



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

2022 Annual Report

VERSION CONTROL

Version	Date	Issue Type	Filename	Description
V1.0	08-Mar 2023	Draft	2022 PAZA Annual report.docx	Issued for review
V1.1	23-Mar 2023	Draft	2022 PAZA Annual report.docx	Issued based on feedback review

TABLE OF CONTENTS

1	SUMMARY OF KEY PARAMETERS MONITORED IN 2022	11
1.1	Map of PAZA Continuous Stations in 2022	12
1.2	Map of PAZA Passive Stations in 2022.....	14
2	PAZA KEY PARAMETERS - 2022 SUMMARY	15
2.1	Sulphur Dioxide (SO ₂) 2022 Summary	15
2.2	Hydrogen Sulphide (H ₂ S) 2022 Summary	17
2.3	Total Reduced Sulphur (TRS) 2022 Summary	19
2.4	Nitrogen Dioxide (NO ₂) 2022 Summary.....	21
2.5	Ozone (O ₃) 2022 Summary	23
2.6	Total Hydrocarbons (THC / CH ₄ / NMHC) 2022 Summary	25
2.7	Carbon Monoxide (CO) 2022 Summary	30
2.8	Particulate Matter (PM _{2.5}) 2022 Summary	32
2.9	Wind Profile (wind roses) 2022 Summary	34
3	BEAVERLODGE KEY PARAMETERS - CONTINUOUS MONITORING DATA - 2022 SUMMARY	35
3.1	Beaverlodge AQHI Calendar Plot for 2022.....	37
3.2	Sulphur Dioxide (SO ₂) - Beaverlodge 2022 Summary	38
3.3	Nitrogen Dioxide (NO ₂) - Beaverlodge 2022 Summary.....	41
3.4	Nitric Oxide (NO) - Beaverlodge 2022 Summary	43
3.5	Oxides of Nitrogen (NO _x) - Beaverlodge 2022 Summary	44
3.6	Ozone (O ₃) - Beaverlodge 2022 Summary	45
3.7	Particulate Matter (PM _{2.5}) - Beaverlodge 2022 Summary	47
3.8	Temperature (ET) - Beaverlodge 2022 Summary	50
3.9	Relative Humidity (RH) - Beaverlodge 2022 Summary	51
3.10	Wind Speed and Wind Direction (WS and WD) - Beaverlodge 2022 Summary	52
3.11	Beaverlodge Annual Trends, 2012 to 2022.....	55
4	DONNELLY KEY PARAMETERS - CONTINUOUS MONITORING DATA - 2022 SUMMARY	64
4.1	Sulphur Dioxide (SO ₂) - Donnelly 2022 Summary	66
4.2	Hydrogen Sulphide (H ₂ S) - Donnelly 2022 Summary	69
4.3	Temperature (ET) - Donnelly 2022 Summary	72
4.4	Wind Speed and Wind Direction (WS and WD) - Donnelly 2022 Summary	73
4.5	Donnelly Annual Trends, 2017 to 2022	76
5	DUNES KEY PARAMETERS - CONTINUOUS MONITORING DATA - 2022 SUMMARY	82
5.1	Sulphur Dioxide (SO ₂) - Dunes 2022 Summary	84
5.2	Total Reduced Sulphur (TRS) - Dunes 2022 Summary	87
5.3	Particulate Matter (PM _{2.5}) - Dunes 2022 Summary	90
5.4	Temperature (ET) - Dunes 2022 Summary	93
5.5	Relative Humidity (RH) - Dunes 2022 Summary	94
5.6	Wind Speed and Wind Direction (WS and WD) - Dunes 2022 Summary	95
6	HENRY PIRKER KEY PARAMETERS - CONTINUOUS MONITORING DATA - 2022 SUMMARY	98
6.1	Henry Pirker AQHI Calendar Plot for 2022.....	100

6.2	Sulphur Dioxide (SO ₂) - Henry Pirker 2022 Summary	101
6.3	Hydrogen Sulphide (H ₂ S) - Henry Pirker 2022 Summary	104
6.4	Nitrogen Dioxide (NO ₂) - Henry Pirker 2022 Summary.....	107
6.5	Nitric Oxide (NO) - Henry Pirker 2022 Summary	109
6.6	Oxides of Nitrogen (NO _x) - Henry Pirker 2022 Summary.....	110
6.7	Ozone (O ₃) - Henry Pirker 2022 Summary	111
6.8	Total Hydrocarbons (THC) - Henry Pirker 2022 Summary	113
6.9	Methane (CH ₄) - Henry Pirker 2022 Summary.....	115
6.10	Nonmethane Hydrocarbons (NMHC) - Henry Pirker 2022 Summary	116
6.11	Carbon Monoxide (CO) - Henry Pirker 2022 Summary.....	117
6.12	Particulate Matter (PM _{2.5}) - Henry Pirker 2022 Summary	120
6.13	Temperature (ET) - Henry Pirker 2022 Summary	123
6.14	Relative Humidity (RH) - Henry Pirker 2022 Summary	124
6.15	Solar Radiation (SR) - Henry Pirker 2022 Summary	125
6.16	Wind Speed and Wind Direction (WS and WD) - Henry Pirker 2022 Summary	126
6.17	Henry Pirker Annual Trends, 2012 to 2022.....	129
7	MILNER KEY PARAMETERS - CONTINUOUS MONITORING DATA - 2022 SUMMARY	143
7.1	Nitrogen Dioxide (NO ₂) - Milner 2022 Summary	145
7.2	Nitric Oxide (NO) - Milner 2022 Summary.....	147
7.3	Oxides of Nitrogen (NO _x) - Milner 2022 Summary	148
7.4	Particulate Matter (PM _{2.5}) - Milner 2022 Summary.....	149
7.5	Wind Speed and Wind Direction (WS and WD) - Milner 2022 Summary.....	152
8	POPLAR KEY PARAMETERS - CONTINUOUS MONITORING DATA - 2022 SUMMARY	155
8.1	Poplar AQHI Calendar Plot for 2022	157
8.2	Sulphur Dioxide (SO ₂) - Poplar 2022 Summary	158
8.3	Total Reduced Sulphur (TRS) - Poplar 2022 Summary.....	161
8.4	Nitrogen Dioxide (NO ₂) - Poplar 2022 Summary	164
8.5	Nitric Oxide (NO) - Poplar 2022 Summary.....	166
8.6	Oxides of Nitrogen (NO _x) - Poplar 2022 Summary.....	167
8.7	Ozone (O ₃) - Poplar 2022 Summary.....	168
8.8	Total Hydrocarbons (THC) - Poplar 2022 Summary.....	170
8.9	Methane (CH ₄) - Poplar 2022 Summary	172
8.10	Nonmethane Hydrocarbons (NMHC) - Poplar 2022 Summary.....	173
8.11	Particulate Matter (PM _{2.5}) - Poplar 2022 Summary.....	174
8.12	Temperature (ET) - Poplar 2022 Summary	177
8.13	Wind Speed and Wind Direction (WS and WD) - Poplar 2022 Summary	178
9	SMOKY HEIGHTS KEY PARAMETERS - CONTINUOUS MONITORING DATA - 2022 SUMMARY	181
9.1	Sulphur Dioxide (SO ₂) - Smoky Heights 2022 Summary	183
9.2	Total Reduced Sulphur (TRS) - Smoky Heights 2022 Summary	186
9.3	Particulate Matter (PM _{2.5}) - Smoky Heights 2022 Summary	189
9.4	Temperature (ET) - Smoky Heights 2022 Summary.....	192

	9.5	Wind Speed and Wind Direction (WS and WD) - Smoky Heights 2022 Summary.....	193
	9.6	Smoky Heights Annual Trends, 2012 to 2022	196
10		VALLEYVIEW KEY PARAMETERS - CONTINUOUS MONITORING DATA - 2022 SUMMARY.....	203
	10.1	Sulphur Dioxide (SO ₂) - Valleyview 2022 Summary	205
	10.2	Hydrogen Sulphide (H ₂ S) - Valleyview 2022 Summary	208
	10.3	Temperature (ET) - Valleyview 2022 Summary	211
	10.4	Relative Humidity (RH) - Valleyview 2022 Summary	212
	10.5	Wind Speed and Wind Direction (WS and WD) - Valleyview 2022 Summary	213
	10.6	Valleyview Annual Trends, 2012 to 2022	216
11		PASSIVE MONITORING DATA - 2022 SUMMARY	222
	11.1	O ₃ Monitoring Passive Data - 2022 Summary.....	222
	11.2	H ₂ S Monitoring Passive Data - 2022 Summary	222
	11.3	NO ₂ Monitoring Data - 2022 Summary.....	223
	11.4	SO ₂ Monitoring Data - 2022 Summary.....	224
	11.5	Monitoring Passive Data Bubble Charts - 2022 Summary	226
12		DUSTFALL MONITORING DATA - 2022 SUMMARY	230
	12.1	Dustfall Monitoring Passive Data - 2022 Summary	230
13		END OF REPORT	232



March 31, 2022

Alberta Environmental Protection
4th Floor, Oxbridge Place
9820 106 Street
Edmonton, Alberta T5K 2J6

**Subject: Peace Airshed Zone Association (PAZA)
2022 Annual Ambient Air Quality Monitoring Report**

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for 2022.

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

Mandeep Dhaliwal, B.Sc., P.Chem.
Program Manager
Box 21135
Grande Prairie, Alberta T8V 6W7
Email: Mandeep@paza.ca
Phone: 403-608-9697

PAZA has retained the services of WSP Canada Inc. to conduct continuous ambient monitoring and Dr. Kevin McCullum 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 annual summary report includes the operational summaries and hourly continuous monitoring results. This report was prepared by Dr. Kevin McCullum and reviewed by Mandeep Dhaliwal.

Continuous Monitoring:

Detailed Annual Summaries are included in the report for the following stations:

- Henry Pirker (Grande Prairie)
- Smoky Heights
- Beaverlodge
- Valleyview
- Donnelly
- Dunes
- Poplar
- Milner

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
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 Regulations (Summary by site in 2022):

Beaverlodge:

- 3, one-hour ozone readings above 76 ppb (O₃ AAAQO)
- 6, one-hour PM_{2.5} readings above 80 µg/m³ (PM_{2.5} AAAQG)
- 4, 24-hour PM_{2.5} reading above 29 µg/m³ (PM_{2.5} AAAQO)

Donnelly:

- None to report

Dunes:

- 9, one-hour PM_{2.5} readings above 80 µg/m³ (PM_{2.5} AAAQG)
- 3, 24-hour PM_{2.5} reading above 29 µg/m³ (PM_{2.5} AAAQO)

Henry Pirker:

- 13, one-hour PM_{2.5} readings above 80 µg/m³ (PM_{2.5} AAAQG)
- 5, 24-hour PM_{2.5} reading above 29 µg/m³ (PM_{2.5} AAAQO)

Poplar:

- 4, one-hour PM_{2.5} readings above 80 µg/m³ (PM_{2.5} AAAQG)
- 1, 24-hour PM_{2.5} reading above 29 µg/m³ (PM_{2.5} AAAQO)

Smoky Heights:

- 8, one-hour PM_{2.5} readings above 80 µg/m³ (PM_{2.5} AAAQG)

Valleyview:

- None to report

Milner:

- 20, one-hour PM_{2.5} readings above 80 µg/m³ (PM_{2.5} AAAQG)
- 3, 24-hour PM_{2.5} reading above 29 µg/m³ (PM_{2.5} AAAQO)

2022 total summary:

- 3, one-hour ozone readings above 76 ppb (O₃ AAAQO)
- 60, one-hour PM_{2.5} reading above 80 µg/m³ (PM_{2.5} AAAQG)
- 16, 24-hour PM_{2.5} reading above 29 µg/m³ (PM_{2.5} AAAQO)

Summary of one-hour O₃ above the AAAQO (76 ppb)

Reference Number	Pollutant	Station	Date	From MST	To MST	Hour avg ppb	WS km/h	WD degrees
402947	O ₃	Beaverlodge	August 19	15:00	16:00	77.5	1.5	135
402947	O ₃	Beaverlodge	August 19	16:00	17:00	81.8	1.4	99
402947	O ₃	Beaverlodge	August 19	17:00	18:00	82.2	0.9	81

Summary of one-hour PM_{2.5} above the AAAQG (80 µg/m³)

Reference Number	Pollutant	Station	Date	From MST	To MST	Hour avg ppb	WS km/h	WD degrees
387652	PM _{2.5}	Beaverlodge	Feb 04, 2022	00:00	01:00	109.6	11.3	93
403862	PM _{2.5}	Beaverlodge	Sep 03, 2022	13:00	14:00	112.0	7.8	297
404185	PM _{2.5}	Beaverlodge	Sep 10, 2022	23:00	00:00	150.0	11.3	312
405635	PM _{2.5}	Beaverlodge	Oct 15, 2022	02:00	03:00	82.9	9.8	67
405848	PM _{2.5}	Beaverlodge	Oct 19, 2022	11:00	12:00	80.8	21.1	264
405848	PM _{2.5}	Beaverlodge	Oct 19, 2022	16:00	17:00	121.5	37.4	230
391324	PM _{2.5}	Dunes	Jun 04, 2022	04:00	05:00	139.5	0.2 (calm)	32
403541	PM _{2.5}	Dunes	Aug 31, 2022	01:00	02:00	83.7	1.5	254
403798	PM _{2.5}	Dunes	Sep 02, 2022	20:00	21:00	111.0	0.6	292
403798	PM _{2.5}	Dunes	Sep 02, 2022	21:00	22:00	171.0	0.6	274

Reference Number	Pollutant	Station	Date	From MST	To MST	Hour avg ppb	WS km/h	WD degrees
404186	PM _{2.5}	Dunes	Sep 11, 2022	01:00	02:00	86.0	0.8	247
404186	PM _{2.5}	Dunes	Sep 11, 2022	02:00	03:00	83.0	0.7	331
405636	PM _{2.5}	Dunes	Oct 15, 2022	02:00	03:00	92.6	6.4	52
405846	PM _{2.5}	Dunes	Oct 19, 2022	13:00	14:00	125.2	8.4	282
405846	PM _{2.5}	Dunes	Oct 19, 2022	14:00	15:00	90.0	10.6	255
391343	PM _{2.5}	Henry Pirker	Jun 04, 2022	22:00	23:00	133.6	5.4	107
400240	PM _{2.5}	Henry Pirker	Jun 14, 2022	23:00	00:00	82.5	14.4	68
400241	PM _{2.5}	Henry Pirker	Jun 15, 2022	00:00	01:00	82.0	13.6	72
403863	PM _{2.5}	Henry Pirker	Sep 03, 2022	14:00	15:00	82.0	10.4	309
404187	PM _{2.5}	Henry Pirker	Sep 11, 2022	00:00	01:00	80.0	7.9	316
405637	PM _{2.5}	Henry Pirker	Oct 15, 2022	01:00	02:00	131.2	4.4	41
405637	PM _{2.5}	Henry Pirker	Oct 15, 2022	02:00	03:00	103.5	5.0	53
405847	PM _{2.5}	Henry Pirker	Oct 19, 2022	12:00	13:00	147.0	11.3	254
405847	PM _{2.5}	Henry Pirker	Oct 19, 2022	13:00	14:00	140.3	28.0	262
405847	PM _{2.5}	Henry Pirker	Oct 19, 2022	15:00	16:00	102.5	17.6	220
405847	PM _{2.5}	Henry Pirker	Oct 19, 2022	22:00	23:00	86.0	13.0	282
405847	PM _{2.5}	Henry Pirker	Oct 19, 2022	23:00	24:00	104.4	17.7	258
408197	PM _{2.5}	Henry Pirker	Dec 31, 2022	22:00	23:00	86.3	3.0	298
388300	PM _{2.5}	Milner	Jan 10, 2022	12:00	13:00	98.4	0.6	288
388300	PM _{2.5}	Milner	Jan 10, 2022	13:00	14:00	106.0	0.6	344
388300	PM _{2.5}	Milner	Jan 20, 2022	12:00	13:00	129.5	40.8	236
401601	PM _{2.5}	Milner	Jul 19, 2022	06:00	07:00	130.1	18.7	246
403483	PM _{2.5}	Milner	Jul 23, 2022	10:00	11:00	169.0	4.9	222
403483	PM _{2.5}	Milner	Jul 23, 2022	23:00	00:00	156.7	4.3	268
404152	PM _{2.5}	Milner	Sep 09, 2022	19:00	20:00	90.0	15.7	239
406754	PM _{2.5}	Milner	Nov 13, 2022	10:00	11:00	98.4	10.5	251
406763	PM _{2.5}	Milner	Nov 14, 2022	24:00	01:00	90.6	4.0	274
406763	PM _{2.5}	Milner	Nov 14, 2022	02:00	03:00	120.4	3.1	277
406763	PM _{2.5}	Milner	Nov 14, 2022	04:00	05:00	128.0	5.7	259
406763	PM _{2.5}	Milner	Nov 14, 2022	05:00	06:00	142.3	5.9	265
406763	PM _{2.5}	Milner	Nov 14, 2022	11:00	12:00	100.5	3.1	260
408074	PM _{2.5}	Milner	Dec 26, 2022	21:00	22:00	100.7	1.0	340
408091	PM _{2.5}	Milner	Dec 27, 2022	04:00	05:00	83.8	0.6	269
408091	PM _{2.5}	Milner	Dec 27, 2022	08:00	09:00	101.7	1.0	250
408091	PM _{2.5}	Milner	Dec 27, 2022	09:00	10:00	89.4	0.7	275
408114	PM _{2.5}	Milner	Dec 28, 2022	14:00	15:00	108.5	3.9	245
408150	PM _{2.5}	Milner	Dec 29, 2022	06:00	07:00	117.3	0.5	23
408150	PM _{2.5}	Milner	Dec 29, 2022	10:00	11:00	98.6	1.0	264
401732	PM _{2.5}	Poplar	Jul 21, 2022	16:00	17:00	96.9	15.6	11
405638	PM _{2.5}	Poplar	Oct 15, 2022	02:00	03:00	80.0	6.5	118
405845	PM _{2.5}	Poplar	Oct 19, 2022	09:00	10:00	82.2	14.4	270
405845	PM _{2.5}	Poplar	Oct 19, 2022	10:00	11:00	89.5	16.6	259
403540	PM _{2.5}	Smoky Heights	Aug 30, 2022	21:00	22:00	115.4	14.1	271
403270	PM _{2.5}	Smoky Heights	Sep 01, 2022	21:00	22:00	211.0	8.7	244
403270	PM _{2.5}	Smoky Heights	Sep 01, 2022	22:00	23:00	94.0	10	257
403270	PM _{2.5}	Smoky Heights	Sep 01, 2022	23:00	00:00	95.0	8.5	253
403881	PM _{2.5}	Smoky Heights	Sep 04, 2022	20:00	21:00	141.0	19.4	248
405639	PM _{2.5}	Smoky Heights	Oct 15, 2022	24:00	01:00	103.8	11.3	32
406496	PM _{2.5}	Smoky Heights	Nov 04, 2022	24:00	01:00	356.4	2.0	43
406834	PM _{2.5}	Smoky Heights	Nov 16, 2022	21:00	22:00	115.5	7.0	257

Summary of 24-hour PM_{2.5} above the AAAQO (29 µg/m³)

Reference Number	Pollutant	Station	Date	Day avg µg/m ³	WS km/h	WD degrees
403862	PM _{2.5}	Beaverlodge	Sep 03, 2022	30.0	6.4	316
404185	PM _{2.5}	Beaverlodge	Sep 10, 2022	30.0	9.9	282
405635	PM _{2.5}	Beaverlodge	Oct 15, 2022	34.2	6.4	126
405848	PM _{2.5}	Beaverlodge	Oct 19, 2022	32.5	19.8	202
403864	PM _{2.5}	Dunes	Sep 03, 2022	37.0	1.6	320
405636	PM _{2.5}	Dunes	Oct 15, 2022	29.2	1.8	56
405846	PM _{2.5}	Dunes	Oct 19, 2022	29.2	5.0	237
403863	PM _{2.5}	Henry Pirker	Sep 03, 2022	38.0	4.4	305
405637	PM _{2.5}	Henry Pirker	Oct 15, 2022	45.2	3.0	110
405807	PM _{2.5}	Henry Pirker	Oct 18, 2022	38.4	3.5	213
405847	PM _{2.5}	Henry Pirker	Oct 19, 2022	52.6	10.3	219
406668	PM _{2.5}	Henry Pirker	Nov 10, 2022	33.4	2.3	274
403483	PM _{2.5}	Milner	Jul 23, 2022	33.7	6.2	231
406763	PM _{2.5}	Milner	Nov 14, 2022	63.8	4.8	250
408197	PM _{2.5}	Milner	Dec 29, 2022	33.4	0.8	286
405638	PM _{2.5}	Poplar	Oct 15, 2022	30.3	5.5	147

Operational times less than 90 percent:

Beaverlodge:

- December PM_{2.5} (reference #408009)

Donnelly:

- None

Dunes:

- May PM_{2.5} (reference #400790)

Henry Pirker:

- January THC/CH₄/NMHC (reference #387815)
- February THC/CH₄/NMHC (reference #387816)
- March THC/CH₄/NMHC (reference #387816)
- April CH₄/NMHC (reference #387816)

Poplar:

- February THC/CH₄/NMHC (reference #389129)
- March THC/CH₄/NMHC (reference #389129)
- April THC/CH₄/NMHC (reference #391078)
- May CH₄/NMHC (reference #391078)
- June CH₄/NMHC (reference #391078)
- July CH₄/NMHC (reference #391078)
- August THC/CH₄/NMHC (reference #404647)
- September CH₄/NMHC (reference #404647)
- October CH₄/NMHC (reference #404647)
- November CH₄/NMHC (reference #404647)
- December CH₄/NMHC (reference #404647)

Smoky Heights:

- December PM_{2.5} (reference #408011)

Valleyview:

- None

Air Incidents

From September to October wildfires impacted many stations within PAZA. Wildfires resulted in elevated PM_{2.5}, ozone and carbon monoxide readings

Deviations from Authorized Monitoring Methods

None to report

Data deletions or resubmissions since monthly reports submitted.

None to report

Missed calibrations.

None to report

AEP Audits in 2022.

None to report

Passive Monitoring

Passive samples were analyzed by Bureau Veritas Laboratories

- 517 passive sulphur dioxide samples collected over 12 months at 47 sites in PAZA
 - Minimum annual average was 0.1ppb collected at Deer Mountain
 - Maximum annual average was 0.8ppb collected at Duvernay3
 - Maximum overall monthly average was 1.7ppb in January 2022
- 36 passive ozone samples collected over 12 months at 3 sites in PAZA
 - Minimum annual average was 31.2ppb collected at Kinuso
 - Maximum annual average was 32.0ppb collected at Bay Tree
 - Maximum overall monthly average was 50.5ppb in February 2022
- 495 passive nitrogen dioxide samples collected over 12 months at 43 sites in PAZA
 - Minimum annual average was 0.4ppb collected at Steeprock Creek
 - Maximum annual average was 6.4ppb collected at Grande Prairie
 - Maximum overall monthly average was 22.8ppb in December 2022
- 139 passive hydrogen sulphide samples collected over 12 months at 12 sites in PAZA
 - Minimum annual average was 0.06ppb collected at Jayar3 Bone Yard
 - Maximum annual average was 0.58ppb collected at Girouxville 3
 - Maximum overall monthly average was 1.02ppb in May 2022

There were no exceedances of the AAAQOs for all monitored parameters at any of the passive monitoring stations during 2022

Dustfall Monitoring

Dustfall samples were analyzed by Bureau Veritas Laboratories

- 60 dustfall samples collected over 12 months at 5 sites in PAZA
 - Minimum annual average was 25.1 mg/100cm²/30day collected at Milner Bridge
 - Maximum annual average was 117.8 mg/100cm²/30day collected at Milner Pipeline
 - Maximum overall monthly average was 190.3 mg/100cm²/30day collected in October 2022

There were four monthly events above the AAAQGs for dustfall, three based on the residential and recreational area and one based on the commercial and industrial area during 2022.

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



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

1 Summary of Key Parameters monitored in 2022

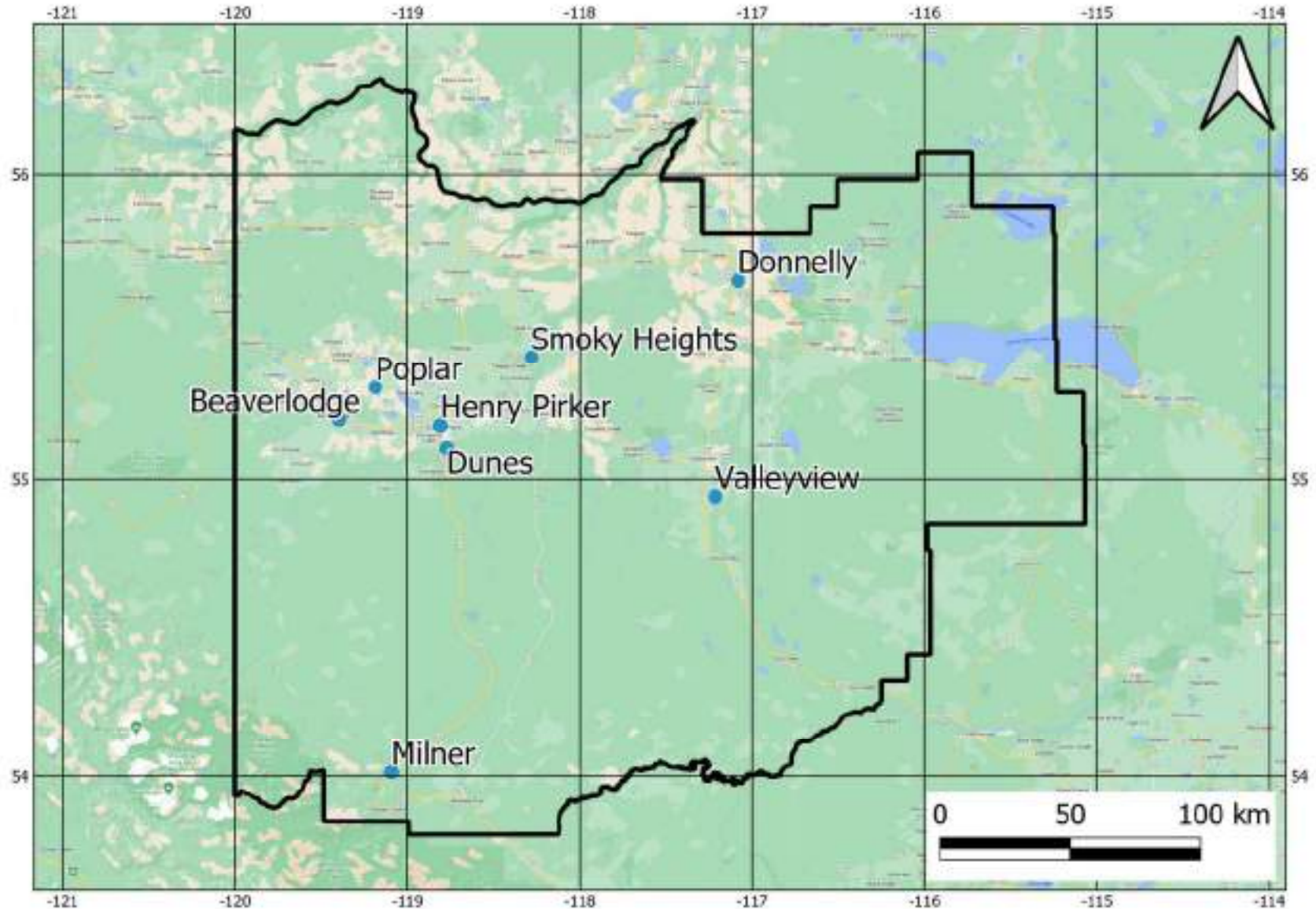
The PAZA air monitoring network in 2022 includes a continuous monitoring network and a passive network. The continuous monitoring network contains eight air monitoring stations. The following table identifies the parameters that have been monitored within the network in 2022.

The continuous air monitoring stations in this report measured the following parameters in 2022:

Station Name	SO ₂	H ₂ S / TRS	NO / NO ₂ / NO _x	O ₃	CO	THC / CH ₄ / NMHC	PM _{2.5}	ET / SR	RH	WS / WD
	Sulphur Dioxide	Hydrogen Sulphide / Total Reduced Sulphur	Nitric Oxide / Nitrogen Dioxide / Nitrogen Oxides	Ozone	Carbon Monoxide	Total Hydrocarbons / Methane / Nonmethane Hydrocarbons	Fine Particulate Matter	Temperature / Solar Radiation	Relative Humidity	Wind Speed / Wind Direction
Beaverlodge	SO ₂		NO / NO ₂ / NO _x	O ₃			PM _{2.5}	ET	RH	WS / WD
Donnelly	SO ₂	H ₂ S						ET		WS / WD
Dunes	SO ₂	TRS					PM _{2.5}	ET	RH	WS / WD
Henry Pirker	SO ₂	H ₂ S	NO / NO ₂ / NO _x	O ₃	CO	THC / CH ₄ / NMHC	PM _{2.5}	ET + SR	RH	WS / WD
Milner			NO / NO ₂ / NO _x				PM _{2.5}			WS / WD
Poplar	SO ₂	TRS	NO / NO ₂ / NO _x	O ₃		THC / CH ₄ / NMHC	PM _{2.5}	ET		WS / WD
Smoky Heights	SO ₂	TRS					PM _{2.5}	ET		WS / WD
Valleyview	SO ₂	H ₂ S						ET	RH	WS / WD

The following figure illustrates the location of the monitoring stations.

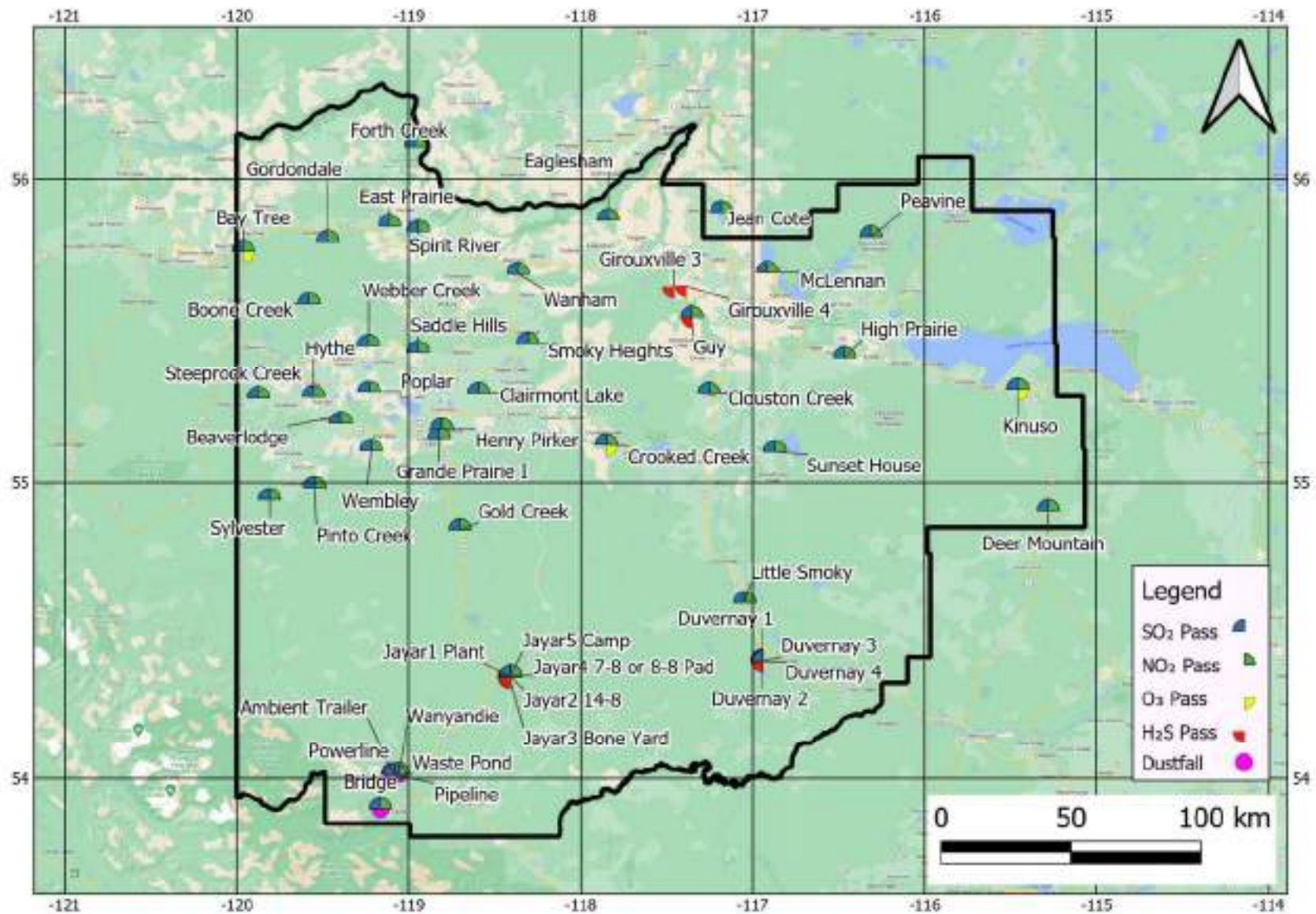
1.1 Map of PAZA Continuous Stations in 2022



The PAZA Passive monitoring network in 2022 included collection of NO₂, SO₂, O₃, H₂S and dustfall at 50 sites located throughout the region, the following table highlights what is collected at each site and the figure illustrates the locations of the monitoring sites.

Site	SO ₂	O ₃	NO ₂	H ₂ S	Dustfall
Bay Tree	x	x	x		
Forth Creek	x		x		
Gordondale	x		x		
Boone Creek	x		x		
Steepprock Creek	x		x		
Spirit River	x		x		
Webber Creek	x		x		
Hythe	x		x		
Sylvester	x		x		
Beaverlodge	x		x		
Poplar	x		x		
Saddle Hills	x		x		
Wanham	x		x		
Eaglesham	x		x		
Wembley	x		x		
Pinto Creek	x		x		
Grande Prairie I	x		x		
Clairmont Lake	x		x		
Smoky Heights	x		x		
Gold Creek	x		x		
Jean Cote	x		x		
Guy	x		x	x	
Crooked Creek	x	x	x		
Clouston Creek	x		x		
McLennan	x		x		
Sunset House	x		x		
High Prairie	x		x		
Peavine	x		x		
Little Smoky	x		x		
Kinuso	x	x	x		
Deer Mountain	x		x		
Henry Pirker	x		x		
East Prairie	x		x		
Jayar1 Plant	x		x	x	
Jayar2 14-8	x		x	x	
Jayar3 Bone Yard			x	x	
Jayar4 7-8 or 8-8 Pad	x		x	x	
Jayar5 Camp	x		x	x	
Girouxville 3				x	
Girouxville 4				x	
Duvernay 1	x			x	
Duvernay 2	x			x	
Duvernay 3	x			x	
Duvernay 4	x			x	
Pipeline	x		x		x
Bridge	x		x		x
Wanyandie	x		x		x
Ambient Trailer	x		x		
Powerline	x		x		x
Waste Pond					x

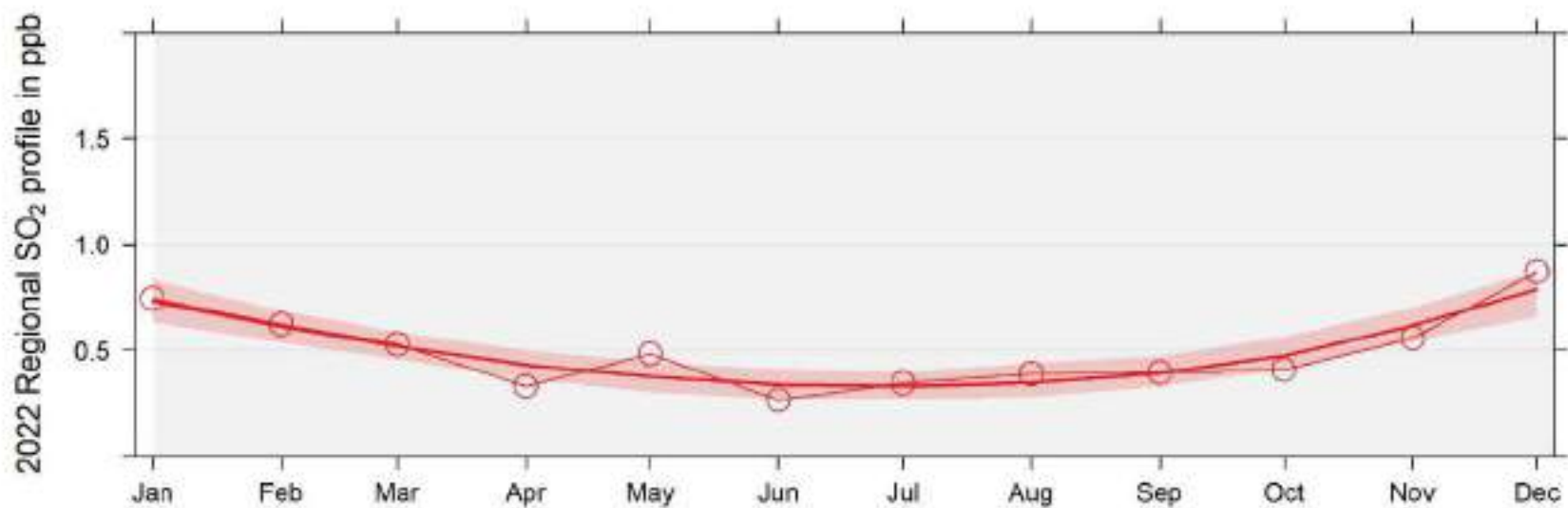
1.2 Map of PAZA Passive Stations in 2022



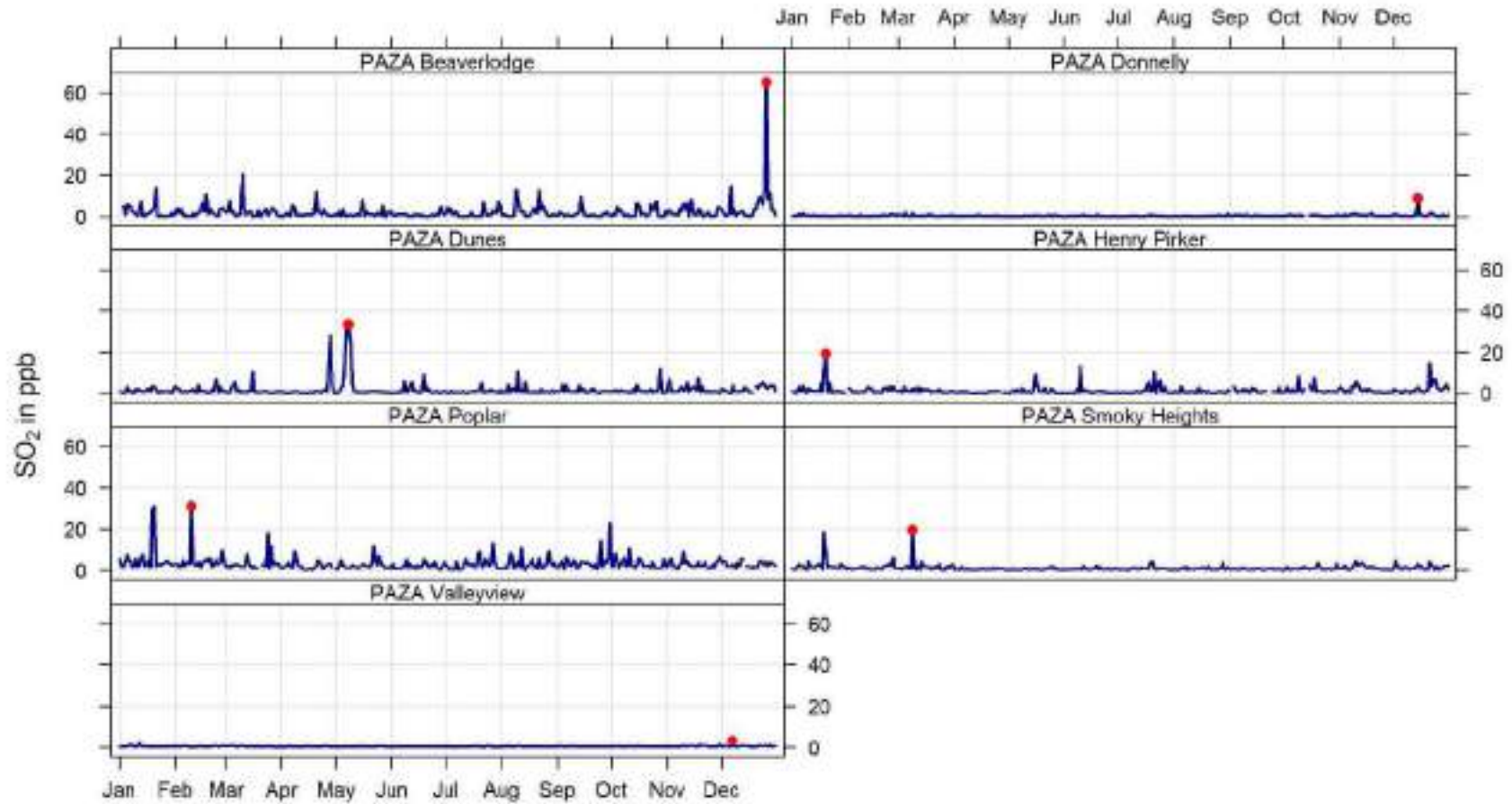
2 PAZA Key Parameters - 2022 Summary

2.1 Sulphur Dioxide (SO₂) 2022 Summary

Station	Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date		1-hr	24-hr	30-d	Annual
Beaverlodge	Sulphur Dioxide SO ₂ measured in ppb	0.7	14.7	Dec 26	84.0	Dec 26 20:00	99.6%	0	0	0	0
Donnelly		0.2	1.8	Dec 14	11.2	Dec 14 15:00	99.4%	0	0	0	0
Dunes		0.6	17.0	May 08	39.5	Feb 24 12:00	100.0%	0	0	0	0
Henry Pirker		0.4	6.9	Jan 20	44.1	Oct 18 12:00	99.2%	0	0	0	0
Poplar		1.1	10.2	Jan 20	76.7	Aug 07 11:00	99.6%	0	0	0	0
Smoky Heights		0.4	5.7	Jan 19	20.5	Mar 09 18:00	100.0%	0	0	0	0
Valleyview		0.1	0.7	Nov 30	3.5	Dec 07 01:00	99.9%	0	0	0	0

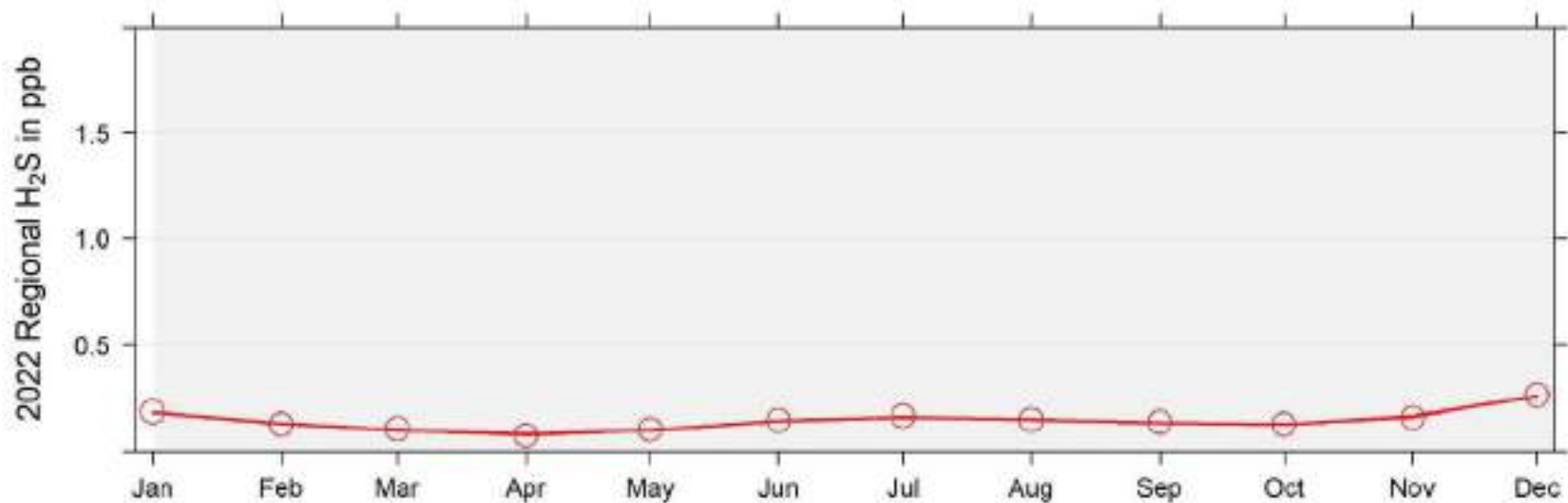


2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association

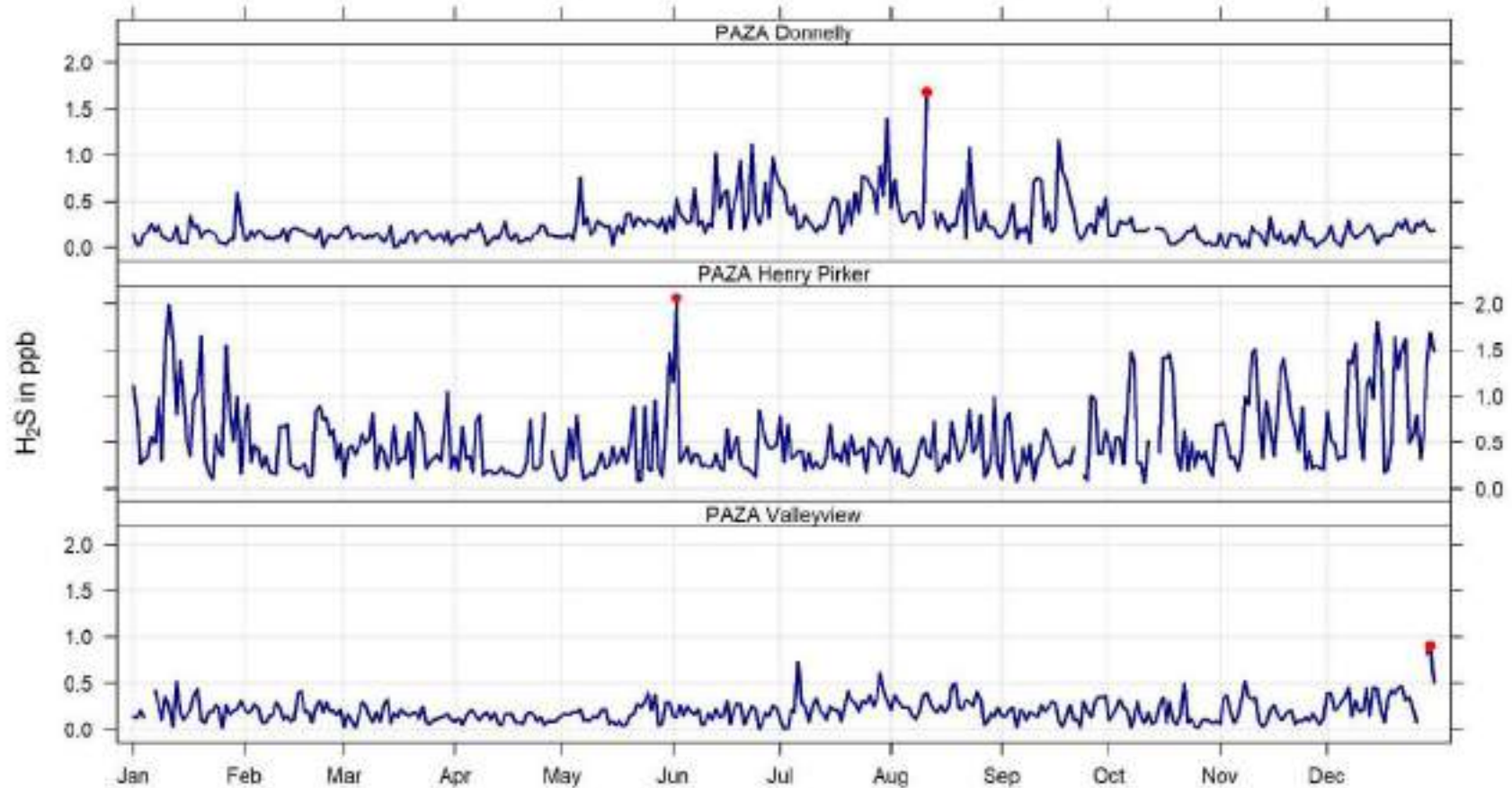


2.2 Hydrogen Sulphide (H₂S) 2022 Summary

Station	Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date		1-hr	24-hr	30-d	Annual
Donnelly	Hydrogen Sulphide H ₂ S measured in ppb	0.1	0.5	Jul 31	3.2	Aug 11 21:00	99.5%	0	0	-	-
Henry Pirker		0.2	1.3	Dec 30	3.4	May 05 21:00	99.3%	0	0	-	-
Valleyview		0.1	0.5	Dec 30	1.0	Dec 30 01:00	99.3%	0	0	-	-

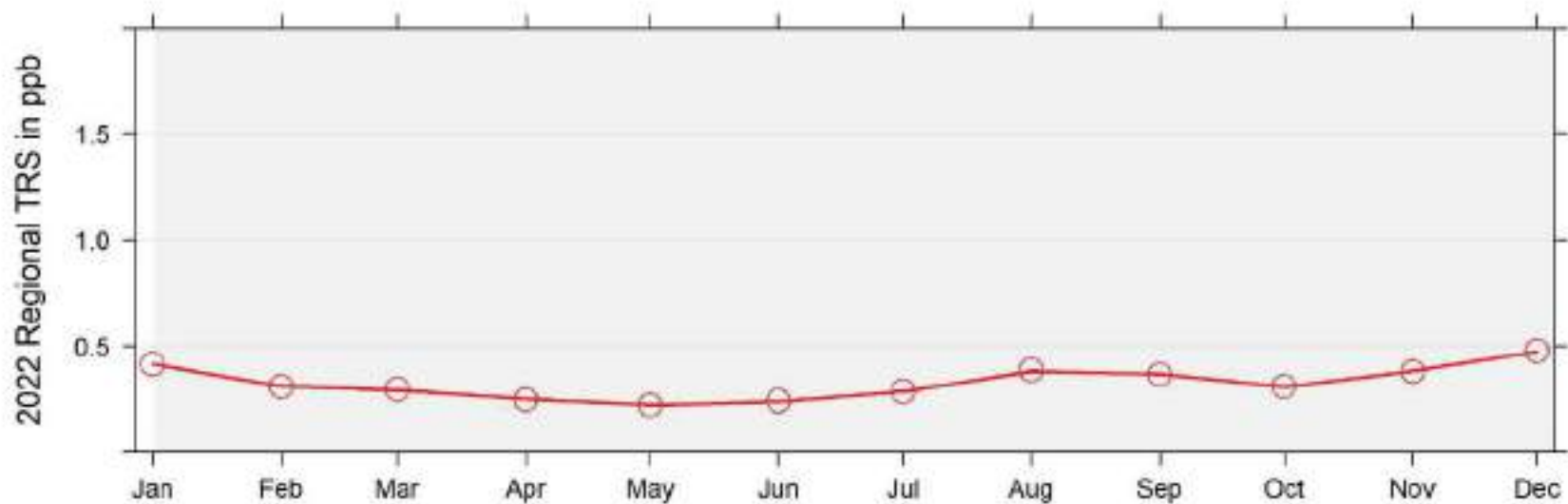


2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association

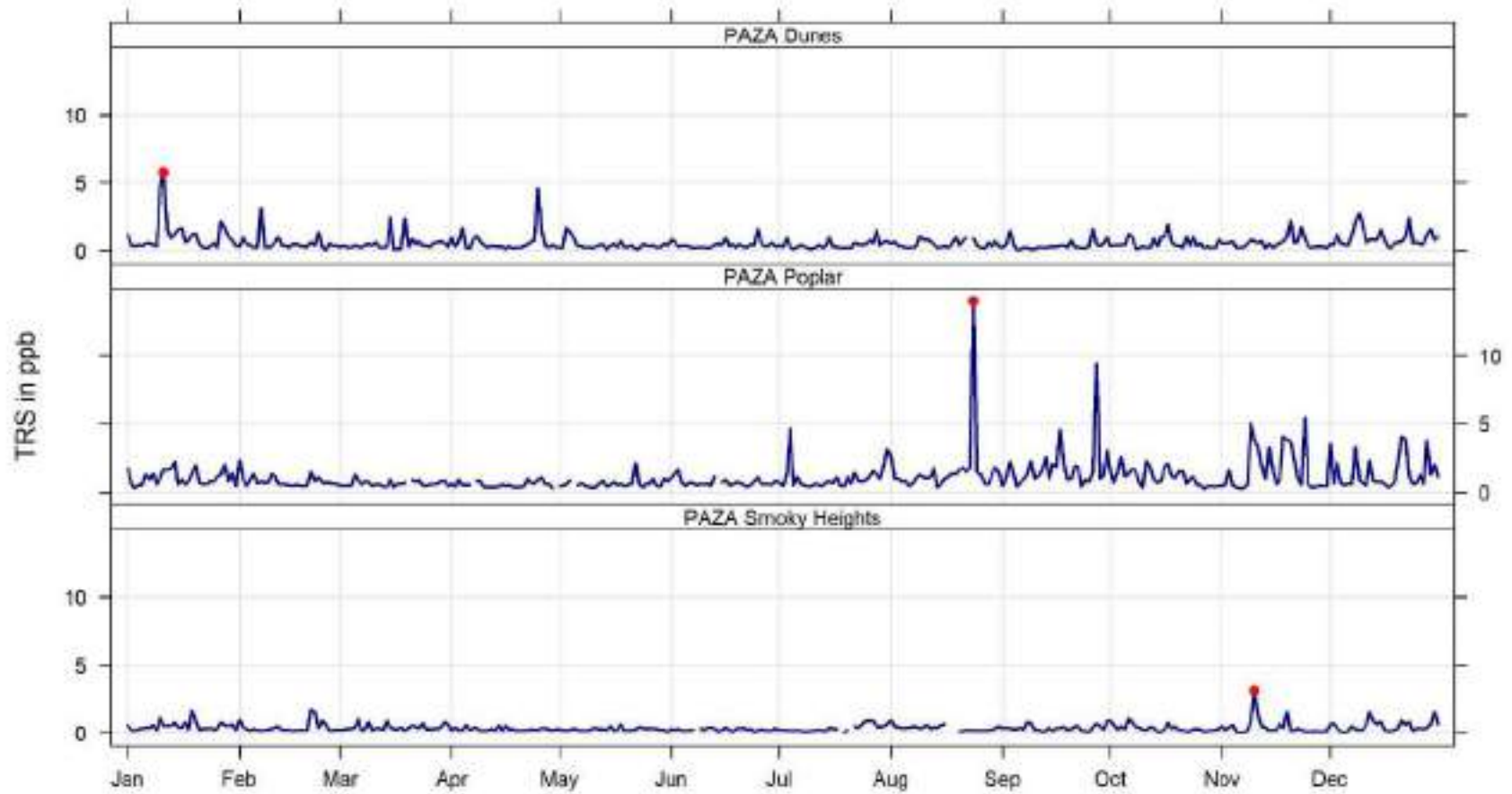


2.3 Total Reduced Sulphur (TRS) 2022 Summary

Station	Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date		1-hr	24-hr	30-d	Annual
Dunes	Total Reduced Sulphur TRS measured in ppb	0.3	2.0	Jan 11	7.2	Jan 11 05:00	99.9%	-	-	-	-
Poplar		0.5	3.5	Aug 24	16.9	Aug 24 04:00	99.6%	-	-	-	-
Smoky Heights		0.2	0.9	Nov 10	4.1	Nov 10 02:00	99.3%	-	-	-	-

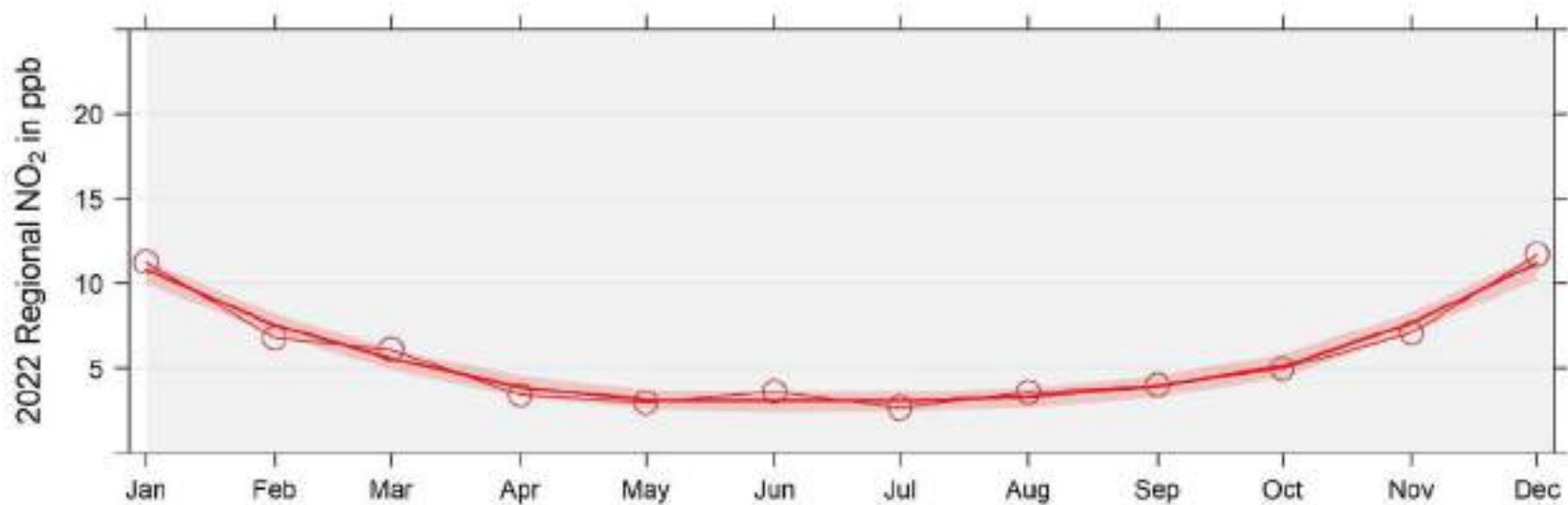


2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association

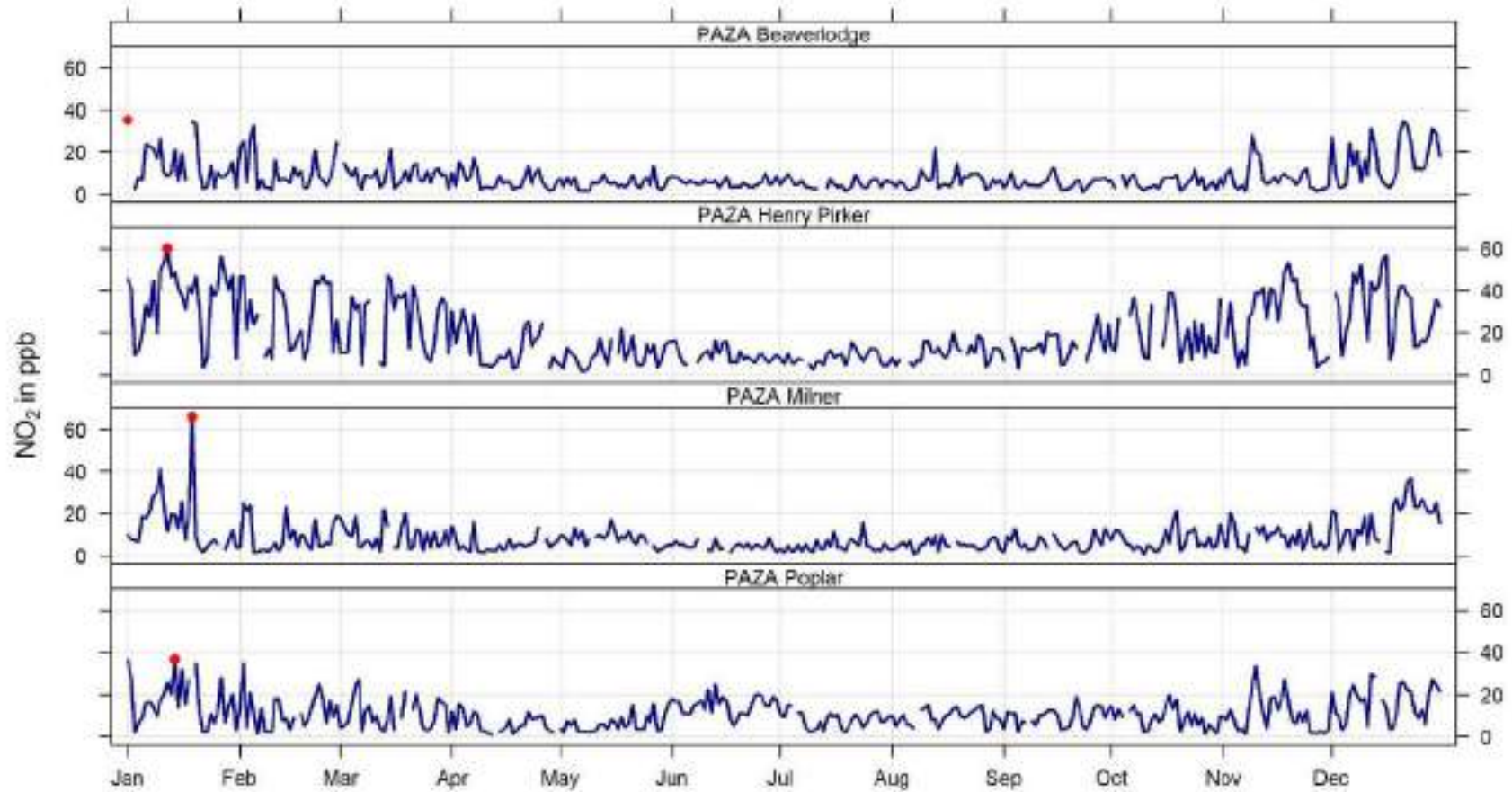


2.4 Nitrogen Dioxide (NO₂) 2022 Summary

Station	Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date		1-hr	24-hr	30-d	Annual
Beaverlodge	Nitric Oxide NO measured in ppb	0.8	21.9	Jan 19	64.6	Jan 19 13:00	99.5%	-	-	-	-
Henry Pirker		6.3	64.8	Jan 27	203.9	Jan 12 20:00	98.3%	-	-	-	-
Milner		1.2	42.5	Jan 19	188.6	Jan 19 17:00	99.4%	-	-	-	-
Poplar		1.5	14.1	Jun 13	87.2	Jun 16 06:00	99.5%	-	-	-	-
Beaverlodge	Nitrogen Dioxide NO ₂ measured in ppb	3.9	27.1	Jan 19	36.5	Jan 01 18:00	99.5%	0	-	-	0
Henry Pirker		10.0	41.4	Jan 27	62.9	Dec 16 10:00	98.3%	0	-	-	0
Milner		3.9	31.5	Jan 19	77.5	Jan 19 17:00	99.4%	0	-	-	0
Poplar		5.0	25.7	Jan 01	38.4	Jan 14 18:00	99.5%	0	-	-	0
Beaverlodge	Oxides of Nitrogen NO _x measured in ppb	4.8	49.2	Jan 19	95.9	Dec 20 11:00	99.5%	-	-	-	-
Henry Pirker		16.4	106.7	Jan 27	264.4	Jan 12 20:00	98.3%	-	-	-	-
Milner		5.2	73.9	Jan 19	266.1	Jan 19 17:00	99.4%	-	-	-	-
Poplar		6.5	36.7	Jan 14	103.6	Jun 16 06:00	99.5%	-	-	-	-

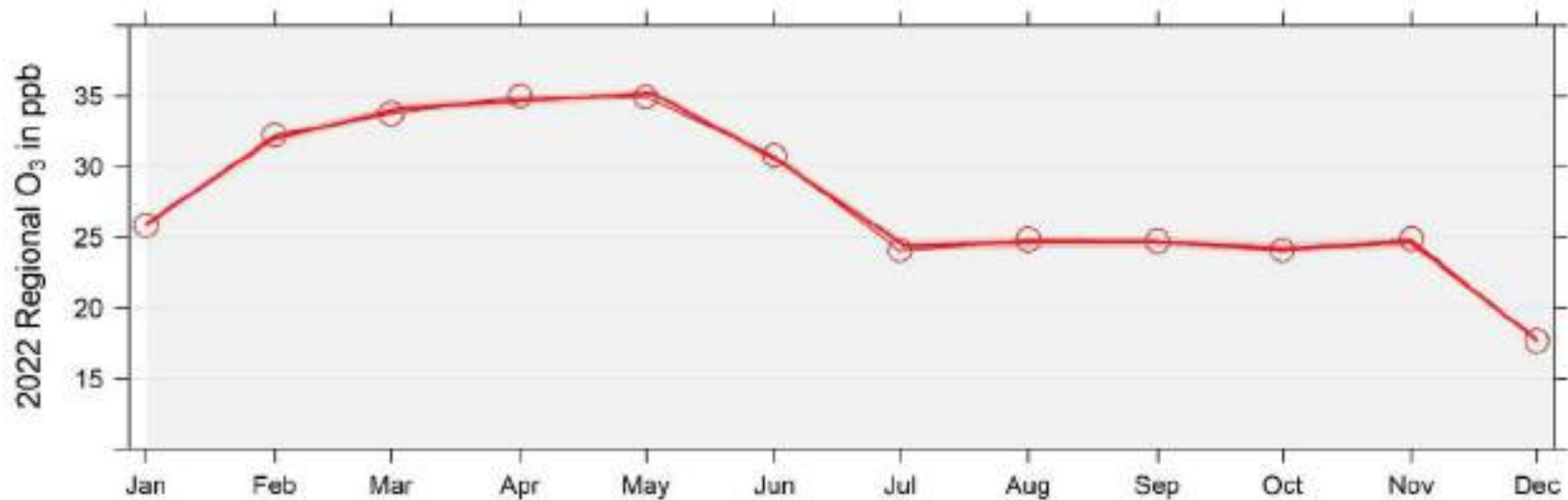


2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association

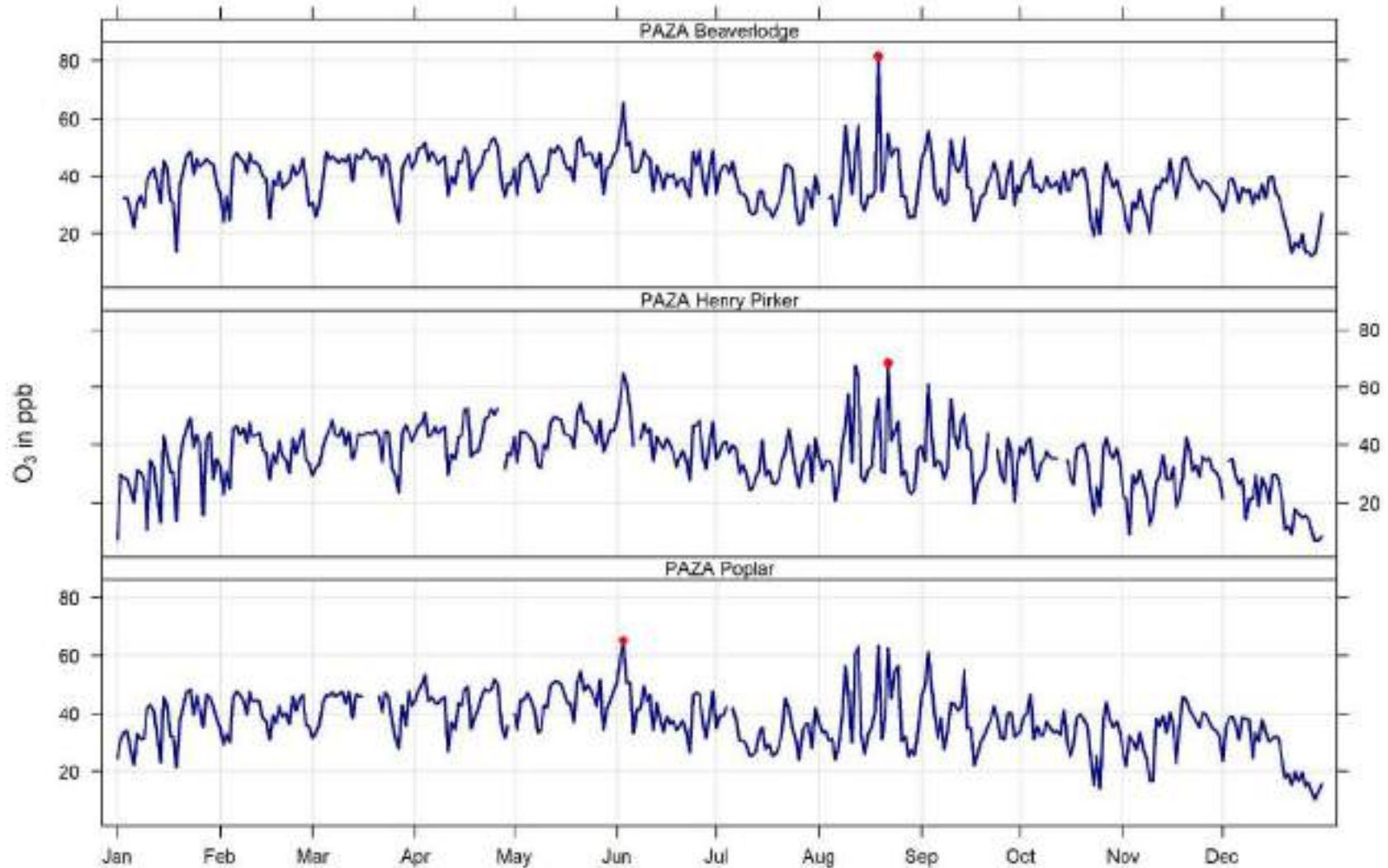


2.5 Ozone (O₃) 2022 Summary

Station	Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date		1-hr	24-hr	30-d	Annual
Beaverlodge	Ozone O ₃ measured in ppb	30.5	50.2	Jun 03	82.2	Aug 19 17:00	99.4%	3	-	-	-
Henry Pirker		24.6	52.1	Jun 03	70.7	Aug 12 14:00	99.4%	0	-	-	-
Poplar		27.8	46.0	Mar 07	69.5	Aug 13 14:00	99.3%	0	-	-	-

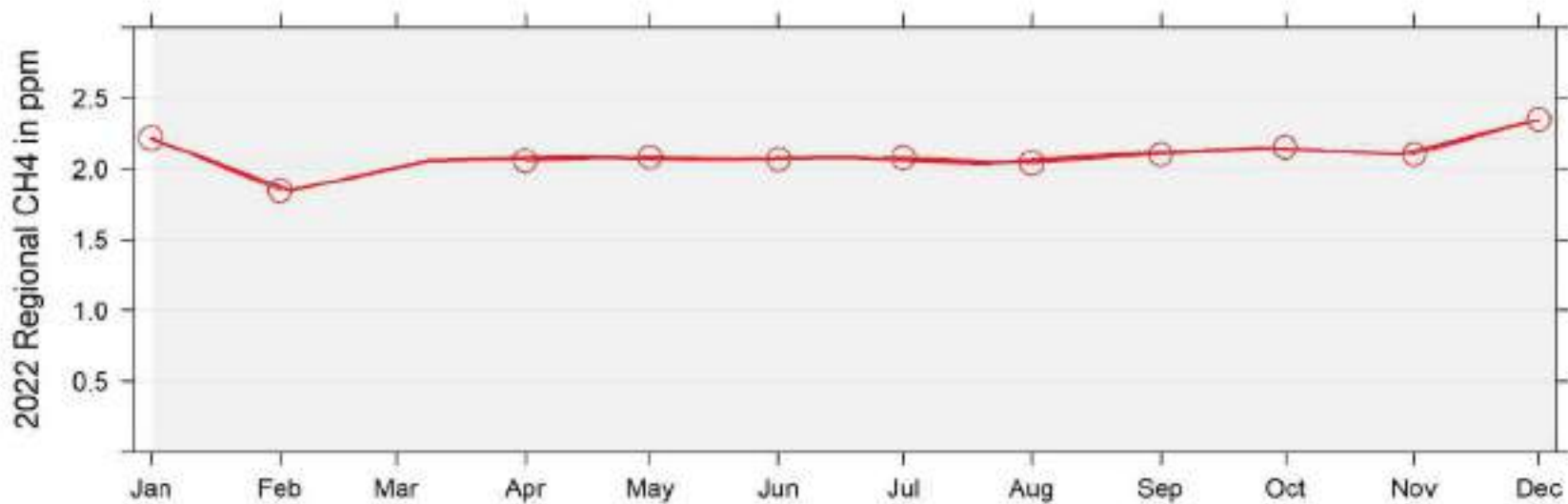


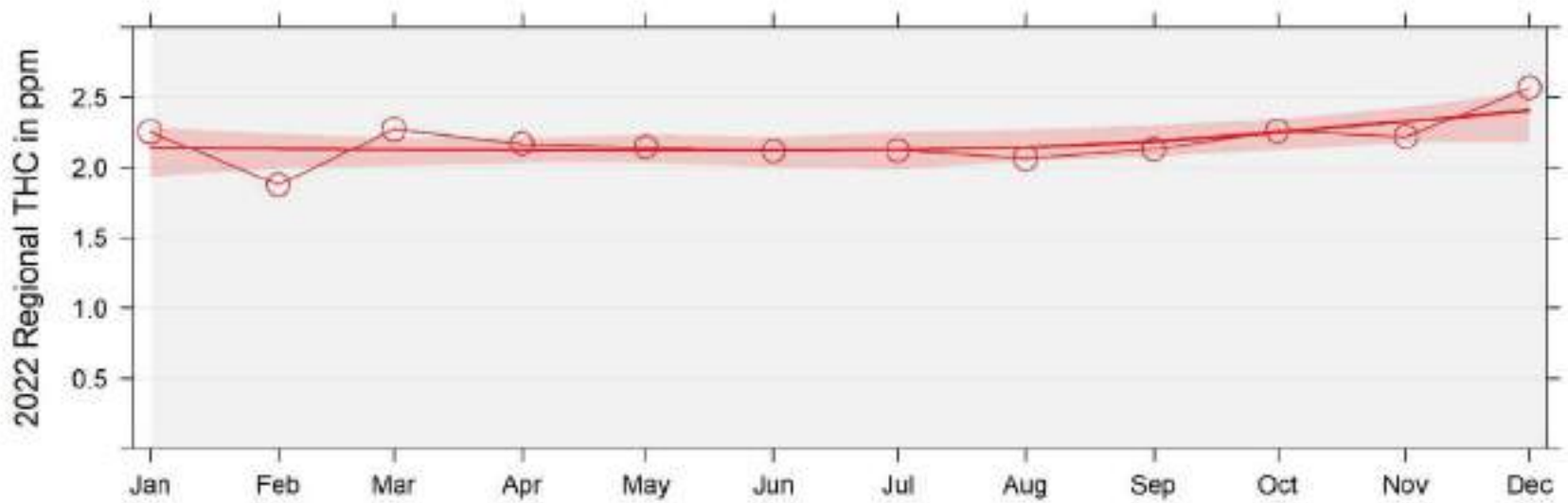
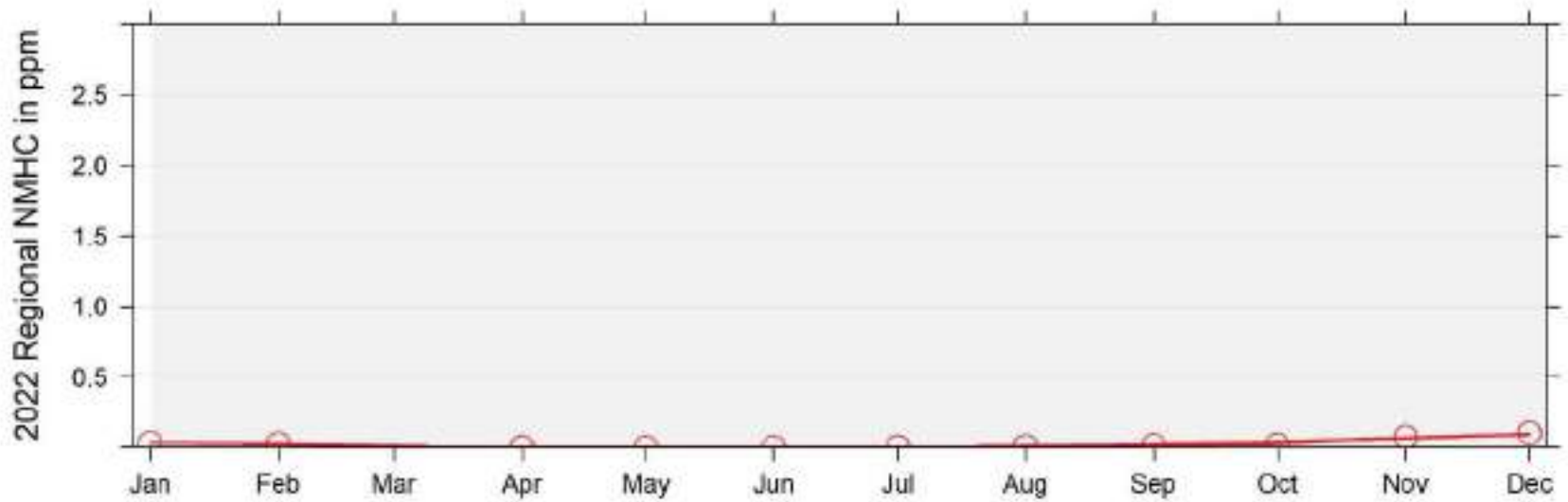
2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association



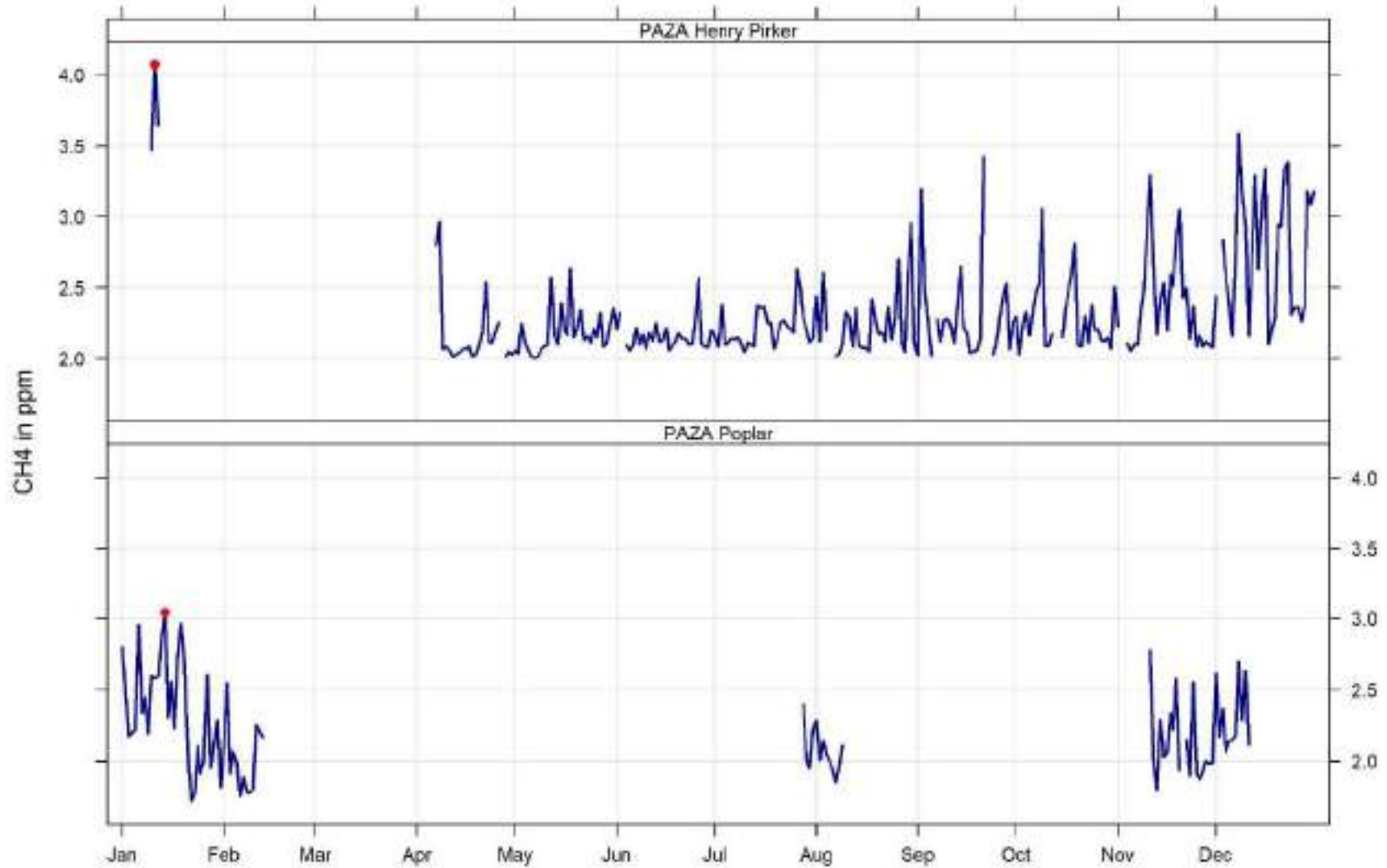
2.6 Total Hydrocarbons (THC / CH₄ / NMHC) 2022 Summary

Station	Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date		1-hr	24-hr	30-d	Annual
Henry Pirker	Methane CH ₄ measured in ppm	2.14	3.1	Jan 11	7.8	Dec 09 22:00	80.2%	-	-	-	-
Poplar		-	2.8	Jan 14	3.5	Jan 19 19:00	32.7%	-	-	-	-
Henry Pirker	Non Methane Hydrocarbons NMHC measured in ppm	0.03	0.6	Dec 31	0.9	Dec 09 22:00	80.2%	-	-	-	-
Poplar		-	0.5	Nov 11	5.4	Nov 10 20:00	32.7%	-	-	-	-
Henry Pirker	Total Hydrocarbons THC measured in ppm	2.17	3.5	Dec 31	8.7	Dec 09 22:00	90.2%	-	-	-	-
Poplar		2.19	4.1	Dec 22	8.9	Nov 10 20:00	83.4%	-	-	-	-

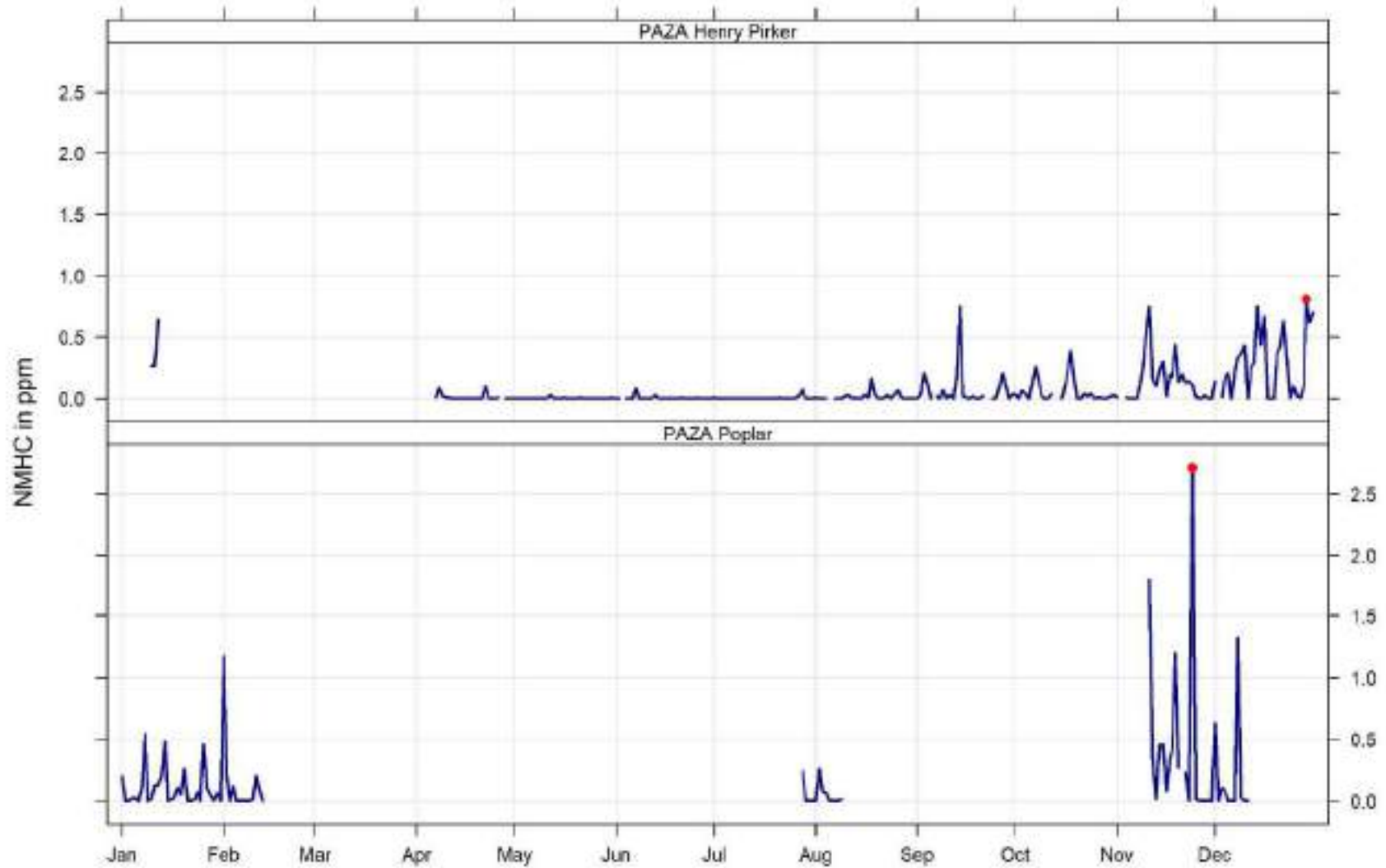




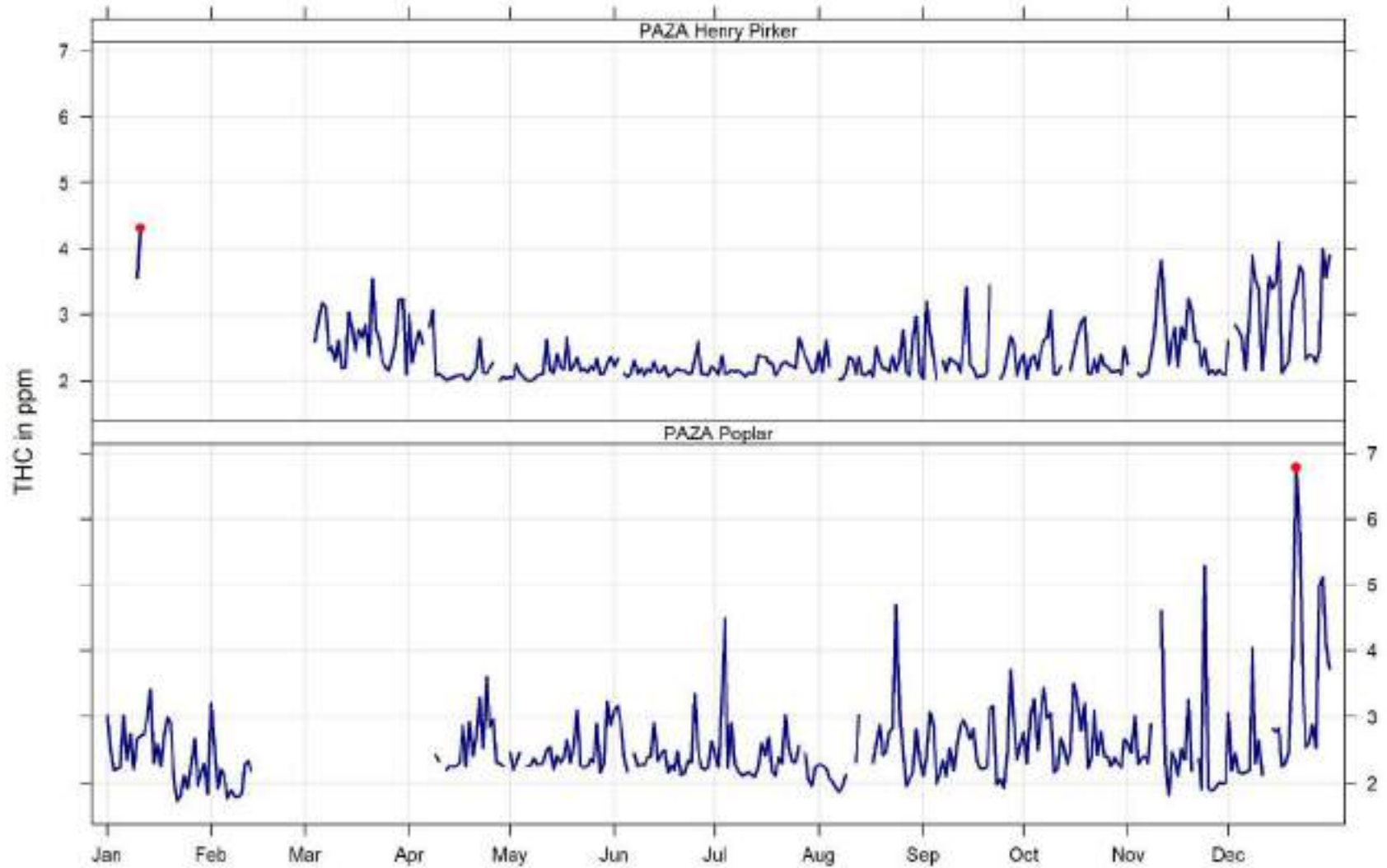
2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association



2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association

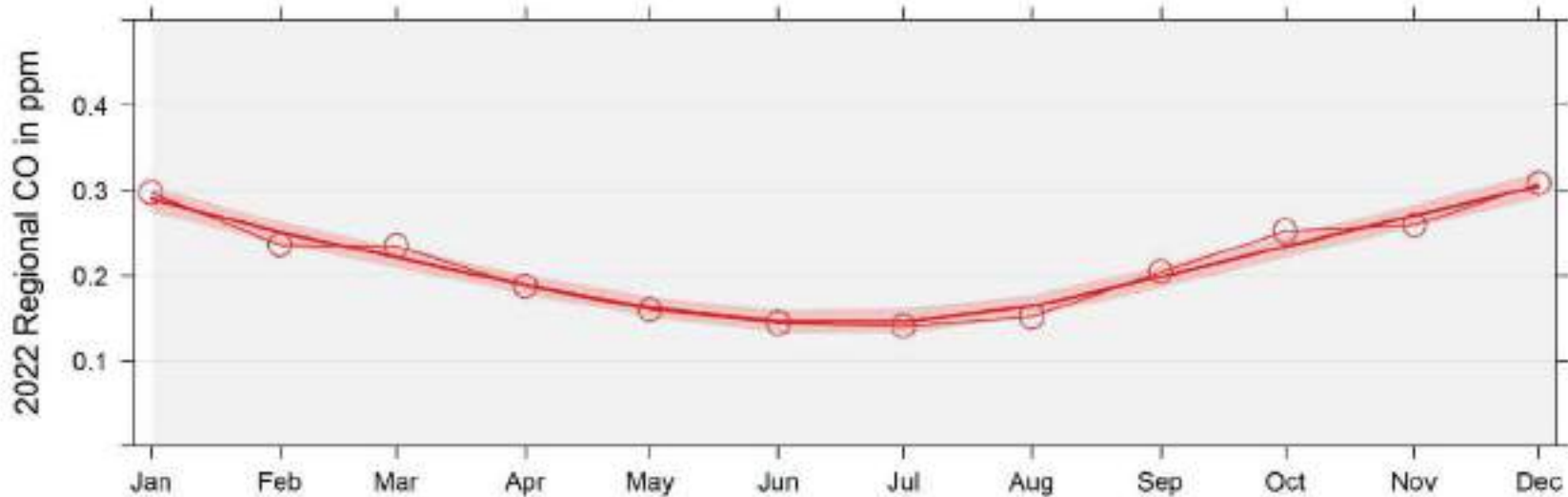


2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association

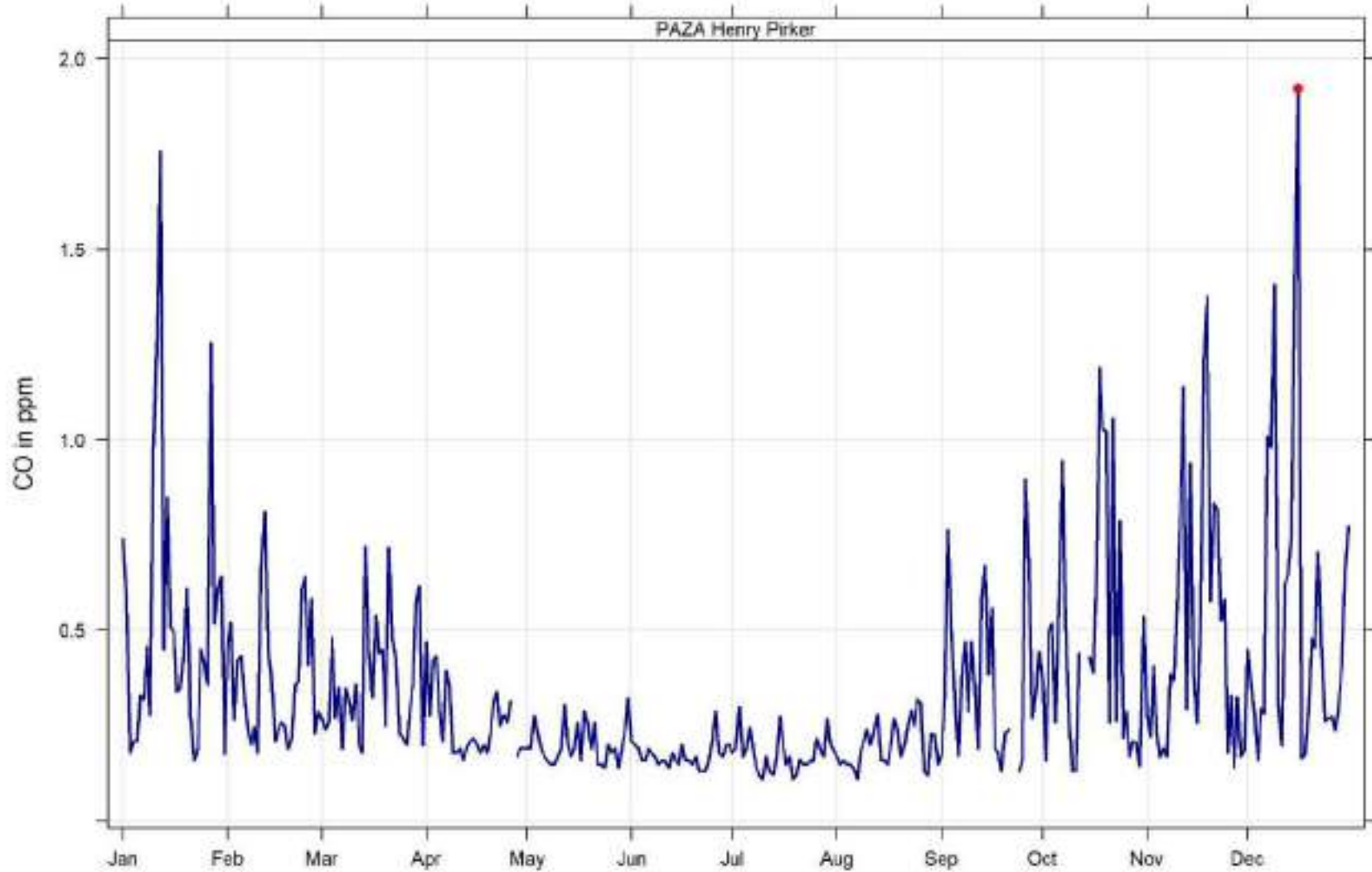


2.7 Carbon Monoxide (CO) 2022 Summary

Station	Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above AAQO & AAQG				
			24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	30-d	Annual
Henry Pirker	Carbon Monoxide CO measured in ppm	0.2	0.6	Jan 27	2.3	Dec 16 09:00	99.4%	0	0	-	-	-

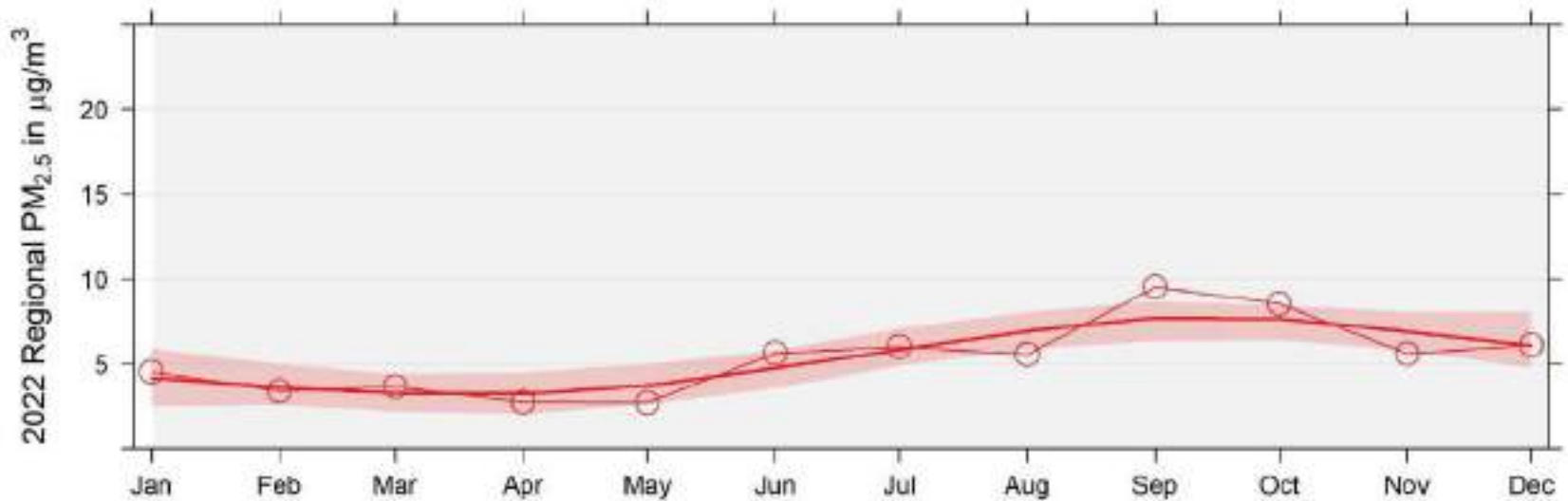


2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association

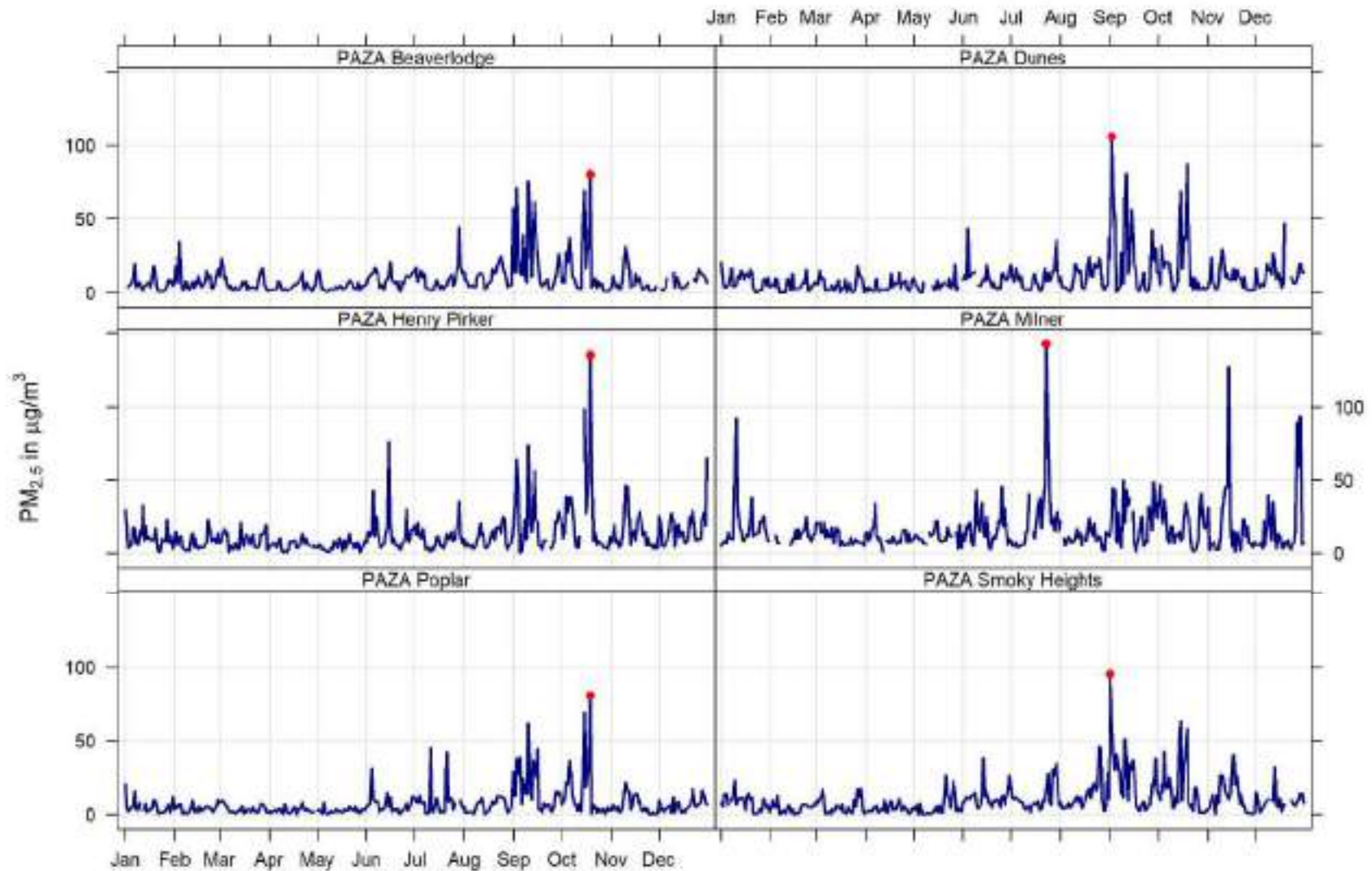


2.8 Particulate Matter (PM_{2.5}) 2022 Summary

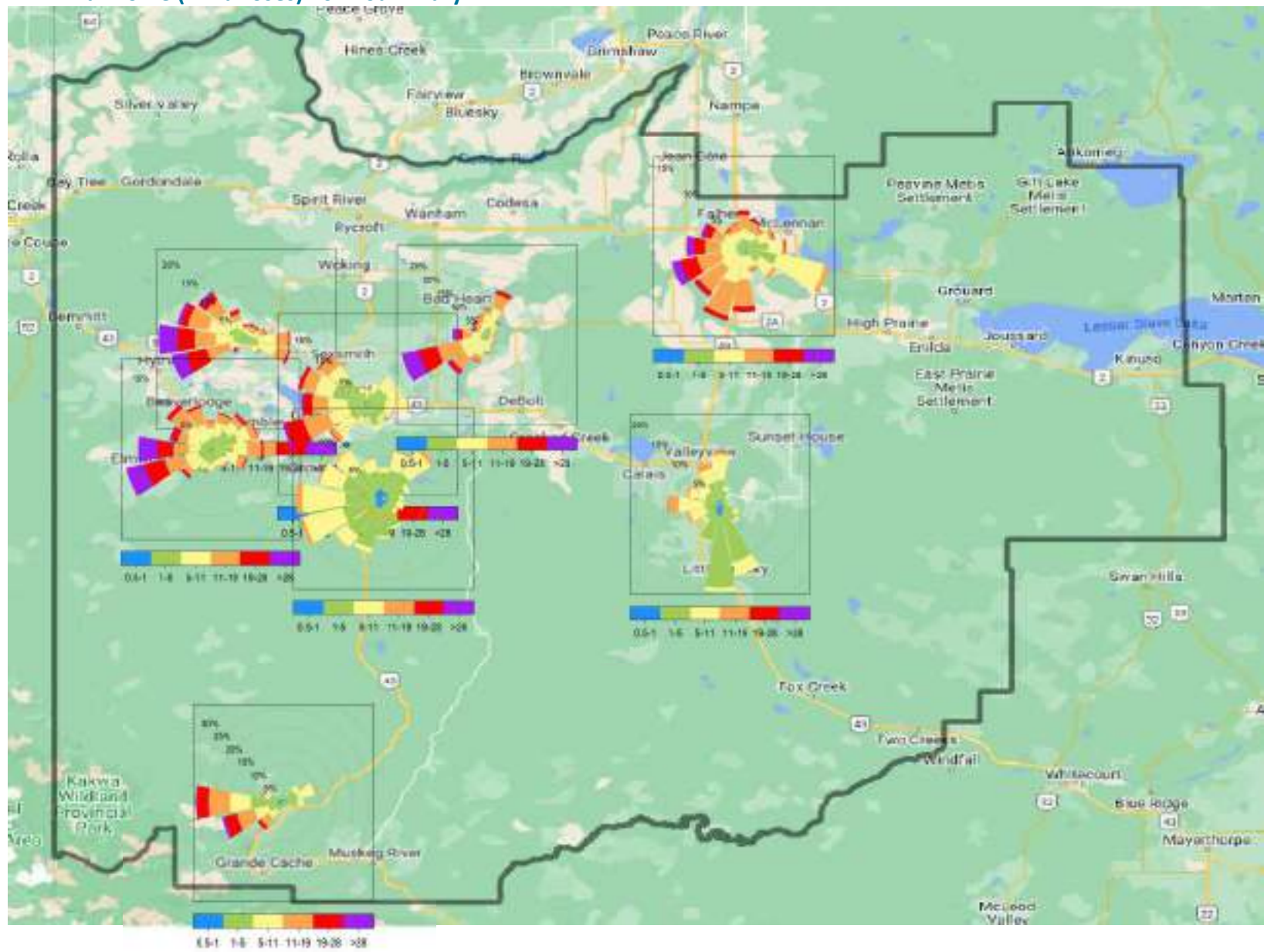
Station	Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date		1-hr	24-hr	30-d	Annual
Beaverlodge	Particulate Matter PM _{2.5} measured in µg/m ³	4.9	34.2	Oct 15	150.3	Sep 10 23:00	98.2%	6	4	-	-
Dunes		4.8	37.6	Sep 03	171.2	Sep 02 21:00	97.7%	9	3	-	-
Henry Pirker		6.6	52.6	Oct 19	147.0	Oct 19 13:00	99.5%	13	5	-	-
Milner		7.3	63.8	Nov 14	169.0	Jul 23 10:00	95.4%	20	3	-	-
Poplar		3.3	30.3	Oct 15	96.9	Jul 21 17:00	97.6%	4	1	-	-
Smoky Heights		5.1	28.2	Oct 19	356.4	Nov 04 17:00	98.9%	8	0	-	-



