



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

Ambient Air Quality Monitoring Program

Monthly Report

April 2020

May 31, 2020

Alberta Environment and Parks

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

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

Please find enclosed the PAZA Ambient Air Quality Monitoring Network Report for the month of April 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 April 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 no exceedances of the AAAQO in April 2020

Operational times less than 90 percent:

There were no operational times less than 90% in April 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 seven duplicate sites sampled in the month of April with RPD from 0 to 33%:

For sulphur dioxide duplicates at Sylvester, Eaglesham, and Gift Lake stations

For ozone duplicate at Kinuso station

For nitrogen dioxide duplicates at Silver Valley, Wembley, and Little Smoky stations

For hydrogen sulphide the duplicate at Guy station was missing upon sample collection

The two samples that could not be collected at Girouxville 3 and 4 due to accessibility last month were collected and analyzed this month after being exposed for two months.

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.

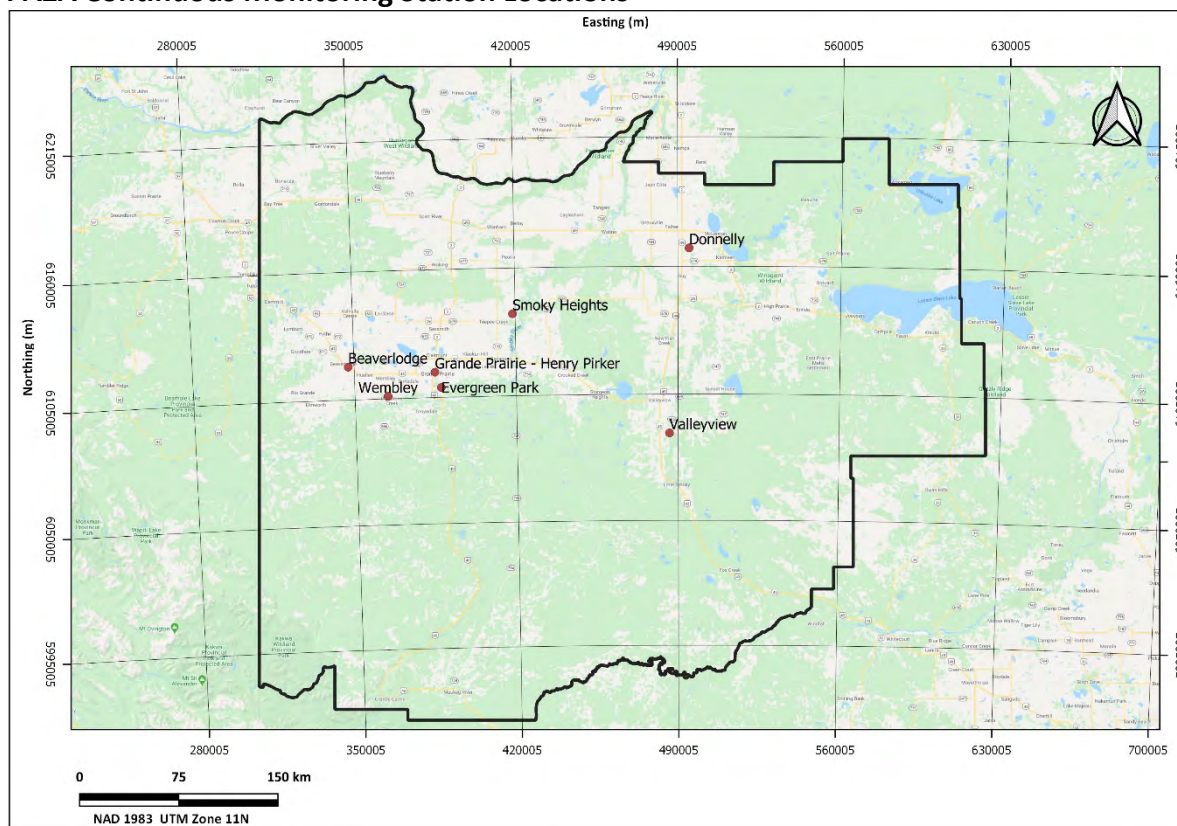


Mandeep Dhaliwal, B.Sc., P.Chem.
Program Manager

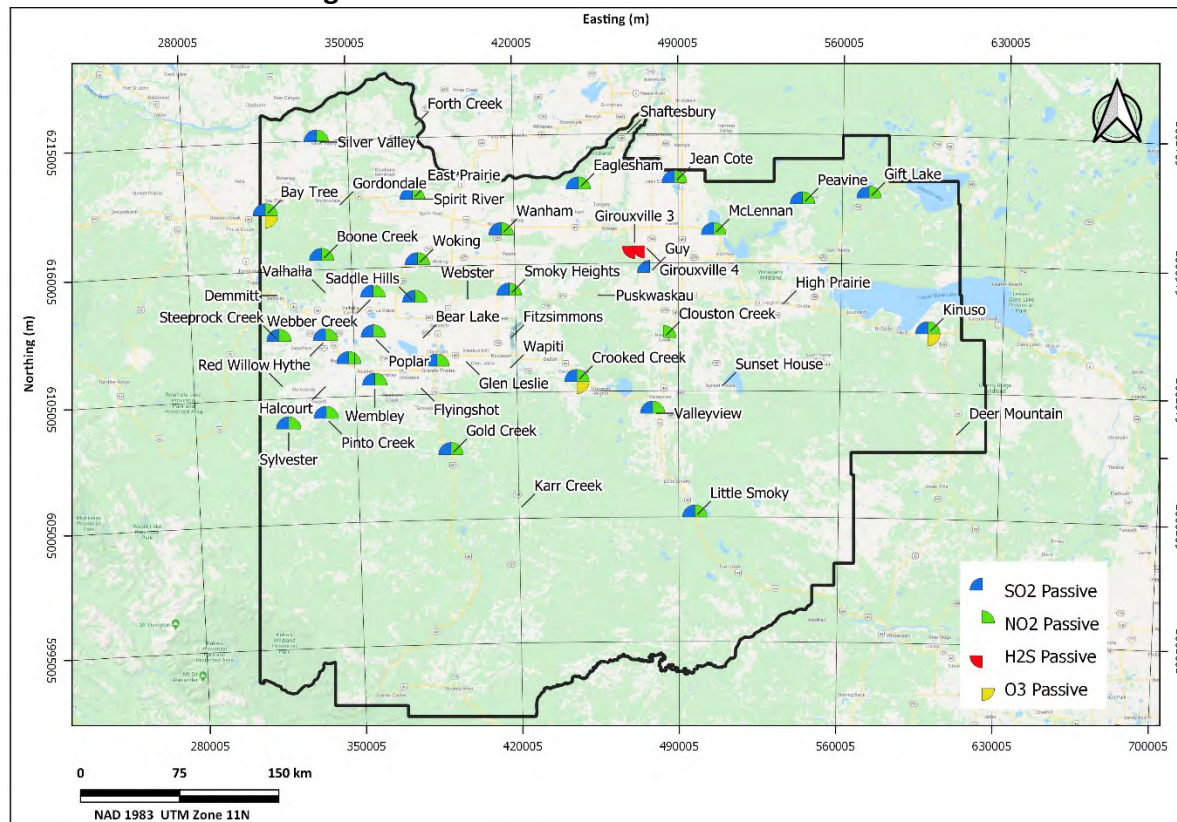
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PAZA Continuous Monitoring Station Locations



PAZA Passive Monitoring Station Locations



1 Monthly Station Summaries

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

1.1 Beaverlodge Air Monitoring Station

PAZA - April 2020 Beaverlodge Station Report

Parameter	April				Max	1-hour		24-hour			Exceedance				Calibration	
	Average	Minimum	Valid	Operational		Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date	
NO (ppb)	0.5	0.0	94.2%	99.0%	38.7	-	Apr-02 08:00	5.4	-	Mar-02	-	-	-	-	Apr 21, 2020	
NO ₂ (ppb)	2.3	0.3	94.2%	99.0%	27.2	159	Apr-02 08:00	8.6	-	Mar-02	0	-	-	-	Apr 21, 2020	
NO _x (ppb)	2.8	0.2	94.2%	99.0%	66.2	-	Apr-02 08:00	14.1	-	Mar-02	-	-	-	-	Apr 21, 2020	
O ₃ (ppb)	42.4	19.8	92.8%	98.1%	58.5	76	Apr-29 18:00	48.3	-	Mar-29	0	-	-	-	Apr 22, 2020	
PM _{2.5} (µg/m³)	2.5	0.3	99.7%	100.0%	30.4	80	Apr-06 02:00	6.4	29	Mar-05	0	-	0	-	Apr 07, 2020	
SO ₂ (ppb)	0.3	0.0	95.1%	100.0%	4.2	172	Apr-05 06:00	1.3	48	Mar-05	0	-	0	0	Apr 22, 2020	
	Average	Minimum	Valid	Operational	Maximum											
Temp (°C)	2.1	-21.0	100.0%	100.0%	17.9											
RH (%)	53.9	18.1	100.0%	100.0%	99.5											
WS (km/hr)	13.4	0.4	100.0%	100.0%	45.2											
WD (deg)	270	1.1	100.0%	100.0%	359.6											
Note: Valid hours must be greater than 75% Operational hours must be greater than 90%																
Average Wind Direction										270	W					

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	Thermo	42i	A calibration was started and equipment failed resulting in a few hours of data flagged as not valid
O ₃	Thermo	49i	Optic cells cleaned and voltage adjusted
PM _{2.5}	Sharp	5030	No Operational issues noted during the month
SO ₂	Thermo	43i-TLE	No Operational issues noted during the month
Met Equip	MetOne	50.5	No Operational issues noted during the month

1.2 Evergreen Park Air Monitoring Station

PAZA - April 2020 Evergreen Park Station Report

Parameter	April		Valid	Operational	1-hour			24-hour			Exceedance				Calibration
	Average	Minimum			Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	Date
PM _{2.5} (µg/m³)	2.4	0.0	99.3%	100.0%	15.8	80	Apr-06 08:00	5.6	29	Mar-06	0	-	0	-	Apr-23-2020
SO ₂ (ppb)	0.2	0.0	95.3%	100.0%	3.1	172	Apr-11 14:00	0.6	48	Mar-01	0	-	0	0	Apr-23-2020
TRS (ppb)	0.5	0.1	95.3%	100.0%	2.1	-	Apr-04 03:00	0.7	-	Mar-03	-	-	-	-	Apr-23-2020
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	2.2	-24.5	100.0%	100.0%	19.2										
RH (%)	53.5	15.0	100.0%	100.0%	96.2										
WS (km/hr)	5.4	0.0	100.0%	100.0%	18.9										
WD (deg)	259	2.8	100.0%	100.0%	359.0										

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

Average Wind Direction259W

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted during the month
SO ₂	TECO	43i	No Operational issues noted during the month
TRS	TECO	43C	No Operational issues noted during the month
Met Equip	Gil/RMYoung	MetPak/RMY86004	No Operational issues noted during the month

1.3 Grande Prairie - Henry Pirker Air Monitoring Station

PAZA - April 2020 Henry Pirker Station Report

Parameter	April				1-hour			8-hour / 24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
NO (ppb)	1.4	0.0	95.0%	100.0%	27.7	-	Apr-03 10:00	5.5	-	Mar-06	-	-	-	-	Apr 01, 2020
NO ₂ (ppb)	6.4	0.5	95.0%	100.0%	42.3	159	Apr-01 22:00	14.4	-	Mar-03	0	-	-	-	Apr 01, 2020
NO _x (ppb)	7.8	0.7	95.0%	100.0%	61.5	-	Apr-01 22:00	19.6	-	Mar-03	-	-	-	-	Apr 01, 2020
O ₃ (ppb)	37.2	0.9	95.4%	100.0%	56.6	76	Apr-29 16:00	45.1	-	Mar-15	0	-	-	-	Apr 01, 2020
PM _{2.5} (µg/m ³)	3.6	1.1	99.7%	100.0%	21.9	80	Apr-06 10:00	11.1	29	Mar-06	0	-	0	-	Apr 03, 2020
SO ₂ (ppb)	0.2	0.0	94.5%	99.6%	3.2	172	Apr-08 11:00	0.7	48	Mar-01	0	-	0	0	Apr 12, 2020
H ₂ S (ppb)	0.2	0.0	95.3%	100.0%	2.1	10	Apr-18 07:00	0.5	3	Mar-18	0	-	0	-	Apr 03, 2020
CH ₄ (ppm)	1.7	1.6	95.3%	100.0%	4.2	-	Apr-18 05:00	1.9	-	Mar-18	-	-	-	-	Apr 02, 2020
THC (ppm)	1.7	1.6	95.3%	100.0%	4.2	-	Apr-18 05:00	1.9	-	Mar-03	-	-	-	-	Apr 02, 2020
NMHC (ppm)	0.0	0.0	95.3%	100.0%	0.3	-	Apr-02 04:00	0.1	-	Mar-03	-	-	-	-	Apr 02, 2020
CO (ppm)	0.2	0.1	95.3%	100.0%	0.4	13	Apr-01 22:00	0.2	5	Mar-06	0	0	-	-	Apr 02, 2020
Average															
Temp (°C)	2.5	-26.4	100.0%	100.0%	19.0	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
RH (%)	50.9	14.5	100.0%	100.0%	86.2										
SR (W/m ²)	177.8	0.0	100.0%	100.0%	712.2										
WS (km/hr)	9.1	0.4	98.5%	98.5%	30.4										
WD (deg)	267	0.5	98.5%	98.5%	359.9										
Average Wind Direction										267	W				

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
PM _{2.5}	Sharp	5030	No Operational issues noted during the month
SO ₂	TEI	43i-TLE	Perm tube replaced and span checked resulting in a few hours of not valid data
H ₂ S	TEI	450i	No Operational issues noted during the month
THC/CH ₄ /NMHC	TEI	55i	Replaced hydrogen & nitrogen cylinders and regulator on span gas
CO	TEI	48i-TLE	No Operational issues noted during the month
Met Equip	MetOne	50.5	Periods of WS/WD data removed due to invalid readings between April 2-4

1.4 Smoky Heights Air Monitoring Station

PAZA - April 2020 Smoky Heights Station Report

April 2020 Emery Weight Station Report															
Parameter	April				1-hour			24-hour			Exceedance				Calibration Date
	Average	Minimum	Valid	Operational	Max	Objective	Max Day and Time	Max	Objective	Max Day	1hr	8hr	24hr	30d	
PM _{2.5} (µg/m³)	2.5	0.0	98.8%	99.0%	19.5	80	Apr-24 17:00	8.2	29	Mar-05	0	-	0	-	Mar 20, 2020
SO ₂ (ppb)	0.4	0.0	94.5%	99.0%	5.2	172	Apr-18 18:00	0.7	48	Mar-03	0	-	0	0	Mar 20, 2020
TRS (ppb)	0.1	0.0	94.2%	99.0%	1.6	-	Apr-03 06:00	0.3	-	Mar-03	-	-	-	-	Mar 20, 2020
	Average	Minimum	Valid	Operational	Maximum										
Temp (°C)	1.0	-25.2	99.0%	99.0%	16.8	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%									
WS (km/hr)	14.3	0.3	99.0%	99.0%	43.9										
WD (deg)	262	0.0	99.0%	99.0%	359.8										
Average Wind Direction										262	WNW				

Update Summary:

Parameter	Make	Model	Equipment summary
PM _{2.5}	Sharp	5030	Data logger power supply failure resulted in down time during the month
SO ₂	TECO	43i	Data logger power supply failure resulted in down time during the month
TRS	TEI	43i APSAA	Data logger power supply failure resulted in down time during the month
Met Equip	MetOne	50.5	Data logger power supply failure resulted in down time during the month

1.5 Valleyview Air Monitoring Station

PAZA - April 2020 Valleyview Station Report

Parameter	April Average	Minimum	Valid	Operational	Max	1-hour Objective	Max Day and Time	Max	24-hour Objective	Max Day	Exceedance	1hr	8hr	24hr	30d	Calibration Date
SO ₂ (ppb)	0.1	0.0	95.4%	100.0%	1.3	172	Apr-09 03:00	0.4	48	Mar-05	0	-	0	0	0	Apr 07, 2020
H ₂ S (ppb)	0.1	0.0	95.6%	100.0%	1.7	10	Apr-18 22:00	0.2	3	Mar-18	0	-	0	-	-	Apr 07, 2020
	Average	Minimum	Valid	Operational	Maximum											
Temp (°C)	2.2	-29.3	100.0%	100.0%	20.3	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%										
RH (%)	58.8	21.9	100.0%	100.0%	99.7											
WS (km/hr)	5.2	0.0	100.0%	100.0%	16.6											
WD (deg)	293	0.1	100.0%	100.0%	359.7											
Average Wind Direction									293	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 - April 2020 Donnelly Station Report

Parameter	April Average	Minimum	Valid	Operational	Max	1-hour Objective	Max Day and Time	Max	24-hour Objective	Max Day	Exceedance	1hr	8hr	24hr	30d	Calibration Date
SO ₂ (ppb)	0.1	0.0	94.0%	98.6%	0.7	172	Apr-23 08:00	0.4	48	Mar-05	0	-	0	0	0	Apr 09, 2020
H ₂ S (ppb)	0.2	0.0	94.0%	98.6%	0.6	10	Apr-29 22:00	0.3	3	Mar-29	0	-	0	-	-	Apr 09, 2020
	Average	Minimum	Valid	Operational	Maximum											
Temp (°C)	0.7	-28.4	98.6%	98.6%	17.4	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%										
WS (km/hr)	11.4	0.2	98.6%	98.6%	34.5											
WD (deg)	250	0.9	98.6%	98.6%	359.6											
Average Wind Direction									250	WSW						

Update Summary:

Parameter	Make	Model	Equipment summary
SO ₂	Teco	43I	A major regional power failure resulted in lost time at station on April 26
H ₂ S	Thermo	45C	A major regional power failure resulted in lost time at station on April 26
Met Equip	RMYoung	5103	A major regional power failure resulted in lost time at station on April 26

