



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

May 2020

June 30, 2020

Alberta Environment and Parks

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

**Subject: Peace Airshed Zone Association (PAZA)
May 2020 Ambient Air Quality Monitoring Report**

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of May 2020.

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

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This report was prepared by Matrix Solutions Inc. and reviewed by Mandeep Dhaliwal.

PAZA has retained the services of WSP Canada Inc. to conduct continuous ambient monitoring and Matrix Solutions Inc. to provide data validation and reporting.

This report is submitted by PAZA on behalf of the industrial member companies to satisfy the requirements of the facility Operating Approvals listed in Table A

The monthly summary report includes the operational summaries and hourly continuous monitoring and monthly passive results

Continuous Monitoring: Seven (7) Stations including Henry Pirker (Grande Prairie), Evergreen Park, Smoky Heights, Beaverlodge, Valleyview, Donnelly and Wembley-Portable. Detailed Summaries are included in the report

Calibration and Data Submission:

Monthly report, hourly data and calibration reports for May 2020 were submitted to the ETS data system.

Table A. PAZA members with Facility Operating Approvals

Company	Facility	LSD	EPEA Approval No.
Advantage Oil & Gas Ltd.	Glacier	05-02-076-13-W6	262479-00-00
Alberta Power (2000) Ltd. (an ATCO company)	Sturgeon	SW-06-069-21-W5	10283-02-02
ATCO Power Canada	Poplar Hill	11-19-073-08-W6	67774-01-01
ATCO Power Canada	Valleyview	SW-06-069-21-W5	147709-01-01
AltaGas Ltd.	Pouce Coupe	03-03-081-13-W6	247673-00-00
	Ante Creek	02-26-068-25-W5	266694-00-00
	Gordondale	02-26-068-25-W5	287474-00-00
Apache Canada Ltd.	House Mountain	01-08-070-10-W5	10137-02-02
Birchcliff Energy Ltd.	Pouce Coupe	03-22-078-12-W6	252529-00-00
Canadian Natural Resources Limited	Bonanza	11-25-081-11-W6	00000029-01-00
	Progress/Gordondale	01-01-077-10-W6	00010036-02-00
	Gold Creek	13-26-067-05-W6	00010446-02-00
	Teepee Creek	SE-2-074-04-W6	00001635-02-00
	Sturgeon/Valleyview	02-02-069-22-W5	1633-02-00
Canfor Forest Products	Grande Prairie	SW-23-071-06-W6	152645-01-00
Conocophillips Canada Energy Partnership	Wembley	06-19-073-08-W6	00000212-01-00
Devon Canada	NW Belloy (Dunvegan)	16-36-079-03-W6	00009810-02-00
	Eaglesham (South)	02-14-077-25-W5	00047669-01-00
	North Normanville	03-36-079-23-W5	00047455-01-00
	West Culp	05-34-078-25-W6	00136284-00-00
	Cecil	08-15-084-08-W6	00010032-02-00
Encana Corporation	Sexsmith	04-08-075-07-W6	00010002-01-00
Enerplus Resources	Pouce Coupe	SW-06-069-21-W5	1464-02-03
Exshaw Oil Corporation	Spirit River	03-10-077-07-W6	344521-00-00
Grande Prairie Generation Inc.	Northern Prairie Power Project	04-19-073-08-W6	00238762-00-00
Inception Exploration Ltd.	Gold Creek	03-26-069-05-W6	00335317-00-02
Long Run Exploration	Eaglesham	01-25-076-01-W6	00241532-00-00
	Kakut	14-12-075-03-W6	00248469-00-00
	Donnelly	06-01-077-21-W5	00000087-02-00
	Puskwaskau	03-26-074-01-W6	00017524-01-00
Longview Oil Corp.	Sunset House	06-22-070-20-W5	138884-01-00
Penn West Petroleum Ltd.	Tangent	13-29-080-23-W5	00001746-02-00
	Pouce Coupe	16-07-078-11-W6	00000614-01-00
Petrus Resources	Rycroft	08-25-077-06-W6	11351-02-00
	Spirit River	08-34-077-06-W6	11096-02-00
NorthRiver Midstream Corporation	Fourth Creek	16-11-082-09-W6	00000263-01-00
	Gordondale	11-26-079-09-W6	00011495-01-01
	Pouce Coupe/Bonanza	3-23-080-13-W6	00070203-01-01
Suncor Energy Inc.	Progress	07-22-078-09-W6	00011428-02-00
TAQA North Ltd.	Valhalla	13-21-076-09-W6	00017620-01-00
Veresen Energy	Hythe Brainard	11-18-074-12-W6	00010910-02-00
Weyerhaeuser Canada	Grande Prairie Pulp and Wood Plant	01-14-070-05-W6	00000113-02-00

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

There were two exceedances of the AAAQG for PM_{2.5} at Henry Pirker Station in May 2020.

There was one exceedance of the AAAQG for PM_{2.5} at Smoky Heights Station in May 2020

Operational times less than 90 percent:

There were no **operational times** less than 90% in May 2020.

There were no **valid times** less than 75% in May 2020.

Air Incidents

None were reported to PAZA

Deviations from Authorized Monitoring Methods

Trees nearby to Valleyview air monitoring station exceed the height allowed under section 2.3 of the siting criteria in Chapter 3 of the AMD. This variance was authorized in writing by the director on February 4, 2019.

Passive Monitoring

33 Stations throughout the PAZA zone

The passive sample analyses were performed by Bureau Veritas Laboratories (formally Maxxam Analytics Inc.)

- There were six duplicate sites sampled in the month of May with RPD all less than 23% except one NO₂ duplicate at 64% (Bay Tree, noted issue at collection):
 - For sulphur dioxide duplicates at Bay Tree, Boone Creek, and McLennan stations
 - For ozone duplicate at Bay Tree station
 - For nitrogen dioxide duplicates at Bay Tree, Gold Creek, and Jean Cote stations
 - For hydrogen sulphide duplicate at Girouxville 4 station
- It was noted that at Bay Tree there was road work to expand the width of the existing road, and the fence was taken down where the sample head was located (three days prior to collection). Station was relocated temporarily further south, with concern due to construction equipment. In addition, the sample at Girouxville 3 was damaged by animals (bird nesting).
- There were no exceedances of the AAAQOs for all monitored parameters at any of the passive monitoring stations during this month.

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

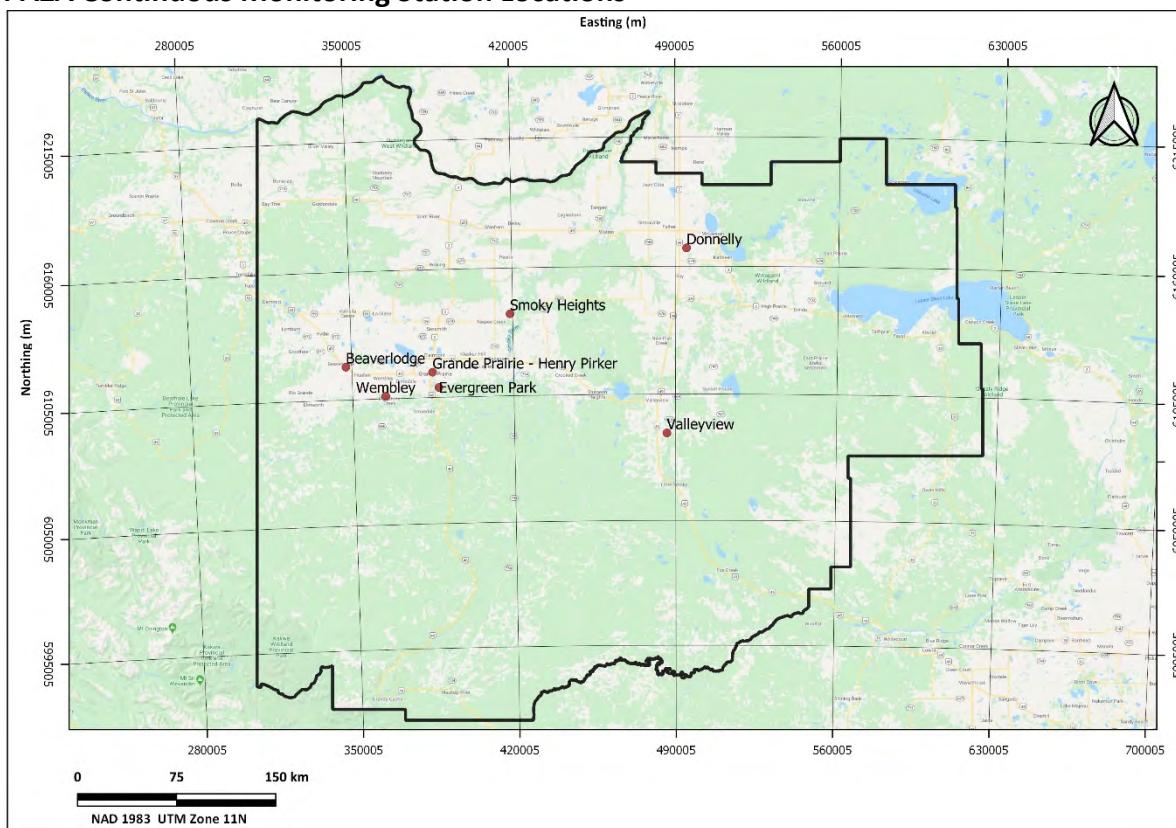


Mandeep Dhaliwal, B.Sc., P.Chem.
Program Manager

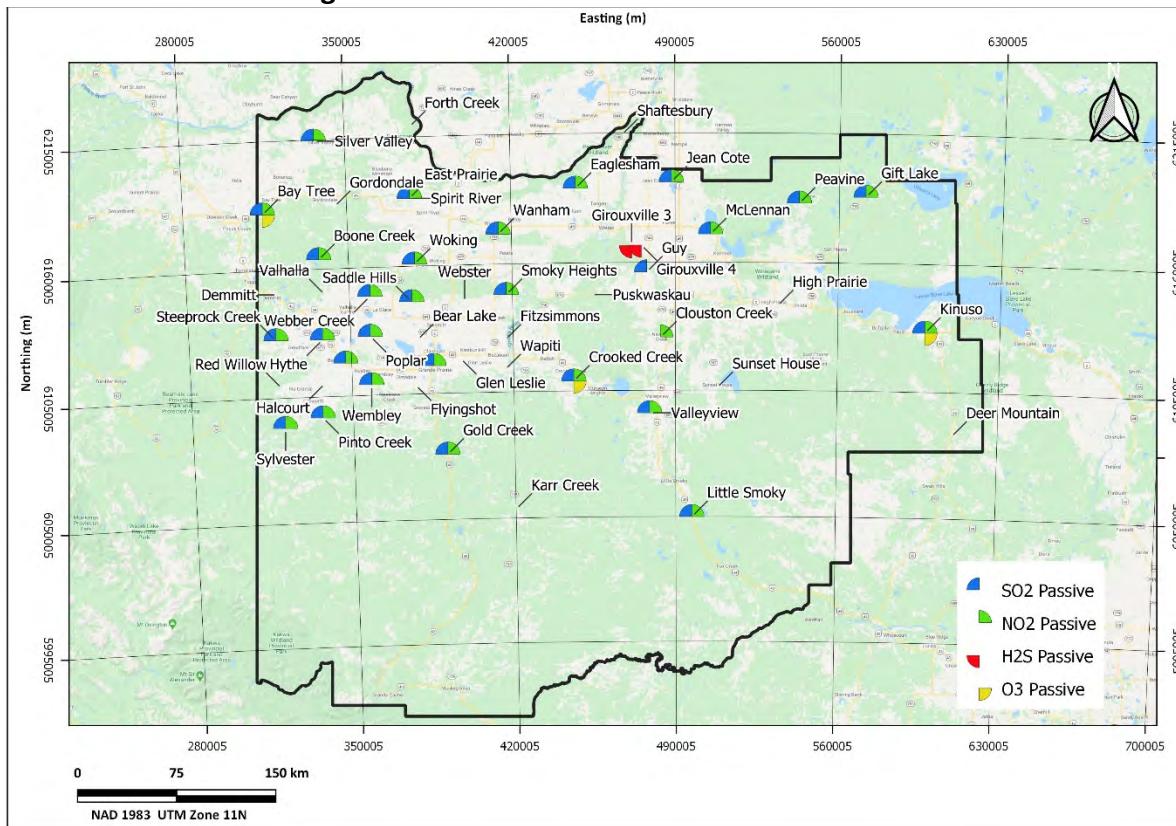
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PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 May Monthly Station Summaries

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

1.1 Beavertown Air Monitoring Station

PAZA - May 2020 Beavertown Station Report

Parameter	May				1-hour				24-hour				Exceedance				Calibration Date										
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d													
NO (ppb)	0.2	0.0	94.5%	94.5%	7.2	-	May-06 08:00	0.7	-	May-05	-	-	-	-	-	May 06, 2020											
NO ₂ (ppb)	1.6	0.2	94.5%	94.5%	12.9	159	May-06 08:00	2.8	-	May-05	0	-	-	-	-	May 06, 2020											
NO _x (ppb)	1.8	0.3	94.5%	94.5%	20.3	-	May-06 08:00	3.6	-	May-05	-	-	-	-	-	May 06, 2020											
O ₃ (ppb)	33.6	9.1	91.7%	91.7%	54.7	76	May-13 14:00	40.9	-	May-12	0	-	-	-	-	May 19, 2020											
PM _{2.5} (µg/m ³)	3.8	0.6	99.7%	99.7%	43.6	80	May-31 06:00	11.0	29	May-31	0	-	0	-	-	May 12, 2020											
SO ₂ (ppb)	0.2	0.0	95.2%	95.2%	3.4	172	May-08 22:00	0.8	48	May-17	0	-	0	0	-	May 07, 2020											
	Average	Minimum	Valid	Operational	Maximum																						
Temp (°C)	10.1	0.3	100.0%	100.0%	22.1																						
RH (%)	59.4	16.3	100.0%	100.0%	100.0																						
WS (km/hr)	13.5	0.1	100.0%	100.0%	43.2																						
WD (deg)	3	0.7	100.0%	100.0%	359.3																						

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - May 2020 Henry Pirker Station Report

Parameter	May				Operational	1-hour			8-hour / 24-hour			Exceedance				Calibration Date											
	Average	Minimum	Valid	Max		Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d													
NO (ppb)	0.5	0.0	95.2%	100.0%	16.4	-	May-06 07:00	1.7	-	May-05	-	-	-	-	-	May 01, 2020											
NO ₂ (ppb)	3.1	0.4	95.2%	100.0%	20.6	159	May-05 00:00	8.2	-	May-05	0	-	-	-	-	May 01, 2020											
NO _x (ppb)	3.7	0.3	95.2%	100.0%	35.1	-	May-06 07:00	10.1	-	May-05	-	-	-	-	-	May 01, 2020											
O ₃ (ppb)	31.2	1.4	95.2%	99.7%	56.0	76	May-05 18:00	39.7	-	May-02	0	-	-	-	-	May 01, 2020											
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	4.0	0.0	99.6%	100.0%	158.4	80	May-30 20:00	22.0	29	May-30	2	-	0	-	-	May 11, 2020											
SO ₂ (ppb)	0.0	0.0	95.3%	100.0%	3.2	172	May-18 19:00	0.5	48	May-18	0	-	0	0	-	May 01, 2020											
H ₂ S (ppb)	0.2	0.0	95.3%	100.0%	1.2	10	May-20 06:00	0.4	3	May-05	0	-	0	-	-	May 11, 2020											
CH ₄ (ppm)	1.6	1.5	93.7%	99.2%	2.0	-	May-05 06:00	1.7	-	May-05	-	-	-	-	-	May 26, 2020											
THC (ppm)	1.6	1.5	93.7%	99.2%	2.0	-	May-05 06:00	1.7	-	May-05	-	-	-	-	-	May 26, 2020											
NMHC (ppm)	0.0	0.0	93.7%	99.2%	0.0	-	May-11 09:00	0.0	-	May-11	-	-	-	-	-	May 26, 2020											
CO (ppm)	0.2	0.1	95.2%	100.0%	0.4	13	May-05 00:00	0.2	5	May-05	0	0	-	-	-	May 07, 2020											
	Average	Minimum	Valid	Operational	Maximum	<div style="background-color: #c0e0c0; padding: 5px; margin-bottom: 10px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div> <div style="display: flex; justify-content: space-between;"> Average Wind Direction 309 NW </div>																					
Update Summary:																											
Parameter	Make	Model	Equipment summary																								
NO/NO ₂ /NO _x	Thermo	42i	No Operational issues noted during the month																								
O ₃	TECO	49i	No Operational issues noted during the month, a few hours were removed due to calibrations at site affecting readings																								
PM _{2.5}	Sharp	5030	No Operational issues noted during the month, aside from exceedences of higher readings																								
SO ₂	TEI	43i-TLE	No Operational Issues noted during the month, a short period <15mins was removed due to invalid data																								
H ₂ S	TEI	450i	No Operational issues noted during the month																								
THC/CH ₄ /NMHC	TEI	55i	May 7 - Replaced hydrogen & nitrogen cylinders, May 26 THC daily span tank replaced, 6hrs invalidated due to drift																								
CO	TEI	48i-TLE	No Operational issues noted during the month																								
Met Equip	MetOne	50.5	No Operational issues noted during the month																								

1.4 Smoky Heights Air Monitoring Station

PAZA - May 2020 Smoky Heights Station Report

Parameter	May				Operational	1-hour			24-hour			Exceedance				Calibration Date											
	Average	Minimum	Valid	Max		Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d													
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	3.8	0.0	98.9%	98.9%	142.5	80	May-14 22:00	10.8	29	May-31	1	-	0	-	-	Mar 20, 2020											
SO ₂ (ppb)	0.1	0.0	94.8%	94.8%	2.5	172	May-23 07:00	0.3	48	May-23	0	-	0	0	-	Mar 20, 2020											
TRS (ppb)	0.2	0.0	91.3%	91.3%	1.3	-	May-24 04:00	0.4	-	May-14	-	-	-	-	-	Mar 20, 2020											
	Average	Minimum	Valid	Operational	Maximum	<div style="background-color: #c0e0c0; padding: 5px; margin-bottom: 10px;"> Note: Valid hours must be greater than 75% Operational hours must be greater than 90% </div> <div style="display: flex; justify-content: space-between;"> Average Wind Direction 309 WNW </div>																					
Update Summary:																											
Parameter	Make	Model	Equipment summary																								
PM _{2.5}	Sharp	5030	May 21 data removed due to missing, and power failure on May 28																								
SO ₂	TECO	43i	May 21 data removed due to missing, and power failure on May 28, manual span check on May 29 flagged not valid																								
TRS	TEI	43i APSAA	Manual span check May 11+29 and span on May 21 flagged, several hours removed from power failure May 28																								
Met Equip	MetOne	50.5	May 21 data removed due to missing, and power failure on May 28																								

1.5 Valleyview Air Monitoring Station

PAZA - May 2020 Valleyview Station Report

Parameter	May				Operational	1-hour			Max	24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Max		Objective	Max Day and Time	Max		Objective	Max Day	1hr	8hr	24hr	30d		
SO ₂ (ppb)	0.1	0.0	95.3%	100.0%	2.6	172	May-02 18:00	0.4	48	May-30	0	-	0	0	0	May 21, 2020	
H ₂ S (ppb)	0.1	0.0	95.3%	100.0%	0.8	10	May-28 04:00	0.1	3	May-17	0	-	0	-	0	May 21, 2020	
Average	Minimum	Valid	Operational	Maximum													
Temp (°C)	10.8	-3.3	100.0%	100.0%	27.0												
RH (%)	65.1	16.4	100.0%	100.0%	100.2												
WS (km/hr)	4.6	0.1	100.0%	100.0%	16.9												
WD (deg)	321	0.2	100.0%	100.0%	359.4												
Note: Valid hours must be greater than 75% Operational hours must be greater than 90%																	
Average Wind Direction				321 NW													

Update Summary:

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

1.6 Donnelly Air Monitoring Station

PAZA - May 2020 Donnelly Station Report

Parameter	May				Operational	1-hour			Max	24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Max		Objective	Max Day and Time	Max		Objective	Max Day	1hr	8hr	24hr	30d		
SO ₂ (ppb)	0.1	0.0	91.1%	95.6%	0.4	172	May-12 09:00	0.2	48	May-26	0	-	0	0	0	May 05, 2020	
H ₂ S (ppb)	0.3	0.0	95.0%	99.7%	2.3	10	May-08 02:00	0.4	3	May-08	0	-	0	-	0	May 04, 2020	
Average	Minimum	Valid	Operational	Maximum													
Temp (°C)	10.4	-1.9	99.7%	99.7%	24.5												
WS (km/hr)	10.8	0.8	99.7%	99.7%	35.5												
WD (deg)	281	0.1	99.7%	99.7%	359.8												
Note: Valid hours must be greater than 75% Operational hours must be greater than 90%																	
Average Wind Direction				281 NW													

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	Teco	43i	Internal pump failed and replaced, data removed from last good span to cal performed on May 5
H ₂ S	Thermo	45C	No Operational issues noted during the month, data lost during calibration of SO ₂ resulted in downtime
Met Equip	RMYoung	5103	No Operational issues noted during the month, data lost during calibration of SO ₂ resulted in downtime

1.7 Wembley Air Monitoring Station

PAZA - May 2020 Wembley Station Report

Parameter	May				Operational	1-hour			Max	24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Max		Objective	Max Day and Time	Max		Objective	Max Day	1hr	8hr	24hr	30d		
NO (ppb)	0.2	0.0	94.2%	99.2%	9.8	-	May-20 08:00	0.9	-	May-20	-	-	-	-	-	May 13, 2020	
NO ₂ (ppb)	1.4	0.1	94.2%	99.2%	7.2	159	May-05 10:00	2.6	-	May-29	0	-	-	-	-	May 13, 2020	
NO _x (ppb)	1.6	0.0	94.2%	99.2%	16.6	-	May-20 08:00	3.2	-	May-05	-	-	-	-	-	May 13, 2020	
O ₃ (ppb)	32.0	3.8	94.9%	99.6%	58.5	76	May-05 18:00	39.5	-	May-06	0	-	-	-	-	May 13, 2020	
PM _{2.5} (µg/m ³)	1.8	0.0	99.5%	99.9%	13.7	80	May-31 05:00	5.7	29	May-30	0	-	0	-	0	May 29, 2020	
SO ₂ (ppb)	0.2	0.0	95.0%	99.7%	6.4	172	May-14 15:00	1.0	48	May-14	0	-	0	0	0	May 12, 2020	
TRS (ppb)	0.2	0.0	94.9%	99.7%	1.1	-	May-05 02:00	0.4	-	May-15	-	-	-	-	-	May 29, 2020	
CH ₄ (ppm)	2.1	1.9	84.3%	91.1%	2.4	-	May-06 07:00	2.1	-	May-28	-	-	-	-	-	May 14, 2020	
THC (ppm)	2.1	1.9	84.3%	91.1%	2.4	-	May-06 07:00	2.1	-	May-28	-	-	-	-	-	May 14, 2020	
NMHC (ppm)	0.0	0.0	84.3%	91.1%	0.0	-	May-29 06:00	0.0	-	May-29	-	-	-	-	-	May 14, 2020	
Average	Minimum	Valid	Operational	Maximum													
Temp (°C)	10.2	-2.4	100.0%	100.0%	23.8												
WS (km/hr)	10.1	0.5	100.0%	100.0%	28.7												
WD (deg)	347	3.2	100.0%	100.0%	359.5												
Note: Valid hours must be greater than 75% Operational hours must be greater than 90%																	
Average Wind Direction				347 NW													

Update Summary:

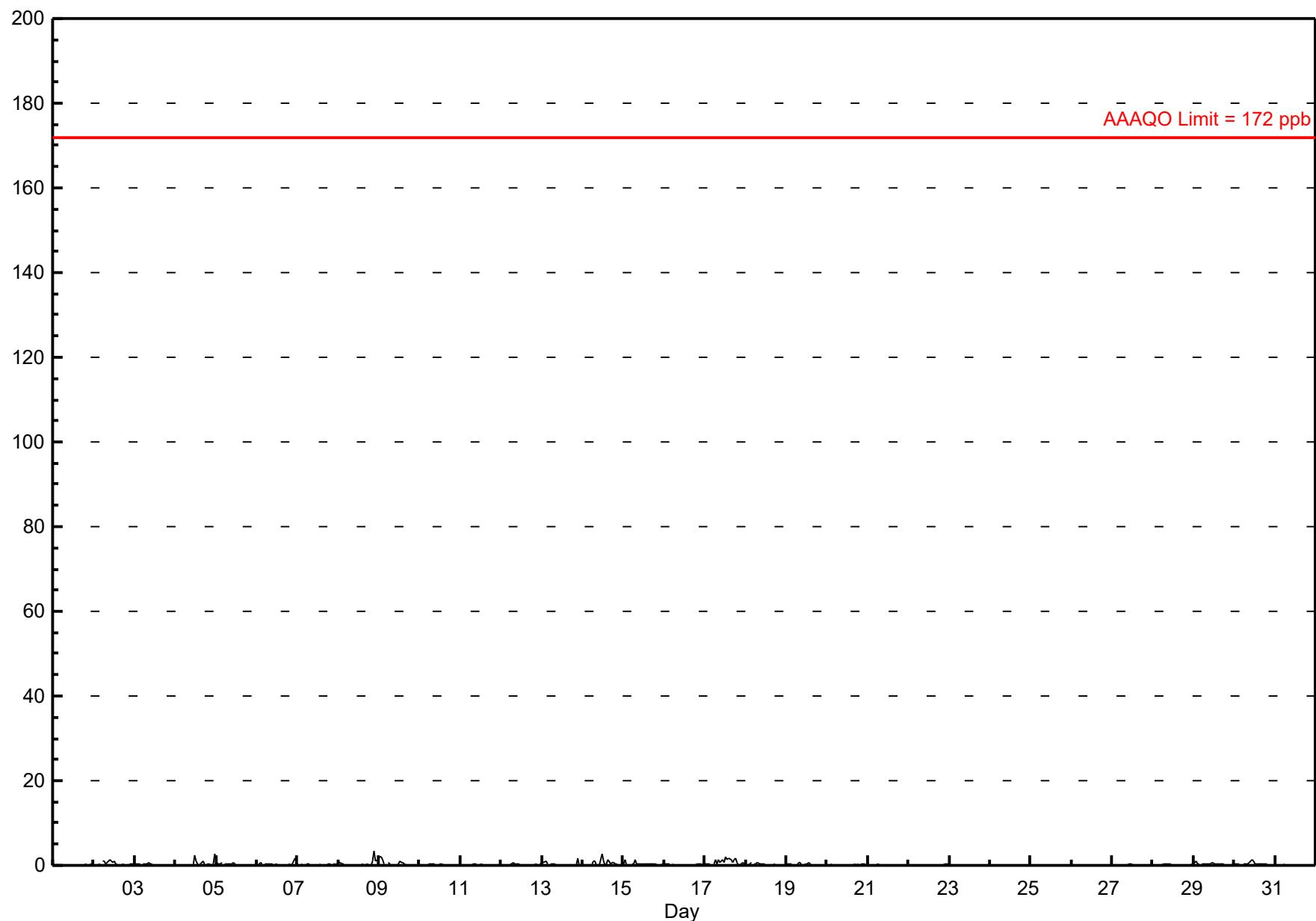
Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42i	Calibration attempted May 12, was not successful - flagged as maintenance
O ₃	TEI	49i	No Operational issues noted during the month, periods on May 12-13 had manual span check and manifold cleaning
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted during the month, hour removed due to negative drift
SO ₂	TEI	43i	No Operational issues noted during the month, May 13 data was flagged maintenance due to manifold cleaning
TRS	TEI	43i	No Operational issues noted during the month, May 13 data was flagged maintenance due to manifold cleaning
THC/CH ₄ /NMHC	TEI	55i-A3PHAA	Removal cal May 1 performed for maintenance, May 4 install cal, data removed between, zero air generator replaced May 13 data was flagged maintenance due to manifold cleaning
Met Equip	MetOne	50.5	No Operational issues noted during the month

2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

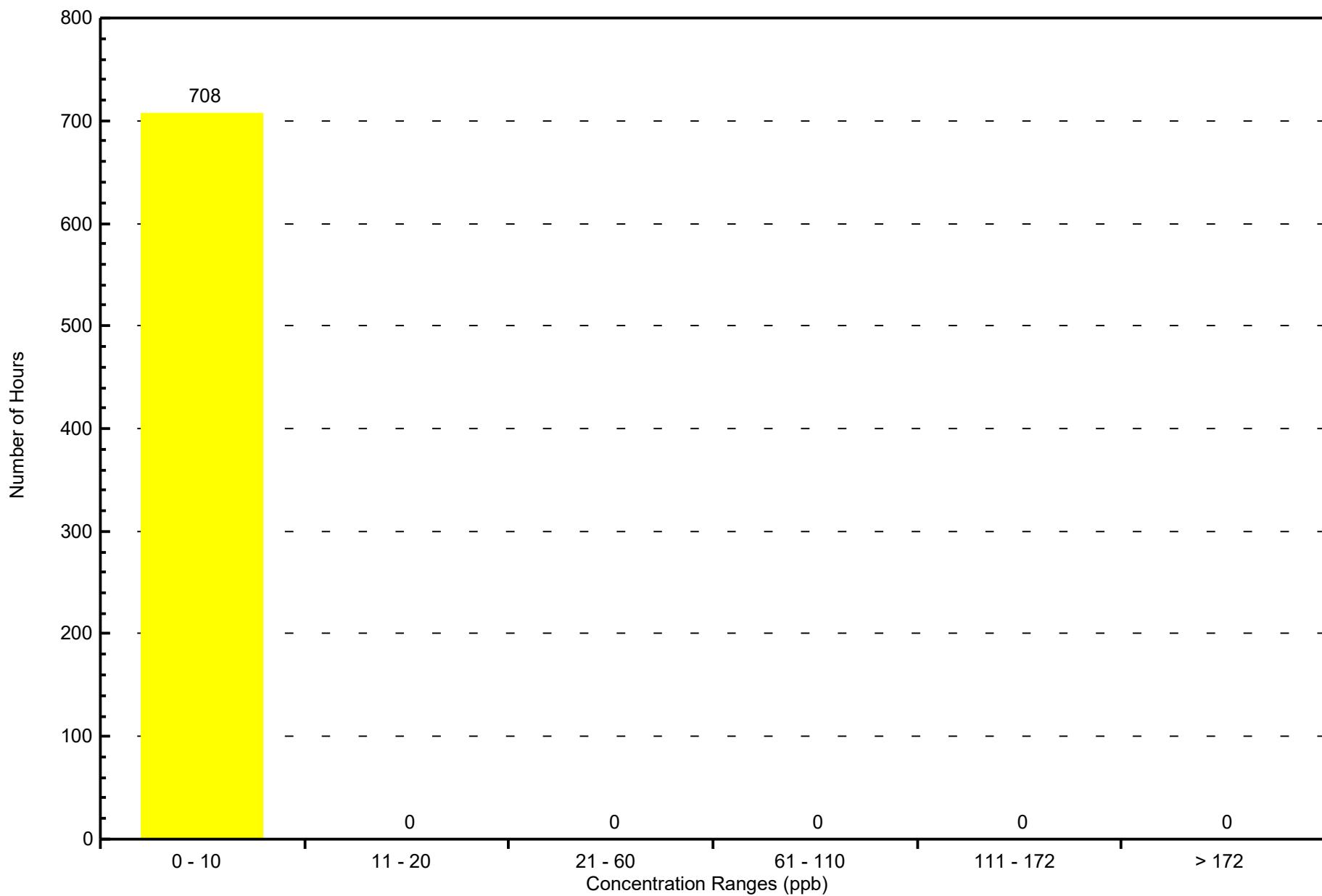
Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Beaverlodge - May 2020



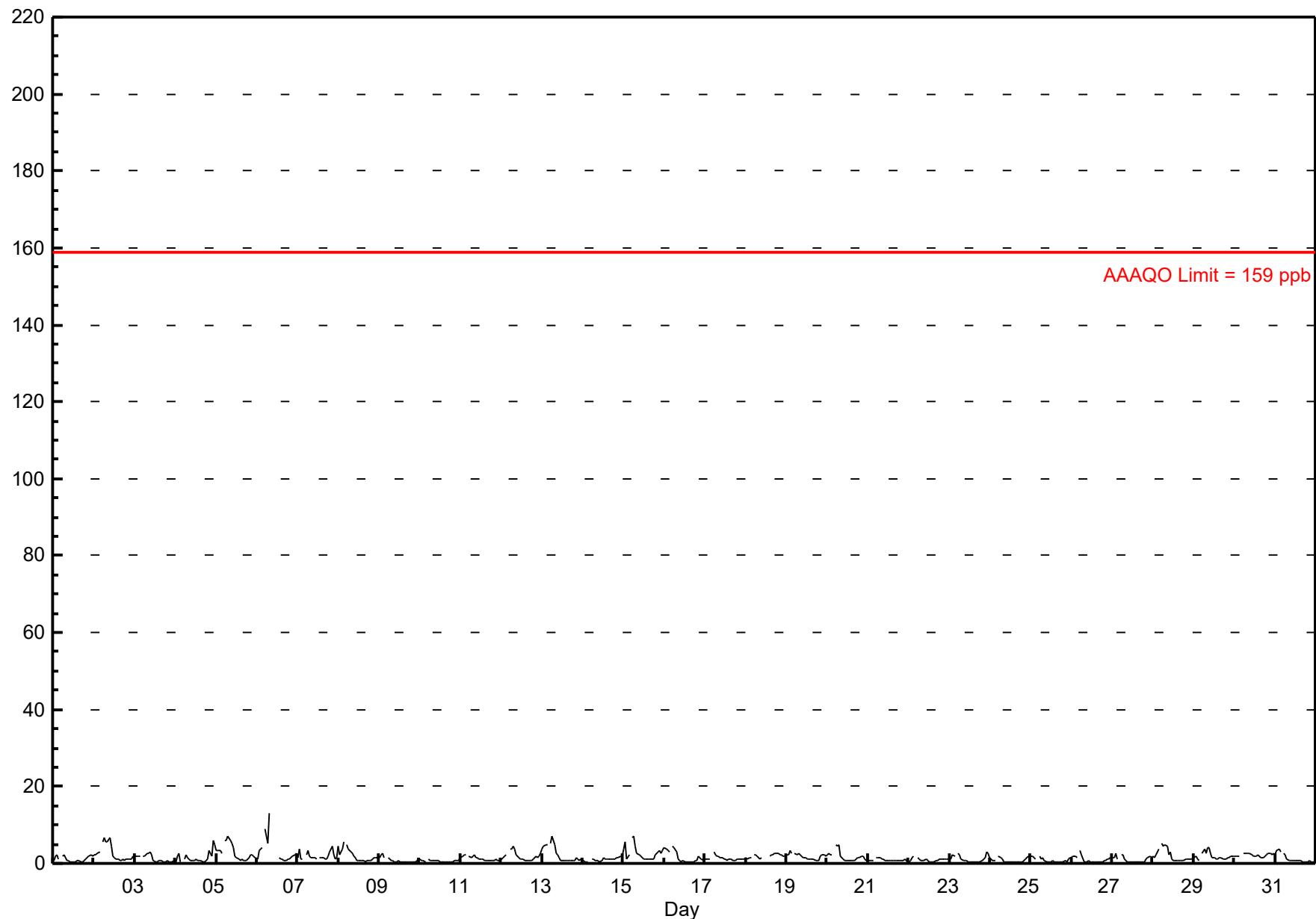
Histogram of Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Beaverlodge - May 2020



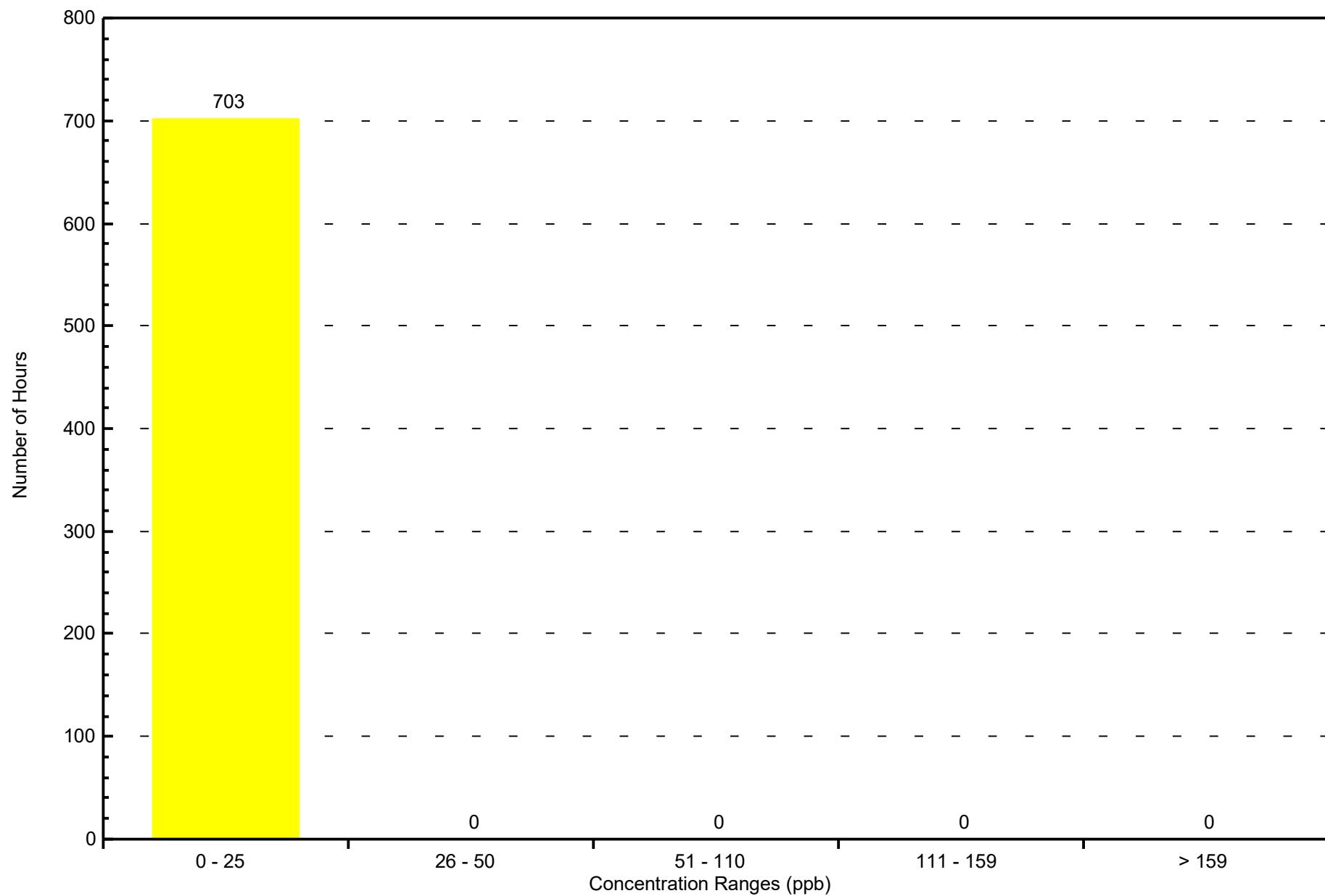
Hourly Averages

**Nitrogen Dioxide (NO_2) - ppb
Beaverlodge - May 2020**



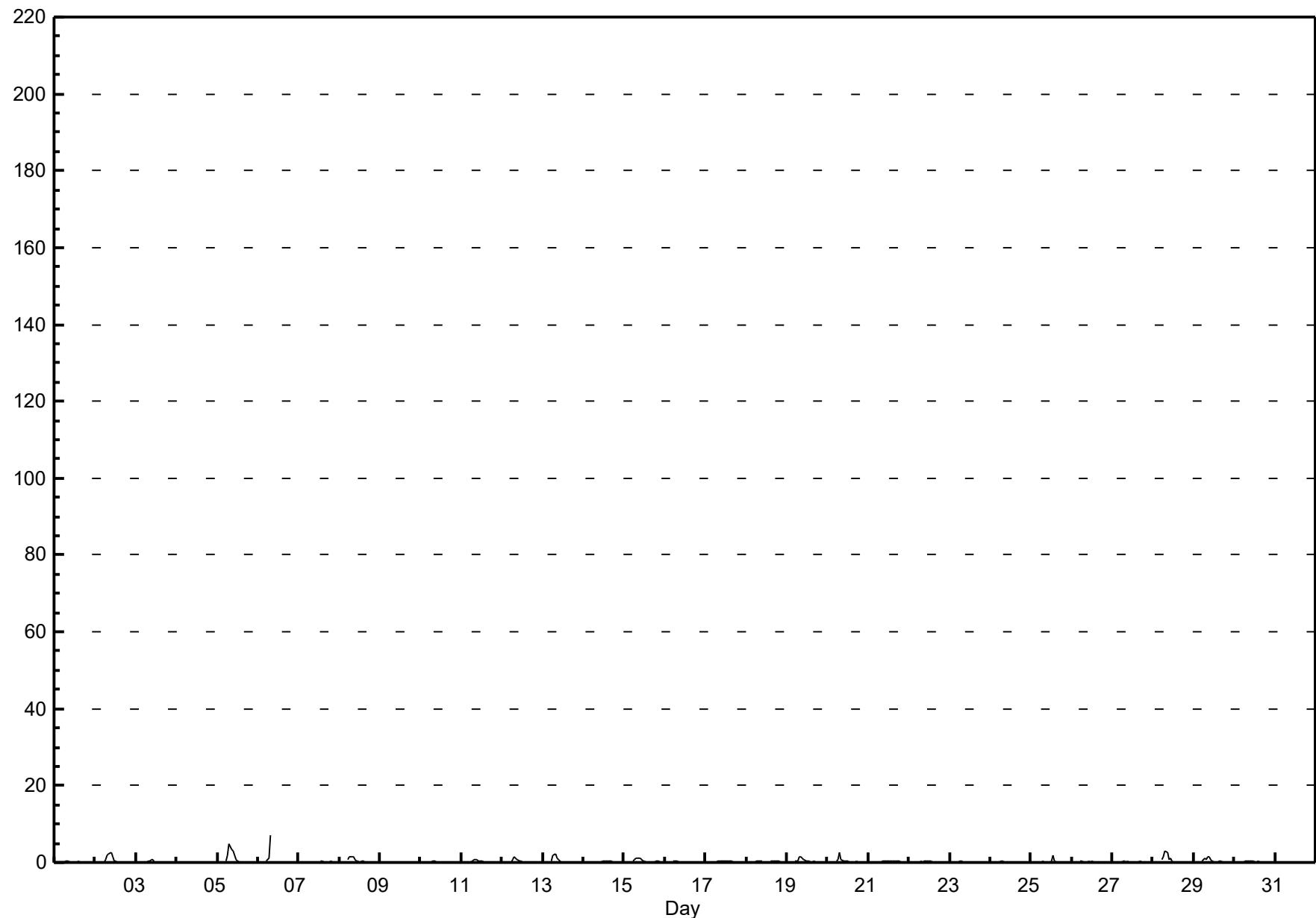
Histogram of Hourly Averages

Nitrogen Dioxide (NO_2) - ppb
Beaverlodge - May 2020



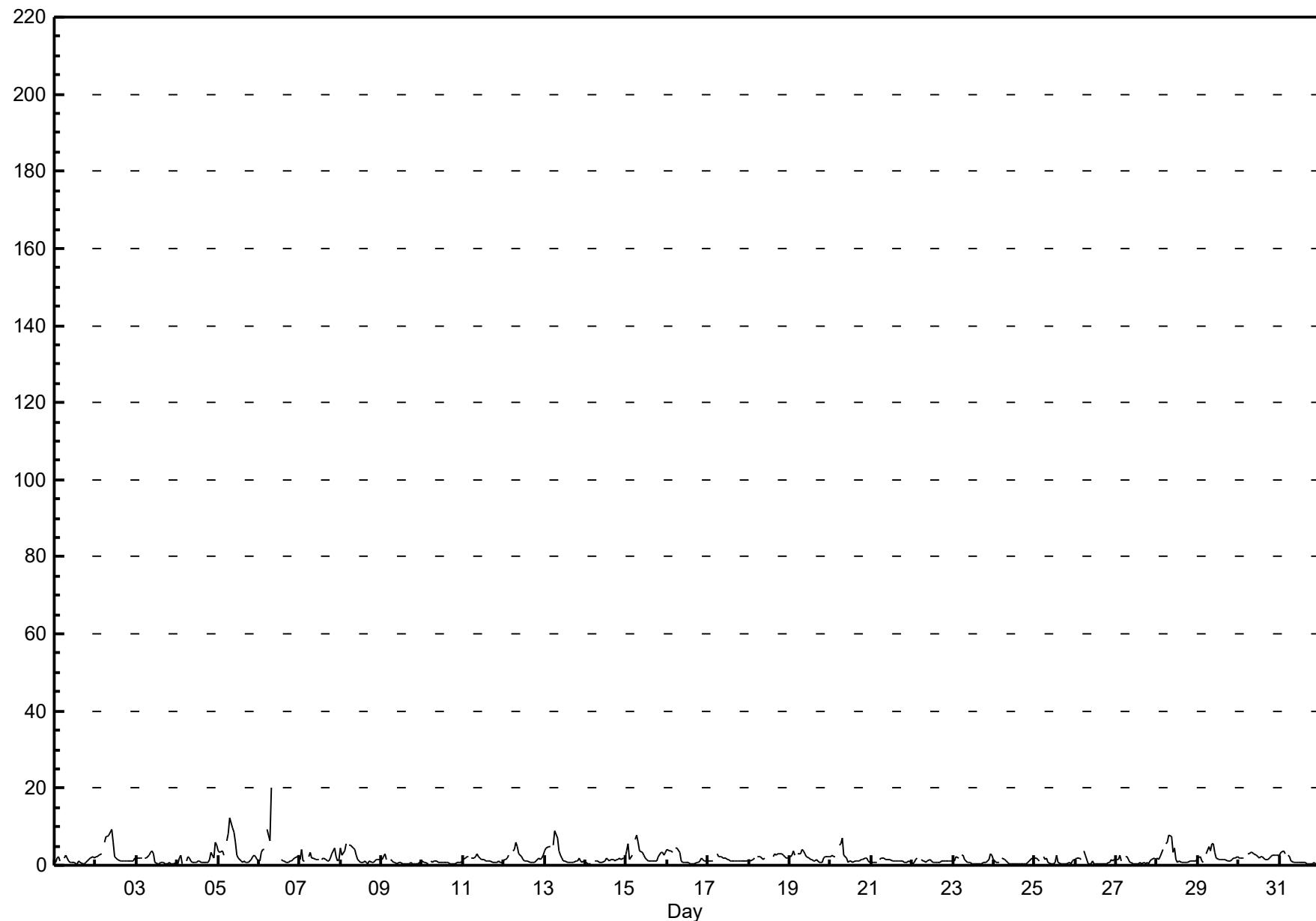
Hourly Averages

Nitrogen Oxide (NO) - ppb
Beaverlodge - May 2020



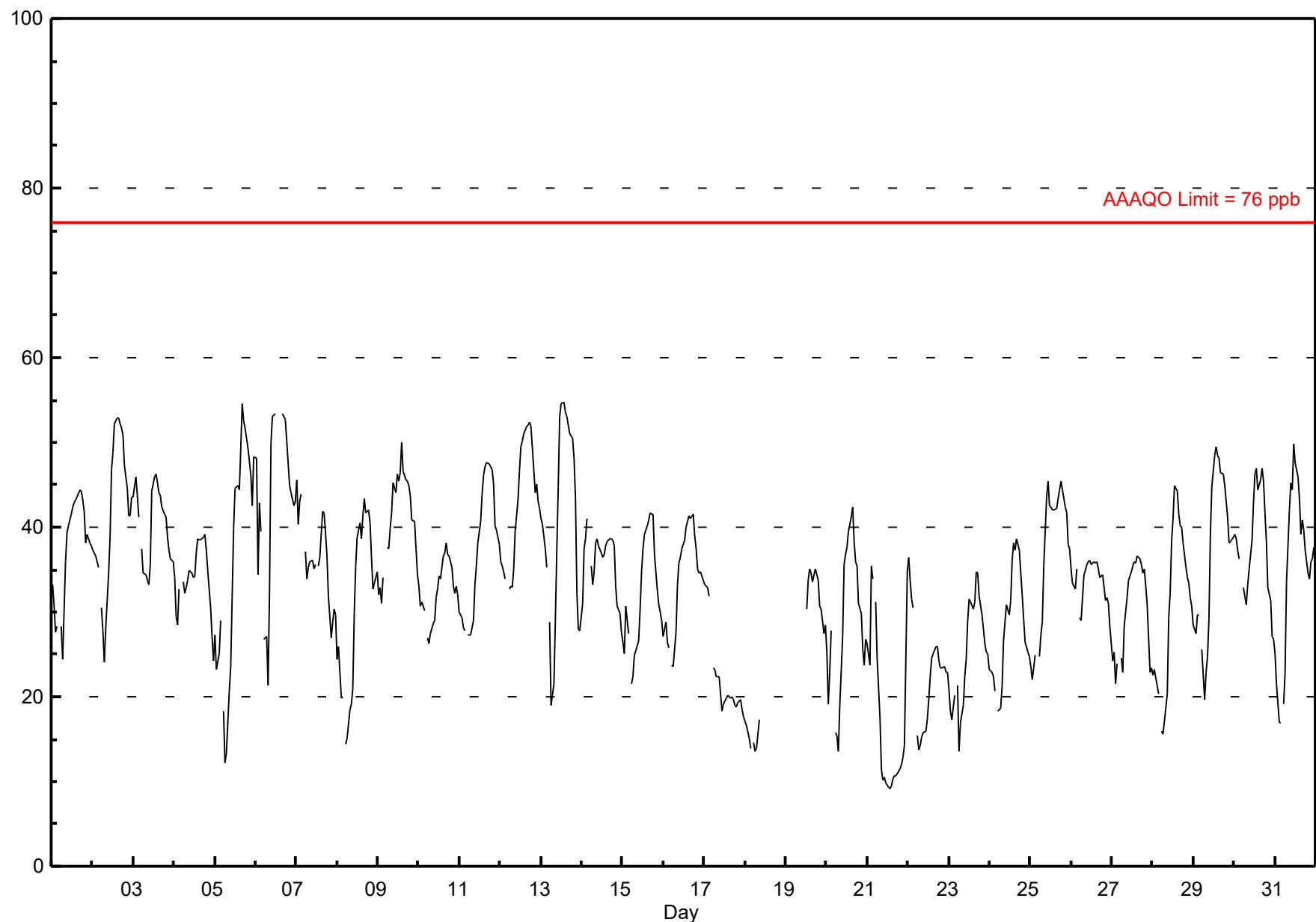
Hourly Averages

**Oxides of Nitrogen (NO_X) - ppb
Beaverlodge - May 2020**



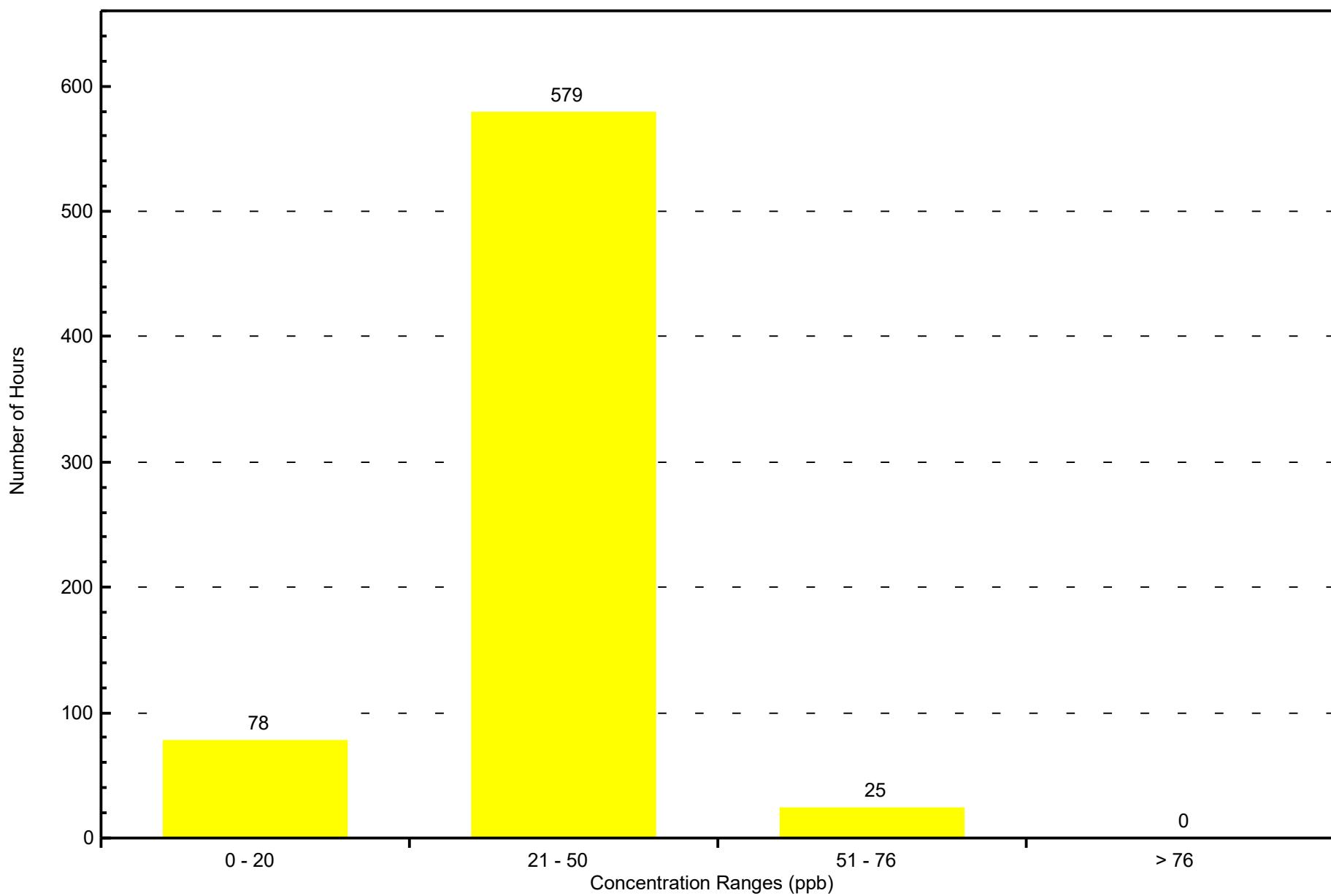
Hourly Averages

Ozone (O_3) - ppb
Beaverlodge - May 2020



Histogram of Hourly Averages

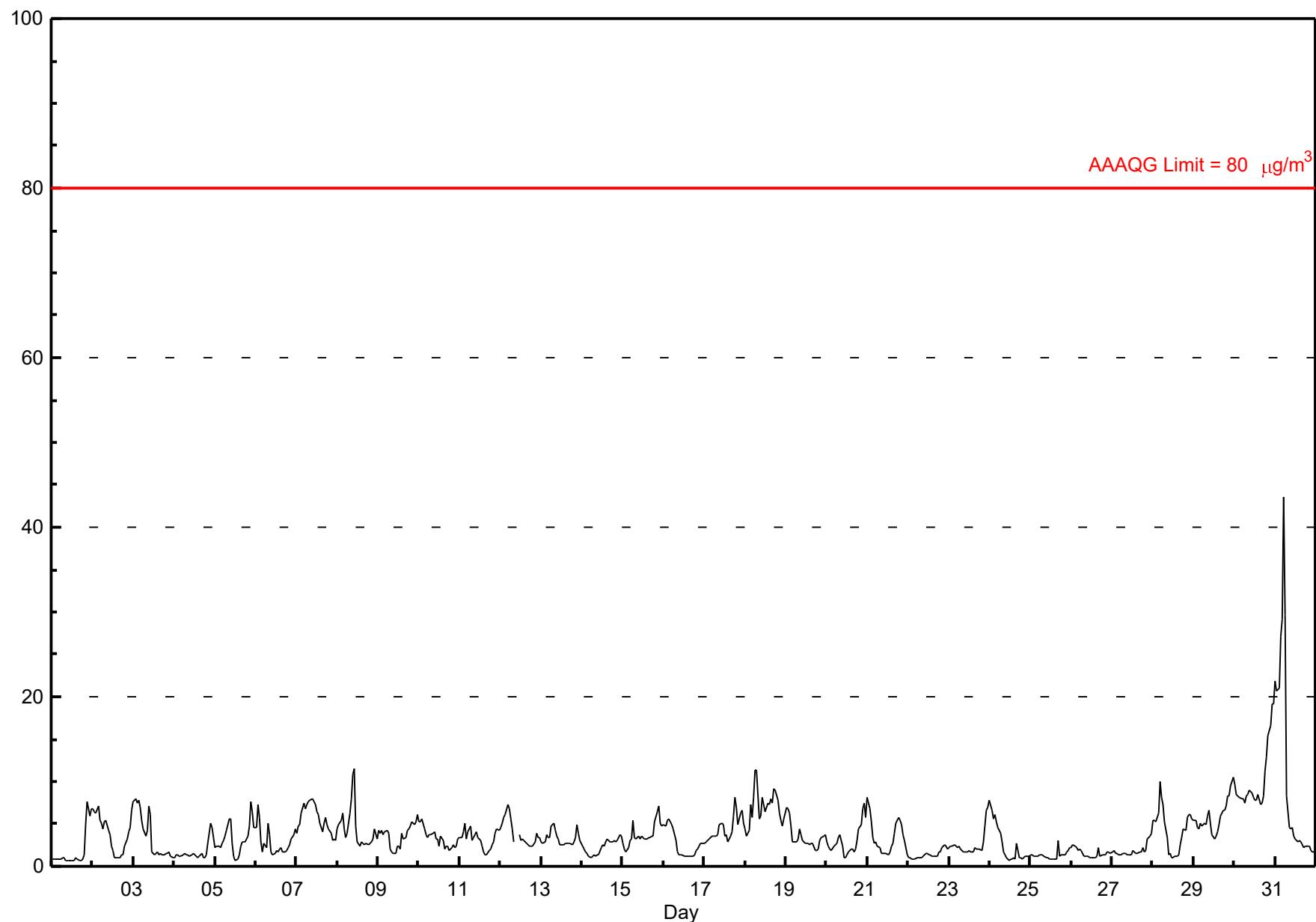
Ozone (O_3) - ppb
Beaverlodge - May 2020