2022 Daily 95th percentile Concentration Readings at Peace Airshed Zone Association



2.9 Wind Profile (wind roses) 2022 Summary

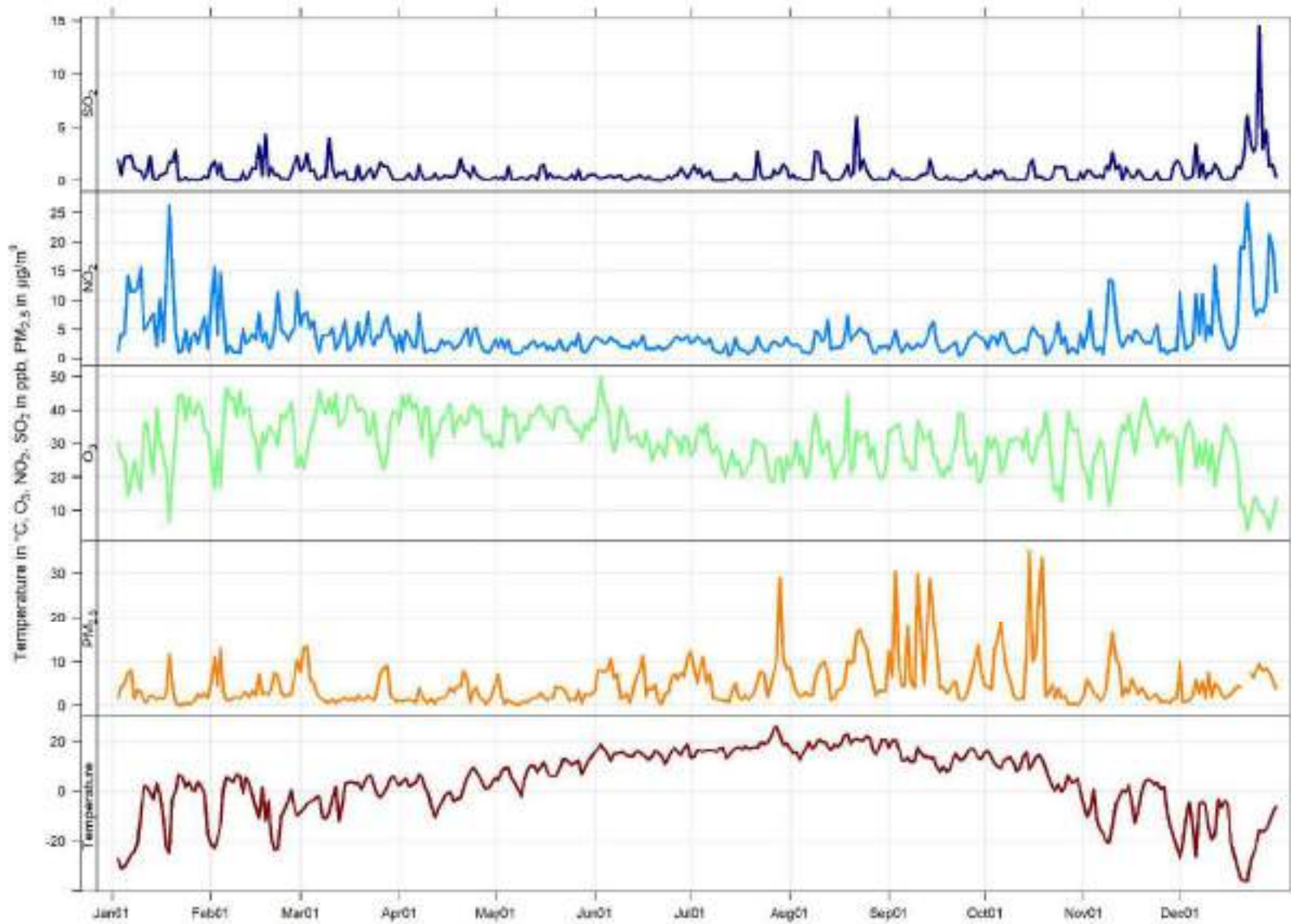


3 Beaverlodge Key Parameters - Continuous Monitoring Data - 2022 Summary

Beaverlodge Key Parameters - Continuous Monitoring Data - 2022 Summary

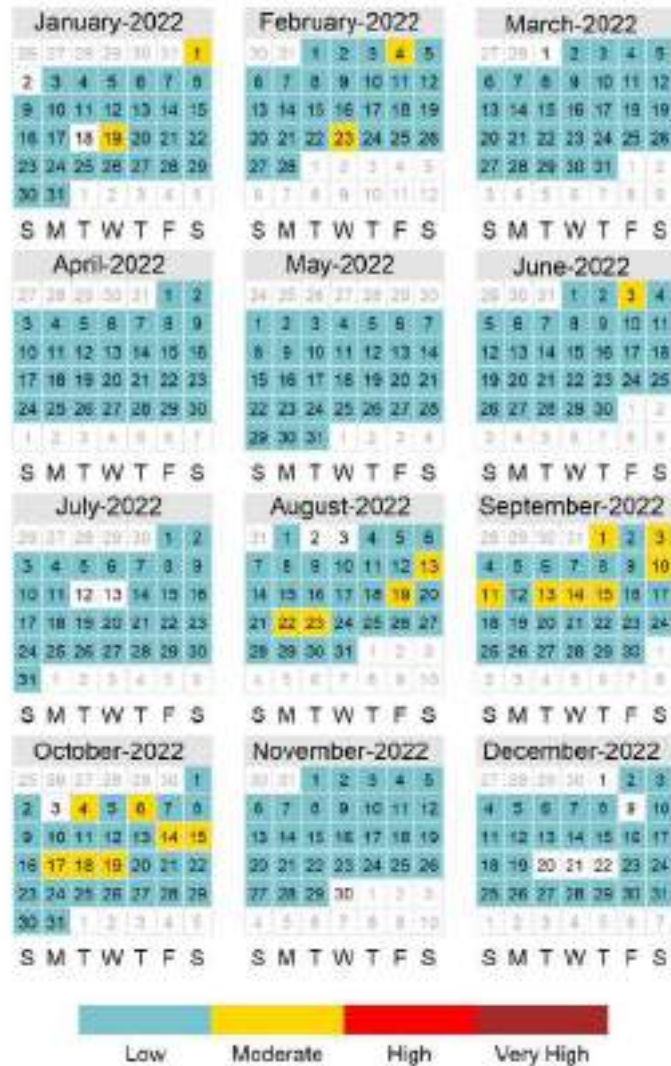
Beaverlodge Station	Parameter	Average	Maximum Values			Operational Time (%)	Valid Time (%)	Readings above AAAQO & AAAQG				
			24-hr	Date	1-hr			Date	1-hr	24-hr	30-d	Annual
			Sulphur Dioxide SO ₂ measured in ppb	0.7	14.7			Dec 26	84.0	Dec 26 20:00	99.6%	94.9%
Nitrogen Dioxide NO ₂ measured in ppb	3.9	27.1	Jan 19	36.5	Jan 01 18:00	99.5%	94.3%	0	-	-	0	
Nitrogen Oxides NO _x measured in ppb	4.8	49.2	Jan 19	95.9	Dec 20 11:00	99.5%	94.3%	-	-	-	-	
Nitric Oxide NO measured in ppb	0.8	21.9	Jan 19	64.6	Jan 19 13:00	99.5%	94.3%	-	-	-	-	
Ozone O ₃ measured in ppb	30.5	50.2	Jun 03	82.2	Aug 19 17:00	99.4%	94.6%	3	-	-	-	
Particulate Matter PM _{2.5} measured in µg/m ³	4.9	34.2	Oct 15	150.3	Sep 10 23:00	98.2%	97.8%	6	4	-	-	

2022 Daily Concentration Readings at Beaverfodge



3.1 Beaverlodge AQHI Calendar Plot for 2022

Hourly Maximum AQHI for 2022 at Beaverlodge



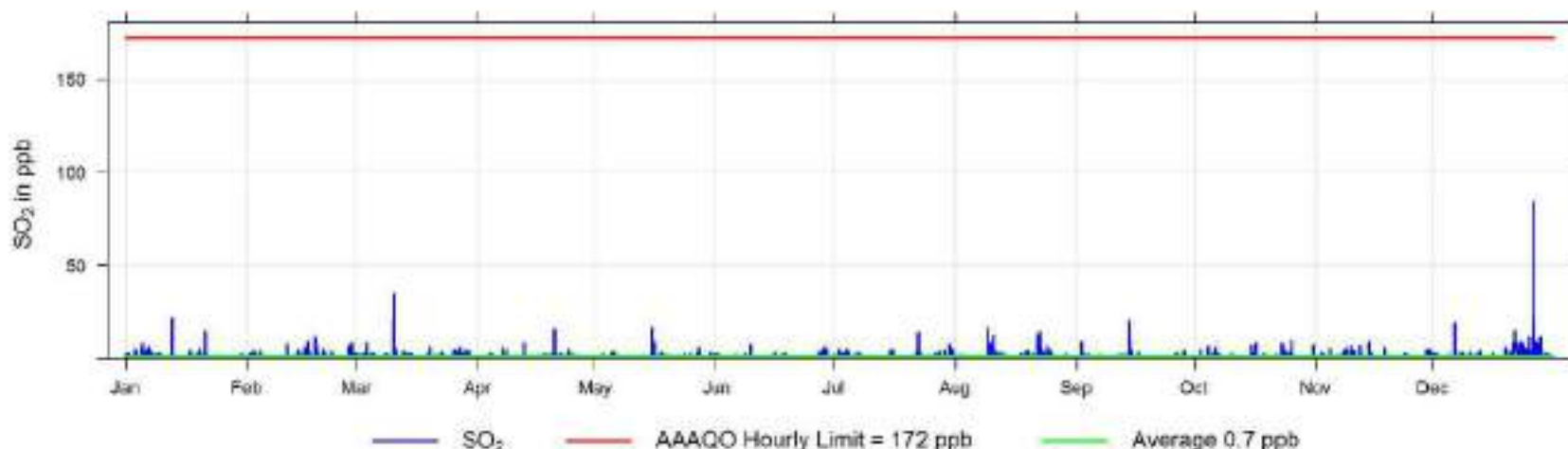
3.2 Sulphur Dioxide (SO₂) - Beaverlodge 2022 Summary

Sulphur Dioxide (SO₂) Frequency Distribution at Beaverlodge

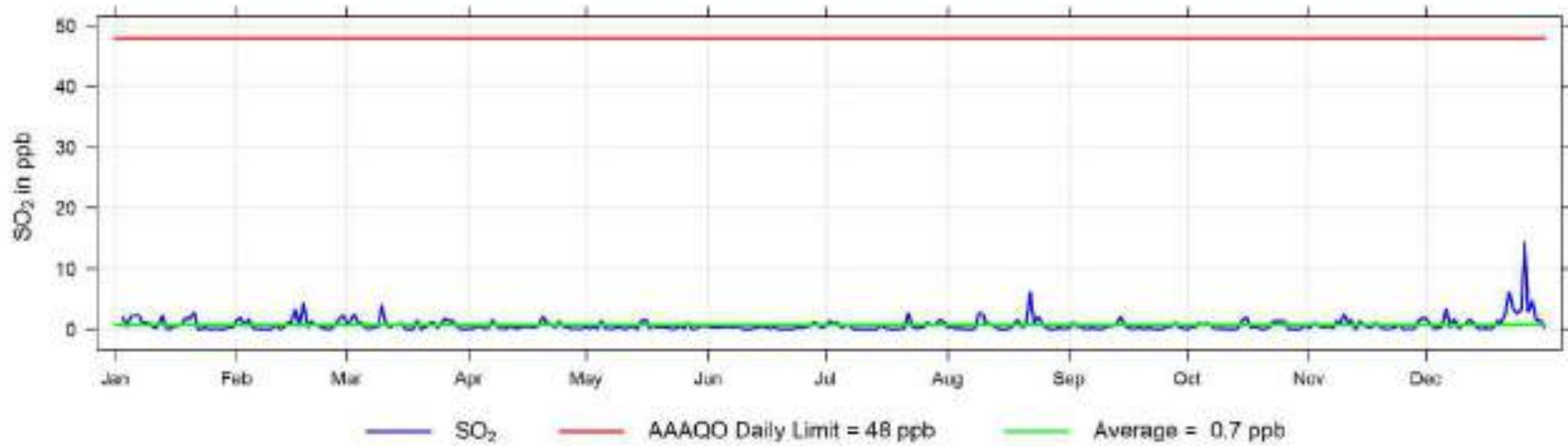
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents			
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 17 (ppb)	17 to 172 (ppb)	> 172 (ppb)			Date	1-hr (ppb)			Date	30-d 11 ppb	24-hr 48 ppb	1-hr 172 ppb
January 2022	685	72.7%	23.3%	1.5%	0.6%	0.0%	0.0%	0.9	2.9	Jan 21	21.8	Jan 13 04:00	99.0%	92.1%	0	0	0
February 2022	640	72.8%	24.2%	2.7%	0.3%	0.0%	0.0%	0.9	4.3	Feb 18	11.6	Feb 18 12:00	100.0%	95.2%	0	0	0
March 2022	709	74.0%	23.0%	1.1%	0.4%	0.0%	0.0%	0.8	4.0	Mar 10	24.6	Mar 10 16:00	100.0%	95.3%	0	0	0
April 2022	686	87.2%	12.1%	0.4%	0.3%	0.0%	0.0%	0.5	1.0	Apr 29	15.4	Apr 29 13:00	100.0%	95.3%	0	0	0
May 2022	700	90.1%	9.2%	0.6%	0.1%	0.0%	0.0%	0.4	1.4	May 18	16.3	May 15 11:00	100.0%	95.3%	0	0	0
June 2022	686	93.7%	6.0%	0.3%	0.0%	0.0%	0.0%	0.3	1.2	Jun 28	7.5	Jun 09 21:00	100.0%	95.3%	0	0	0
July 2022	709	85.9%	13.1%	0.8%	0.1%	0.0%	0.0%	0.5	2.7	Jul 22	13.0	Jul 22 13:00	99.5%	95.3%	0	0	0
August 2022	705	82.4%	14.0%	2.4%	1.1%	0.0%	0.0%	0.8	6.0	Aug 22	16.1	Aug 09 11:00	99.3%	94.8%	0	0	0
September 2022	686	81.3%	8.5%	0.1%	0.3%	0.0%	0.0%	0.4	1.9	Sep 14	20.5	Sep 14 12:00	100.0%	95.3%	0	0	0
October 2022	709	87.0%	11.3%	1.7%	0.0%	0.0%	0.0%	0.5	1.9	Oct 18	9.6	Oct 26 02:00	100.0%	95.3%	0	0	0
November 2022	686	81.2%	17.3%	1.5%	0.0%	0.0%	0.0%	0.7	2.5	Nov 10	9.0	Nov 14 17:00	100.0%	95.3%	0	0	0
December 2022	703	59.5%	33.3%	5.1%	1.8%	0.3%	0.0%	1.9	14.7	Dec 26	84.0	Dec 26 20:00	99.2%	94.5%	0	0	0
Annual	8311	81.6%	16.5%	1.5%	0.4%	0.0%	0.0%	0.7	14.7	Dec 26	84.0	Dec 26 20:00	99.6%	94.9%	0	0	0

AAQO Objectives: Annual: Resp, 30-Day: 11ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

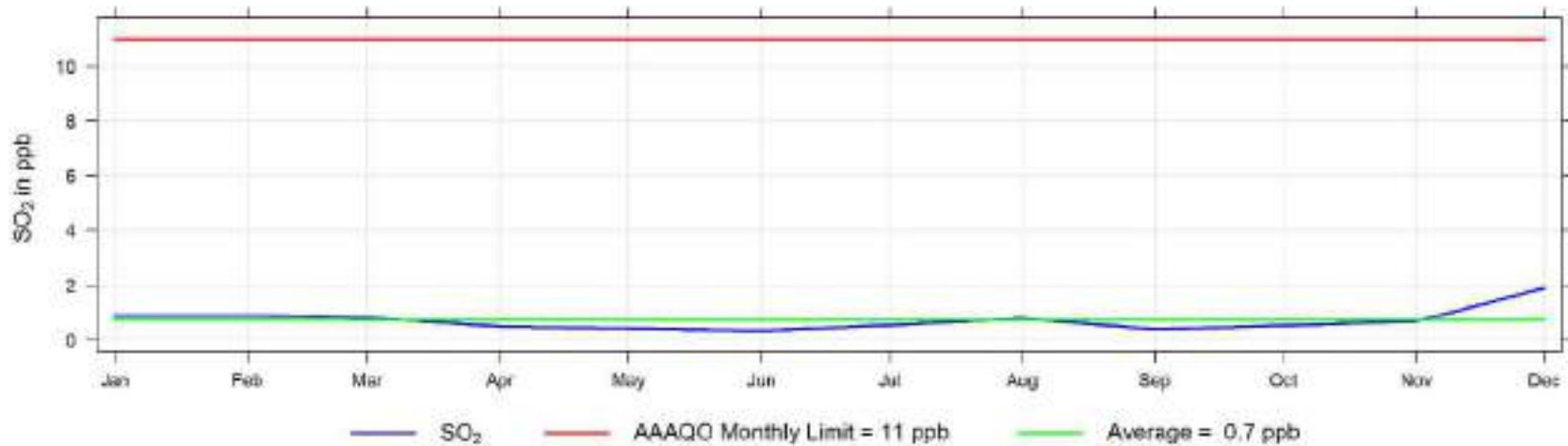
2022 Hourly Concentration Readings of SO₂ (in ppb) at Beaverlodge



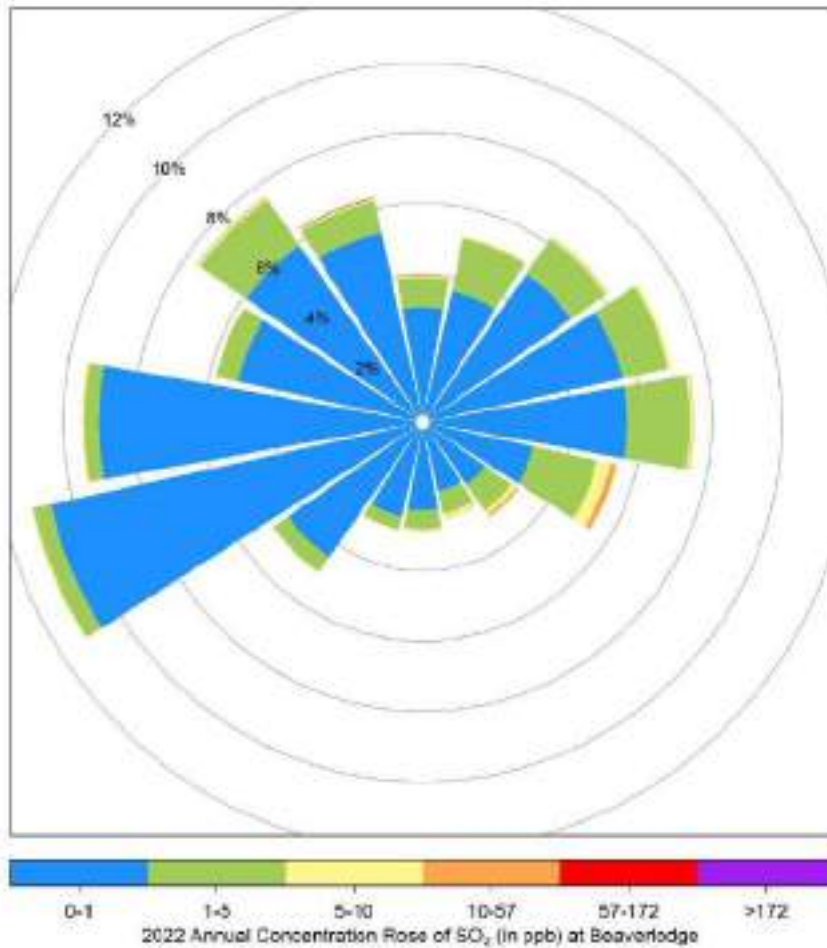
2022 Daily Concentration Readings of SO₂ (in ppb) at Beaverlodge



2022 Monthly Concentration Readings of SO₂ (in ppb) at Beaverlodge



Hourly Maximum SO₂ (in ppb) for 2022 at Beaverlodge



January-2022	February-2022	March-2022
26 27 28 29 30 31 1	30 31 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	24 25 26 27 28 29 30	25 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	16 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
26 27 28 29 30 1 2	21 1 2 3 4 5 6	23 28 29 30 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	26 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
23 26 27 28 29 30 1	30 31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

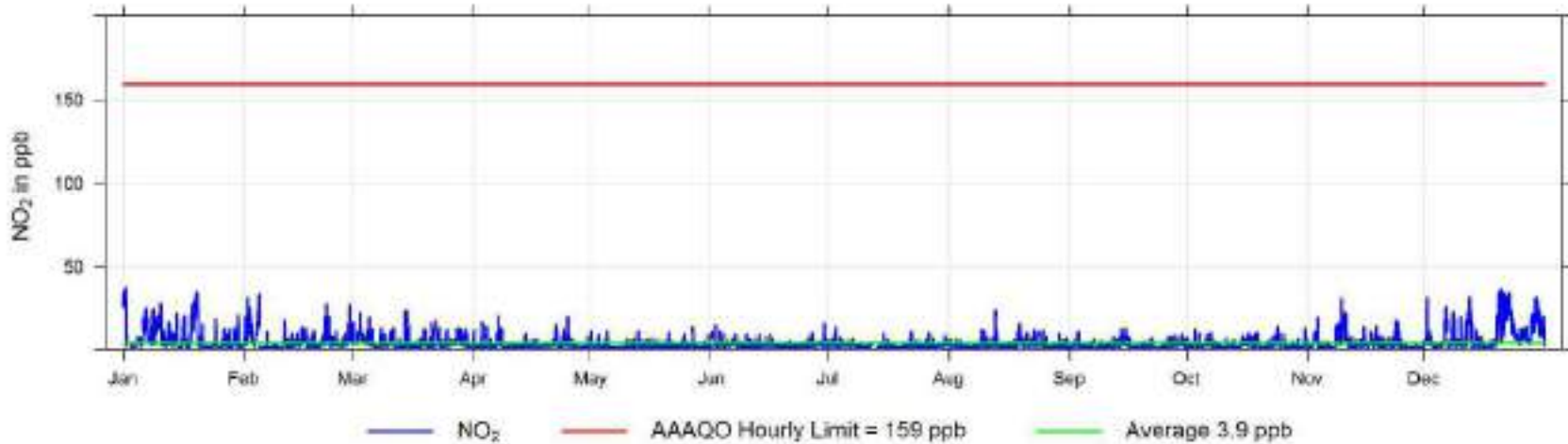
3.3 Nitrogen Dioxide (NO₂) - Beaverlodge 2022 Summary

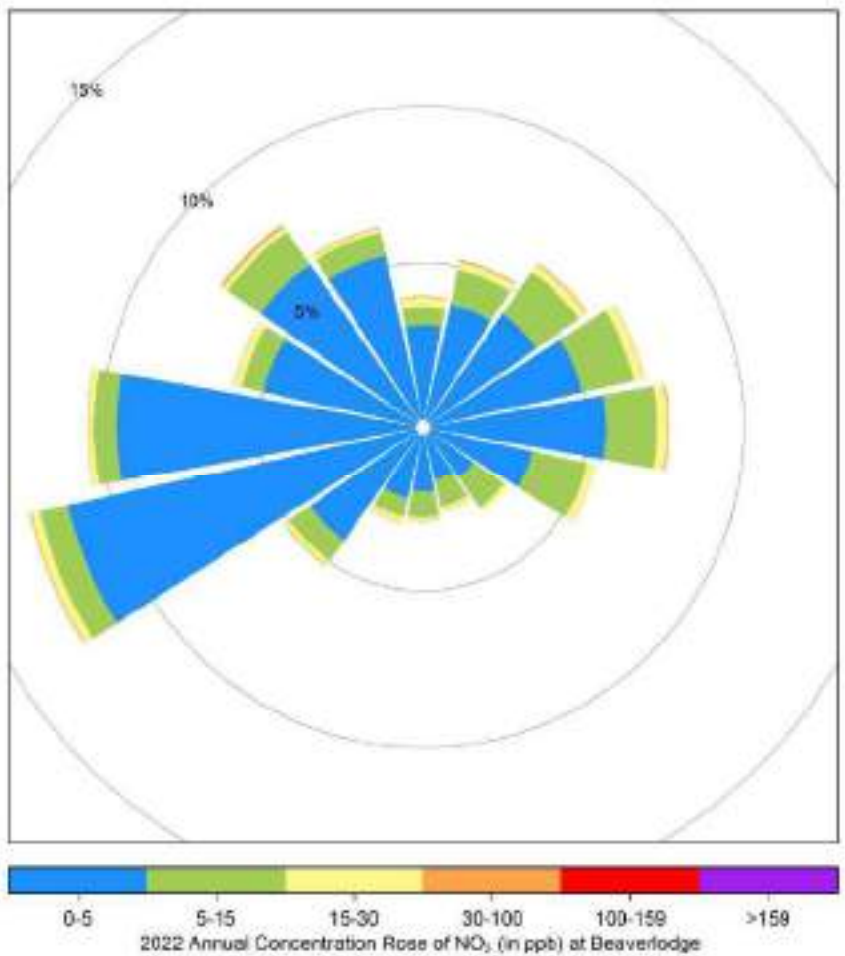
Nitrogen Dioxide (NO₂) Frequency Distribution at Beaverlodge

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents 1-hr 159 ppb	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr Date				
January 2022	685	54.5%	26.4%	13.0%	3.3%	0.0%	0.0%	7.7	27.1	Jan 19	36.5	Jan 01 18:00	96.6%	91.8%	0
February 2022	639	69.2%	24.3%	5.6%	0.9%	0.0%	0.0%	5.1	16.0	Feb 04	32.7	Feb 05 02:00	100.0%	95.1%	0
March 2022	707	69.9%	28.7%	1.4%	0.0%	0.0%	0.0%	4.2	7.9	Mar 02	23.5	Mar 14 08:00	100.0%	95.0%	0
April 2022	685	85.8%	13.4%	0.7%	0.0%	0.0%	0.0%	2.8	7.5	Apr 07	20.3	Apr 07 07:00	100.0%	95.1%	0
May 2022	700	91.6%	8.4%	0.0%	0.0%	0.0%	0.0%	2.0	4.2	May 27	13.5	May 27 07:00	98.9%	94.1%	0
June 2022	685	89.6%	10.2%	0.1%	0.0%	0.0%	0.0%	2.6	3.9	Jun 16	15.3	Jun 29 23:00	100.0%	95.1%	0
July 2022	681	92.2%	7.8%	0.0%	0.0%	0.0%	0.0%	2.1	3.4	Jul 22	13.2	Jul 02 04:00	99.5%	91.5%	0
August 2022	703	84.2%	15.2%	0.6%	0.0%	0.0%	0.0%	2.9	6.8	Aug 19	24.0	Aug 31 02:00	99.1%	94.5%	0
September 2022	685	86.7%	13.3%	0.0%	0.0%	0.0%	0.0%	2.6	6.1	Sep 15	12.8	Sep 15 09:00	100.0%	95.1%	0
October 2022	707	83.0%	17.0%	0.0%	0.0%	0.0%	0.0%	2.7	6.0	Oct 24	13.5	Oct 24 09:00	100.0%	95.0%	0
November 2022	685	78.0%	18.5%	3.4%	0.1%	0.0%	0.0%	3.8	13.9	Nov 09	30.7	Nov 09 20:00	100.0%	95.1%	0
December 2022	703	64.7%	32.1%	20.1%	3.0%	0.0%	0.0%	9.1	26.6	Dec 22	36.1	Dec 21 00:00	99.2%	94.5%	0
Annual	8263	77.4%	18.1%	3.8%	0.6%	0.0%	0.0%	3.9	27.1	Jan 19	36.5	Jan 01 18:00	99.5%	94.3%	0

AAAQO Objectives: Annual: 24ppb, 1-Hr: 159ppb

2022 Hourly Concentration Readings of NO₂ (in ppb) at Beaverlodge





Hourly Maximum NO₂ (in ppb) for 2022 at Beaverlodge

January-2022	February-2022	March-2022
25 26 27 28 29 30 31	26 27 28 29 30 31	27 28 29 30 31
1 2 3 4 5 6 7 8	9 10 11 12 13 14 15	16 17 18 19 20 21 22
16 17 18 19 20 21 22	23 24 25 26 27 28 29	30 31
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31	24 25 26 27 28 29 30	29 30 31
5 6 7 8 9	10 11 12 13 14 15 16	17 18 19 20 21 22 23
17 18 19 20 21 22 23	24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
28 29 30 31	3 4 5 6 7 8 9 10 11 12 13	14 15 16 17 18 19 20 21 22 23 24
10 11 12 13 14 15 16	17 18 19 20 21 22 23 24 25 26 27	28 29 30 31
1 2 3 4 5 6 7 8 9	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
25 26 27 28 29 30 31	30 31	27 28 29 30 31
2 3 4 5 6 7 8	9 10 11 12 13 14 15 16 17 18 19	20 21 22 23 24 25 26
16 17 18 19 20 21 22	23 24 25 26 27 28 29	30 31
S M T W T F S	S M T W T F S	S M T W T F S

0-5 5-15 15-30 30-100 100-159 >159

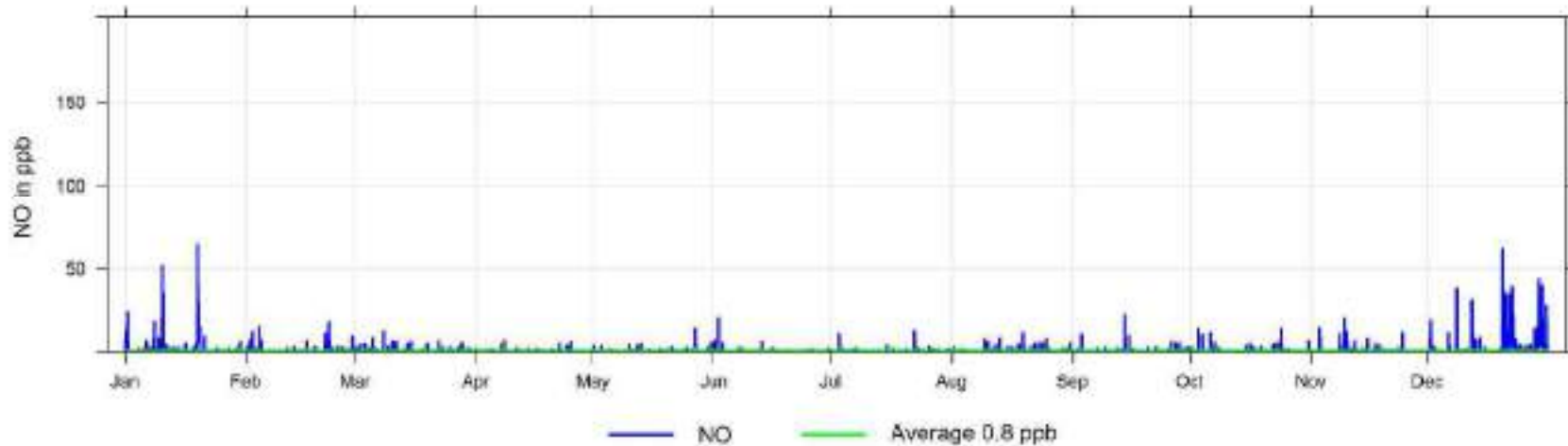
3.4 Nitric Oxide (NO) - Beaverlodge 2022 Summary

Nitric Oxide (NO) Frequency Distribution at Beaverlodge

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		
January 2022	683	88.9%	6.6%	2.3%	1.1%	0.0%	0.0%	2.1	21.9	Jan 19	64.6	Jan 19 13:00	96.6%	91.8%
February 2022	639	95.6%	4.1%	0.3%	0.0%	0.0%	0.0%	0.9	4.2	Feb 04	17.6	Feb 22 09:00	100.0%	95.1%
March 2022	707	97.2%	2.8%	0.0%	0.0%	0.0%	0.0%	0.7	1.6	Mar 10	12.6	Mar 08 11:00	100.0%	95.0%
April 2022	685	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.3	1.0	Apr 22	7.1	Apr 08 09:00	100.0%	95.1%
May 2022	700	98.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.3	1.9	May 27	14.3	May 27 08:00	98.9%	94.1%
June 2022	685	99.4%	0.4%	0.1%	0.0%	0.0%	0.0%	0.3	1.4	Jun 02	20.2	Jun 02 07:00	100.0%	95.1%
July 2022	681	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.3	1.6	Jul 22	12.5	Jul 22 07:00	99.5%	91.5%
August 2022	703	97.6%	2.4%	0.0%	0.0%	0.0%	0.0%	0.5	1.2	Aug 09	11.5	Aug 19 08:00	99.3%	94.5%
September 2022	685	98.7%	1.2%	0.1%	0.0%	0.0%	0.0%	0.4	2.3	Sep 14	22.6	Sep 14 05:00	100.0%	95.1%
October 2022	707	98.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.5	2.0	Oct 24	14.4	Oct 24 10:00	100.0%	95.0%
November 2022	685	96.2%	3.5%	0.3%	0.0%	0.0%	0.0%	0.6	4.6	Nov 09	20.1	Nov 09 15:00	100.0%	95.1%
December 2022	703	82.9%	10.1%	5.0%	2.0%	0.0%	0.0%	3.2	16.3	Dec 22	61.8	Dec 20 11:00	99.2%	94.5%
Annual	8263	96.1%	3.0%	0.7%	0.3%	0.0%	0.0%	0.8	21.9	Jan 19	64.6	Jan 19 13:00	99.5%	94.3%

AAAQO Objectives: none

2022 Hourly Concentration Readings of NO (in ppb) at Beaverlodge



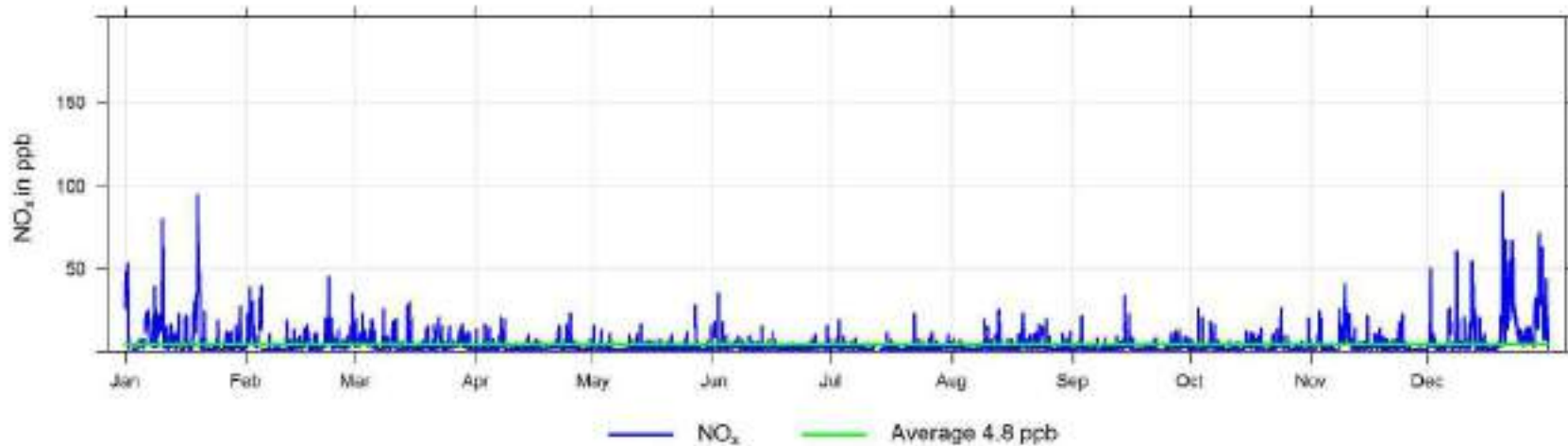
3.5 Oxides of Nitrogen (NO_x) - Beaverlodge 2022 Summary

Nitrogen Oxides (NO_x) Frequency Distribution at Beaverlodge

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		
January 2022	683	51.5%	27.5%	13.3%	7.6%	0.0%	0.0%	9.8	49.2	Jan 19	94.6	Jan 19 13:00	96.6%	91.8%
February 2022	639	61.2%	27.7%	7.0%	2.0%	0.0%	0.0%	5.9	20.3	Feb 04	45.2	Feb 22 09:00	100.0%	95.1%
March 2022	707	65.5%	30.4%	4.1%	0.0%	0.0%	0.0%	4.8	9.2	Mar 22	30.0	Mar 15 09:00	100.0%	95.0%
April 2022	685	83.6%	14.3%	2.0%	0.0%	0.0%	0.0%	3.1	8.5	Apr 07	23.4	Apr 25 07:00	100.0%	95.1%
May 2022	700	88.3%	9.0%	0.0%	0.0%	0.0%	0.0%	2.4	6.2	May 27	28.0	May 27 08:00	98.9%	94.1%
June 2022	685	86.1%	13.1%	0.6%	0.1%	0.0%	0.0%	2.9	4.8	Jun 02	35.1	Jun 02 07:00	100.0%	95.1%
July 2022	681	85.6%	9.7%	0.7%	0.0%	0.0%	0.0%	2.5	5.2	Jul 22	23.1	Jul 22 08:00	99.5%	91.5%
August 2022	703	81.4%	16.4%	2.3%	0.0%	0.0%	0.0%	3.3	8.0	Aug 19	25.6	Aug 13 04:00	99.3%	94.5%
September 2022	685	82.0%	17.1%	0.7%	0.1%	0.0%	0.0%	3.0	7.6	Sep 14	33.4	Sep 14 05:00	100.0%	95.1%
October 2022	707	80.5%	18.2%	1.3%	0.0%	0.0%	0.0%	3.2	8.0	Oct 24	26.3	Oct 24 10:00	100.0%	95.0%
November 2022	685	73.4%	21.0%	4.7%	0.9%	0.0%	0.0%	4.4	18.5	Nov 09	40.7	Nov 09 20:00	100.0%	95.1%
December 2022	703	42.7%	29.0%	16.4%	11.9%	0.0%	0.0%	12.4	42.9	Dec 22	95.9	Dec 20 11:00	99.2%	94.5%
Annual	8263	74.1%	19.5%	4.5%	1.9%	0.0%	0.0%	4.8	49.2	Jan 19	95.9	Dec 20 11:00	99.5%	94.3%

AAAQD Objectives: none

2022 Hourly Concentration Readings of NO_x (in ppb) at Beaverlodge



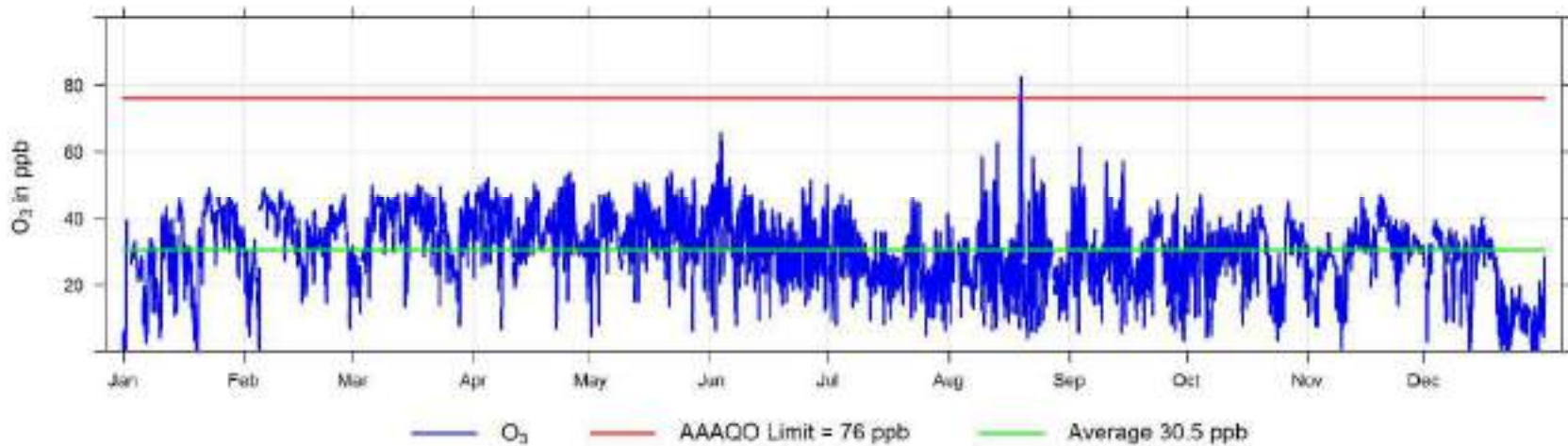
3.6 Ozone (O₃) - Beaverlodge 2022 Summary

Ozone (O₃) Frequency Distribution at Beaverlodge

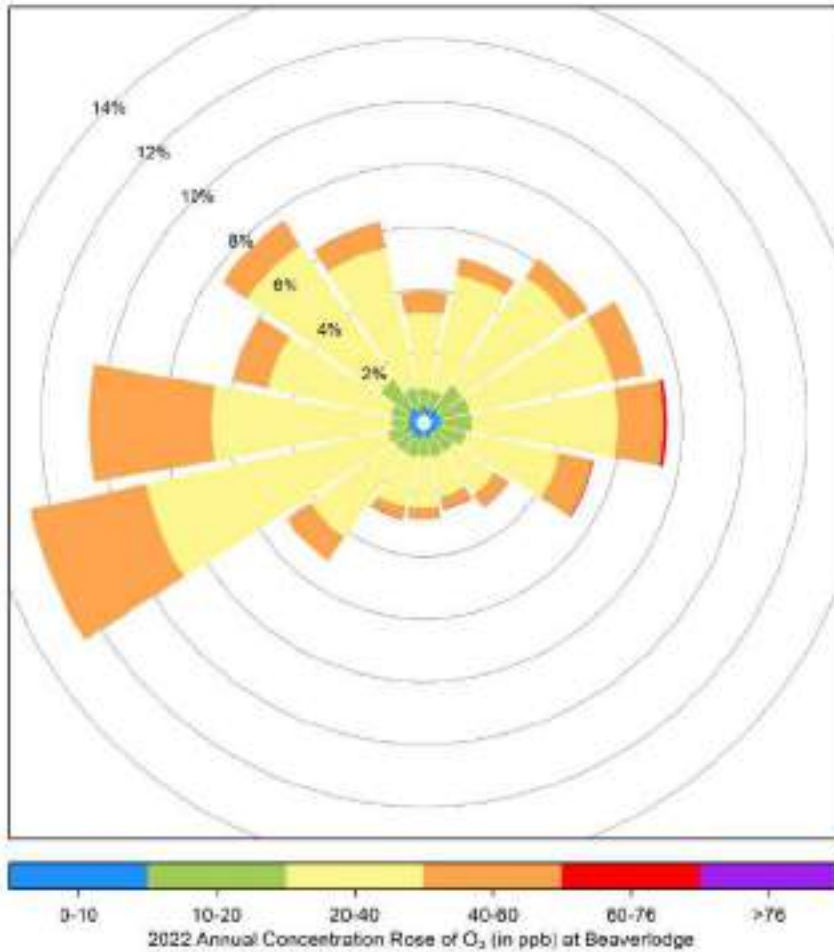
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents 1-hr 76 ppb	
		0 to 10 (ppb)	10 to 20 (ppb)	20 to 40 (ppb)	40 to 60 (ppb)	60 to 76 (ppb)	> 76 (ppb)			Date	1-hr Date				
January 2022	685	10.4%	10.2%	54.2%	25.1%	0.0%	0.0%	29.4	44.6	Jan 22	49.1	Jan 25 04:00	96.6%	92.1%	0
February 2022	640	2.3%	6.9%	59.2%	31.6%	0.0%	0.0%	14.1	46.6	Feb 06	49.0	Feb 05 06:00	100.0%	95.2%	0
March 2022	709	0.3%	3.1%	53.7%	42.9%	0.0%	0.0%	16.3	45.7	Mar 07	50.1	Mar 17 16:00	100.0%	95.3%	0
April 2022	686	0.6%	1.6%	61.2%	36.6%	0.0%	0.0%	17.1	44.5	Apr 02	53.6	Apr 25 17:00	100.0%	95.3%	0
May 2022	709	0.4%	3.4%	64.0%	32.2%	0.0%	0.0%	16.2	41.3	May 15	53.7	May 21 16:00	100.0%	95.3%	0
June 2022	686	0.7%	9.2%	67.1%	21.9%	1.2%	0.0%	13.1	50.2	Jun 05	65.8	Jun 05 16:00	100.0%	95.3%	0
July 2022	705	1.4%	19.1%	72.1%	6.4%	0.0%	0.0%	16.1	35.9	Jul 06	47.1	Jul 04 13:00	99.5%	94.8%	0
August 2022	685	4.8%	22.9%	59.9%	10.9%	1.0%	0.4%	16.9	44.6	Aug 19	82.2	Aug 19 17:00	97.2%	92.1%	3
September 2022	686	3.8%	20.0%	61.7%	14.4%	6.1%	0.0%	18.2	38.8	Sep 23	61.3	Sep 03 18:00	100.0%	95.3%	0
October 2022	709	3.8%	16.5%	73.1%	6.6%	0.0%	0.0%	18.3	39.1	Oct 27	46.9	Oct 04 16:00	100.0%	95.3%	0
November 2022	686	3.1%	10.3%	79.0%	7.6%	0.0%	0.0%	19.7	43.1	Nov 20	47.0	Nov 19 23:00	100.0%	95.3%	0
December 2022	704	21.2%	26.6%	52.0%	0.3%	0.0%	0.0%	20.9	36.2	Dec 04	40.3	Dec 18 02:00	99.2%	94.6%	0
Annual	8290	4.5%	12.5%	63.1%	19.7%	0.2%	0.0%	30.5	50.2	MAXIMUM VALUES		99.4%	94.6%	3	

AAAQO Objectives: 1-Hr: 76ppb

2022 Hourly Concentration Readings of O₃ (in ppb) at Beaverlodge



Hourly Maximum O₃ (in ppb) for 2022 at Beaverlodge



January-2022	February-2022	March-2022
28 29 30 31 1 1	30 31 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 1 2	31 28 29 30 31 1 2	30 31 1 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
26 27 28 29 30 1 2	1 1 2 3 4 5 6	25 26 27 28 29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
25 26 27 28 29 30 1	30 31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

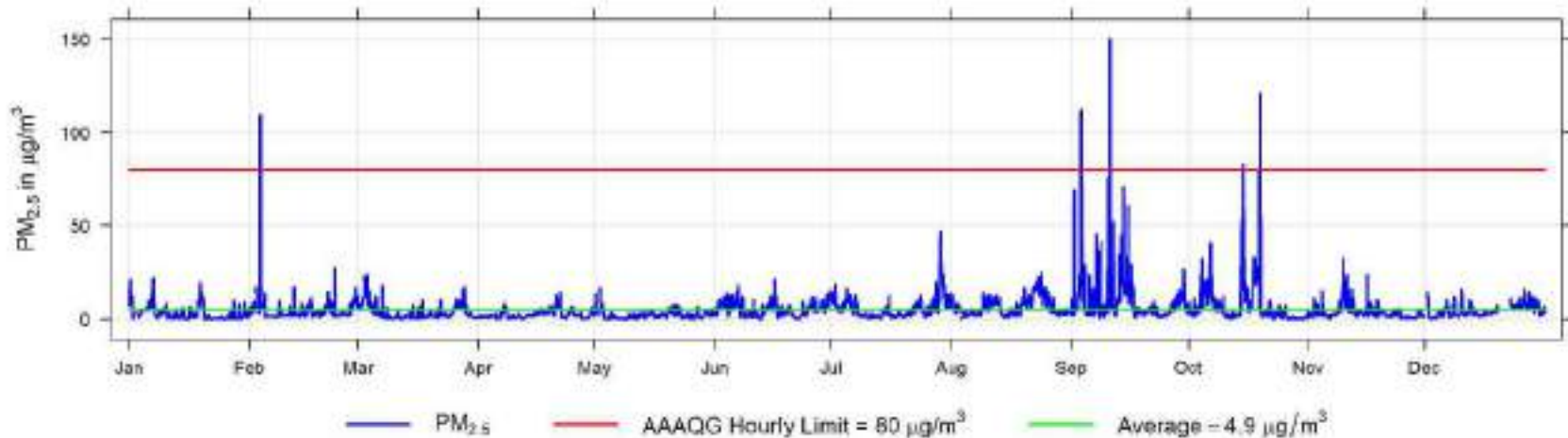
3.7 Particulate Matter (PM_{2.5}) - Beaverlodge 2022 Summary

Particulate Matter (PM_{2.5}) Frequency Distribution at Beaverlodge

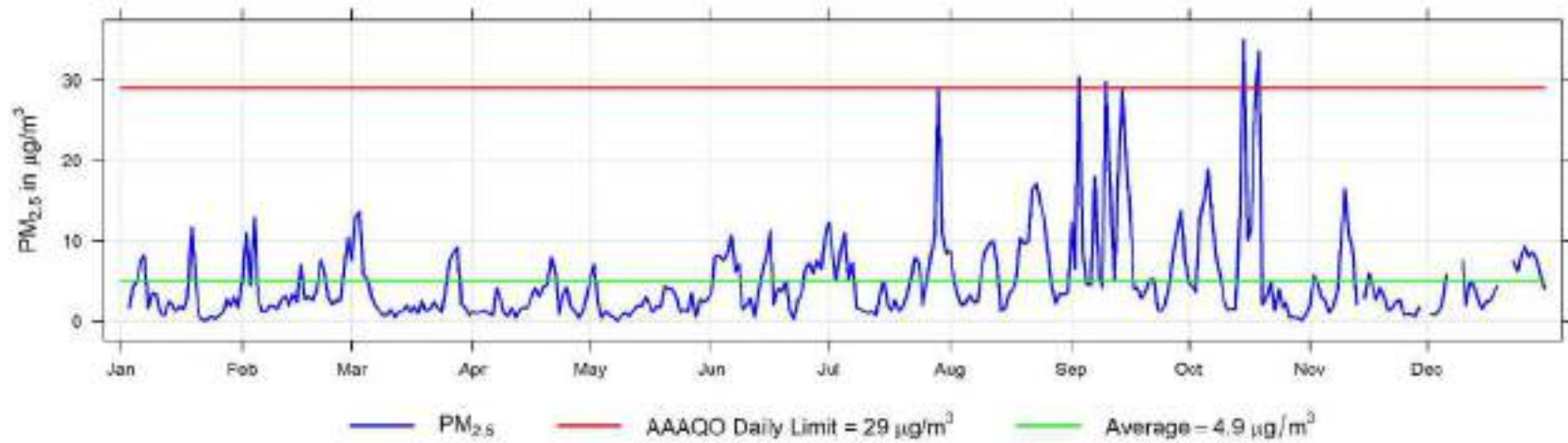
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ug/m ³)	24-hr (ug/m ³)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 5 (ug/m ³)	5 to 15 (ug/m ³)	15 to 30 (ug/m ³)	30 to 50 (ug/m ³)	50 to 80 (ug/m ³)	> 80 (ug/m ³)			Date	1-hr (ug/m ³)			Date	24-hr 29 ug/m ³	1-hr 80 ug/m ³
January 2022	716	81.3%	17.2%	1.5%	0.0%	0.0%	0.0%	2.3	11.7	Jan 18	22.2	Jan 07 05:00	95.6%	96.2%	0	0
February 2022	668	72.0%	26.0%	1.6%	0.1%	0.0%	0.1%	4.2	11.0	Feb 02	106.6	Feb 04 00:00	100.0%	99.4%	0	1
March 2022	741	75.4%	22.3%	2.3%	0.0%	0.0%	0.0%	3.4	13.4	Mar 03	21.8	Mar 03 10:00	100.0%	99.6%	0	0
April 2022	718	87.0%	13.0%	0.0%	0.0%	0.0%	0.0%	2.3	7.9	Apr 21	14.3	Apr 22 08:00	100.0%	99.7%	0	0
May 2022	742	91.5%	8.2%	0.3%	0.0%	0.0%	0.0%	2.1	7.2	May 02	16.7	May 02 12:00	100.0%	99.7%	0	0
June 2022	718	50.1%	48.6%	1.3%	0.0%	0.0%	0.0%	5.4	11.3	Jun 16	21.4	Jun 16 15:00	100.0%	99.7%	0	0
July 2022	740	58.0%	36.8%	4.2%	1.1%	0.0%	0.0%	5.8	28.8	Jul 29	46.9	Jul 29 07:00	99.5%	99.5%	0	0
August 2022	735	50.6%	41.4%	8.0%	0.0%	0.0%	0.0%	6.6	16.9	Aug 23	25.0	Aug 24 10:00	99.3%	98.8%	0	0
September 2022	717	44.8%	37.8%	11.4%	3.5%	2.2%	0.3%	10.0	32.3	Sep 10	150.3	Sep 10 23:00	100.0%	99.6%	2	2
October 2022	742	60.2%	23.3%	12.1%	2.3%	1.6%	0.4%	7.8	34.2	Oct 15	121.5	Oct 19 17:00	100.0%	99.7%	2	3
November 2022	699	77.7%	18.3%	3.7%	0.3%	0.0%	0.0%	3.8	16.5	Nov 10	32.3	Nov 10 03:00	97.6%	97.1%	0	0
December 2022	651	60.1%	39.5%	0.3%	0.0%	0.0%	0.0%	4.8	9.7	Dec 26	15.7	Dec 26 21:00	83.4%	84.8%	0	0
Annual	8567	67.4%	27.7%	3.9%	0.6%	0.3%	0.1%	4.9	34.2	MAXIMUM VALUES		98.2%	97.8%	4	6	

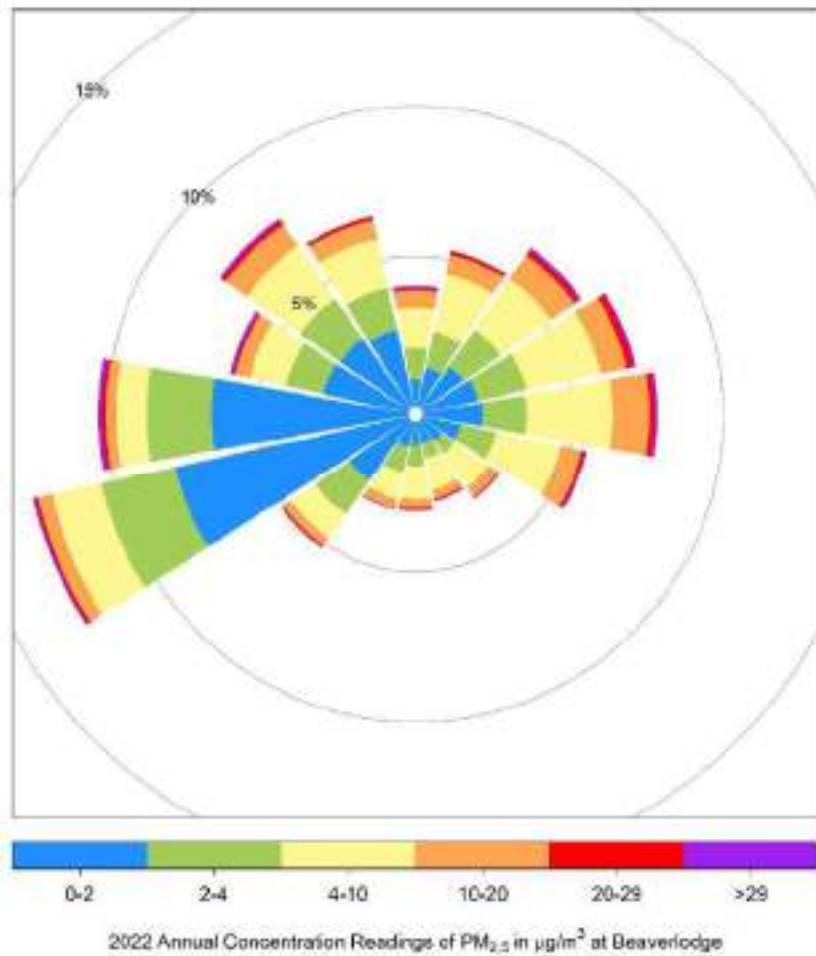
AAQO Objectives: 24-hr: 29 ug/m³, AAQO Guideline: 1-Hr: 80 ug/m³

2022 Hourly Concentration Readings of PM_{2.5} in ug/m³ at Beaverlodge



2022 Daily Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge





Hourly Maximum PM_{2.5} (in µg/m³) for 2022 at Beaverlodge

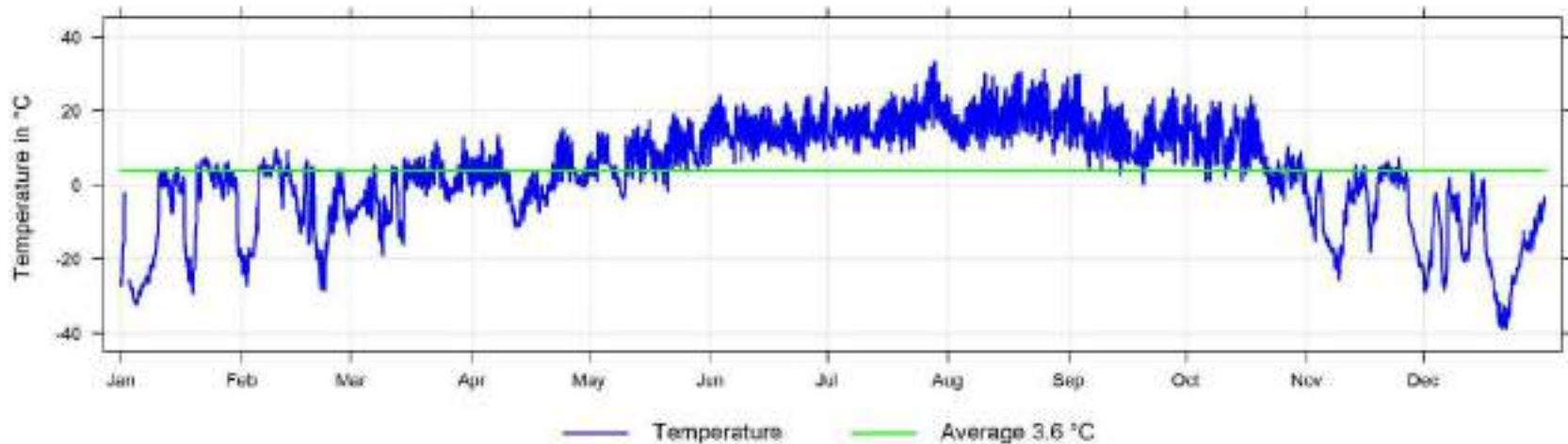


3.8 Temperature (ET) - Beaverlodge 2022 Summary

Temperature (ET) Frequency Distribution at Beaverlodge

Month	Valid Hours	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)	Valid time (%)	
			24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date			
January 2022	719	-9.0	6.6	Jan 22	7.3	Jan 23 00:00	-31.1	Jan 04	-32.5	Jan 04 22:00	96.6%	96.6%	
February 2022	672	6.4	7.0	Feb 09	9.7	Feb 09 18:00	-23.5	Feb 21	-28.7	Feb 22 09:00	100.0%	100.0%	
March 2022	744	-1.2	6.2	Mar 22	12.8	Mar 29 17:00	-12.3	Mar 13	-19.0	Mar 09 08:00	100.0%	100.0%	
April 2022	720	1.1	9.5	Apr 24	15.2	Apr 24 14:00	-10.5	Apr 12	-11.8	Apr 12 08:00	100.0%	100.0%	
May 2022	744	8.1	13.7	May 31	19.2	May 22 17:00	-2.5	May 09	-3.7	May 10 01:00	100.0%	100.0%	
June 2022	720	15.0	18.7	Jun 30	26.1	Jun 30 18:00	10.9	Jun 23	6.0	Jun 07 05:00	100.0%	100.0%	
July 2022	740	17.5	25.5	Jul 28	33.3	Jul 28 17:00	13.0	Jul 12	8.7	Jul 08 05:00	99.3%	99.3%	
August 2022	739	18.5	22.5	Aug 19	31.1	Aug 25 18:00	12.3	Aug 04	8.4	Aug 28 05:00	99.3%	99.3%	
September 2022	720	13.5	20.3	Sep 02	30.1	Sep 03 16:00	7.7	Sep 19	0.2	Sep 20 07:00	100.0%	100.0%	
October 2022	744	8.6	15.8	Oct 02	24.3	Oct 01 17:00	-0.5	Oct 25	-4.7	Oct 23 09:00	100.0%	100.0%	
November 2022	720	-6.6	4.3	Nov 21	7.3	Nov 24 15:00	-22.5	Nov 30	-26.0	Dec 01 00:00	100.0%	100.0%	
December 2022	738	-16.9	-3.1	Dec 13	3.2	Dec 13 14:00	-36.1	Dec 21	-38.9	Dec 21 05:00	99.2%	99.2%	
		AVERAGE	MAXIMUM VALUES				MINIMUM VALUES						
		8720	3.6	25.5	Jul 28	33.3	Jul 28 17:00	-36.1	Dec 21	-38.9	Dec 21 05:00	99.6%	99.6%

2022 Hourly Temperature Readings (in °C) at Beaverlodge

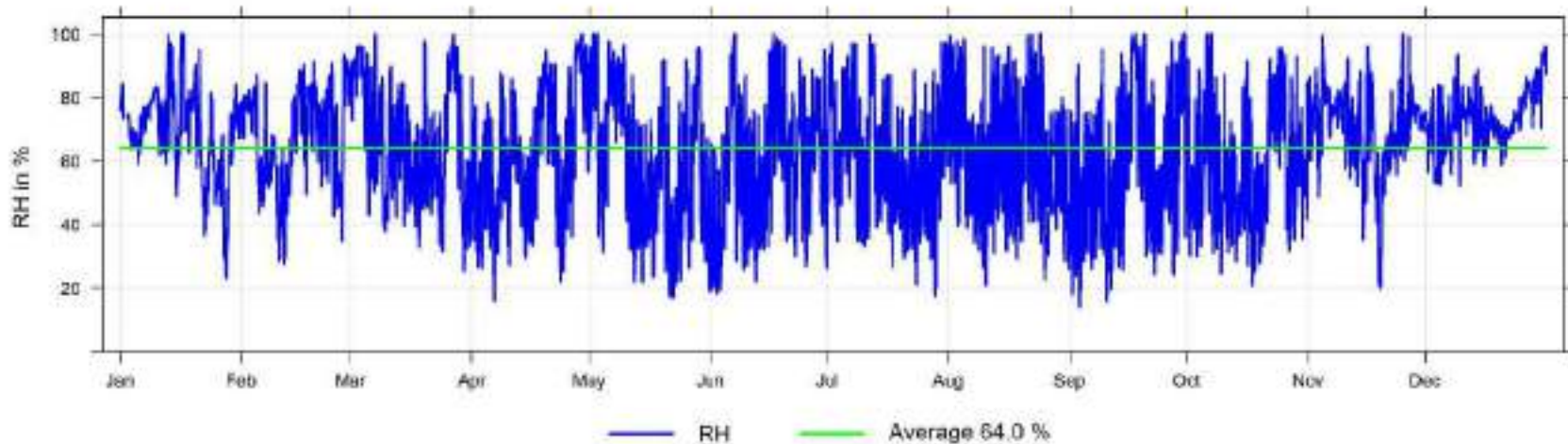


3.9 Relative Humidity (RH) - Beaverlodge 2022 Summary

Relative Humidity (RH) Frequency Distribution at Beaverlodge

Month	Valid Hours	Monthly Average (%)	Maximum Values				Operational time (%)	Valid time (%)		
			24-hr (%)	Date	1-hr (%)	Date				
January 2022	719	68.5	87.6	Jan 14	100.0	Jan 16 18:00	96.6%	96.6%		
February 2022	672	67.4	86.3	Feb 28	93.5	Feb 27 08:00	100.0%	100.0%		
March 2022	744	66.3	94.0	Mar 27	99.9	Mar 07 05:00	100.0%	100.0%		
April 2022	720	62.3	94.3	Apr 28	100.0	Apr 29 04:00	100.0%	100.0%		
May 2022	744	59.5	90.4	May 02	99.9	May 03 05:00	100.0%	100.0%		
June 2022	720	58.4	85.8	Jun 18	99.9	Jun 07 06:00	100.0%	100.0%		
July 2022	740	61.1	89.1	Jul 12	99.8	Jul 12 00:00	99.5%	99.5%		
August 2022	739	62.2	84.4	Aug 01	99.9	Aug 24 08:00	99.3%	99.3%		
September 2022	720	58.8	97.0	Sep 17	99.9	Sep 20 05:00	100.0%	100.0%		
October 2022	744	58.7	83.2	Oct 25	99.9	Oct 06 04:00	100.0%	100.0%		
November 2022	720	70.2	82.7	Nov 05	99.9	Nov 25 05:00	100.0%	100.0%		
December 2022	738	73.6	92.4	Dec 31	95.0	Dec 31 19:00	99.2%	99.2%		
	8720	AVERAGE 64.0		MAXIMUM VALUES		Sep 17	100.0	Jan 16 18:00	99.6%	99.6%

2022 Hourly Readings of Relative Humidity (in %) at Beaverlodge

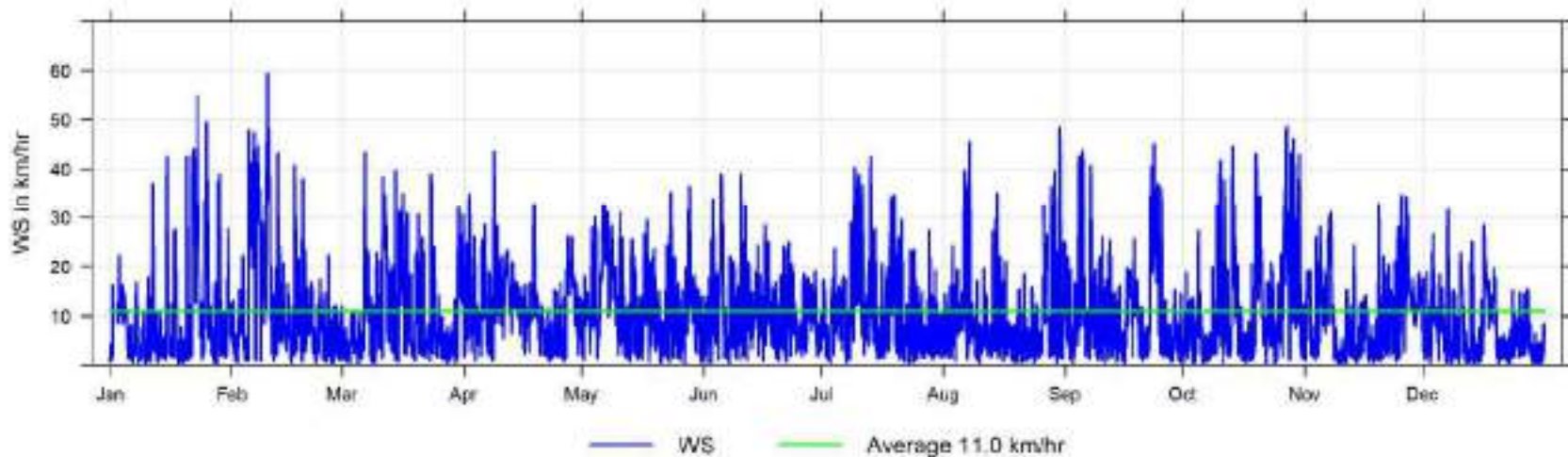


3.10 Wind Speed and Wind Direction (WS and WD) - Beaverlodge 2022 Summary

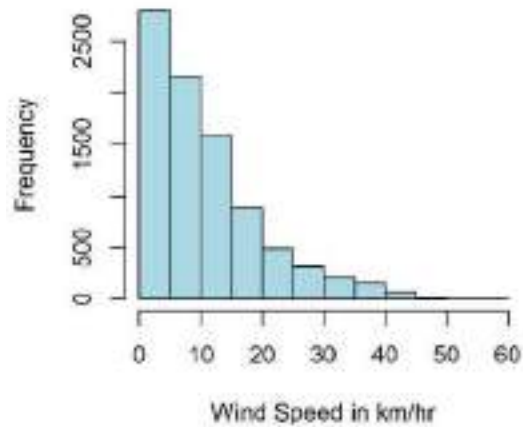
Wind Speed Frequency Distribution at Beaverlodge

Month	Valid Hours	Calm	% of Readings in Concentration Range					Monthly Average (km/hr)	24-hr (km/hr)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	
			0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)			Date	1-hr (km/hr)			Date
January 2022	719	1.4%	39.5%	24.8%	17.4%	4.3%	10.7%	10.8	31.6	Jan 22	34.7	Jan 23 04:00	96.6%	96.4%
February 2022	672	0.3%	26.3%	31.0%	18.2%	10.4%	13.8%	13.3	35.8	Feb 10	59.4	Feb 10 04:00	100.0%	100.0%
March 2022	744	0.7%	37.9%	27.4%	15.1%	12.0%	7.0%	10.4	20.8	Mar 12	43.3	Mar 06 23:00	100.0%	100.0%
April 2022	720	0.0%	18.1%	32.2%	33.5%	12.4%	3.9%	12.0	23.6	Apr 02	43.4	Apr 06 16:00	100.0%	100.0%
May 2022	744	0.4%	20.4%	29.2%	30.5%	15.2%	4.3%	12.2	25.3	May 06	36.4	May 28 14:00	100.0%	100.0%
June 2022	720	0.3%	21.1%	36.1%	29.9%	8.9%	3.8%	11.1	25.8	Jun 05	39.2	Jun 10 13:00	100.0%	100.0%
July 2022	740	0.3%	26.8%	32.0%	22.6%	10.7%	7.7%	11.7	24.9	Jul 10	42.4	Jul 13 16:00	99.5%	99.5%
August 2022	739	0.4%	35.0%	34.1%	17.7%	5.8%	6.9%	9.9	22.5	Aug 06	48.4	Aug 30 13:00	99.3%	99.3%
September 2022	720	0.4%	33.1%	27.5%	22.9%	8.5%	7.6%	11.1	30.1	Sep 23	45.1	Sep 23 15:00	100.0%	100.0%
October 2022	744	1.1%	32.4%	26.9%	16.4%	12.2%	11.0%	12.2	34.2	Oct 27	48.6	Oct 27 15:00	100.0%	100.0%
November 2022	720	1.0%	35.4%	25.8%	25.7%	8.8%	3.3%	9.7	23.5	Nov 07	34.7	Nov 25 16:00	100.0%	100.0%
December 2022	738	2.0%	49.1%	22.9%	20.7%	4.5%	0.8%	7.4	15.1	Dec 17	31.7	Dec 07 13:00	99.2%	99.2%
Annual	8720	0.7%	31.3%	29.2%	22.5%	3.6%	6.7%	11.0	35.8	MAXIMUM VALUES		99.6%	99.6%	

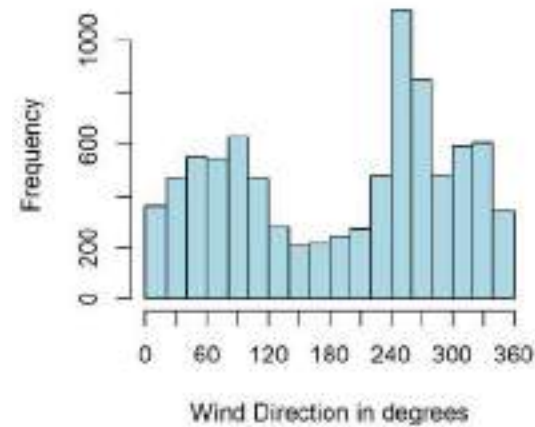
2022 Hourly Readings of Wind Speed (in km/hr) at Beaverlodge



2022 Wind Speed Histogram

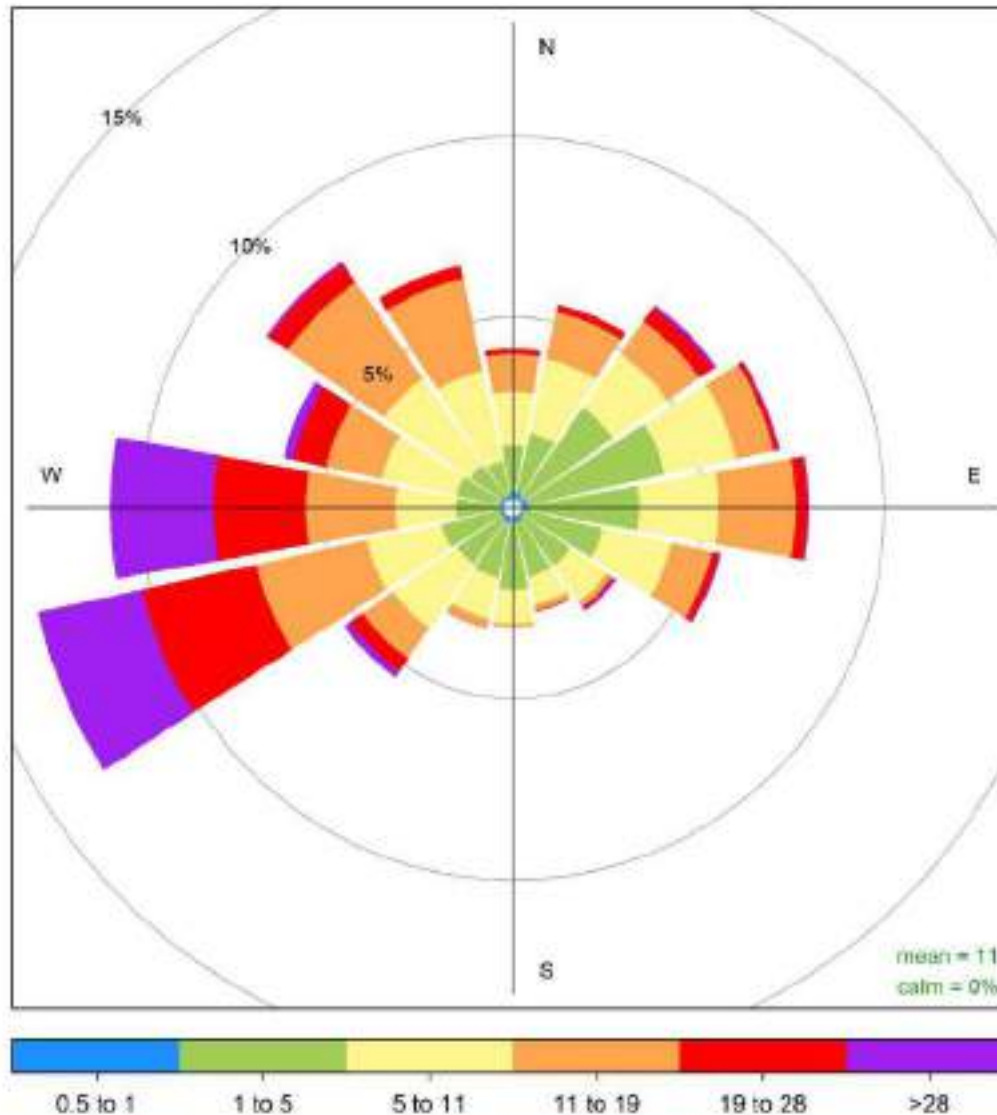


2022 Wind Direction Histogram



Wind Speed and Wind Direction Frequency Distribution at Beaverlodge

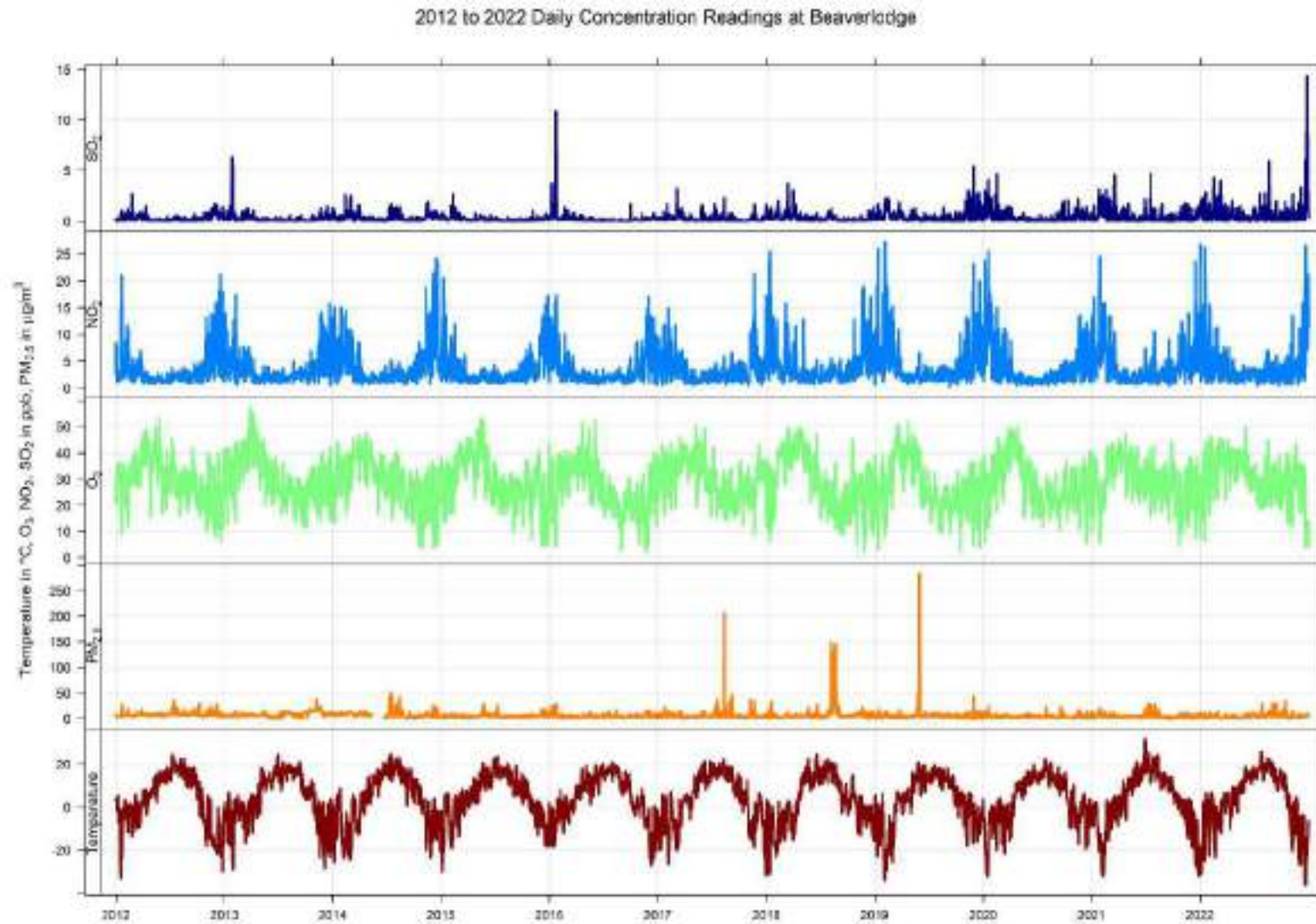
Direction	Number of Readings	% of wind speed range						Total %
		Calm (<0.5 (km/hr)	0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)	
N	363	0.1%	1.5%	1.5%	1.0%	0.1%	0.0%	4.2%
NNE	484	0.0%	1.9%	2.1%	1.3%	0.2%	0.0%	5.6%
NE	577	0.1%	3.1%	1.8%	1.1%	0.4%	0.1%	6.6%
ENE	642	0.1%	4.0%	2.0%	1.1%	0.1%	0.0%	7.4%
E	694	0.0%	3.2%	2.2%	2.1%	0.3%	0.0%	8.0%
ESE	491	0.0%	3.3%	1.9%	1.1%	0.3%	0.1%	5.6%
SE	385	0.0%	1.7%	1.2%	0.2%	0.1%	0.1%	3.3%
SSE	237	0.0%	1.7%	0.8%	0.2%	0.0%	0.0%	2.7%
S	265	0.0%	2.0%	0.9%	0.1%	0.0%	0.0%	3.0%
SSW	275	0.0%	1.7%	1.2%	0.3%	0.0%	0.0%	3.2%
SW	482	0.1%	1.6%	2.1%	1.0%	0.4%	0.2%	5.5%
WSW	1150	0.0%	1.7%	2.1%	3.1%	3.2%	2.9%	13.2%
W	949	0.0%	1.5%	1.7%	2.3%	2.5%	2.8%	10.9%
WNW	544	0.0%	1.3%	2.1%	1.8%	0.9%	0.3%	6.2%
NW	704	0.0%	1.2%	2.9%	3.2%	0.6%	0.1%	8.1%
NNW	578	0.0%	1.1%	2.5%	2.4%	0.4%	0.0%	6.4%
Total	8720	0.7%	31.3%	29.2%	22.6%	9.6%	6.7%	100.0%



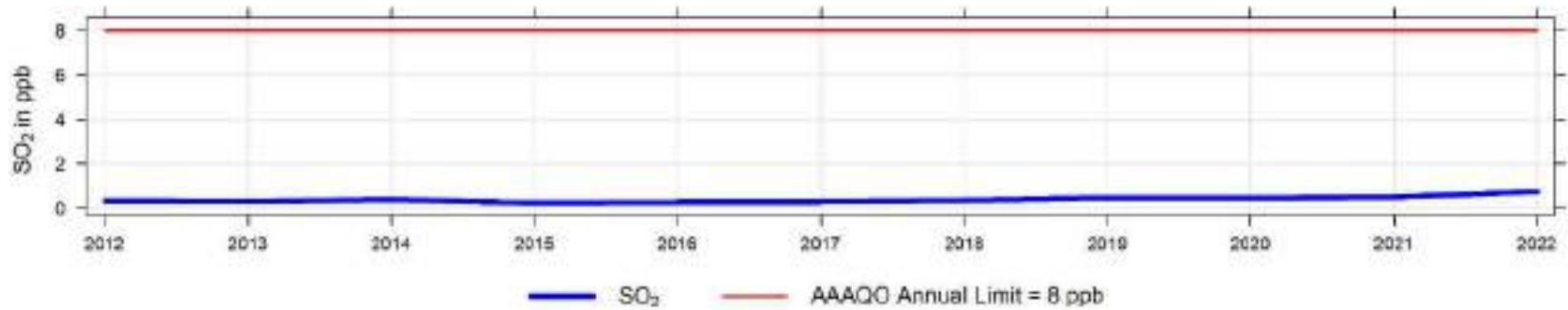
Beaverlodge 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

3.11 Beaverlodge Annual Trends, 2012 to 2022

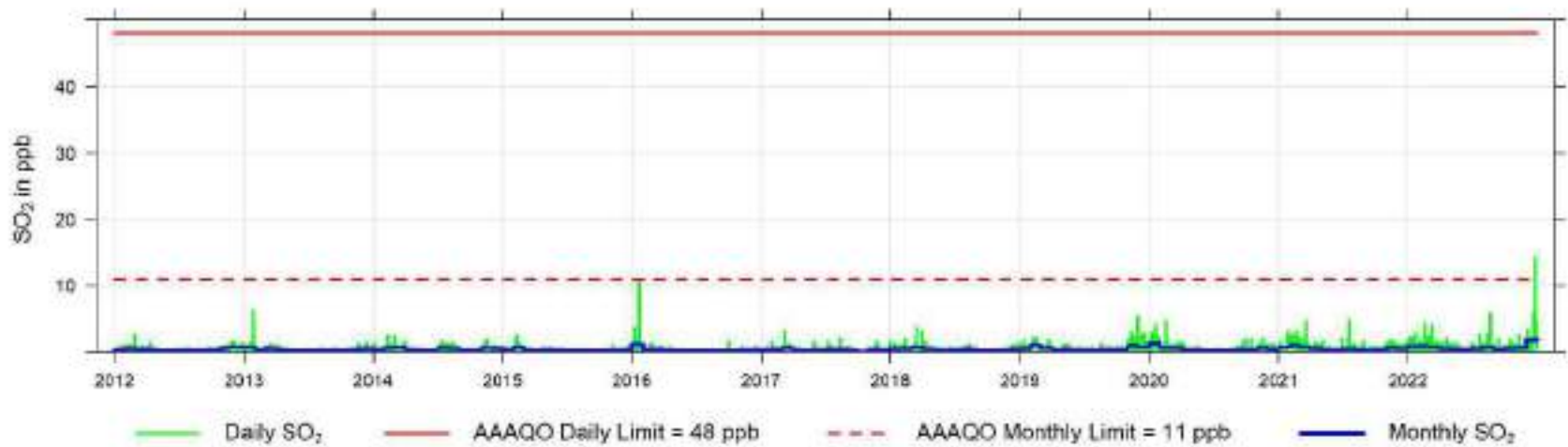
The following pages include historical annual charts collected between 2012 and 2022 at the Beaverlodge Station.



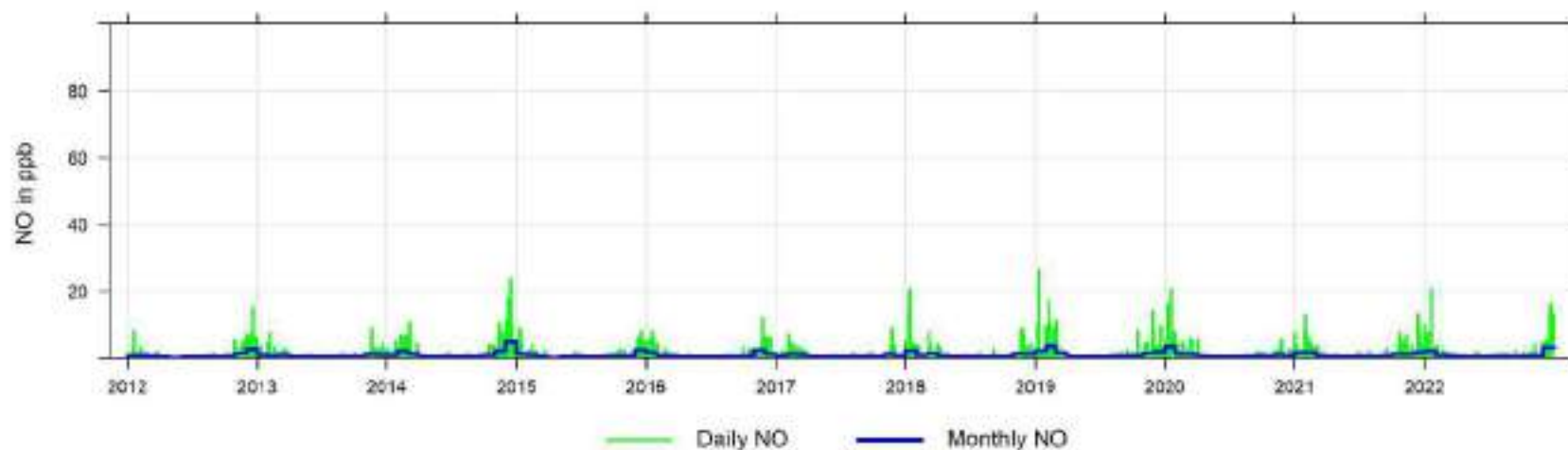
Years 2012 to 2022 Annual Concentration Readings of SO₂ (in ppb) at Beaverlodge



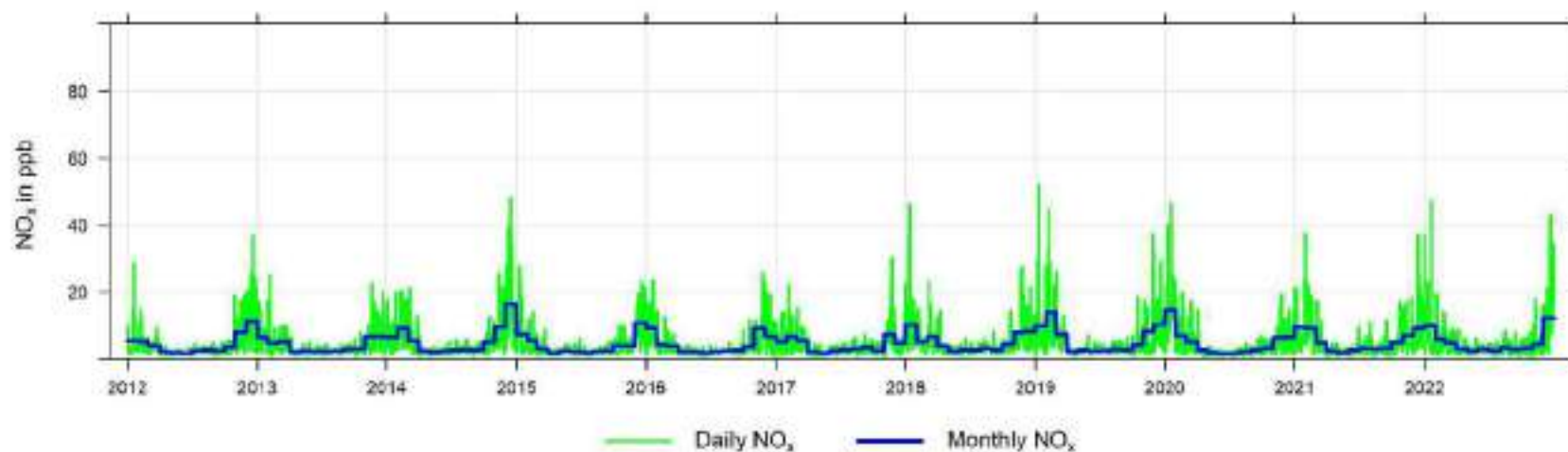
Years 2012 to 2022 Concentration Readings of SO₂ (in ppb) at Beaverlodge



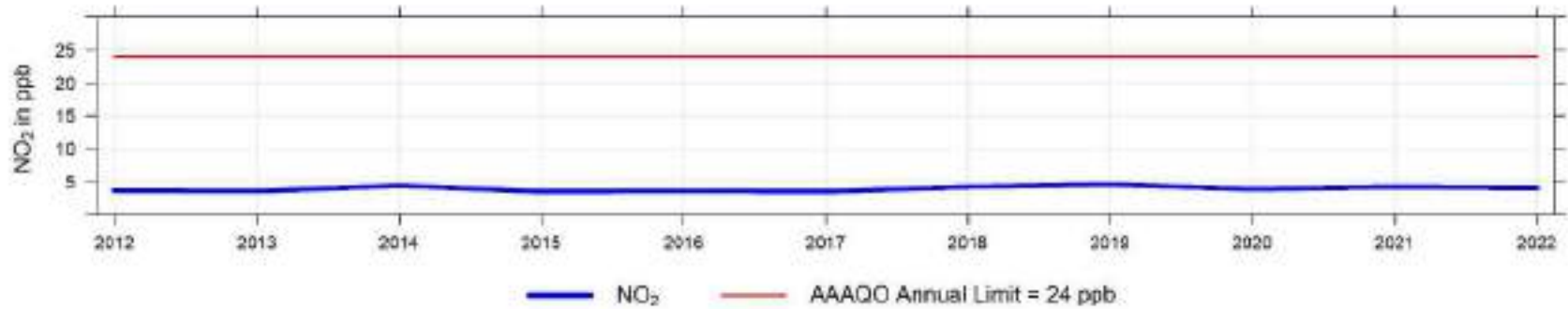
Years 2012 to 2022 Concentration Readings of NO (in ppb) at Beaverlodge



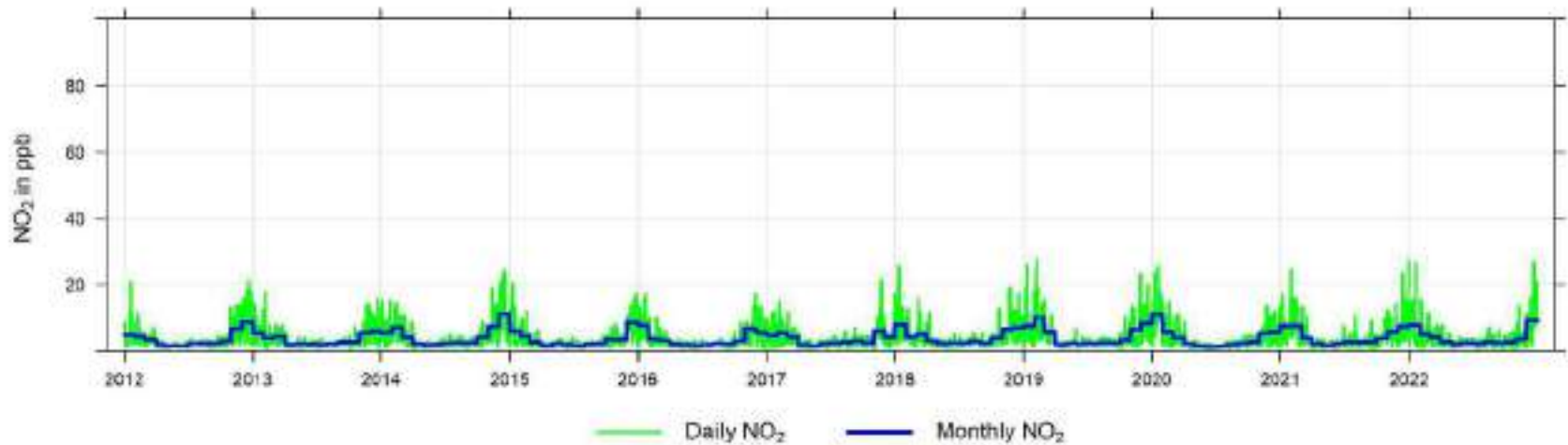
Years 2012 to 2022 Concentration Readings of NO_x (in ppb) at Beaverlodge



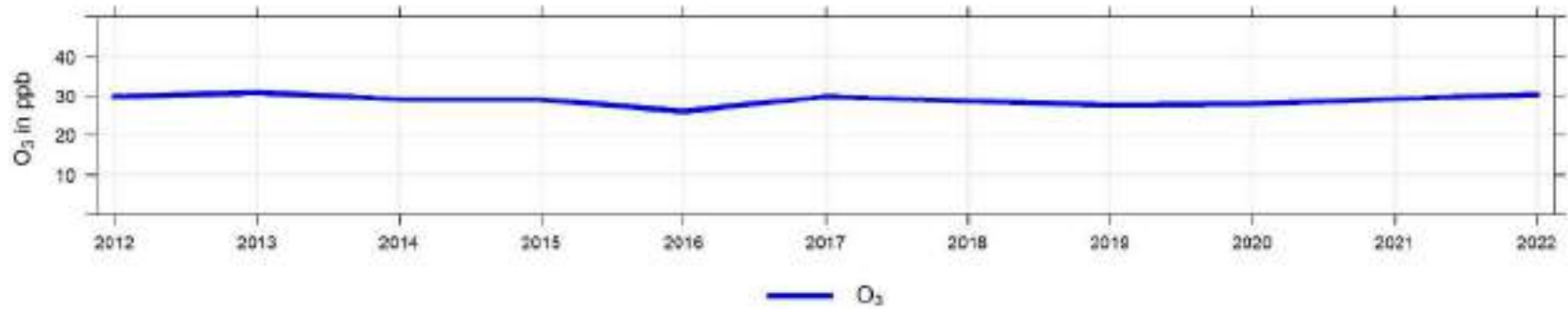
Years 2012 to 2022 Annual Concentration Readings of NO₂ (in ppb) at Beaverlodge



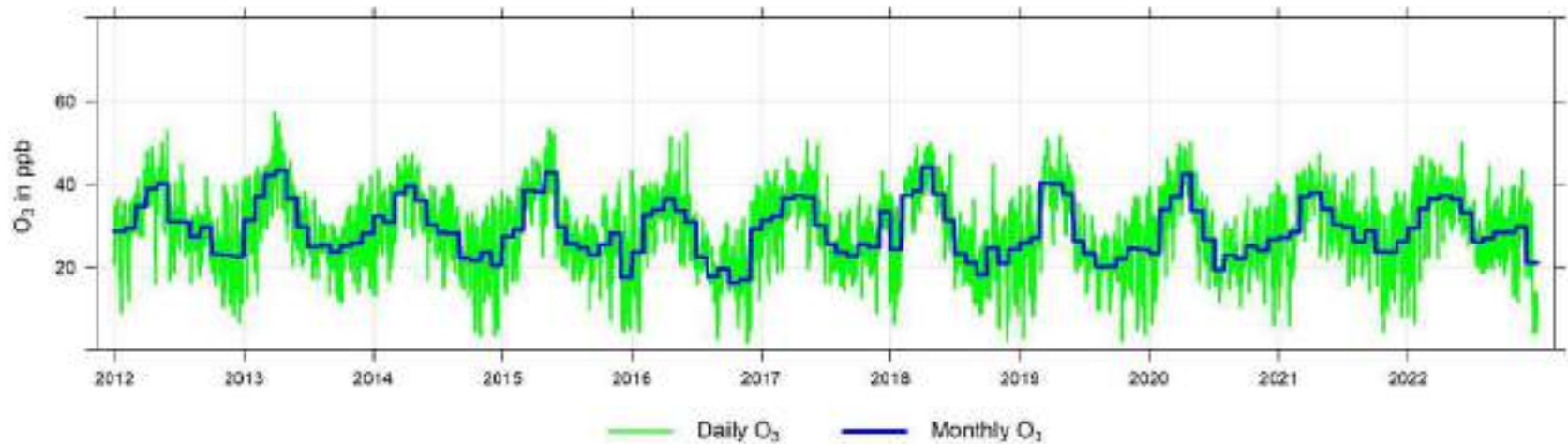
Years 2012 to 2022 Concentration Readings of NO₂ (in ppb) at Beaverlodge



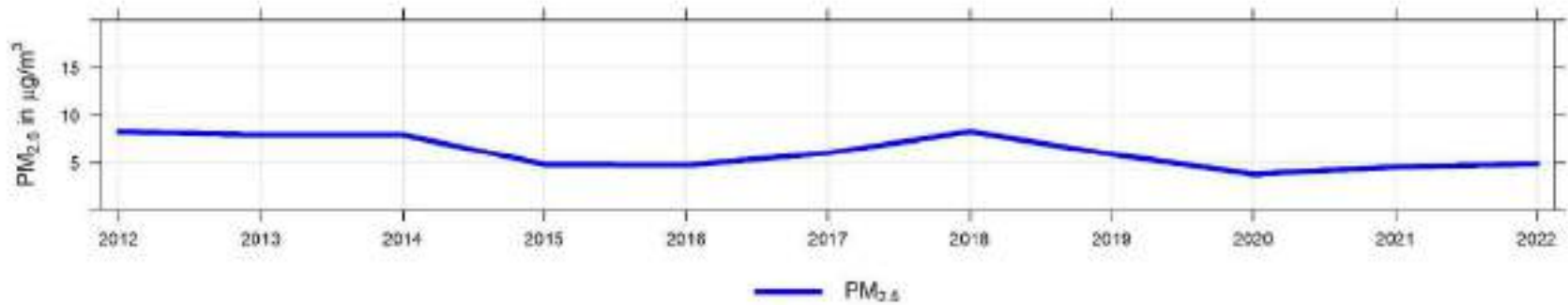
Years 2012 to 2022 Annual Concentration Readings of O₃ (in ppb) at Beaverlodge



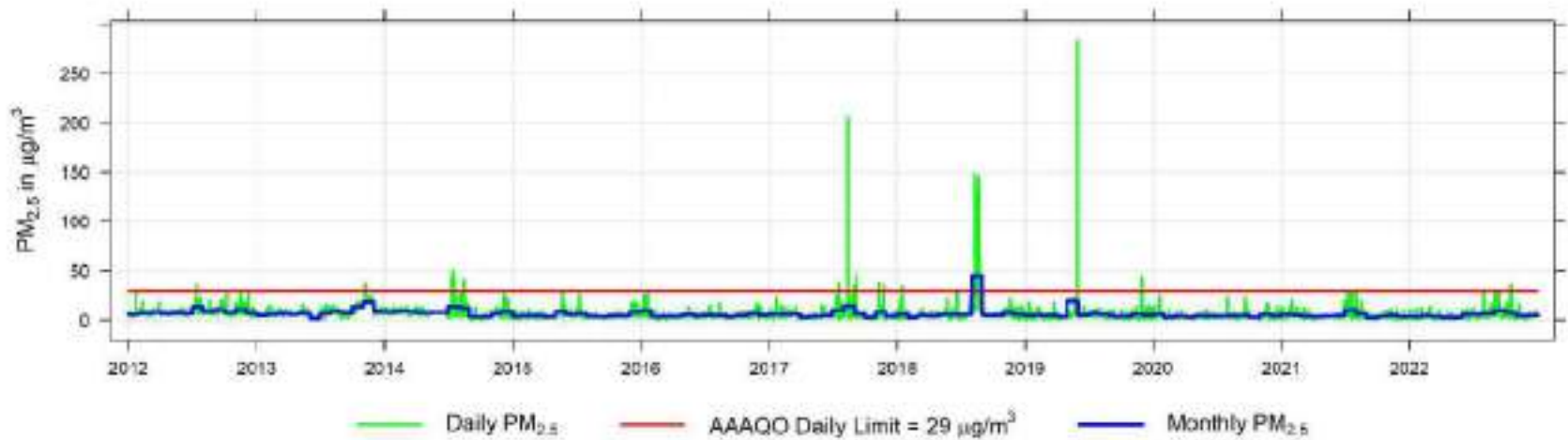
Years 2012 to 2022 Concentration Readings of O₃ (in ppb) at Beaverlodge



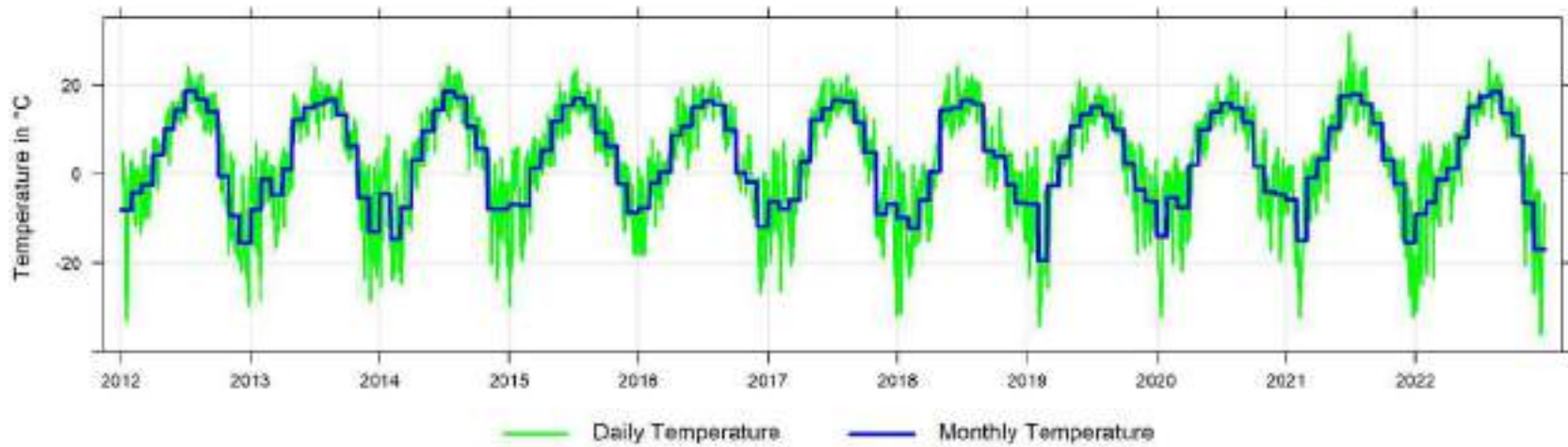
2012 to 2022 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



