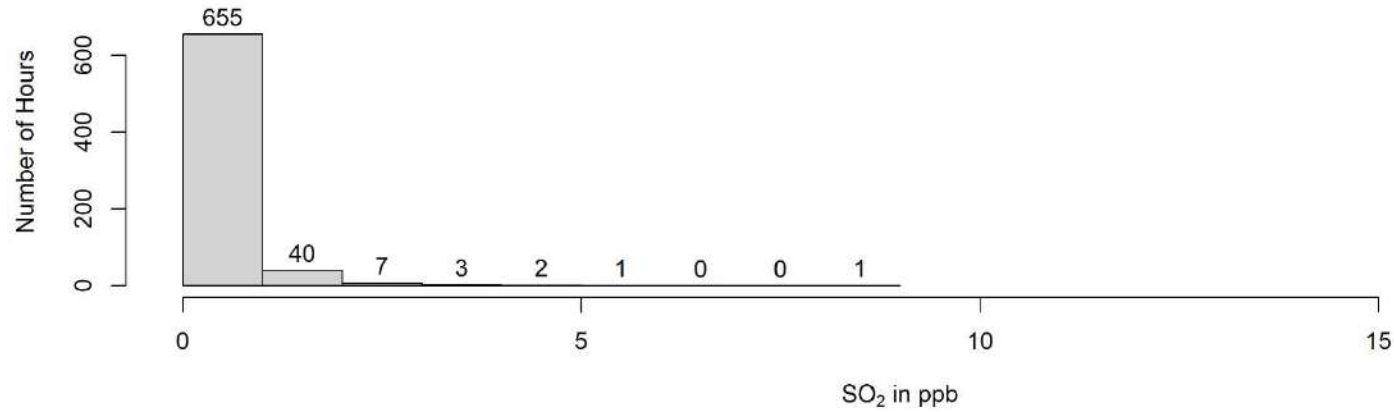
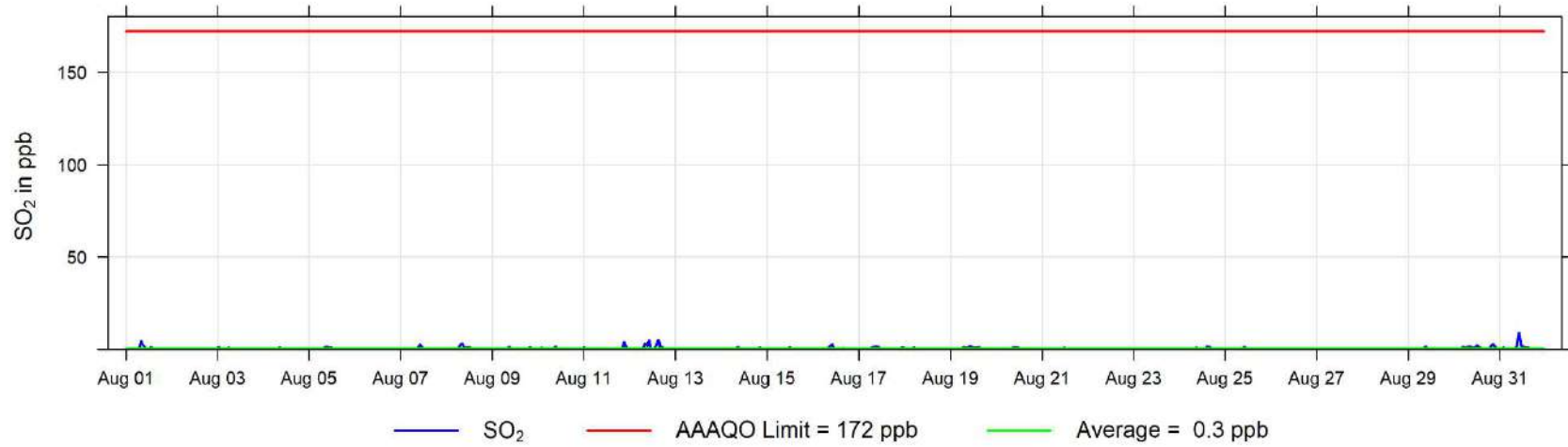
Beaverlodge August 2023 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

3 Dunes Charts

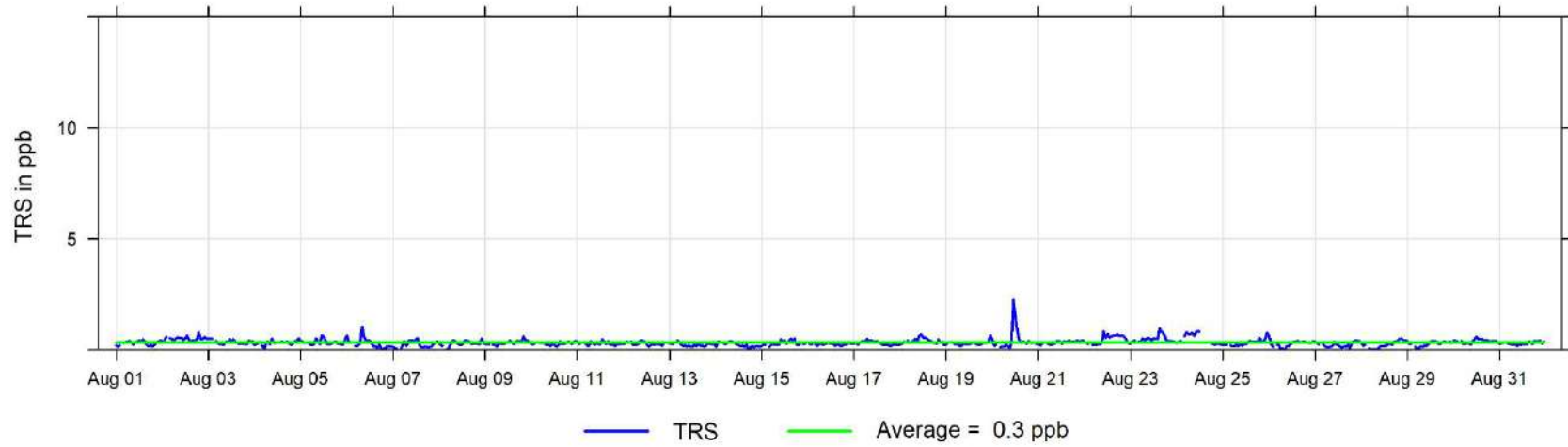
The following pages include the charts and histograms for Dunes Station



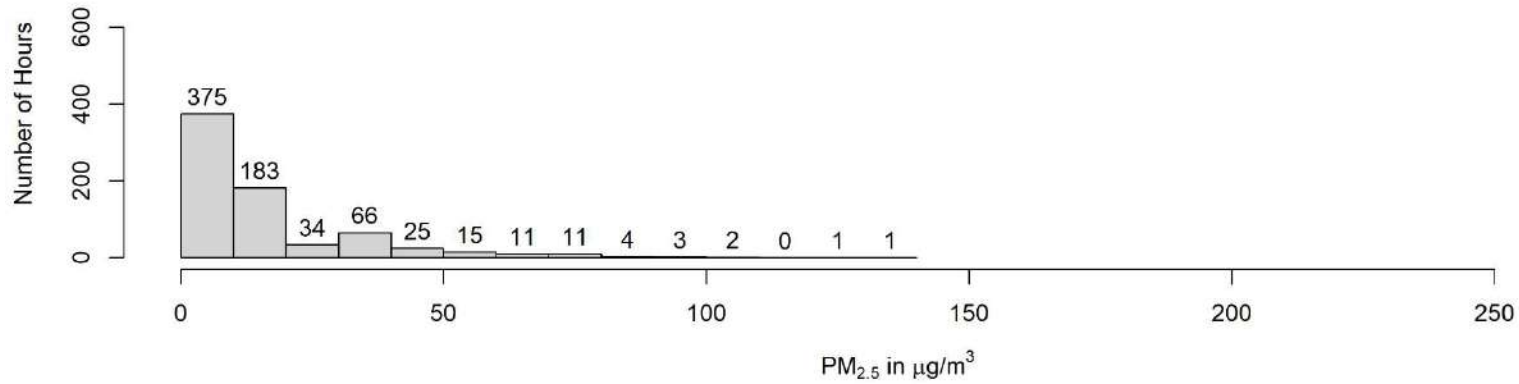
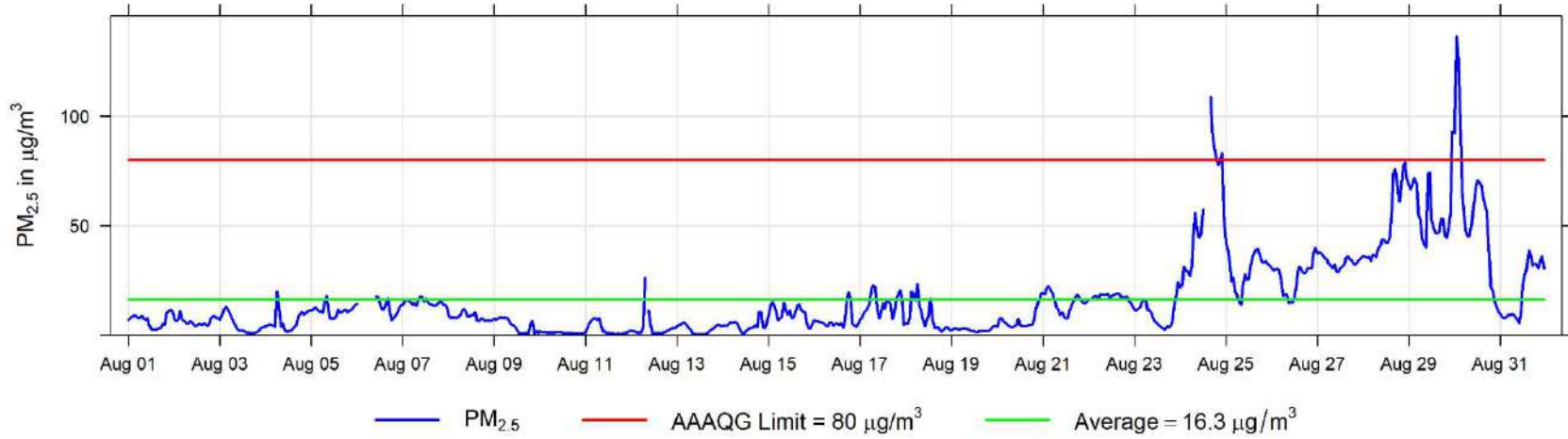
August 2023 Hourly Concentration Readings of SO₂ (in ppb) at Dunes



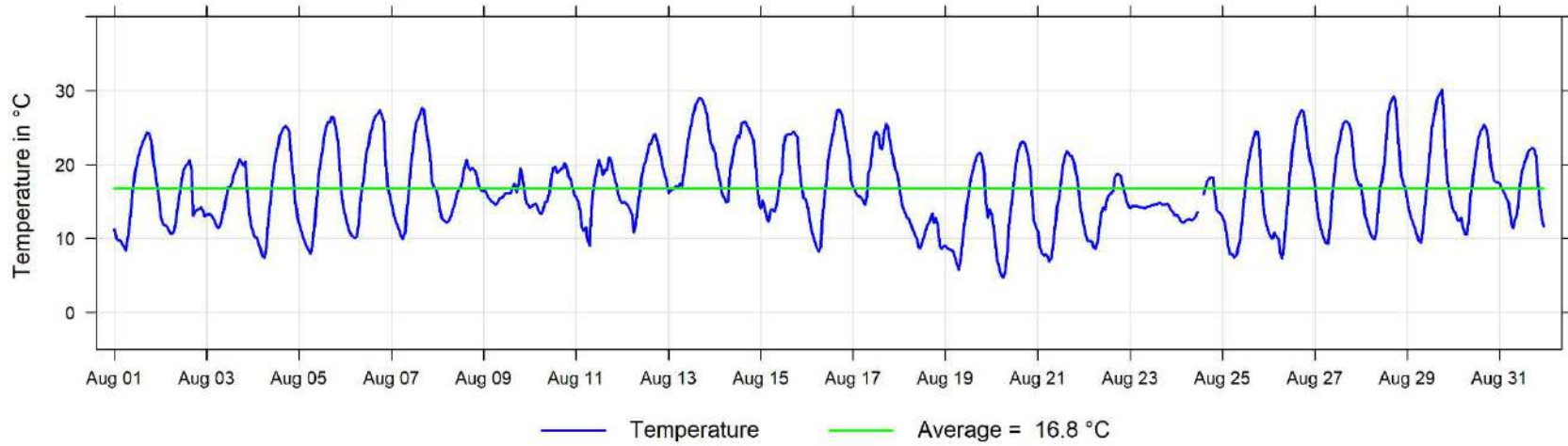
August 2023 Hourly Concentration Readings of TRS (in ppb) at Dunes



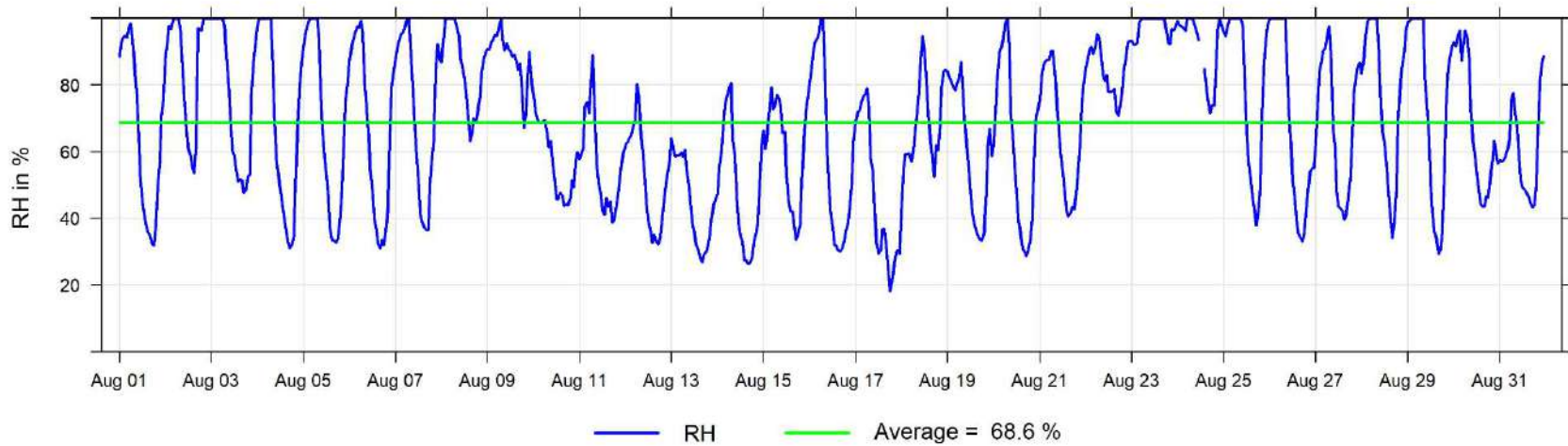
August 2023 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Dunes



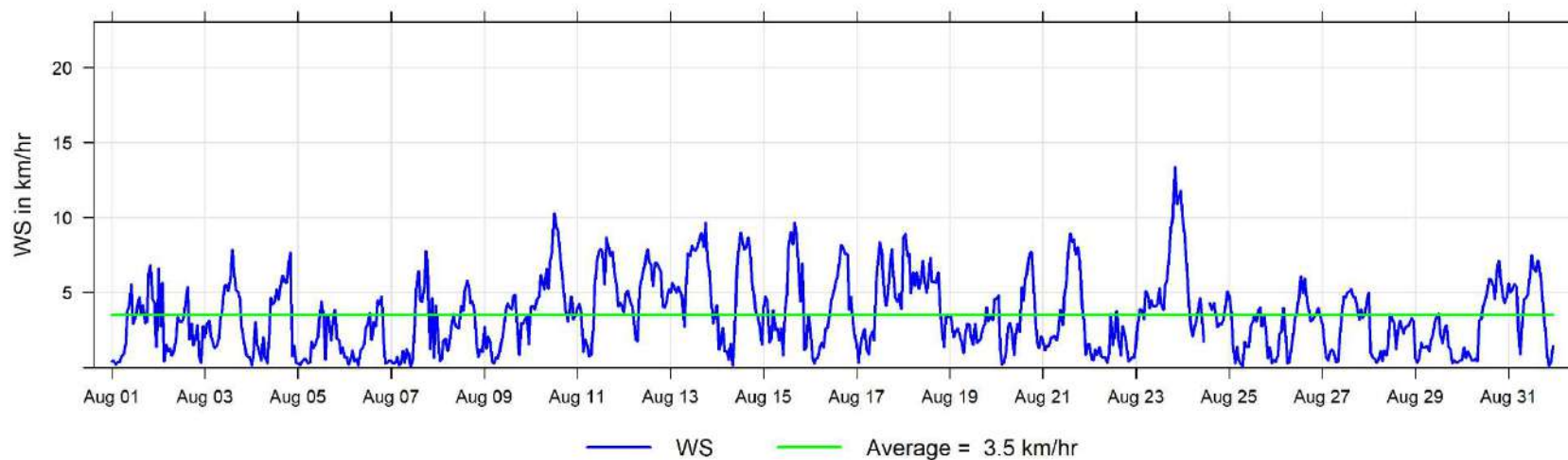
August 2023 Hourly Temperature Readings (in °C) at Dunes



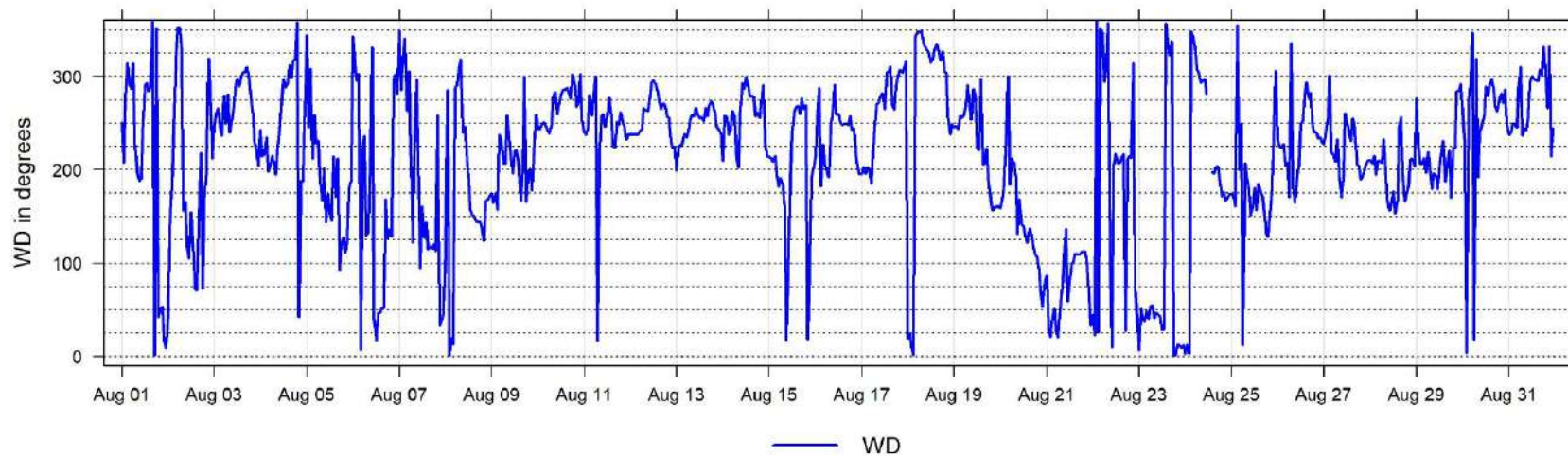
August 2023 Hourly Readings of Relative Humidity (in %) at Dunes



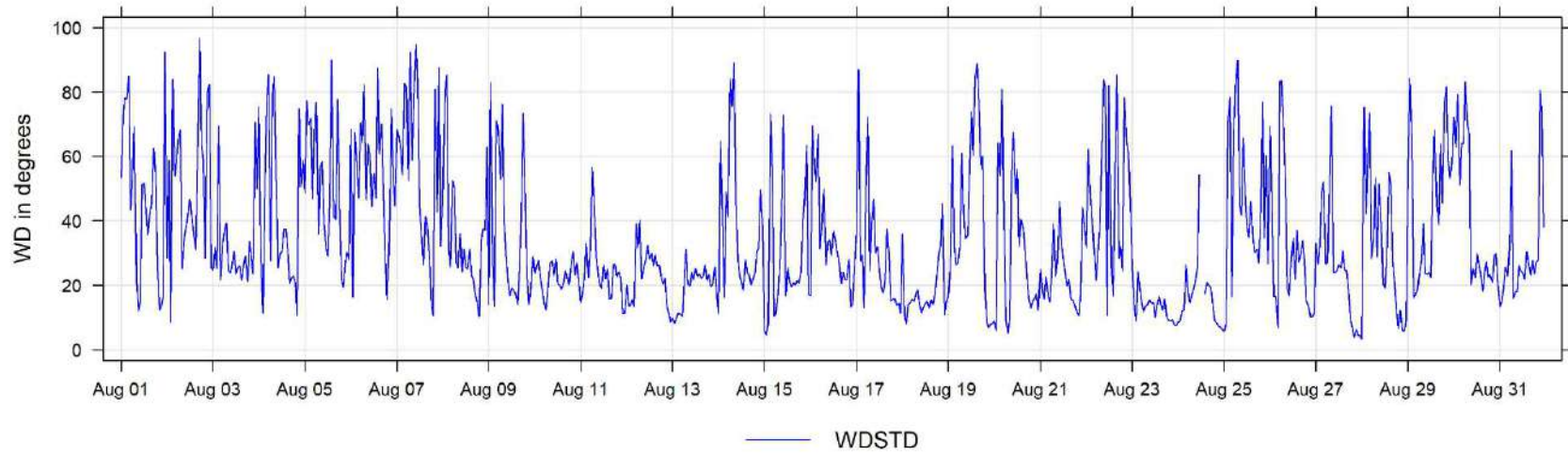
August 2023 Hourly Readings of Wind Speed (in km/hr) at Dunes

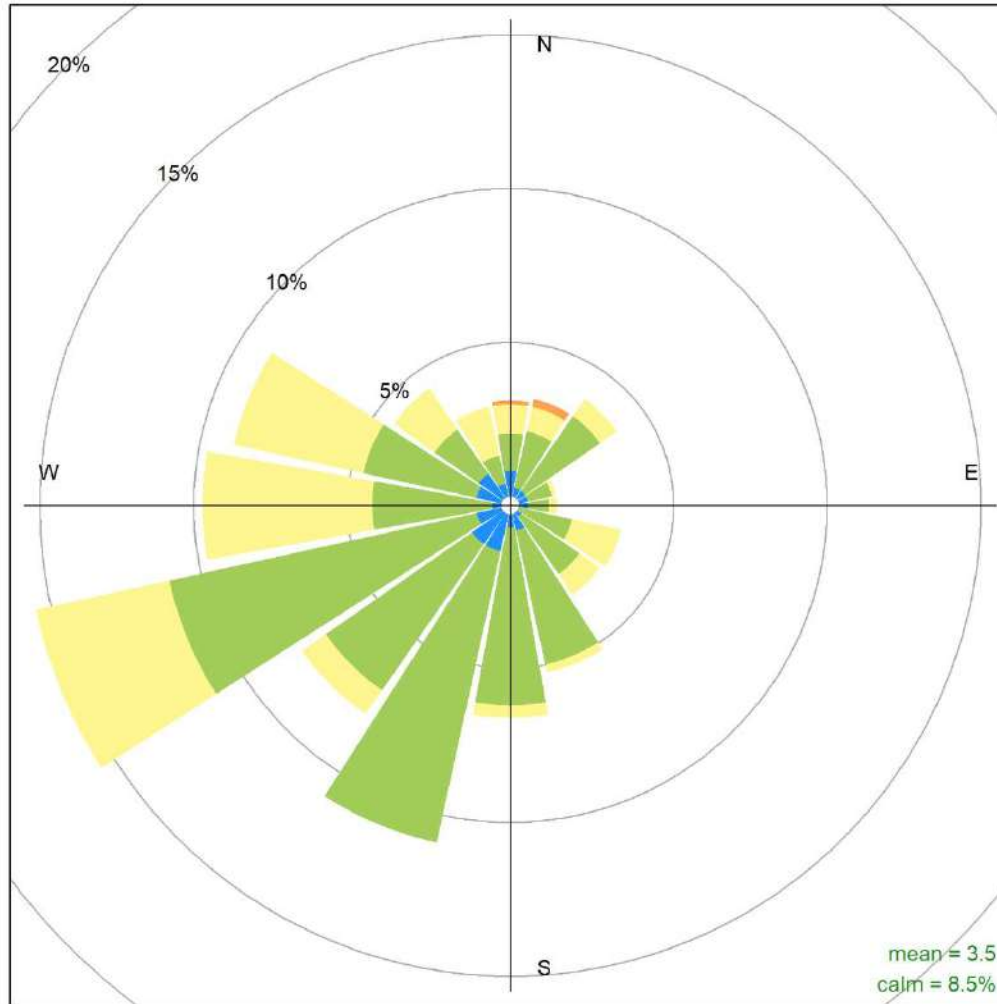


August 2023 Hourly Readings of Wind Direction (in degrees) at Dunes



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



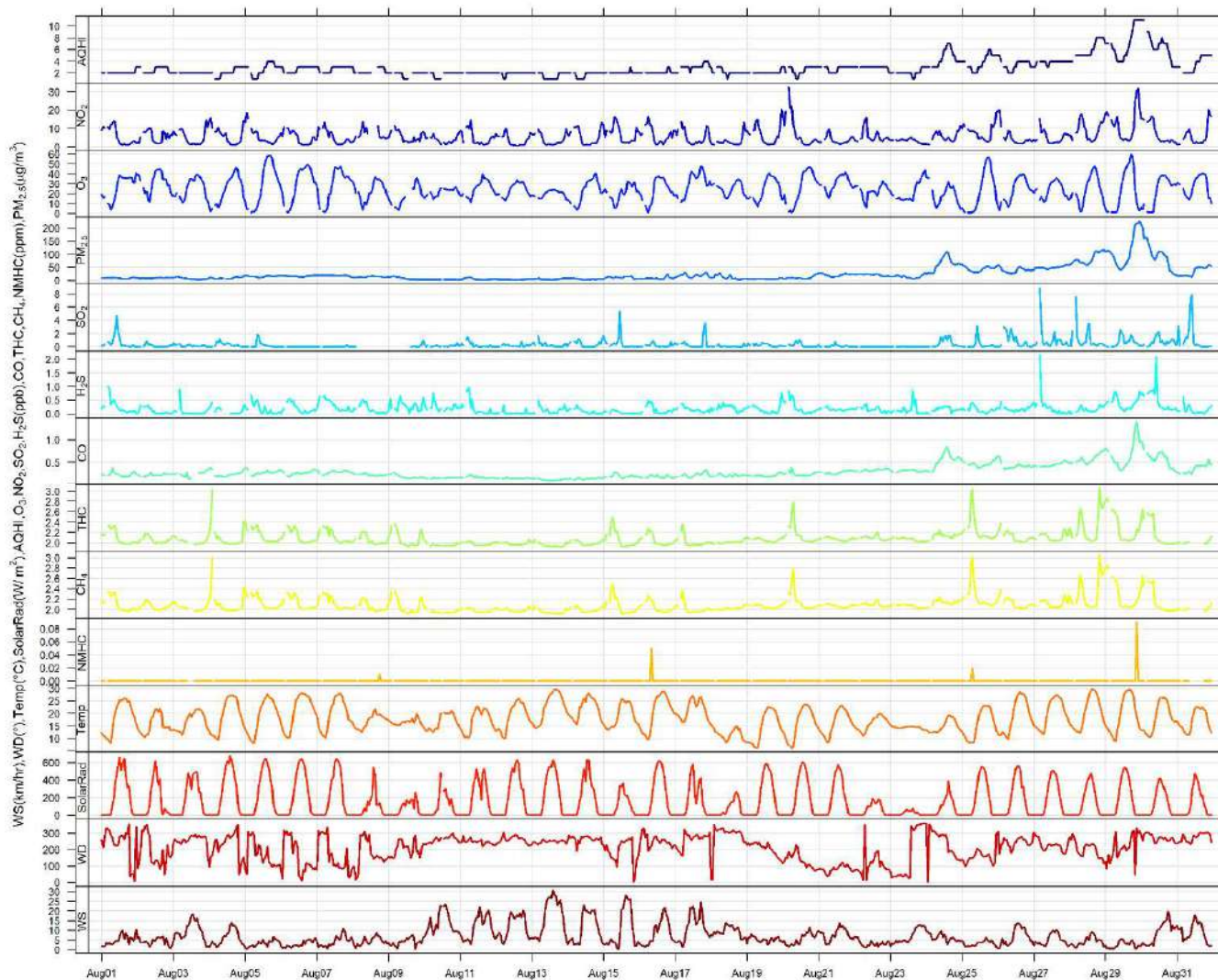


Dunes August 2023 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

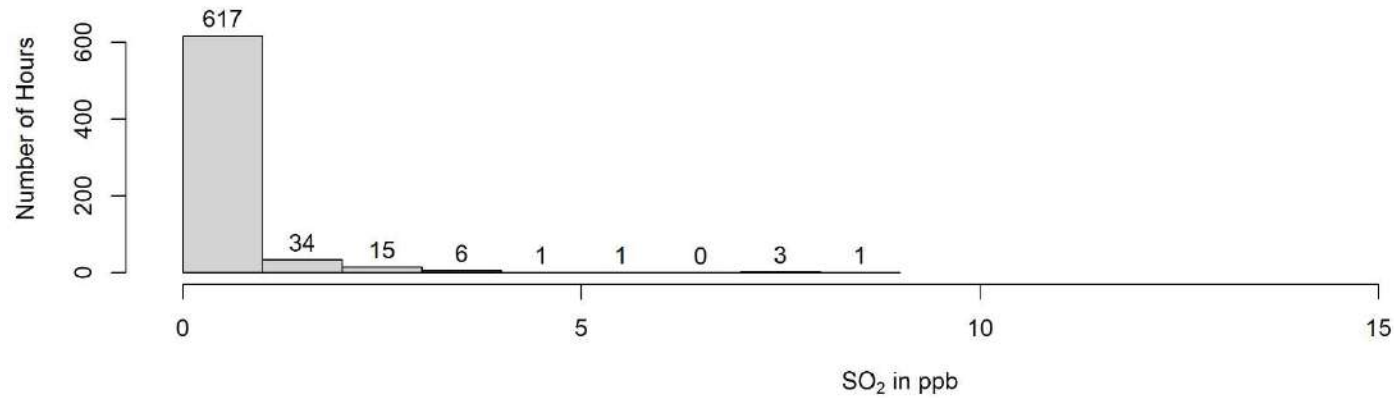
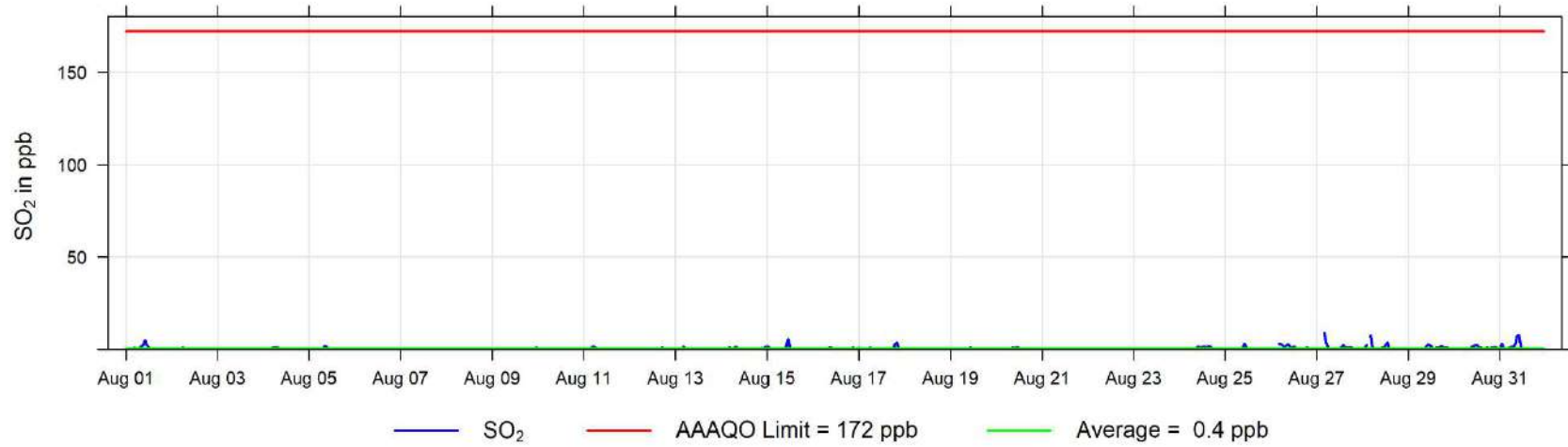
4 Grande Prairie - Henry Pirker Charts

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

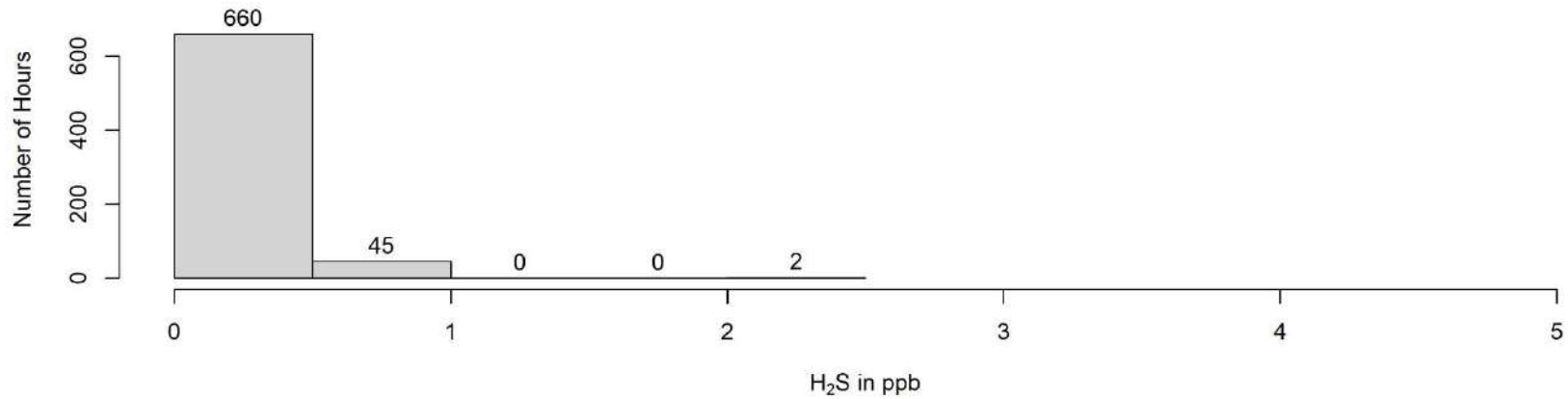
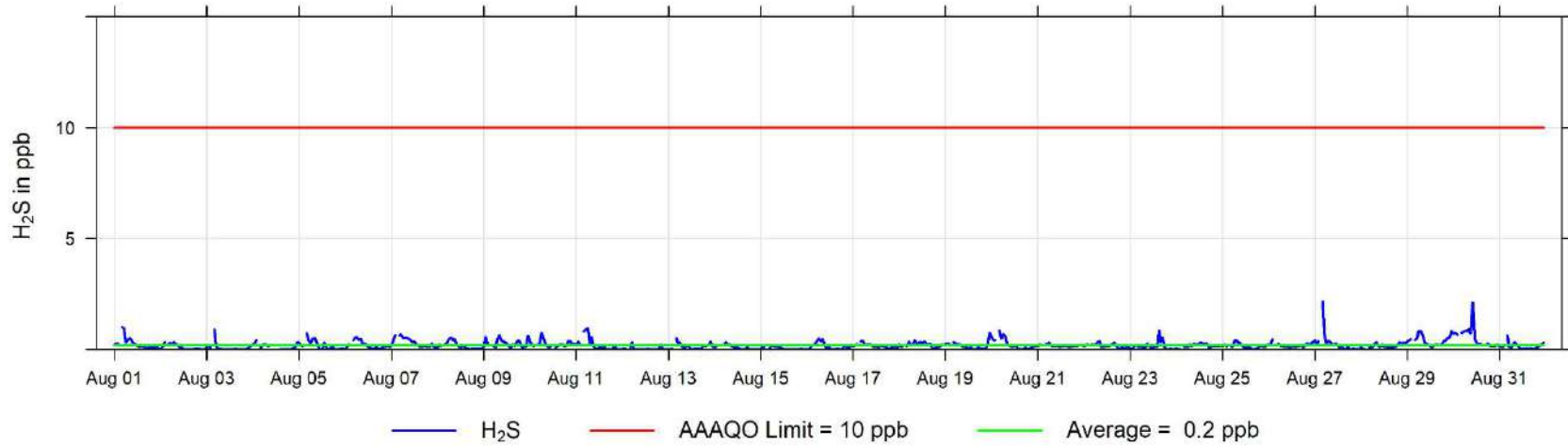
August 2023 Concentration Readings at Henry Pirker Station