1.7 Wembley Air Monitoring Station

PAZA - April 2020 Wembley Station Report

Parameter	April Average	Minimum	Valid	Operational	Max	1-hour Objective	Max Day and Time	Max	24-hour Objective	Max Day	Exceedance	1hr	8hr	24hr	30d	Calibration Date
NO (ppb)	0.3	0.0	95.1%	100.0%	6.0	-	Apr-06 12:00	1.3	-	Mar-04	-	-	-	-	-	Apr 02, 2020
NO ₂ (ppb)	1.8	0.1	95.1%	100.0%	11.9	159	Apr-03 00:00	5.8	-	Mar-03	0	-	-	-	-	Apr 02, 2020
NO _x (ppb)	2.0	0.1	95.1%	100.0%	14.4	-	Apr-06 12:00	6.9	-	Mar-03	-	-	-	-	-	Apr 02, 2020
O ₃ (ppb)	43.1	17.3	95.4%	100.0%	60.8	76	Apr-29 17:00	47.6	-	Mar-15	0	-	-	-	-	Apr 02, 2020
PM _{2.5} (µg/m³)	1.4	0.0	99.4%	100.0%	13.8	80	Apr-06 15:00	5.3	29	Mar-06	0	-	0	-	-	Apr 06, 2020
SO ₂ (ppb)	0.3	0.0	94.9%	99.4%	5.3	172	Apr-03 10:00	1.1	48	Mar-31	0	-	0	0	0	Apr 02, 2020
TRS (ppb)	0.2	0.0	94.0%	99.6%	1.0	-	Apr-05 08:00	0.3	-	Mar-12	-	-	-	-	-	Apr 10, 2020
CH ₄ (ppm)	2.0	1.6	94.7%	99.6%	2.8	-	Apr-06 07:00	2.1	-	Mar-06	-	-	-	-	-	Apr 03, 2020
THC (ppm)	2.0	1.6	94.7%	99.6%	2.8	-	Apr-06 07:00	2.1	-	Mar-06	-	-	-	-	-	Apr 03, 2020
NMHC (ppm)	0.0	0.0	94.7%	99.6%	0.0	-	Apr-02 14:00	0.0	-	Mar-02	-	-	-	-	-	Apr 03, 2020
	Average	Minimum	Valid	Operational	Maximum											
Temp (°C)	2.2	-25.2	100.0%	100.0%	18.3	Note: Valid hours must be greater than 75% Operational hours must be greater than 90%										
WS (km/hr)	11.0	0.2	100.0%	100.0%	33.5											
WD (deg)	295	1.4	100.0%	100.0%	359.1											
Average Wind Direction									295	WNW						

Update Summary:

Parameter	Make	Model	Equipment summary
NO/NO ₂ /NO _x	TEI	42I	No Operational issues noted during the month
O ₃	TEI	49I	No Operational issues noted during the month
PM _{2.5}	Thermo	TEOM AB	No Operational issues noted during the month
SO ₂	TEI	43I	Replaced perm tube
TRS	TEI	43I	A span check was conducted resulting in a few hours of not valid data
THC/CH ₄ /NMHC	TEI	55I-A3PHAA	Replaced Hydrogen & Nitrogen cylinders, there was also a few hours of not valid data due to low drift
Met Equip	MetOne	50.5	No Operational issues noted during the month

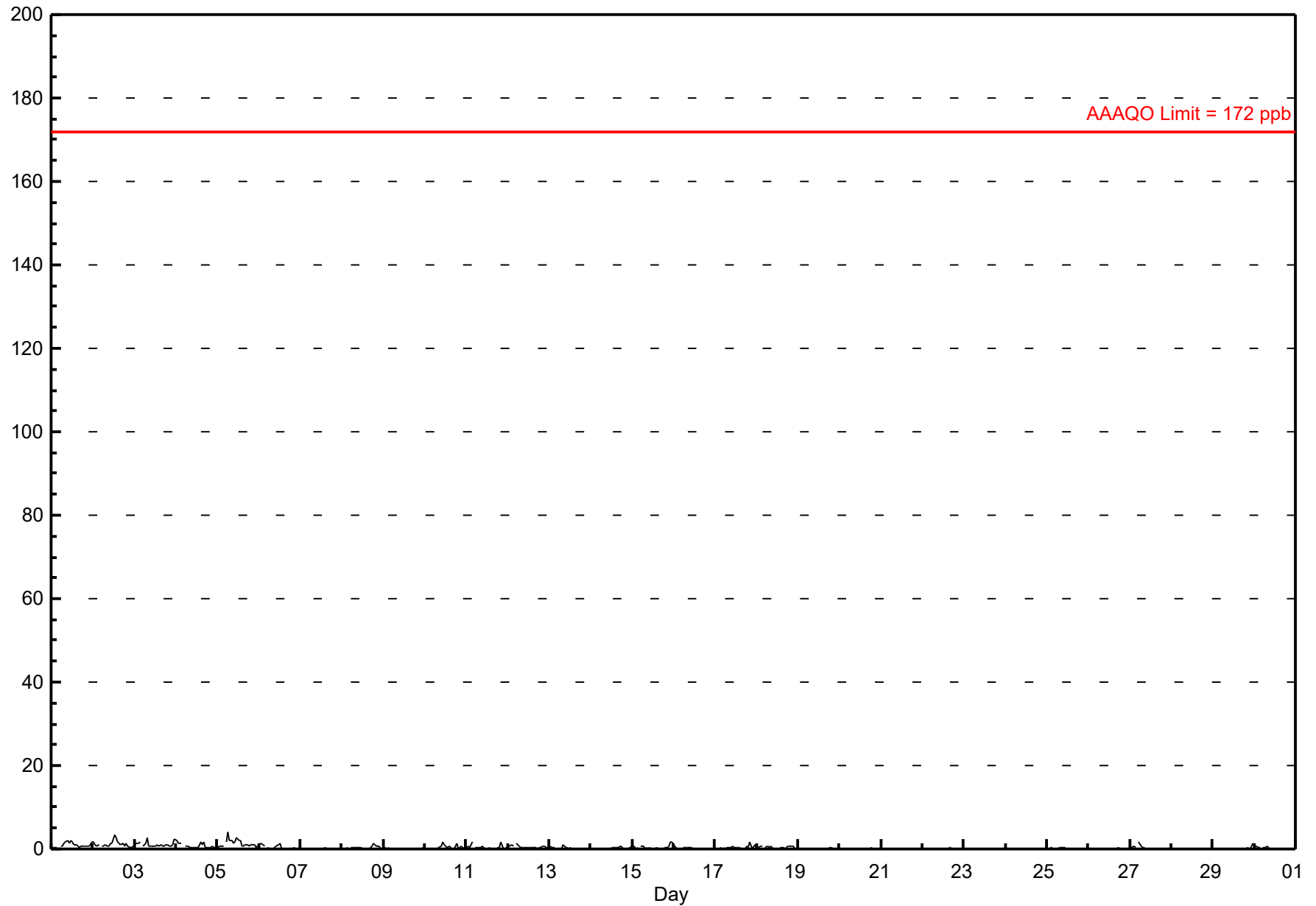
2 Beaverlodge Charts

The following pages include the charts and histograms for Beaverlodge Station

Hourly Averages

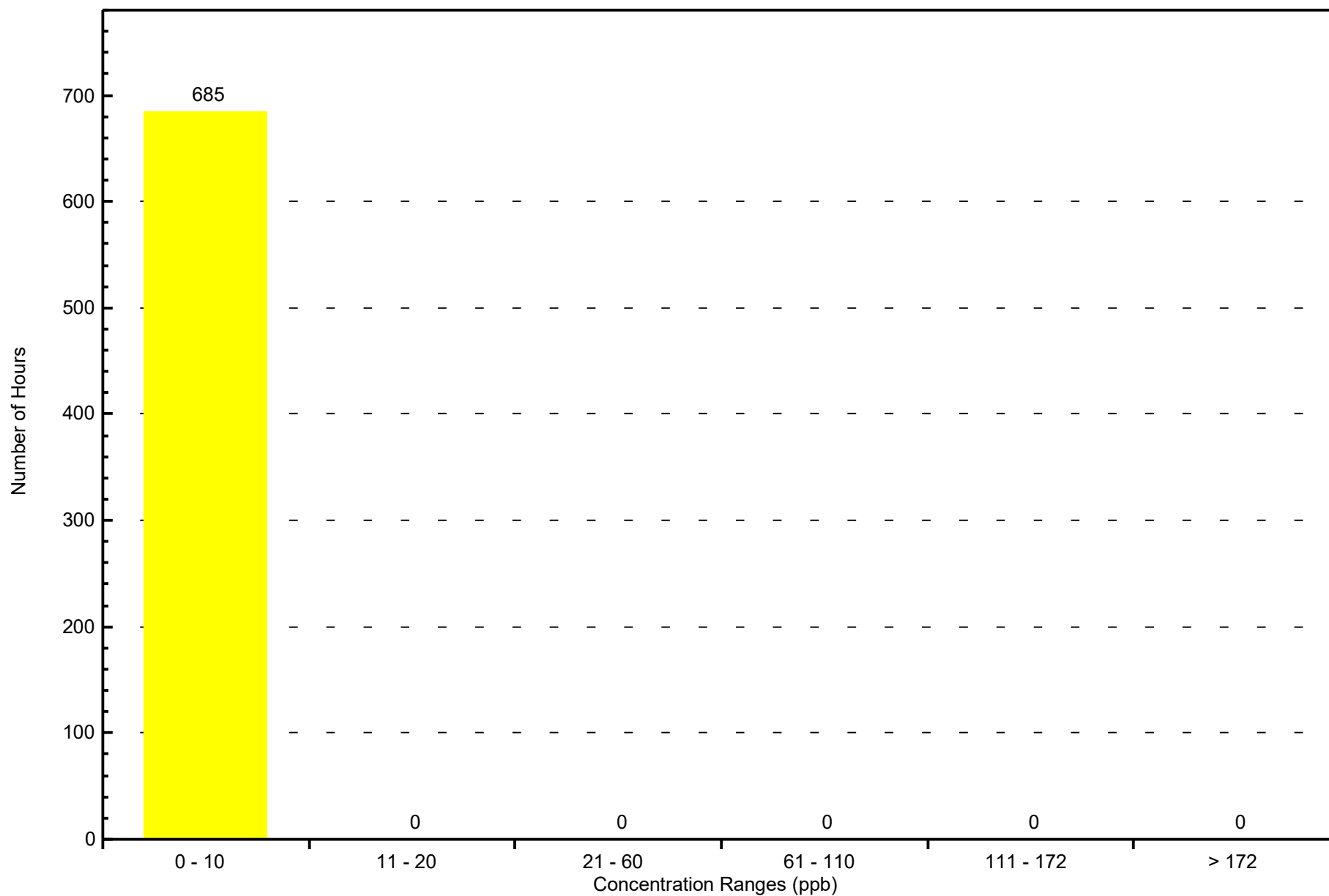
Sulphur Dioxide (SO₂) - ppb

Beaverlodge - April 2020



Histogram of Hourly Averages

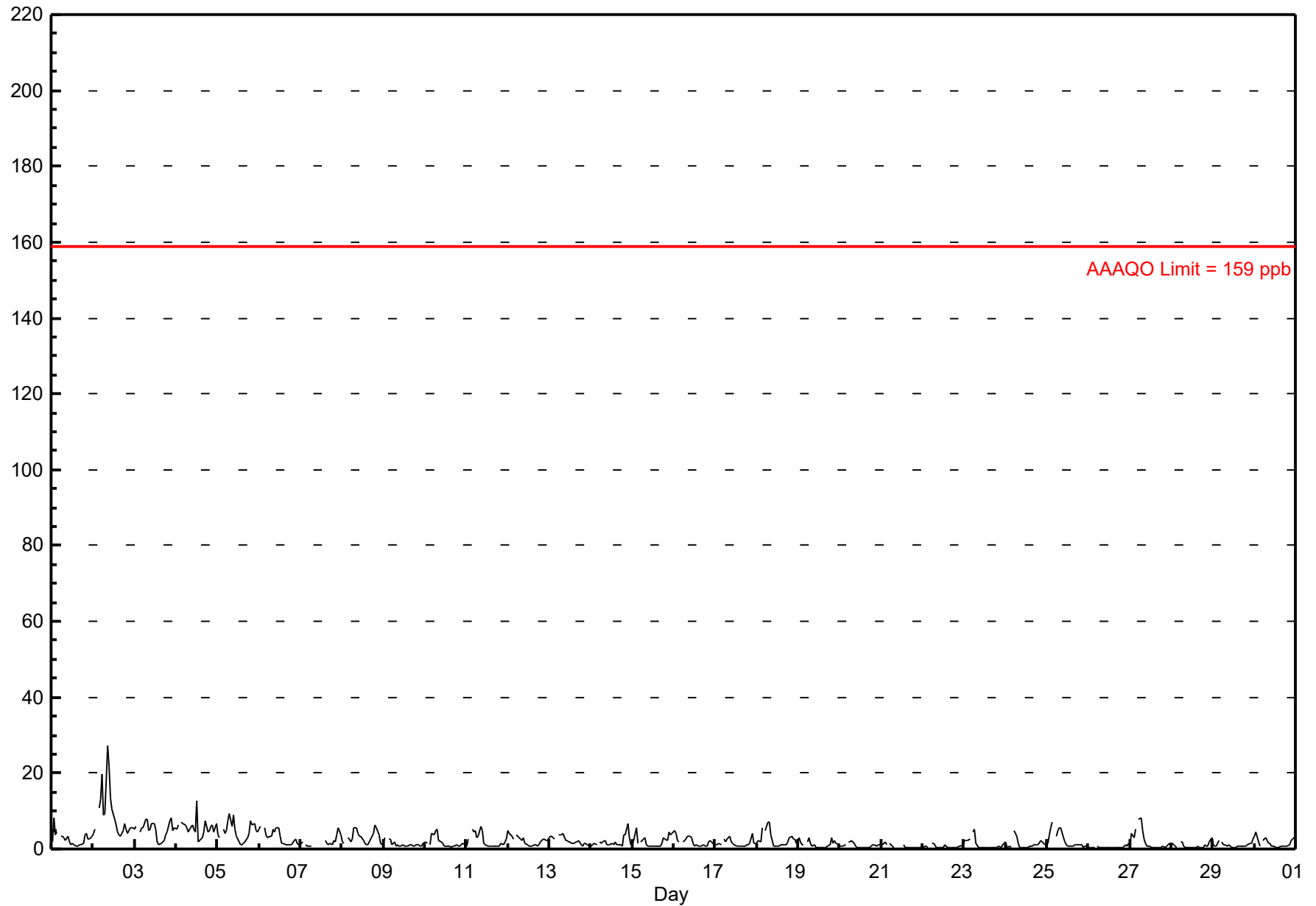
Sulphur Dioxide (SO₂) - ppb
Beaverlodge - April 2020



Hourly Averages

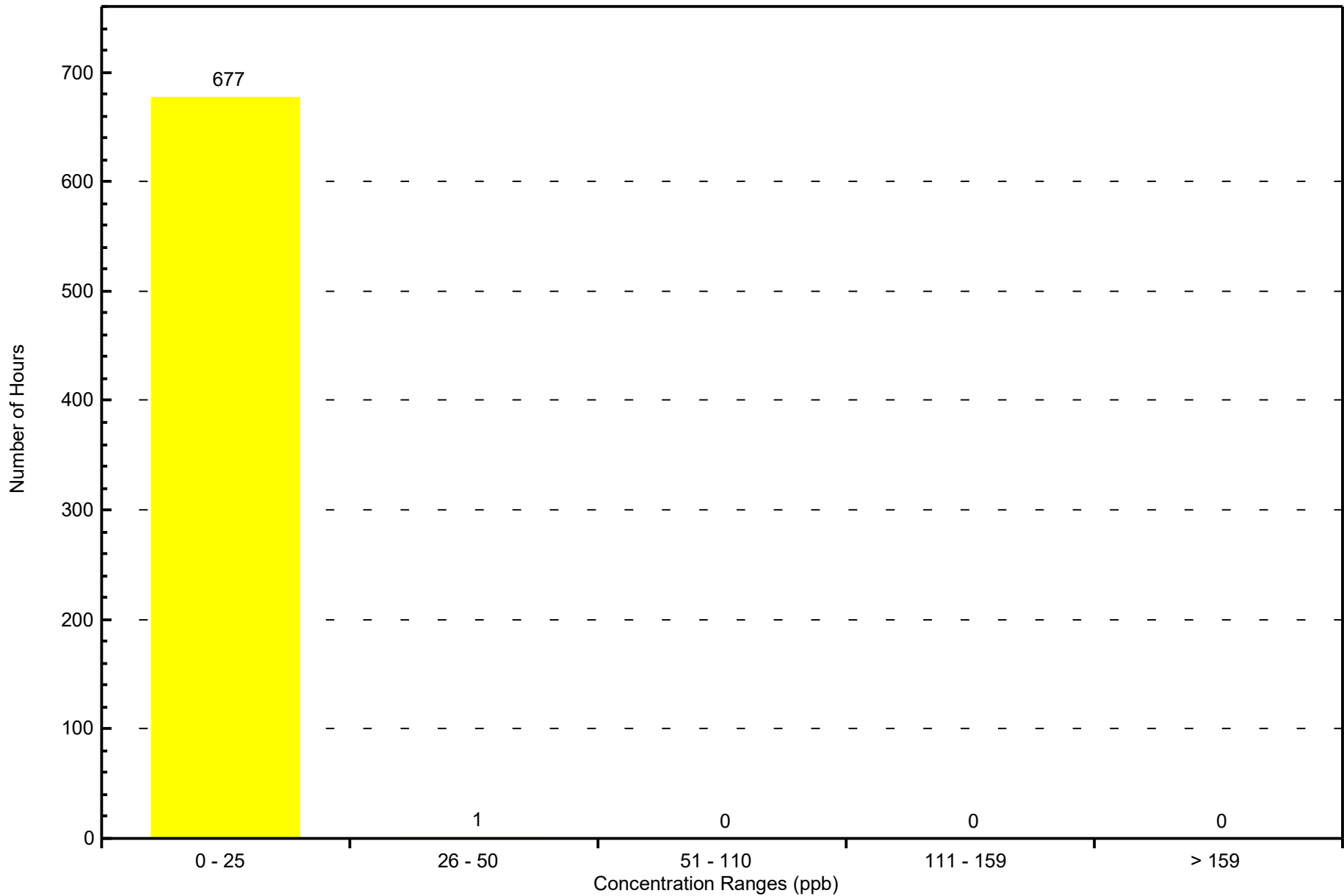
Nitrogen Dioxide (NO₂) - ppb

Beaverlodge - April 2020



Histogram of Hourly Averages

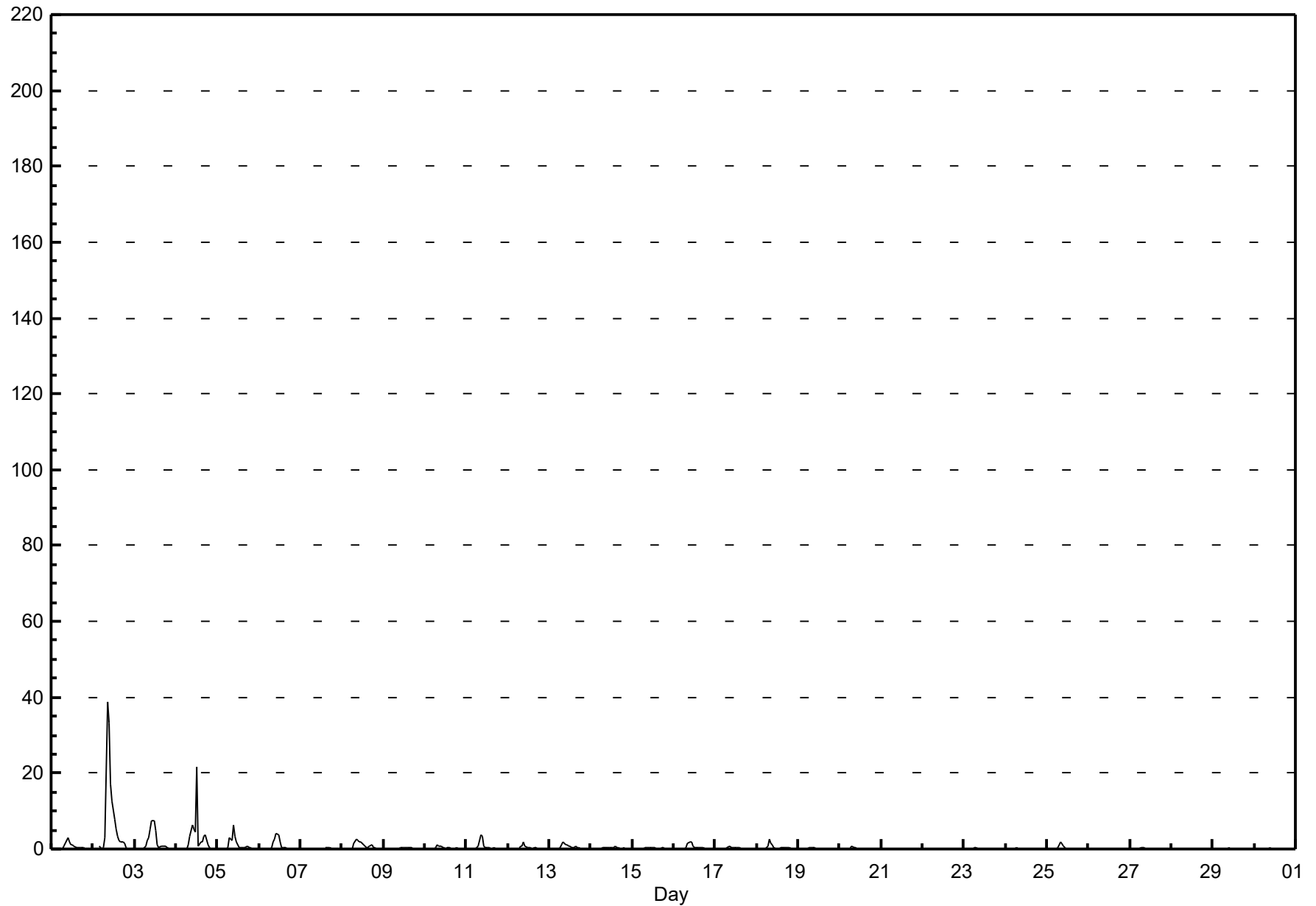
Nitrogen Dioxide (NO₂) - ppb
Beaverlodge - April 2020