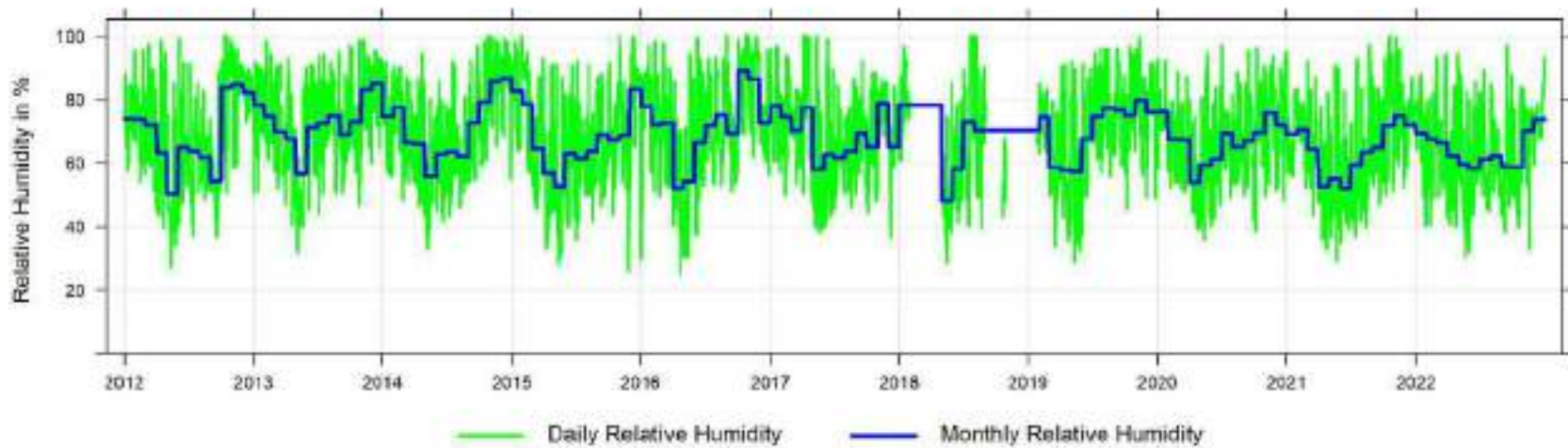
Years 2012 to 2022 Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Beaverlodge



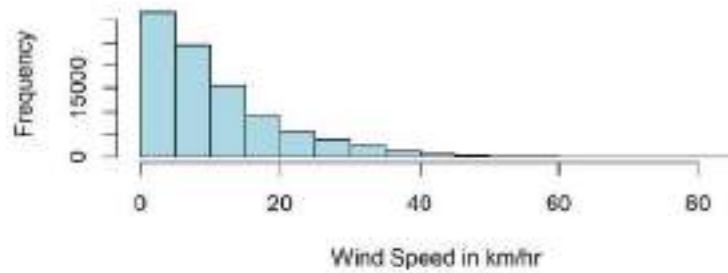
Years 2012 to 2022 Temperature Readings (in °C) at Beaverlodge



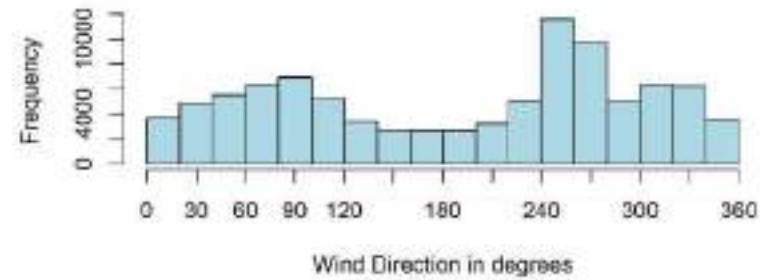
Years 2012 to 2022 Relative Humidity Readings (in %) at Beaverlodge



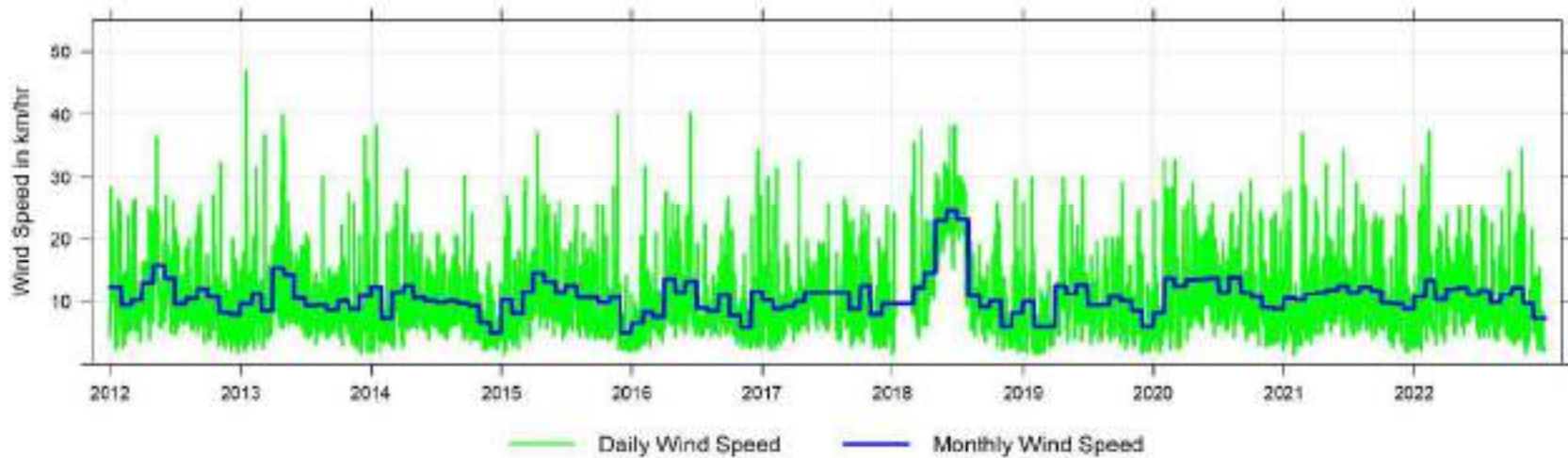
Years 2012 to 2022 Wind Speed Histogram

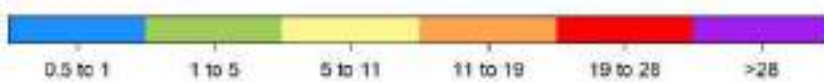
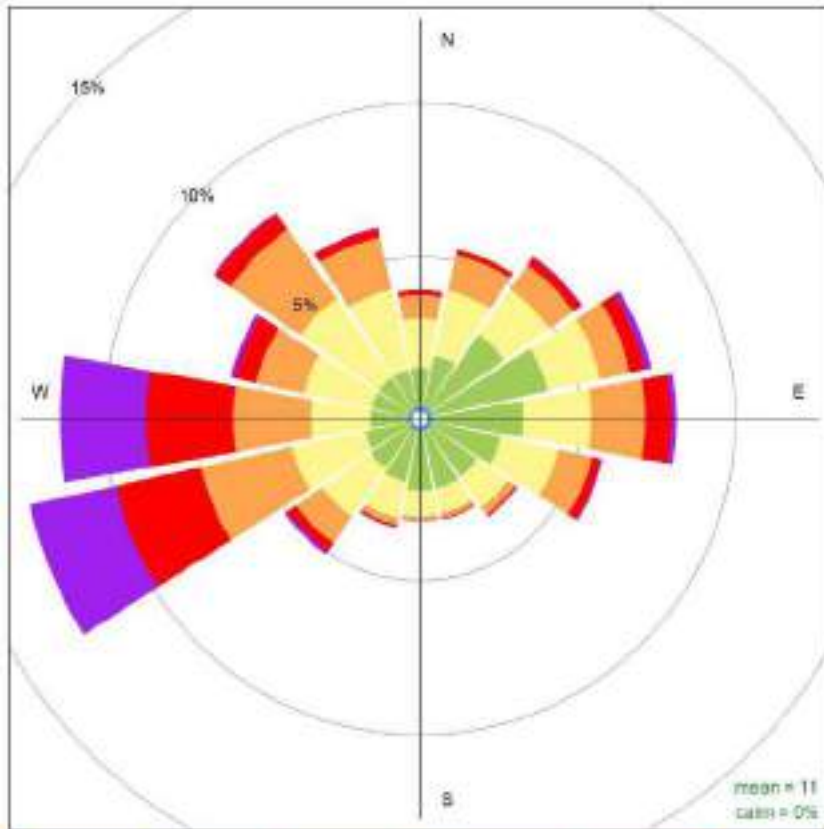


Years 2012 to 2022 Wind Direction Histogram

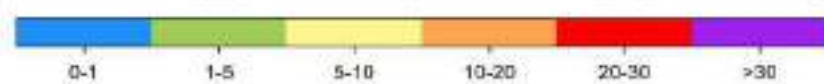
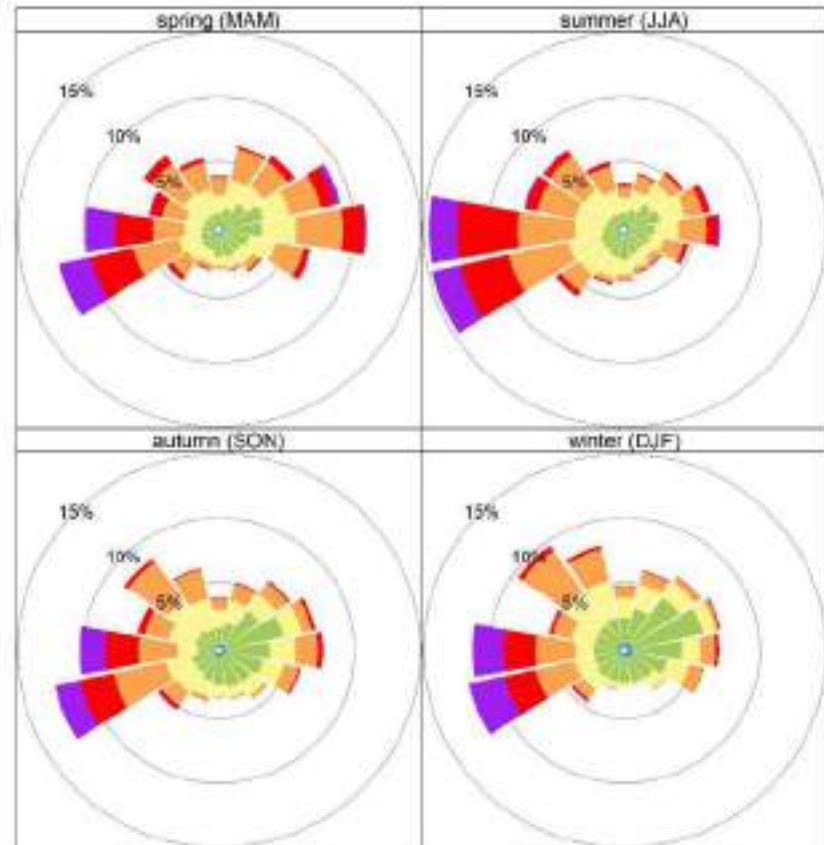


Years 2012 to 2022 Wind Speed Readings (in km/hr) at Beaverlodge





Beaverlodge 2012 to 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)



Beaverlodge 2012 to 2022 Seasonal Wind Rose, wind speed in km/hr

4 Donnelly Key Parameters - Continuous Monitoring Data - 2022 Summary

Donnelly Key Parameters - Continuous Monitoring Data - 2022 Summary

Donnelly Station	Parameter	Average	Maximum Values				Operational Time (%)	Valid Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date			1-hr	24-hr	30-d	Annual
			Sulphur Dioxide SO ₂ measured in ppb	0.2	1.8	Dec 14			11.2	Dec 14 15:00	99.4%	94.7%
Hydrogen Sulphide H ₂ S measured in ppb	0.1	0.5	Jul 31	3.2	Aug 11 21:00	99.5%	94.7%	0	0	-	-	

2022 Daily Concentration Readings at Donnelly



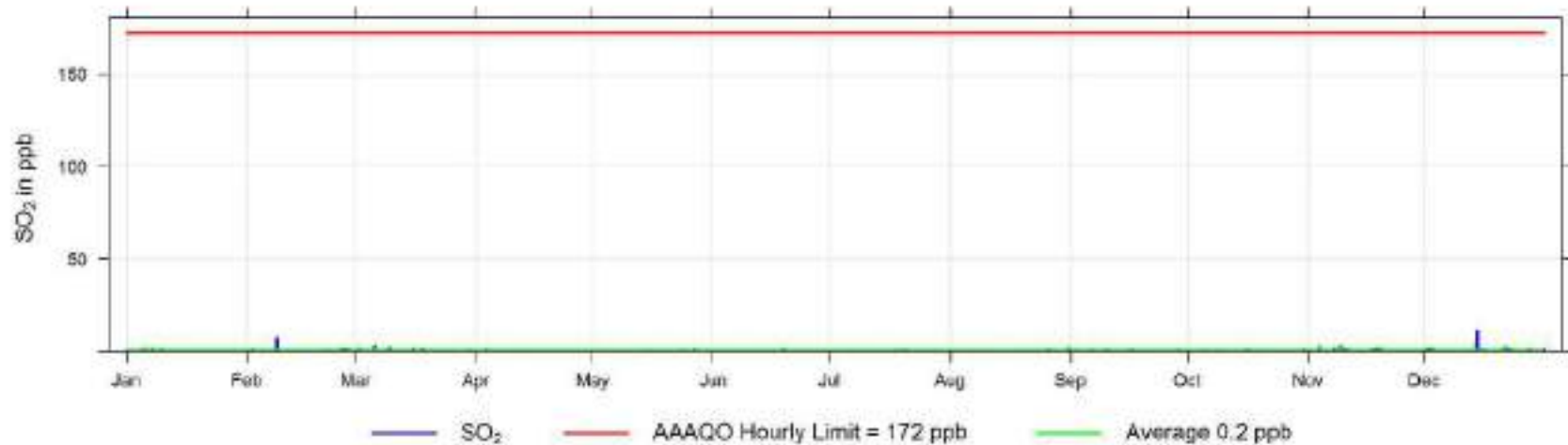
4.1 Sulphur Dioxide (SO₂) - Donnelly 2022 Summary

Sulphur Dioxide (SO₂) Frequency Distribution at Donnelly

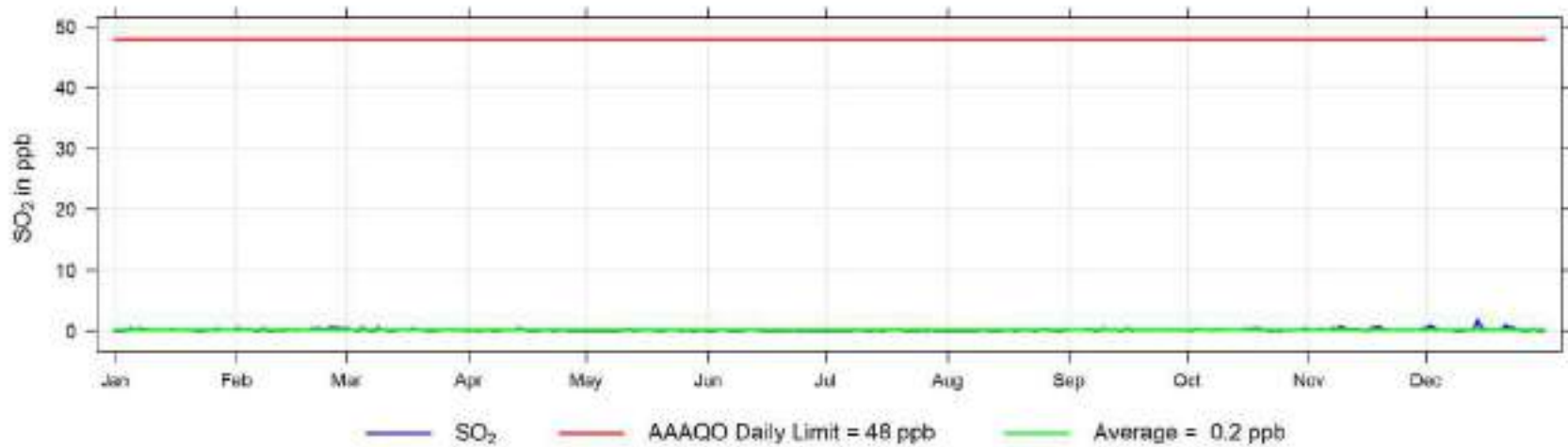
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents			
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 17 (ppb)	17 to 172 (ppb)	> 172 (ppb)			Date	1-hr (ppb)			Date	30-d 11 ppb	24-hr 48 ppb	1-hr 172 ppb
January 2022	707	89.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Jan 07	1.7	Jan 07 14:00	99.6%	95.0%	0	0	0
February 2022	633	89.1%	0.8%	0.2%	0.0%	0.0%	0.0%	0.2	0.7	Feb 25	7.4	Feb 08 19:00	99.0%	94.2%	0	0	0
March 2022	703	88.4%	1.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.7	Mar 09	1.4	Mar 05 18:00	99.2%	94.0%	0	0	0
April 2022	677	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.4	Apr 14	0.8	Apr 03 17:00	98.9%	94.0%	0	0	0
May 2022	706	89.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	May 24	1.2	May 27 11:00	99.6%	94.6%	0	0	0
June 2022	686	89.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Jun 12	1.4	Jun 19 08:00	100.0%	95.3%	0	0	0
July 2022	708	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Jul 28	0.9	Jul 18 04:00	100.0%	95.2%	0	0	0
August 2022	709	89.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Aug 31	1.8	Aug 31 10:00	100.0%	95.2%	0	0	0
September 2022	686	89.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Sep 10	1.1	Sep 20 12:00	100.0%	95.3%	0	0	0
October 2022	692	89.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Oct 18	1.1	Oct 30 20:00	97.5%	93.0%	0	0	0
November 2022	685	87.4%	1.6%	0.0%	0.0%	0.0%	0.0%	0.3	0.7	Nov 19	1.0	Nov 09 06:00	99.9%	95.1%	0	0	0
December 2022	706	86.6%	2.8%	0.4%	0.1%	0.0%	0.0%	0.3	1.8	Dec 14	11.2	Dec 14 15:00	99.6%	94.9%	0	0	0
Annual	6298	89.1%	0.9%	0.0%	0.0%	0.0%	0.0%	0.2	1.8	Dec 14	11.2	Dec 14 15:00	99.4%	94.7%	0	0	0

AAAQO Objectives: Annual: Resp, 30-Day: 11ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

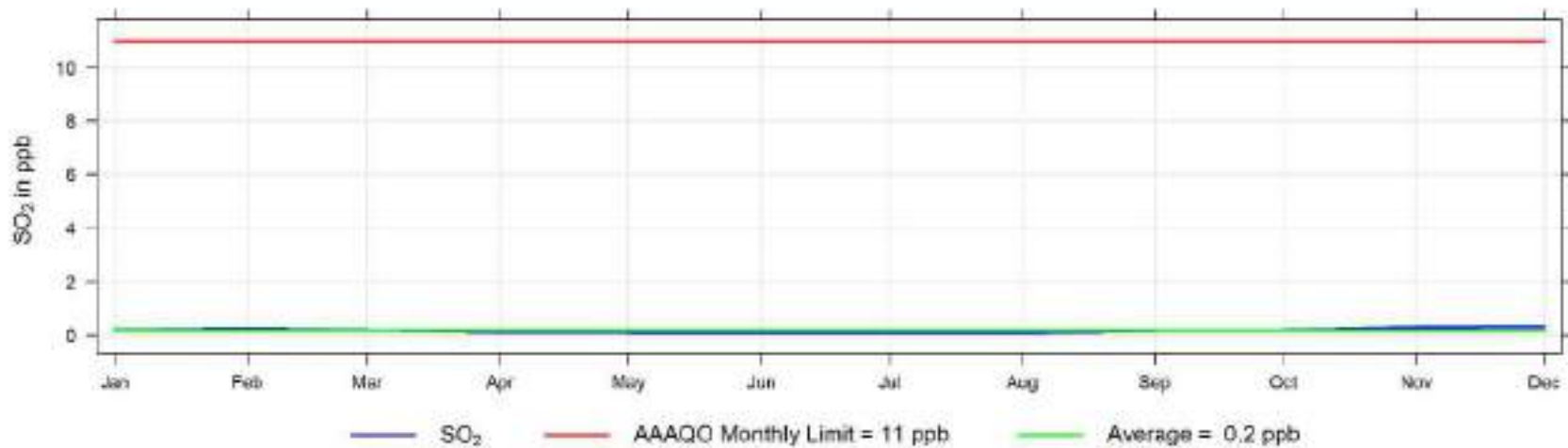
2022 Hourly Concentration Readings of SO₂ (in ppb) at Donnelly



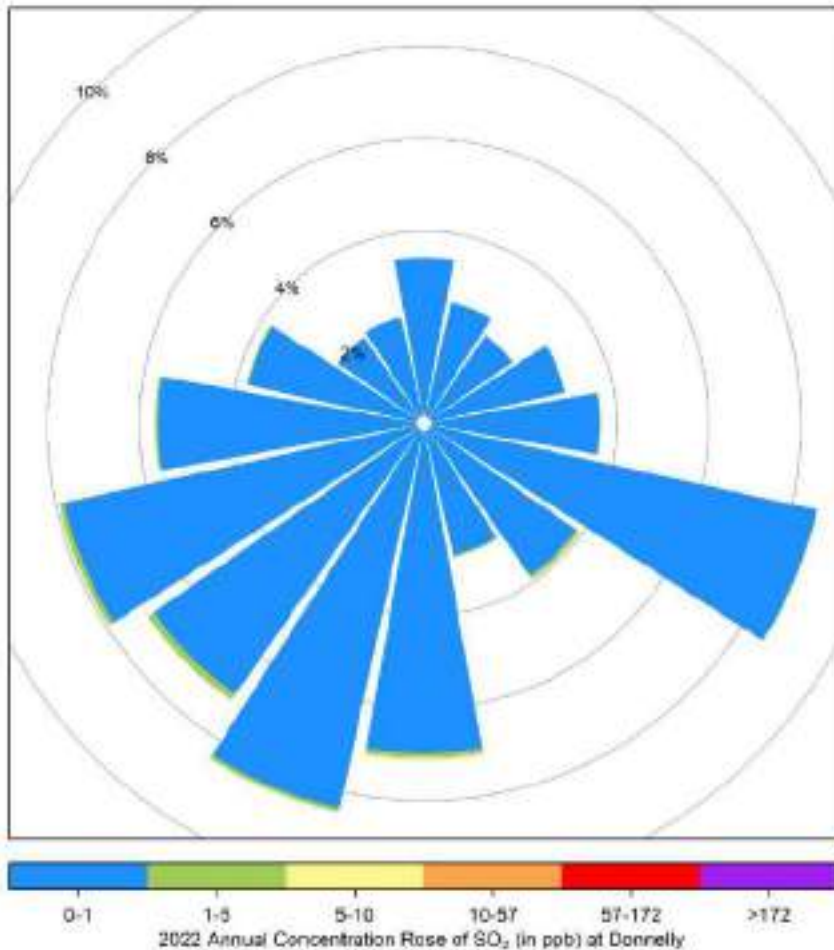
2022 Daily Concentration Readings of SO₂ (in ppb) at Donnelly



2022 Monthly Concentration Readings of SO₂ (in ppb) at Donnelly



Hourly Maximum SO₂ (in ppb) for 2022 at Donnelly



January-2022	February-2022	March-2022
24 25 26 29 30 31 1	30 31 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	31 29 28 27 26 25 24	29 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
28 27 26 25 24 23 22	3 1 2 3 4 5 6	29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
25 26 27 28 29 30 31	30 31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

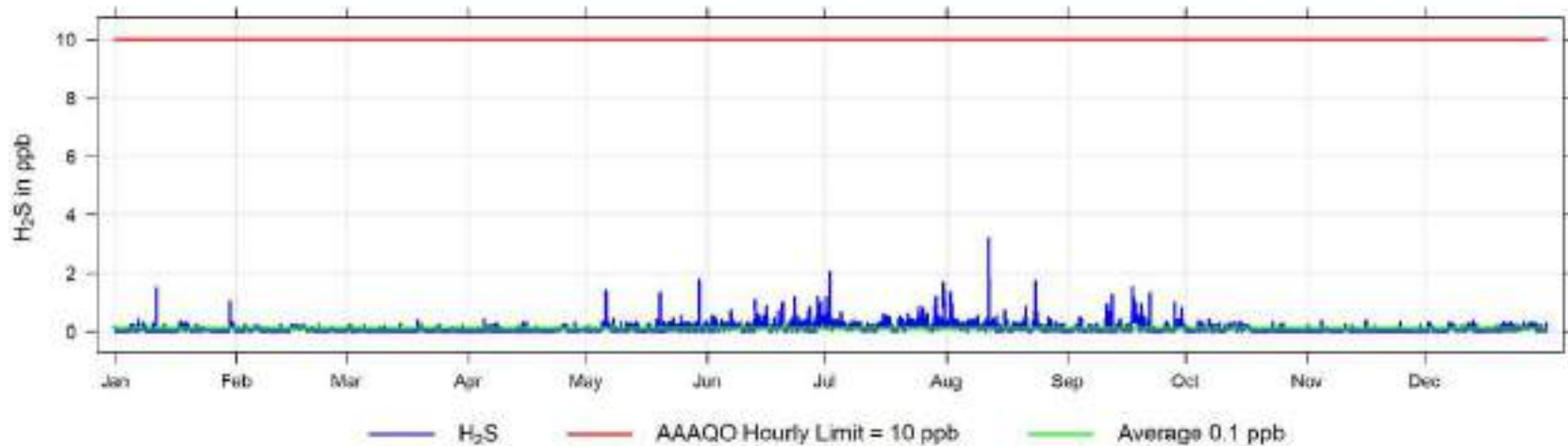
4.2 Hydrogen Sulphide (H₂S) - Donnelly 2022 Summary

Hydrogen Sulphide (H₂S) Frequency Distribution at Donnelly

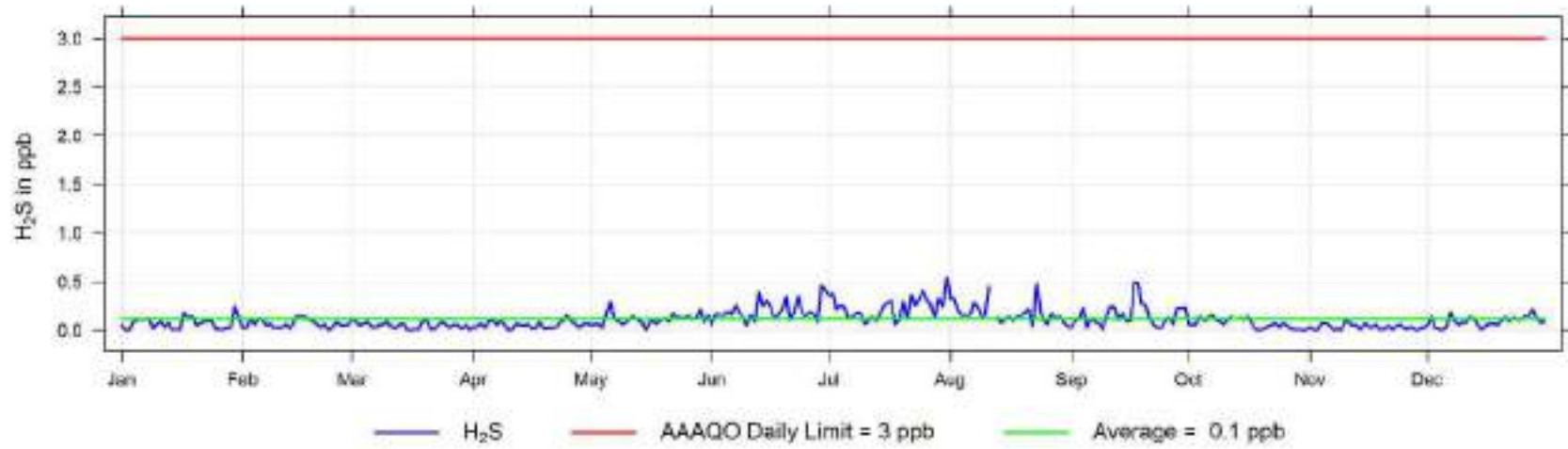
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)			Date	1-hr (ppb)			Date	24-hr 3 ppb	1-hr 10 ppb
January 2022	700	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Jan 30	1.5	Jan 11 12:00	98.7%	94.1%	0	0
February 2022	633	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Feb 15	0.3	Feb 22 04:00	99.0%	94.2%	0	0
March 2022	703	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.1	Mar 01	0.4	Mar 19 08:00	99.2%	94.5%	0	0
April 2022	678	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Apr 25	0.4	Apr 05 03:00	98.9%	94.2%	0	0
May 2022	706	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	May 06	1.3	May 29 22:00	99.6%	94.9%	0	0
June 2022	685	99.1%	0.9%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Jun 29	1.2	Jun 29 04:00	100.0%	95.1%	0	0
July 2022	709	98.9%	1.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Jul 31	2.0	Jul 02 04:00	100.0%	95.3%	0	0
August 2022	705	99.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.2	0.5	Aug 23	3.2	Aug 11 21:00	100.0%	94.8%	0	0
September 2022	686	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Sep 17	1.5	Sep 17 10:00	100.0%	95.3%	0	0
October 2022	702	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Oct 07	0.4	Oct 06 23:00	99.1%	94.4%	0	0
November 2022	684	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.1	Nov 10	0.4	Nov 15 23:00	99.9%	95.0%	0	0
December 2022	706	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Dec 28	0.4	Dec 13 11:00	99.6%	94.9%	0	0
Annual	8297	99.6%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1	0.5	MAXIMUM VALUES		99.5%	94.7%	0	0	

AAAQO Objectives: 24-Hr: 3ppb, 1-Hr: 10ppb

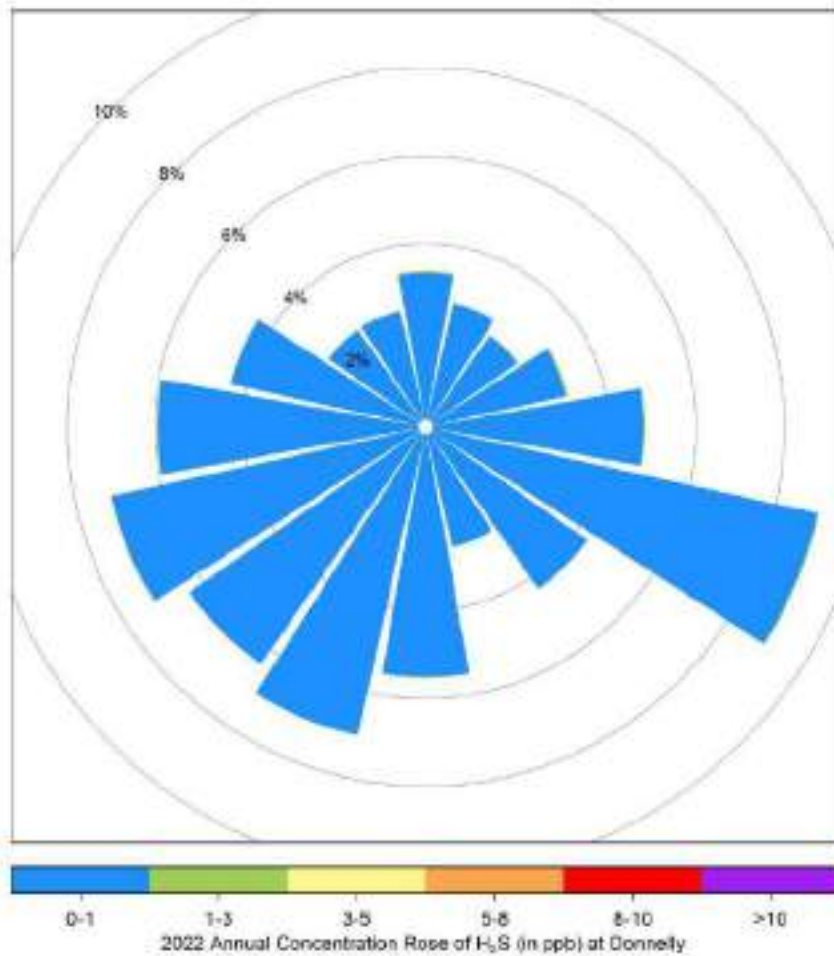
2022 Hourly Concentration Readings of H₂S (in ppb) at Donnelly



2022 Daily Concentration Readings of H₂S (in ppb) at Donnelly



Hourly Maximum H₂S (in ppb) for 2022 at Donnelly



January-2022	February-2022	March-2022
26 27 28 29 30 31 1	30 31 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	31 28 29 30 31 1 2	30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
28 29 30 31 1 2	1 2 3 4 5 6	28 29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
29 30 31 1 2 3 4 5	30 31 1 2 3 4 5	27 28 29 30 1 2 3
6 7 8 9 10 11 12	6 7 8 9 10 11 12	4 5 6 7 8 9 10
13 14 15 16 17 18 19	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

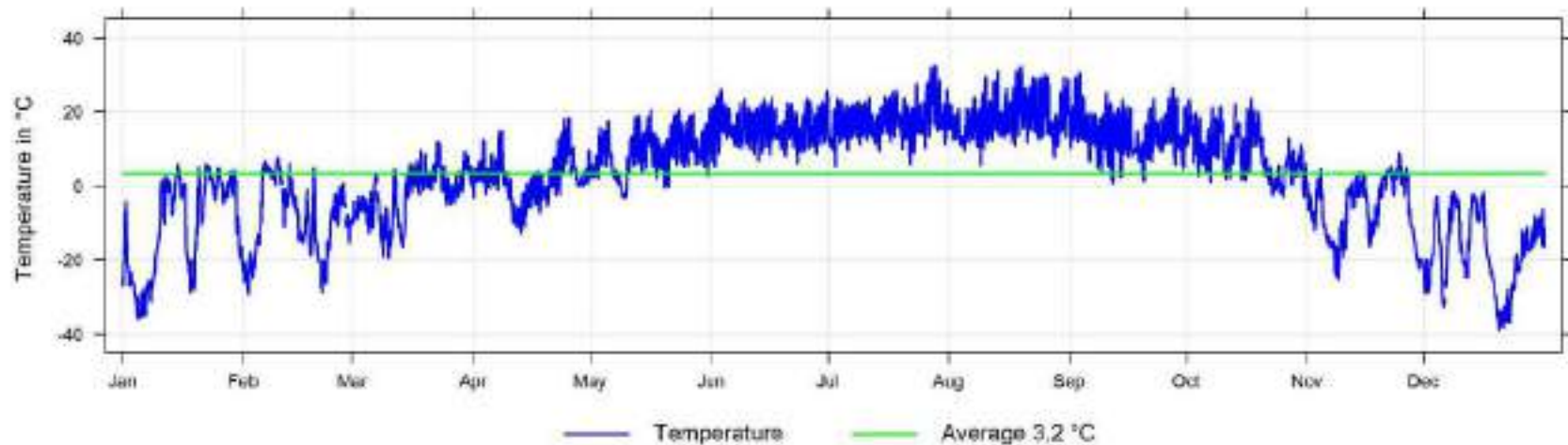


4.3 Temperature (ET) - Donnelly 2022 Summary

Temperature (ET) Frequency Distribution at Donnelly

Month	Valid Hours	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)	Valid time (%)	
			24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date			
January 2022	741	-11.0	3.1	Jan 15	5.9	Jan 22 15:00	-32.6	Jan 05	-36.2	Jan 04 23:00	99.6%	99.6%	
February 2022	665	-9.2	5.2	Feb 06	7.7	Feb 09 23:00	-24.9	Feb 21	-29.4	Feb 02 09:00	99.0%	99.0%	
March 2022	738	-2.4	6.5	Mar 22	11.9	Mar 22 18:00	-14.4	Mar 10	-19.6	Mar 10 08:00	99.2%	99.2%	
April 2022	712	1.6	11.9	Apr 25	18.3	Apr 25 16:00	-9.0	Apr 12	-13.0	Apr 13 06:00	98.9%	98.9%	
May 2022	741	9.0	14.1	May 23	20.7	May 31 19:00	-2.2	May 09	-3.5	May 10 04:00	99.6%	99.6%	
June 2022	718	15.8	19.2	Jun 30	25.9	Jun 03 17:00	11.9	Jun 23	5.1	Jun 02 05:00	100.0%	99.7%	
July 2022	744	17.9	25.2	Jul 28	32.5	Jul 28 16:00	12.2	Jul 01	5.2	Jul 03 04:00	100.0%	100.0%	
August 2022	744	18.6	23.5	Aug 19	32.2	Aug 19 18:00	11.9	Aug 04	5.5	Aug 09 05:00	100.0%	100.0%	
September 2022	720	13.8	20.2	Sep 03	30.6	Sep 03 17:00	7.5	Sep 19	0.7	Sep 12 06:00	100.0%	100.0%	
October 2022	740	8.5	17.0	Oct 01	21.7	Oct 17 16:00	-1.2	Oct 25	-3.4	Oct 25 20:00	99.5%	99.5%	
November 2022	719	-6.7	5.5	Nov 24	9.0	Nov 24 16:00	-21.3	Nov 08	-25.1	Nov 09 00:00	99.9%	99.9%	
December 2022	741	-18.1	-4.7	Dec 09	-1.4	Dec 08 16:00	-36.5	Dec 20	-38.9	Dec 20 10:00	99.6%	99.6%	
		AVERAGE	MAXIMUM VALUES				MINIMUM VALUES						
		8723	3.2	25.2	Jul 28	32.5	Jul 28 16:00	-36.5	Dec 20	-38.9	Dec 20 10:00	99.6%	99.6%

2022 Hourly Temperature Readings (in °C) at Donnelly

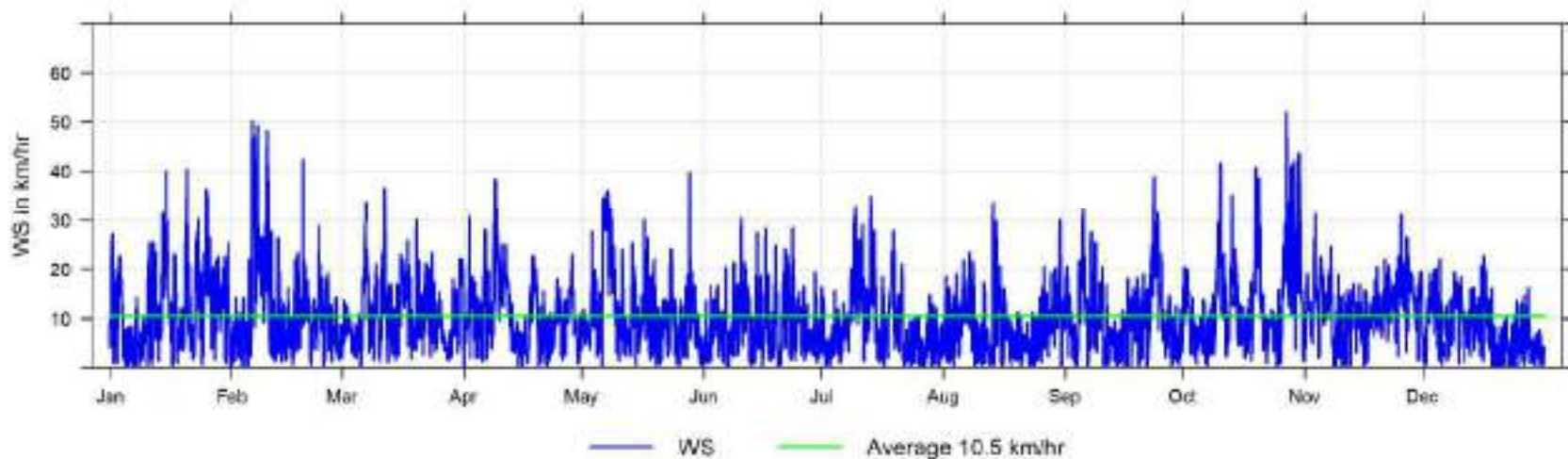


4.4 Wind Speed and Wind Direction (WS and WD) - Donnelly 2022 Summary

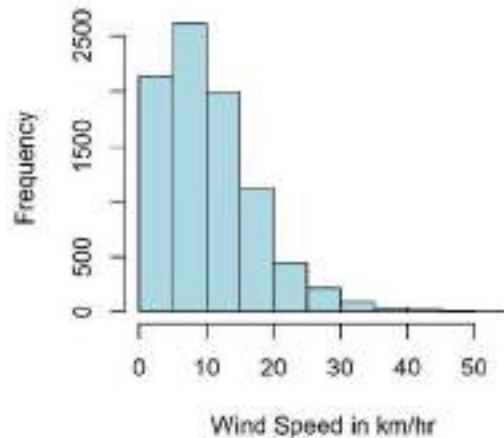
Wind Speed Frequency Distribution at Donnelly

Month	Valid Hours	Calm	% of Readings in Concentration Range					Monthly Average (km/hr)	24-hr (km/hr)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	
			0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)			Date	1-hr Date			
January 2022	737	2.7%	20.6%	28.6%	26.9%	17.4%	3.8%	12.0	25.3	Jan 15	40.3	Jan 20 15:00	99.1%	99.1%
February 2022	665	0.6%	21.1%	36.5%	23.5%	10.7%	7.5%	12.2	34.1	Feb 06	50.1	Feb 06 05:00	99.0%	99.0%
March 2022	738	0.3%	19.4%	35.9%	32.5%	10.6%	1.4%	11.0	18.3	Mar 11	36.5	Mar 11 23:00	99.2%	99.2%
April 2022	712	0.7%	21.5%	36.7%	29.1%	10.3%	1.8%	10.8	23.2	Apr 09	38.2	Apr 09 01:00	98.9%	98.9%
May 2022	741	0.8%	19.4%	40.5%	26.6%	6.7%	5.9%	11.0	30.0	May 07	39.6	May 28 13:00	99.6%	99.6%
June 2022	718	1.8%	28.7%	38.7%	25.6%	4.5%	0.7%	8.8	18.2	Jun 10	30.5	Jun 10 17:00	100.0%	99.7%
July 2022	744	4.2%	30.8%	34.7%	21.1%	6.9%	2.4%	8.8	22.4	Jul 09	34.8	Jul 13 16:00	100.0%	100.0%
August 2022	764	2.3%	28.9%	39.9%	24.2%	3.8%	0.9%	8.5	17.1	Aug 30	33.5	Aug 13 20:00	100.0%	100.0%
September 2022	720	2.9%	23.3%	34.9%	28.3%	7.9%	2.6%	10.2	26.3	Sep 23	38.8	Sep 23 16:00	100.0%	100.0%
October 2022	726	0.6%	16.0%	31.8%	30.2%	13.1%	8.4%	13.3	29.5	Oct 27	52.0	Oct 27 12:00	97.6%	97.6%
November 2022	719	1.1%	10.4%	27.4%	51.5%	8.9%	0.7%	12.2	19.8	Nov 25	31.3	Nov 03 19:00	99.9%	99.9%
December 2022	741	5.0%	31.0%	36.3%	25.2%	2.4%	0.0%	7.8	15.6	Dec 09	22.8	Dec 16 14:00	99.6%	99.6%
Annual	8705	1.9%	22.6%	35.2%	28.7%	8.6%	3.0%	10.5	34.1	MAXIMUM VALUES		99.4%	99.4%	

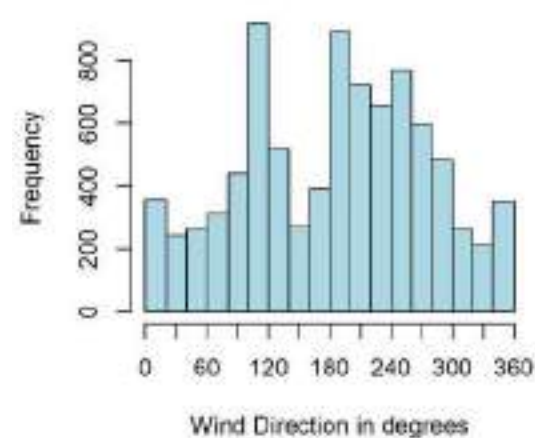
2022 Hourly Readings of Wind Speed (in km/hr) at Donnelly



2022 Wind Speed Histogram

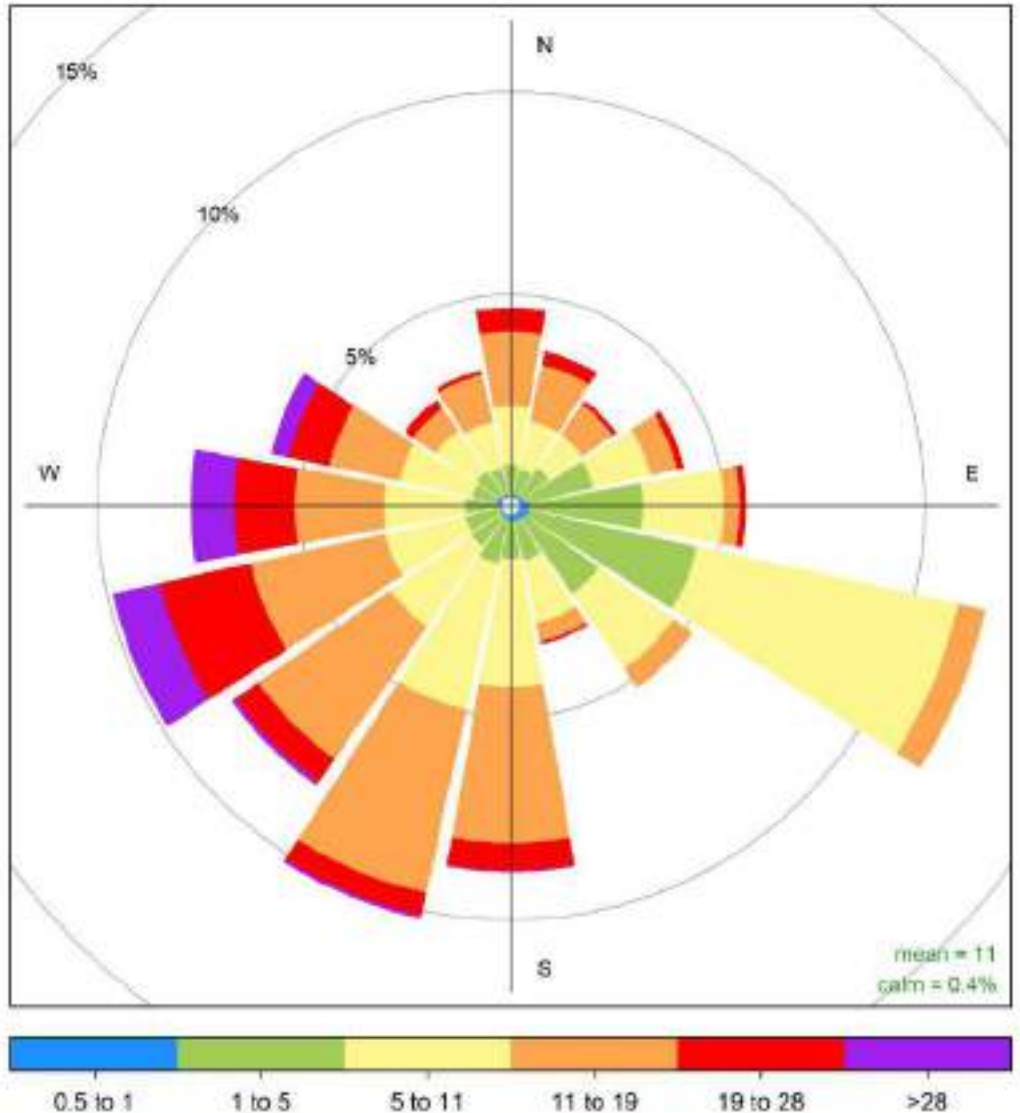


2022 Wind Direction Histogram



Wind Speed and Wind Direction Frequency Distribution at Donnelly

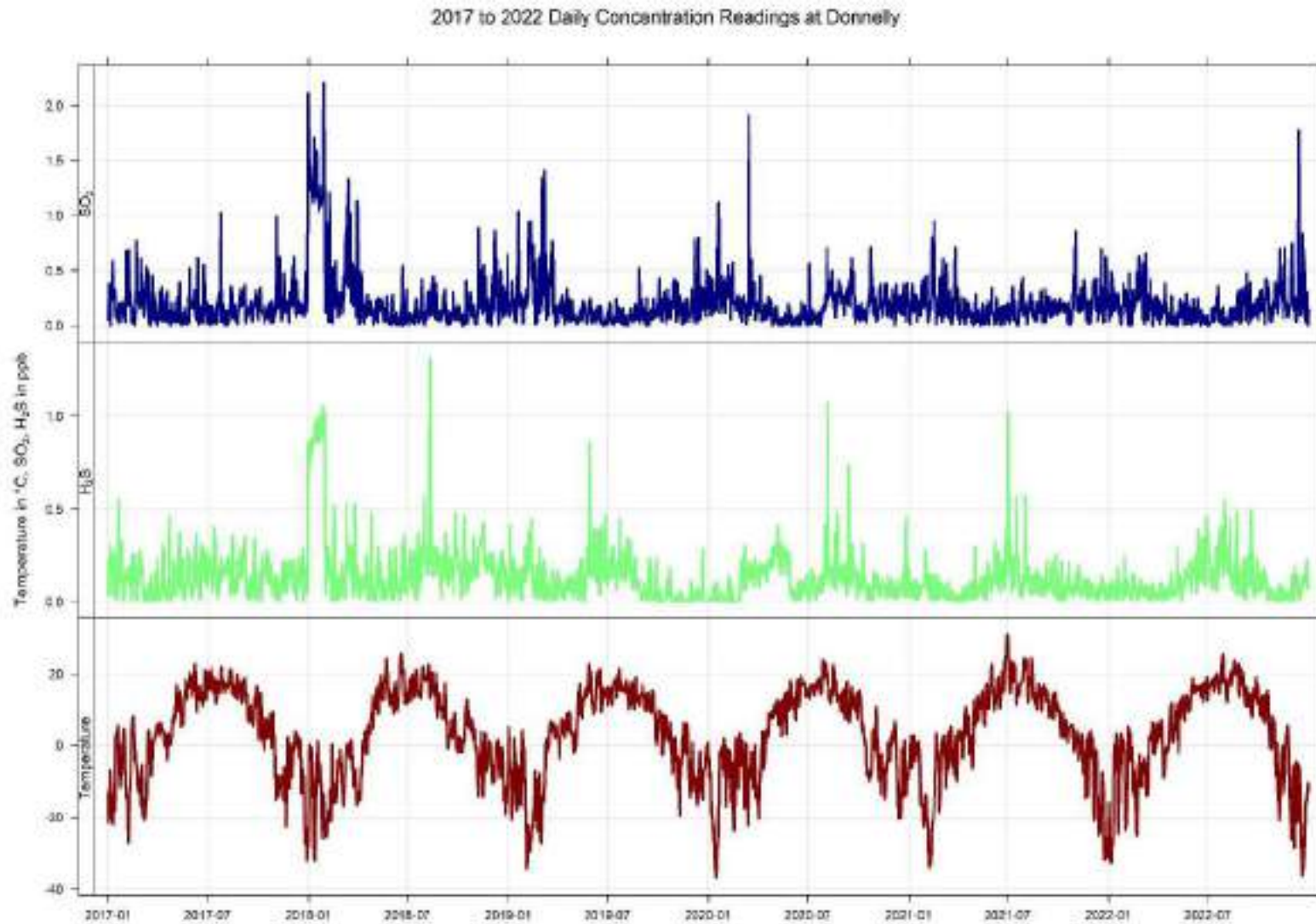
Direction	Number of Readings	% of wind speed range						Total %
		Calm (<0.5 (km/hr)	0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)	
N	446	0.4%	0.8%	1.4%	1.8%	0.6%	0.0%	5.1%
NNE	326	0.1%	0.7%	1.2%	1.4%	0.3%	0.0%	3.7%
NE	254	0.1%	0.9%	1.0%	0.9%	0.1%	0.0%	3.0%
ENE	367	0.1%	1.8%	1.0%	0.7%	0.2%	0.0%	4.2%
E	495	0.1%	3.0%	2.0%	0.4%	0.1%	0.0%	5.7%
ESE	1037	0.1%	4.5%	6.6%	0.7%	0.0%	0.0%	11.9%
SE	467	0.1%	2.4%	2.3%	0.8%	0.0%	0.0%	5.4%
SSE	298	0.1%	1.1%	1.6%	0.3%	0.1%	0.0%	3.4%
S	783	0.2%	1.1%	3.2%	3.9%	0.7%	0.0%	9.0%
SSW	899	0.1%	1.2%	3.7%	4.6%	0.6%	0.1%	10.3%
SW	726	0.1%	1.0%	2.4%	4.0%	0.7%	0.1%	8.3%
WSW	861	0.0%	0.9%	2.0%	3.4%	2.3%	1.2%	9.8%
W	675	0.1%	0.9%	2.0%	2.2%	1.5%	1.1%	7.8%
WNW	513	0.1%	0.7%	1.9%	1.8%	1.0%	0.4%	5.9%
NW	255	0.1%	0.8%	1.2%	0.7%	0.3%	0.0%	3.0%
MNW	283	0.1%	0.7%	1.2%	1.2%	0.1%	0.0%	3.3%
Total	8705	1.9%	22.6%	95.2%	28.7%	8.6%	3.0%	100.0%



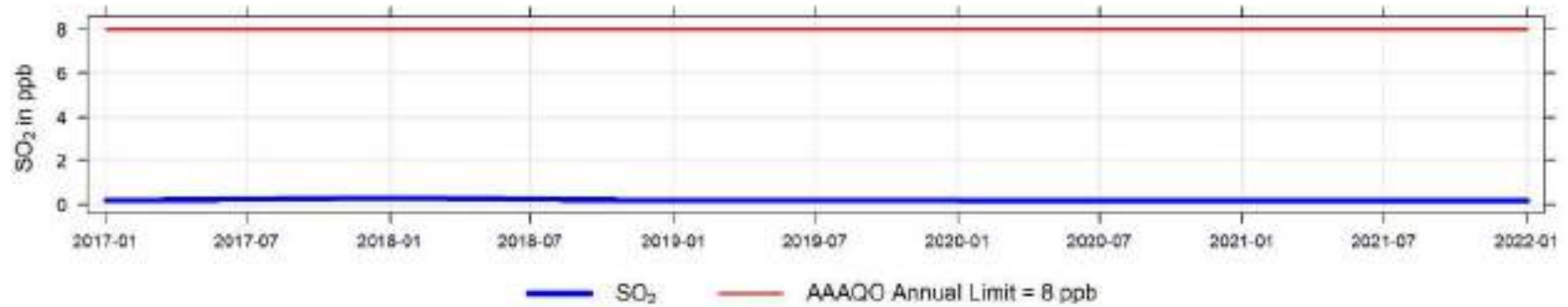
Donnelly 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

4.5 Donnelly Annual Trends, 2017 to 2022

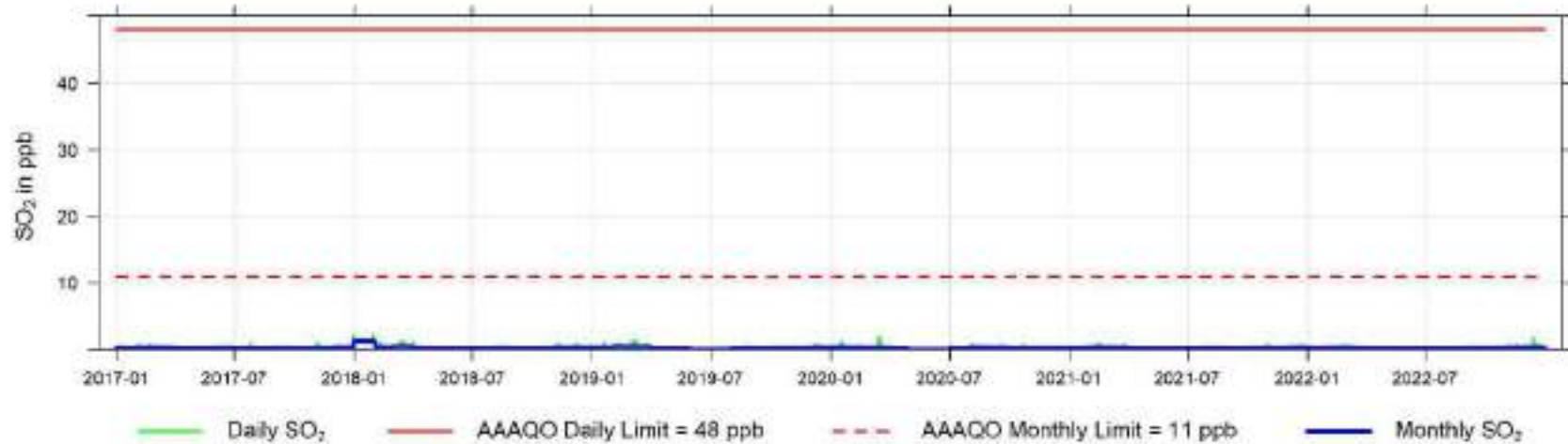
The following pages include historical annual charts collected between 2017 and 2022 at the Donnelly Station.



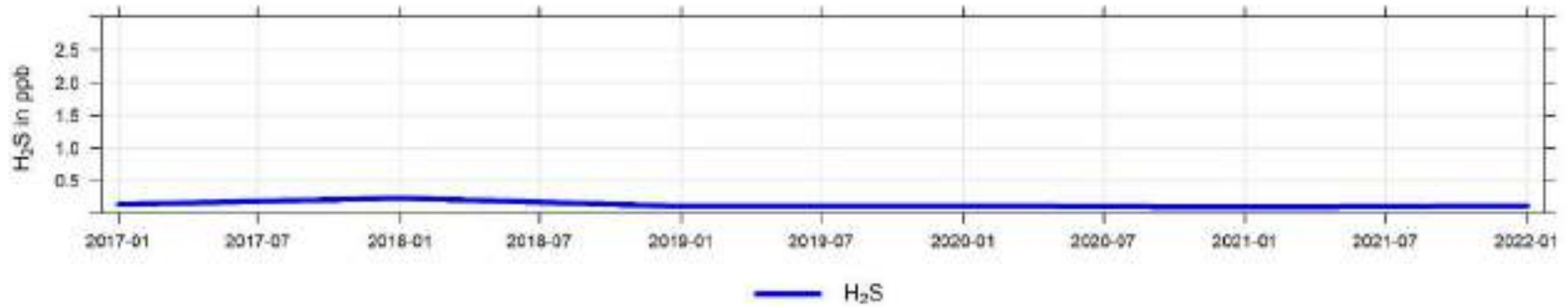
Years 2017 to 2022 Annual Concentration Readings of SO₂ (in ppb) at Donnelly



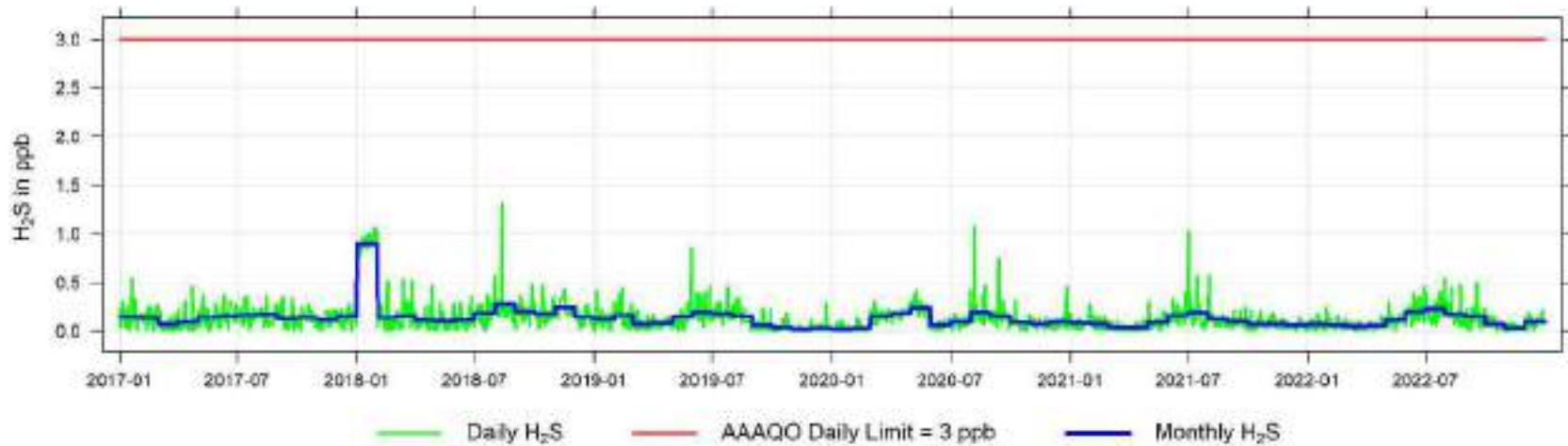
Years 2017 to 2022 Concentration Readings of SO₂ (in ppb) at Donnelly



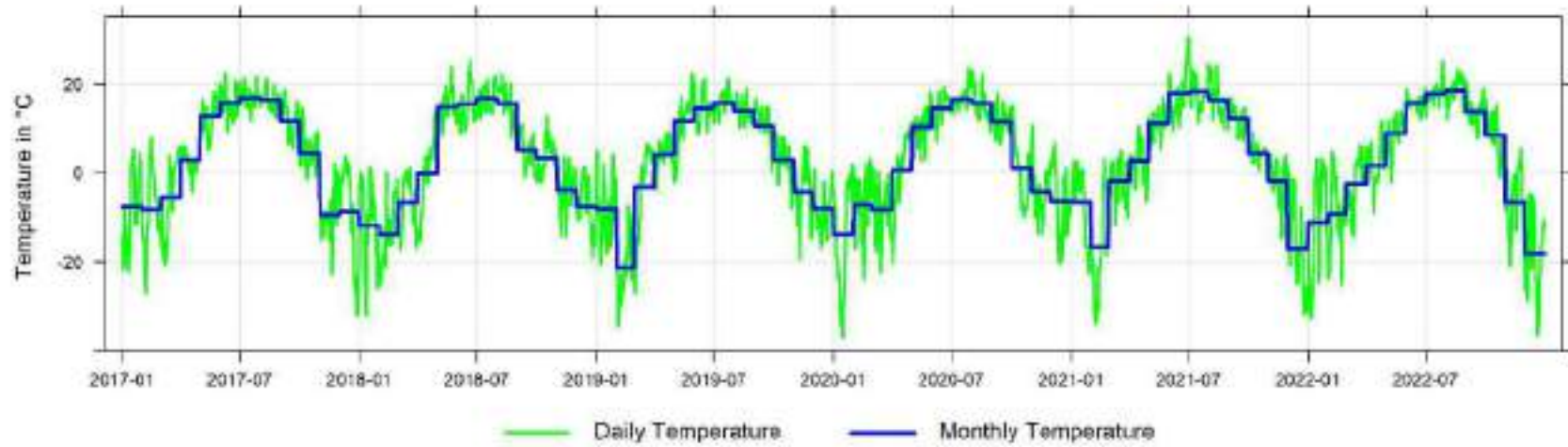
Years 2017 to 2022 Annual Concentration Readings of H₂S (in ppb) at Donnelly



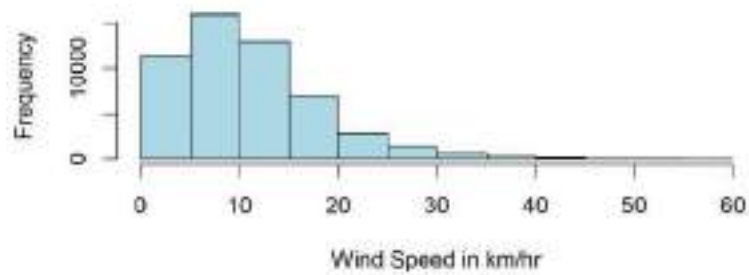
Years 2017 to 2022 Concentration Readings of H₂S (in ppb) at Donnelly



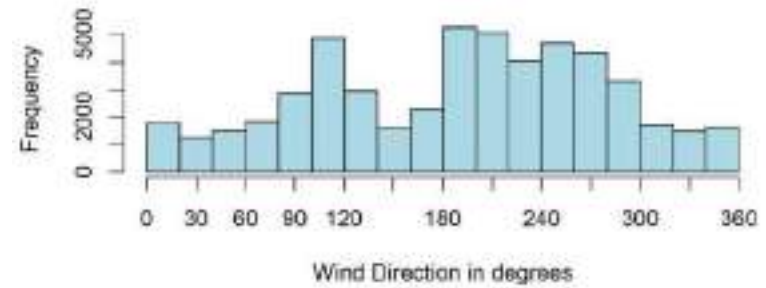
Years 2017 to 2022 Temperature Readings (in °C) at Donnelly



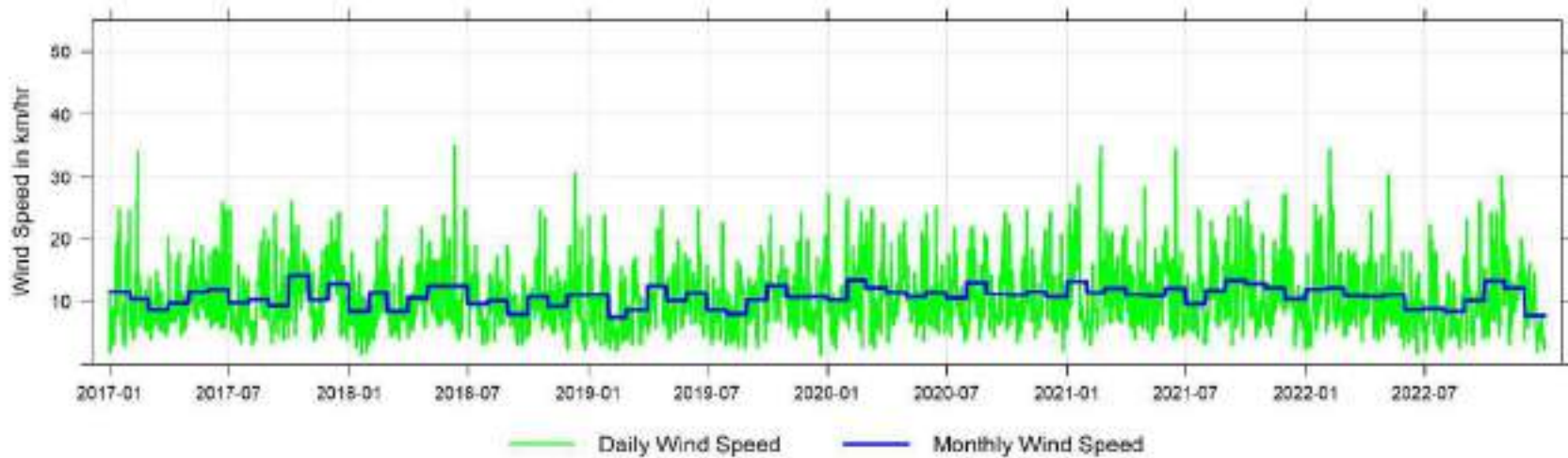
Years 2017 to 2022 Wind Speed Histogram

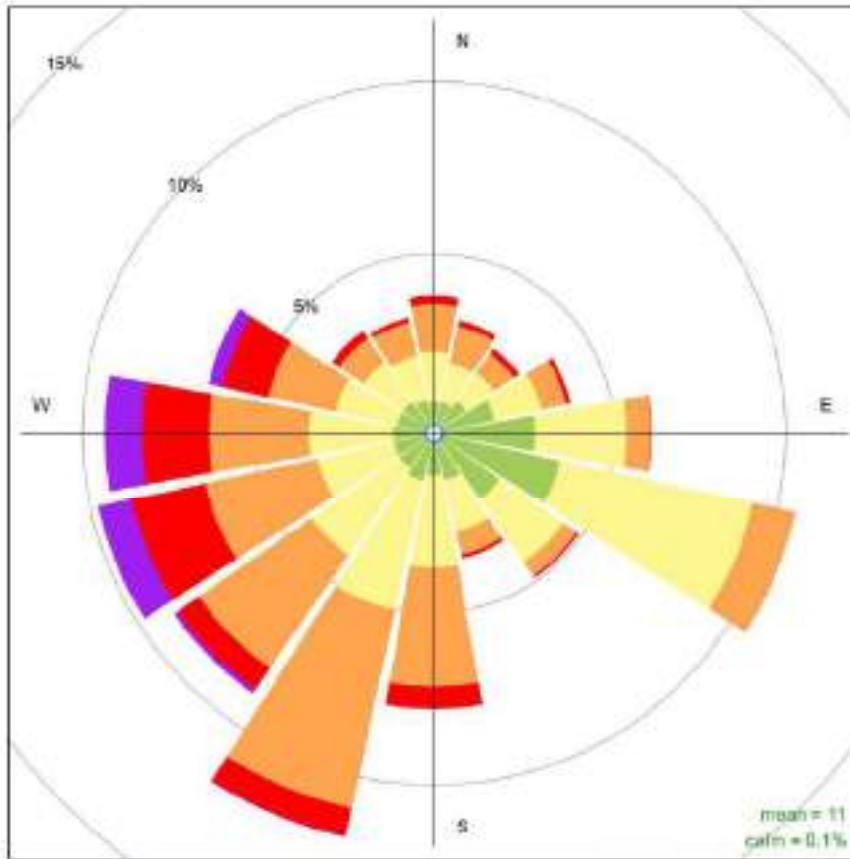


Years 2017 to 2022 Wind Direction Histogram

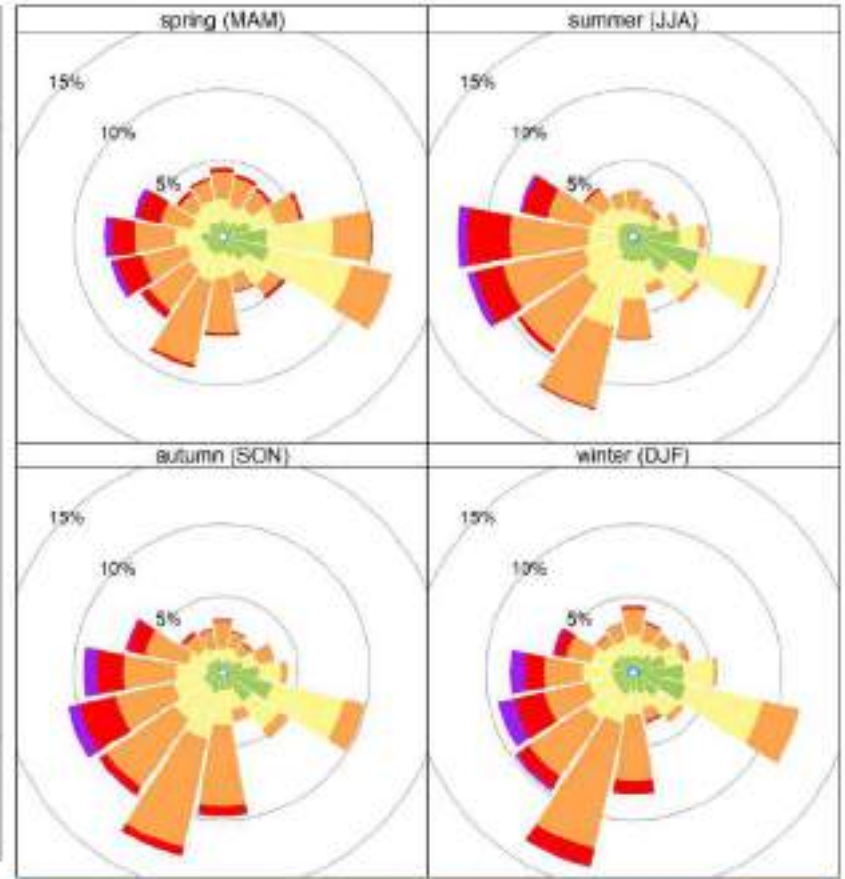


Years 2017 to 2022 Wind Speed Readings (in km/hr) at Donnelly





Donnelly 2017 to 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)



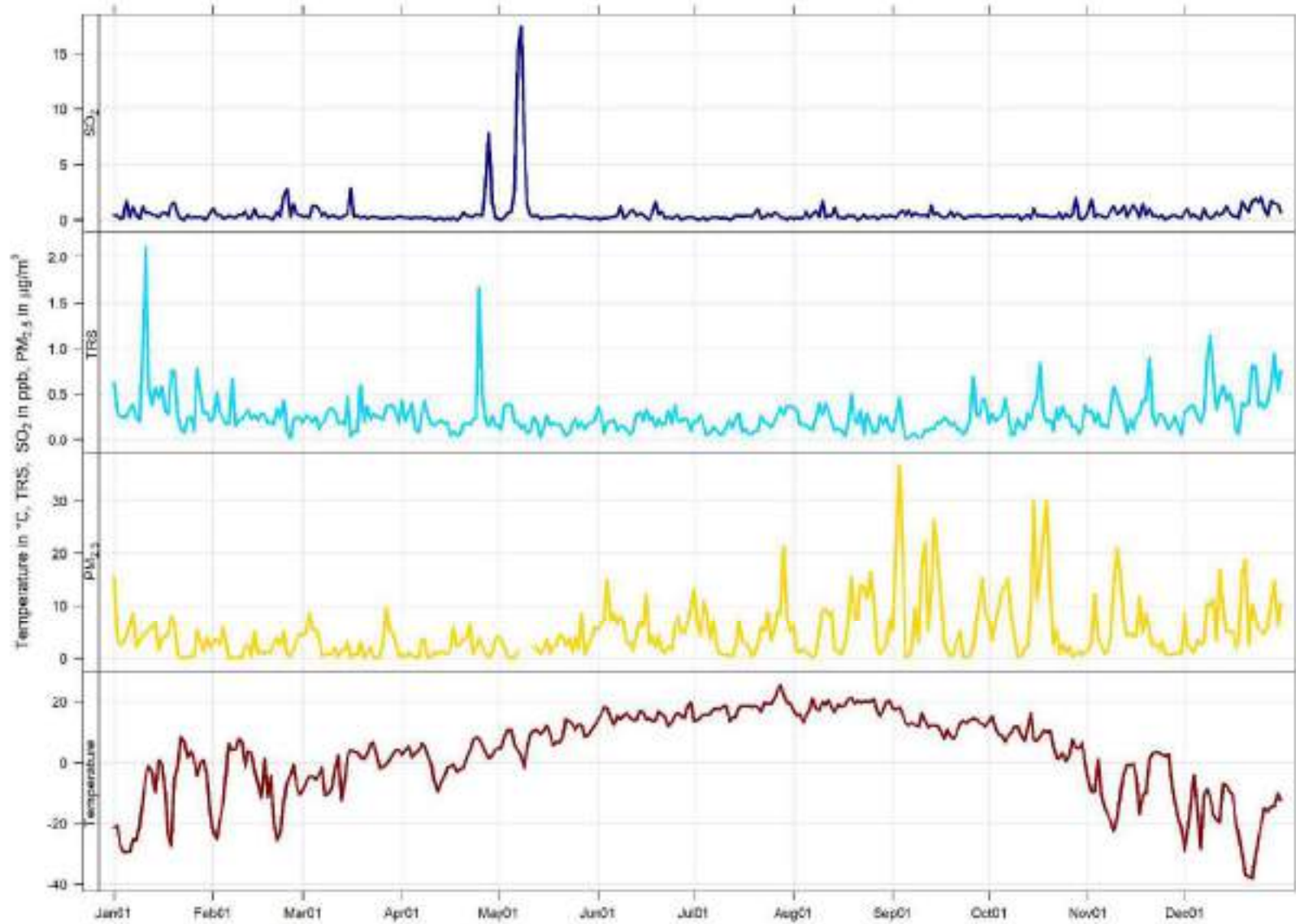
Donnelly 2017 to 2022 Seasonal Wind Rose, wind speed in km/hr

5 Dunes Key Parameters - Continuous Monitoring Data - 2022 Summary

Dunes Key Parameters - Continuous Monitoring Data - 2022 Summary

Dunes Station	Parameter	Average	Maximum Values				Operational Time (%)	Valid Time (%)	Readings above AAAQO & AAAQG			
			24-hr	Date	1-hr	Date			1-hr	24-hr	30-d	Annual
			Sulphur Dioxide SO ₂ measured in ppb	0.6	17.0	May 08			39.5	Feb 24 12:00	100.0%	95.2%
Total Reduced Sulphur TRS measured in ppb	0.3	2.0	Jan 11	7.2	Jan 11 05:00	99.9%	95.1%	0	0	-	-	
Particulate Matter PM _{2.5} measured in µg/m ³	4.8	37.6	Sep 03	171.2	Sep 02 21:00	97.7%	97.3%	9	3	-	-	

2022 Daily Concentration Readings at Dunes



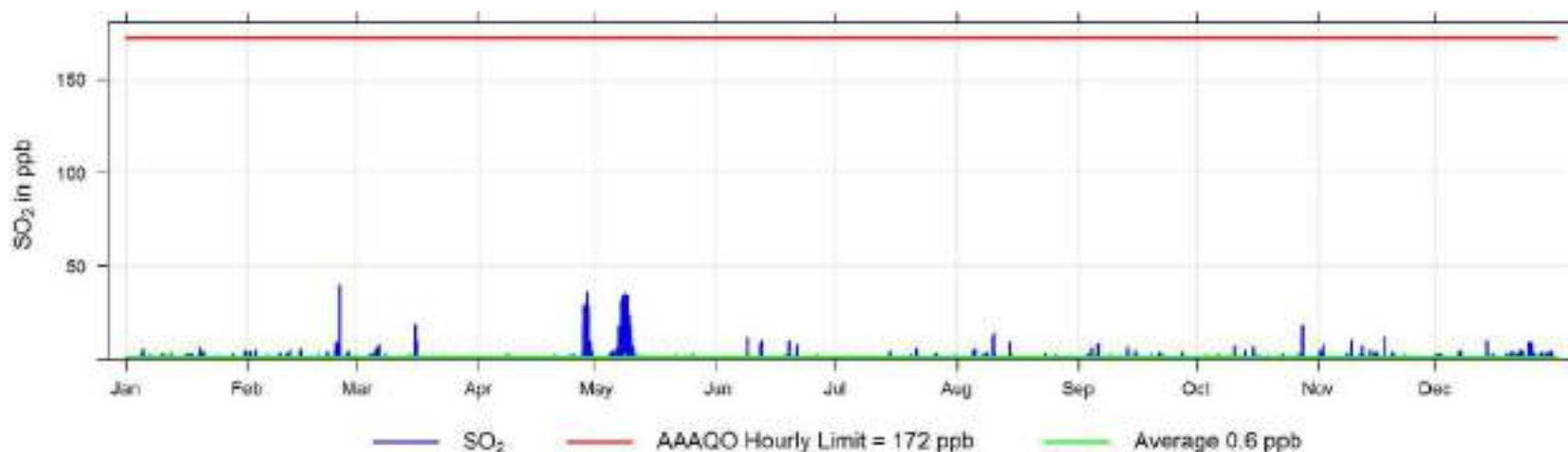
5.1 Sulphur Dioxide (SO₂) - Dunes 2022 Summary

Sulphur Dioxide (SO₂) Frequency Distribution at Dunes

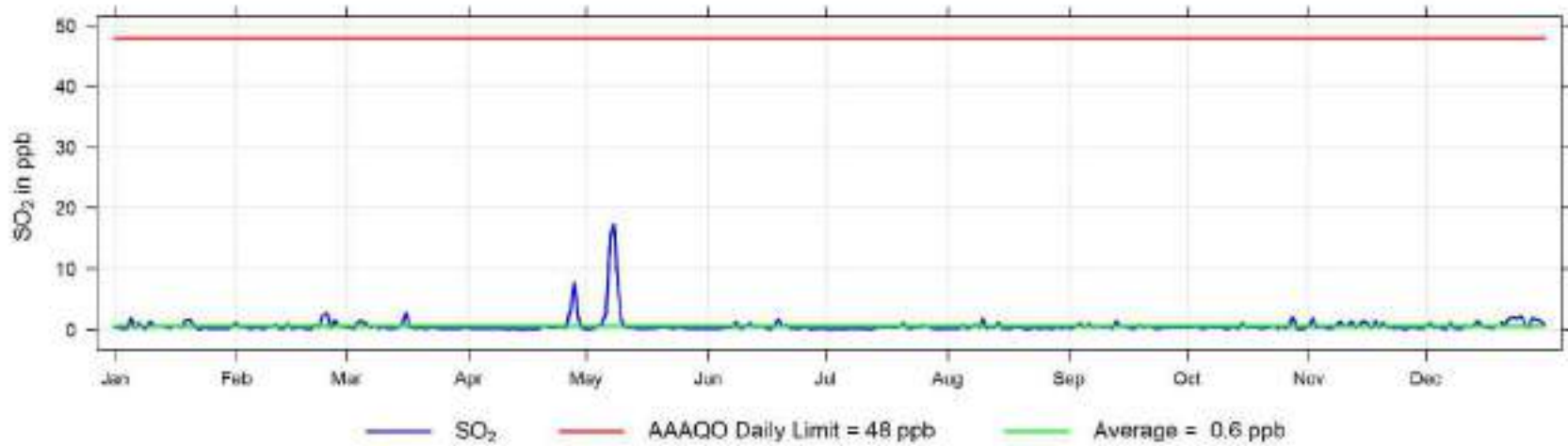
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents			
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)			Date	1-hr (ppb)			Date	30-d 11 ppb	24-hr 48 ppb	1-hr 172 ppb
January 2022	709	85.9%	13.7%	0.4%	0.0%	0.0%	0.0%	0.5	1.7	Jan 05	6.5	Jan 19 23:00	100.0%	95.3%	0	0	0
February 2022	640	88.9%	9.8%	1.1%	0.2%	0.0%	0.0%	0.6	2.8	Feb 24	39.5	Feb 24 12:00	100.0%	95.2%	0	0	0
March 2022	709	82.5%	6.1%	1.1%	0.2%	0.0%	0.0%	0.4	2.6	Mar 16	16.6	Mar 16 02:00	100.0%	95.3%	0	0	0
April 2022	685	84.5%	3.6%	0.9%	1.0%	0.0%	0.0%	0.6	7.8	Apr 28	36.0	Apr 28 18:00	100.0%	95.1%	0	0	0
May 2022	709	87.0%	6.3%	1.3%	5.4%	0.0%	0.0%	1.6	17.0	May 08	34.9	May 08 09:00	100.0%	95.3%	0	0	0
June 2022	685	84.5%	4.2%	1.2%	0.1%	0.0%	0.0%	0.4	1.6	Jun 19	11.4	Jun 08 17:00	100.0%	95.1%	0	0	0
July 2022	709	85.6%	4.1%	0.3%	0.0%	0.0%	0.0%	0.3	0.9	Jul 21	5.8	Jul 21 15:00	100.0%	95.3%	0	0	0
August 2022	709	84.8%	4.5%	0.4%	0.3%	0.0%	0.0%	0.3	1.7	Aug 10	13.4	Aug 10 12:00	100.0%	95.2%	0	0	0
September 2022	686	82.7%	6.9%	0.4%	0.0%	0.0%	0.0%	0.4	1.3	Sep 13	8.2	Sep 06 01:00	100.0%	95.3%	0	0	0
October 2022	708	82.7%	6.9%	0.3%	0.3%	0.0%	0.0%	0.4	1.9	Oct 28	17.7	Oct 28 06:00	99.9%	95.2%	0	0	0
November 2022	686	87.0%	12.0%	0.9%	0.1%	0.0%	0.0%	0.6	1.8	Nov 02	11.9	Nov 18 04:00	100.0%	95.3%	0	0	0
December 2022	706	76.5%	22.9%	0.6%	0.0%	0.0%	0.0%	0.8	2.0	Dec 25	9.6	Dec 14 04:00	99.9%	94.9%	0	0	0
Annual	8542	80.2%	8.4%	0.7%	0.6%	0.0%	0.0%	0.6	17.0	May 08	39.5	Feb 24 12:00	100.0%	95.2%	0	0	0

AAAQO Objectives: Annual: Resp, 30-Day: 11ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

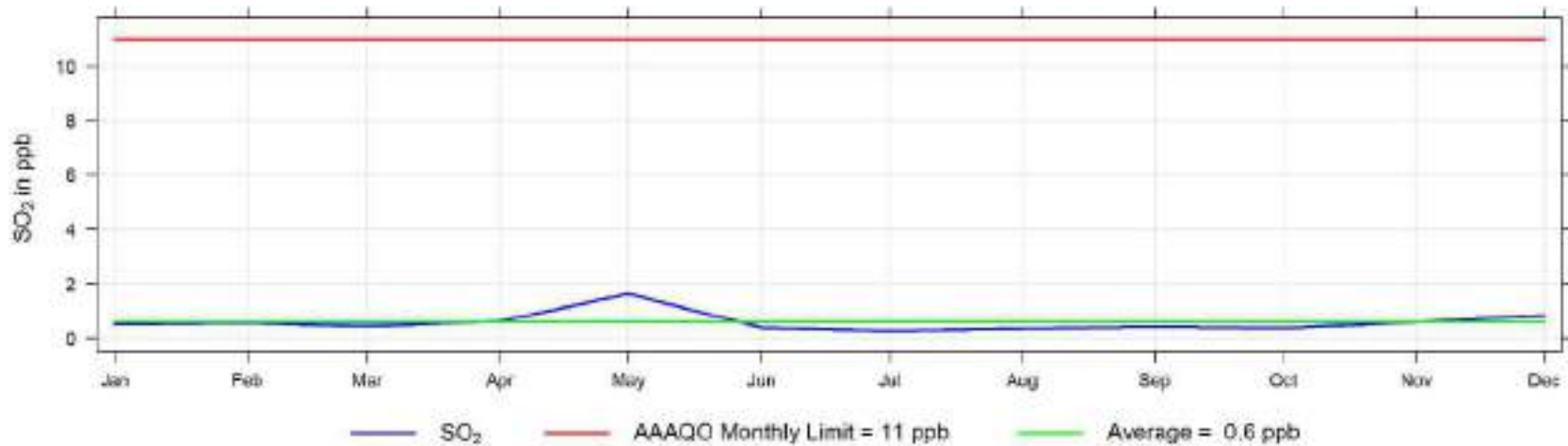
2022 Hourly Concentration Readings of SO₂ (in ppb) at Dunes

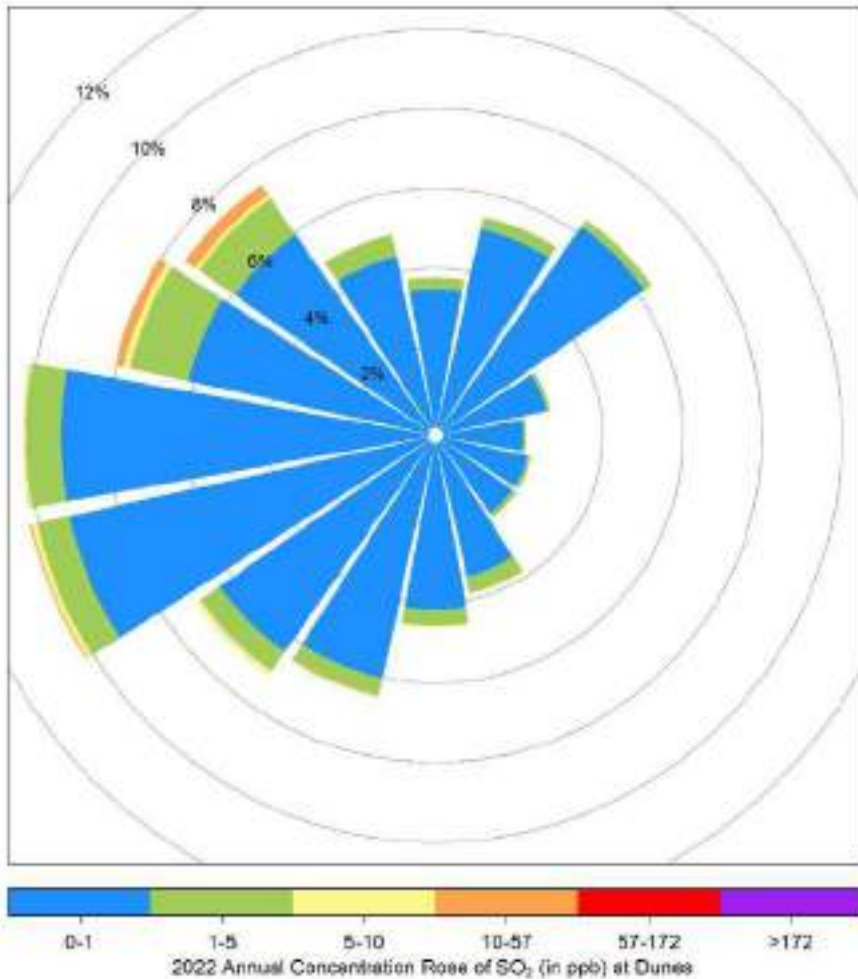


2022 Daily Concentration Readings of SO₂ (in ppb) at Dunes



2022 Monthly Concentration Readings of SO₂ (in ppb) at Dunes





Hourly Maximum SO₂ (in ppb) for 2022 at Dunes



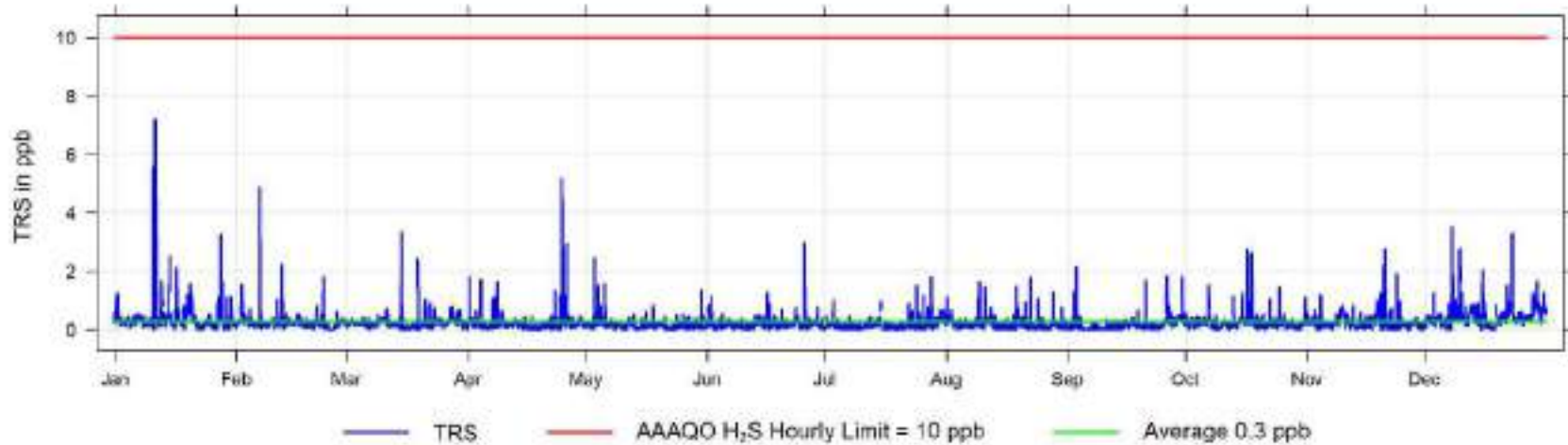
5.2 Total Reduced Sulphur (TRS) - Dunes 2022 Summary

Total Reduced Sulphur (TRS) Frequency Distribution at Dunes

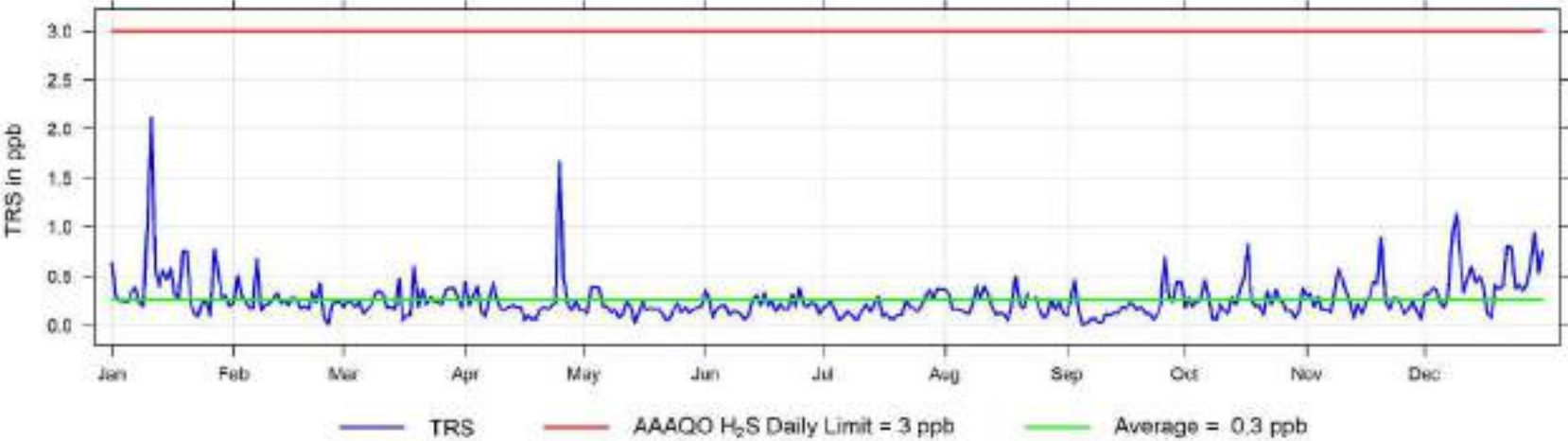
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)			Date	1-hr (ppb)			Date	24-hr 3 ppb	1-hr 10 ppb
January 2022	709	90.8%	7.5%	1.3%	0.4%	0.0%	0.0%	0.4	2.0	Jan 11	7.2	Jan 11 05:00	100.0%	95.3%	0	0
February 2022	640	98.3%	1.3%	0.5%	0.0%	0.0%	0.0%	0.3	0.6	Feb 07	4.9	Feb 07 01:00	100.0%	95.2%	0	0
March 2022	709	98.6%	1.3%	0.1%	0.0%	0.0%	0.0%	0.2	0.6	Mar 19	3.3	Mar 15 01:00	100.0%	95.3%	0	0
April 2022	688	96.9%	2.5%	0.4%	0.1%	0.0%	0.0%	0.3	1.4	Apr 25	5.1	Apr 25 03:00	100.0%	95.3%	0	0
May 2022	708	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	May 08	2.4	May 03 07:00	100.0%	95.2%	0	0
June 2022	688	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Jun 25	3.0	Jun 25 22:00	100.0%	95.3%	0	0
July 2022	708	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Jul 30	1.8	Jul 28 05:00	100.0%	95.2%	0	0
August 2022	700	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Aug 19	1.8	Aug 22 13:00	98.7%	94.1%	0	0
September 2022	688	98.4%	1.6%	0.0%	0.0%	0.0%	0.0%	0.2	0.7	Sep 26	2.1	Sep 03 04:00	100.0%	95.3%	0	0
October 2022	708	96.6%	3.4%	0.0%	0.0%	0.0%	0.0%	0.3	0.9	Oct 17	2.8	Oct 16 15:00	99.9%	95.2%	0	0
November 2022	685	97.7%	2.3%	0.0%	0.0%	0.0%	0.0%	0.3	1.0	Nov 20	2.8	Nov 20 23:00	100.0%	95.1%	0	0
December 2022	709	93.4%	6.3%	0.3%	0.0%	0.0%	0.0%	0.5	1.2	Dec 09	3.5	Dec 08 02:00	100.0%	95.3%	0	0
Annual	8334	97.3%	2.5%	0.2%	0.0%	0.0%	0.0%	0.3	2.0	MAXIMUM VALUES		99.9%	95.1%	0	0	

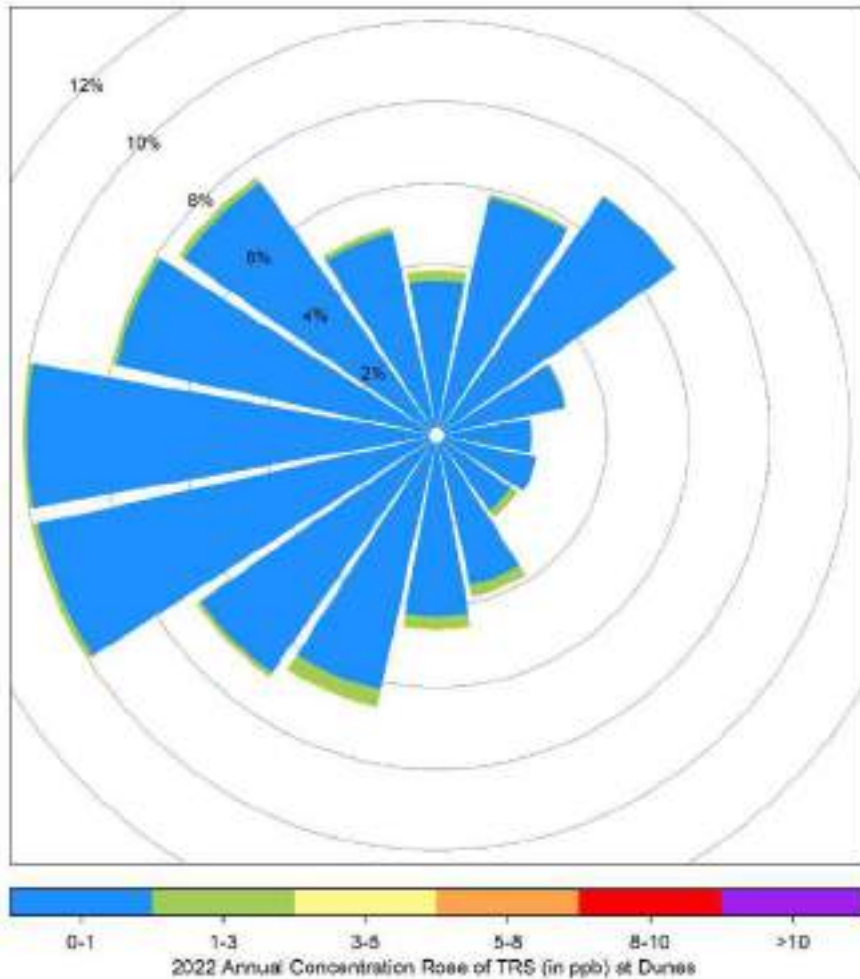
AAAQO H₂S Objectives: 24-Hr: 3ppb, 1-Hr: 10ppb

2022 Hourly Concentration Readings of TRS (in ppb) at Dunes



2022 Daily Concentration Readings of TRS (in ppb) at Dunes





Hourly Maximum TRS (in ppb) for 2022 at Dunes

January-2022	February-2022	March-2022
26 27 28 29 30 31 1	30 31 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	24 25 26 27 28 29 30	30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
28 29 30 31 1 2	1 2 3 4 5 6	28 29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
23 24 25 26 27 28 29 1	30 31 1 2 3 4 5	27 28 29 30 31 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

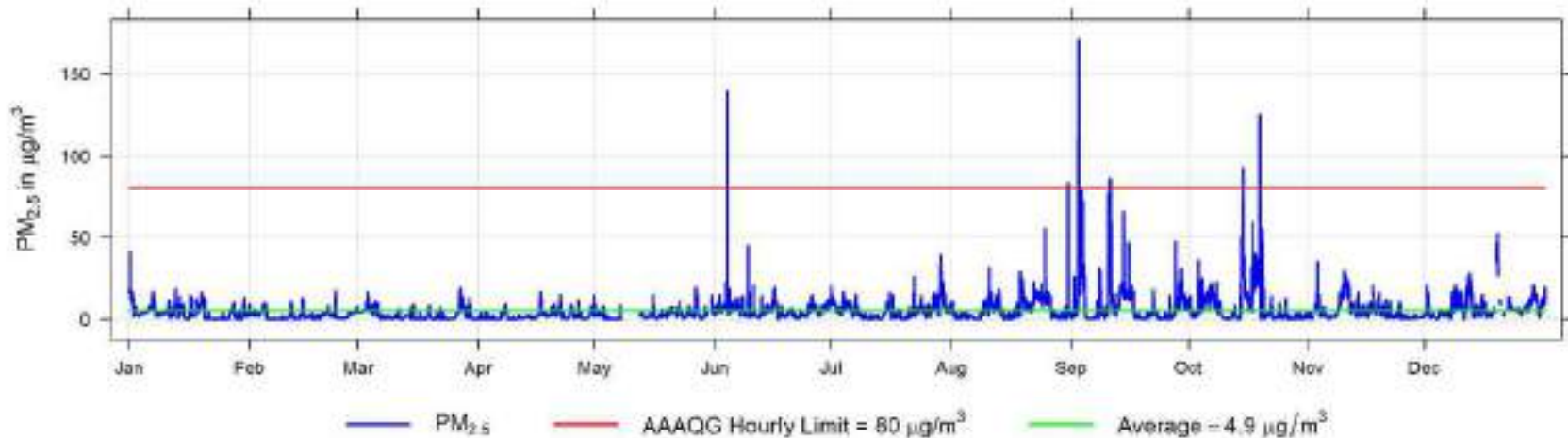
5.3 Particulate Matter (PM_{2.5}) - Dunes 2022 Summary

Particulate Matter (PM_{2.5}) Frequency Distribution at Dunes

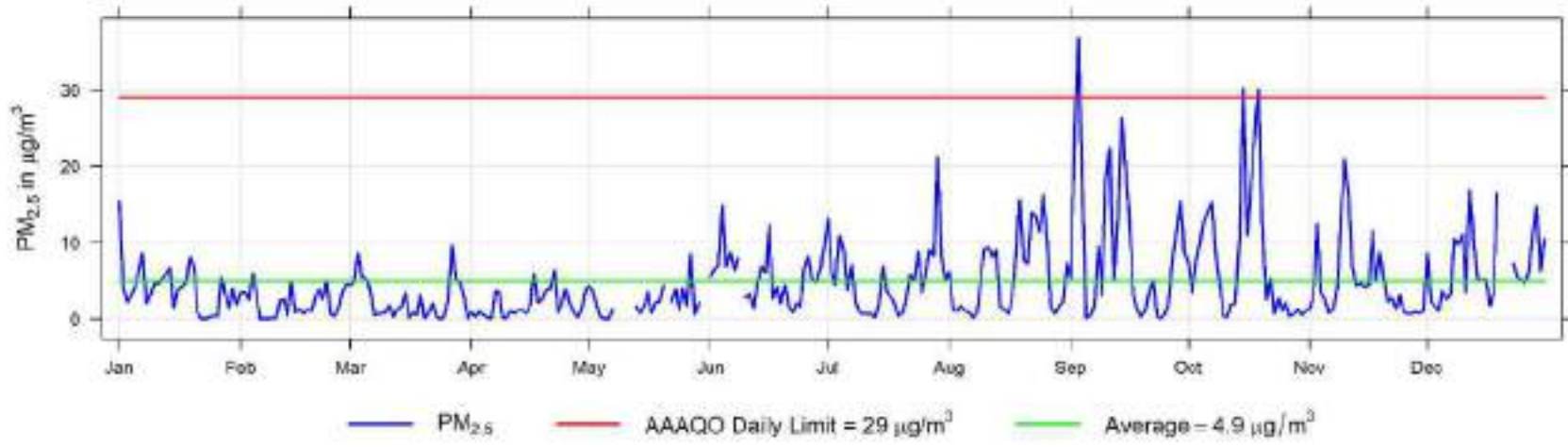
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average $\mu\text{g}/\text{m}^3$	24-hr $\mu\text{g}/\text{m}^3$	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 5 $\mu\text{g}/\text{m}^3$	5 to 15 $\mu\text{g}/\text{m}^3$	15 to 30 $\mu\text{g}/\text{m}^3$	30 to 50 $\mu\text{g}/\text{m}^3$	50 to 80 $\mu\text{g}/\text{m}^3$	> 80 $\mu\text{g}/\text{m}^3$			Date	1-hr $\mu\text{g}/\text{m}^3$			Date	24-hr $29 \mu\text{g}/\text{m}^3$	1-hr $80 \mu\text{g}/\text{m}^3$
January 2022	742	70.2%	27.8%	1.9%	0.1%	0.0%	0.0%	4.0	15.0	Jan 01	40.5	Jan 01 05:00	100.0%	99.7%	0	0
February 2022	669	89.5%	10.2%	0.1%	0.0%	0.0%	0.0%	2.1	6.1	Feb 06	16.9	Feb 23 07:00	100.0%	99.6%	0	0
March 2022	741	82.2%	17.3%	0.5%	0.0%	0.0%	0.0%	2.4	9.9	Mar 27	18.7	Mar 27 11:00	100.0%	99.6%	0	0
April 2022	717	90.0%	9.8%	0.3%	0.0%	0.0%	0.0%	1.9	6.1	Apr 22	16.4	Apr 17 03:00	100.0%	99.6%	0	0
May 2022	592	87.7%	11.7%	0.7%	0.0%	0.0%	0.0%	2.5	8.2	May 27	19.3	May 27 04:00	80.4%	79.6%	0	0
June 2022	709	53.3%	44.6%	1.7%	0.3%	0.0%	0.1%	5.5	15.0	Jun 04	139.5	Jun 04 05:00	99.0%	98.5%	0	1
July 2022	743	58.8%	36.1%	4.7%	0.4%	0.0%	0.0%	5.2	21.1	Jul 29	38.7	Jul 29 07:00	100.0%	99.9%	0	0
August 2022	739	59.1%	33.0%	7.3%	0.3%	0.1%	0.1%	5.7	16.4	Aug 25	83.7	Aug 31 01:00	100.0%	99.3%	0	1
September 2022	716	54.6%	28.2%	10.6%	3.5%	2.5%	0.6%	9.1	37.6	Sep 03	171.2	Sep 02 21:00	100.0%	99.4%	1	4
October 2022	780	59.9%	23.2%	12.6%	3.1%	0.8%	0.4%	7.7	29.2	Oct 15	125.2	Oct 19 14:00	99.9%	99.5%	2	3
November 2022	719	65.5%	27.0%	7.4%	0.1%	0.0%	0.0%	4.9	21.1	Nov 10	34.6	Nov 03 14:00	100.0%	99.9%	0	0
December 2022	694	48.1%	43.1%	7.3%	1.5%	0.1%	0.0%	7.0	18.0	Dec 19	52.1	Dec 19 25:00	93.4%	95.5%	0	0
Annual	8521	68.2%	26.8%	4.6%	0.8%	0.3%	0.1%	4.8	37.6	MAXIMUM VALUES		97.7%	97.3%	3	9	

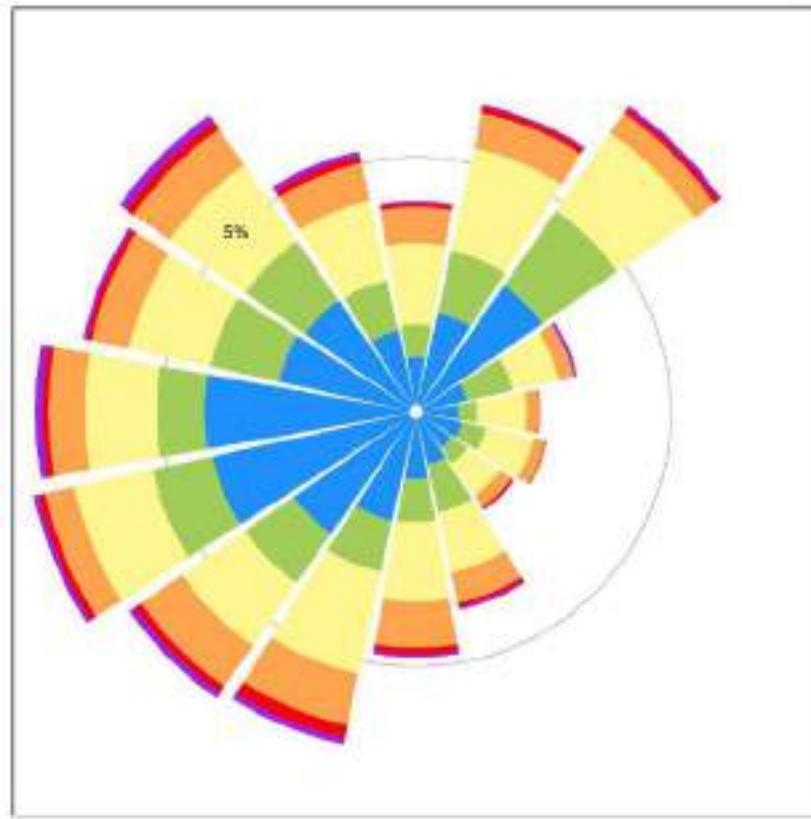
AAQO Objectives: 24-hr: $29 \mu\text{g}/\text{m}^3$, AAQO Guideline: 1-hr: $80 \mu\text{g}/\text{m}^3$

2022 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Dunes



2022 Daily Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Dunes





2022 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Dunes.