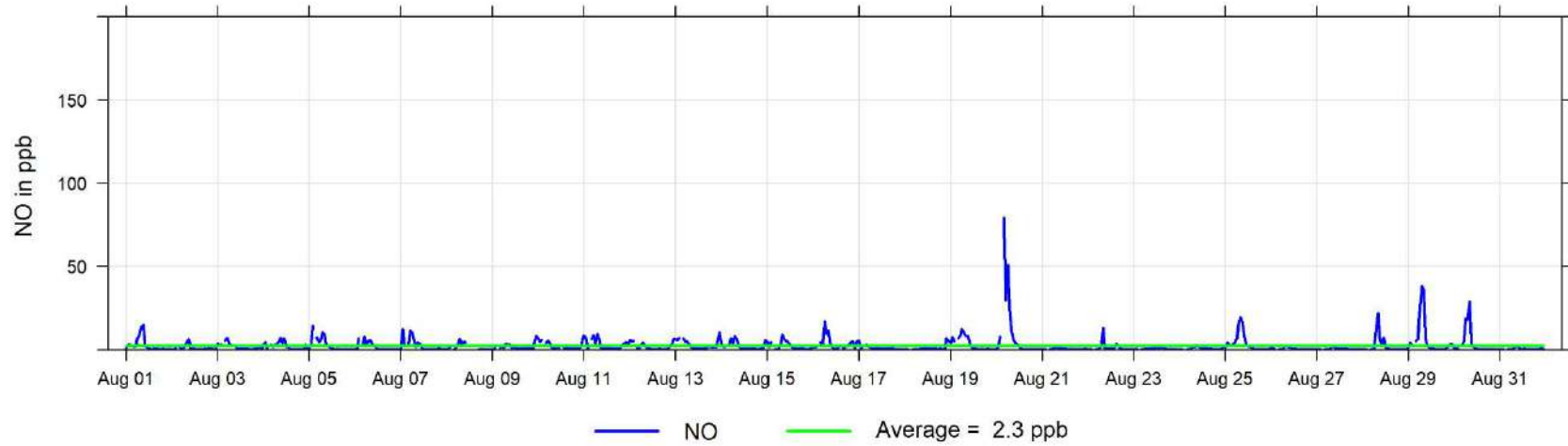
August 2023 Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



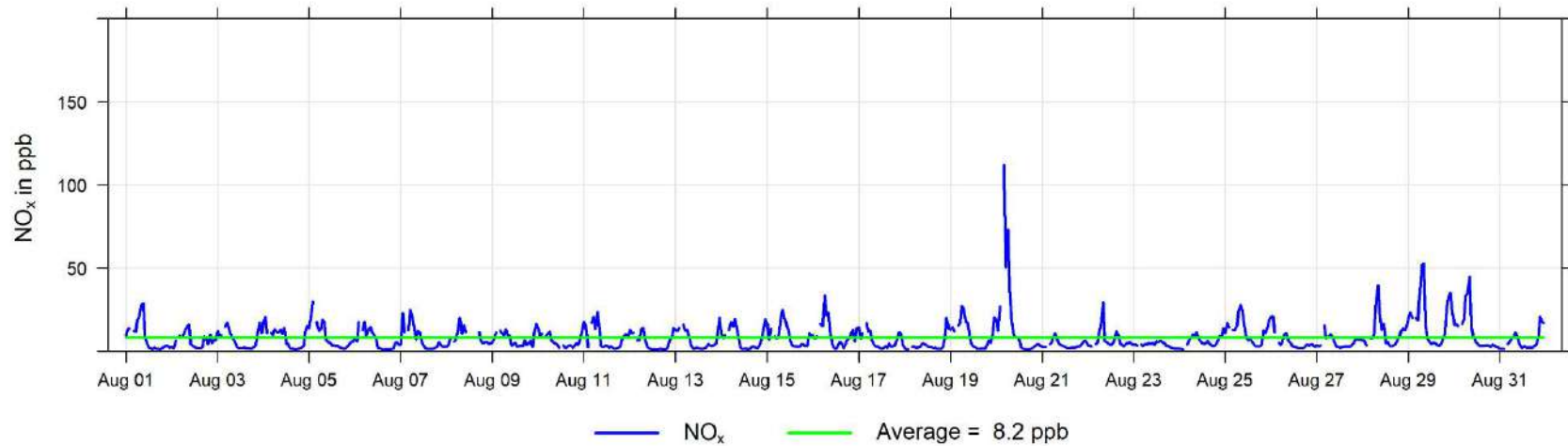
August 2023 Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



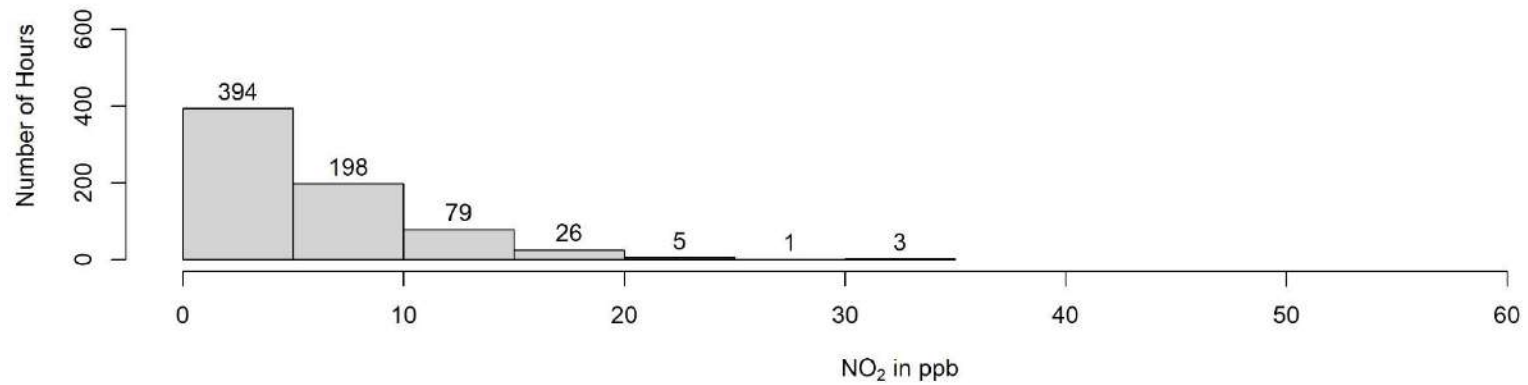
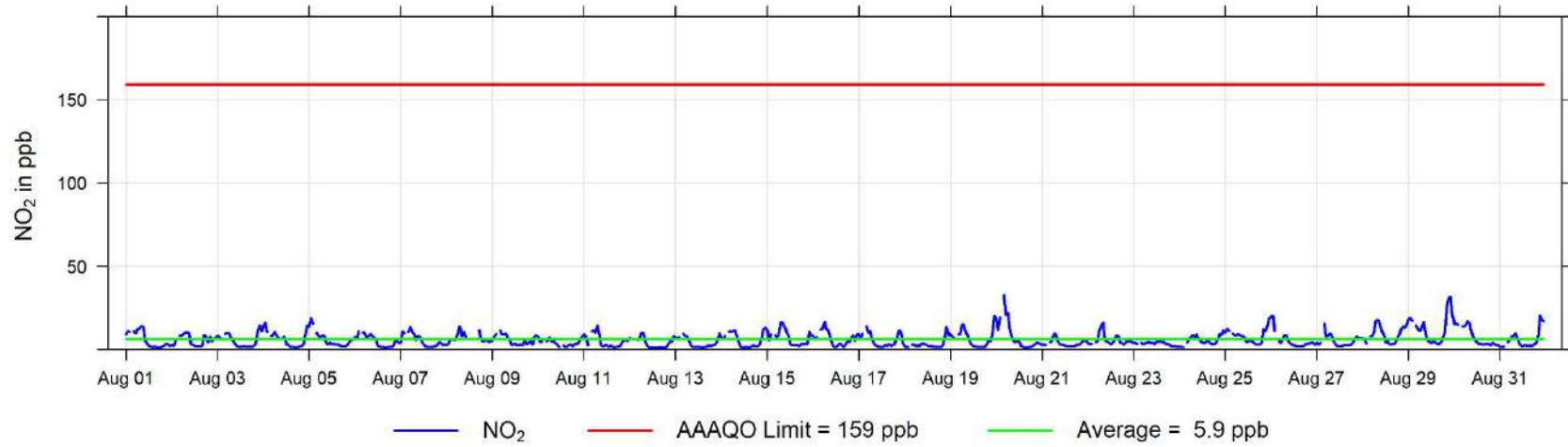
August 2023 Hourly Concentration Readings of NO (in ppb) at Henry Pirker



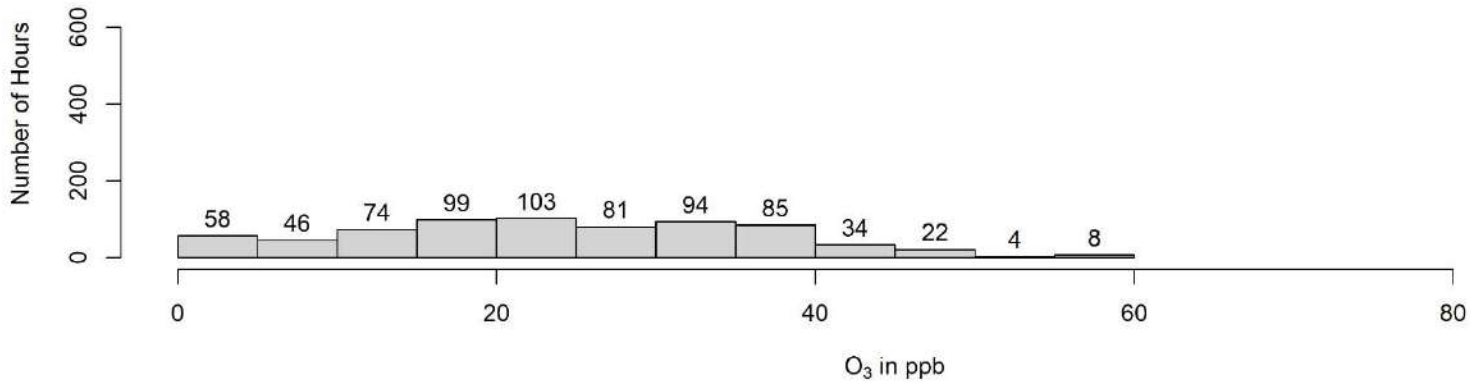
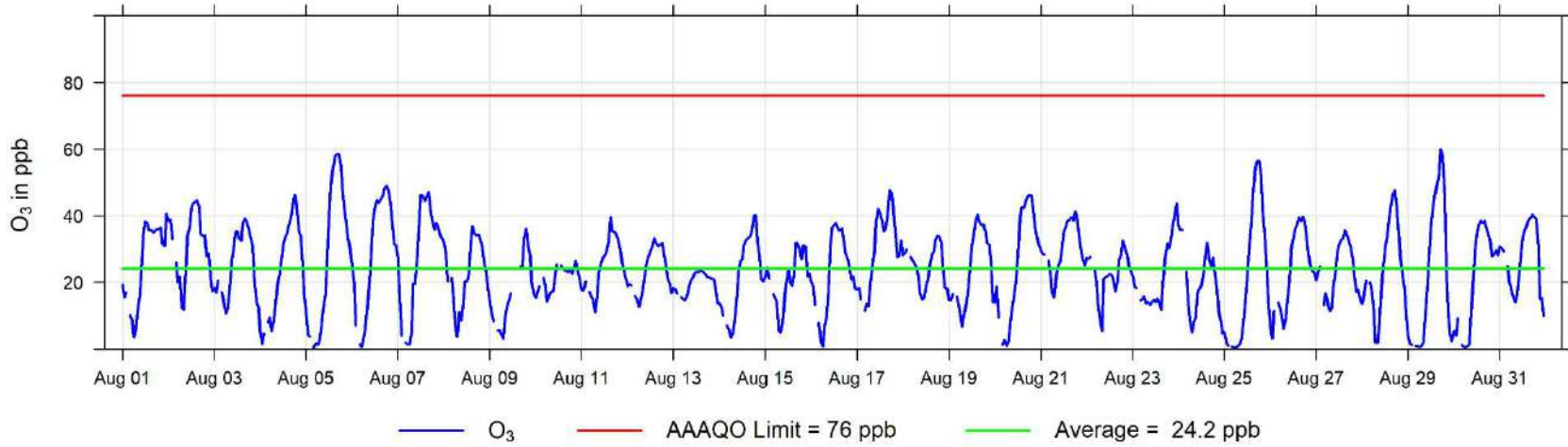
August 2023 Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



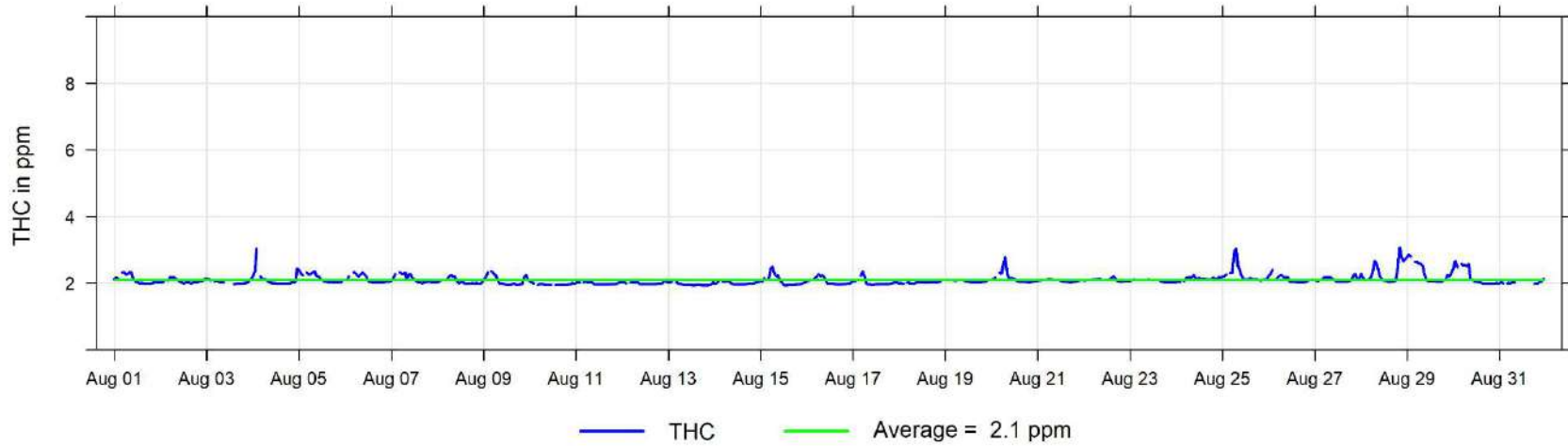
August 2023 Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker



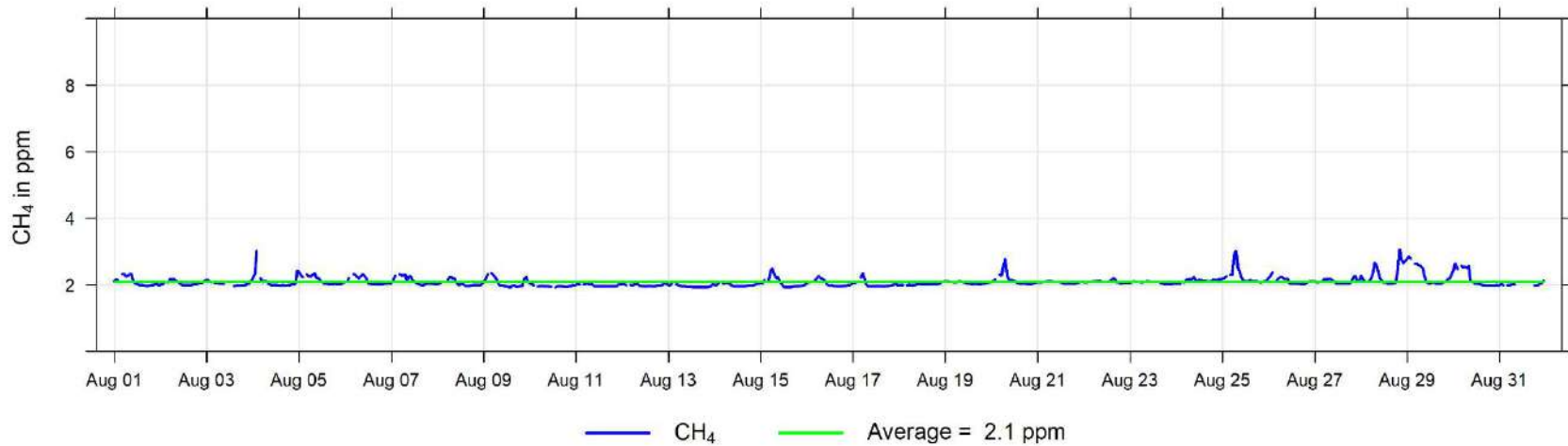
August 2023 Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



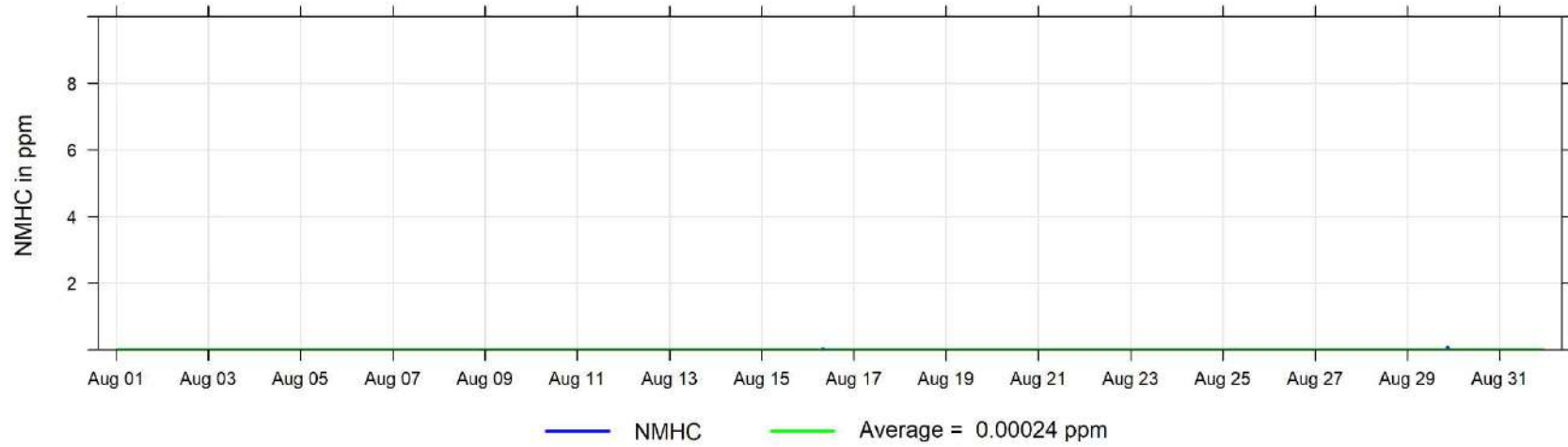
August 2023 Hourly Concentration Readings of THC (in ppm) at Henry Pirker



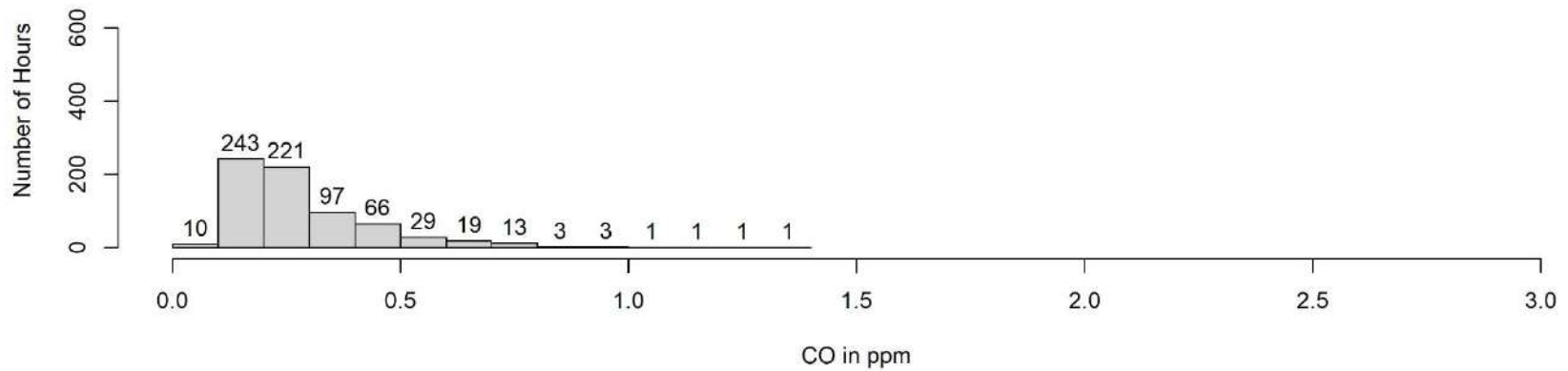
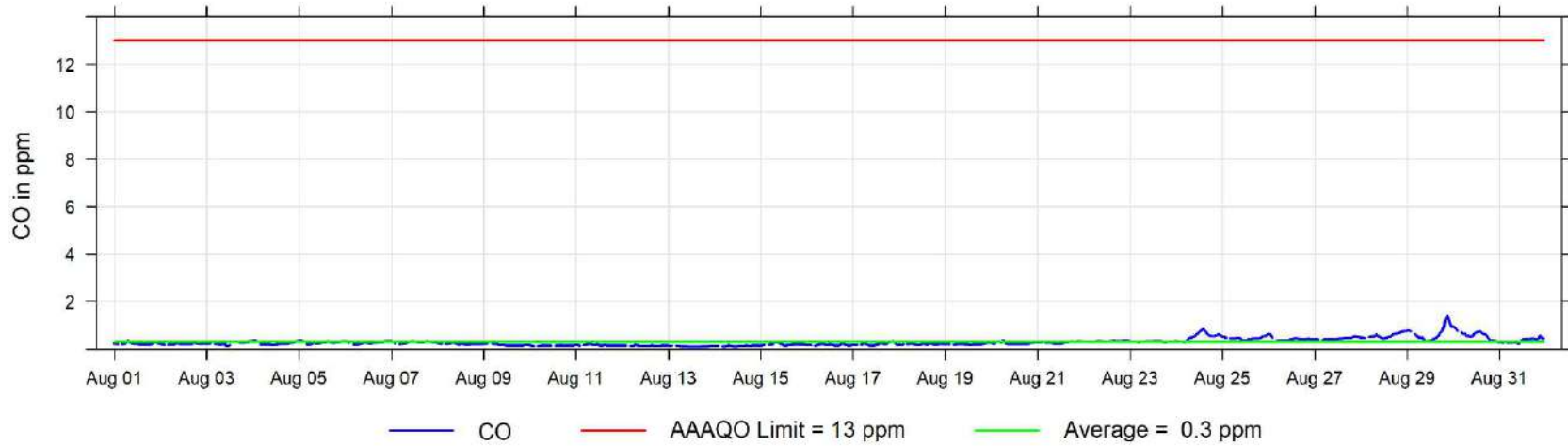
August 2023 Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



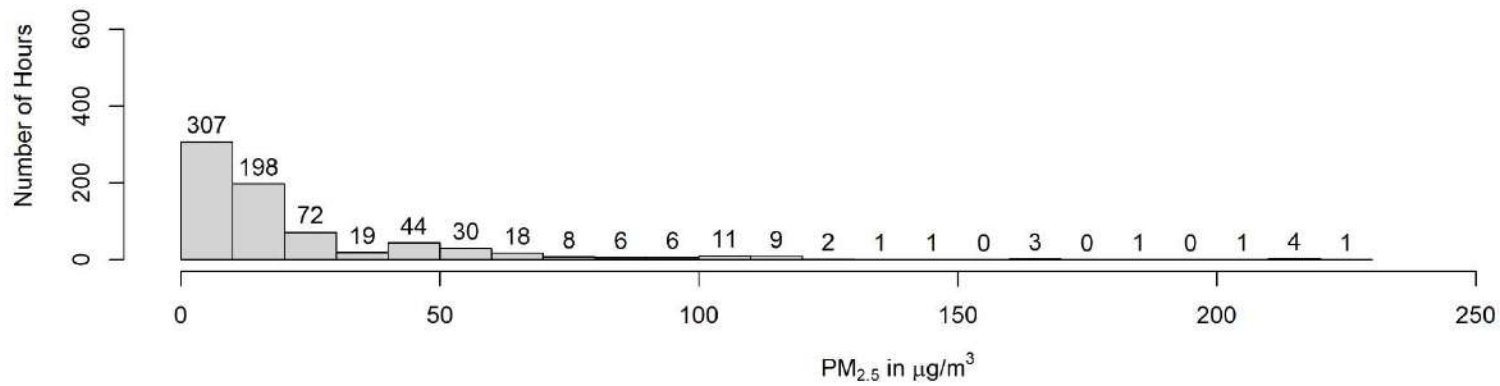
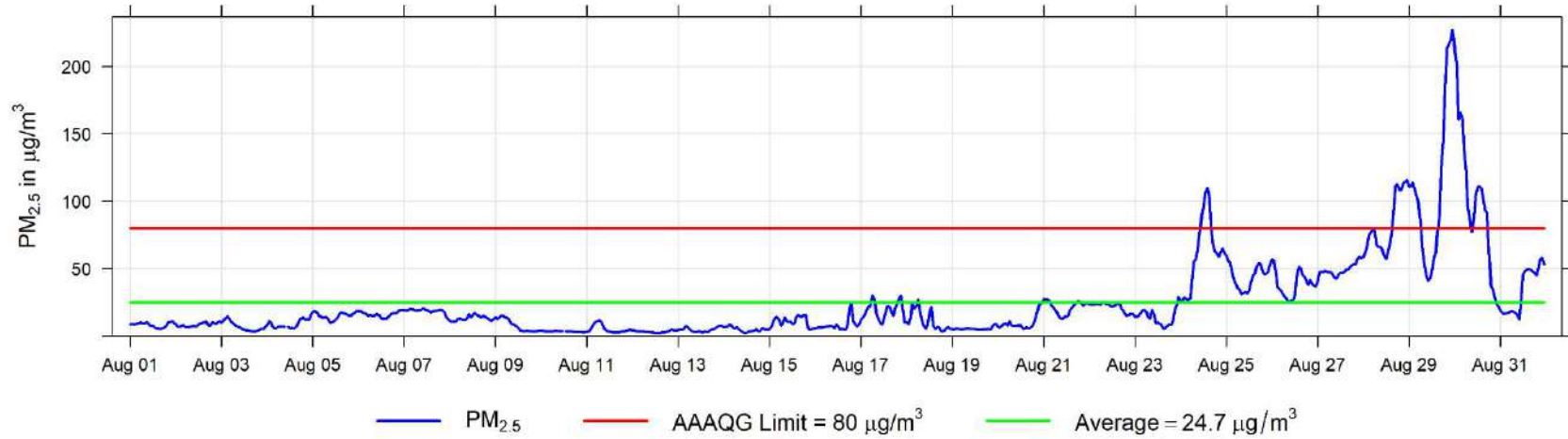
August 2023 Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



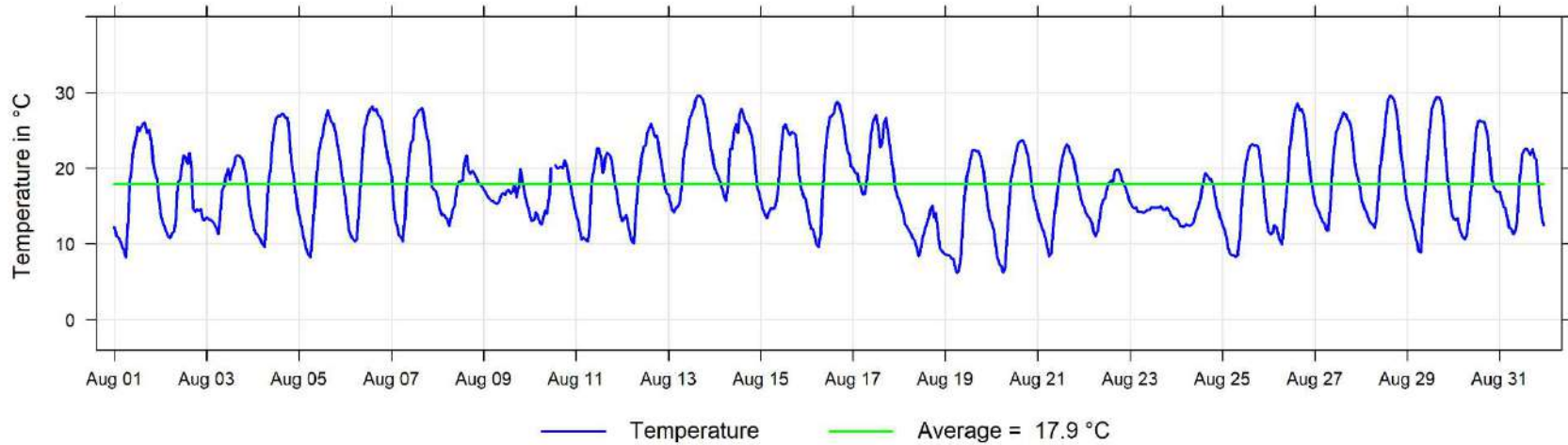
August 2023 Hourly Concentration Readings of CO (in ppm) at Henry Pirker



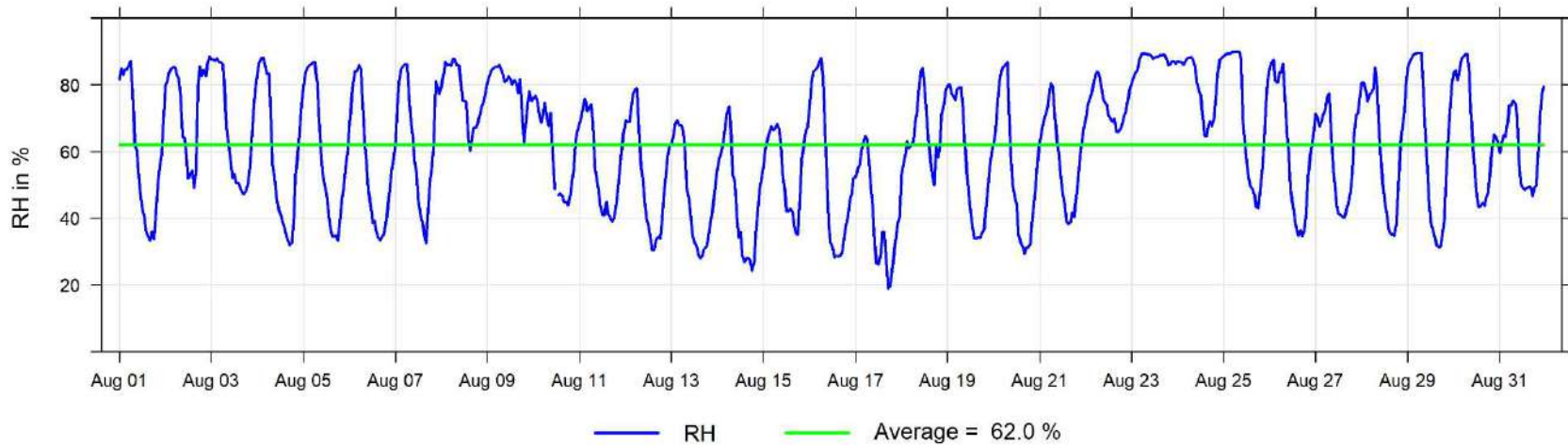
August 2023 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker



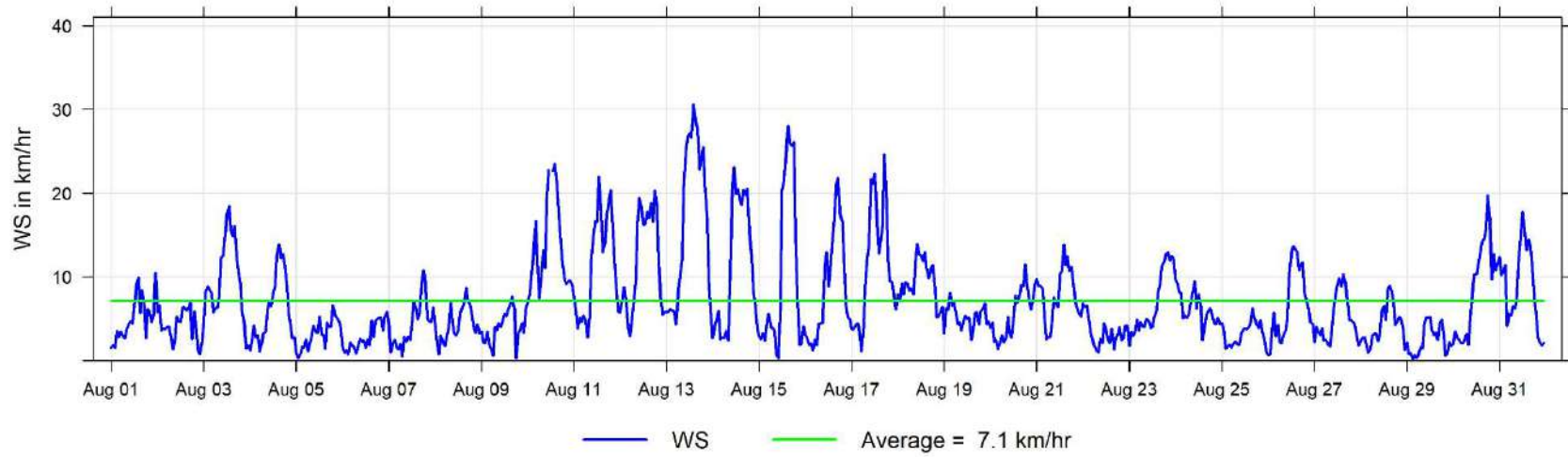
August 2023 Hourly Temperature Readings (in °C) at Henry Pirker