Hourly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$

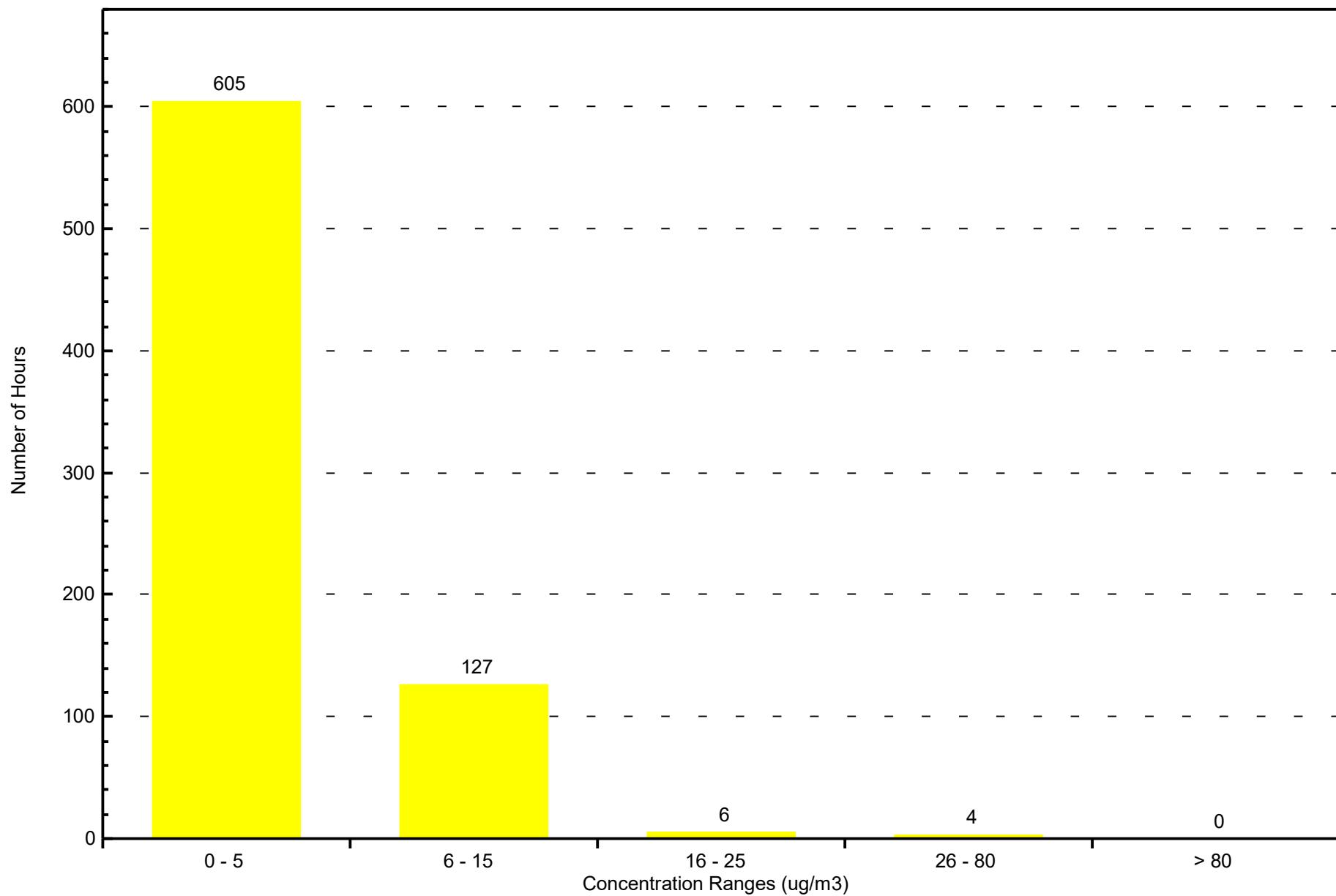
Beaverlodge - May 2020



Histogram of Hourly Averages

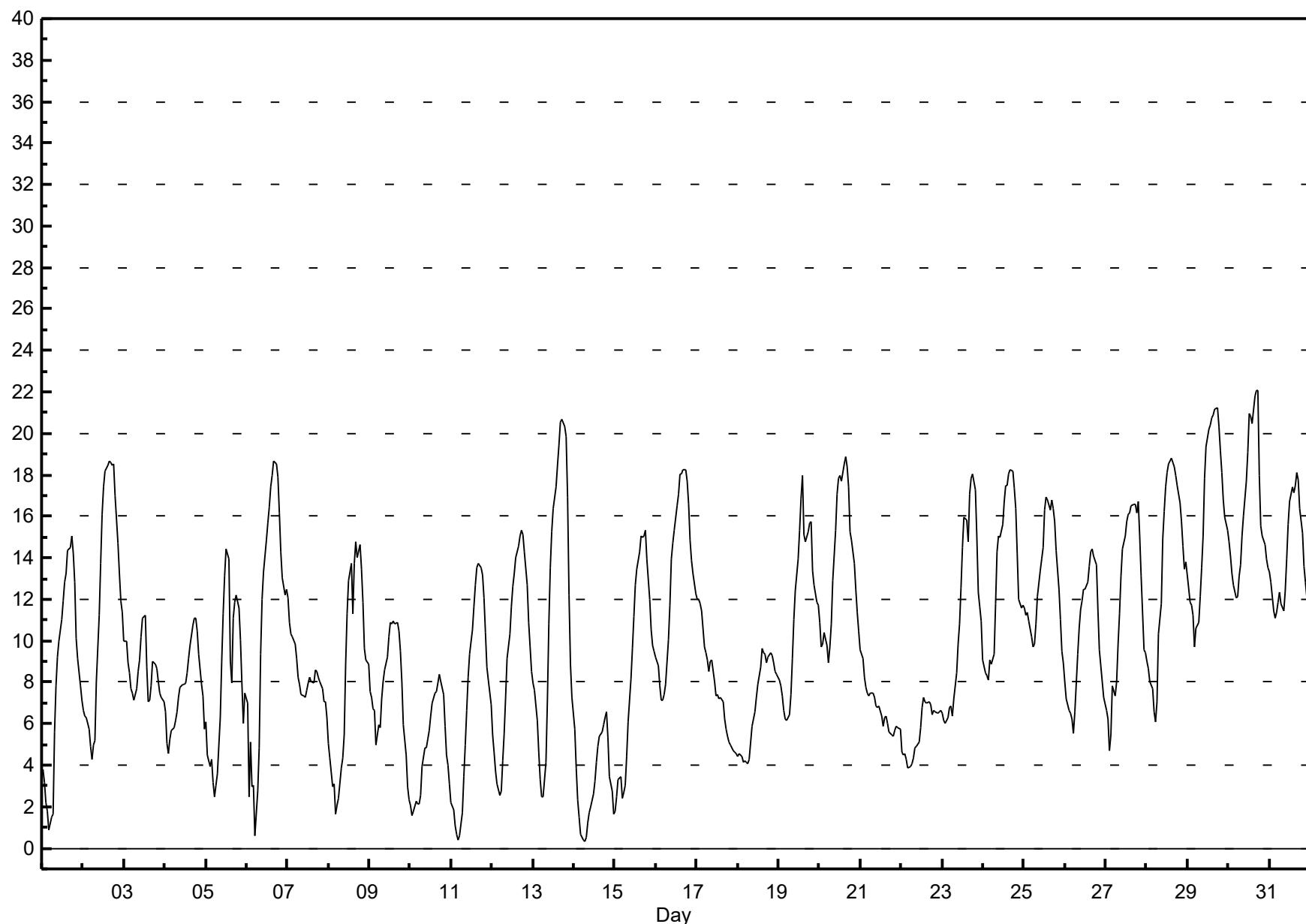
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$

Beaverlodge - May 2020



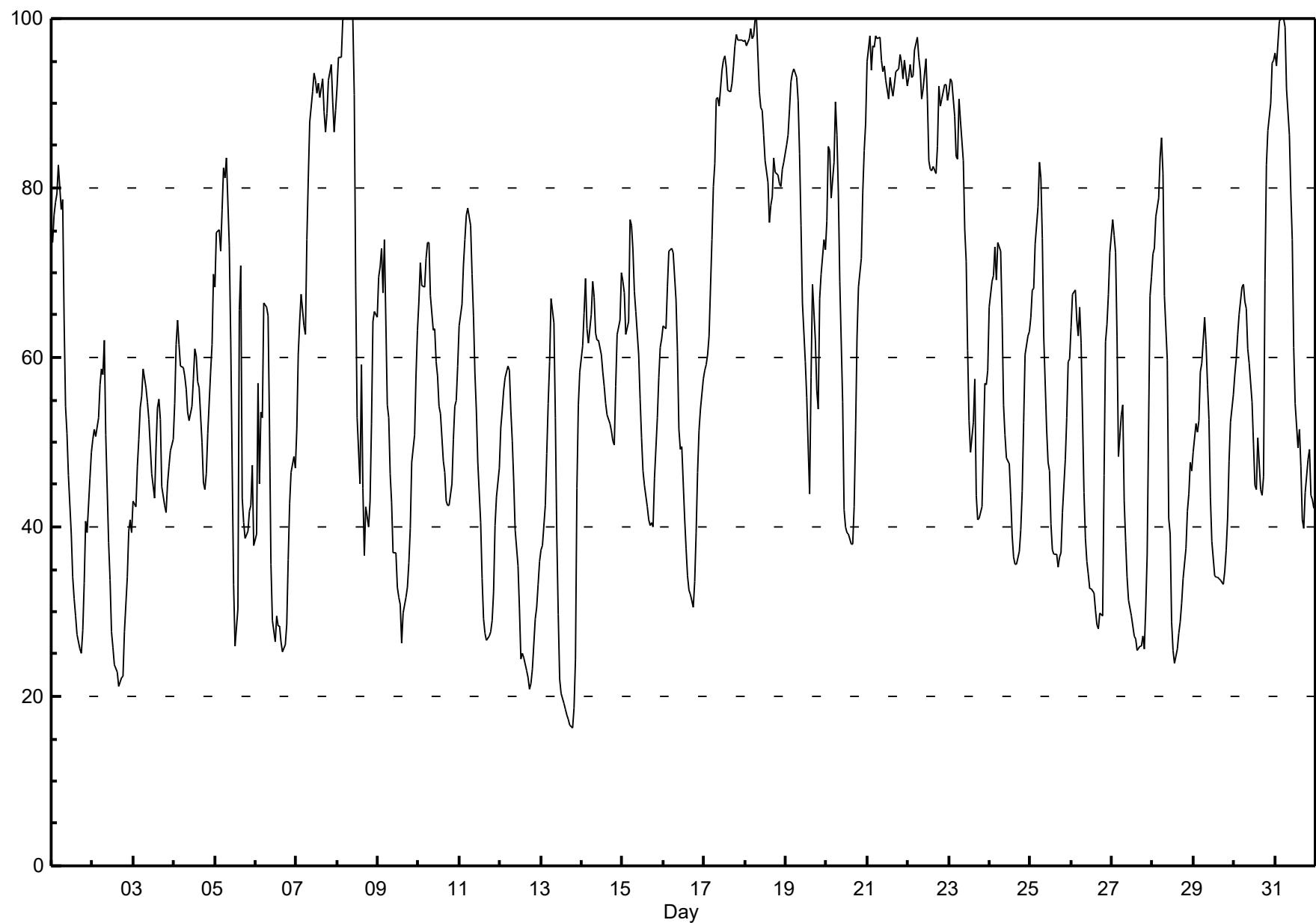
Hourly Averages

External Temperature (ET) - °C
Beaverlodge - May 2020



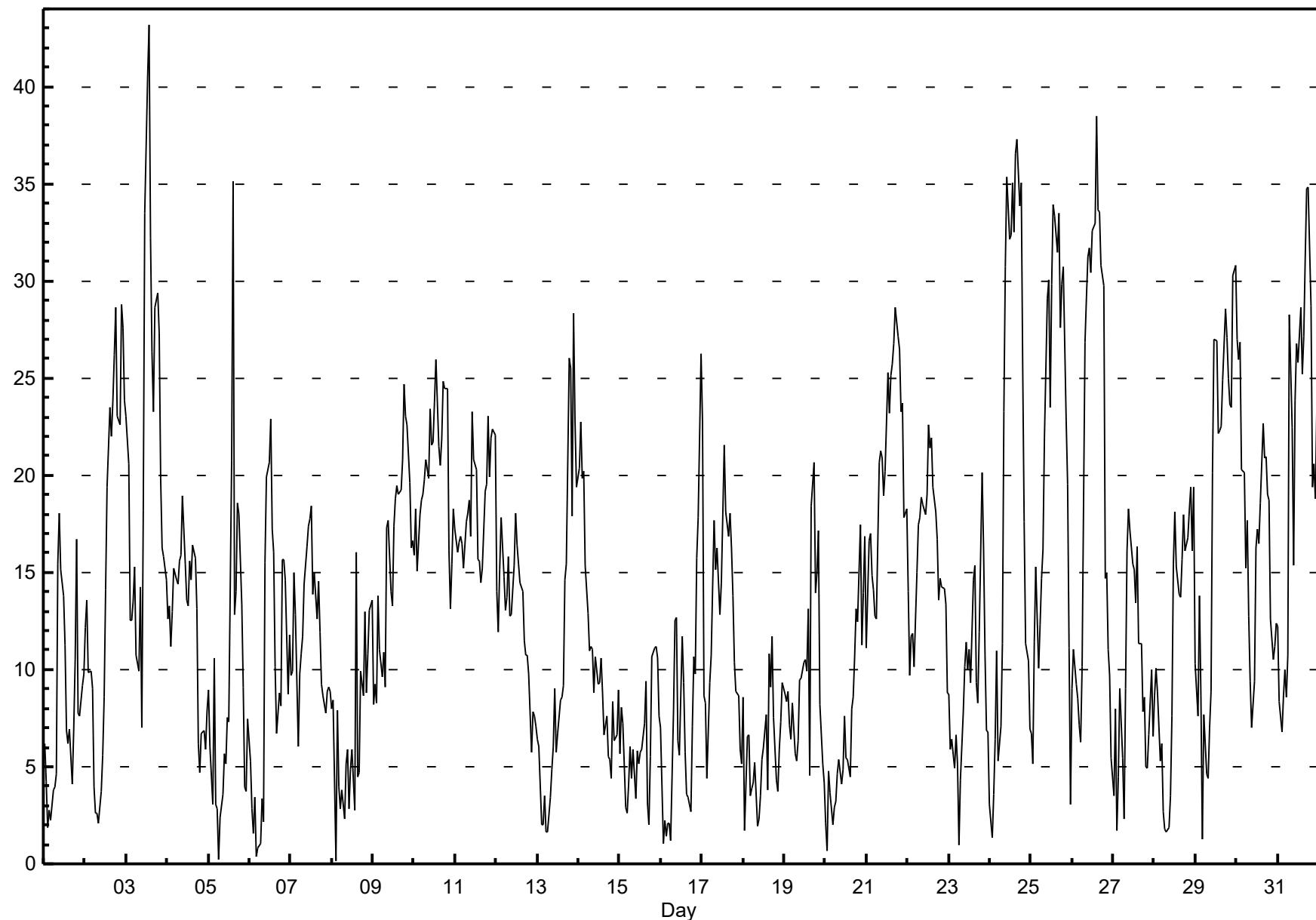
Hourly Averages

Relative Humidity (RH) - %
Beaverlodge - May 2020



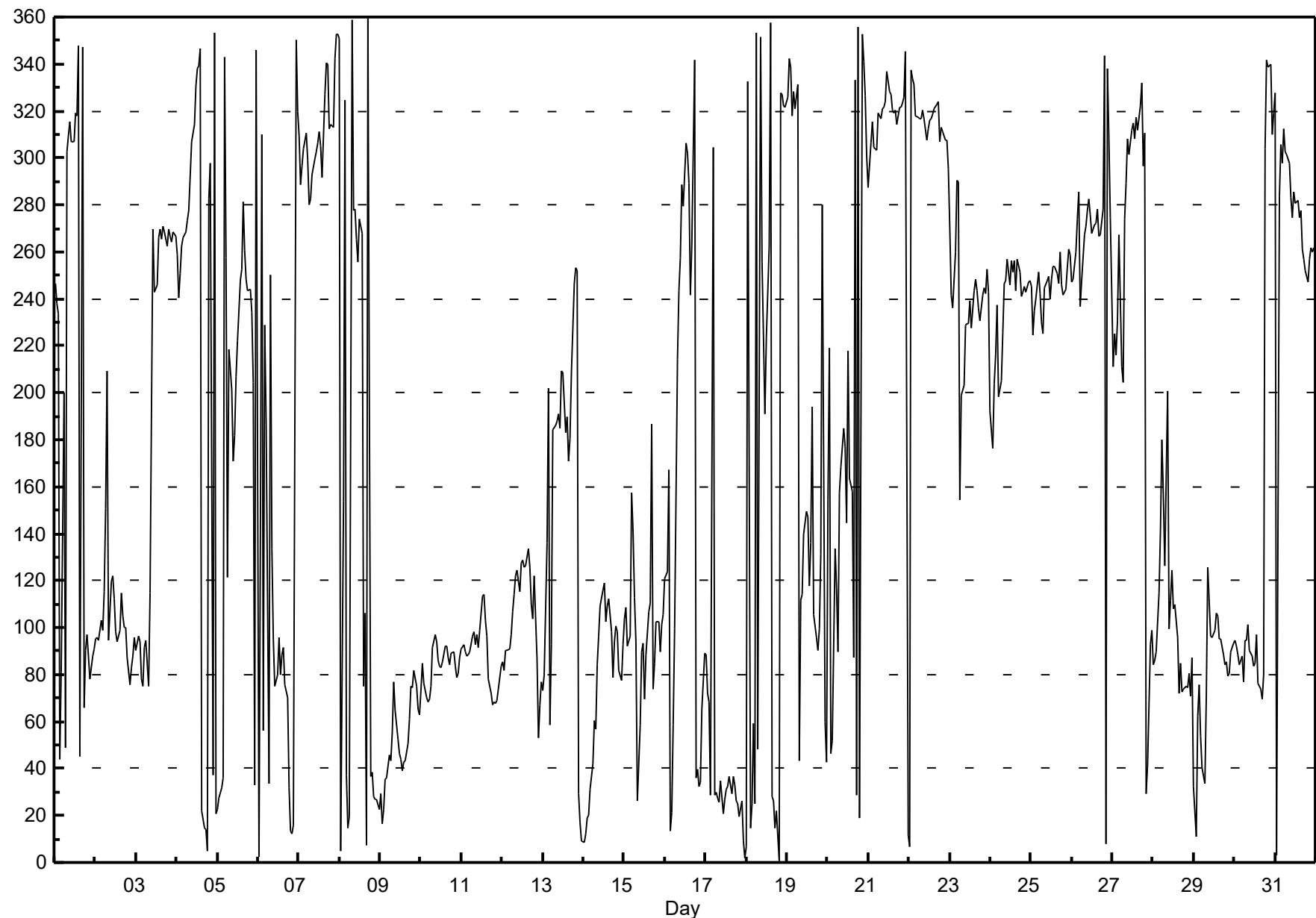
Hourly Averages

Wind Speed (WS) - km/h
Beaverlodge - May 2020



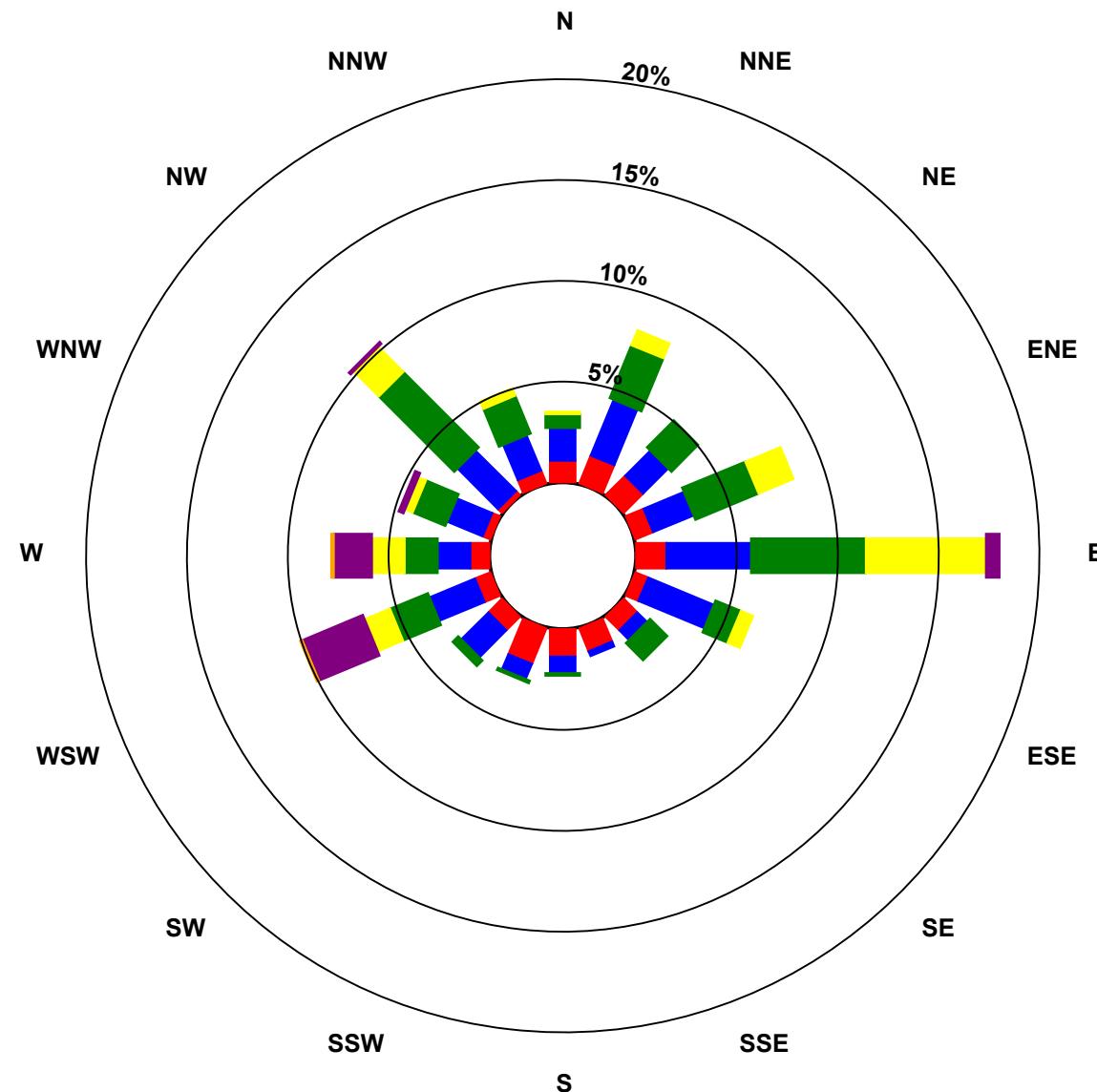
Hourly Averages

Wind Direction (WD) - deg
Beaverlodge - May 2020

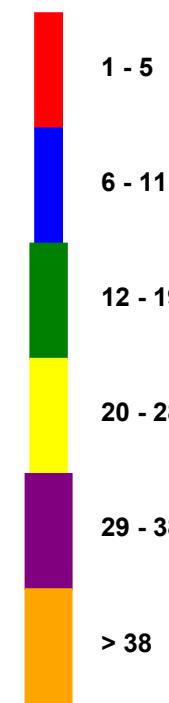


Wind Rose

Wind Speed (WS) (km/h)
Beaverlodge - May 2020



Wind Speed Classes (km/h)

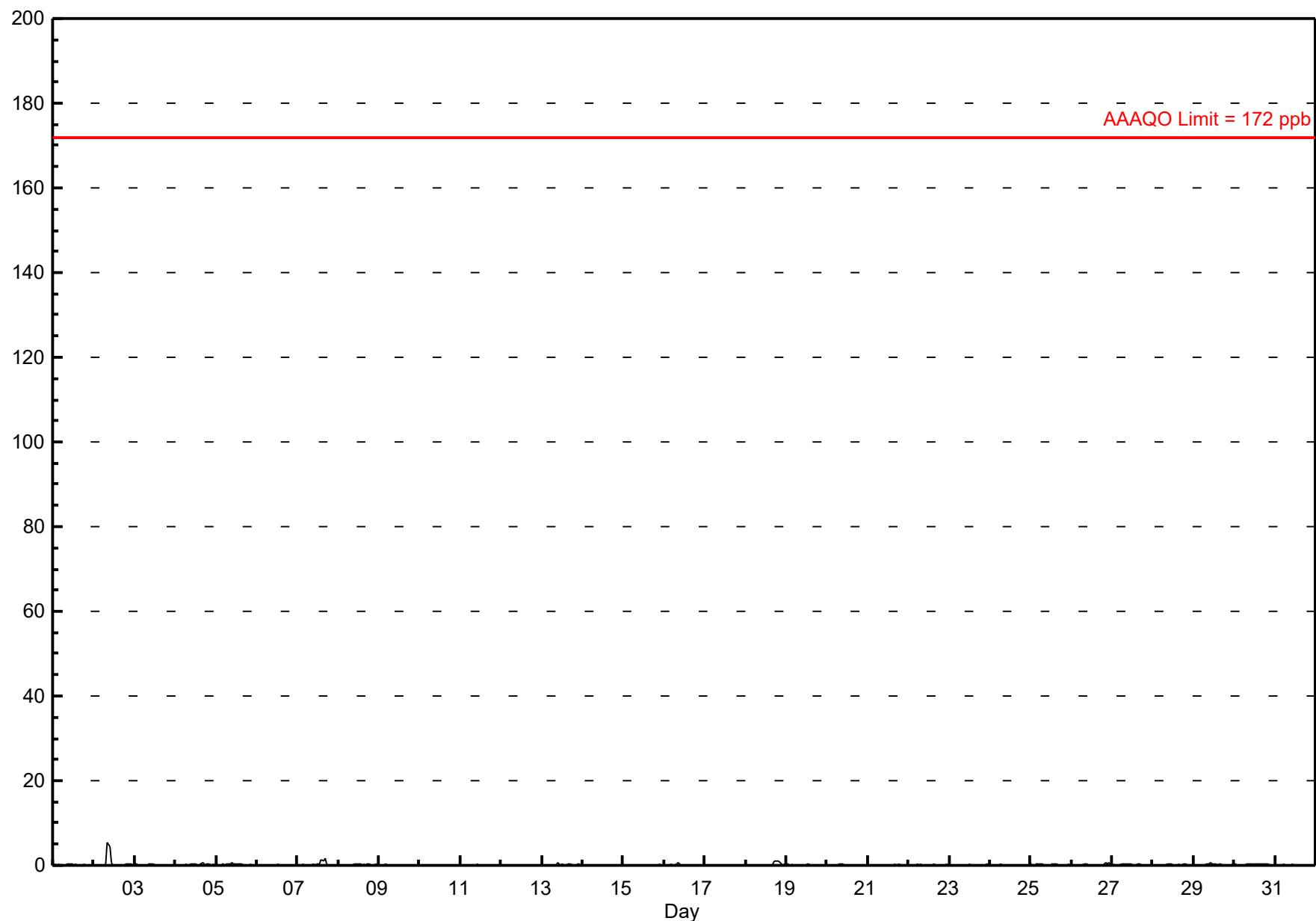


3 Evergreen Park Charts

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

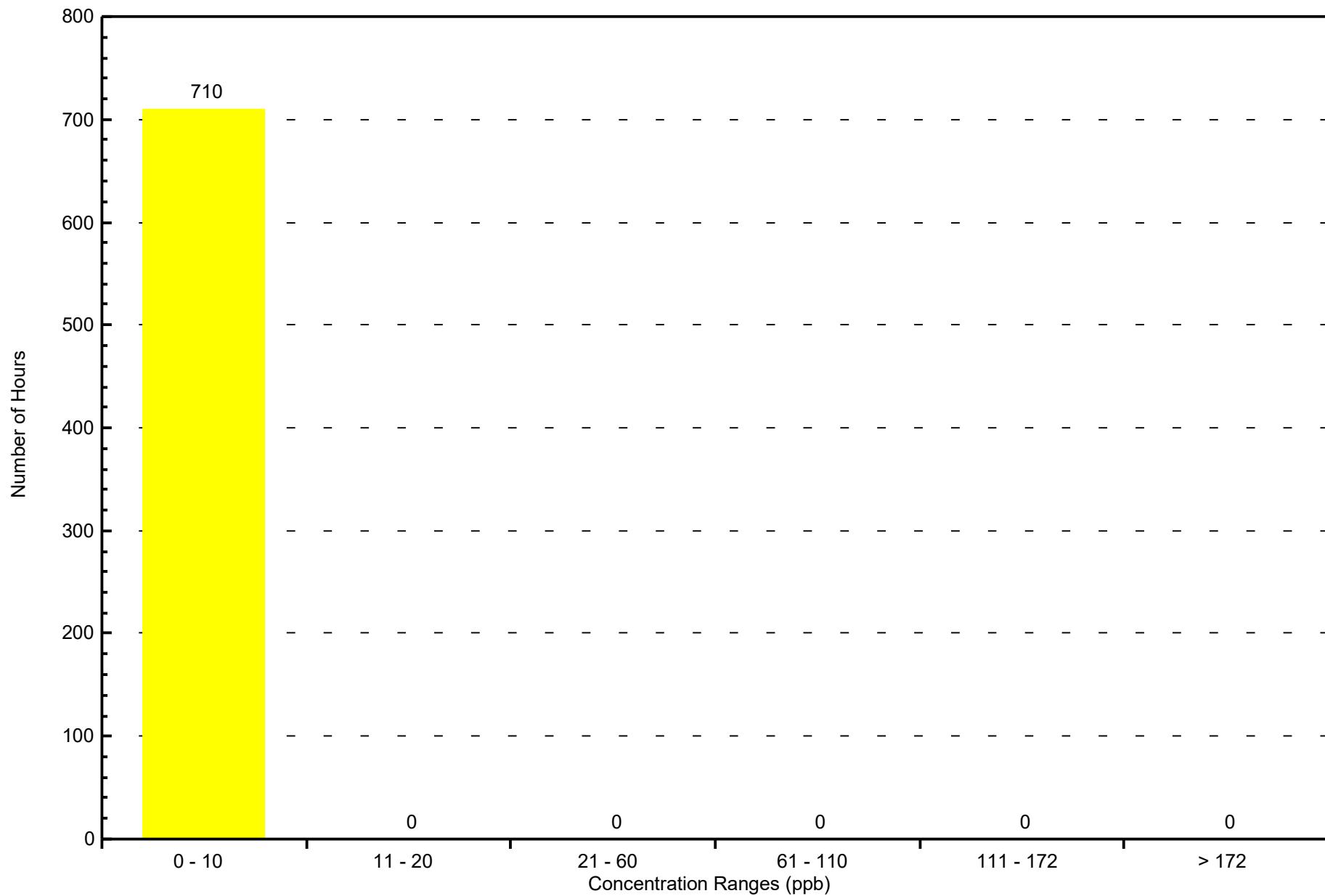
Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Evergreen Park - May 2020



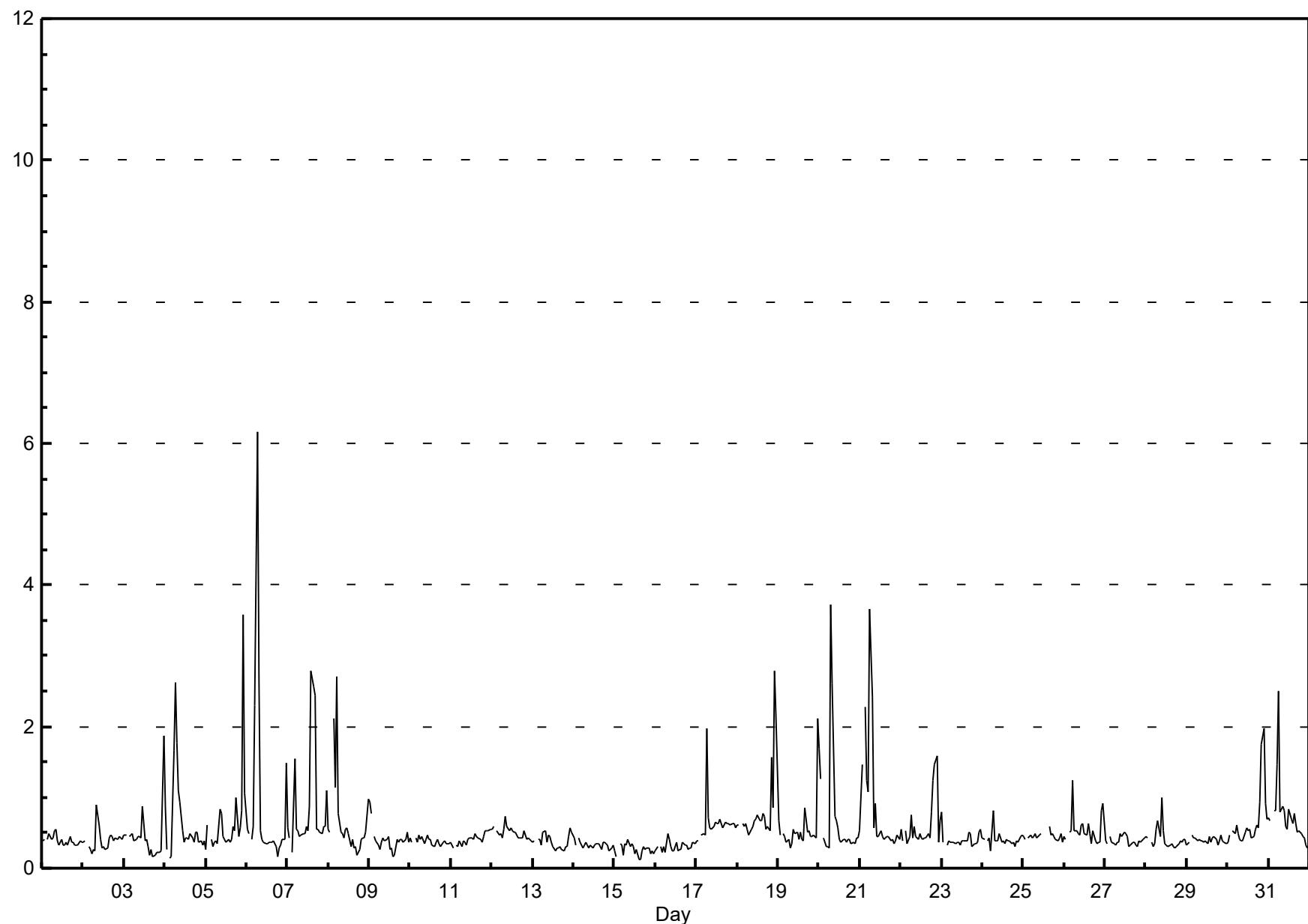
Histogram of Hourly Averages

**Sulphur Dioxide (SO_2) - ppb
Evergreen Park - May 2020**



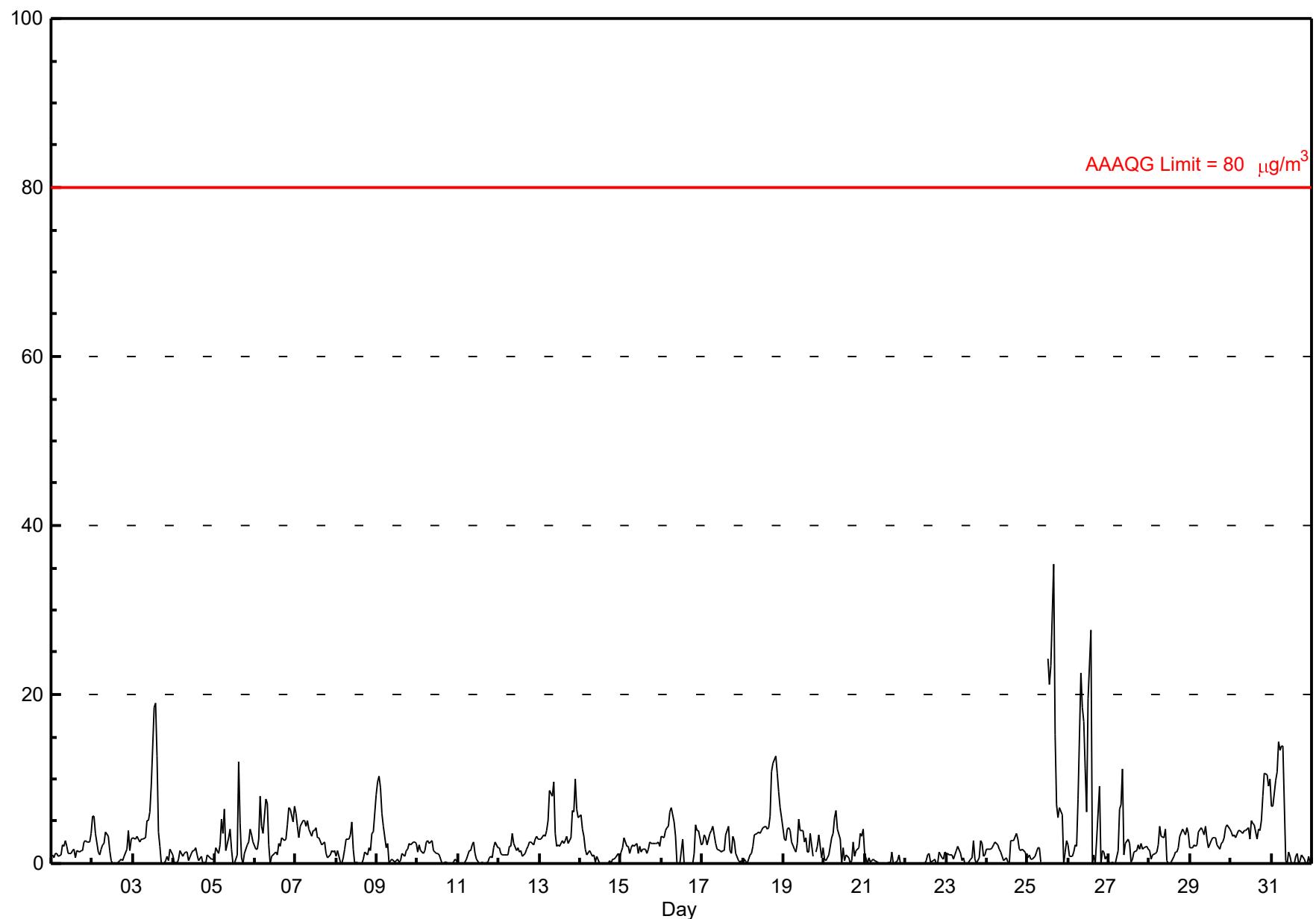
Hourly Averages

Total Reduced Sulphur (TRS) - ppb
Evergreen Park - May 2020



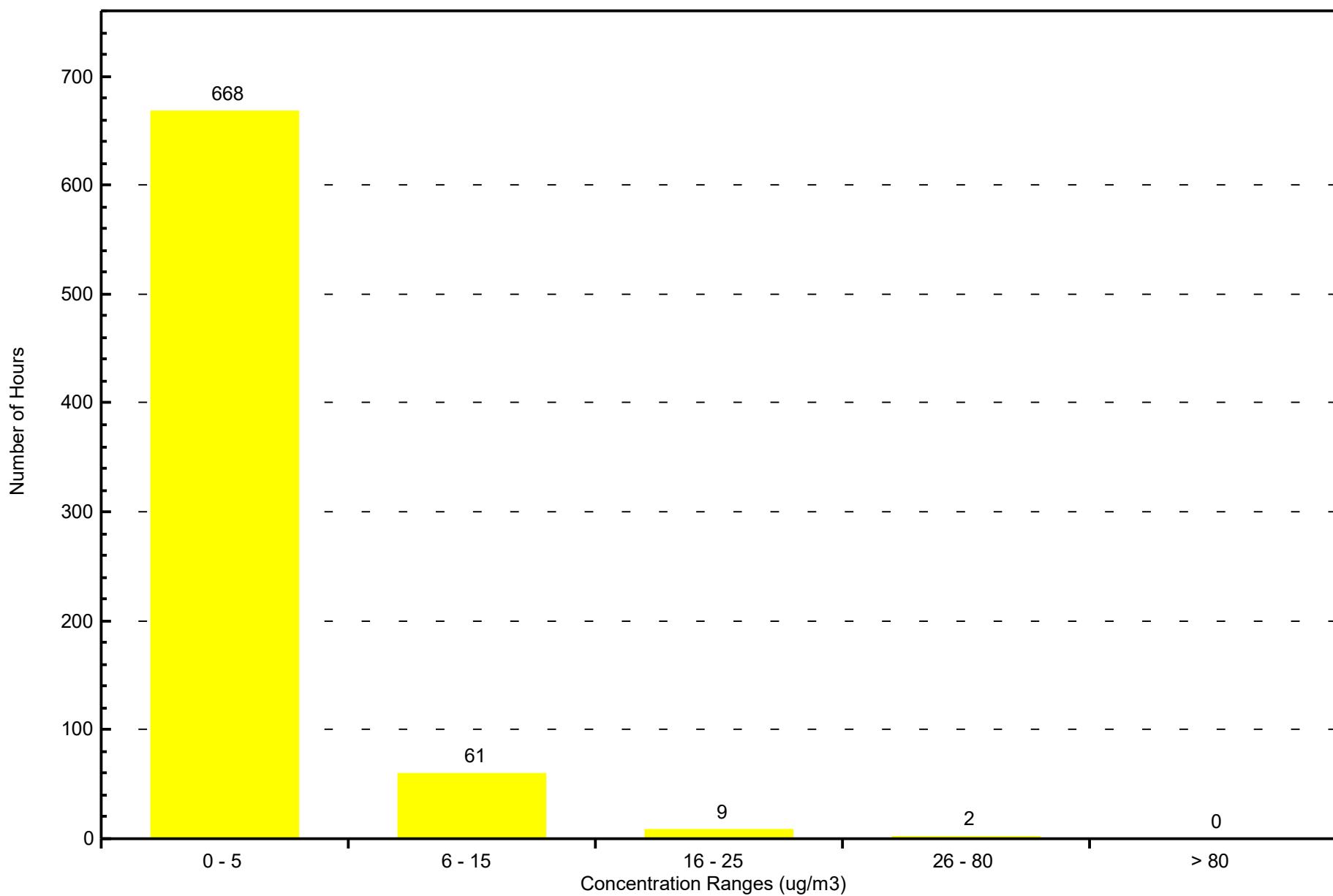
Hourly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Evergreen Park - May 2020



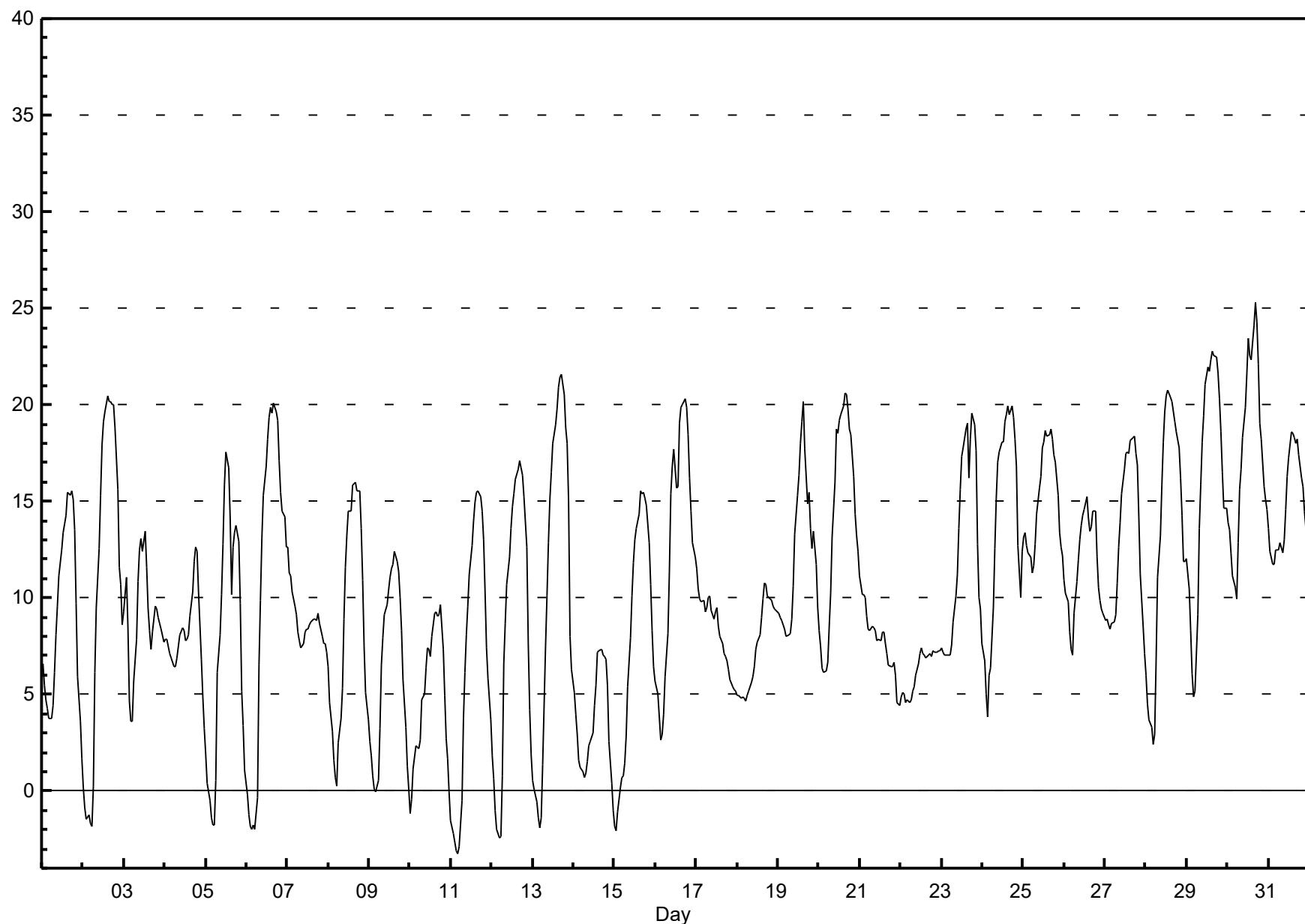
Histogram of Hourly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Evergreen Park - May 2020