Hourly Averages

Nitrogen Oxide (NO) - ppb

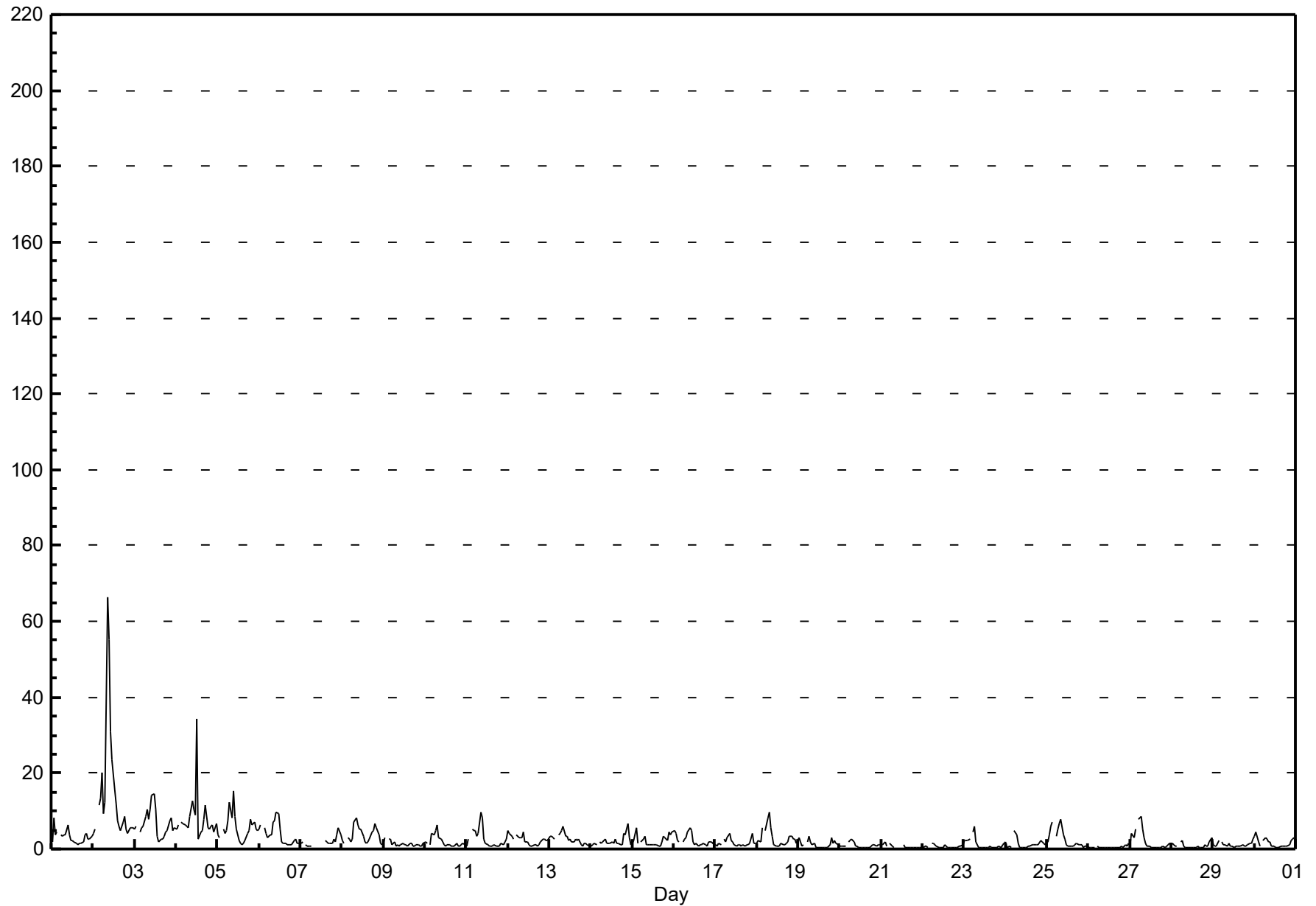
Beaverlodge - April 2020



Hourly Averages

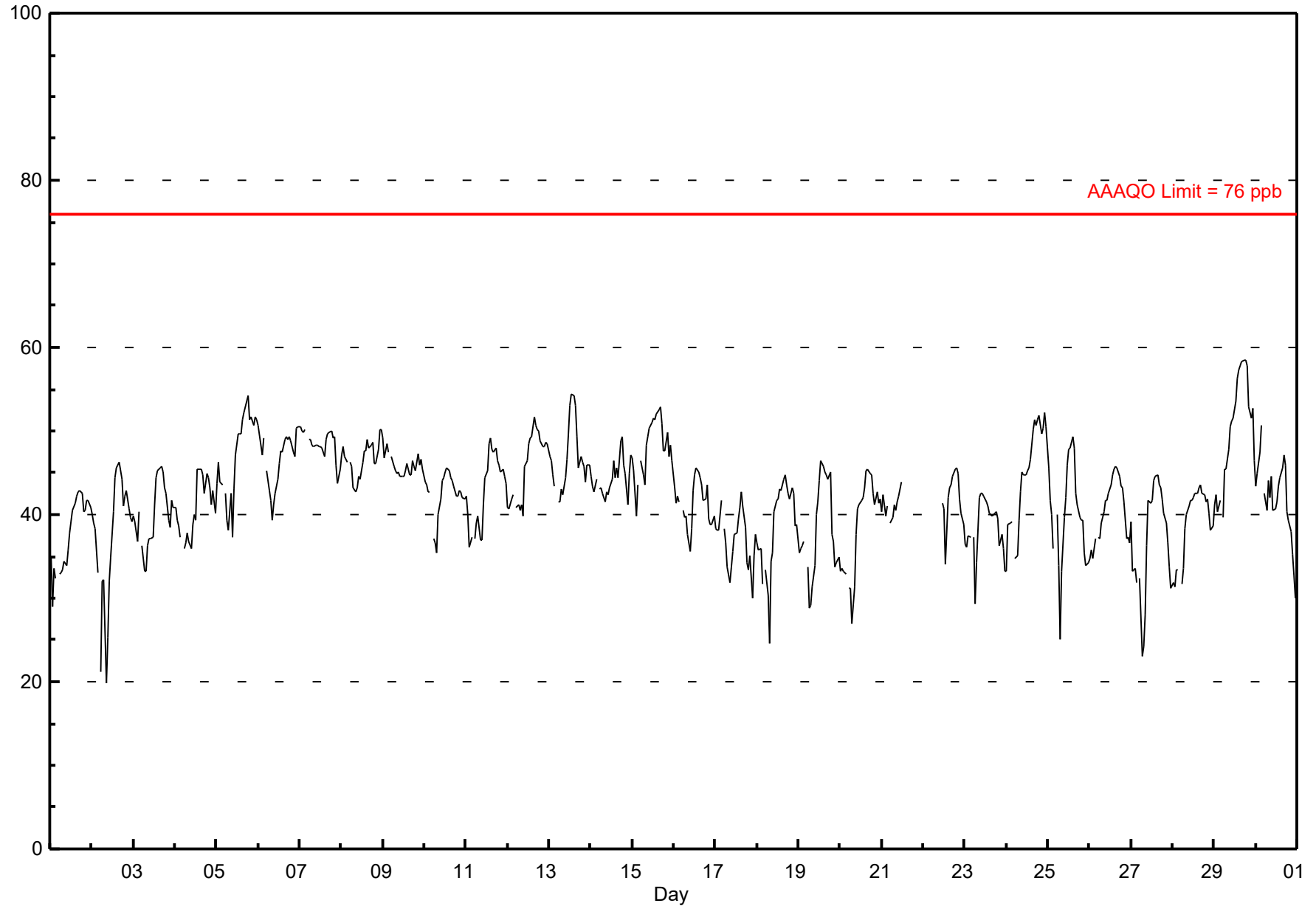
Oxides of Nitrogen (NO_x) - ppb

Beaverlodge - April 2020



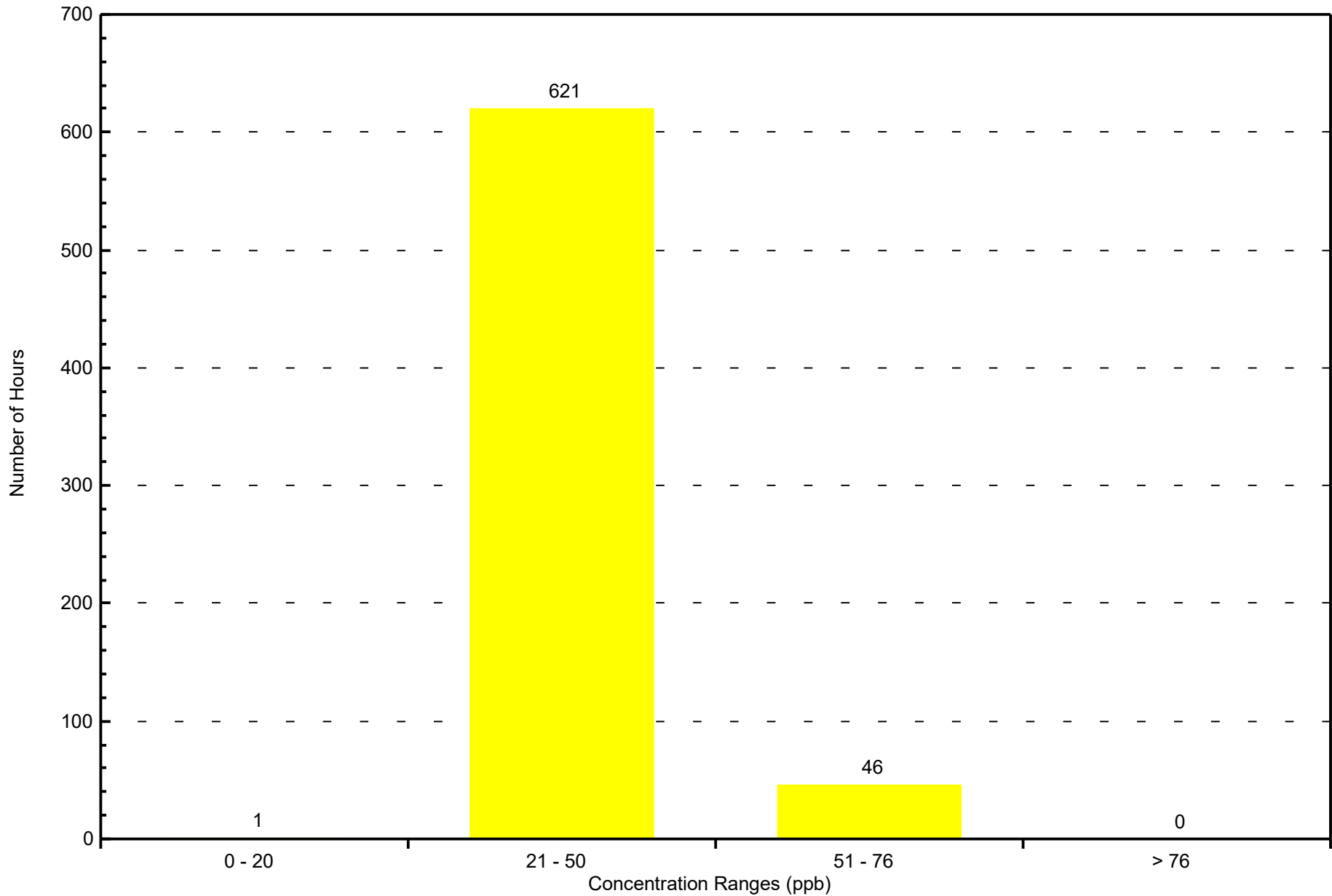
Hourly Averages

Ozone (O₃) - ppb
Beaverlodge - April 2020



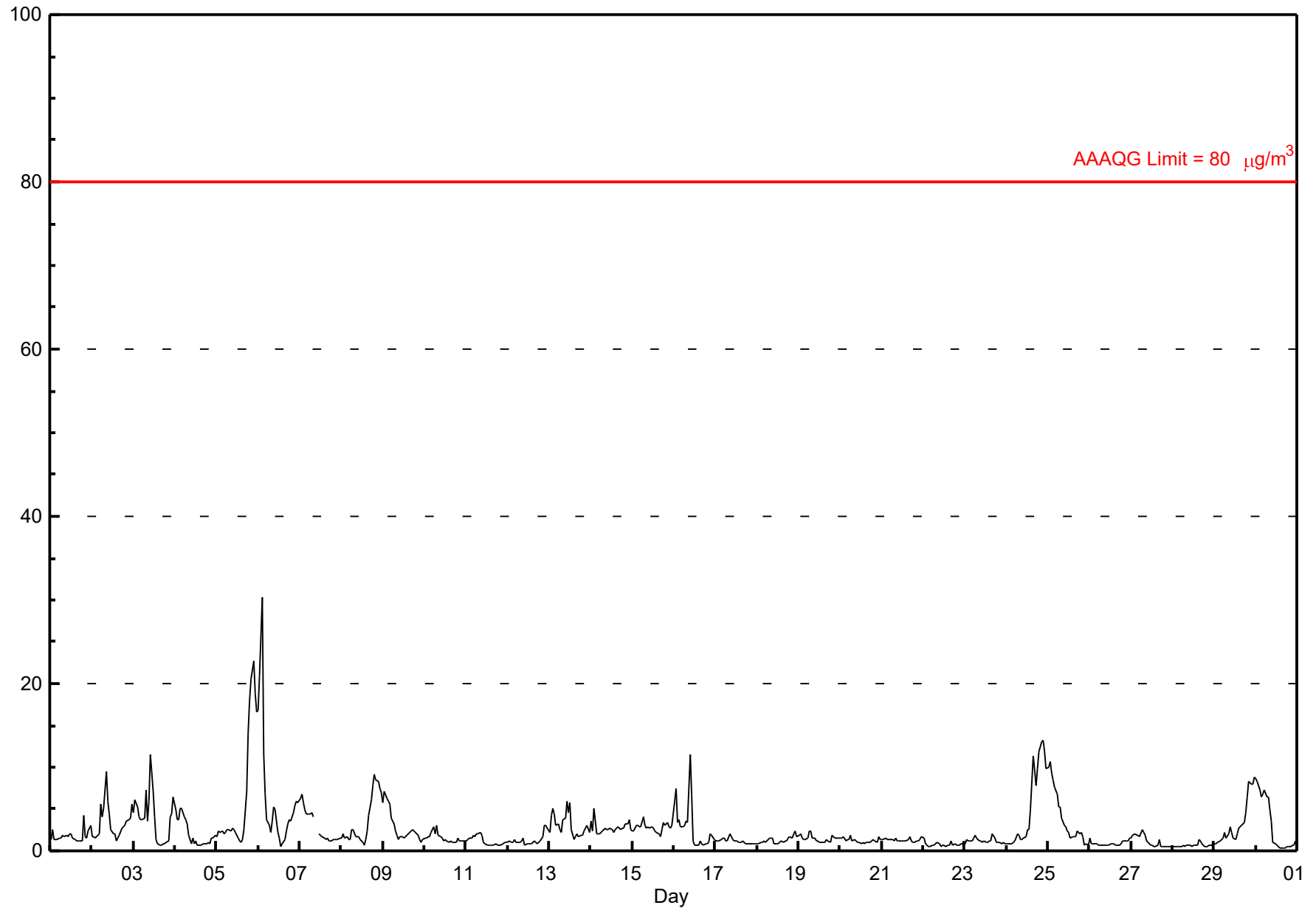
Histogram of Hourly Averages

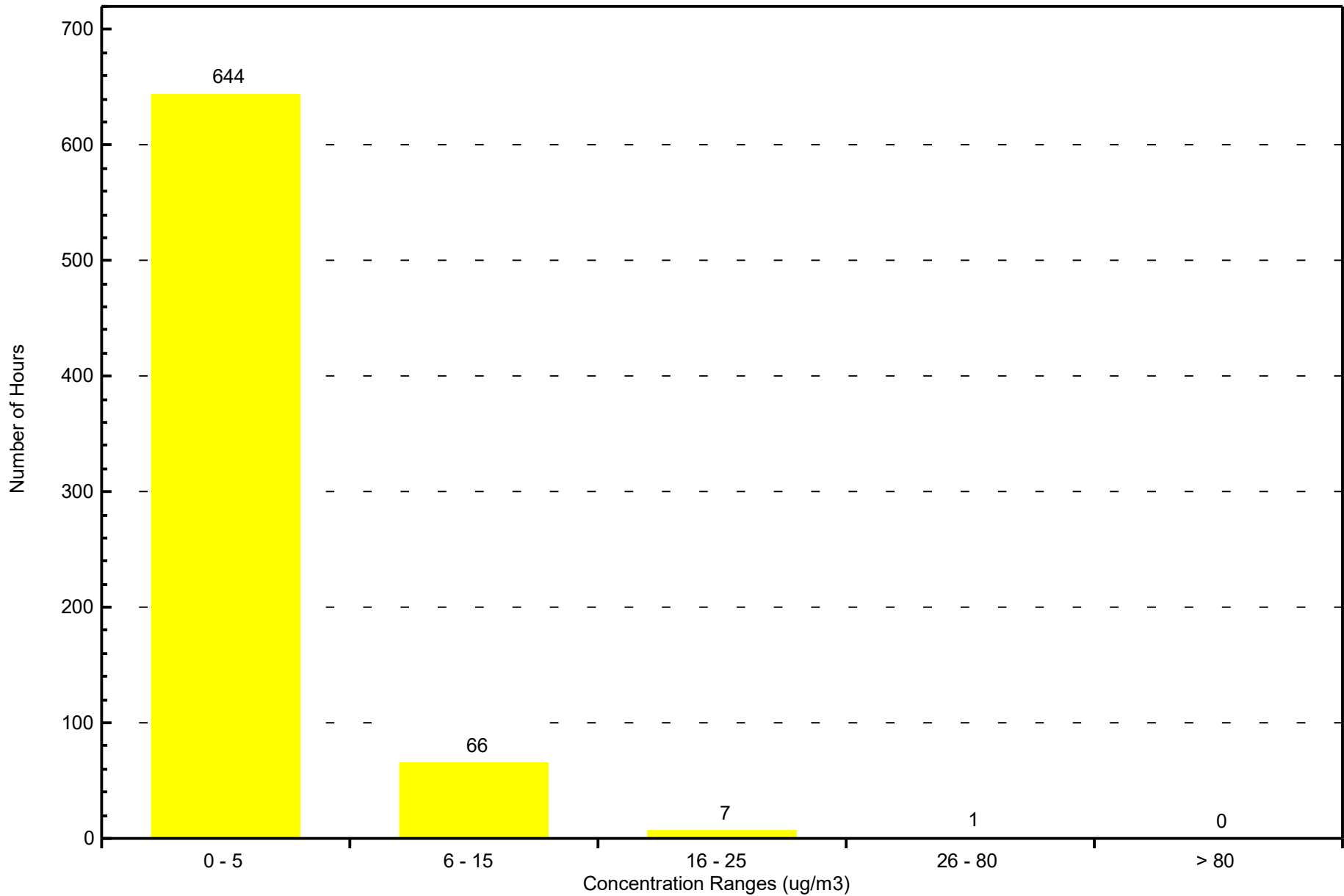
Ozone (O₃) - ppb
Beaverlodge - April 2020