Hourly Maximum PM_{2.5} (in $\mu\text{g}/\text{m}^3$) for 2022 at Dunes

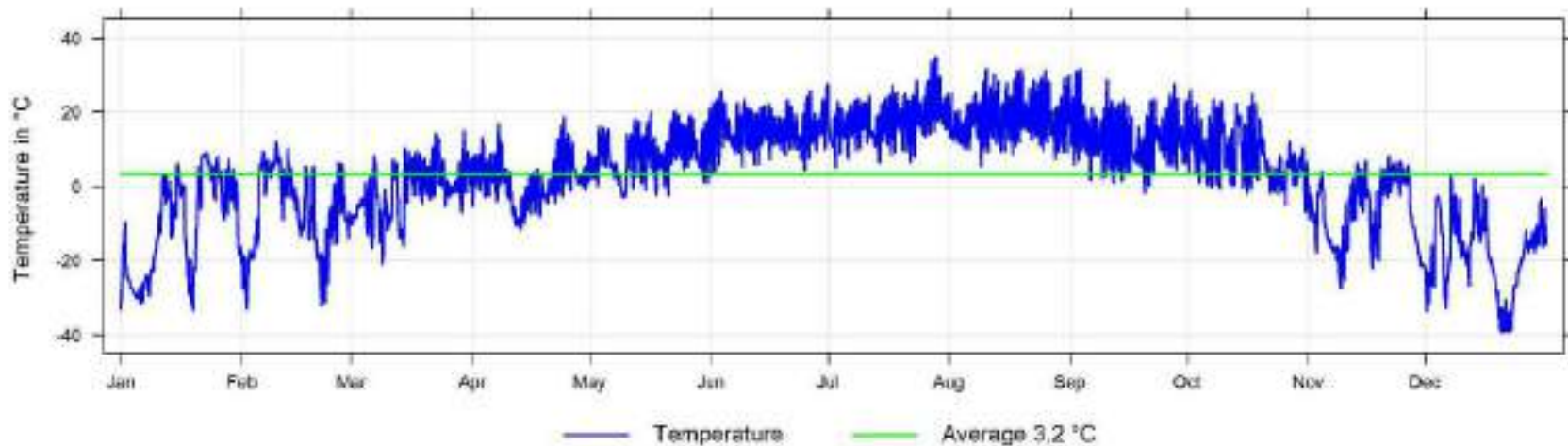


5.4 Temperature (ET) - Dunes 2022 Summary

Temperature (ET) Frequency Distribution at Dunes

Month	Valid Hours	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)	Valid time (%)	
			24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date			
January 2022	744	-10.6	8.4	Jan 22	9.2	Jan 23 02:00	-29.3	Jan 04	-33.1	Jan 19 08:00	100.0%	100.0%	
February 2022	672	-7.1	8.1	Feb 09	11.8	Feb 09 19:00	-25.5	Feb 21	-33.0	Feb 02 04:00	100.0%	100.0%	
March 2022	744	-1.9	6.7	Mar 22	15.0	Mar 29 18:00	-12.6	Mar 13	-20.9	Mar 09 03:00	100.0%	100.0%	
April 2022	720	1.5	8.4	Apr 24	18.5	Apr 24 15:00	-9.4	Apr 12	-11.7	Apr 13 07:00	100.0%	100.0%	
May 2022	744	8.7	14.6	May 22	20.5	May 31 16:00	-2.0	May 09	-3.3	May 10 02:00	100.0%	100.0%	
June 2022	720	15.4	29.8	Jun 30	27.5	Jun 30 20:00	11.7	Jun 23	2.8	Jun 01 05:00	100.0%	100.0%	
July 2022	744	18.0	25.6	Jul 28	34.9	Jul 28 18:00	13.4	Jul 12	4.9	Jul 03 05:00	100.0%	100.0%	
August 2022	744	18.4	21.7	Aug 19	31.6	Aug 10 18:00	13.0	Aug 04	5.3	Aug 09 06:00	100.0%	100.0%	
September 2022	720	12.8	18.1	Sep 03	31.6	Sep 03 17:00	7.9	Sep 20	-1.7	Sep 20 07:00	100.0%	100.0%	
October 2022	743	7.8	15.8	Oct 14	25.9	Oct 01 17:00	0.2	Oct 31	-7.1	Oct 31 08:00	99.9%	99.9%	
November 2022	730	-7.6	3.3	Nov 23	8.1	Nov 21 15:00	-22.6	Nov 09	-27.6	Nov 09 09:00	100.0%	100.0%	
December 2022	744	-18.7	-4.4	Dec 04	2.4	Dec 07 16:00	-37.9	Dec 22	-39.2	Dec 22 10:00	100.0%	100.0%	
		AVERAGE	MAXIMUM VALUES				MINIMUM VALUES						
		8758	3.2	25.6	Jul 28	34.9	Jul 28 18:00	-37.9	Dec 22	-39.2	Dec 22 10:00	100.0%	100.0%

2022 Hourly Temperature Readings (in °C) at Dunes

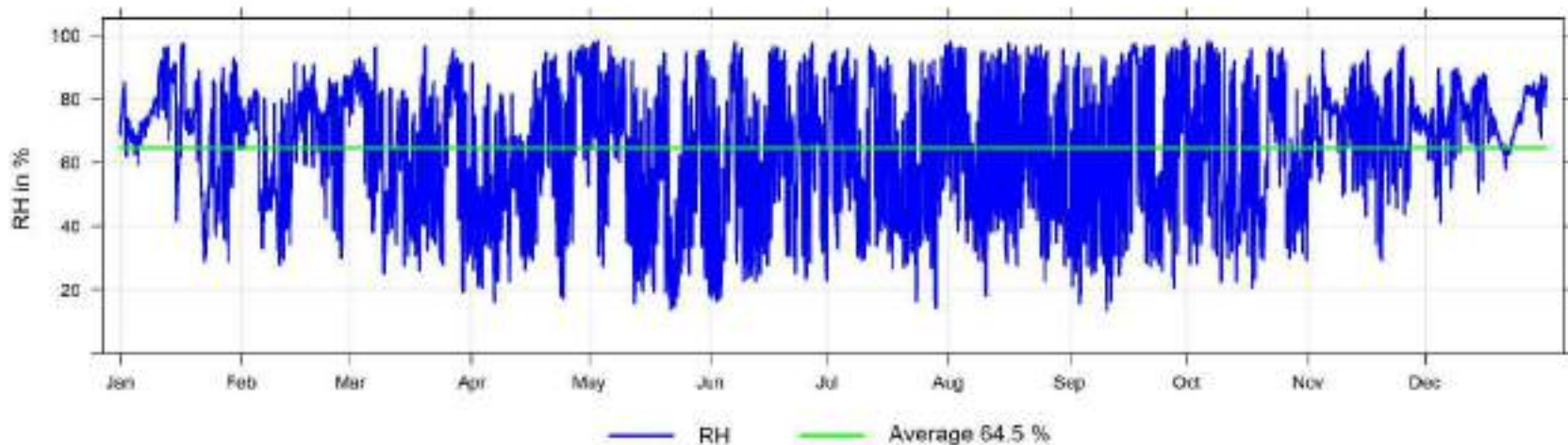


5.5 Relative Humidity (RH) - Dunes 2022 Summary

Relative Humidity (RH) Frequency Distribution at Dunes

Month	Valid Hours	Monthly Average (%)	Maximum Values			Operational time (%)	Valid time (%)	
			24-hr (%)	Date	1-hr (%)			Date
January 2022	744	71.4	90.3	Jan 12	97.4	Jan 17 07:00	100.0%	100.0%
February 2022	672	66.5	84.0	Feb 27	91.1	Feb 14 23:00	100.0%	100.0%
March 2022	744	63.5	88.9	Mar 27	96.4	Mar 20 01:00	100.0%	100.0%
April 2022	720	59.9	92.3	Apr 28	96.9	Apr 29 06:00	100.0%	100.0%
May 2022	744	57.7	85.2	May 09	98.2	May 08 09:00	100.0%	100.0%
June 2022	720	58.4	81.7	Jun 18	98.0	Jun 07 06:00	100.0%	100.0%
July 2022	744	60.8	91.3	Jul 12	96.8	Jul 31 07:00	100.0%	100.0%
August 2022	744	64.6	84.8	Aug 01	97.9	Aug 01 07:00	100.0%	100.0%
September 2022	720	63.6	95.8	Sep 17	98.7	Sep 30 11:00	100.0%	100.0%
October 2022	743	62.4	88.2	Oct 22	98.2	Oct 06 16:00	99.9%	99.9%
November 2022	720	71.8	83.1	Nov 05	96.4	Nov 25 07:00	100.0%	100.0%
December 2022	744	74.2	83.6	Dec 08	89.4	Dec 08 23:00	100.0%	100.0%
	8759	AVERAGE 64.5		MAXIMUM VALUES		Sep 30 11:00	100.0%	100.0%

2022 Hourly Readings of Relative Humidity (in %) at Dunes

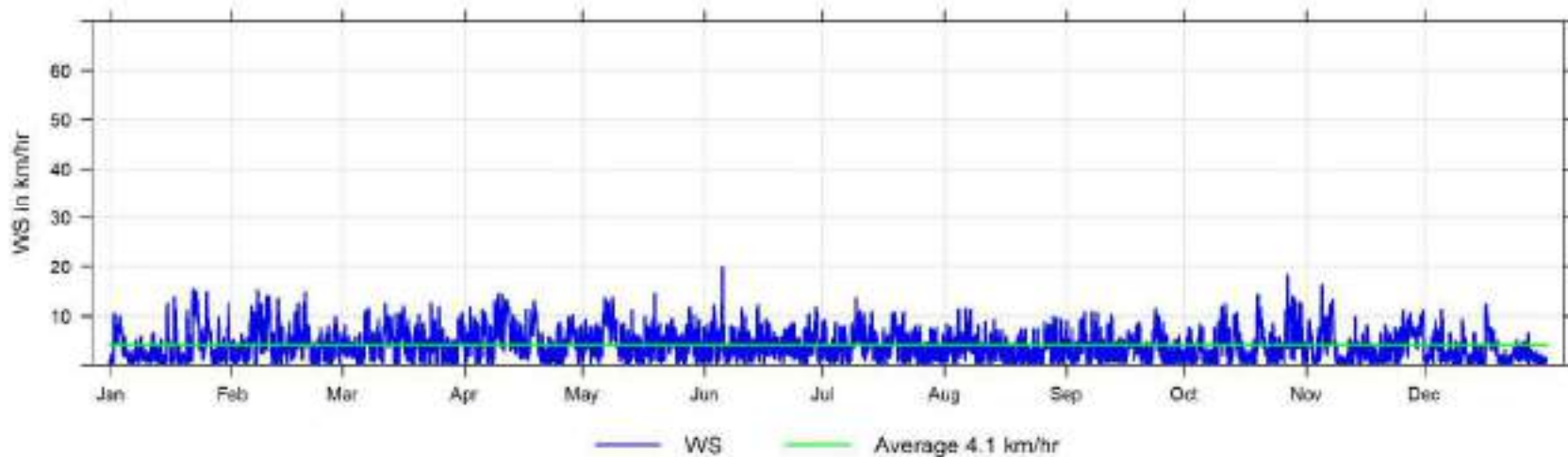


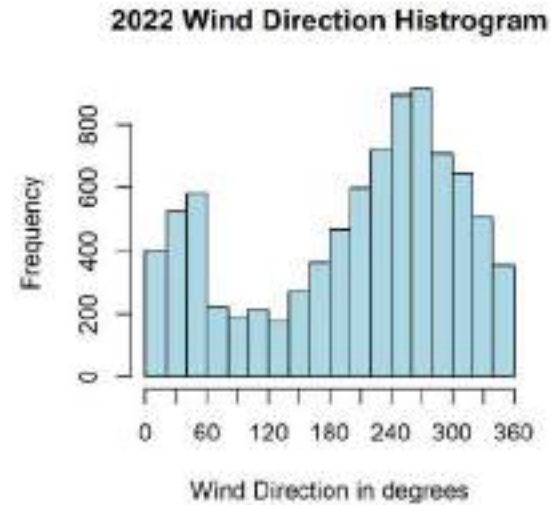
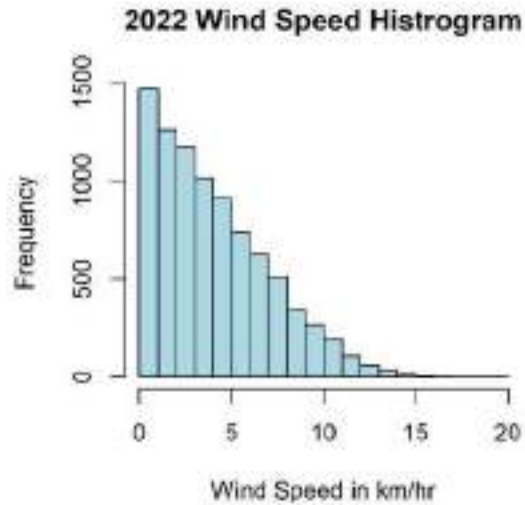
5.6 Wind Speed and Wind Direction (WS and WD) - Dunes 2022 Summary

Wind Speed Frequency Distribution at Dunes

Month	Valid Hours	Calm	% of Readings in Concentration Range					Monthly Average (km/hr)	24-hr (km/hr)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	
			0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)			Date	1-hr (km/hr)			Date
January 2022	744	0.0%	65.7%	22.3%	5.9%	0.0%	0.0%	3.9	12.9	Jan 22	15.5	Jan 21 22:00	100.0%	100.0%
February 2022	673	5.5%	58.2%	30.8%	5.5%	0.0%	0.0%	4.6	9.7	Feb 07	15.3	Feb 07 12:00	100.0%	100.0%
March 2022	744	7.3%	51.5%	39.5%	1.7%	0.0%	0.0%	4.5	8.0	Mar 12	12.6	Mar 23 13:00	100.0%	100.0%
April 2022	720	4.6%	44.2%	45.0%	6.3%	0.0%	0.0%	5.3	9.6	Apr 11	14.6	Apr 09 16:00	100.0%	100.0%
May 2022	744	5.0%	49.9%	42.2%	3.0%	0.0%	0.0%	4.7	9.4	May 07	14.6	May 19 15:00	100.0%	100.0%
June 2022	720	2.8%	62.8%	32.6%	1.7%	0.1%	0.0%	4.3	9.1	Jun 05	19.8	Jun 05 16:00	100.0%	100.0%
July 2022	744	5.9%	60.3%	33.6%	0.1%	0.0%	0.0%	4.1	7.6	Jul 19	13.5	Jul 09 13:00	100.0%	100.0%
August 2022	764	8.6%	66.3%	24.3%	0.8%	0.0%	0.0%	3.5	6.6	Aug 06	11.4	Aug 05 11:00	100.0%	100.0%
September 2022	720	7.8%	66.8%	25.3%	0.1%	0.0%	0.0%	3.5	7.6	Sep 23	11.4	Sep 23 16:00	100.0%	100.0%
October 2022	743	7.3%	58.0%	30.0%	4.7%	0.0%	0.0%	4.2	10.9	Oct 27	18.2	Oct 27 09:00	99.9%	99.9%
November 2022	720	9.2%	57.1%	31.1%	2.6%	0.0%	0.0%	4.0	10.6	Nov 07	15.4	Nov 05 02:00	100.0%	100.0%
December 2022	744	10.2%	76.7%	12.2%	0.8%	0.0%	0.0%	2.5	6.2	Dec 17	12.3	Dec 16 17:00	100.0%	100.0%
Annual	8759	6.7%	59.8%	30.8%	2.8%	0.0%	0.0%	4.1	12.9	MAXIMUM VALUES		100.0%	100.0%	

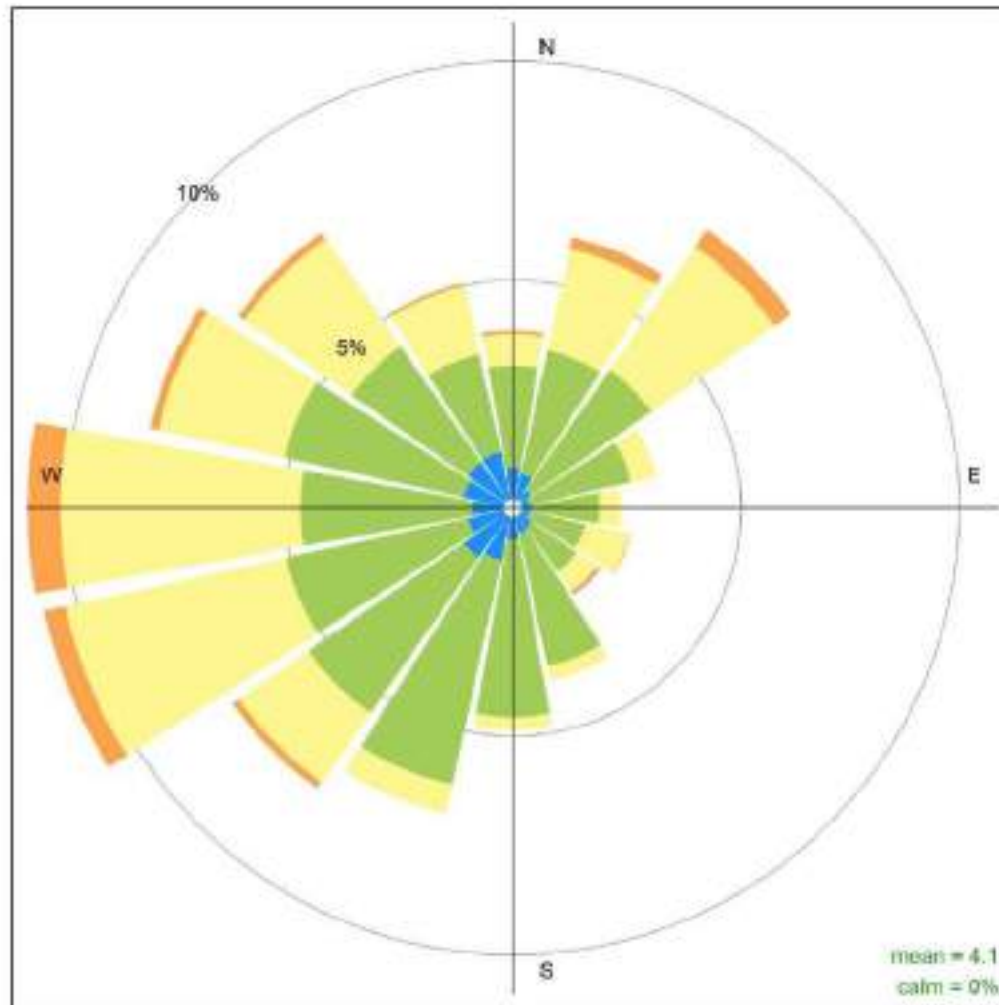
2022 Hourly Readings of Wind Speed (in km/hr) at Dunes





Wind Speed and Wind Direction Frequency Distribution at Dunes

Direction	Number of Readings	% of wind speed range						Total %
		Calm (<0.5 (km/hr)	0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)	
N	379	0.5%	3.0%	0.7%	0.1%	0.0%	0.0%	4.3%
NNE	561	0.3%	3.5%	2.4%	0.3%	0.0%	0.0%	6.4%
NE	671	0.1%	3.6%	3.4%	0.3%	0.0%	0.0%	7.7%
ENE	290	0.2%	2.5%	0.6%	0.0%	0.0%	0.0%	3.3%
E	210	0.1%	1.8%	0.5%	0.0%	0.0%	0.0%	2.4%
ESE	231	0.1%	1.5%	1.0%	0.0%	0.0%	0.0%	2.6%
SE	212	0.2%	1.6%	0.6%	0.1%	0.0%	0.0%	2.4%
SSE	365	0.3%	3.5%	0.3%	0.0%	0.0%	0.0%	4.2%
S	451	0.3%	4.6%	0.3%	0.0%	0.0%	0.0%	5.1%
SSW	651	0.5%	6.3%	0.7%	0.0%	0.0%	0.0%	7.4%
SW	717	0.6%	5.5%	1.9%	0.2%	0.0%	0.0%	8.2%
WSW	1008	0.7%	5.1%	5.2%	0.5%	0.0%	0.0%	11.5%
W	1016	0.7%	4.6%	5.5%	0.8%	0.0%	0.0%	11.6%
WNW	785	0.7%	5.1%	3.0%	0.2%	0.0%	0.0%	9.0%
NW	723	0.8%	4.3%	3.0%	0.2%	0.0%	0.0%	8.3%
NNW	489	0.5%	3.4%	1.6%	0.1%	0.0%	0.0%	5.6%
Total	8759	6.7%	58.8%	30.7%	2.8%	0.0%	0.0%	100.0%



Dunes 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

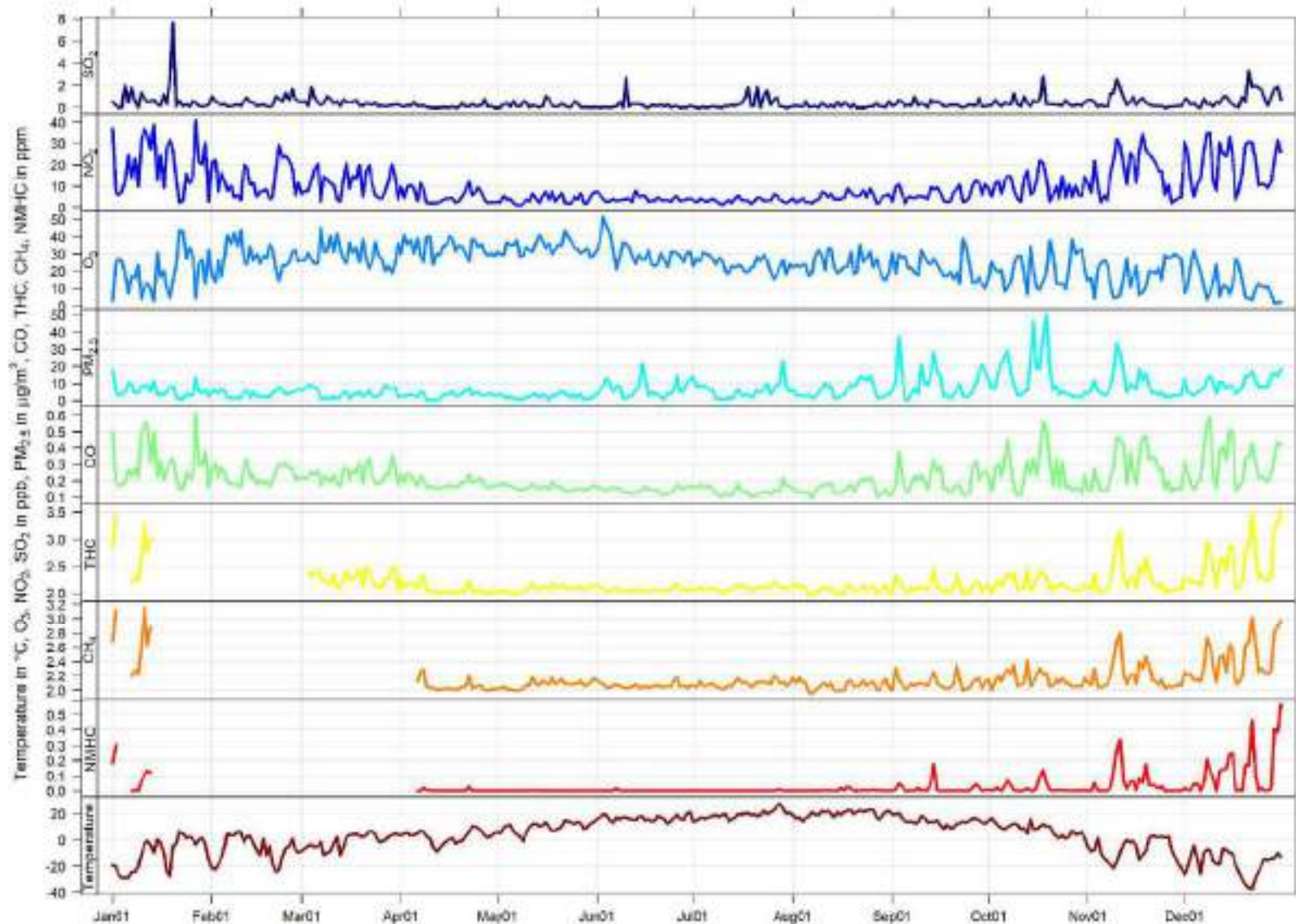
6 Henry Pirker Key Parameters - Continuous Monitoring Data - 2022 Summary

Henry Pirker Key Parameters - Continuous Monitoring Data - 2022 Summary

Henry Pirker Station	Parameter	Average	Maximum Values			Operational Time (%)	Valid Time (%)	Readings above AAAQO & AAAQG					
			24-hr	Date	1-hr			Date	1-hr	8-hr	24-hr	30-d	Annual
	Sulphur Dioxide SO ₂ measured in ppb	0.4	6.9	Jan 20	44.1	Oct 18 12:00	99.2%	94.4%	0	-	0	0	0
	Hydrogen Sulphide H ₂ S measured in ppb	0.2	1.3	Dec 30	3.4	May 05 21:00	99.3%	94.6%	0	-	0	-	-
	Nitrogen Dioxide NO ₂ measured in ppb	10.0	41.4	Jan 27	62.9	Dec 16 10:00	98.3%	93.1%	0	-	-	-	0
	Nitrogen Oxides NO _x measured in ppb	16.4	106.7	Jan 27	264.4	Jan 12 20:00	98.3%	93.1%	-	-	-	-	-
	Nitric Oxide NO measured in ppb	6.3	64.8	Jan 27	203.9	Jan 12 20:00	98.3%	93.1%	-	-	-	-	-
	Ozone O ₃ measured in ppb	24.6	52.1	Jun 03	70.7	Aug 12 14:00	99.4%	94.7%	0	-	-	-	-
	Carbon Monoxide CO measured in ppm	0.21	0.6	Jan 27	2.3	Dec 16 09:00	99.4%	94.7%	0	0	-	-	-
	Total Hydrocarbons THC measured in ppm	2.17	3.5	Dec 31	8.7	Dec 09 22:00	90.2%	85.7%	-	-	-	-	-
	Methane CH ₄ measured in ppm	2.14	3.1	Jan 11	7.8	Dec 09 22:00	80.2%	76.2%	-	-	-	-	-
	Non Methane Hydrocarbons NMHC measured in ppm	0.03	0.6	Dec 31	0.9	Dec 09 22:00	80.2%	76.2%	-	-	-	-	-
	Particulate Matter PM _{2.5} measured in µg/m ³	6.6	52.6	Oct 19	147.0	Oct 19 13:00	99.5%	98.9%	13	-	5	-	-

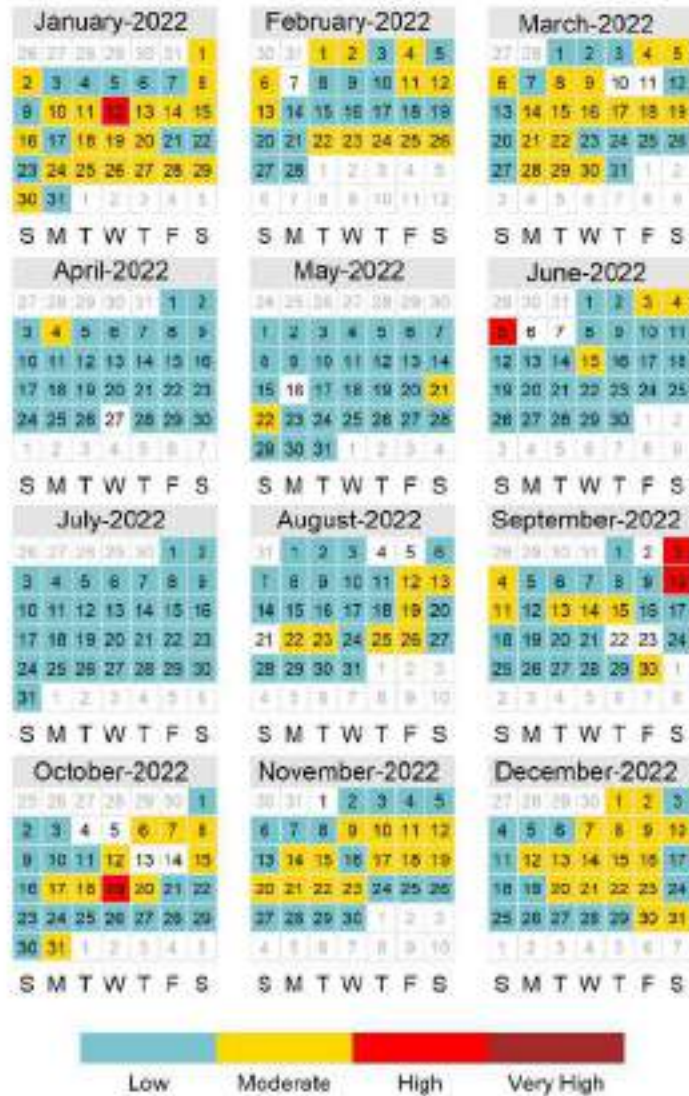
PM2.5 analyzer changed in September 2022, data combined in table

2022 Daily Concentration Readings at Henry Pirker



6.1 Henry Pirker AQHI Calendar Plot for 2022

Hourly Maximum AQHI for 2022 at Henry Pirker



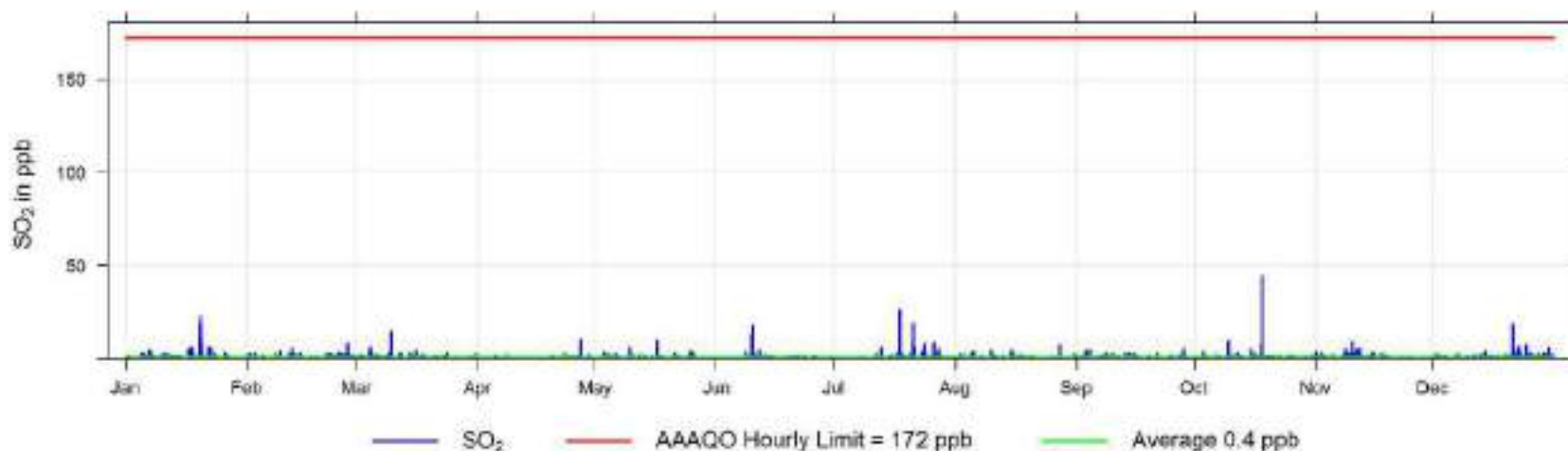
6.2 Sulphur Dioxide (SO₂) - Henry Pirker 2022 Summary

Sulphur Dioxide (SO₂) Frequency Distribution at Henry Pirker

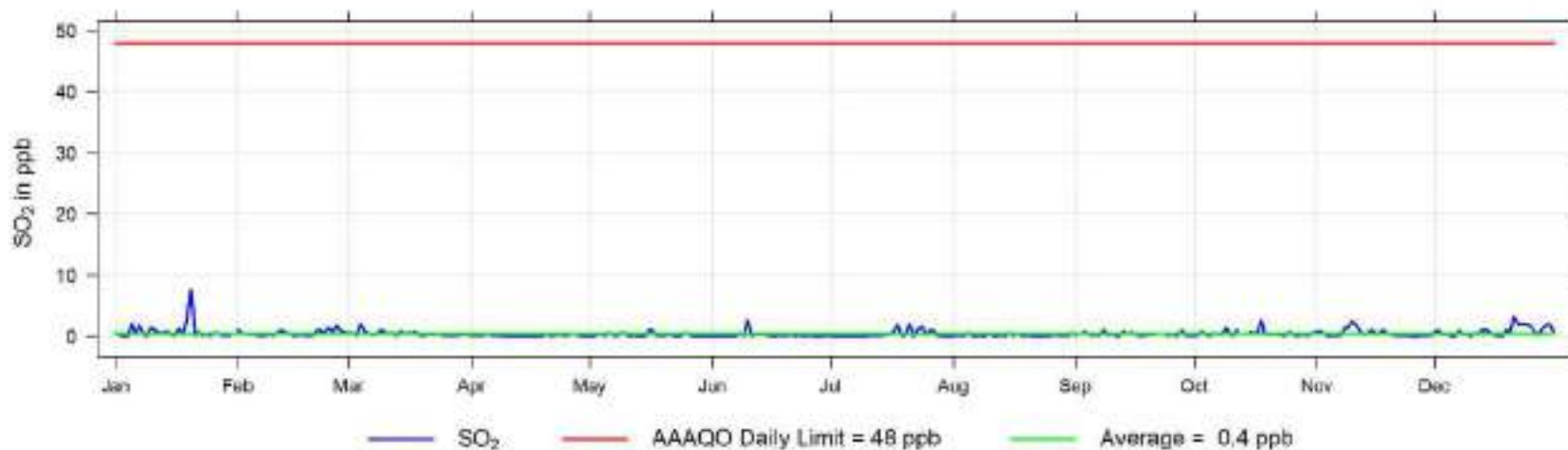
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date			30-d 11 ppb	24-hr 48 ppb	1-hr 172 ppb
January 2022	697	82.8%	14.6%	1.0%	1.6%	0.0%	0.0%	0.8	6.9	Jan 20	22.8	Jan 20 07:00	98.4%	93.7%	0	0	0
February 2022	640	85.9%	13.8%	0.3%	0.0%	0.0%	0.0%	0.5	1.6	Feb 26	8.3	Feb 26 17:00	100.0%	95.2%	0	0	0
March 2022	709	86.2%	11.4%	0.1%	0.1%	0.0%	0.0%	0.5	1.8	Mar 04	14.4	Mar 10 00:00	100.0%	95.3%	0	0	0
April 2022	678	87.6%	2.2%	0.0%	0.1%	0.0%	0.0%	0.1	0.5	Apr 05	10.1	Apr 27 10:00	98.9%	94.2%	0	0	0
May 2022	708	85.1%	4.6%	0.6%	0.0%	0.0%	0.0%	0.2	1.6	May 16	9.7	May 16 22:00	100.0%	95.2%	0	0	0
June 2022	685	85.5%	3.9%	0.3%	0.3%	0.0%	0.0%	0.2	2.7	Jun 18	17.5	Jun 10 10:00	100.0%	95.3%	0	0	0
July 2022	705	82.5%	5.8%	1.4%	0.3%	0.0%	0.0%	0.8	2.0	Jul 17	26.2	Jul 18 00:00	99.5%	94.8%	0	0	0
August 2022	705	85.5%	4.4%	0.1%	0.0%	0.0%	0.0%	0.2	0.6	Aug 31	7.2	Aug 27 19:00	99.5%	94.8%	0	0	0
September 2022	667	82.4%	7.5%	0.1%	0.0%	0.0%	0.0%	0.3	1.0	Sep 08	5.3	Sep 28 11:00	97.5%	92.6%	0	0	0
October 2022	684	81.5%	7.9%	0.4%	0.1%	0.0%	0.0%	0.5	2.8	Oct 18	44.1	Oct 18 12:00	96.5%	93.9%	0	0	0
November 2022	685	84.7%	14.6%	0.7%	0.0%	0.0%	0.0%	0.5	2.5	Nov 10	9.3	Nov 10 14:00	100.0%	95.3%	0	0	0
December 2022	709	73.1%	25.4%	1.1%	0.4%	0.0%	0.0%	0.9	3.4	Dec 21	18.3	Dec 21 15:00	100.0%	95.3%	0	0	0
Annual	8272	89.6%	9.7%	0.5%	0.3%	0.0%	0.0%	0.4	6.9	Jan 20	44.1	Oct 18 12:00	99.2%	94.4%	0	0	0

AAAQO Objectives: Annual: Resp, 30-Day: 11ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

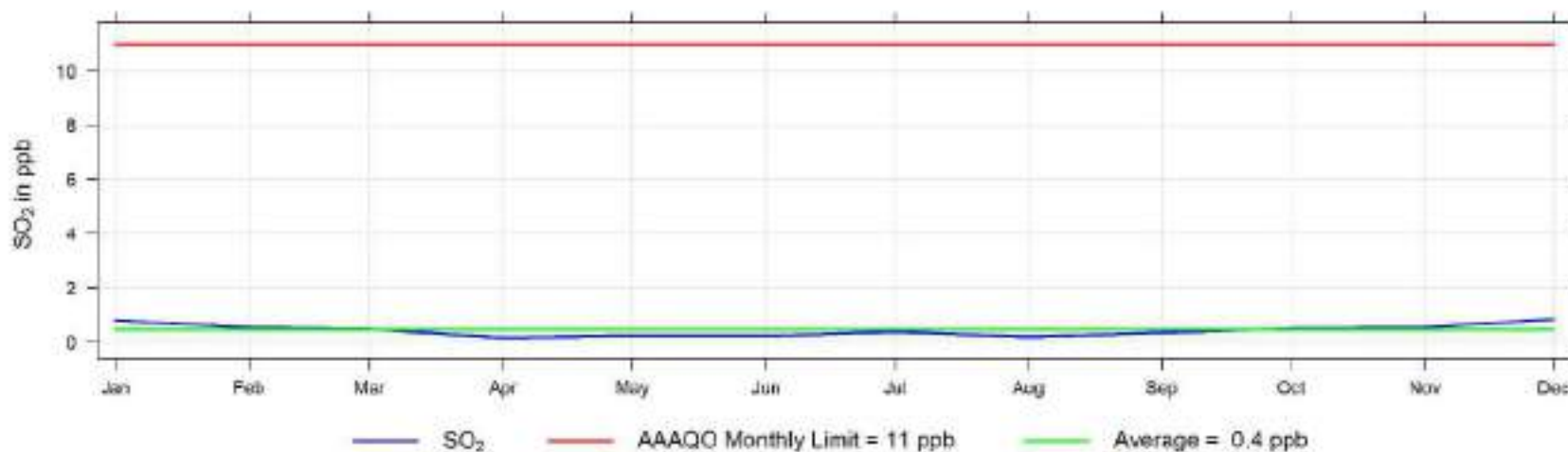
2022 Hourly Concentration Readings of SO₂ (in ppb) at Henry Pirker



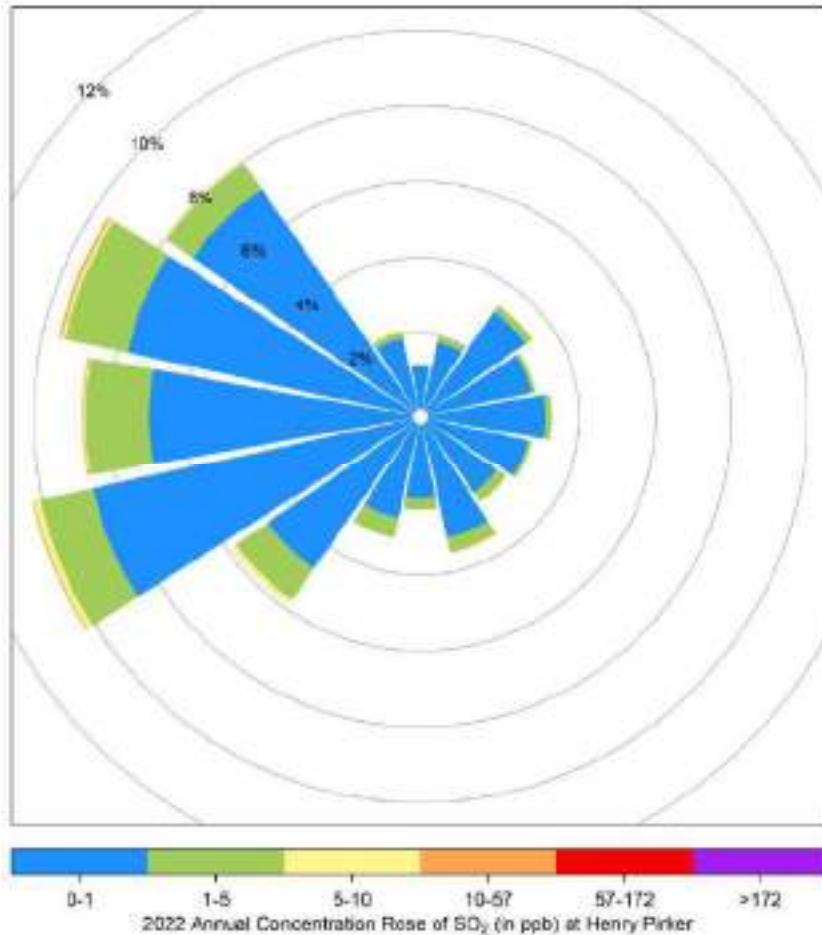
2022 Daily Concentration Readings of SO₂ (in ppb) at Henry Pirker



2022 Monthly Concentration Readings of SO₂ (in ppb) at Henry Pirker



Hourly Maximum SO₂ (in ppb) for 2022 at Henry Pirker



January-2022	February-2022	March-2022
18 21 28 29 30 31 1	30 31 1 2 3 4 5	21 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	24 25 26 27 28 29 30	29 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
28 27 28 29 30 1 2	31 1 2 3 4 5 6	25 26 27 28 29 30 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
25 26 27 28 29 30 1	30 31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S



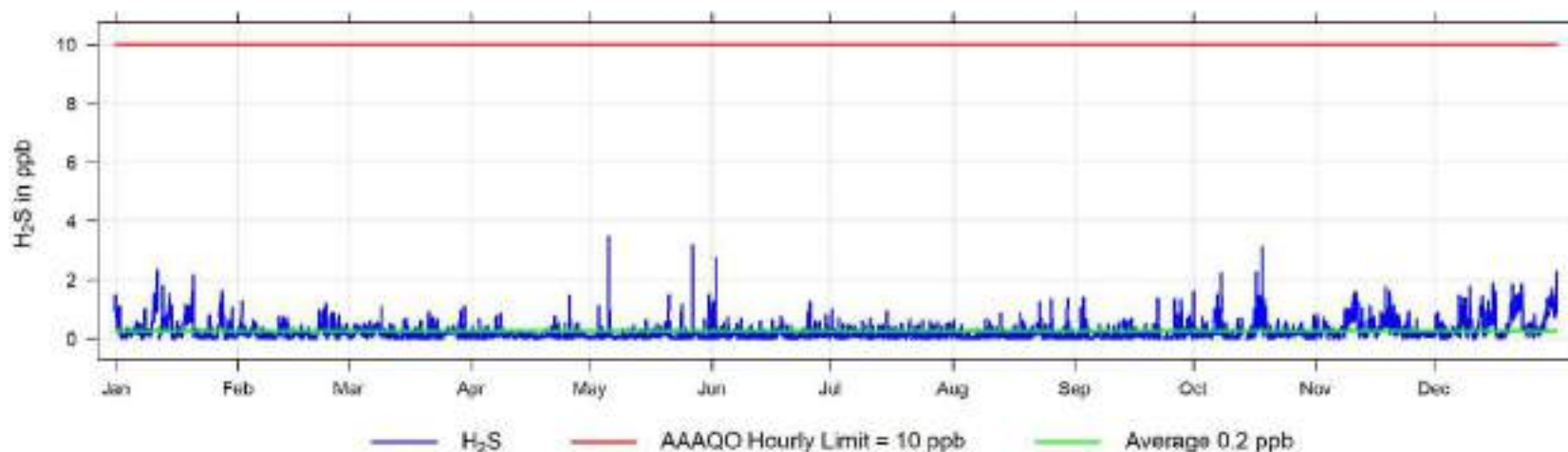
6.3 Hydrogen Sulphide (H₂S) - Henry Pirker 2022 Summary

Hydrogen Sulphide (H₂S) Frequency Distribution at Henry Pirker

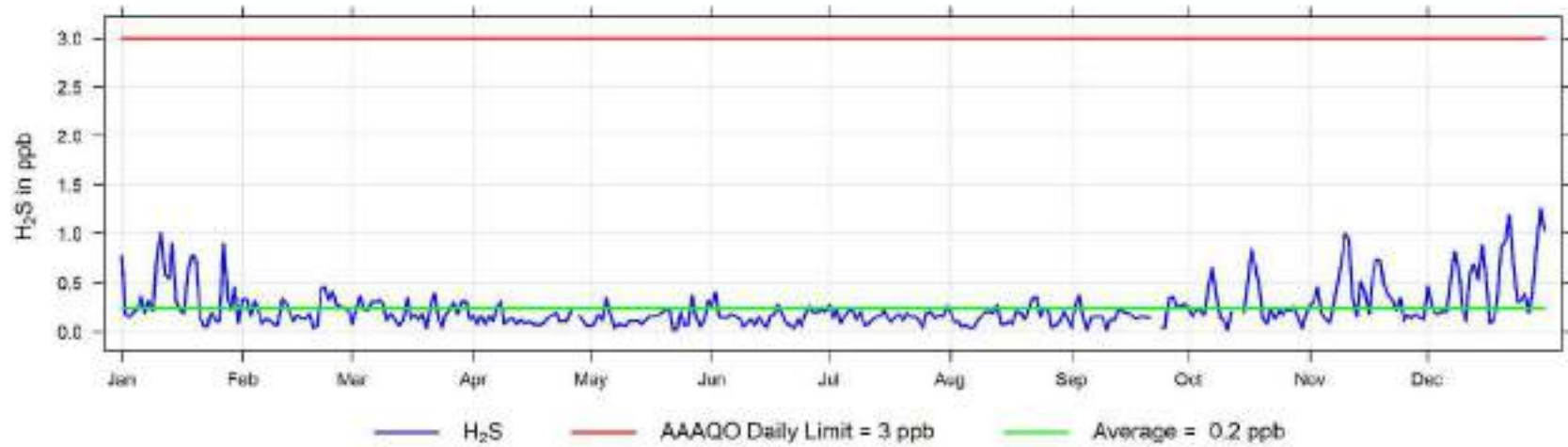
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)			Date	1-hr (ppb)			Date	24-hr 3 ppb	1-hr 10 ppb
January 2022	709	91.7%	8.3%	0.0%	0.0%	0.0%	0.0%	0.4	0.9	Jan 27	2.3	Jan 11 10:00	100.0%	95.3%	0	0
February 2022	640	99.5%	0.3%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Feb 22	1.3	Feb 02 01:00	100.0%	95.2%	0	0
March 2022	709	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Mar 22	1.1	Mar 09 06:00	100.0%	95.3%	0	0
April 2022	678	99.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Apr 08	1.3	Apr 26 01:00	98.9%	94.2%	0	0
May 2022	709	98.7%	1.0%	0.3%	0.0%	0.0%	0.0%	0.1	0.4	May 27	3.4	May 05 21:00	100.0%	95.3%	0	0
June 2022	688	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Jun 02	2.7	Jun 02 05:00	100.0%	95.3%	0	0
July 2022	700	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.3	Jul 01	1.0	Jul 01 07:00	98.9%	94.1%	0	0
August 2022	708	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.2	0.3	Aug 23	1.4	Aug 30 02:00	100.0%	95.2%	0	0
September 2022	668	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Sep 27	1.4	Sep 03 07:00	97.5%	92.8%	0	0
October 2022	686	95.9%	3.9%	0.1%	0.0%	0.0%	0.0%	0.3	0.9	Oct 17	3.1	Oct 18 08:00	96.8%	92.2%	0	0
November 2022	686	94.6%	5.4%	0.0%	0.0%	0.0%	0.0%	0.4	1.0	Nov 10	1.8	Nov 18 20:00	100.0%	95.3%	0	0
December 2022	709	84.3%	15.7%	0.0%	0.0%	0.0%	0.0%	0.5	1.3	Dec 30	2.3	Dec 31 23:00	100.0%	95.3%	0	0
Annual	8288	96.8%	3.2%	0.0%	0.0%	0.0%	0.0%	0.2	1.3	Dec 30	3.4	May 05 21:00	99.3%	94.6%	0	0

AAAQO Objectives: 24-Hr: 3ppb, 1-Hr: 10ppb

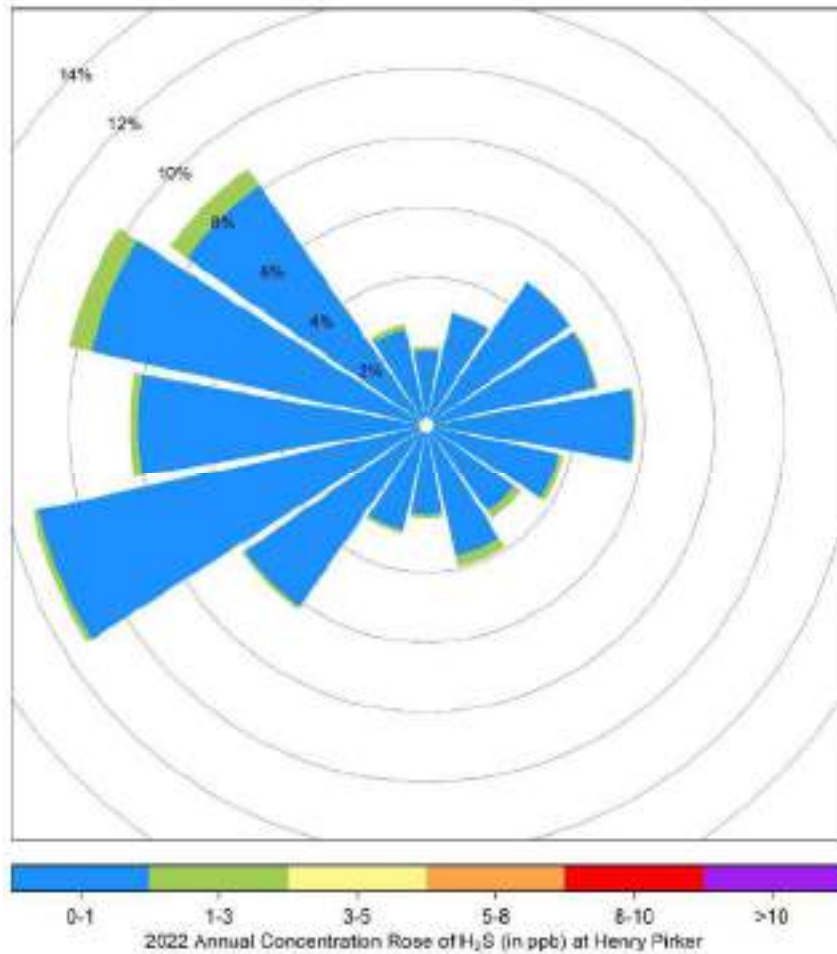
2022 Hourly Concentration Readings of H₂S (in ppb) at Henry Pirker



2022 Daily Concentration Readings of H₂S (in ppb) at Henry Pirker



Hourly Maximum H₂S (in ppb) for 2022 at Henry Pirker



January-2022	February-2022	March-2022
26 27 28 29 30 31 1	26 27 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	31 28 29 27 28 29 30	30 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
28 27 28 29 30 1 2	3 1 2 3 4 5 6	28 29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
25 26 27 28 29 30 1	30 31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

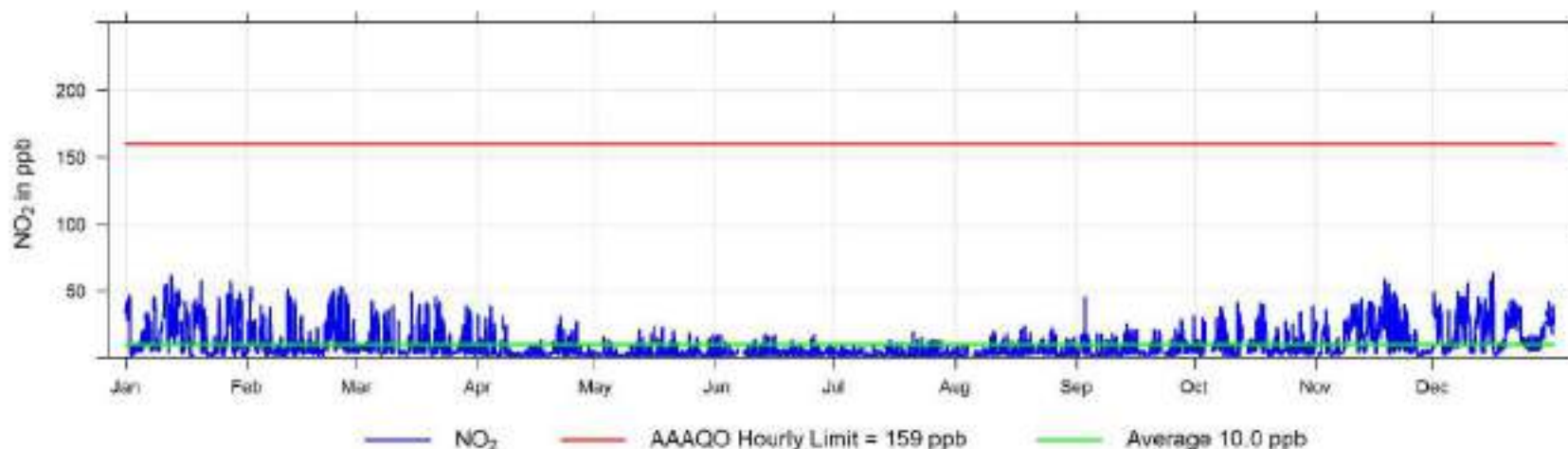
6.4 Nitrogen Dioxide (NO₂) - Henry Pirker 2022 Summary

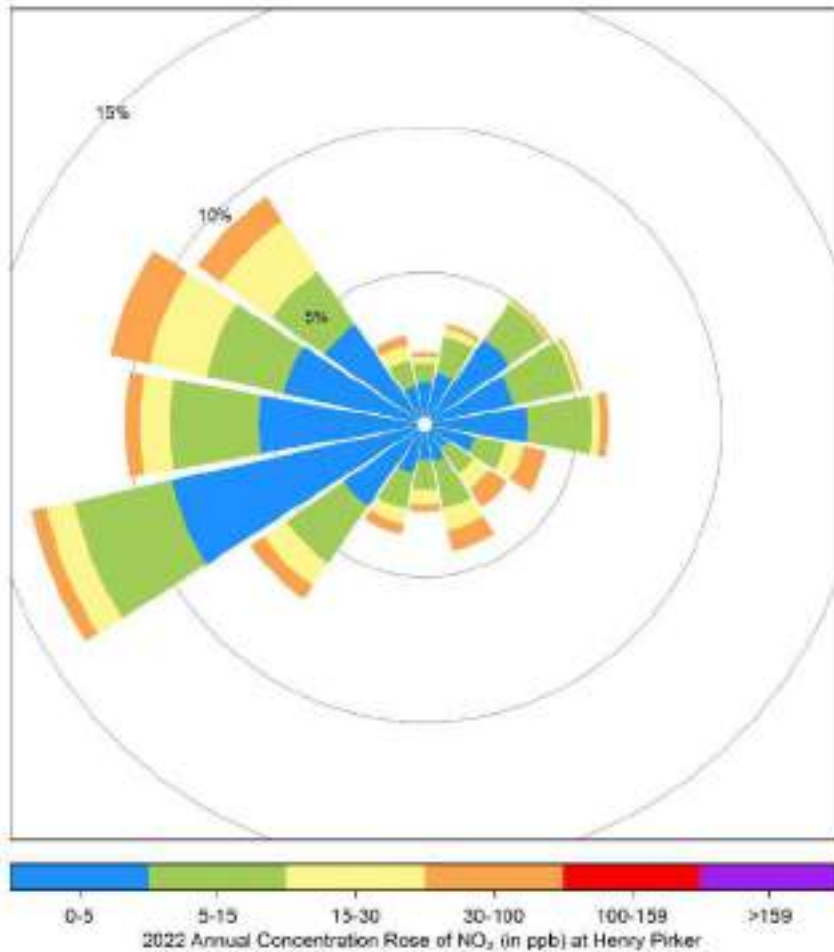
Nitrogen Dioxide (NO₂) Frequency Distribution at Henry Pirker

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents 1-hr 159 ppb	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr Date				
January 2022	708	22.5%	27.7%	18.4%	31.5%	0.0%	0.0%	19.8	41.4	Jan 27	61.1	Jan 11 19:00	100.0%	95.2%	0
February 2022	638	30.9%	38.6%	19.1%	11.4%	0.0%	0.0%	13.0	29.7	Feb 22	53.1	Feb 24 20:00	100.0%	94.9%	0
March 2022	697	37.1%	38.6%	13.8%	10.5%	0.0%	0.0%	11.3	19.9	Mar 29	49.6	Mar 14 22:00	97.2%	92.3%	0
April 2022	677	69.4%	21.3%	8.3%	1.0%	0.0%	0.0%	5.6	11.7	Apr 07	38.2	Apr 04 08:00	98.9%	94.0%	0
May 2022	707	77.1%	19.7%	3.3%	0.0%	0.0%	0.0%	4.0	7.3	May 31	22.7	May 16 07:00	100.0%	95.0%	0
June 2022	659	70.6%	26.9%	2.6%	0.0%	0.0%	0.0%	4.2	7.9	Jun 15	17.2	Jun 15 08:00	96.3%	91.5%	0
July 2022	703	79.1%	20.8%	0.1%	0.0%	0.0%	0.0%	3.5	6.1	Jul 26	18.9	Jul 21 07:00	99.5%	94.5%	0
August 2022	671	62.1%	35.2%	2.7%	0.0%	0.0%	0.0%	5.0	9.1	Aug 25	23.1	Aug 18 22:00	98.3%	90.2%	0
September 2022	696	53.5%	37.1%	9.2%	0.3%	0.0%	0.0%	6.6	13.3	Sep 27	45.2	Sep 03 07:00	97.5%	92.5%	0
October 2022	649	35.1%	42.8%	18.0%	4.0%	0.0%	0.0%	10.0	22.6	Oct 17	41.0	Oct 12 07:00	91.9%	87.2%	0
November 2022	642	27.7%	26.8%	29.6%	15.8%	0.0%	0.0%	15.9	34.4	Nov 18	58.7	Nov 18 20:00	100.0%	94.7%	0
December 2022	707	9.6%	35.8%	27.3%	27.3%	0.0%	0.0%	20.2	35.6	Dec 09	62.9	Dec 14 10:00	100.0%	95.0%	0
Annual	8154	47.9%	30.9%	12.7%	8.5%	0.0%	0.0%	10.0	41.4	Jan 27	62.9	Dec 14 10:00	98.3%	93.1%	0

AAQO Objectives: Annual: 24ppb, 1-Hr: 159ppb

2022 Hourly Concentration Readings of NO₂ (in ppb) at Henry Pirker





Hourly Maximum NO₂ (in ppb) for 2022 at Henry Pirker



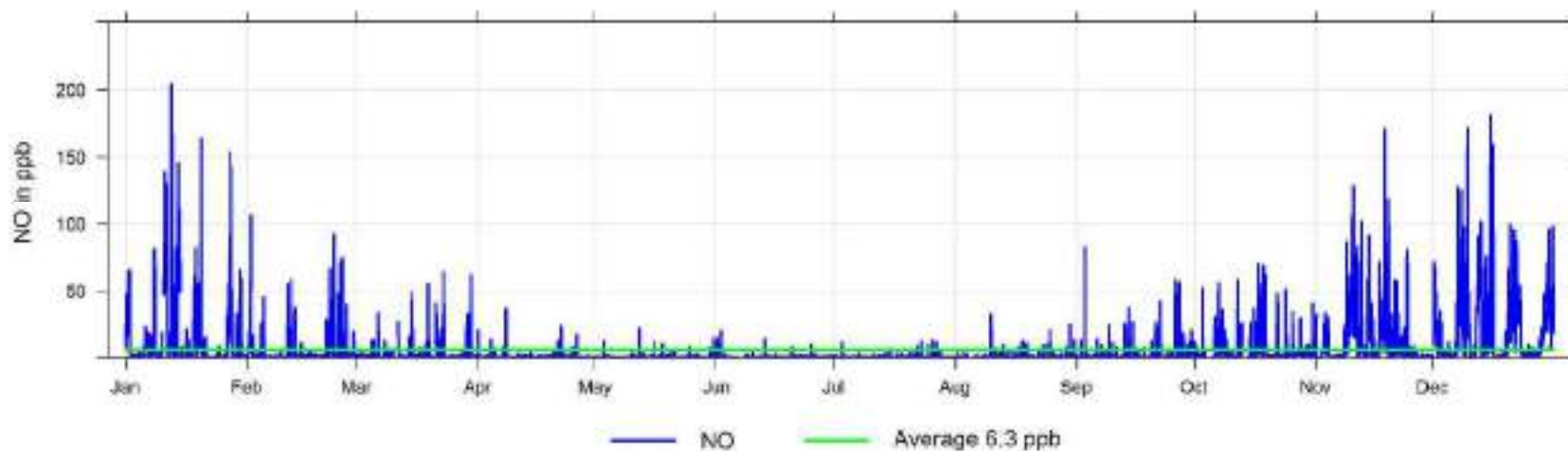
6.5 Nitric Oxide (NO) - Henry Pirker 2022 Summary

Nitric Oxide (NO) Frequency Distribution at Henry Pirker

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		
January 2022	708	62.1%	10.7%	7.9%	15.5%	3.0%	0.7%	16.8	64.8	Jan 27	203.9	Jan 12 20:00	100.0%	95.2%
February 2022	638	80.1%	9.1%	6.4%	4.2%	0.2%	0.0%	5.1	17.3	Feb 01	106.1	Feb 02 01:00	100.0%	94.9%
March 2022	667	83.4%	9.5%	4.2%	2.9%	0.0%	0.0%	3.8	13.4	Mar 30	63.8	Mar 23 09:00	97.2%	92.3%
April 2022	677	95.7%	3.0%	1.2%	0.1%	0.0%	0.0%	1.2	6.4	Apr 22	36.8	Apr 08 08:00	98.9%	94.0%
May 2022	707	96.3%	3.3%	0.4%	0.0%	0.0%	0.0%	0.7	3.0	May 31	21.5	May 12 07:00	100.0%	95.0%
June 2022	659	97.4%	2.3%	0.3%	0.0%	0.0%	0.0%	0.7	2.6	Jun 02	19.8	Jun 02 07:00	96.3%	91.5%
July 2022	703	97.4%	2.6%	0.0%	0.0%	0.0%	0.0%	0.7	1.9	Jul 27	13.6	Jul 26 09:00	99.5%	94.5%
August 2022	671	94.5%	4.9%	0.4%	0.1%	0.0%	0.0%	1.1	3.4	Aug 10	32.9	Aug 10 07:00	98.3%	90.2%
September 2022	666	84.8%	9.6%	3.6%	1.8%	0.0%	0.0%	3.2	12.7	Sep 27	82.3	Sep 09 07:00	97.9%	92.5%
October 2022	649	70.1%	13.4%	9.1%	5.4%	0.0%	0.0%	6.7	22.0	Oct 17	69.3	Oct 17 08:00	91.9%	87.2%
November 2022	682	55.3%	18.0%	11.4%	14.1%	1.0%	0.1%	13.6	38.9	Nov 10	170.9	Nov 18 20:00	100.0%	94.7%
December 2022	707	46.8%	14.0%	13.4%	23.5%	1.7%	0.6%	20.4	51.8	Dec 09	181.1	Dec 15 21:00	100.0%	95.0%
Annual	8154	80.3%	8.5%	4.9%	5.6%	0.5%	0.1%	6.3	64.8	Jan 27	203.9	Jan 12 20:00	98.3%	93.1%

AAAQO Objectives: none

2022 Hourly Concentration Readings of NO (in ppb) at Henry Pirker



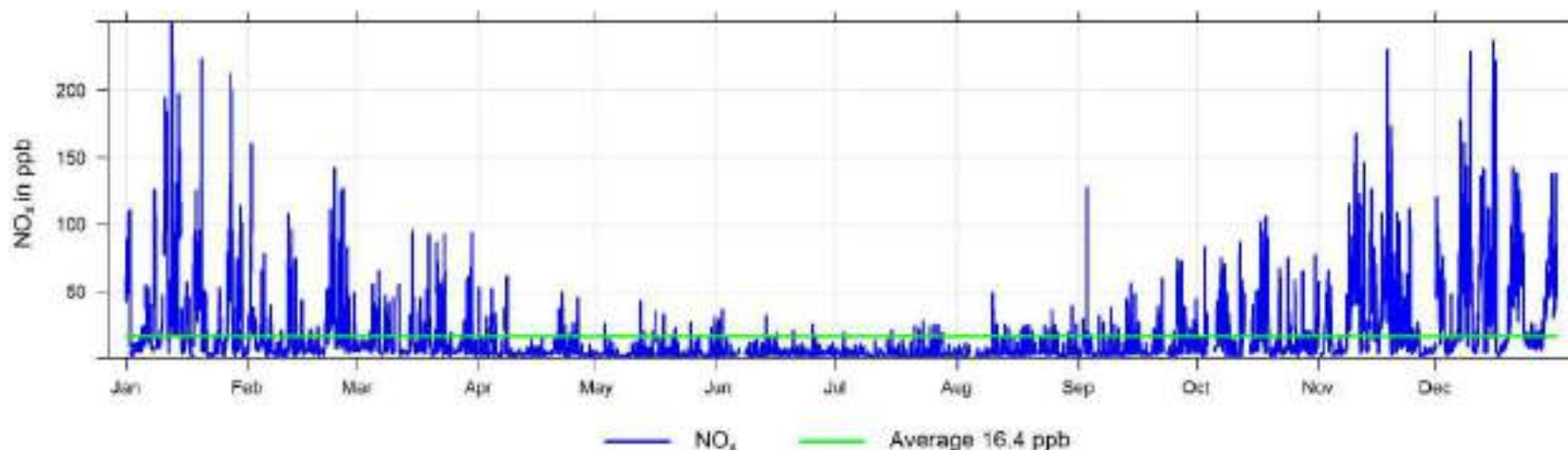
6.6 Oxides of Nitrogen (NO_x) - Henry Pirker 2022 Summary

Nitrogen Oxides (NO_x) Frequency Distribution at Henry Pirker

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		
January 2022	708	19.8%	28.0%	13.3%	28.8%	7.5%	2.7%	36.9	106.7	Jan 27	264.4	Jan 12 20:00	100.0%	95.2%
February 2022	638	20.7%	43.1%	19.0%	16.0%	1.1%	0.2%	18.5	47.3	Feb 22	159.5	Feb 02 01:00	100.0%	94.9%
March 2022	667	26.6%	44.5%	12.5%	16.3%	0.0%	0.0%	15.3	30.9	Mar 29	96.3	Mar 15 08:00	97.2%	92.3%
April 2022	677	62.3%	26.7%	7.2%	3.7%	0.0%	0.0%	6.9	17.8	Apr 22	60.8	Apr 08 08:00	98.9%	94.0%
May 2022	707	74.0%	19.9%	5.2%	0.8%	0.0%	0.0%	4.8	10.4	May 31	42.0	May 12 07:00	100.0%	95.0%
June 2022	659	65.4%	29.9%	4.2%	0.1%	0.0%	0.0%	5.0	10.4	Jun 13	36.1	Jun 02 07:00	96.3%	91.5%
July 2022	703	75.0%	22.0%	3.0%	0.0%	0.0%	0.0%	4.3	8.0	Jul 26	28.0	Jul 23 07:00	99.5%	94.5%
August 2022	671	57.5%	34.3%	7.6%	0.6%	0.0%	0.0%	6.2	11.7	Aug 25	48.2	Aug 10 07:00	98.3%	90.2%
September 2022	666	46.4%	34.7%	12.8%	6.0%	0.2%	0.0%	9.8	26.1	Sep 27	127.8	Sep 09 07:00	97.9%	92.5%
October 2022	649	25.4%	39.9%	17.1%	17.1%	0.5%	0.0%	16.8	44.8	Oct 17	105.1	Oct 18 22:00	91.9%	87.2%
November 2022	682	18.6%	28.7%	16.6%	31.4%	4.1%	0.6%	29.6	91.3	Nov 10	230.0	Nov 18 20:00	100.0%	94.7%
December 2022	707	6.6%	32.4%	15.0%	37.9%	6.1%	2.0%	40.8	87.8	Dec 09	236.6	Dec 15 21:00	100.0%	95.0%
Annual	8154	41.5%	32.0%	11.1%	13.3%	1.6%	0.5%	16.4	106.7	Jan 27	264.4	Jan 12 20:00	98.3%	93.1%

AAAQD Objectives: none

2022 Hourly Concentration Readings of NO_x (in ppb) at Henry Pirker



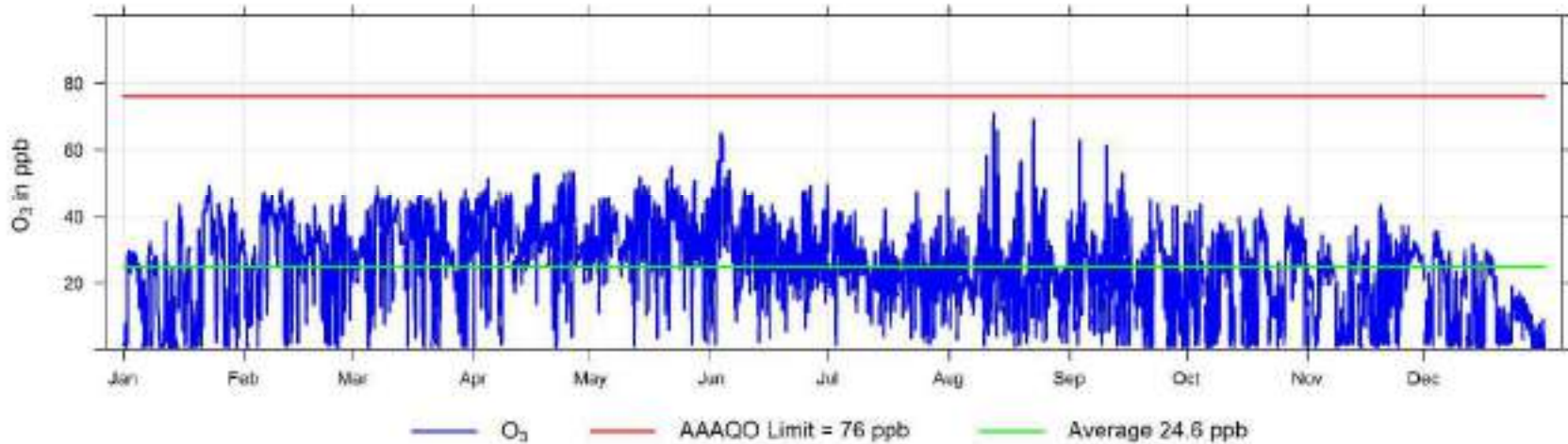
6.7 Ozone (O₃) - Henry Pirker 2022 Summary

Ozone (O₃) Frequency Distribution at Henry Pirker

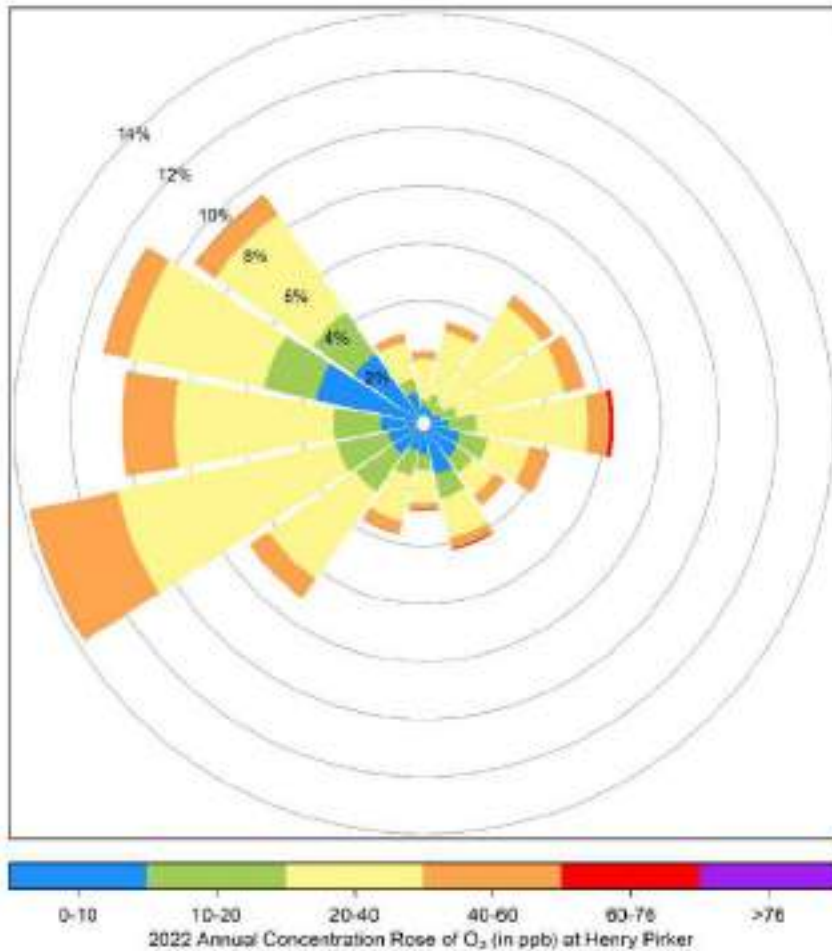
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents 1-hr 76 ppb	
		0 to 10 (ppb)	10 to 20 (ppb)	20 to 40 (ppb)	40 to 60 (ppb)	60 to 76 (ppb)	> 76 (ppb)			Date	1-hr (ppb)				Date
January 2022	710	35.8%	12.0%	40.6%	11.4%	0.0%	0.0%	19.5	44.0	Jan 22	49.3	Jan 23 04:00	100.0%	95.4%	0
February 2022	690	10.8%	15.3%	54.1%	19.8%	0.0%	0.0%	18.0	44.0	Feb 10	48.1	Feb 10 12:00	100.0%	95.2%	0
March 2022	709	10.7%	8.2%	56.6%	24.7%	0.0%	0.0%	29.7	44.9	Mar 07	48.8	Mar 07 05:00	100.0%	95.3%	0
April 2022	678	3.7%	5.8%	63.3%	27.3%	0.0%	0.0%	35.4	40.1	Apr 16	53.3	Apr 25 18:00	98.9%	94.2%	0
May 2022	709	3.1%	5.6%	62.5%	28.8%	0.0%	0.0%	33.8	43.4	May 22	54.6	May 21 20:00	100.0%	95.3%	0
June 2022	694	3.4%	16.7%	57.3%	20.6%	2.0%	0.0%	31.0	52.1	Jun 05	65.2	Jun 05 15:00	100.0%	95.0%	0
July 2022	706	8.2%	22.5%	66.4%	2.8%	0.0%	0.0%	23.8	30.8	Jul 04	48.2	Jul 31 14:00	99.5%	94.0%	0
August 2022	709	12.6%	27.8%	48.2%	10.0%	1.4%	0.0%	24.1	35.1	Aug 22	70.7	Aug 12 14:00	100.0%	95.3%	0
September 2022	669	20.0%	27.4%	44.2%	7.9%	0.4%	0.0%	22.0	34.5	Sep 24	62.7	Sep 03 18:00	97.5%	92.9%	0
October 2022	686	28.3%	16.9%	52.2%	2.6%	0.0%	0.0%	20.7	38.2	Oct 27	43.4	Oct 04 16:00	96.8%	92.2%	0
November 2022	687	33.0%	15.7%	52.7%	0.6%	0.0%	0.0%	18.3	30.0	Nov 28	43.3	Nov 20 01:00	100.0%	95.4%	0
December 2022	707	49.9%	24.3%	25.7%	0.0%	0.0%	0.0%	12.0	31.7	Dec 04	35.3	Dec 04 04:00	100.0%	95.0%	0
Annual	8294	18.1%	16.5%	52.0%	13.0%	0.3%	0.0%	24.6	52.1	Jun 05	70.7	Aug 12 14:00	99.4%	94.7%	0

AAAQO Objectives: 1-Hr: 76ppb

2022 Hourly Concentration Readings of O₃ (in ppb) at Henry Pirker



Hourly Maximum O₃ (in ppb) for 2022 at Henry Pirker



January-2022	February-2022	March-2022
26 27 28 29 30 31 1	30 31 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	31 28 29 30 31 1 2	29 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
26 27 28 29 30 1 2	1 1 2 3 4 5 6	28 29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
25 26 27 28 29 30 1	30 31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

0-10 10-20 20-40 40-60 60-76 >76

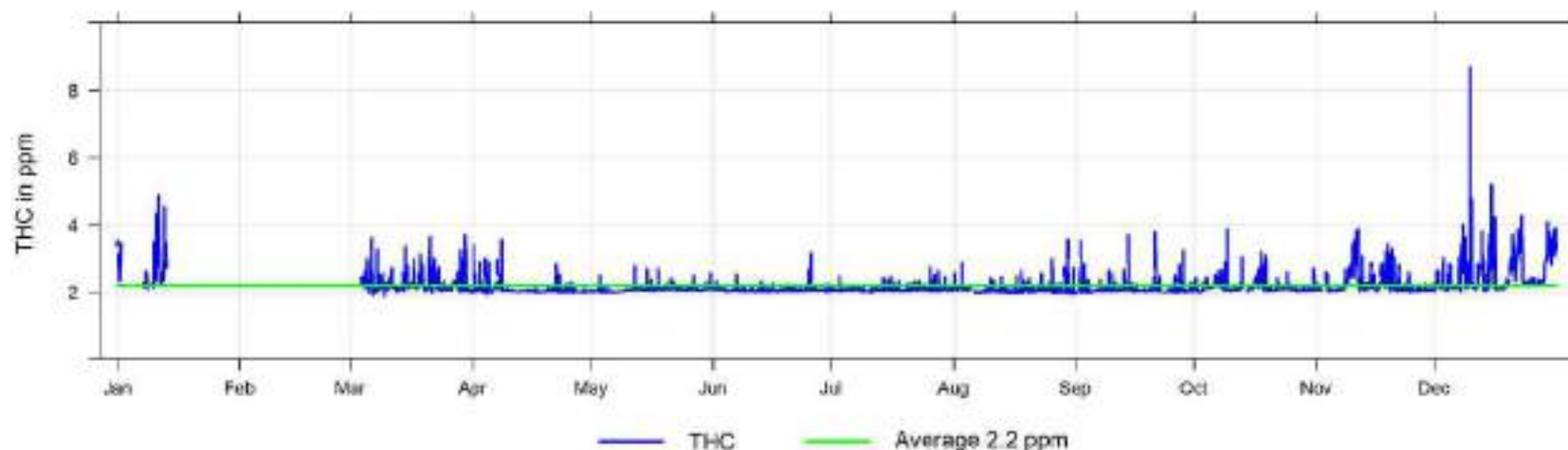
6.8 Total Hydrocarbons (THC) - Henry Pirker 2022 Summary

Total Hydrocarbons (THC) Frequency Distribution at Henry Pirker

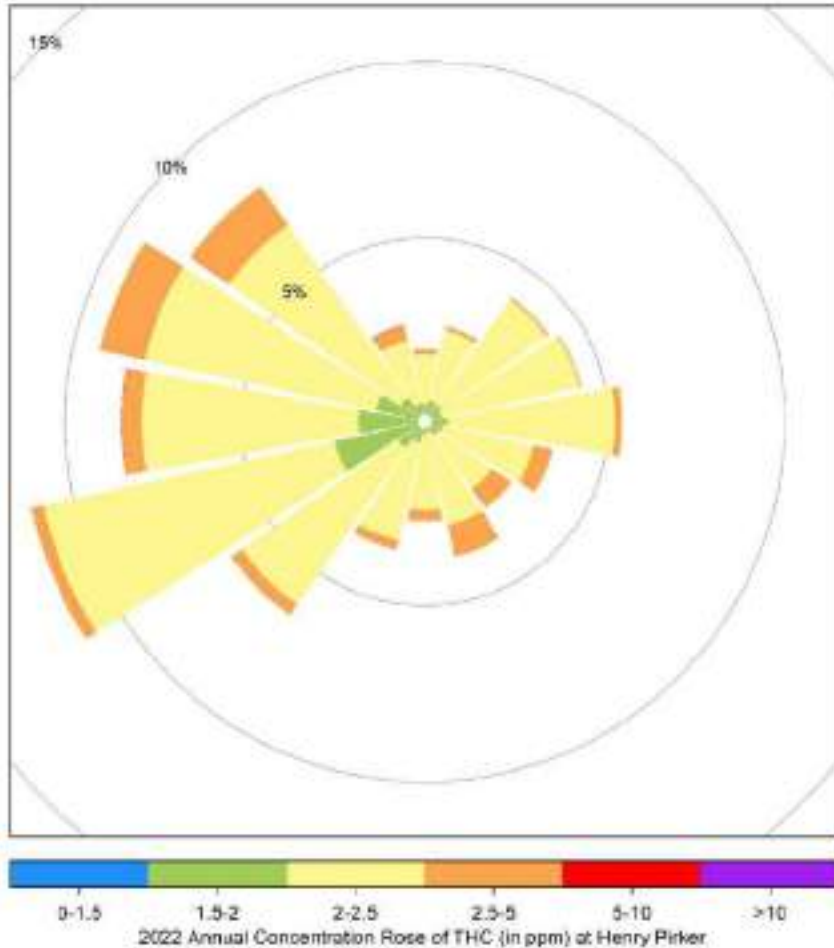
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppm)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 1.5 (ppm)	1.5 to 2 (ppm)	2 to 2.5 (ppm)	2.5 to 5 (ppm)	5 to 10 (ppm)	> 10 (ppm)		24-hr (ppm)	Date	1-hr (ppm)	Date		
January 2022	135	-	-	-	-	-	-	-	-	-	-	-	45.4%	41.2%
February 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
March 2022	651	0.0%	7.4%	76.3%	16.3%	0.0%	0.0%	2.3	2.5	Mar 21	3.7	Mar 30 02:00	91.9%	87.5%
April 2022	670	0.0%	28.8%	67.6%	3.6%	0.0%	0.0%	2.1	2.3	Apr 08	3.5	Apr 08 08:00	98.6%	93.1%
May 2022	709	0.0%	14.5%	84.2%	1.3%	0.0%	0.0%	2.1	2.2	May 18	2.8	May 12 07:00	100.0%	95.3%
June 2022	684	0.0%	12.4%	87.0%	0.6%	0.0%	0.0%	2.1	2.2	Jun 25	3.2	Jun 26 00:00	100.0%	95.0%
July 2022	705	0.0%	3.5%	96.0%	0.4%	0.0%	0.0%	2.1	2.2	Jul 26	2.7	Jul 26 06:00	99.5%	94.8%
August 2022	695	0.0%	37.3%	60.6%	2.2%	0.0%	0.0%	2.1	2.2	Aug 03	3.6	Aug 30 01:00	98.1%	93.4%
September 2022	667	0.0%	17.1%	78.3%	4.6%	0.0%	0.0%	2.1	2.4	Sep 14	3.8	Sep 21 05:00	97.5%	92.6%
October 2022	686	0.0%	2.2%	90.8%	7.0%	0.0%	0.0%	2.2	2.4	Oct 17	3.9	Oct 09 09:00	96.8%	92.2%
November 2022	666	0.0%	0.0%	83.0%	16.1%	0.0%	0.0%	2.3	3.1	Nov 11	3.9	Nov 11 19:00	97.1%	92.5%
December 2022	707	0.0%	0.0%	61.7%	38.0%	0.3%	0.0%	2.5	3.5	Dec 31	8.7	Dec 09 22:00	100.0%	95.0%
Annual	6975	0.0%	11.3%	76.1%	12.6%	0.0%	0.0%	2.2	MAXIMUM VALUES				90.2%	85.7%

AAAQO Objectives: none

2022 Hourly Concentration Readings of THC (in ppm) at Henry Pirker



Hourly Maximum THC (in ppm) for 2022 at Henry Pirker



January-2022							March-2022							April-2022						
28	29	30	31	1	2	3	27	28	1	2	3	4	5	27	28	29	30	31	1	2
4	5	6	7	8	9	10	6	7	8	9	10	11	12	3	4	5	6	7	8	9
11	12	13	14	15	16	17	13	14	15	16	17	18	19	10	11	12	13	14	15	16
18	19	20	21	22	23	24	20	21	22	23	24	25	26	17	18	19	20	21	22	23
25	26	27	28	29	30	31	27	28	29	30	31	1	2	24	25	26	27	28	29	30
1	2	3	4	5	6	7	3	4	5	6	7	8	9	1	2	3	4	5	6	7
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
May-2022							June-2022							July-2022						
24	25	26	27	28	29	30	28	29	30	1	2	3	4	28	29	30	31	1	2	
1	2	3	4	5	6	7	5	6	7	8	9	10	11	3	4	5	6	7	8	9
8	9	10	11	12	13	14	12	13	14	15	16	17	18	10	11	12	13	14	15	16
15	16	17	18	19	20	21	19	20	21	22	23	24	25	17	18	19	20	21	22	23
22	23	24	25	26	27	28	26	27	28	29	30	1	2	24	25	26	27	28	29	30
29	30	31	1	2	3	4	3	4	5	6	7	8	9	31	1	2	3	4	5	6
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
August-2022							September-2022							October-2022						
11	1	2	3	4	5	6	28	29	30	31	1	2	3	28	29	27	28	29	30	1
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
28	29	30	31	1	2	3	25	26	27	28	29	30	1	23	24	25	26	27	28	29
4	5	6	7	8	9	10	2	3	4	5	6	7	8	30	31	1	2	3	4	5
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
November-2022							December-2022													
30	31	1	2	3	4	5	27	28	29	30	1	2	3							
6	7	8	9	10	11	12	4	5	6	7	8	9	10							
13	14	15	16	17	18	19	11	12	13	14	15	16	17							
20	21	22	23	24	25	26	18	19	20	21	22	23	24							
27	28	29	30	1	2	3	25	26	27	28	29	30	31							
4	5	6	7	8	9	10	1	2	3	4	5	6	7							
S	M	T	W	T	F	S	S	M	T	W	T	F	S							

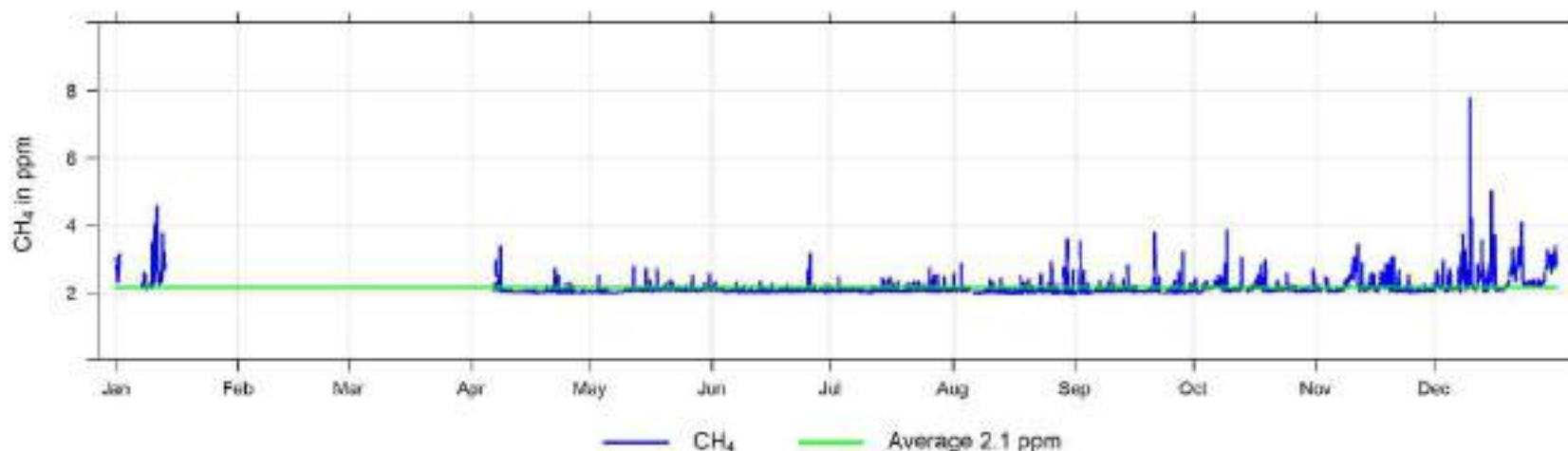
6.9 Methane (CH₄) - Henry Pirker 2022 Summary

Methane (CH₄) Frequency Distribution at Henry Pirker

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppm)	MAXIMUM VALUES			Operational time (%)	Valid time (%)	
		0 to 1.5 (ppm)	1.5 to 2 (ppm)	2 to 2.5 (ppm)	2.5 to 5 (ppm)	5 to 10 (ppm)	> 10 (ppm)		24-hr (ppm)	Date	1-hr (ppm)			Date
January 2022	135	-	-	-	-	-	-	-	-	-	-	45.4%	41.2%	
February 2022	0	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	
March 2022	0	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	
April 2022	549	0.0%	29.7%	68.5%	1.8%	0.0%	0.0%	2.1	2.3	Apr 08	3.4	Apr 08 08:00	80.8%	76.3%
May 2022	709	0.0%	14.4%	84.3%	1.3%	0.0%	0.0%	2.1	2.2	May 18	2.8	May 12 07:00	100.0%	95.3%
June 2022	684	0.0%	12.0%	87.6%	0.4%	0.0%	0.0%	2.1	2.2	Jun 25	3.2	Jun 26 00:00	100.0%	95.0%
July 2022	705	0.0%	3.5%	96.2%	0.3%	0.0%	0.0%	2.1	2.2	Jul 26	2.7	Jul 26 06:00	99.5%	94.8%
August 2022	695	0.0%	37.3%	60.9%	1.9%	0.0%	0.0%	2.1	2.2	Aug 03	3.6	Aug 30 01:00	98.1%	93.4%
September 2022	667	0.0%	17.2%	79.6%	3.1%	0.0%	0.0%	2.1	2.4	Sep 21	3.8	Sep 21 05:00	97.5%	92.6%
October 2022	686	0.0%	2.2%	94.6%	3.2%	0.0%	0.0%	2.1	2.3	Oct 09	3.9	Oct 09 09:00	96.8%	92.2%
November 2022	666	0.0%	0.0%	88.7%	10.4%	0.0%	0.0%	2.2	2.8	Nov 11	3.4	Nov 11 19:00	97.1%	92.5%
December 2022	707	0.0%	0.0%	68.7%	31.0%	0.3%	0.0%	2.4	3.0	Dec 22	7.8	Dec 09 22:00	100.0%	95.0%
Annual	6203	0.0%	11.7%	78.2%	10.1%	0.0%	0.0%	2.1	MAXIMUM VALUES			80.2%	76.2%	

AAAQO Objectives: none

2022 Hourly Concentration Readings of CH₄ (in ppm) at Henry Pirker



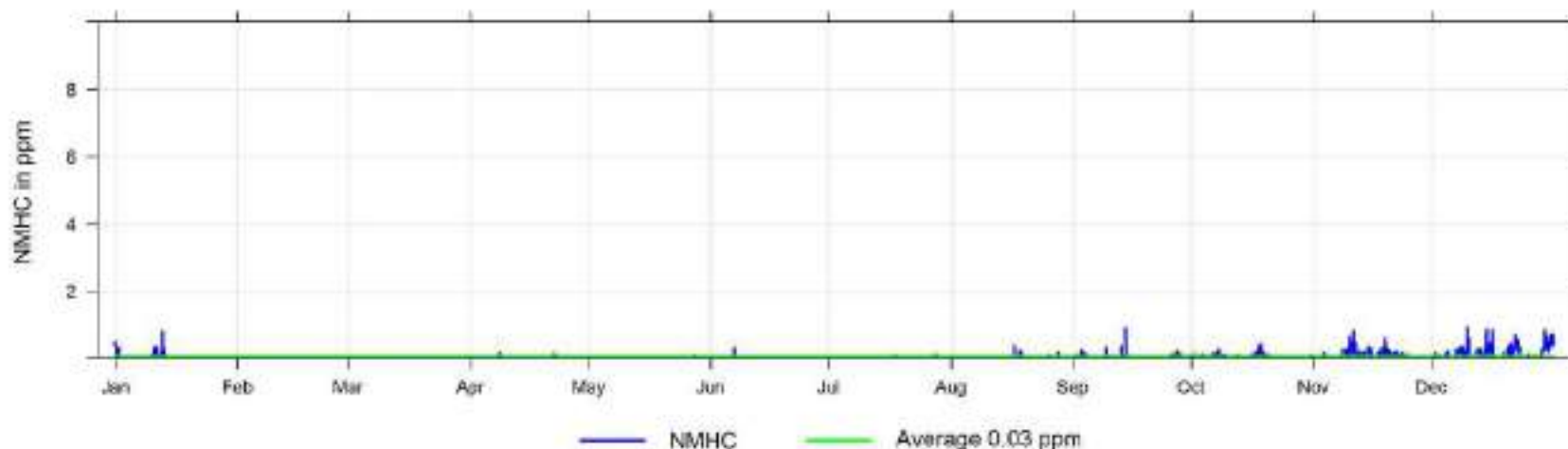
6.10 Nonmethane Hydrocarbons (NMHC) - Henry Pirker 2022 Summary

Nonmethane Hydrocarbons (NMHC) Frequency Distribution at Henry Pirker

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppm)	MAXIMUM VALUES			Operational time (%)	Valid time (%)	
		0 to 0.25 (ppm)	0.25 to 0.5 (ppm)	0.5 to 0.75 (ppm)	0.75 to 1 (ppm)	1 to 2 (ppm)	>2 (ppm)		24-hr (ppm)	Date	1-hr (ppm)			Date
January 2022	135	-	-	-	-	-	-	-	-	-	-	-	45.4%	41.2%
February 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
March 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
April 2022	549	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.00	0.0	Apr 22	0.2	Apr 08 08:00	80.8%	76.3%
May 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.00	0.0	May 12	0.1	May 28 05:00	100.0%	95.3%
June 2022	684	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.00	0.0	Jun 07	0.5	Jun 07 01:00	100.0%	95.0%
July 2022	705	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.00	0.0	Jul 28	0.1	Jul 28 05:00	99.5%	94.8%
August 2022	695	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.00	0.0	Aug 18	0.4	Aug 16 23:00	98.1%	93.4%
September 2022	667	98.8%	0.4%	0.4%	0.3%	0.0%	0.0%	0.02	0.2	Sep 14	0.9	Sep 14 06:00	97.5%	92.6%
October 2022	686	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.02	0.1	Oct 18	0.4	Oct 18 21:00	96.8%	92.2%
November 2022	666	93.5%	5.6%	0.8%	0.2%	0.0%	0.0%	0.05	0.3	Nov 11	0.8	Nov 11 06:00	97.1%	92.5%
December 2022	707	77.5%	16.4%	5.2%	0.8%	0.0%	0.0%	0.12	0.6	Dec 31	0.9	Dec 09 22:00	100.0%	95.0%
Annual	6203	95.3%	3.7%	0.7%	0.2%	0.0%	0.0%	0.03	0.6	MAXIMUM VALUES		80.2%	76.2%	

AAAQO Objectives: none

2022 Hourly Concentration Readings of NMHC (in ppm) at Henry Pirker



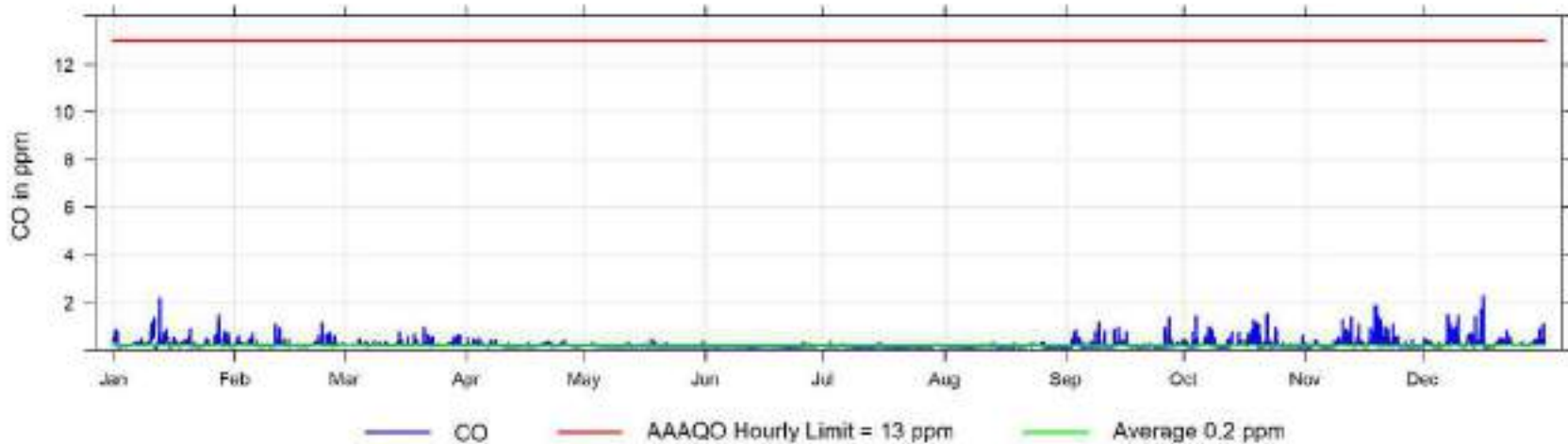
6.11 Carbon Monoxide (CO) - Henry Pirker 2022 Summary

Carbon Monoxide (CO) Frequency Distribution at Henry Pirker

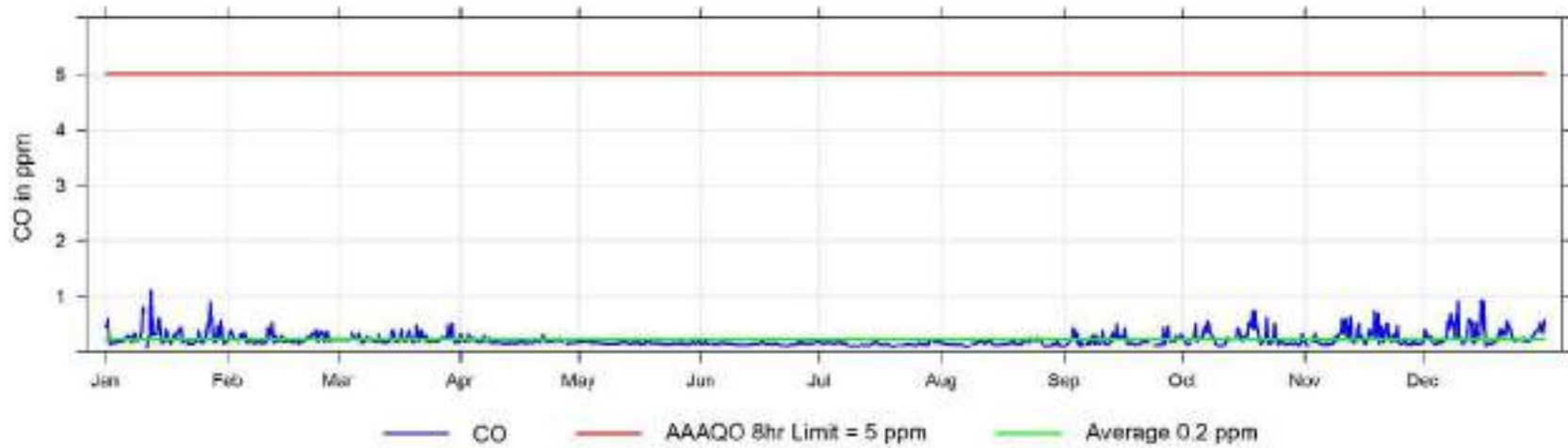
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppm)	24-hr (ppm)	MAXIMUM VALUES			Operational time (%)	Valid time (%)	Reportable Incidents	
		0 to 0.1 (ppm)	0.1 to 1 (ppm)	1 to 2.5 (ppm)	2.5 to 5 (ppm)	5 to 15 (ppm)	> 15 (ppm)			Date	1-hr (ppm)	Date			8-hr 5ppm	1-hr 15ppm
January 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.6	Jan 27	2.2	Jan 12 20:00	100.0%	95.3%	0	0
February 2022	640	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.3	Feb 12	1.1	Feb 23 09:00	100.0%	95.2%	0	0
March 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.3	Mar 29	0.9	Mar 21 07:00	100.0%	95.3%	0	0
April 2022	677	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.3	Apr 01	0.5	Apr 01 06:00	98.9%	94.0%	0	0
May 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.2	May 18	0.5	May 18 08:00	100.0%	95.3%	0	0
June 2022	688	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Jun 26	0.3	Jun 26 02:00	100.0%	95.3%	0	0
July 2022	704	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Jul 29	0.4	Jul 03 01:00	99.5%	94.6%	0	0
August 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.2	Aug 25	0.5	Aug 26 12:00	100.0%	95.3%	0	0
September 2022	668	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Sep 03	1.4	Sep 27 08:00	97.5%	92.8%	0	0
October 2022	686	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.6	Oct 18	1.6	Oct 22 08:00	96.8%	92.2%	0	0
November 2022	686	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.5	Nov 18	1.3	Nov 18 20:00	100.0%	95.3%	0	0
December 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.6	Dec 09	2.3	Dec 16 09:00	100.0%	95.3%	0	0
Annual	8292	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	MAXIMUM VALUES			99.4%	94.7%	0	0

AAAQO Objectives: 8-Hr: 5ppm, 1-Hr: 15ppm

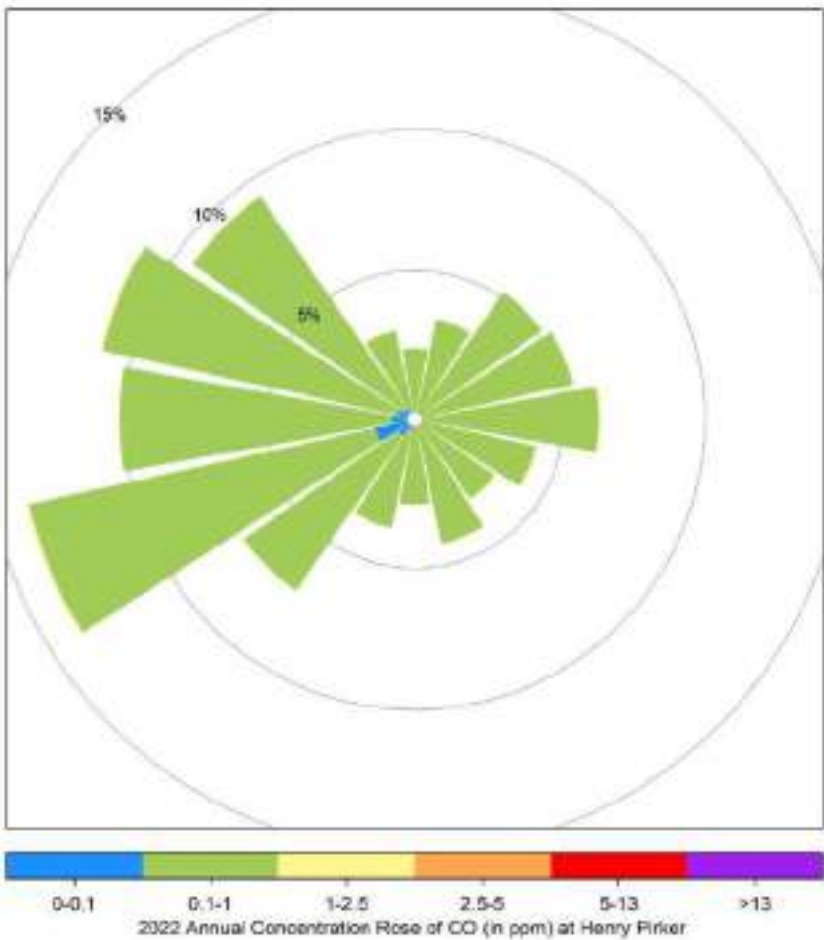
2022 Hourly Concentration Readings of CO (in ppm) at Henry Pirker