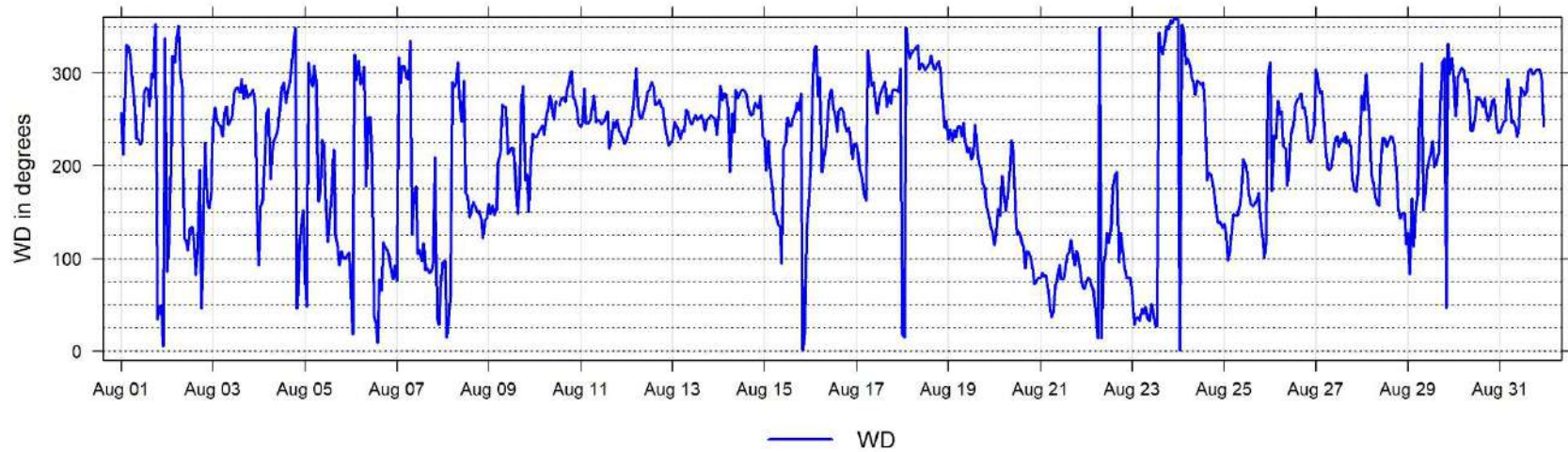
August 2023 Hourly Readings of Relative Humidity (in %) at Henry Pirker



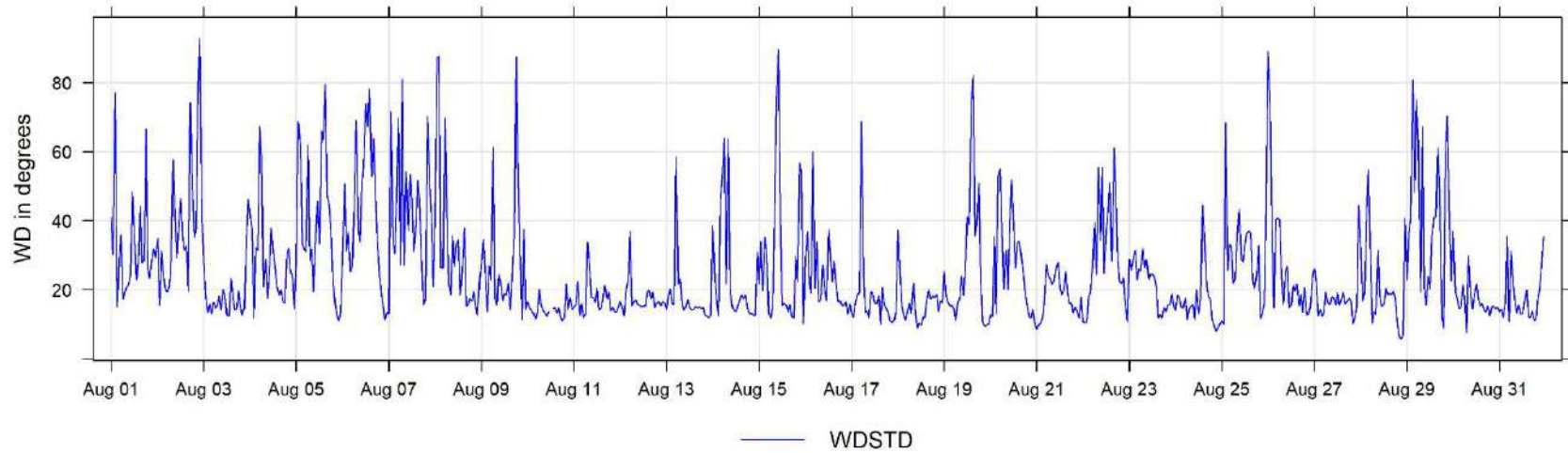
August 2023 Hourly Readings of Wind Speed (in km/hr) at Henry Pirker

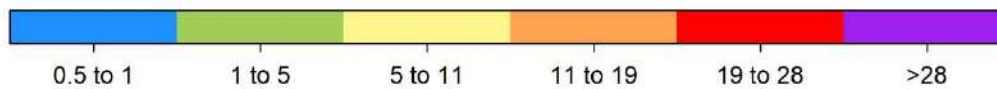
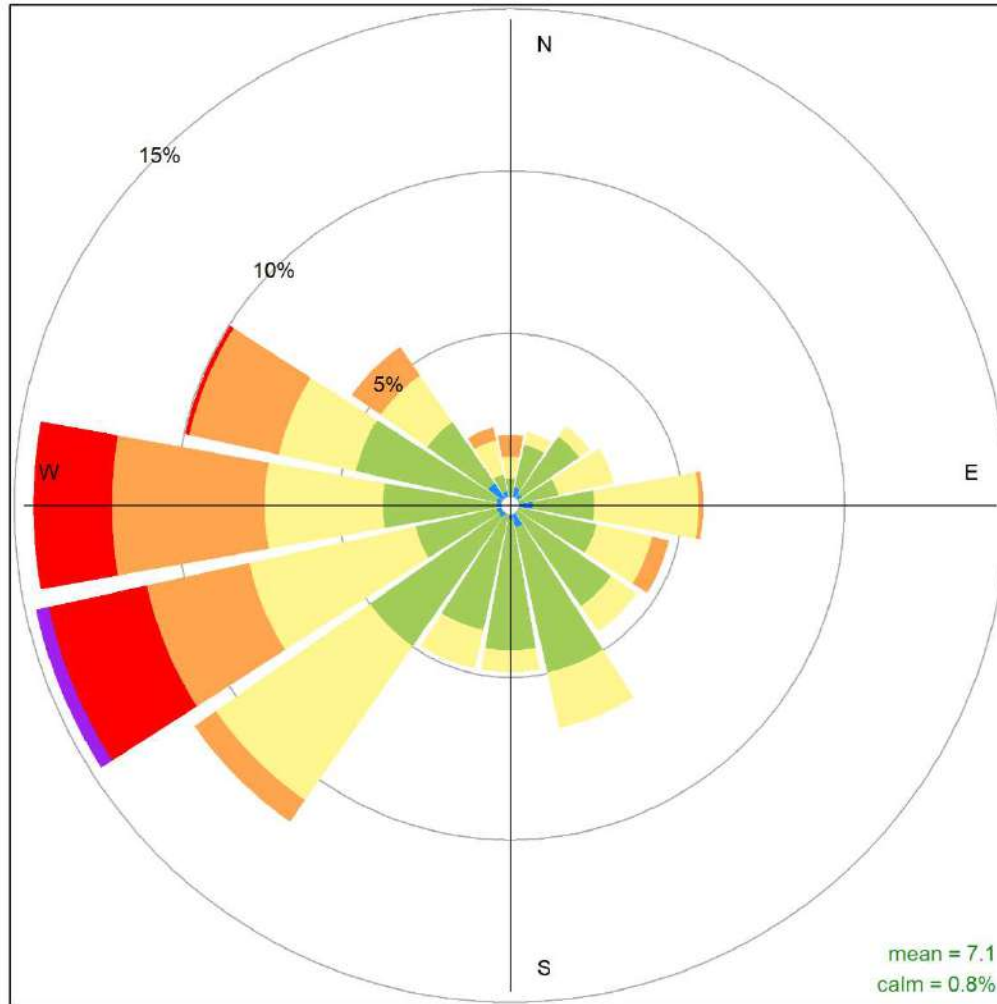


August 2023 Hourly Readings of Wind Direction (in degrees) at Henry Pirker



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

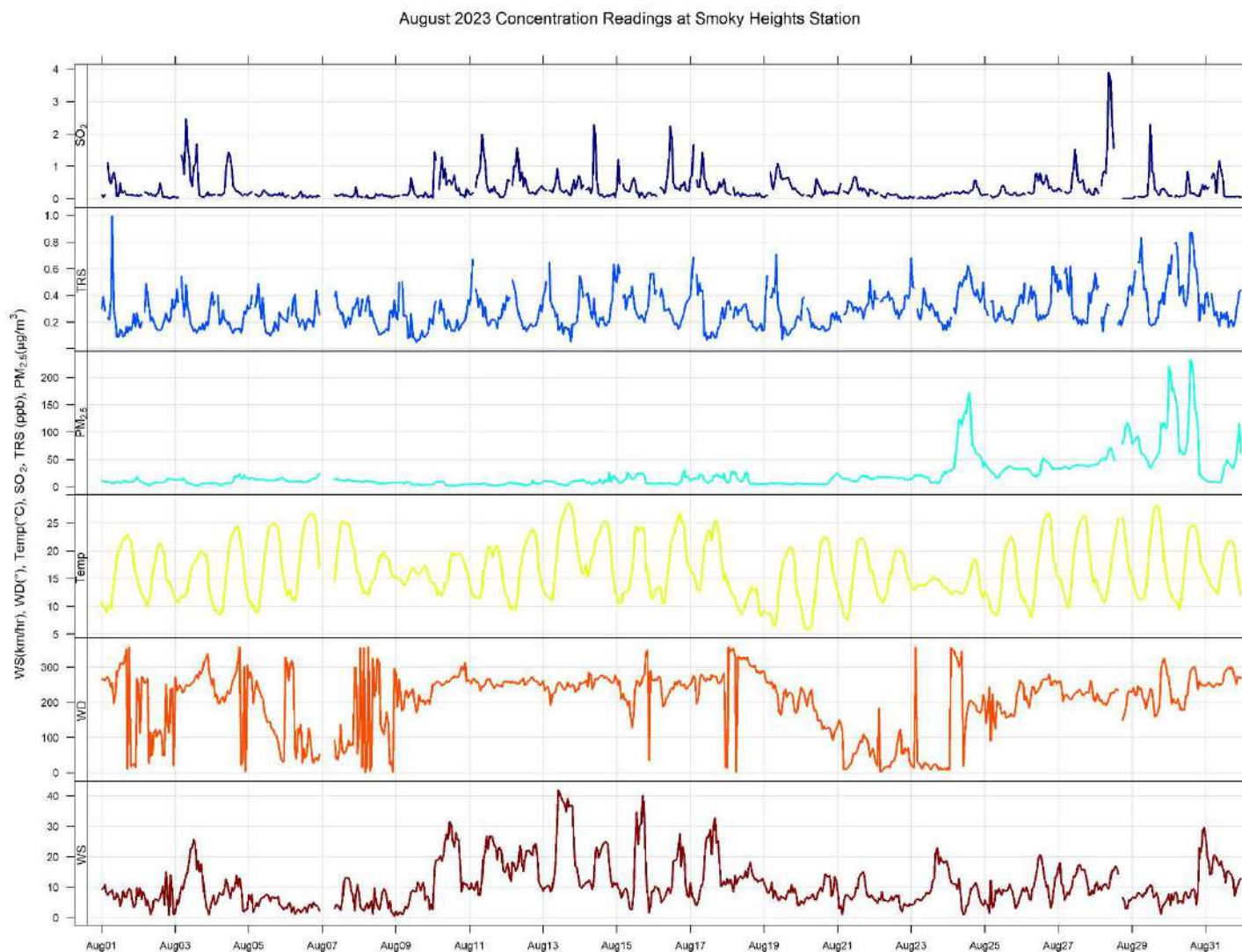




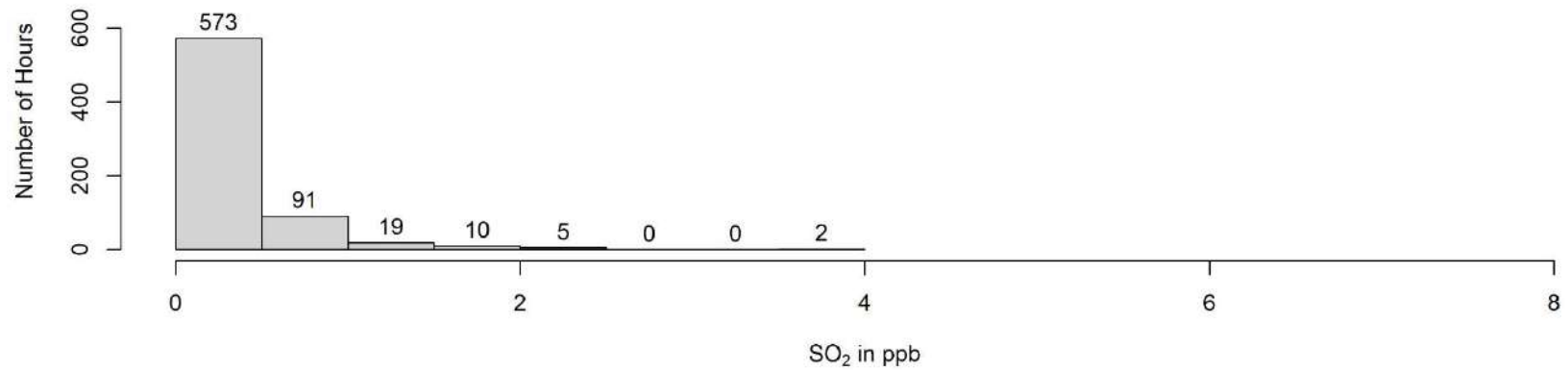
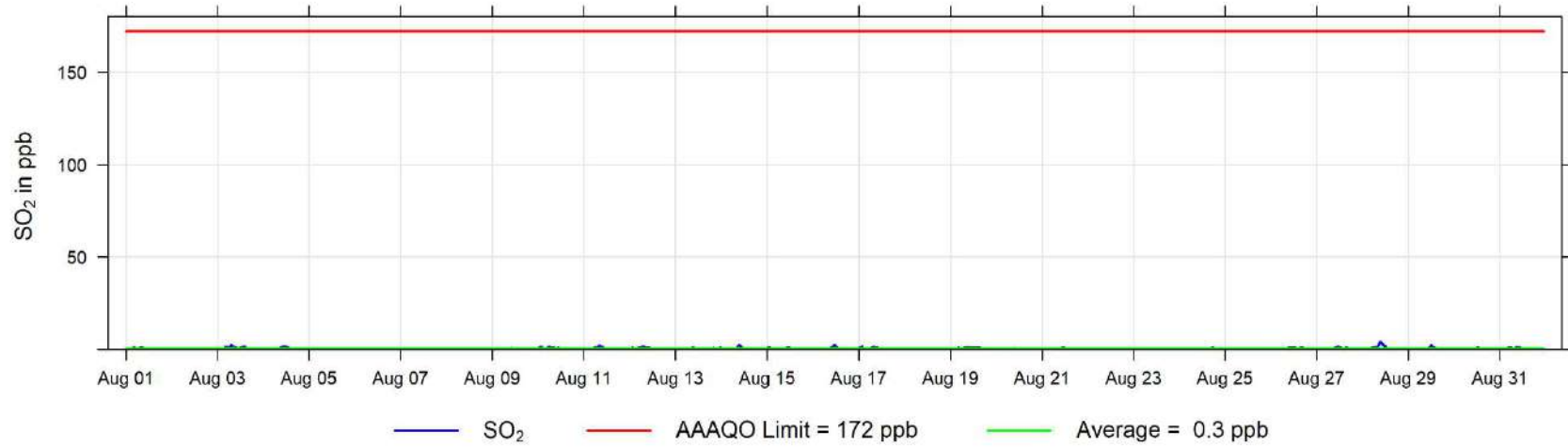
Henry Pirker August 2023 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

5 Smoky Heights Charts

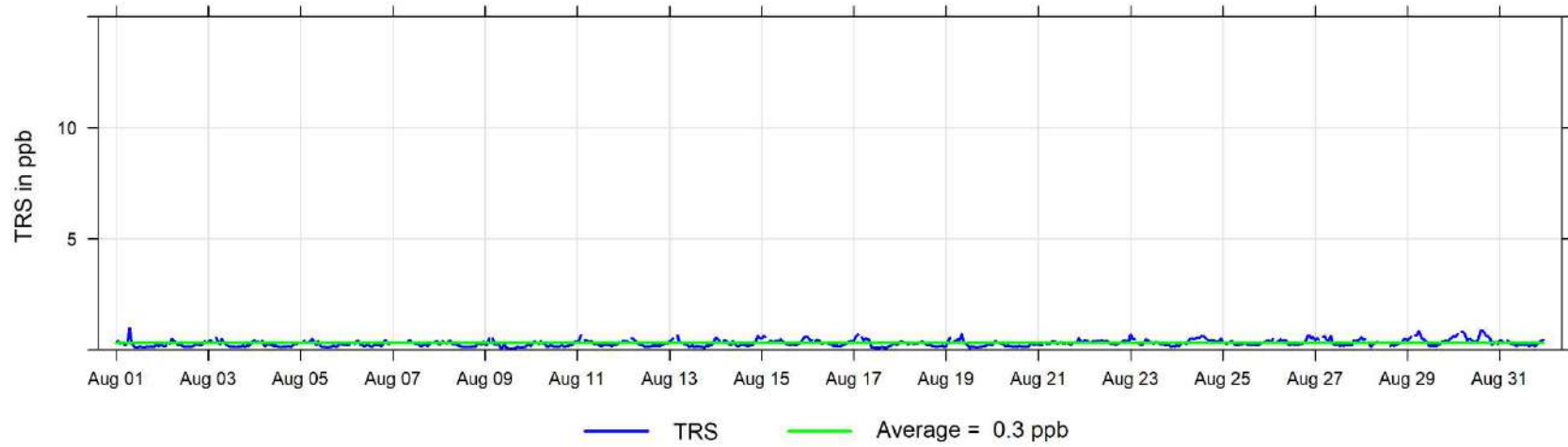
The following pages include the charts and histograms for Smoky Heights Station



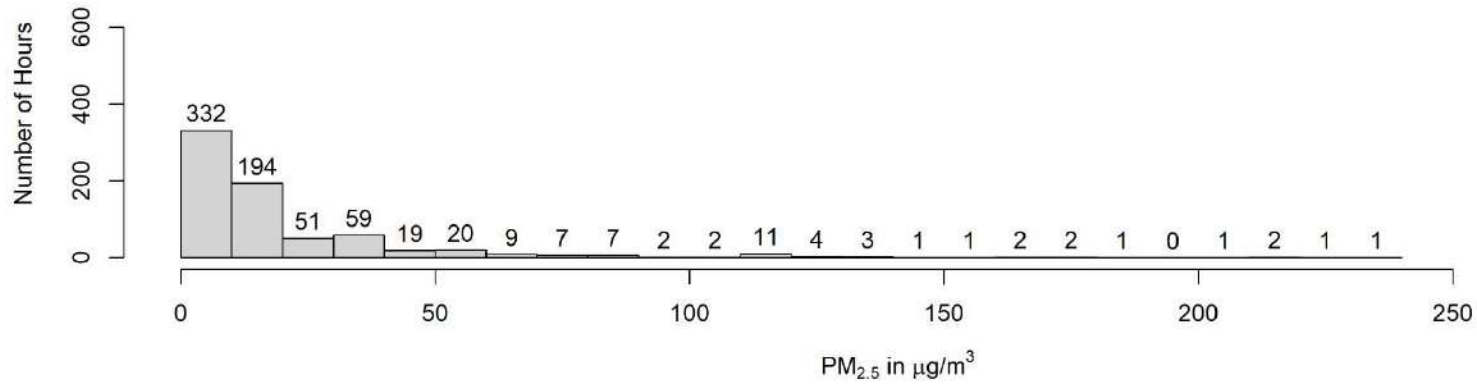
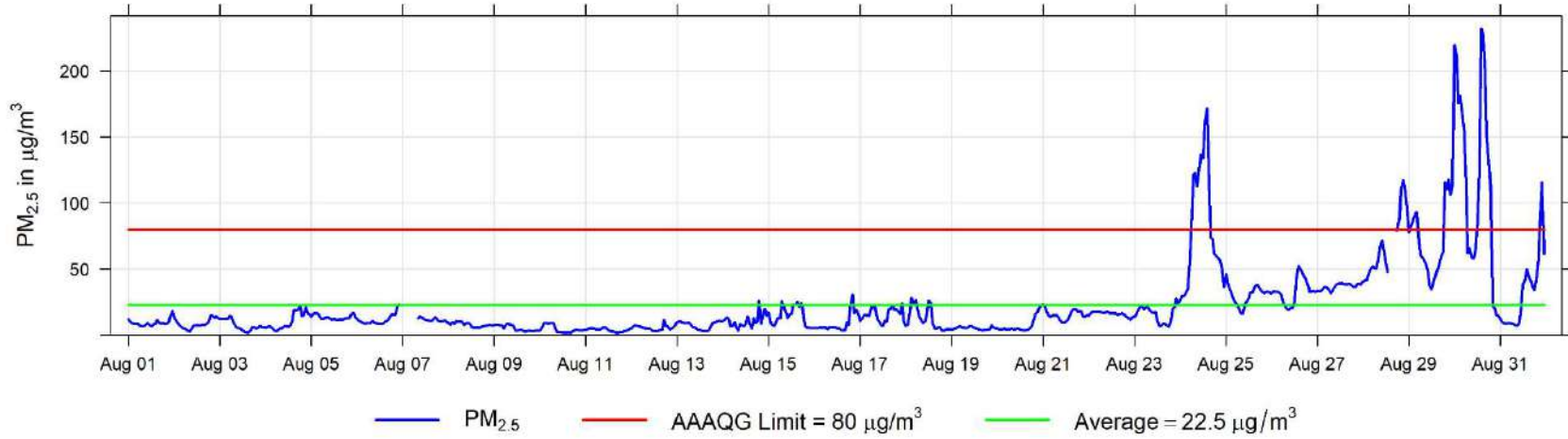
August 2023 Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



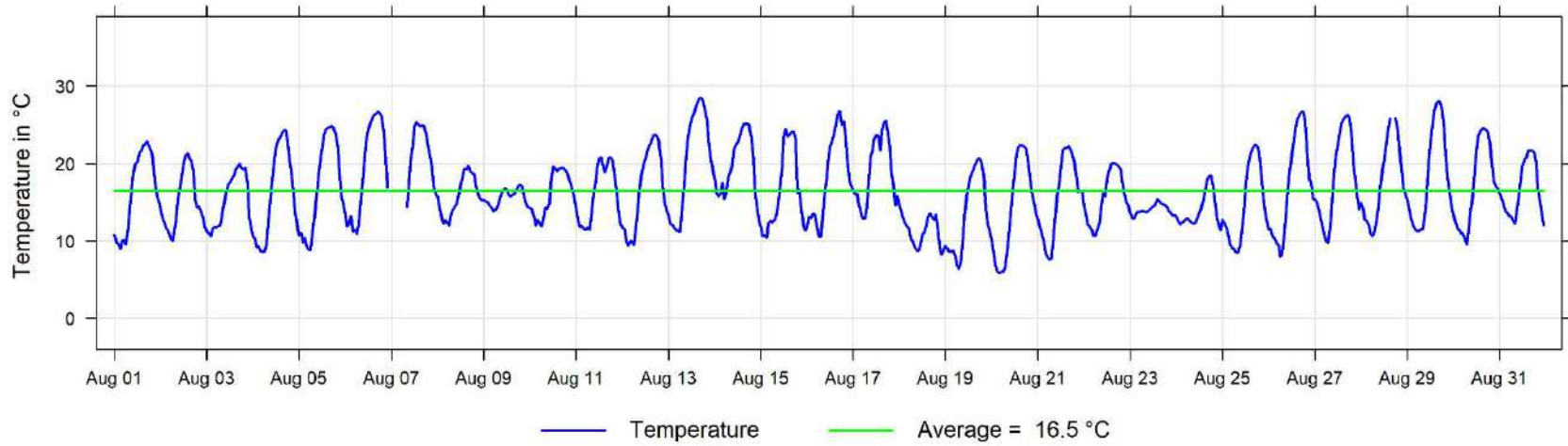
August 2023 Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



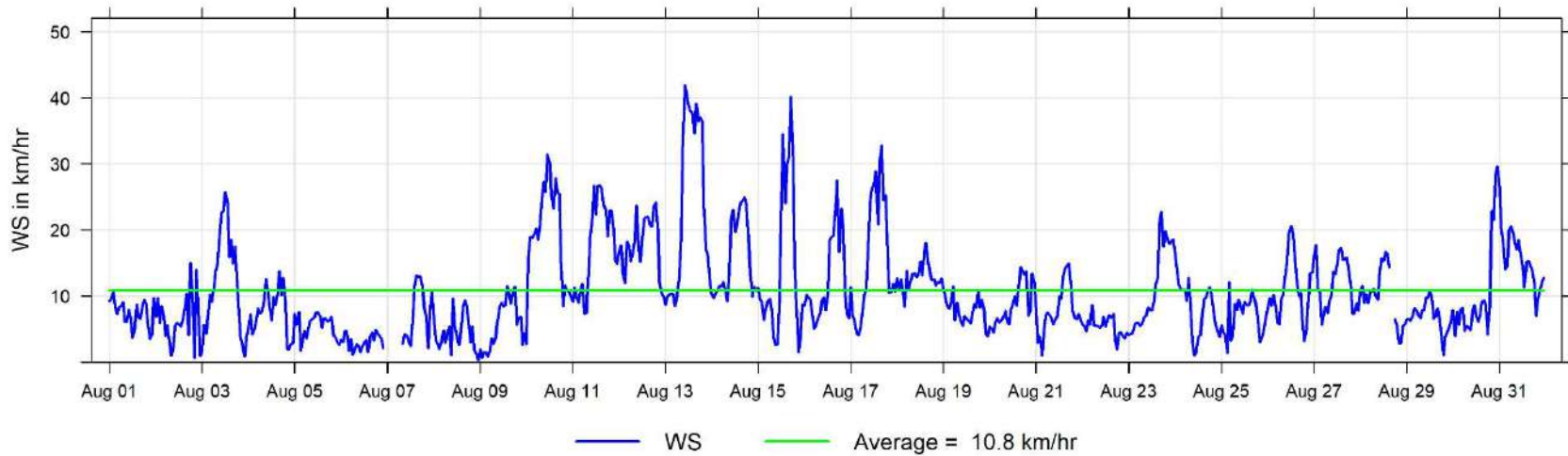
August 2023 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Smoky Heights



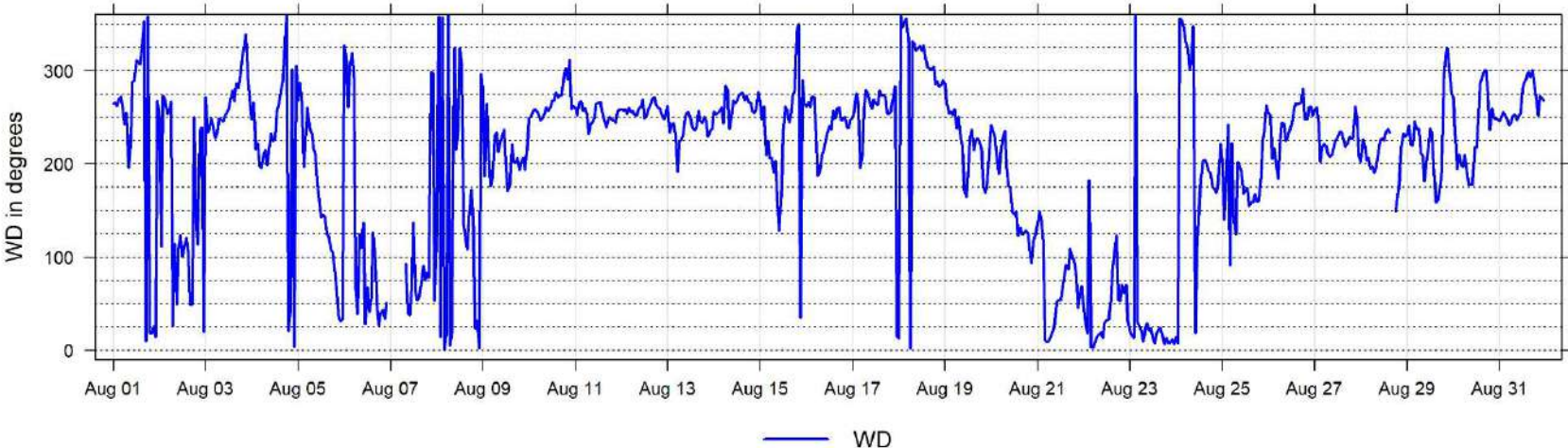
August 2023 Hourly Temperature Readings (in °C) at Smoky Heights



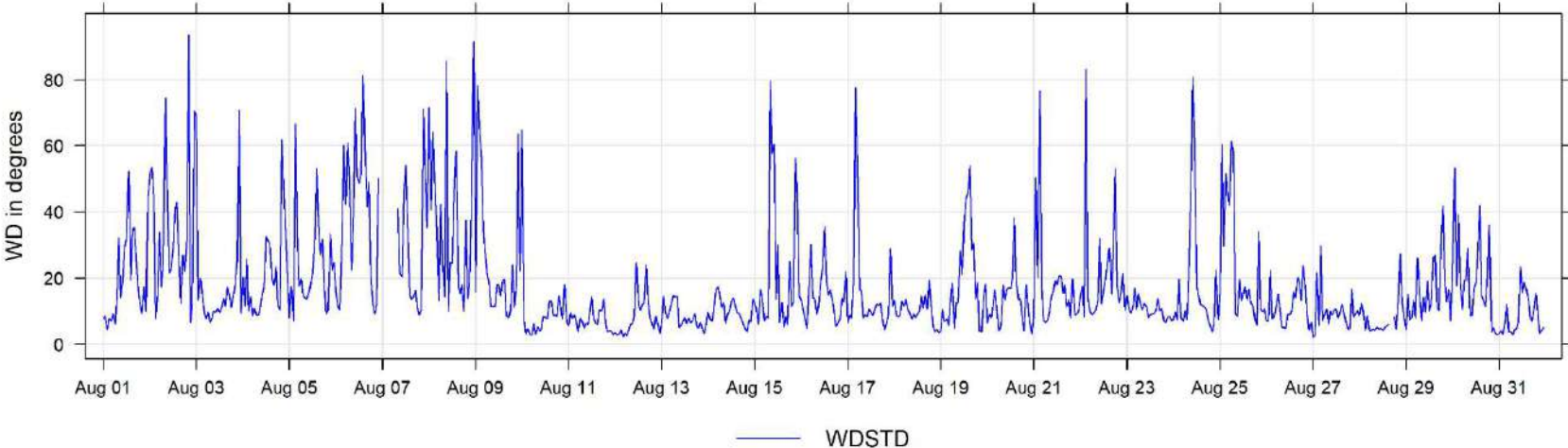
August 2023 Hourly Readings of Wind Speed (in km/hr) at Smoky Heights

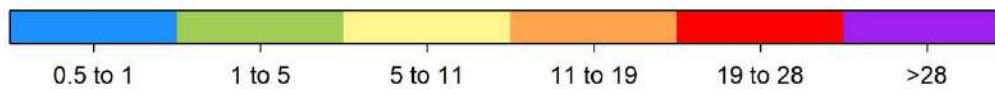
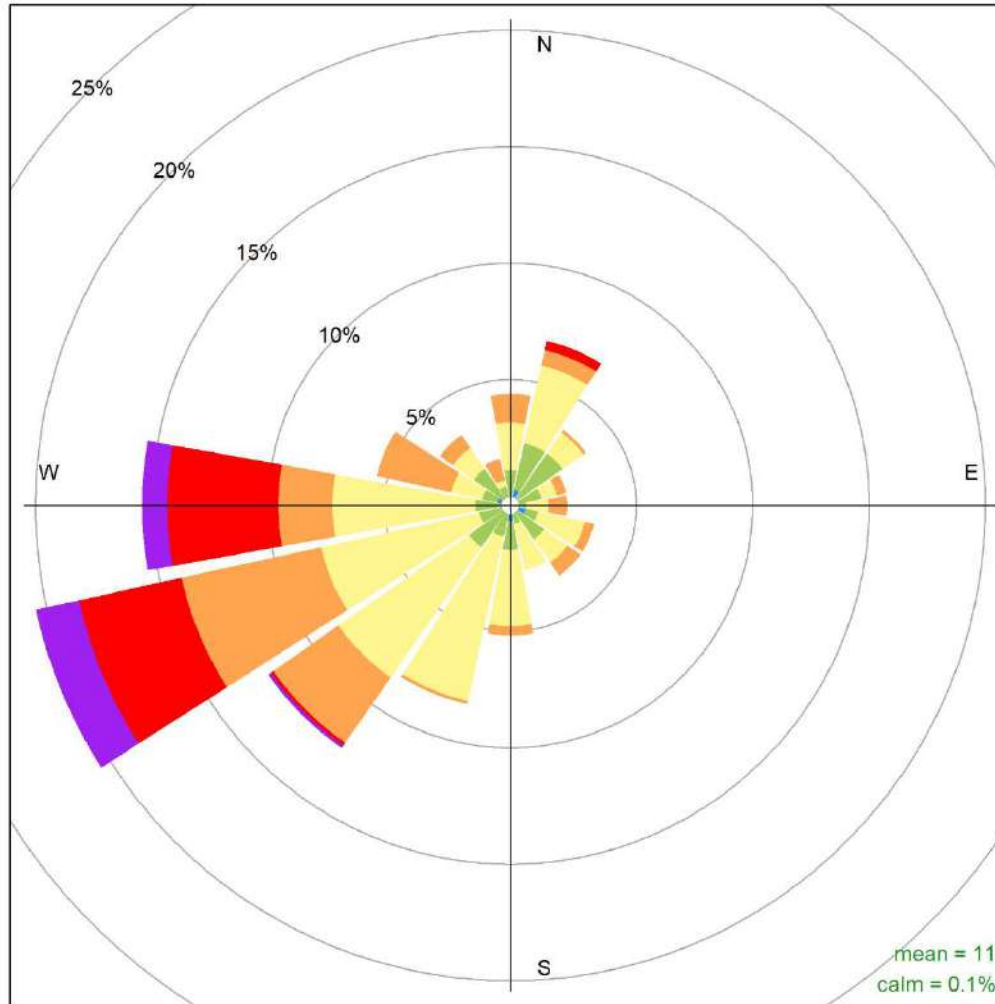