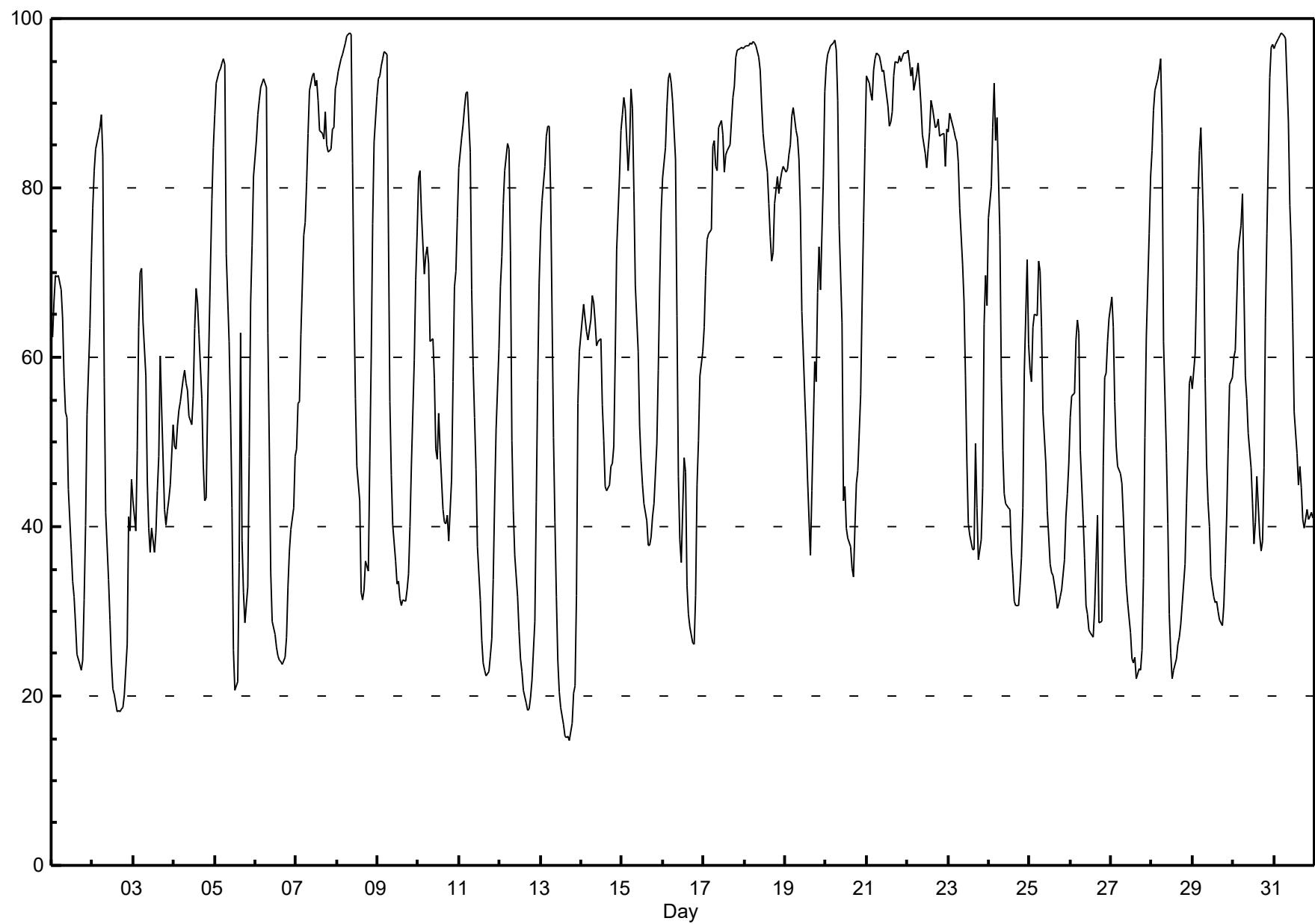
Hourly Averages

External Temperature (ET) - °C
Evergreen Park - May 2020



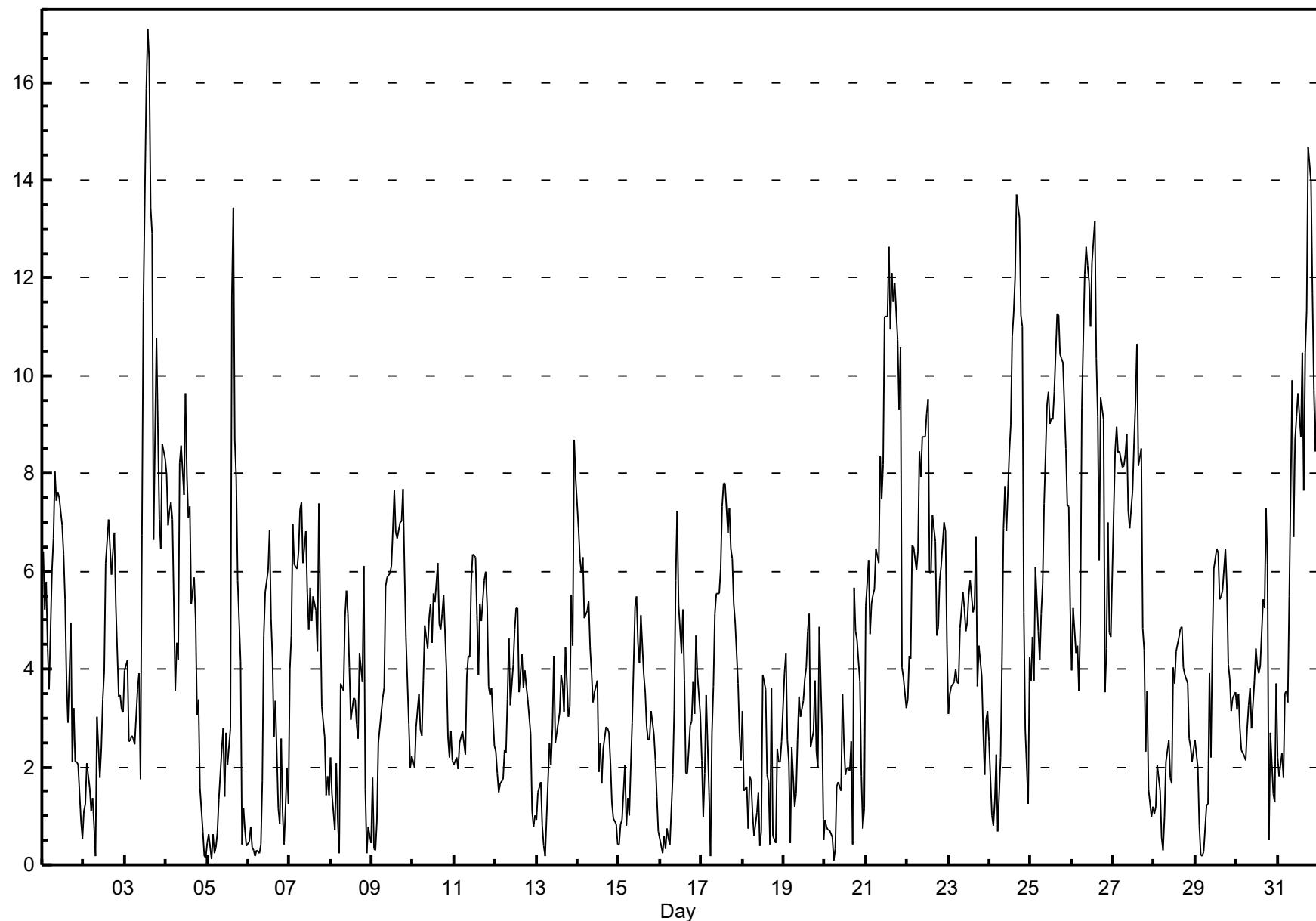
Hourly Averages

Relative Humidity (RH) - %
Evergreen Park - May 2020



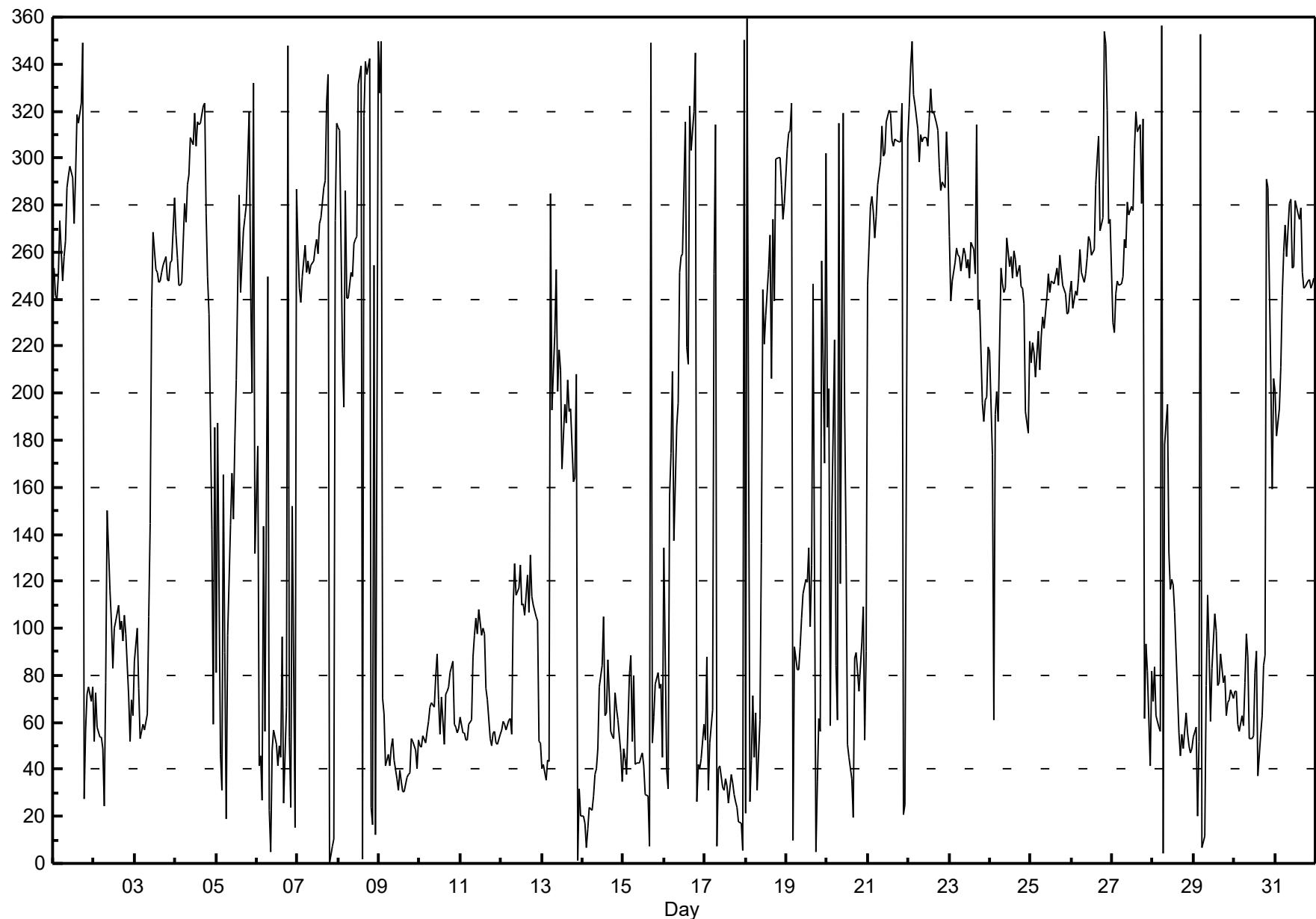
Hourly Averages

Wind Speed (WS) - km/h
Evergreen Park - May 2020



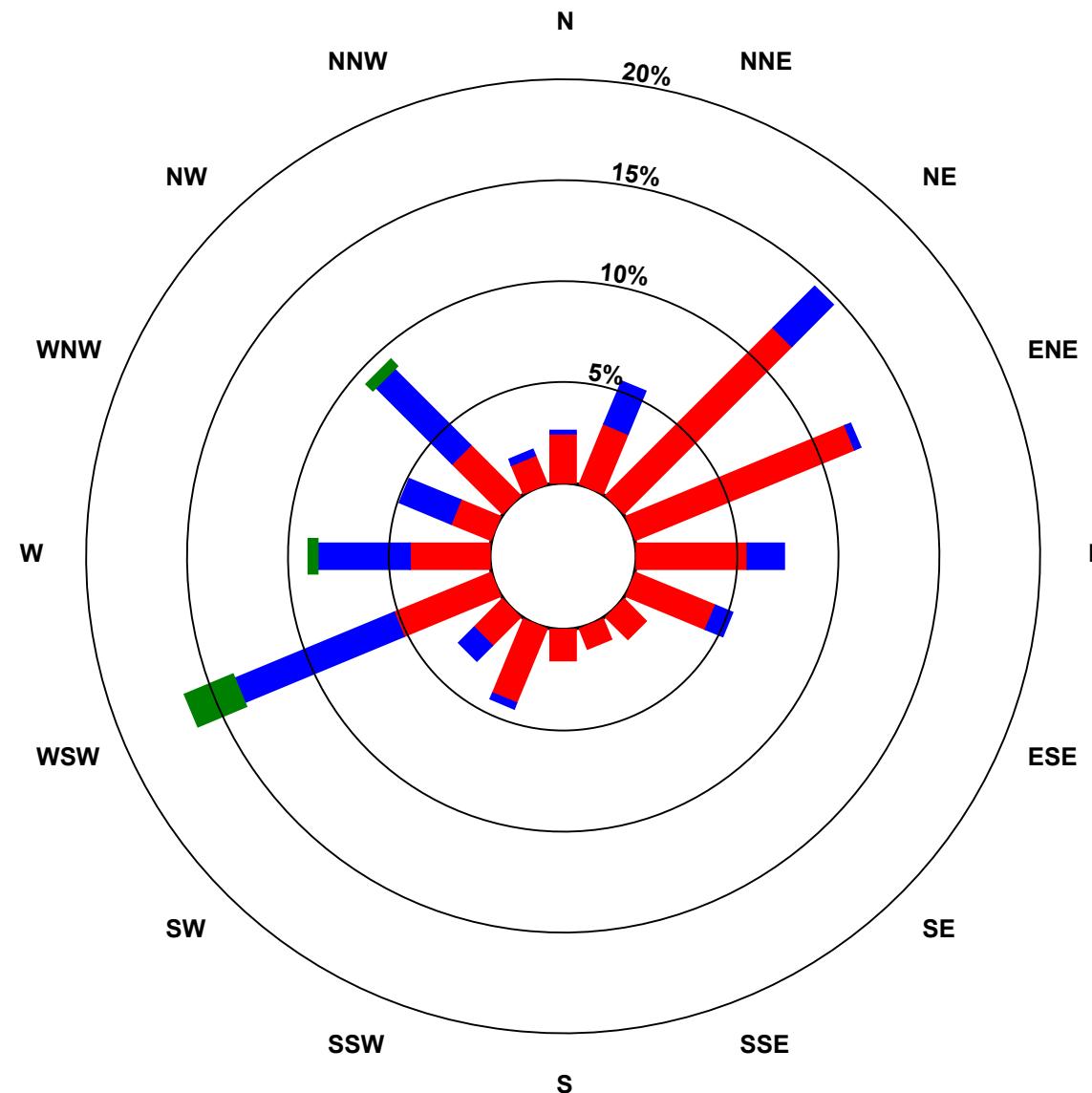
Hourly Averages

Wind Direction (WD) - deg
Evergreen Park - May 2020

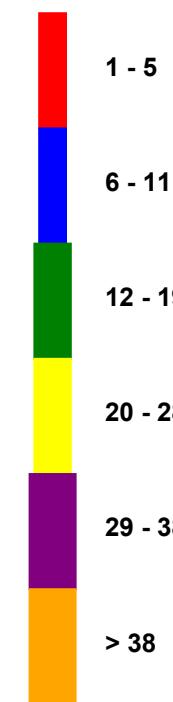


Wind Rose

Wind Speed (WS) (km/h)
Evergreen Park - May 2020



Wind Speed Classes (km/h)

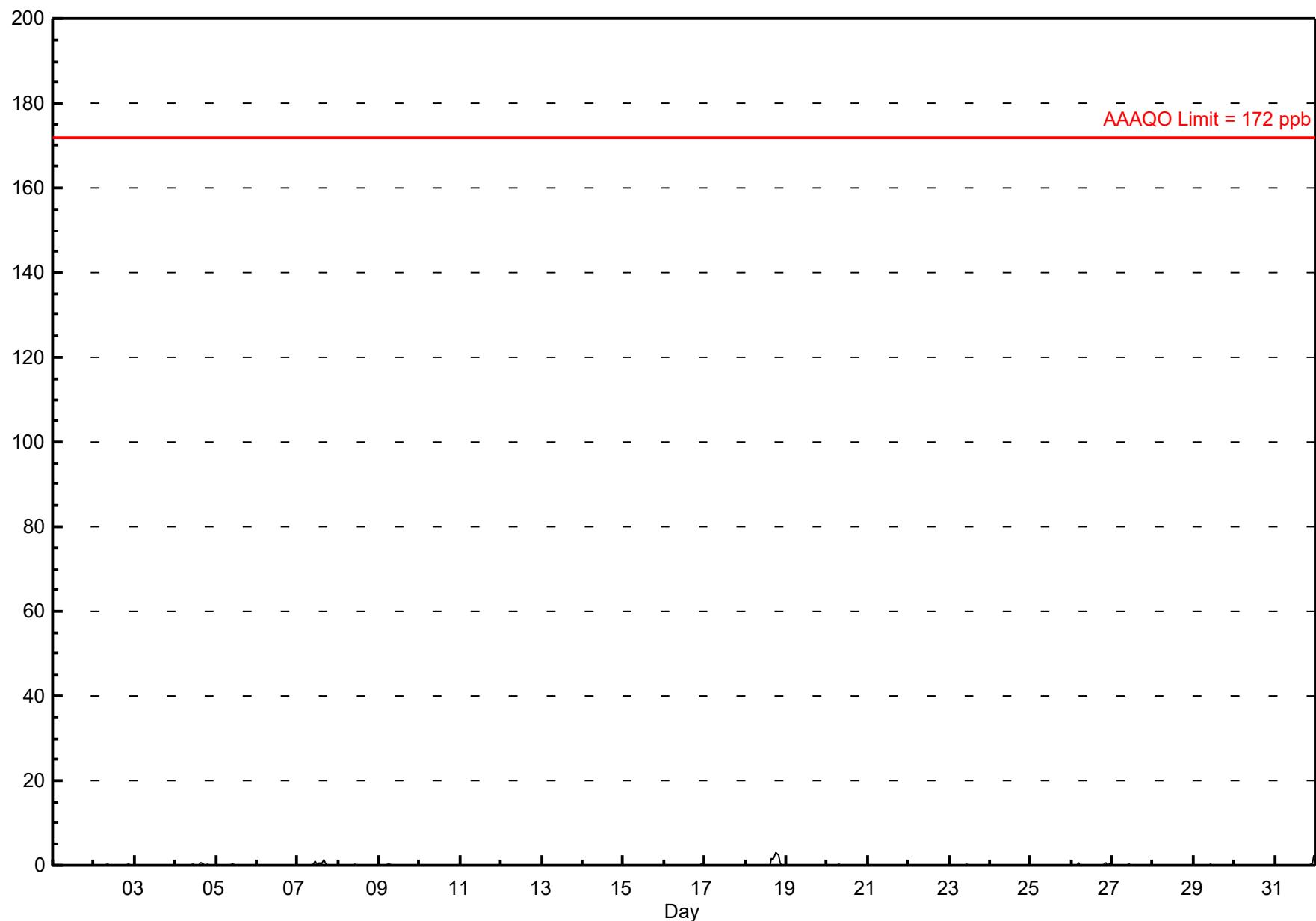


4 Grande Prairie - Henry Pirker Charts

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

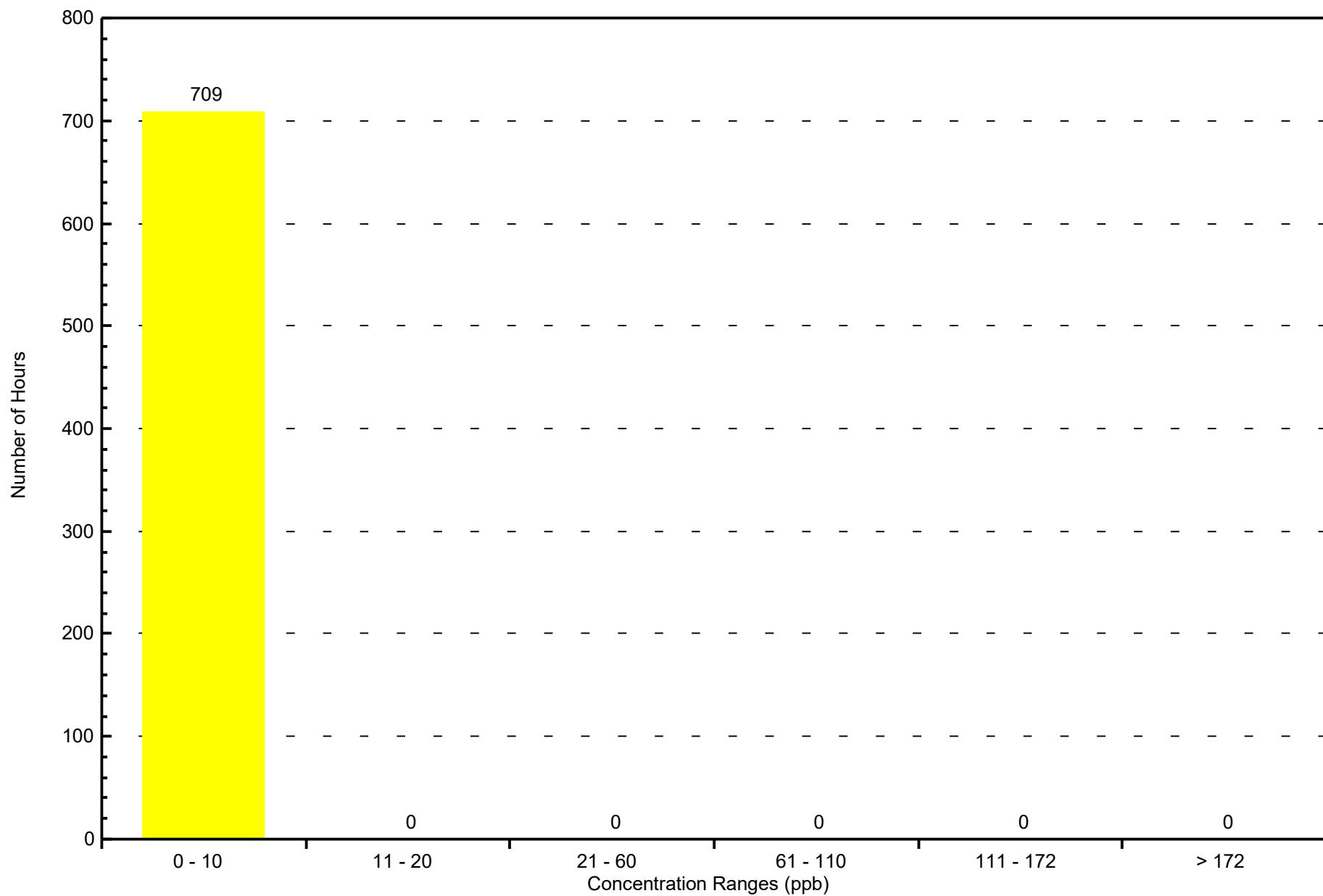
Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Henry Pirker - May 2020



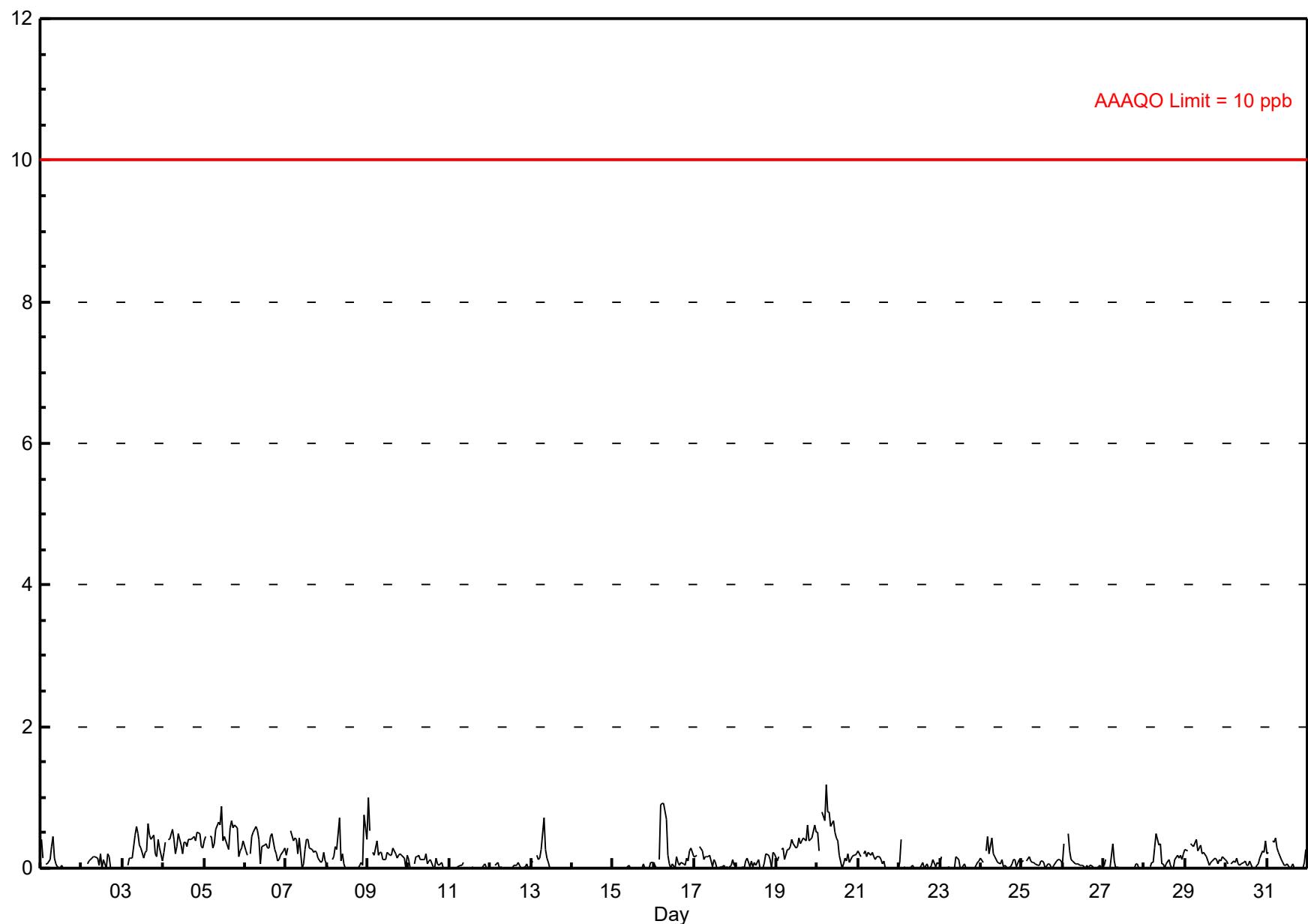
Histogram of Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Henry Pirker - May 2020



Hourly Averages

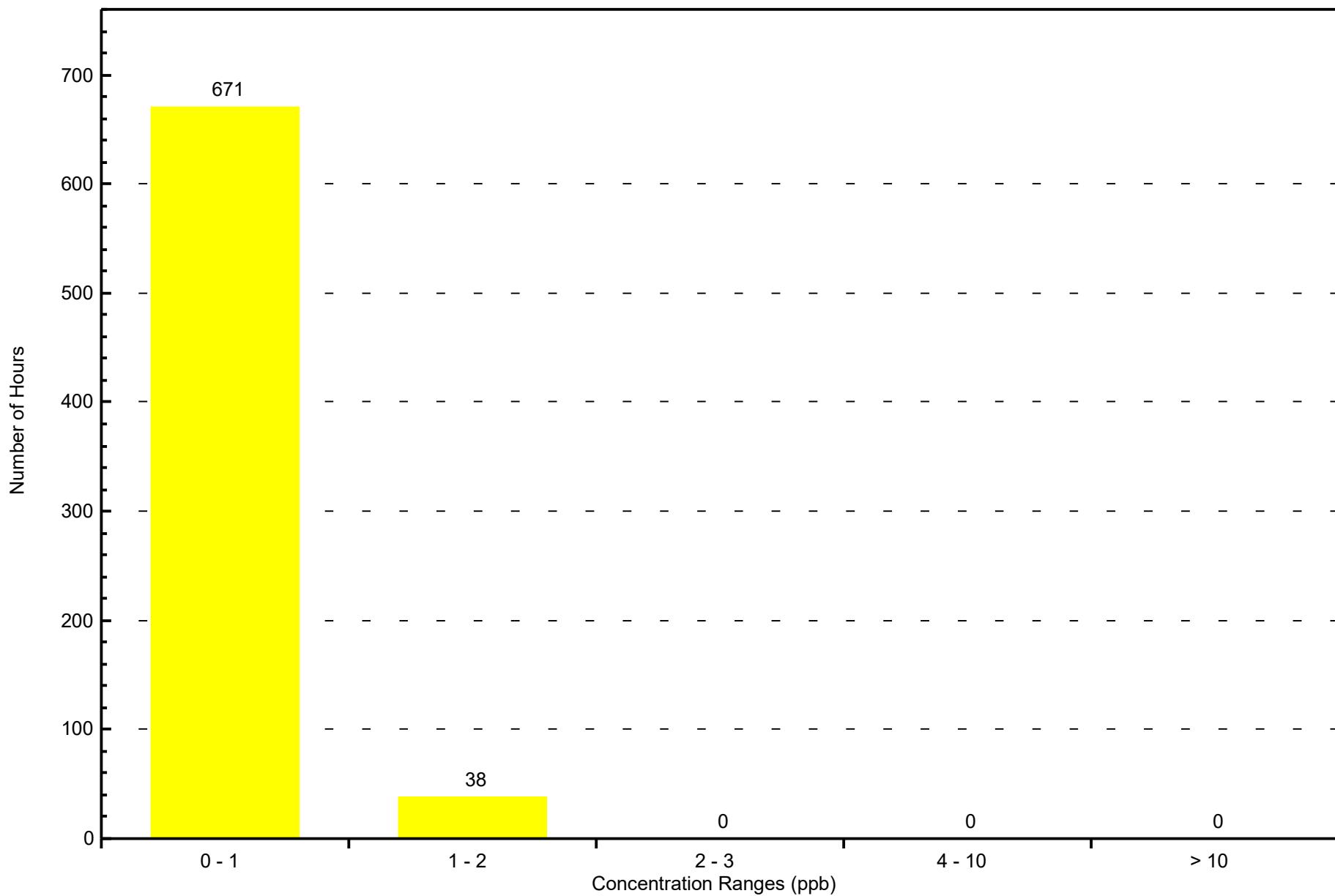
Hydrogen Sulphide (H_2S) - ppb
Henry Pirker - May 2020



Histogram of Hourly Averages

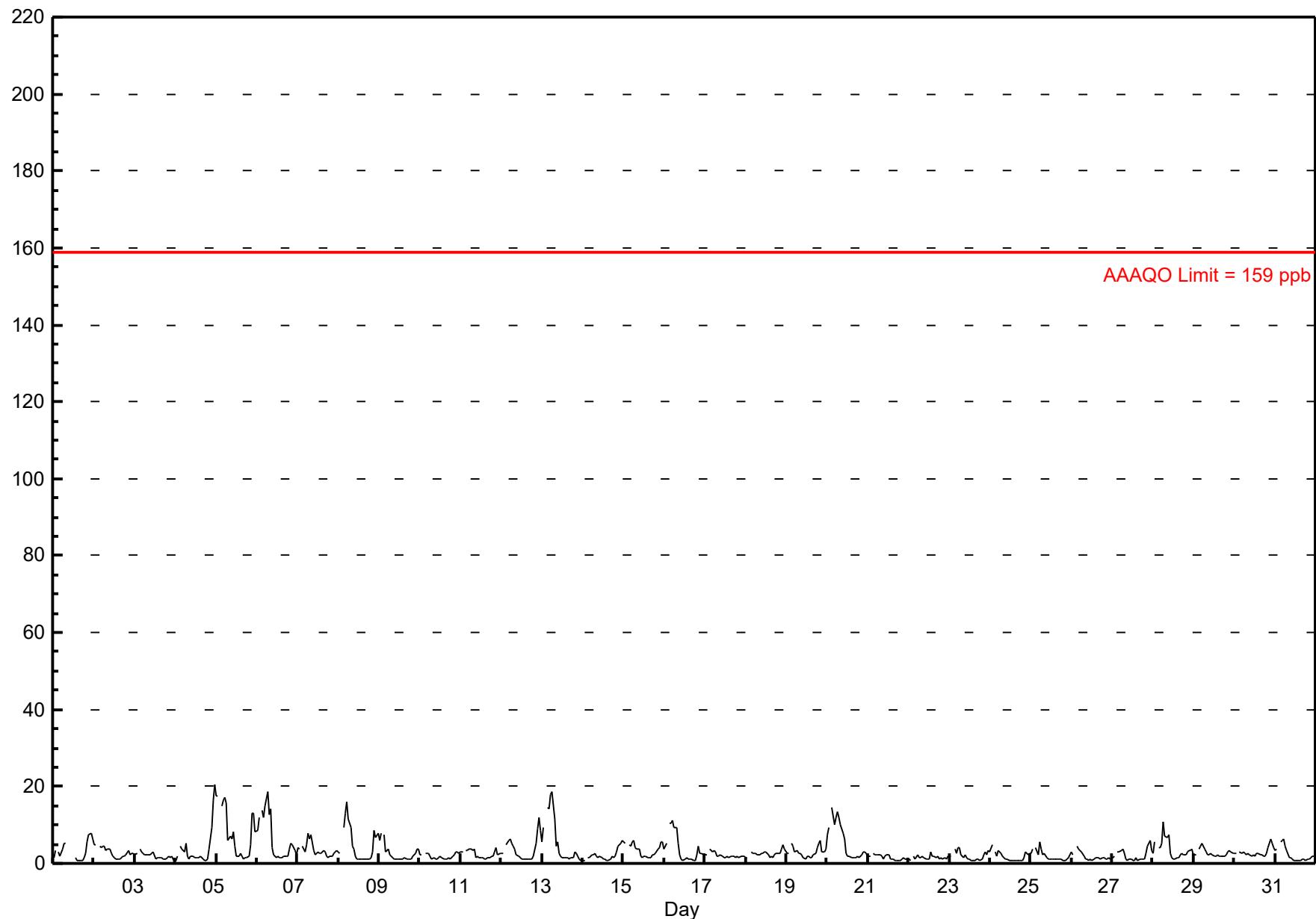
Hydrogen Sulphide (H_2S) - ppb

Henry Pirker - May 2020



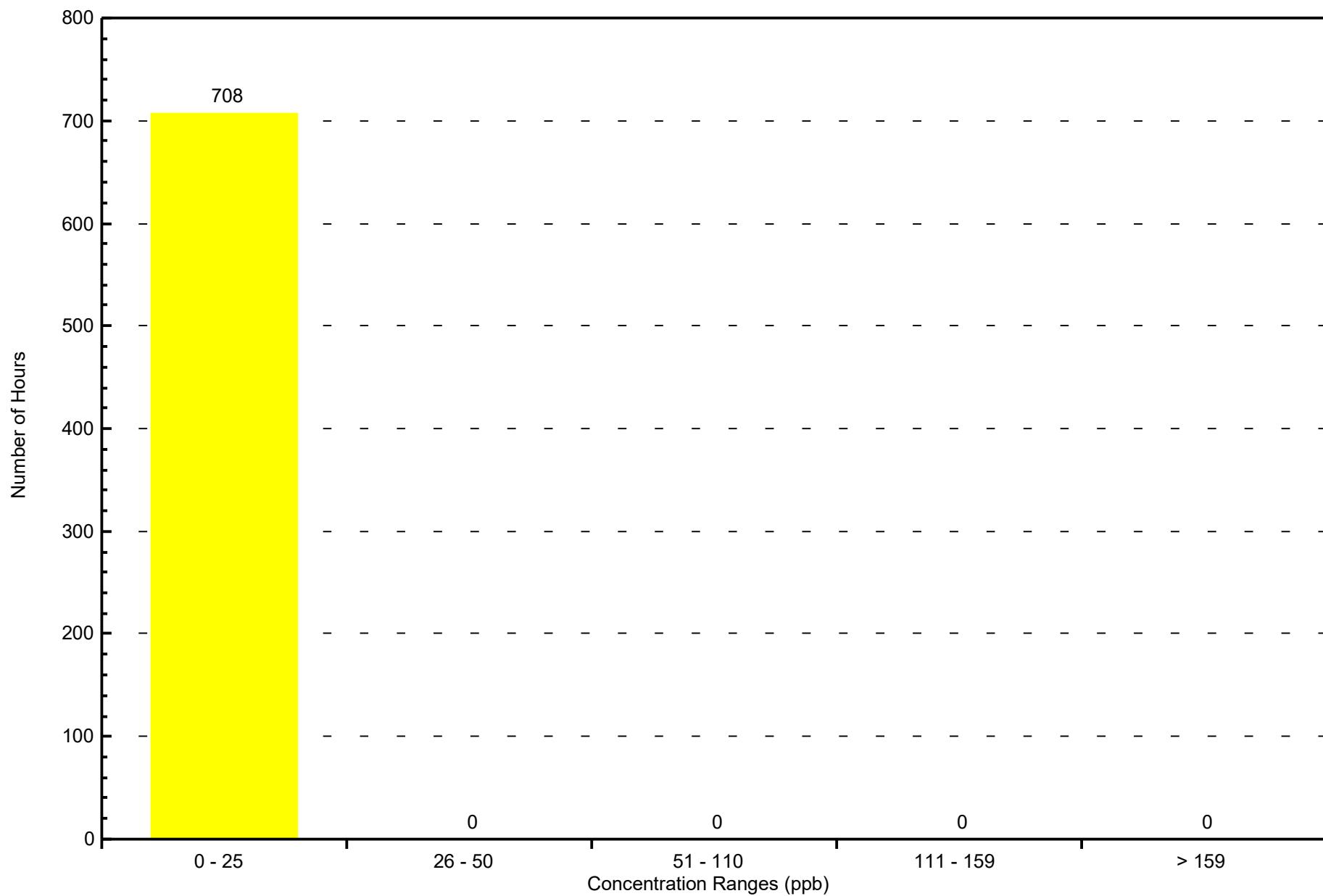
Hourly Averages

Nitrogen Dioxide (NO_2) - ppb
Henry Pirker - May 2020



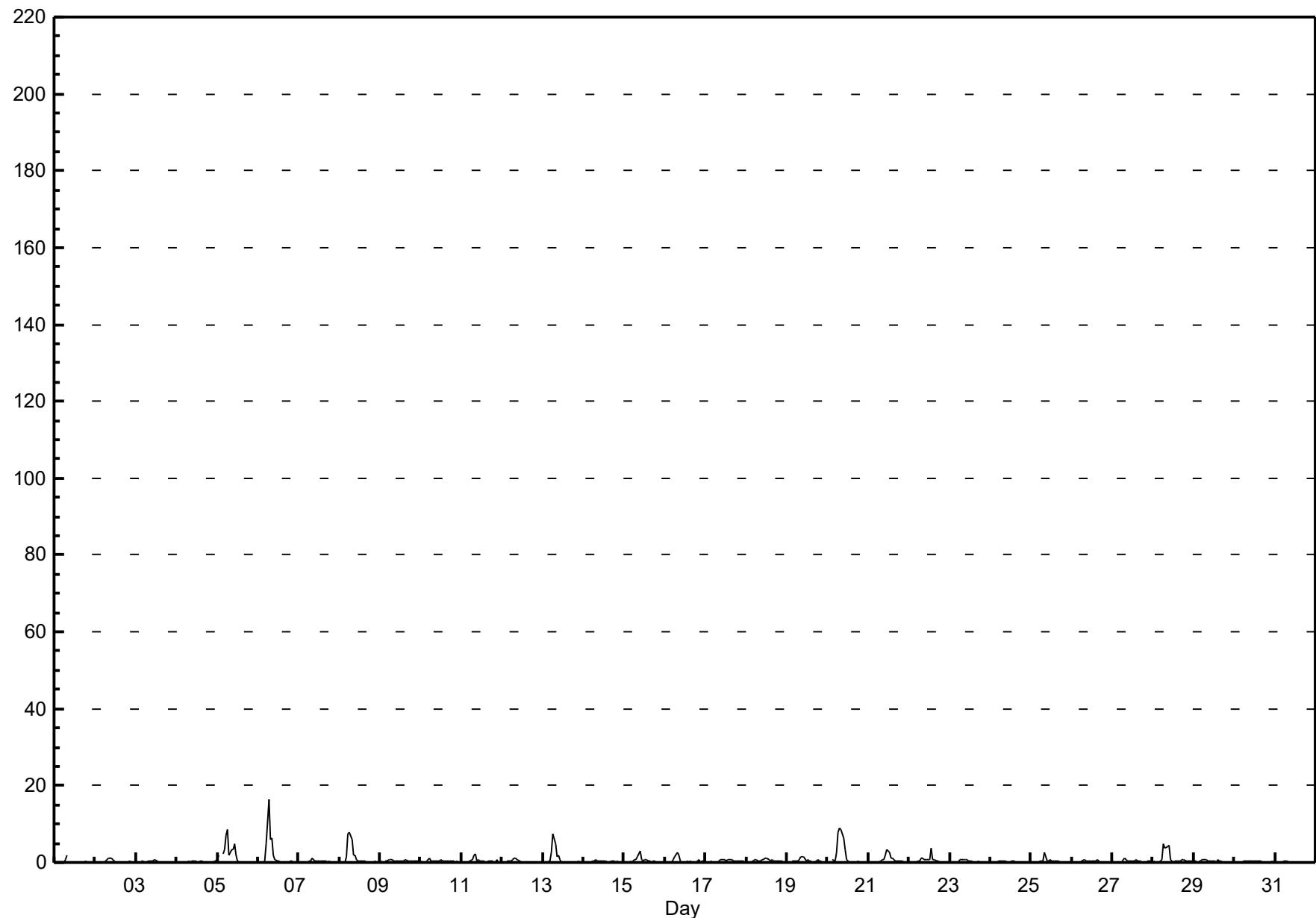
Histogram of Hourly Averages

Nitrogen Dioxide (NO_2) - ppb
Henry Pirker - May 2020



Hourly Averages

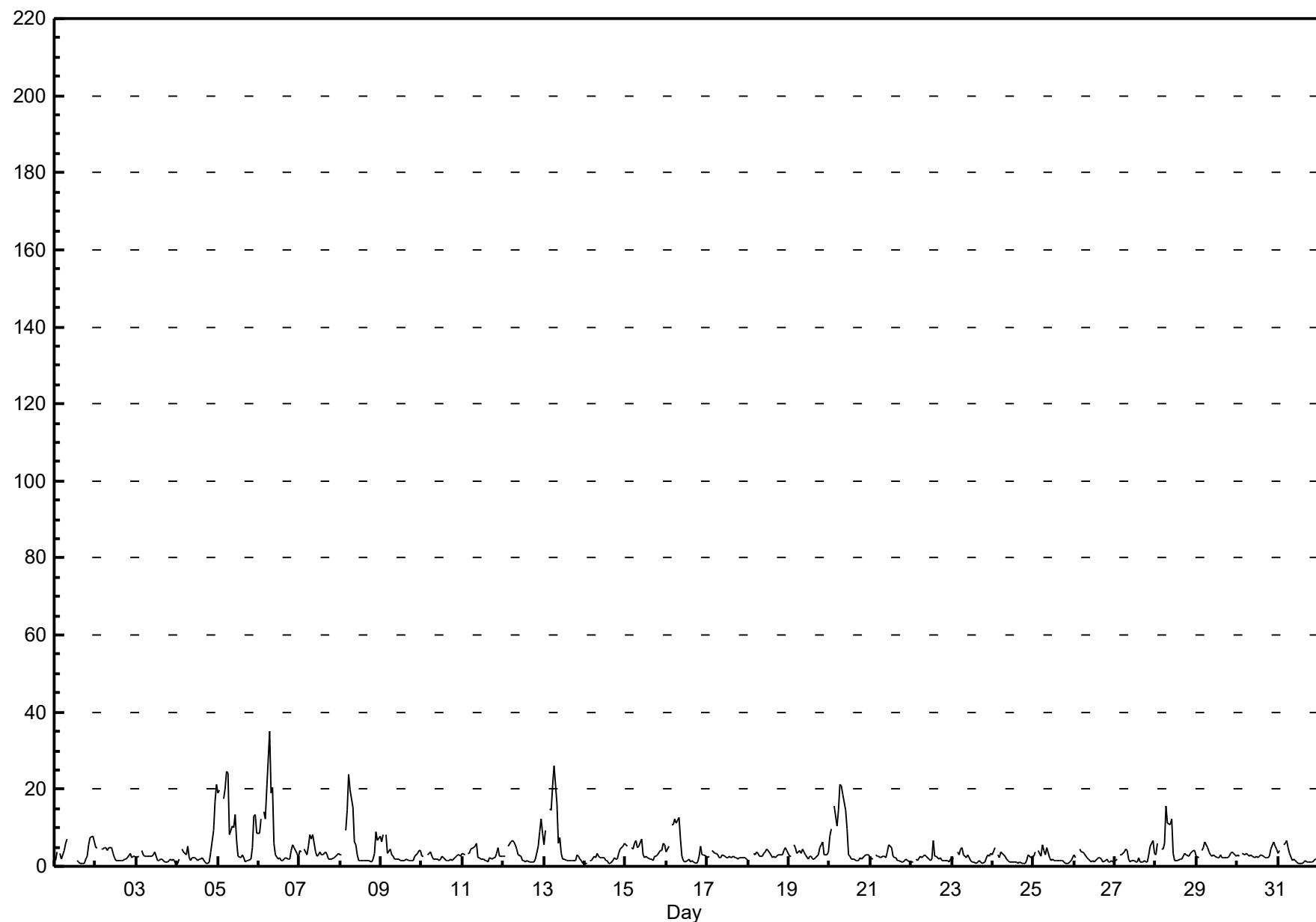
Nitrogen Oxide (NO) - ppb
Henry Pirker - May 2020



Hourly Averages

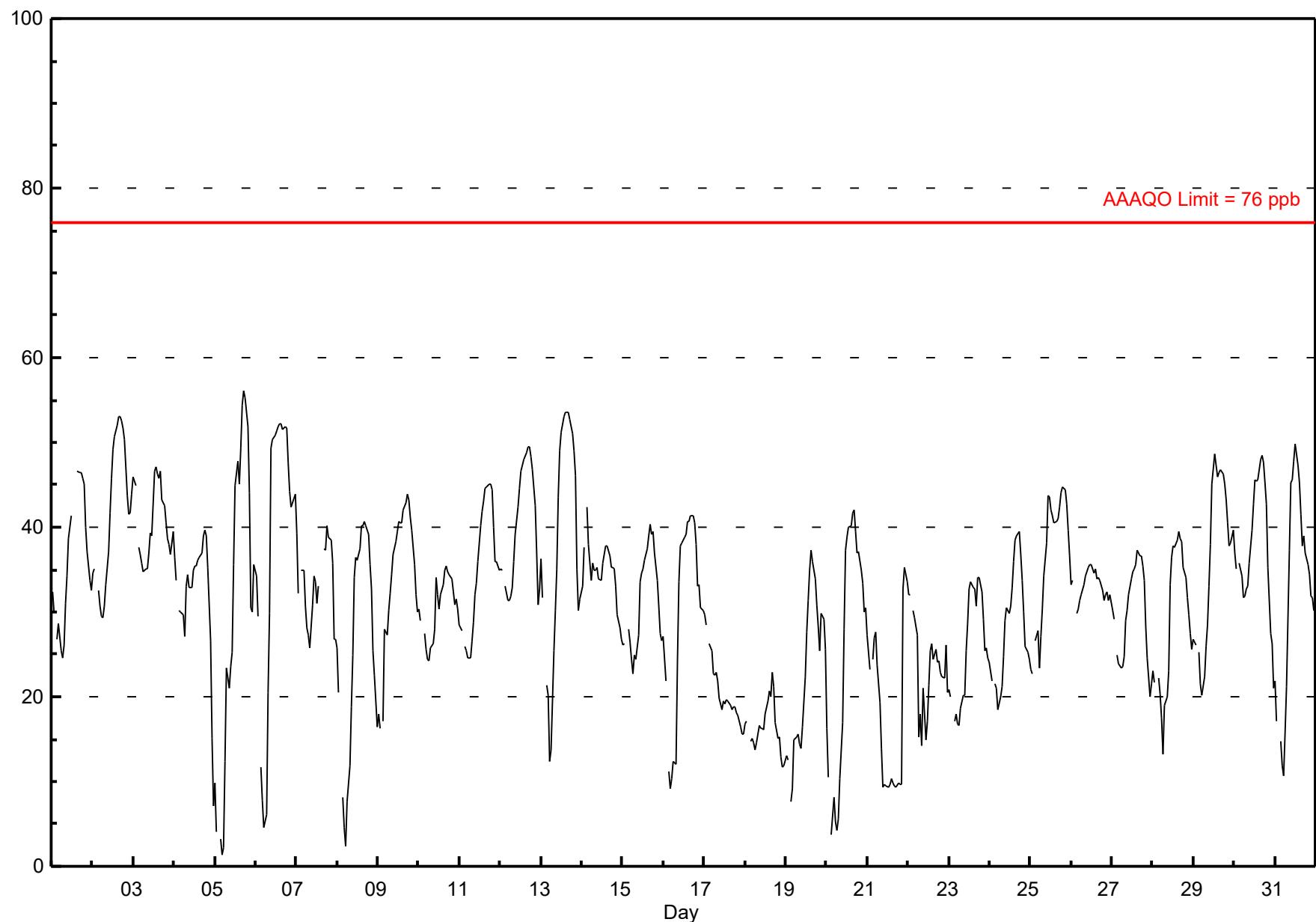
Oxides of Nitrogen (NO_X) - ppb

Henry Pirker - May 2020



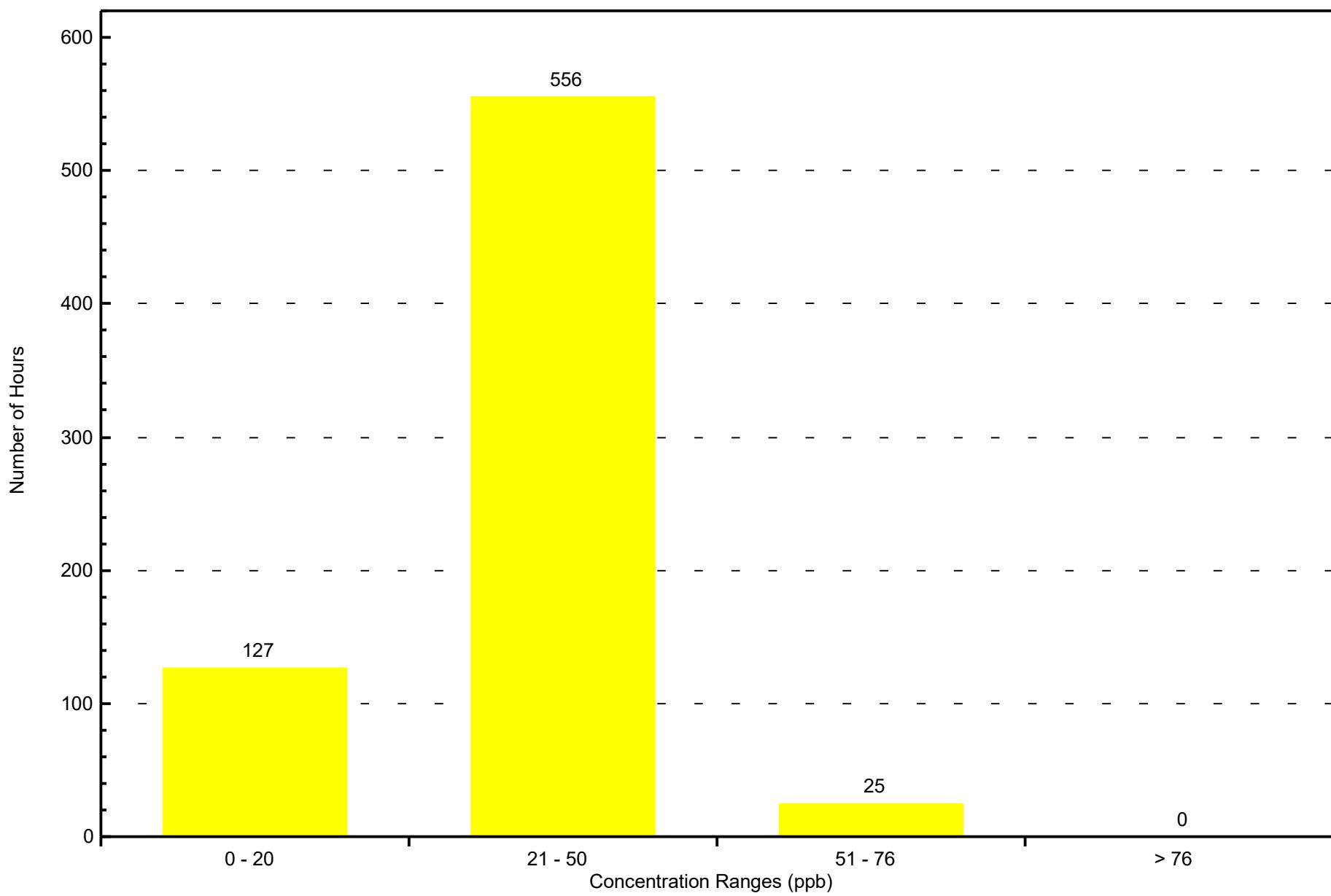
Hourly Averages

Ozone (O_3) - ppb
Henry Pirker - May 2020



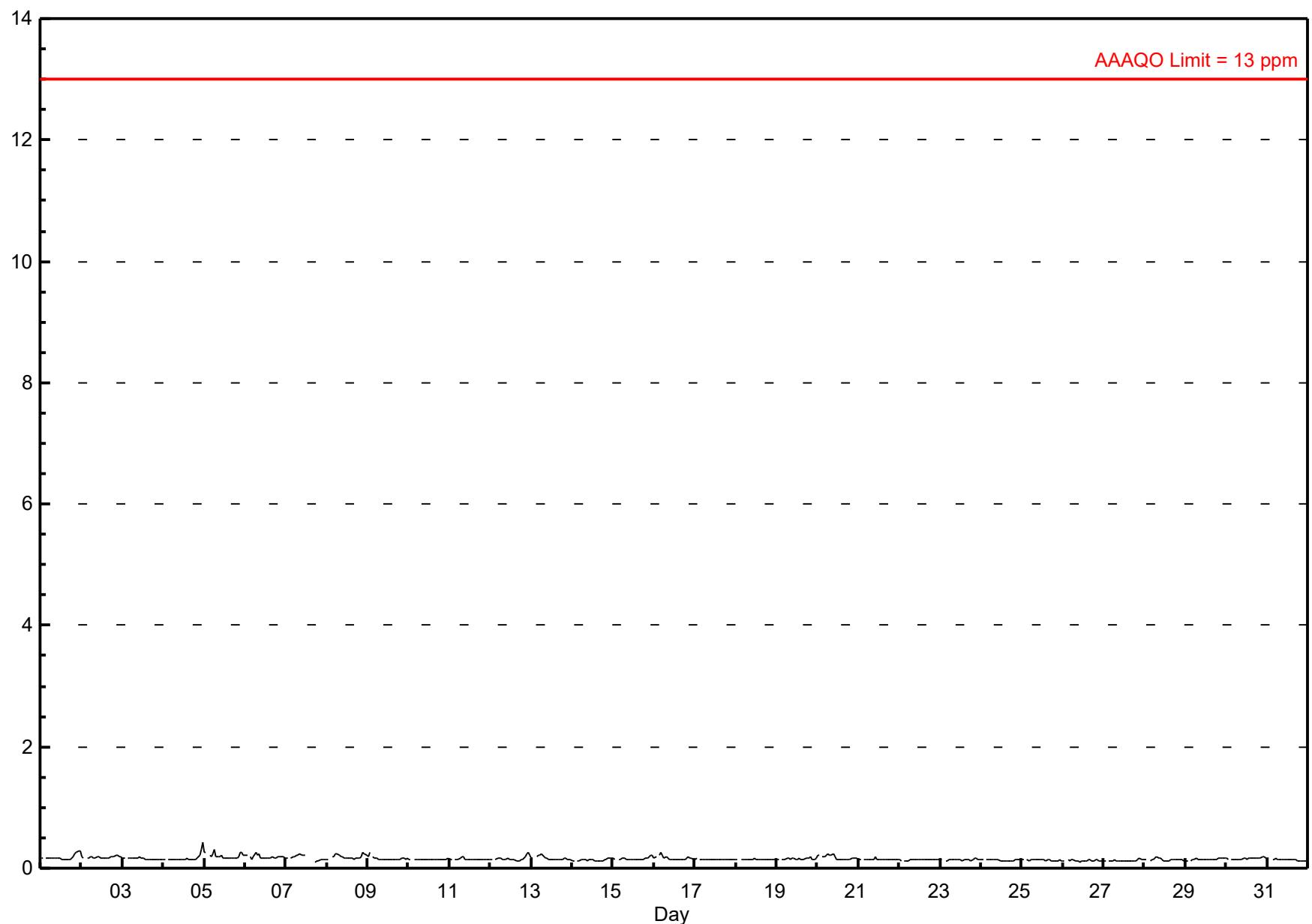
Histogram of Hourly Averages

Ozone (O_3) - ppb
Henry Pirker - May 2020



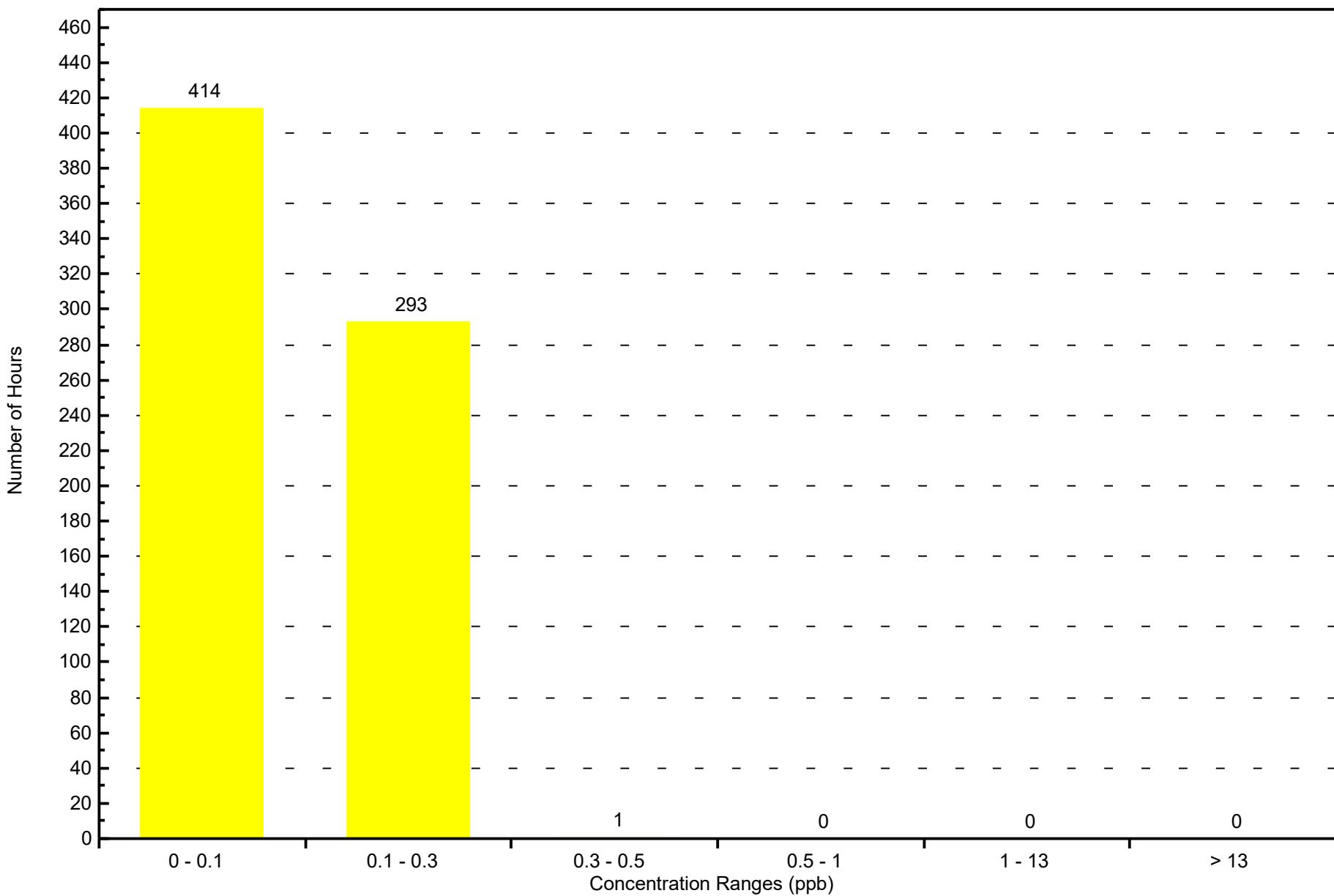
Hourly Averages

Carbon Monoxide (CO) - ppm
Henry Pirker - May 2020



Histogram of Hourly Averages

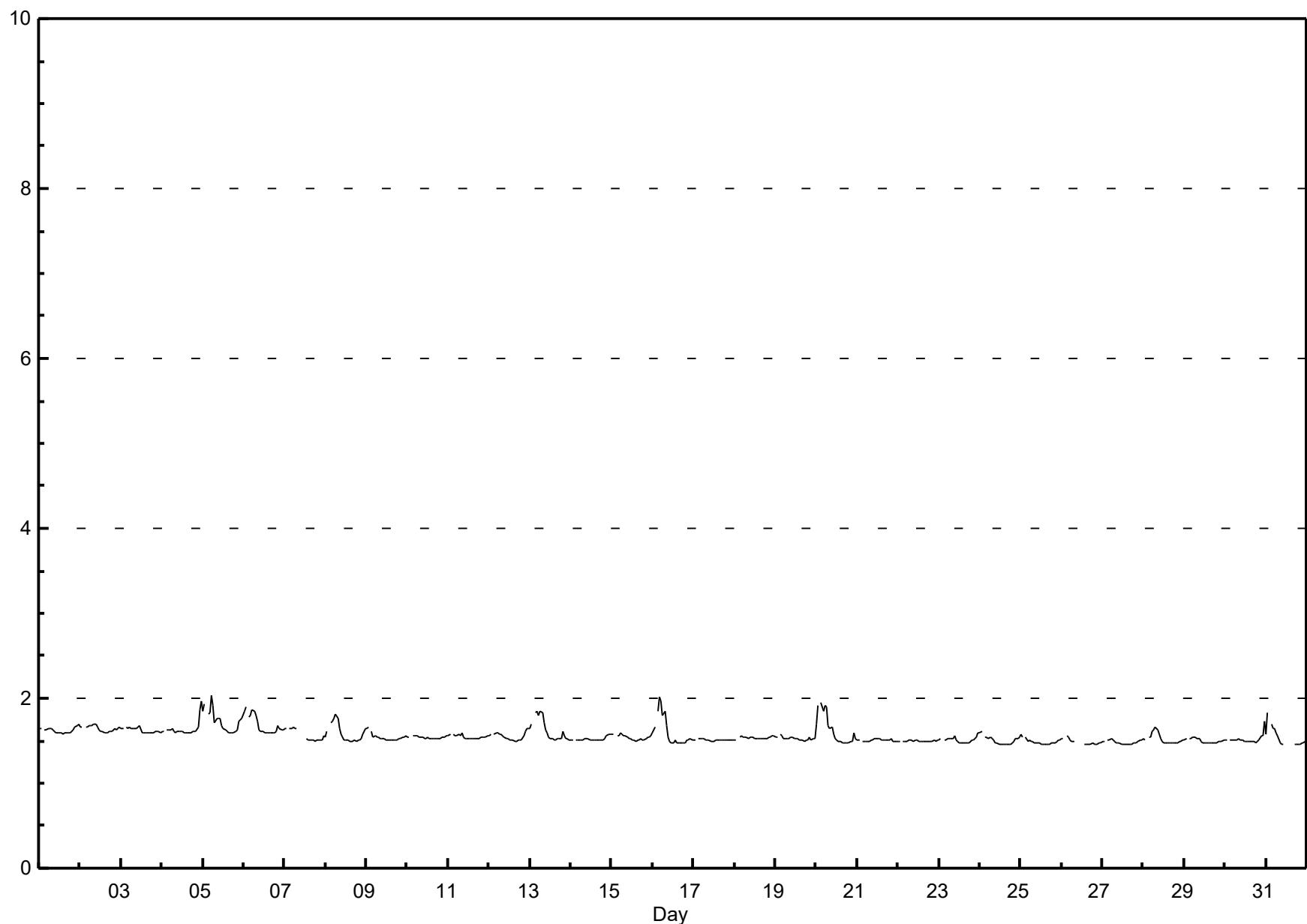
Carbon Monoxide (CO) - ppm
Henry Pirker - May 2020