2022 8hr Concentration Readings of CO (in ppm) at Henry Pirker



Hourly Maximum CO (in ppm) for 2022 at Henry Pirker



January-2022	February-2022	March-2022
30 21 28 29 30 31 1	30 21 1 2 3 4 5	21 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	24 25 26 27 28 29 30	29 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
30 27 28 29 30 1 2	31 1 2 3 4 5 6	29 28 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	2 3 4 5 6 7 8
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
28 29 30 31 1 2 3	30 31 1 2 3 4 5	27 28 29 30 31 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

6.12 Particulate Matter (PM_{2.5}) - Henry Pirker 2022 Summary

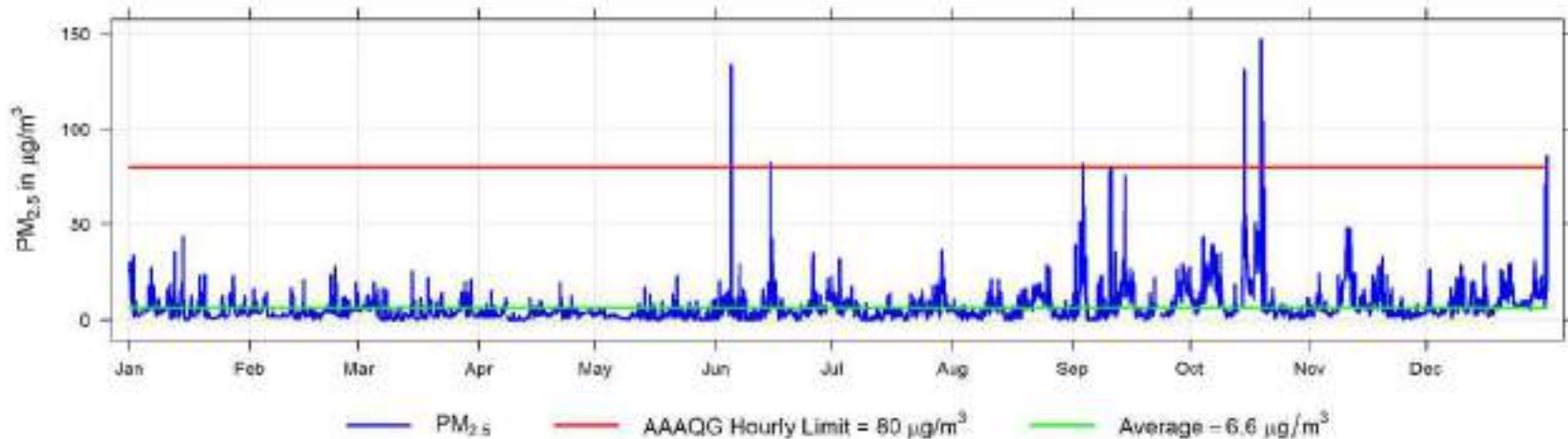
Particulate Matter (PM_{2.5}) Frequency Distribution at Henry Pirker

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m ³)	24-hr (µg/m ³)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 5 (µg/m ³)	5 to 15 (µg/m ³)	15 to 30 (µg/m ³)	30 to 50 (µg/m ³)	50 to 80 (µg/m ³)	> 80 (µg/m ³)			Date	1-hr (µg/m ³)			Date	24-hr 29 µg/m ³	1-hr 80 µg/m ³
January 2022	741	56.3%	35.3%	5.1%	0.7%	0.0%	0.0%	5.8	17.4	Jan 01	43.6	Jan 15 00:00	100.0%	99.6%	0	0
February 2022	670	71.1%	25.0%	1.3%	0.0%	0.0%	0.0%	4.0	8.5	Feb 22	27.9	Feb 22 23:00	100.0%	99.7%	0	0
March 2022	738	67.5%	30.8%	1.8%	0.0%	0.0%	0.0%	4.2	9.7	Mar 27	25.5	Mar 14 22:00	99.6%	99.2%	0	0
April 2022	708	83.8%	16.0%	0.3%	0.0%	0.0%	0.0%	3.1	6.9	Apr 22	18.8	Apr 22 00:00	98.6%	98.3%	0	0
May 2022	741	88.1%	11.8%	0.3%	0.0%	0.0%	0.0%	2.3	5.2	May 21	22.9	May 21 23:00	100.0%	99.6%	0	0
June 2022	717	52.4%	41.1%	5.4%	0.4%	0.1%	0.4%	6.5	18.4	Jun 15	133.6	Jun 04 23:00	100.0%	99.6%	0	3
July 2022	736	54.2%	39.3%	5.6%	0.7%	0.0%	0.0%	5.7	22.6	Jul 29	36.4	Jul 29 07:00	99.2%	98.9%	0	0
August 2022	742	53.6%	41.4%	5.0%	0.0%	0.0%	0.0%	5.8	15.0	Aug 25	28.7	Aug 25 10:00	100.0%	99.7%	0	0
September 2022	689	45.7%	30.0%	19.0%	3.2%	1.7%	0.3%	10.2	38.5	Sep 03	81.9	Sep 03 14:00	100.0%	95.7%	1	2
October 2022	718	38.2%	32.2%	16.7%	10.6%	1.4%	1.0%	13.4	52.6	Oct 19	147.0	Oct 19 13:00	96.8%	96.5%	3	7
November 2022	719	49.9%	32.7%	13.5%	3.9%	0.0%	0.0%	8.4	33.4	Nov 10	47.7	Nov 10 15:00	100.0%	99.9%	1	0
December 2022	743	24.6%	60.4%	14.5%	0.1%	0.1%	0.1%	9.8	19.0	Dec 31	86.5	Dec 31 23:00	100.0%	99.9%	0	1
Annual	8642	57.5%	33.1%	7.4%	1.6%	0.3%	0.2%	6.6	52.6	MAXIMUM VALUES		99.5%	98.9%	5	13	

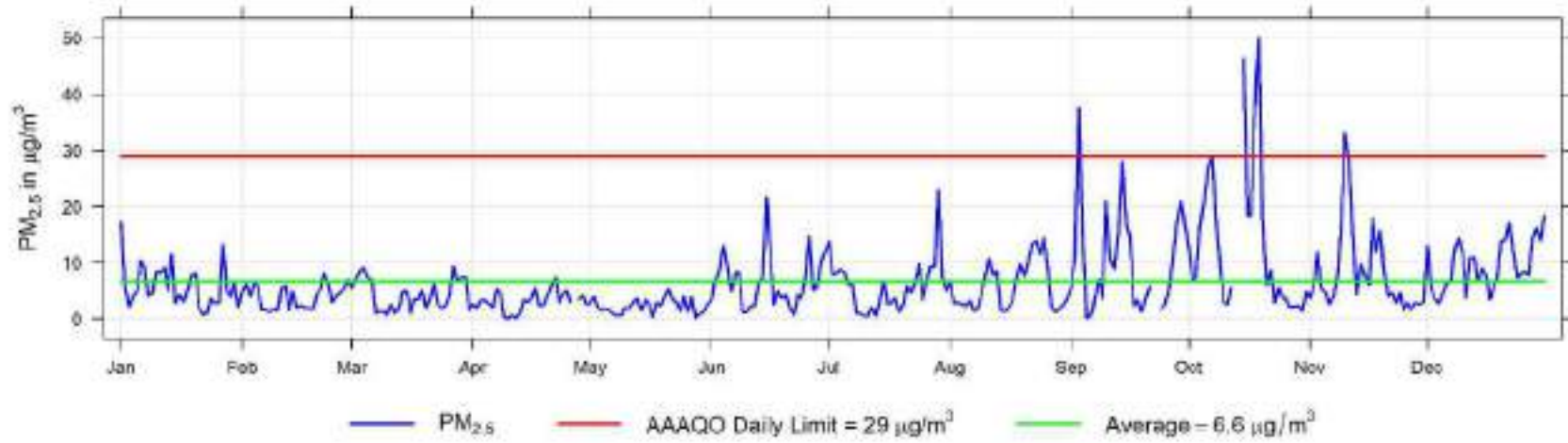
AAQO Objectives: 24-hr: 29 µg/m³, AAQO Guideline: 1-hr: 80 µg/m³

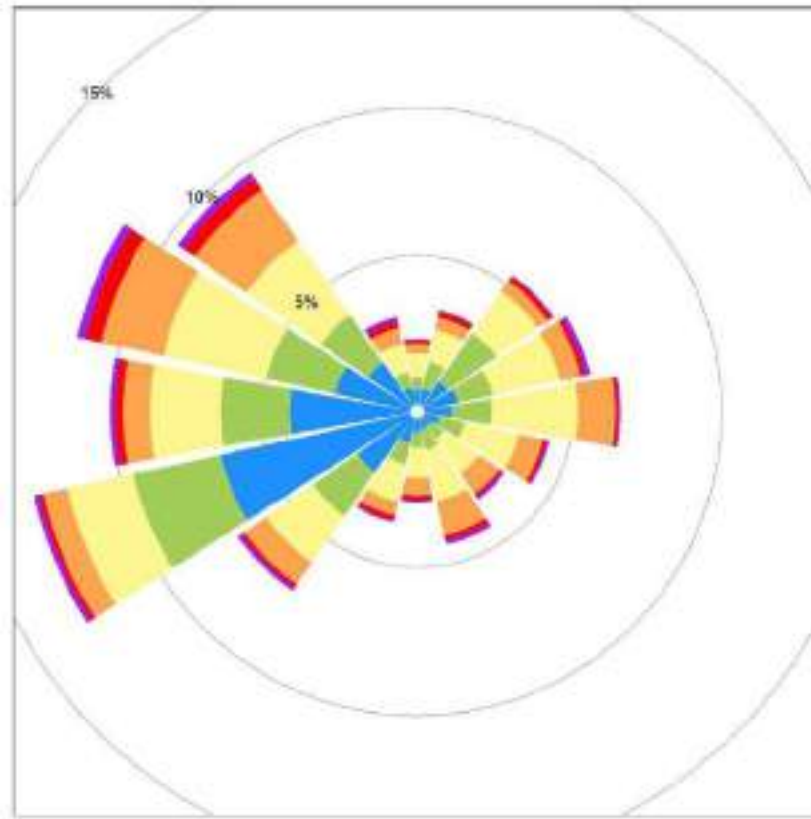
PM_{2.5} analyzer changed in September 2022, data combined in table

2022 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Henry Pirker



2022 Daily Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker





2022 Annual Concentration Readings of PM_{2.5} in µg/m³ at Henry Pirker

Hourly Maximum PM_{2.5} (in µg/m³) for 2022 at Henry Pirker

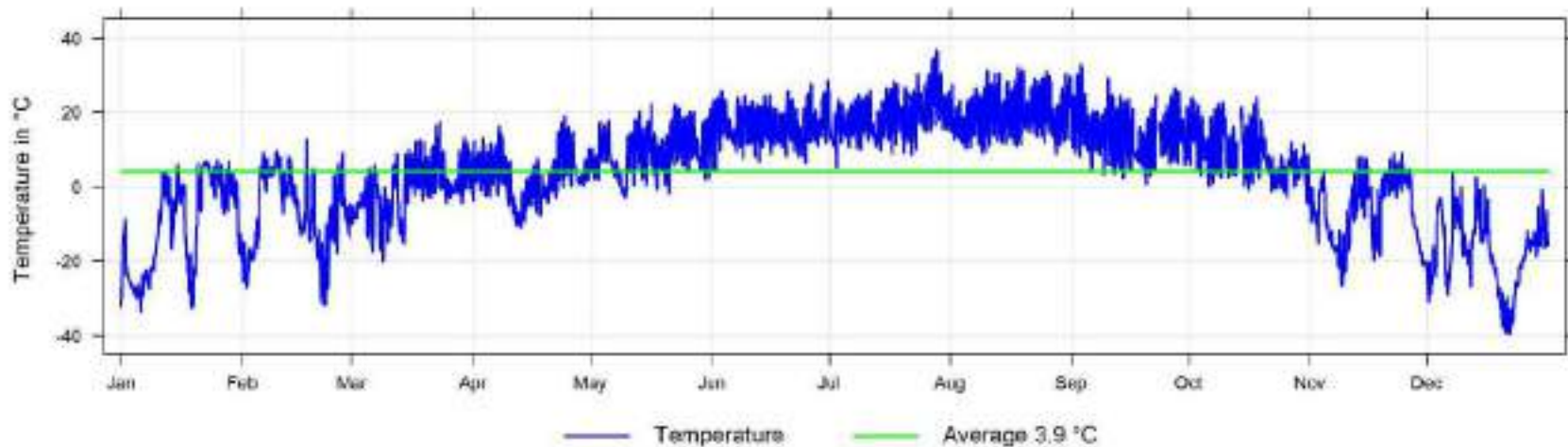


6.13 Temperature (ET) - Henry Pirker 2022 Summary

Temperature (ET) Frequency Distribution at Henry Pirker

Month	Valid Hours	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)	Valid time (%)	
			24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date			
January 2022	744	-10.4	6.1	Jan 22	7.2	Jan 25 14:00	-28.6	Jan 04	-33.6	Jan 06 05:00	100.0%	100.0%	
February 2022	672	-6.9	6.6	Feb 09	12.6	Feb 17 12:00	-24.2	Feb 21	-32.0	Feb 22 08:00	100.0%	100.0%	
March 2022	744	-0.8	7.2	Mar 22	17.5	Mar 23 11:00	-11.8	Mar 13	-20.4	Mar 09 03:00	100.0%	100.0%	
April 2022	712	2.5	10.5	Apr 24	18.9	Apr 24 15:00	-8.7	Apr 12	-11.1	Apr 13 07:00	98.9%	98.9%	
May 2022	744	9.6	14.8	May 22	22.3	May 16 14:00	-1.5	May 09	-3.0	May 10 00:00	100.0%	100.0%	
June 2022	720	16.6	21.2	Jun 30	28.5	Jun 30 18:00	12.8	Jun 23	3.9	Jun 01 05:00	100.0%	100.0%	
July 2022	740	19.2	28.2	Jul 28	36.6	Jul 28 15:00	13.6	Jul 01	4.9	Jul 03 05:00	99.5%	99.3%	
August 2022	744	19.8	22.9	Aug 25	32.2	Aug 18 16:00	13.8	Aug 04	8.8	Aug 28 05:00	100.0%	100.0%	
September 2022	702	14.2	20.2	Sep 03	32.9	Sep 03 15:00	8.5	Sep 17	0.7	Sep 20 07:00	97.5%	97.5%	
October 2022	721	8.2	16.2	Oct 02	24.1	Oct 01 17:00	1.0	Oct 25	-4.6	Oct 31 08:00	96.9%	96.9%	
November 2022	730	-7.2	3.1	Nov 21	9.1	Nov 24 14:00	-21.2	Nov 09	-26.6	Nov 09 03:00	100.0%	100.0%	
December 2022	744	-17.8	-4.7	Dec 04	3.3	Dec 07 14:00	-36.9	Dec 22	-39.6	Dec 22 02:00	100.0%	100.0%	
		AVERAGE	MAXIMUM VALUES				MINIMUM VALUES						
		8707	3.9	28.2	Jul 28	36.6	Jul 28 15:00	-36.9	Dec 22	-39.6	Dec 22 02:00	99.4%	99.4%

2022 Hourly Temperature Readings (in °C) at Henry Pirker

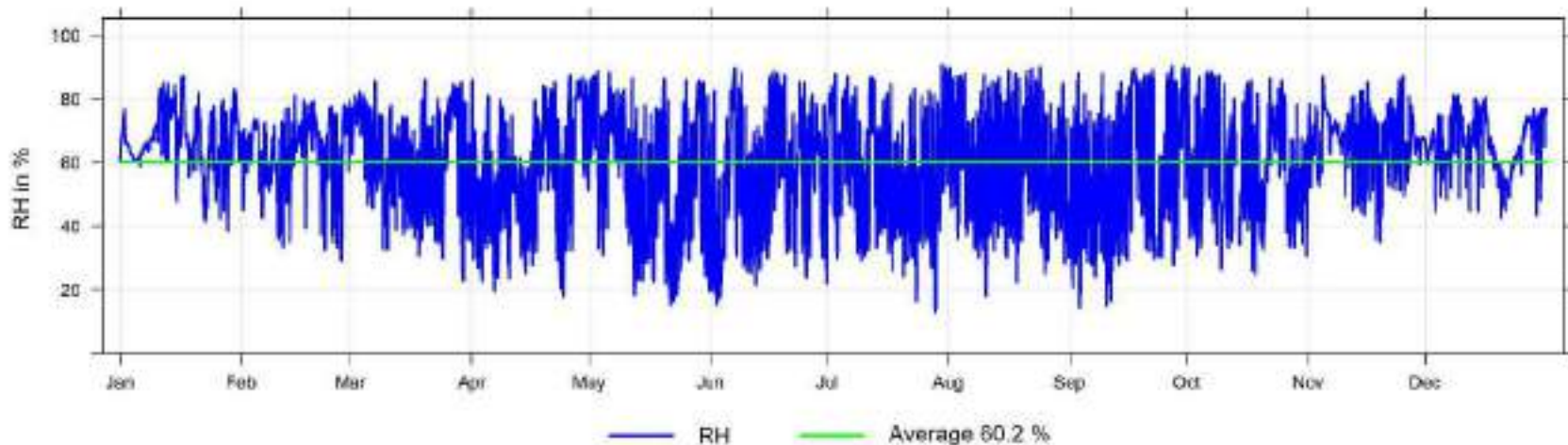


6.14 Relative Humidity (RH) - Henry Pirker 2022 Summary

Relative Humidity (RH) Frequency Distribution at Henry Pirker

Month	Valid Hours	Monthly Average (%)	Maximum Values			Operational time (%)	Valid time (%)			
			24-hr (%)	Date	1-hr (%)			Date		
January 2022	744	67.2	78.2	Jan 30	87.4	Jan 17 06:00	100.0%	100.0%		
February 2022	672	63.1	75.9	Feb 27	81.0	Feb 14 22:00	100.0%	100.0%		
March 2022	744	61.0	80.3	Mar 27	85.9	Mar 20 01:00	100.0%	100.0%		
April 2022	712	55.9	83.4	Apr 28	87.6	Apr 26 07:00	98.9%	98.9%		
May 2022	744	54.9	77.9	May 06	88.5	May 03 06:00	100.0%	100.0%		
June 2022	720	54.7	77.4	Jun 18	89.6	Jun 07 05:00	100.0%	100.0%		
July 2022	740	56.5	81.2	Jul 12	90.6	Jul 30 06:00	99.5%	99.5%		
August 2022	744	58.6	75.7	Aug 01	90.0	Aug 24 07:00	100.0%	100.0%		
September 2022	702	57.6	87.6	Sep 17	90.1	Sep 27 06:00	97.5%	97.5%		
October 2022	731	59.7	76.1	Oct 22	89.4	Oct 01 08:00	96.9%	96.9%		
November 2022	720	67.3	77.8	Nov 05	87.3	Nov 25 07:00	100.0%	100.0%		
December 2022	744	65.4	75.5	Dec 08	81.2	Dec 08 04:00	100.0%	100.0%		
	8707	AVERAGE 60.2		MAXIMUM VALUES		Sep 17	90.6	Jul 30 06:00	95.4%	95.4%

2022 Hourly Readings of Relative Humidity (in %) at Henry Pirker

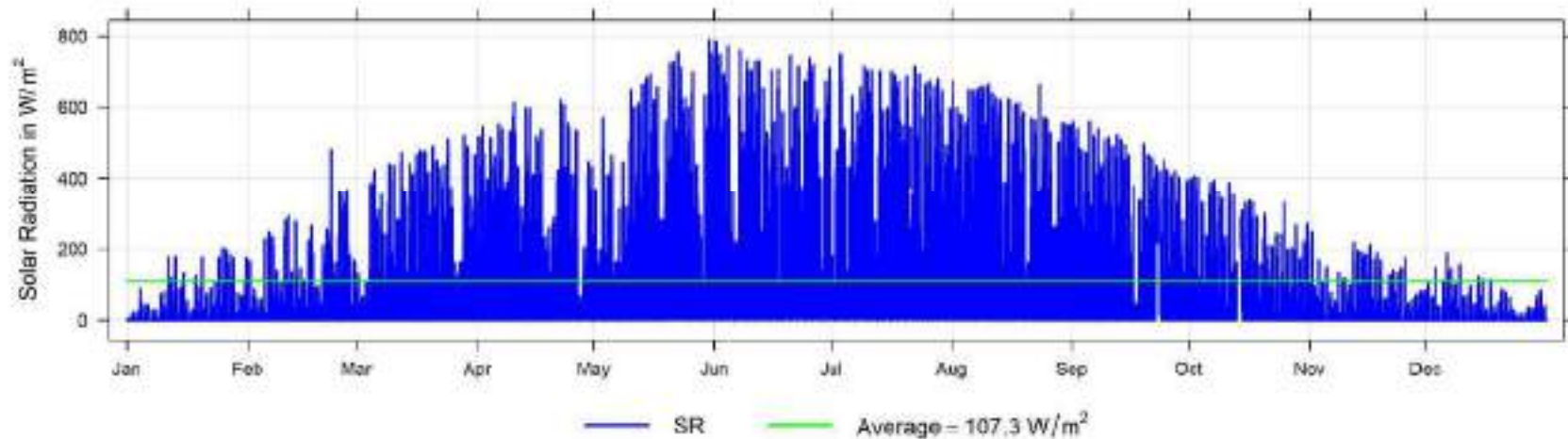


6.15 Solar Radiation (SR) - Henry Pirker 2022 Summary

Solar Radiation (SR) Frequency Distribution at Henry Pirker

Month	Valid Hours	Monthly Average (W/m ²)	Maximum Values			Operational time (%)	Valid time (%)	
			24-hr (W/m ²)	Date	1-hr (W/m ²)			Date
January 2022	744	17.4	38.9	Jan 27	203.6	Jan 25 14:00	100.0%	100.0%
February 2022	672	44.2	100.2	Feb 22	481.0	Feb 22 15:00	100.0%	100.0%
March 2022	744	94.0	153.6	Mar 24	518.6	Mar 28 13:00	100.0%	100.0%
April 2022	712	135.5	209.0	Apr 23	621.7	Apr 22 15:00	98.9%	98.9%
May 2022	744	173.9	290.7	May 31	788.2	May 30 14:00	100.0%	100.0%
June 2022	720	211.5	291.3	Jun 01	783.9	Jun 01 13:00	100.0%	100.0%
July 2022	740	199.2	278.4	Jul 03	748.4	Jul 03 13:00	99.5%	99.5%
August 2022	744	178.3	241.1	Aug 10	672.9	Aug 01 14:00	100.0%	100.0%
September 2022	702	125.6	180.2	Sep 01	560.3	Sep 01 14:00	97.5%	97.5%
October 2022	721	65.7	104.9	Oct 01	406.1	Oct 02 13:00	96.9%	96.9%
November 2022	720	25.6	49.8	Nov 01	247.2	Nov 01 14:00	100.0%	100.0%
December 2022	744	12.3	28.1	Dec 06	186.3	Dec 06 13:00	100.0%	100.0%
		AVERAGE	MAXIMUM VALUES					
		8707	107.3	291.3	788.2	May 30 14:00	95.4%	99.4%

2022 Hourly Concentration Readings of Solar Radiation in W/m² at Henry Pirker

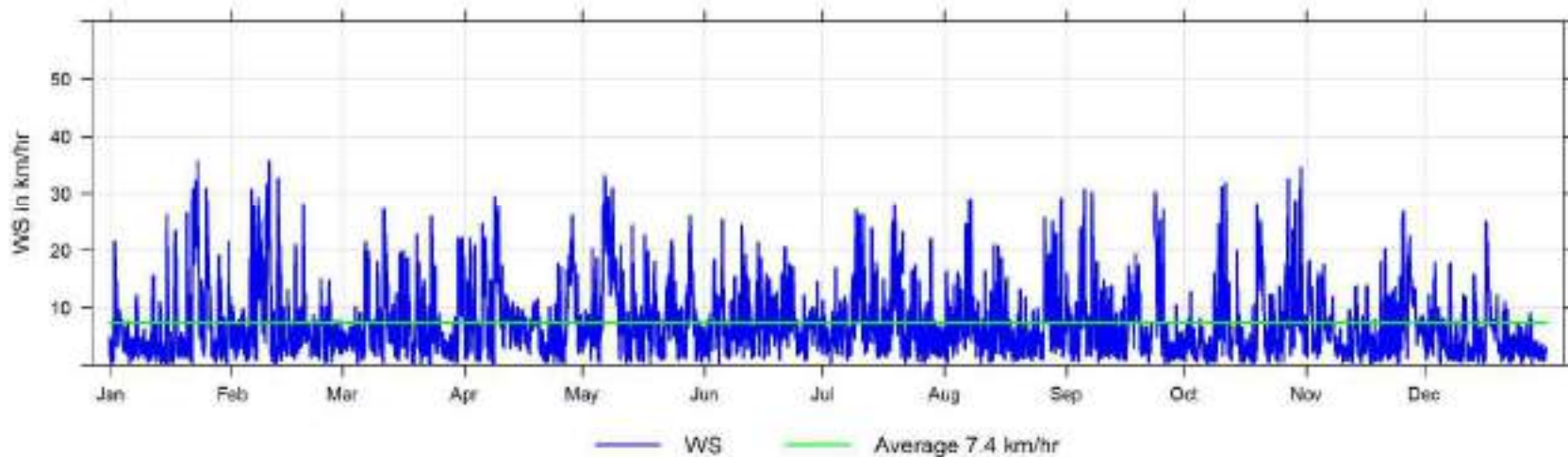


6.16 Wind Speed and Wind Direction (WS and WD) - Henry Pirker 2022 Summary

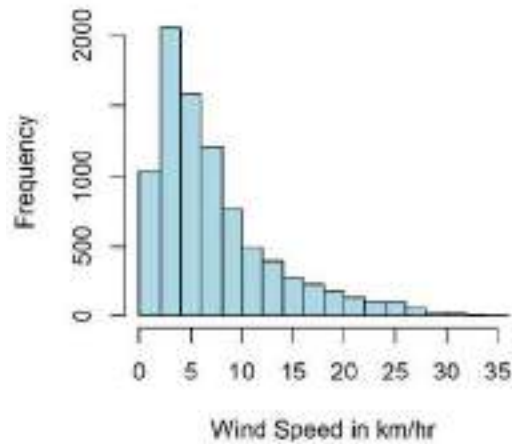
Wind Speed Frequency Distribution at Henry Pirker

Month	Valid Hours	Calm	% of Readings in Concentration Range					Monthly Average (km/hr)	24-hr (km/hr)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	
			0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)			Date	1-hr Date			
January 2022	744	1.5%	36.9%	20.3%	11.2%	7.5%	2.7%	7.2	24.5	Jan 22	35.6	Jan 23 04:00	100.0%	100.0%
February 2022	673	0.4%	43.3%	34.7%	10.3%	9.4%	1.9%	8.1	21.0	Feb 10	35.6	Feb 10 12:00	100.0%	100.0%
March 2022	744	1.3%	48.0%	30.9%	15.9%	3.9%	0.0%	7.0	13.9	Mar 07	27.2	Mar 11 18:00	100.0%	100.0%
April 2022	712	1.0%	32.0%	43.8%	16.7%	6.3%	0.1%	8.2	19.2	Apr 28	29.4	Apr 08 18:00	98.9%	98.9%
May 2022	744	0.5%	30.0%	39.7%	19.5%	8.9%	1.5%	9.2	23.3	May 07	33.1	May 06 17:00	100.0%	100.0%
June 2022	720	0.1%	31.1%	49.7%	16.9%	2.1%	0.0%	7.5	13.6	Jun 10	25.3	Jun 05 16:00	100.0%	100.0%
July 2022	740	0.5%	36.9%	40.7%	13.6%	8.2%	0.0%	8.0	17.6	Jul 19	27.9	Jul 19 10:00	99.5%	99.5%
August 2022	764	0.3%	45.8%	35.5%	12.1%	5.6%	0.7%	7.2	15.8	Aug 07	29.1	Aug 30 17:00	100.0%	100.0%
September 2022	702	0.4%	48.7%	30.5%	14.1%	5.4%	0.9%	7.1	15.1	Sep 05	30.6	Sep 05 18:00	97.5%	97.5%
October 2022	721	0.6%	50.3%	25.4%	14.4%	7.6%	1.4%	7.5	19.3	Oct 20	34.6	Oct 30 15:00	96.9%	96.9%
November 2022	720	1.1%	49.4%	31.7%	15.4%	2.4%	0.0%	6.5	16.6	Nov 27	26.7	Nov 25 16:00	100.0%	100.0%
December 2022	730	1.1%	63.8%	27.3%	7.0%	0.8%	0.0%	4.9	11.3	Dec 17	25.0	Dec 16 16:00	98.1%	98.1%
Annual	8693	0.8%	44.7%	34.2%	13.9%	5.7%	0.8%	7.4	24.5	MAXIMUM VALUES		99.2%	99.2%	

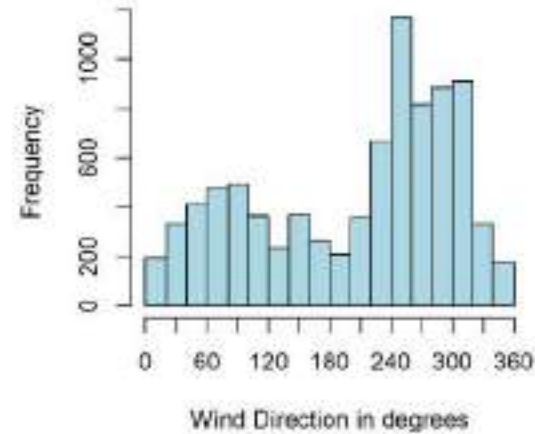
2022 Hourly Readings of Wind Speed (in km/hr) at Henry Pirker



2022 Wind Speed Histogram

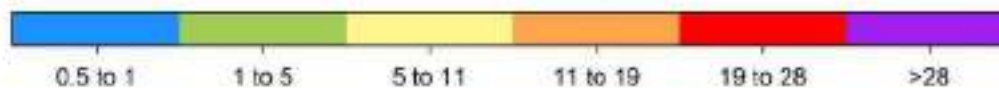
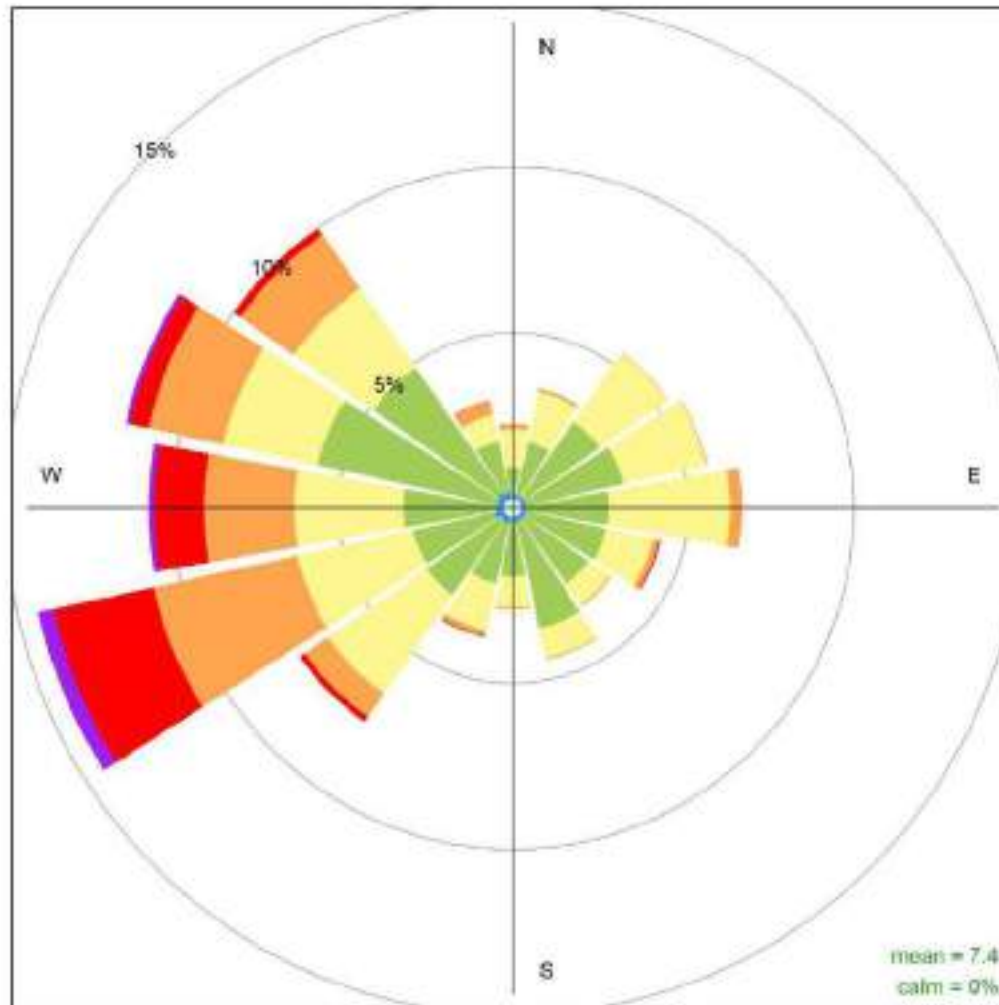


2022 Wind Direction Histogram



Wind Speed and Wind Direction Frequency Distribution at Henry Pirker

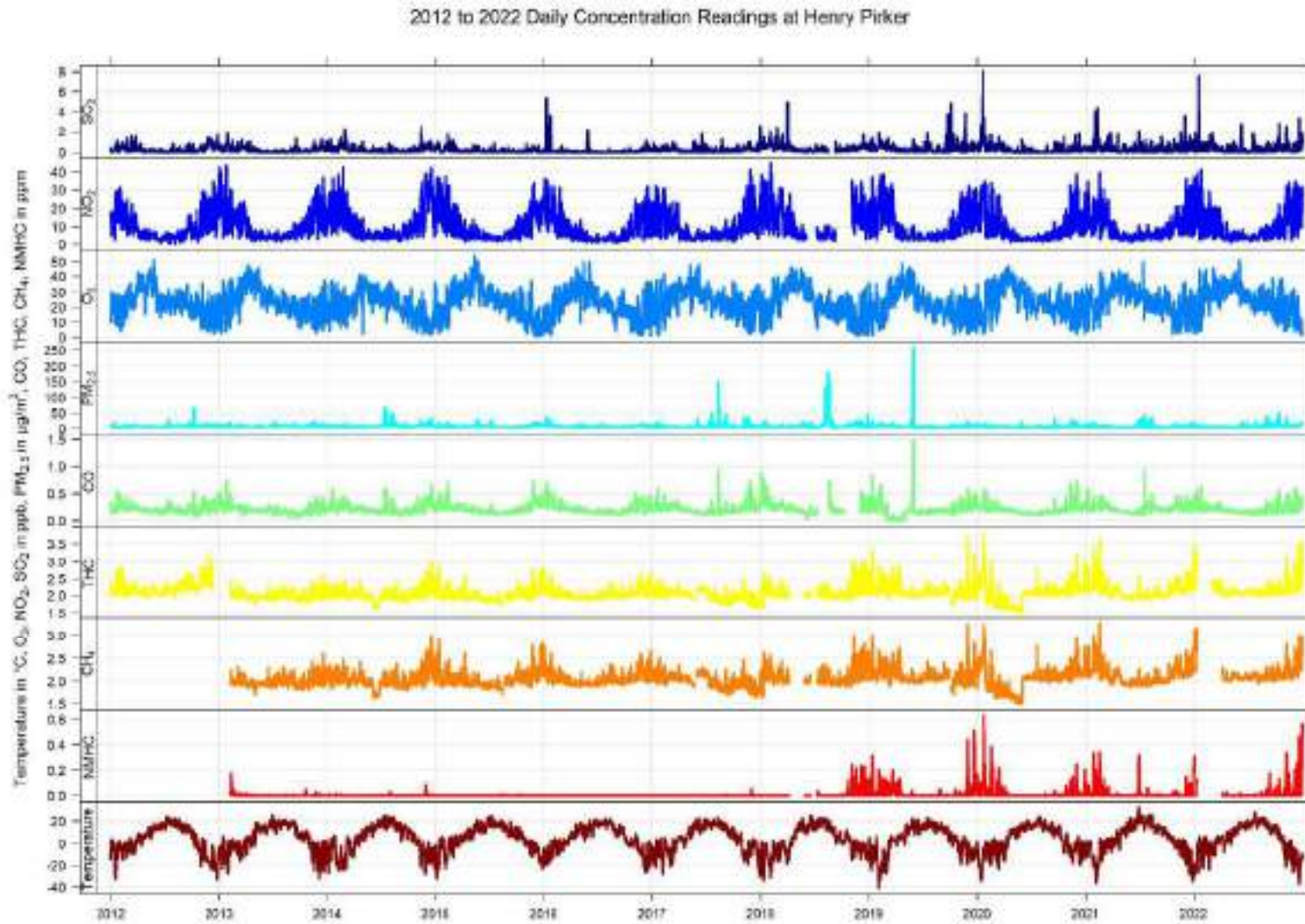
Direction	Number of Readings	% of wind speed range						Total %
		Calm (<0.5 (km/hr)	0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)	
N	158	0.0%	0.9%	1.2%	0.2%	0.0%	0.0%	2.3%
NNE	302	0.1%	1.7%	1.6%	0.1%	0.0%	0.0%	3.5%
NE	474	0.0%	2.9%	2.5%	0.0%	0.0%	0.0%	5.5%
ENE	502	0.0%	3.1%	2.6%	0.0%	0.0%	0.0%	5.8%
E	579	0.0%	2.6%	3.7%	0.4%	0.0%	0.0%	6.7%
ESE	374	0.0%	2.6%	1.4%	0.2%	0.0%	0.0%	4.3%
SE	294	0.0%	2.5%	0.8%	0.1%	0.0%	0.0%	3.4%
SSE	384	0.0%	3.4%	0.9%	0.0%	0.0%	0.0%	4.4%
S	249	0.1%	1.8%	0.9%	0.1%	0.0%	0.0%	2.9%
SSW	328	0.1%	2.0%	1.5%	0.2%	0.0%	0.0%	3.8%
SW	660	0.0%	2.9%	3.6%	0.9%	0.2%	0.0%	7.6%
WSW	1255	0.1%	2.8%	3.6%	4.5%	3.1%	0.5%	14.4%
W	992	0.0%	3.0%	3.3%	2.7%	1.5%	0.2%	10.7%
WNW	1020	0.1%	5.7%	2.9%	2.3%	0.6%	0.1%	11.7%
NW	871	0.0%	4.9%	2.9%	2.0%	0.2%	0.0%	10.0%
NNW	271	0.1%	1.8%	0.8%	0.4%	0.0%	0.0%	3.1%
Total	8693	0.8%	44.7%	34.2%	14.0%	5.7%	0.8%	100.0%



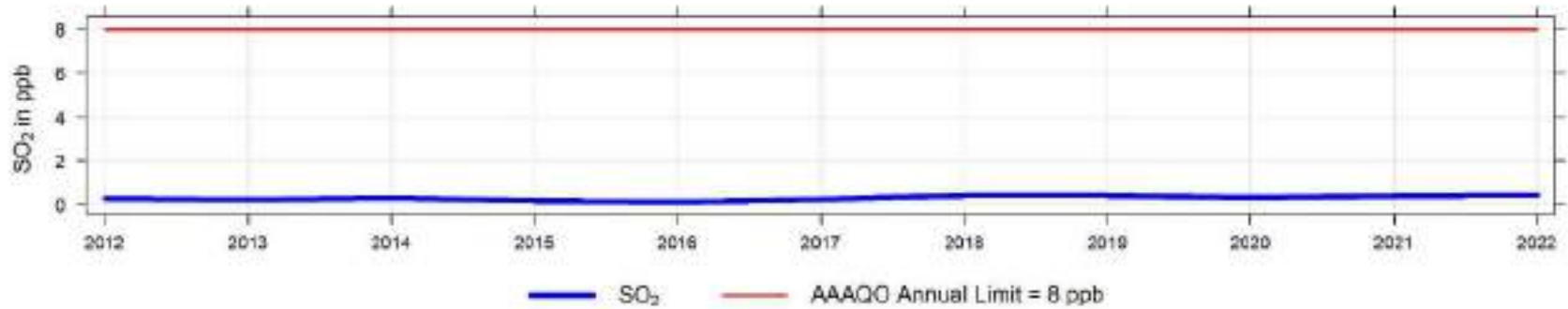
Henry Pirker 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

6.17 Henry Pirker Annual Trends, 2012 to 2022

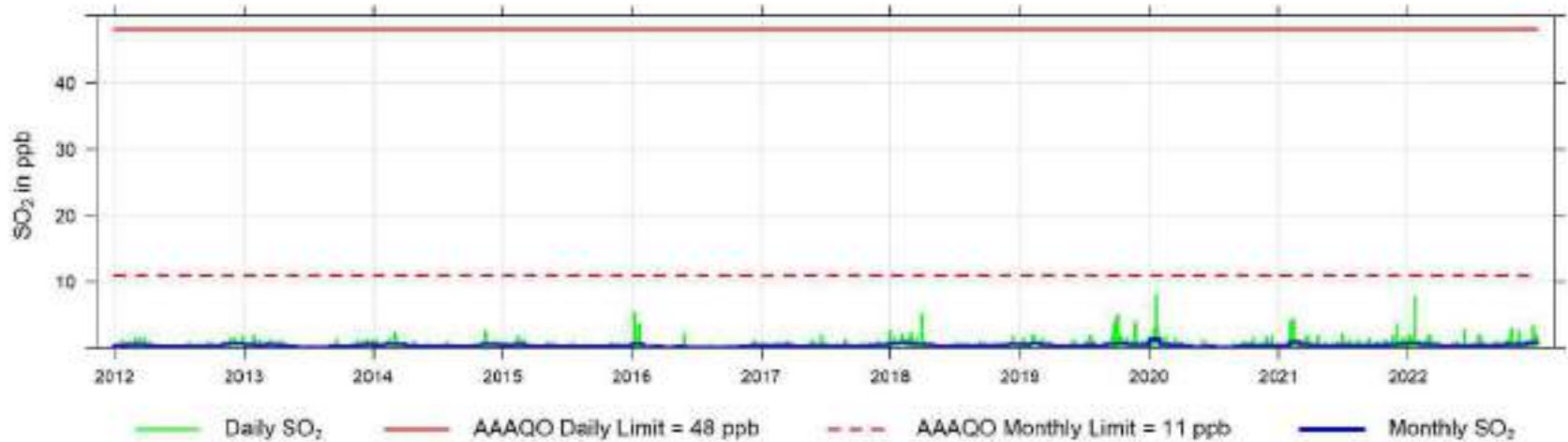
The following pages include historical annual charts collected between 2012 and 2022 at the Henry Pirker Station.



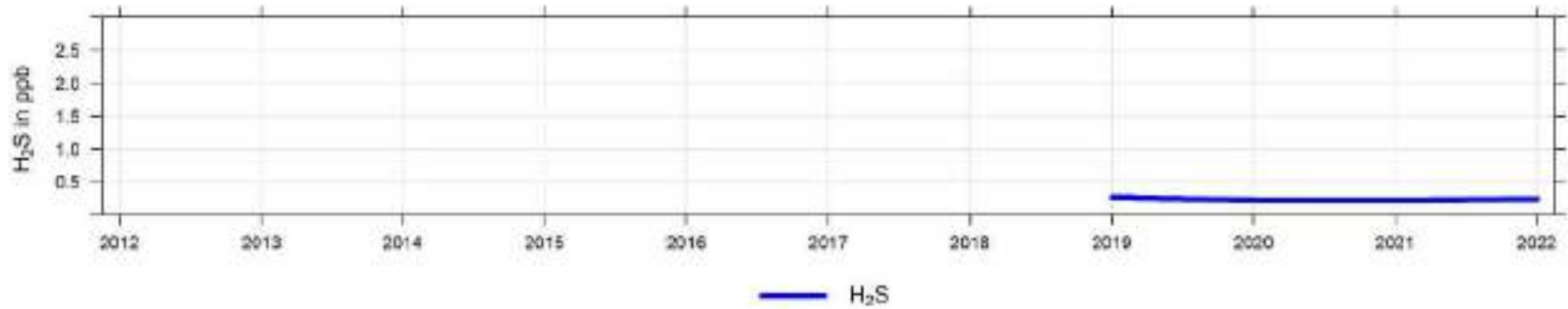
Years 2012 to 2022 Annual Concentration Readings of SO₂ (in ppb) at Henry Pirker



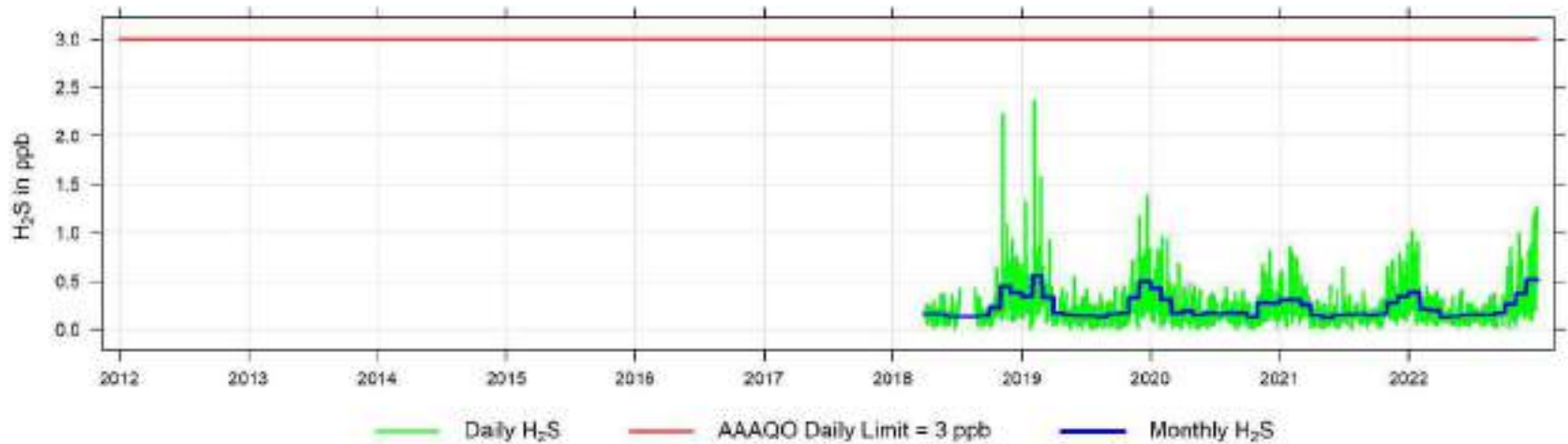
Years 2012 to 2022 Concentration Readings of SO₂ (in ppb) at Henry Pirker



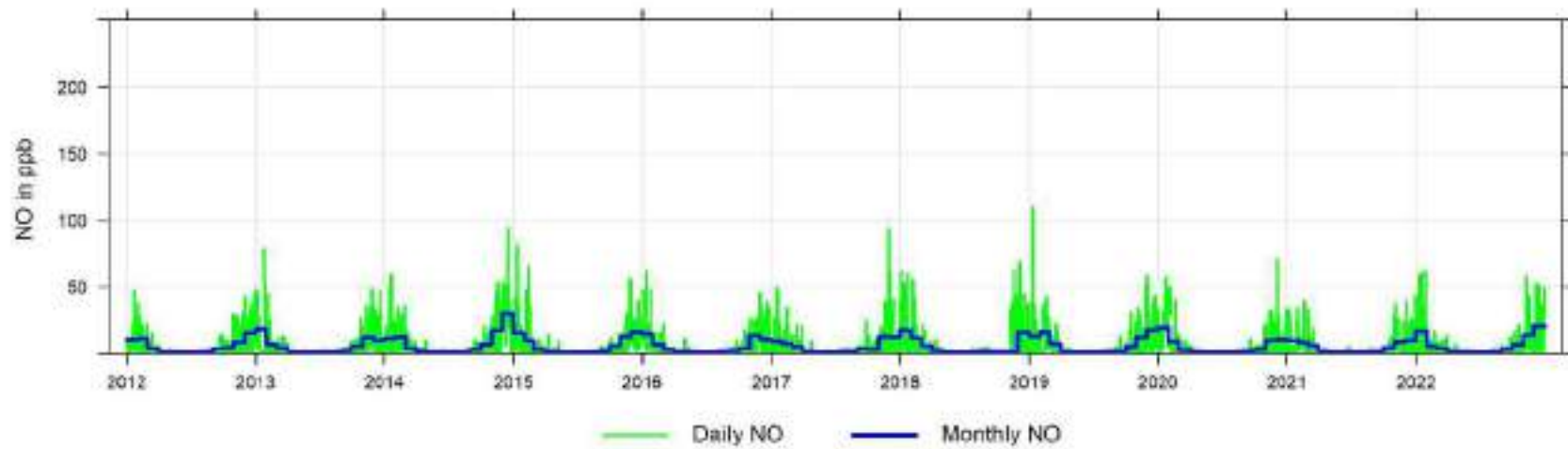
Years 2012 to 2022 Annual Concentration Readings of H₂S (in ppb) at Henry Pirker



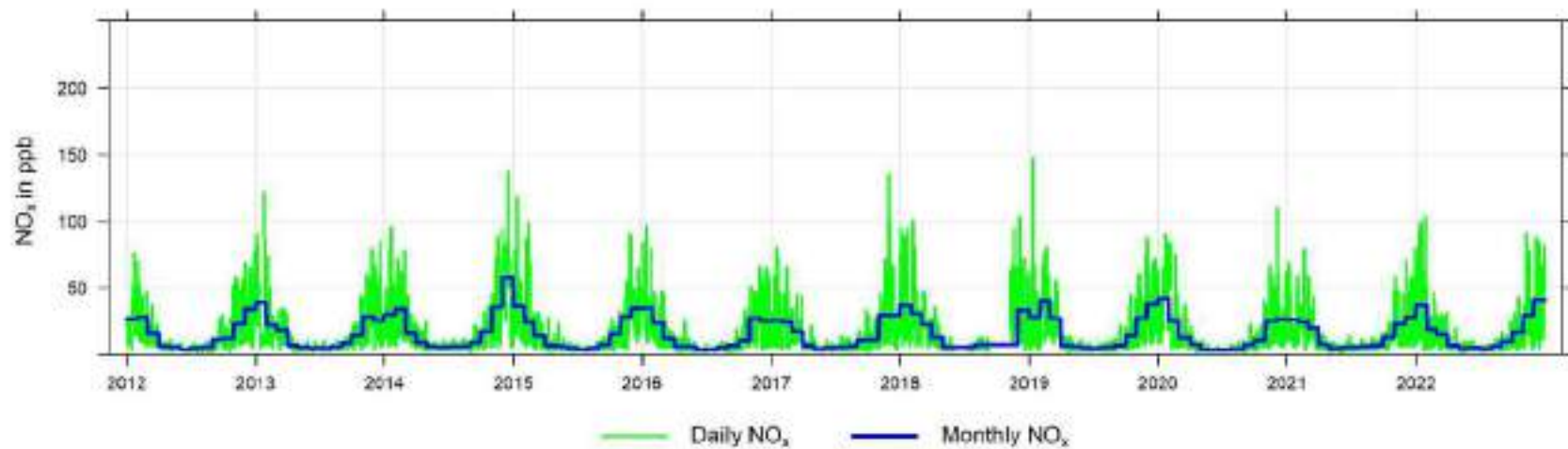
Years 2012 to 2022 Concentration Readings of H₂S (in ppb) at Henry Pirker



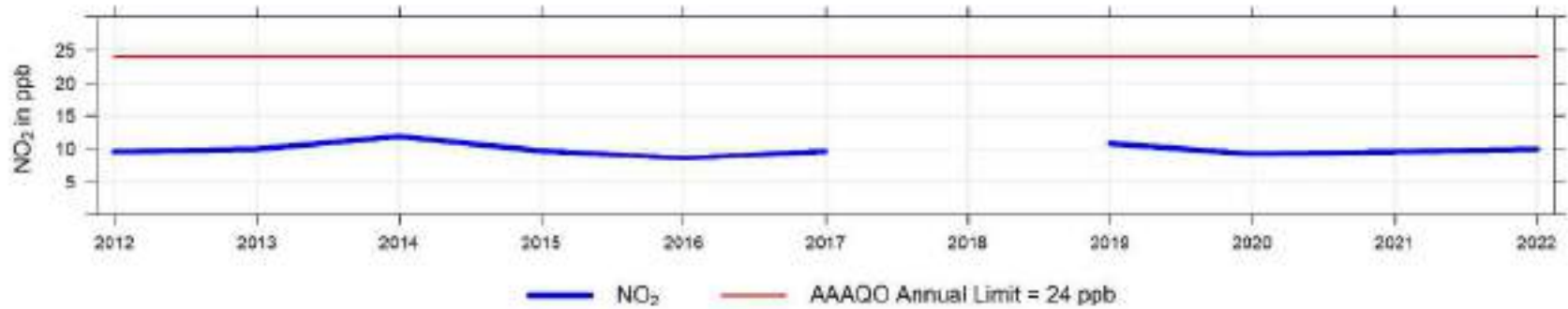
Years 2012 to 2022 Concentration Readings of NO (in ppb) at Henry Pirker



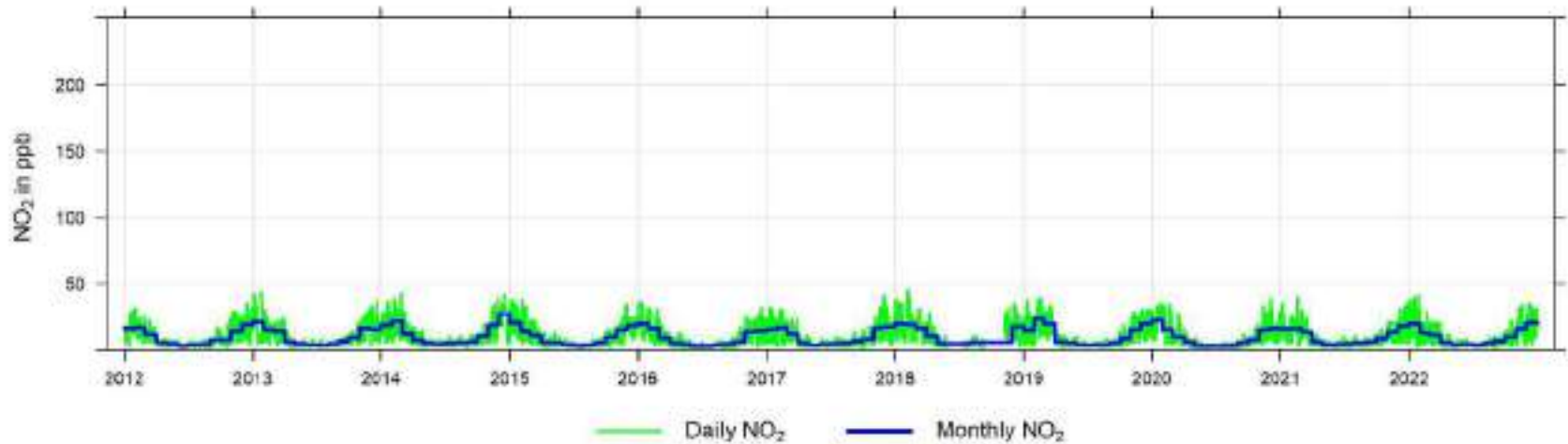
Years 2012 to 2022 Concentration Readings of NO_x (in ppb) at Henry Pirker



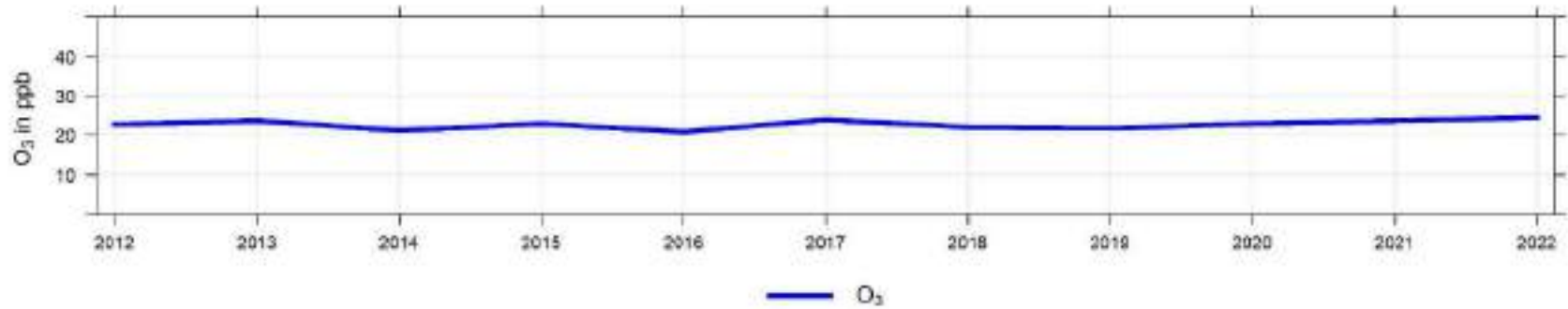
Years 2012 to 2022 Annual Concentration Readings of NO₂ (in ppb) at Henry Pirker



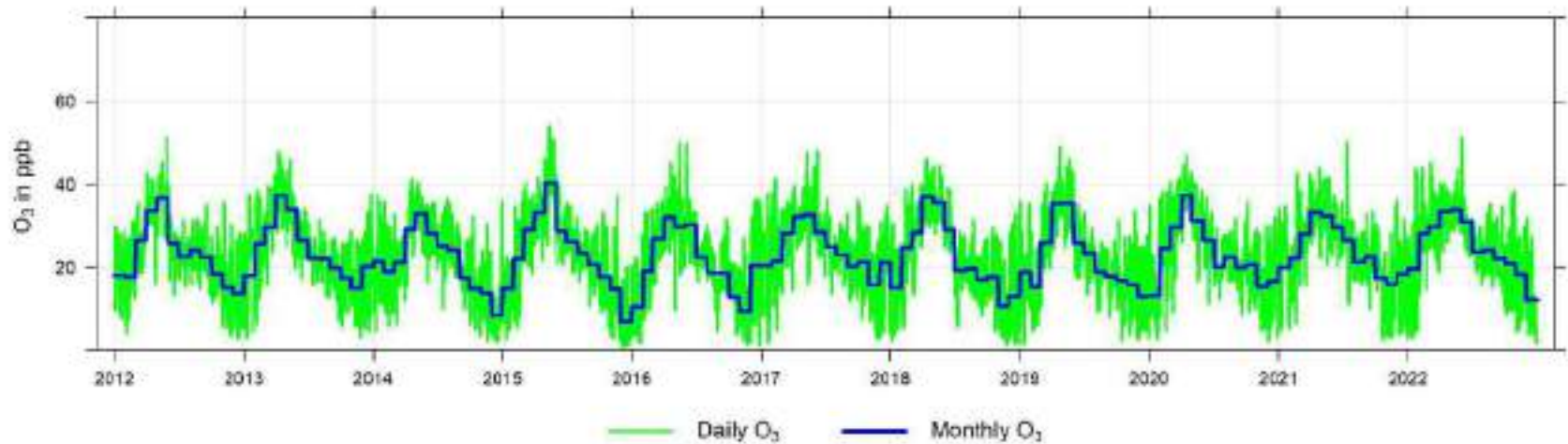
Years 2012 to 2022 Concentration Readings of NO₂ (in ppb) at Henry Pirker



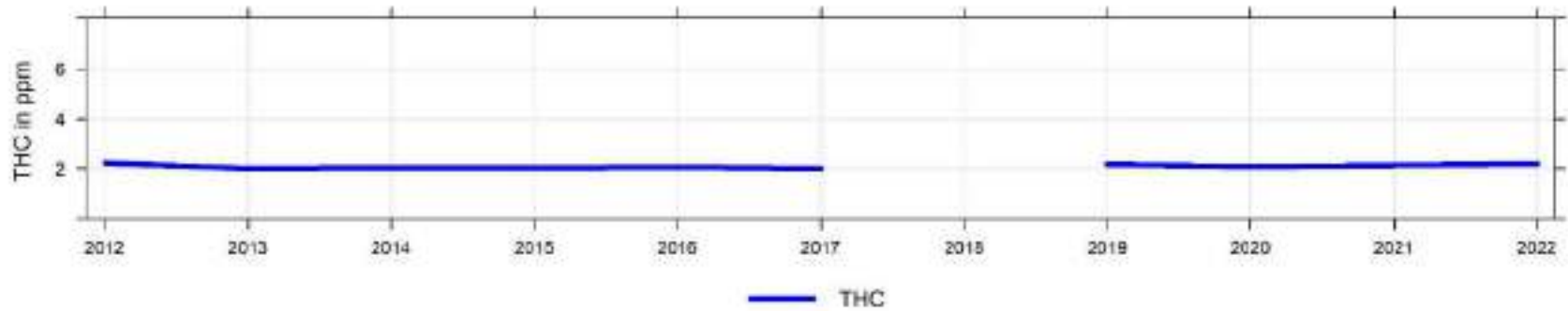
Years 2012 to 2022 Annual Concentration Readings of O₃ (in ppb) at Henry Pirker



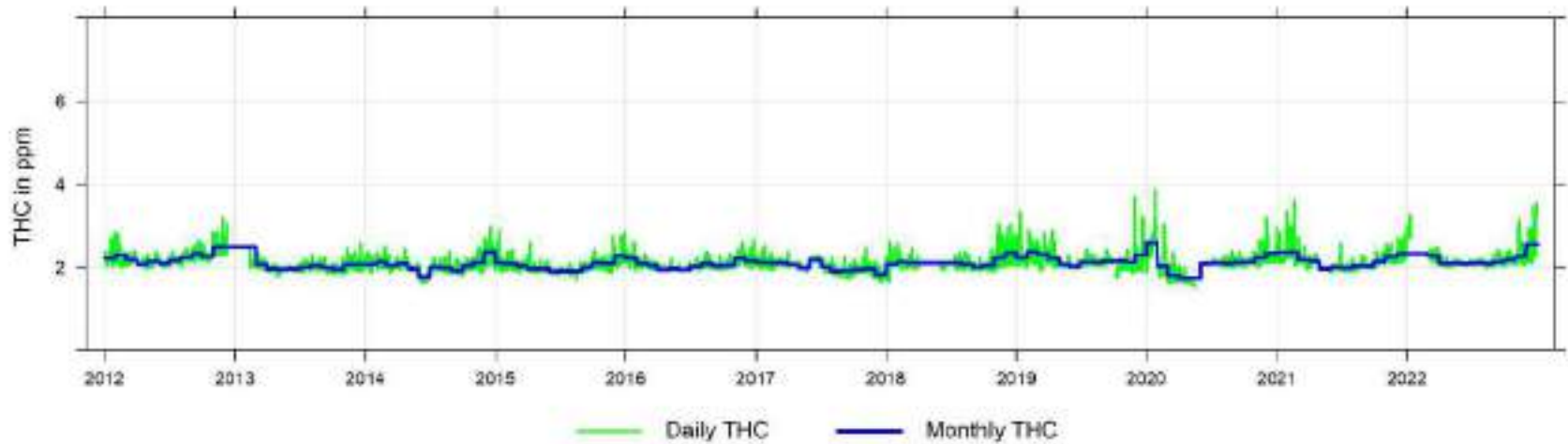
Years 2012 to 2022 Concentration Readings of O₃ (in ppb) at Henry Pirker



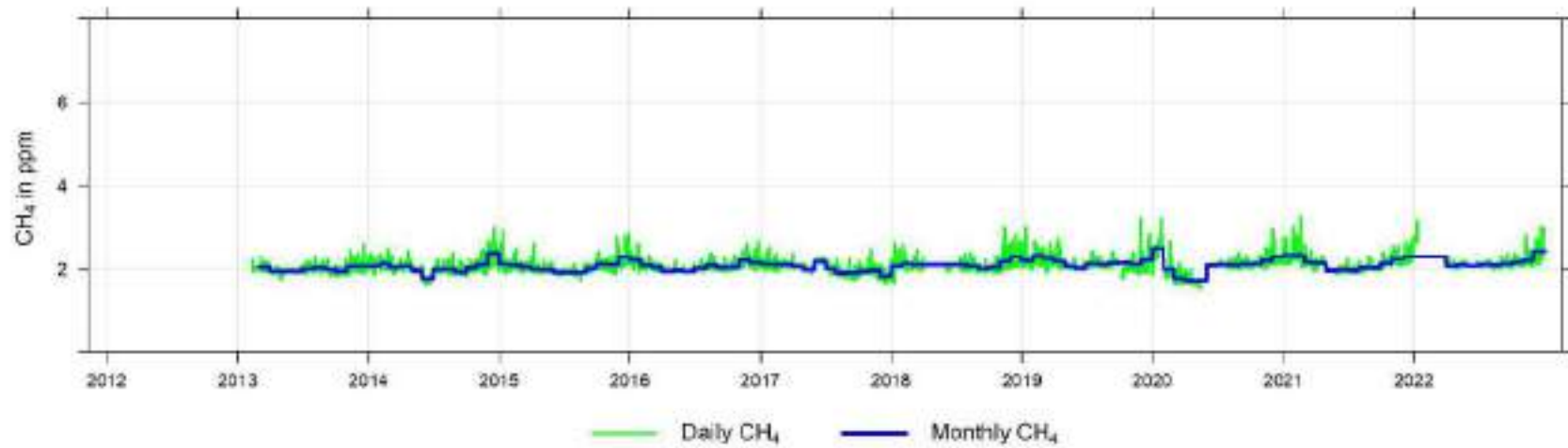
Years 2022 Annual Concentration Readings of THC (in ppm) at Henry Pirker



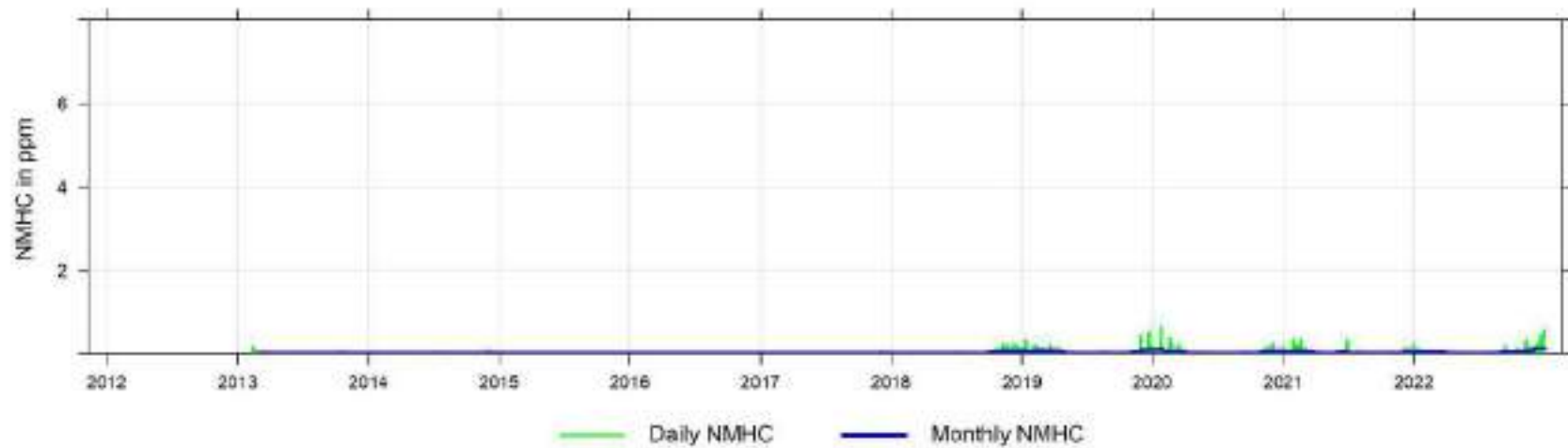
Years 2012 to 2022 Concentration Readings of THC (in ppm) at Henry Pirker



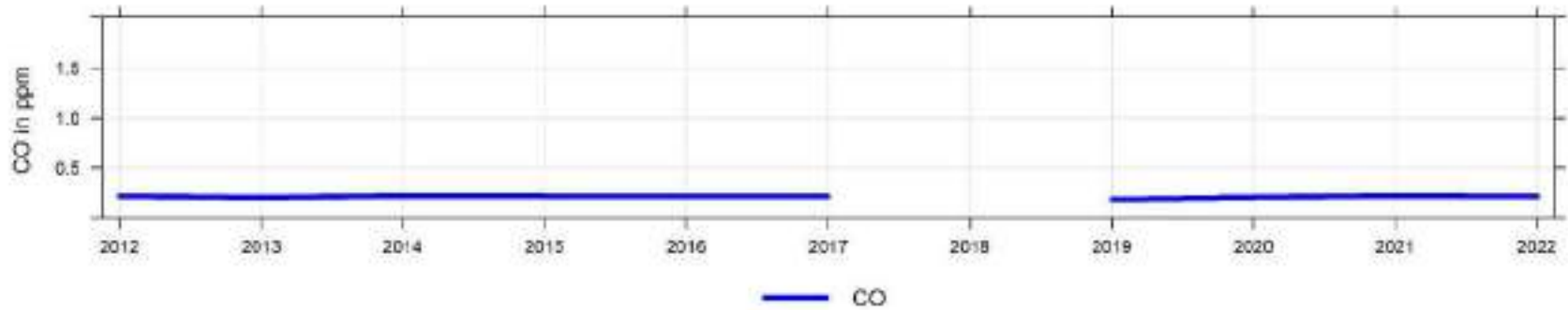
Years 2012 to 2022 Concentration Readings of CH₄ (in ppm) at Henry Pirker



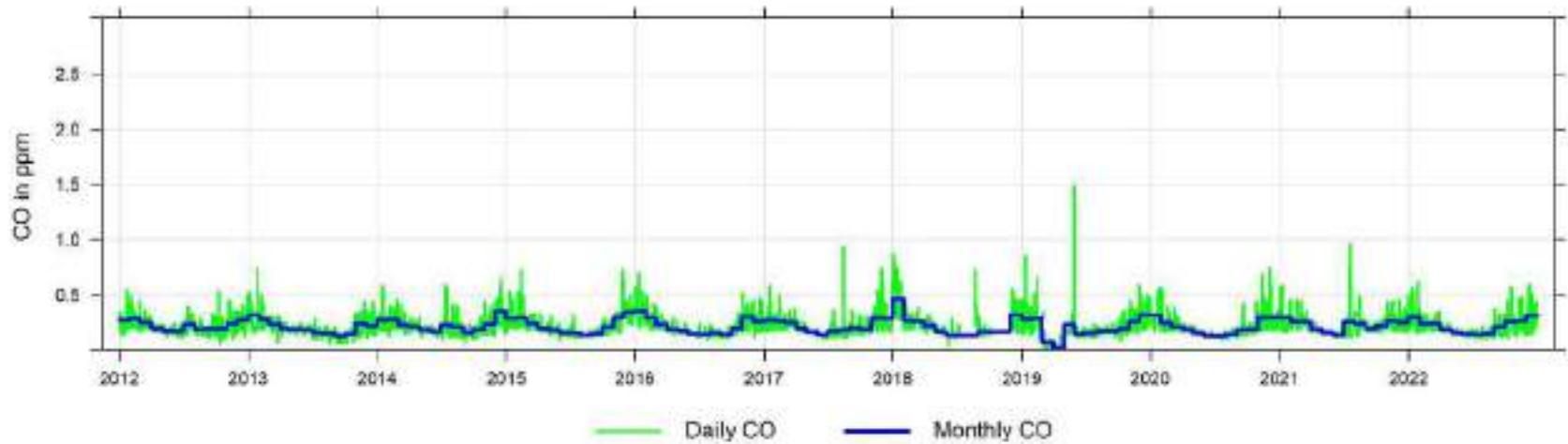
Years 2012 to 2022 Concentration Readings of NMHC (in ppm) at Henry Pirker



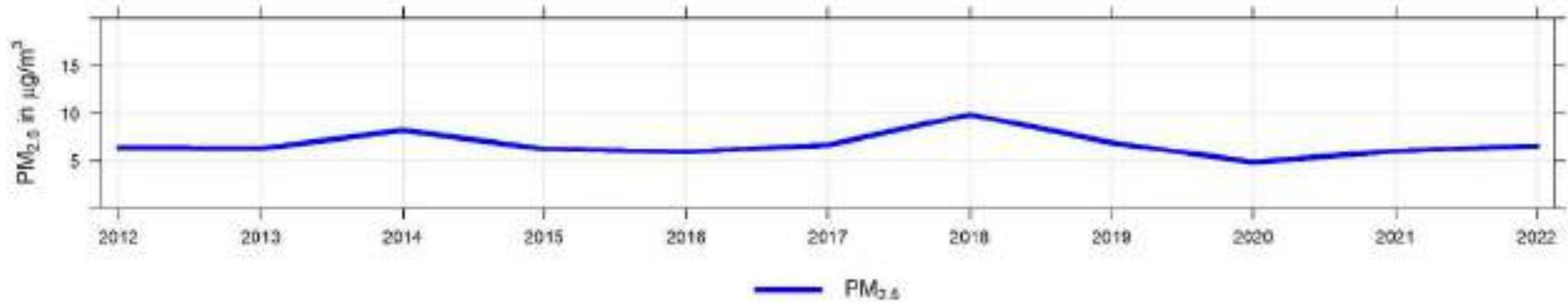
Years 2022 Annual Concentration Readings of CO (in ppm) at Henry Pirker



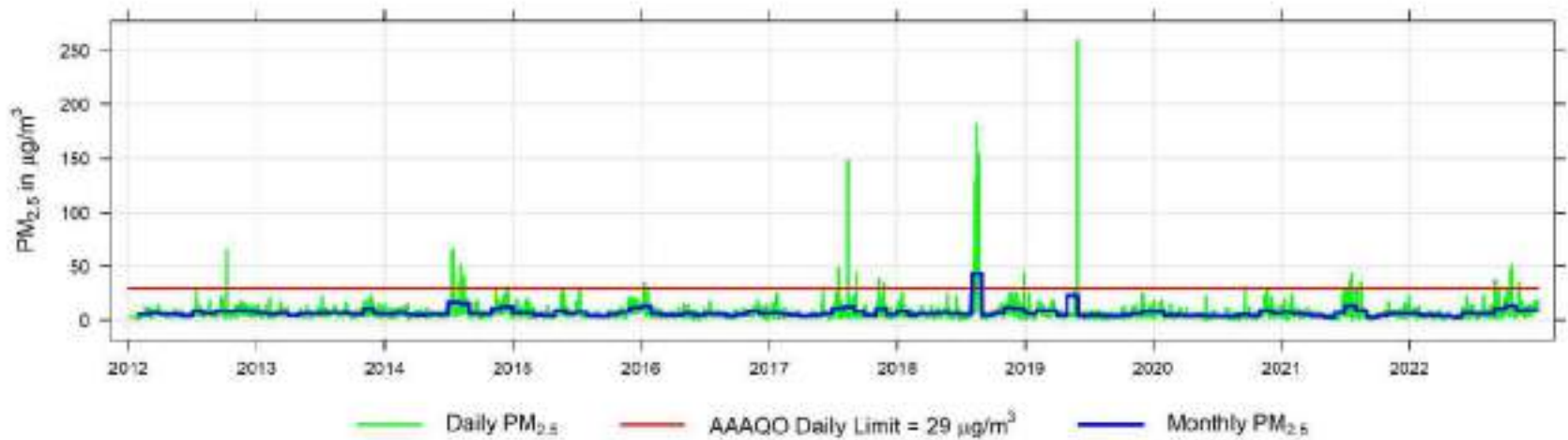
Years 2012 to 2022 Concentration Readings of CO (in ppm) at Henry Pirker



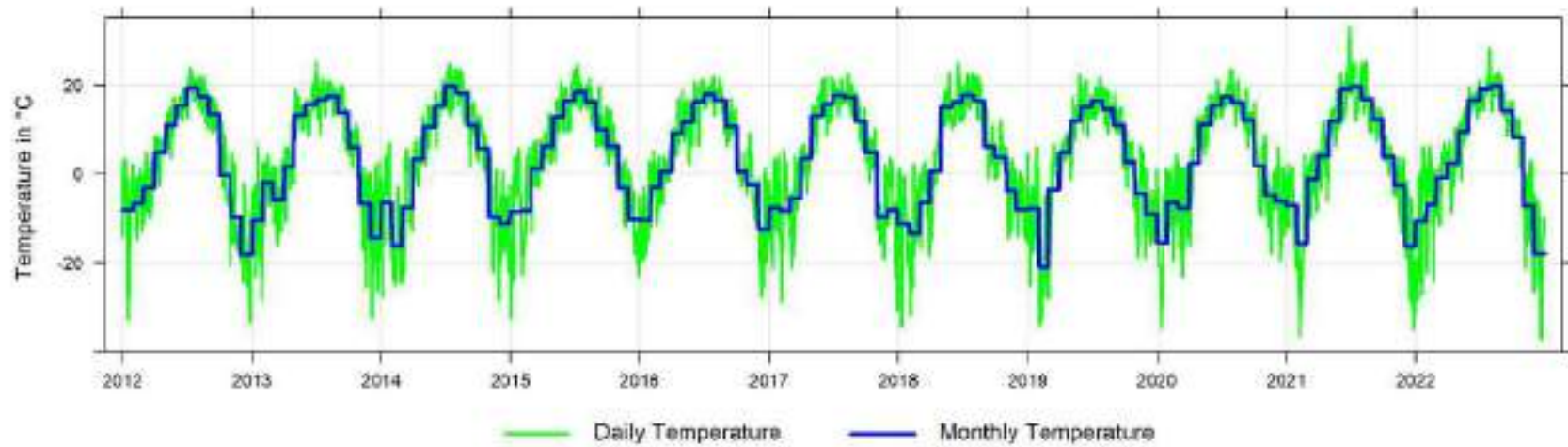
2012 to 2022 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker



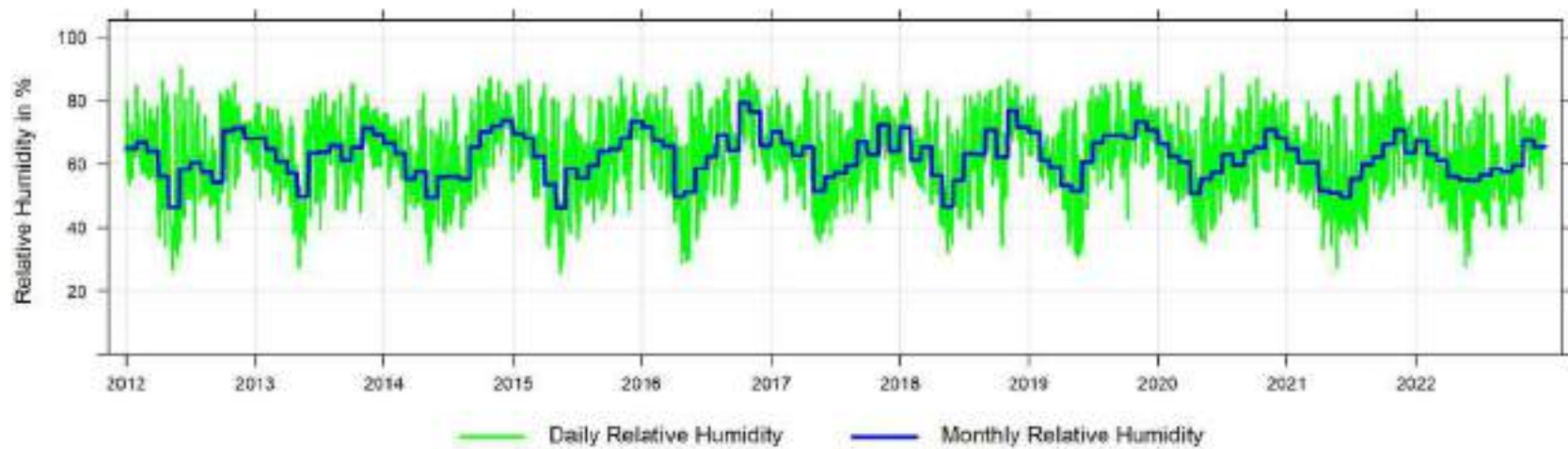
Years 2012 to 2022 Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Henry Pirker



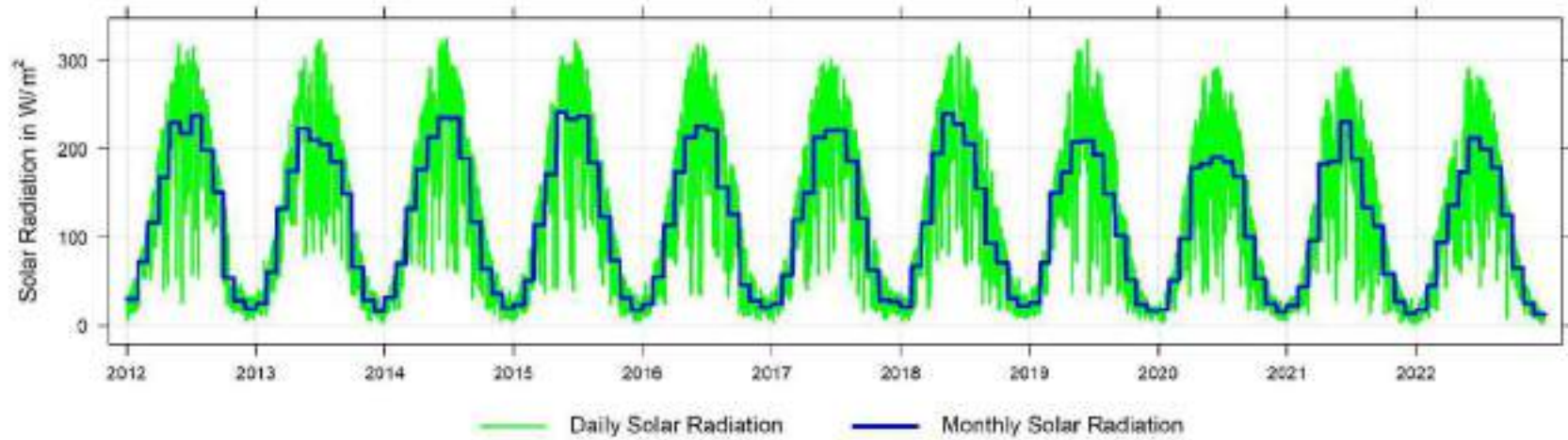
Years 2012 to 2022 Temperature Readings (in °C) at Henry Pirker



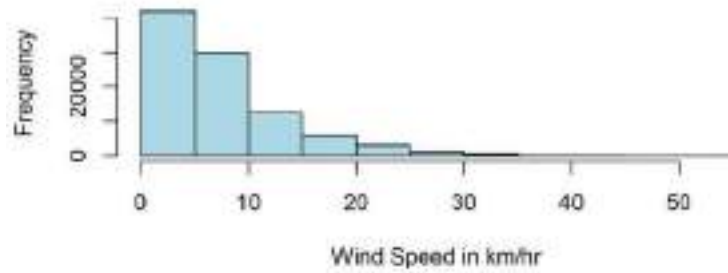
Years 2012 to 2022 Relative Humidity Readings (in %) at Henry Pirker



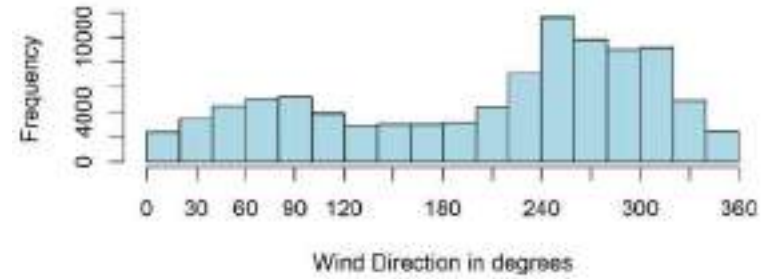
Years 2012 to 2022 Solar Radiation in W/m^2 at Henry Pirker



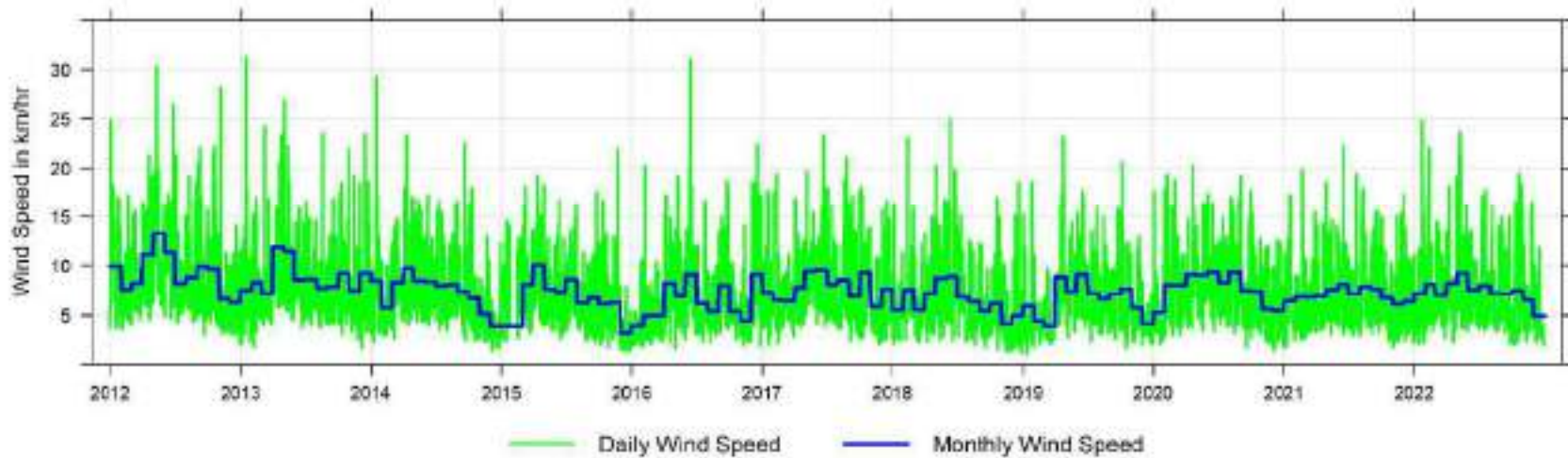
Years 2012 to 2022 Wind Speed Histogram

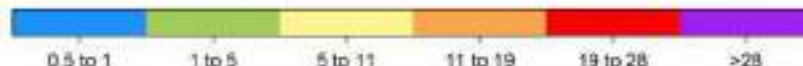
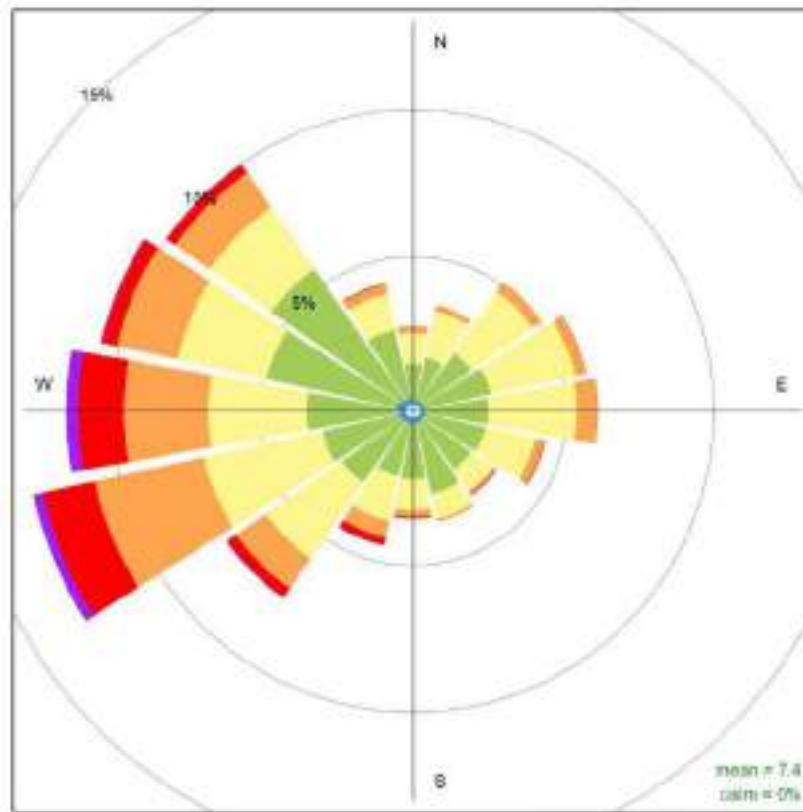


Years 2012 to 2022 Wind Direction Histogram

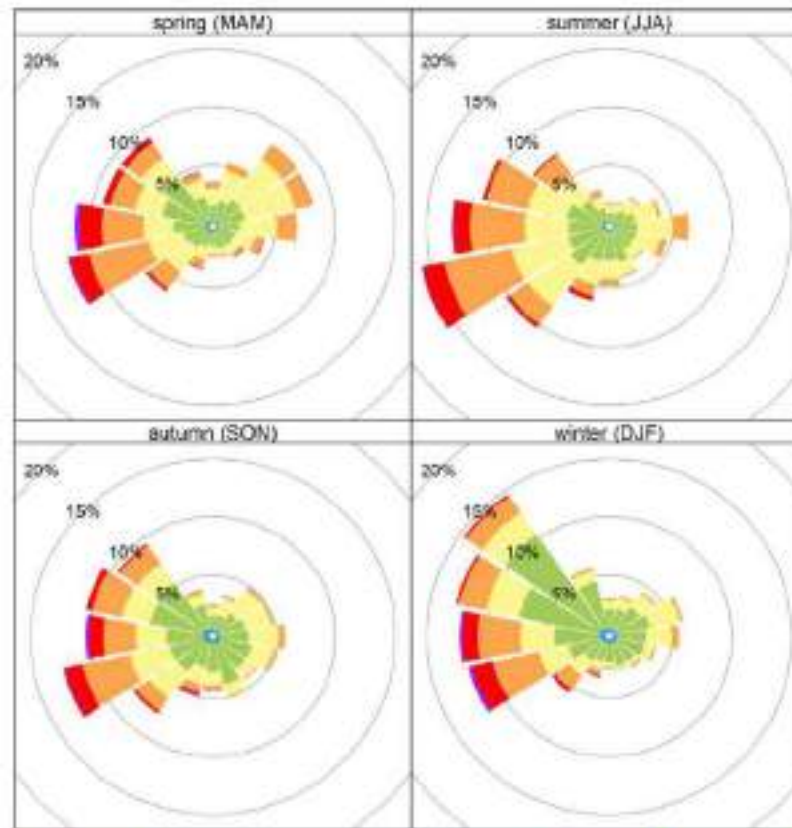


Years 2012 to 2022 Wind Speed Readings (in km/hr) at Henry Pirker





Henry Pirker 2012 to 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)



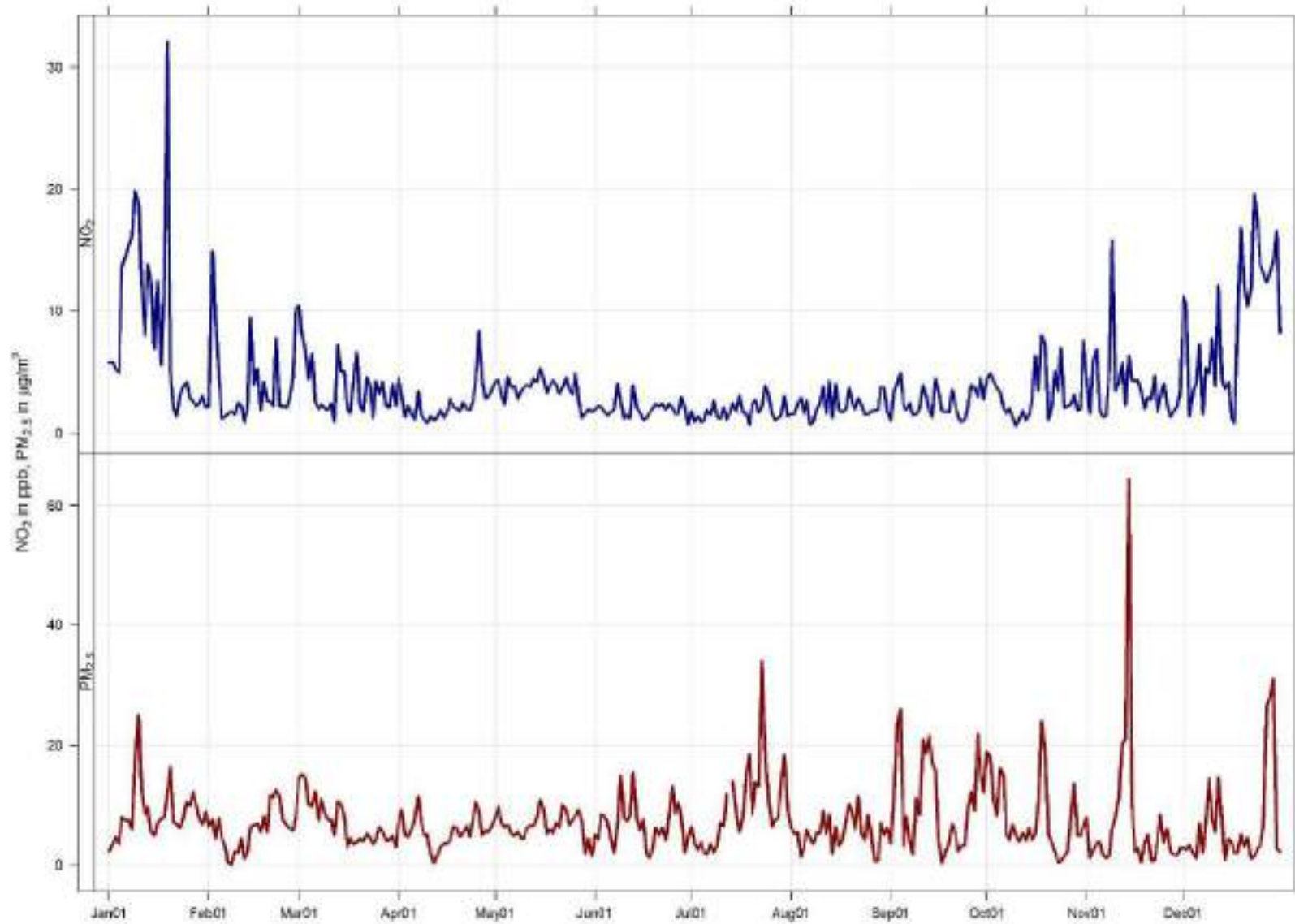
Henry Pirker 2012 to 2022 Seasonal Wind Rose, wind speed in km/hr

7 Milner Key Parameters - Continuous Monitoring Data - 2022 Summary

Milner Key Parameters - Continuous Monitoring Data - 2022 Summary

Milner Station	Parameter	Average	Maximum Values				Operational Time (%)	Valid Time (%)	Readings above AAAQO & AAAQG				
			24-hr	Date	1-hr	Date			1-hr	8-hr	24-hr	30-d	Annual
			Nitrogen Dioxide NO ₂ measured in ppb	3.9	31.5	Jan 19			77.5	Jan 19 17:00	99.4%	94.0%	0
Nitrogen Oxides NO _x measured in ppb	5.2	73.9	Jan 19	266.1	Jan 19 17:00	99.4%	94.0%	-	-	-	-	-	
Nitric Oxide NO measured in ppb	1.2	42.5	Jan 19	188.6	Jan 19 17:00	99.4%	94.0%	-	-	-	-	-	
Particulate Matter PM _{2.5} measured in µg/m ³	7.3	63.8	Nov 14	169.0	Jul 23 10:00	95.4%	95.0%	20	-	3	-	-	

2022 Daily Concentration Readings at Milner



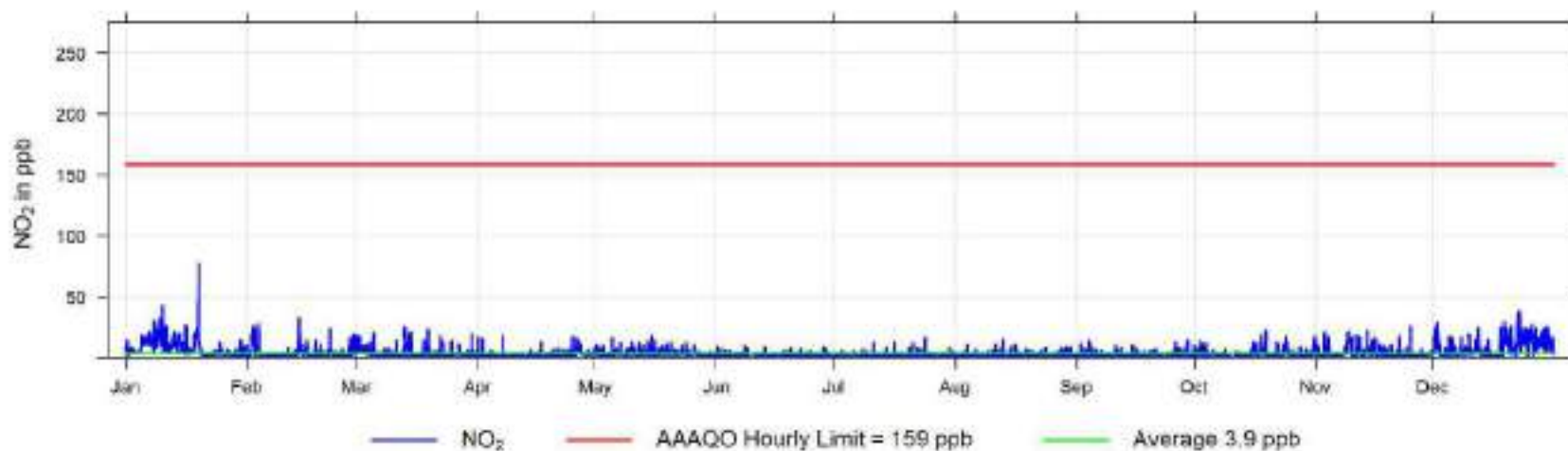
7.1 Nitrogen Dioxide (NO₂) - Milner 2022 Summary

Nitrogen Dioxide (NO₂) Frequency Distribution at Milner

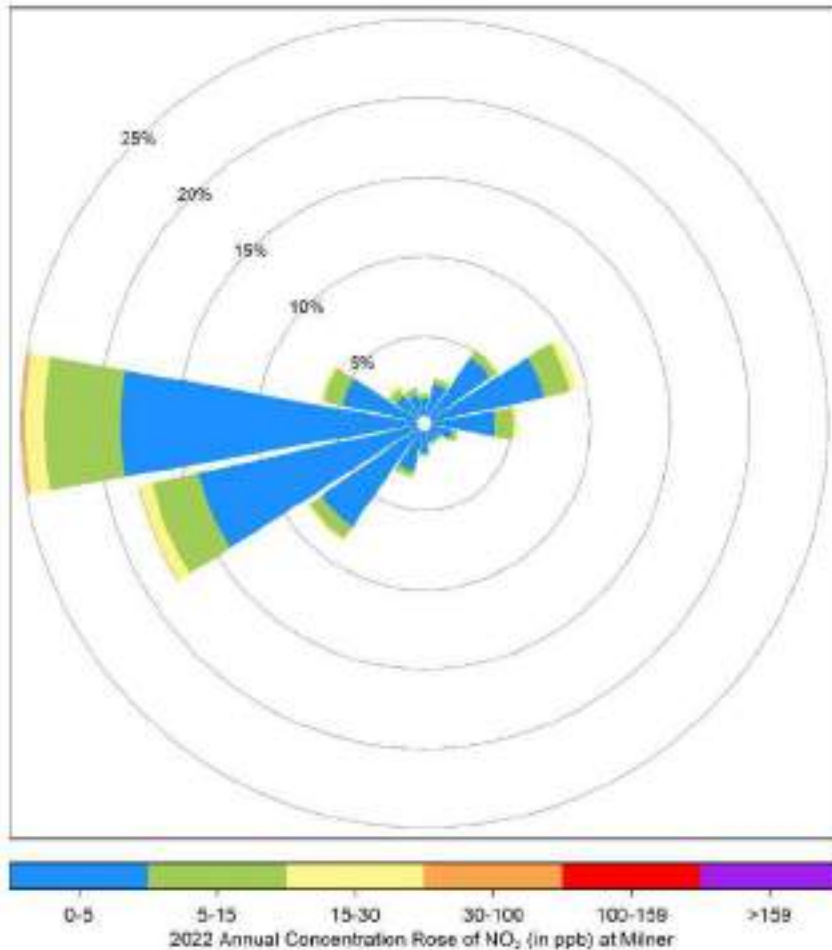
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents 1-hr 159 ppb	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr Date				
January 2022	706	44.1%	37.8%	15.9%	2.3%	0.0%	0.0%	6.7	31.5	Jan 19	77.5	Jan 19 17:00	100.0%	94.9%	0
February 2022	636	79.7%	16.0%	4.1%	0.2%	0.0%	0.0%	3.9	14.9	Feb 02	31.0	Feb 14 10:00	99.7%	94.6%	0
March 2022	704	77.1%	20.2%	2.7%	0.0%	0.0%	0.0%	3.7	10.6	Mar 01	24.8	Mar 15 07:00	99.9%	94.6%	0
April 2022	656	89.5%	9.6%	0.9%	0.0%	0.0%	0.0%	2.4	4.5	Apr 01	16.3	Apr 07 09:00	99.7%	91.1%	0
May 2022	696	81.3%	18.2%	0.4%	0.0%	0.0%	0.0%	3.5	5.2	May 15	16.1	May 15 09:00	98.4%	93.5%	0
June 2022	656	93.8%	6.3%	0.0%	0.0%	0.0%	0.0%	2.0	4.0	Jun 06	10.3	Jun 08 03:00	96.4%	91.1%	0
July 2022	706	94.1%	5.7%	0.2%	0.0%	0.0%	0.0%	1.8	3.9	Jul 24	17.0	Jul 24 07:00	99.7%	94.0%	0
August 2022	703	90.2%	9.7%	0.1%	0.0%	0.0%	0.0%	2.2	4.2	Aug 13	15.1	Aug 31 04:00	99.9%	94.5%	0
September 2022	682	85.6%	14.4%	0.0%	0.0%	0.0%	0.0%	2.6	4.5	Sep 04	14.8	Sep 29 12:00	99.7%	94.7%	0
October 2022	701	80.7%	17.7%	1.6%	0.0%	0.0%	0.0%	3.2	8.0	Oct 18	22.3	Oct 19 10:00	99.1%	94.2%	0
November 2022	683	80.1%	16.3%	3.7%	0.0%	0.0%	0.0%	3.7	6.7	Nov 04	25.3	Nov 25 08:00	100.0%	94.9%	0
December 2022	707	81.1%	14.1%	21.5%	1.3%	0.0%	0.0%	8.9	19.2	Dec 23	38.3	Dec 25 02:00	100.0%	95.0%	0
Annual	8236	78.3%	17.2%	4.3%	0.3%	0.0%	0.0%	3.9	31.5	Jan 19	77.5	Jan 19 17:00	99.4%	94.0%	0

AAQO Objectives: Annual: 24ppb, 1-Hr: 159ppb

2022 Hourly Concentration Readings of NO₂ (in ppb) at Milner



Hourly Maximum NO₂ (in ppb) for 2022 at Milner



January-2022							February-2022							March-2022						
28	29	30	31	1	2	3														
4	5	6	7	8	9	10														
11	12	13	14	15	16	17														
18	19	20	21	22	23	24														
25	26	27	28	29	30	31														
S	M	T	W	T	F	S														
April-2022							May-2022							June-2022						
27	28	29	30	1	2	3														
4	5	6	7	8	9	10														
11	12	13	14	15	16	17														
18	19	20	21	22	23	24														
25	26	27	28	29	30	31														
S	M	T	W	T	F	S														
July-2022							August-2022							September-2022						
26	27	28	29	30	1	2														
3	4	5	6	7	8	9														
10	11	12	13	14	15	16														
17	18	19	20	21	22	23														
24	25	26	27	28	29	30														
31	1	2	3	4	5	6														
S	M	T	W	T	F	S														
October-2022							November-2022							December-2022						
23	24	25	26	27	28	29														
30	31	1	2	3	4	5														
6	7	8	9	10	11	12														
13	14	15	16	17	18	19														
20	21	22	23	24	25	26														
27	28	29	30	1	2	3														
4	5	6	7	8	9	10														
11	12	13	14	15	16	17														
18	19	20	21	22	23	24														
25	26	27	28	29	30	31														
S	M	T	W	T	F	S														