Hourly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Beaverlodge - April 2020

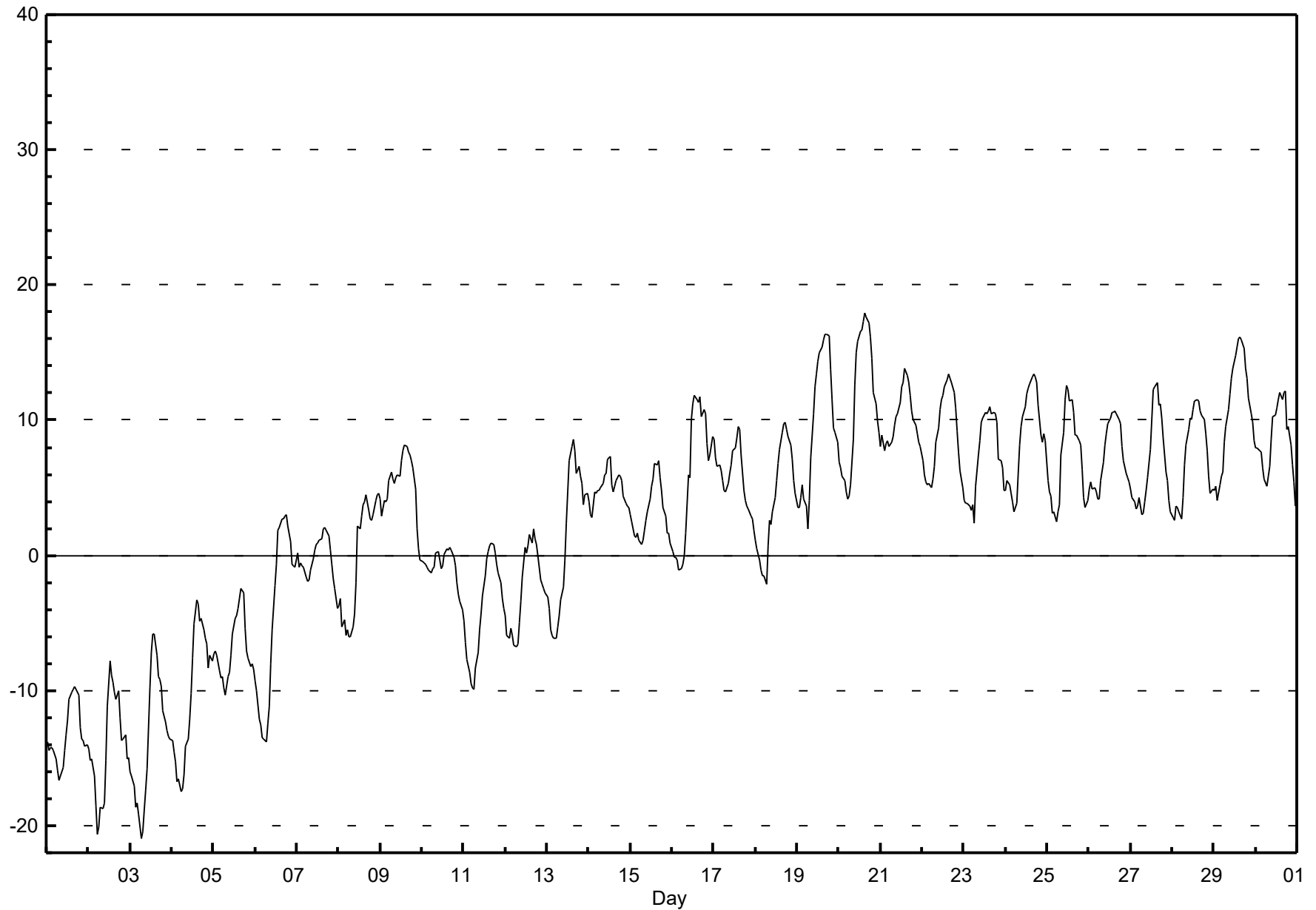




Hourly Averages

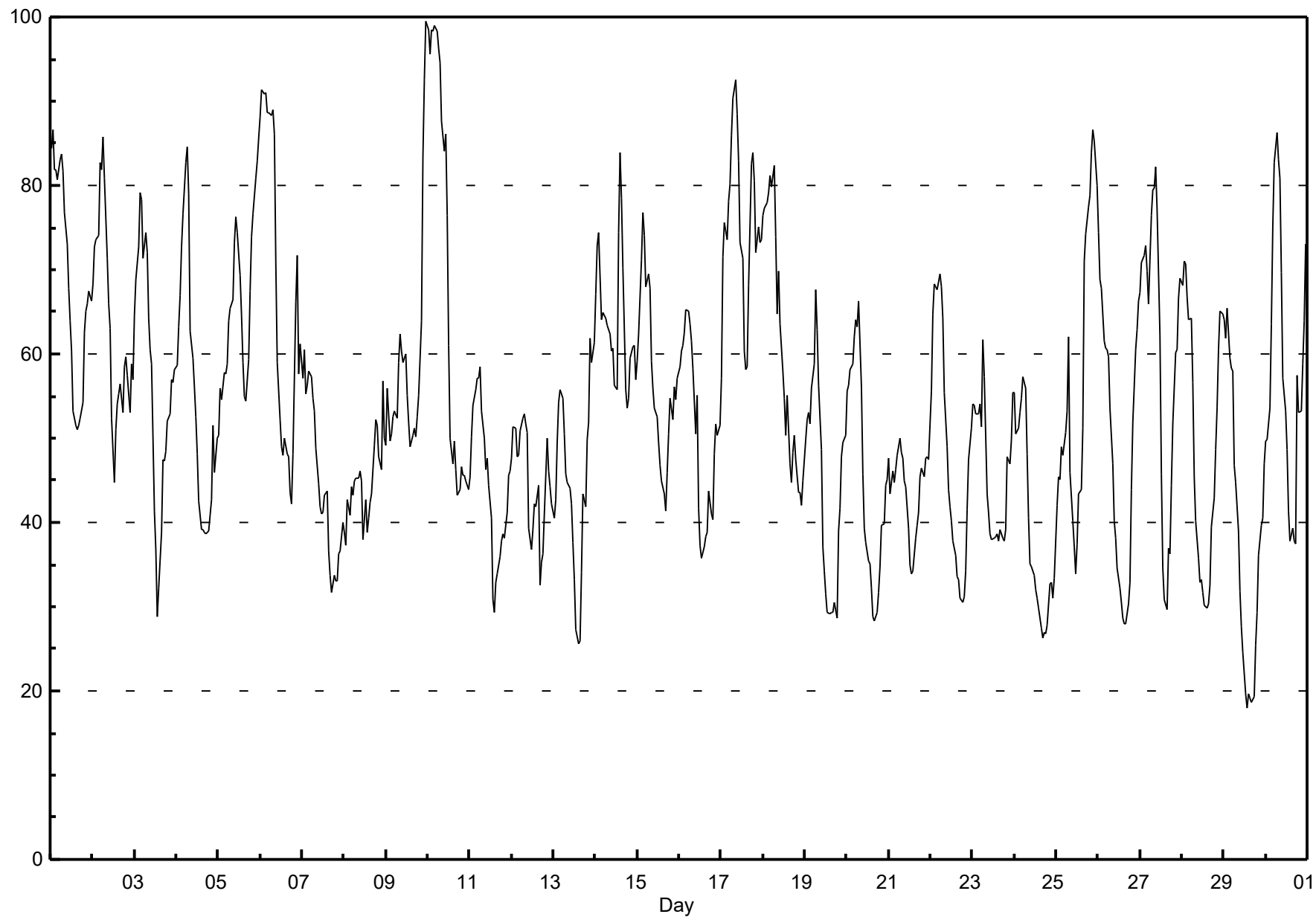
External Temperature (ET) - °C

Beaverlodge - April 2020



Hourly Averages

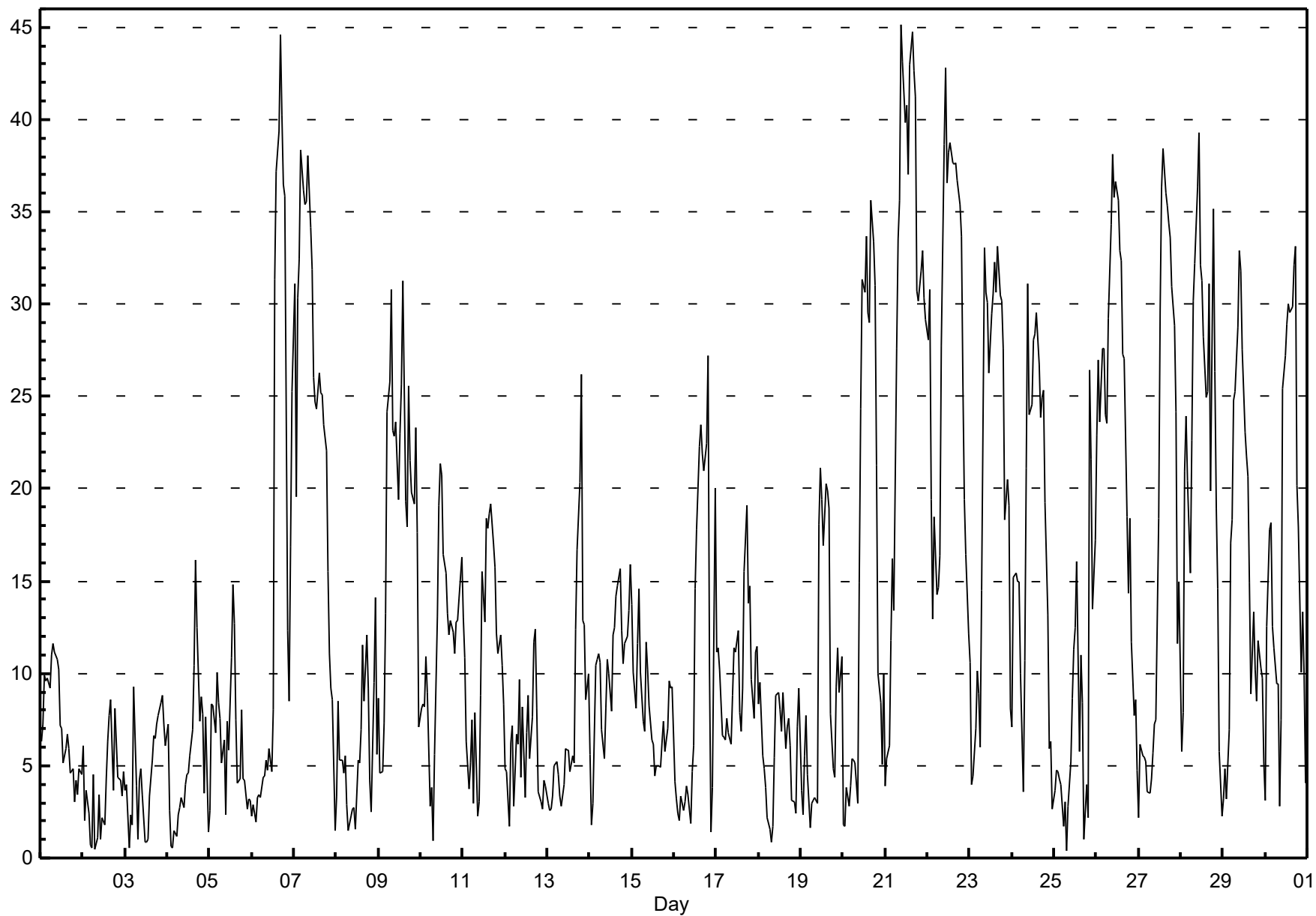
Relative Humidity (RH) - %
Beaverlodge - April 2020



Hourly Averages

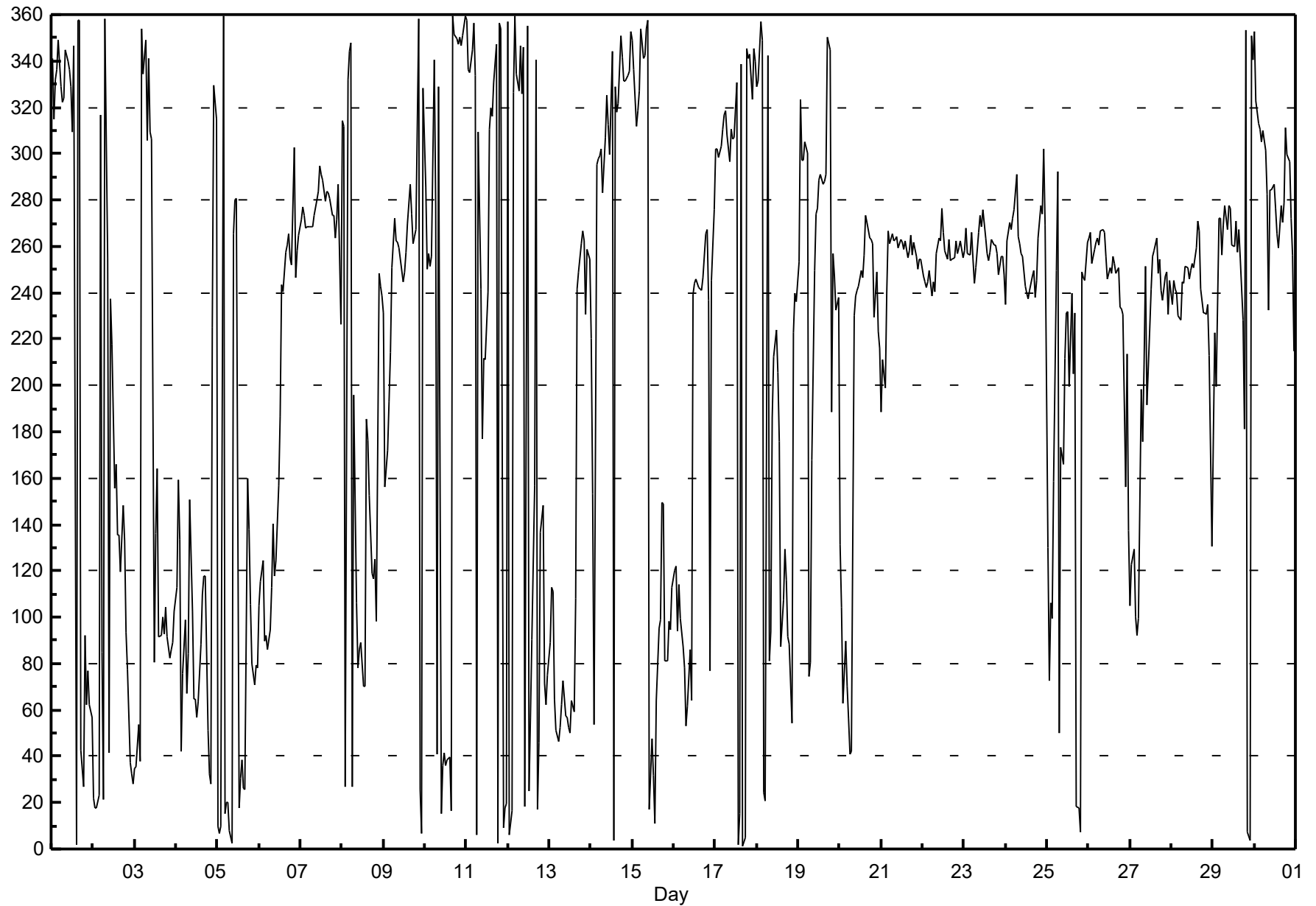
Wind Speed (WS) - km/h

Beaverlodge - April 2020



Hourly Averages

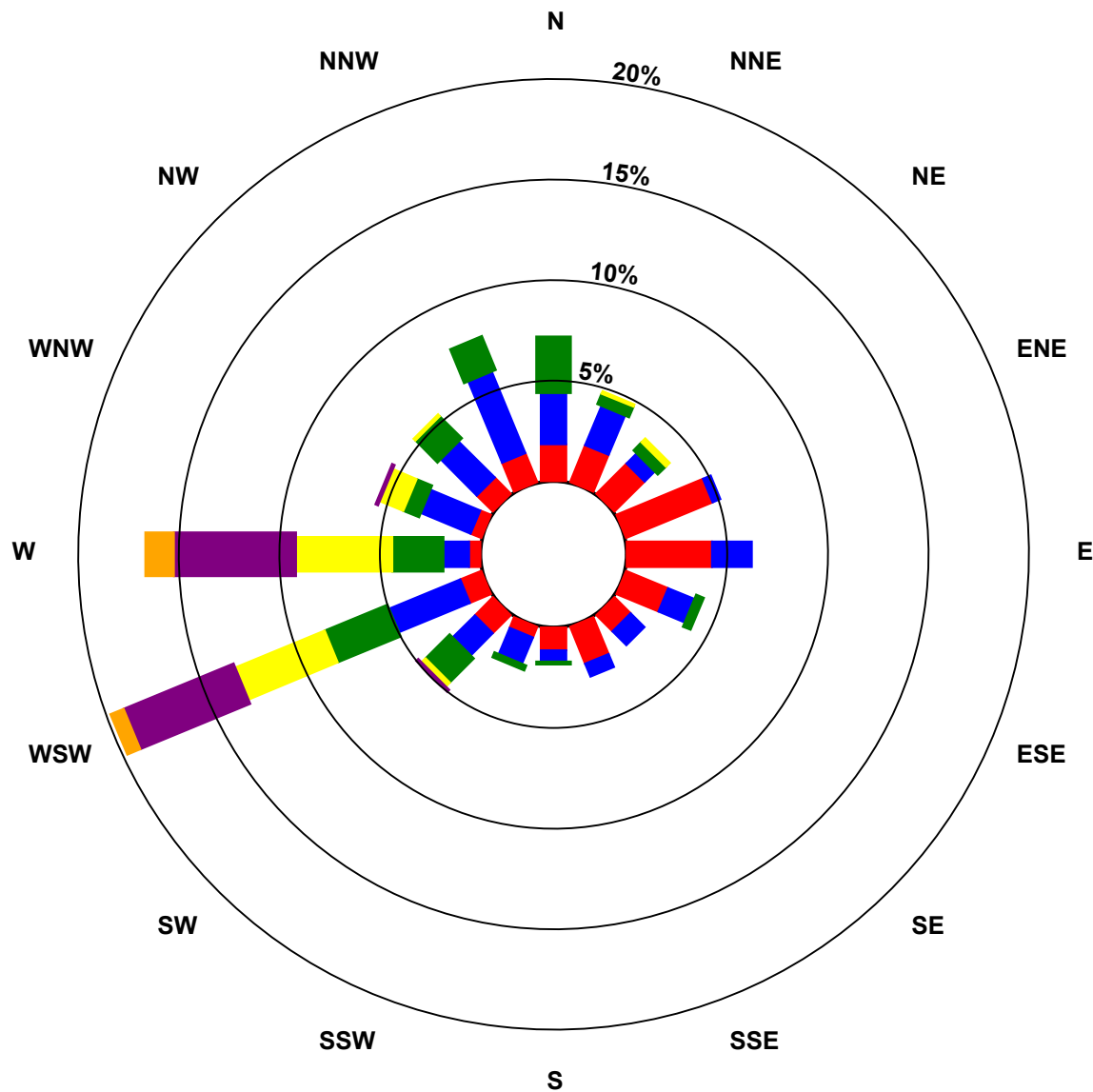
Wind Direction (WD) - deg
Beaverlodge - April 2020