Hourly Averages

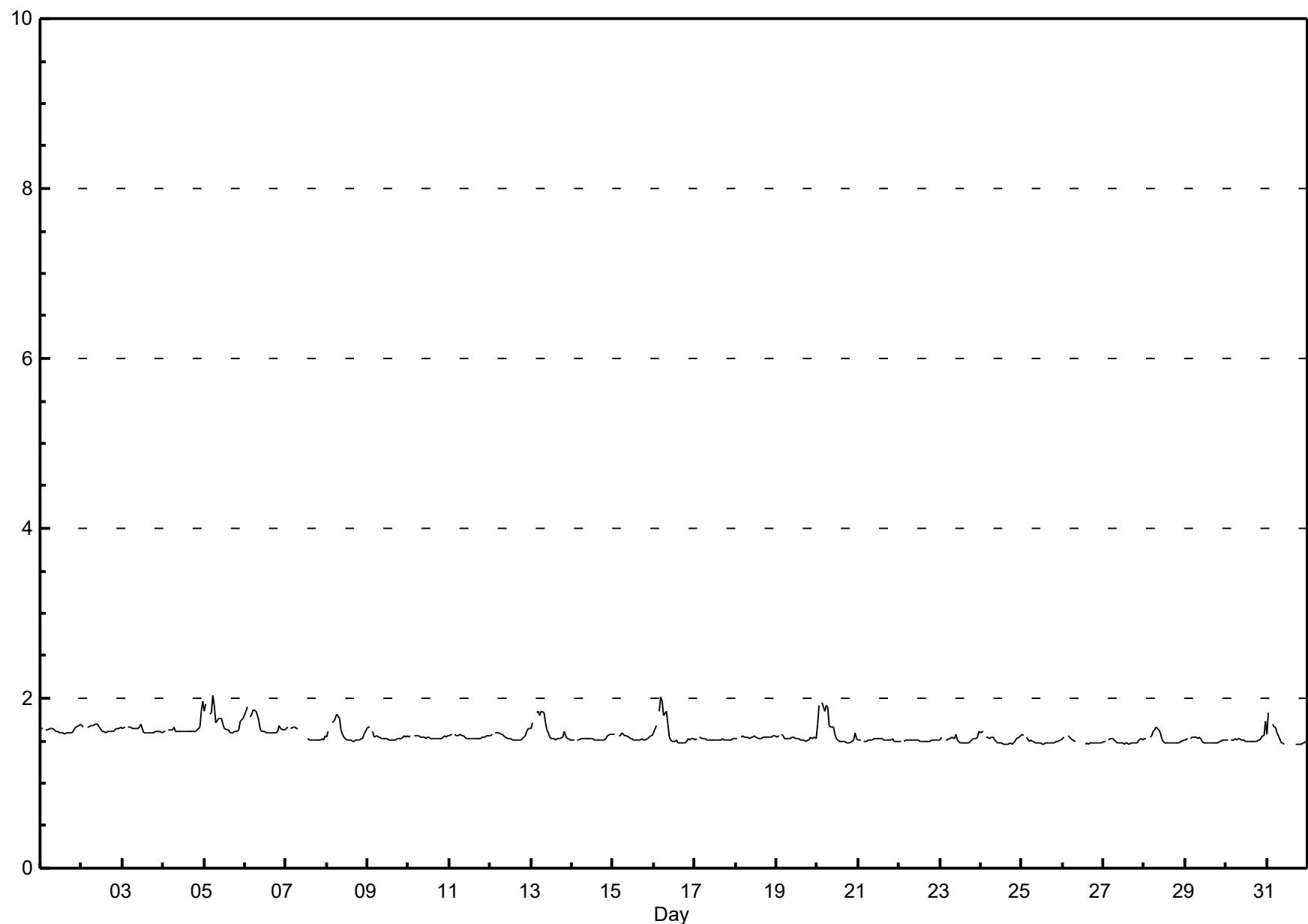
Total Hydrocarbons (THC) - ppm

Henry Pirker - May 2020



Hourly Averages

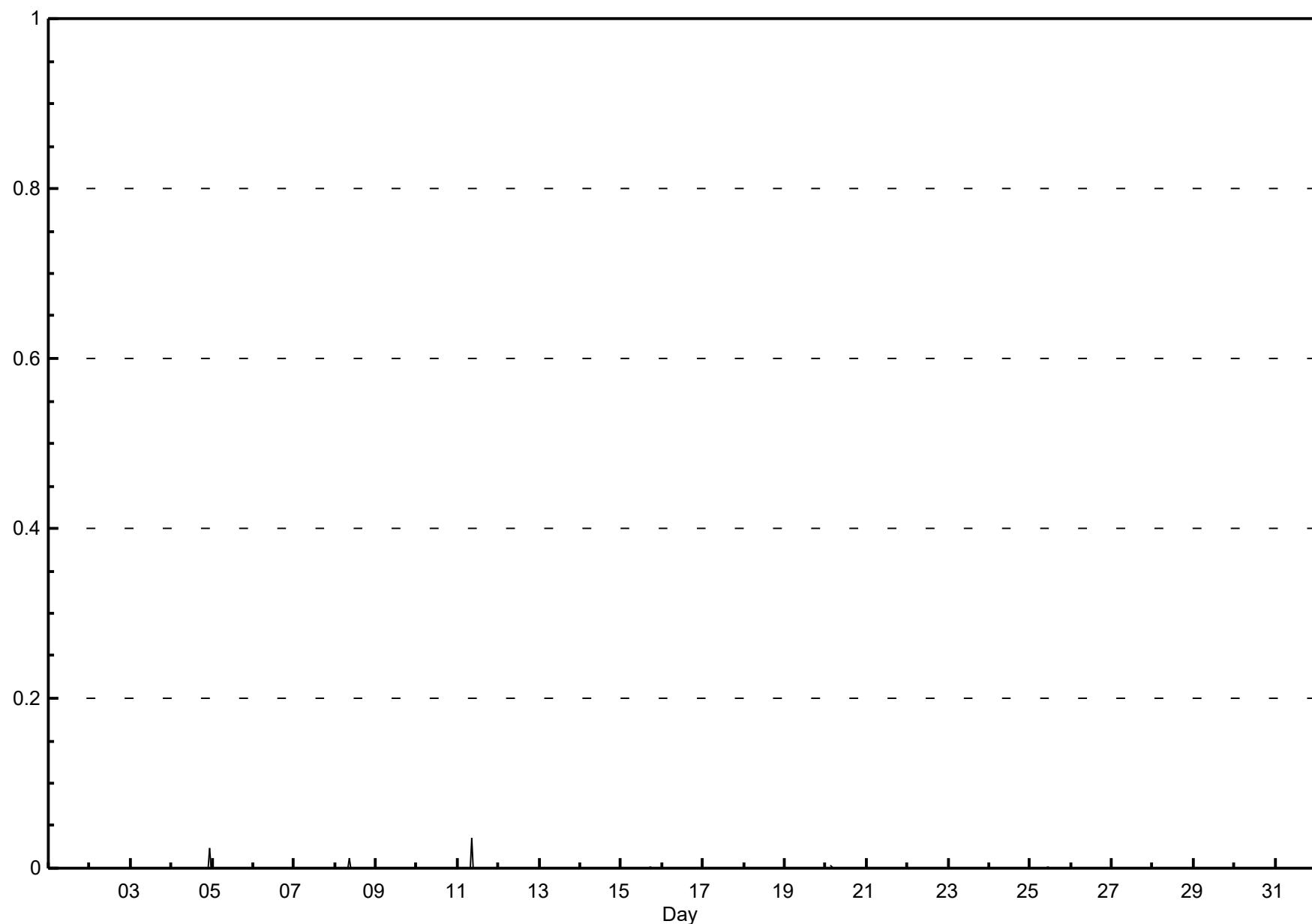
Methane (CH_4) - ppm
Henry Pirker - May 2020



Hourly Averages

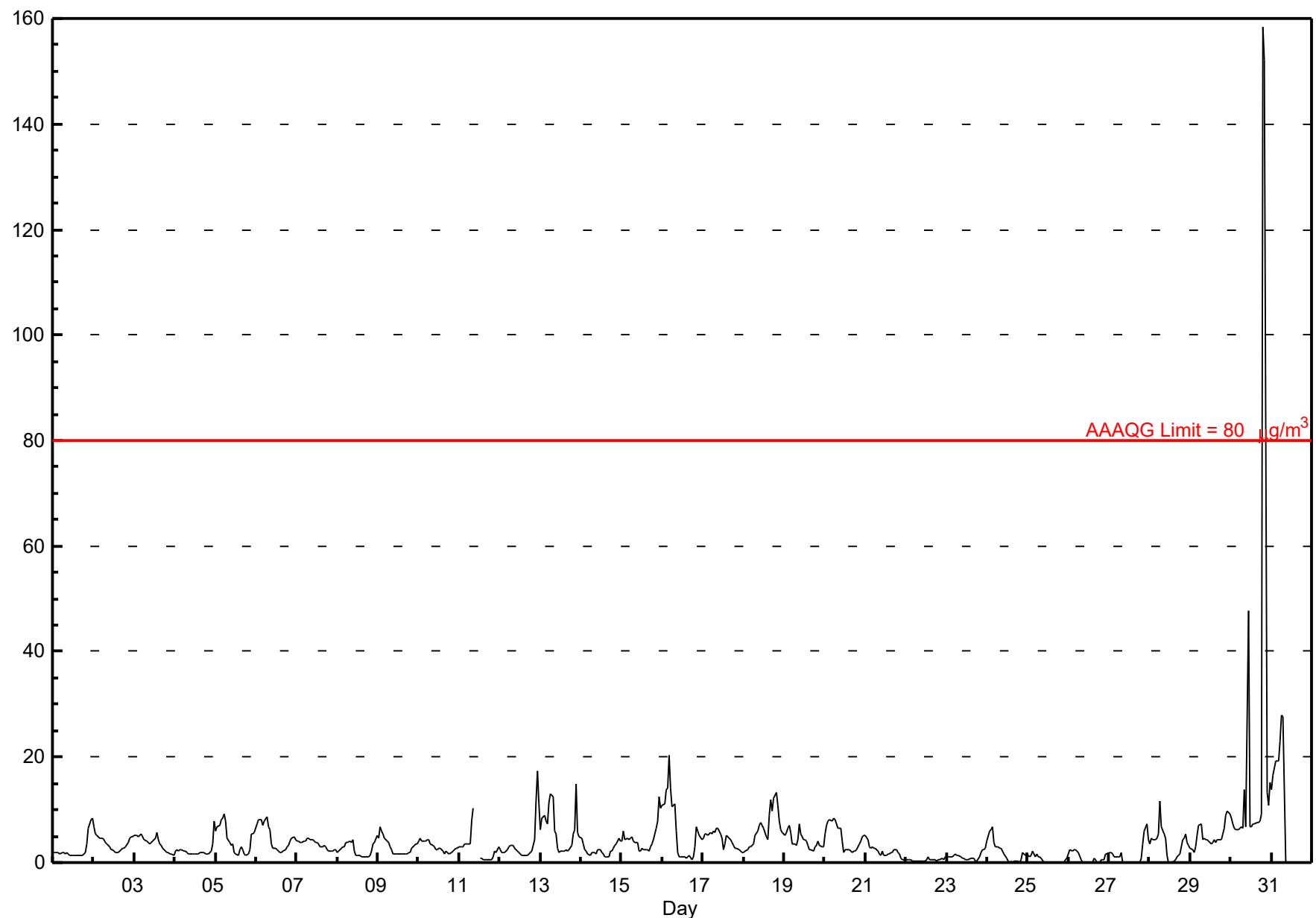
Non Methane Hydrocarbon (NMHC) - ppm

Henry Pirker - May 2020



Hourly Averages

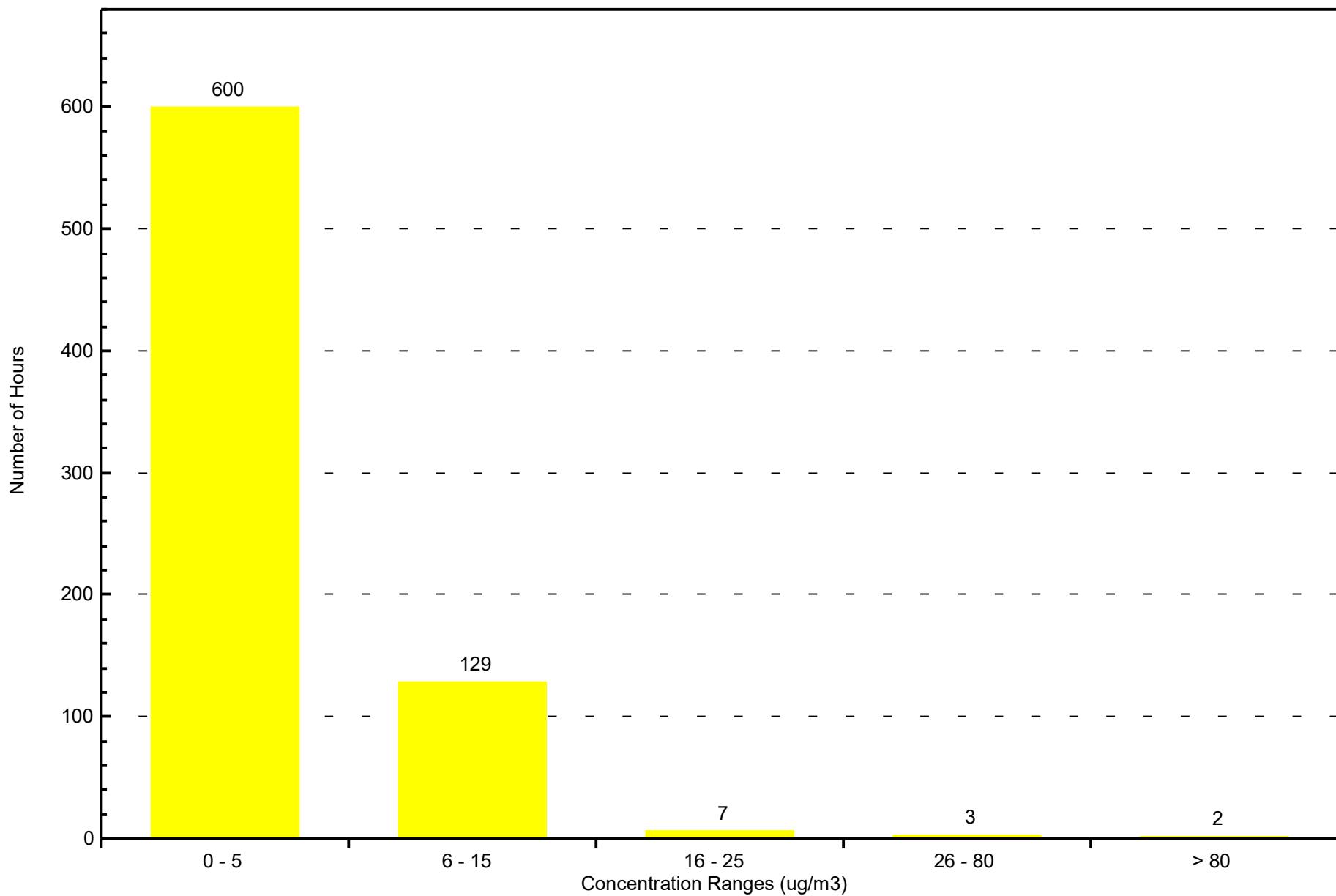
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Henry Pirker - May 2020



Histogram of Hourly Averages

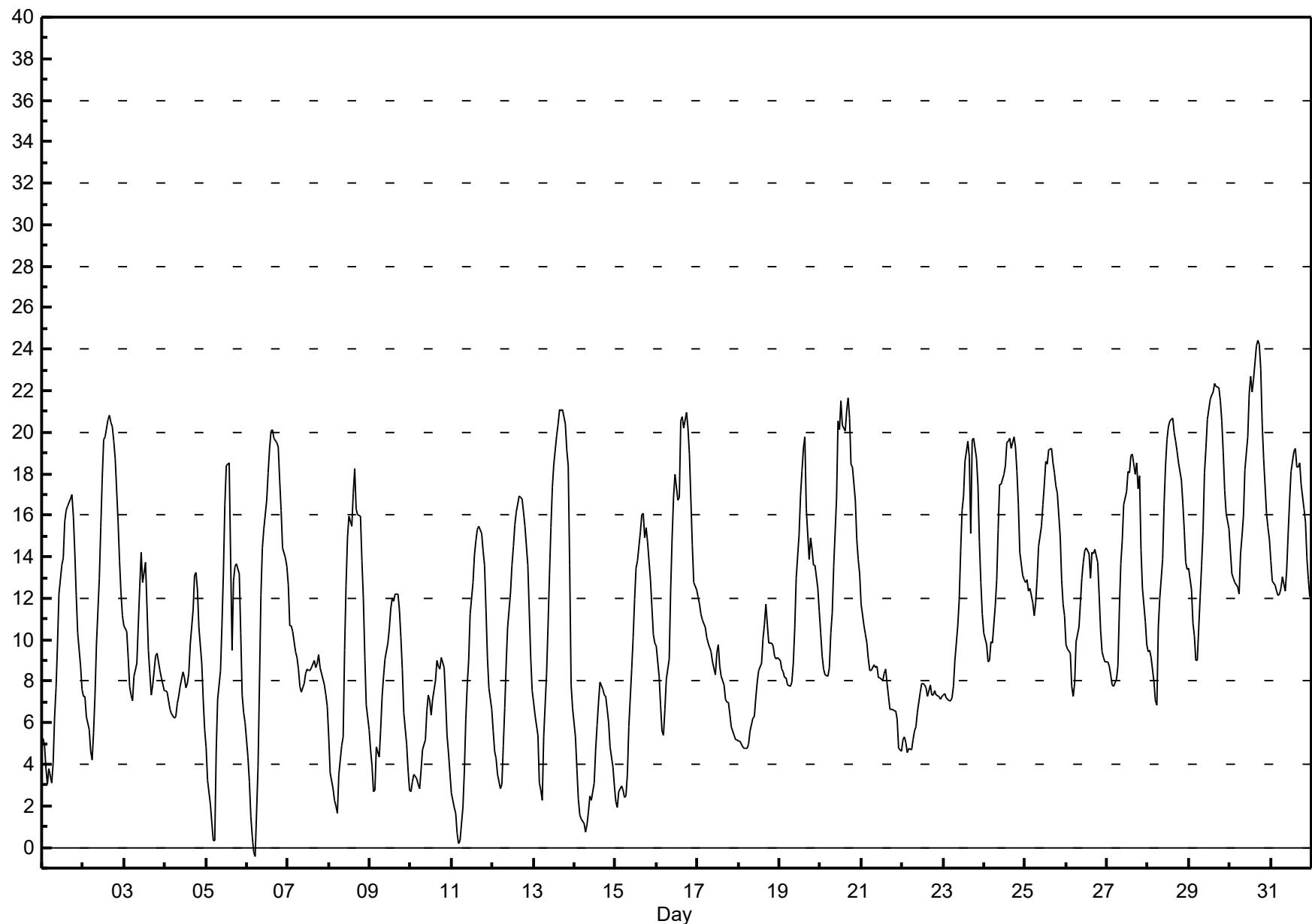
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$

Henry Pirker - May 2020



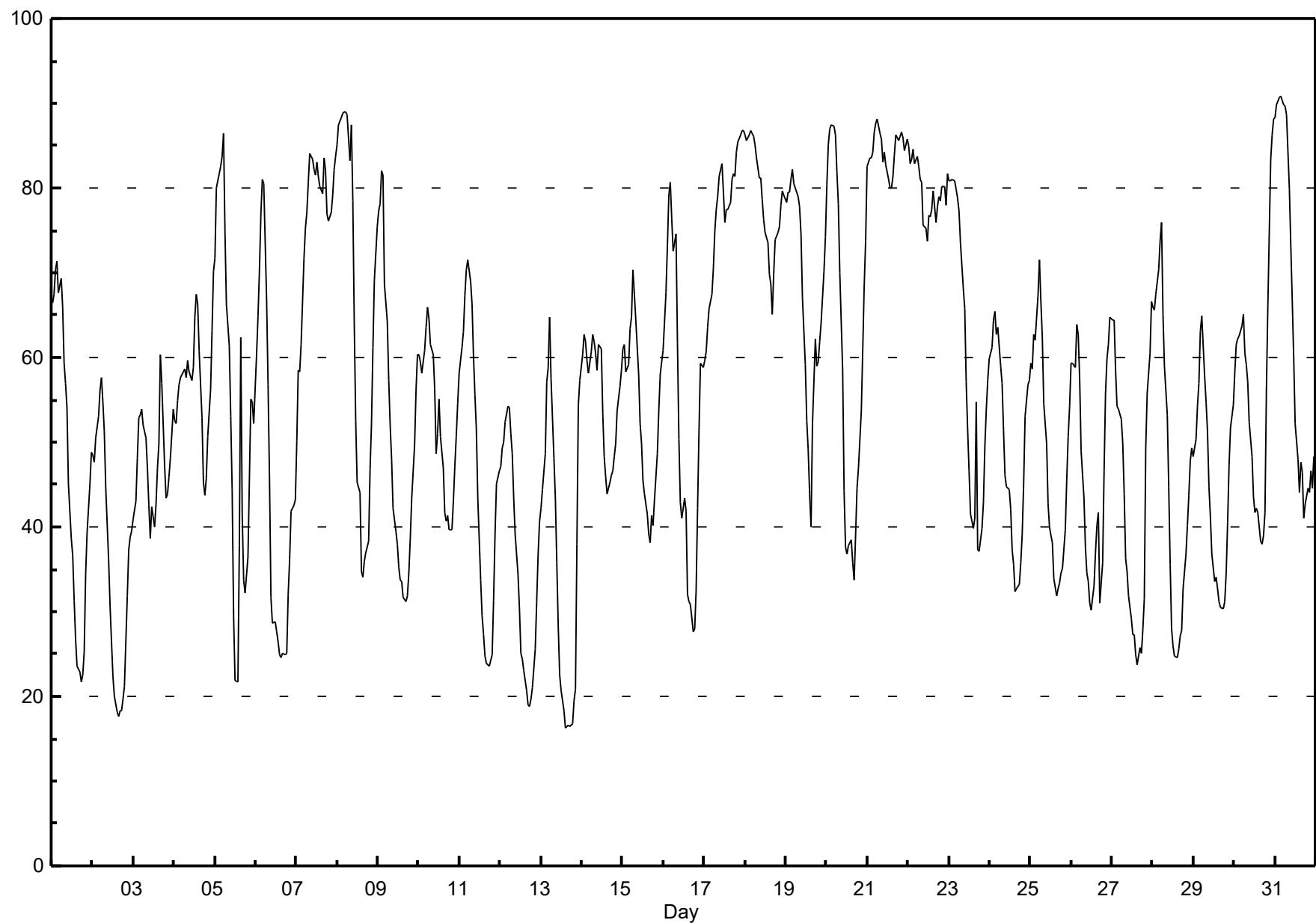
Hourly Averages

External Temperature (ET) - °C
Henry Pirker - May 2020



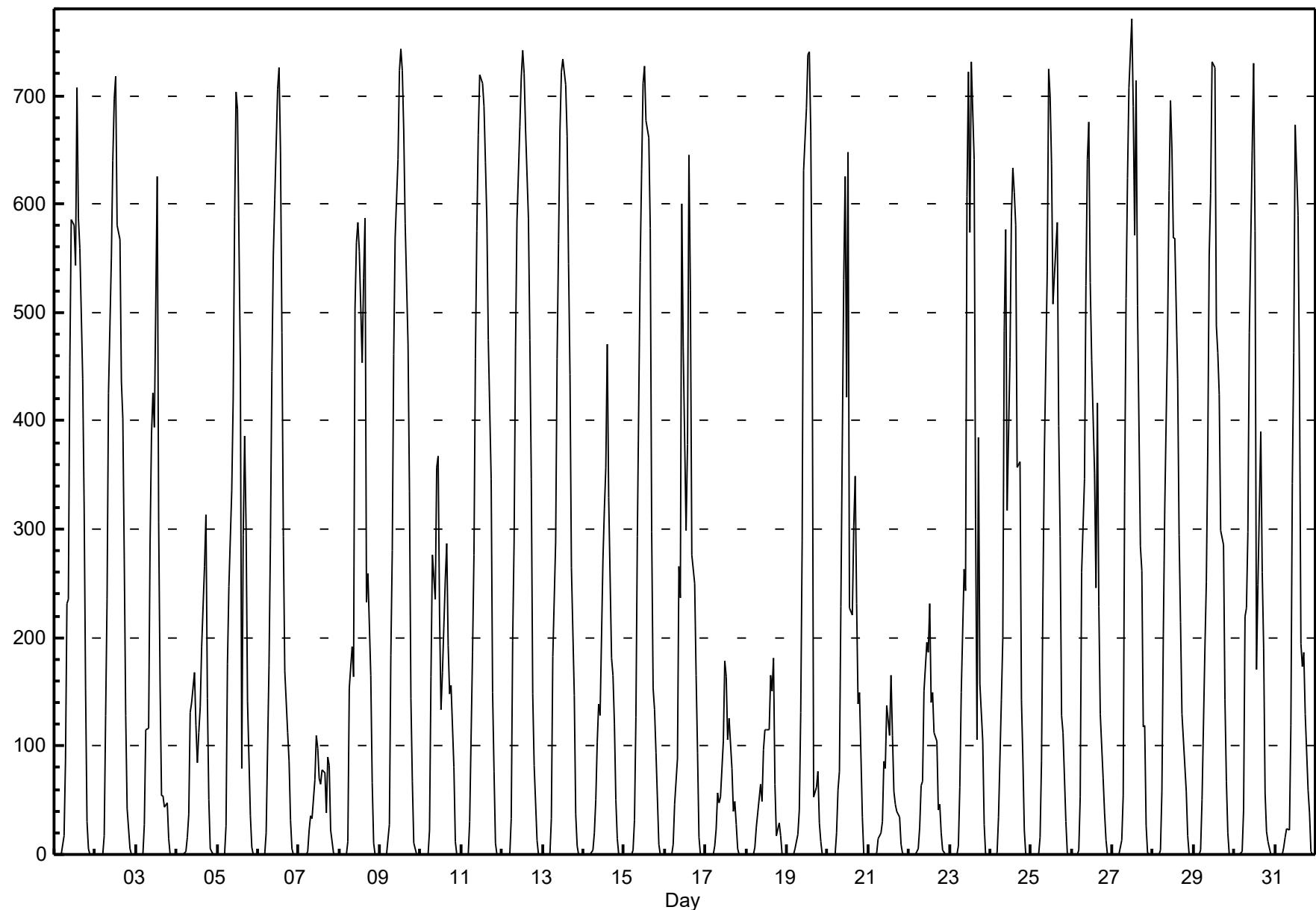
Hourly Averages

Relative Humidity (RH) - %
Henry Pirker - May 2020



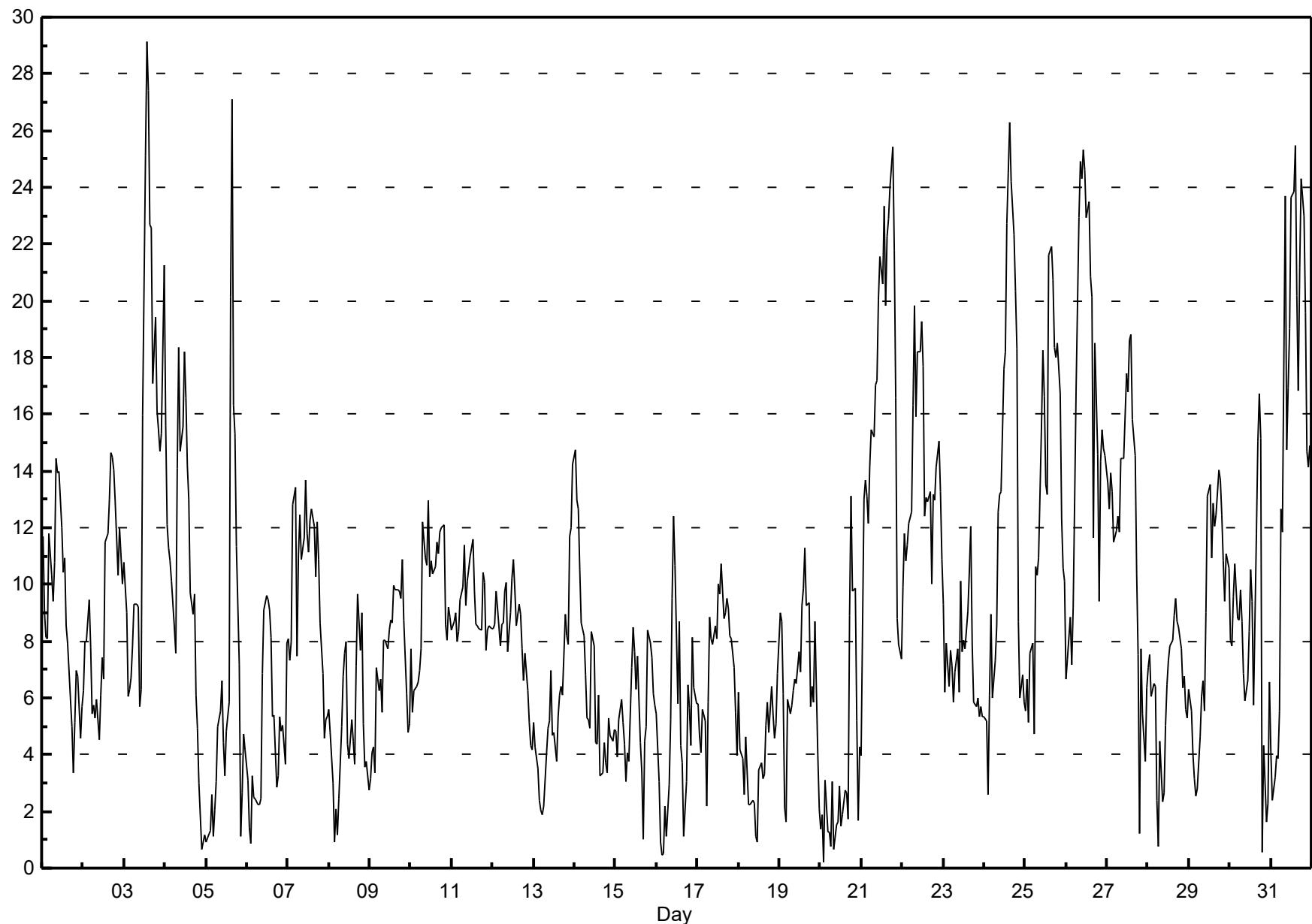
Hourly Averages

Solar Radiation (SR) - W/m²
Henry Pirker - May 2020



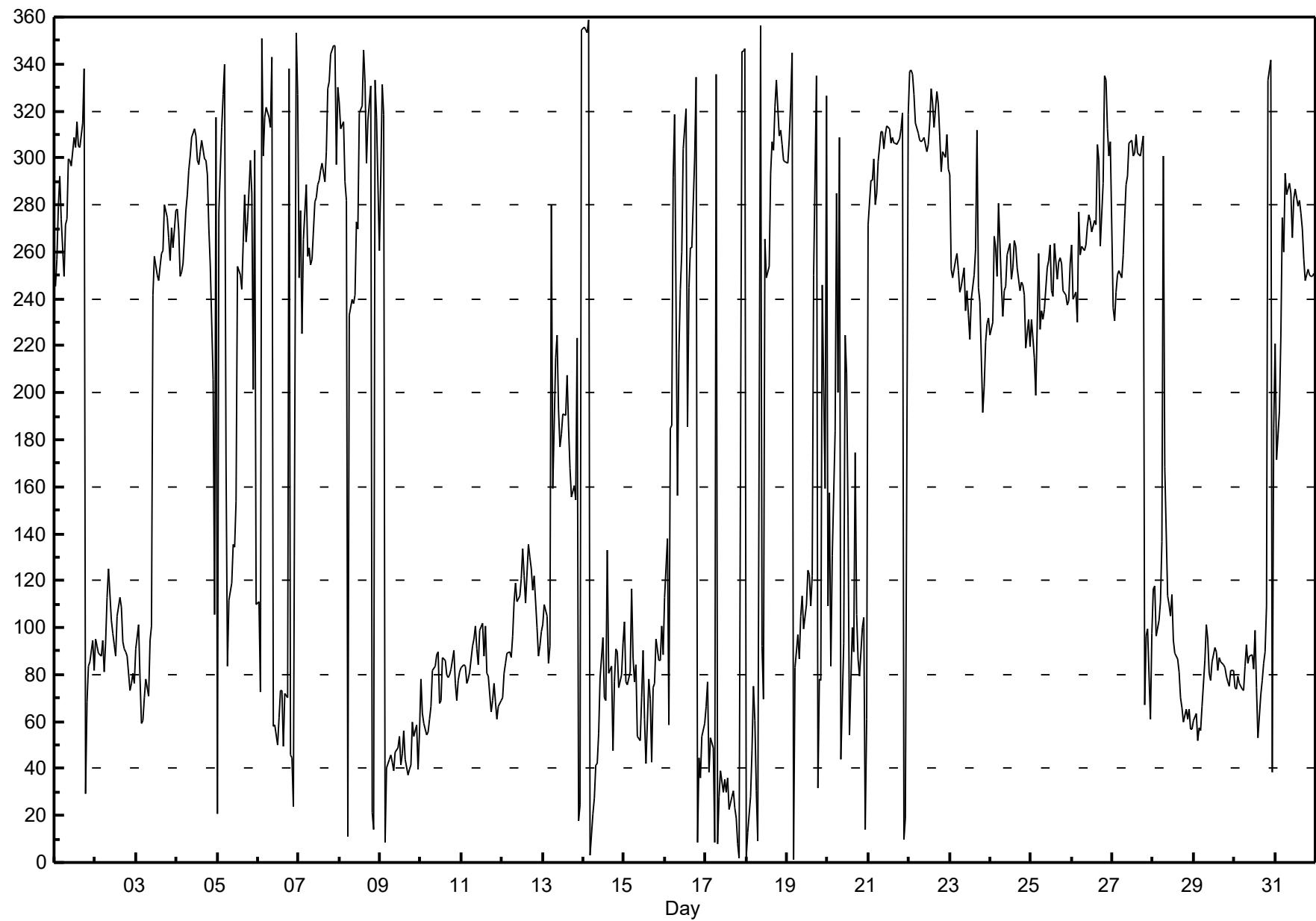
Hourly Averages

Wind Speed (WS) - km/h
Henry Pirker - May 2020



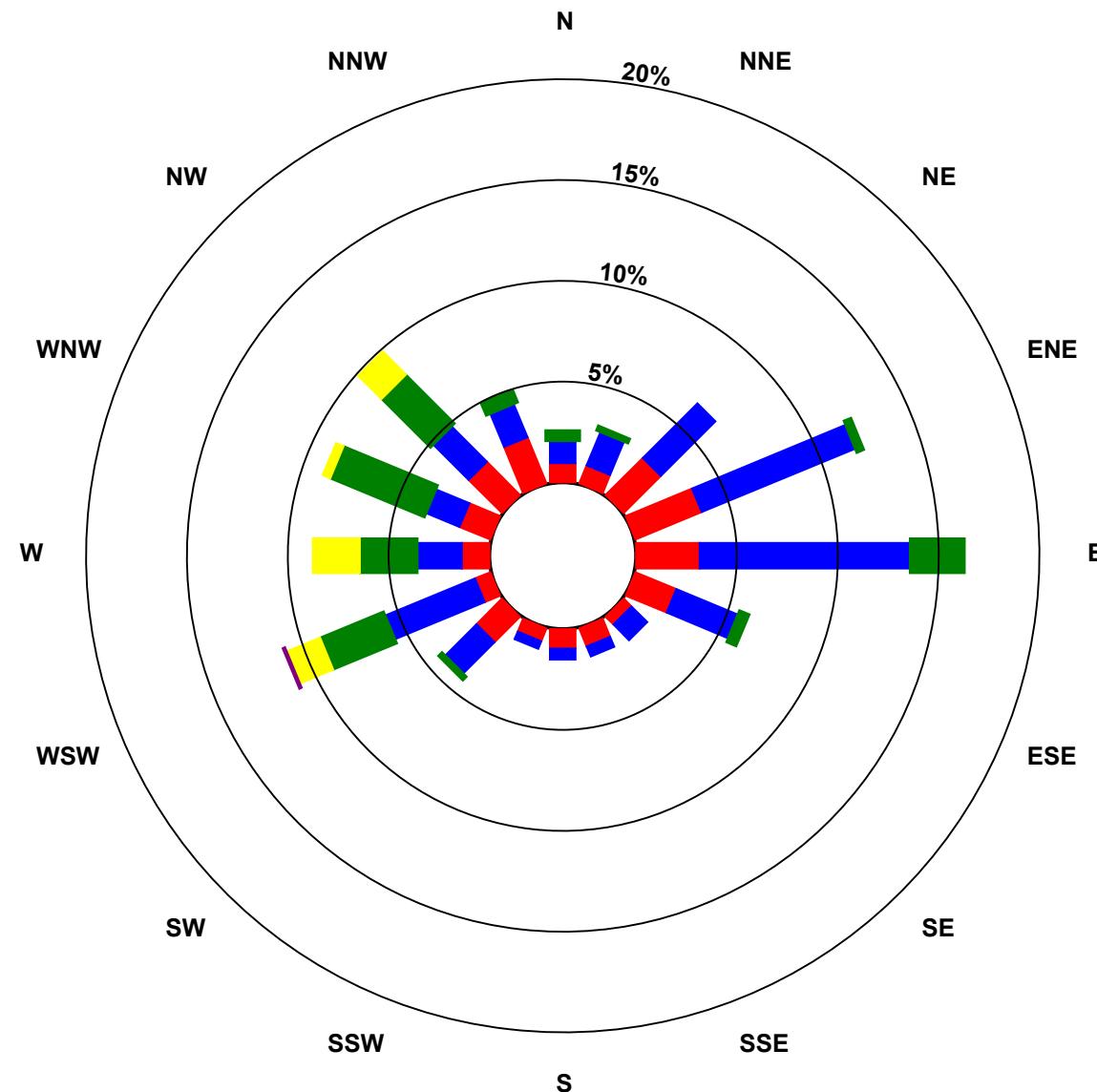
Hourly Averages

Wind Direction (WD) - deg
Henry Pirker - May 2020

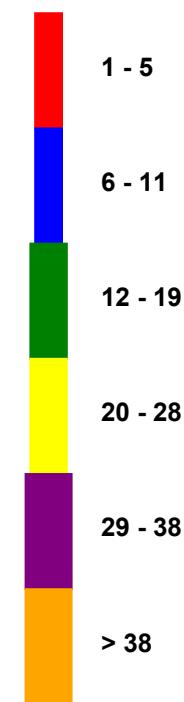


Wind Rose

Wind Speed (WS) (km/h)
Henry Pirker - May 2020



Wind Speed Classes (km/h)

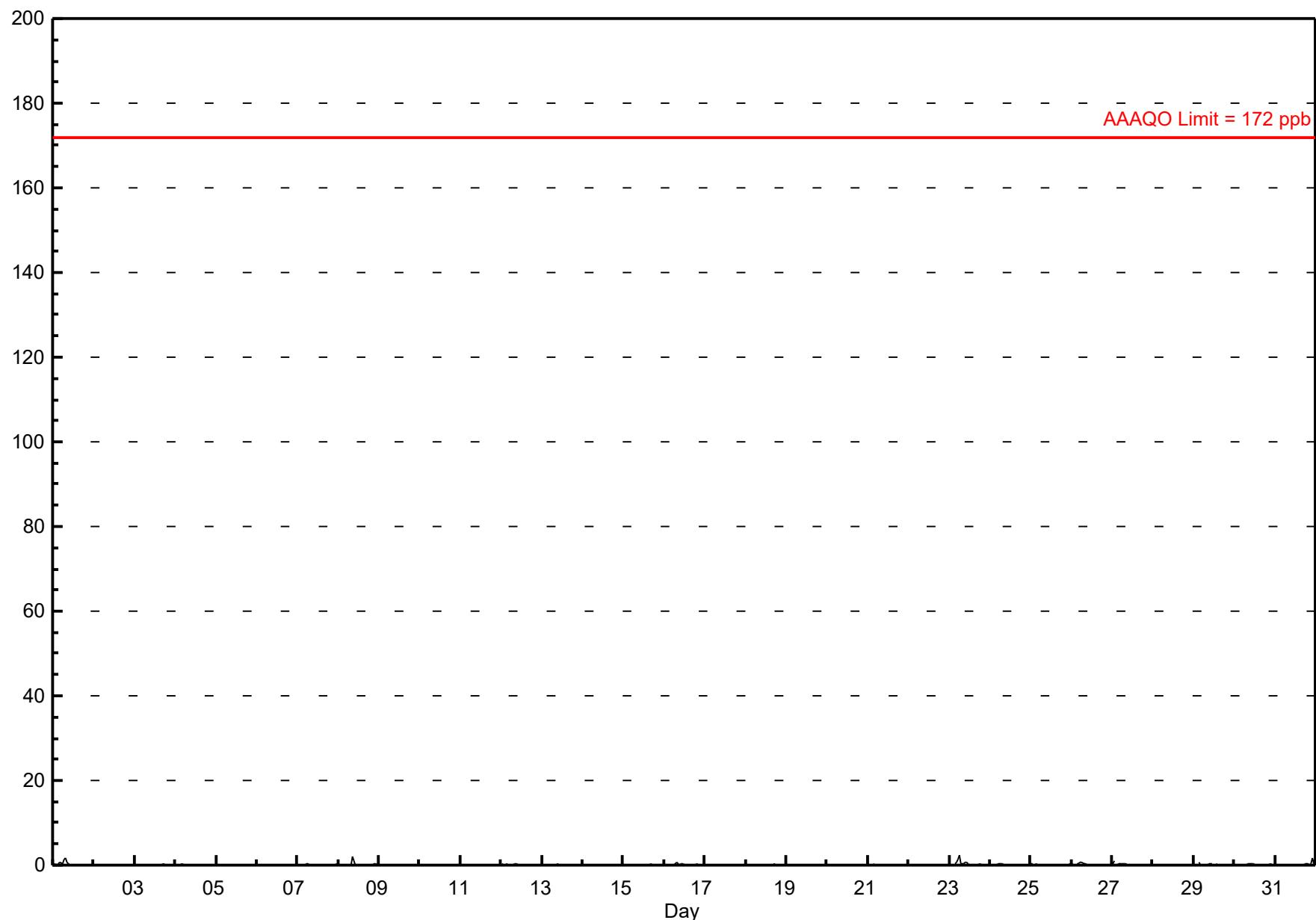


5 Smoky Heights Charts

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

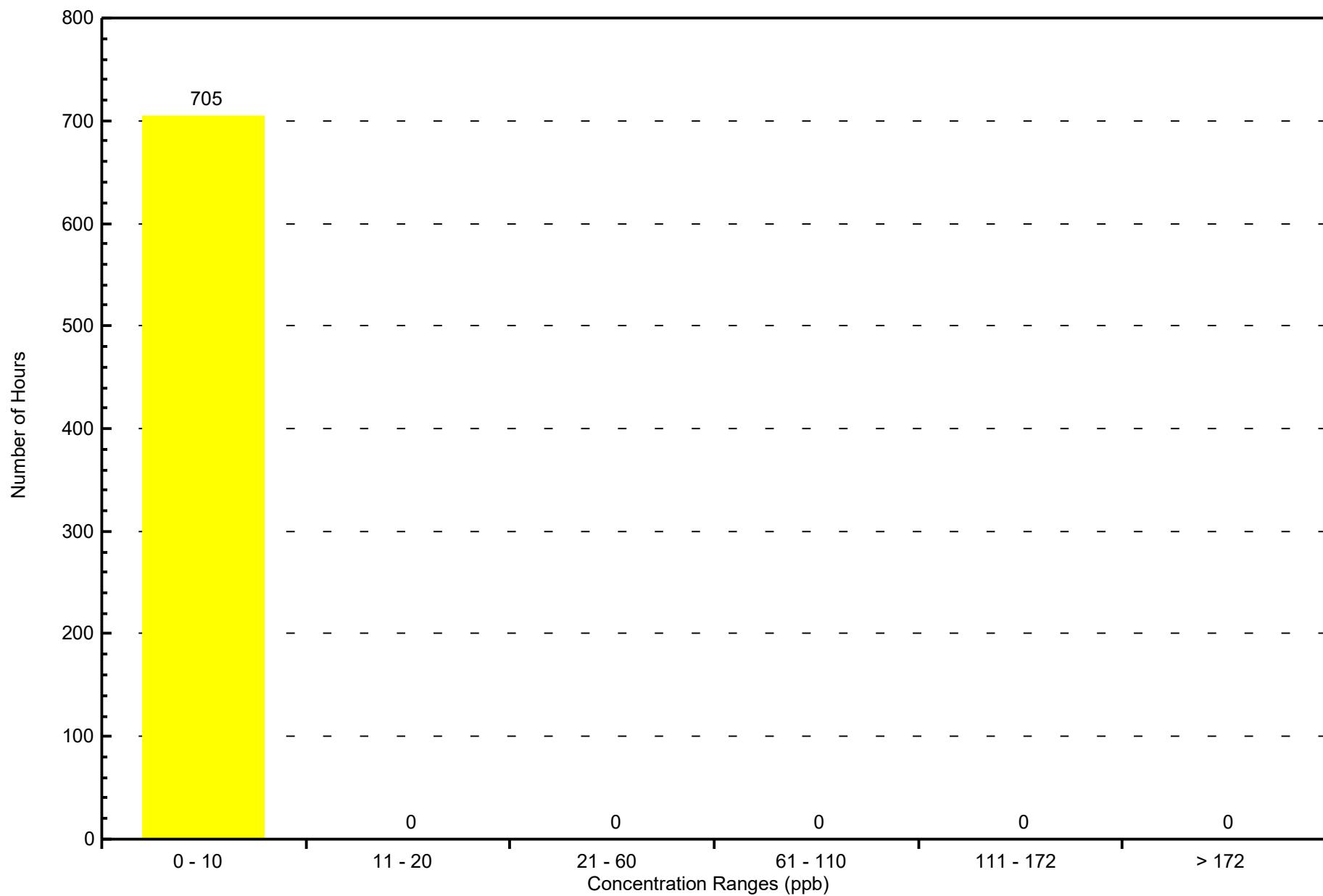
Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Smoky Heights - May 2020



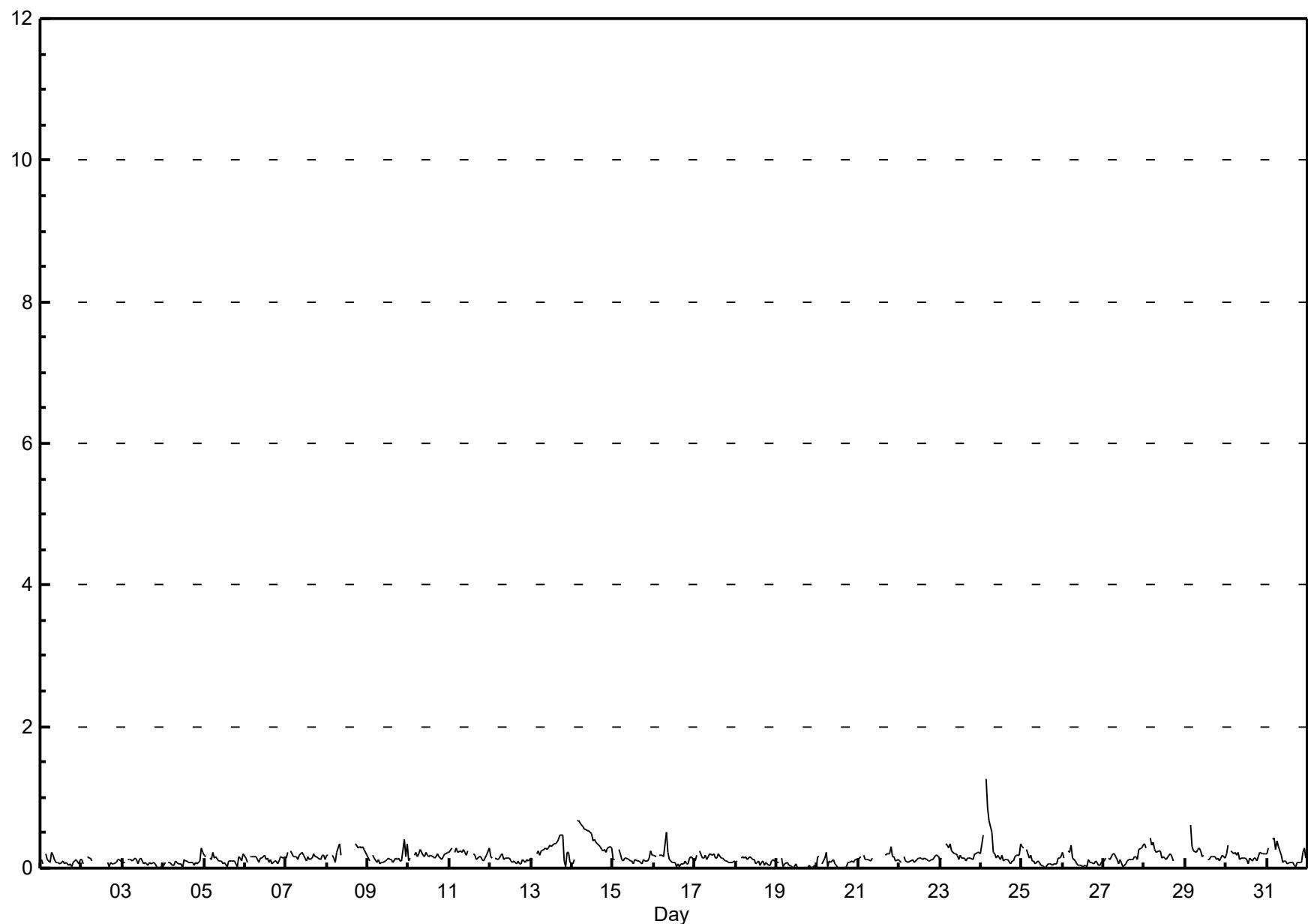
Histogram of Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Smoky Heights - May 2020