August 2023 Hourly Readings of Wind Direction (in degrees) at Smoky Heights



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

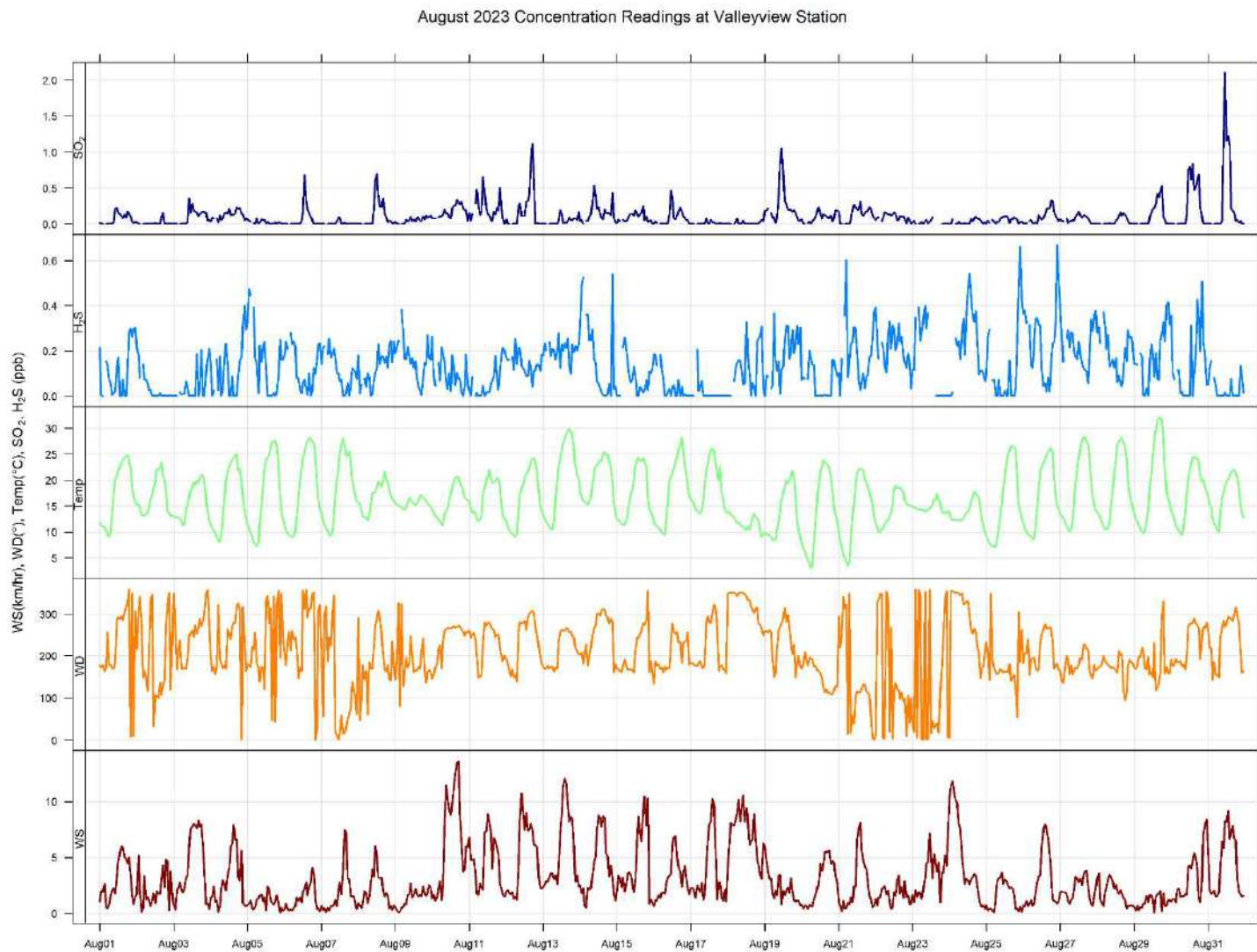




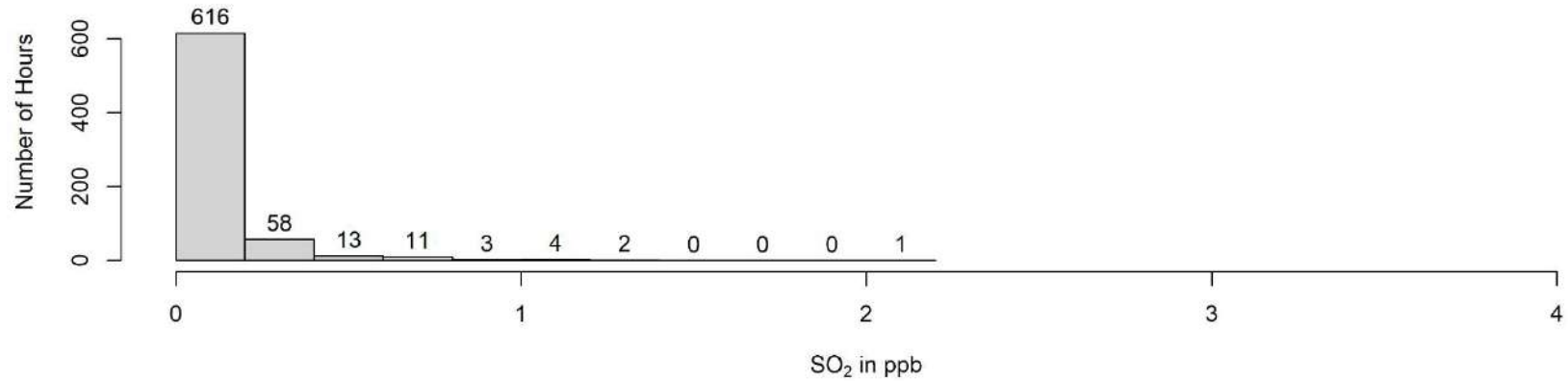
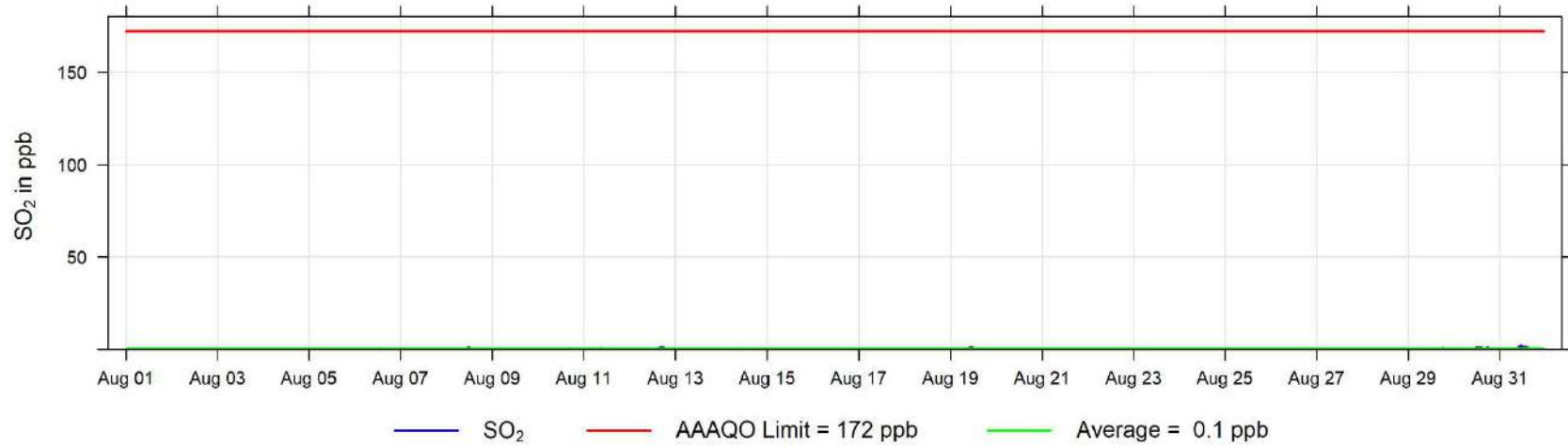
Smoky Heights August 2023 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

6 Valleyview Charts

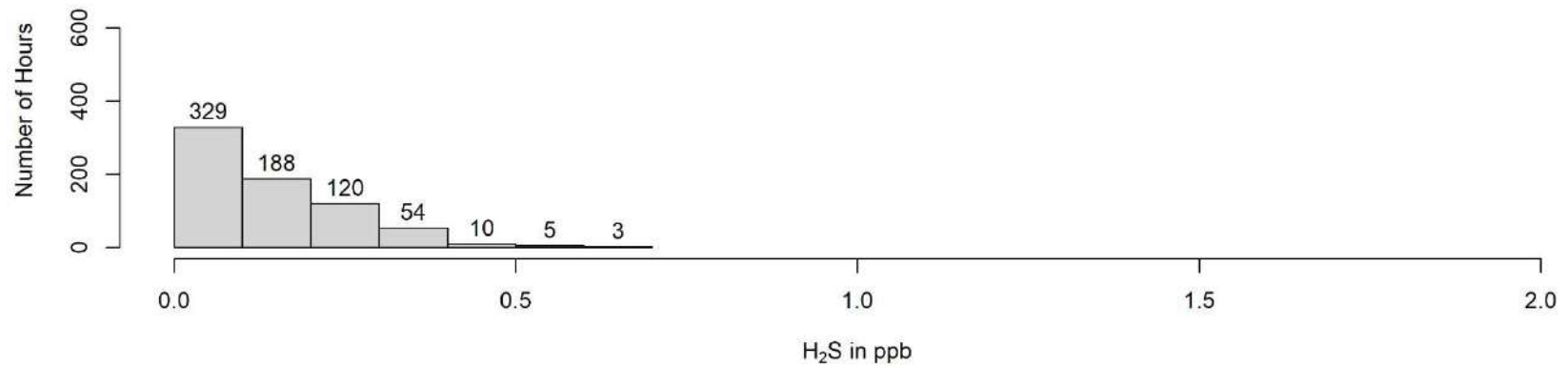
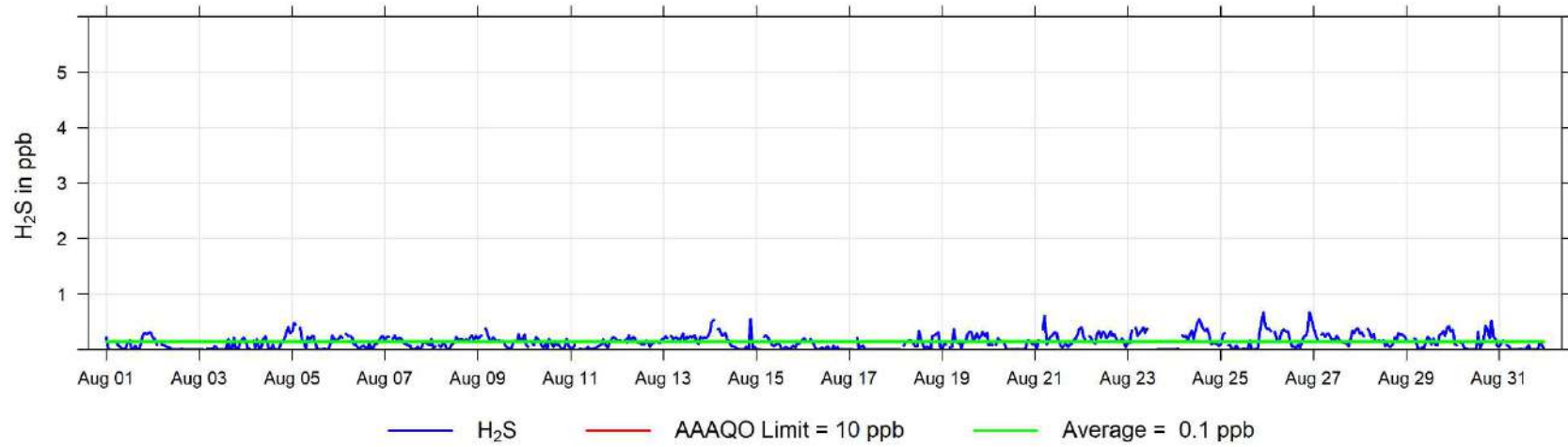
The following pages include the charts and histograms for Valleyview Station



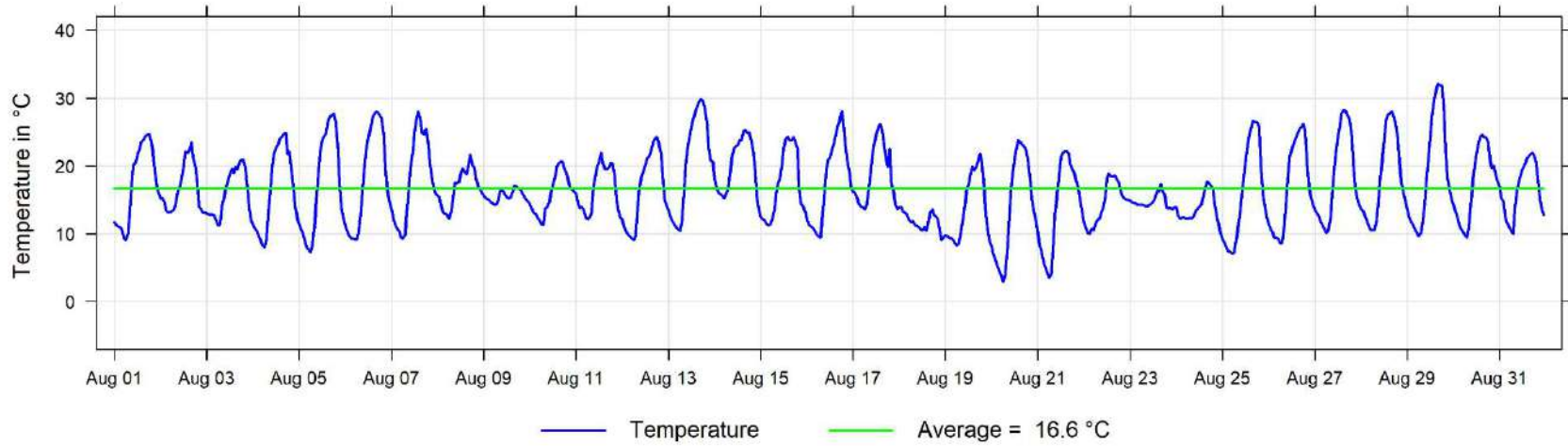
August 2023 Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



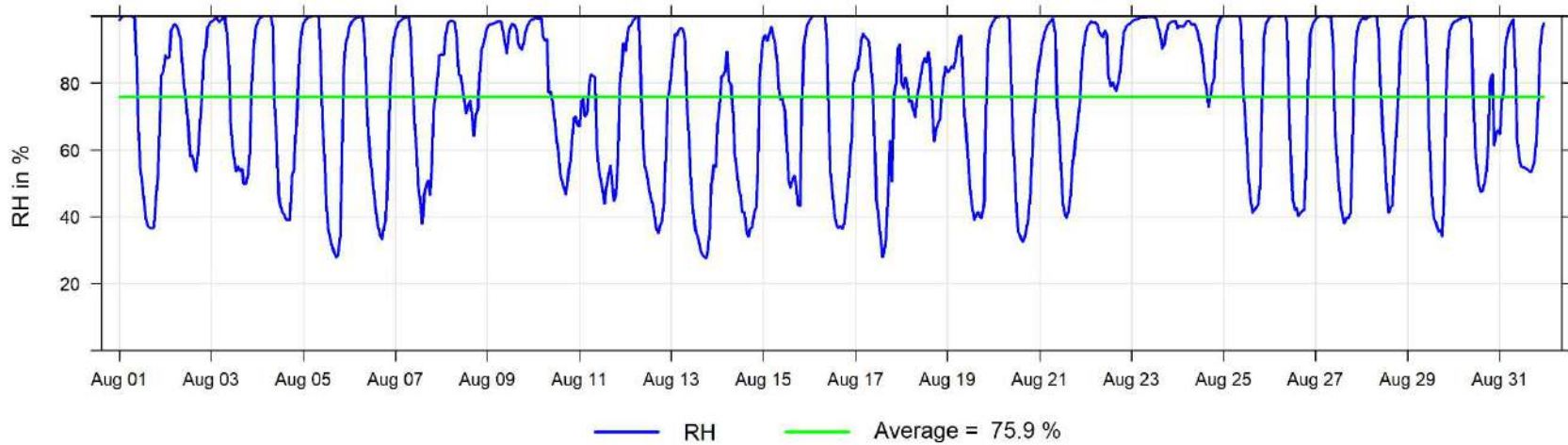
August 2023 Hourly Concentration Readings of H₂S (in ppb) at Valleyview



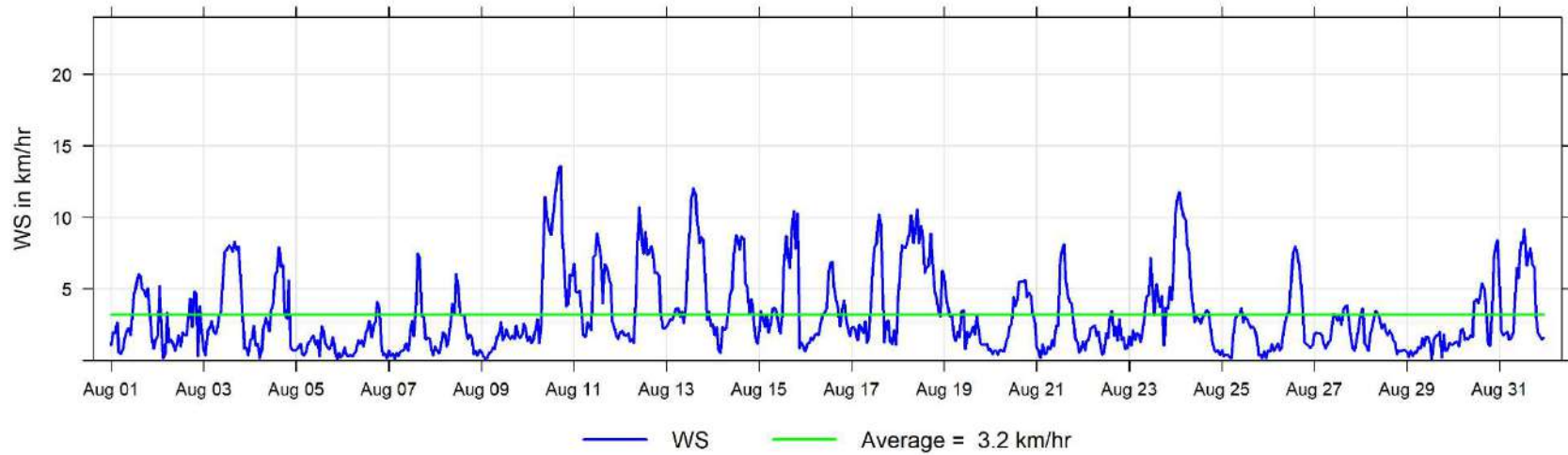
August 2023 Hourly Temperature Readings (in °C) at Valleyview



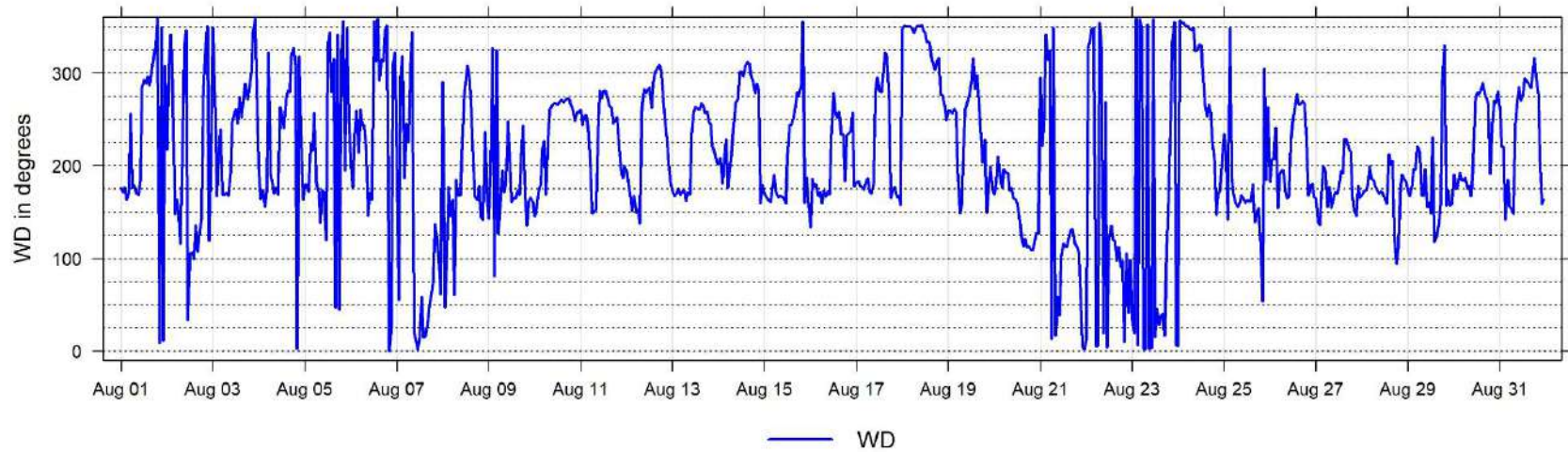
August 2023 Hourly Readings of Relative Humidity (in %) at Valleyview



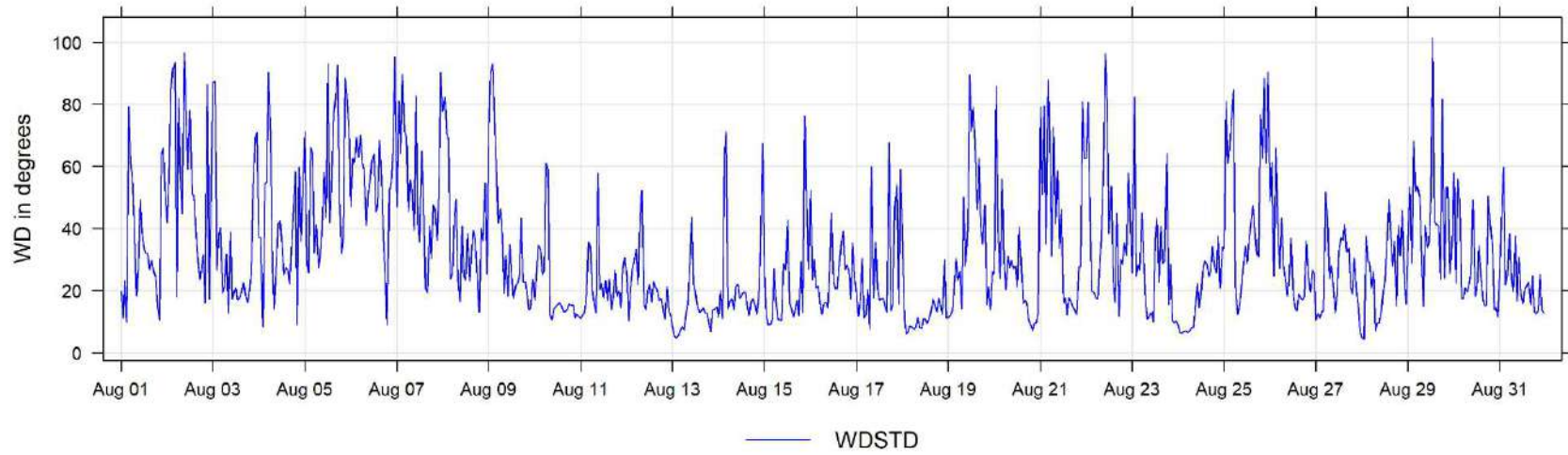
August 2023 Hourly Readings of Wind Speed (in km/hr) at Valleyview

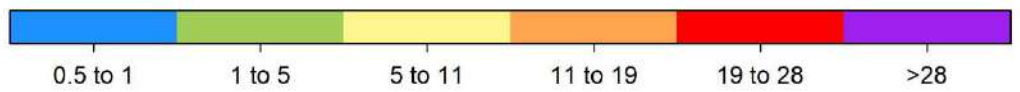
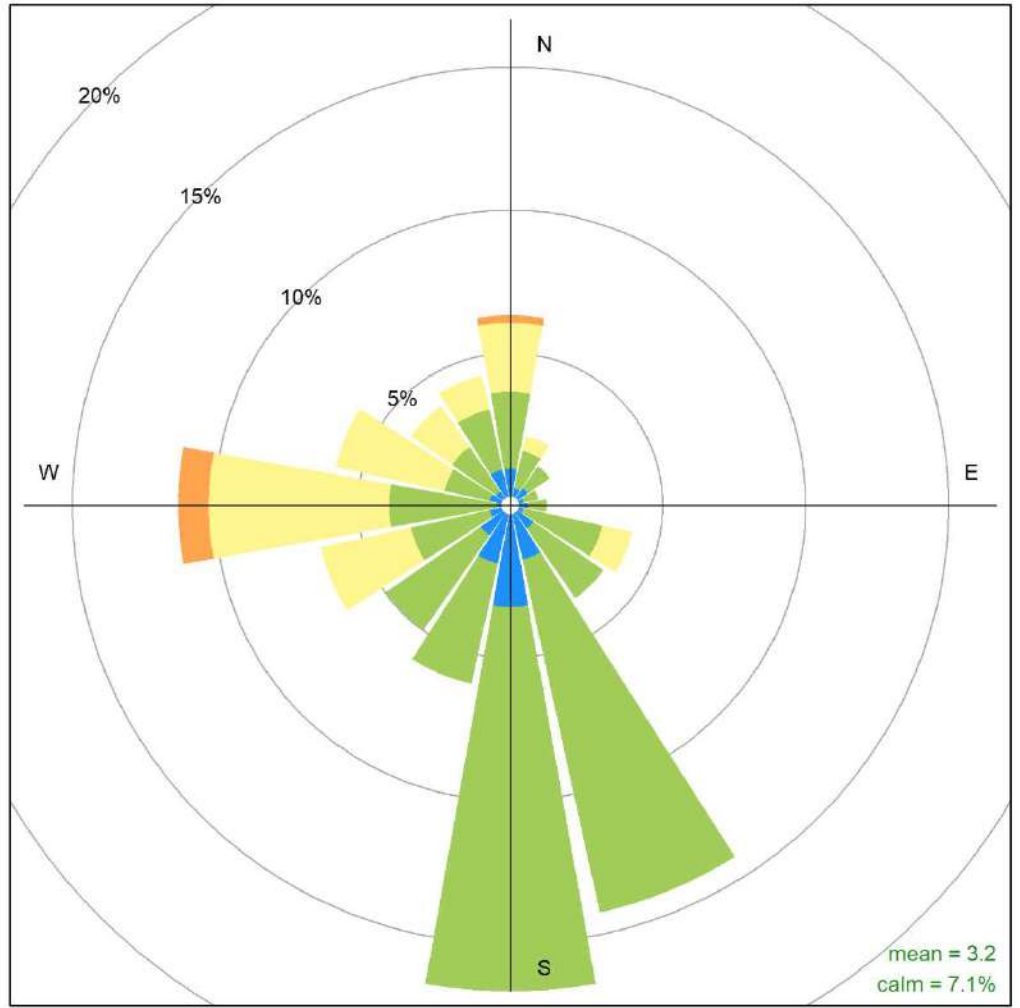


August 2023 Hourly Readings of Wind Direction (in degrees) at Valleyview



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





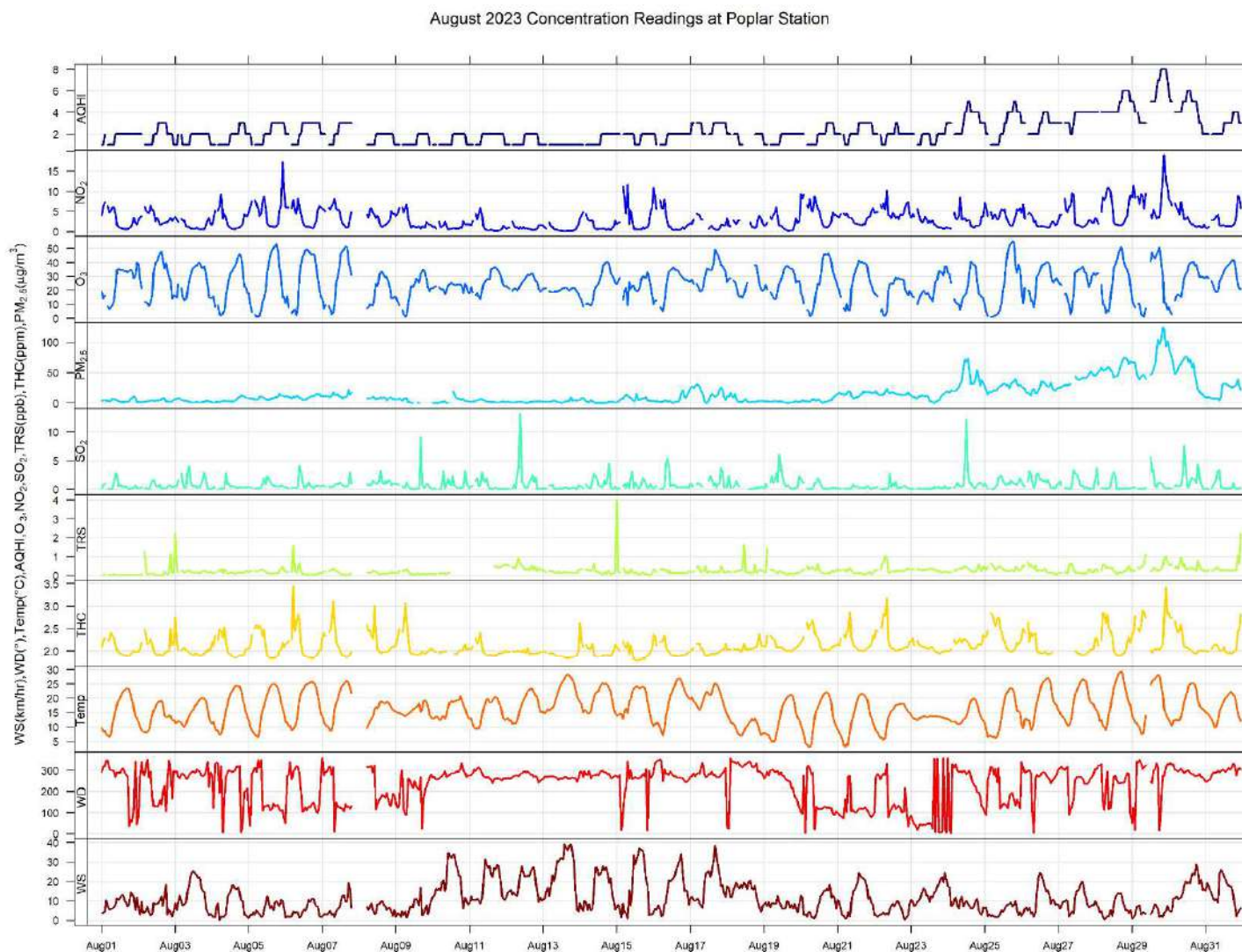
Valleyview August 2023 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

7 Donnelly Charts – Station Decommissioned

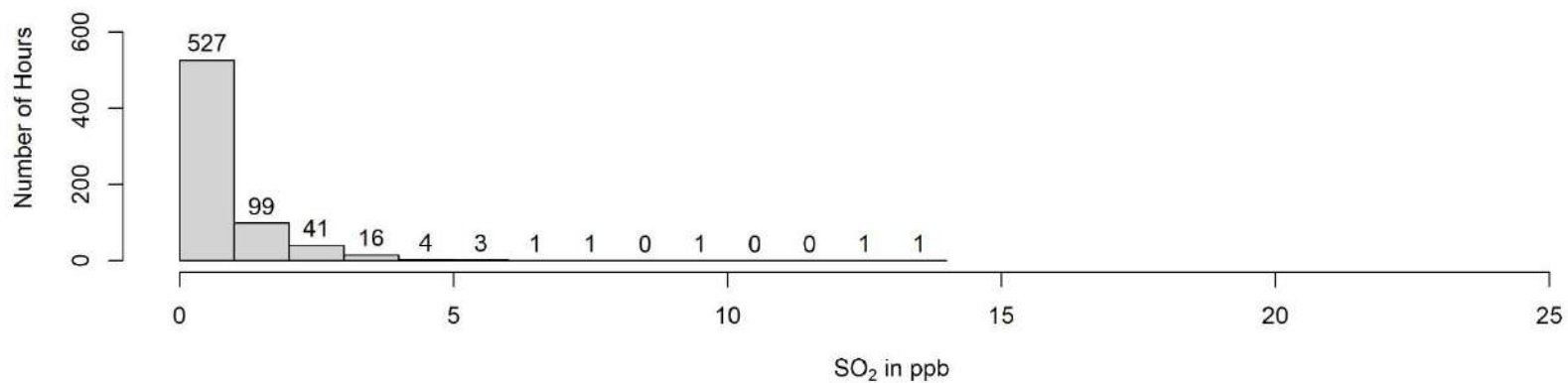
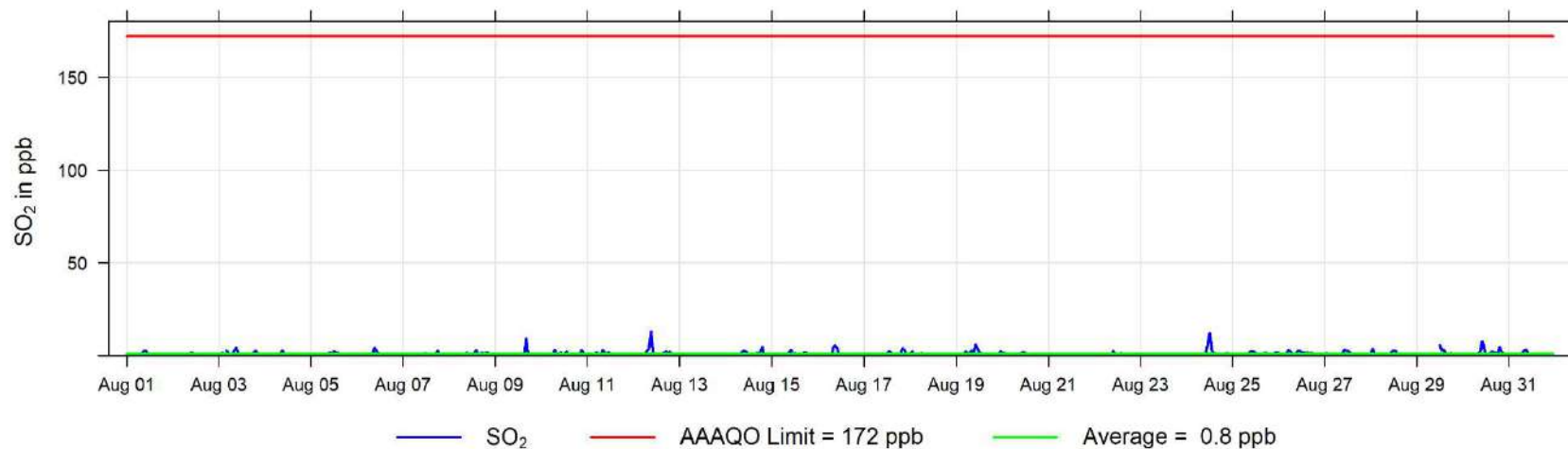
The following charts and histograms are not displayed for Donnelly Station due to shutdown

8 Poplar (Portable) Charts

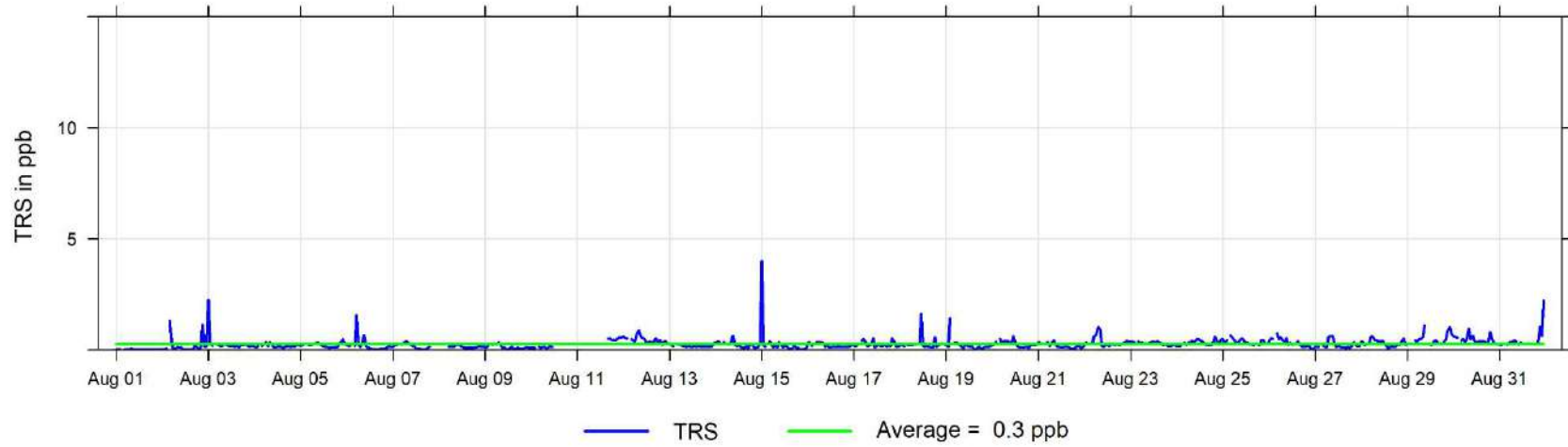
The following pages include the charts and histograms for Poplar Portable Station