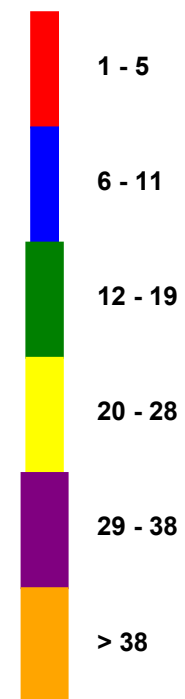
Wind Rose

Wind Speed (WS) (km/h)

Beaverlodge - April 2020



Wind Speed Classes (km/h)

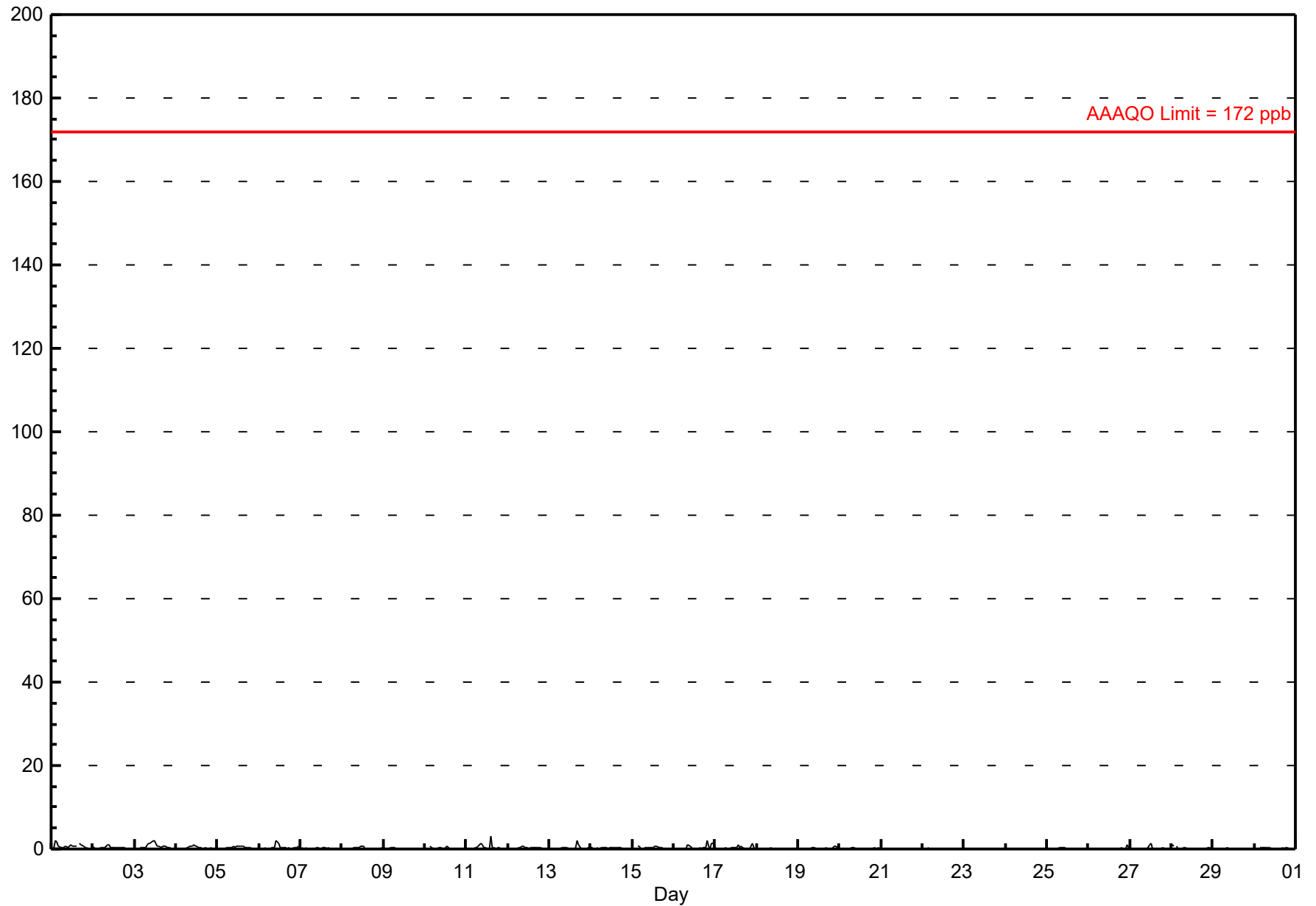


3 Evergreen Park Charts

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

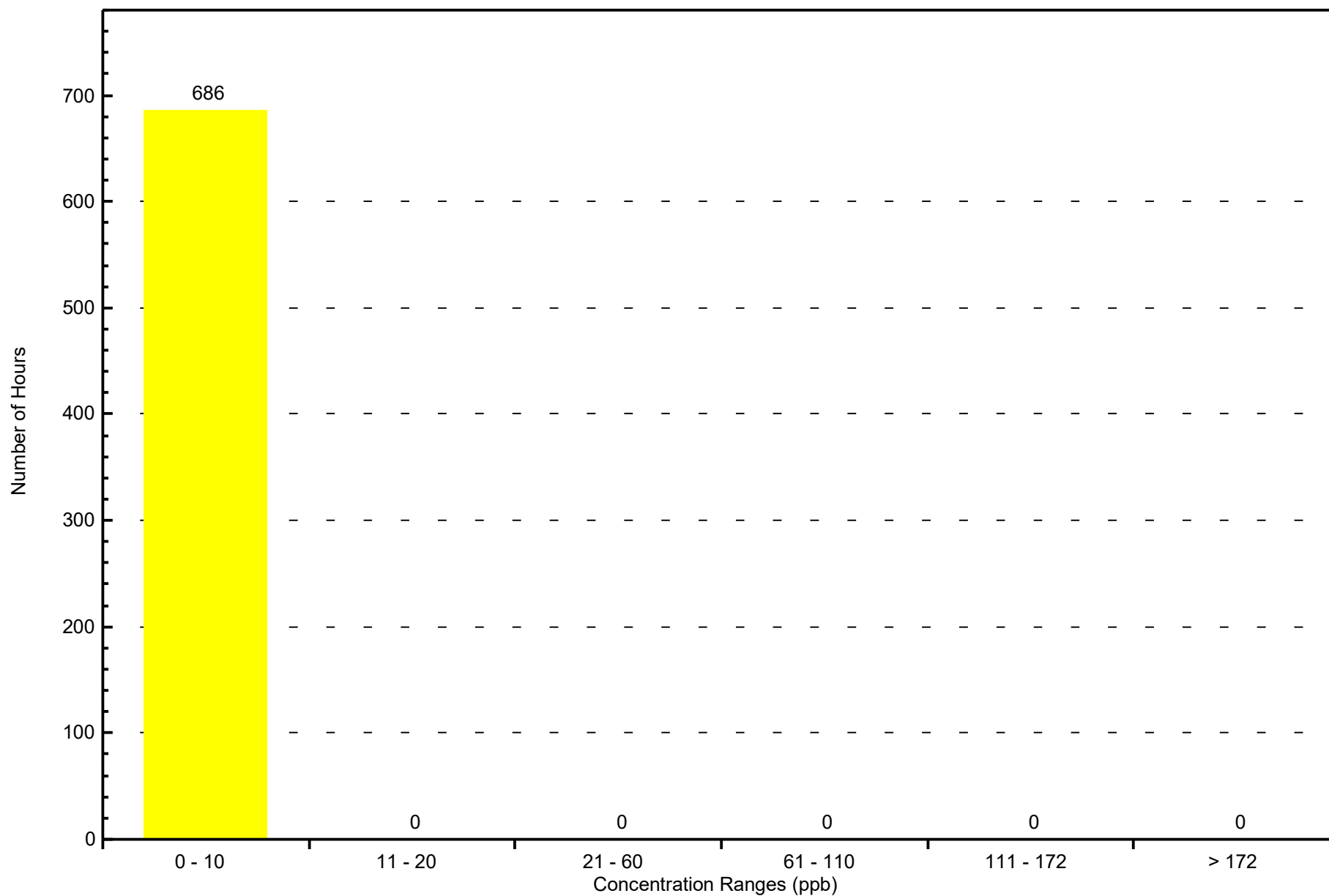
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Evergreen Park - April 2020



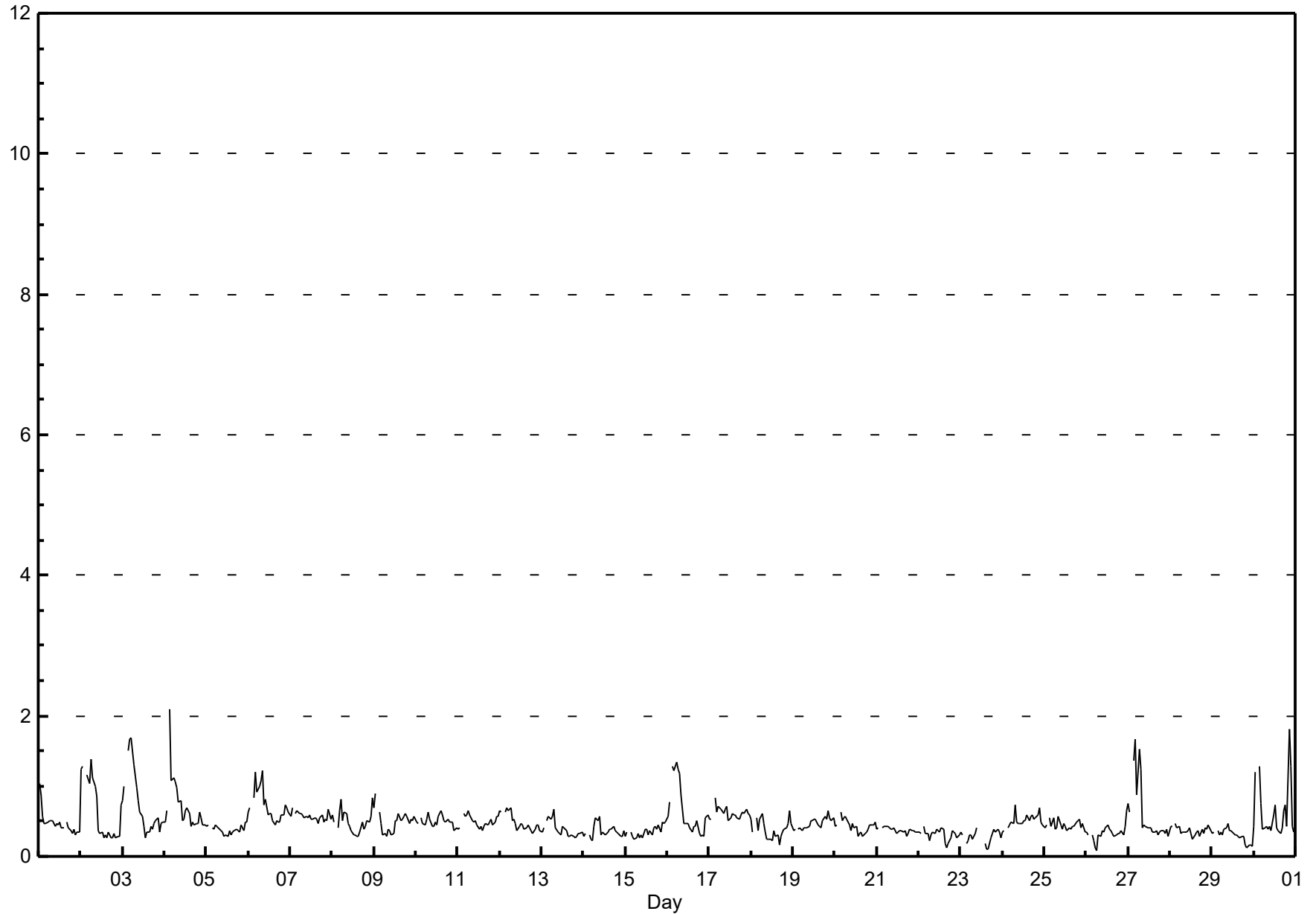
Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Evergreen Park - April 2020