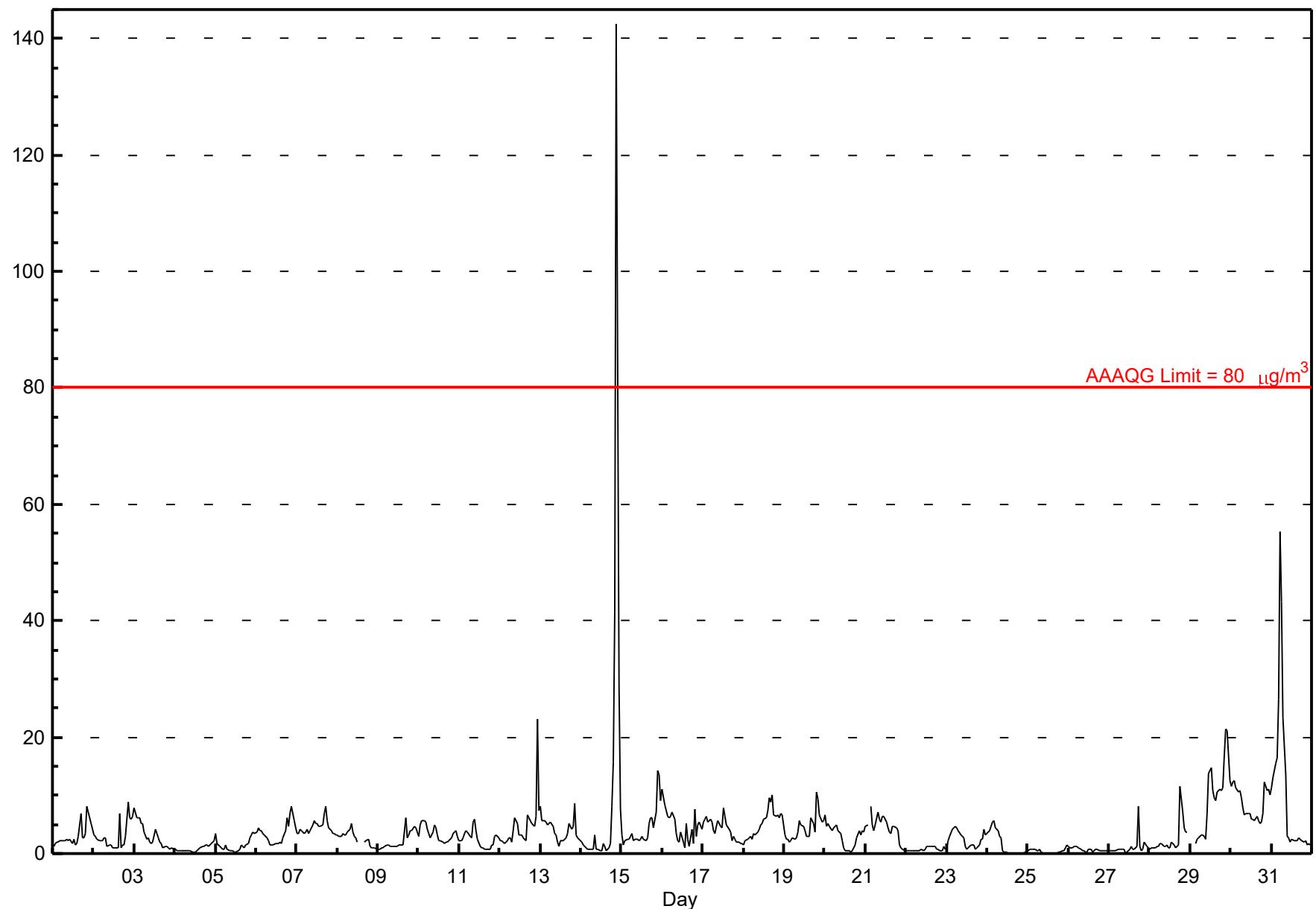
Hourly Averages

Total Reduced Sulphur (TRS) - ppb
Smoky Heights - May 2020



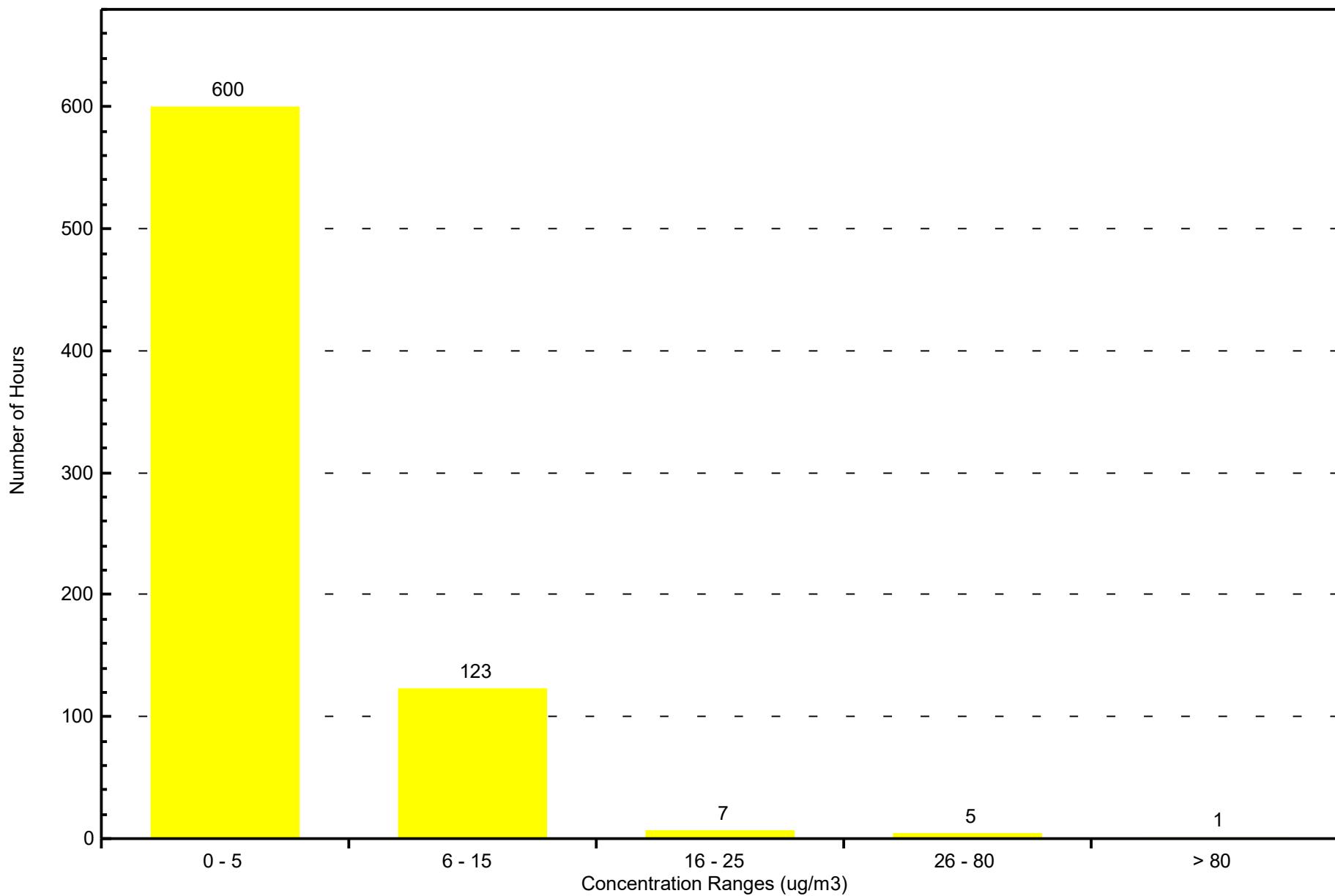
Hourly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Smoky Heights - May 2020



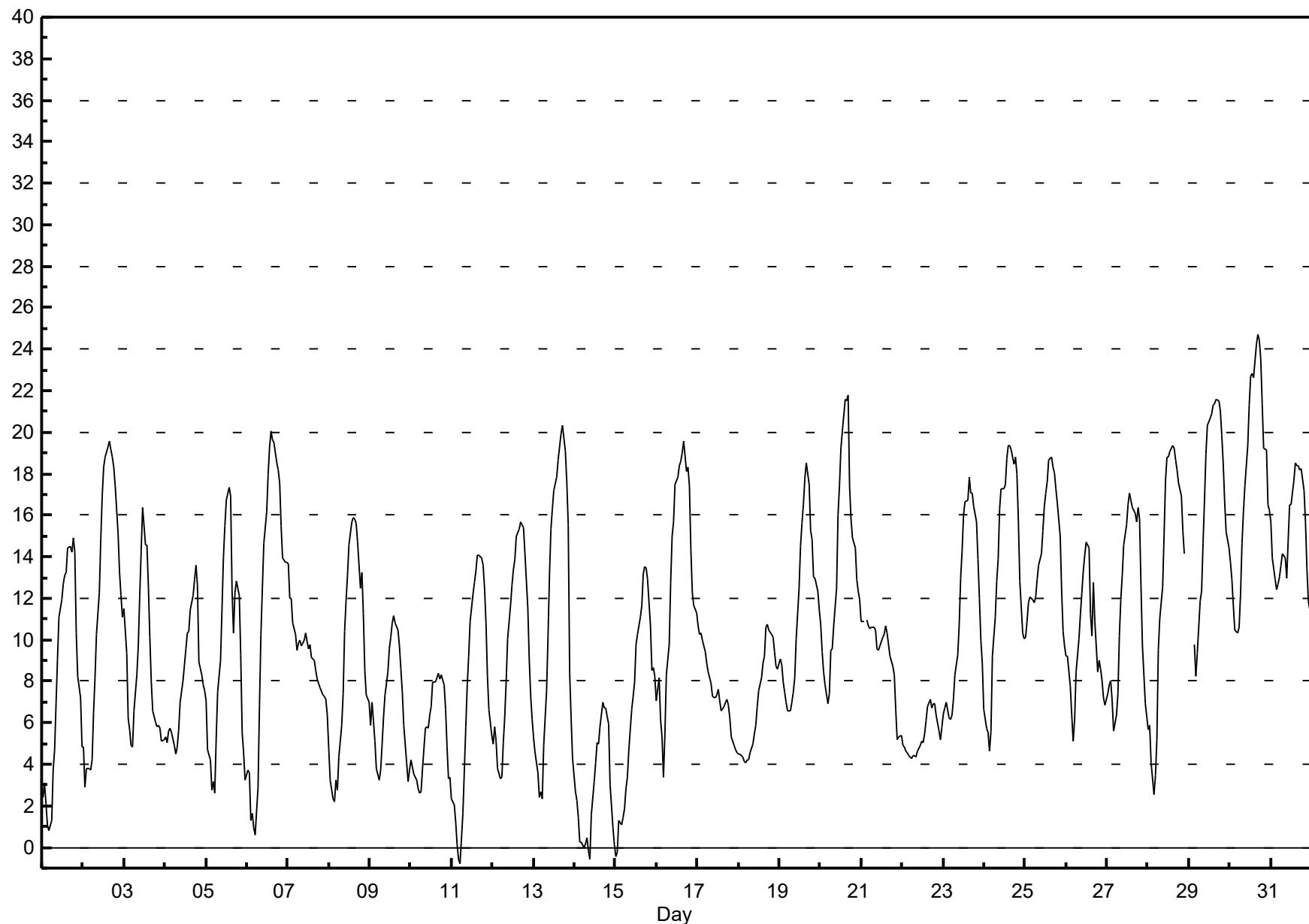
Histogram of Hourly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Smoky Heights - May 2020



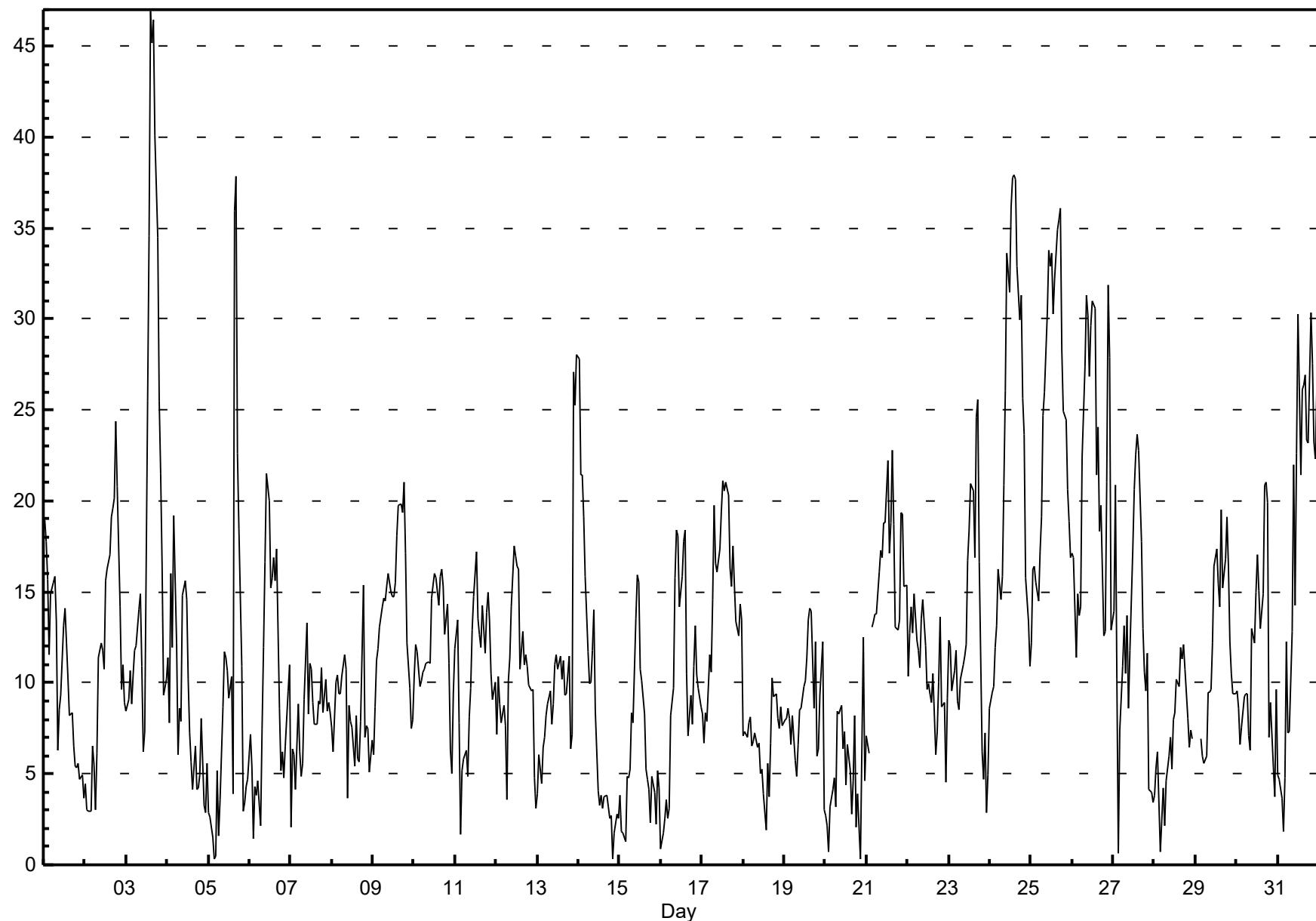
Hourly Averages

External Temperature (ET) - °C
Smoky Heights - May 2020



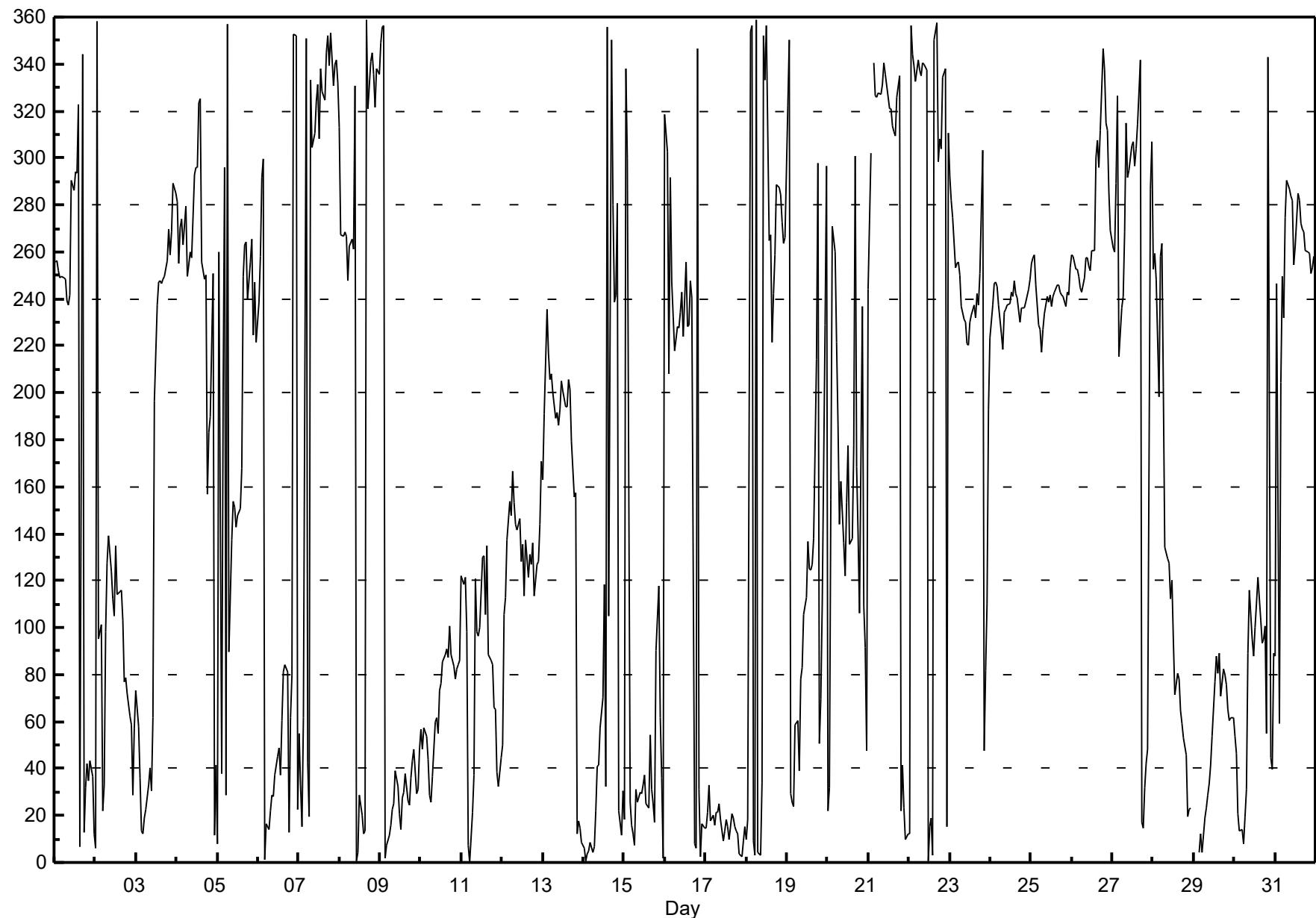
Hourly Averages

Wind Speed (WS) - km/h
Smoky Heights - May 2020



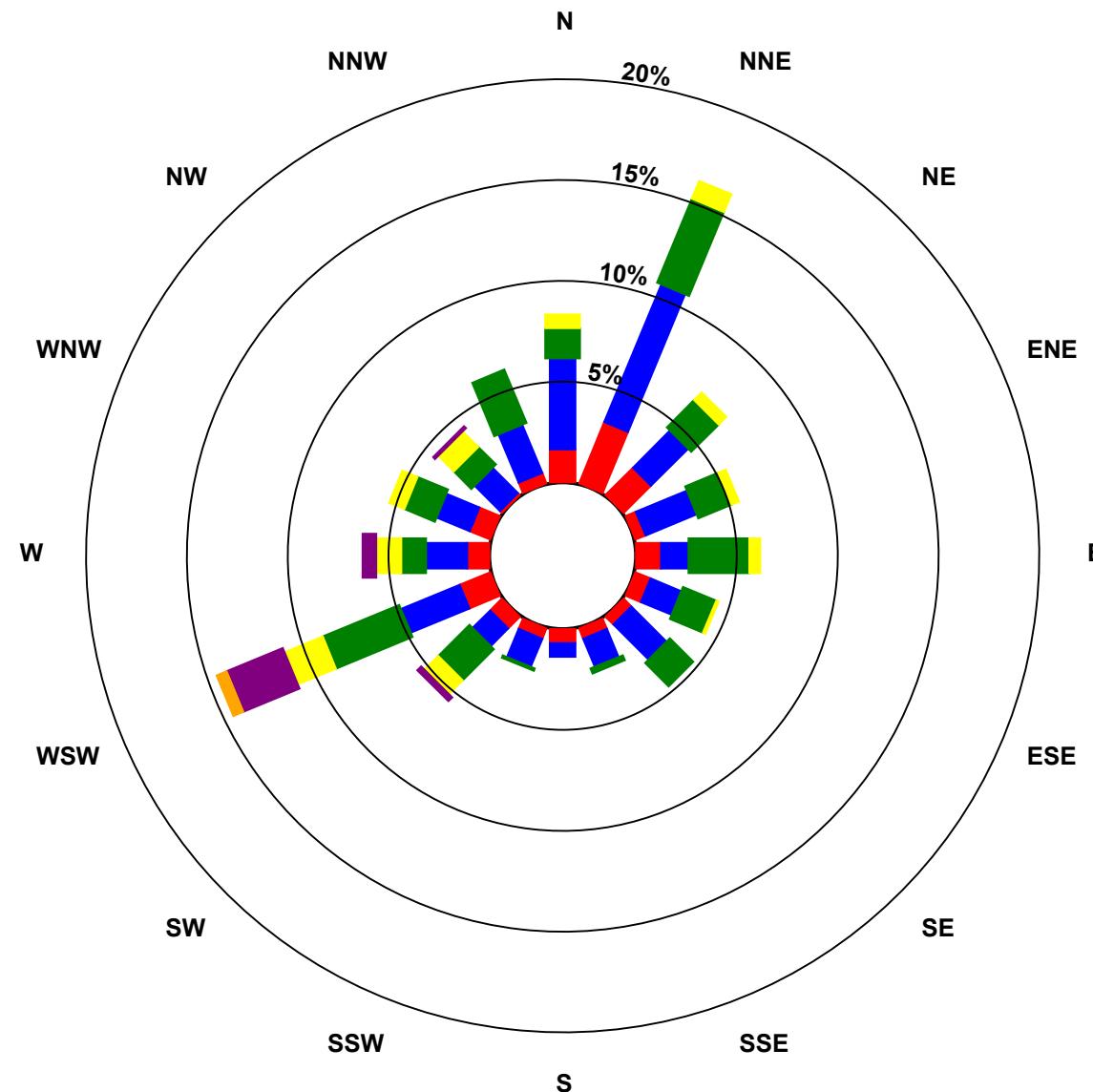
Hourly Averages

Wind Direction (WD) - deg
Smoky Heights - May 2020

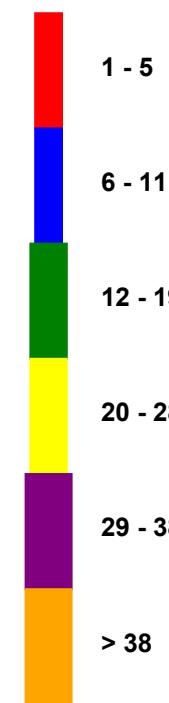


Wind Rose

Wind Speed (WS) (km/h)
Smoky Heights - May 2020



Wind Speed Classes (km/h)

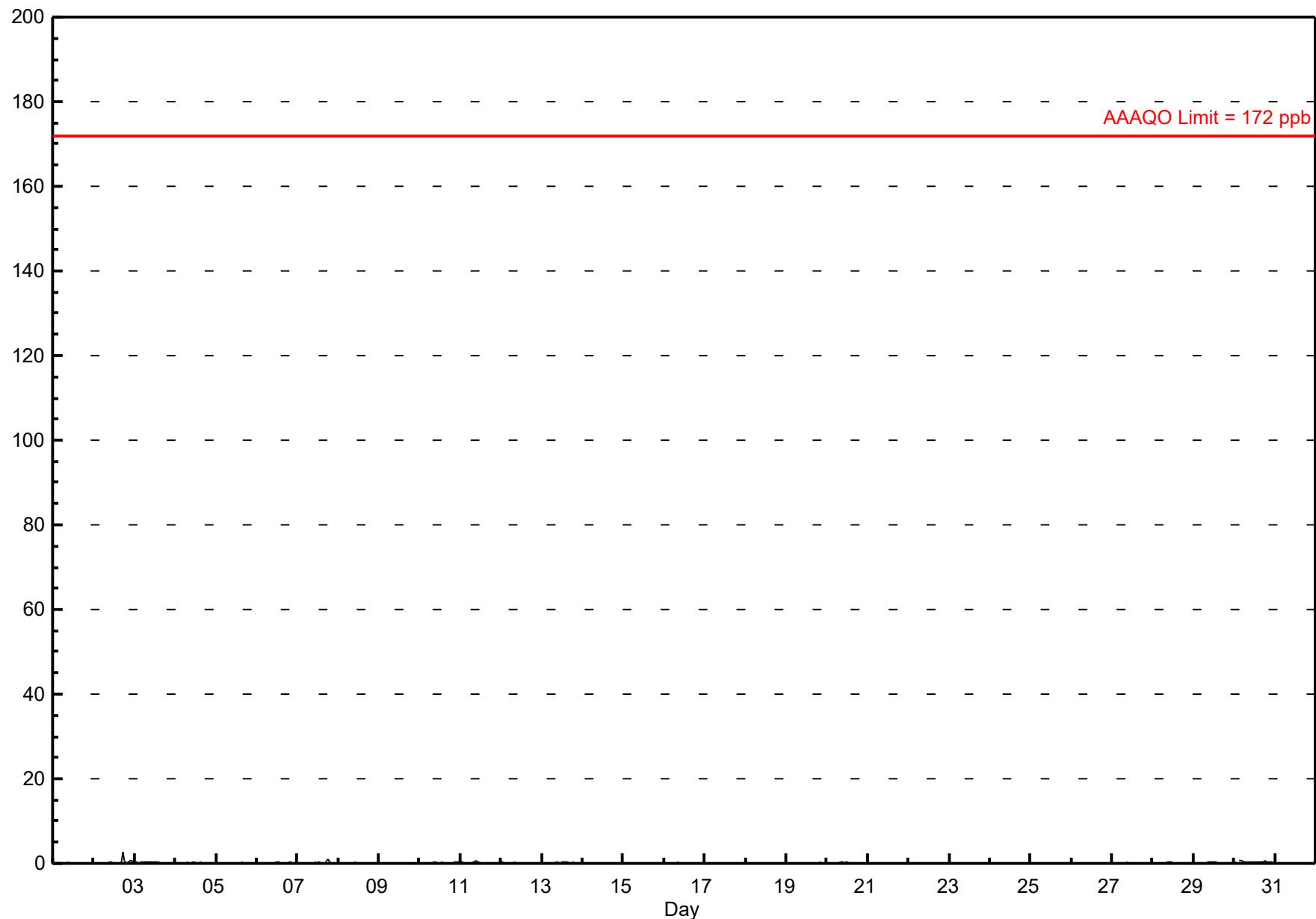


6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

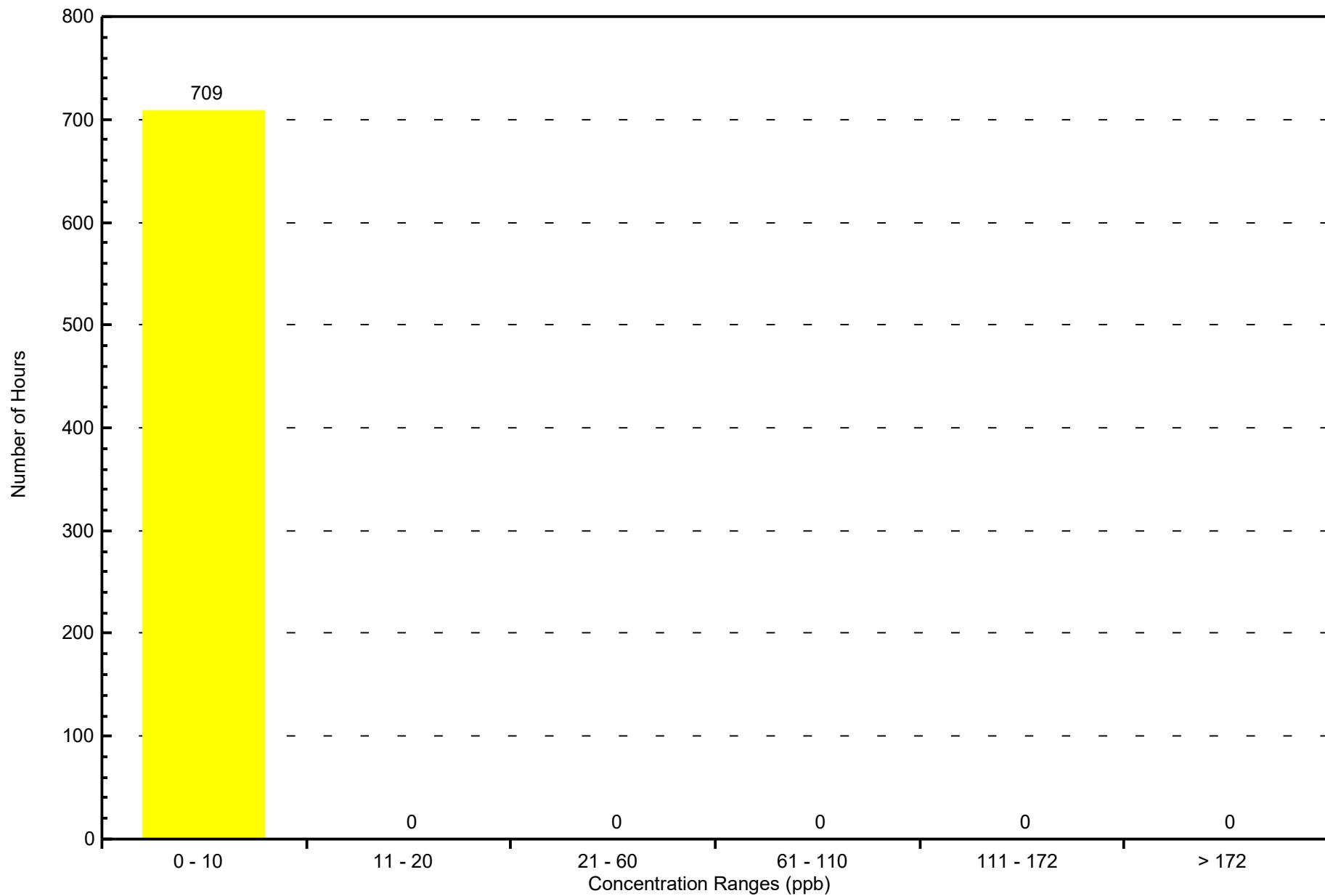
Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Valleyview - May 2020



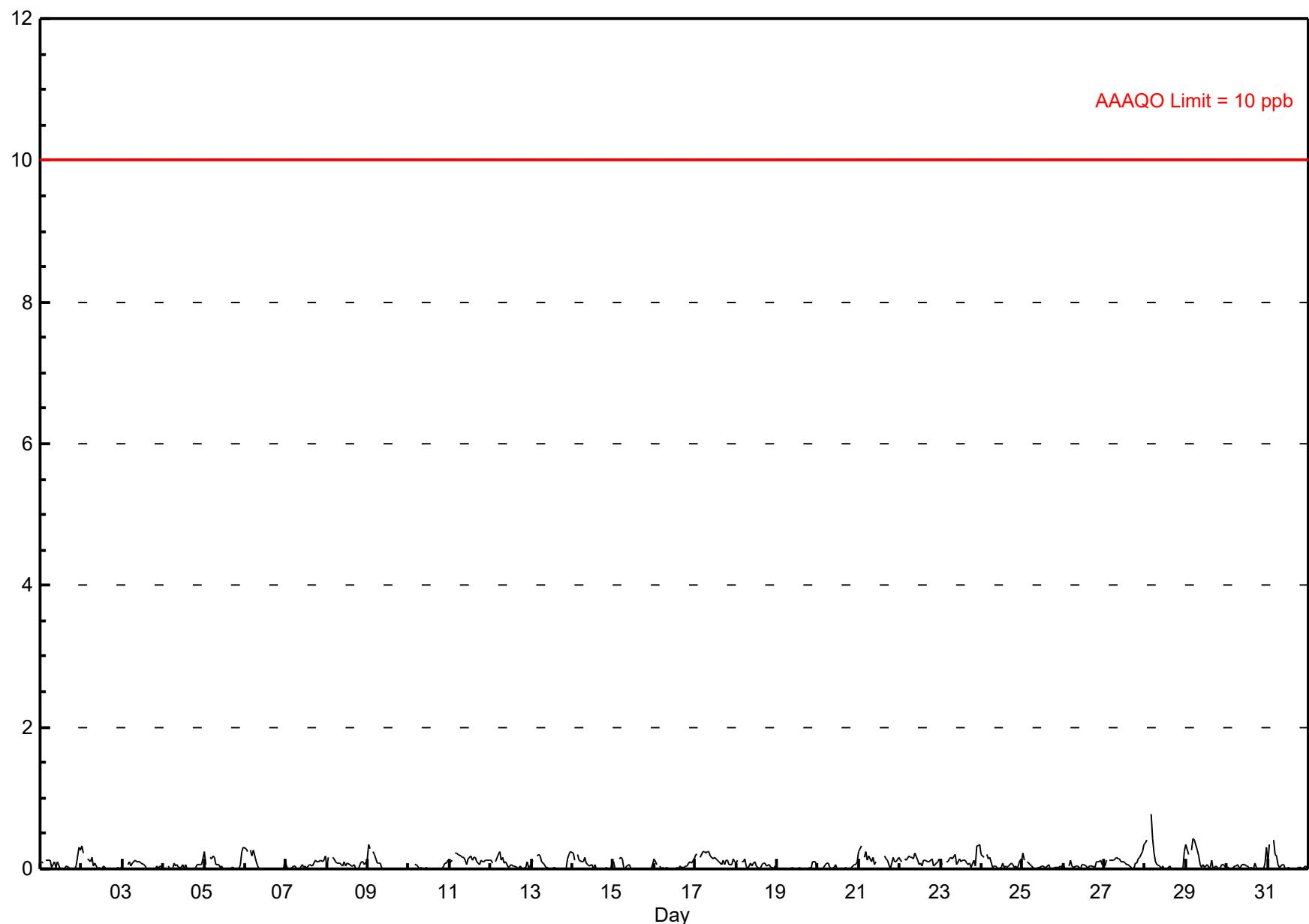
Histogram of Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Valleyview - May 2020



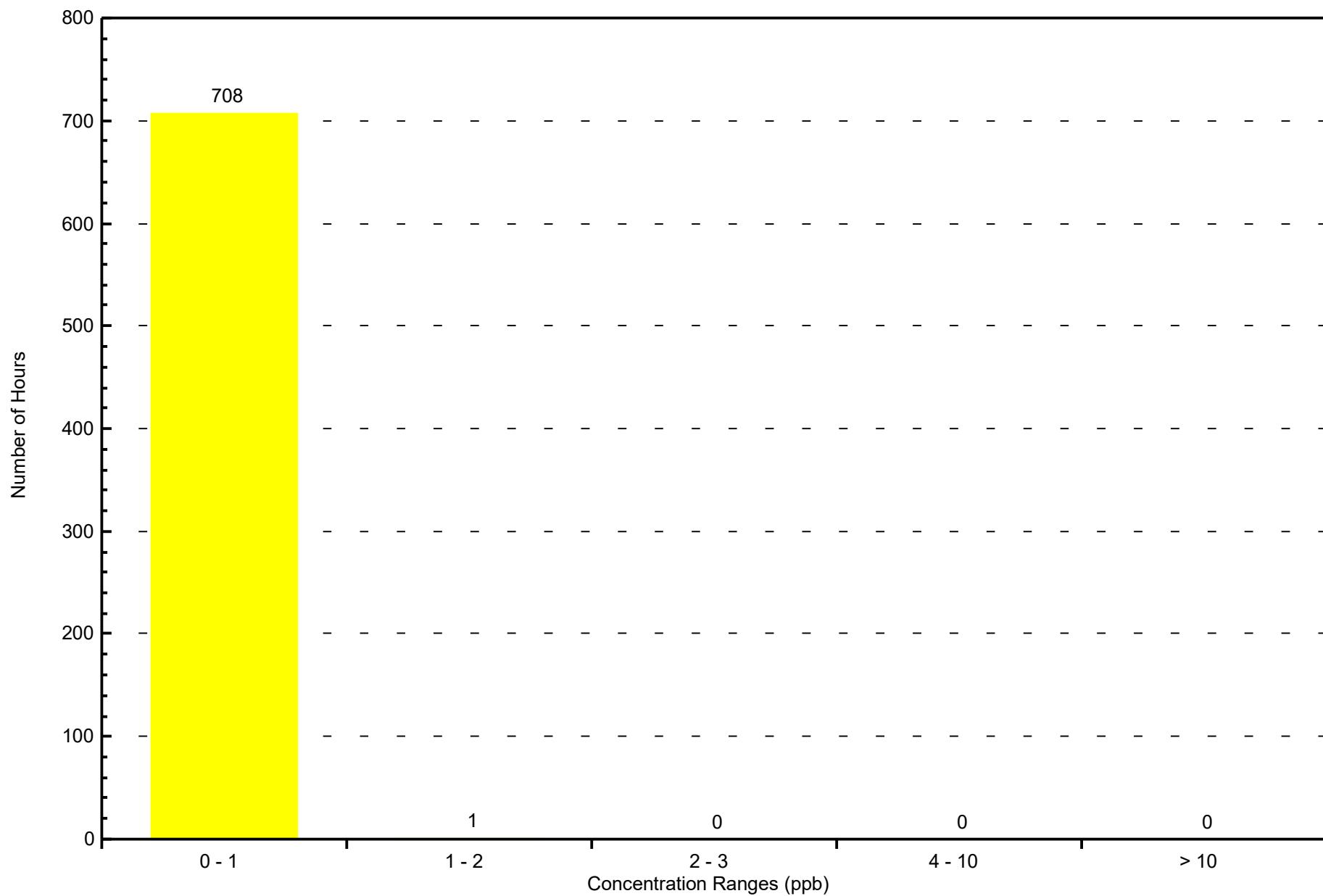
Hourly Averages

Hydrogen Sulphide (H_2S) - ppb
Valleyview - May 2020



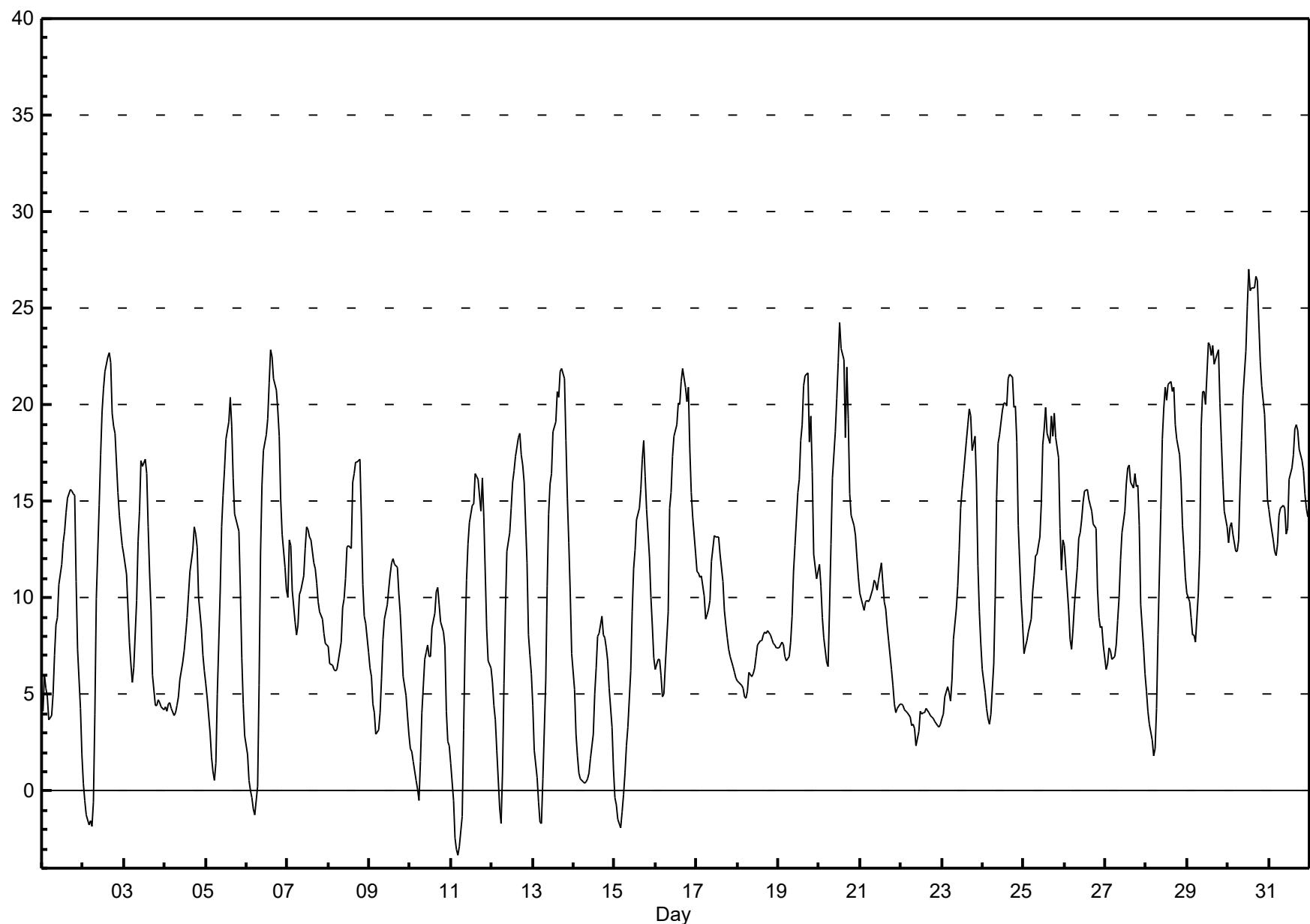
Histogram of Hourly Averages

Hydrogen Sulphide (H_2S) - ppb
Valleyview - May 2020



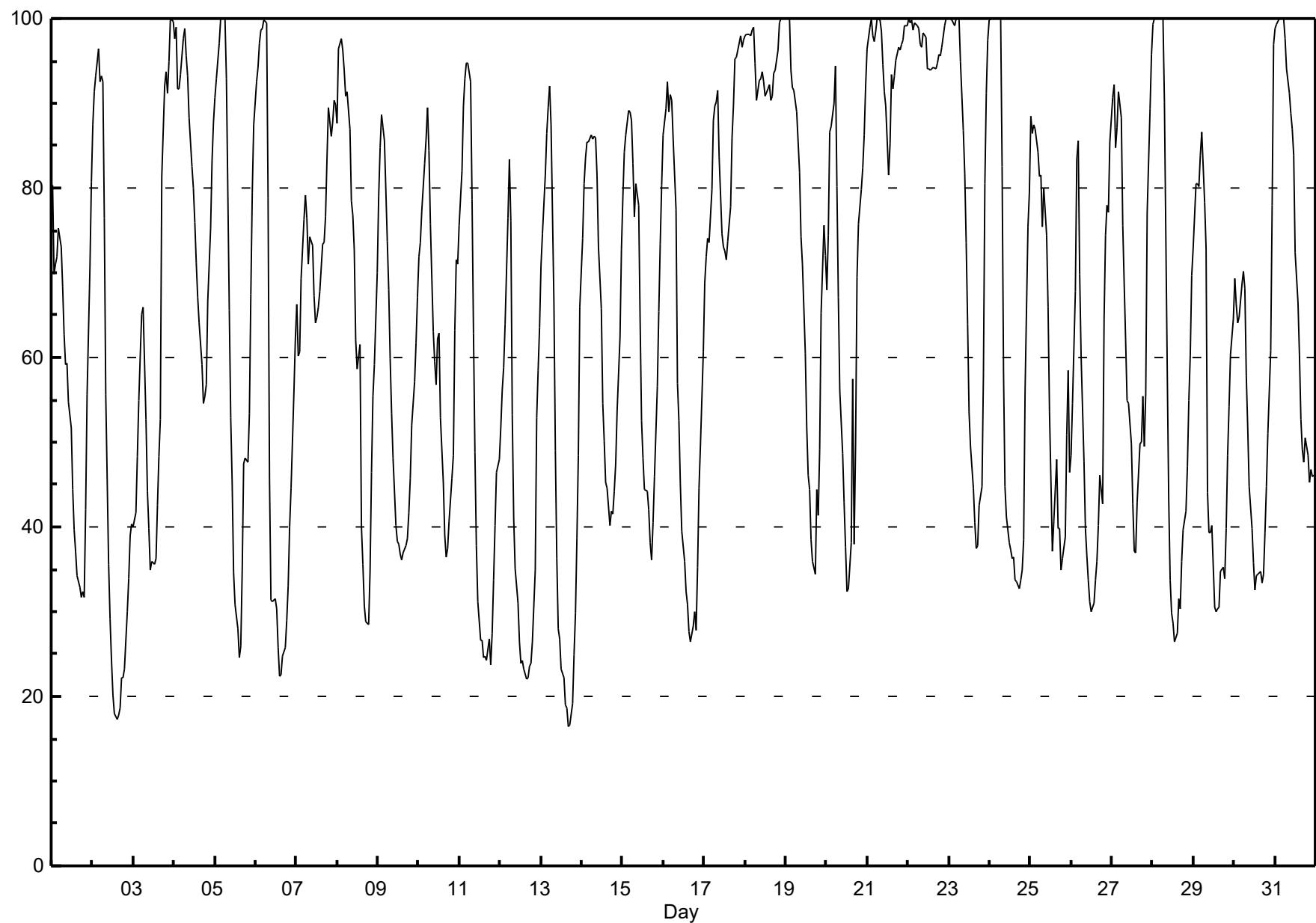
Hourly Averages

External Temperature (ET) - °C
Valleyview - May 2020



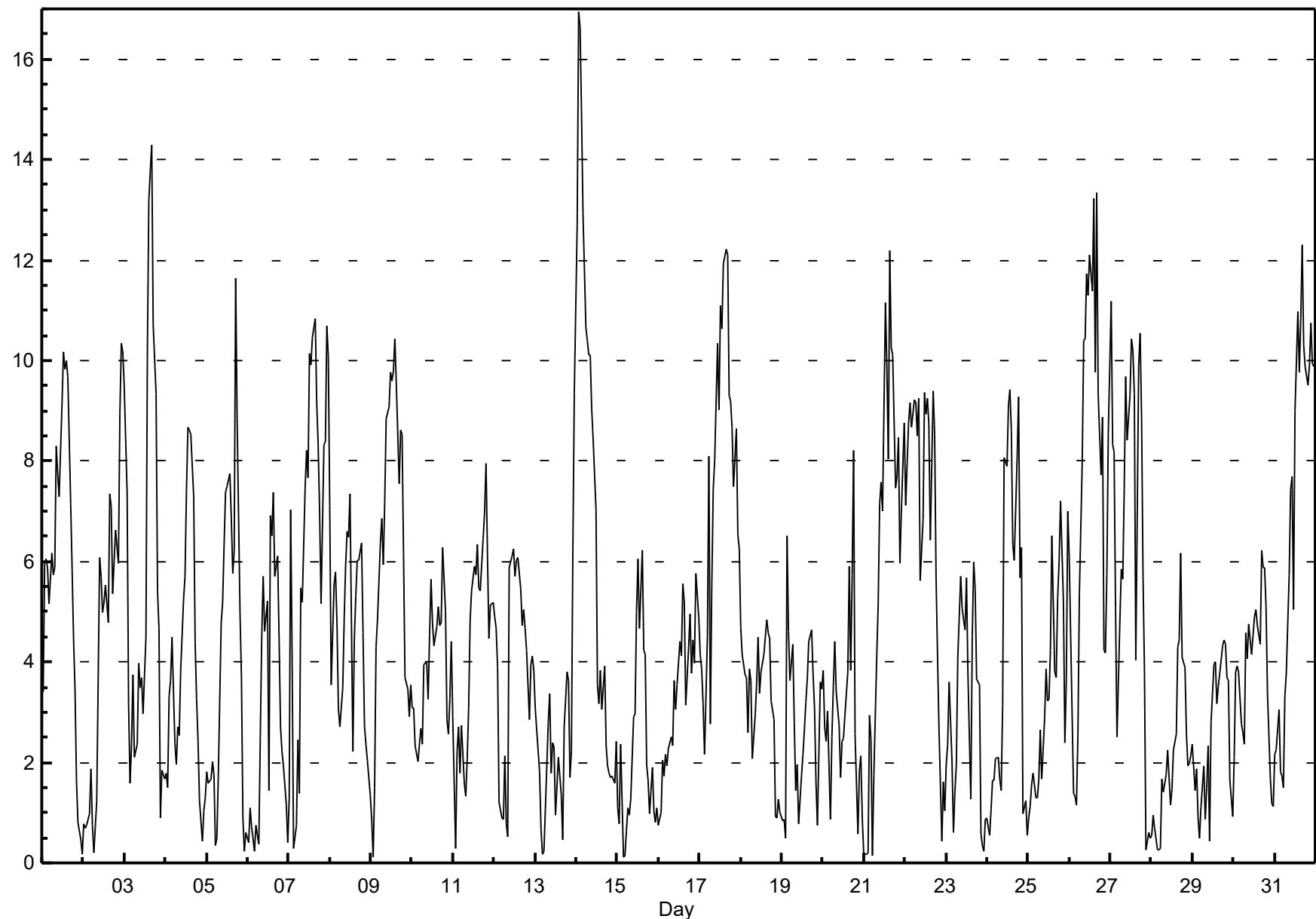
Hourly Averages

Relative Humidity (RH) - %
Valleyview - May 2020



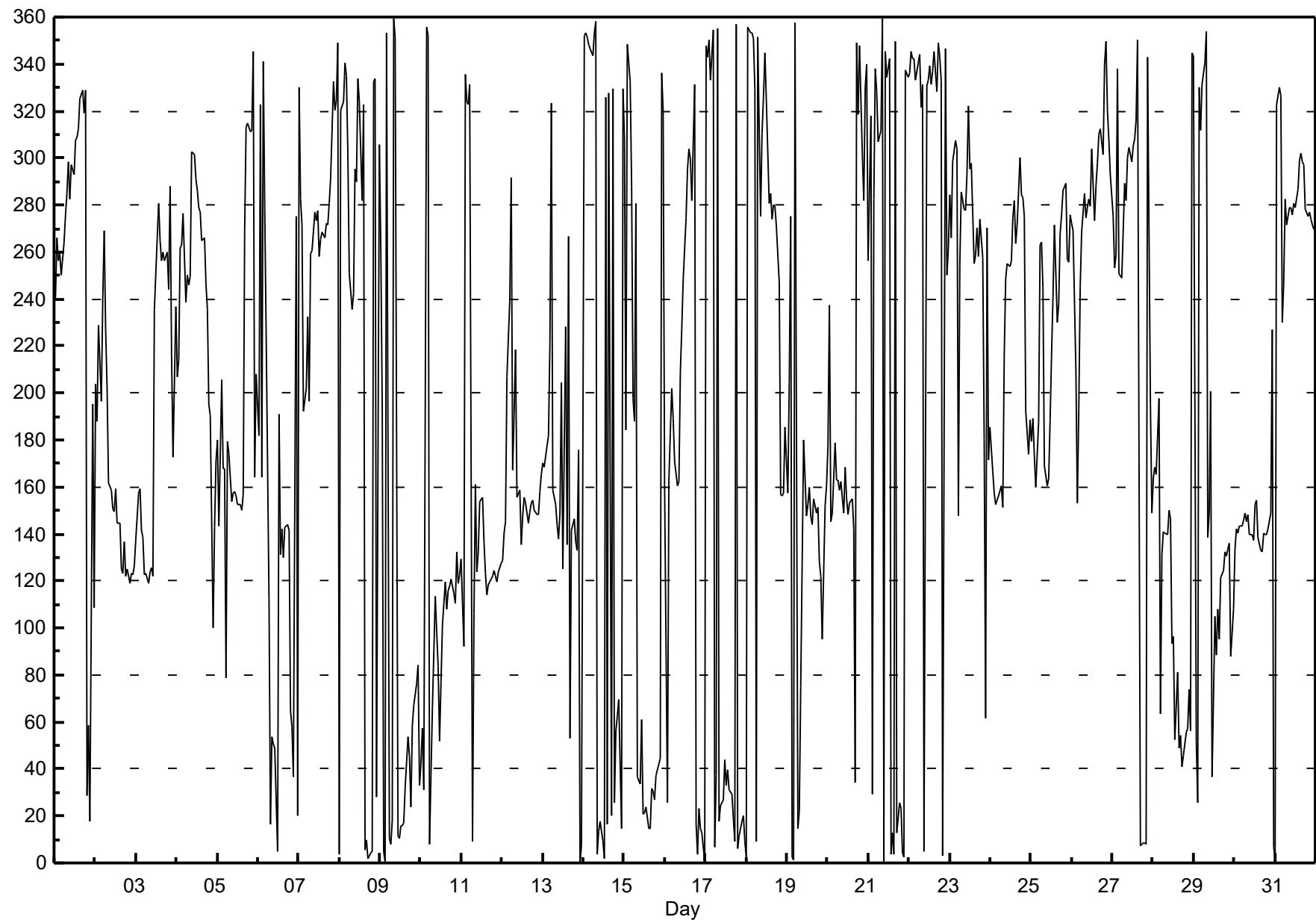
Hourly Averages

Wind Speed (WS) - km/h
Valleyview - May 2020



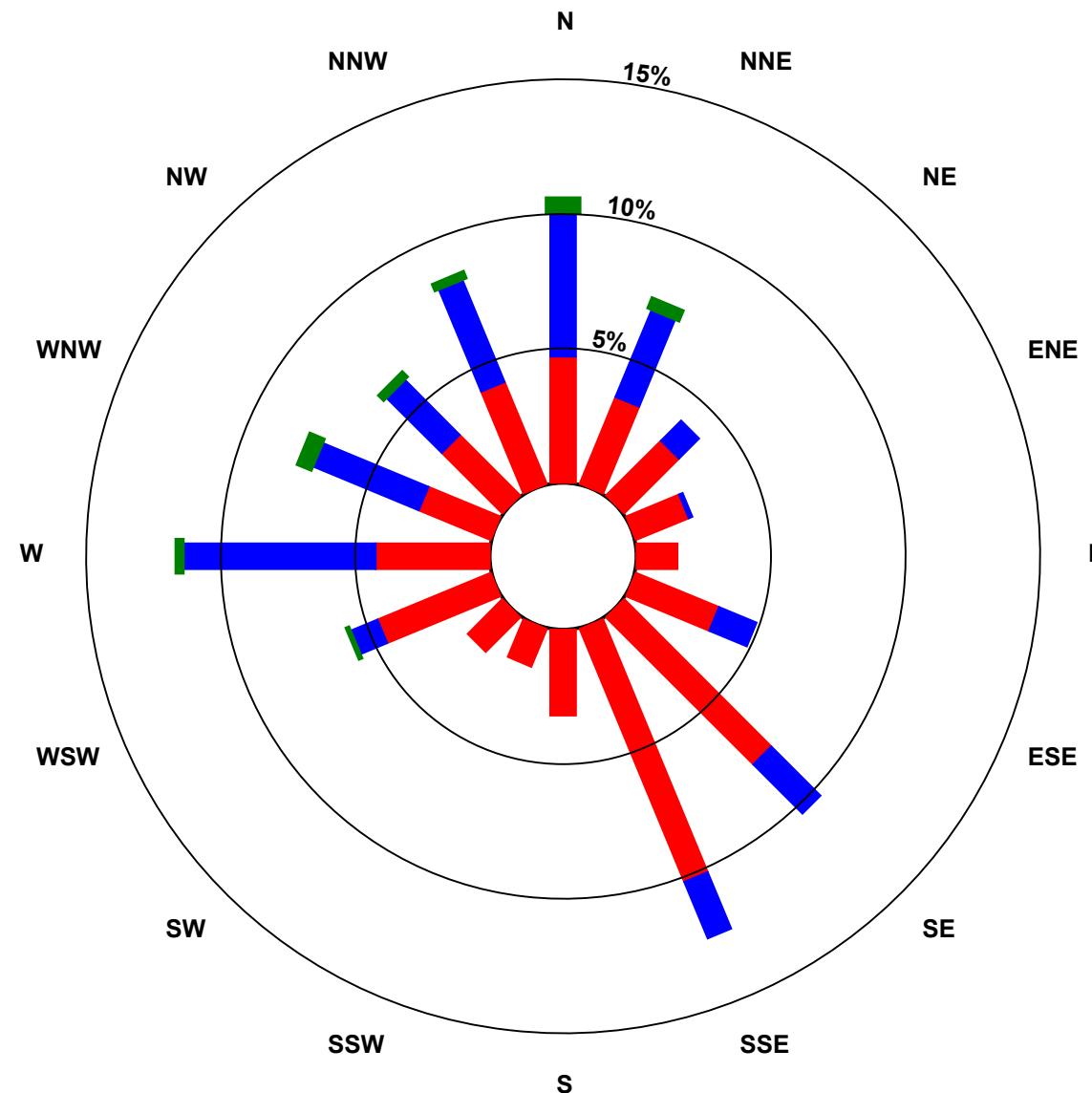
Hourly Averages

Wind Direction (WD) - deg
Valleyview - May 2020

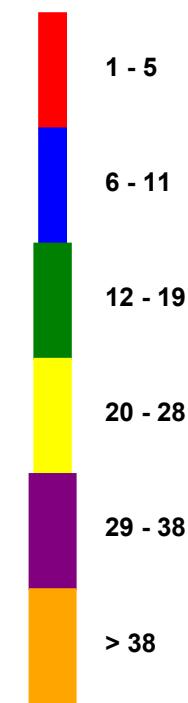


Wind Rose

Wind Speed (WS) (km/h)
Valleyview - May 2020



Wind Speed Classes (km/h)