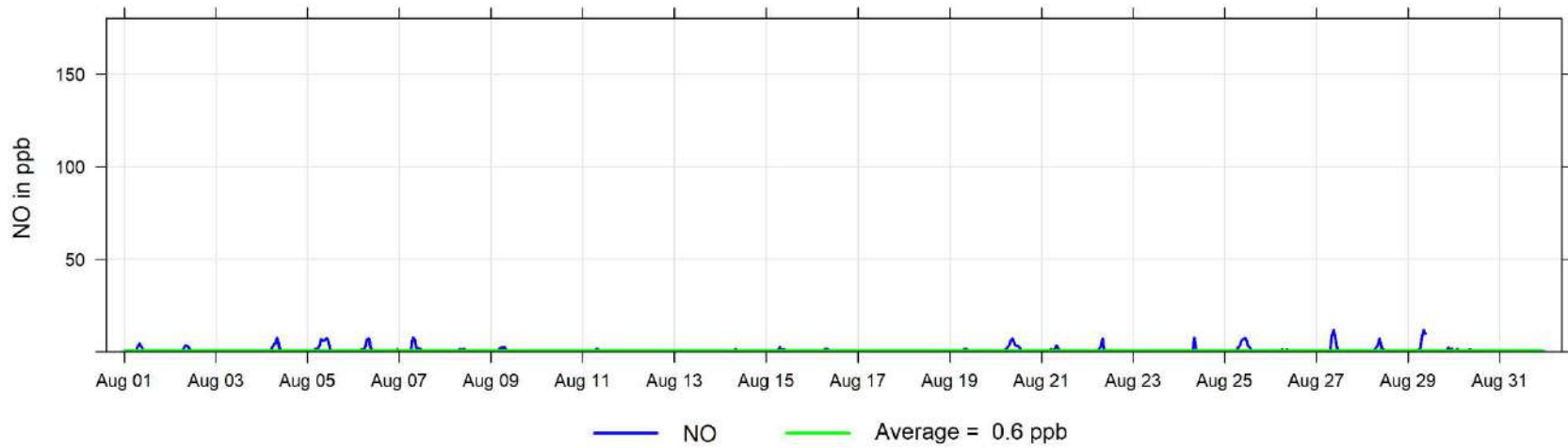
August 2023 Hourly Concentration Readings of SO₂ (in ppb) at Poplar



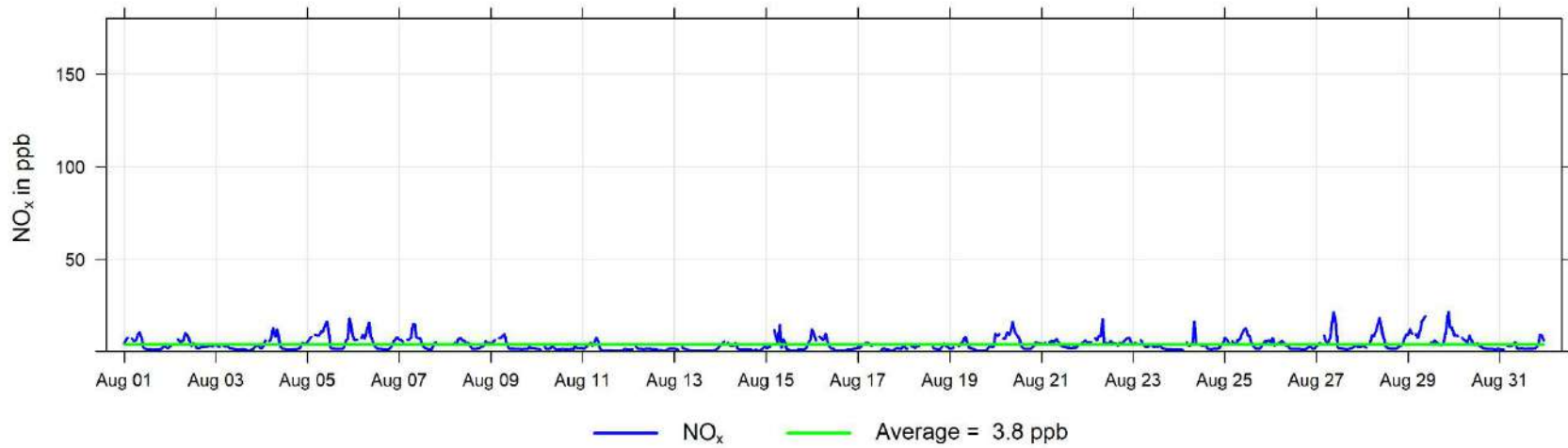
August 2023 Hourly Concentration Readings of TRS (in ppb) at Poplar



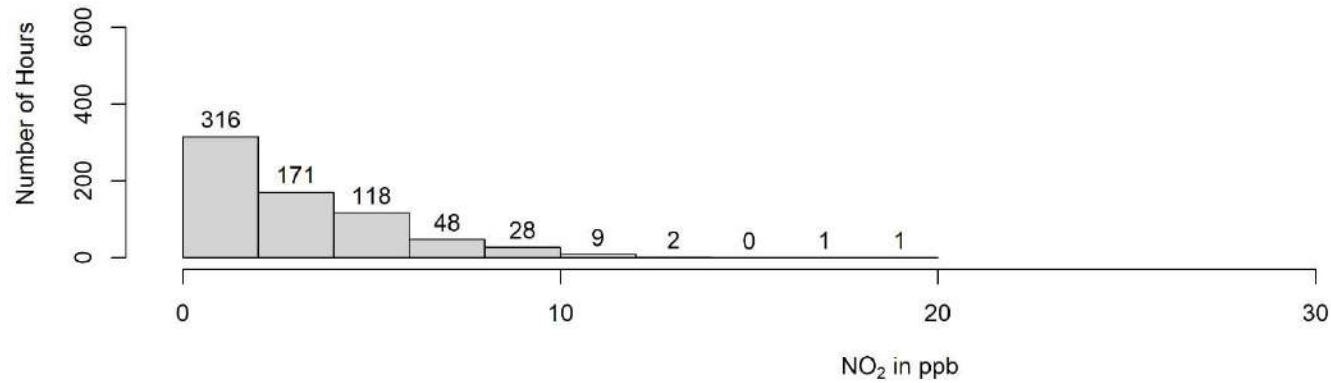
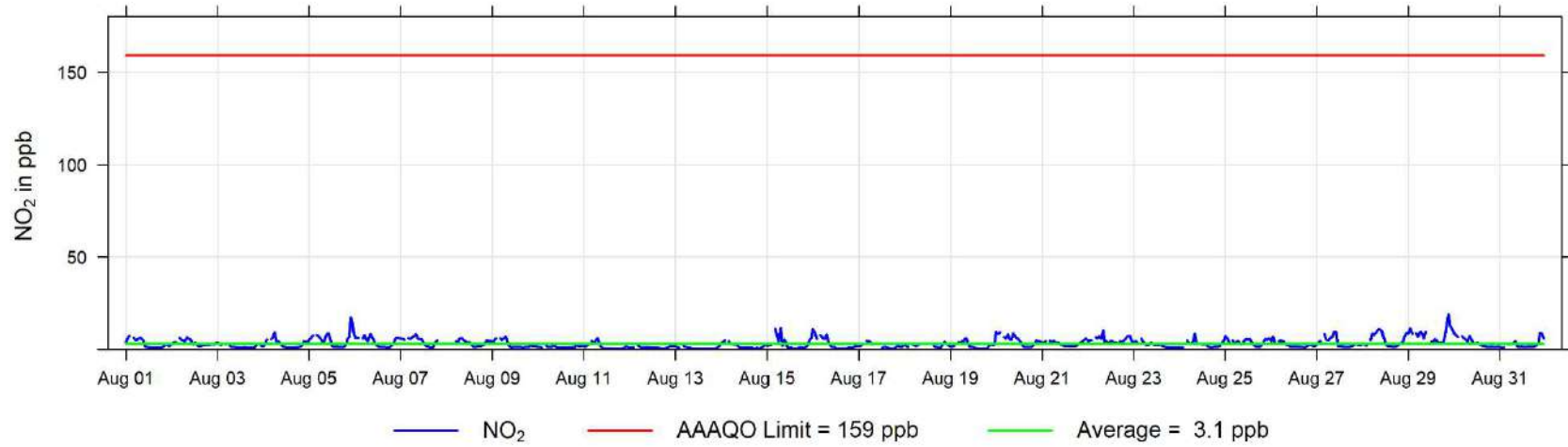
August 2023 Hourly Concentration Readings of NO (in ppb) at Poplar



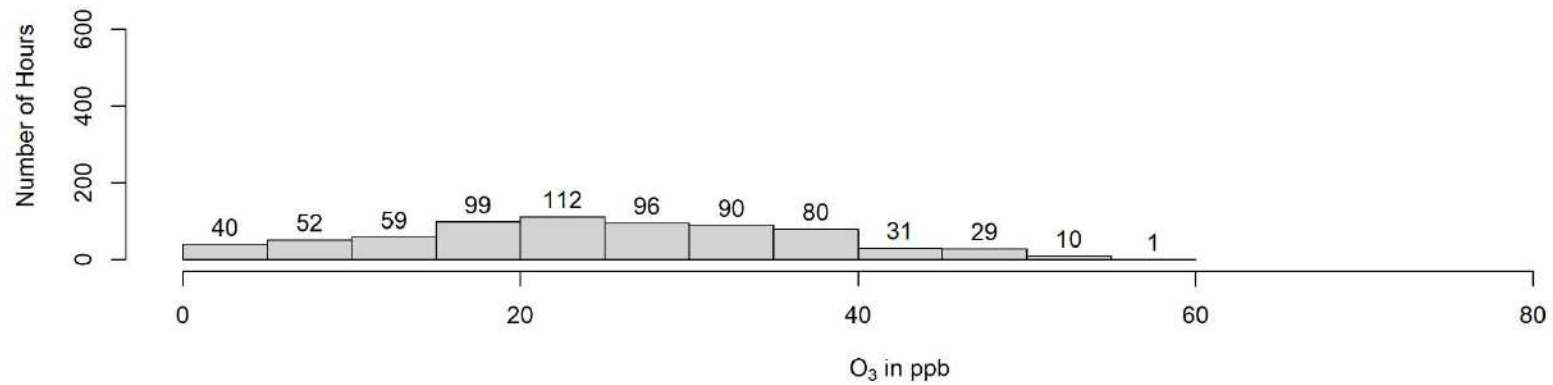
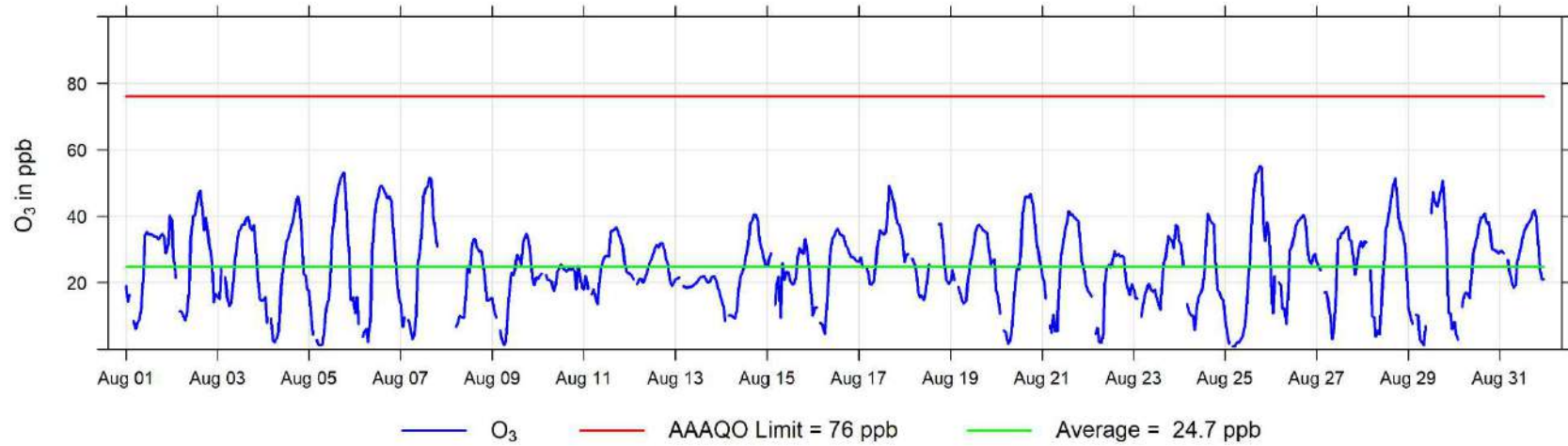
August 2023 Hourly Concentration Readings of NO_x (in ppb) at Poplar



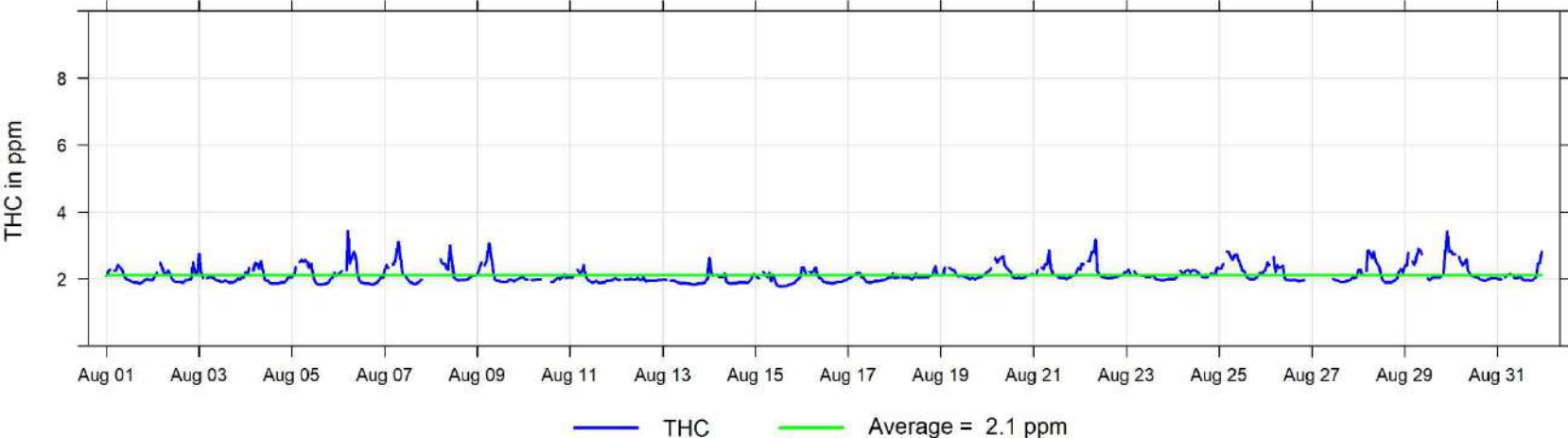
August 2023 Hourly Concentration Readings of NO₂ (in ppb) at Poplar



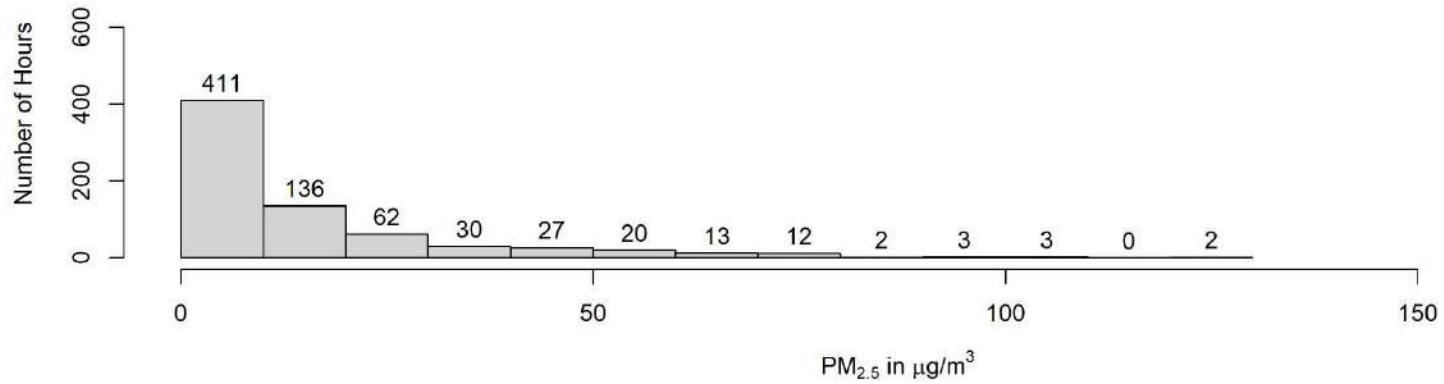
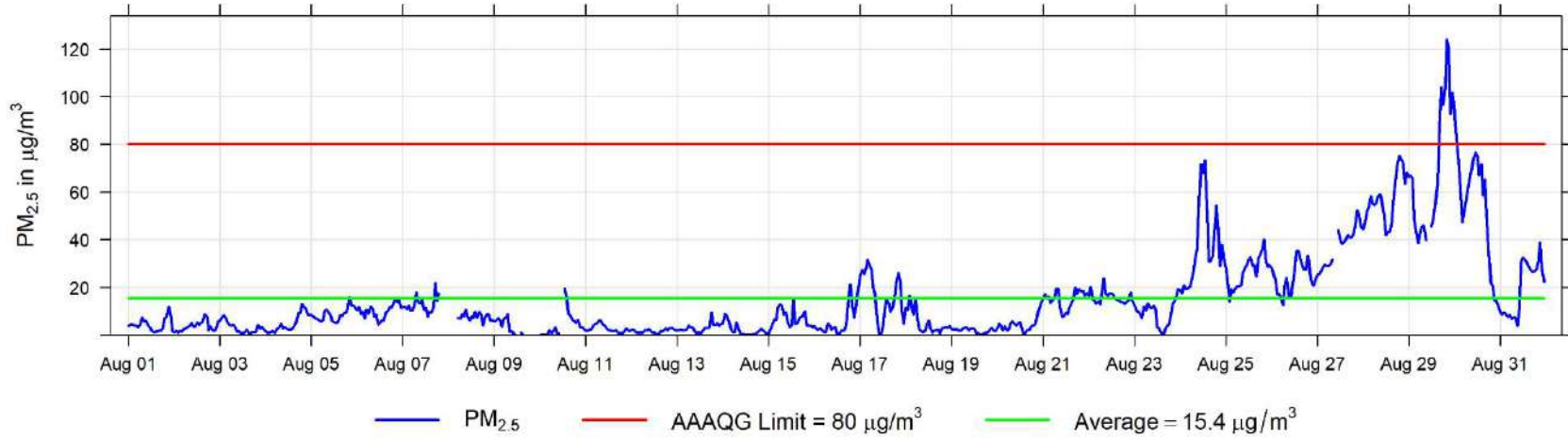
August 2023 Hourly Concentration Readings of O₃ (in ppb) at Poplar



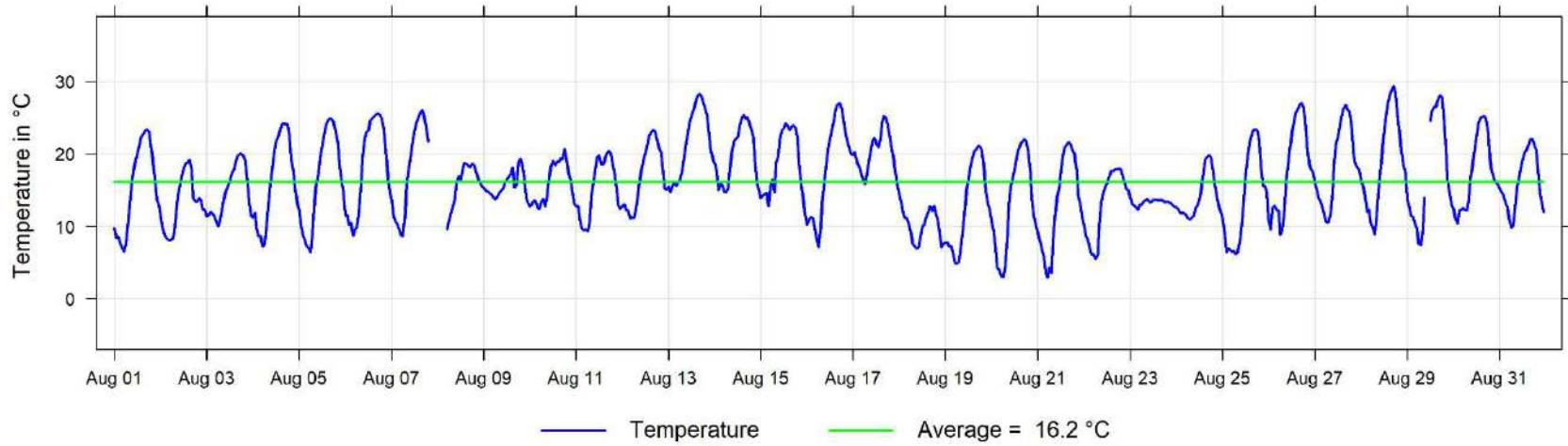
August 2023 Hourly Concentration Readings of THC (in ppm) at Poplar



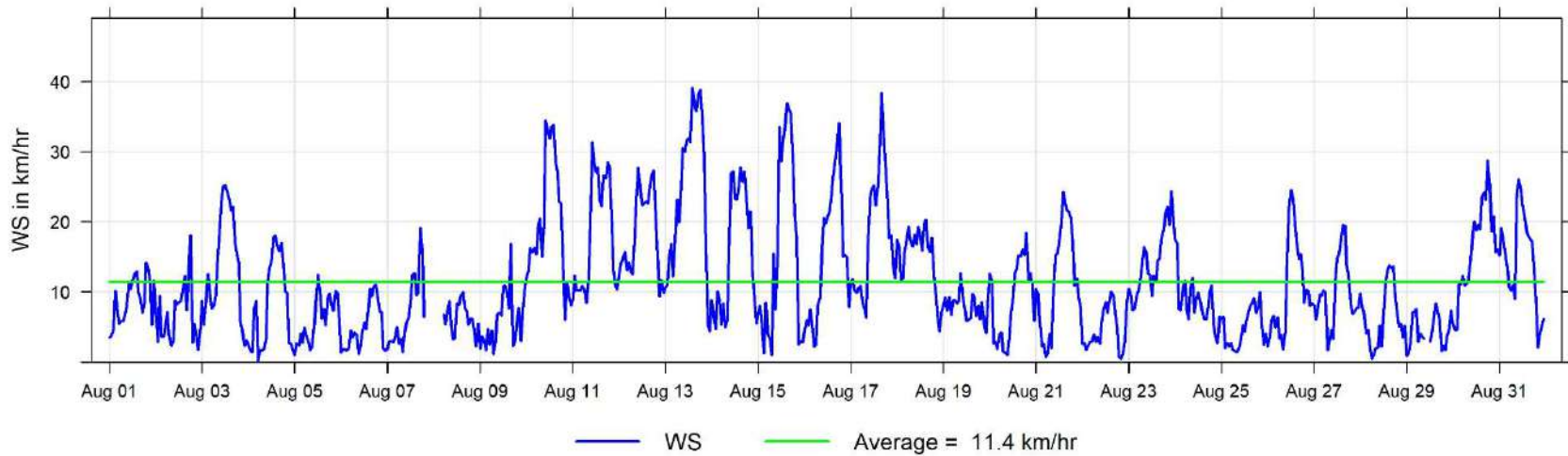
August 2023 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Poplar



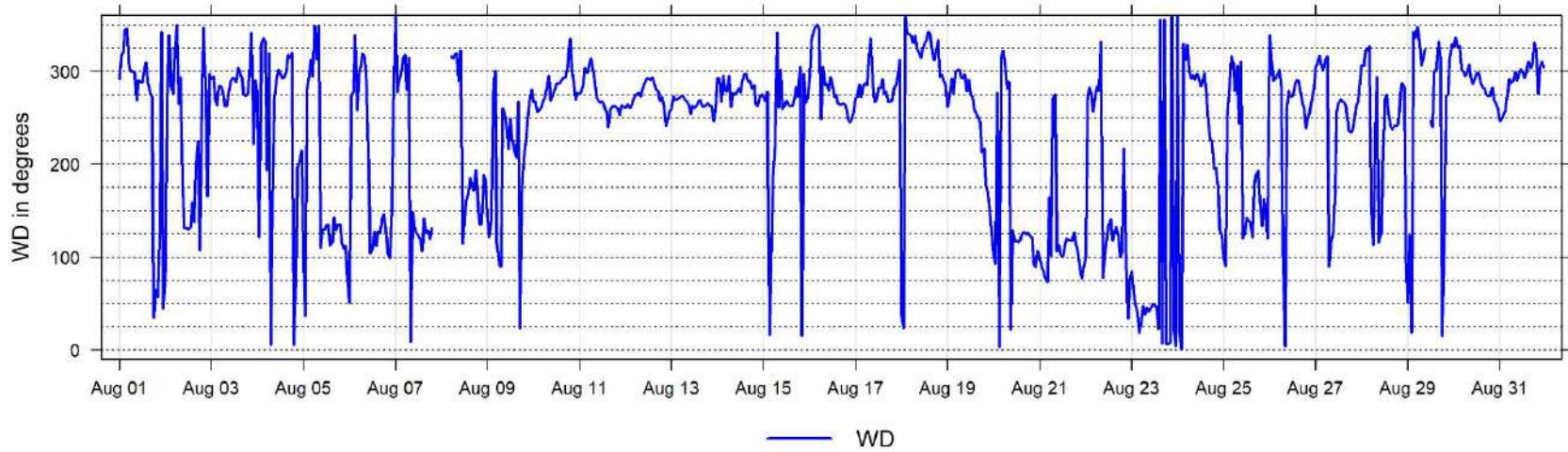
August 2023 Hourly Temperature Readings (in °C) at Poplar



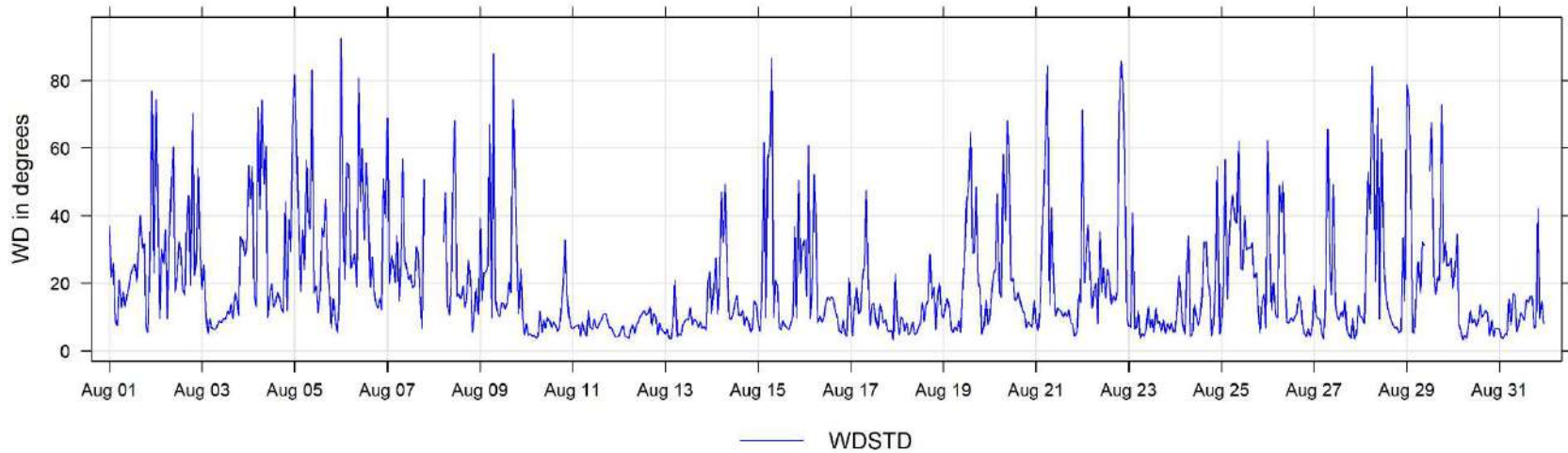
August 2023 Hourly Readings of Wind Speed (in km/hr) at Poplar

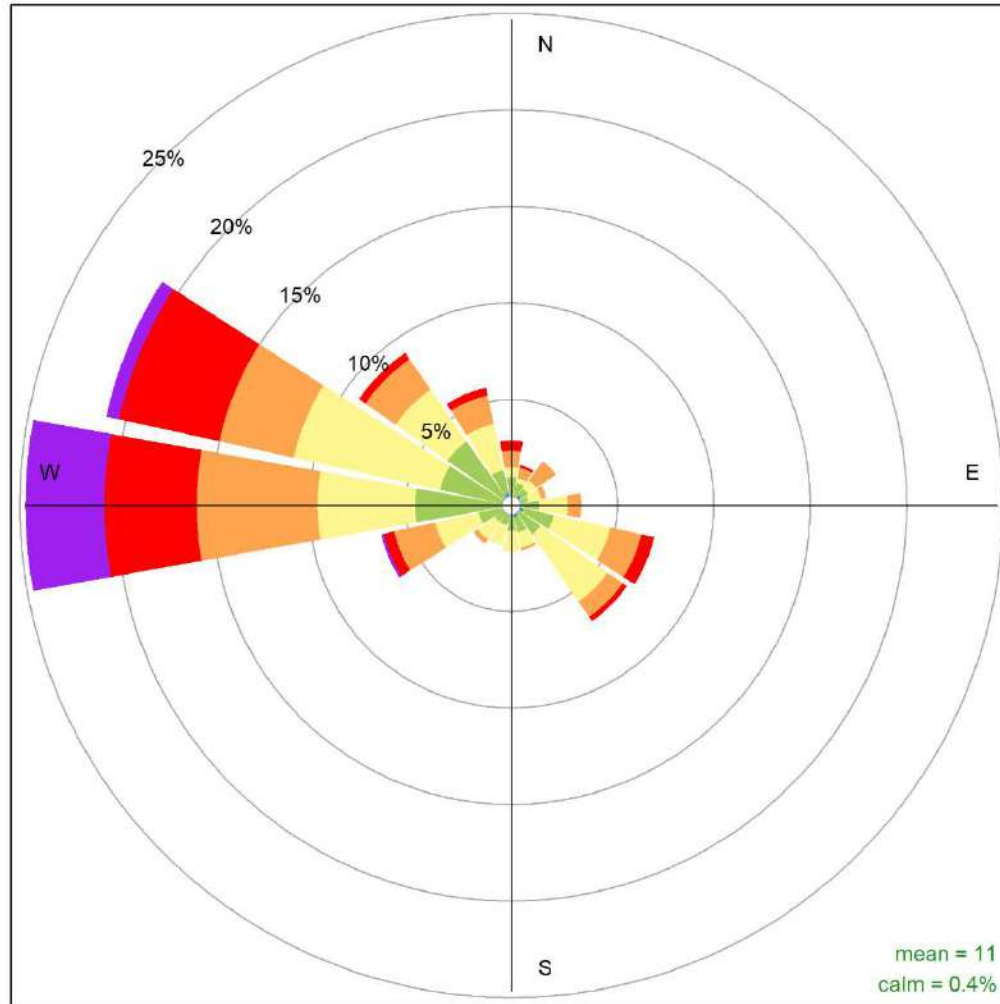


August 2023 Hourly Readings of Wind Direction (in degrees) at Poplar



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

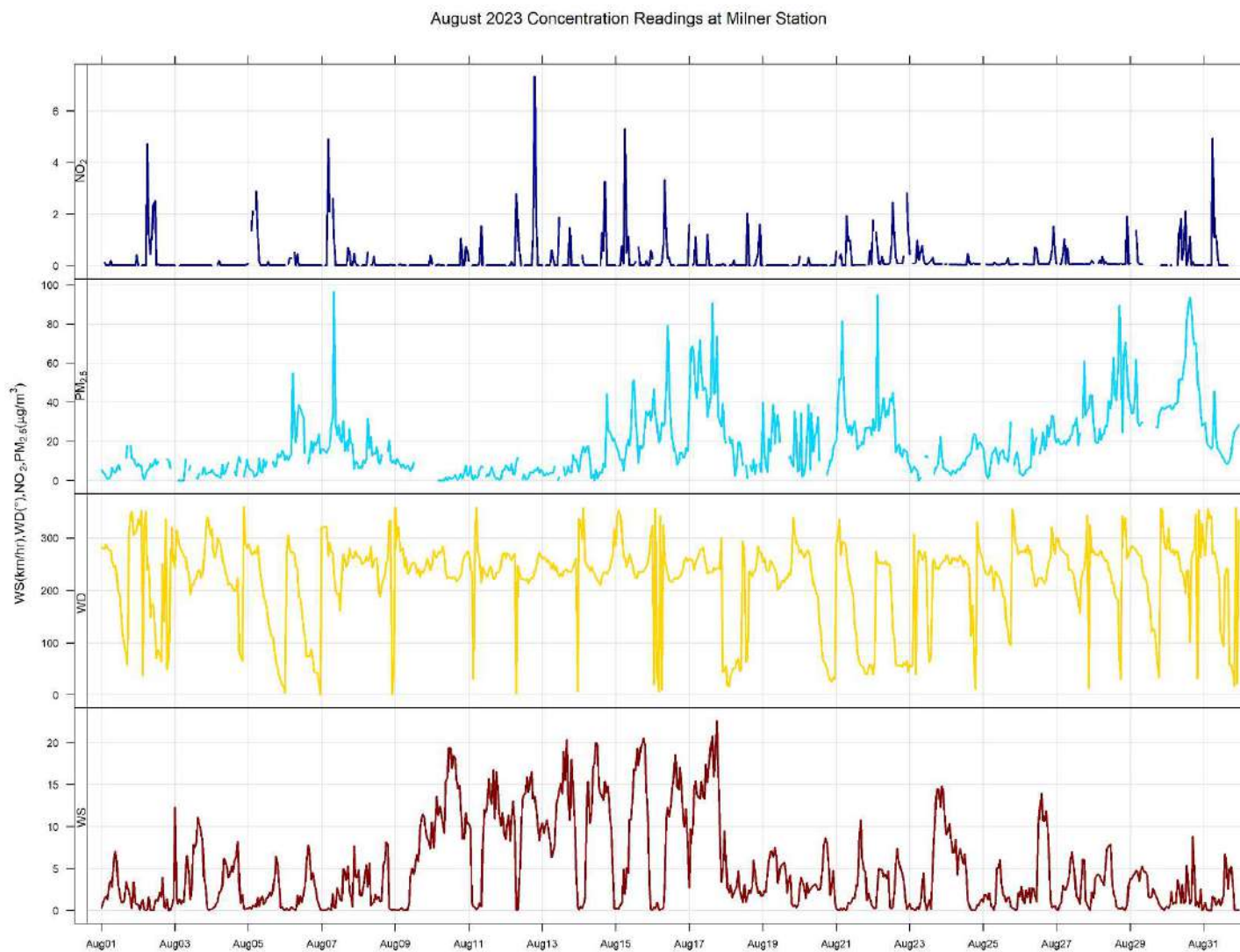




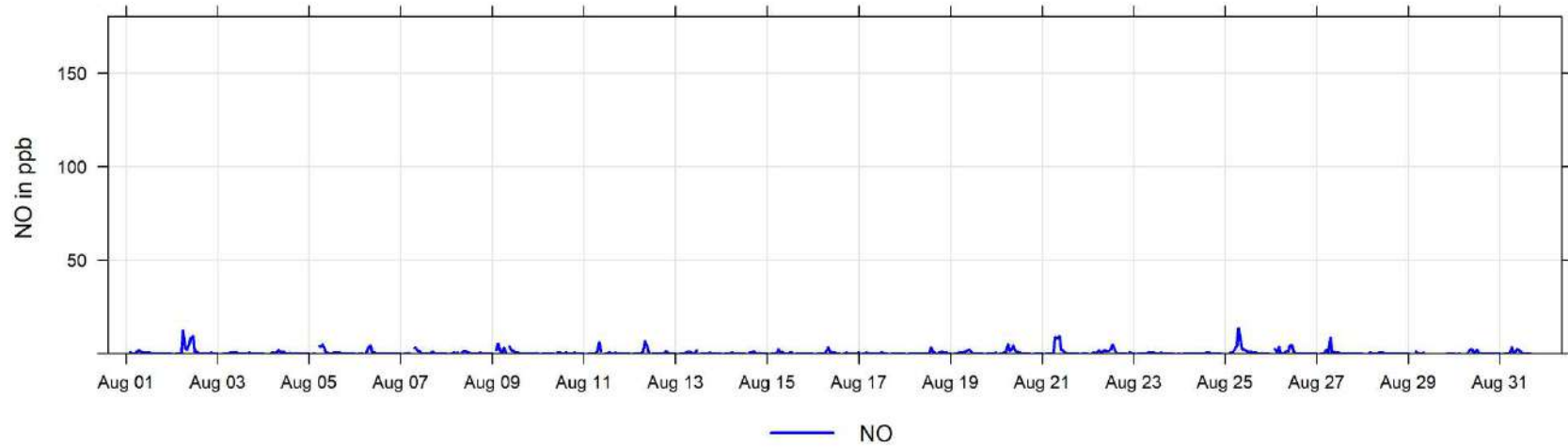
Poplar August 2023 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