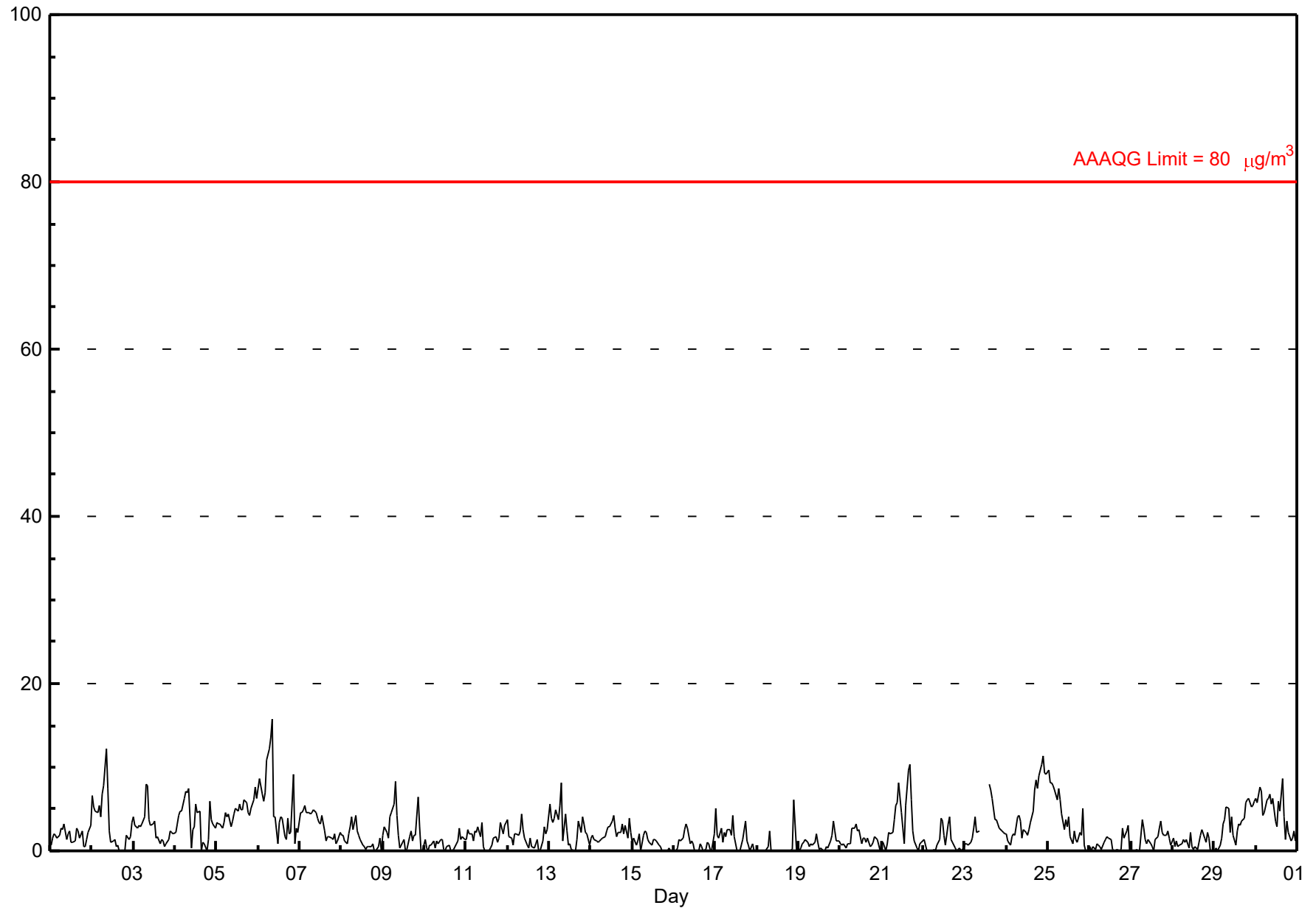
Hourly Averages

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



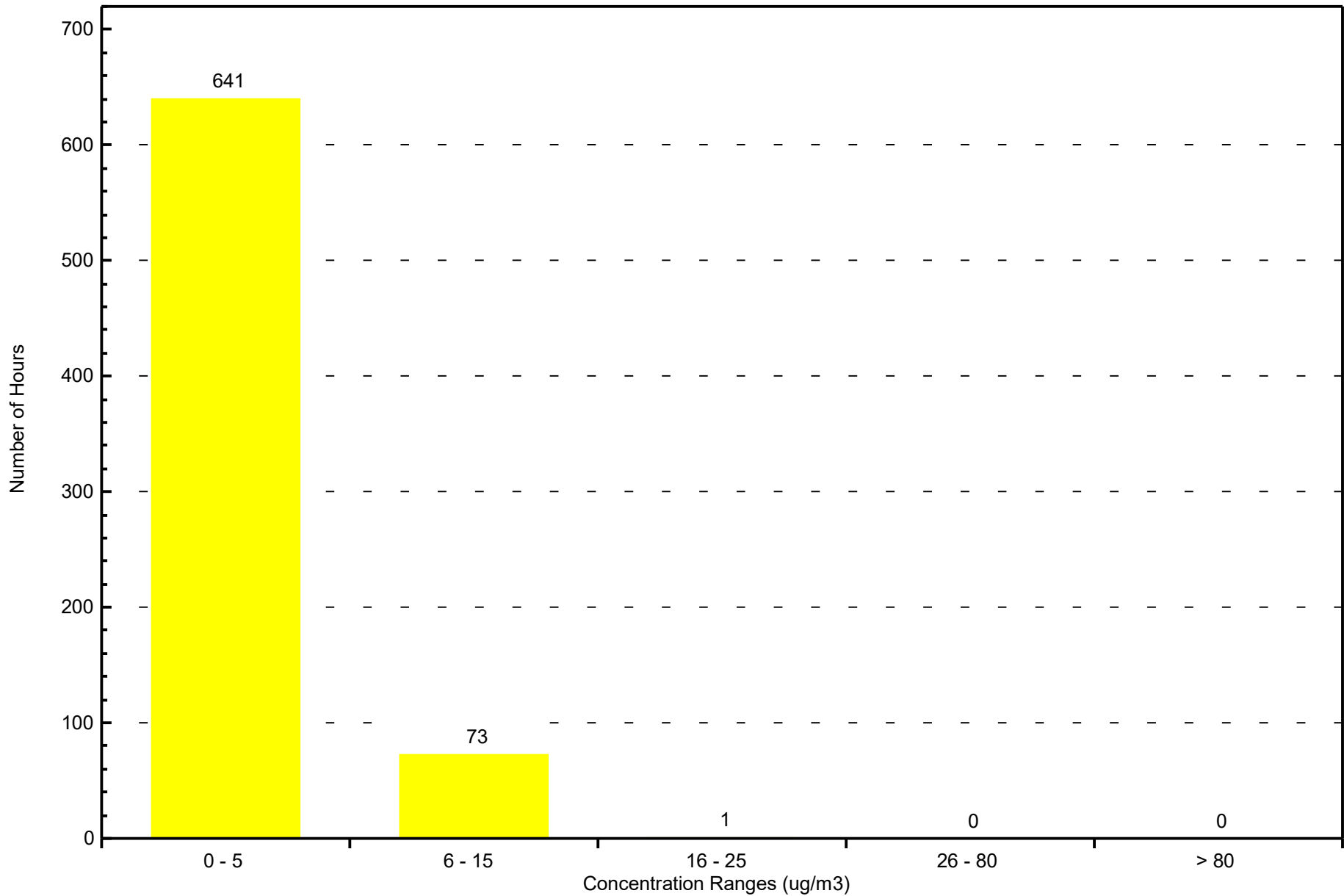
Hourly Averages

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



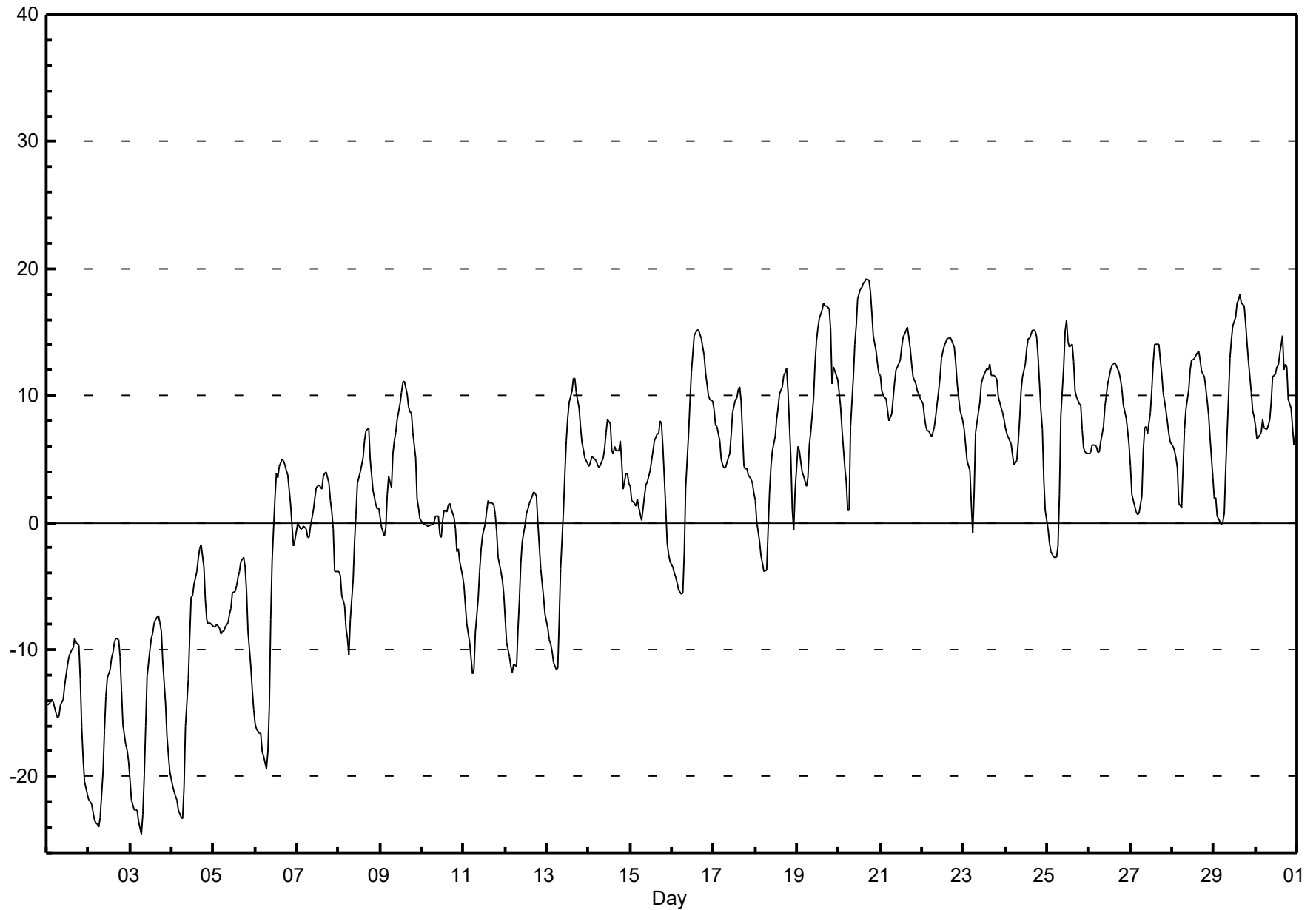
Histogram of Hourly Averages

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



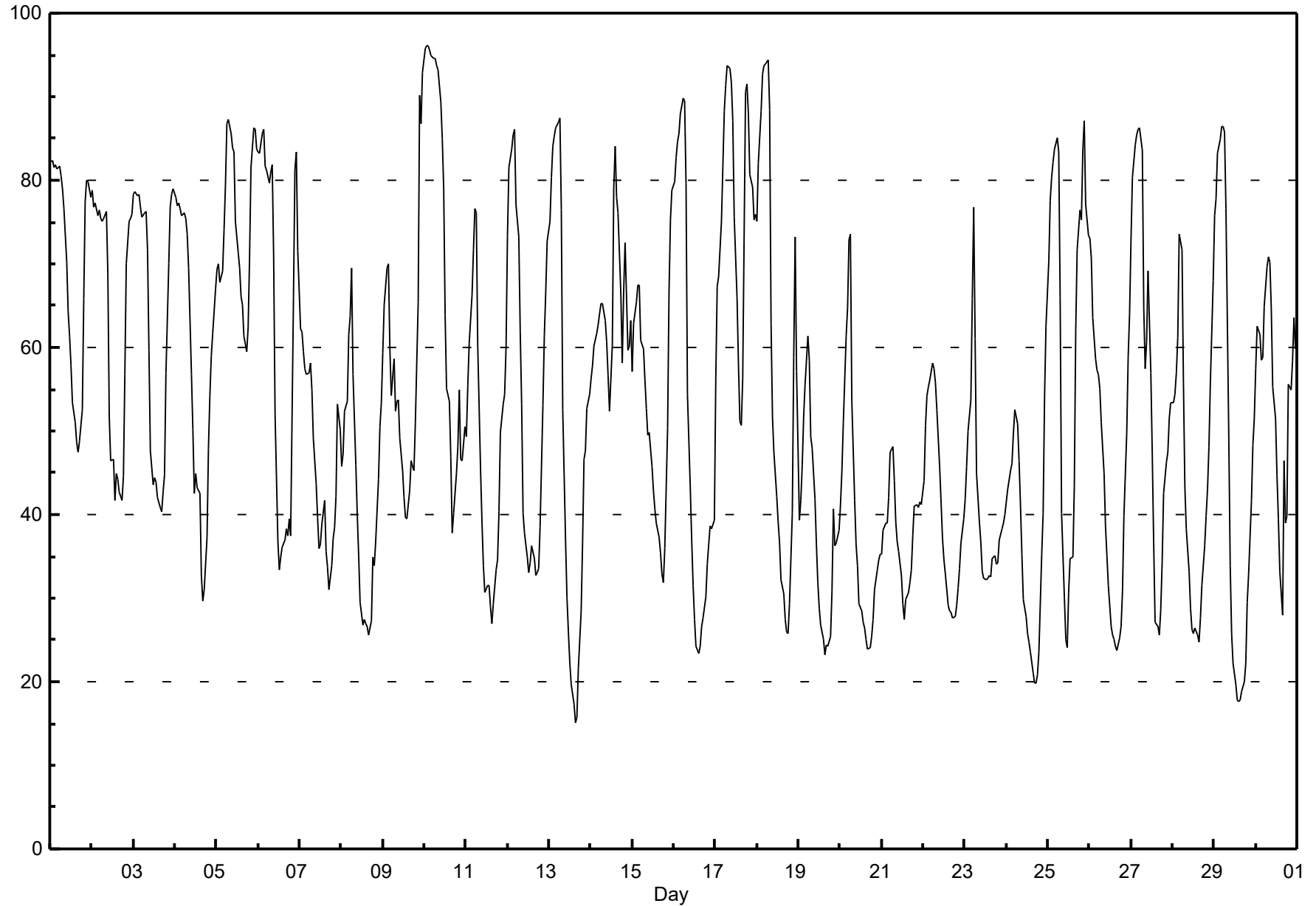
Hourly Averages

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



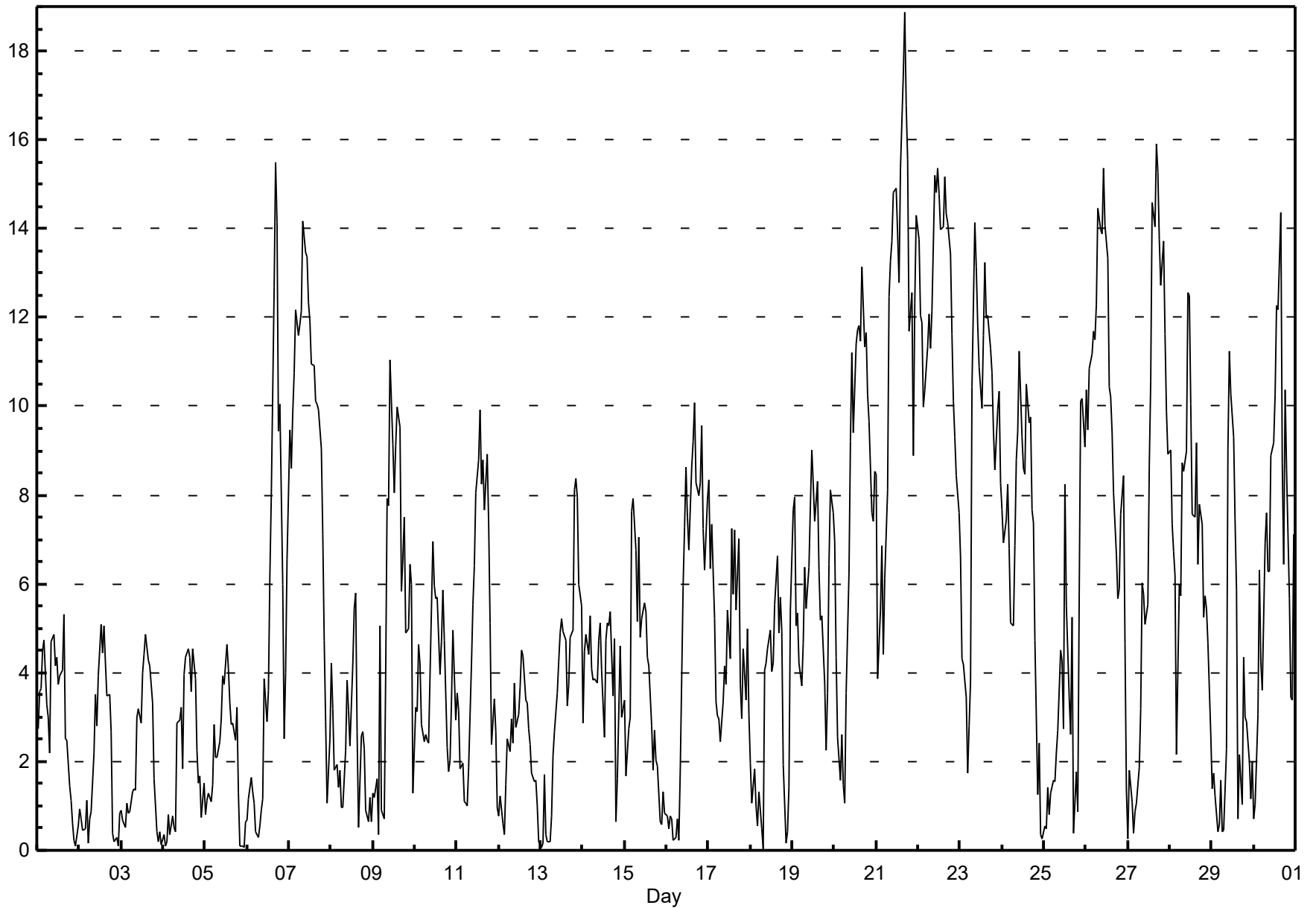
Hourly Averages

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



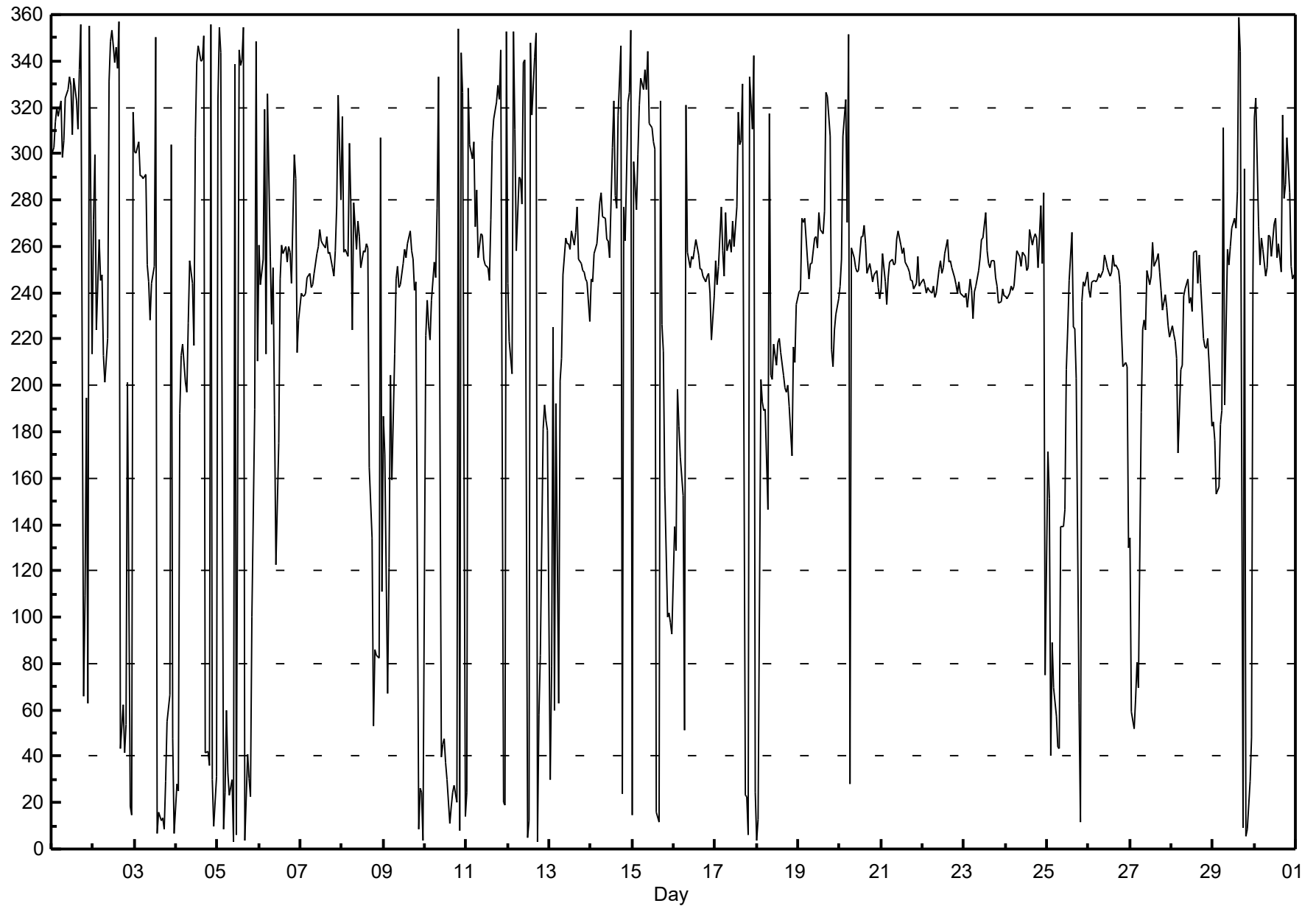
Hourly Averages

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



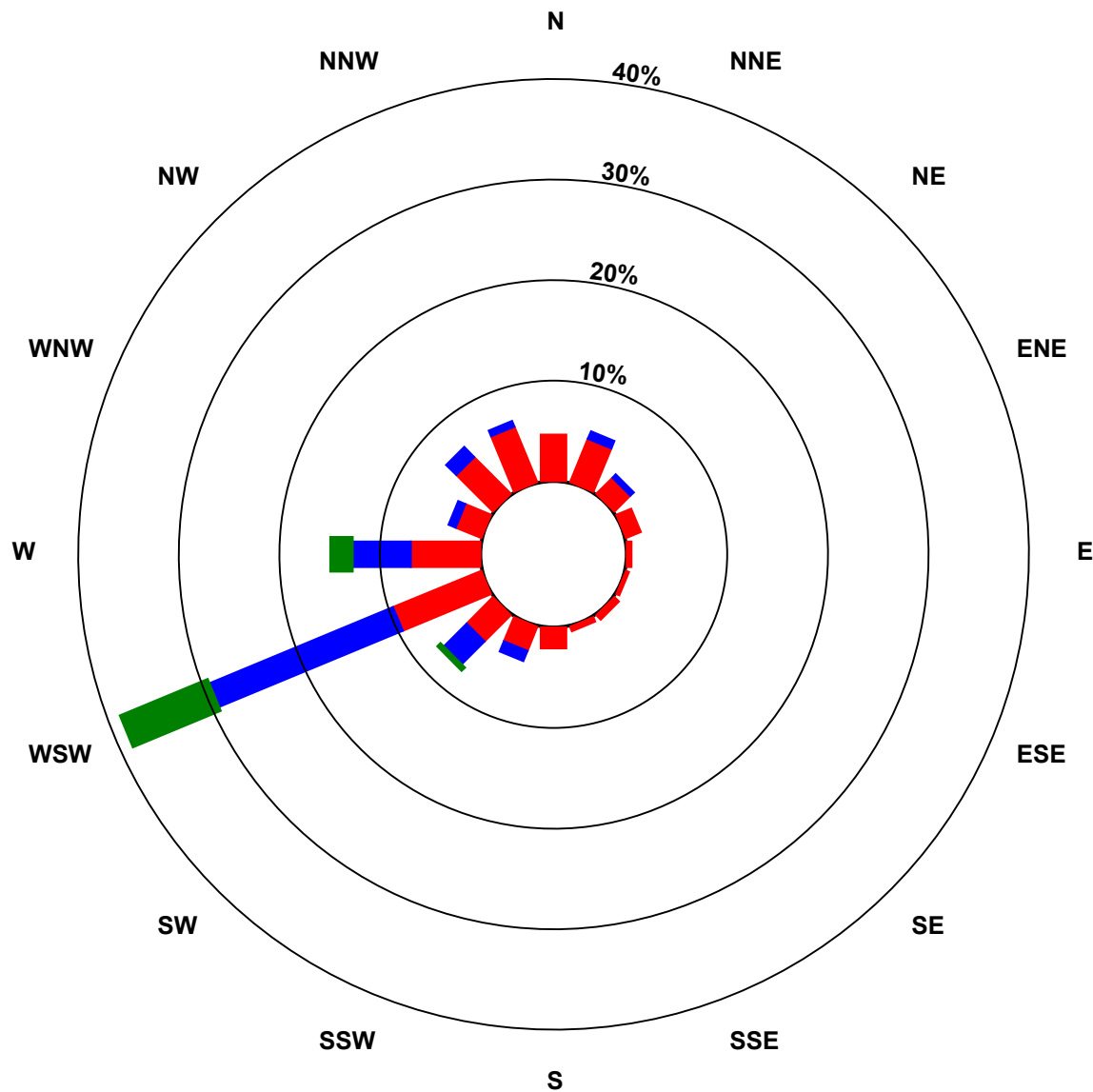
Hourly Averages

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

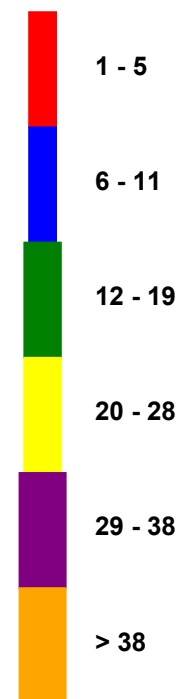


Wind Rose

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



Wind Speed Classes (km/h)