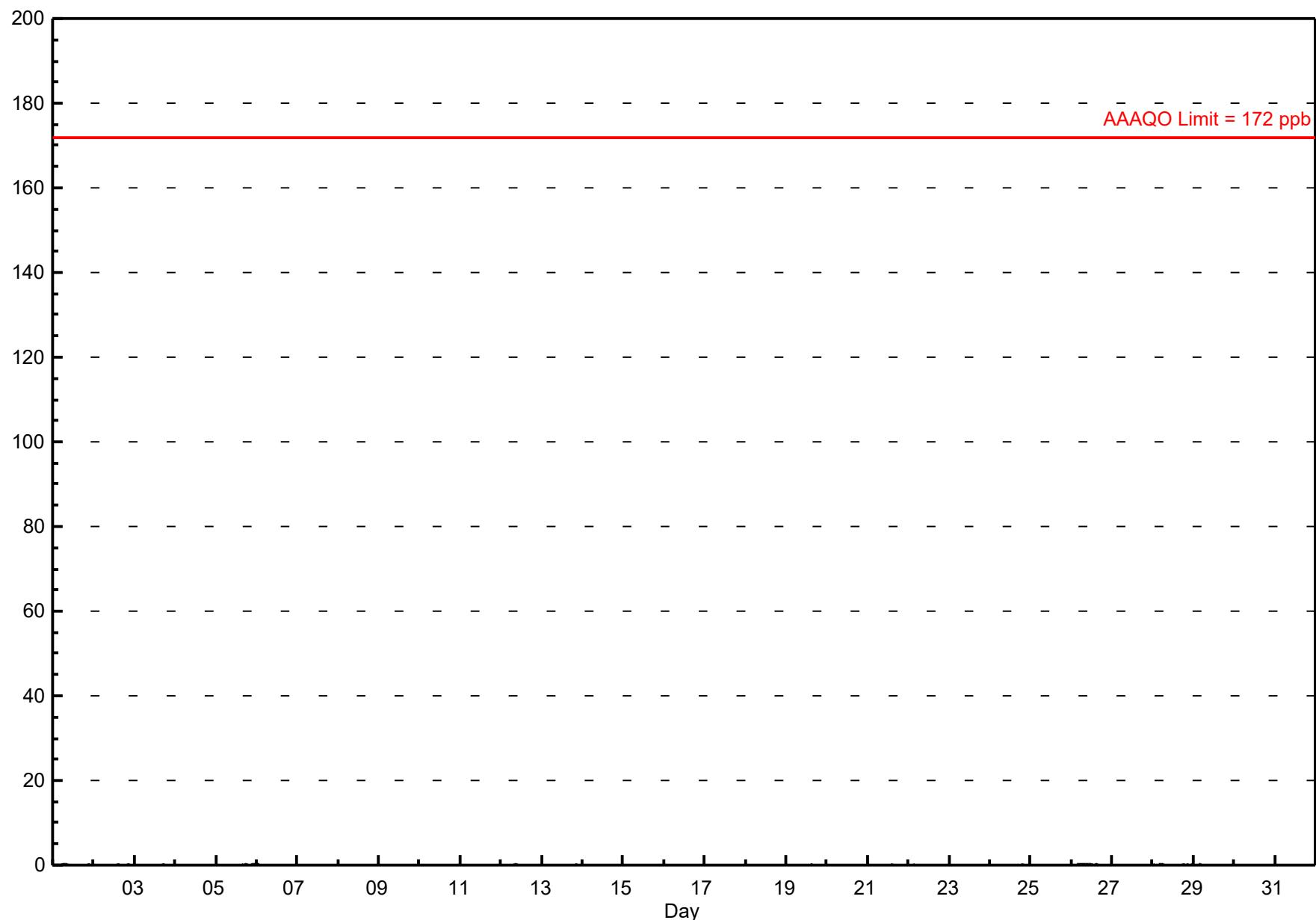


7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

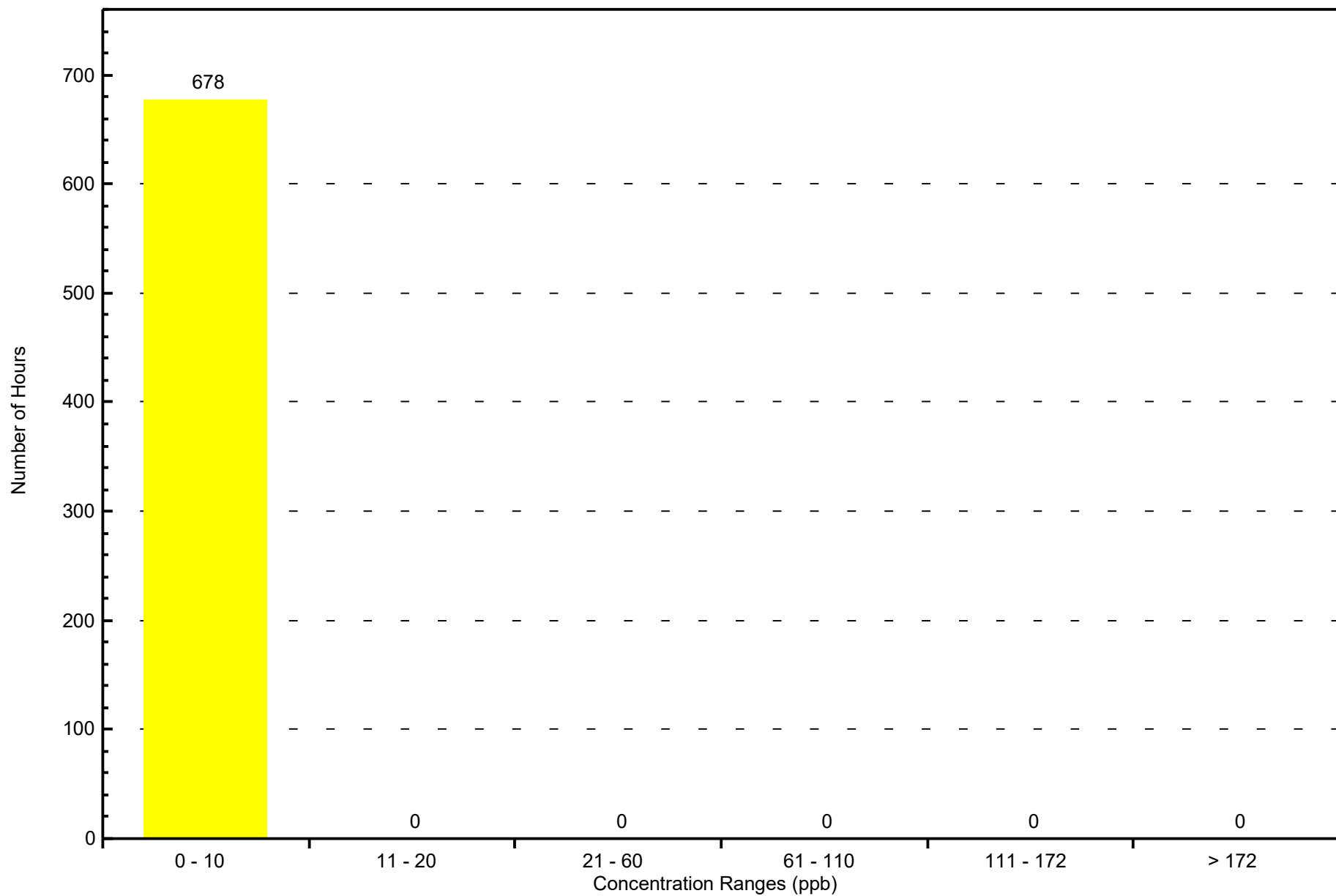
Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Donnelly - May 2020



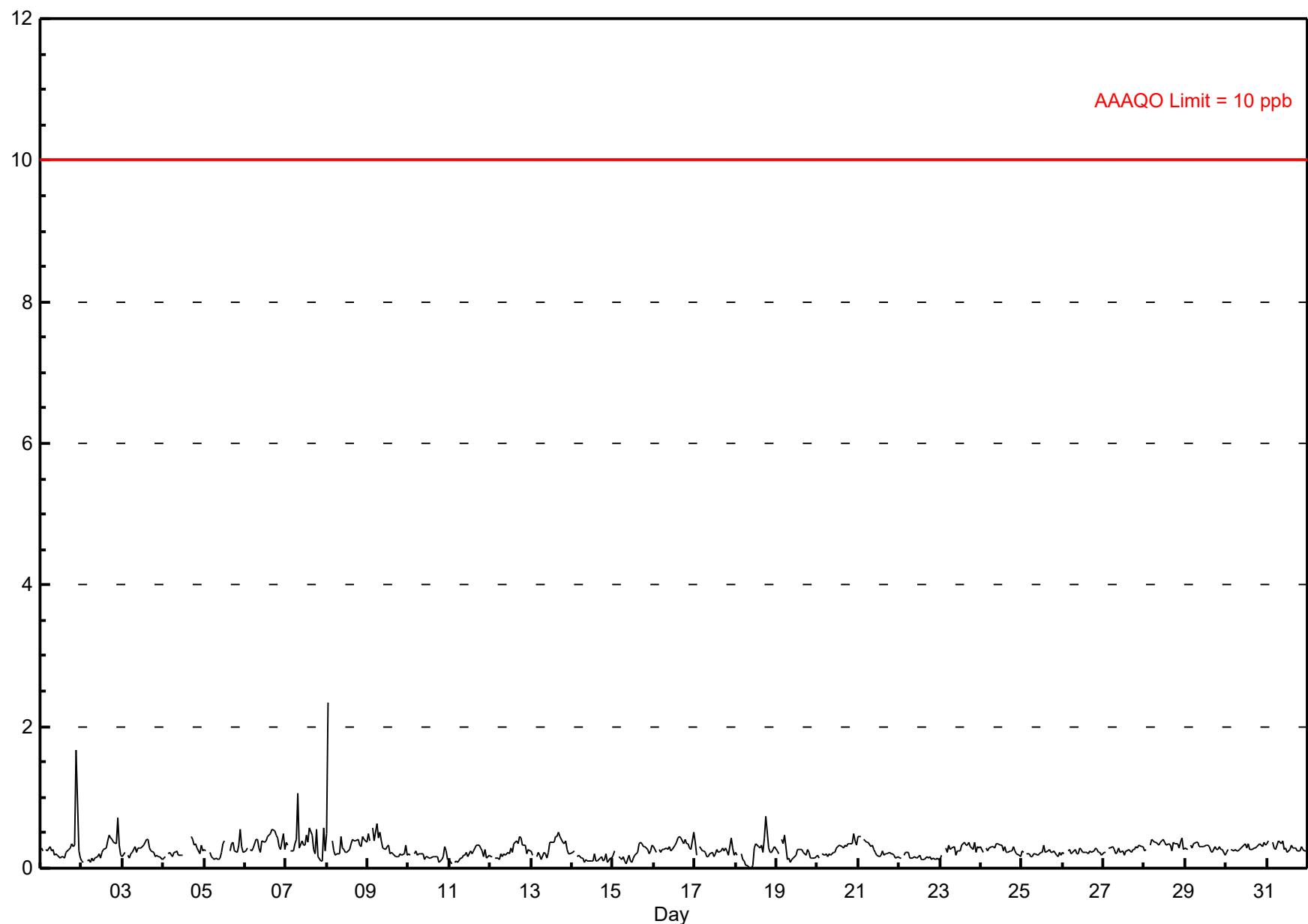
Histogram of Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Donnelly - May 2020



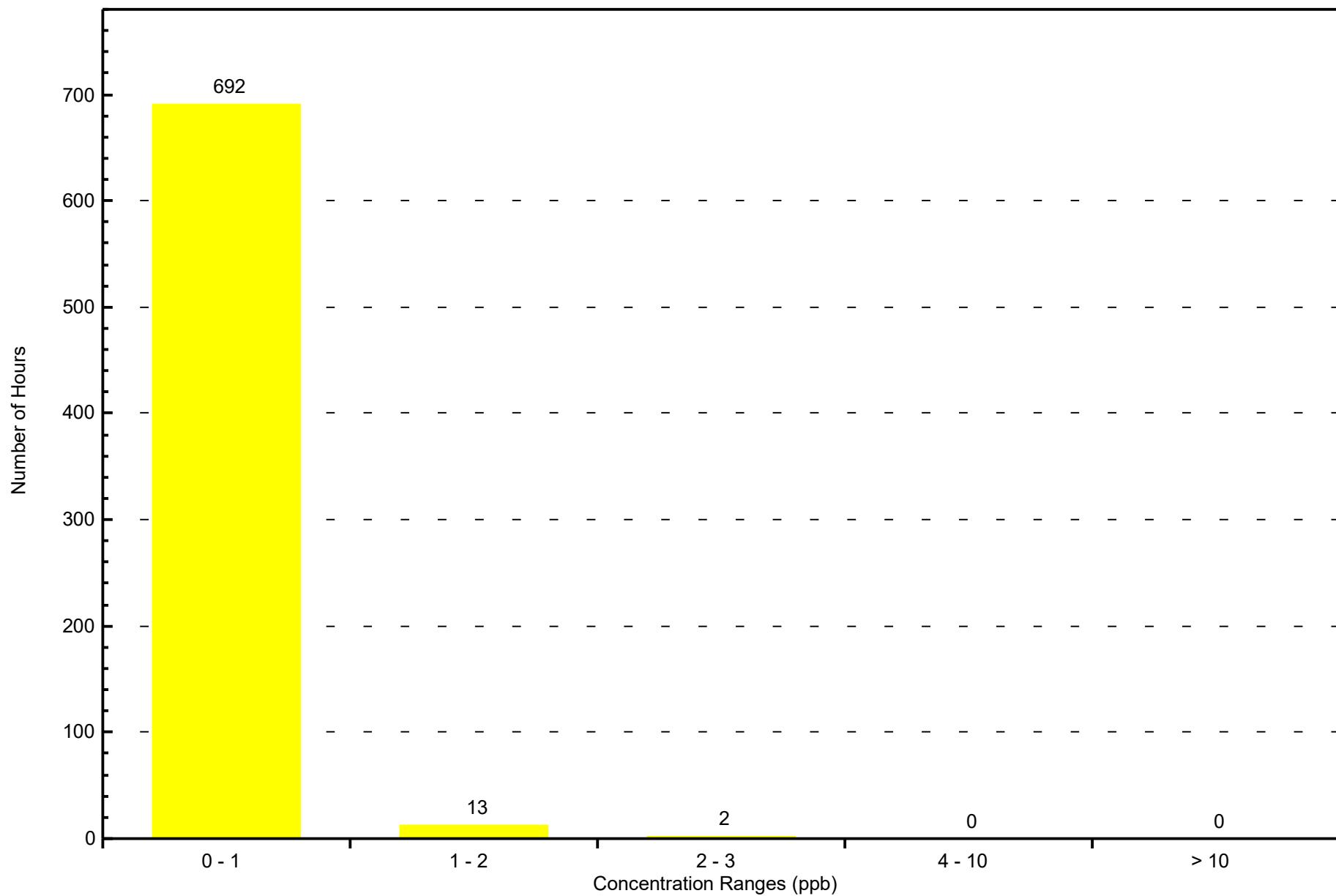
Hourly Averages

Hydrogen Sulphide (H_2S) - ppb
Donnelly - May 2020



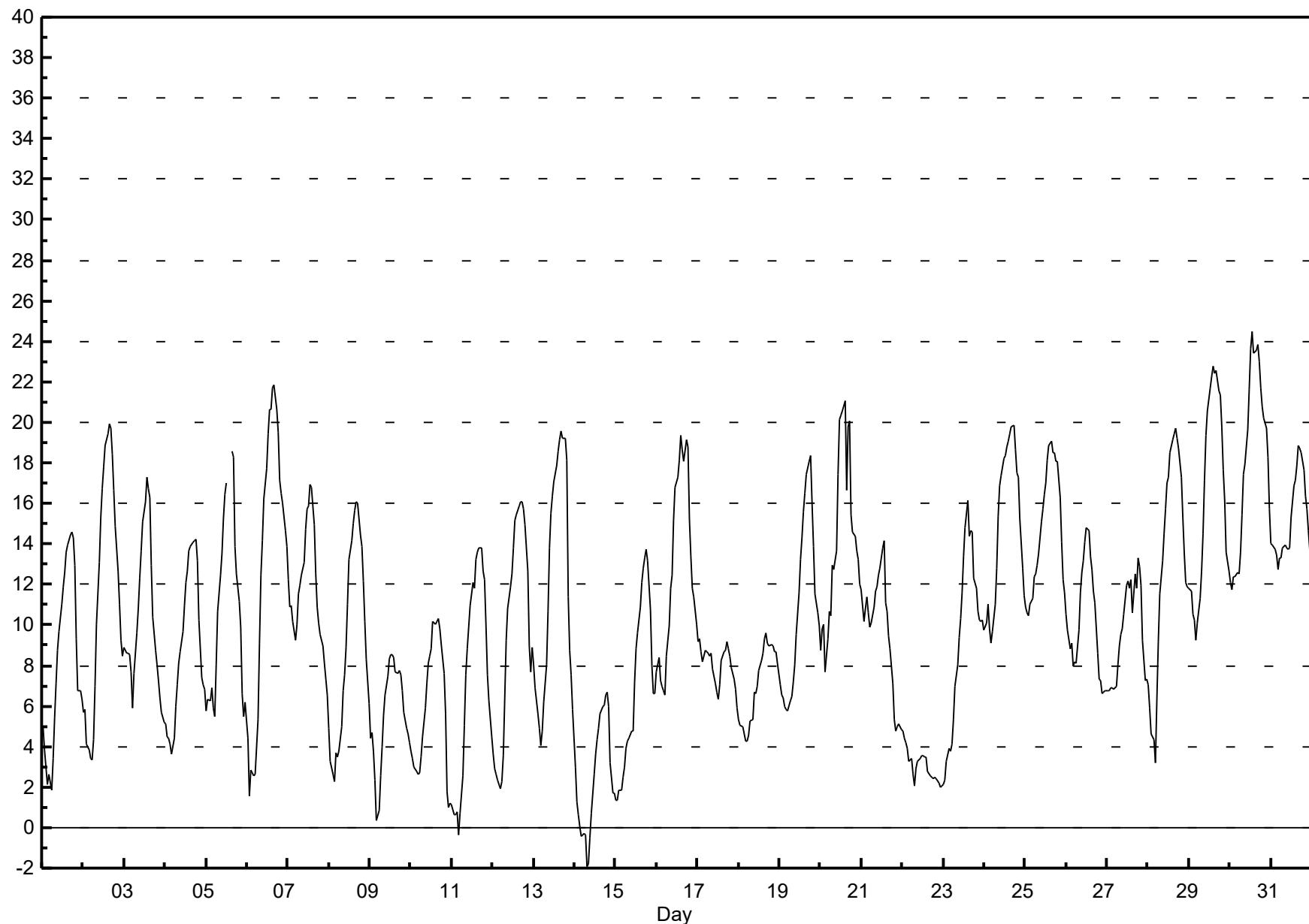
Histogram of Hourly Averages

Hydrogen Sulphide (H_2S) - ppb
Donnelly - May 2020



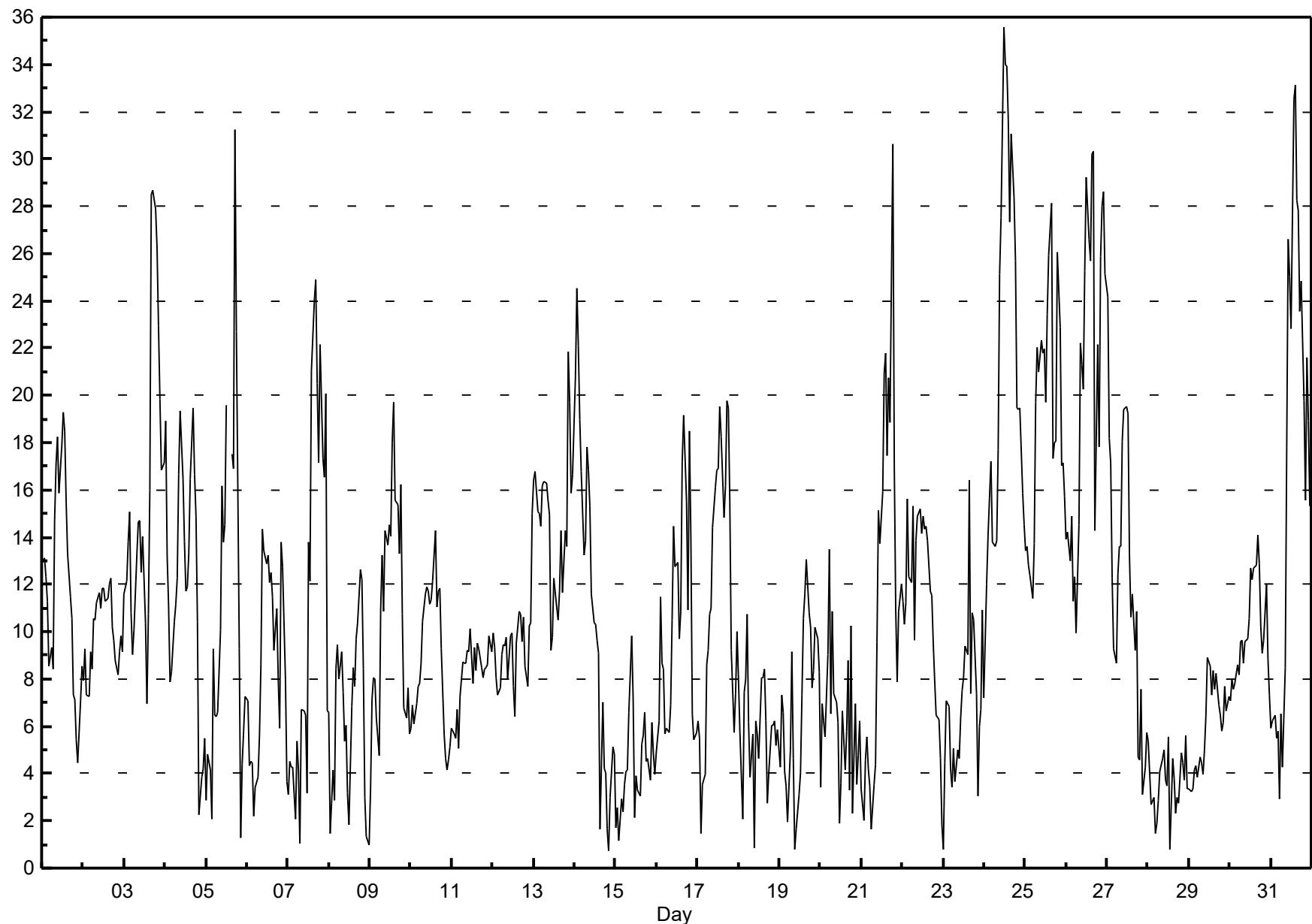
Hourly Averages

External Temperature (ET) - °C
Donnelly - May 2020



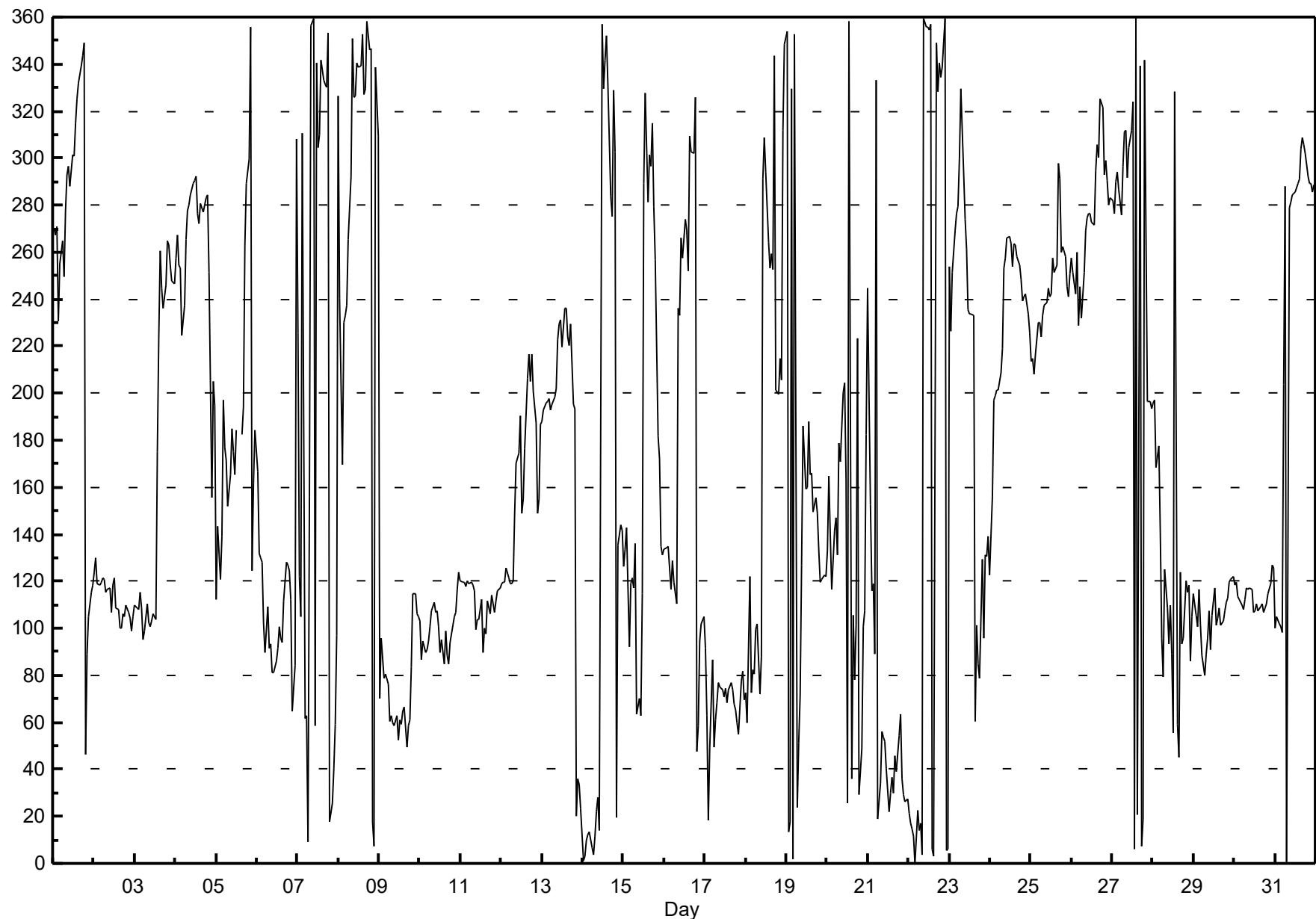
Hourly Averages

Wind Speed (WS) - km/h
Donnelly - May 2020



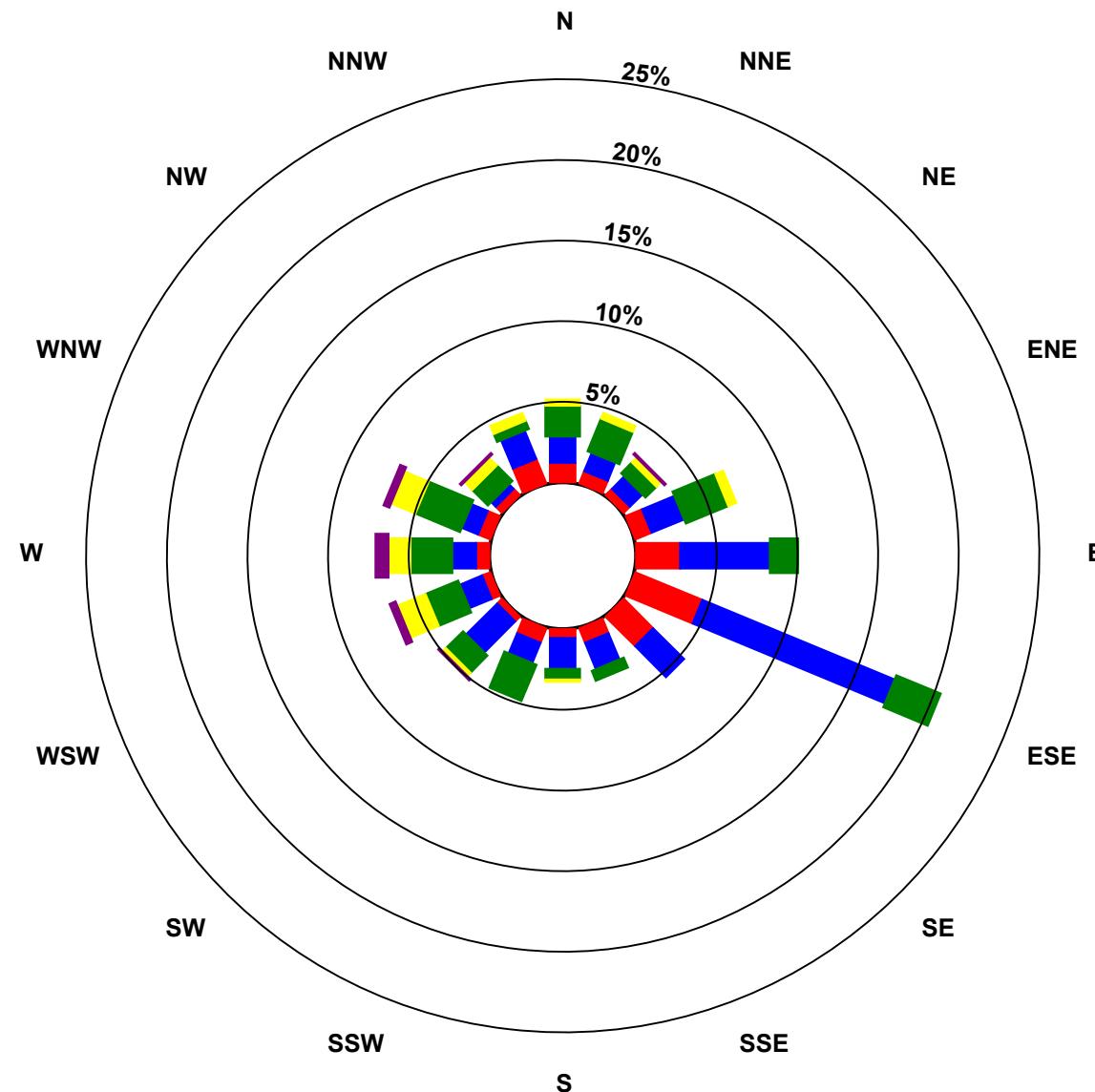
Hourly Averages

Wind Direction (WD) - deg
Donnelly - May 2020

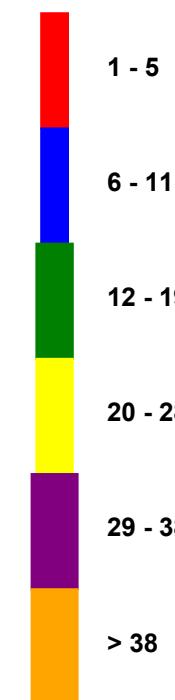


Wind Rose

Wind Speed (WS) (km/h)
Donnelly - May 2020



Wind Speed Classes (km/h)

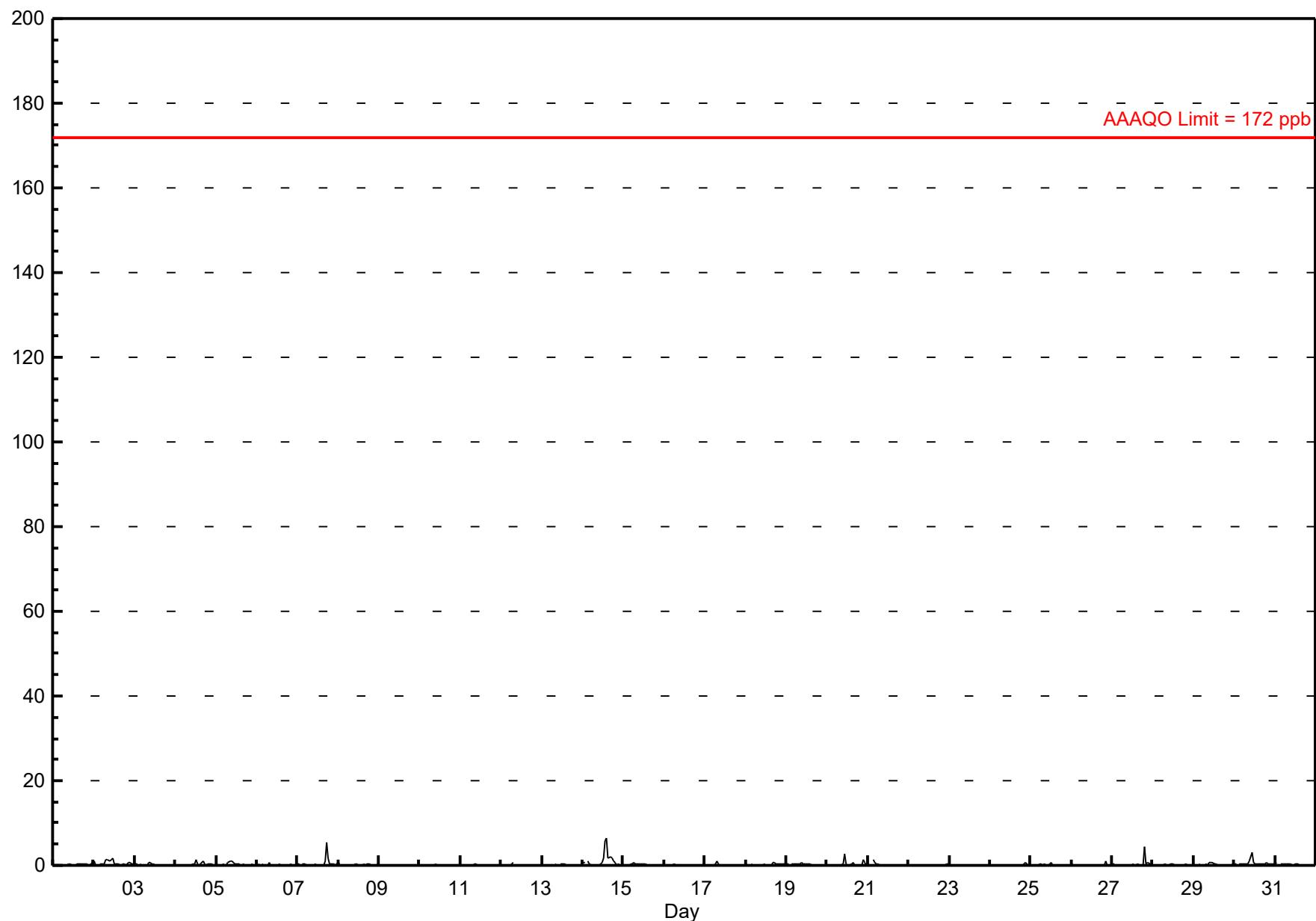


8 Wembley (Portable) Charts

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

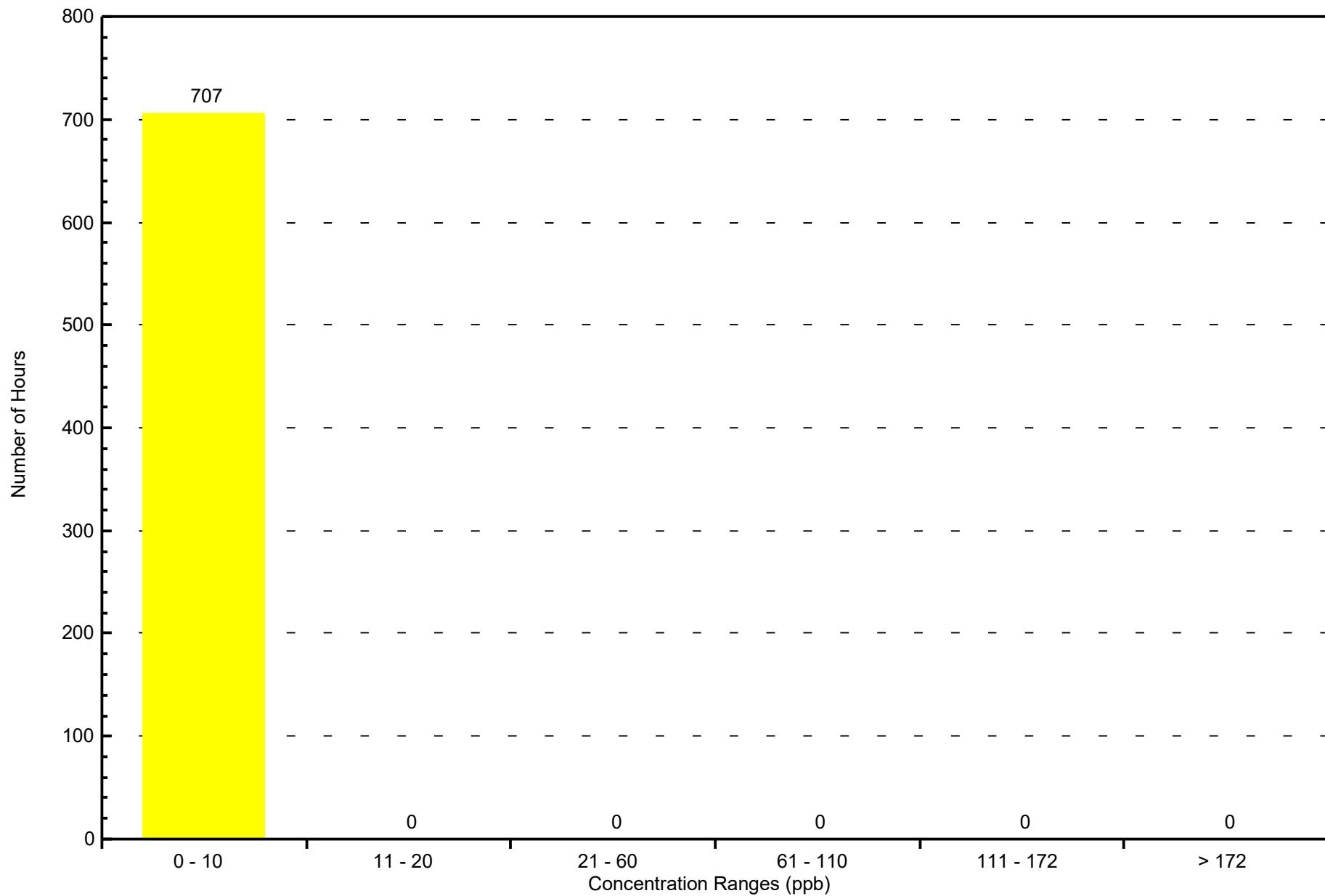
Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Wembley - May 2020