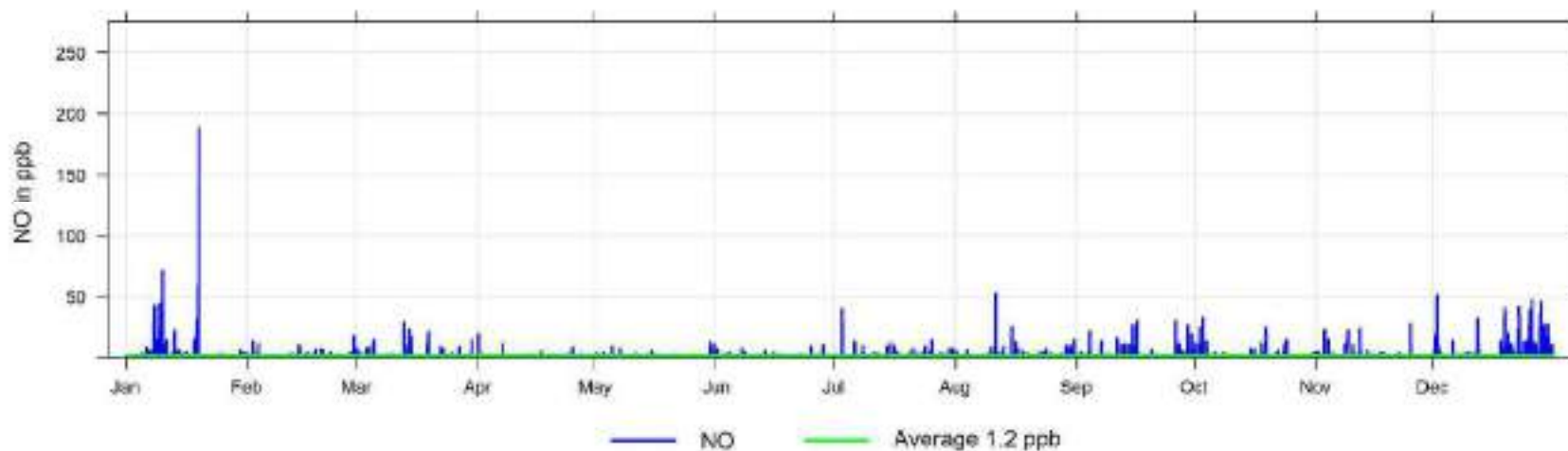
7.2 Nitric Oxide (NO) - Milner 2022 Summary

Nitric Oxide (NO) Frequency Distribution at Milner

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		
January 2022	706	88.4%	5.1%	2.8%	2.1%	0.4%	0.1%	3.2	42.5	Jan 19	188.6	Jan 19 17:00	100.0%	94.0%
February 2022	636	96.1%	3.6%	0.3%	0.0%	0.0%	0.0%	0.7	3.3	Feb 02	18.0	Feb 28 11:00	99.7%	94.6%
March 2022	704	97.0%	2.4%	0.6%	0.0%	0.0%	0.0%	0.9	2.9	Mar 19	29.2	Mar 13 04:00	99.9%	94.6%
April 2022	656	98.9%	0.9%	0.2%	0.0%	0.0%	0.0%	0.4	1.6	Apr 01	19.2	Apr 01 09:00	99.7%	91.1%
May 2022	696	98.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.4	2.3	May 30	12.5	May 30 08:00	98.0%	91.5%
June 2022	656	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.5	1.5	Jun 25	11.2	Jun 28 08:00	96.4%	91.1%
July 2022	706	96.2%	3.5%	0.1%	0.1%	0.0%	0.0%	0.9	4.2	Jul 03	40.1	Jul 03 07:00	99.7%	94.9%
August 2022	703	95.4%	3.8%	0.4%	0.3%	0.0%	0.0%	1.0	4.9	Aug 11	52.3	Aug 11 09:00	99.9%	94.5%
September 2022	662	92.5%	5.4%	1.6%	0.3%	0.0%	0.0%	1.3	5.6	Sep 16	30.9	Sep 16 10:00	99.7%	94.7%
October 2022	701	95.1%	3.9%	0.9%	0.1%	0.0%	0.0%	1.0	4.1	Oct 19	33.3	Oct 05 10:00	99.1%	94.2%
November 2022	683	95.8%	3.1%	1.2%	0.0%	0.0%	0.0%	0.9	3.2	Nov 03	27.7	Nov 25 07:00	100.0%	94.9%
December 2022	707	80.1%	13.3%	4.2%	2.4%	0.0%	0.0%	3.6	14.4	Dec 25	51.1	Dec 02 00:00	100.0%	95.0%
Annual	8236	94.4%	4.0%	1.0%	0.4%	0.0%	0.0%	1.2	42.5	Jan 19	188.6	Jan 19 17:00	99.4%	94.0%

AAAQO Objectives: none

2022 Hourly Concentration Readings of NO (in ppb) at Milner



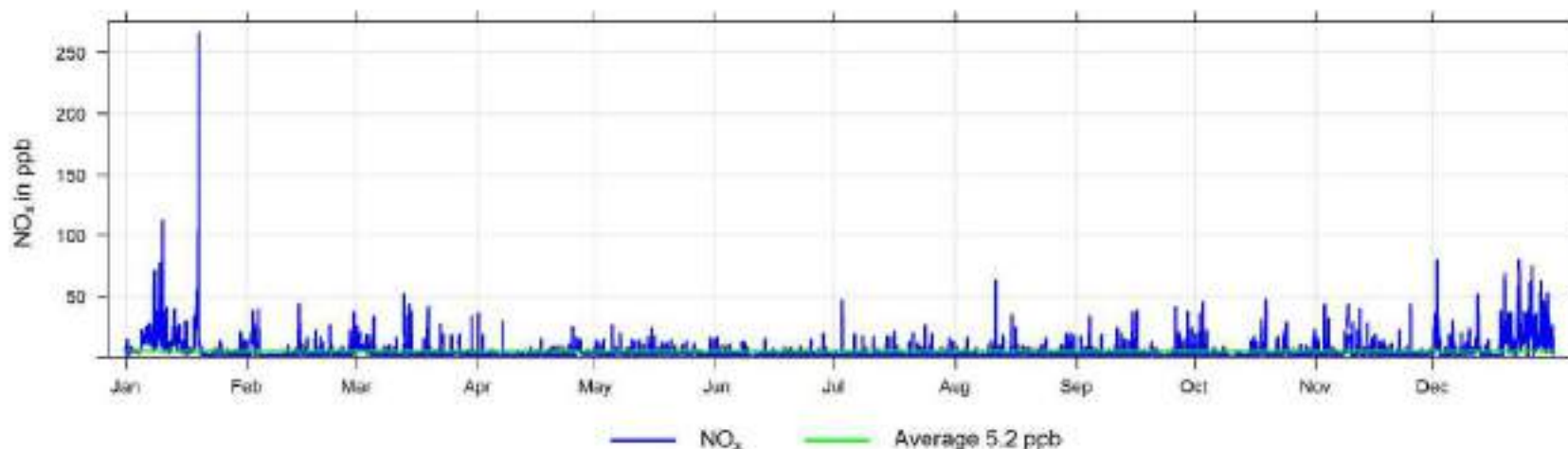
7.3 Oxides of Nitrogen (NO_x) - Milner 2022 Summary

Nitrogen Oxides (NO_x) Frequency Distribution at Milner

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		
January 2022	706	41.6%	34.1%	15.3%	5.9%	0.6%	0.4%	11.9	73.9	Jan 19	266.1	Jan 19 17:00	100.0%	94.9%
February 2022	636	76.9%	16.4%	5.7%	1.1%	0.0%	0.0%	4.5	17.9	Feb 02	43.4	Feb 14 10:00	99.7%	94.6%
March 2022	704	72.0%	22.4%	4.3%	1.3%	0.0%	0.0%	4.6	12.5	Mar 01	51.3	Mar 13 04:00	99.9%	94.6%
April 2022	656	87.0%	11.4%	1.2%	0.3%	0.0%	0.0%	2.8	6.2	Apr 01	36.5	Apr 01 09:00	99.7%	91.1%
May 2022	696	78.6%	20.0%	1.6%	0.0%	0.0%	0.0%	3.9	5.9	May 15	26.2	May 05 09:00	98.0%	91.5%
June 2022	656	87.7%	11.6%	0.8%	0.0%	0.0%	0.0%	2.6	5.4	Jun 13	19.6	Jun 28 08:00	96.4%	91.1%
July 2022	706	87.3%	10.3%	2.0%	0.3%	0.0%	0.0%	2.7	5.5	Jul 03	46.4	Jul 03 07:00	99.7%	94.9%
August 2022	703	83.8%	14.1%	1.7%	0.4%	0.0%	0.0%	3.3	8.7	Aug 11	63.5	Aug 11 09:00	99.9%	94.5%
September 2022	662	75.3%	13.7%	3.6%	1.2%	0.0%	0.0%	3.9	8.9	Sep 16	41.3	Sep 26 05:00	99.7%	94.7%
October 2022	701	76.9%	17.7%	4.4%	1.0%	0.0%	0.0%	4.2	11.5	Oct 19	46.9	Oct 19 10:00	99.1%	94.2%
November 2022	683	75.6%	17.9%	4.1%	1.5%	0.0%	0.0%	4.4	9.1	Nov 03	43.6	Nov 03 13:00	100.0%	94.9%
December 2022	707	41.7%	29.1%	17.4%	11.7%	0.0%	0.0%	12.5	28.4	Dec 19	80.2	Dec 02 00:00	100.0%	95.0%
Annual	8236	74.3%	18.4%	5.2%	2.1%	0.0%	0.0%	5.2	73.9	Jan 19	266.1	Jan 19 17:00	99.4%	94.0%

AAAQD Objectives: none

2022 Hourly Concentration Readings of NO_x (in ppb) at Milner



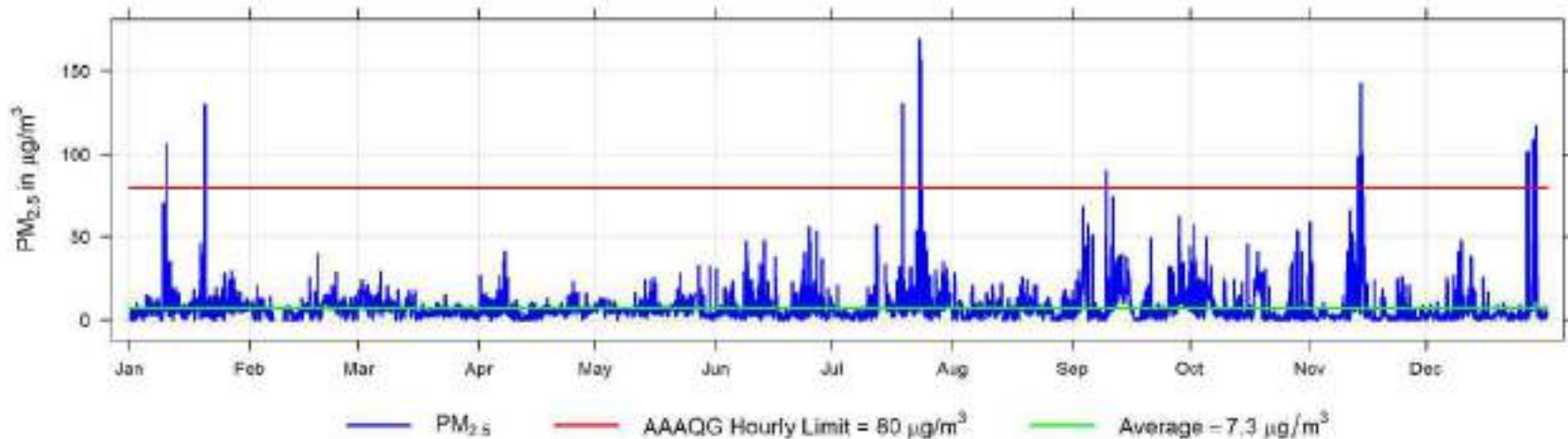
7.4 Particulate Matter (PM_{2.5}) - Milner 2022 Summary

Particulate Matter (PM_{2.5}) Frequency Distribution at Milner

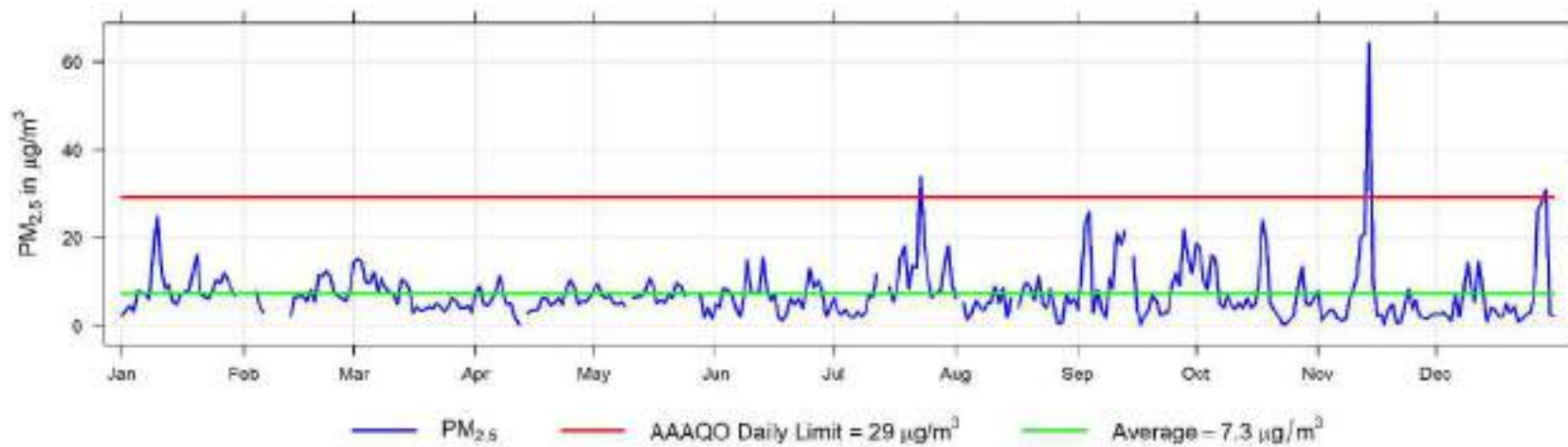
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average $\mu\text{g}/\text{m}^3$	24-hr $\mu\text{g}/\text{m}^3$	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 5 $\mu\text{g}/\text{m}^3$	5 to 15 $\mu\text{g}/\text{m}^3$	15 to 30 $\mu\text{g}/\text{m}^3$	30 to 50 $\mu\text{g}/\text{m}^3$	50 to 80 $\mu\text{g}/\text{m}^3$	> 80 $\mu\text{g}/\text{m}^3$			Date	1-hr $\mu\text{g}/\text{m}^3$			Date	24-hr $29 \mu\text{g}/\text{m}^3$	1-hr $80 \mu\text{g}/\text{m}^3$
January 2022	722	29.2%	51.4%	7.3%	1.1%	0.6%	0.4%	8.7	24.3	Jan 10	125.5	Jan 20 12:00	97.0%	97.0%	0	3
February 2022	537	36.9%	60.0%	2.8%	0.2%	0.0%	0.0%	6.7	22.5	Feb 22	39.4	Feb 18 15:00	79.9%	79.9%	0	0
March 2022	794	44.6%	47.5%	7.9%	0.0%	0.0%	0.0%	7.1	14.8	Mar 02	29.0	Mar 06 21:00	99.2%	98.7%	0	0
April 2022	702	48.3%	48.3%	3.1%	0.5%	0.0%	0.0%	5.7	11.5	Apr 07	40.9	Apr 07 19:00	97.8%	97.5%	0	0
May 2022	707	35.2%	60.7%	2.8%	0.3%	0.0%	0.0%	6.5	10.7	May 15	32.4	May 27 14:00	96.1%	95.0%	0	0
June 2022	709	54.2%	36.4%	7.2%	2.0%	0.3%	0.0%	6.7	15.8	Jun 13	55.3	Jun 25 04:00	98.8%	98.5%	0	0
July 2022	673	42.1%	41.9%	11.6%	3.8%	1.2%	0.4%	9.4	33.7	Jul 23	165.0	Jul 23 10:00	91.0%	90.5%	1	3
August 2022	682	53.7%	42.5%	3.8%	0.0%	0.0%	0.0%	5.5	11.1	Aug 22	28.2	Aug 01 16:00	91.8%	91.7%	0	0
September 2022	696	44.8%	32.2%	15.7%	6.3%	0.9%	0.1%	10.2	25.4	Sep 04	89.7	Sep 09 19:00	97.6%	96.7%	0	1
October 2022	718	57.2%	25.1%	14.2%	3.2%	0.3%	0.0%	7.8	24.1	Oct 18	56.3	Oct 02 08:00	97.0%	96.5%	0	0
November 2022	712	70.9%	17.8%	5.9%	2.4%	2.1%	0.8%	7.0	63.8	Nov 14	142.3	Nov 14 06:00	99.6%	98.9%	1	6
December 2022	757	89.7%	19.3%	9.8%	2.6%	0.9%	0.9%	6.7	30.6	Dec 29	117.5	Dec 29 07:00	99.2%	99.1%	1	7
Annual	8329	49.0%	41.2%	7.3%	1.8%	0.5%	0.2%	7.3	63.8	Nov 14	165.0	Jul 23 10:00	95.4%	95.0%	3	20

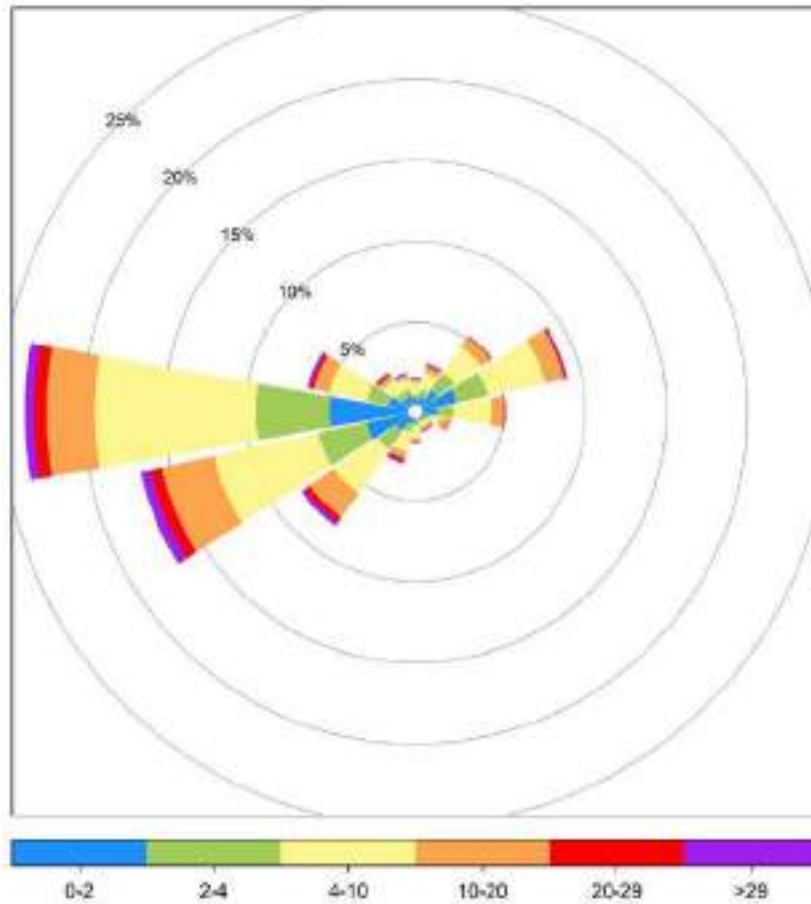
AAQO Objectives: 24-hr: $29 \mu\text{g}/\text{m}^3$, AAQO Guideline: 1-hr: $80 \mu\text{g}/\text{m}^3$

2022 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Milner



2022 Daily Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Milner





Hourly Maximum PM_{2.5} (in µg/m³) for 2022 at Milner

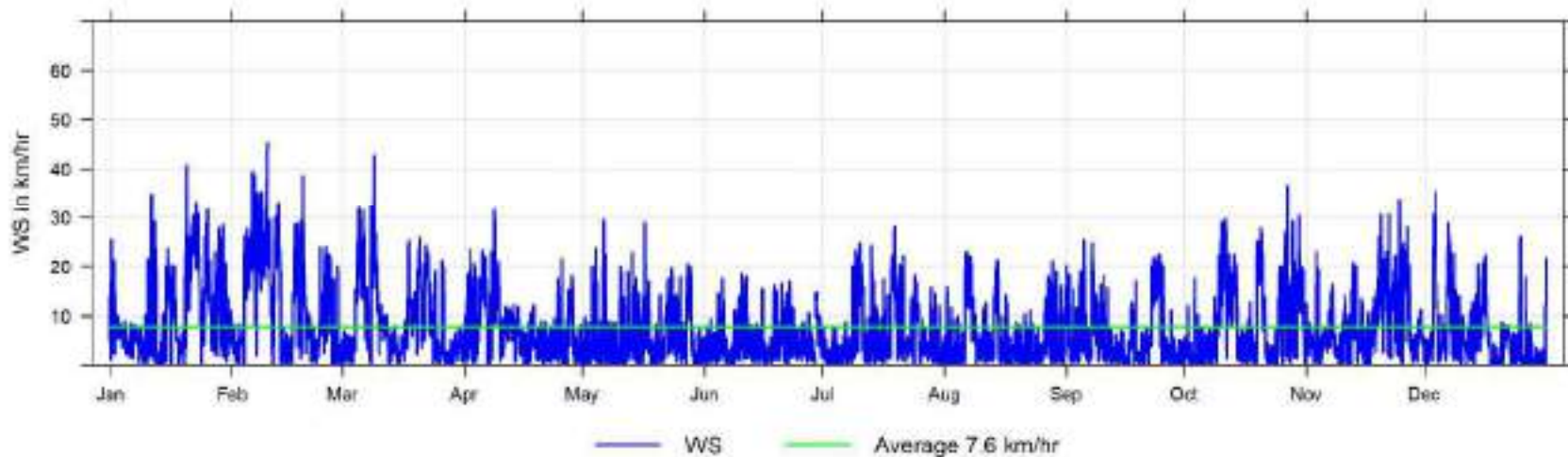


7.5 Wind Speed and Wind Direction (WS and WD) - Milner 2022 Summary

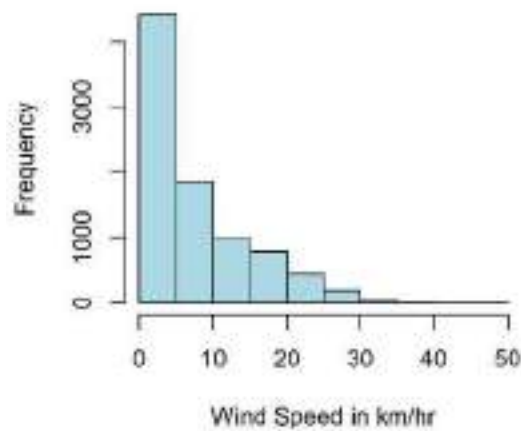
Wind Speed Frequency Distribution at Milner

Month	Valid Hours	Calm	% of Readings in Concentration Range					Monthly Average (km/hr)	24-hr (km/hr)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	
			0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)			Date	1-hr Date			
January 2022	744	4.2%	28.0%	29.4%	18.0%	16.7%	3.1%	10.5	26.1	Jan 22	40.8	Jan 20 12:00	100.0%	100.0%
February 2022	670	5.1%	30.1%	18.2%	15.7%	24.9%	6.0%	12.5	26.5	Feb 09	45.4	Feb 10 02:00	99.7%	99.7%
March 2022	744	5.0%	38.8%	25.4%	15.9%	13.3%	1.6%	9.0	21.0	Mar 05	42.6	Mar 09 00:00	100.0%	100.0%
April 2022	719	6.8%	37.6%	33.1%	17.4%	4.6%	0.6%	7.3	18.5	Apr 08	31.5	Apr 08 13:00	99.9%	99.9%
May 2022	732	9.8%	47.4%	22.4%	16.9%	3.0%	0.4%	6.2	14.7	May 28	29.5	May 06 13:00	98.4%	98.4%
June 2022	714	5.6%	52.7%	29.7%	12.0%	0.0%	0.0%	5.1	10.3	Jun 10	18.6	Jun 10 11:00	99.2%	99.2%
July 2022	742	6.9%	53.5%	16.4%	18.2%	4.9%	0.1%	6.4	19.0	Jul 19	28.1	Jul 19 13:00	99.7%	99.7%
August 2022	764	10.1%	35.9%	17.3%	13.8%	2.8%	0.0%	5.3	15.3	Aug 07	21.0	Aug 06 17:00	100.0%	100.0%
September 2022	718	9.6%	33.2%	16.4%	15.3%	5.4%	0.0%	5.8	17.7	Sep 23	25.3	Sep 05 12:00	99.7%	99.7%
October 2022	743	9.2%	39.7%	17.2%	19.9%	12.8%	1.2%	8.6	20.5	Oct 11	36.5	Oct 27 08:00	99.9%	99.9%
November 2022	720	5.6%	30.8%	32.5%	20.7%	9.4%	1.0%	8.7	17.7	Nov 26	33.8	Nov 24 15:00	100.0%	100.0%
December 2022	744	16.3%	40.1%	27.6%	9.1%	6.2%	0.8%	6.0	24.3	Dec 03	35.3	Dec 04 00:00	100.0%	100.0%
Annual	8734	7.8%	42.4%	23.8%	16.1%	8.7%	1.2%	7.6	26.5	MAXIMUM VALUES		99.7%	99.7%	

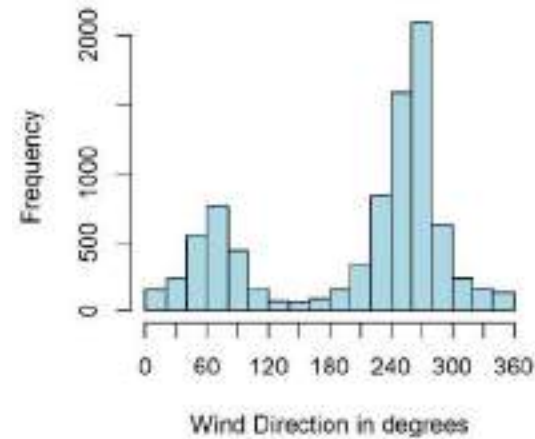
2022 Hourly Readings of Wind Speed (in km/hr) at Milner



2022 Wind Speed Histogram

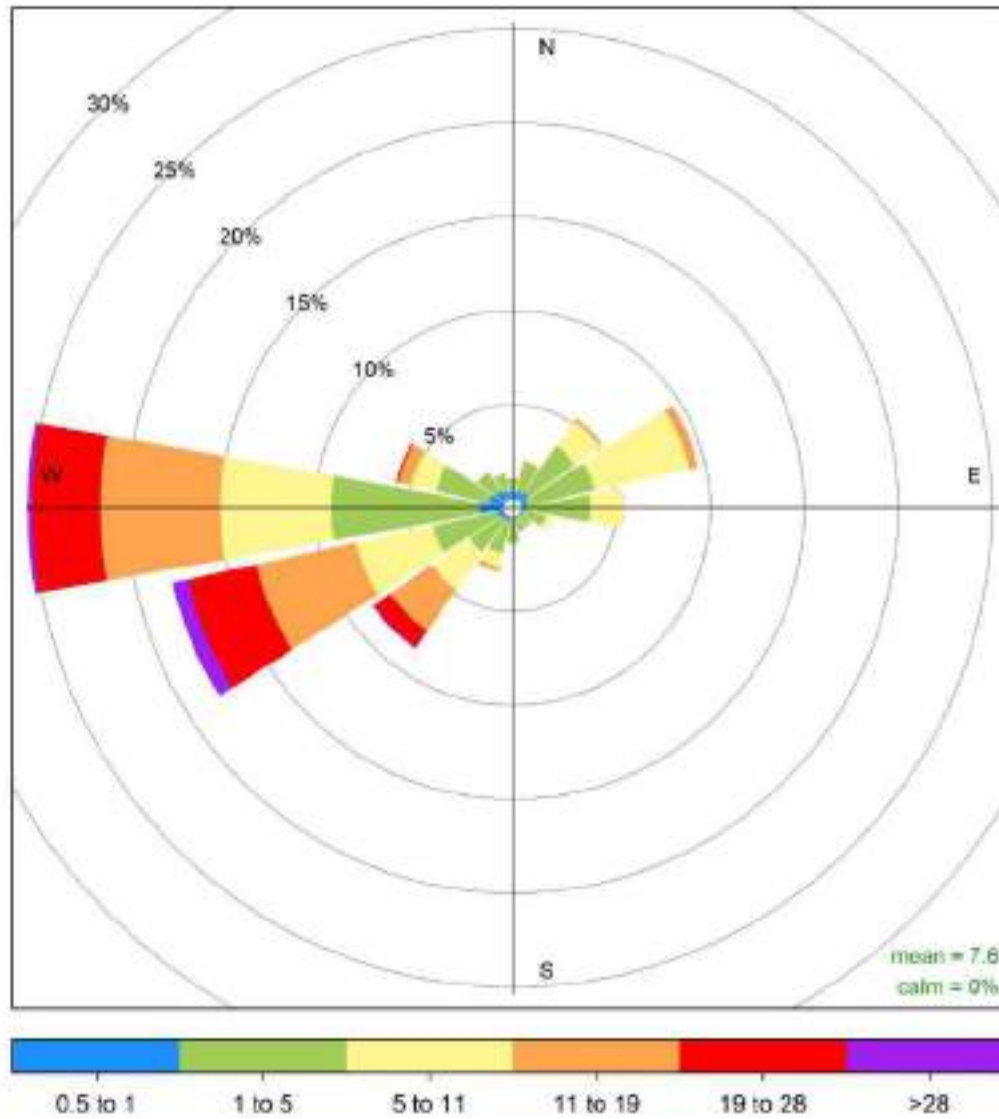


2022 Wind Direction Histogram



Wind Speed and Wind Direction Frequency Distribution at Milner

Direction	Number of Readings	% of wind speed range						Total %
		Calm (<0.5 (km/hr)	0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)	
N	145	0.6%	1.1%	0.0%	0.0%	0.0%	0.0%	1.7%
NNE	243	0.7%	2.0%	0.1%	0.0%	0.0%	0.0%	2.8%
NE	491	0.3%	3.5%	1.6%	0.2%	0.0%	0.0%	5.6%
ENE	867	0.4%	3.9%	5.2%	0.3%	0.0%	0.0%	9.9%
E	489	0.2%	3.6%	1.7%	0.0%	0.0%	0.0%	5.4%
ESE	356	0.2%	1.3%	0.4%	0.0%	0.0%	0.0%	1.9%
SE	82	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.9%
SSE	86	0.2%	0.8%	0.0%	0.0%	0.0%	0.0%	1.0%
S	346	0.2%	1.4%	0.1%	0.0%	0.0%	0.0%	1.7%
SSW	358	0.1%	2.0%	0.7%	0.3%	0.0%	0.0%	3.1%
SW	772	0.2%	2.3%	2.5%	2.7%	1.0%	0.1%	8.8%
WSW	1644	0.8%	3.9%	4.2%	5.4%	3.7%	0.8%	18.8%
W	2322	1.2%	5.2%	5.9%	6.3%	3.7%	0.3%	26.6%
WNW	594	0.9%	3.7%	1.3%	0.7%	0.1%	0.0%	6.8%
NW	230	0.8%	1.8%	0.0%	0.0%	0.0%	0.0%	2.6%
NNW	189	0.8%	1.4%	0.0%	0.0%	0.0%	0.0%	2.2%
Total	8734	7.9%	42.4%	23.8%	16.1%	8.6%	1.2%	100.0%



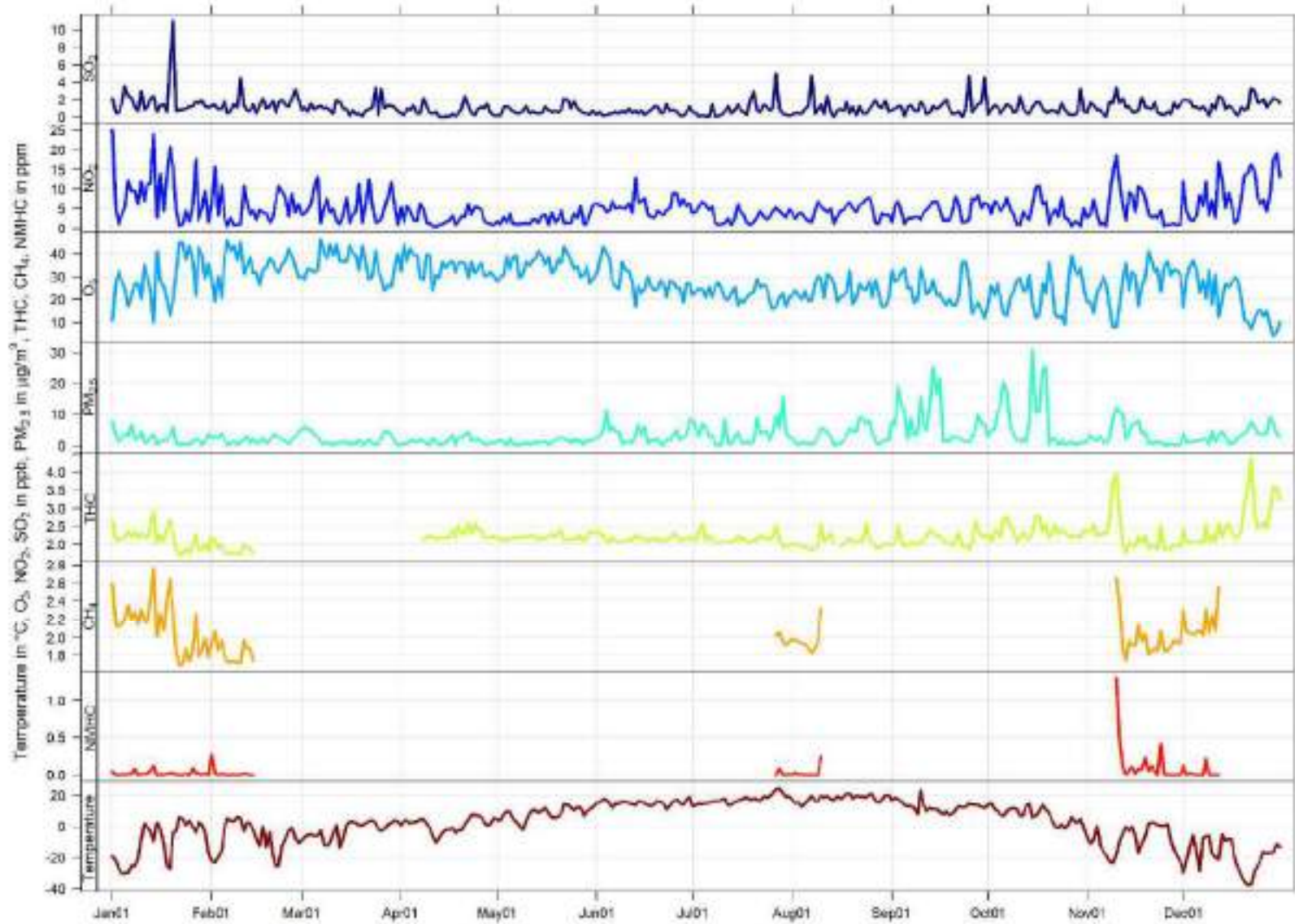
Milner 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

8 Poplar Key Parameters - Continuous Monitoring Data - 2022 Summary

Poplar Key Parameters - Continuous Monitoring Data - 2022 Summary

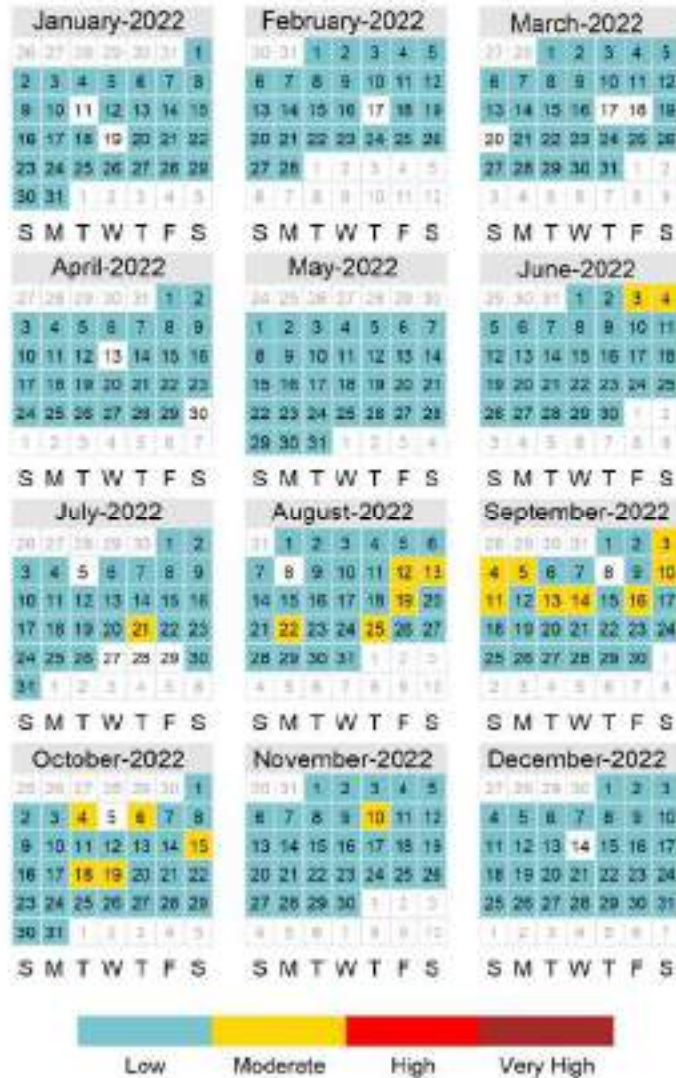
Poplar Station	Parameter	Average	Maximum Values				Operational Time (%)	Valid Time (%)	Readings above AAAQO & AAAQG				
			24-hr	Date	1-hr	Date			1-hr	8-hr	24-hr	30-d	Annual
			Sulphur Dioxide SO ₂ measured in ppb	1.1	10.2	Jan 20			76.7	Aug 07 11:00	99.6%	94.8%	0
Total Reduced Sulphur TRS measured in ppb	0.5	3.5	Aug 24	16.9	Aug 24 04:00	99.6%	94.8%	11	-	1	-	-	
Nitrogen Dioxide NO ₂ measured in ppb	5.0	25.7	Jan 01	38.4	Jan 14 18:00	99.5%	94.5%	0	-	-	-	0	
Nitrogen Oxides NO _x measured in ppb	6.5	36.7	Jan 14	103.6	Jun 16 06:00	99.5%	94.5%	-	-	-	-	-	
Nitric Oxide NO measured in ppb	1.5	14.1	Jun 13	87.2	Jun 16 06:00	99.5%	94.5%	-	-	-	-	-	
Ozone O ₃ measured in ppb	27.8	46.0	Mar 07	69.5	Aug 13 14:00	99.3%	94.6%	0	-	-	-	-	
Total Hydrocarbons THC measured in ppm	2.19	4.1	Dec 22	8.9	Nov 10 20:00	83.4%	79.1%	-	-	-	-	-	
Methane CH ₄ measured in ppm	-	2.8	Jan 14	3.5	Jan 19 19:00	32.7%	23.5%	-	-	-	-	-	
Non Methane Hydrocarbons NMHC measured in ppm	-	0.5	Nov 11	5.4	Nov 10 20:00	32.7%	23.5%	-	-	-	-	-	
Particulate Matter PM _{2.5} measured in µg/m ³	3.3	30.3	Oct 15	96.9	Jul 21 17:00	97.6%	97.2%	4	-	1	-	-	

2022 Daily Concentration Readings at Poplar



8.1 Poplar AQHI Calendar Plot for 2022

Hourly Maximum AQHI for 2022 at Poplar



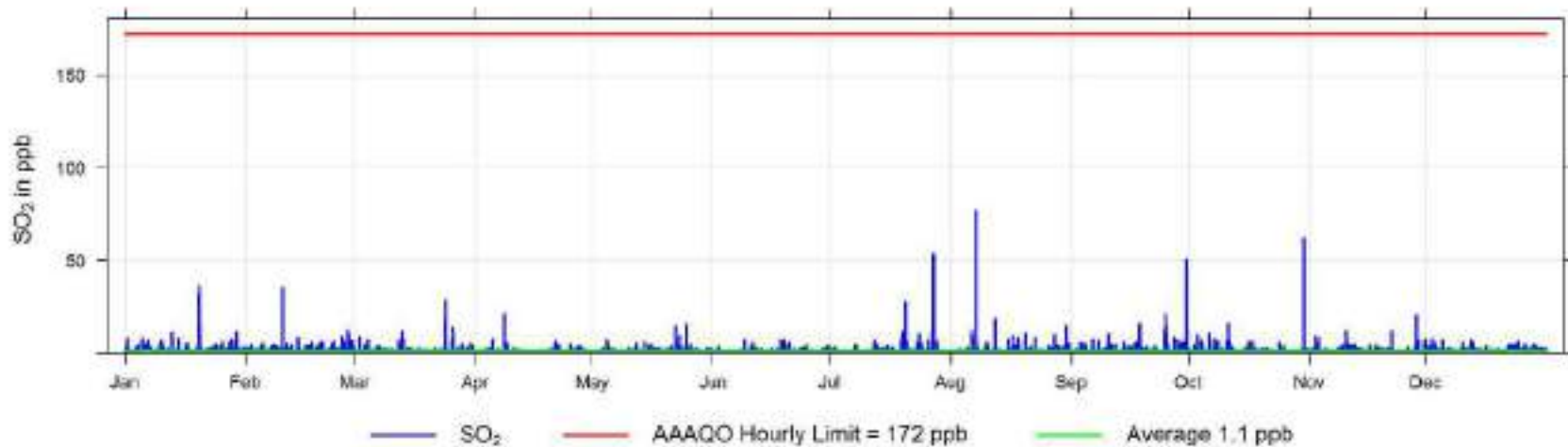
8.2 Sulphur Dioxide (SO₂) - Poplar 2022 Summary

Sulphur Dioxide (SO₂) Frequency Distribution at Poplar

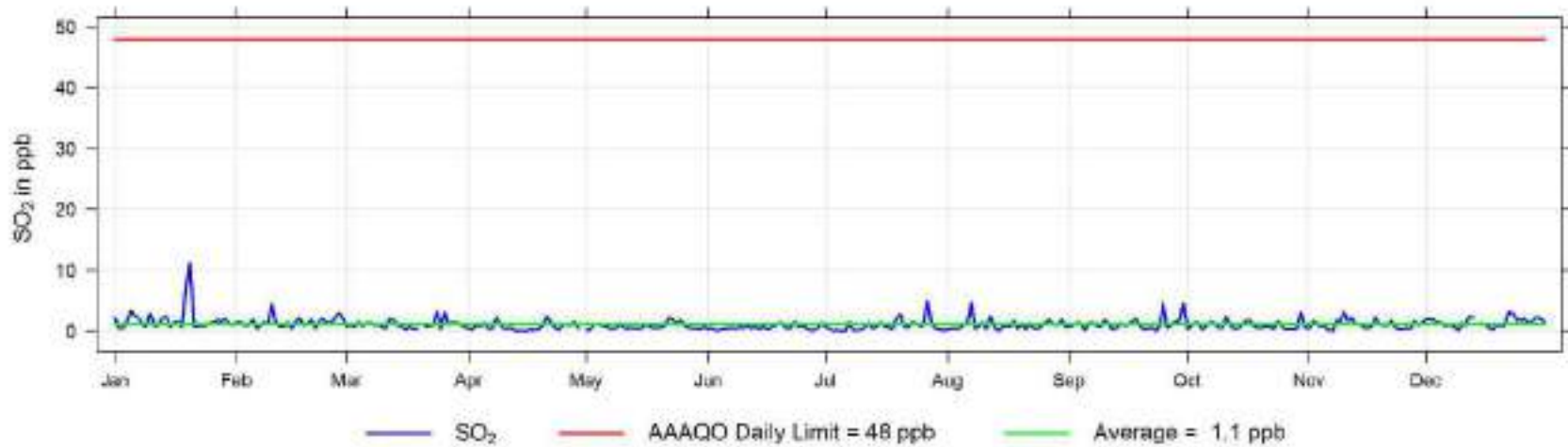
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents			
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)			Date	1-hr (ppb)			Date	30-d (11 ppb)	24-hr (48 ppb)	1-hr (172 ppb)
January 2022	708	52.4%	41.5%	4.0%	1.1%	0.0%	0.0%	1.8	10.2	Jan 20	36.6	Jan 20 04:00	100.0%	95.2%	0	0	0
February 2022	640	55.2%	41.3%	3.1%	0.5%	0.0%	0.0%	1.4	4.3	Feb 10	35.0	Feb 10 08:00	100.0%	95.2%	0	0	0
March 2022	701	71.0%	26.1%	2.1%	0.7%	0.0%	0.0%	1.0	3.3	Mar 24	20.3	Mar 24 09:00	98.0%	94.2%	0	0	0
April 2022	667	78.7%	20.2%	0.9%	0.1%	0.0%	0.0%	0.7	2.3	Apr 21	21.5	Apr 08 13:00	97.2%	92.6%	0	0	0
May 2022	705	76.6%	21.8%	1.1%	0.4%	0.0%	0.0%	0.8	2.1	May 22	15.2	May 25 08:00	99.3%	94.8%	0	0	0
June 2022	684	84.8%	14.0%	1.2%	0.0%	0.0%	0.0%	0.6	1.4	Jun 23	7.4	Jun 18 17:00	99.7%	95.0%	0	0	0
July 2022	709	80.0%	17.5%	1.6%	1.0%	0.0%	0.0%	0.9	5.0	Jul 27	53.7	Jul 27 15:00	100.0%	95.3%	0	0	0
August 2022	707	75.2%	21.8%	2.1%	0.7%	0.1%	0.0%	1.0	4.6	Aug 07	76.7	Aug 07 11:00	99.7%	95.0%	0	0	0
September 2022	686	71.7%	24.2%	2.8%	1.5%	0.0%	0.0%	1.2	4.5	Sep 30	50.6	Sep 30 12:00	100.0%	95.3%	0	0	0
October 2022	706	76.9%	20.3%	2.1%	0.6%	0.1%	0.0%	0.9	3.2	Oct 38	61.1	Oct 30 16:00	99.7%	94.9%	0	0	0
November 2022	686	84.1%	13.5%	1.9%	0.4%	0.0%	0.0%	1.1	3.4	Nov 10	20.8	Nov 28 15:00	100.0%	95.3%	0	0	0
December 2022	707	47.4%	51.2%	1.4%	0.0%	0.0%	0.0%	1.4	3.4	Dec 22	7.4	Dec 02 14:00	100.0%	95.0%	0	0	0
Annual	8394	49.5%	27.8%	2.0%	0.7%	0.0%	0.0%	1.1	10.2	Jan 20	76.7	Aug 07 11:00	99.6%	94.8%	0	0	0

AAAQO Objectives: Annual: 8ppb, 30-Day: 11ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

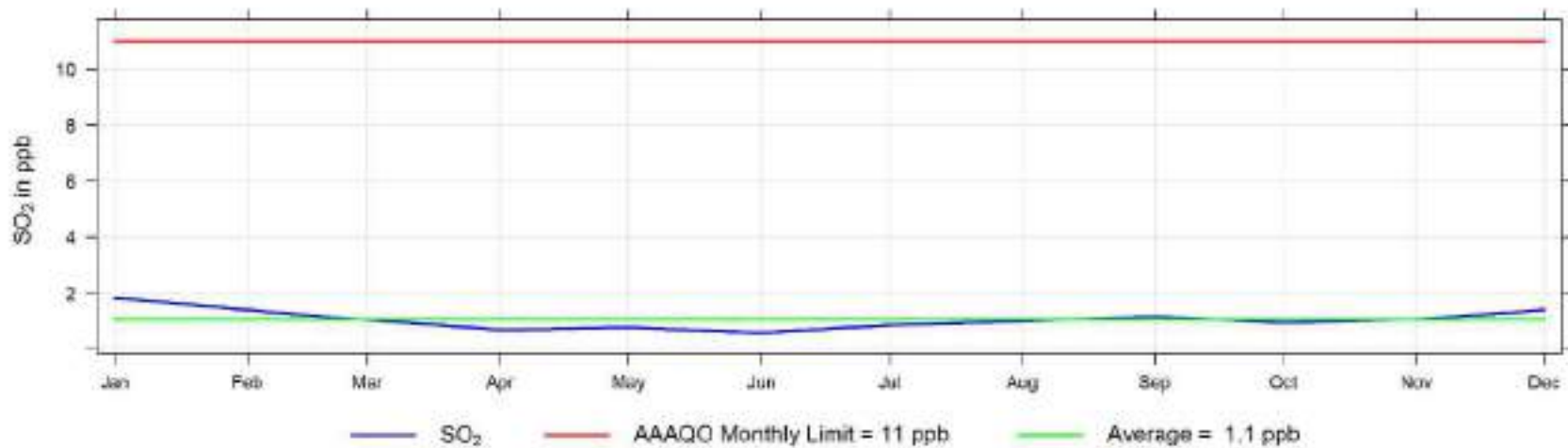
2022 Hourly Concentration Readings of SO₂ (in ppb) at Poplar

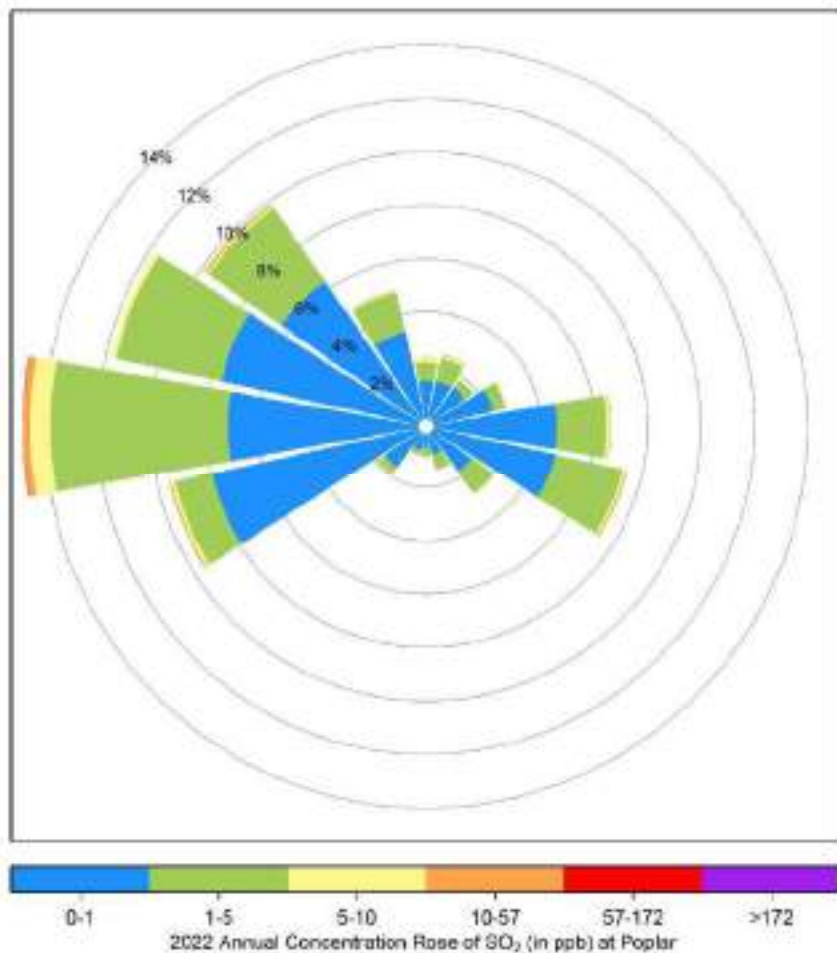


2022 Daily Concentration Readings of SO₂ (in ppb) at Poplar

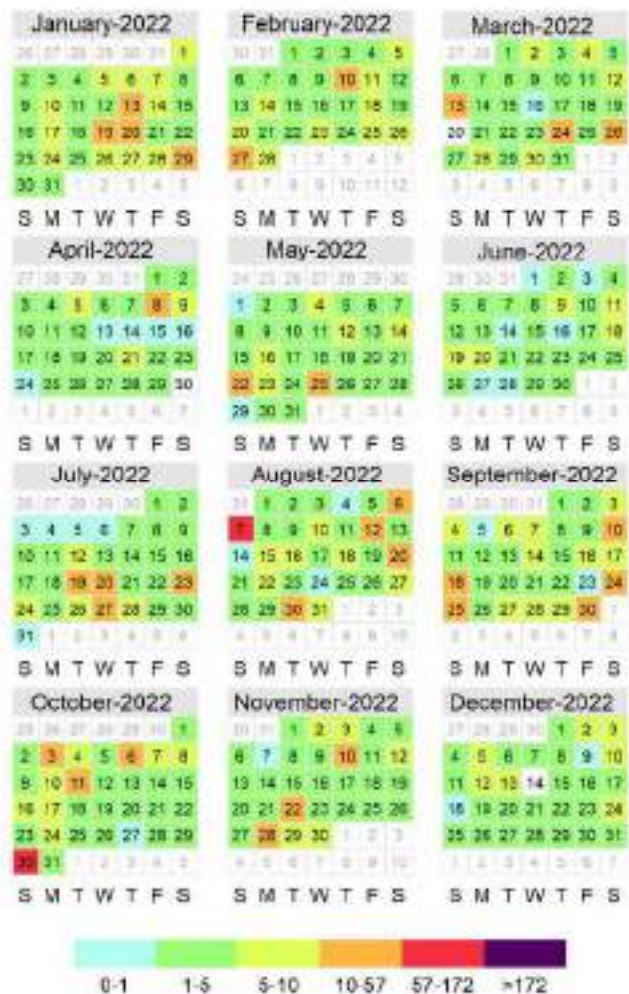


2022 Monthly Concentration Readings of SO₂ (in ppb) at Poplar





Hourly Maximum SO₂ (in ppb) for 2022 at Poplar



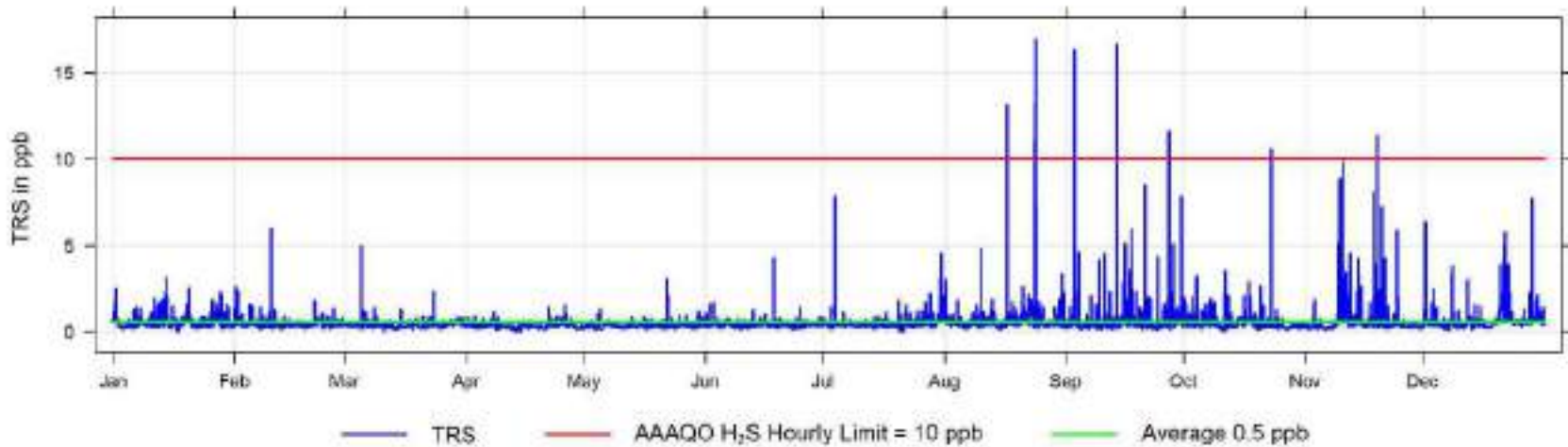
8.3 Total Reduced Sulphur (TRS) - Poplar 2022 Summary

Total Reduced Sulphur (TRS) Frequency Distribution at Poplar

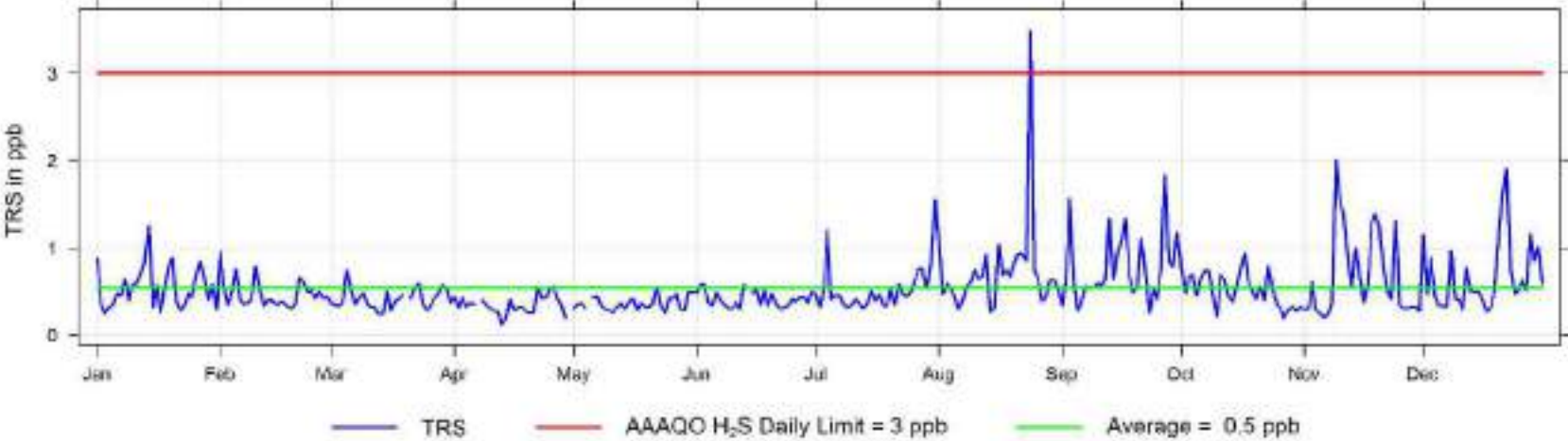
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)			Date	1-hr (ppb)			Date	24-hr 3 ppb	1-hr 10 ppb
January 2022	708	90.3%	9.6%	0.1%	0.0%	0.0%	0.0%	0.5	1.3	Jan 14	3.1	Jan 14 12:00	100.0%	95.2%	0	0
February 2022	639	94.7%	5.2%	0.0%	0.2%	0.0%	0.0%	0.5	1.0	Feb 01	5.9	Feb 10 09:00	100.0%	95.1%	0	0
March 2022	702	98.7%	1.1%	0.1%	0.0%	0.0%	0.0%	0.4	0.8	Mar 05	5.0	Mar 05 09:00	98.9%	94.4%	0	0
April 2022	665	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.3	0.5	Apr 26	1.5	Apr 26 09:00	97.2%	92.4%	0	0
May 2022	703	99.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.4	0.5	May 22	3.1	May 22 07:00	99.3%	94.5%	0	0
June 2022	681	97.4%	2.5%	0.1%	0.0%	0.0%	0.0%	0.4	0.6	Jun 02	4.3	Jun 18 13:00	99.7%	94.6%	0	0
July 2022	709	92.0%	7.3%	0.6%	0.1%	0.0%	0.0%	0.5	1.5	Jul 31	7.8	Jul 04 06:00	100.0%	95.3%	0	0
August 2022	707	85.1%	15.3%	0.6%	0.3%	0.0%	0.7%	0.7	3.5	Aug 24	16.9	Aug 24 04:00	99.7%	95.0%	1	5
September 2022	686	85.3%	12.1%	1.2%	0.6%	0.1%	0.6%	0.8	1.8	Sep 27	16.6	Sep 13 23:00	100.0%	95.3%	0	4
October 2022	707	90.8%	8.8%	0.3%	0.0%	0.0%	0.1%	0.5	1.0	Oct 17	10.6	Oct 23 09:00	99.7%	95.0%	0	1
November 2022	685	87.7%	8.6%	2.5%	0.6%	0.4%	0.1%	0.7	2.0	Nov 09	11.4	Nov 19 13:00	100.0%	95.1%	0	1
December 2022	709	87.6%	9.9%	2.0%	0.6%	0.0%	0.0%	0.7	1.8	Dec 21	7.7	Dec 28 21:00	100.0%	95.3%	0	0
Annual	8301	92.3%	6.7%	0.6%	0.2%	0.0%	0.1%	0.5	3.5	MAXIMUM VALUES		99.6%	94.8%	1	11	

AAAQO H₂S Objectives: 24-Hr: 3ppb, 1-Hr: 10ppb

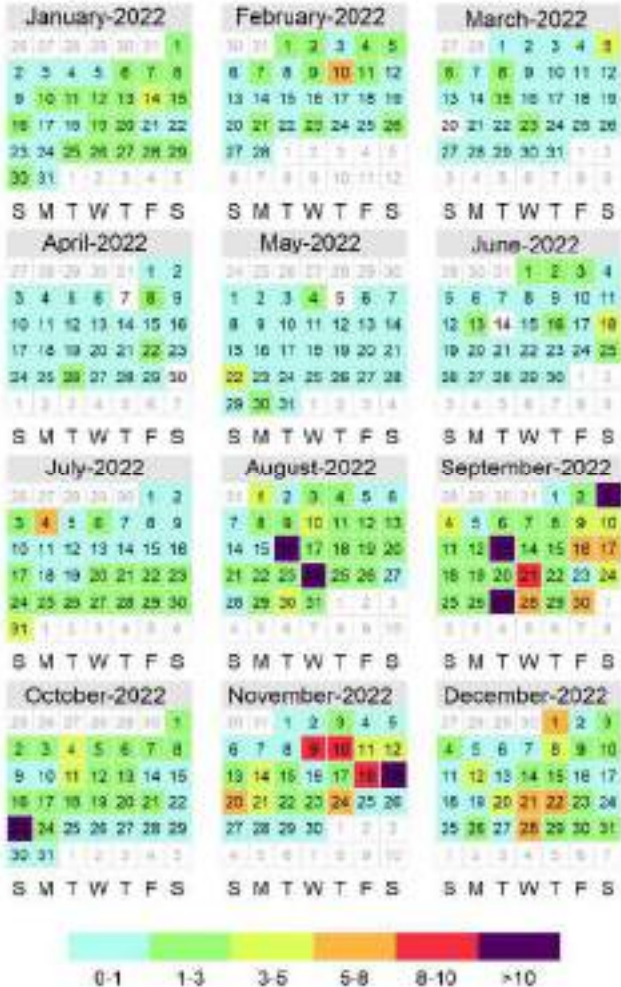
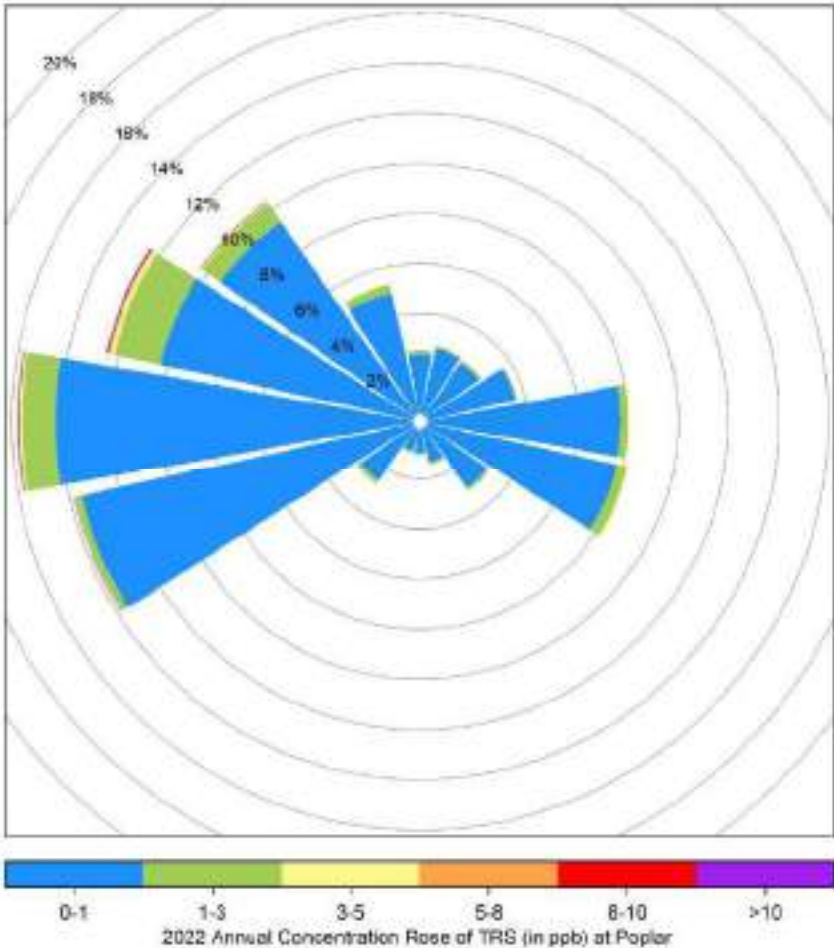
2022 Hourly Concentration Readings of TRS (in ppb) at Poplar



2022 Daily Concentration Readings of TRS (in ppb) at Poplar



Hourly Maximum TRS (in ppb) for 2022 at Poplar



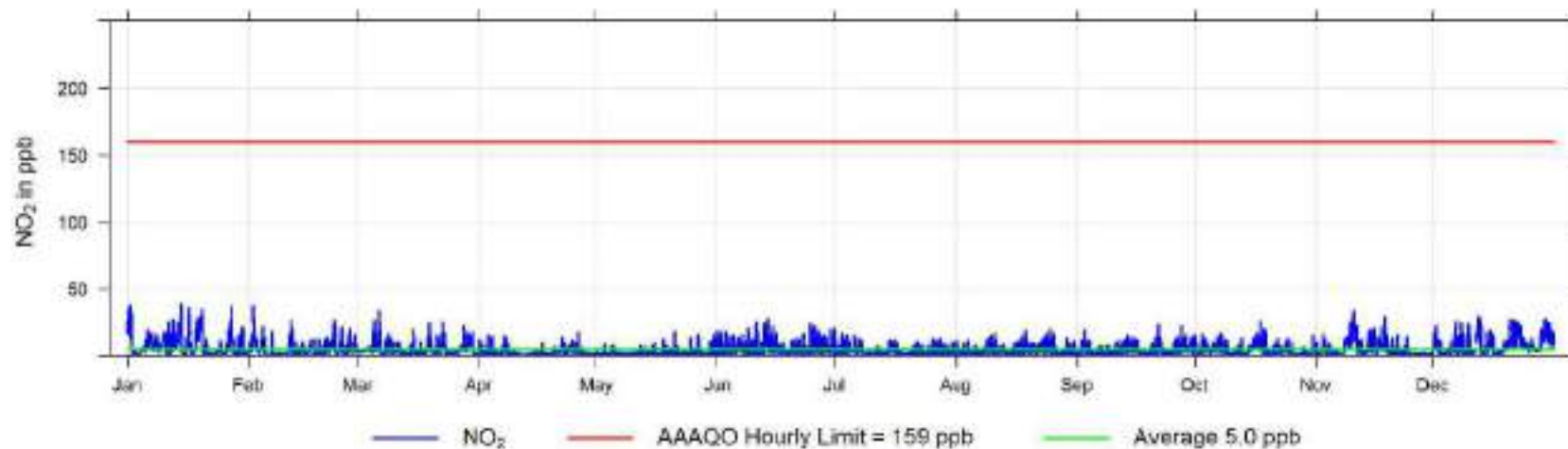
8.4 Nitrogen Dioxide (NO₂) - Poplar 2022 Summary

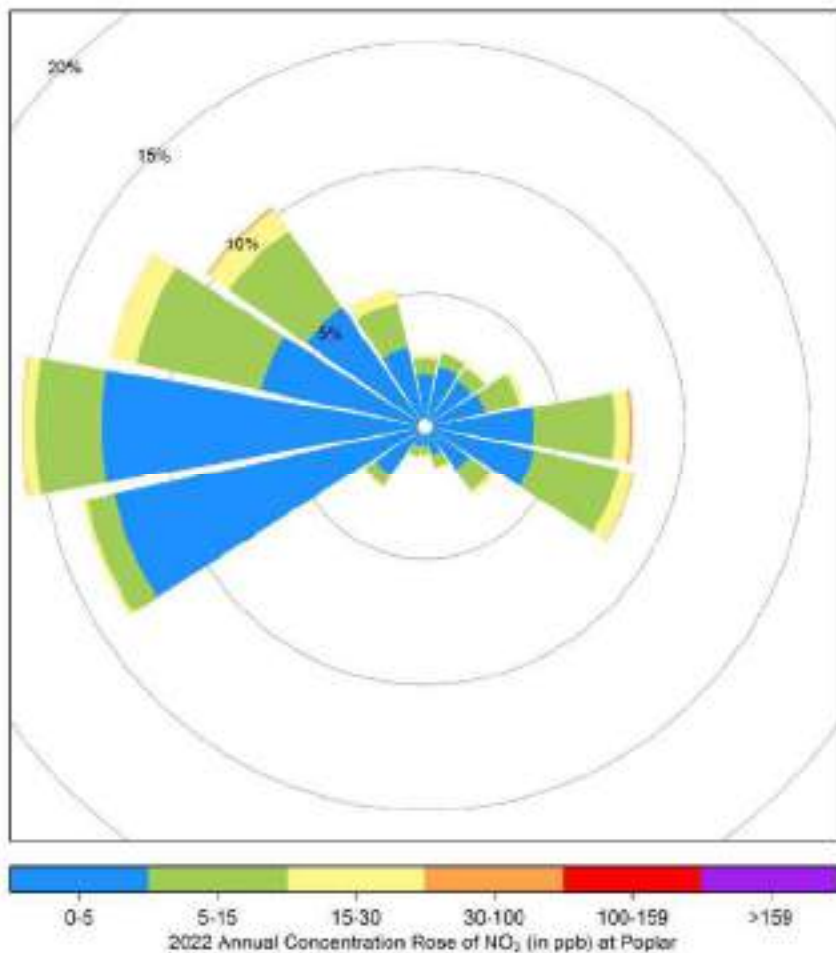
Nitrogen Dioxide (NO₂) Frequency Distribution at Poplar

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents 1-hr 159 ppb	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr Date				
January 2022	707	49.6%	31.2%	15.6%	3.7%	0.0%	0.0%	8.5	25.7	Jan 01	38.4	Jan 14 18:00	100.0%	95.0%	0
February 2022	638	64.6%	28.5%	6.6%	0.3%	0.0%	0.0%	5.3	15.2	Feb 02	37.1	Feb 02 09:00	100.0%	94.8%	0
March 2022	699	66.7%	26.5%	6.6%	0.1%	0.0%	0.0%	5.3	12.8	Mar 06	34.0	Mar 06 07:00	98.9%	94.0%	0
April 2022	664	81.5%	17.9%	0.6%	0.0%	0.0%	0.0%	2.9	6.4	Apr 07	17.5	Apr 26 09:00	97.2%	92.2%	0
May 2022	703	86.2%	12.8%	1.0%	0.0%	0.0%	0.0%	2.4	6.1	May 31	18.0	May 21 00:00	99.1%	94.5%	0
June 2022	682	61.6%	29.3%	9.1%	0.0%	0.0%	0.0%	5.6	12.2	Jun 19	28.0	Jun 13 22:00	99.6%	94.7%	0
July 2022	704	75.1%	24.4%	0.4%	0.0%	0.0%	0.0%	3.4	6.6	Jul 04	16.6	Jul 01 01:00	100.0%	94.6%	0
August 2022	705	65.4%	31.9%	0.7%	0.0%	0.0%	0.0%	4.3	7.9	Aug 25	19.7	Aug 25 04:00	99.7%	94.8%	0
September 2022	684	64.0%	34.8%	1.2%	0.0%	0.0%	0.0%	4.4	8.5	Sep 21	22.8	Sep 21 23:00	100.0%	95.0%	0
October 2022	705	63.3%	34.8%	2.0%	0.0%	0.0%	0.0%	4.3	10.8	Oct 16	28.0	Oct 17 20:00	99.7%	94.8%	0
November 2022	685	66.1%	27.0%	6.4%	0.4%	0.0%	0.0%	5.1	18.5	Nov 10	31.4	Nov 10 23:00	100.0%	95.1%	0
December 2022	704	40.9%	38.2%	20.9%	0.0%	0.0%	0.0%	8.6	18.8	Dec 30	29.8	Dec 12 22:00	100.0%	94.6%	0
Annual	8280	65.4%	28.3%	5.9%	0.4%	0.0%	0.0%	5.0	25.7	Jan 01	38.4	Jan 14 18:00	99.5%	94.5%	0

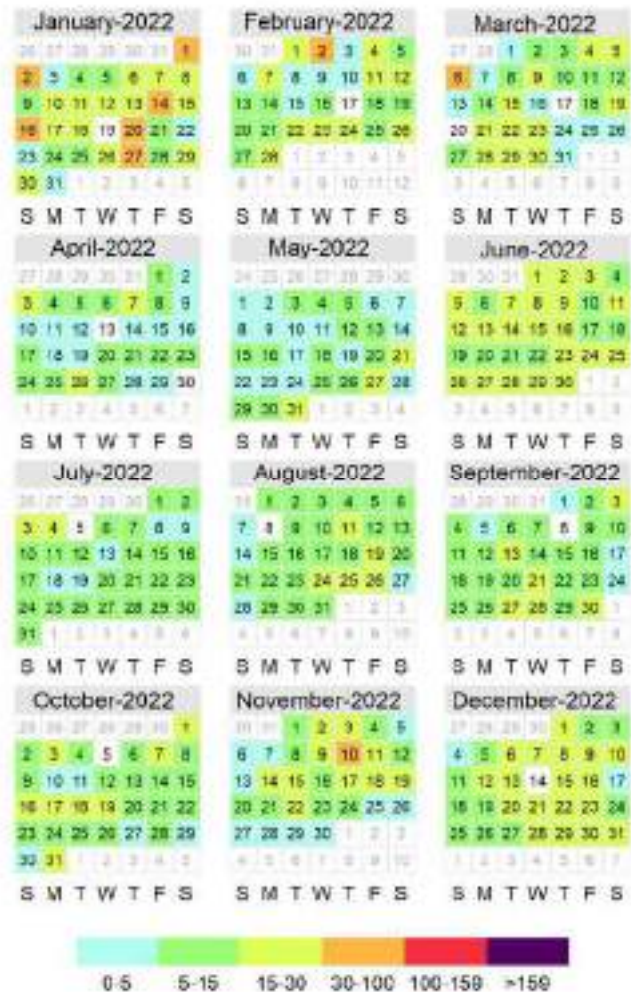
AAQO Objectives: Annual: 24ppb, 1-Hr: 159ppb

2022 Hourly Concentration Readings of NO₂ (in ppb) at Poplar





Hourly Maximum NO₂ (in ppb) for 2022 at Poplar



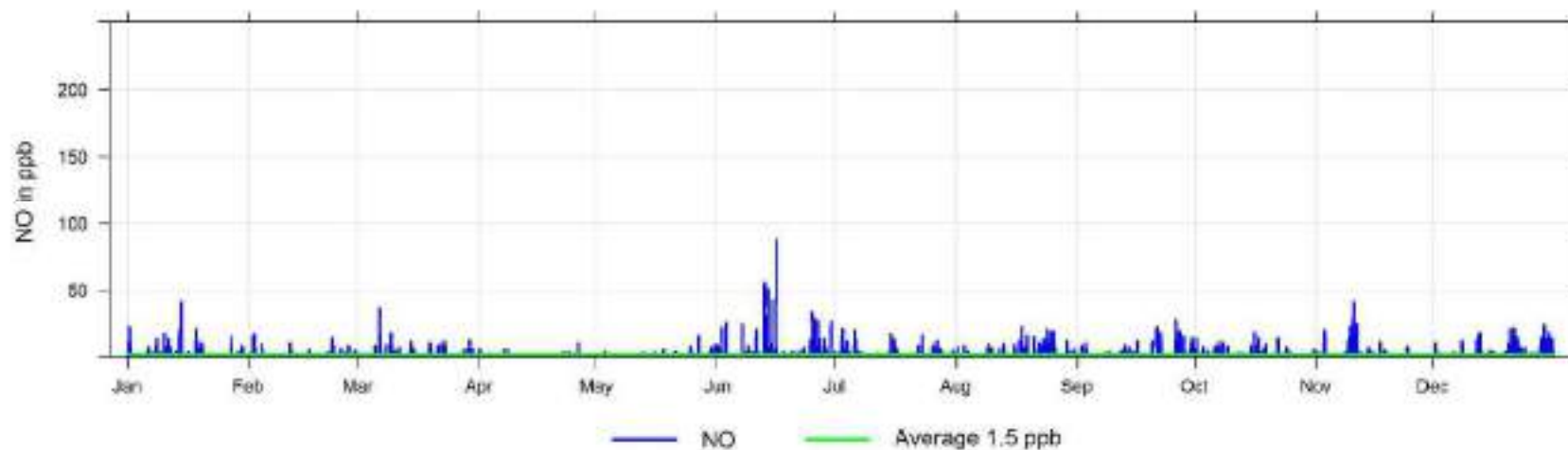
8.5 Nitric Oxide (NO) - Poplar 2022 Summary

Nitric Oxide (NO) Frequency Distribution at Poplar

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		
January 2022	707	88.3%	8.6%	1.7%	0.4%	0.0%	0.0%	1.8	12.1	Jan 14	40.9	Jan 14 22:00	100.0%	95.0%
February 2022	638	94.7%	5.0%	0.3%	0.0%	0.0%	0.0%	1.0	4.5	Feb 02	16.8	Feb 02 13:00	100.0%	94.9%
March 2022	699	91.0%	8.2%	0.7%	0.1%	0.0%	0.0%	1.4	6.8	Mar 06	36.5	Mar 06 11:00	98.9%	94.0%
April 2022	664	95.2%	0.8%	0.0%	0.0%	0.0%	0.0%	0.4	1.2	Apr 01	10.6	Apr 26 09:00	97.2%	92.2%
May 2022	703	98.3%	1.6%	0.1%	0.0%	0.0%	0.0%	0.5	2.8	May 27	15.7	May 27 07:00	99.3%	94.5%
June 2022	682	88.3%	7.6%	2.5%	1.8%	0.0%	0.0%	3.0	14.1	Jun 13	87.2	Jun 16 06:00	99.6%	94.7%
July 2022	704	94.0%	5.1%	0.9%	0.0%	0.0%	0.0%	1.3	4.4	Jul 15	20.9	Jul 03 02:00	100.0%	94.6%
August 2022	705	90.6%	8.7%	0.7%	0.0%	0.0%	0.0%	1.5	4.4	Aug 24	21.8	Aug 18 02:00	99.7%	94.8%
September 2022	684	91.4%	7.0%	1.6%	0.0%	0.0%	0.0%	1.8	6.0	Sep 26	28.3	Sep 26 08:00	100.0%	95.0%
October 2022	705	93.9%	6.0%	0.1%	0.0%	0.0%	0.0%	1.3	4.8	Oct 16	18.5	Oct 16 09:00	99.7%	94.8%
November 2022	685	90.2%	7.0%	2.5%	0.3%	0.0%	0.0%	1.6	14.0	Nov 10	41.0	Nov 10 23:00	100.0%	95.1%
December 2022	704	84.1%	13.6%	2.3%	0.0%	0.0%	0.0%	2.2	8.9	Dec 29	23.9	Dec 29 13:00	100.0%	94.6%
Annual	8280	92.1%	6.6%	1.1%	0.2%	0.0%	0.0%	1.5	14.1	Jun 13	87.2	Jun 16 06:00	99.5%	94.5%

AAAQO Objectives: none

2022 Hourly Concentration Readings of NO (in ppb) at Poplar



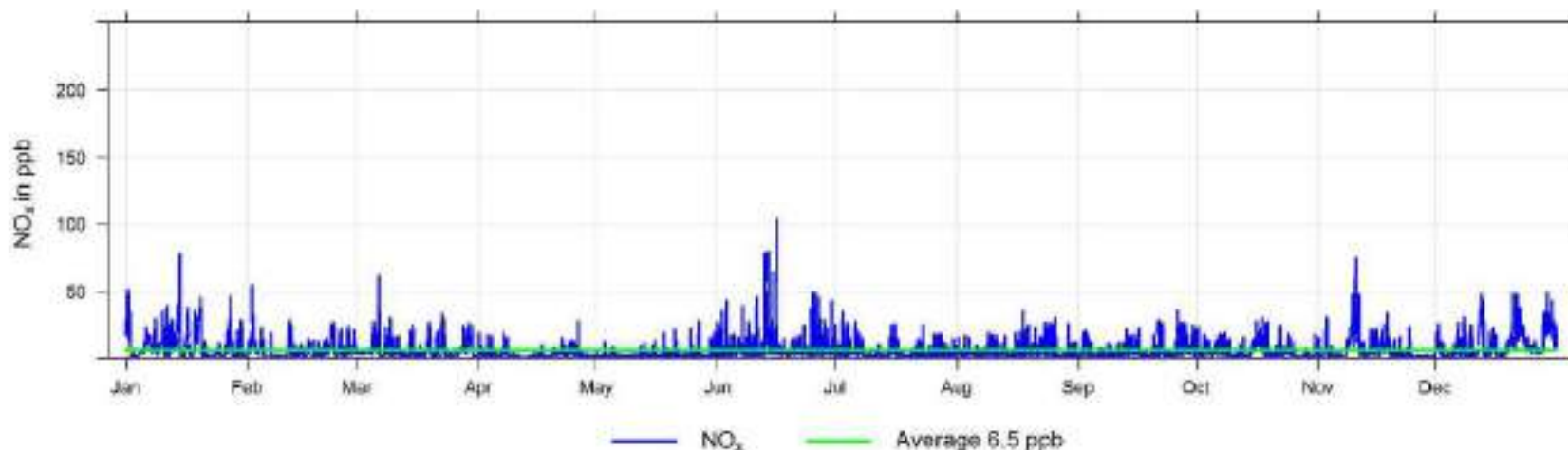
8.6 Oxides of Nitrogen (NO_x) - Poplar 2022 Summary

Nitrogen Oxides (NO_x) Frequency Distribution at Poplar

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		
January 2022	707	47.5%	29.0%	15.7%	7.8%	0.0%	0.0%	10.4	36.7	Jan 14	77.9	Jan 14 22:00	100.0%	95.0%
February 2022	638	60.5%	27.4%	11.4%	0.6%	0.0%	0.0%	6.3	19.9	Feb 02	54.3	Feb 02 05:00	100.0%	94.9%
March 2022	699	59.9%	26.5%	12.4%	1.1%	0.0%	0.0%	6.7	19.7	Mar 06	61.3	Mar 06 11:00	98.9%	94.0%
April 2022	664	79.1%	19.0%	2.0%	0.0%	0.0%	0.0%	3.3	7.6	Apr 07	28.3	Apr 26 09:00	97.2%	92.2%
May 2022	703	84.5%	12.9%	2.6%	0.0%	0.0%	0.0%	2.9	8.2	May 31	28.1	May 27 06:00	99.3%	94.5%
June 2022	682	56.2%	28.0%	11.3%	4.4%	0.1%	0.0%	8.7	26.4	Jun 13	103.6	Jun 16 06:00	99.6%	94.7%
July 2022	704	69.6%	24.7%	5.5%	0.1%	0.0%	0.0%	4.7	10.6	Jul 15	34.7	Jul 03 02:00	100.0%	94.6%
August 2022	705	60.3%	30.9%	8.5%	0.3%	0.0%	0.0%	5.8	12.0	Aug 24	35.3	Aug 18 02:00	99.7%	94.8%
September 2022	684	59.1%	30.6%	10.1%	0.3%	0.0%	0.0%	6.0	14.0	Sep 28	36.2	Sep 28 08:00	100.0%	95.0%
October 2022	705	59.6%	32.9%	7.4%	0.1%	0.0%	0.0%	5.6	15.8	Oct 16	30.8	Oct 17 20:00	99.7%	94.8%
November 2022	685	63.2%	22.8%	10.9%	3.1%	0.0%	0.0%	6.7	32.8	Nov 10	74.6	Nov 10 23:00	100.0%	95.1%
December 2022	704	37.8%	33.5%	23.2%	5.5%	0.0%	0.0%	10.9	26.6	Dec 29	48.8	Dec 29 17:00	100.0%	94.6%
Annual	8280	61.4%	26.5%	10.1%	2.6%	0.0%	0.0%	6.5	36.7	Jan 14	103.6	Jun 16 06:00	99.5%	94.5%

AAAQD Objectives: none

2022 Hourly Concentration Readings of NO_x (in ppb) at Poplar



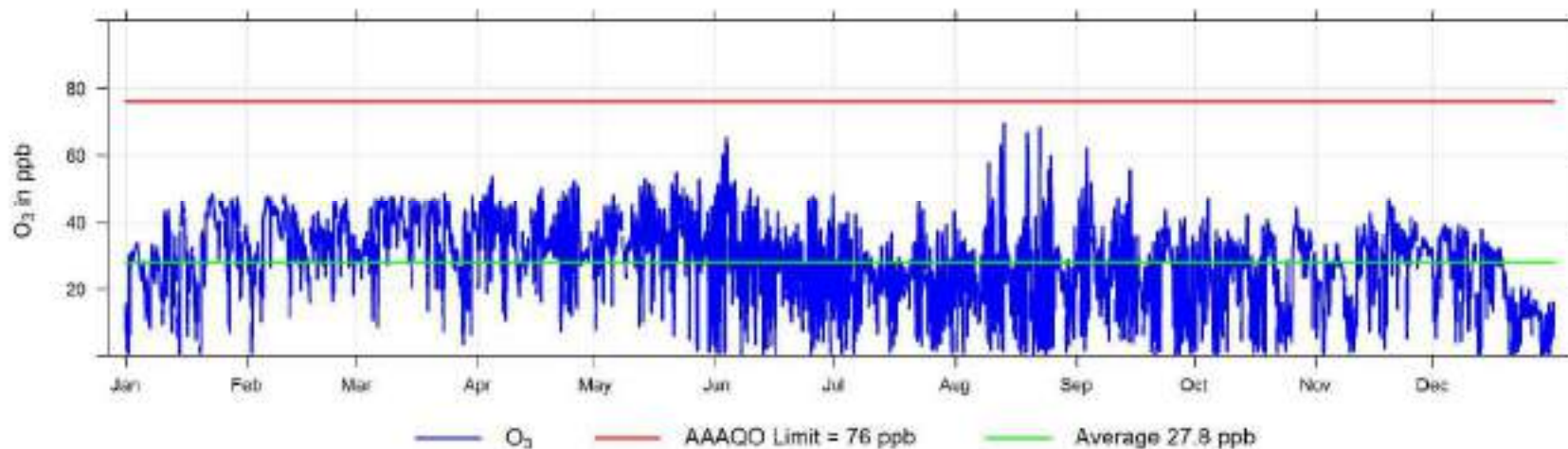
8.7 Ozone (O₃) - Poplar 2022 Summary

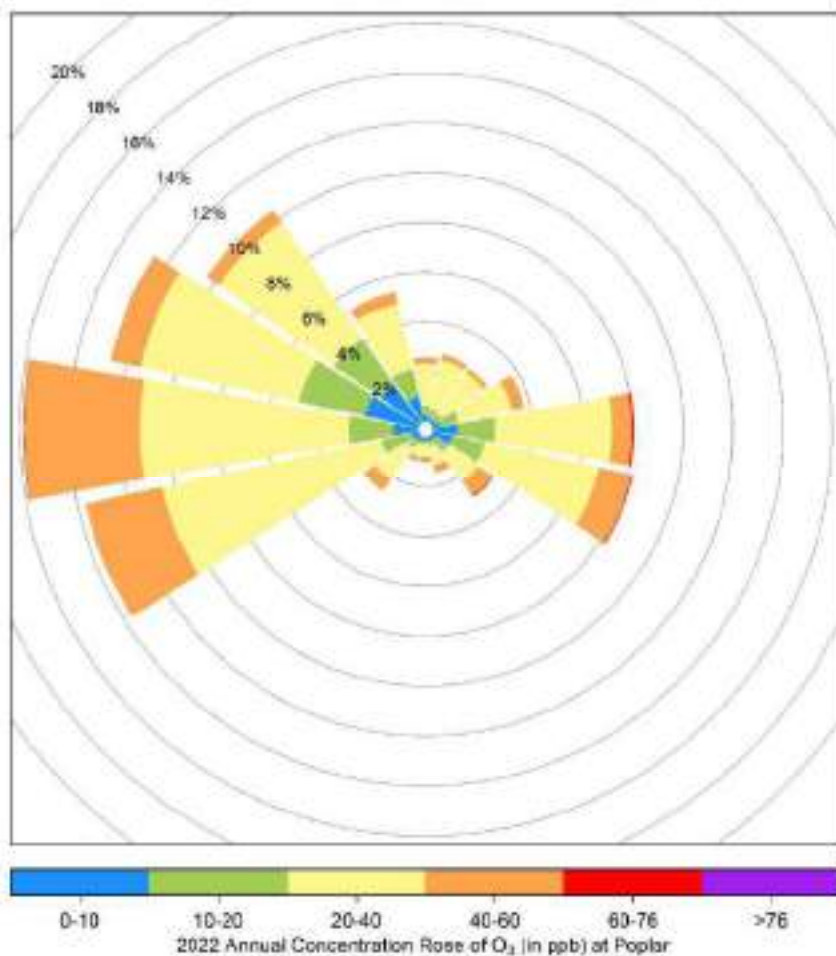
Ozone (O₃) Frequency Distribution at Poplar

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents 1-hr 76 ppb	
		0 to 10 (ppb)	10 to 20 (ppb)	20 to 40 (ppb)	40 to 60 (ppb)	60 to 76 (ppb)	> 76 (ppb)			Date	1-hr (ppb)				Date
January 2022	709	8.3%	13.8%	55.9%	22.0%	0.0%	0.0%	28.8	45.1	Jan 22	46.5	Jan 23 04:00	100.0%	95.3%	0
February 2022	641	0.6%	5.6%	63.8%	30.0%	0.0%	0.0%	34.5	45.6	Feb 06	48.1	Feb 10 08:00	100.0%	95.4%	0
March 2022	682	1.3%	4.5%	55.0%	39.1%	0.0%	0.0%	35.3	66.0	Mar 07	48.6	Mar 23 14:00	96.4%	91.7%	0
April 2022	668	0.6%	5.7%	64.1%	29.6%	0.0%	0.0%	34.3	43.8	Apr 02	53.3	Apr 04 17:00	97.2%	92.8%	0
May 2022	704	3.4%	6.3%	58.9%	31.4%	0.0%	0.0%	34.6	43.3	May 22	54.8	May 21 18:00	99.3%	94.6%	0
June 2022	694	9.3%	20.0%	52.6%	17.3%	1.0%	0.0%	28.2	44.1	Jun 05	65.5	Jun 05 16:00	99.7%	95.0%	0
July 2022	705	13.3%	23.0%	61.0%	2.7%	0.0%	0.0%	22.2	28.4	Jul 21	45.7	Jul 22 17:00	100.0%	94.8%	0
August 2022	707	18.0%	22.8%	48.2%	9.3%	1.7%	0.0%	23.5	33.6	Aug 19	68.5	Aug 31 14:00	99.7%	95.0%	0
September 2022	686	17.1%	23.0%	50.3%	9.3%	0.3%	0.0%	23.7	36.1	Sep 23	61.9	Sep 03 16:00	100.0%	95.3%	0
October 2022	707	19.0%	17.8%	60.3%	3.0%	0.0%	0.0%	23.0	38.8	Oct 27	47.1	Oct 04 16:00	99.7%	95.0%	0
November 2022	686	10.5%	13.3%	71.6%	4.7%	0.0%	0.0%	26.6	40.9	Nov 20	46.6	Nov 19 23:00	100.0%	95.3%	0
December 2022	709	19.7%	34.7%	45.6%	0.0%	0.0%	0.0%	19.9	36.8	Dec 04	39.5	Dec 04 02:00	100.0%	95.3%	0
Annual	8288	10.1%	15.9%	57.3%	16.5%	0.3%	0.0%	27.8	46.0	Mar 07	65.5	Aug 31 14:00	99.3%	94.6%	0

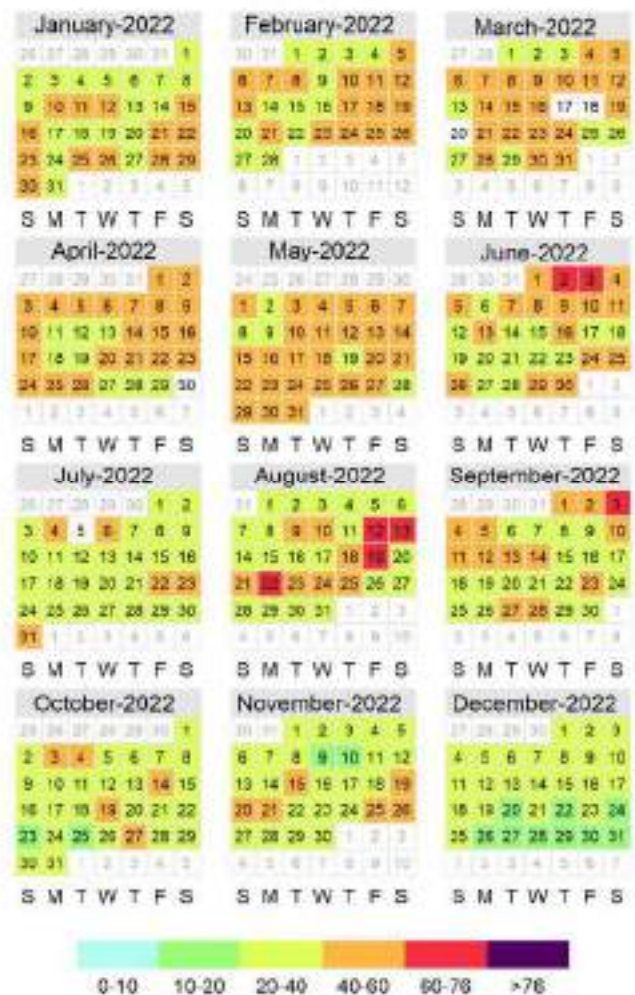
AAAQO Objectives: 1-Hr: 76ppb

2022 Hourly Concentration Readings of O₃ (in ppb) at Poplar





Hourly Maximum O₃ (in ppb) for 2022 at Poplar



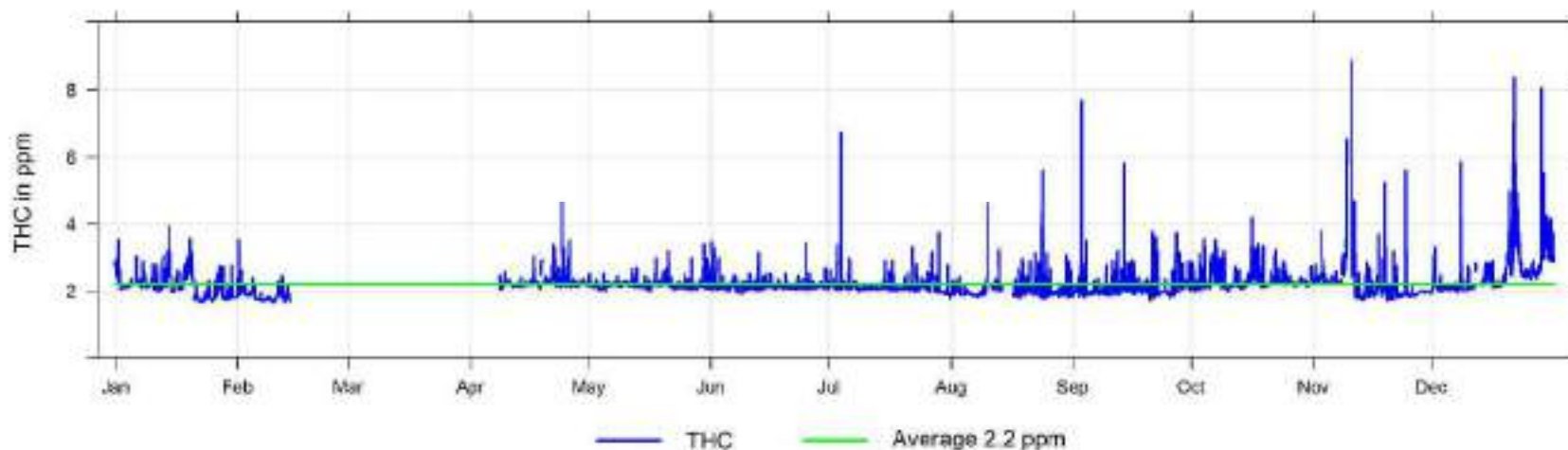
8.8 Total Hydrocarbons (THC) - Poplar 2022 Summary

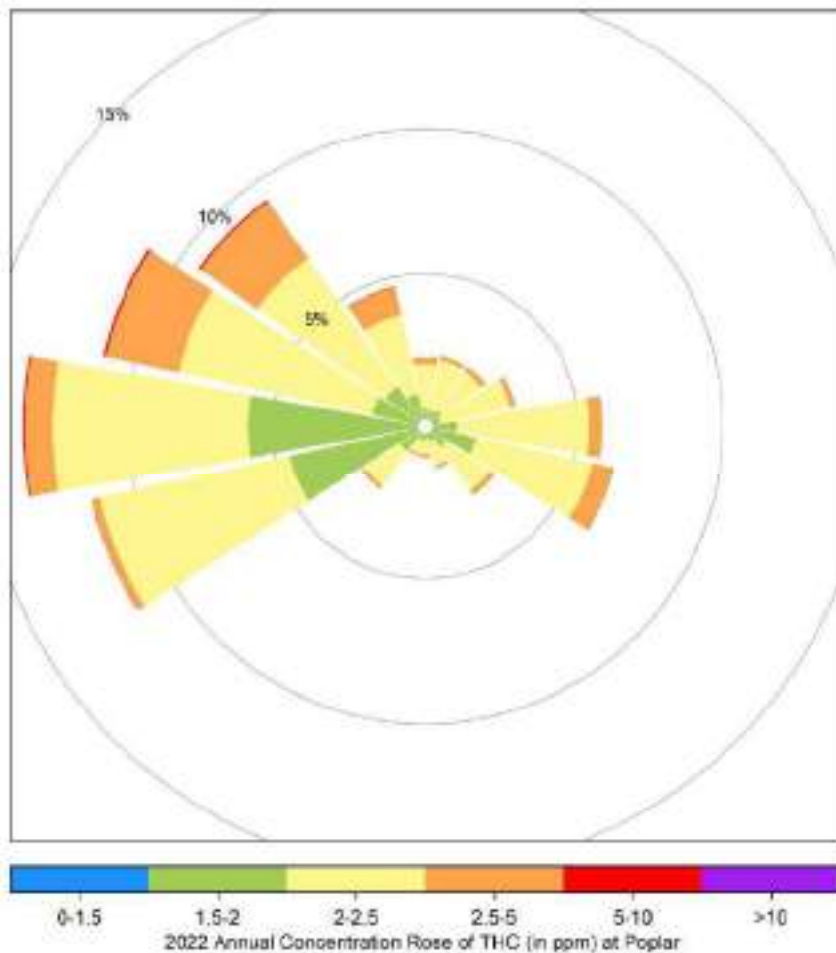
Total Hydrocarbons (THC) Frequency Distribution at Poplar

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppm)	24-hr (ppm)	MAXIMUM VALUES				Operational time (%)	Valid time (%)
		0 to 1.5 (ppm)	1.5 to 2 (ppm)	2 to 2.5 (ppm)	2.5 to 5 (ppm)	5 to 10 (ppm)	> 10 (ppm)			Date	1-hr (ppm)	Date	Date		
January 2022	709	0.0%	31.7%	53.2%	15.1%	0.0%	0.0%	2.2	2.9	Jan 14	3.9	Jan 14 12:00	100.0%	95.3%	
February 2022	307	-	-	-	-	-	-	-	-	-	-	-	48.2%	45.7%	
March 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%	
April 2022	492	-	-	-	-	-	-	-	-	-	-	-	71.7%	68.3%	
May 2022	704	0.0%	0.4%	94.3%	5.3%	0.0%	0.0%	2.2	2.4	May 21	3.4	May 30 07:00	99.3%	94.6%	
June 2022	681	0.0%	5.6%	89.7%	4.7%	0.0%	0.0%	2.2	2.4	Jun 01	3.5	Jun 01 05:00	99.2%	94.6%	
July 2022	703	0.0%	17.4%	76.7%	5.8%	0.1%	0.0%	2.1	2.5	Jul 04	6.7	Jul 04 06:00	100.0%	94.5%	
August 2022	625	0.0%	62.4%	31.5%	5.9%	0.2%	0.0%	2.1	2.6	Aug 24	5.6	Aug 24 04:00	89.1%	84.0%	
September 2022	682	0.0%	46.3%	41.8%	11.6%	0.3%	0.0%	2.1	2.6	Sep 27	7.7	Sep 03 06:00	99.4%	94.7%	
October 2022	707	0.0%	1.8%	77.4%	20.8%	0.0%	0.0%	2.3	2.8	Oct 16	4.2	Oct 16 09:00	99.7%	95.0%	
November 2022	654	0.0%	51.4%	36.4%	11.3%	0.9%	0.0%	2.2	2.8	Nov 11	8.9	Nov 10 20:00	98.3%	90.8%	
December 2022	680	0.0%	5.3%	55.4%	37.5%	1.8%	0.0%	2.6	4.1	Dec 22	8.4	Dec 22 00:00	96.2%	91.4%	
Annual	6944	0.0%	27.6%	60.4%	11.7%	0.3%	0.0%	2.2	4.1	MAXIMUM VALUES		8.9	Nov 10 20:00	83.4%	79.1%

AAAQO Objectives: none

2022 Hourly Concentration Readings of THC (in ppm) at Poplar





Hourly Maximum THC (in ppm) for 2022 at Poplar



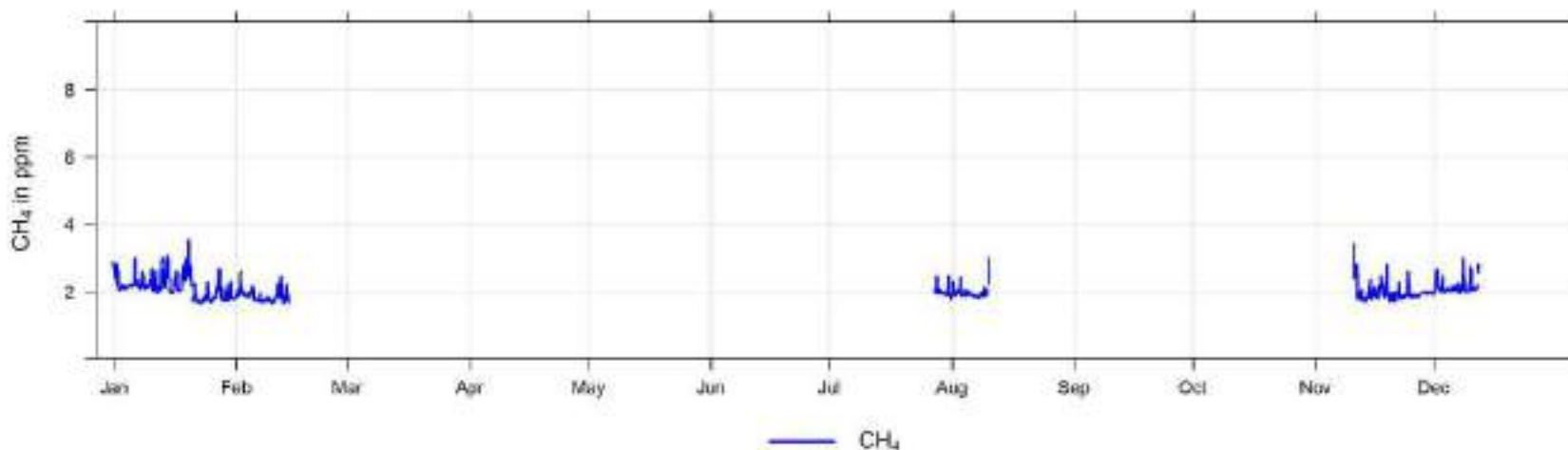
8.9 Methane (CH₄) - Poplar 2022 Summary

Methane (CH₄) Frequency Distribution at Poplar

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppm)	MAXIMUM VALUES			Operational time (%)	Valid time (%)	
		0 to 1.5 (ppm)	1.5 to 2 (ppm)	2 to 2.5 (ppm)	2.5 to 5 (ppm)	5 to 10 (ppm)	> 10 (ppm)		24-hr (ppm)	Date	1-hr (ppm)			Date
January 2022	709	0.0%	33.0%	53.5%	13.5%	0.0%	0.0%	2.1	2.8	Jan 14	3.5	Jan 19 19:00	100.0%	95.3%
February 2022	307	-	-	-	-	-	-	-	-	-	-	-	48.2%	45.7%
March 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
April 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
May 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
June 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
July 2022	96	-	-	-	-	-	-	-	-	-	-	-	14.7%	12.9%
August 2022	214	-	-	-	-	-	-	-	-	-	-	-	31.5%	28.8%
September 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
October 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
November 2022	461	-	-	-	-	-	-	-	-	-	-	-	97.6%	64.0%
December 2022	263	-	-	-	-	-	-	-	-	-	-	-	100.0%	95.3%
Annual	2050	0.0%	62.7%	32.8%	4.6%	0.0%	0.0%	-	2.8	Jan 14	3.5	Jan 19 19:00	32.7%	23.5%