9 Milner Charts

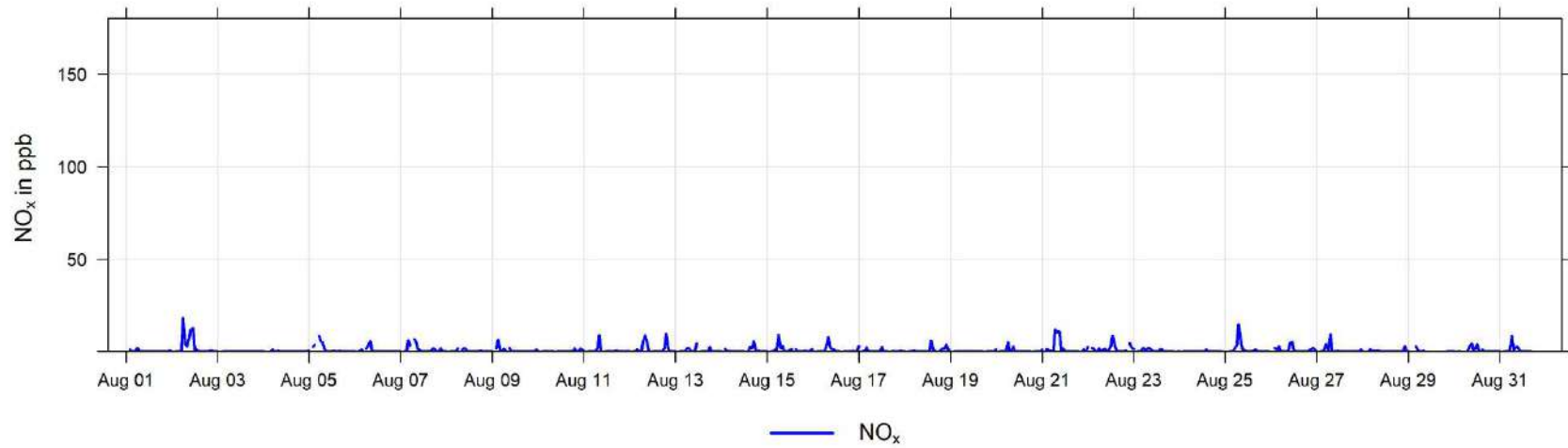
The following pages include the charts and histograms for Milner Station



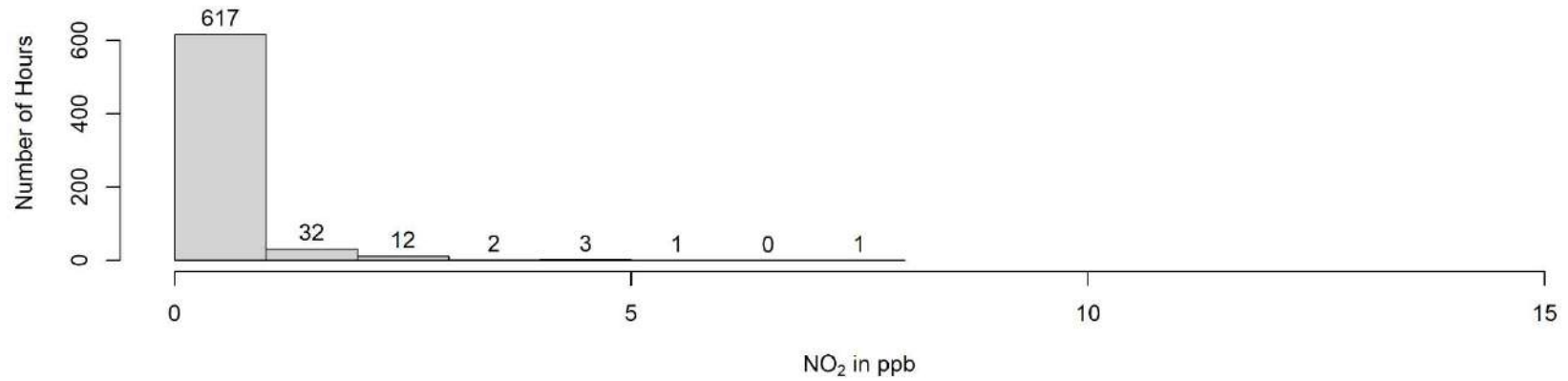
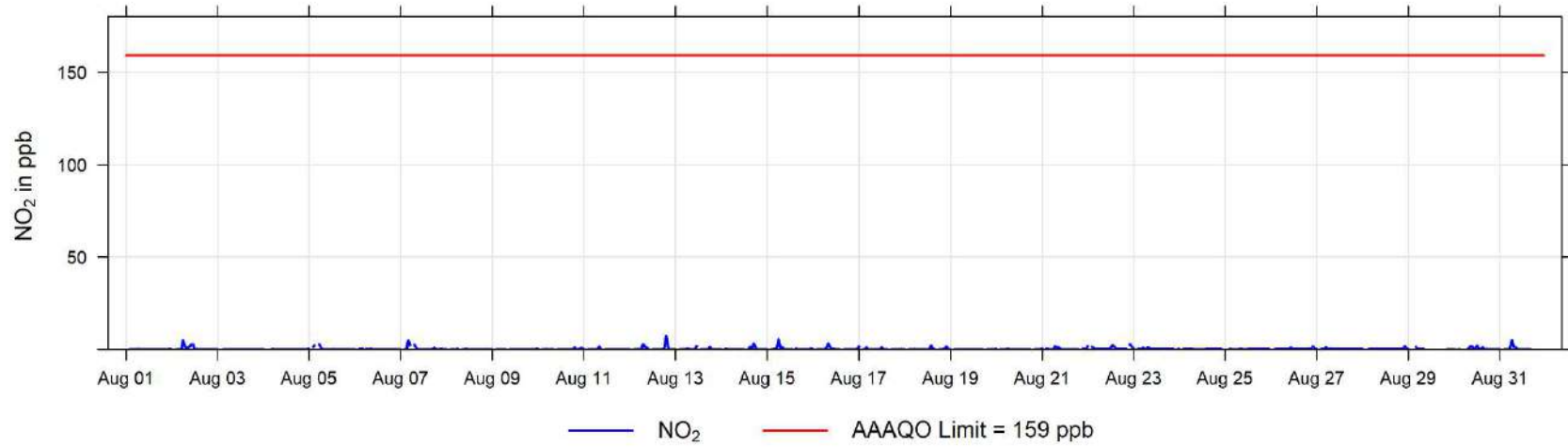
August 2023 Hourly Concentration Readings of NO (in ppb) at Milner



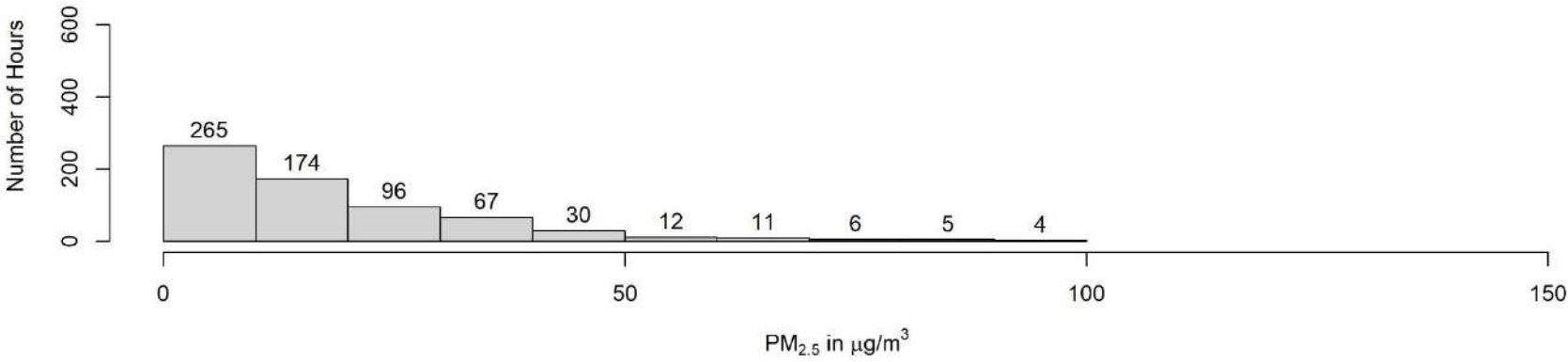
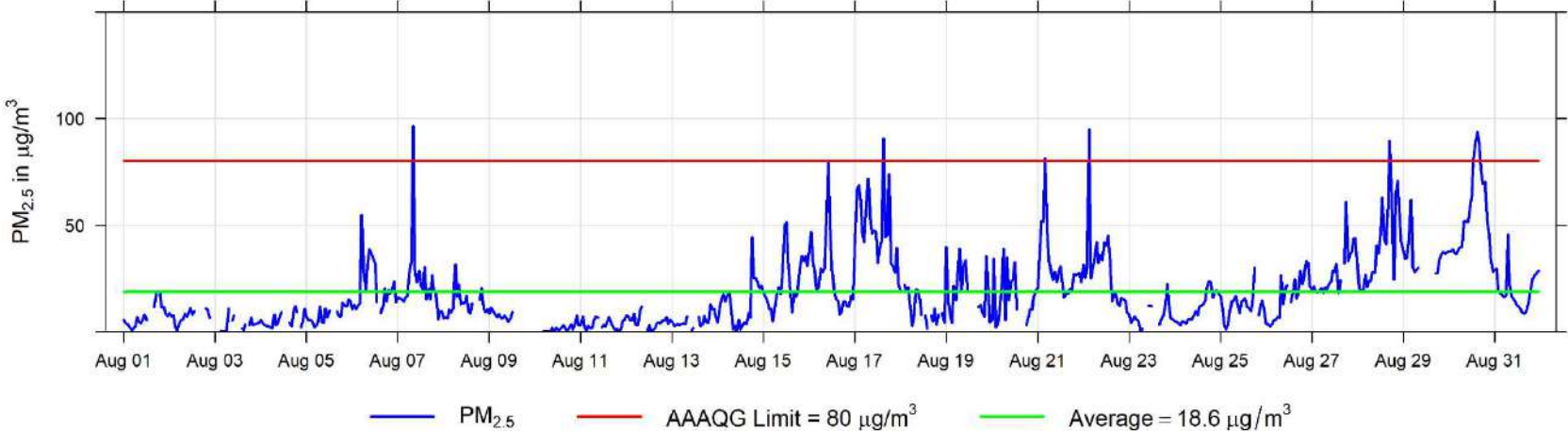
August 2023 Hourly Concentration Readings of NO_x (in ppb) at Milner



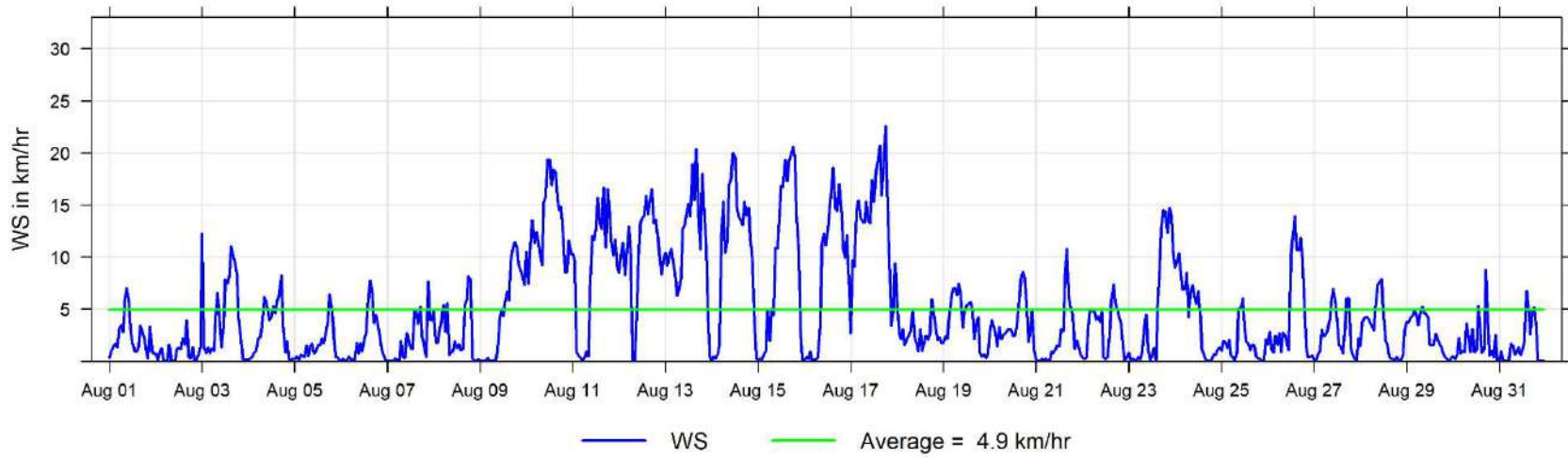
August 2023 Hourly Concentration Readings of NO₂ (in ppb) at Milner



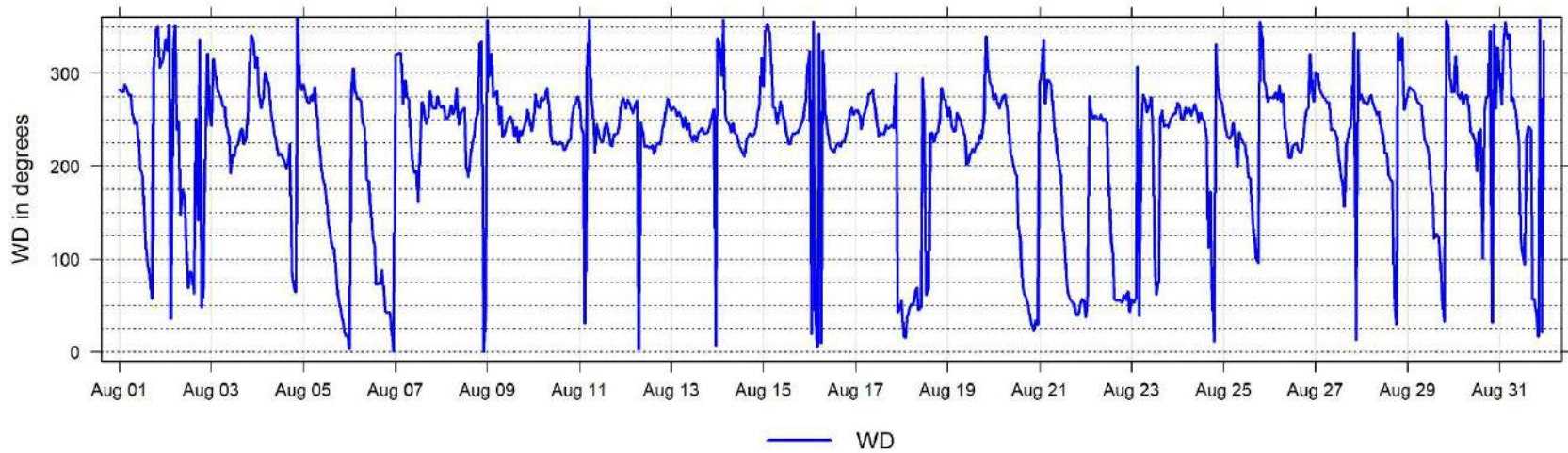
August 2023 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Milner

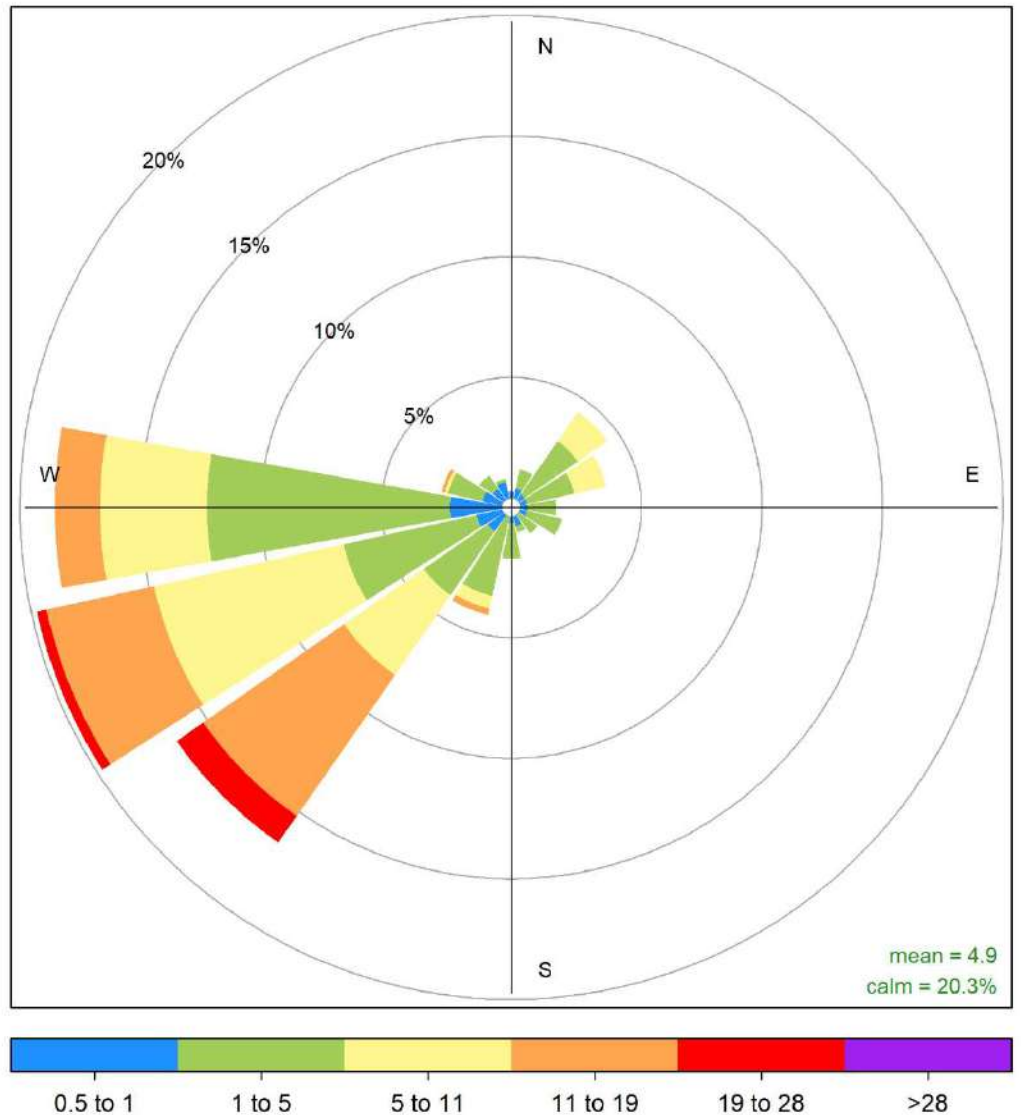


August 2023 Hourly Readings of Wind Speed (in km/hr) at Milner



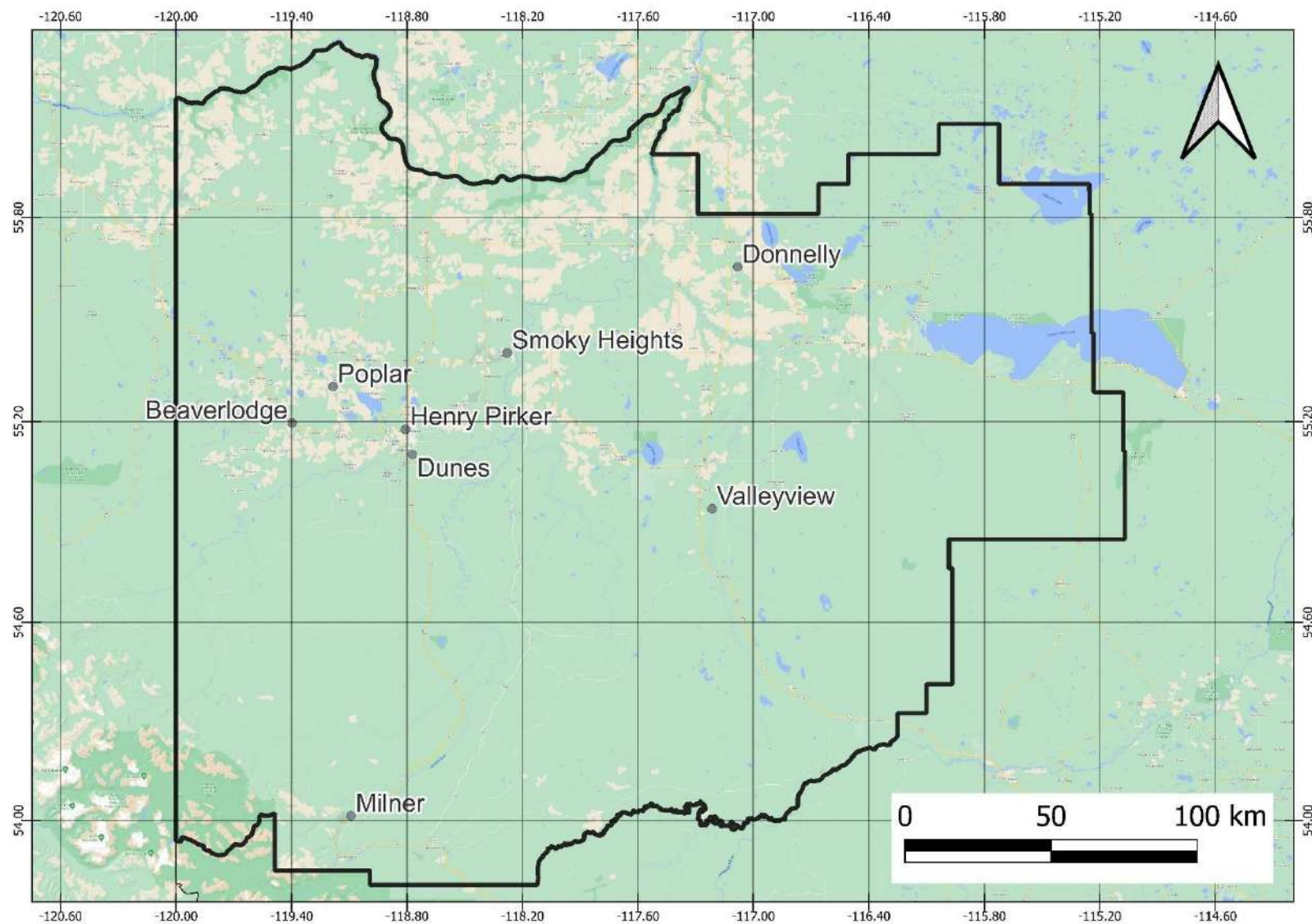
August 2023 Hourly Readings of Wind Direction (in degrees) at Milner



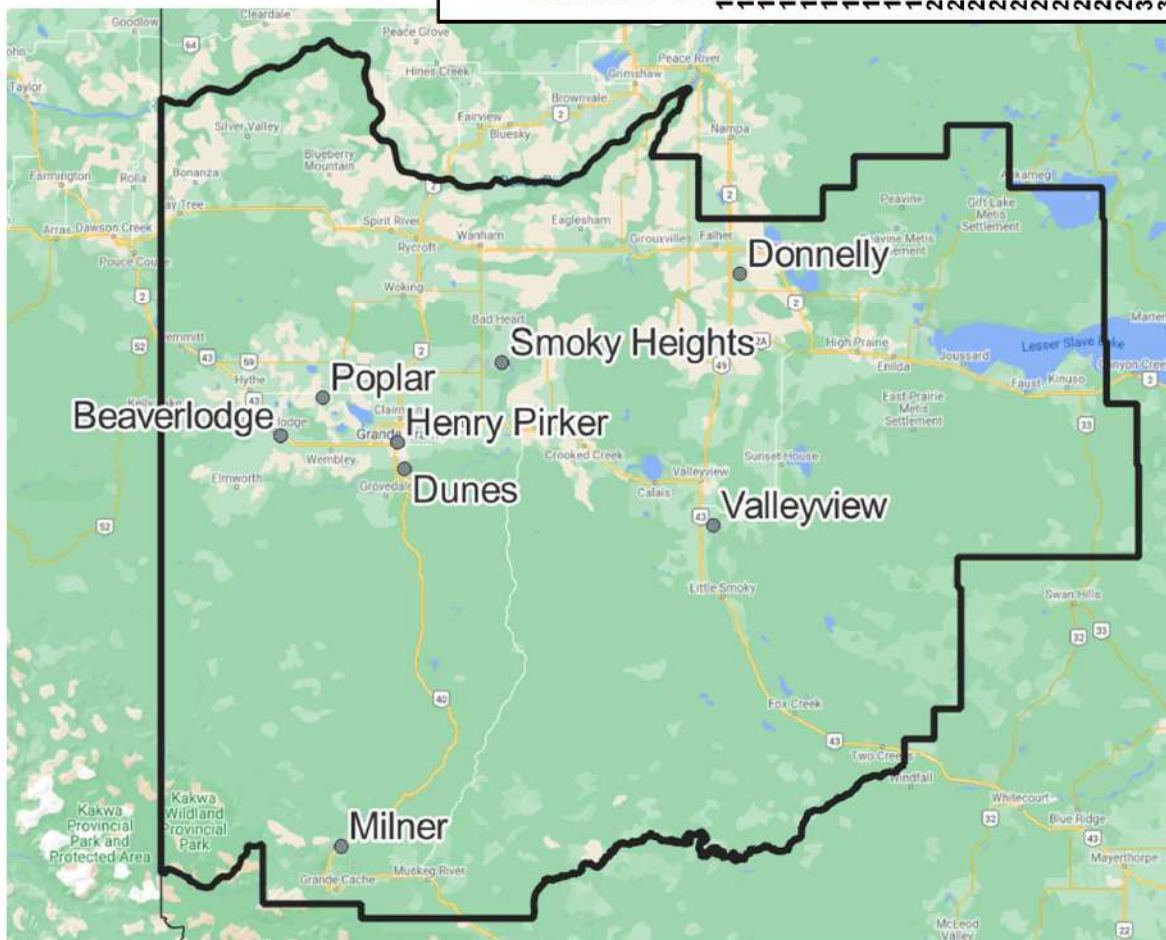
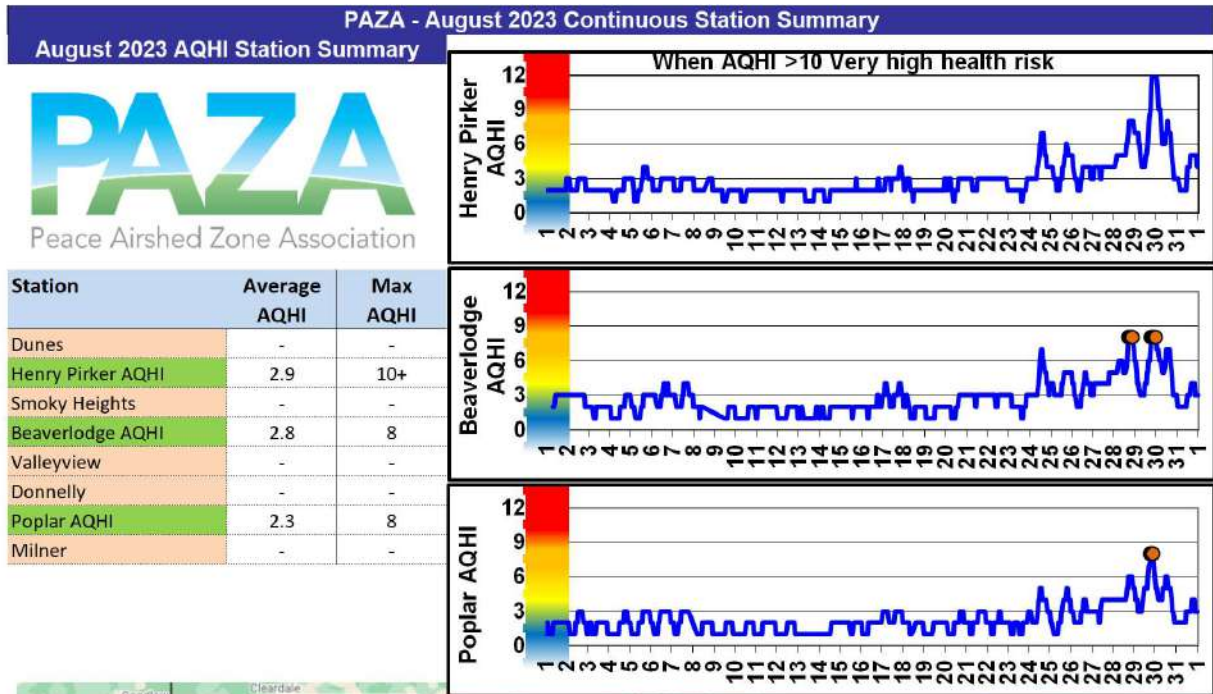


Milner August 2023 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

10 Concentration Summaries and Roses for PAZA

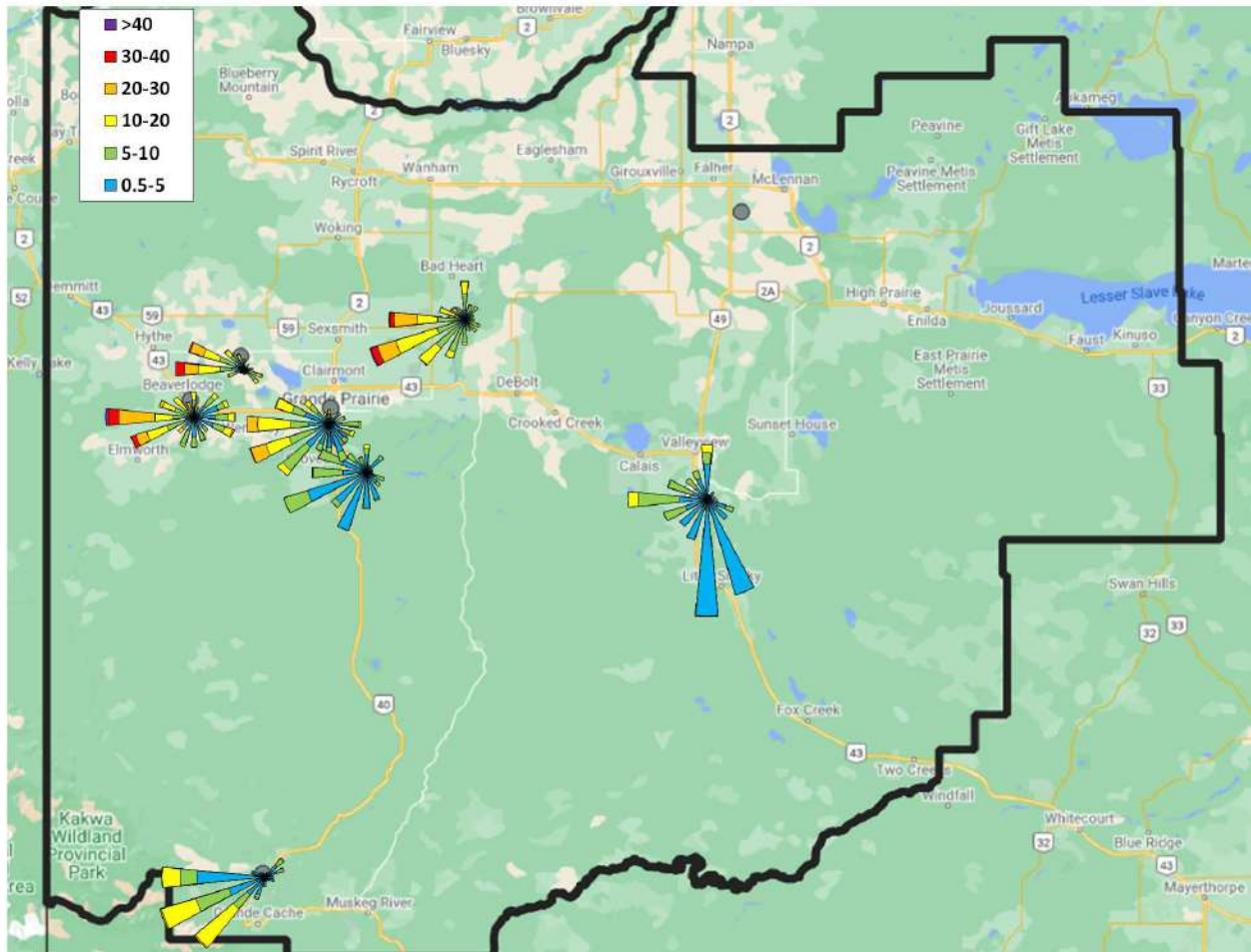


10.1 Air Quality Health Index (AQHI) Plots



10.2 Wind Roses

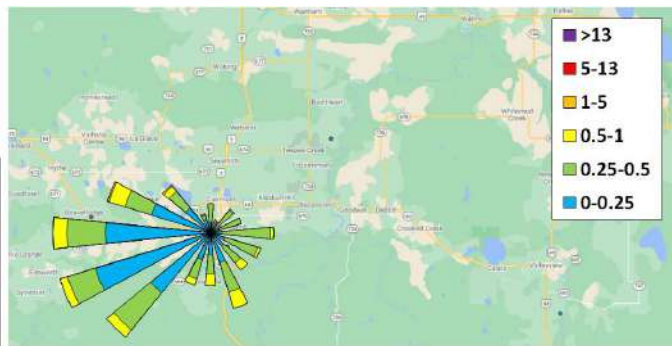
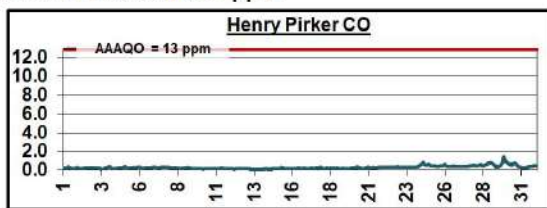
Wind Roses in km/hr



10.3 Carbon Monoxide (CO) Plots

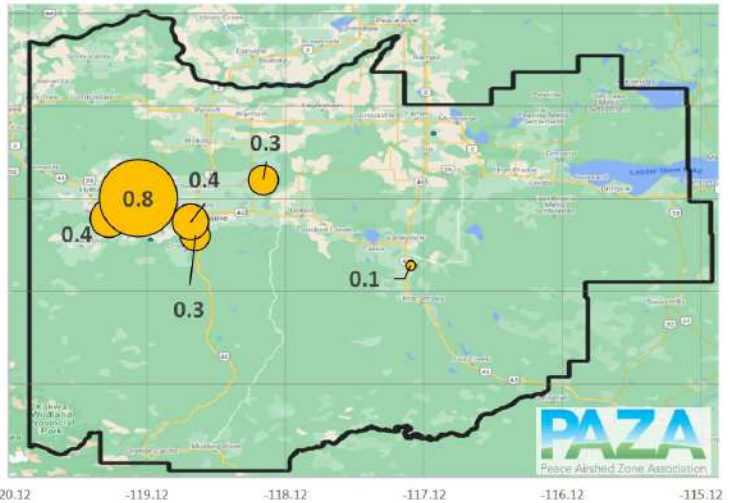
August 2023 CO Station Summary		
Station	Avg (ppm)	Max (ppm)
Henry Pirker CO	0.29	1.40