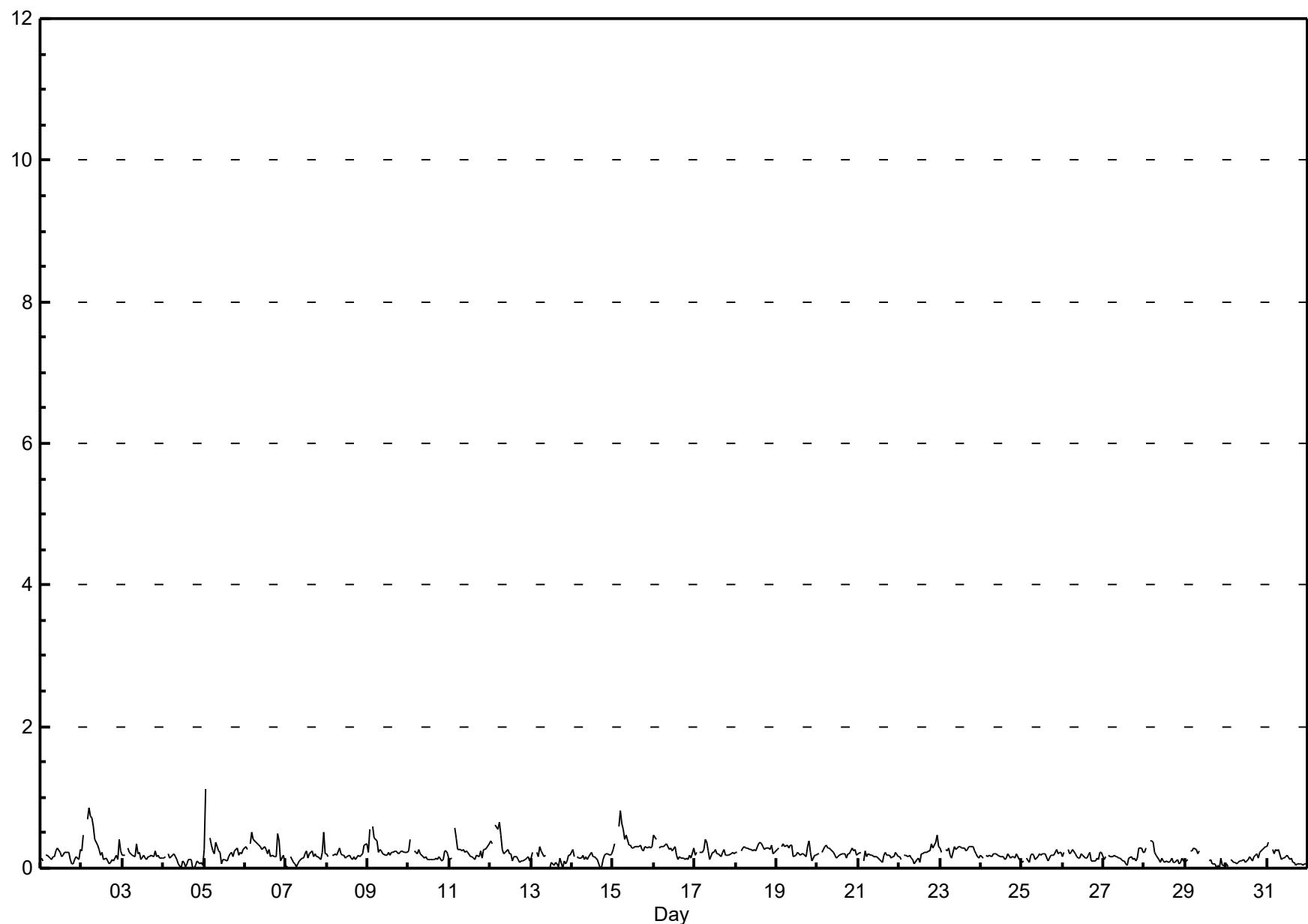
Histogram of Hourly Averages

Sulphur Dioxide (SO_2) - ppb
Wembley - May 2020



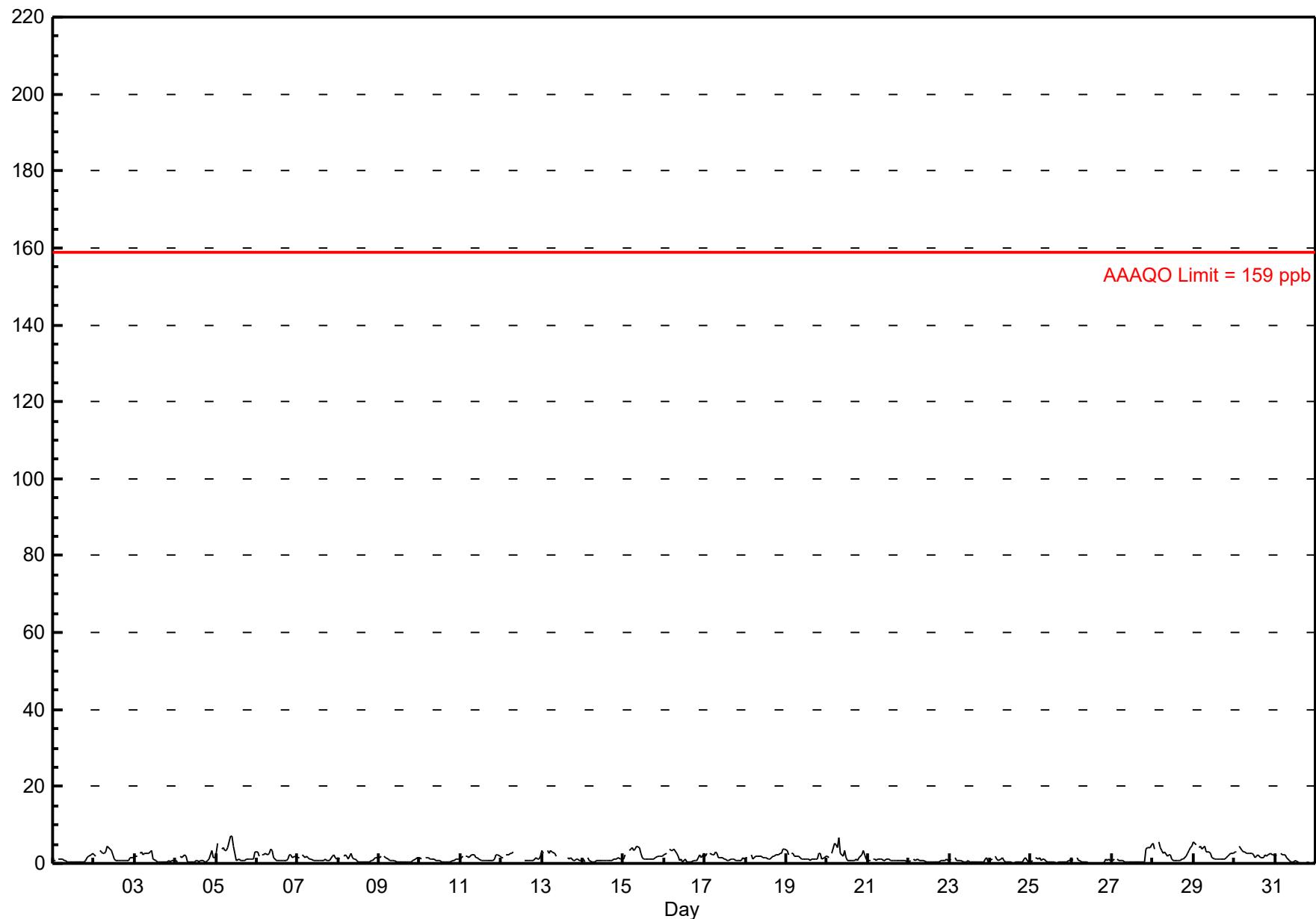
Hourly Averages

Total Reduced Sulphur (TRS) - ppb
Wembley - May 2020



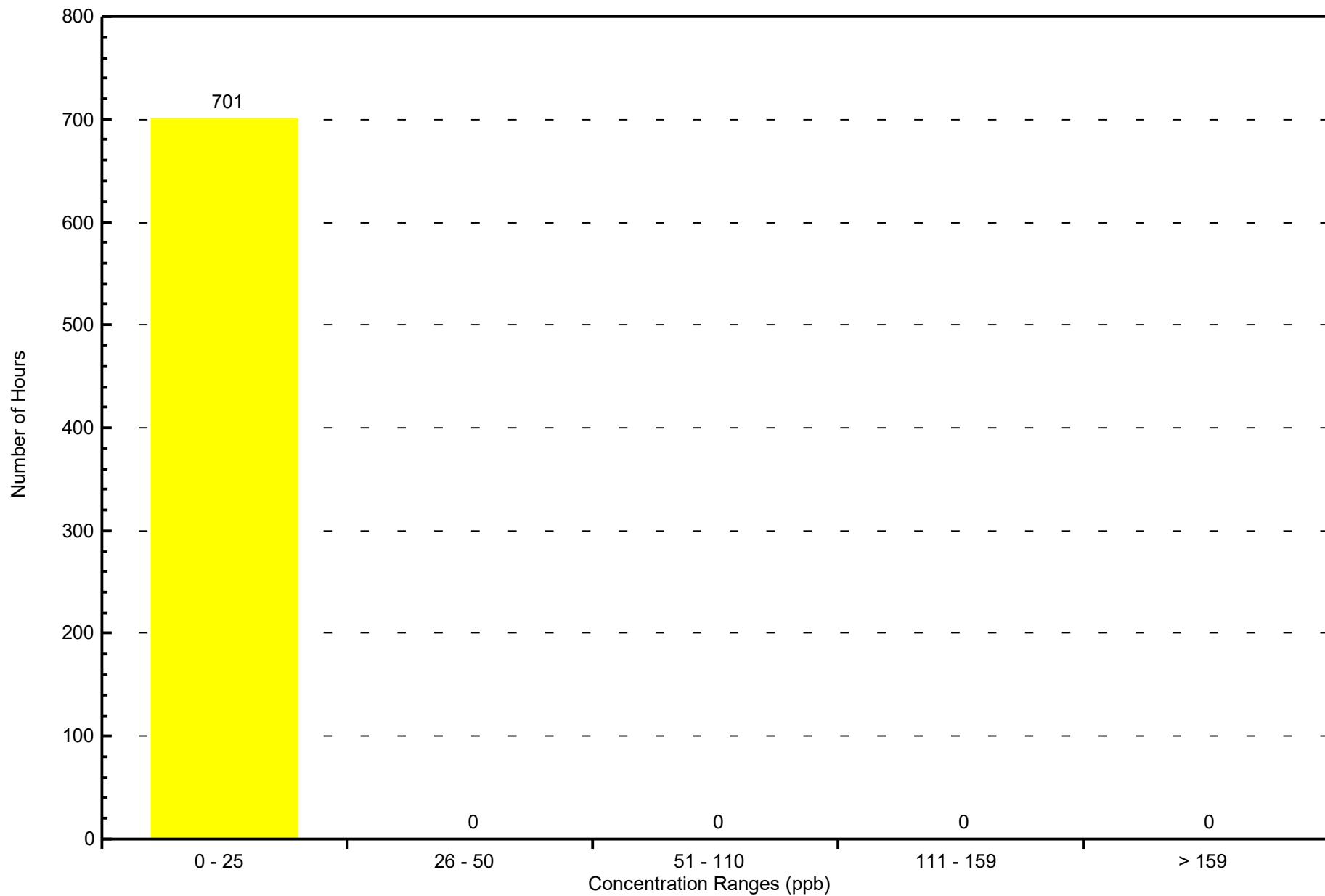
Hourly Averages

**Nitrogen Dioxide (NO_2) - ppb
Wembley - May 2020**



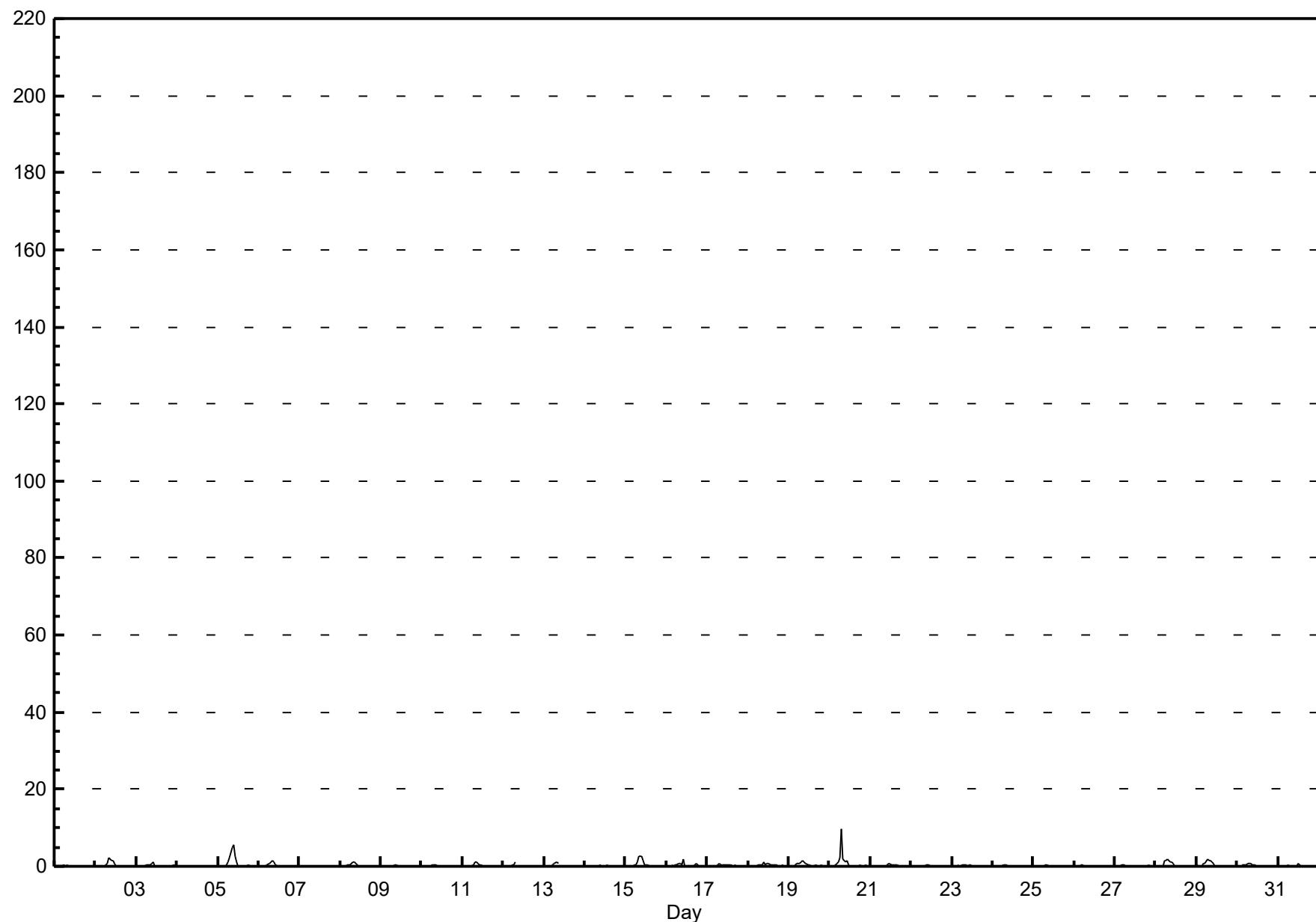
Histogram of Hourly Averages

Nitrogen Dioxide (NO_2) - ppb
Wembley - May 2020



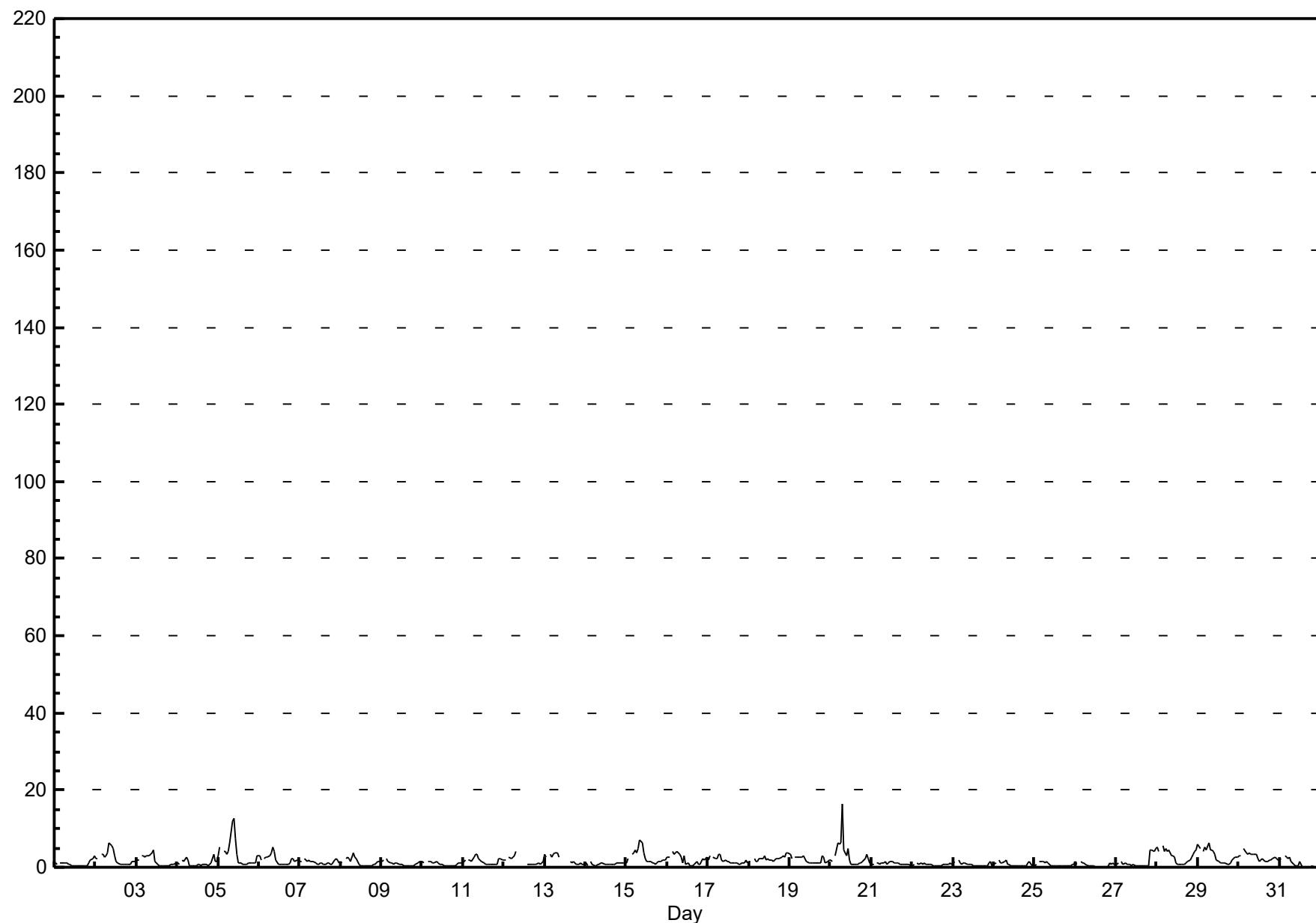
Hourly Averages

Nitrogen Oxide (NO) - ppb
Wembley - May 2020



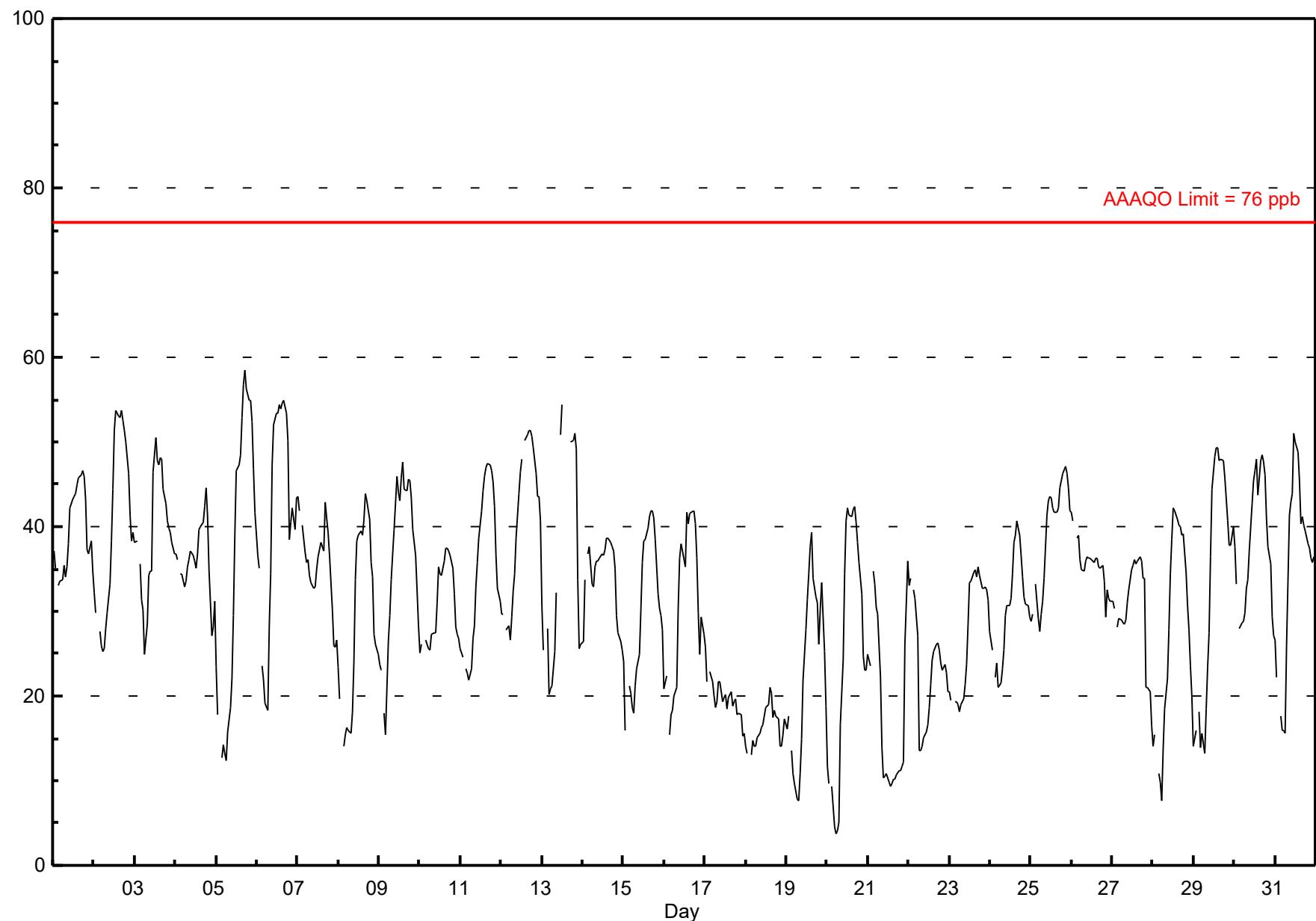
Hourly Averages

**Oxides of Nitrogen (NO_X) - ppb
Wembley - May 2020**



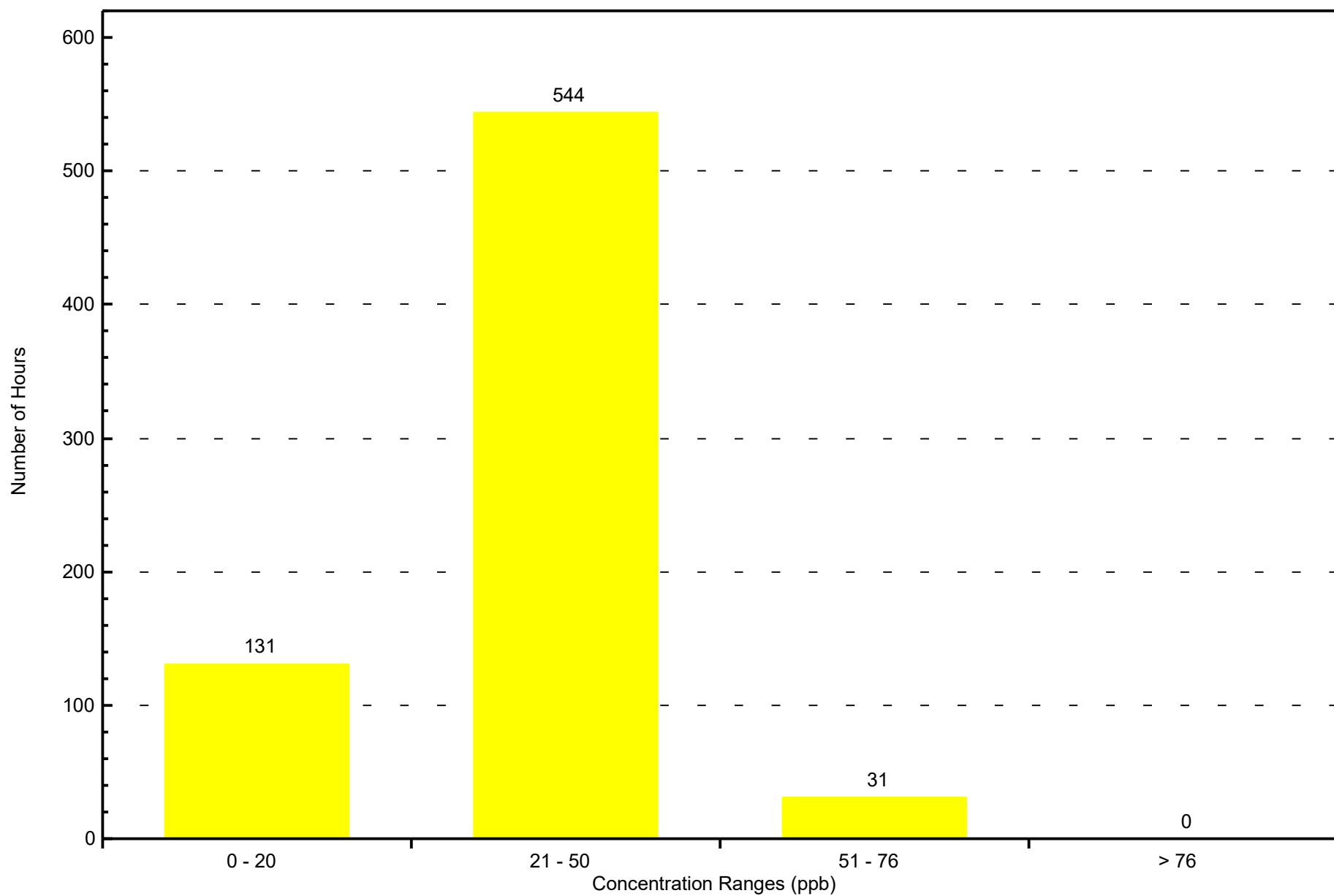
Hourly Averages

Ozone (O_3) - ppb
Wembley - May 2020



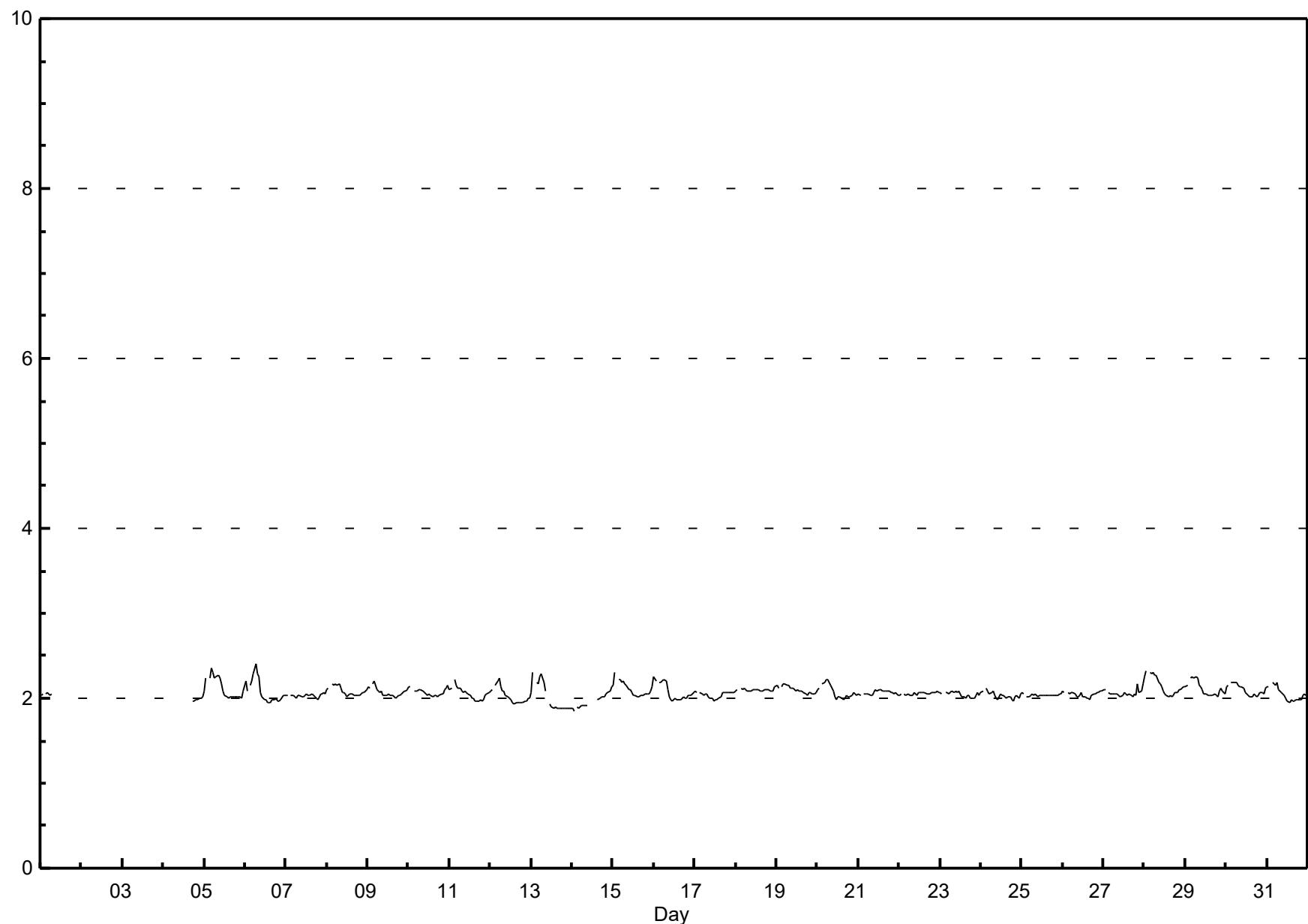
Histogram of Hourly Averages

Ozone (O_3) - ppb
Wembley - May 2020



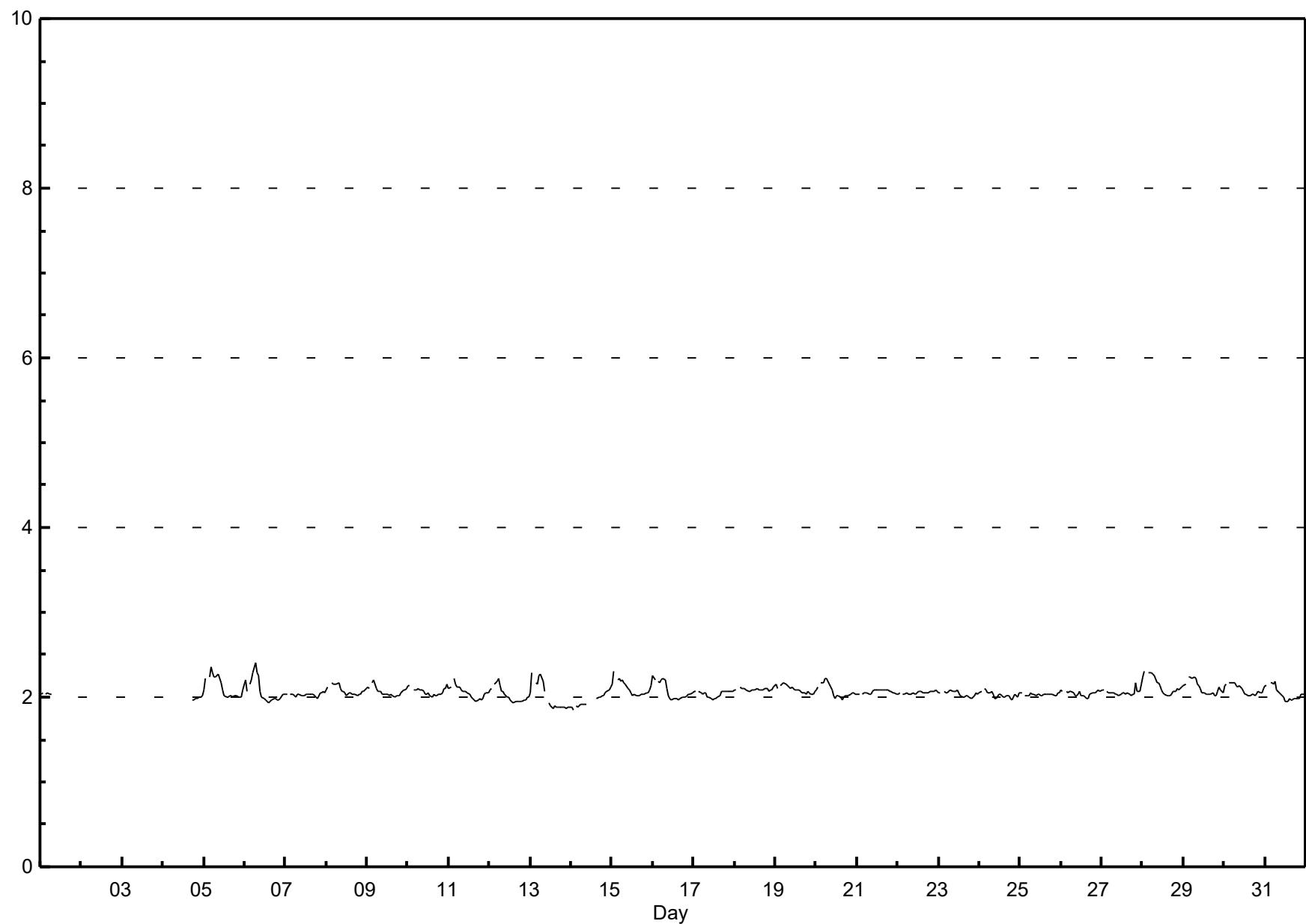
Hourly Averages

Total Hydrocarbons (THC) - ppm
Wembley - May 2020



Hourly Averages

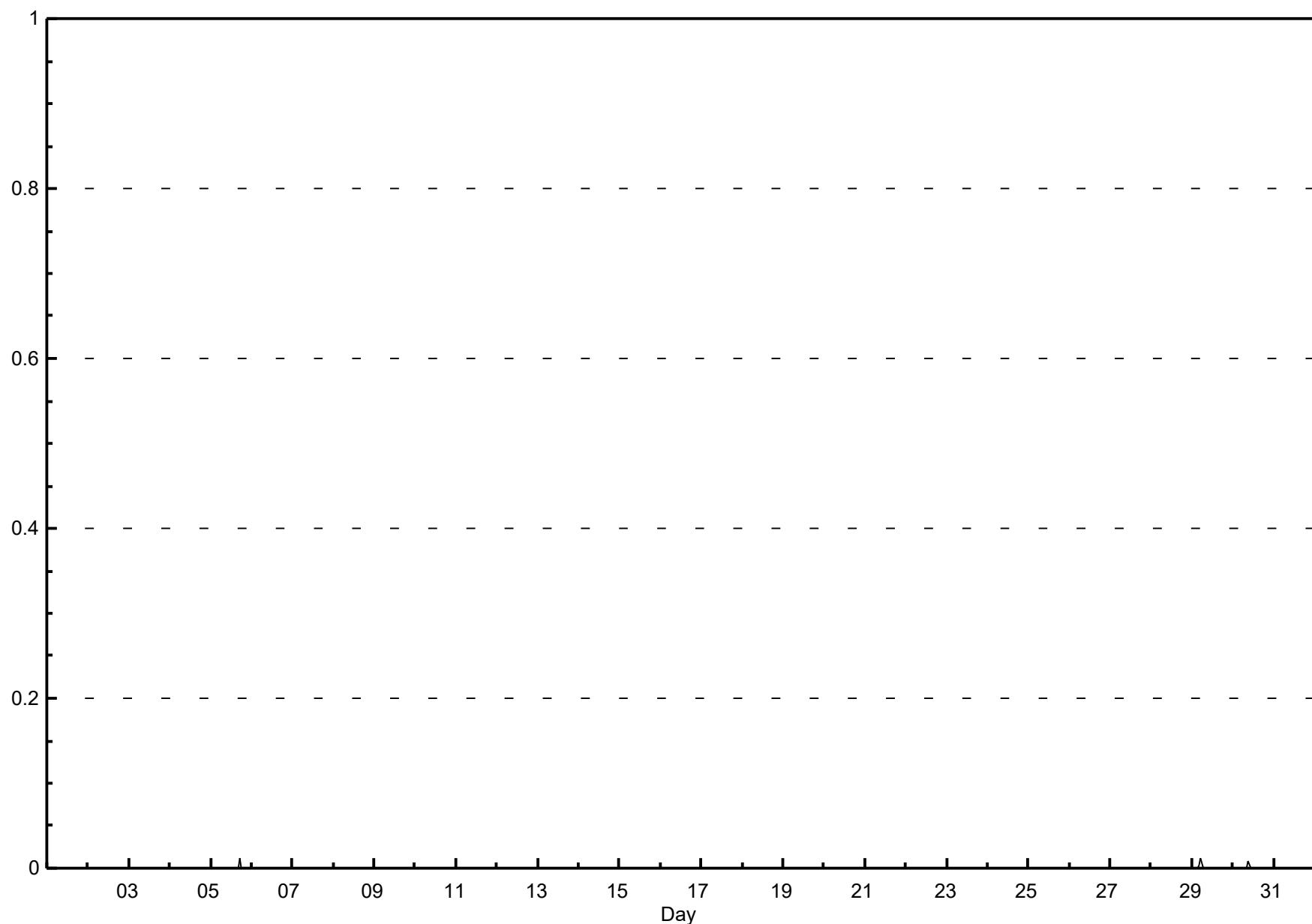
Methane (CH_4) - ppm
Wembley - May 2020



Hourly Averages

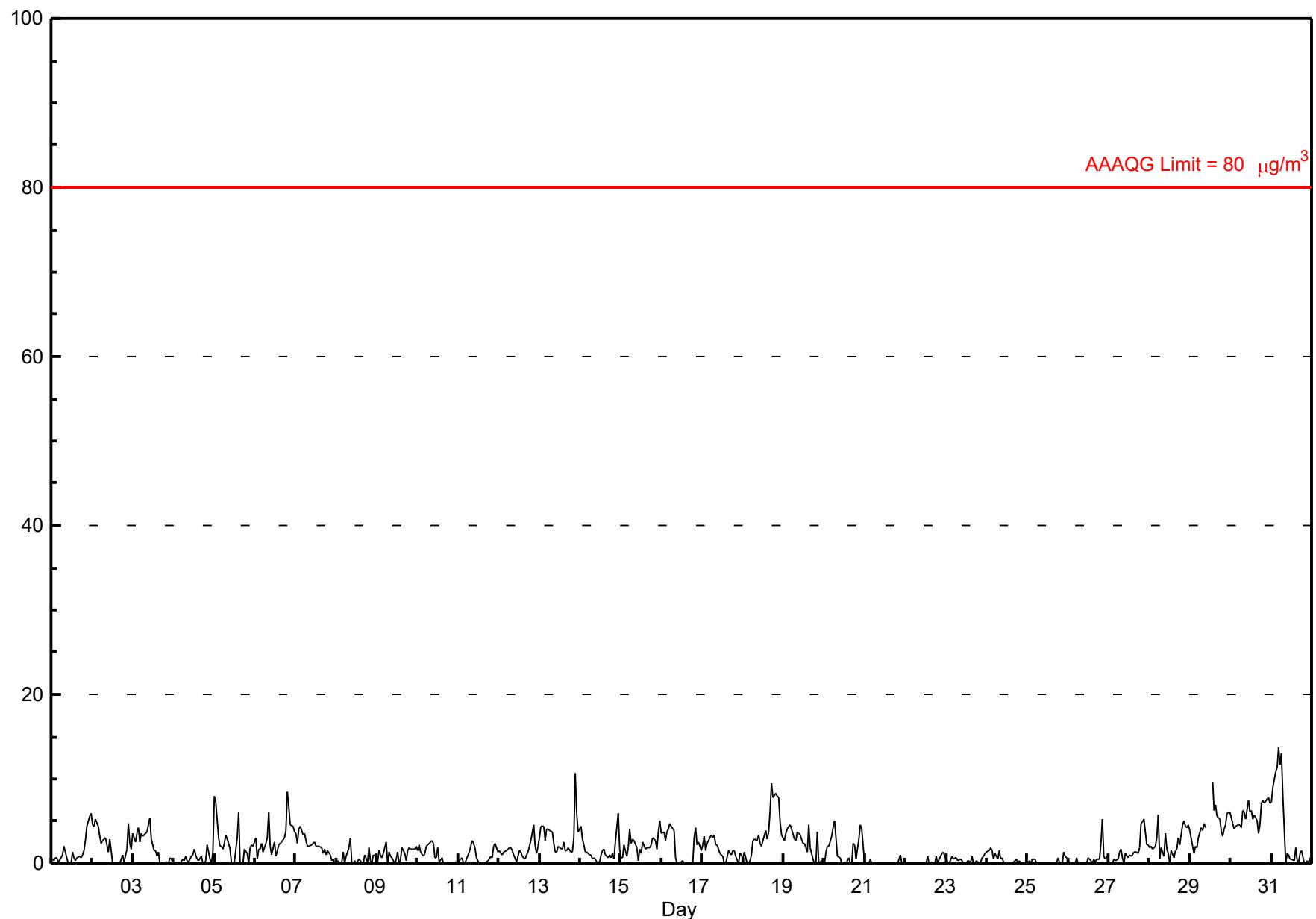
Non Methane Hydrocarbon (NMHC) - ppm

Wembley - May 2020



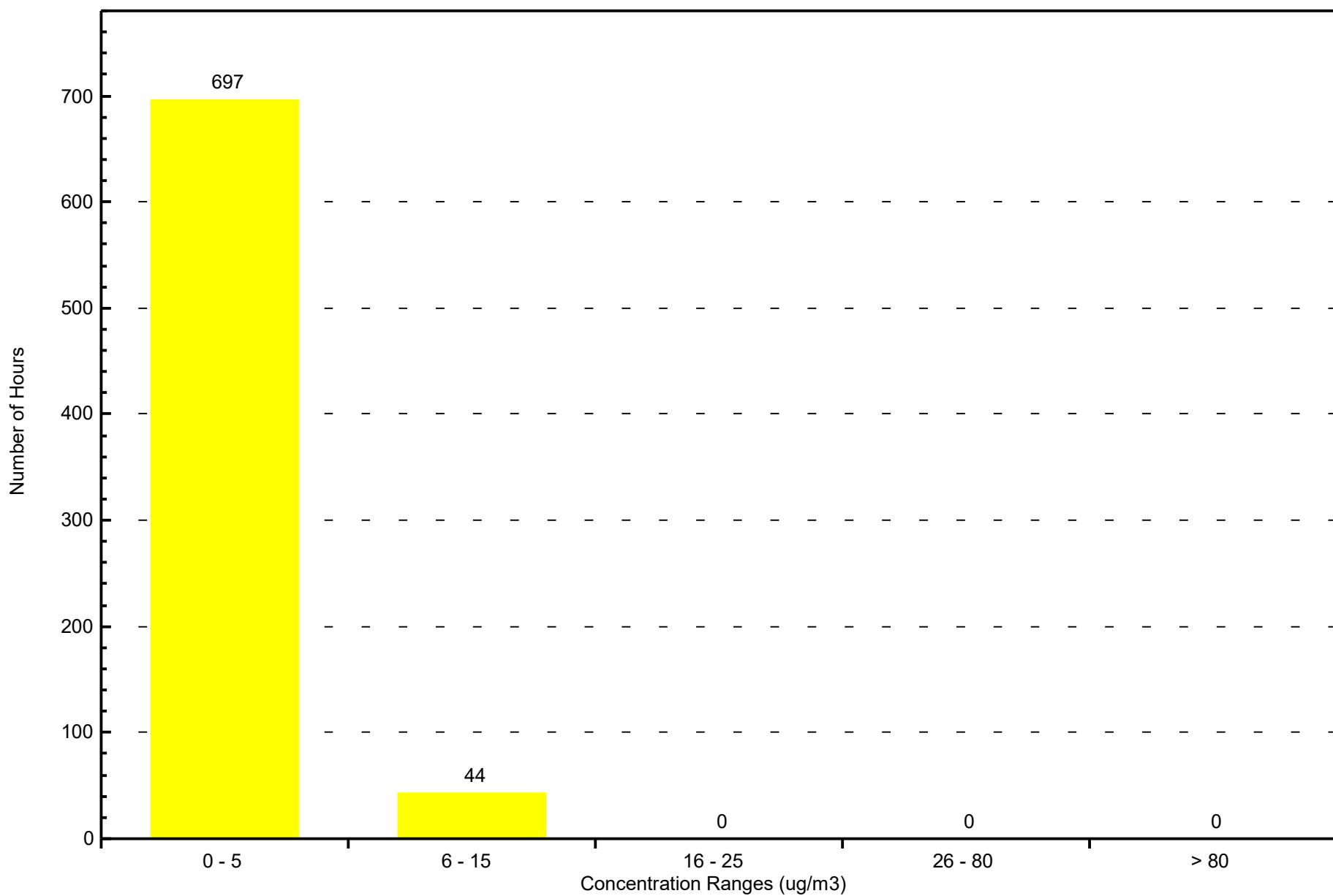
Hourly Averages

PM2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wembley - May 2020



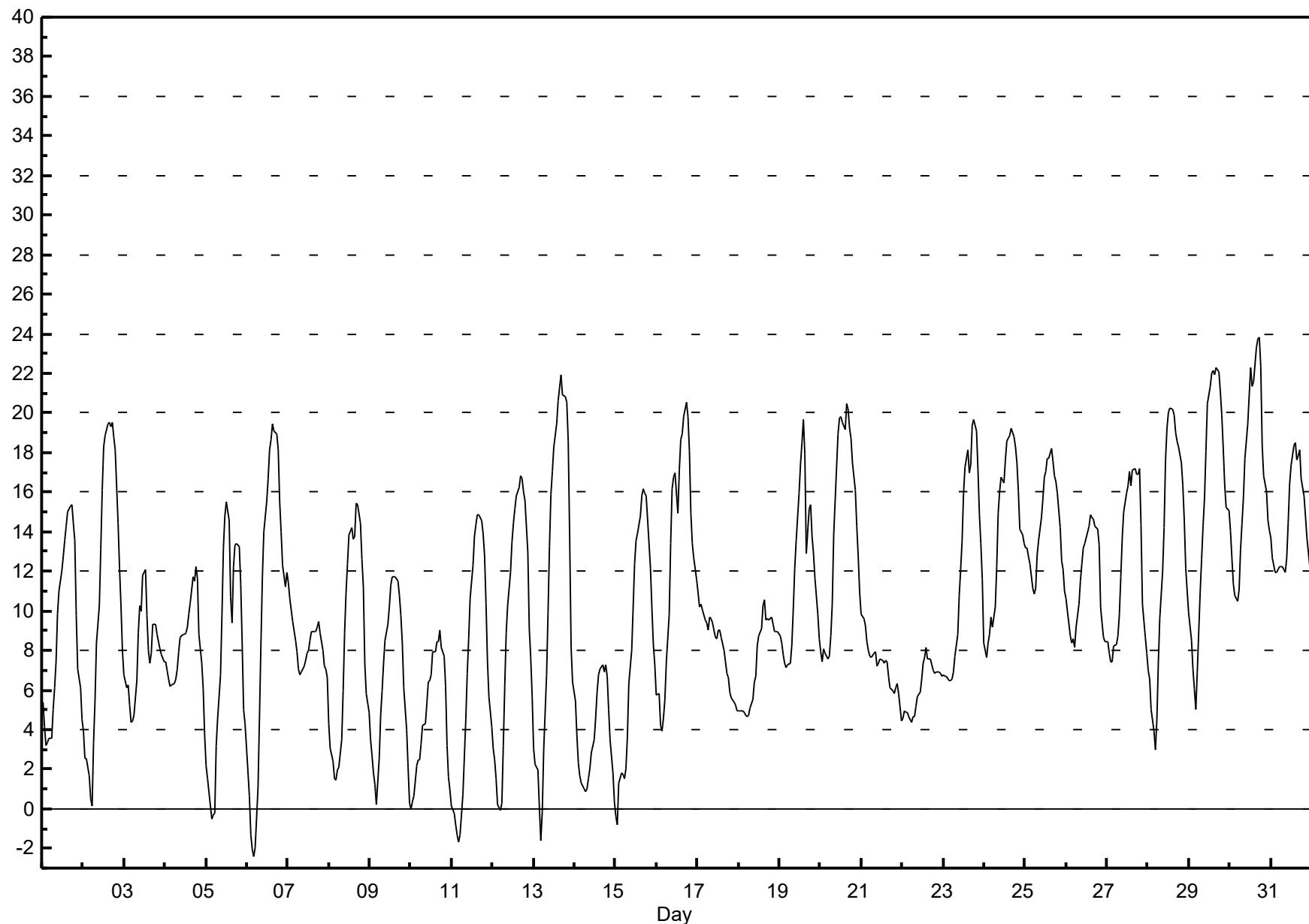
Histogram of Hourly Averages

PM2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wembley - May 2020



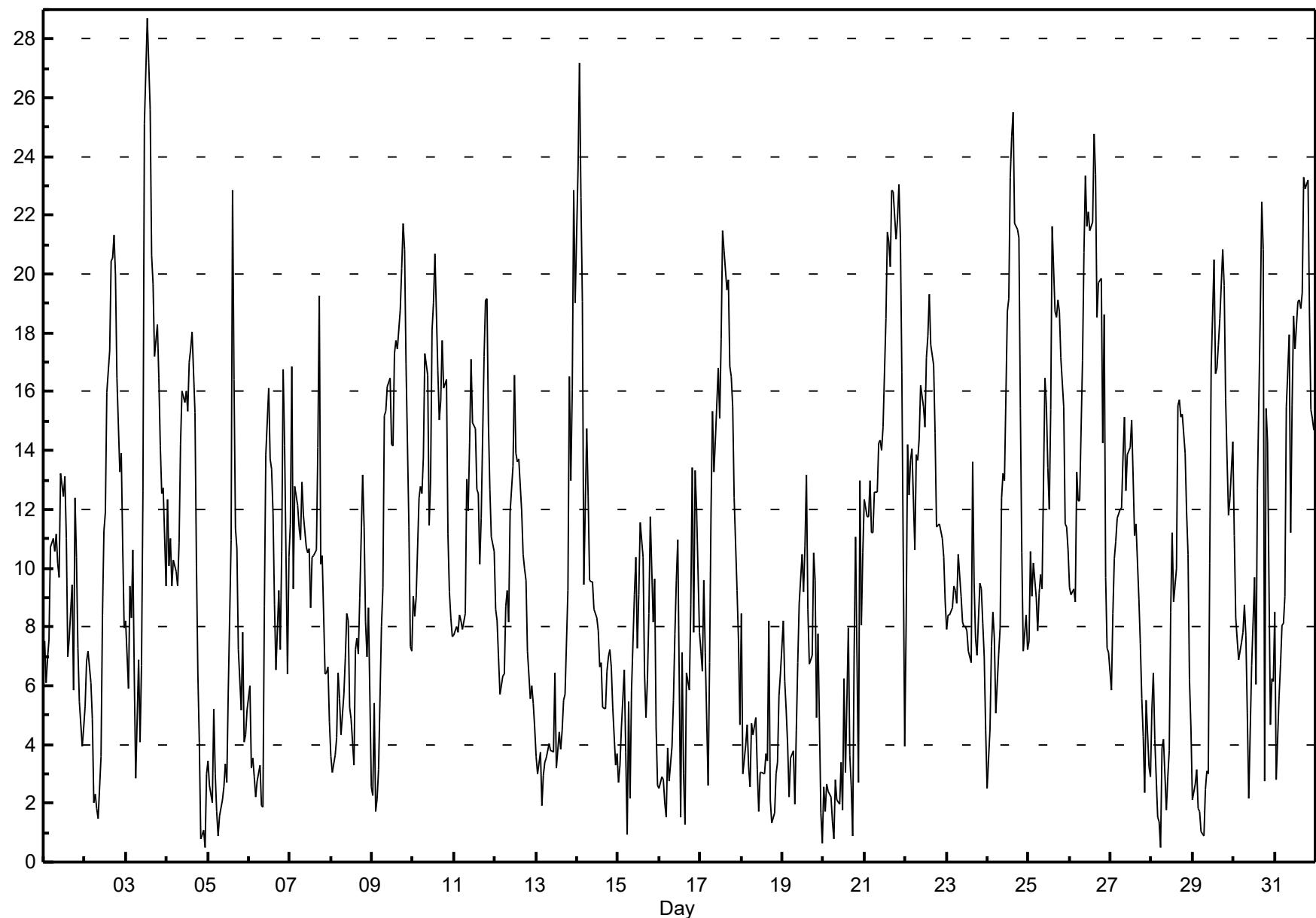
Hourly Averages

External Temperature (ET) - °C
Wembley - May 2020



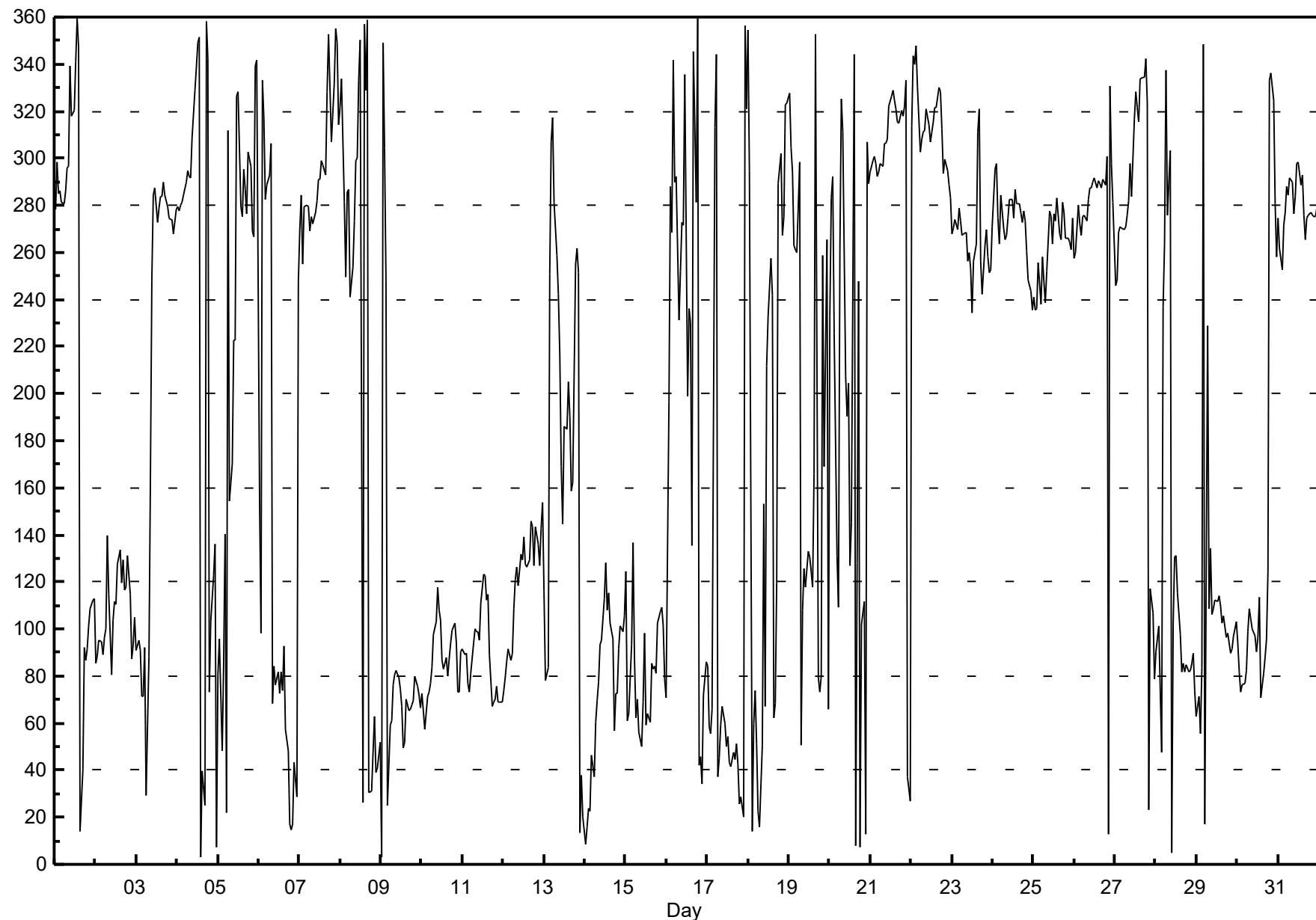
Hourly Averages

Wind Speed (WS) - km/h
Wembley - May 2020



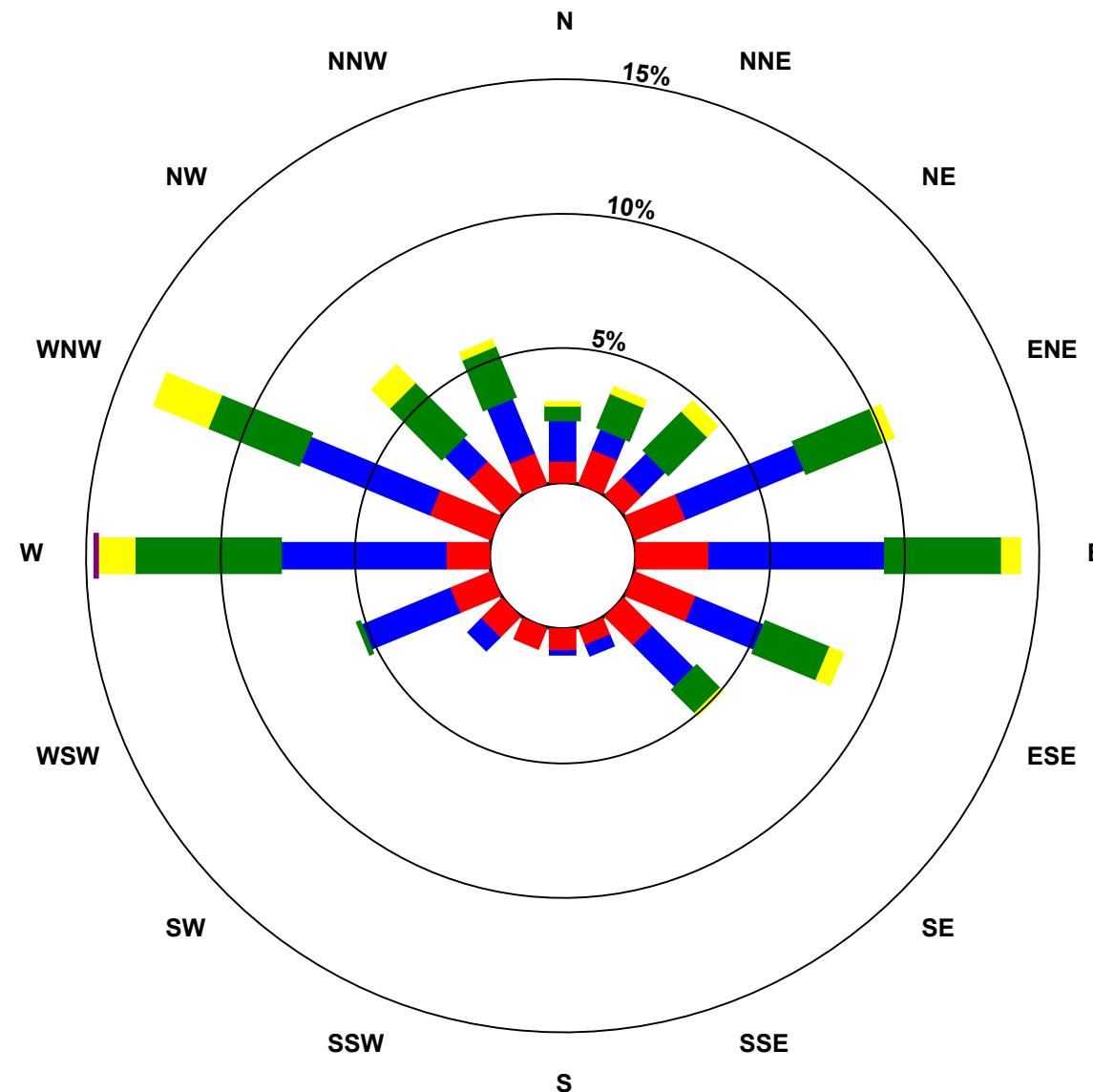
Hourly Averages

Wind Direction (WD) - deg
Wembley - May 2020



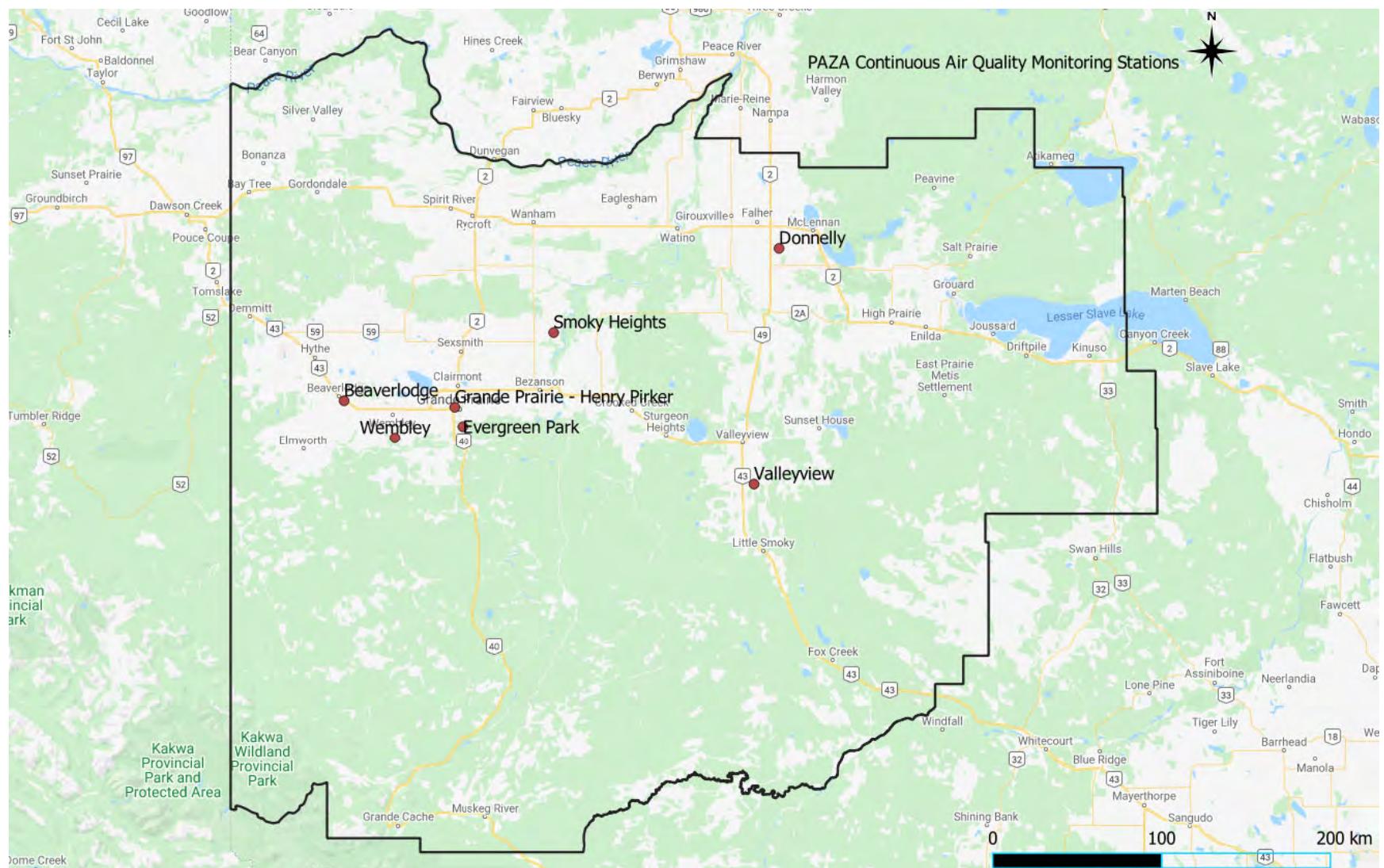
Wind Rose

Wind Speed (WS) (km/h)
Wembley - May 2020



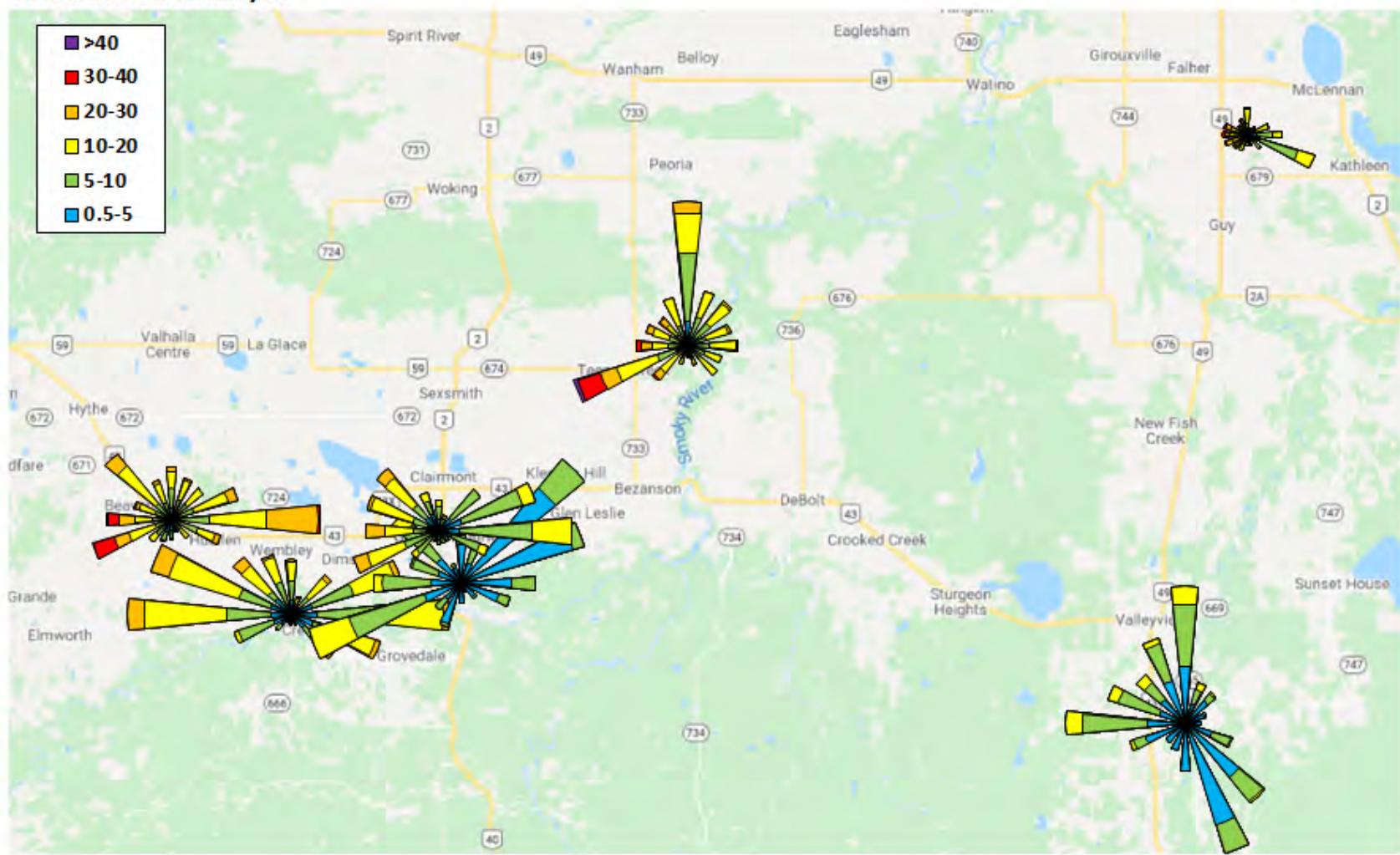
Wind Speed Classes (km/h)