AAAQO Objectives: none

2022 Hourly Concentration Readings of CH₄ (in ppm) at Poplar



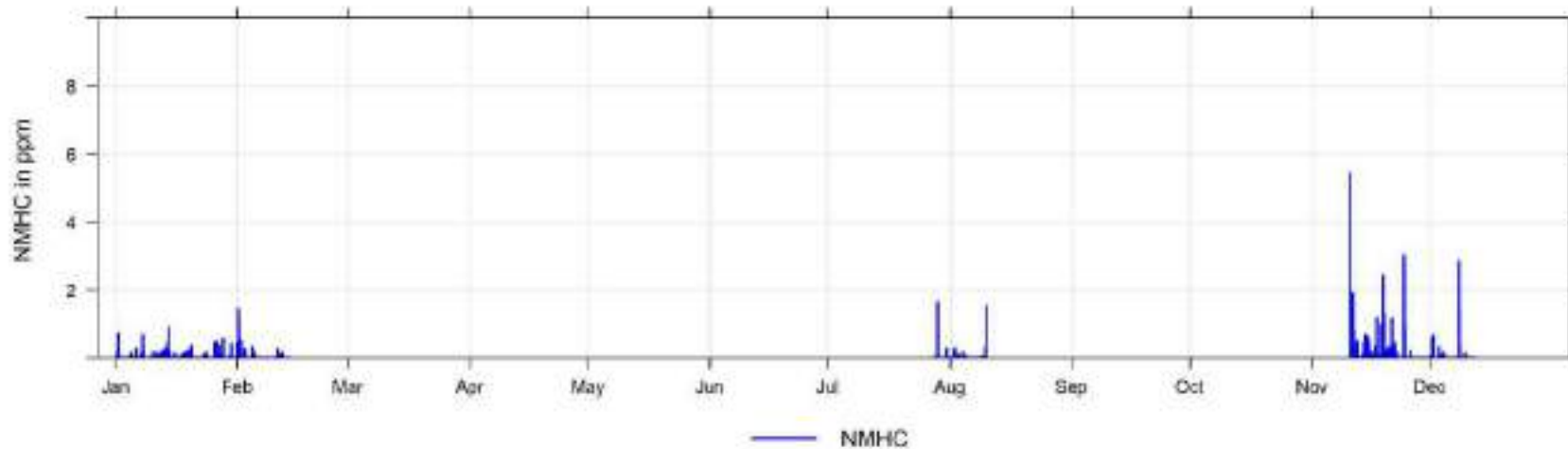
8.10 Nonmethane Hydrocarbons (NMHC) - Poplar 2022 Summary

Nonmethane Hydrocarbons (NMHC) Frequency Distribution at Poplar

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppm)	MAXIMUM VALUES			Operational time (%)	Valid time (%)	
		0 to 0.25 (ppm)	0.25 to 0.5 (ppm)	0.5 to 0.75 (ppm)	0.75 to 1 (ppm)	1 to 2 (ppm)	>2 (ppm)		24-hr (ppm)	Date	1-hr (ppm)			Date
January 2022	709	97.6%	1.7%	0.6%	0.1%	0.0%	0.0%	0.02	0.1	Jan 14	0.9	Jan 14 12:00	100.0%	95.3%
February 2022	307	-	-	-	-	-	-	-	-	-	-	-	48.2%	45.7%
March 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
April 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
May 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
June 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
July 2022	96	-	-	-	-	-	-	-	-	-	-	-	14.7%	12.9%
August 2022	214	-	-	-	-	-	-	-	-	-	-	-	31.5%	28.8%
September 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
October 2022	0	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.0%
November 2022	461	-	-	-	-	-	-	-	-	-	-	-	97.6%	64.0%
December 2022	263	-	-	-	-	-	-	-	-	-	-	-	100.0%	95.3%
Annual	2050	96.0%	2.2%	0.7%	0.2%	0.8%	0.2%	-	0.5	Nov 11	5.4	Nov 10 20:30	32.7%	23.5%

AAAQO Objectives: none

2022 Hourly Concentration Readings of NMHC (in ppm) at Poplar



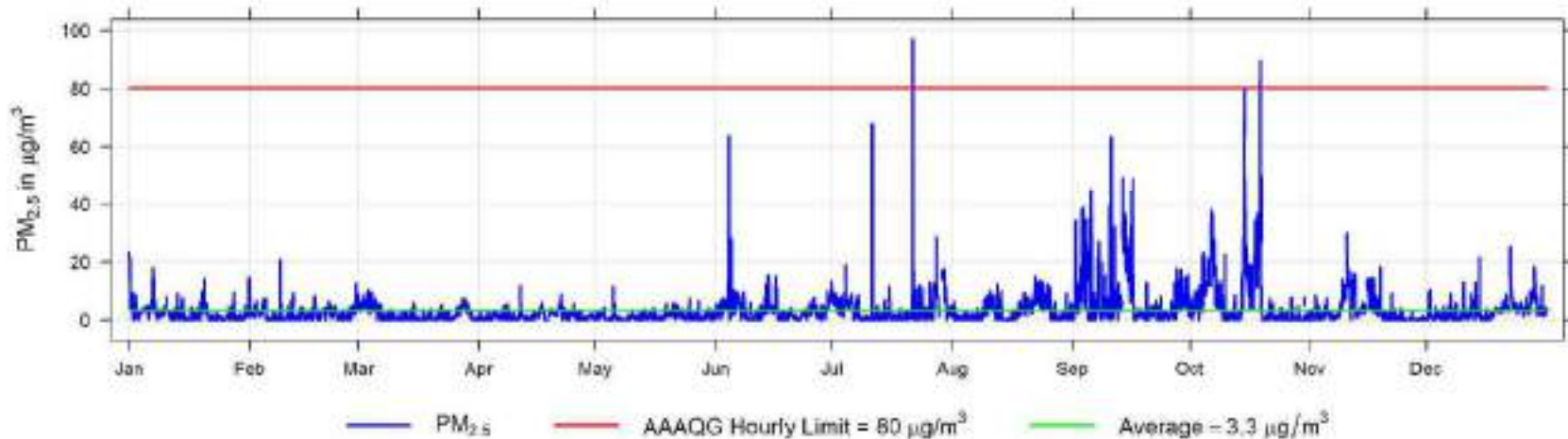
8.11 Particulate Matter (PM_{2.5}) - Poplar 2022 Summary

Particulate Matter (PM_{2.5}) Frequency Distribution at Poplar

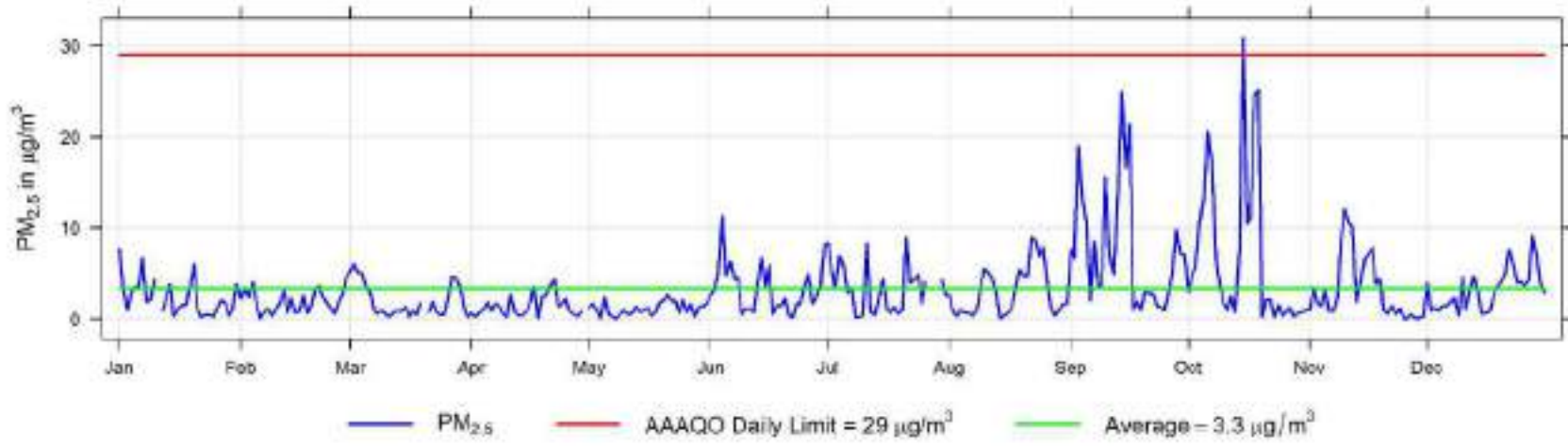
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m ³)	24-hr (µg/m ³)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 5 (µg/m ³)	5 to 15 (µg/m ³)	15 to 30 (µg/m ³)	30 to 50 (µg/m ³)	50 to 80 (µg/m ³)	> 80 (µg/m ³)			Date	1-hr (µg/m ³)			Date	24-hr 29 µg/m ³	1-hr 80 µg/m ³
January 2022	709	86.3%	10.6%	0.0%	0.0%	0.0%	0.0%	2.3	6.3	Jan 01	21.4	Jan 01 01:00	85.7%	95.3%	0	0
February 2022	661	93.2%	6.7%	0.2%	0.0%	0.0%	0.0%	1.9	5.0	Feb 28	20.6	Feb 08 19:00	99.0%	98.4%	0	0
March 2022	725	87.2%	12.8%	0.0%	0.0%	0.0%	0.0%	1.9	6.0	Mar 02	30.2	Mar 03 13:00	97.7%	97.4%	0	0
April 2022	694	95.8%	4.2%	0.0%	0.0%	0.0%	0.0%	1.4	4.2	Apr 21	11.7	Apr 11 16:00	95.7%	96.4%	0	0
May 2022	731	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	1.1	2.6	May 21	11.4	May 05 13:00	98.7%	98.3%	0	0
June 2022	705	78.2%	20.9%	0.7%	0.1%	0.1%	0.0%	3.3	11.5	Jun 04	63.4	Jun 04 13:00	98.5%	97.9%	0	0
July 2022	697	74.2%	23.0%	2.2%	0.4%	0.3%	0.1%	3.7	9.0	Jul 21	96.9	Jul 21 17:00	94.1%	93.7%	0	1
August 2022	726	76.4%	23.4%	0.1%	0.0%	0.0%	0.0%	2.9	9.0	Aug 22	15.1	Aug 22 08:00	98.1%	97.6%	0	0
September 2022	696	60.6%	23.3%	11.4%	4.3%	0.4%	0.0%	7.5	24.9	Sep 14	63.0	Sep 10 22:00	97.5%	96.7%	0	0
October 2022	730	62.7%	22.3%	11.5%	2.7%	0.3%	0.4%	6.8	30.3	Oct 15	89.5	Oct 19 11:00	98.7%	98.1%	1	3
November 2022	697	76.9%	21.2%	1.9%	0.0%	0.0%	0.0%	3.2	12.1	Nov 10	29.8	Nov 10 16:00	97.5%	96.8%	0	0
December 2022	740	78.9%	20.0%	1.1%	0.0%	0.0%	0.0%	5.2	9.3	Dec 28	25.5	Dec 22 15:00	99.7%	99.5%	0	0
Annual	8511	81.0%	15.8%	2.5%	0.6%	0.1%	0.0%	3.3	30.3	MAXIMUM VALUES		97.6%	97.2%	1	4	

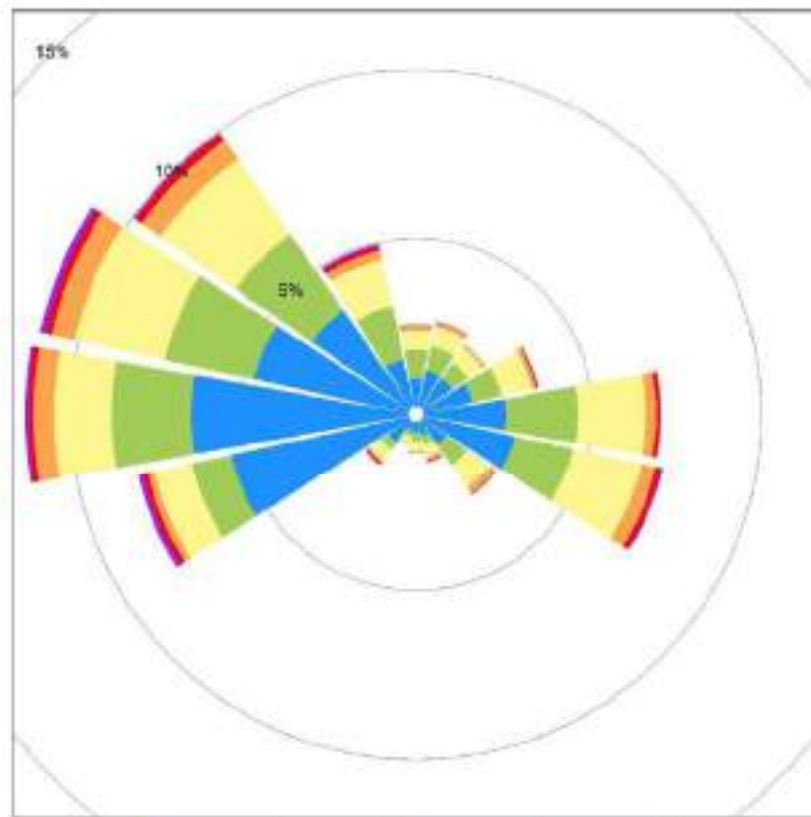
AAAQD Objectives: 24-hr: 29 µg/m³, AAAQG Guideline: 1-Hr: 80 µg/m³

2022 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Poplar



2022 Daily Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Poplar





2022 Annual Concentration Readings of PM_{2.5} in µg/m³ at Poplar

Hourly Maximum PM_{2.5} (in µg/m³) for 2022 at Poplar

January-2022	February-2022	March-2022
28 29 30 31 1	30 31 1 2 3 4 5	31 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	24 25 26 27 28 29 30	28 29 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7 8	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
26 27 28 29 30 1 2	31 1 2 3 4 5 6	28 29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
23 24 25 26 27 28 29 30 1	30 31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
8 10 11 12 13 14	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

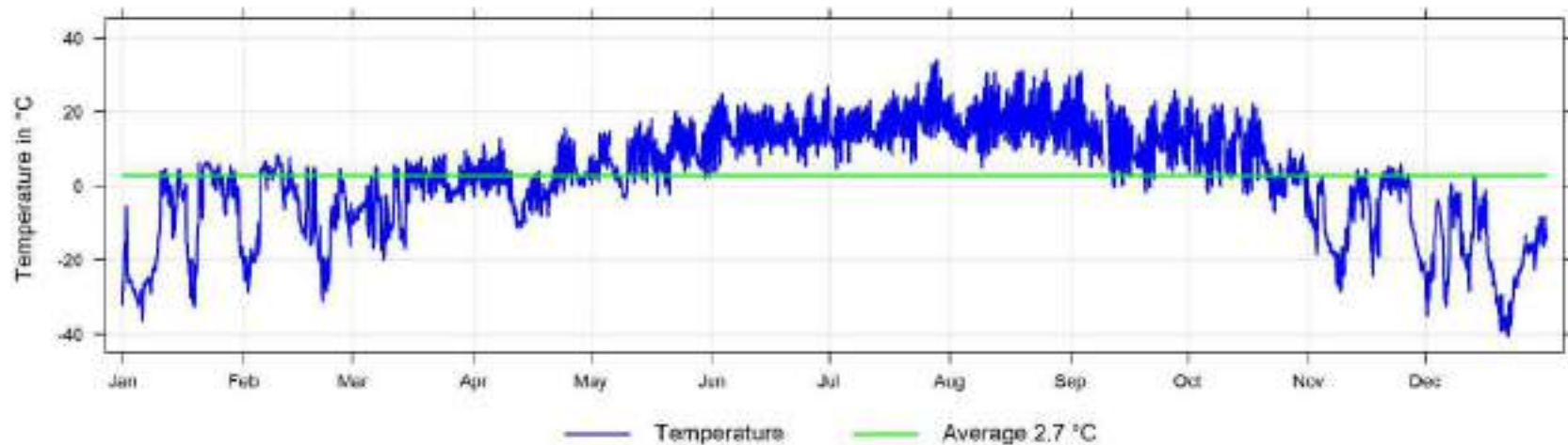


8.12 Temperature (ET) - Poplar 2022 Summary

Temperature (ET) Frequency Distribution at Poplar

Month	Valid Hours	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)	Valid time (%)	
			24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date			
January 2022	744	-10.5	5.9	Jan 22	6.4	Jan 23 02:00	-30.3	Jan 04	-36.7	Jan 06 05:00	100.0%	100.0%	
February 2022	672	-7.4	6.2	Feb 09	8.3	Feb 09 17:00	-25.9	Feb 21	-31.2	Feb 21 08:00	100.0%	100.0%	
March 2022	736	-2.4	4.1	Mar 30	9.5	Mar 29 18:00	-13.5	Mar 13	-20.1	Mar 09 03:00	98.9%	98.9%	
April 2022	700	0.9	7.4	Apr 24	15.6	Apr 24 14:00	-10.2	Apr 12	-11.6	Apr 12 08:00	97.2%	97.2%	
May 2022	739	8.2	14.3	May 22	19.9	May 22 17:00	-2.4	May 09	-3.5	May 09 23:00	99.3%	99.3%	
June 2022	718	15.1	19.3	Jun 30	26.7	Jun 30 18:00	10.6	Jun 23	3.6	Jun 01 05:00	99.7%	99.7%	
July 2022	744	17.3	24.5	Jul 28	34.0	Jul 28 17:00	12.6	Jul 01	4.6	Jul 03 05:00	100.0%	100.0%	
August 2022	742	18.1	21.3	Aug 19	31.4	Aug 25 17:00	12.4	Aug 04	4.8	Aug 09 05:00	99.7%	99.7%	
September 2022	687	12.6	18.5	Sep 02	30.9	Sep 03 16:00	7.1	Sep 19	-1.7	Sep 20 07:00	95.7%	95.4%	
October 2022	743	7.2	14.5	Oct 02	24.0	Oct 01 17:00	-1.7	Oct 25	-8.4	Oct 31 09:00	99.9%	99.9%	
November 2022	730	-8.5	2.6	Nov 21	5.9	Nov 24 15:00	-23.5	Nov 09	-28.5	Nov 09 02:00	100.0%	100.0%	
December 2022	744	-18.8	-5.2	Dec 13	1.9	Dec 13 14:00	-37.7	Dec 21	-40.7	Dec 22 08:00	100.0%	100.0%	
		AVERAGE	MAXIMUM VALUES				MINIMUM VALUES						
		8689	2.7	24.5	Jul 28	34.0	Jul 28 17:00	-37.7	Dec 21	-40.7	Dec 22 08:00	99.2%	99.2%

2022 Hourly Temperature Readings (in °C) at Poplar

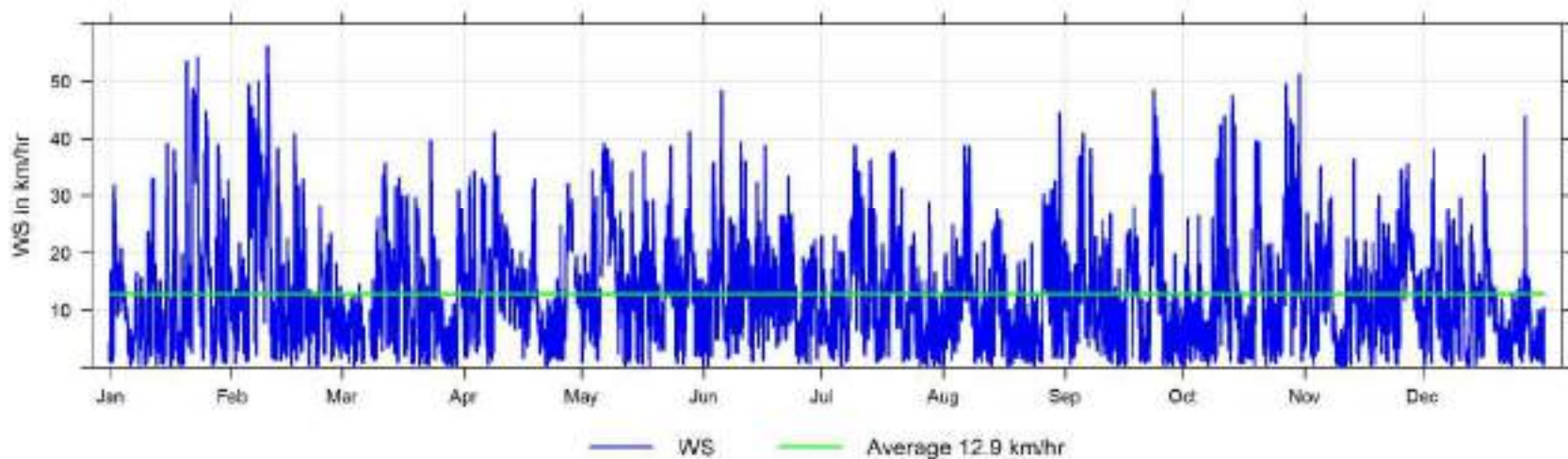


8.13 Wind Speed and Wind Direction (WS and WD) - Poplar 2022 Summary

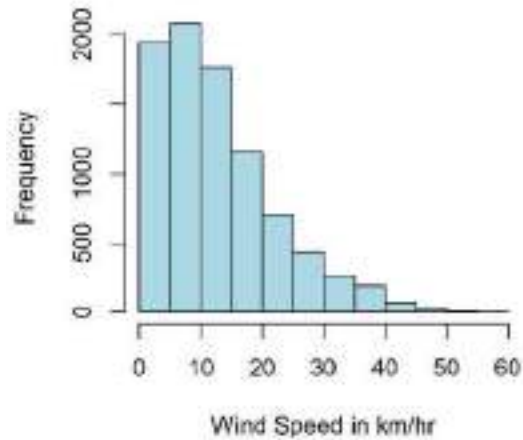
Wind Speed Frequency Distribution at Poplar

Month	Valid Hours	Calm	% of Readings in Concentration Range					Monthly Average (km/hr)	24-hr (km/hr)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	
			0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)			Date	1-hr Date			
January 2022	743	1.3%	27.0%	22.0%	23.7%	10.5%	18.3%	13.8	41.8	Jan 22	34.1	Jan 23 06:00	99.9%	99.9%
February 2022	671	0.6%	18.5%	33.2%	24.3%	10.0%	18.5%	15.6	36.6	Feb 10	56.0	Feb 10 04:00	100.0%	100.0%
March 2022	699	1.3%	25.3%	34.6%	20.6%	13.3%	4.9%	11.0	21.5	Mar 12	39.6	Mar 23 14:00	94.0%	94.0%
April 2022	678	0.4%	15.5%	27.7%	32.7%	17.0%	6.6%	13.3	24.0	Apr 09	41.0	Apr 08 19:00	94.2%	94.2%
May 2022	739	0.4%	13.4%	22.2%	36.7%	18.0%	9.3%	14.9	31.1	May 07	41.1	May 28 13:00	99.3%	99.3%
June 2022	718	0.1%	12.8%	29.0%	36.5%	15.9%	5.7%	13.7	28.4	Jun 05	48.2	Jun 05 17:00	99.7%	99.7%
July 2022	744	0.7%	23.0%	30.1%	26.5%	13.4%	6.3%	12.0	27.5	Jul 09	38.9	Jul 09 10:00	100.0%	100.0%
August 2022	743	0.8%	27.4%	30.3%	25.3%	10.9%	5.3%	11.0	23.5	Aug 07	44.5	Aug 30 13:00	99.7%	99.7%
September 2022	717	0.7%	26.2%	27.3%	24.1%	12.8%	8.8%	12.4	30.6	Sep 23	48.3	Sep 23 13:00	100.0%	99.6%
October 2022	743	0.5%	22.9%	27.9%	20.3%	13.5%	14.9%	14.2	32.4	Oct 27	51.2	Oct 30 15:00	99.9%	99.8%
November 2022	720	1.3%	19.7%	23.8%	32.9%	18.2%	4.2%	12.8	26.2	Nov 27	36.3	Nov 13 14:00	100.0%	100.0%
December 2022	731	1.1%	32.2%	29.0%	25.4%	9.5%	2.7%	9.8	20.9	Dec 03	43.9	Dec 27 06:00	98.3%	98.3%
Annual	8646	0.8%	21.6%	28.1%	27.4%	13.6%	8.5%	12.9	41.8	MAXIMUM VALUES		98.7%	98.7%	

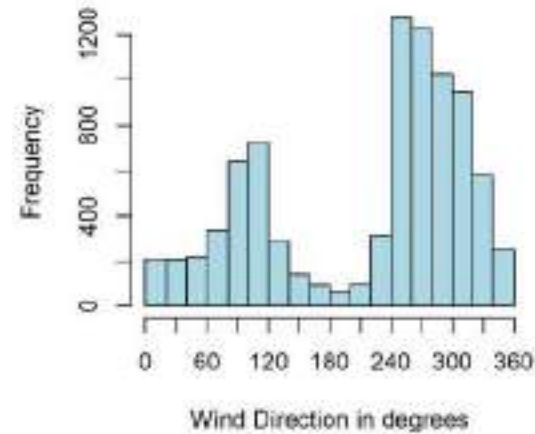
2022 Hourly Readings of Wind Speed (in km/hr) at Poplar



2022 Wind Speed Histogram

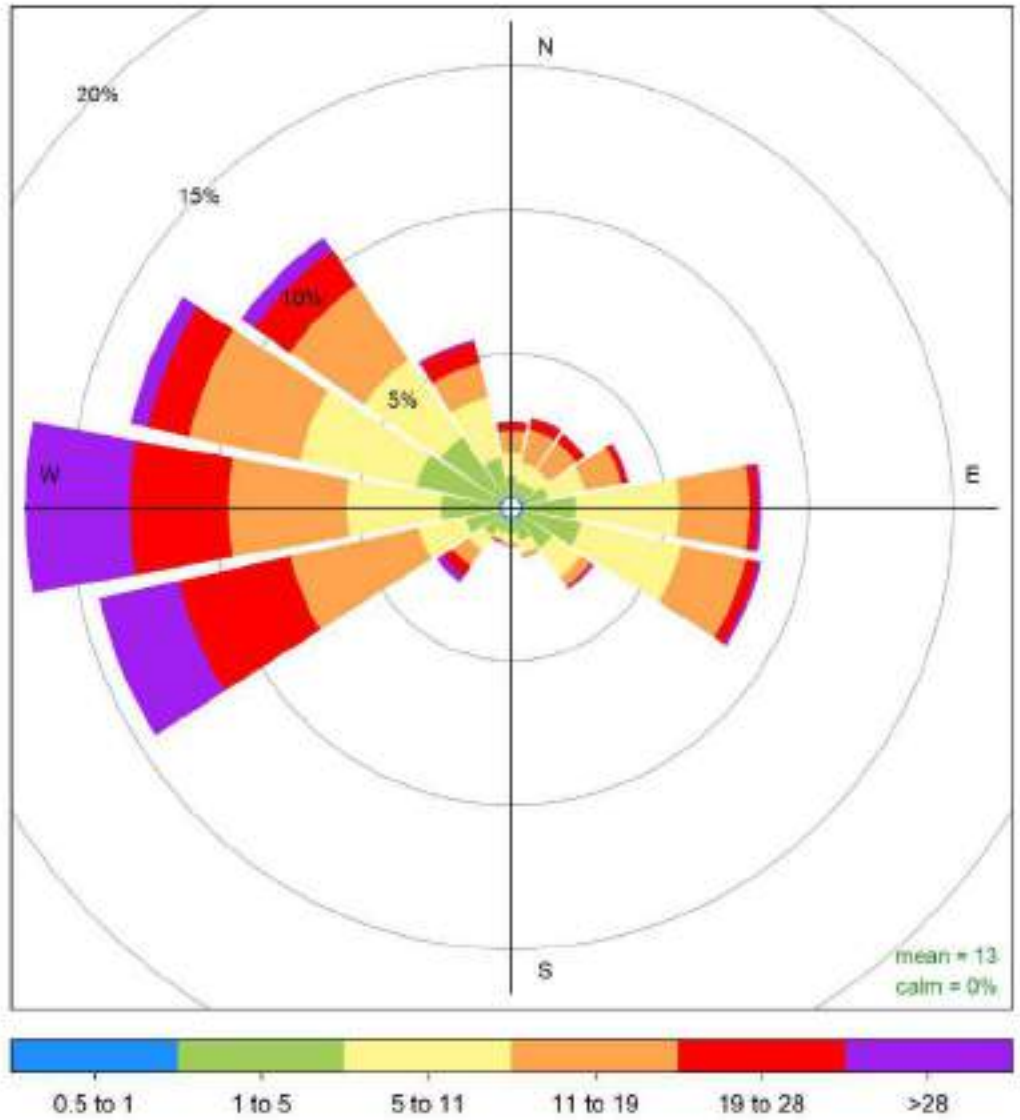


2022 Wind Direction Histogram



Wind Speed and Wind Direction Frequency Distribution at Poplar

Direction	Number of Readings	% of wind speed range						Total %
		Calm (<0.5 (km/hr)	0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)	
N	234	0.1%	0.8%	0.8%	0.7%	0.3%	0.0%	2.7%
NNE	253	0.1%	0.6%	0.7%	1.2%	0.4%	0.0%	2.9%
NE	244	0.0%	0.6%	0.7%	1.2%	0.3%	0.0%	2.8%
ENE	339	0.1%	1.0%	1.3%	1.3%	0.2%	0.0%	3.9%
E	727	0.1%	1.9%	3.6%	2.5%	0.3%	0.1%	8.4%
ESE	742	0.0%	2.2%	3.6%	2.3%	0.4%	0.1%	8.6%
SE	273	0.0%	1.4%	1.2%	0.4%	0.1%	0.1%	3.2%
SSE	133	0.1%	0.8%	0.5%	0.1%	0.0%	0.0%	1.5%
S	89	0.0%	0.6%	0.3%	0.1%	0.0%	0.0%	1.0%
SSW	85	0.0%	0.6%	0.2%	0.1%	0.1%	0.0%	1.0%
SW	249	0.1%	0.8%	0.6%	0.7%	0.4%	0.3%	2.9%
WSW	1246	0.1%	1.3%	1.7%	4.6%	4.0%	2.8%	14.4%
W	1436	0.0%	2.1%	3.3%	4.1%	3.4%	5.6%	16.6%
WNW	1143	0.0%	3.0%	4.2%	3.9%	1.5%	0.6%	13.2%
NW	954	0.0%	2.6%	3.3%	3.1%	1.5%	0.5%	11.1%
MNW	489	0.0%	1.4%	2.2%	1.2%	0.8%	0.1%	5.7%
Total	8646	0.8%	21.7%	26.1%	27.4%	13.6%	8.4%	100.0%



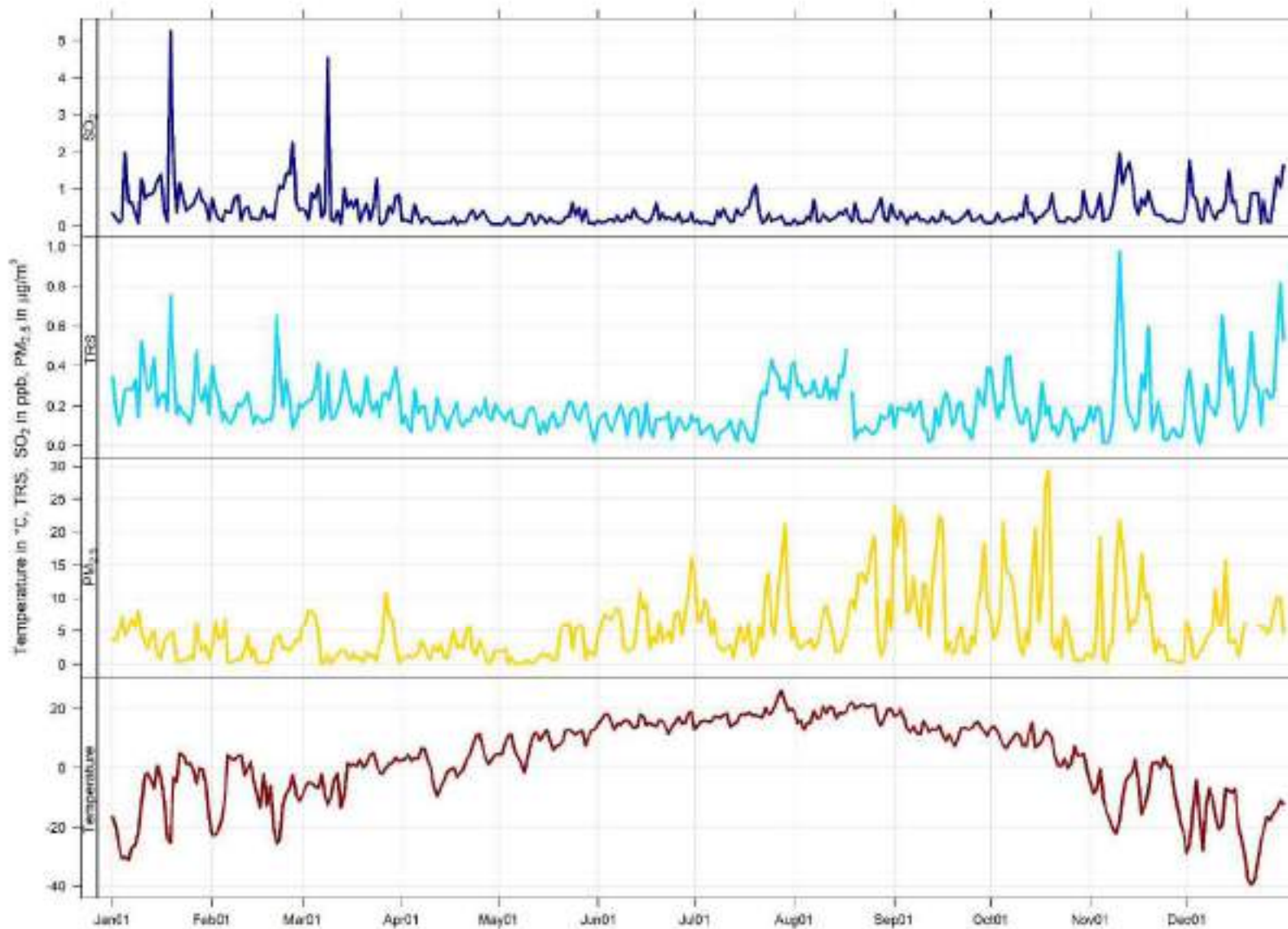
Poplar 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

9 Smoky Heights Key Parameters - Continuous Monitoring Data - 2022 Summary

Smoky Heights Key Parameters - Continuous Monitoring Data - 2022 Summary

Smoky Heights Station	Parameter	Average	Maximum Values				Operational Time (%)	Valid Time (%)	Readings above AAAQO & AAAQG				
			24-hr	Date	1-hr	Date			1-hr	8-hr	24-hr	30-d	Annual
			Sulphur Dioxide SO ₂ measured in ppb	0.4	5.7	Jan 19			20.5	Mar 09 18:00	100.0%	95.3%	0
Total Reduced Sulphur TRS measured in ppb	0.2	0.9	Nov 10	4.1	Nov 10 02:00	99.3%	94.4%	0	-	0	-	-	
Particulate Matter PM _{2.5} measured in µg/m ³	5.1	28.2	Oct 19	356.4	Nov 04 17:00	98.9%	98.4%	8	-	0	-	-	

2022 Daily Concentration Readings at Smoky Heights



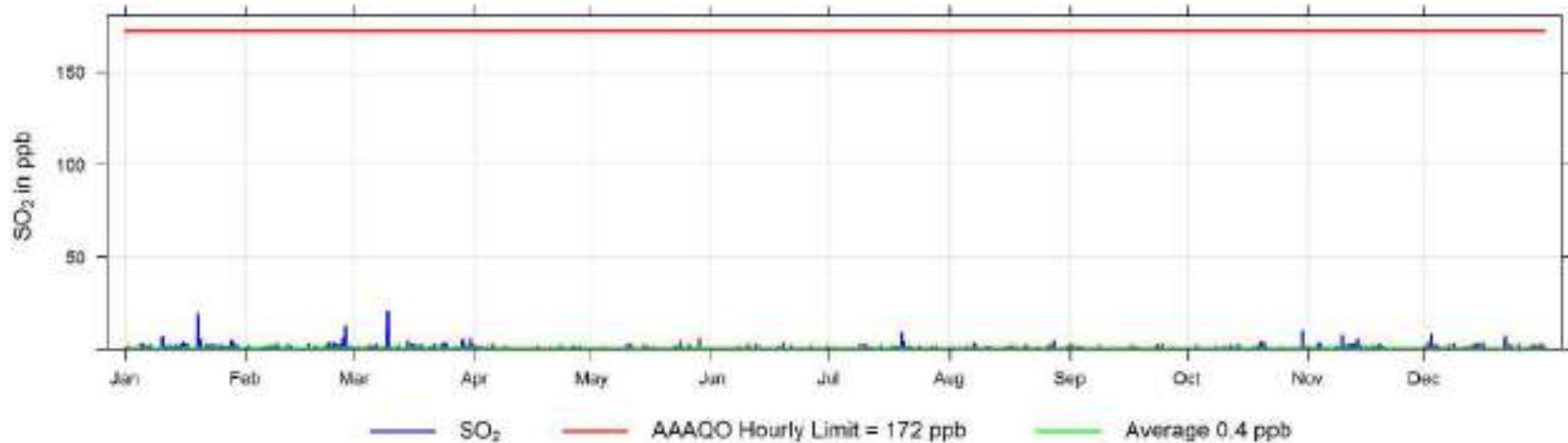
9.1 Sulphur Dioxide (SO₂) - Smoky Heights 2022 Summary

Sulphur Dioxide (SO₂) Frequency Distribution at Smoky Heights

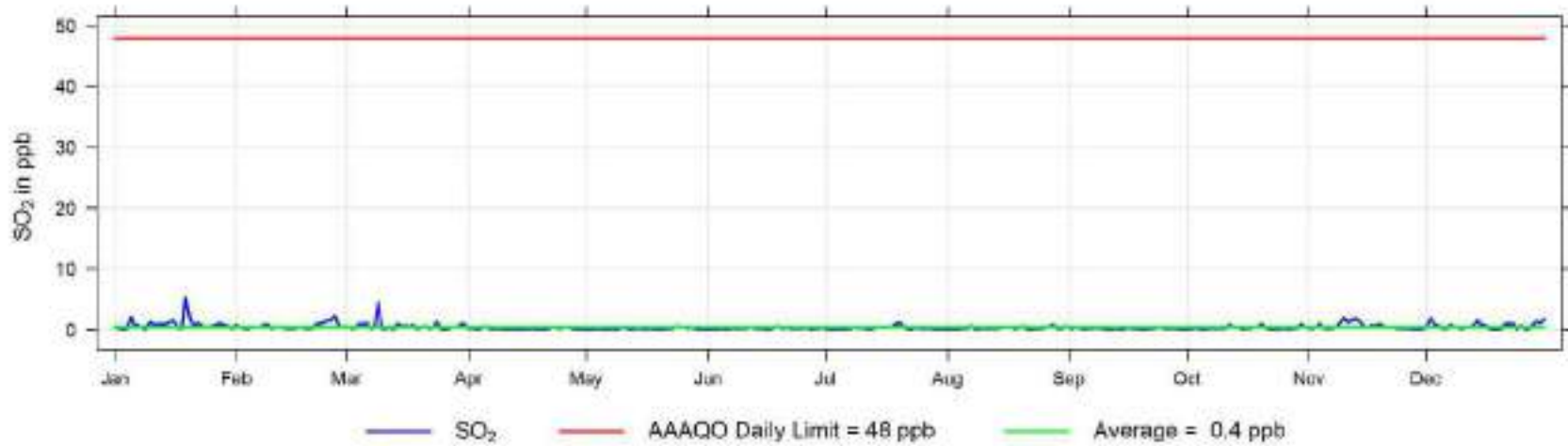
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)			Date	1-hr (ppb)	Date			30-d 11 ppb	24-hr 48 ppb	1-hr 172 ppb
January 2022	709	76.2%	22.0%	1.0%	0.8%	0.0%	0.0%	0.8	5.7	Jan 19	19.8	Jan 19 19:00	100.0%	95.3%	0	0	0
February 2022	640	82.7%	16.9%	0.3%	0.2%	0.0%	0.0%	0.6	2.0	Feb 26	12.5	Feb 26 17:00	100.0%	95.2%	0	0	0
March 2022	709	83.9%	15.0%	0.6%	0.6%	0.0%	0.0%	0.6	4.5	Mar 09	20.5	Mar 09 18:00	100.0%	95.3%	0	0	0
April 2022	686	97.4%	2.6%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	Apr 05	2.3	Apr 05 10:00	100.0%	95.3%	0	0	0
May 2022	709	97.5%	2.4%	0.1%	0.0%	0.0%	0.0%	0.2	0.6	May 24	5.7	May 28 17:00	100.0%	95.3%	0	0	0
June 2022	686	96.9%	3.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	Jun 19	3.5	Jun 19 10:00	100.0%	95.3%	0	0	0
July 2022	708	95.3%	4.3%	0.1%	0.0%	0.0%	0.0%	0.3	1.1	Jul 20	8.8	Jul 19 19:00	99.7%	95.2%	0	0	0
August 2022	709	95.3%	4.7%	0.0%	0.0%	0.0%	0.0%	0.3	0.7	Aug 28	4.6	Aug 28 02:00	100.0%	95.3%	0	0	0
September 2022	686	98.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Sep 24	3.2	Sep 24 22:00	100.0%	95.3%	0	0	0
October 2022	708	95.1%	4.8%	0.1%	0.0%	0.0%	0.0%	0.3	0.9	Oct 30	9.9	Oct 30 18:00	100.0%	95.2%	0	0	0
November 2022	686	83.1%	16.5%	0.4%	0.0%	0.0%	0.0%	0.6	1.9	Nov 13	7.8	Nov 10 00:00	100.0%	95.3%	0	0	0
December 2022	709	79.3%	20.2%	0.6%	0.0%	0.0%	0.0%	0.6	1.8	Dec 02	8.0	Dec 02 17:00	100.0%	95.3%	0	0	0
Annual	8345	80.0%	9.5%	0.3%	0.1%	0.0%	0.0%	0.4	MAXIMUM VALUES			100.0%	95.3%	0	0	0	

AAAQO Objectives: Annual: 8ppb, 30-Day: 11ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

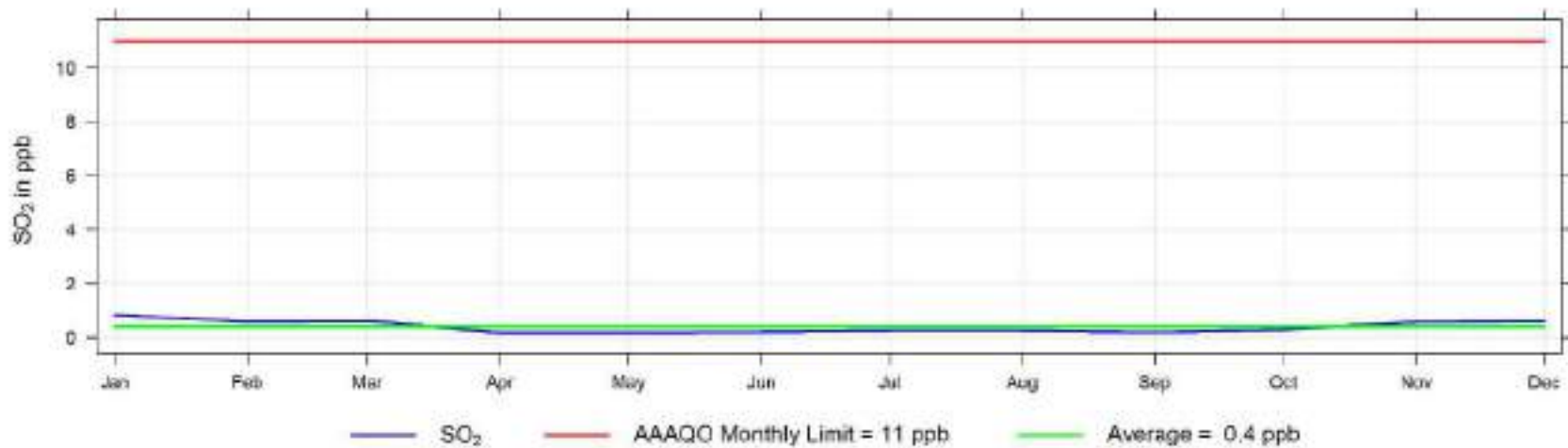
2022 Hourly Concentration Readings of SO₂ (in ppb) at Smoky Heights



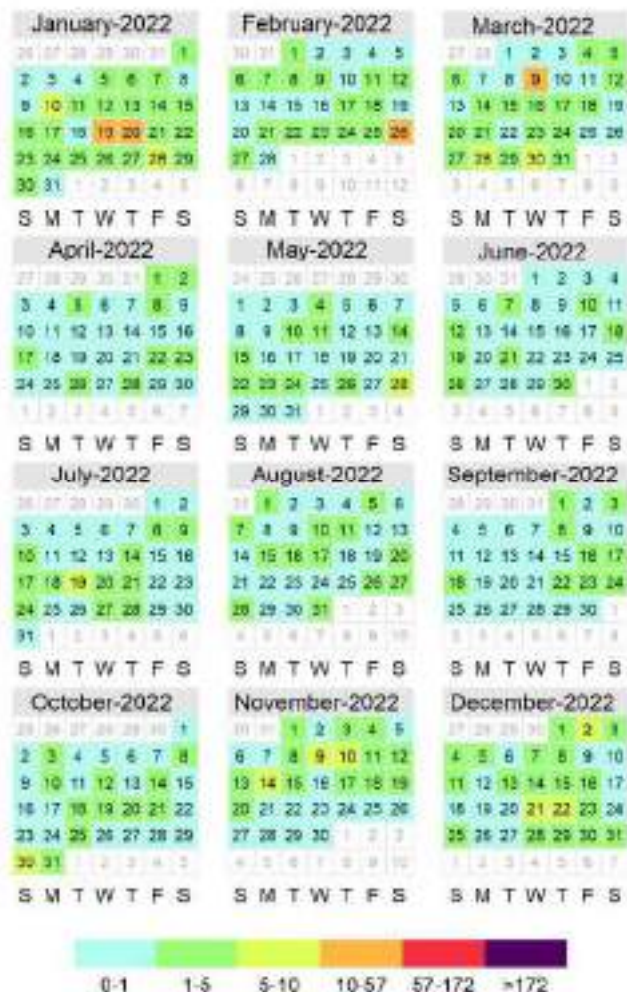
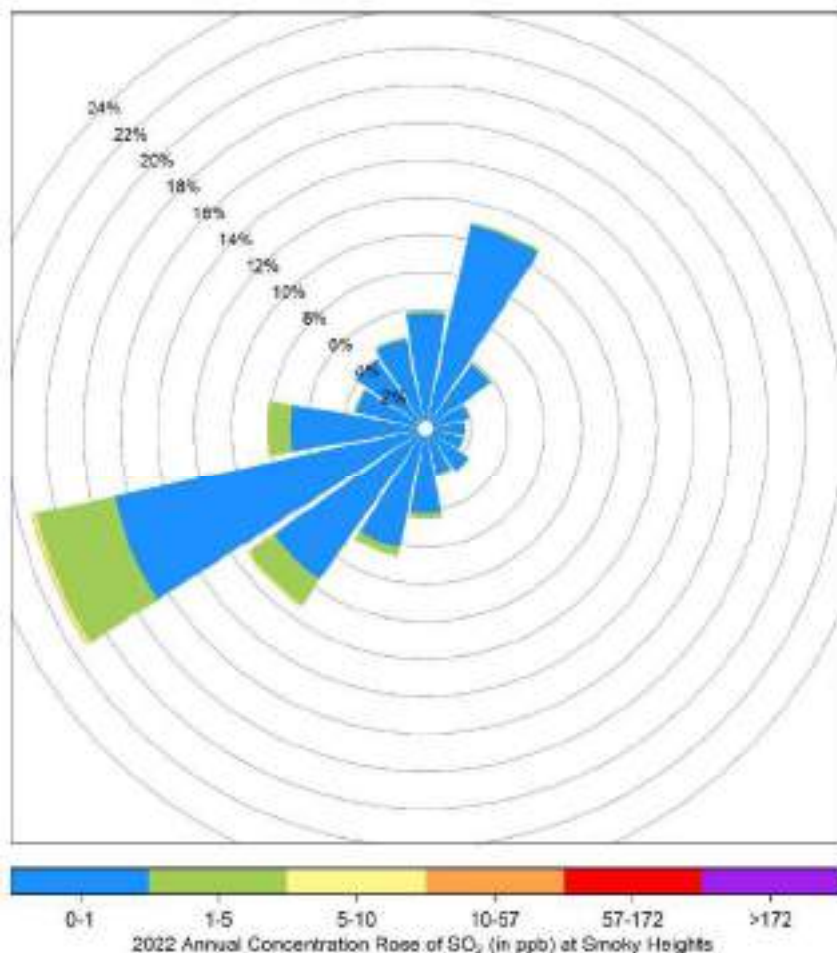
2022 Daily Concentration Readings of SO₂ (in ppb) at Smoky Heights



2022 Monthly Concentration Readings of SO₂ (in ppb) at Smoky Heights



Hourly Maximum SO₂ (in ppb) for 2022 at Smoky Heights



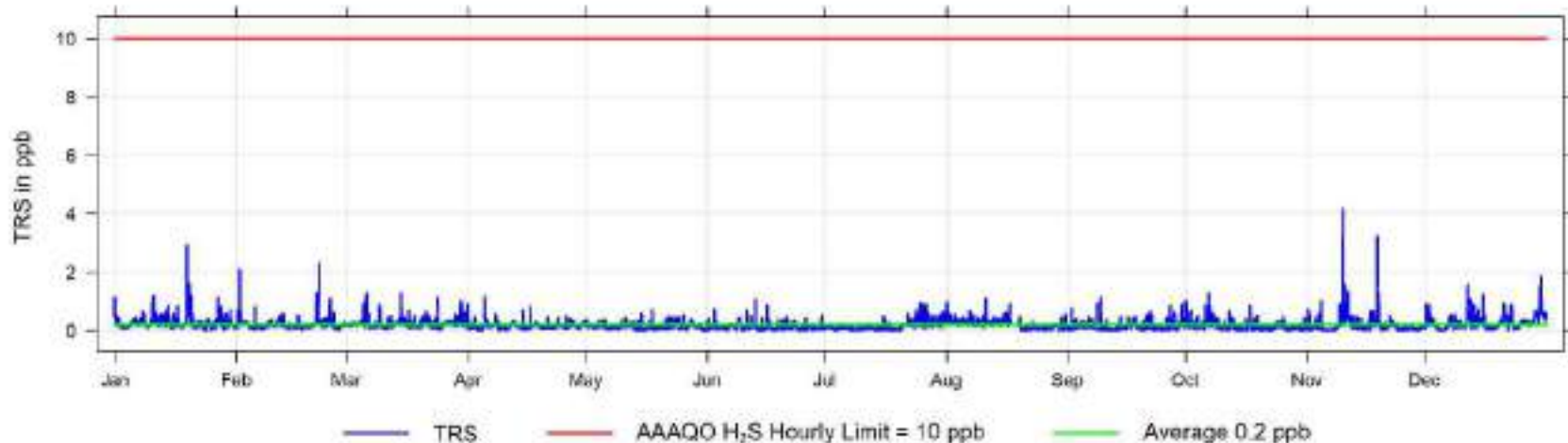
9.2 Total Reduced Sulphur (TRS) - Smoky Heights 2022 Summary

Total Reduced Sulphur (TRS) Frequency Distribution at Smoky Heights

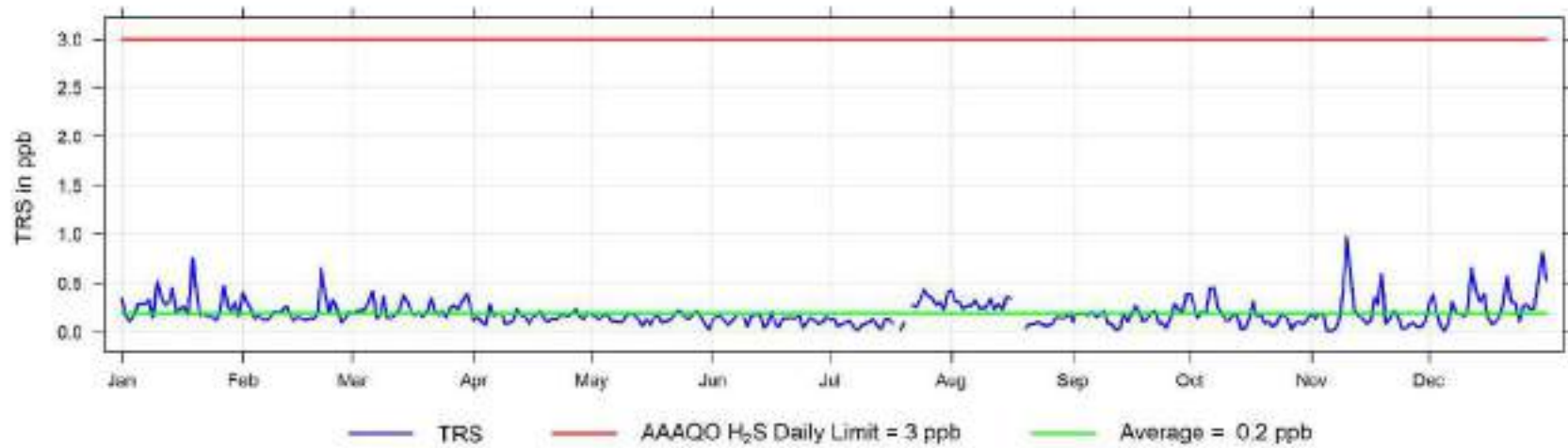
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Valid time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date			24-hr 3 ppb	1-hr 10 ppb
January 2022	708	98.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.3	0.8	Jan 19	2.9	Jan 19 10:00	100.0%	95.2%	0	0
February 2022	640	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%	0.2	0.7	Feb 21	2.3	Feb 21 23:00	100.0%	95.2%	0	0
March 2022	709	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Mar 14	1.3	Mar 14 19:00	100.0%	95.3%	0	0
April 2022	686	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.3	Apr 05	1.1	Apr 05 06:00	100.0%	95.3%	0	0
May 2022	708	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	May 24	0.7	May 18 02:00	100.0%	95.2%	0	0
June 2022	682	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Jun 16	1.1	Jun 15 07:00	100.0%	94.7%	0	0
July 2022	689	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Jul 25	1.0	Aug 01 00:00	98.1%	92.6%	0	0
August 2022	656	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Aug 01	1.1	Aug 11 04:00	93.0%	88.2%	0	0
September 2022	685	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Sep 30	1.1	Sep 09 06:00	100.0%	95.1%	0	0
October 2022	708	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Oct 06	1.3	Oct 06 21:00	100.0%	95.2%	0	0
November 2022	685	98.2%	1.3%	0.4%	0.0%	0.0%	0.0%	0.2	0.9	Nov 10	4.1	Nov 10 02:00	100.0%	95.1%	0	0
December 2022	709	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%	0.3	0.8	Dec 30	1.9	Dec 30 15:00	100.0%	95.3%	0	0
Annual	8255	99.3%	0.6%	0.0%	0.0%	0.0%	0.0%	0.2	0.9	MAXIMUM VALUES		99.3%	94.4%	0	0	

AAAQO H₂S Objectives: 24-Hr: 3ppb, 1-Hr: 10ppb

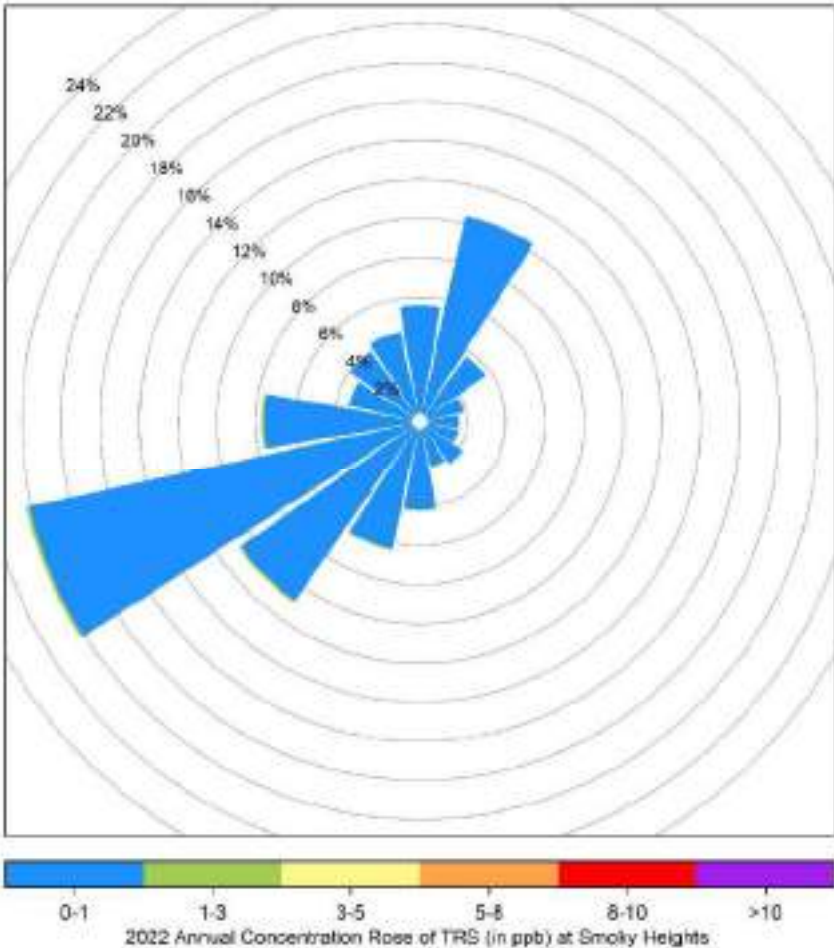
2022 Hourly Concentration Readings of TRS (in ppb) at Smoky Heights



2022 Daily Concentration Readings of TRS (in ppb) at Smoky Heights



Hourly Maximum TRS (in ppb) for 2022 at Smoky Heights



January-2022	February-2022	March-2022
26 27 28 29 30 31 1	30 31 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	24 25 26 27 28 29 30	28 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1 2
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
28 29 30 31 1 2	31 1 2 3 4 5 6	28 29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	16 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	6 7 8 9 10 11 12 13
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
29 30 31 1 2 3 4 5	31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	16 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

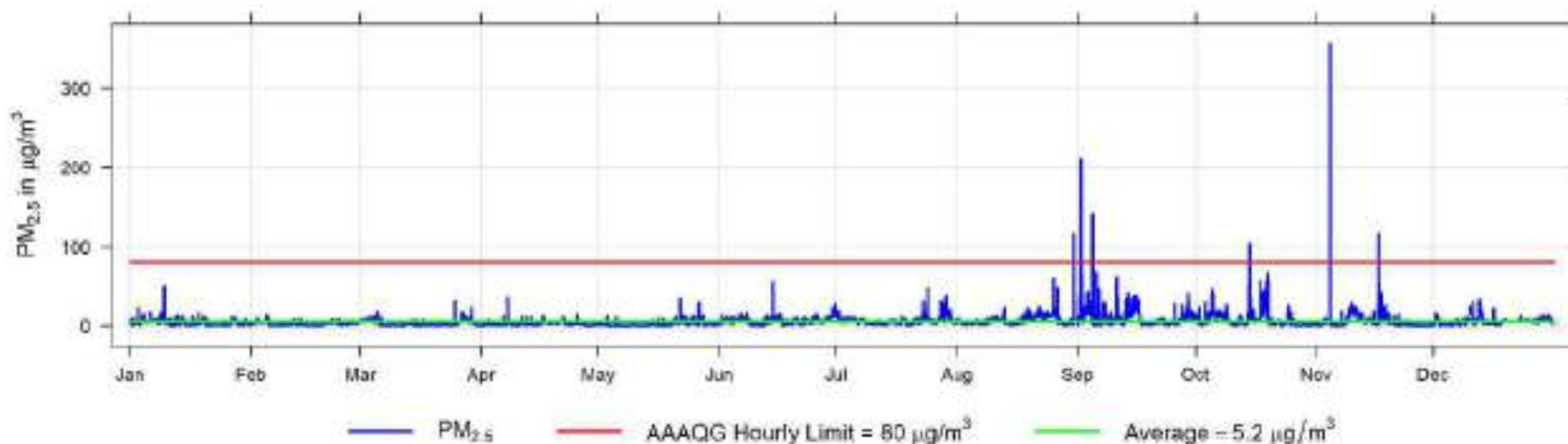
9.3 Particulate Matter (PM_{2.5}) - Smoky Heights 2022 Summary

Particulate Matter (PM_{2.5}) Frequency Distribution at Smoky Heights

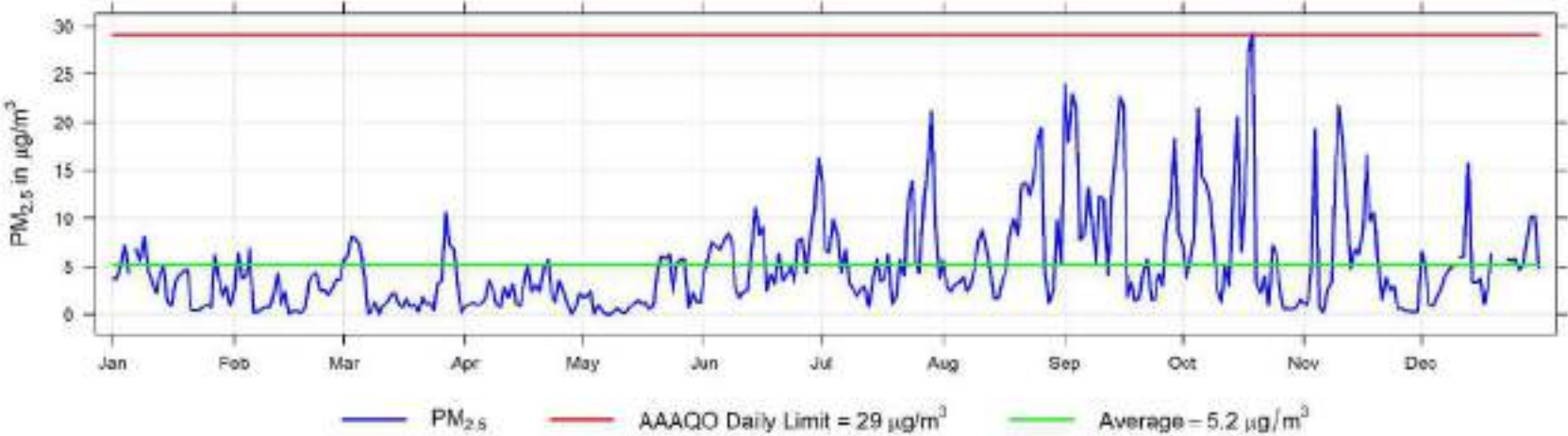
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m ³)	24-hr (µg/m ³)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 5 (µg/m ³)	5 to 15 (µg/m ³)	15 to 30 (µg/m ³)	30 to 50 (µg/m ³)	50 to 80 (µg/m ³)	> 80 (µg/m ³)			Date	1-hr (µg/m ³)			Date	24-hr 29 µg/m ³	1-hr 80 µg/m ³
January 2022	733	73.7%	25.2%	1.0%	0.0%	0.1%	0.0%	3.4	7.9	Jan 09	50.7	Jan 09 19:00	99.1%	98.5%	0	0
February 2022	668	87.6%	12.4%	0.0%	0.0%	0.0%	0.0%	2.3	6.4	Feb 05	14.2	Feb 05 01:00	100.0%	99.4%	0	0
March 2022	740	77.2%	21.5%	1.2%	0.1%	0.0%	0.0%	2.9	10.8	Mar 27	31.2	Mar 25 10:00	100.0%	99.5%	0	0
April 2022	737	92.9%	6.8%	0.1%	0.1%	0.0%	0.0%	2.1	5.2	Apr 23	35.6	Apr 07 23:00	100.0%	99.6%	0	0
May 2022	741	88.4%	11.1%	0.4%	0.1%	0.0%	0.0%	2.0	6.3	May 21	34.3	May 21 22:00	100.0%	99.6%	0	0
June 2022	738	45.8%	50.8%	3.1%	0.1%	0.1%	0.0%	6.2	16.3	Jun 30	56.4	Jun 14 18:00	100.0%	99.7%	0	0
July 2022	740	50.4%	42.8%	5.4%	1.4%	0.0%	0.0%	6.4	20.2	Jul 29	47.7	Jul 24 16:00	99.7%	99.5%	0	0
August 2022	741	51.3%	40.4%	7.6%	0.4%	0.3%	0.1%	6.8	18.7	Aug 26	115.4	Aug 30 21:00	100.0%	99.6%	0	1
September 2022	713	46.4%	29.7%	18.1%	4.3%	0.8%	0.6%	10.3	26.7	Sep 01	210.9	Sep 01 21:00	99.9%	99.0%	0	4
October 2022	741	54.8%	28.9%	12.4%	2.7%	1.1%	0.1%	7.9	28.2	Oct 19	103.8	Oct 15 00:00	100.0%	99.6%	0	1
November 2022	738	65.6%	24.0%	9.6%	0.4%	0.1%	0.3%	6.0	21.3	Nov 10	356.4	Nov 04 17:00	100.0%	99.7%	0	2
December 2022	648	56.8%	40.0%	2.8%	0.5%	0.0%	0.0%	5.3	15.3	Dec 13	33.3	Dec 13 01:00	87.8%	87.1%	0	0
Annual	8618	65.9%	27.8%	5.1%	0.9%	0.2%	0.1%	5.1	28.2	Oct 19	356.4	Nov 04 17:00	98.9%	98.4%	0	8

AAAQO Objectives: 24-Hr: 29 µg/m³, AAAQG Guideline: 1-Hr: 80 µg/m³

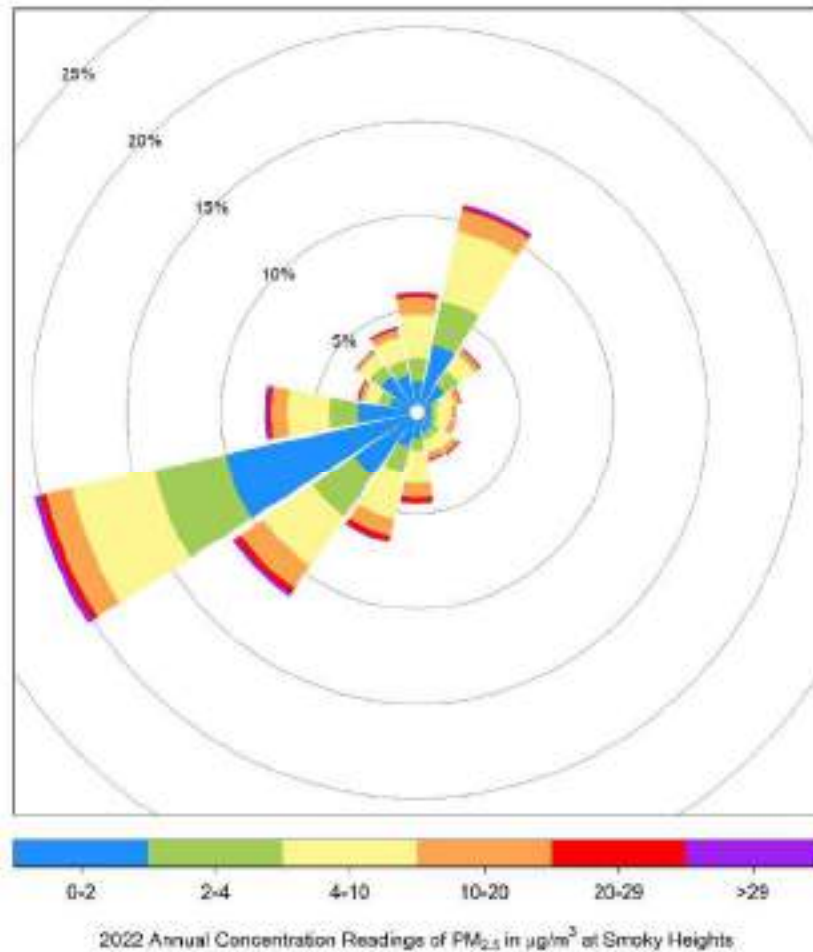
2022 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Smoky Heights



2022 Daily Concentration Readings of PM_{2.5} in µg/m³ at Smoky Heights



Hourly Maximum PM_{2.5} (in µg/m³) for 2022 at Smoky Heights

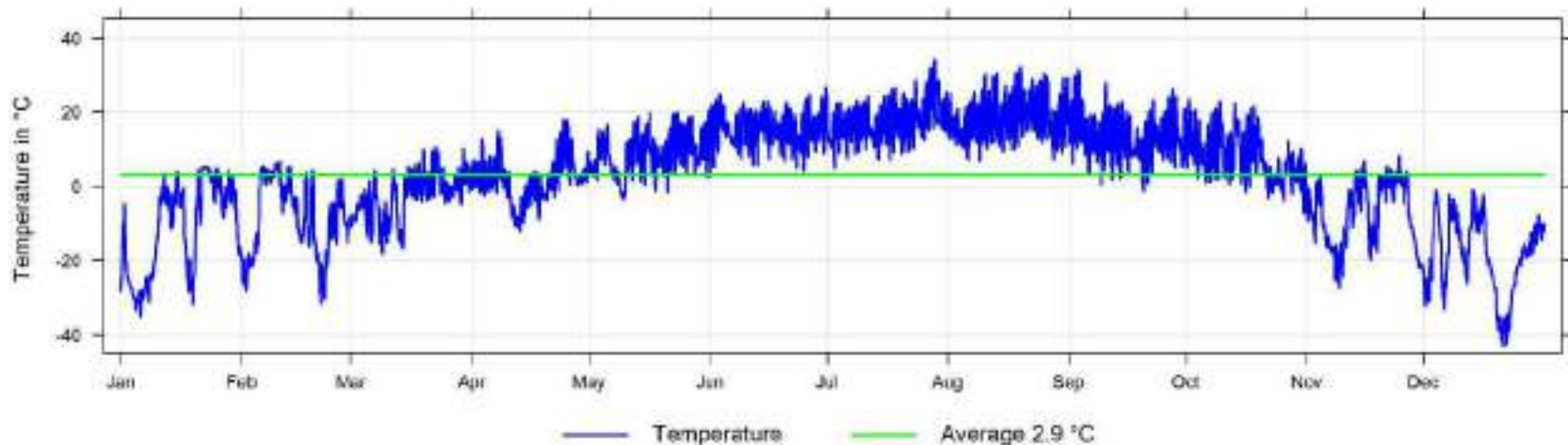


9.4 Temperature (ET) - Smoky Heights 2022 Summary

Temperature (ET) Frequency Distribution at Smoky Heights

Month	Valid Hours	Monthly Average (°C)	Maximum Values			Minimum Values			Operational time (%)	Valid time (%)			
			24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date			1-hr (°C)	Date	
January 2022	744	-11.2	5.1	Jan 22	5.5	Jan 23 00:00	-31.1	Jan 06	-35.1	Jan 06 06:00	100.0%	100.0%	
February 2022	672	-8.7	4.4	Feb 06	6.6	Feb 10 16:00	-25.8	Feb 21	-31.7	Feb 21 09:00	100.0%	100.0%	
March 2022	744	-2.6	4.8	Mar 23	10.6	Mar 22 16:00	-13.8	Mar 13	-18.2	Mar 09 09:00	100.0%	100.0%	
April 2022	720	1.7	10.9	Apr 24	17.9	Apr 24 17:00	-9.6	Apr 12	-12.3	Apr 13 06:00	100.0%	100.0%	
May 2022	744	8.8	13.0	May 31	20.5	May 31 18:00	-1.7	May 09	-3.8	May 10 02:00	100.0%	100.0%	
June 2022	720	15.5	18.9	Jun 30	26.5	Jun 30 18:00	11.2	Jun 23	2.4	Jun 01 05:00	100.0%	100.0%	
July 2022	742	17.8	25.9	Jul 28	34.1	Jul 28 16:00	12.5	Jul 01	4.7	Jul 03 05:00	99.7%	99.7%	
August 2022	744	18.5	22.3	Aug 19	32.2	Aug 19 17:00	12.7	Aug 04	6.8	Aug 09 03:00	100.0%	100.0%	
September 2022	719	13.2	19.7	Sep 03	31.5	Sep 03 14:00	7.4	Sep 20	-1.3	Sep 20 07:00	99.9%	99.9%	
October 2022	744	7.5	14.7	Oct 14	23.5	Oct 01 17:00	-0.7	Oct 31	-7.4	Oct 31 07:00	100.0%	100.0%	
November 2022	720	-7.9	3.5	Nov 24	8.2	Nov 24 16:00	-22.2	Nov 09	-27.4	Nov 09 09:00	100.0%	100.0%	
December 2022	744	-19.0	-4.3	Dec 04	-0.9	Dec 13 19:00	-39.4	Dec 21	-43.1	Dec 21 10:00	100.0%	100.0%	
		AVERAGE	MAXIMUM VALUES			MINIMUM VALUES							
		8757	2.9	25.9	Jul 28	34.1	Jul 28 16:00	-39.4	Dec 21	-43.1	Dec 21 10:00	100.0%	100.0%

2022 Hourly Temperature Readings (in °C) at Smoky Heights

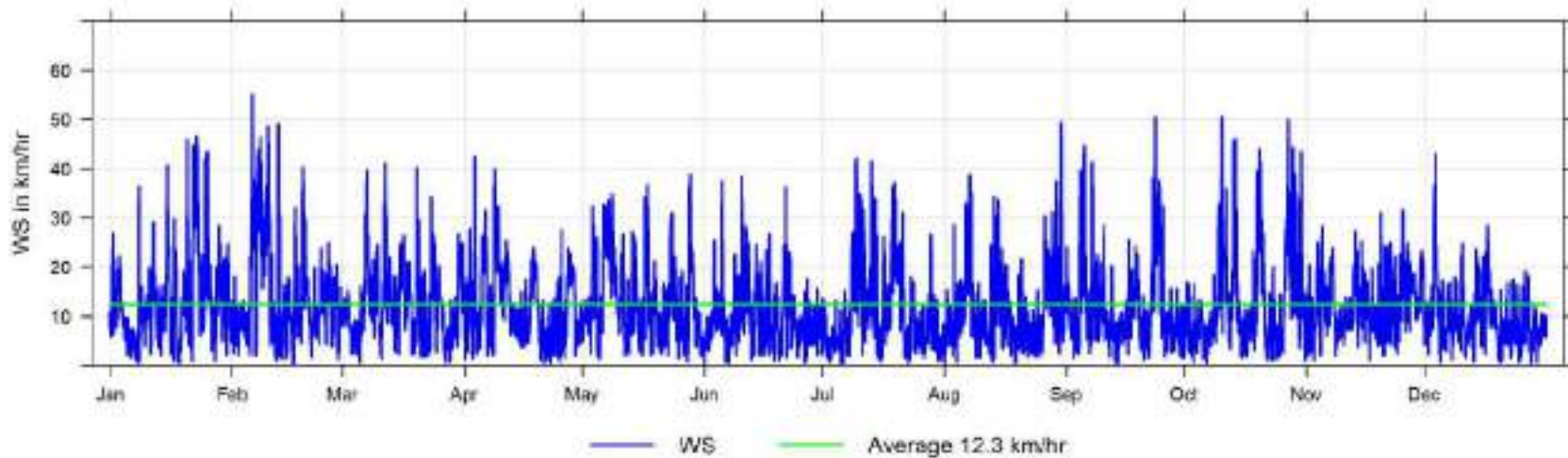


9.5 Wind Speed and Wind Direction (WS and WD) - Smoky Heights 2022 Summary

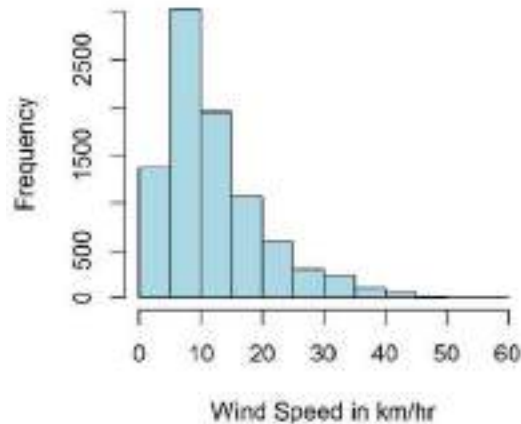
Wind Speed Frequency Distribution at Smoky Heights

Month	Valid Hours	Calm	% of Readings in Concentration Range					Monthly Average (km/hr)	24-hr (km/hr)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	
			0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)			Date	1-hr Date			
January 2022	740	0.3%	14.2%	33.5%	30.7%	11.4%	10.0%	13.6	37.6	Jan 22	46.6	Jan 22 21:00	99.5%	99.5%
February 2022	672	0.1%	11.5%	36.5%	28.4%	8.9%	14.6%	14.7	30.9	Feb 08	55.0	Feb 06 03:00	100.0%	100.0%
March 2022	744	0.0%	13.6%	37.0%	32.4%	13.8%	3.2%	12.2	23.1	Mar 07	41.1	Mar 12 01:00	100.0%	100.0%
April 2022	720	0.3%	18.3%	35.7%	25.8%	16.3%	3.6%	12.0	24.5	Apr 09	42.4	Apr 03 21:00	100.0%	100.0%
May 2022	744	0.1%	13.0%	34.8%	29.7%	14.4%	7.9%	13.3	26.9	May 07	38.9	May 28 11:00	100.0%	100.0%
June 2022	720	0.1%	18.6%	47.5%	24.2%	7.5%	2.1%	10.1	22.1	Jun 10	38.4	Jun 10 13:00	100.0%	100.0%
July 2022	742	0.4%	24.0%	37.5%	19.0%	10.6%	8.5%	11.7	27.0	Jul 09	42.1	Jul 09 14:00	99.7%	99.7%
August 2022	744	0.3%	16.7%	44.0%	25.8%	7.1%	6.2%	11.2	23.4	Aug 07	49.3	Aug 30 14:00	100.0%	100.0%
September 2022	719	0.3%	13.9%	45.9%	23.8%	7.6%	8.5%	12.2	29.4	Sep 23	50.4	Sep 23 15:00	99.9%	99.9%
October 2022	744	0.1%	15.3%	41.5%	17.6%	12.5%	12.9%	13.7	33.5	Oct 27	50.4	Oct 10 12:00	100.0%	100.0%
November 2022	720	0.0%	7.9%	37.8%	38.1%	15.4%	0.8%	12.6	19.2	Nov 07	31.6	Nov 25 10:00	100.0%	100.0%
December 2022	744	0.3%	17.3%	50.0%	24.7%	5.8%	1.9%	9.9	24.5	Dec 03	43.0	Dec 04 01:00	100.0%	100.0%
Annual	8753	0.2%	15.4%	40.1%	26.7%	10.9%	6.7%	12.3	37.6	MAXIMUM VALUES		99.9%	99.9%	

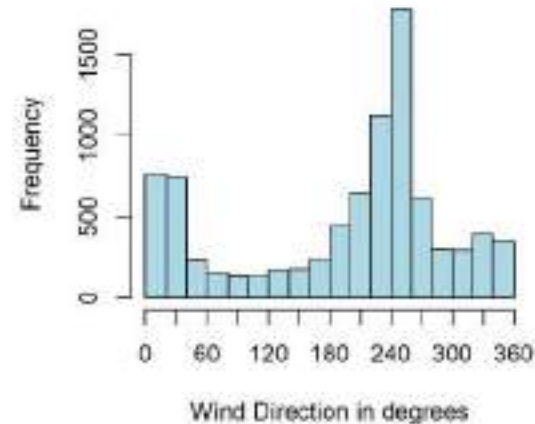
2022 Hourly Readings of Wind Speed (in km/hr) at Smoky Heights



2022 Wind Speed Histogram

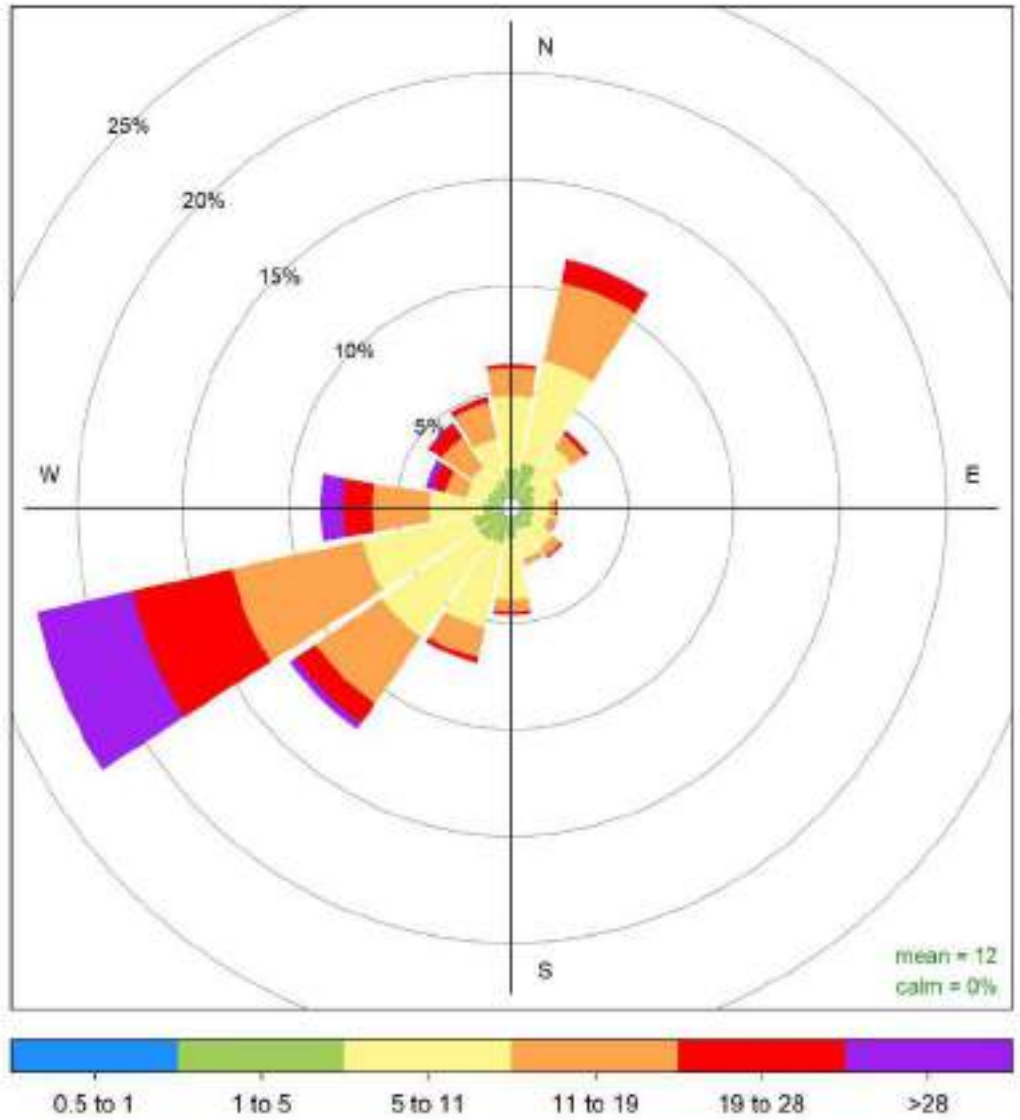


2022 Wind Direction Histogram



Wind Speed and Wind Direction Frequency Distribution at Smoky Heights

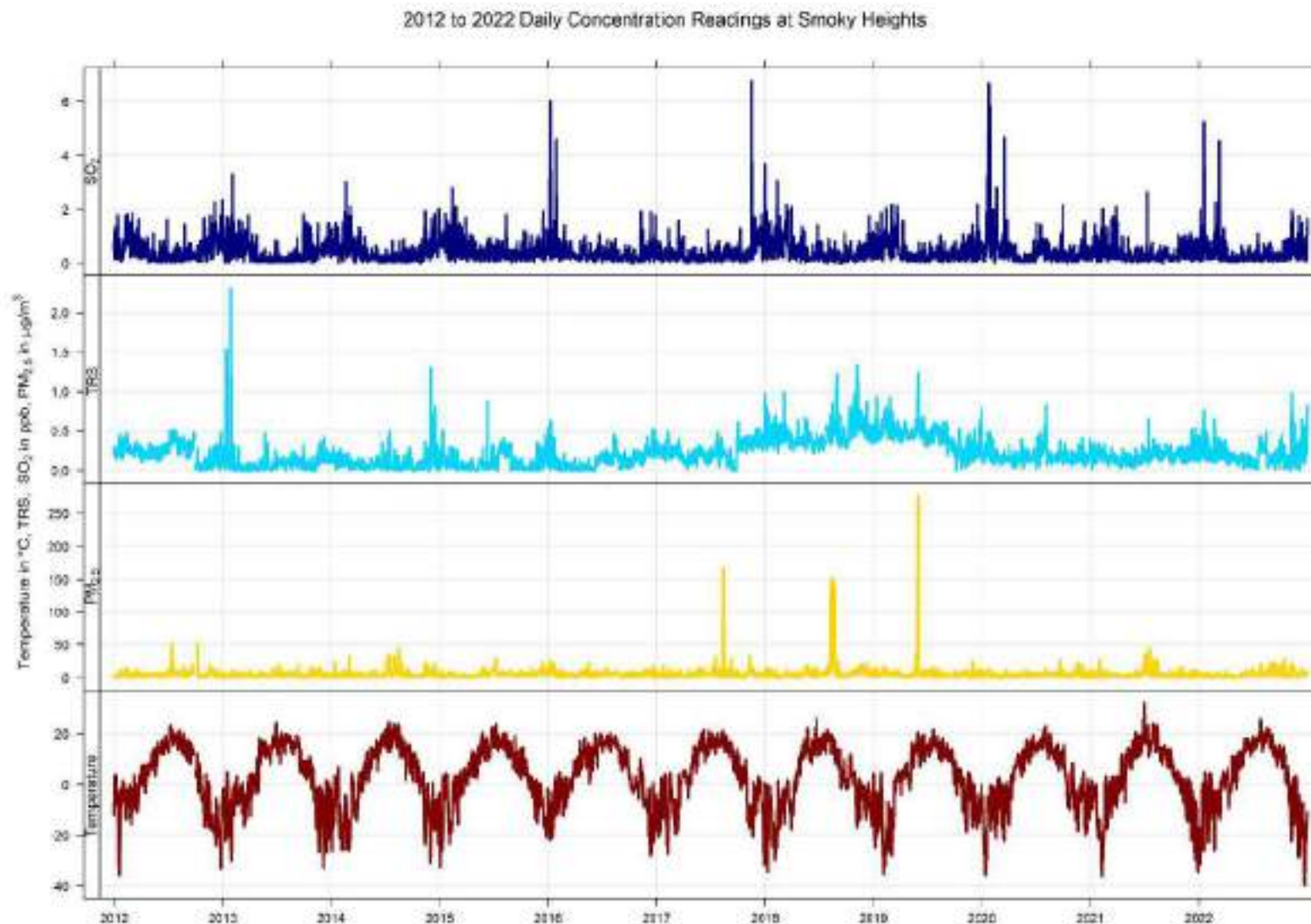
Direction	Number of Readings	% of wind speed range						Total %
		Calm (<0.5) (km/hr)	0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)	
N	551	0.0%	1.4%	3.4%	1.3%	0.2%	0.0%	6.3%
NNE	1008	0.0%	1.7%	4.9%	3.8%	1.1%	0.0%	11.5%
NE	349	0.0%	0.9%	2.1%	0.7%	0.2%	0.0%	4.0%
ENE	178	0.0%	0.7%	1.2%	0.2%	0.0%	0.0%	2.0%
E	152	0.0%	0.5%	0.8%	0.3%	0.1%	0.0%	1.7%
ESE	155	0.0%	0.6%	0.8%	0.4%	0.0%	0.0%	1.8%
SE	218	0.0%	0.8%	1.1%	0.5%	0.1%	0.0%	2.5%
SSE	202	0.0%	0.6%	1.4%	0.3%	0.0%	0.0%	2.3%
S	404	0.0%	1.0%	2.9%	0.6%	0.1%	0.0%	4.6%
SSW	618	0.0%	1.3%	4.1%	1.4%	0.2%	0.0%	7.1%
SW	1073	0.0%	1.4%	5.6%	3.8%	1.1%	0.4%	12.3%
WSW	1963	0.0%	1.4%	5.3%	6.3%	4.8%	4.6%	22.4%
W	747	0.0%	0.9%	2.5%	2.7%	1.4%	1.1%	8.5%
WNW	325	0.0%	0.7%	1.0%	1.0%	0.6%	0.3%	3.7%
NW	384	0.0%	0.7%	1.2%	1.7%	0.7%	0.1%	4.4%
NNW	426	0.0%	0.9%	2.0%	1.7%	0.3%	0.0%	4.9%
Total	8753	0.2%	15.4%	40.2%	26.7%	11.8%	6.6%	100.0%



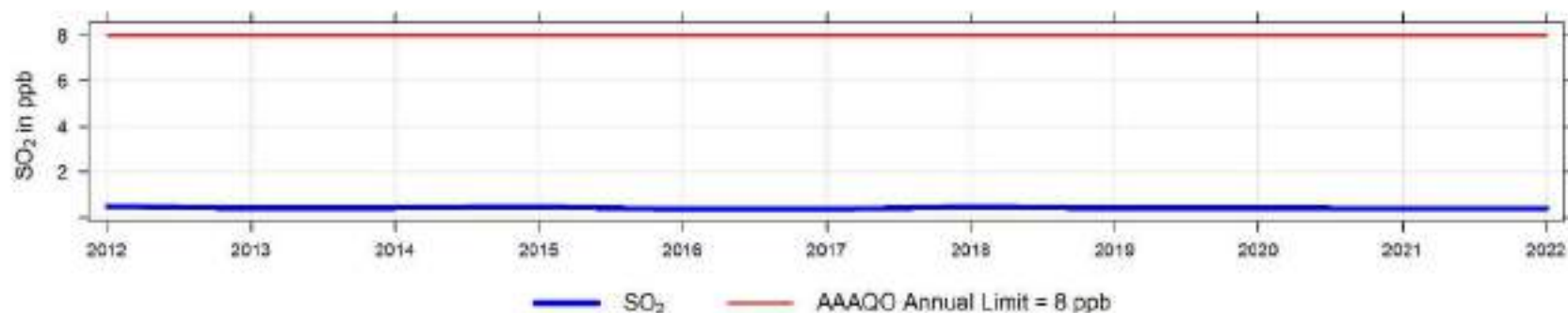
Smoky Heights 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

9.6 Smoky Heights Annual Trends, 2012 to 2022

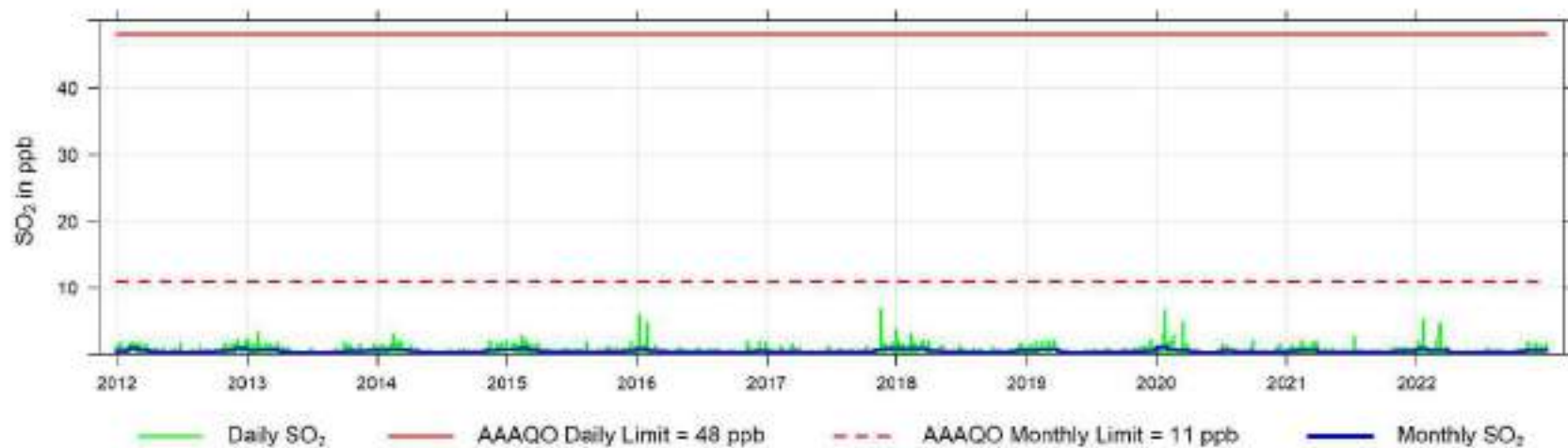
The following pages include historical annual charts collected between 2012 and 2022 at the Smoky Heights Station.