Carbon Monoxide in ppm

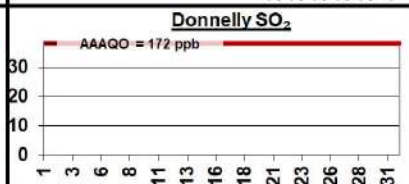
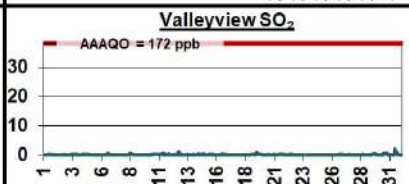
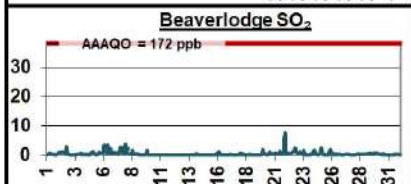
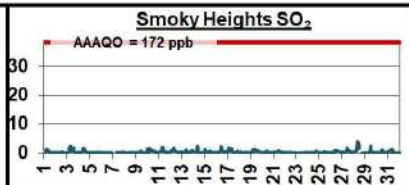
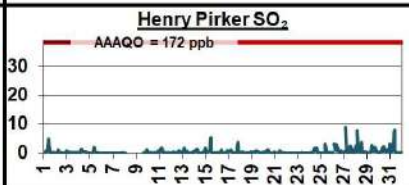
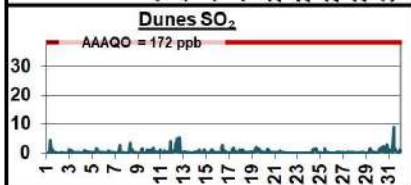
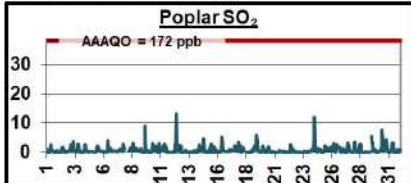


10.4 Sulphur Dioxide (SO₂) Plots

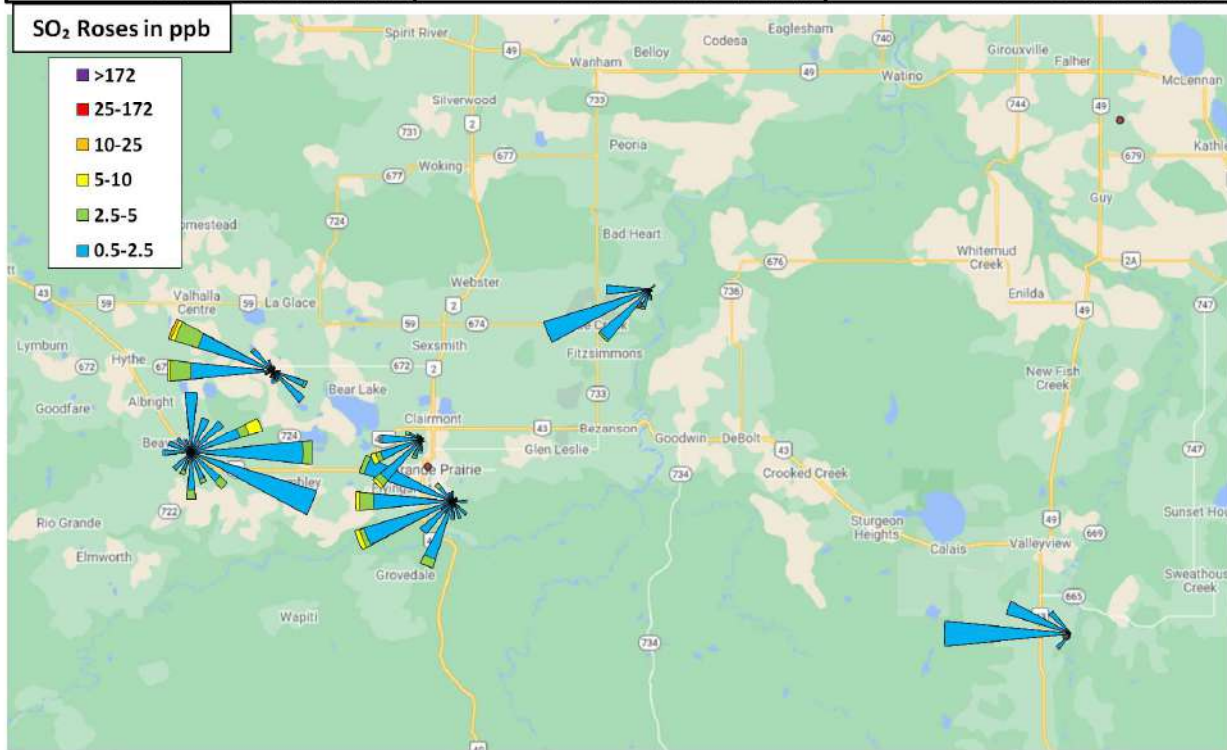
August 2023 SO ₂ Station Summary		
Station	Avg (ppb)	Max (ppb)
Dunes SO ₂	0.3	9.0
Henry Pirker SO ₂	0.4	8.9
Smoky Heights SO ₂	0.3	3.9
Beaverlodge SO ₂	0.4	7.6
Valleyview SO ₂	0.1	2.1
Donnelly SO ₂	-	-
Poplar SO ₂	0.8	13.1
Milner SO ₂	-	-



Sulphur Dioxide in ppb



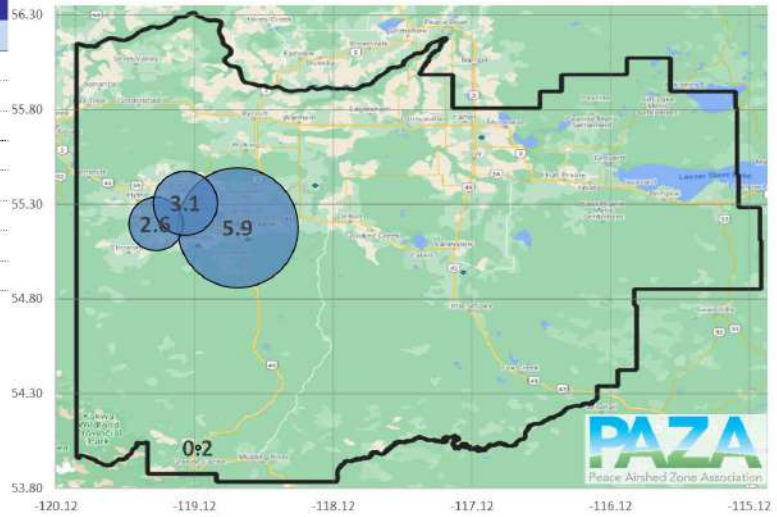
SO₂ Roses in ppb



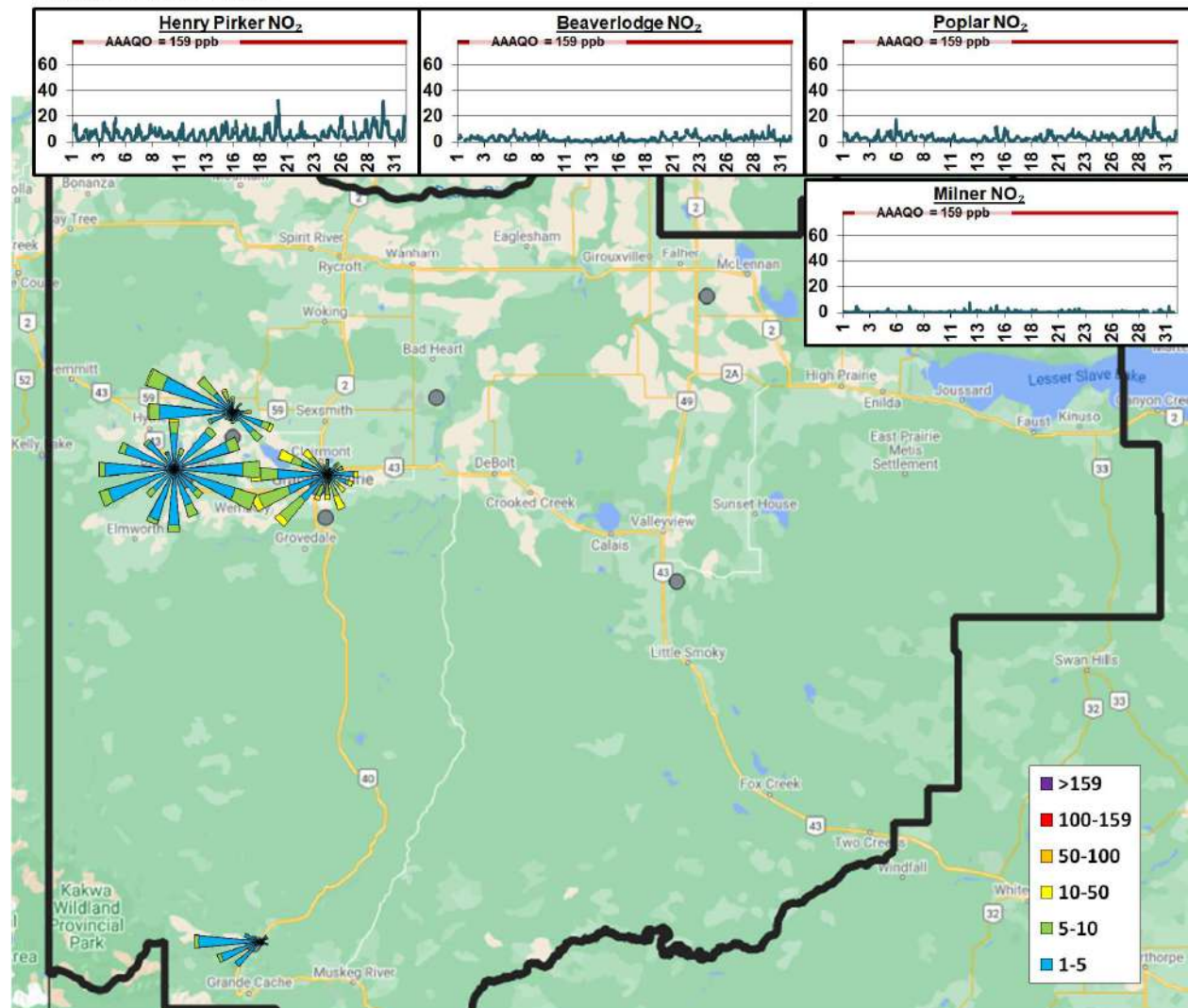
10.5 Nitrogen Dioxide (NO₂) Plots

August 2023 NO₂ Station Summary

Station	Avg (ppb)	Max (ppb)
Dunes NO ₂	-	-
Henry Pirkler NO ₂	5.9	32.5
Smoky Heights NO ₂	-	-
Beaverlodge NO ₂	2.6	12.7
Valleyview NO ₂	-	-
Donnelly NO ₂	-	-
Poplar NO ₂	3.1	18.9
Milner NO ₂	0.2	7.3

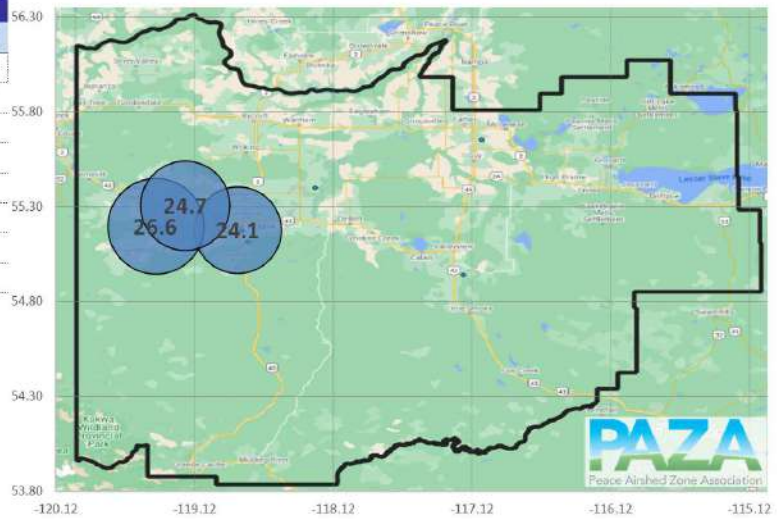


Nitrogen Dioxide in ppb

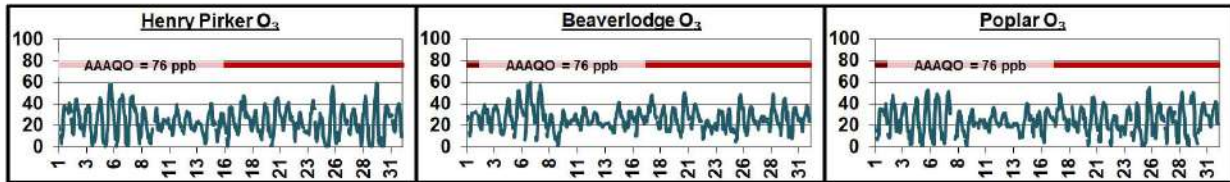


10.6 Ozone (O₃) Plots

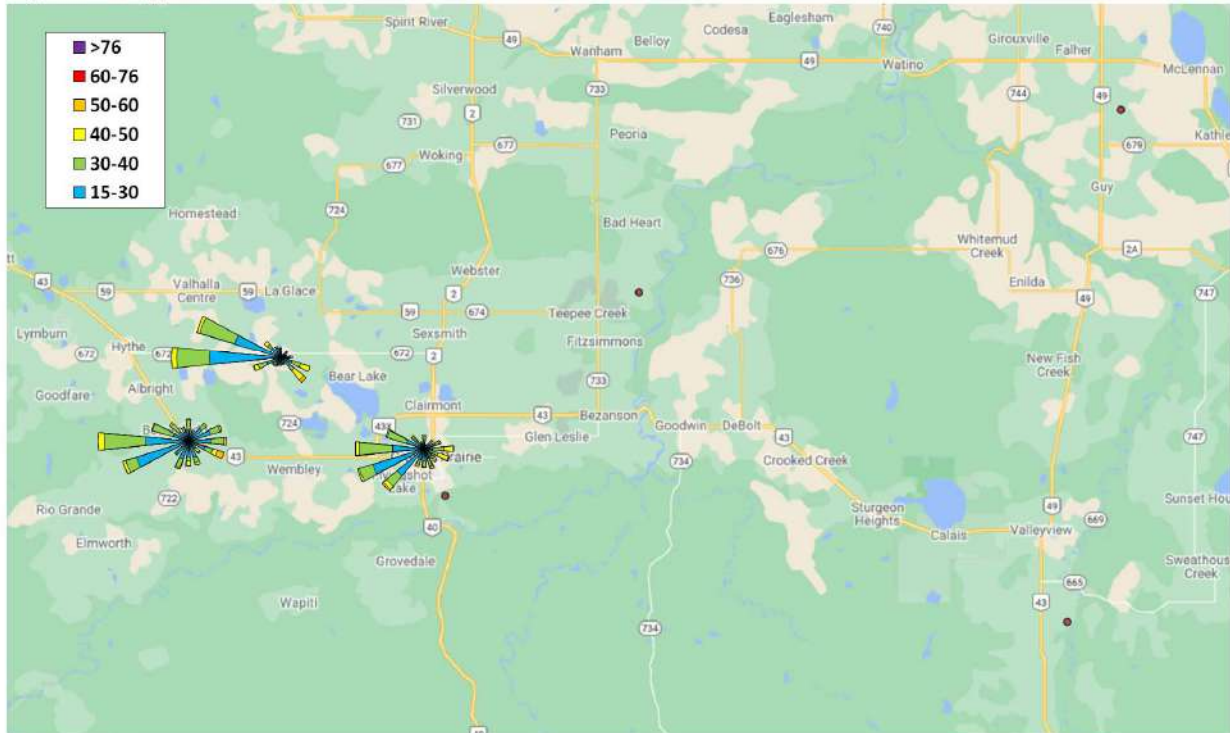
August 2023 O ₃ Station Summary		
Station	Avg (ppb)	Max (ppb)
Dunes O ₃	-	-
Henry Pirker O ₃	24.1	59.9
Smoky Heights O ₃	-	-
Beaverlodge O ₃	26.6	60.1
Valleyview O ₃	-	-
Donnelly O ₃	-	-
Poplar O ₃	24.7	55.0
Milner O ₃	-	-



Ozone in ppb



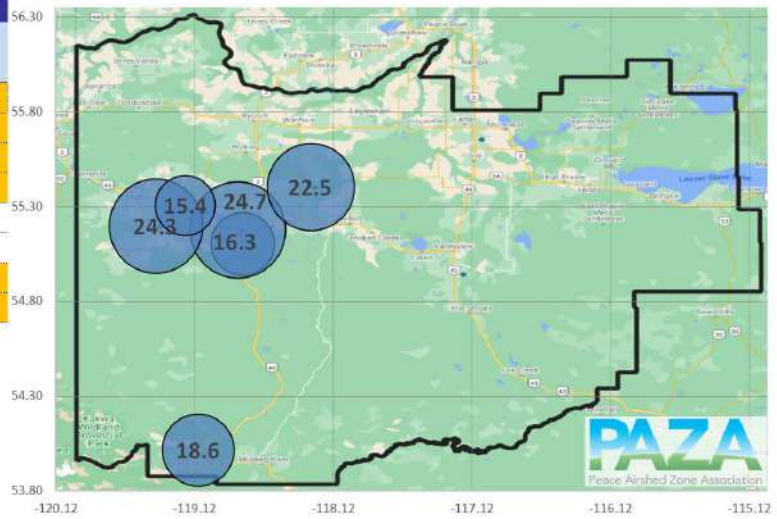
O₃ Roses in ppb



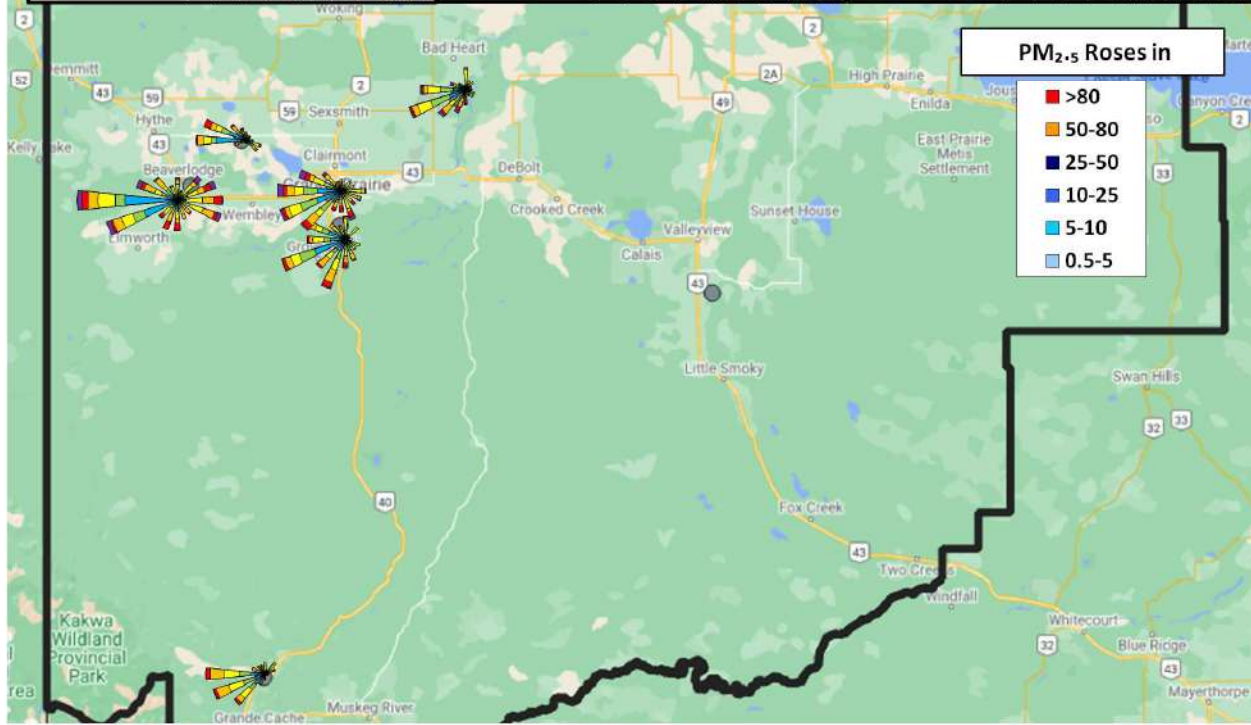
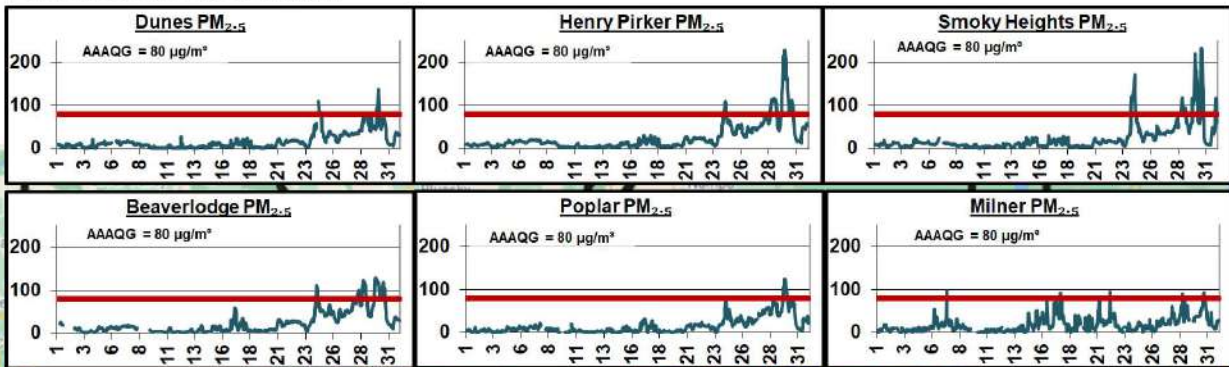
10.7 Fine Particulate Matter (PM_{2.5}) Plots

August 2023 PM_{2.5} Station Summary

Station	Avg µg/m ³	Max µg/m ³
Dunes PM _{2.5}	16.3	136.5
Henry Pirker PM _{2.5}	24.7	227.2
Smoky Heights PM _{2.5}	22.5	232.3
Beaverlodge PM _{2.5}	24.3	129.3
Valleyview PM _{2.5}	-	-
Donnelly PM _{2.5}	-	-
Poplar PM _{2.5}	15.4	123.9
Milner PM _{2.5}	18.6	96.4

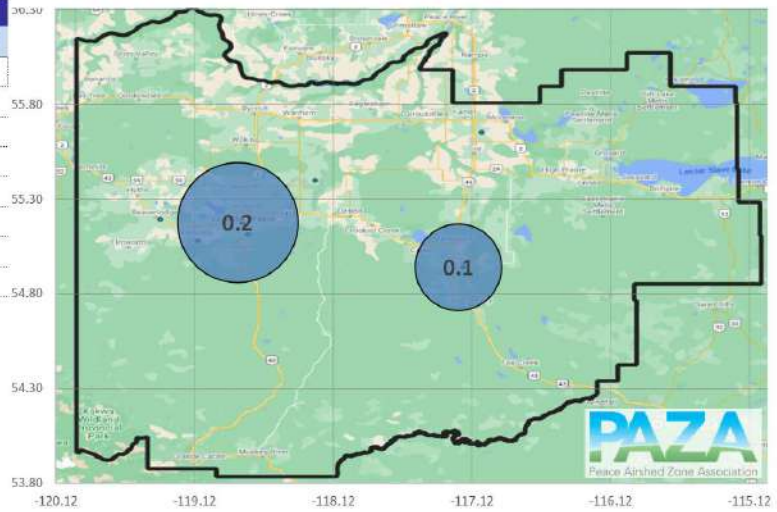


Fine Particulate Matter in µg/m³

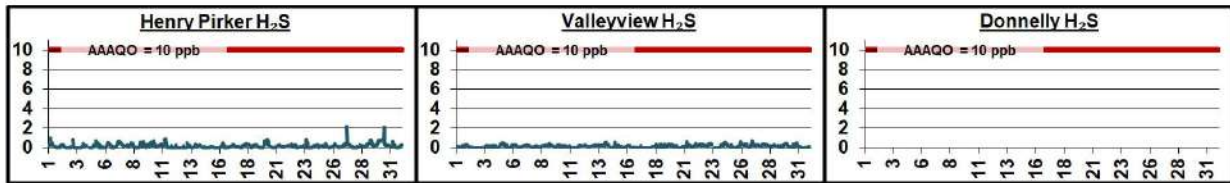


10.8 Hydrogen Sulphide (H₂S) Plots

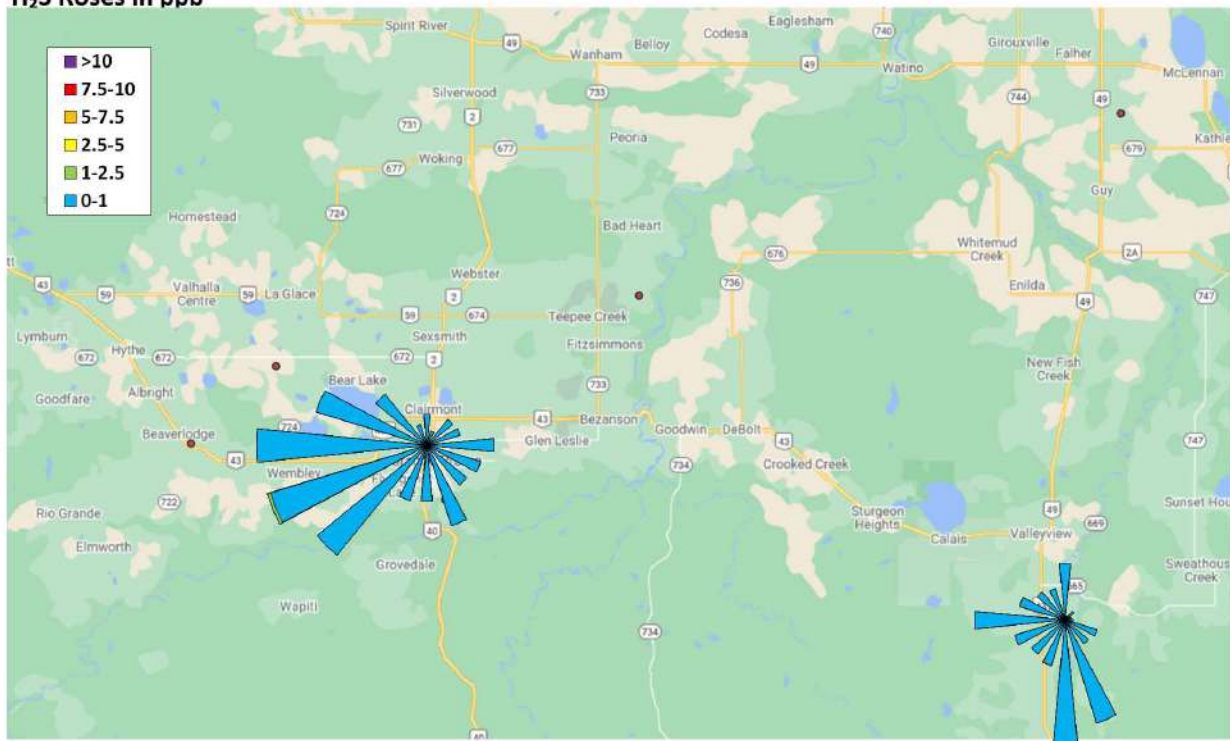
August 2023 H ₂ S Station Summary		
Station	Avg (ppb)	Max (ppb)
Dunes H ₂ S	-	-
Henry Pirkler H ₂ S	0.2	2.2
Smoky Heights H ₂ S	-	-
Beaverlodge H ₂ S	-	-
Valleyview H ₂ S	0.1	0.7
Donnelly H ₂ S	-	-
Poplar H ₂ S	-	-
Milner H ₂ S	-	-



Hydrogen Sulphide in ppb

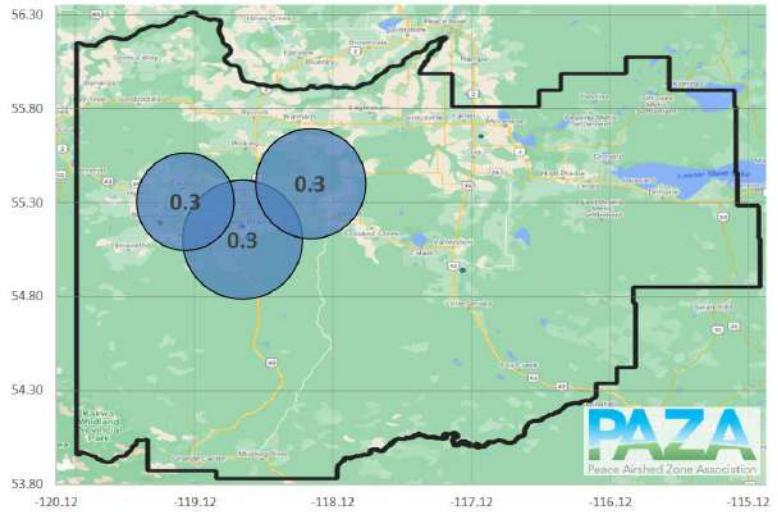


H₂S Roses in ppb

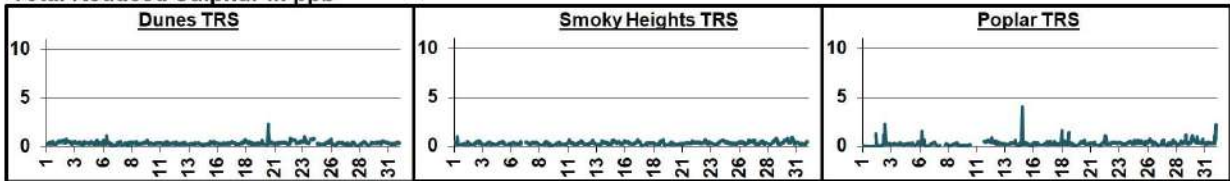


10.9 Total Reduced Sulphur (TRS) Plots

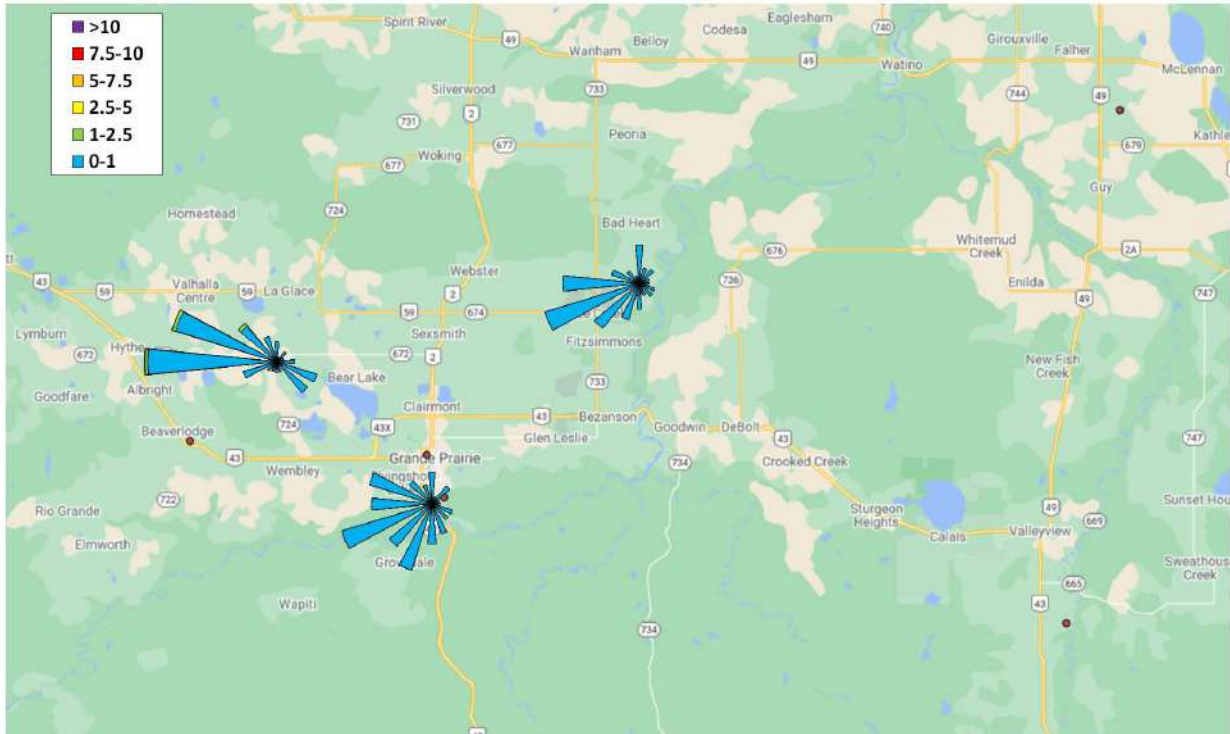
August 2023 TRS Station Summary		
Station	Avg (ppb)	Max (ppb)
Dunes TRS	0.3	2.3
Henry Pirkler TRS	-	-
Smoky Heights TRS	0.3	1.0
Beaverlodge TRS	-	-
Valleyview TRS	-	-
Donnelly TRS	-	-
Poplar TRS	0.3	4.0
Milner TRS	-	-



Total Reduced Sulphur in ppb



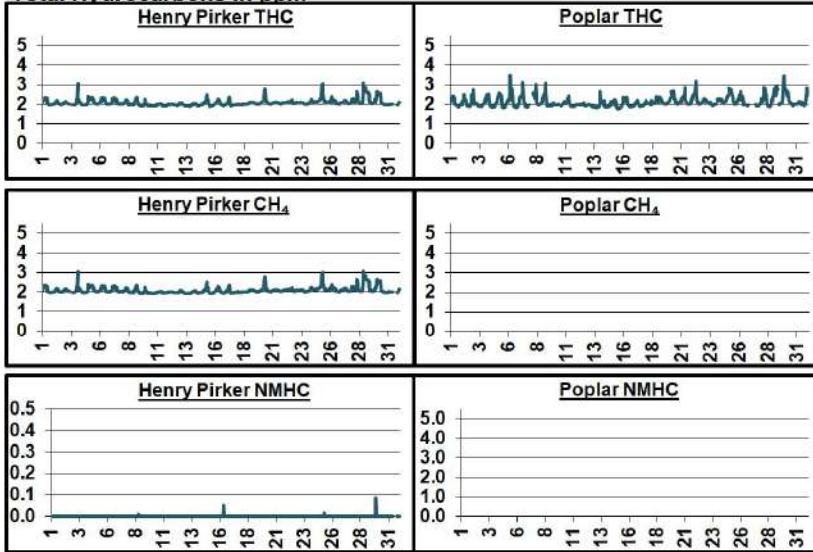
TRS Roses in ppb



10.10 Total Hydrocarbon (THC) Plots

August 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 Pirker THC	2.1	3.1	2.1	3.1	0.0	0.1
Smoky Heights THC	-	-	-	-	-	-
Beaverlodge THC	-	-	-	-	-	-
Valleyview THC	-	-	-	-	-	-
Donnelly THC	-	-	-	-	-	-
Poplar THC	2.1	3.4	-	-	-	-