9 Concentration Roses for PAZA



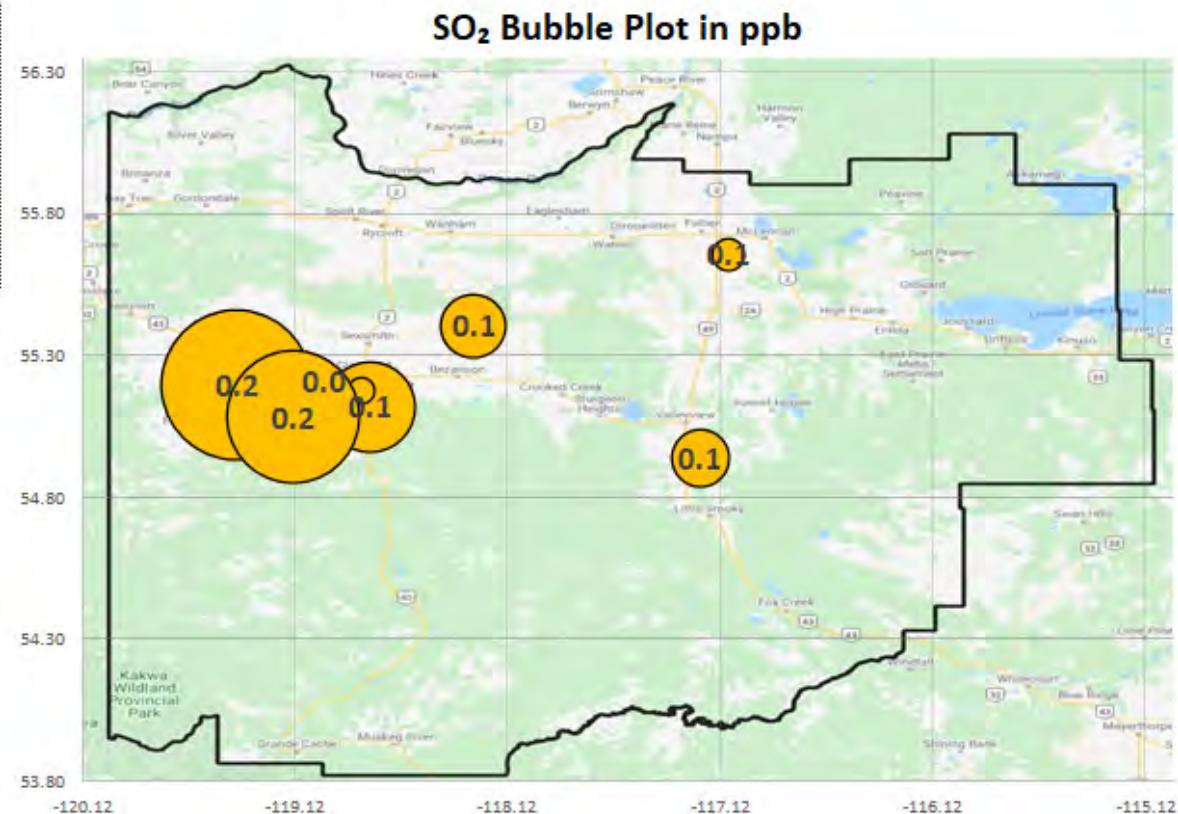
9.1 Wind Roses

Wind Roses in km/hr



9.2 Sulphur Dioxide Plots

May 2020 SO ₂ Summary	
Station	Avg (ppb)
Evergreen Park	0.1
Henry Pirker	0.0
Smoky Heights	0.1
Beaverlodge	0.2
Valleyview	0.1
Donnelly	0.1
Wembley	0.2

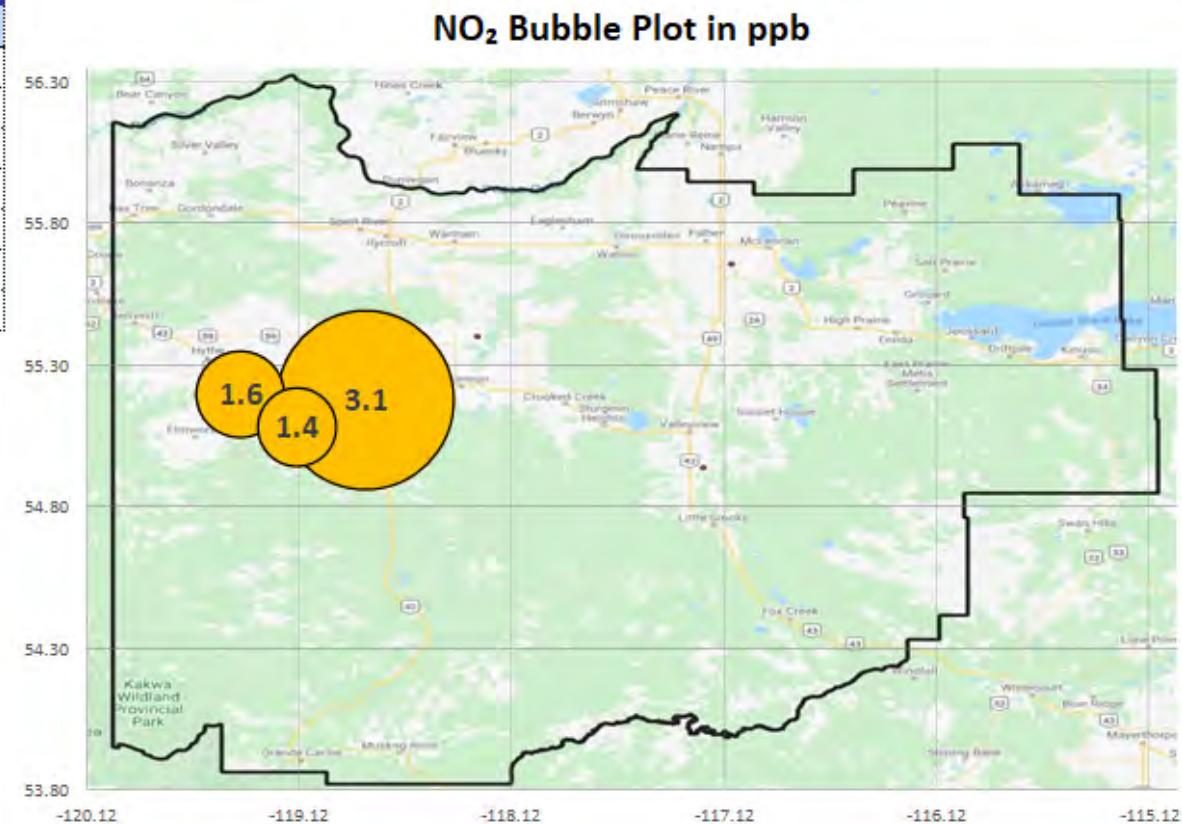


SO₂ Roses in ppb

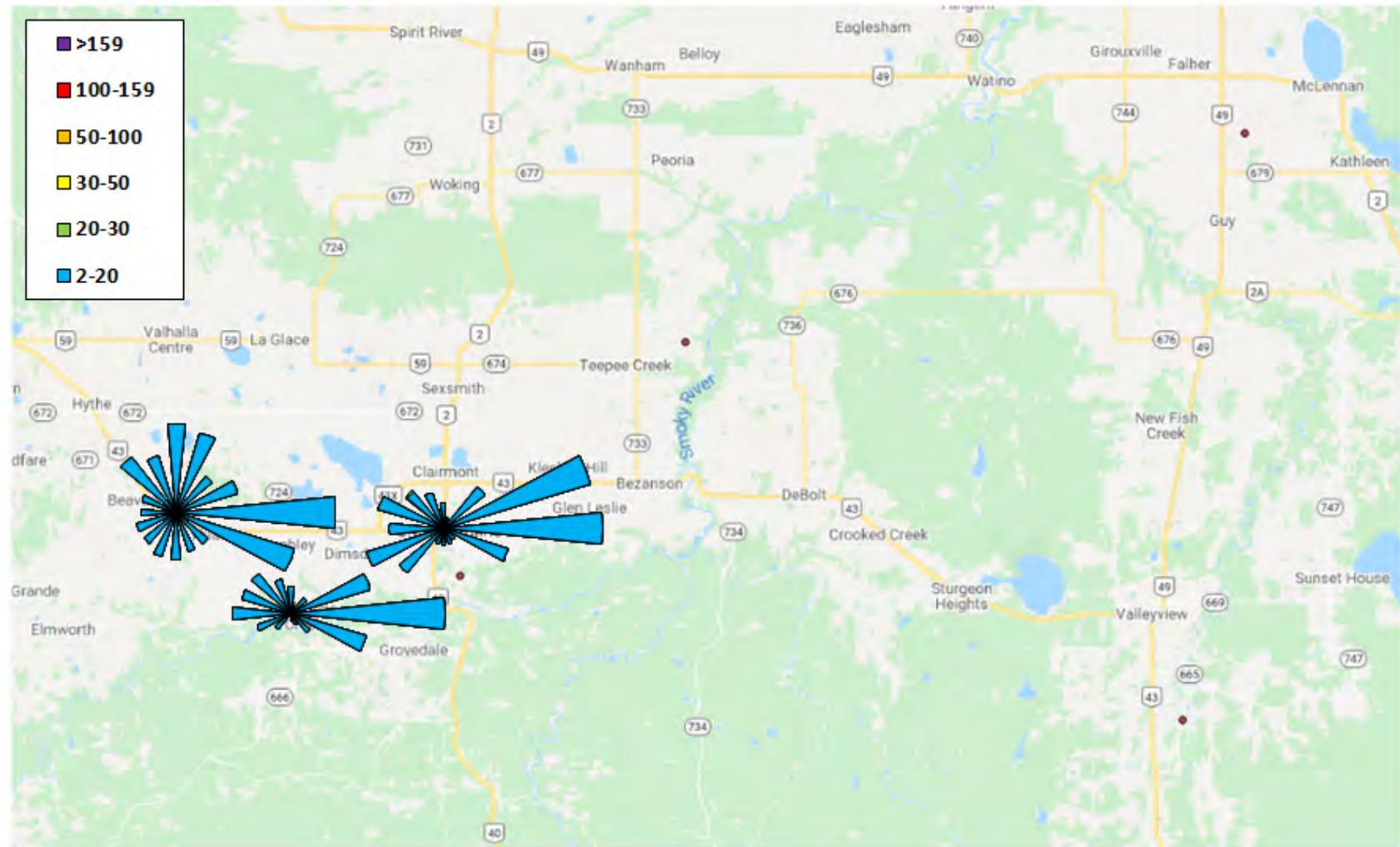


9.3 Nitrogen Dioxide Plots

May 2020 NO ₂ Summary	
Station	Avg (ppb)
Evergreen Park	-
Henry Pirker	3.1
Smoky Heights	-
Beaverlodge	1.6
Valleyview	-
Donnelly	-
Wembley	1.4

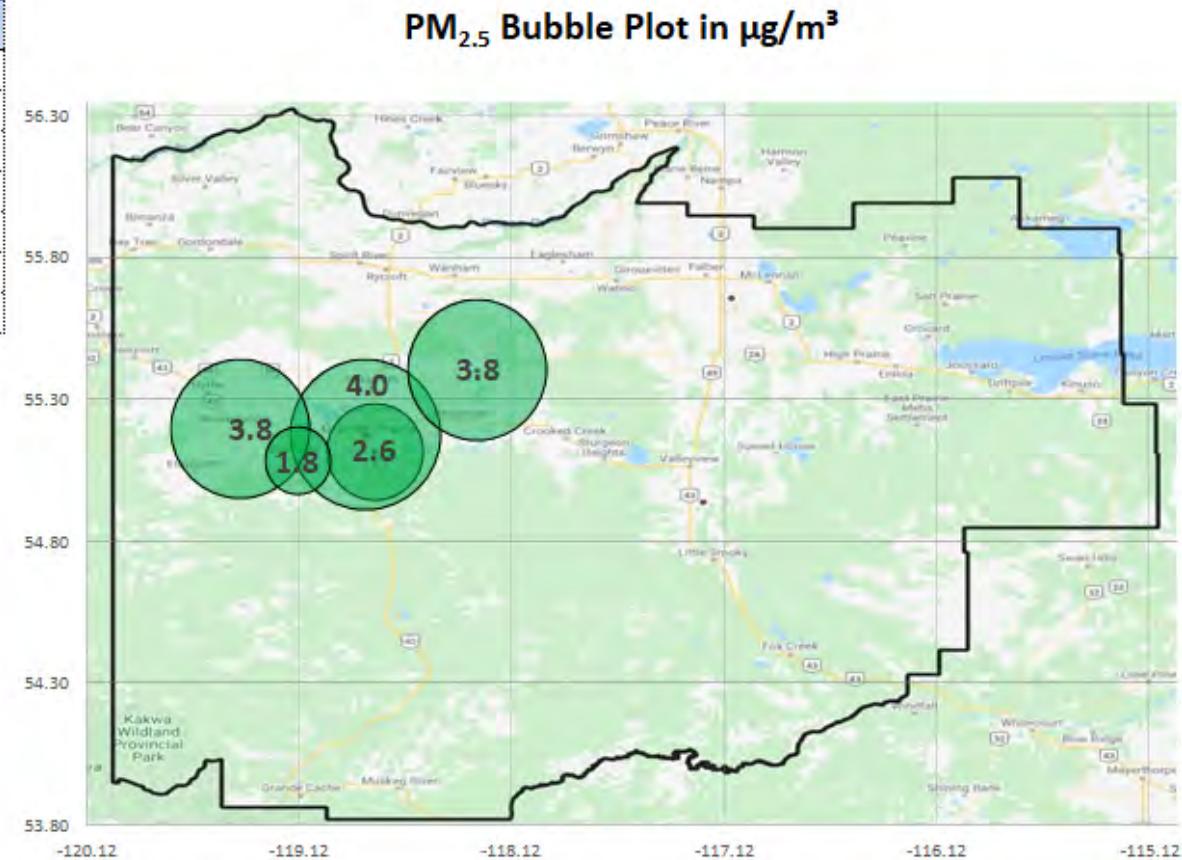


NO₂ Roses in ppb

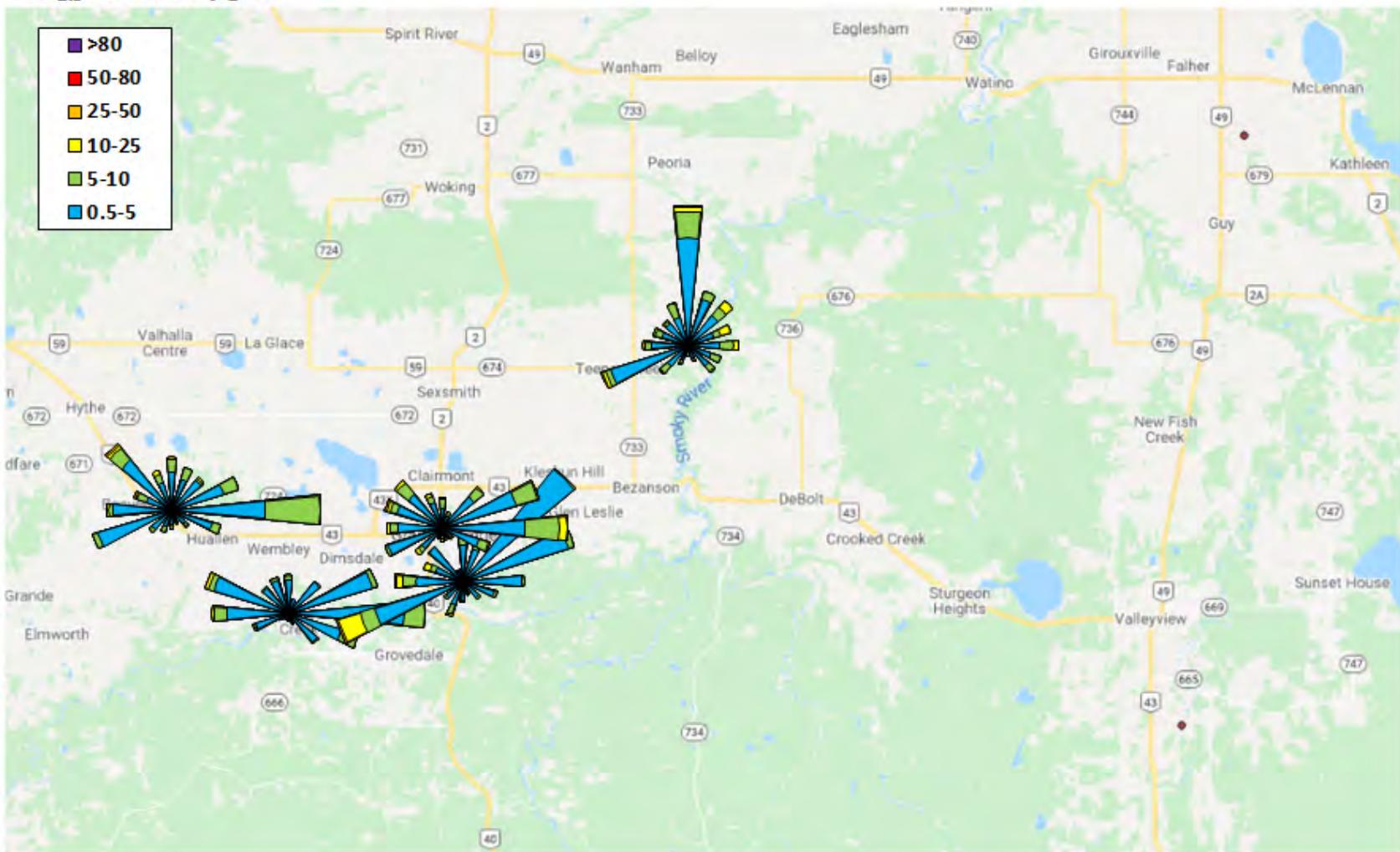


9.4 Fine Particulate Matter (PM_{2.5}) Plots

May 2020 PM _{2.5} Summary	
Station	Avg ($\mu\text{g}/\text{m}^3$)
Evergreen Park	2.6
Henry Pirker	4.0
Smoky Heights	3.8
Beaverlodge	3.8
Valleyview	-
Donnelly	-
Wembley	1.8



PM_{2.5} Roses in $\mu\text{g}/\text{m}^3$



10 Passive Monitoring Data

Peace Airshed Zone Association - PAZA Passive Stations for May 2020

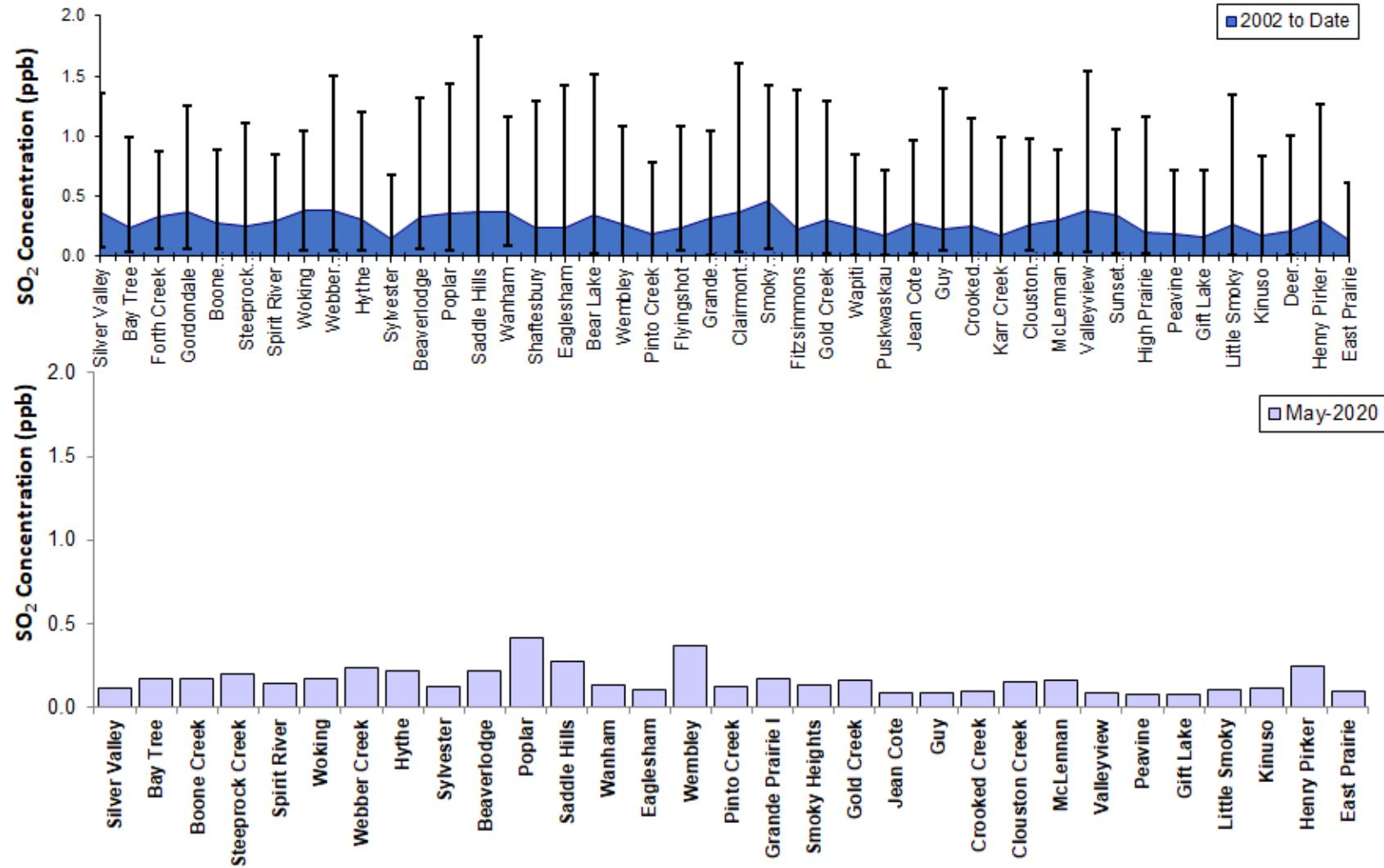
Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
Duplicates						
2a	Bay Tree	0.1	41.4	0.7		
2b	Bay Tree	0.1	33.7	0.4		
5a	Boone Creek	0.2				
5b	Boone Creek	0.2				
32a	Gold Creek			1.2		
32b	Gold Creek			1.1		
35a	Jean Cote			0.6		
35b	Jean Cote			0.7		
40a	McLennan	0.2				
40b	McLennan	0.1				
64a	Girouxville 4				0.3	
64b	Girouxville 4				0.3	

1	Silver Valley	0.1	-	0.5	-	08-27-081-11 W6M
2	Bay Tree	0.2	37.5	0.5	-	13-16-078-13 W6M
5	Boone Creek	0.2	-	0.4	-	01-23-076-11 W6M
7	Steeprock Creek	0.2	-	0.4	-	09-35-072-13 W6M
9	Spirit River	0.1	-	1.1	-	08-12-079-07 W6M
10	Woking	0.2	-	0.4	-	01-13-076-07 W6M
11	Webber Creek	0.2	-	1.7	-	09-36-074-09 W6M
12	Hythe	0.2	-	1.0	-	14-36-072-11 W6M
14	Sylvester	0.1	-	0.5	-	08-06-069-12 W6M
16	Beaverlodge	0.2	-	0.8	-	15-36-071-10 W6M
17	Poplar	0.4	-	0.9	-	13-06-073-08 W6M
18	Saddle Hills	0.3	-	0.4	-	04-25-074-07 W6M
19	Wanham	0.1	-	0.4	-	16-22-077-03 W6M
21	Eaglesham	0.1	-	0.5	-	16-21-079-25 W5M
24	Wembley	0.4	-	1.1	-	12-31-070-08 W6M
25	Pinto Creek	0.1	-	0.5	-	04-24-069-11 W6M
27	Grande Prairie I	0.2	-	2.1	-	08-15-071-06 W6M
29	Smoky Heights	0.1	-	0.4	-	04-06-075-02 W6M
32	Gold Creek	0.2	-	1.1	-	06-33-067-05 W6M
35	Jean Cote	0.1	-	0.7	-	12-35-079-21 W5M
36	Guy	0.1	-	1.2	0.1	03-04-076-22 W5M
37	Crooked Creek	0.1	43.9	0.5	-	16-01-071-26 W5M
39	Clouston Creek	0.2	-	0.7	-	12-01-073-22 W5M
40	McLennan	0.2	-	0.5	-	03-29-077-19 W5M
41	Valleyview	0.1	-	0.3	-	09-30-069-22 W5M
44	Peavine	0.1	-	0.1	-	03-05-079-15 W5M
45	Gift Lake	0.1	-	0.1	-	10-07-079-12 W5M
46	Little Smoky	0.1	-	0.8	-	12-01-065-21 W5M
47	Kinuso	0.1	41.6	0.2	-	12-10-073-10 W5M
49	Henry Pirker	0.3	-	1.5	-	17-26-071-06 W6M
50	East Prairie	0.1	-	0.3	-	11-13-079-08 W6M
63	Girouxville 3	-	-	-	-	14-02-077-23 W5M
64	Girouxville 4	-	-	-	0.3	04-08-077-22 W5M

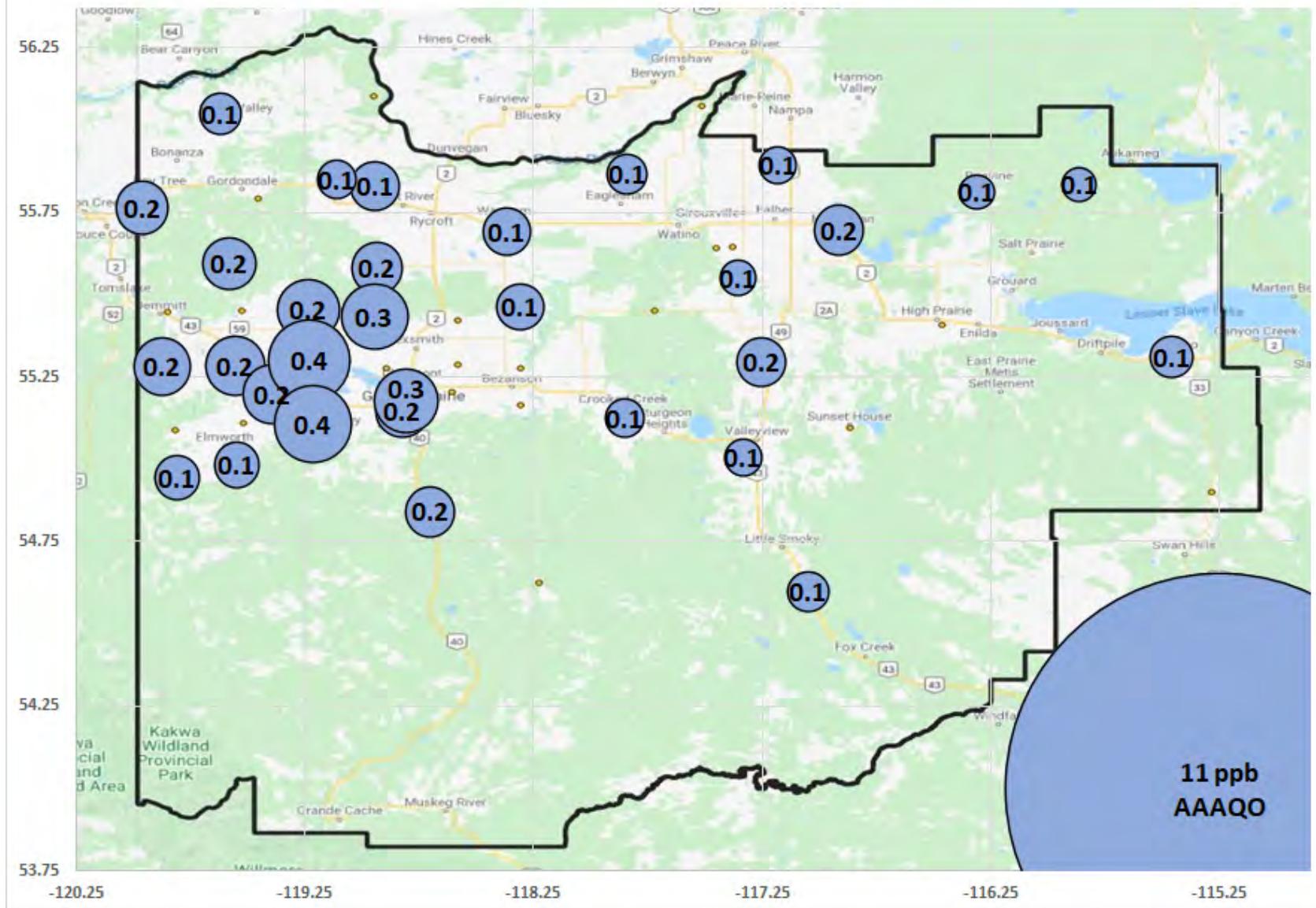
Passive Summary for May 2020

Stats	Sulphur Dioxide SO ₂ ppb	Ozone O ₃ ppb	Nitrogen Dioxide NO ₂ ppb	Hydrogen Sulphide H ₂ S ppb
Passive Summary for May 2020 (PAZA)				
Mean	0.2	41.0	0.7	0.2
Standard Deviation	0.1	3.2	0.5	0.2
Minimum	0.1	37.5	0.1	0.1
	Gift Lake (#45)	Bay Tree (#2)	Peavine (#44)	Guy (#36)
Maximum	0.4	43.9	2.1	0.3
	Poplar (#17)	Crooked Creek (#37)	Grande Prairie I (#27)	Girouxville 4 (#64)
Continuous and Passive Monitoring Comparision				
PAZA Beaverlodge Station	0.2	33.6	1.6	-
Beaverlodge Passive (#16)	0.2	-	0.8	-
PAZA Henry Pirker Station	0.0	31.2	3.1	0.2
Henry Pirker passive (#49)	0.3	-	1.5	-

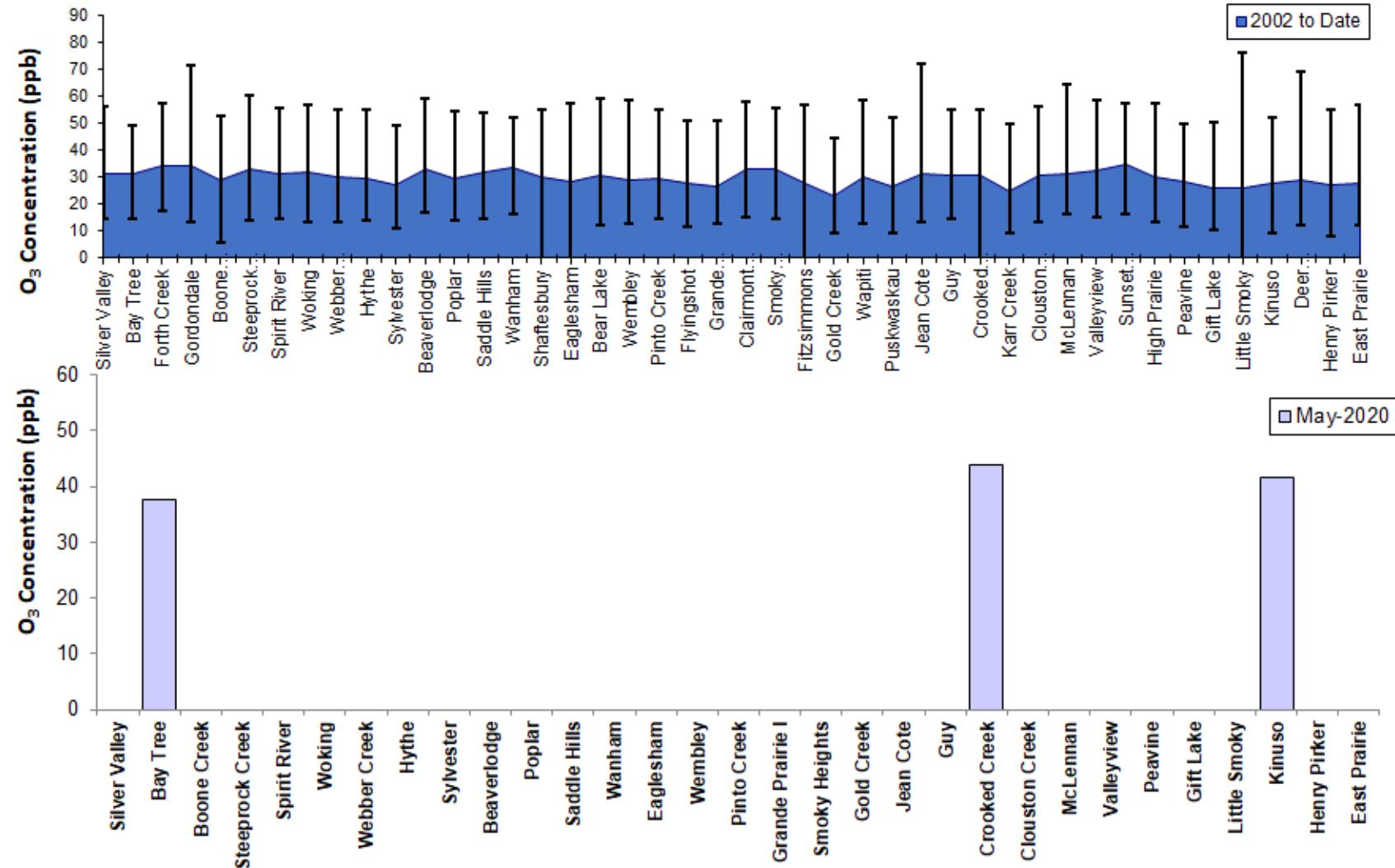
Alberta Ambient Air Quality Objective - 30-day SO₂ Objective is 11 ppb



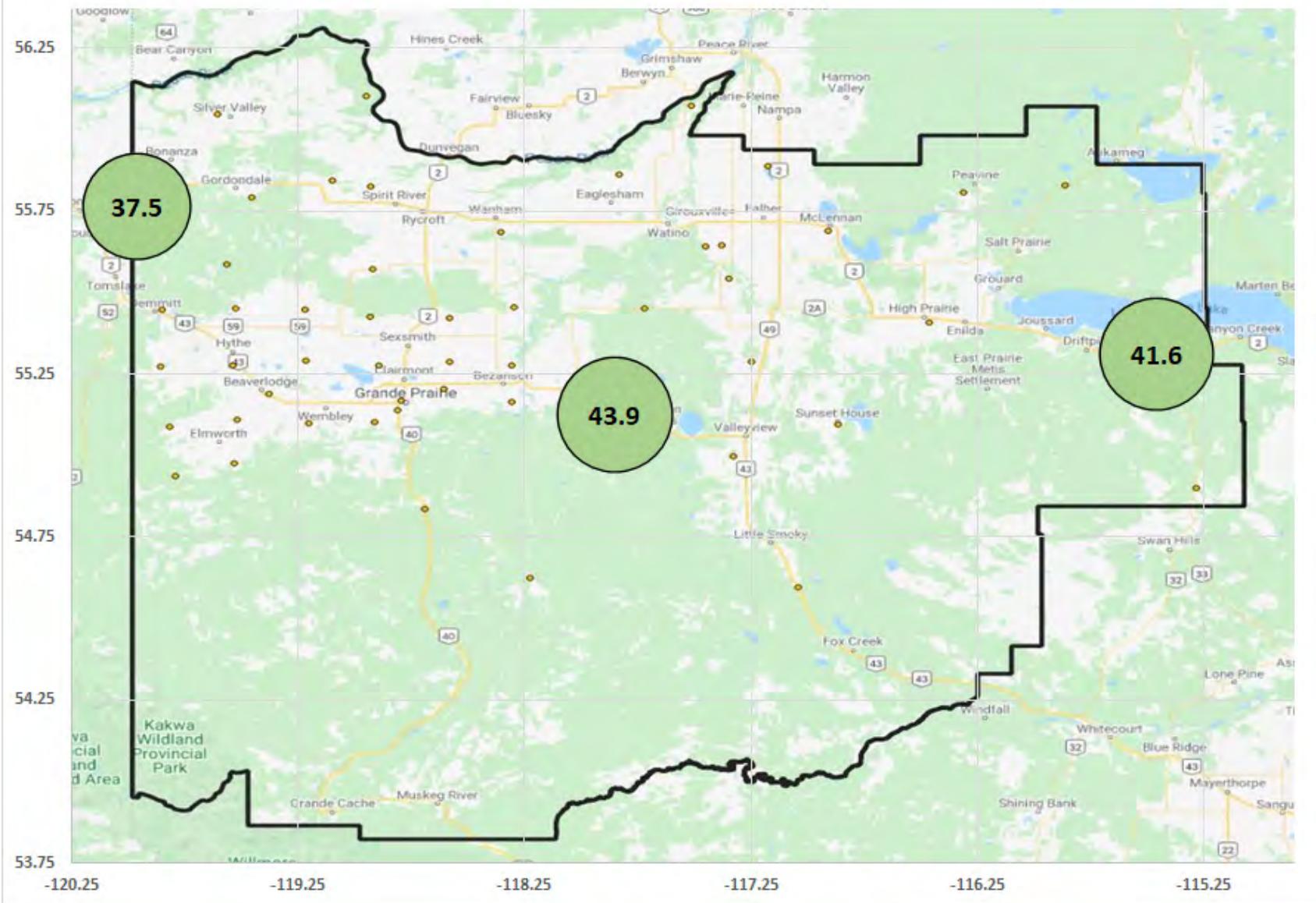
SO₂ Monthly Average (units in ppb)



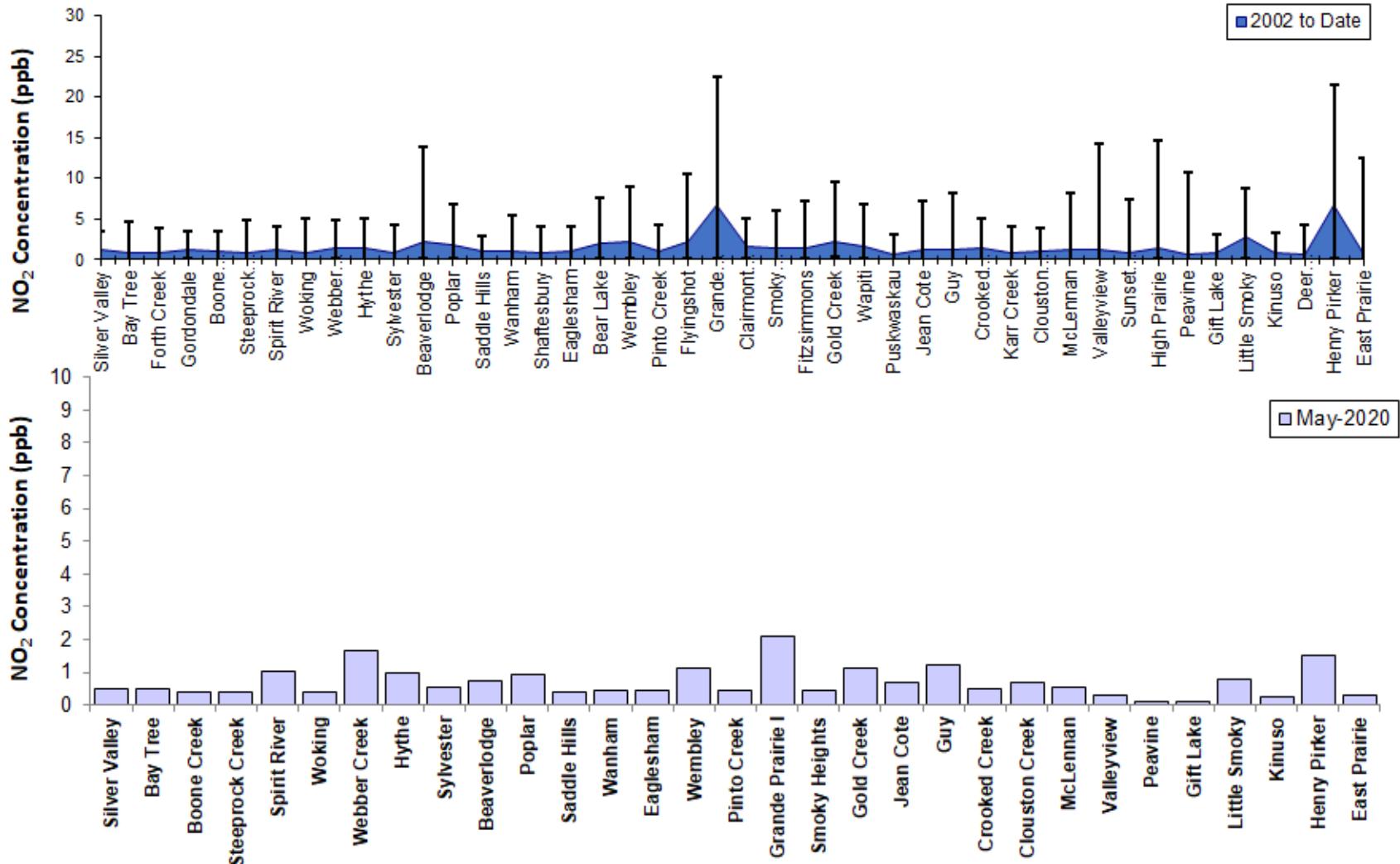
No Monthly or Annual Alberta Ambient Air Quality Objective for O₃



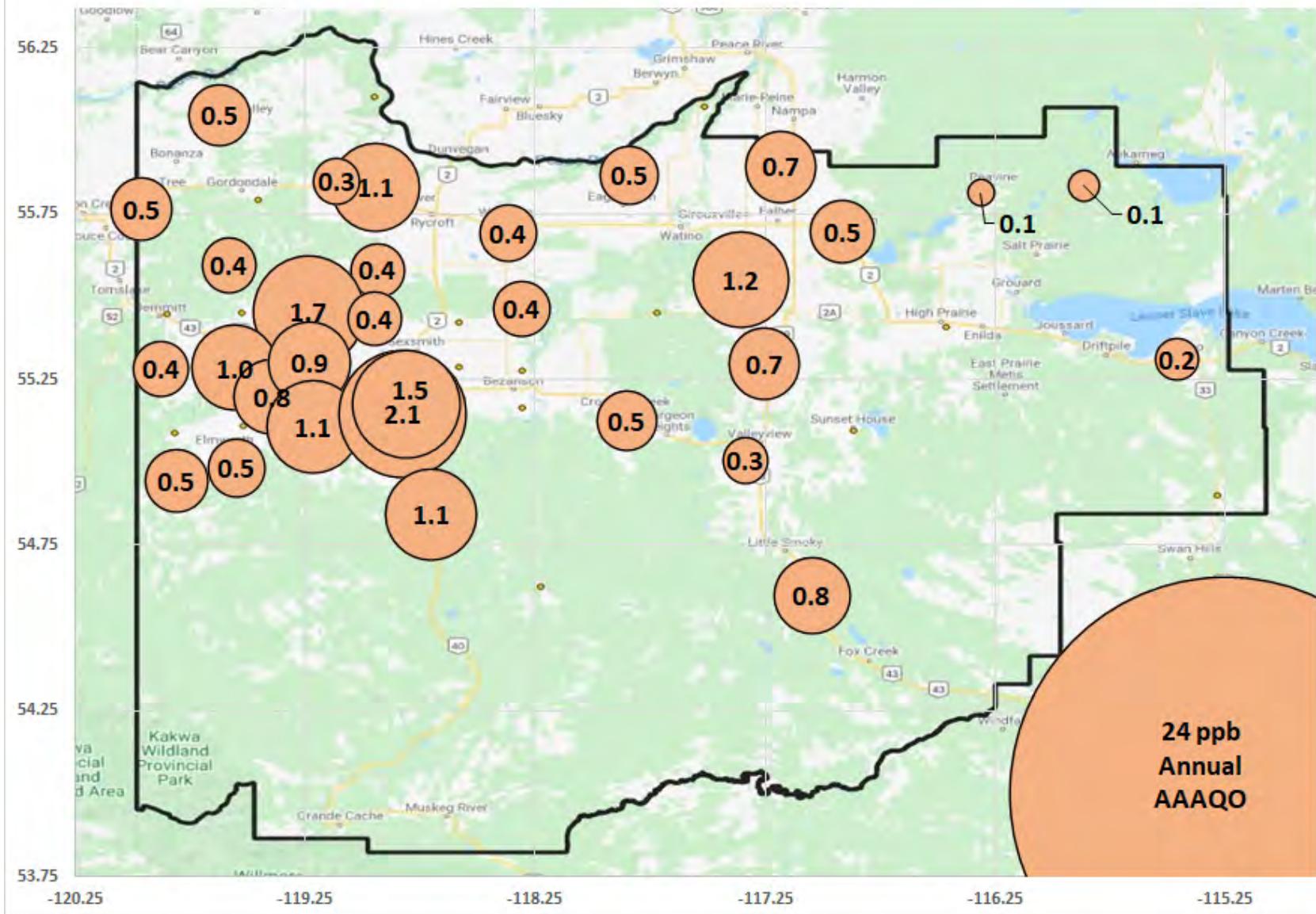
O₃ Monthly Average (units in ppb)



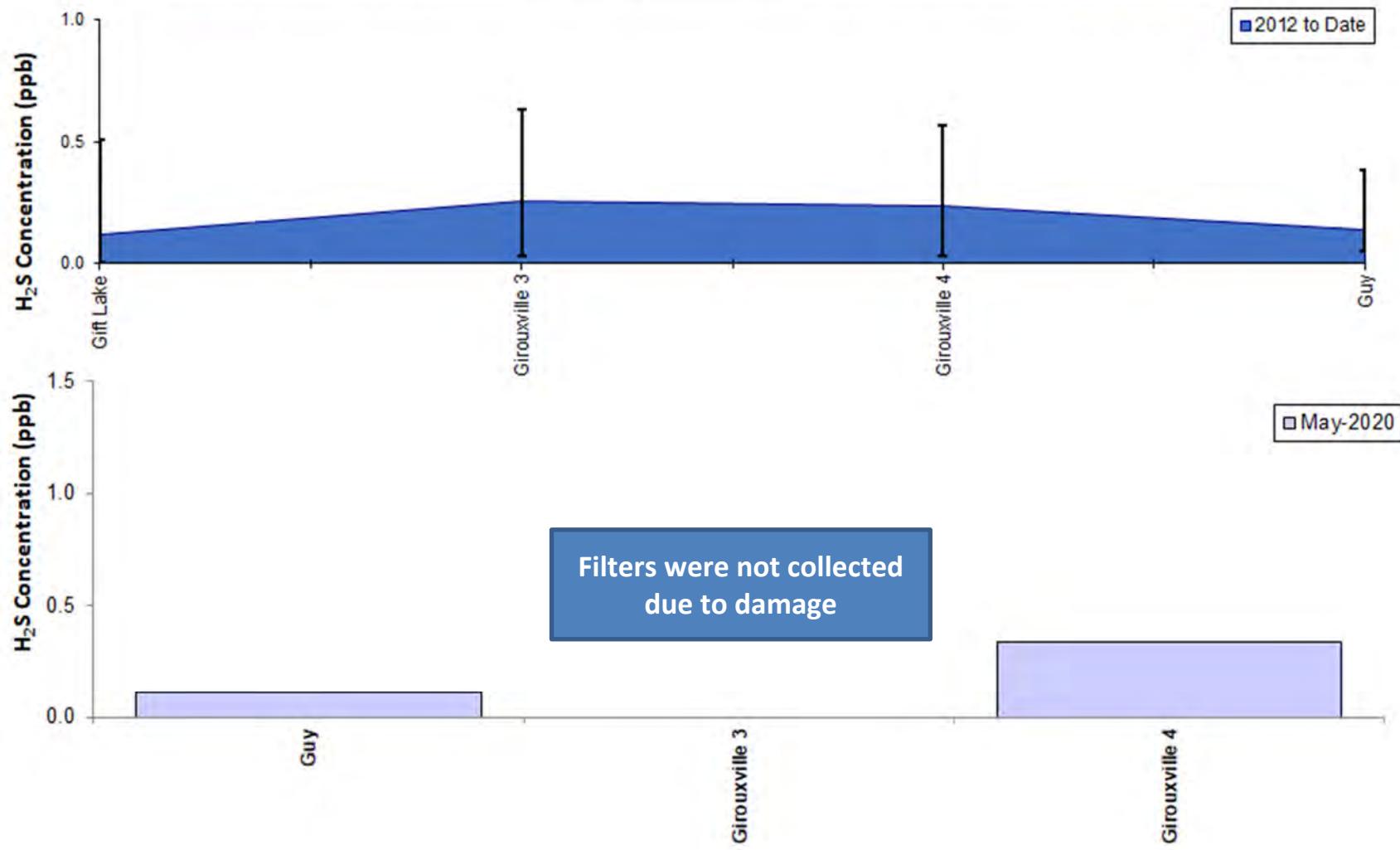
Alberta Ambient Air Quality Objective - Annual NO₂ Objective is 24 ppb



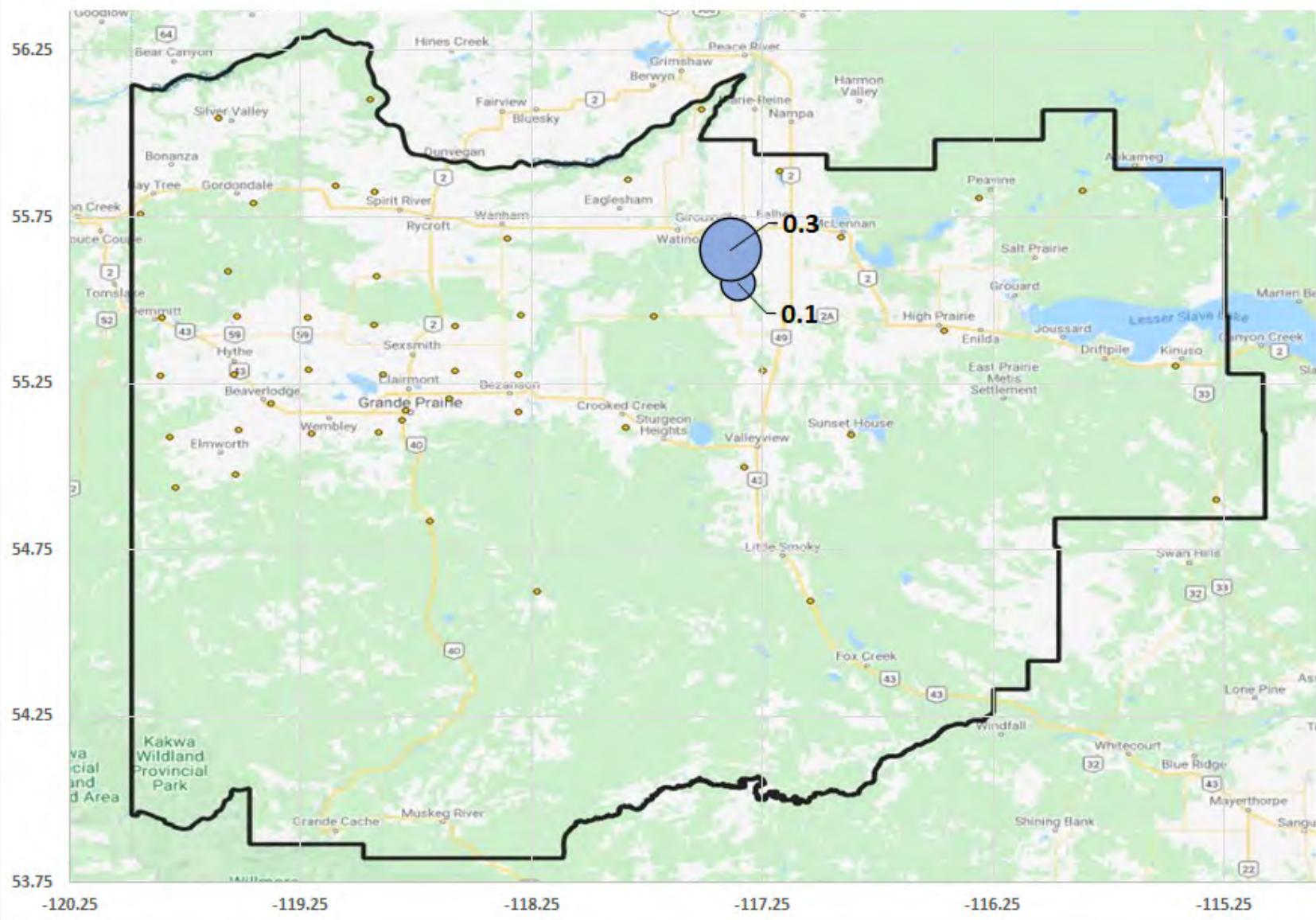
NO₂ Monthly Average (units in ppb)



No Monthly or Annual Alberta Ambient Air Quality Objective for H₂S



H₂S Monthly Average (units in ppb)



End of Report



Peace Airshed Zone Association
Ambient Air Monitoring Report

May 2020