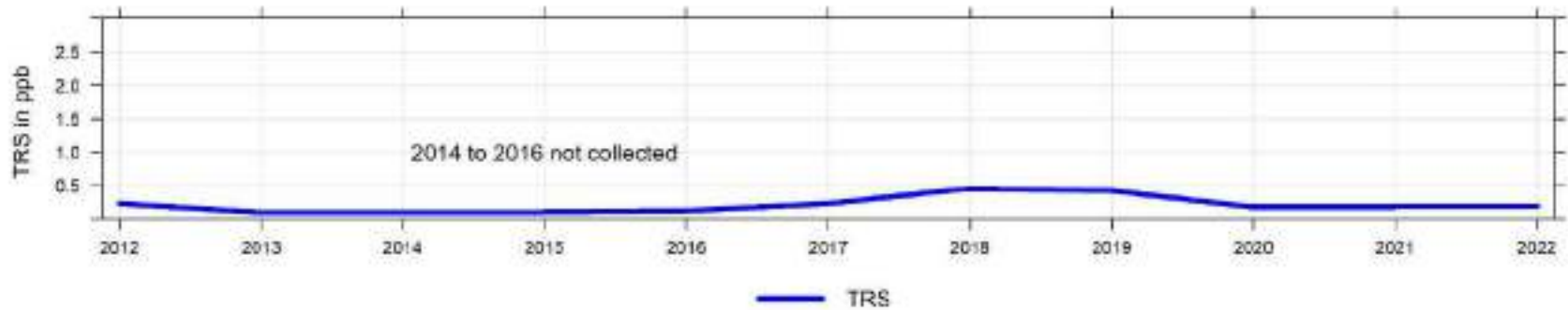
Years 2012 to 2022 Annual Concentration Readings of SO₂ (in ppb) at Smoky Heights



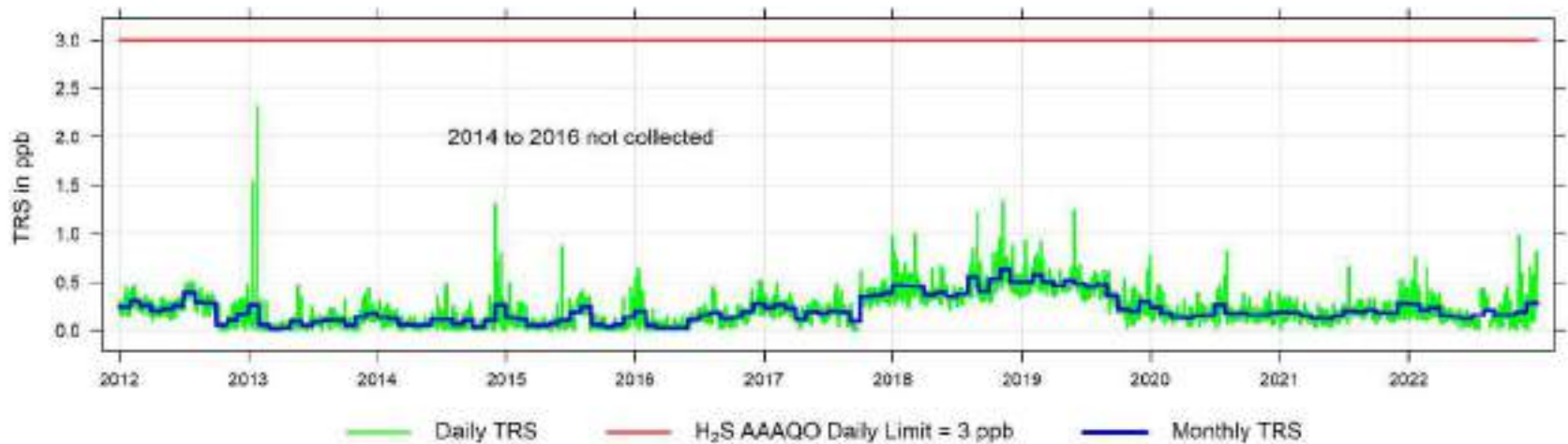
Years 2012 to 2022 Concentration Readings of SO₂ (in ppb) at Smoky Heights



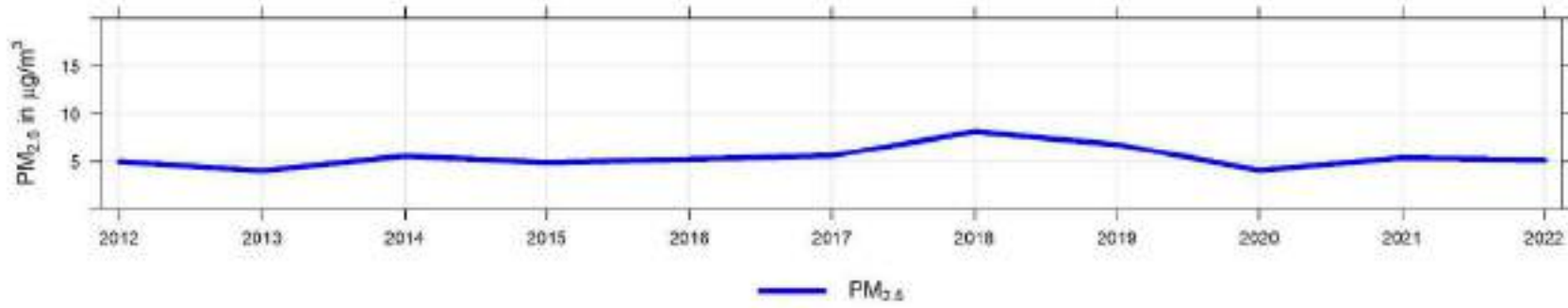
Years 2022 Annual Concentration Readings of TRS (in ppb) at Smoky Heights



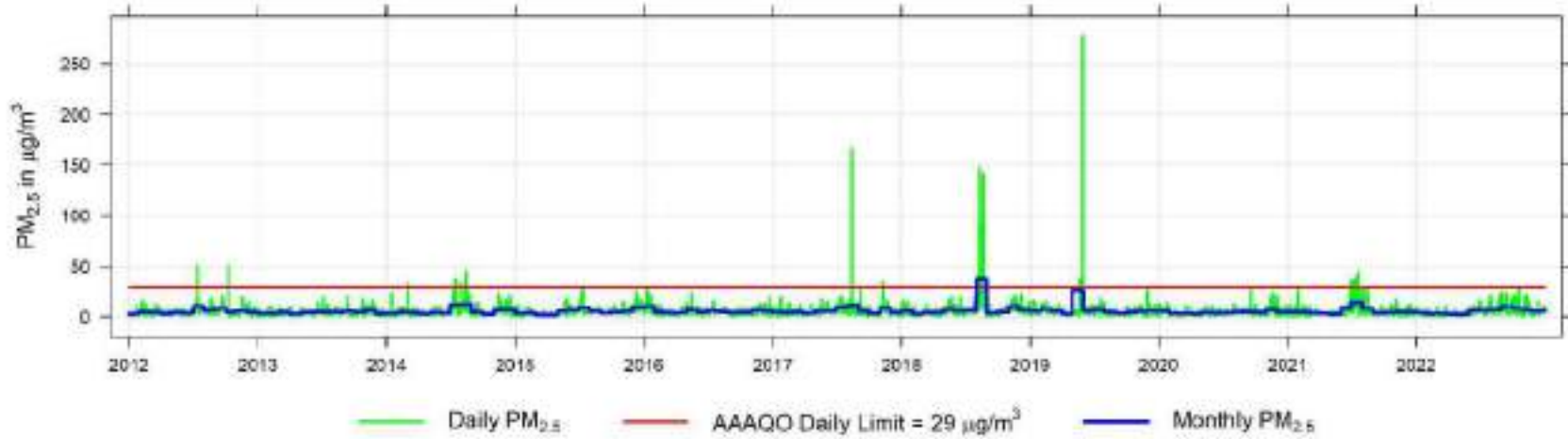
Years 2012 to 2022 Concentration Readings of TRS (in ppb) at Smoky Heights



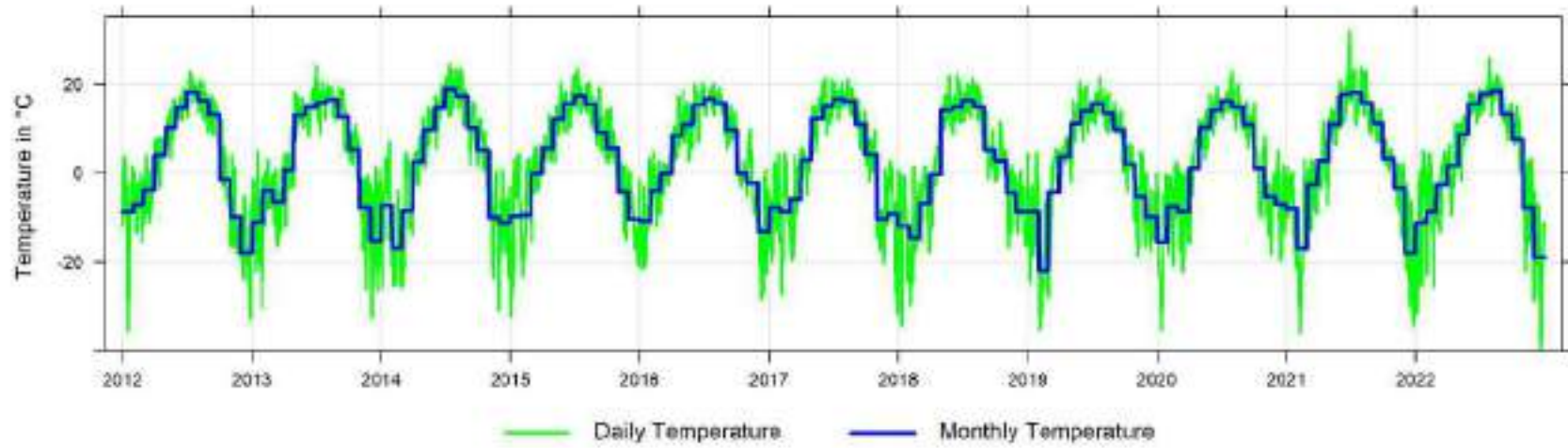
2012 to 2022 Annual Concentration Readings of PM_{2.5} in µg/m³ at Smoky Heights



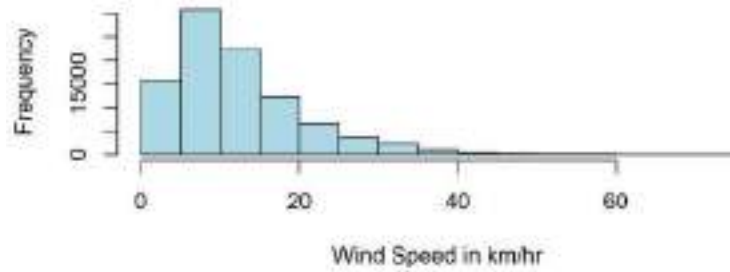
Years 2012 to 2022 Concentration Readings of PM_{2.5} in µg/m³ at Smoky Heights



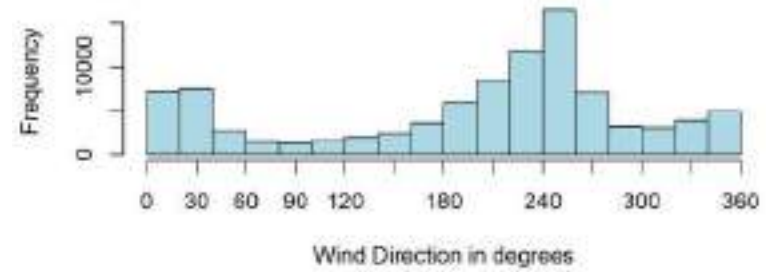
Years 2012 to 2022 Temperature Readings (in °C) at Smoky Heights



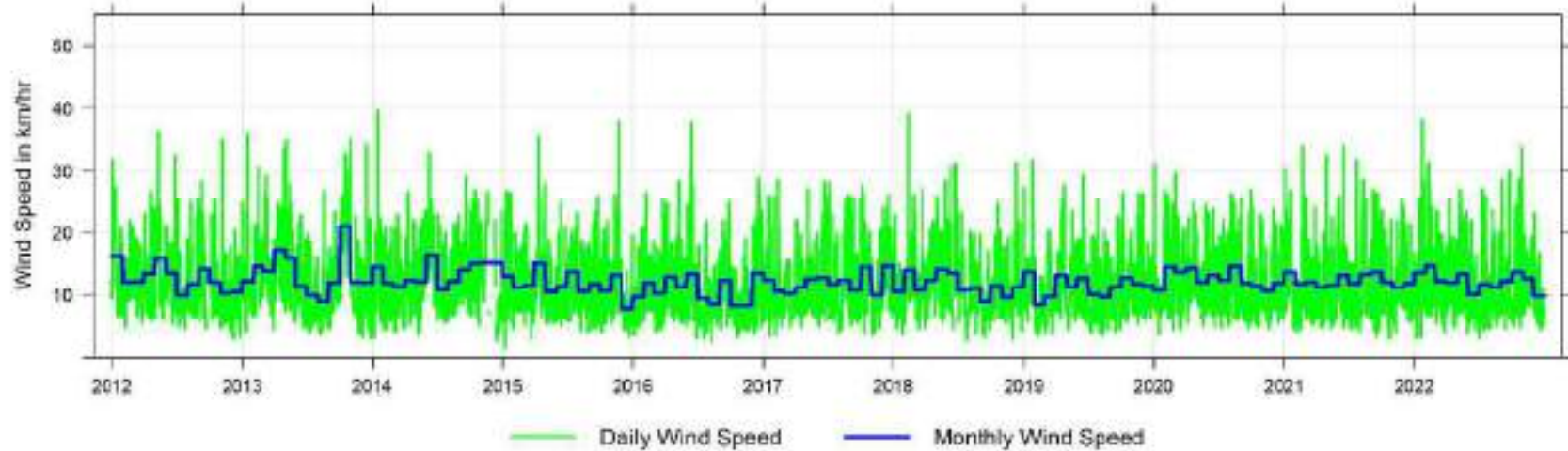
Years 2012 to 2022 Wind Speed Histogram

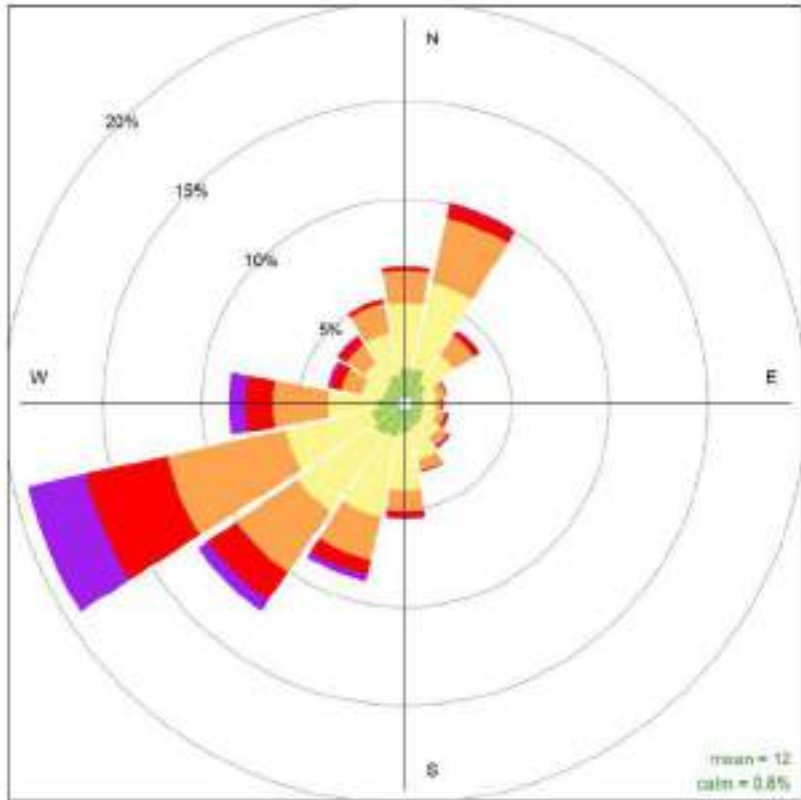


Years 2012 to 2022 Wind Direction Histogram



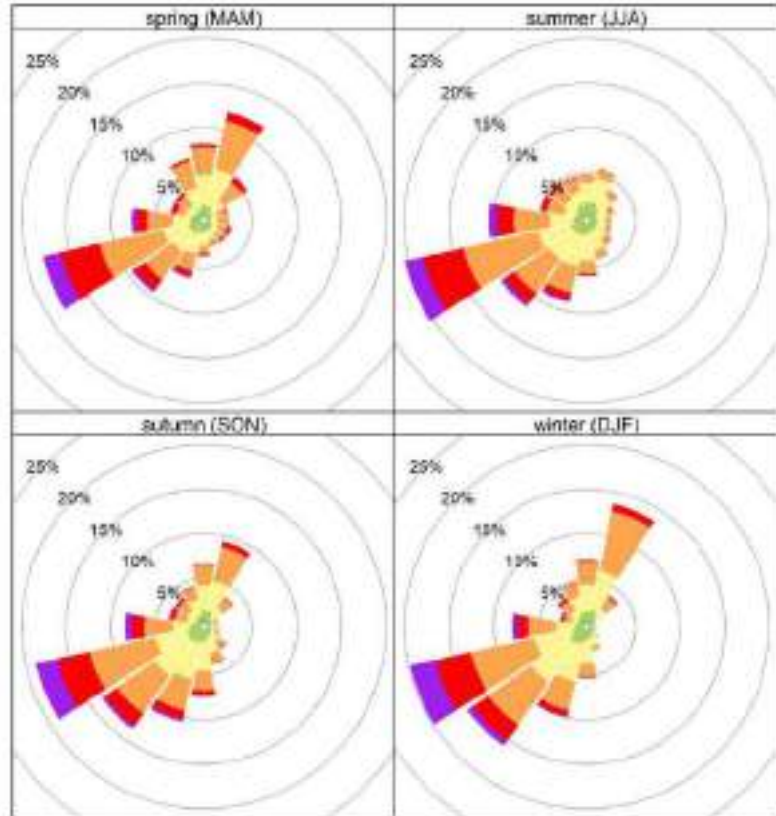
Years 2012 to 2022 Wind Speed Readings (in km/hr) at Smoky Heights





0.5 to 1 1 to 5 5 to 11 11 to 19 19 to 28 >28

Smoky Heights 2012 to 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)



0-1 1-5 5-10 10-20 20-30 >30

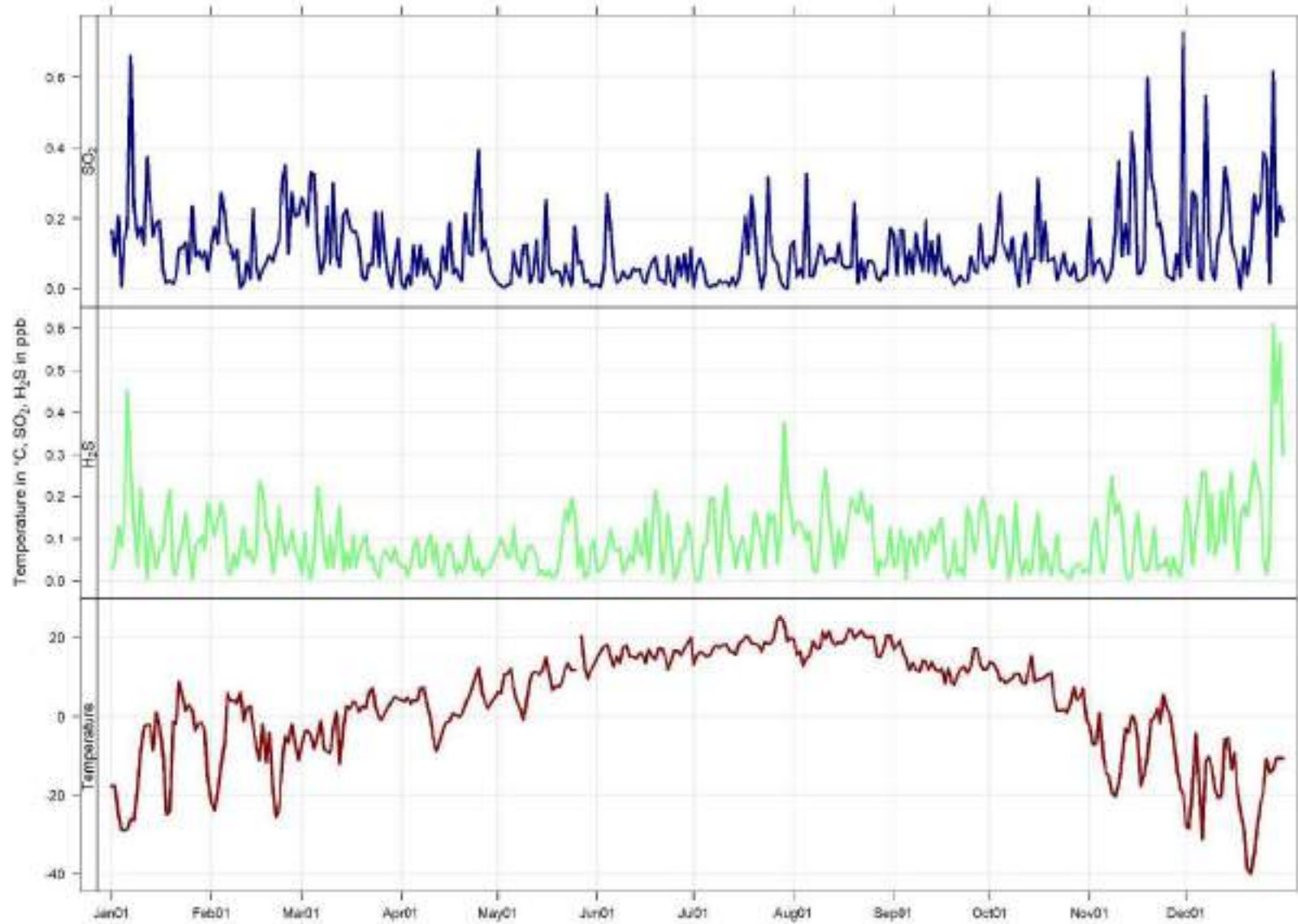
Smoky Heights 2012 to 2022 Seasonal Wind Rose, wind speed in km/hr

10 Valleyview Key Parameters - Continuous Monitoring Data - 2022 Summary

Valleyview Key Parameters - Continuous Monitoring Data - 2022 Summary

Valleyview Station	Parameter	Average	Maximum Values				Operational Time (%)	Valid Time (%)	Readings above AAAQO & AAAQG				
			24-hr	Date	1-hr	Date			1-hr	8-hr	24-hr	30-d	Annual
			Sulphur Dioxide SO ₂ measured in ppb	0.1	0.7	Nov 30			3.5	Dec 07 01:00	99.9%	95.2%	0
Hydrogen Sulphide H ₂ S measured in ppb	0.1	0.5	Dec 30	1.0	Dec 30 01:00	99.3%	94.6%	0	-	0	-	-	

2022 Daily Concentration Readings at Valleyview



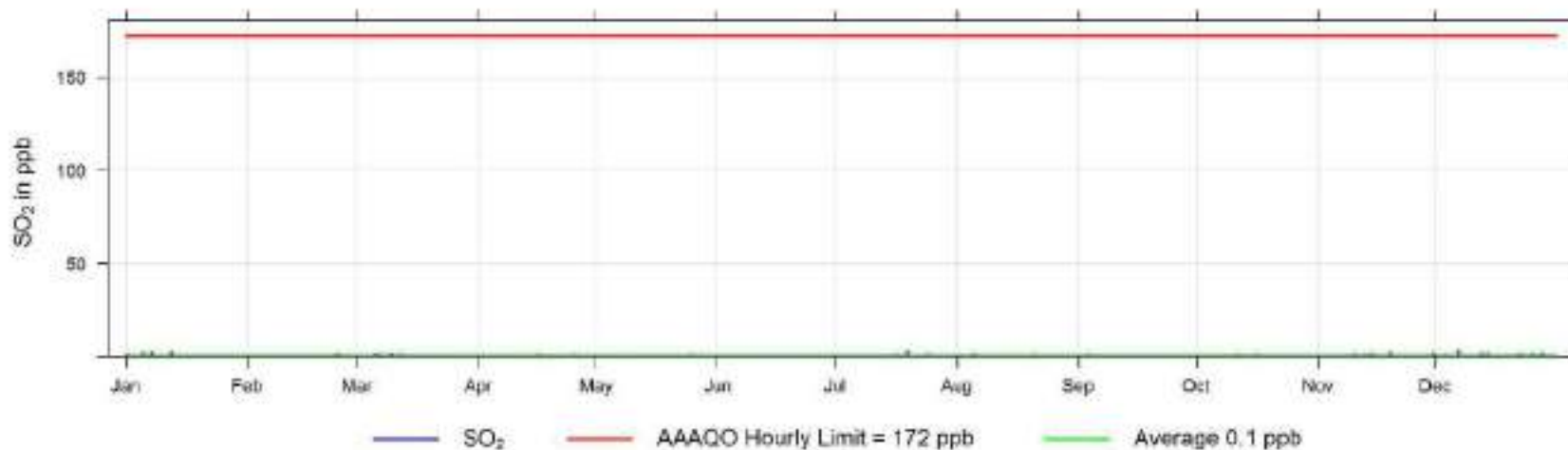
10.1 Sulphur Dioxide (SO₂) - Valleyview 2022 Summary

Sulphur Dioxide (SO₂) Frequency Distribution at Valleyview

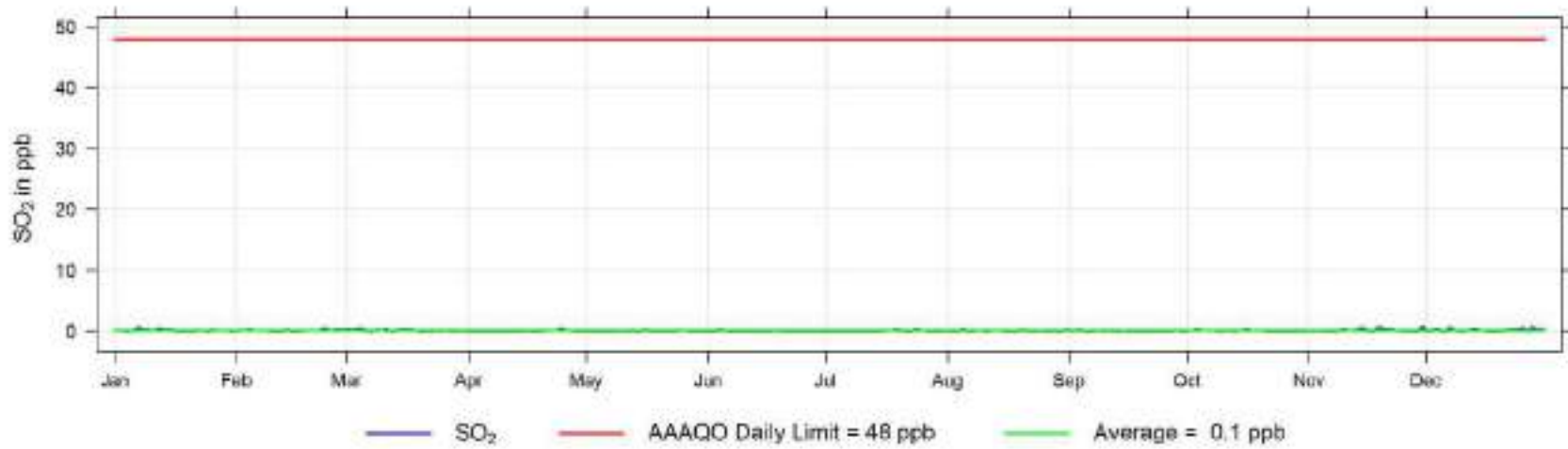
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents			
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)			Date	1-hr (ppb)			Date	30-d 11 ppb	24-hr 48 ppb	1-hr 172 ppb
January 2022	709	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%	0.1	0.7	Jan 07	2.9	Jan 12 16:00	100.0%	95.3%	0	0	0
February 2022	640	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Feb 24	1.0	Feb 23 20:00	100.0%	95.2%	0	0	0
March 2022	709	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Mar 05	1.2	Mar 05 16:00	100.0%	95.3%	0	0	0
April 2022	686	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.4	Apr 25	1.0	Apr 16 11:00	100.0%	95.3%	0	0	0
May 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	May 16	0.8	May 25 10:00	100.0%	95.3%	0	0	0
June 2022	682	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Jun 04	0.7	Jun 30 09:00	99.4%	94.7%	0	0	0
July 2022	709	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Jul 24	3.2	Jul 19 13:00	100.0%	95.3%	0	0	0
August 2022	708	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Aug 05	1.0	Aug 05 05:00	100.0%	95.2%	0	0	0
September 2022	686	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Sep 11	1.0	Sep 03 13:00	100.0%	95.3%	0	0	0
October 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Oct 16	0.9	Oct 11 16:00	100.0%	95.3%	0	0	0
November 2022	684	97.5%	2.5%	0.0%	0.0%	0.0%	0.0%	0.2	0.7	Nov 30	2.1	Nov 19 17:00	99.7%	95.0%	0	0	0
December 2022	709	98.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	Dec 28	3.5	Dec 07 01:00	100.0%	95.3%	0	0	0
Annual	8340	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.1	0.7	MAXIMUM VALUES		99.9%	95.2%	0	0	0	

AAAQO Objectives: Annual: 8ppb, 30-Day: 11ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

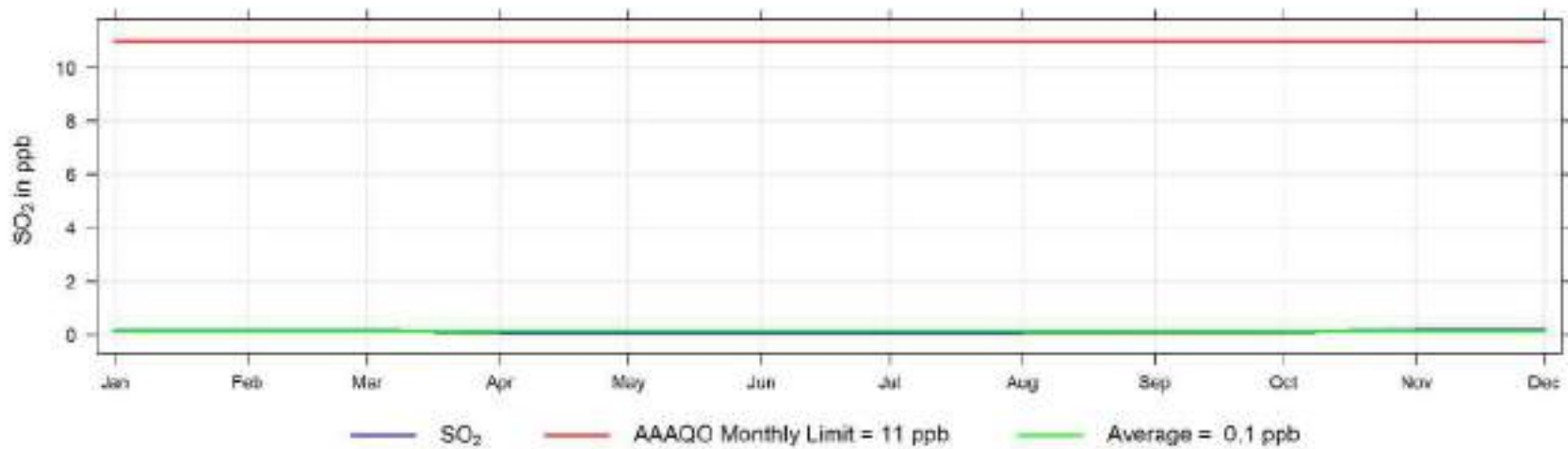
2022 Hourly Concentration Readings of SO₂ (in ppb) at Valleyview



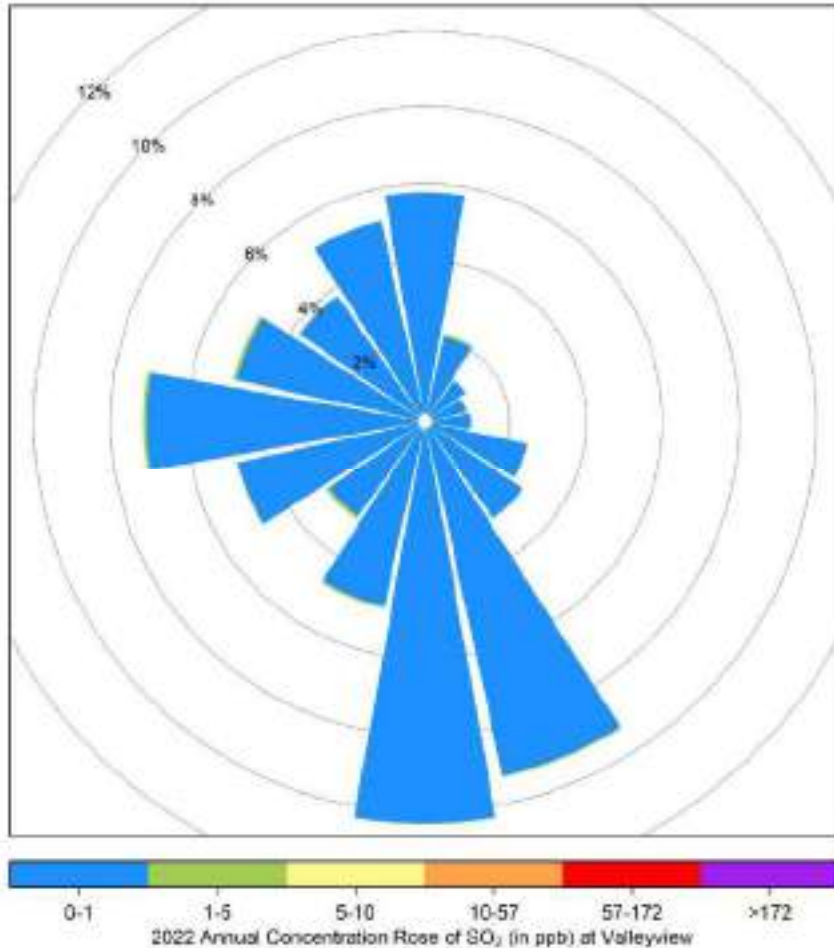
2022 Daily Concentration Readings of SO₂ (in ppb) at Valleyview



2022 Monthly Concentration Readings of SO₂ (in ppb) at Valleyview



Hourly Maximum SO₂ (in ppb) for 2022 at Valleyview



January-2022	February-2022	March-2022
24 27 28 29 30 31 1	31 31 1 2 3 4 5	27 28 1 2 3 4 5
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26
23 24 25 26 27 28 29	27 28 1 2 3 4 5	27 28 29 30 31 1 2
30 31 1 2 3 4 5	6 7 8 9 10 11 12	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
27 28 29 30 31 1 2	24 25 26 27 28 29 30	28 30 31 1 2 3 4
3 4 5 6 7 8 9	1 2 3 4 5 6 7	5 6 7 8 9 10 11
10 11 12 13 14 15 16	8 9 10 11 12 13 14	12 13 14 15 16 17 18
17 18 19 20 21 22 23	15 16 17 18 19 20 21	19 20 21 22 23 24 25
24 25 26 27 28 29 30	22 23 24 25 26 27 28	26 27 28 29 30 1
1 2 3 4 5 6 7	29 30 31 1 2 3 4	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
28 27 28 29 30 1 2	31 1 2 3 4 5 6	28 29 30 31 1 2 3
3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8 9 10
10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15 16 17
17 18 19 20 21 22 23	21 22 23 24 25 26 27	16 19 20 21 22 23 24
24 25 26 27 28 29 30	28 29 30 31 1 2 3	25 26 27 28 29 30 1
31 1 2 3 4 5 6	4 5 6 7 8 9 10	3 4 5 6 7 8 9
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
29 28 27 26 25 30 1	31 31 1 2 3 4 5	27 28 29 30 1 2 3
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
16 17 18 19 20 21 22	20 21 22 23 24 25 26	16 19 20 21 22 23 24
23 24 25 26 27 28 29	27 28 29 30 1 2 3	25 26 27 28 29 30 31
30 31 1 2 3 4 5	4 5 6 7 8 9 10	1 2 3 4 5 6 7
S M T W T F S	S M T W T F S	S M T W T F S

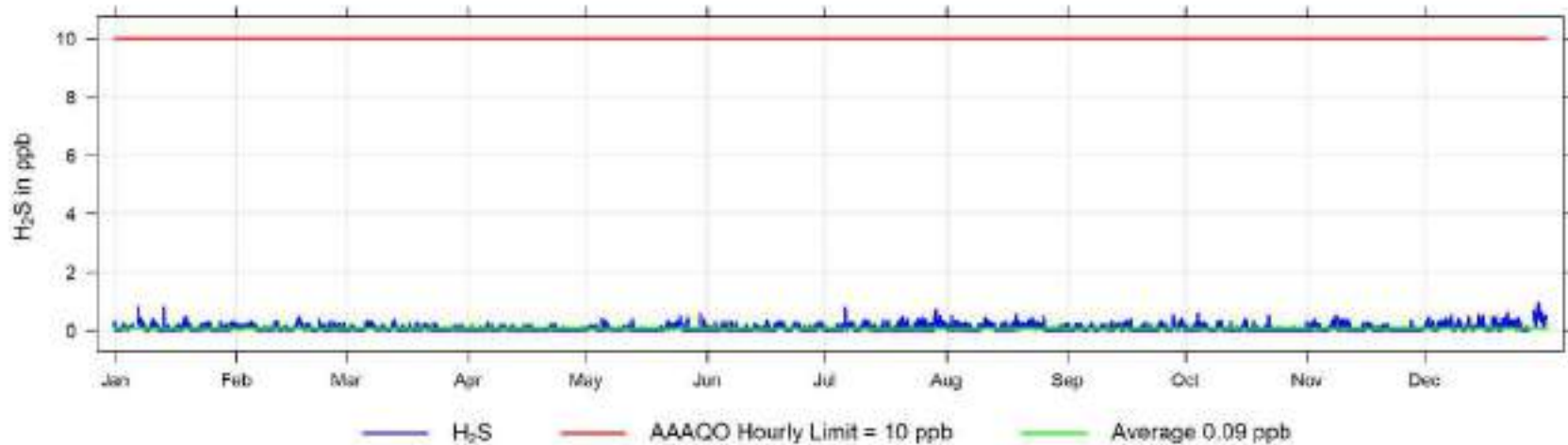
10.2 Hydrogen Sulphide (H₂S) - Valleyview 2022 Summary

Hydrogen Sulphide (H₂S) Frequency Distribution at Valleyview

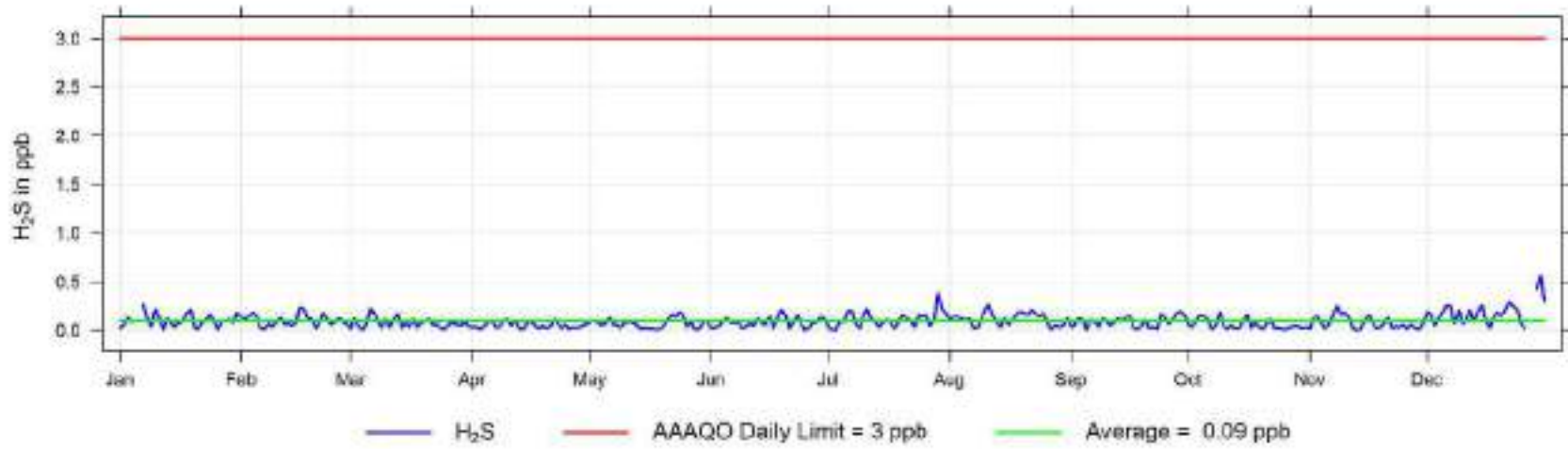
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Valid time (%)	Reportable Incidents		
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)			Date	1-hr (ppb)			Date	24-hr 3 ppb	1-hr 10 ppb
January 2022	688	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Jan 07	0.8	Jan 06 22:00	97.2%	92.5%	0	0
February 2022	639	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Feb 16	0.5	Feb 16 23:00	100.0%	95.1%	0	0
March 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Mar 06	0.3	Mar 13 02:00	100.0%	95.3%	0	0
April 2022	685	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.1	Apr 22	0.3	Apr 06 00:00	100.0%	95.1%	0	0
May 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	May 24	0.6	May 30 05:00	100.0%	95.3%	0	0
June 2022	861	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Jun 19	0.3	Jun 18 06:00	99.4%	94.6%	0	0
July 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.4	Jul 29	0.8	Jul 06 04:00	100.0%	95.3%	0	0
August 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Aug 11	0.6	Aug 19 01:00	100.0%	95.3%	0	0
September 2022	686	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Sep 29	0.5	Sep 27 23:00	100.0%	95.3%	0	0
October 2022	709	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Oct 09	0.6	Oct 04 08:00	100.0%	95.3%	0	0
November 2022	683	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Nov 08	0.5	Nov 08 10:00	99.7%	94.9%	0	0
December 2022	677	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Dec 30	1.0	Dec 30 01:00	95.7%	91.0%	0	0
Annual	8284	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.5	MAXIMUM VALUES		99.3%	94.6%	0	0	

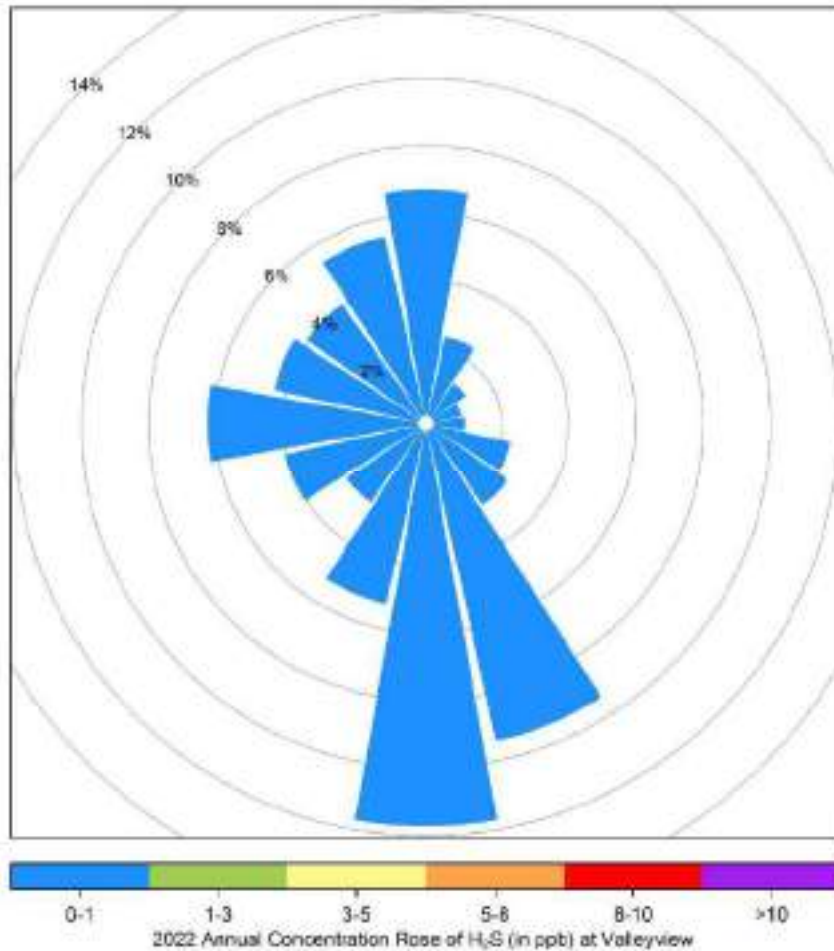
AAAQO Objectives: 24-Hr: 3ppb, 1-Hr: 10ppb

2022 Hourly Concentration Readings of H₂S (in ppb) at Valleyview



2022 Daily Concentration Readings of H₂S (in ppb) at Valleyview





Hourly Maximum H₂S (in ppb) for 2022 at Valleyview

January-2022	February-2022	March-2022
01 02 03 04 05 06 07 08 09 10 11 12	01 02 03 04 05	01 02 03 04 05
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	06 07 08 09 10 11 12	06 07 08 09 10 11 12
S M T W T F S	S M T W T F S	S M T W T F S
April-2022	May-2022	June-2022
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	01 02 03 04 05 06 07	01 02 03 04
S M T W T F S	S M T W T F S	S M T W T F S
July-2022	August-2022	September-2022
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	01 02 03 04 05 06	01 02 03
S M T W T F S	S M T W T F S	S M T W T F S
October-2022	November-2022	December-2022
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	01 02 03 04 05	01 02 03
S M T W T F S	S M T W T F S	S M T W T F S

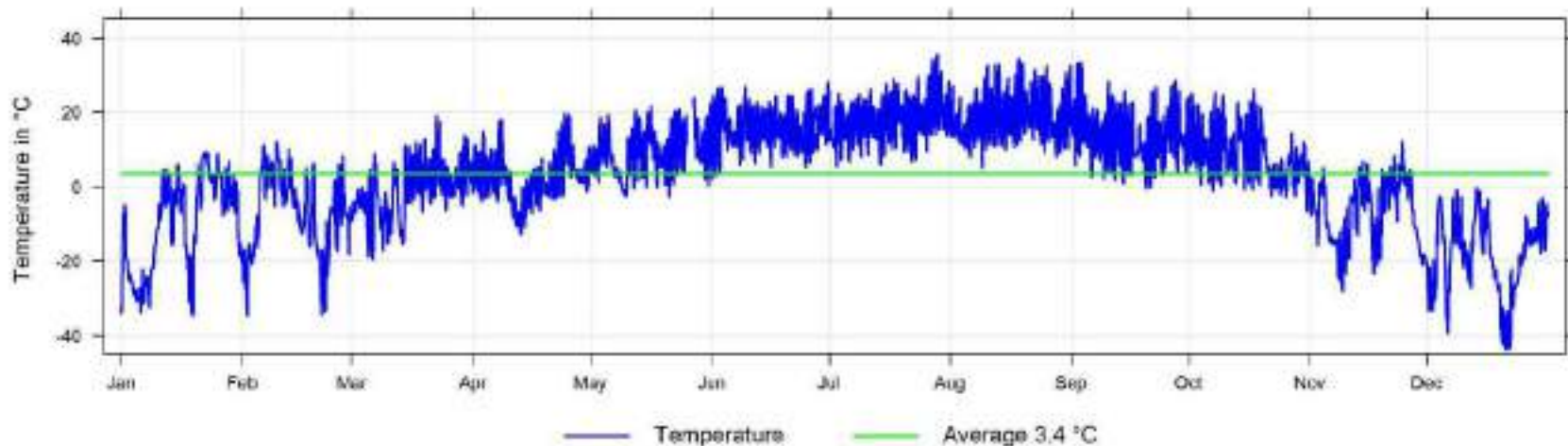
0-1 1-3 3-5 5-8 8-10 >10

10.3 Temperature (ET) - Valleyview 2022 Summary

Temperature (ET) Frequency Distribution at Valleyview

Month	Valid Hours	Monthly Average (°C)	Maximum Values			Minimum Values			Operational time (%)	Valid time (%)			
			24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date			1-hr (°C)	Date	
January 2022	744	-10.2	8.7	Jan 22	9.3	Jan 22 17:00	-29.1	Jan 04	-34.6	Jan 19 04:00	100.0%	100.0%	
February 2022	672	-7.5	5.8	Feb 06	11.9	Feb 09 20:00	-25.8	Feb 21	-34.6	Feb 02 07:00	100.0%	100.0%	
March 2022	744	-1.0	6.8	Mar 23	19.0	Mar 22 15:00	-12.3	Mar 13	-19.7	Mar 06 07:00	100.0%	100.0%	
April 2022	720	2.4	12.1	Apr 25	19.7	Apr 24 16:00	-9.0	Apr 12	-13.1	Apr 13 06:00	100.0%	100.0%	
May 2022	707	9.4	14.6	May 16	23.9	May 27 17:00	-0.8	May 09	-2.7	May 21 05:00	95.0%	95.0%	
June 2022	716	15.8	19.9	Jun 30	28.0	Jun 30 19:00	12.0	Jun 23	1.9	Jun 01 05:00	99.4%	99.4%	
July 2022	744	18.3	25.5	Jul 28	35.5	Jul 28 18:00	13.1	Jul 01	5.4	Jul 03 05:00	100.0%	100.0%	
August 2022	744	18.7	22.0	Aug 18	34.3	Aug 18 16:00	12.9	Aug 04	4.8	Aug 09 06:00	100.0%	100.0%	
September 2022	720	13.0	19.3	Sep 03	33.4	Sep 03 15:00	8.0	Sep 20	-0.5	Sep 20 07:00	100.0%	100.0%	
October 2022	744	7.9	15.0	Oct 14	26.2	Oct 17 16:00	-0.4	Oct 31	-6.6	Oct 31 07:00	100.0%	100.0%	
November 2022	720	-7.6	5.6	Nov 24	12.1	Nov 24 15:00	-20.1	Nov 09	-28.2	Nov 09 07:00	100.0%	100.0%	
December 2022	744	-18.8	-4.5	Dec 04	-0.5	Dec 13 18:00	-40.0	Dec 21	-44.1	Dec 21 09:00	100.0%	100.0%	
		AVERAGE	MAXIMUM VALUES			MINIMUM VALUES							
		8719	3.4	25.5	Jul 28	35.5	Jul 28 18:00	-40.0	Dec 21	-44.1	Dec 21 09:00	99.5%	99.5%

2022 Hourly Temperature Readings (in °C) at Valleyview

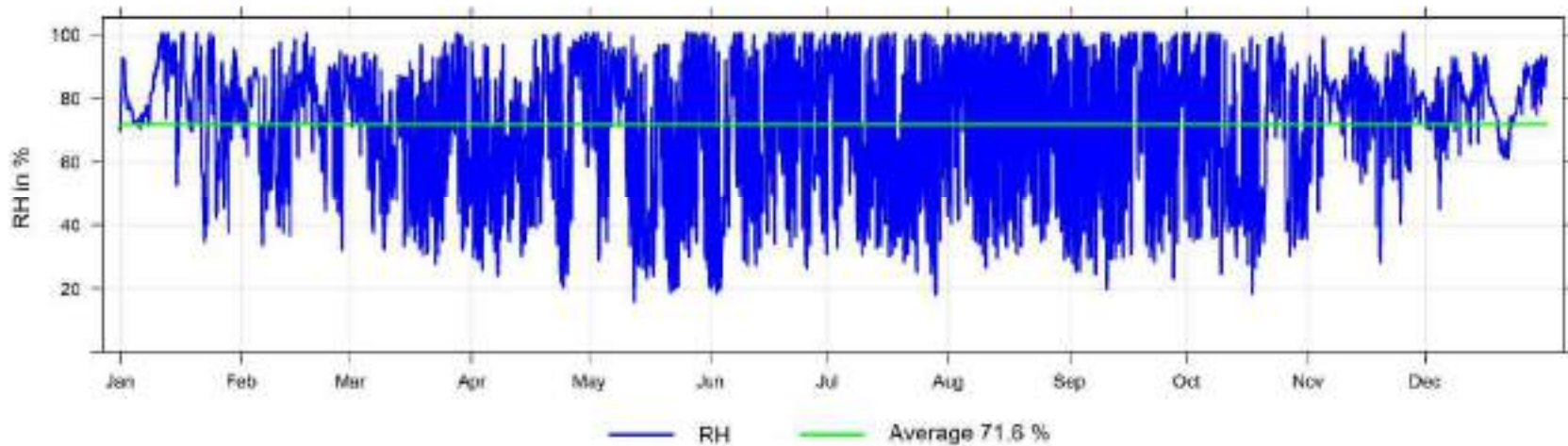


10.4 Relative Humidity (RH) - Valleyview 2022 Summary

Relative Humidity (RH) Frequency Distribution at Valleyview

Month	Valid Hours	Monthly Average (%)	24-hr (%)	Maximum Values		Operational time (%)	Valid time (%)	
				Date	1-hr (%)			
January 2022	744	79.6	97.9	Jan 11	100.2	Jan 11 20:00	100.0%	
February 2022	672	74.8	91.0	Feb 17	100.2	Feb 17 19:00	100.0%	
March 2022	744	68.5	86.3	Mar 01	100.2	Mar 28 06:00	100.0%	
April 2022	720	66.4	94.3	Apr 28	100.2	Apr 30 09:00	100.0%	
May 2022	744	65.0	89.5	May 07	100.6	May 26 05:00	100.0%	
June 2022	716	67.7	86.7	Jun 06	100.2	Jun 08 05:00	99.4%	
July 2022	744	67.9	90.4	Jul 01	100.2	Jul 03 04:00	100.0%	
August 2022	744	73.4	89.6	Aug 04	100.2	Aug 06 04:00	100.0%	
September 2022	720	71.9	97.1	Sep 17	100.2	Sep 03 06:00	100.0%	
October 2022	744	68.0	94.5	Oct 22	100.2	Oct 01 03:00	100.0%	
November 2022	720	77.4	87.5	Nov 05	100.2	Nov 25 05:00	100.0%	
December 2022	744	78.7	89.6	Dec 16	94.0	Dec 13 15:00	100.0%	
		AVERAGE	MAXIMUM VALUES					
		8756	71.6	97.9	Jan 11	100.6	May 26 05:00	100.0%

2022 Hourly Readings of Relative Humidity (in %) at Valleyview

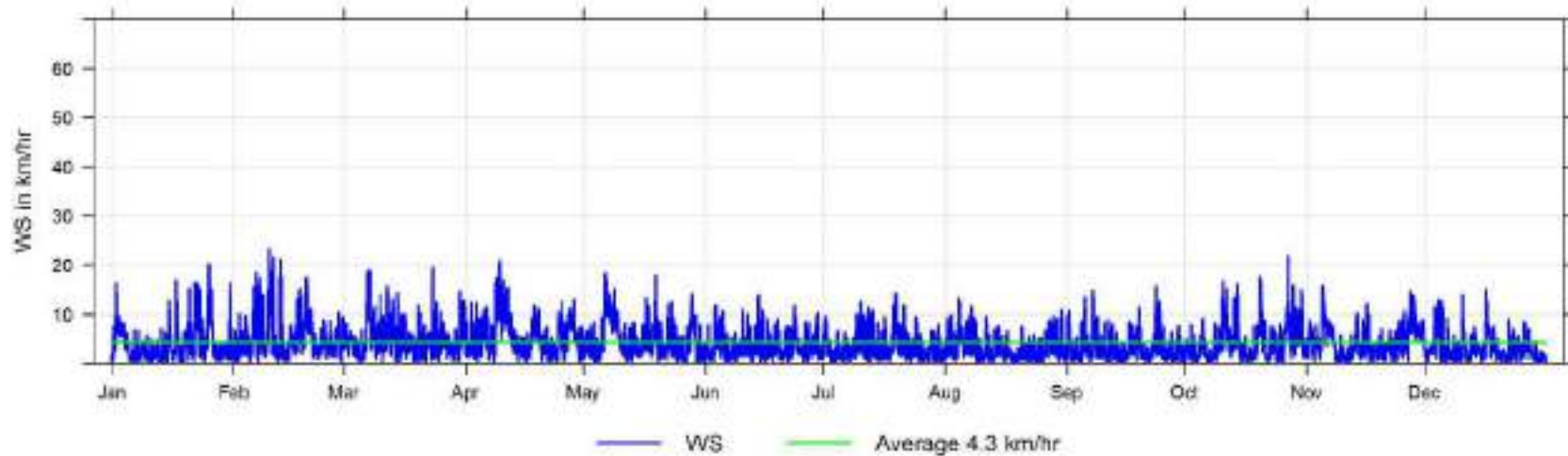


10.5 Wind Speed and Wind Direction (WS and WD) - Valleyview 2022 Summary

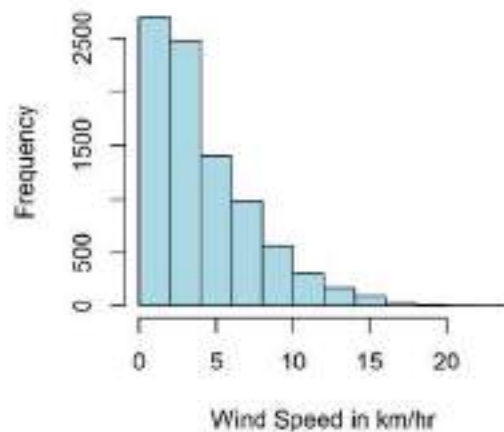
Wind Speed Frequency Distribution at Valleyview

Month	Valid Hours	Calm	% of Readings in Concentration Range					Monthly Average (km/hr)	24-hr (km/hr)	MAXIMUM VALUES			Operational time (%)	Valid time (%)
			0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)			Date	1-hr (km/hr)	Date		
January 2022	744	5.4%	63.3%	23.1%	8.1%	0.1%	0.0%	4.4	12.6	Jan 21	20.1	Jan 25 18:00	100.0%	100.0%
February 2022	672	1.5%	53.3%	32.1%	12.2%	0.9%	0.0%	5.6	14.0	Feb 10	23.3	Feb 10 03:00	100.0%	100.0%
March 2022	744	2.0%	56.2%	34.3%	7.4%	0.1%	0.0%	5.0	12.6	Mar 07	19.4	Mar 23 15:00	100.0%	100.0%
April 2022	720	2.5%	47.9%	40.4%	8.9%	0.3%	0.0%	5.7	13.2	Apr 09	20.9	Apr 09 16:00	100.0%	100.0%
May 2022	742	3.2%	57.7%	32.6%	6.5%	0.0%	0.0%	4.8	10.6	May 06	18.3	May 06 15:00	99.7%	99.7%
June 2022	716	2.8%	71.8%	24.2%	1.3%	0.0%	0.0%	3.6	6.9	Jun 23	13.8	Jun 14 13:00	99.4%	99.4%
July 2022	744	5.5%	67.9%	24.5%	2.2%	0.0%	0.0%	3.6	8.4	Jul 19	14.2	Jul 19 11:00	100.0%	100.0%
August 2022	744	5.6%	73.1%	20.4%	0.8%	0.0%	0.0%	3.3	5.9	Aug 04	13.2	Aug 04 16:00	100.0%	100.0%
September 2022	720	5.3%	73.3%	18.3%	3.1%	0.0%	0.0%	3.3	7.2	Sep 05	15.7	Sep 23 16:00	100.0%	100.0%
October 2022	744	4.4%	60.3%	28.2%	6.9%	0.1%	0.0%	4.5	10.5	Oct 20	21.8	Oct 27 12:00	100.0%	100.0%
November 2022	720	3.1%	60.4%	32.9%	3.6%	0.0%	0.0%	4.4	11.5	Nov 05	15.9	Nov 05 05:00	100.0%	100.0%
December 2022	744	8.6%	73.0%	16.0%	2.4%	0.0%	0.0%	3.1	7.9	Dec 04	15.1	Dec 16 15:00	100.0%	100.0%
Annual	8754	4.2%	63.2%	27.3%	5.3%	0.1%	0.0%	4.3	14.0	Feb 10	23.3	Feb 10 03:00	99.9%	99.9%

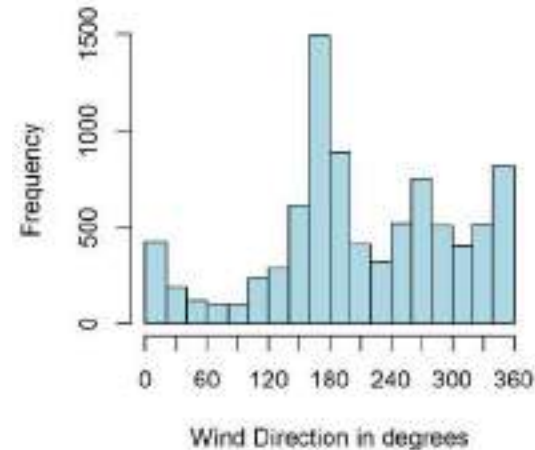
2022 Hourly Readings of Wind Speed (in km/hr) at Valleyview



2022 Wind Speed Histogram

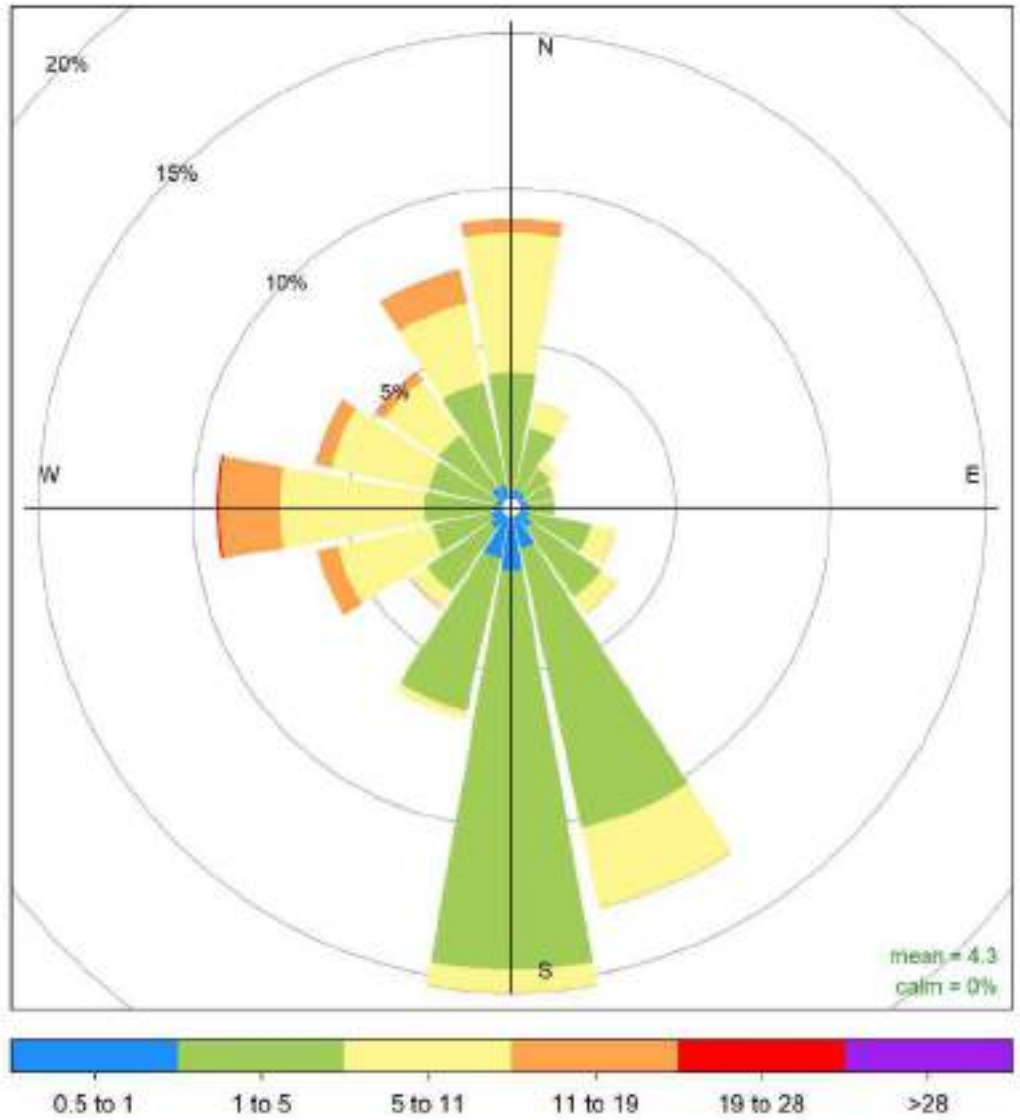


2022 Wind Direction Histogram



Wind Speed and Wind Direction Frequency Distribution at Valleyview

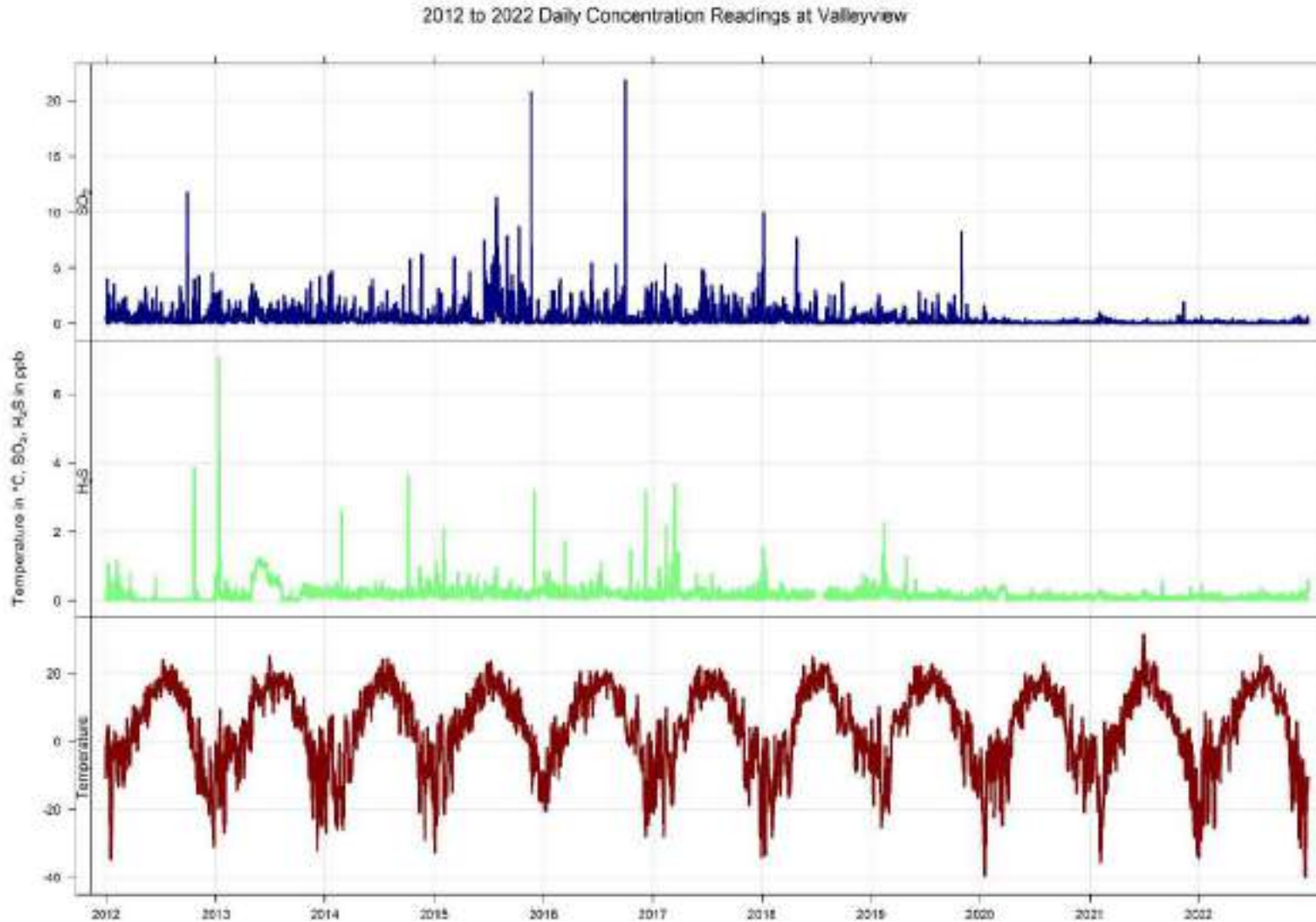
Direction	Number of Readings	% of wind speed range						Total %
		Calm (<0.5) (km/hr)	0.5 to 5 (km/hr)	5 to 11 (km/hr)	11 to 19 (km/hr)	19 to 28 (km/hr)	>28 (km/hr)	
N	807	0.2%	4.0%	4.5%	0.5%	0.0%	0.0%	9.2%
NNE	293	0.2%	2.3%	0.9%	0.0%	0.0%	0.0%	3.3%
NE	156	0.2%	1.2%	0.3%	0.0%	0.0%	0.0%	1.8%
ENE	110	0.1%	1.1%	0.1%	0.0%	0.0%	0.0%	1.3%
E	113	0.2%	1.1%	0.0%	0.0%	0.0%	0.0%	1.3%
ESE	289	0.1%	2.3%	0.8%	0.0%	0.0%	0.0%	3.3%
SE	358	0.2%	3.2%	0.6%	0.0%	0.0%	0.0%	4.1%
SSE	1175	0.5%	10.3%	2.6%	0.0%	0.0%	0.0%	13.4%
S	1394	0.5%	14.6%	0.8%	0.0%	0.0%	0.0%	15.9%
SSW	619	0.4%	6.4%	0.3%	0.0%	0.0%	0.0%	7.1%
SW	353	0.4%	3.0%	0.6%	0.0%	0.0%	0.0%	4.0%
WSW	554	0.2%	2.3%	3.1%	0.7%	0.0%	0.0%	6.3%
W	825	0.2%	2.5%	4.6%	2.0%	0.1%	0.0%	9.4%
WNW	560	0.2%	2.4%	3.2%	0.5%	0.0%	0.0%	6.4%
NW	472	0.4%	2.5%	2.1%	0.3%	0.0%	0.0%	5.4%
NNW	677	0.2%	3.8%	2.6%	1.1%	0.0%	0.0%	7.7%
Total	8754	4.2%	63.3%	27.2%	5.2%	0.1%	0.0%	100.0%



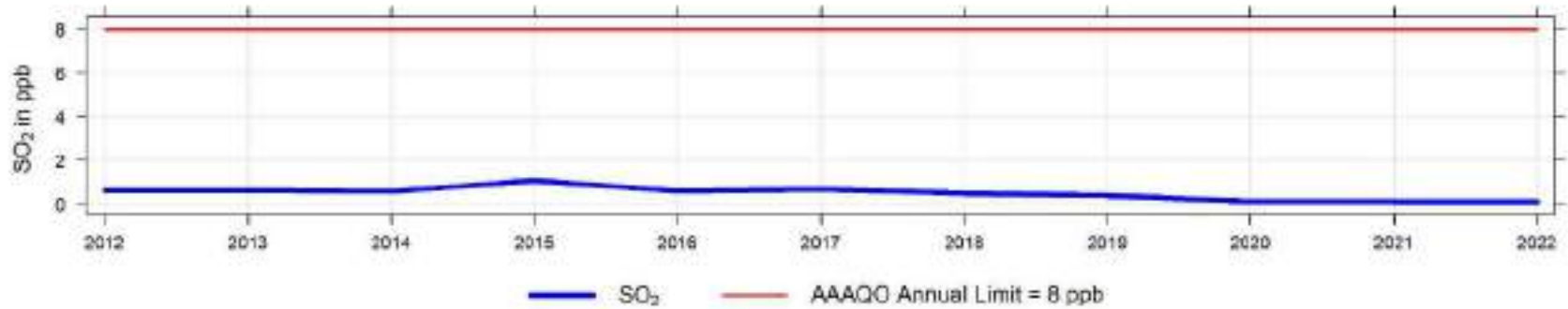
Valleyview 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)

10.6 Valleyview Annual Trends, 2012 to 2022

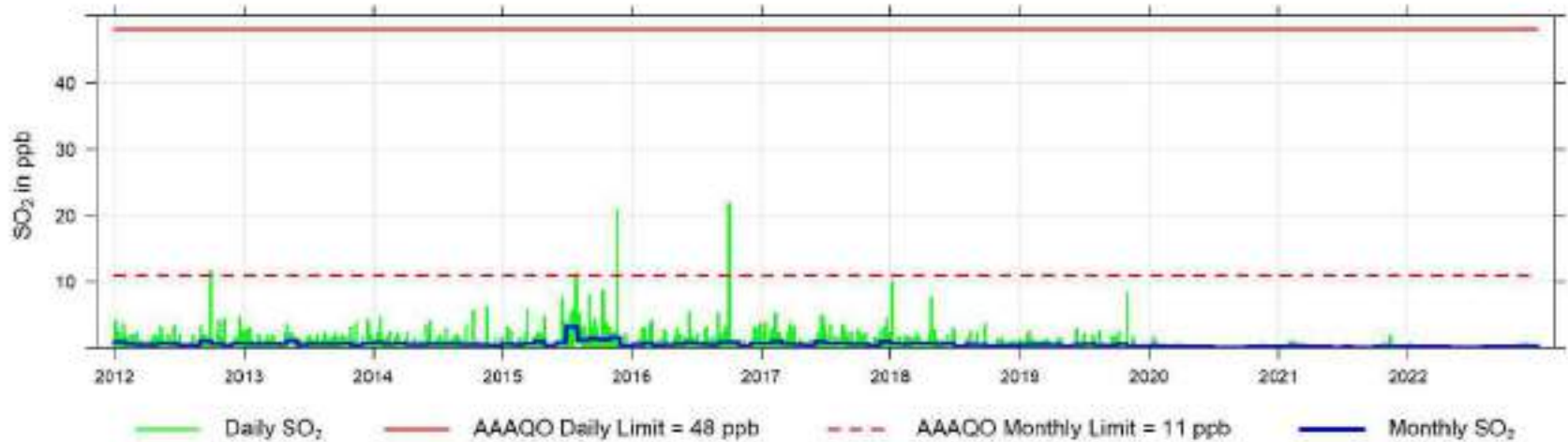
The following pages include historical annual charts collected between 2012 and 2022 at the Valleyview Station.



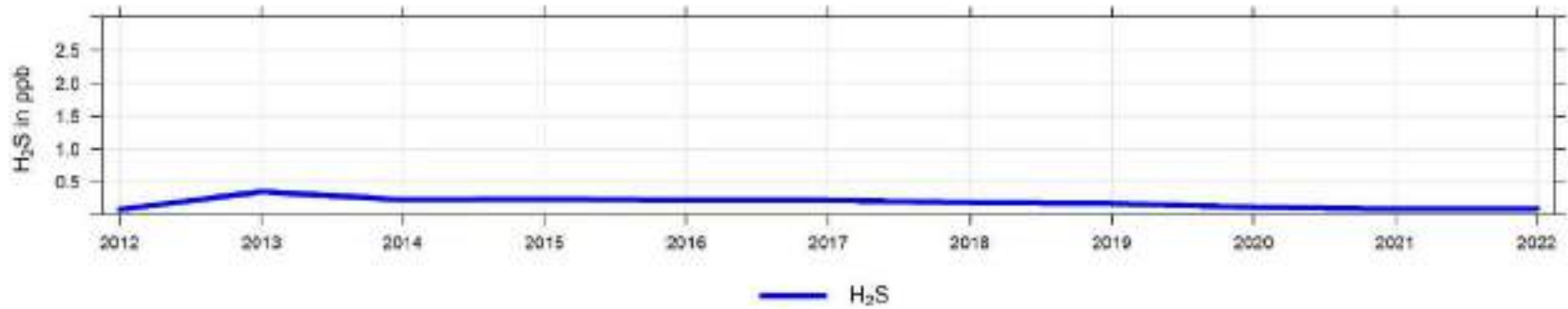
Years 2012 to 2022 Annual Concentration Readings of SO₂ (in ppb) at Valleyview



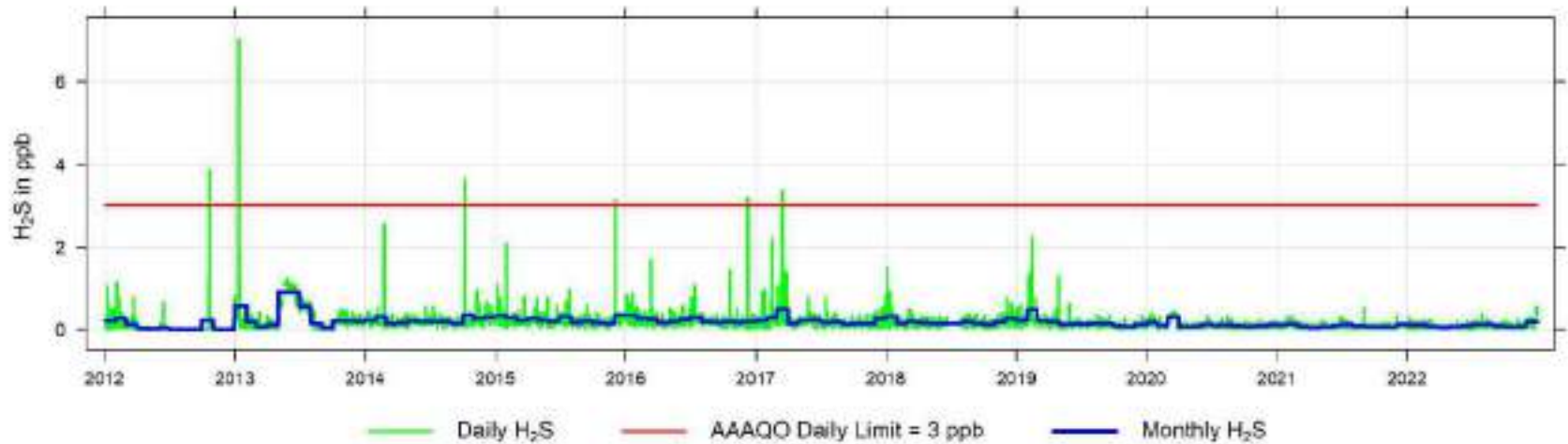
Years 2012 to 2022 Concentration Readings of SO₂ (in ppb) at Valleyview



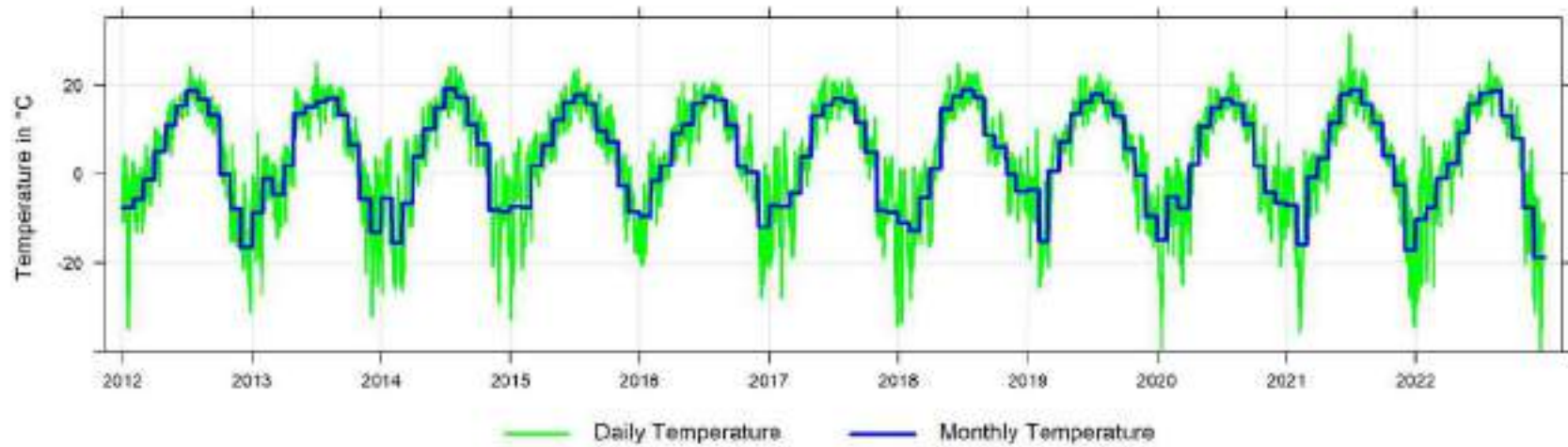
Years 2012 to 2022 Annual Concentration Readings of H₂S (in ppb) at Valleyview



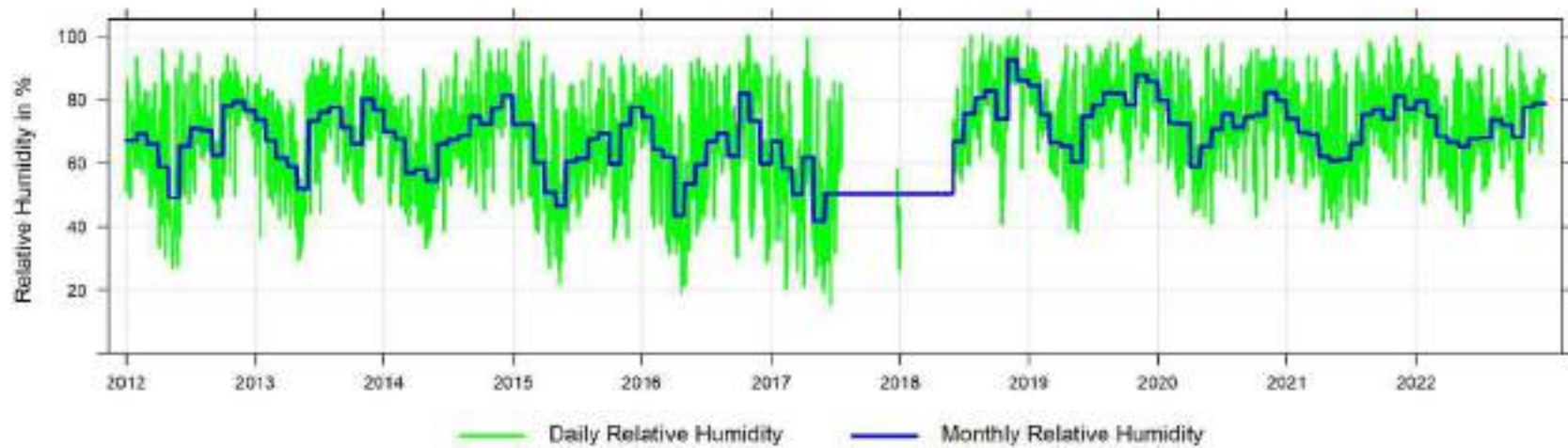
Years 2012 to 2022 Concentration Readings of H₂S (in ppb) at Valleyview



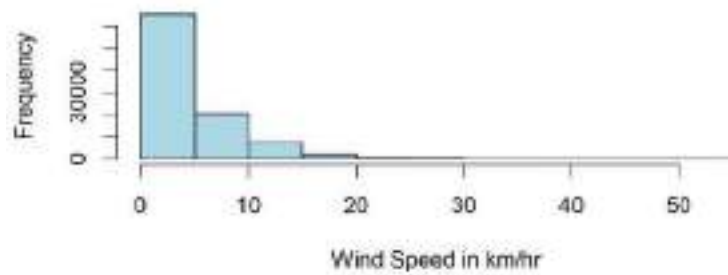
Years 2012 to 2022 Temperature Readings (in °C) at Valleyview



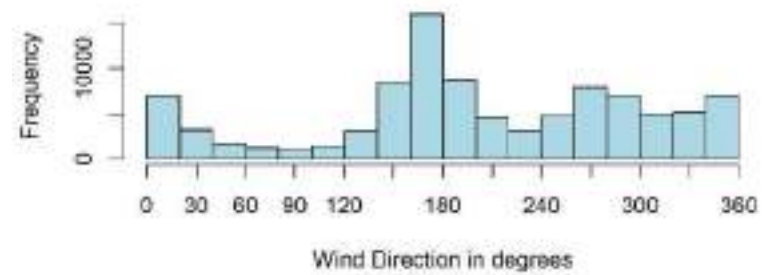
Years 2012 to 2022 Relative Humidity Readings (in %) at Valleyview



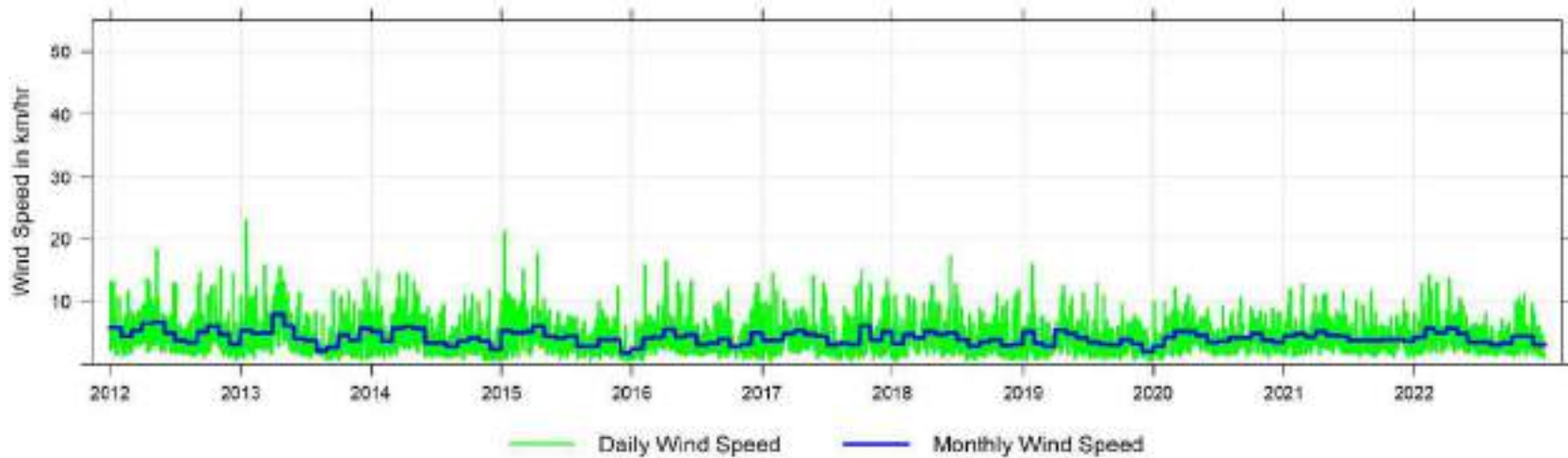
Years 2012 to 2022 Wind Speed Histogram

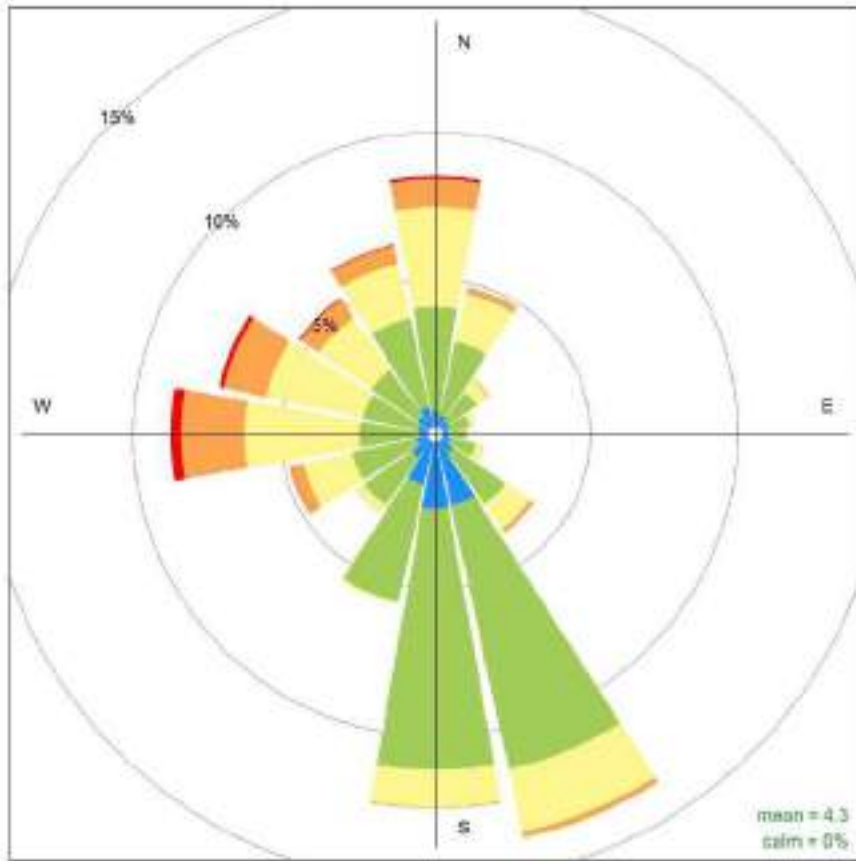


Years 2012 to 2022 Wind Direction Histogram

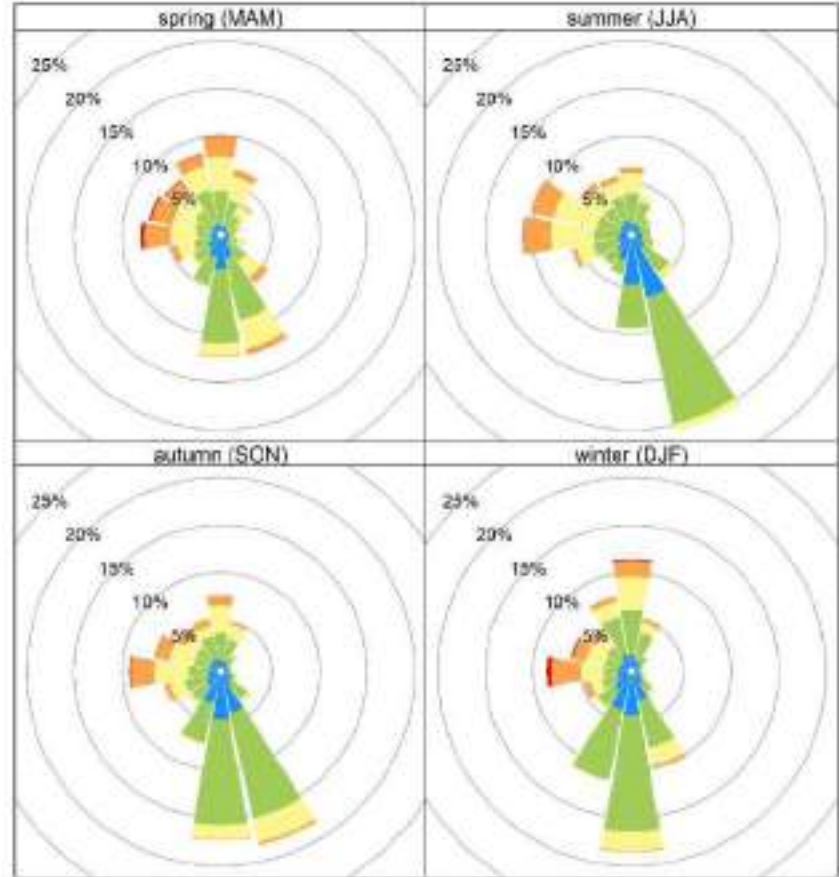


Years 2012 to 2022 Wind Speed Readings (in km/hr) at Valleyview





Valleyview 2012 to 2022 Wind Rose, wind speed in km/hr
Frequency of counts by wind direction (%)



Valleyview 2012 to 2022 Seasonal Wind Rose, wind speed in km/hr

11 Passive Monitoring Data - 2022 Summary

11.1 O₃ Monitoring Passive Data - 2022 Summary

Ozone (O₃) passive summaries for 2022 are tabulated as follows:

O ₃ in ppb	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Bay Tree	34.7	39.3	37.5	40.1	35.3	26.5	25.8	23.2	23.2	29.4	35.7	33.1
Crooked Creek	34.1	45.1	37.2	38.0	36.2	27.5	25.2	27.5	24.2	25.0	31.9	25.3
Kinuso	32.8	50.5	39.7	31.5	36.9	26.6	20.7	22.1	17.4	34.0	35.3	27.0

36 passive ozone samples collected over 12 months at 3 sites in PAZA

- Minimum annual average was 31.2ppb collected at Kinuso
- Maximum annual average was 32.0ppb collected at Bay Tree
- Maximum overall monthly average was 50.5ppb in February 2022

11.2 H₂S Monitoring Passive Data - 2022 Summary

Hydrogen Sulphide (H₂S) passive summaries for 2022 are tabulated as follows:

H ₂ S in ppb	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Duvernay 1	0.16	0.11	0.10	0.07	0.07	0.09	0.08	0.10	0.09	0.10	0.10	0.30
Duvernay 2	0.16	0.12	0.10	0.10	0.07	0.08	0.07	0.10	0.11	0.10	0.10	0.30
Duvernay 3	0.18	0.10	0.08	0.08	0.08	0.09	0.08	0.10	0.08	0.10	0.10	0.30
Duvernay 4	0.15	0.11	0.09	0.09	0.07	0.09	0.08	0.10	0.09	0.10	0.10	0.30
Girouville 3	0.72	0.39	0.97	0.30	0.62	0.45	0.86	NA	0.33	NA	0.30	0.90
Girouville 4	0.54	0.35	NA	NA	0.31	0.46	0.56	0.30	0.35	0.30	0.40	NA
Guy	0.20	0.15	0.12	0.12	0.15	0.15	0.18	0.10	0.11	0.10	0.20	0.20
Jayar1 Plant	0.16	0.10	0.06	0.07	0.13	0.08	0.07	0.10	0.05	0.10	0.10	0.20
Jayar2 14-8	0.18	0.01	0.08	0.06	0.08	0.08	0.07	0.10	0.07	0.10	0.10	0.20
Jayar3 Bone Yard	0.01	0.10	0.01	0.01	0.01	0.01	0.01	0.10	0.05	0.10	0.10	0.20
Jayar4 7-8 or 8-8 Pad	0.16	0.10	0.08	0.08	0.01	0.07	0.06	0.10	0.04	0.10	0.10	0.20
Jayar5 Camp	0.25	0.21	0.01	0.14	1.02	0.01	0.01	0.10	0.07	0.10	0.10	0.20

139 passive hydrogen sulphide samples collected over 12 months at 12 sites in PAZA

- Minimum annual average was 0.06ppb collected at Jayar3 Bone Yard
- Maximum annual average was 0.58ppb collected at Girouville 3
- Maximum overall monthly average was 1.02ppb in May 2022

11.3 NO₂ Monitoring Data - 2022 Summary

Nitrogen Dioxide (NO₂) passive summaries for 2022 are tabulated as follows:

NO ₂ in ppb	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Bay Tree	1.4	0.9	1.0	0.5	0.5	0.4	0.5	0.2	0.5	0.7	1.3	2.0
Beaverlodge	3.4	2.0	1.3	1.3	0.8	0.8	0.7	0.9	1.1	1.7	2.6	5.5
Boone Creek	1.0	0.7	0.5	0.5	0.3	0.7	0.6	0.3	0.7	0.7	1.3	2.0
Clairmont Lake	2.6	1.0	0.7	0.6	0.7	1.6	1.9	0.9	1.3	1.7	3.5	4.9
Clouston Creek	1.3	0.7	0.7	0.4	0.8	2.0	0.7	0.3	1.2	0.8	0.9	2.6
Crooked Creek	1.9	1.1	0.5	0.6	0.5	0.8	0.5	0.3	0.7	1.6	1.7	3.8
Deer Mountain	0.9	0.6	0.2	0.2	0.2	0.5	0.2	NA	0.4	0.5	5.9	1.5
Eaglesham	0.7	0.4	0.1	NA	1.1	NA	1.5	1.0	1.0	0.7	1.2	1.6
East Prairie	2.0	0.9	0.3	0.1	0.3	0.1	0.2	NA	0.3	0.5	1.1	1.4
Forth Creek	0.7	0.4	0.2	0.3	NA	0.5	0.5	0.6	0.6	0.6	NA	1.9
Gold Creek	5.5	2.7	2.1	1.5	1.0	0.7	0.9	1.0	1.5	2.9	2.4	7.9
Gordondale	1.8	0.9	1.0	0.3	0.5	0.4	0.6	0.5	1.3	1.0	1.7	2.5
Grande Prairie I	13.5	5.9	6.7	3.2	2.4	1.7	1.8	1.8	3.2	4.2	9.9	22.8
Guy	1.0	0.5	0.4	0.4	1.5	5.1	1.4	0.7	0.9	0.8	1.3	1.9
Henry Pirker	12.7	6.3	5.5	2.1	1.5	1.2	1.2	1.4	3.5	6.2	13.3	18.0
High Prairie	1.7	0.8	0.5	0.5	1.0	1.1	0.5	0.3	0.6	1.0	0.7	2.9
Hythe	2.0	1.2	0.8	0.7	0.6	1.0	0.8	1.0	0.9	1.0	1.6	4.3
Jayar1 Plant	1.6	1.8	1.8	1.9	1.3	2.0	0.8	0.9	0.7	1.3	0.5	3.9
Jayar2 14-8	5.4	NA	3.7	NA	2.7	3.4	1.1	1.2	1.8	2.9	0.8	5.5
Jayar3 Bone Yard	3.2	0.1	NA	0.7	NA	0.9	0.5	1.0	0.7	1.3	0.3	2.8
Jayar4 7-8 or 8-8 Pad	1.7	1.8	1.2	0.8	1.2	1.1	0.6	0.8	0.6	0.7	0.4	2.9
Jayar5 Camp	10.7	8.9	7.2	2.8	4.3	NA	NA	1.1	2.8	3.6	0.3	3.7
Jean Cote	1.0	0.6	0.2	0.5	1.1	5.0	1.7	1.1	1.3	1.4	1.2	2.0
Kinuso	1.5	NA	0.5	0.2	0.2	0.3	0.2	0.4	0.3	0.5	1.1	2.5
Little Smoky	4.7	2.4	1.0	1.2	1.0	0.5	0.9	0.9	1.9	2.6	2.8	6.8
McLennan	1.2	0.8	0.2	0.5	0.5	2.4	1.0	0.7	0.9	0.9	2.4	2.0
Milner Ambient Trailer	3.3	2.2	1.3	0.9	1.4	1.1	1.2	1.2	1.7	2.0	2.2	9.6
Milner Bridge	1.8	NA	1.0	0.8	0.4	0.5	0.6	0.6	0.8	1.3	1.6	5.0
Milner Pipeline	4.0	2.1	1.6	1.0	1.0	0.9	1.0	1.4	1.7	2.1	2.1	6.1
Milner Powerline	6.5	3.8	4.0	2.9	1.7	NA	1.6	2.4	2.5	4.6	4.5	13.8
Milner Wanyandie	NA	1.0	NA	NA	NA	0.6	NA	0.6	0.6	1.0	1.2	4.4
Peavine	0.8	0.4	0.1	0.2	0.1	0.3	0.1	0.2	0.2	0.7	1.1	1.4
Pinto Creek	1.5	0.7	0.3	0.4	0.3	0.3	0.7	0.4	0.9	0.7	0.8	1.8
Poplar	2.8	1.6	1.3	1.3	1.4	1.8	1.2	1.1	1.8	2.1	3.2	8.9
Saddle Hills	1.0	0.8	0.2	0.2	0.3	0.1	0.3	0.1	0.5	0.8	0.7	1.6
Smoky Heights	2.9	0.9	0.8	0.3	0.5	1.2	0.8	0.6	1.0	1.2	2.7	4.9
Spirit River	1.2	0.7	0.6	0.4	0.8	4.3	1.1	1.2	1.5	1.5	1.3	2.3

NO ₂ in ppb	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Steepprock Creek	0.8	0.4	0.2	0.1	0.1	0.1	0.3	NA	0.2	0.4	0.4	1.4
Sunset House	0.8	0.5	0.2	0.2	0.2	0.2	0.4	0.1	0.5	0.6	1.3	1.7
Sylvester	0.8	0.8	0.3	0.5	0.3	0.2	0.3	0.1	0.2	0.3	0.7	2.0
Wanham	1.1	0.5	0.5	0.3	0.4	0.8	0.4	0.3	0.5	0.7	1.8	2.0
Webber Creek	4.7	2.5	1.8	1.5	1.5	1.3	1.1	1.3	2.4	3.5	5.1	6.4
Wembley	3.8	1.5	1.6	1.4	1.2	1.6	1.3	1.4	1.8	1.8	3.8	5.0

495 passive nitrogen dioxide samples collected over 12 months at 43 sites in PAZA

- Minimum annual average was 0.4ppb collected at Steepprock Creek
- Maximum annual average was 6.4ppb collected at Grande Prairie
- Maximum overall monthly average was 22.8ppb in December 2022

11.4 SO₂ Monitoring Data - 2022 Summary

Sulphur Dioxide (SO₂) passive summaries for 2022 are tabulated as follows:

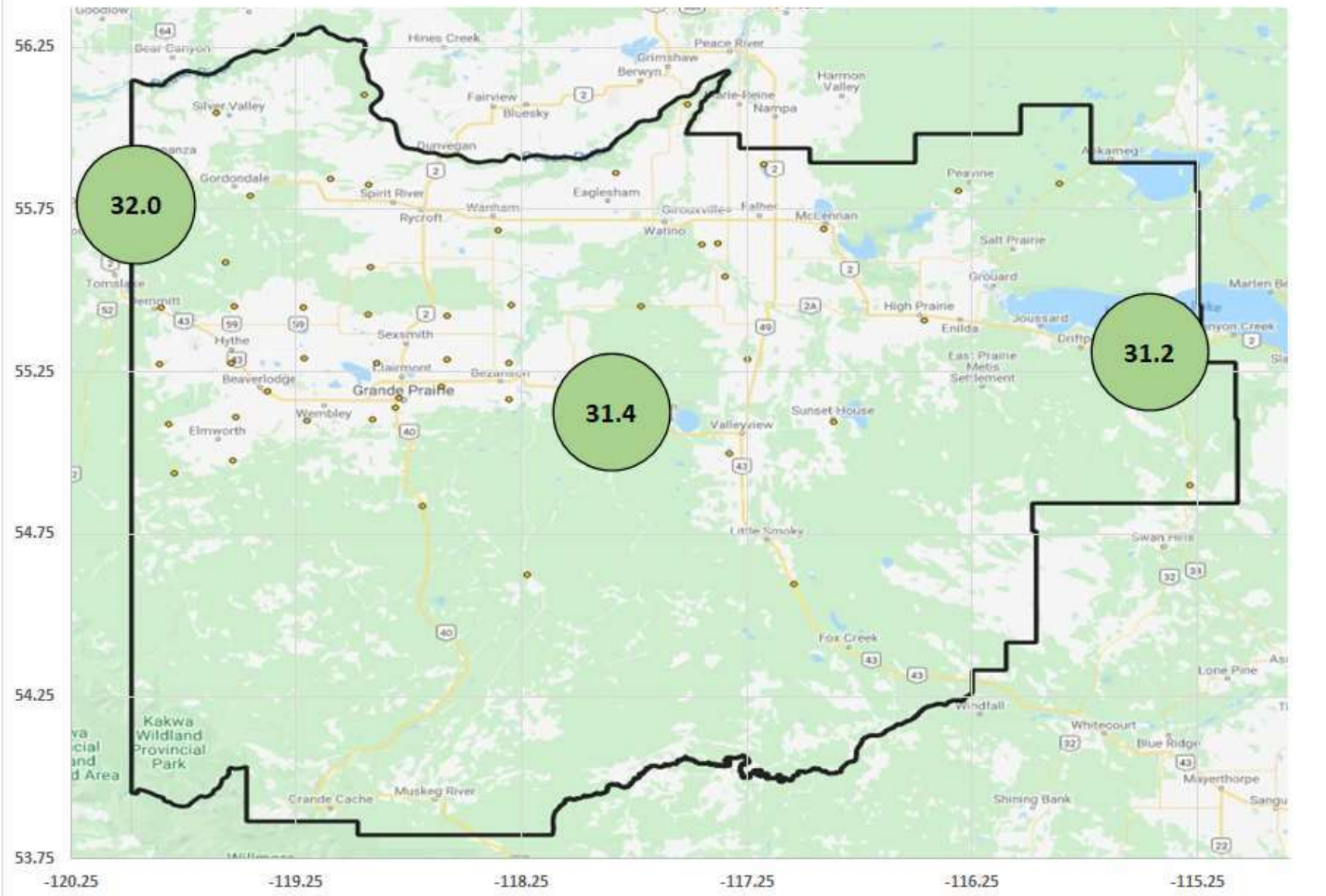
SO ₂ in ppb	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Bay Tree	0.1	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.5	0.4
Beaverlodge	0.7	0.7	0.6	0.4	0.4	0.3	0.4	0.8	0.3	0.5	0.1	1.7
Boone Creek	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.2	0.3	0.6	0.7
Clairmont Lake	0.7	0.6	0.5	0.2	0.4	0.4	0.4	0.3	0.4	0.4	1.0	1.1
Clouston Creek	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.4
Crooked Creek	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.3
Deer Mountain	NA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Duvernay 1	1.0	0.3	0.2	0.5	0.6	0.3	0.4	0.2	0.3	0.4	0.2	0.6
Duvernay 2	0.2	0.2	0.2	0.3	0.6	0.3	0.2	0.3	0.5	0.4	0.4	0.7
Duvernay 3	0.6	1.0	1.0	0.8	0.9	0.6	0.8	0.7	0.9	1.6	0.4	0.5
Duvernay 4	0.9	0.5	1.0	0.9	0.5	0.7	0.5	0.8	0.7	0.7	0.8	1.2
Eaglesham	0.1	0.2	0.2	NA	0.2	NA	0.2	0.2	0.1	0.2	0.1	0.2
East Prairie	NA	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Forth Creek	NA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	0.3
Gold Creek	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.6
Gordondale	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.5	0.6
Grande Prairie I	0.6	0.4	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.7	1.0
Guy	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2
Henry Pirker	0.5	0.5	0.4	0.3	0.3	0.4	0.5	0.3	0.3	0.6	0.8	0.9
High Prairie	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.2
Hythe	0.4	0.6	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.6	1.2
Jayar1 Plant	0.6	0.5	0.4	0.4	0.5	0.5	0.6	0.3	0.4	0.2	1.3	0.5

SO ₂ in ppb	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Jayar2 14-8	0.5	0.5	0.4	NA	0.8	0.8	0.5	0.3	0.7	0.4	0.1	0.1
Jayar3 Bone Yard	NA	NA	1.5	NA	1.2	NA	NA	0.5	1.0	1.1	0.1	0.1
Jayar4 7-8 or 8-8 Pad	0.4	0.4	0.5	0.7	NA	0.4	0.4	0.3	0.4	0.4	0.1	0.1
Jayar5 Camp	0.4	0.4	NA	0.4	0.7	0.5	0.4	0.3	0.3	0.5	0.1	0.1
Jean Cote	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.3	0.2	0.3
Kinuso	NA	NA	0.1	NA	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.2
Little Smoky	NA	0.1	NA	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2
McLennan	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.1	0.1	0.3	0.3
Milner Ambient Trailer	NA	0.1	NA	0.2	0.2	NA	NA	0.1	NA	0.1	0.1	0.1
Milner Bridge	0.3	0.1	NA	NA	NA	NA	NA	0.1	NA	0.1	0.1	0.1
Milner Pipeline	0.2	0.1	NA	NA	NA	0.1	NA	0.1	NA	0.1	0.1	0.1
Milner Powerline	0.4	0.2	NA	NA	NA	0.2	0.1	0.1	NA	0.1	0.1	0.1
Milner Wanyandie	0.2	NA	NA	NA	NA	NA	0.2	0.1	NA	0.1	0.1	0.1
Peavine	NA	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Pinto Creek	0.2	0.4	0.2	NA	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.9
Poplar	1.1	0.8	0.5	0.7	0.6	0.6	0.5	0.4	0.5	0.6	0.9	1.2
Saddle Hills	0.4	0.4	0.5	0.4	0.4	0.2	0.3	0.2	0.3	0.3	0.4	0.5
Smoky Heights	0.7	0.5	0.5	0.2	0.4	0.3	0.4	0.3	0.3	0.3	0.6	0.7
Spirit River	0.3	0.3	0.4	0.2	0.3	0.2	0.2	0.3	0.3	0.4	0.4	0.5
Steepprock Creek	0.3	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.4	0.9
Sunset House	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.4
Sylvester	NA	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.3
Wanham	0.3	0.3	0.4	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.6	0.5
Webber Creek	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.1	0.7
Wembley	0.8	1.0	0.9	0.3	0.8	1.0	0.5	0.9	0.2	0.6	0.2	1.4

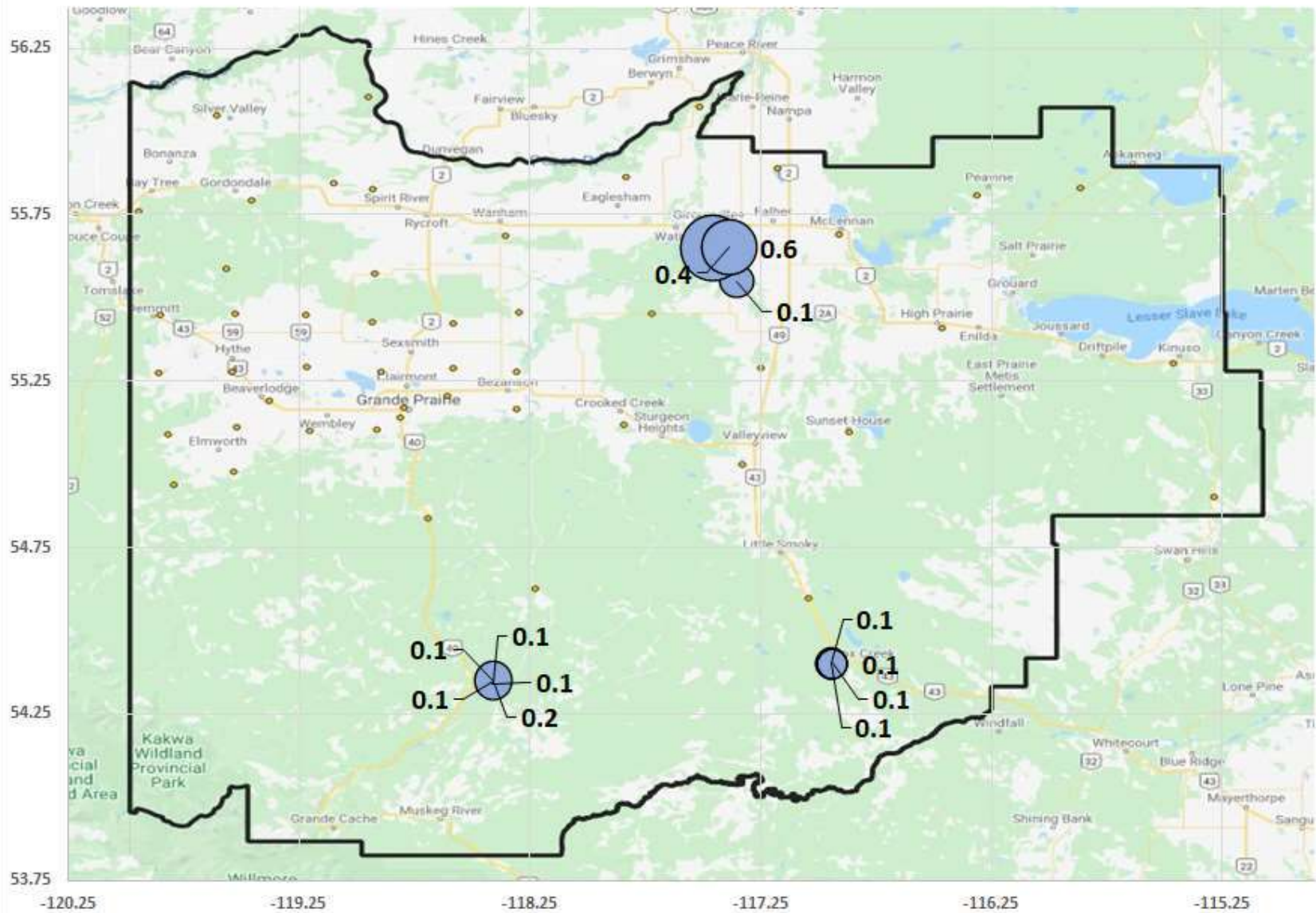
517 passive sulphur dioxide samples collected over 12 months at 47 sites in PAZA

- Minimum annual average was 0.1ppb collected at Deer Mountain
- Maximum annual average was 0.8ppb collected at Duvernay3
- Maximum overall monthly average was 1.7ppb in January 2022

O₃ Annual Average (units in ppb)



H₂S Annual Average (units in ppb)



12 Dustfall Monitoring Data - 2022 Summary

12.1 Dustfall Monitoring Passive Data - 2022 Summary

Dustfall summaries for 2022 are tabulated as follows:

Dustfall in mg/100cm ² /30day	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Milner Bridge	9.4	10.6	19.8	14.4	24.7	50.5	27.7	22.7	28.7	52.2	20.0	20.0
Milner Pipeline	133.6	119.6	105.8	86.6	54.8	124.8	120.9	77.1	148.4	190.3	125.6	125.6
Milner Powerline	24.0	43.3	30.9	29.6	26.0	77.4	30.6	35.1	33.8	127.8	56.6	56.6
Milner Wanyandie	18.7	54.2	33.1	30.4	26.0	55.8	27.7	22.7	33.1	61.7	36.7	36.7
Milner Waste Pond	42.7	67.7	40.4	31.2	35.4	76.5	41.2	43.4	46.3	83.0	105.1	105.1

Note:

AAAQG for residential and recreation areas = 53 mg/100cm²/30day

AAAQG for commercial and industrial areas = 158 mg/100cm²/30day

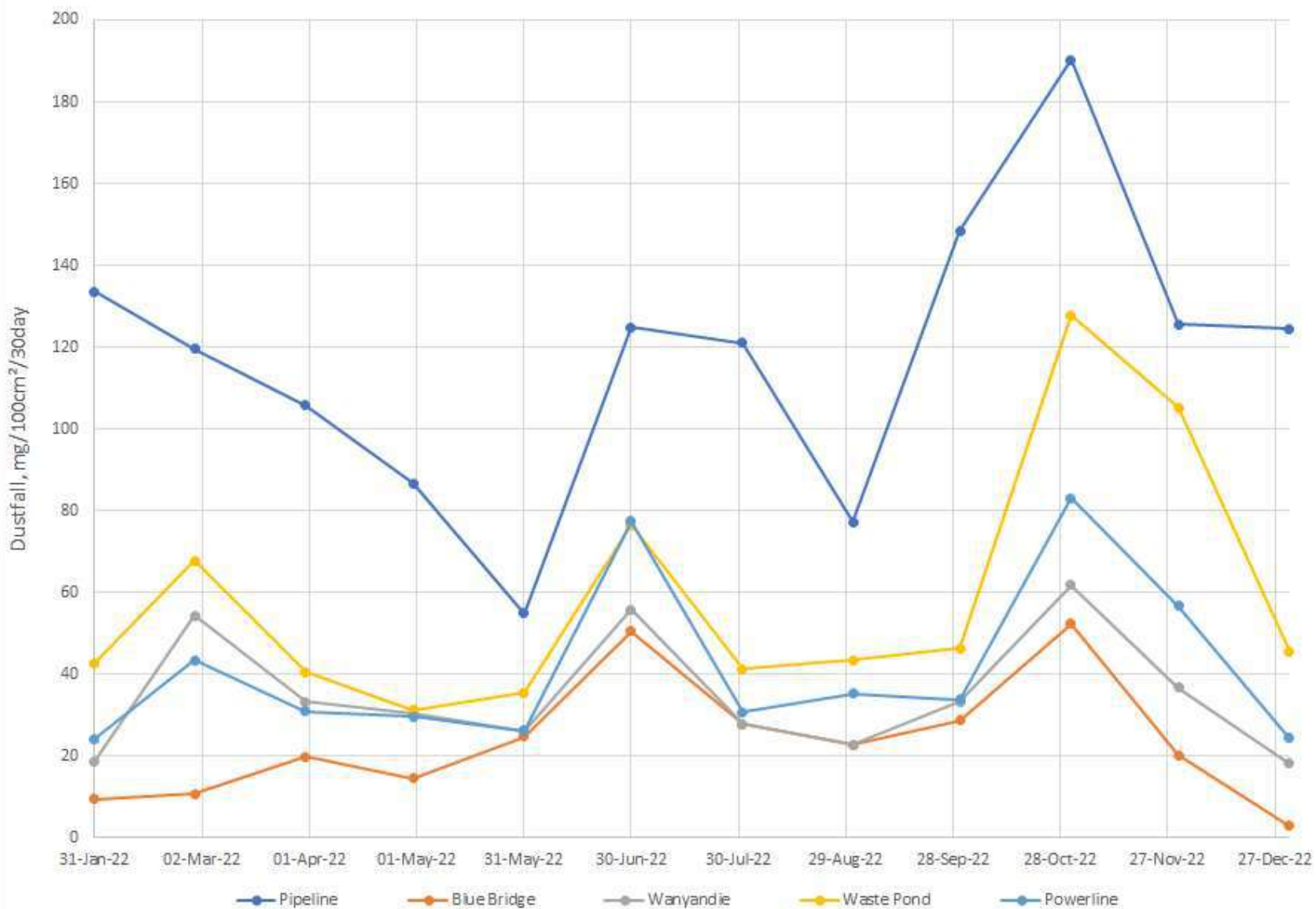
Wanyandie site compared to residential and recreation areas, all other sites compared to commercial and industrial areas

60 dustfall samples collected over 12 months at 5 sites in PAZA

- Minimum annual average was 25.1 mg/100cm²/30day collected at Milner Bridge
- Maximum annual average was 117.8 mg/100cm²/30day collected at Milner Pipeline
- Maximum overall monthly average was 190.3 mg/100cm²/30day collected in October 2022

There were four monthly events above the AAAQGs for dustfall, three based on the residential and recreational area and one based on the commercial and industrial area during 2022.

Annual Dustfall Summary



End of Report



Peace Airshed Zone Association

Ambient Annual Air Monitoring Report

2022 Annual