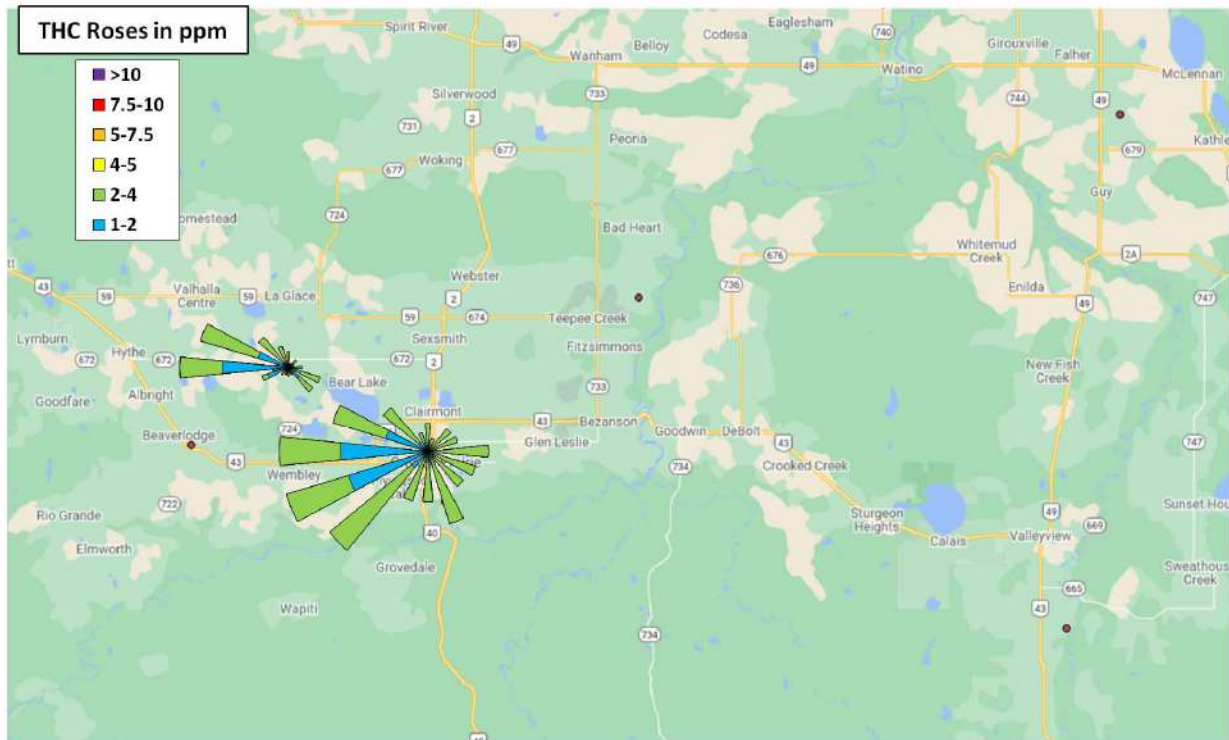
Total Hydrocarbons in ppm



Total Hydrocarbons (THC)

Methane (CH₄)

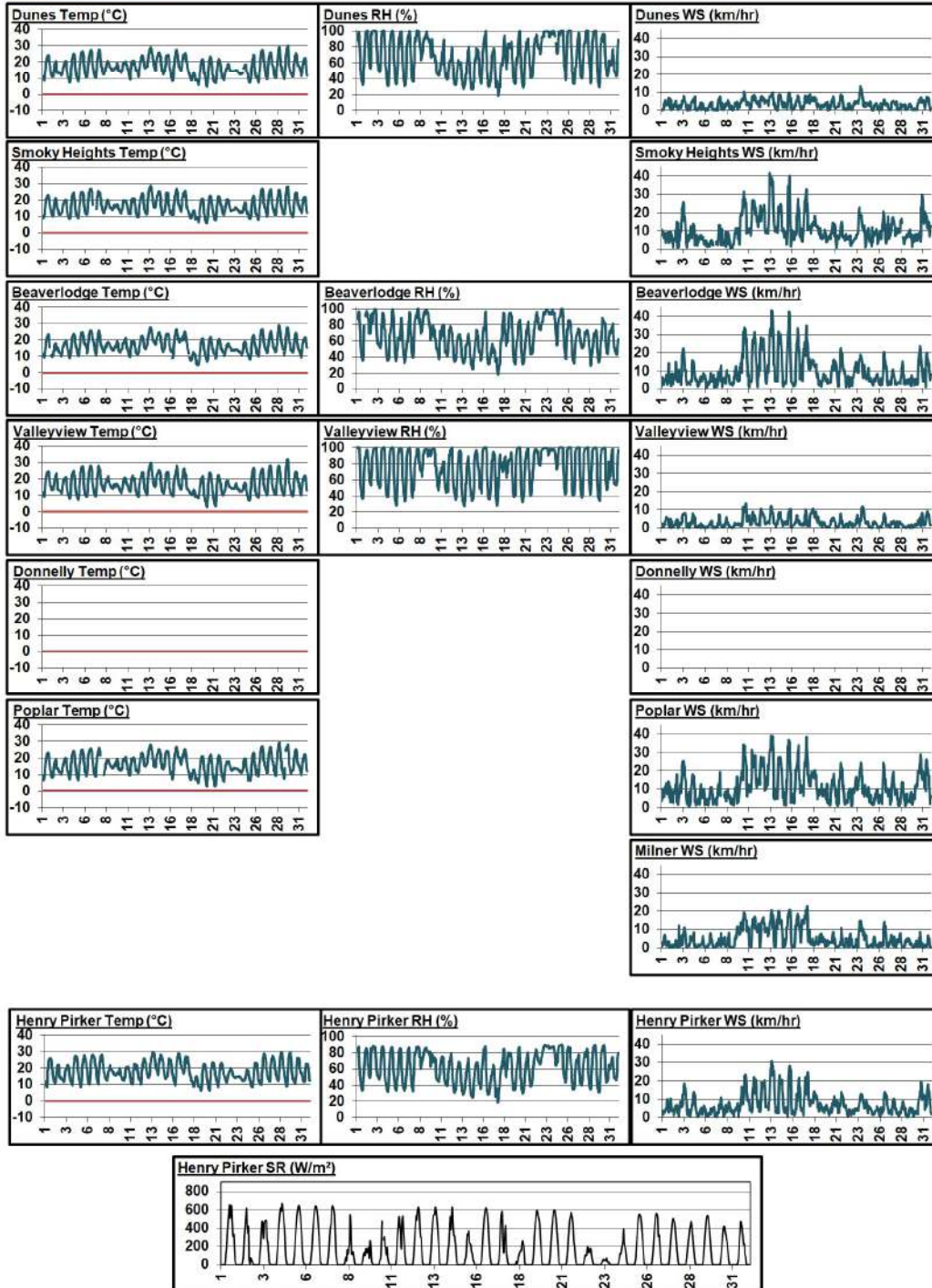
Non-Methane Hydrocarbons (NMHC)



10.11 Meteorology Summary

August 2023 Meteorological Summary						
Station	Temp (°C)	RH (%)	SR (W/m ²)	WS (km/hr)	WD (deg)	WD
Dunes	16.7	68.6	-	3.5	256	WSW
Henry Pirker	17.9	62.1	158.5	7.1	256	WSW
Smoky Heights	16.5	-	-	10.8	254	WSW
Beaverlodge	16.9	65.3	-	9.8	269	W
Valleyview	16.6	75.9	-	3.2	263	W
Donnelly	-	-	-	-	-	-
Poplar	16.2	-	-	11.4	282	WNW
Milner	-	-	-	4.9	242	WSW

Temp (°C) Outside Temperature
 RH (%) Relative Humidity
 SR (W/m²) 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 August 2023

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
Duplicates						
5a	Boone Creek	0.3				01-23-076-11 W6M
5b	Boone Creek	0.2				
9a	Spirit River			0.9		08-12-079-07 W6M
9b	Spirit River			1.8		
12a	Hythe			0.8		14-36-072-11 W6M
12b	Hythe			0.9		
16a	Beaverlodge	0.5				15-36-071-10 W6M
16b	Beaverlodge	0.4				
18a	Saddle Hills					04-25-074-07 W6M
18b	Saddle Hills					
27a	Grande Prairie I			2.1		08-15-071-06 W6M
27b	Grande Prairie I			2.0		
35a	Jean Cote			0.6		12-35-079-21 W5M
35b	Jean Cote			0.7		
40a	McLennan	0.3				03-29-077-19 W5M
40b	McLennan	0.3				
47a	Kinuso		17.5			12-10-073-10 W5M
47b	Kinuso		23.6			
49a	Henry Pirker	0.5				17-26-071-06 W6M
49b	Henry Pirker	0.5				
G4a	Girouxville 4				0.49	04-08-077-22 W5M
G4b	Girouxville 4				0.56	
D3a	Duvernay 3	0.2			0.15	04-33-062-20 W5M
D3b	Duvernay 3	0.2			0.12	
K2a	Kakwa 2			2.0		08-13-063-05 W6M
K2b	Kakwa 2			2.2		
K1a	Kakwa 1	0.2				01-13-063-05 W6M
K1b	Kakwa 1	0.2				
K4a	Kakwa 4				0.12	06-18-063-04 W6M
K4b	Kakwa 4				0.13	
M5a	Milner Bridge	0.1				08-06-057-08 W6M
M5b	Milner Bridge	0.2				
M9Aa	Milner Powerline			2.0		06-14-058-08 W6M
M9Ab	Milner Powerline			2.5		
J1a	Jayar1 Plant	0.4				06-08-062-03 W6M
J1b	Jayar1 Plant	0.4				
J5a	Jayar5 Camp			2.0		11-08-062-03 W6M
J5b	Jayar5 Camp			2.8		
J4a	Jayar4 7-8 or 8-8 Pad				0.07	10-08-062-03 W6M
J4b	Jayar4 7-8 or 8-8 Pad				0.10	

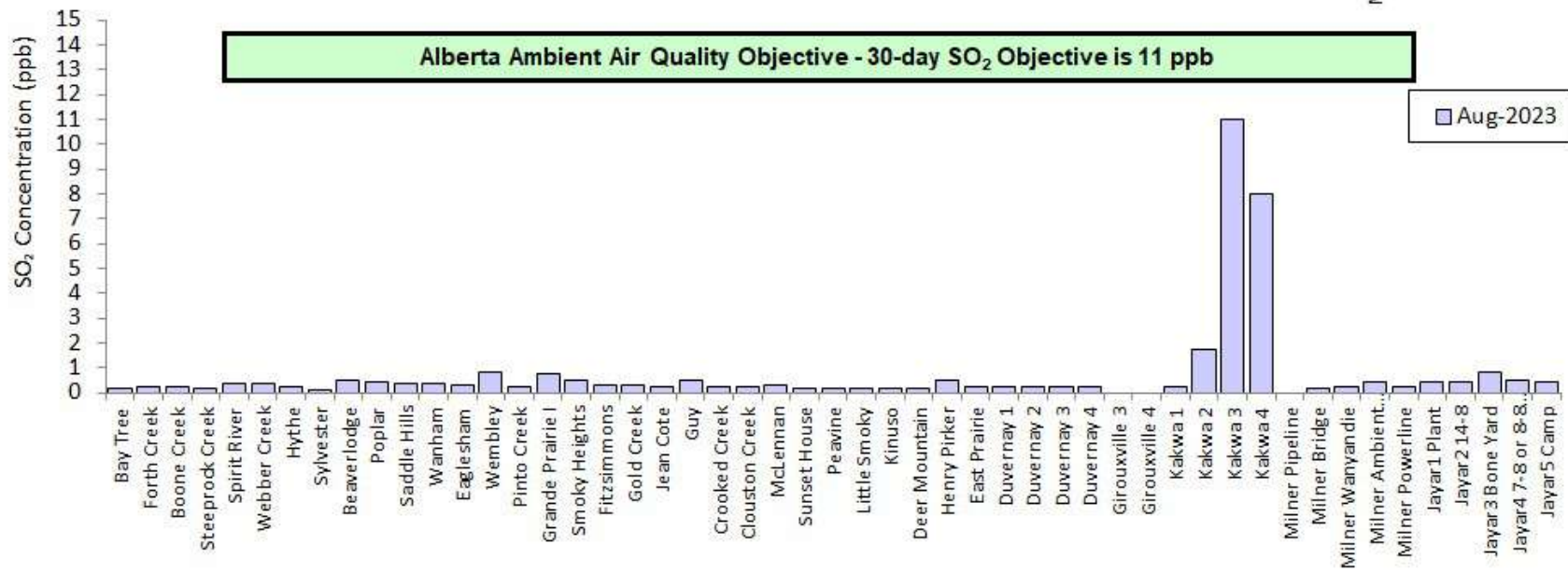
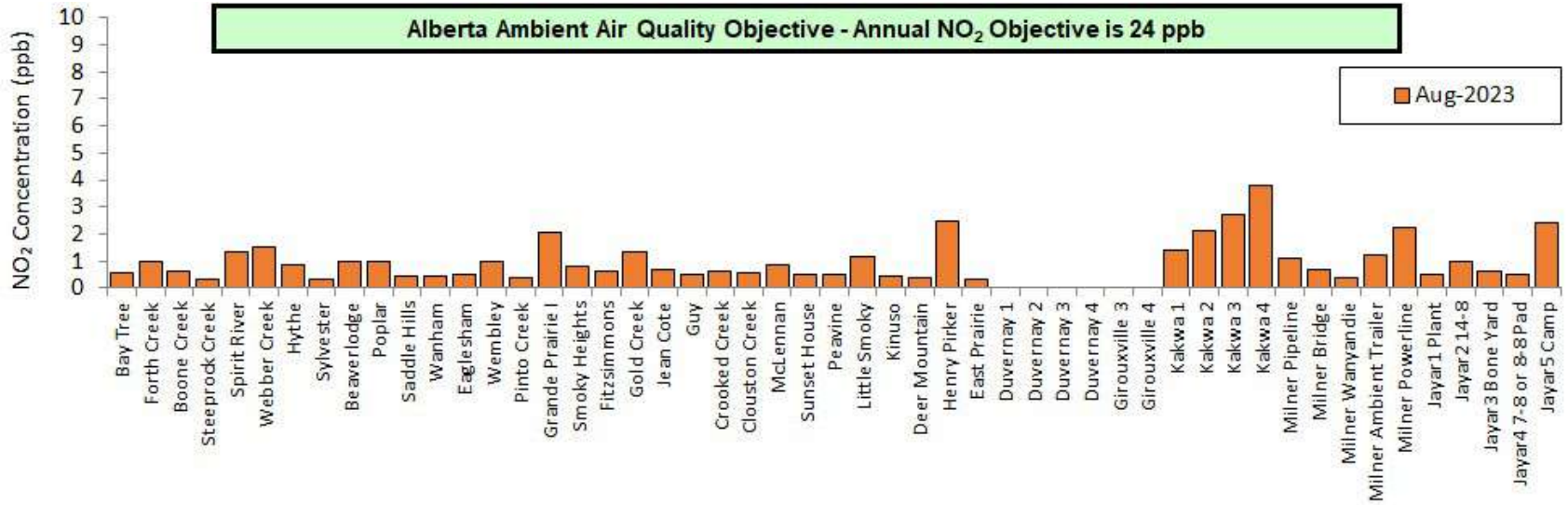
Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
2	Bay Tree	0.2	23.2	0.6	-	13-16-078-13 W6M
3	Forth Creek	0.2	-	1.0	-	04-13-082-07 W6M
5	Boone Creek	0.2	-	0.6	-	01-23-076-11 W6M
7	Steeprock Creek	0.2	-	0.3	-	09-35-072-13 W6M
9	Spirit River	0.3	-	1.3	-	08-12-079-07 W6M
11	Webber Creek	0.4	-	1.5	-	09-36-074-09 W6M
12	Hythe	0.3	-	0.8	-	14-36-072-11 W6M
14	Sylvester	0.1	-	0.3	-	08-06-069-12 W6M
16	Beaverlodge	0.5	-	1.0	-	15-36-071-10 W6M
17	Poplar	0.4	-	1.0	-	13-06-073-08 W6M
18	Saddle Hills	0.3	-	0.5	-	04-25-074-07 W6M
19	Wanham	0.3	-	0.4	-	16-22-077-03 W6M
21	Eaglesham	0.3	-	0.5	-	16-21-079-25 W5M
24	Wembley	0.8	-	1.0	-	12-31-070-08 W6M
25	Pinto Creek	0.2	-	0.4	-	04-24-069-11 W6M
27	Grande Prairie I	0.8	-	2.1	-	08-15-071-06 W6M
29	Smoky Heights	0.5	-	0.8	-	04-06-075-02 W6M
30	Fitzsimmons	0.3	-	0.6	-	15-36-072-03 W6M
32	Gold Creek	0.3	-	1.3	-	06-33-067-05 W6M
35	Jean Cote	0.2	-	0.7	-	12-35-079-21 W5M
36	Guy	0.5	-	0.5	0.18	03-04-076-22 W5M
37	Crooked Creek	0.2	23.1	0.6	-	16-01-071-26 W5M
39	Clouston Creek	0.2	-	0.6	-	12-01-073-22 W5M
40	McLennan	0.3	-	0.9	-	03-29-077-19 W5M
42	Sunset House	0.2	-	0.5	-	05-32-070-19 W5M
44	Peavine	0.1	-	0.5	-	03-05-079-15 W5M
46	Little Smoky	0.2	-	1.2	-	12-01-065-21 W5M
47	Kinuso	0.2	20.5	0.4	-	12-10-073-10 W5M
48	Deer Mountain	0.2	-	0.4	-	15-22-068-09 W5M
49	Henry Pirker	0.5	-	2.5	-	17-26-071-06 W6M
50	East Prairie	0.2	-	0.3	-	11-13-079-08 W6M
D1	Duvernay 1	0.2	-	-	0.10	04-33-062-20 W5M
D2	Duvernay 2	0.2	-	-	0.12	04-33-062-20 W5M
D3	Duvernay 3	0.2	-	-	0.13	04-33-062-20 W5M
D4	Duvernay 4	0.2	-	-	0.13	04-33-062-20 W5M
G3	Girouxville 3	-	-	-	0.65	14-02-077-23 W5M
G4	Girouxville 4	-	-	-	0.52	04-08-077-22 W5M
K1	Kakwa 1	0.2	-	1.4	0.07	01-13-063-05 W6M
K2	Kakwa 2	1.7	-	2.1	0.09	08-13-063-05 W6M
K3	Kakwa 3	11.0	-	2.7	0.13	12-18-063-04 W6M
K4	Kakwa 4	8.0	-	3.8	0.13	06-18-063-04 W6M
M1	Milner Pipeline	<0.1	-	1.1	-	12-14-058-08 W6M
M2	Milner Bridge	0.2	-	0.7	-	08-06-057-08 W6M
M3	Milner Wanyandie	0.2	-	0.4	-	11-13-058-08 W6M
M4	Milner Ambient Trailer	0.4	-	1.2	-	09-15-058-08 W6M
M5	Milner Powerline	0.2	-	2.3	-	06-14-058-08 W6M
J1	Jayar1 Plant	0.4	-	0.5	0.09	06-08-062-03 W6M
J2	Jayar2 14-8	0.4	-	1.0	0.10	07-08-062-03 W6M
J3	Jayar3 Bone Yard	0.8	-	0.6	0.09	14-08-062-03 W6M
J4	Jayar4 7-8 or 8-8 Pad	0.5	-	0.5	0.09	10-08-062-03 W6M
J5	Jayar5 Camp	0.4	-	2.4	0.11	11-08-062-03 W6M

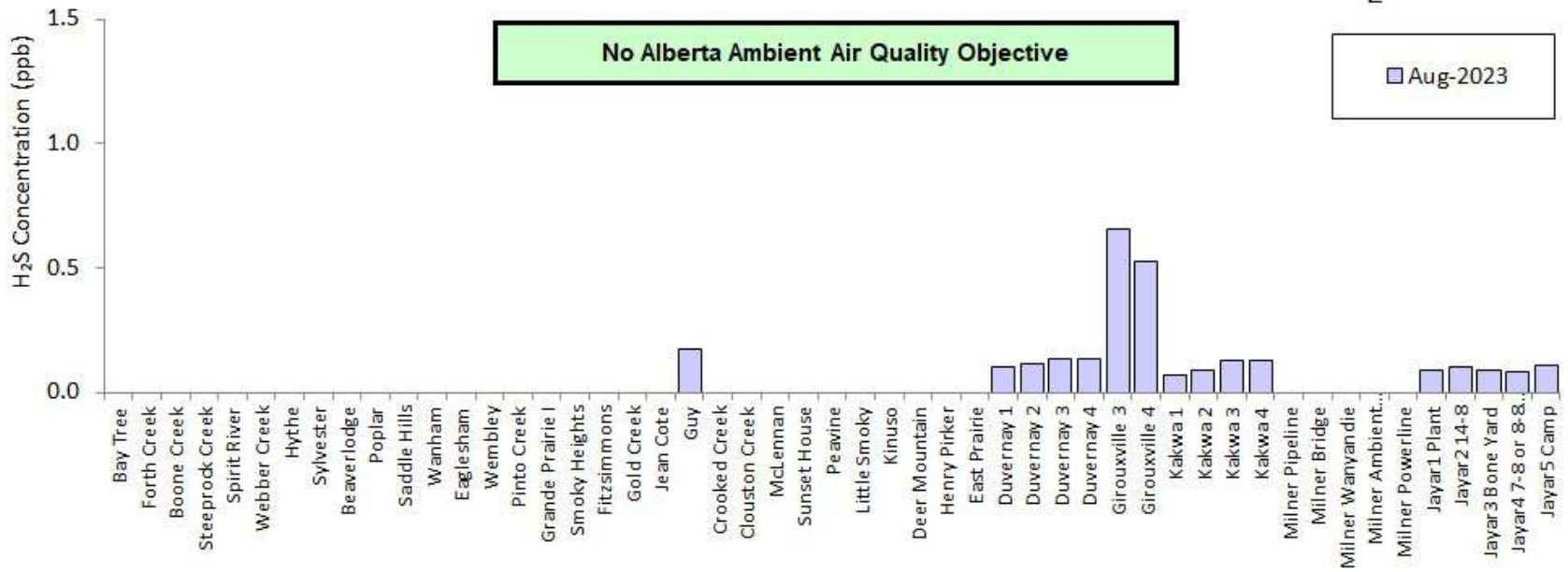
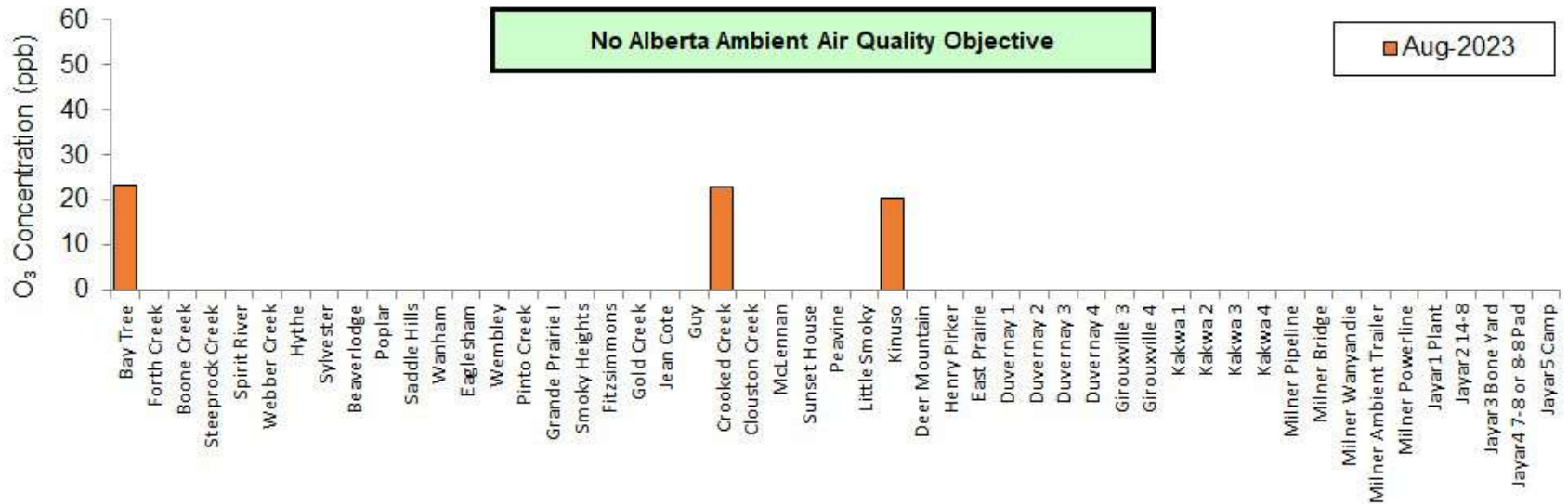
Passive Summary for August 2023

Stats	Sulphur Dioxide SO ₂ ppb	Ozone O ₃ ppb	Nitrogen Dioxide NO ₂ ppb	Hydrogen Sulphide H ₂ S ppb
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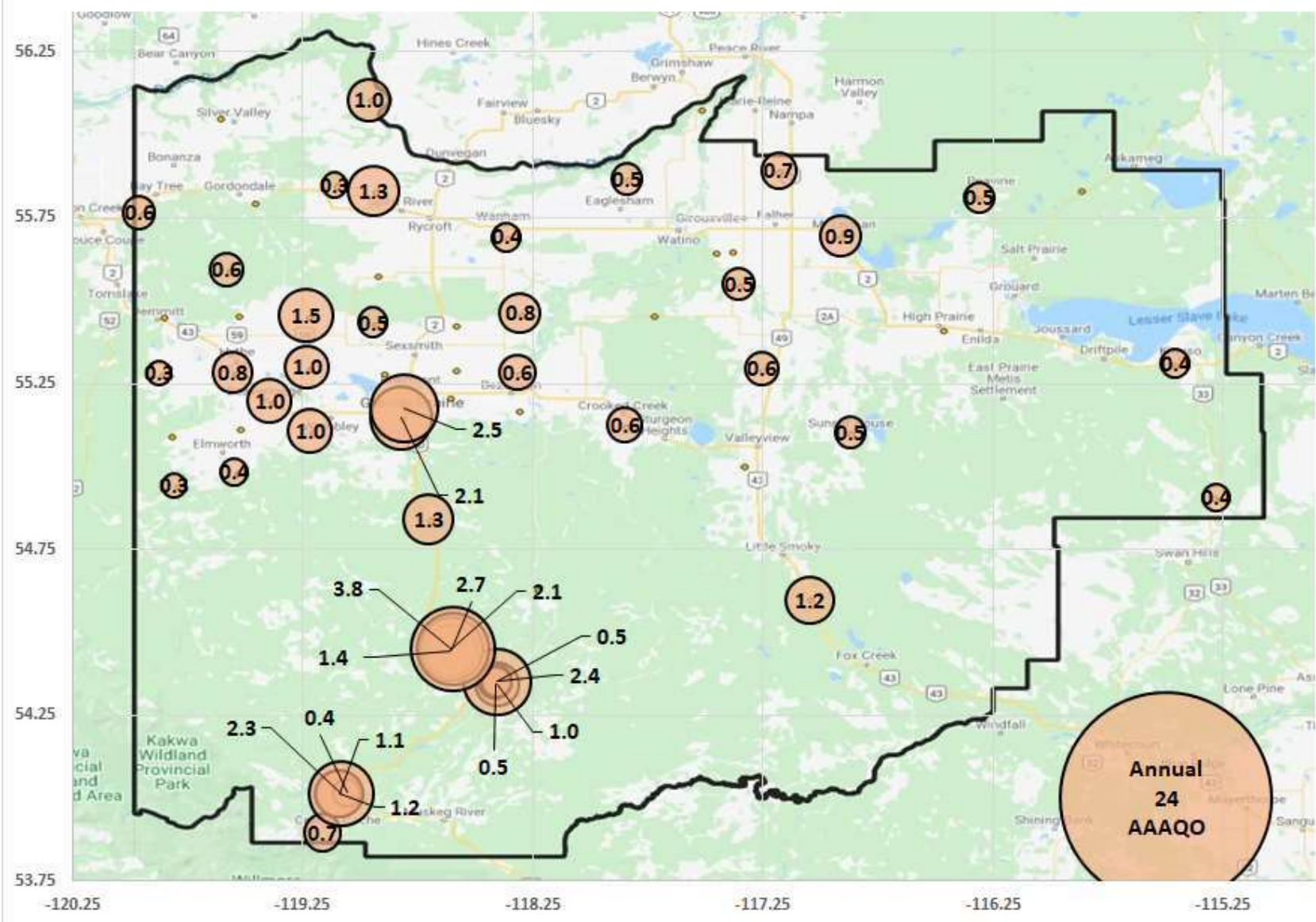
Passive Summary for August 2023 (PAZA)				
Mean	0.7	22.3	1.0	0.2
Standard Deviation	1.9	1.5	0.8	0.2
Minimum	0.1	20.5	0.3	0.1
Maximum	Sylvester (#14)	Kinuso (#47)	Sylvester (#14)	Kakwa 1 (#K1)
	11.0	23.2	3.8	0.7
	Kakwa 3 (#K3)	Bay Tree (#2)	Kakwa 4 (#K4)	Girouxville 3 (#G3)

Continuous and Passive Monitoring Comparison				
PAZA Beaverlodge Station	0.4	26.6	2.6	-
Beaverlodge Passive (#16)	0.5	-	1.0	-
PAZA Henry Pirker Station	0.4	24.1	5.9	0.2
Henry Pirker passive (#49)	0.5	-	2.5	-
Milner Station	-	-	0.2	-
Milner passive	0.4	-	1.2	-

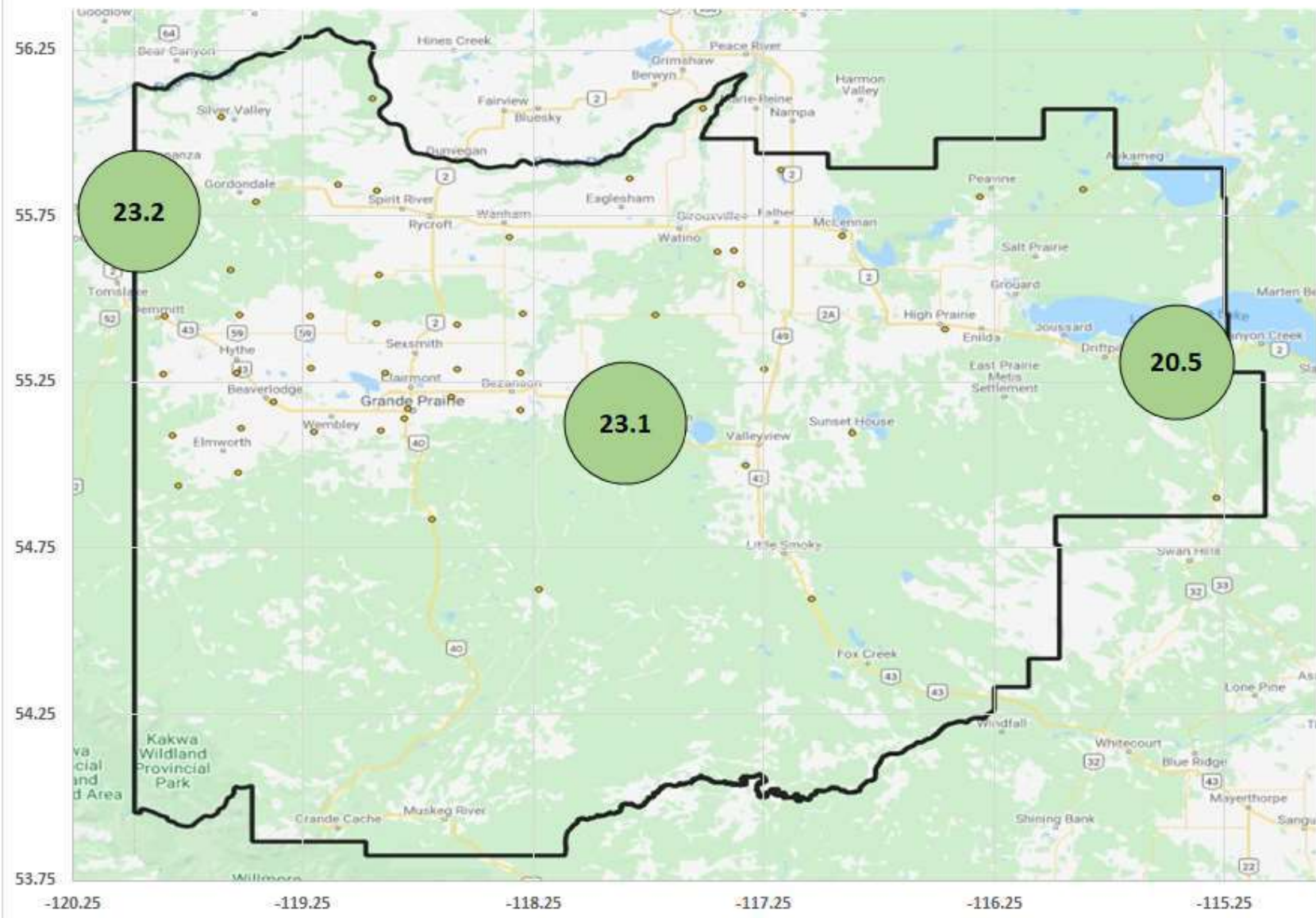




NO₂ Monthly Average (units in ppb)



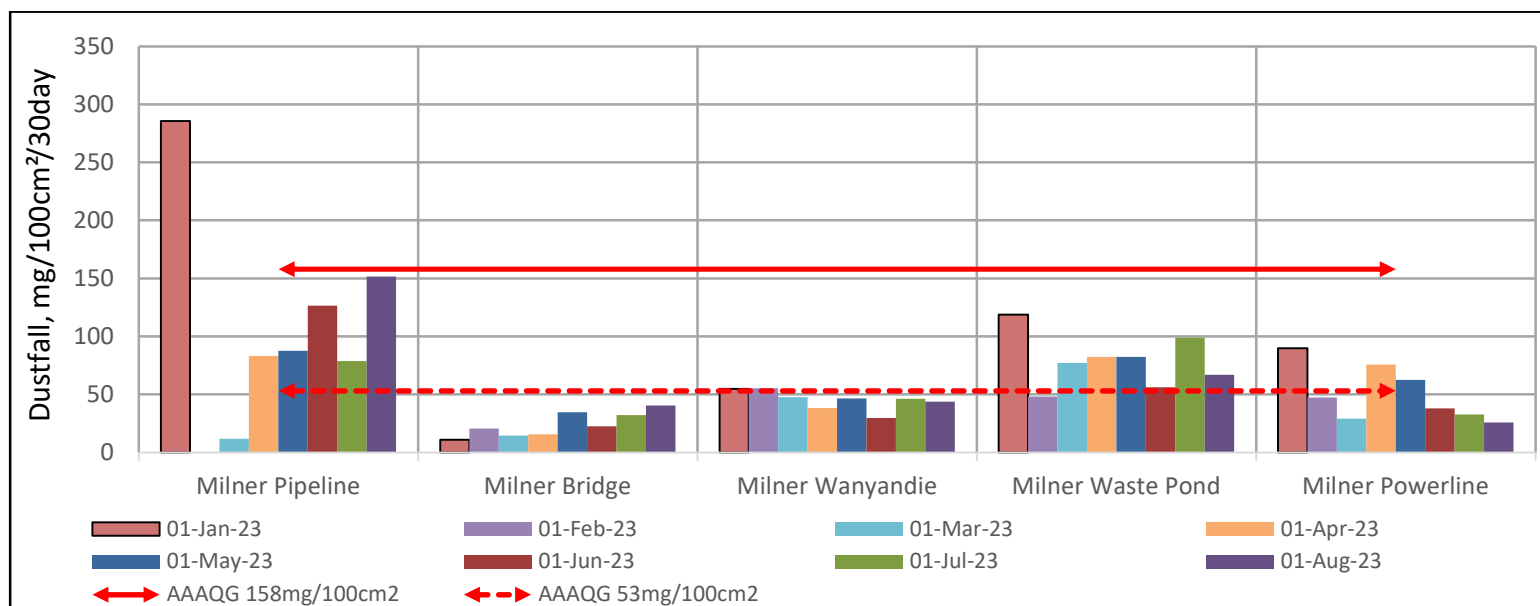
O₃ Monthly Average (units in ppb)



12 Dustfall Monitoring Data

Milner Dustfall Samples August 2023

Exposure Month	Year	Sample	Total Dustfall (30 day) mg/100cm ² /30day	Fixed Dustfall (30 day) mg/100cm ² /30day	Exposure days	Field Notes
August	2023	Milner Pipeline	151.4	67.5	31	
August	2023	Milner Bridge	40.3	33.2	31	
August	2023	Milner Wanyandie	43.6	15.0	31	
August	2023	Milner Waste Pond	66.8	27.0	31	
August	2023	Milner Powerline	25.6	9.2	31	
August	2023	Milner Powerline Dup	20.6	8.5	31	RPD= 22% / 8%



End of Report



Peace Airshed Zone Association

Ambient Air Monitoring Report

August 2023