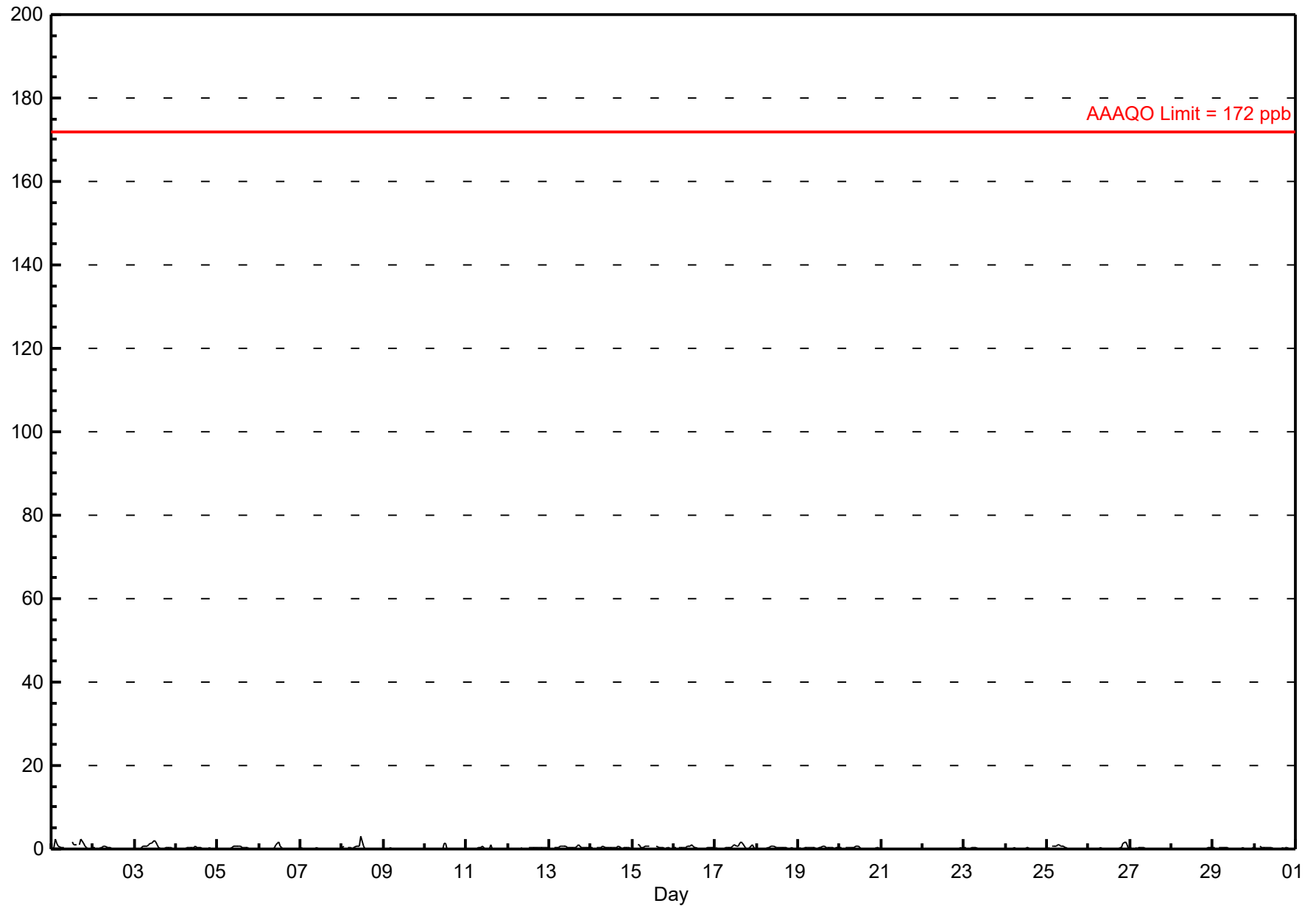
4 Grande Prairie - Henry Pirker Charts

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

Hourly Averages

Sulphur Dioxide (SO₂) - ppb

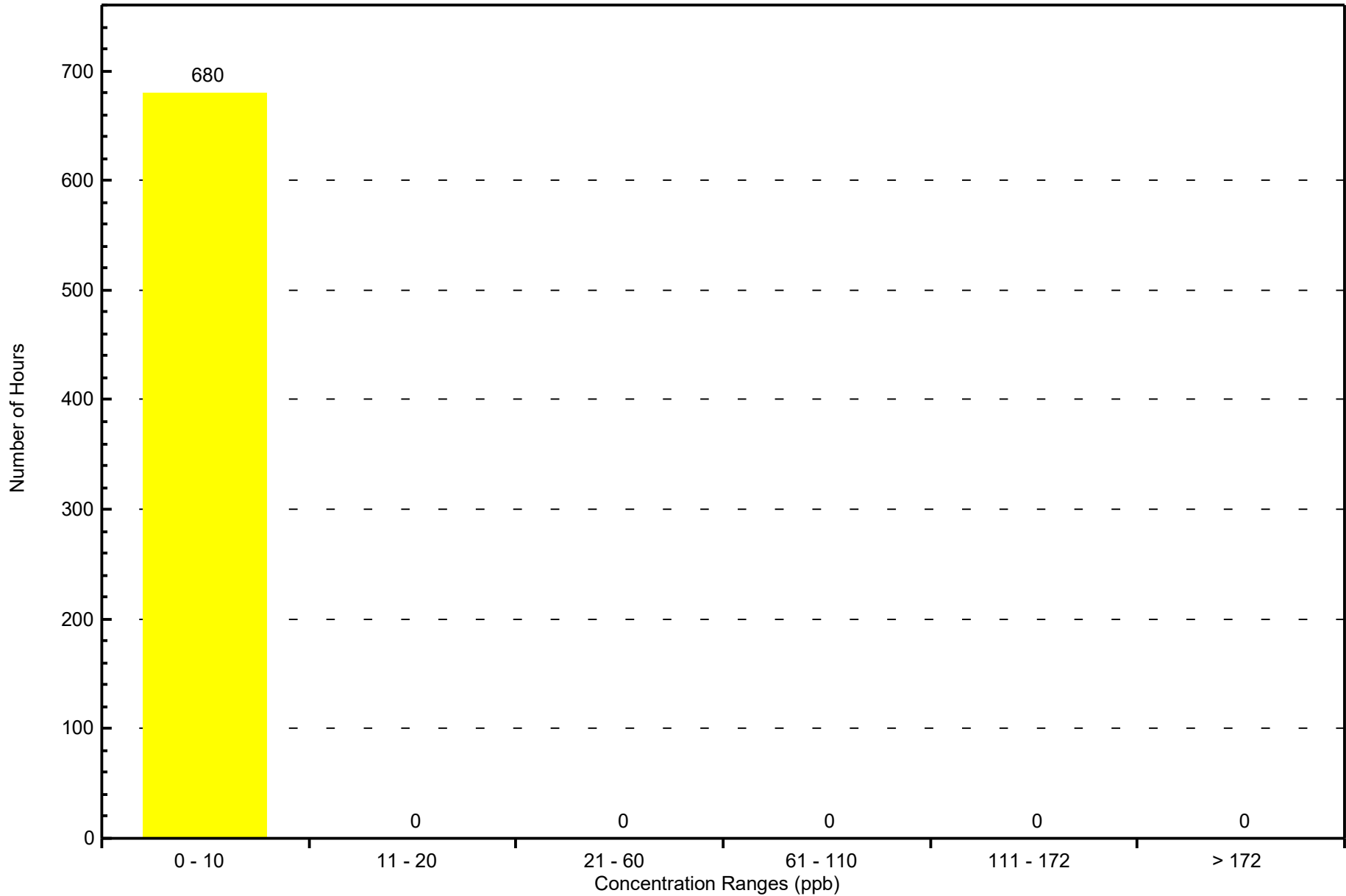
Henry Pirker - April 2020



Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb

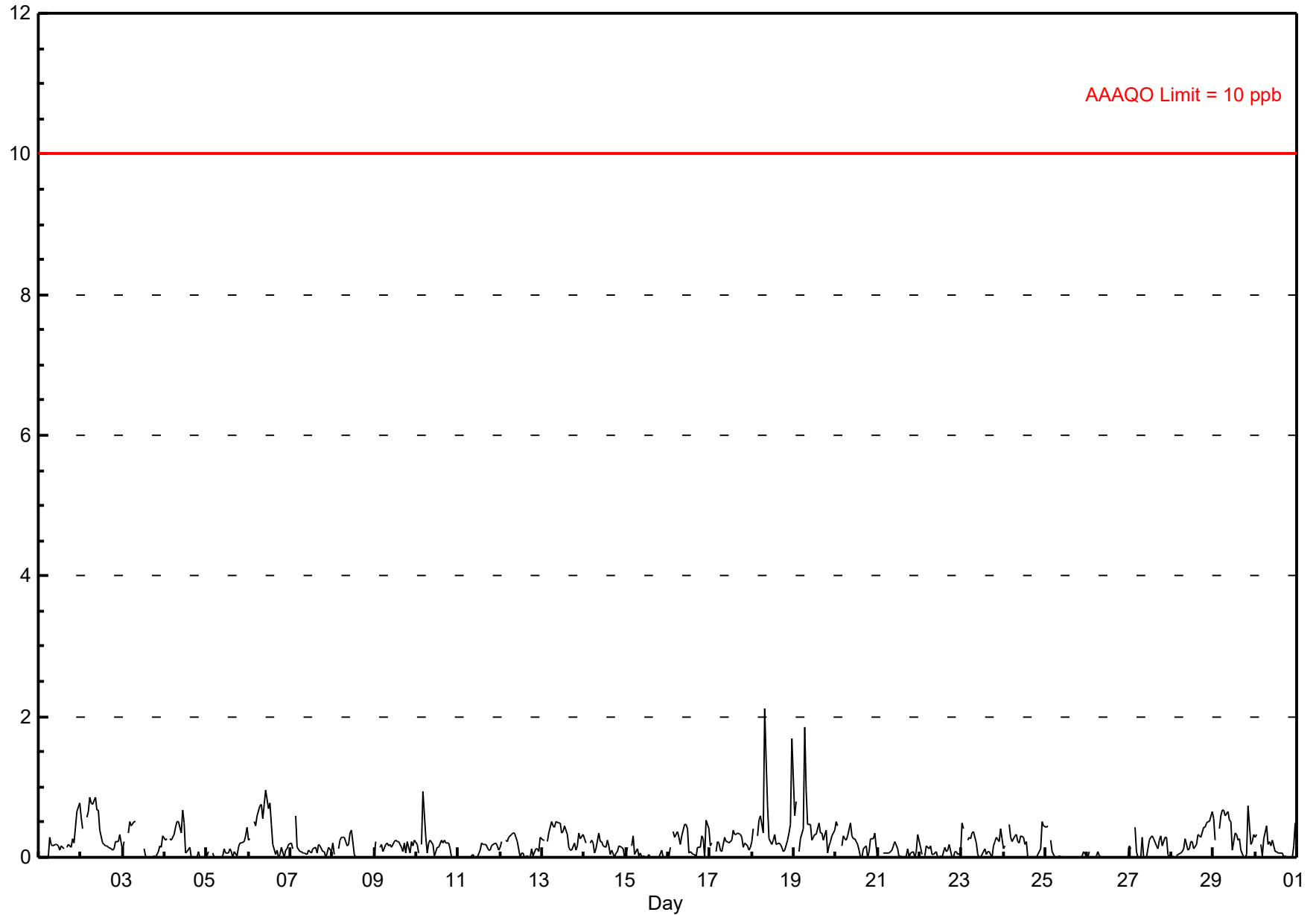
Henry Pirker - April 2020



Hourly Averages

Hydrogen Sulphide (H₂S) - ppb

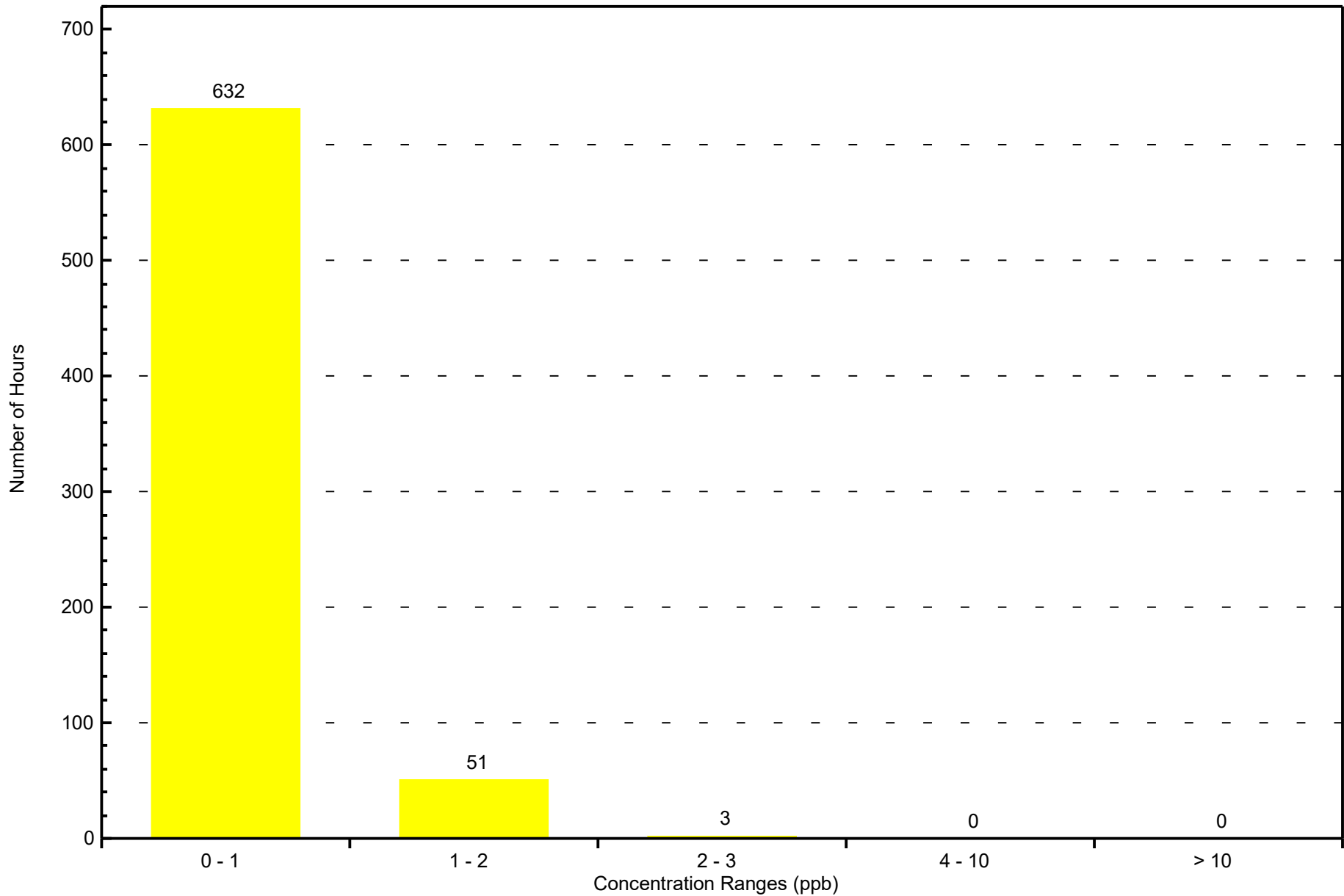
Henry Pirker - April 2020



Histogram of Hourly Averages

Hydrogen Sulphide (H₂S) - ppb

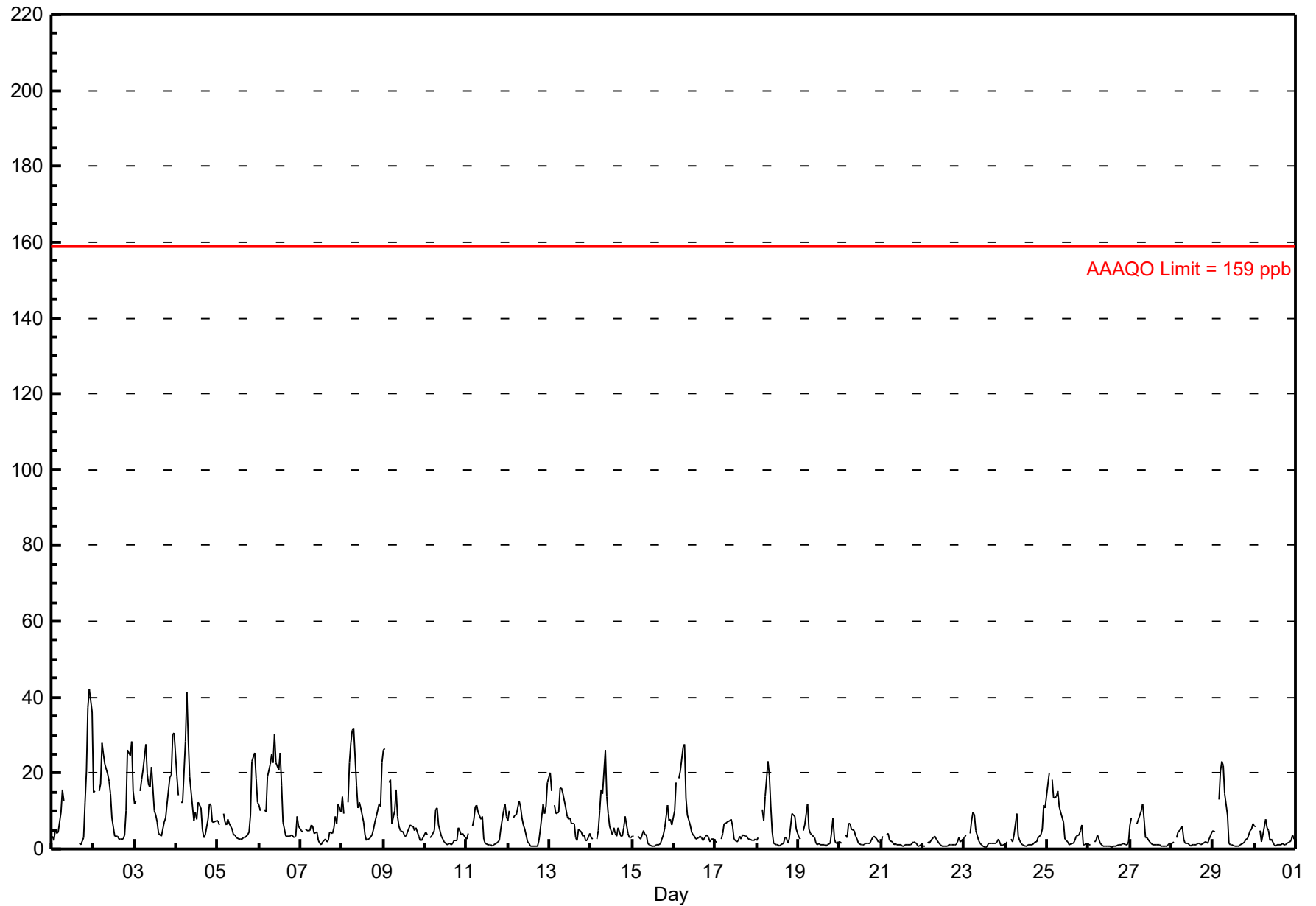
Henry Pirker - April 2020



Hourly Averages

Nitrogen Dioxide (NO₂) - ppb

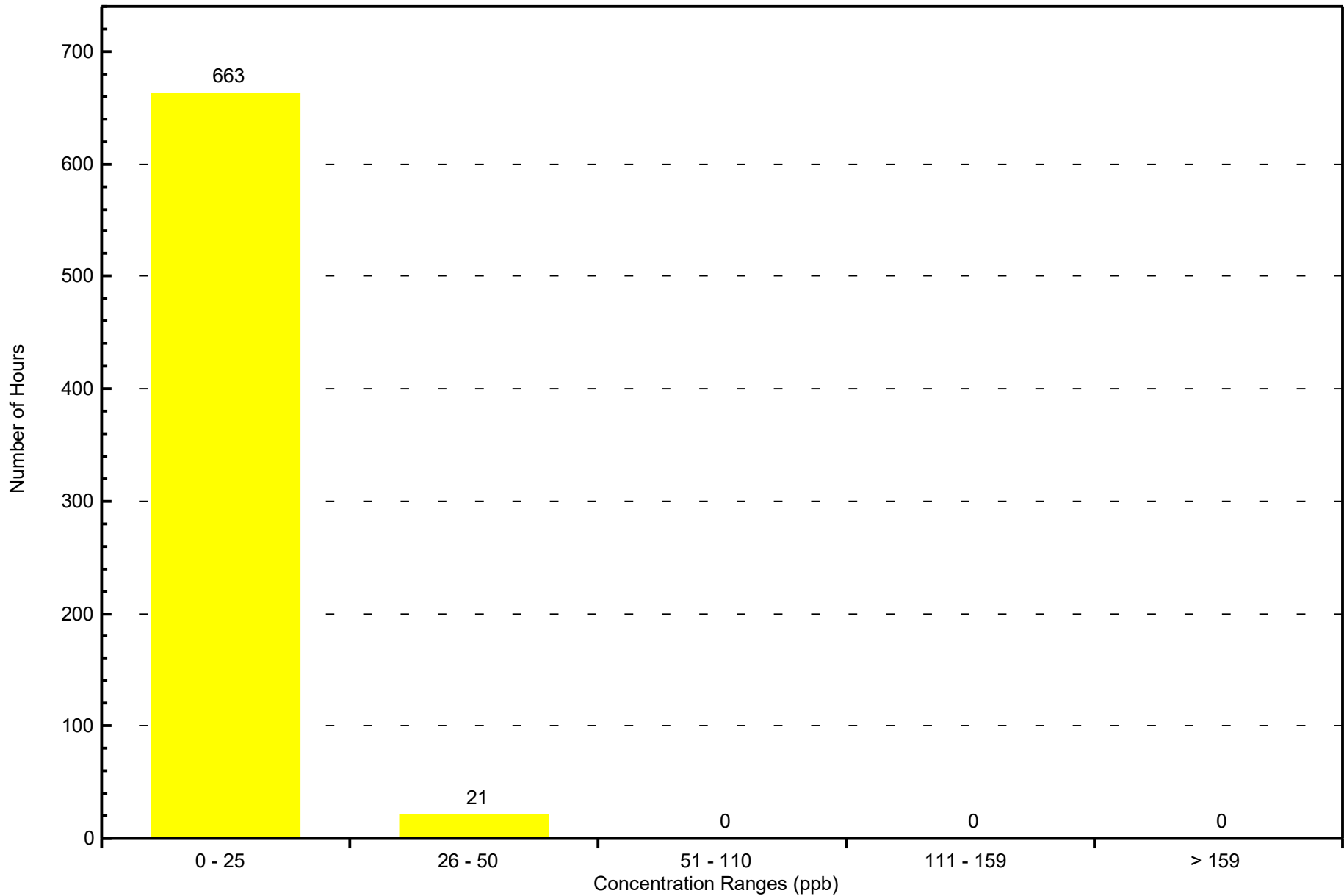
Henry Pirker - April 2020



Histogram of Hourly Averages

Nitrogen Dioxide (NO₂) - ppb

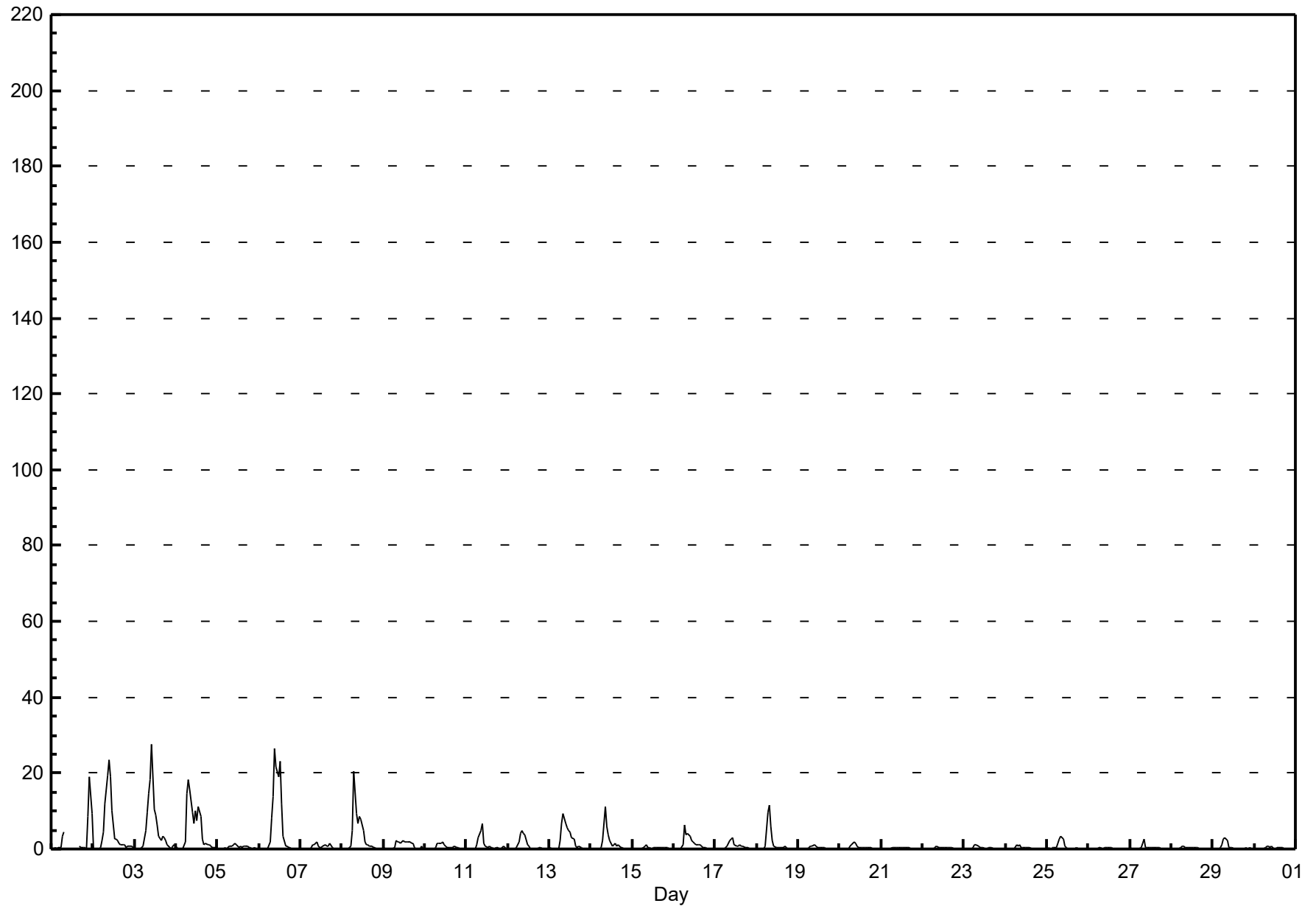
Henry Pirker - April 2020



Hourly Averages

Nitrogen Oxide (NO) - ppb

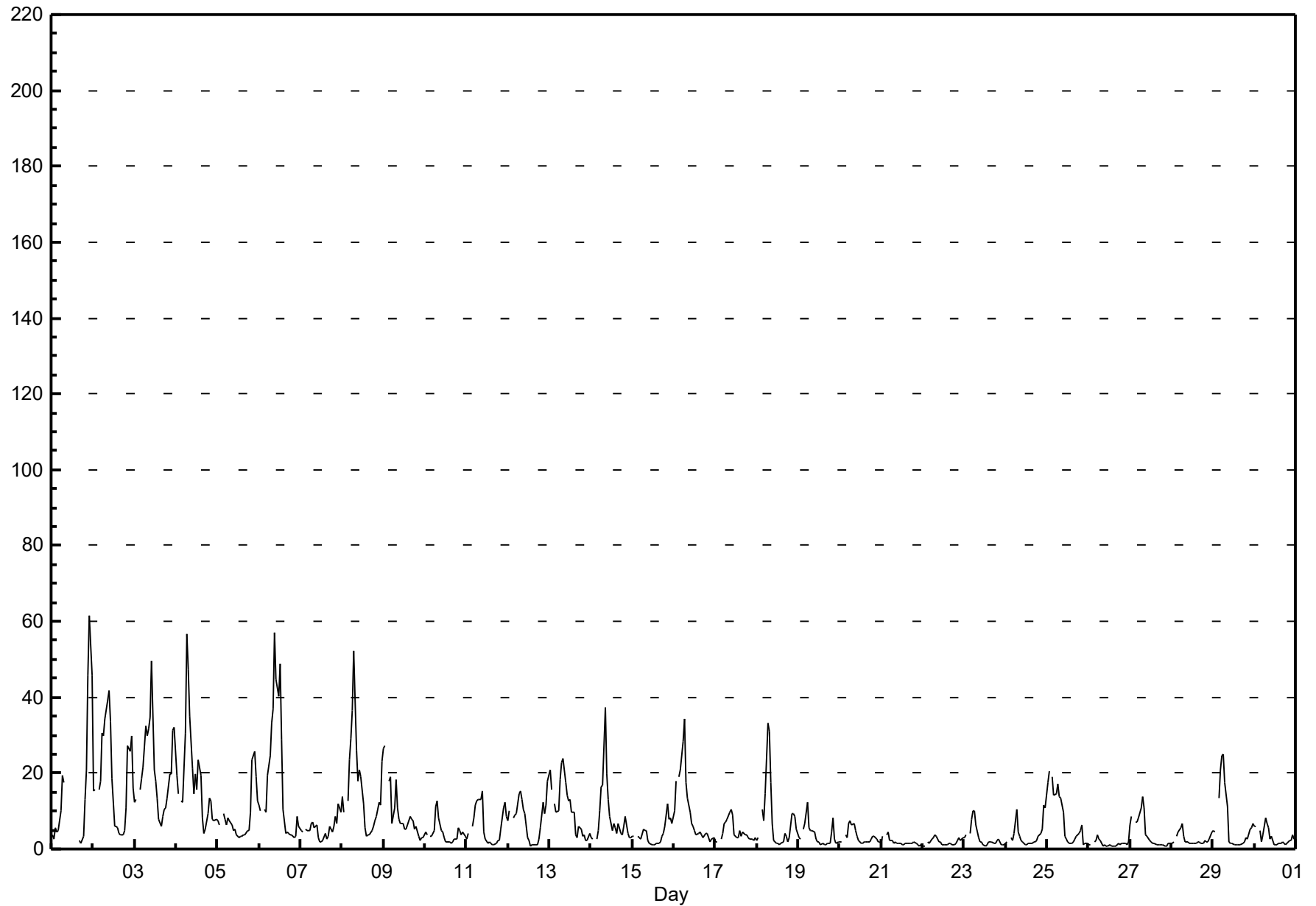
Henry Pirker - April 2020



Hourly Averages

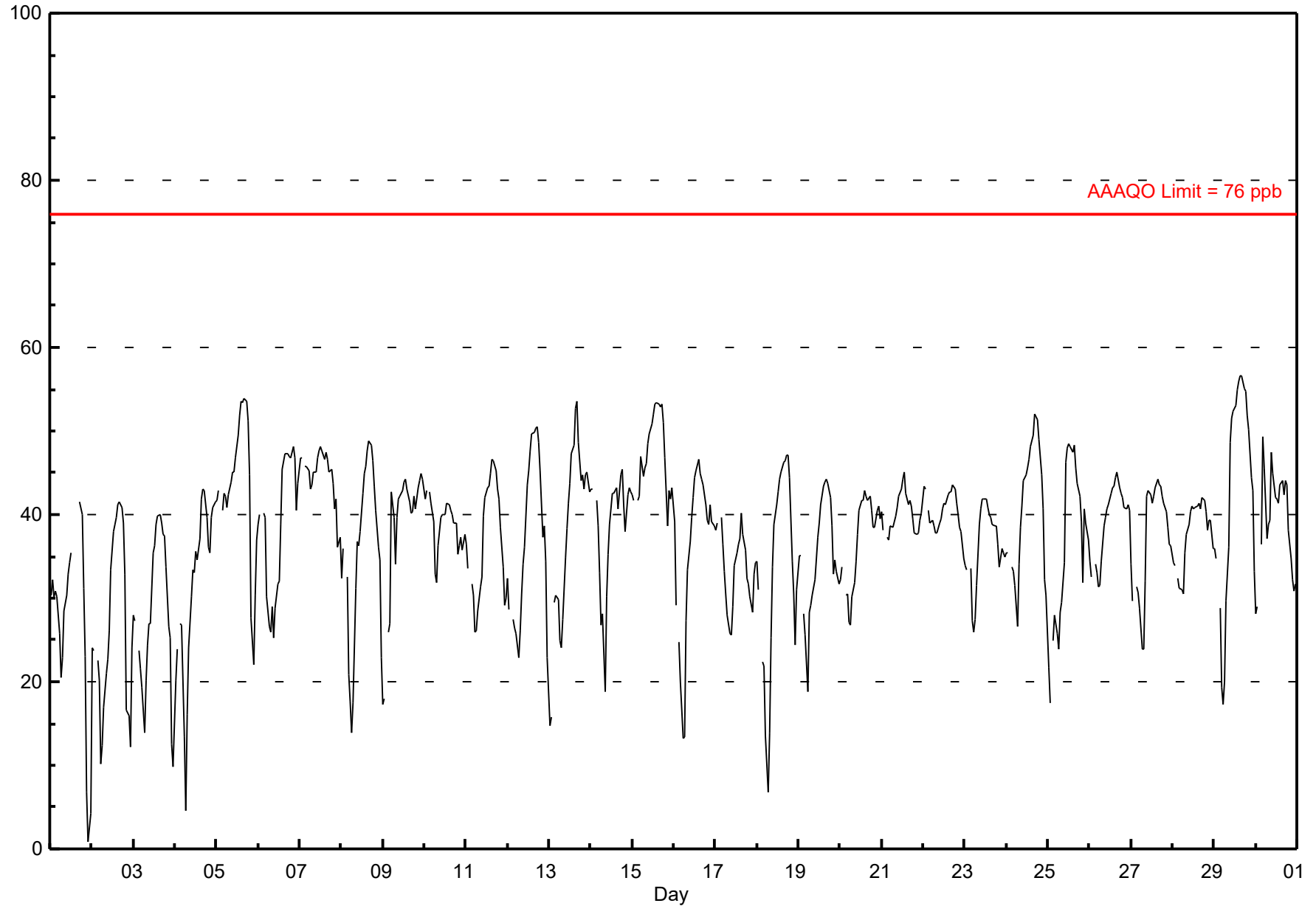
Oxides of Nitrogen (NO_x) - ppb

Henry Pirker - April 2020



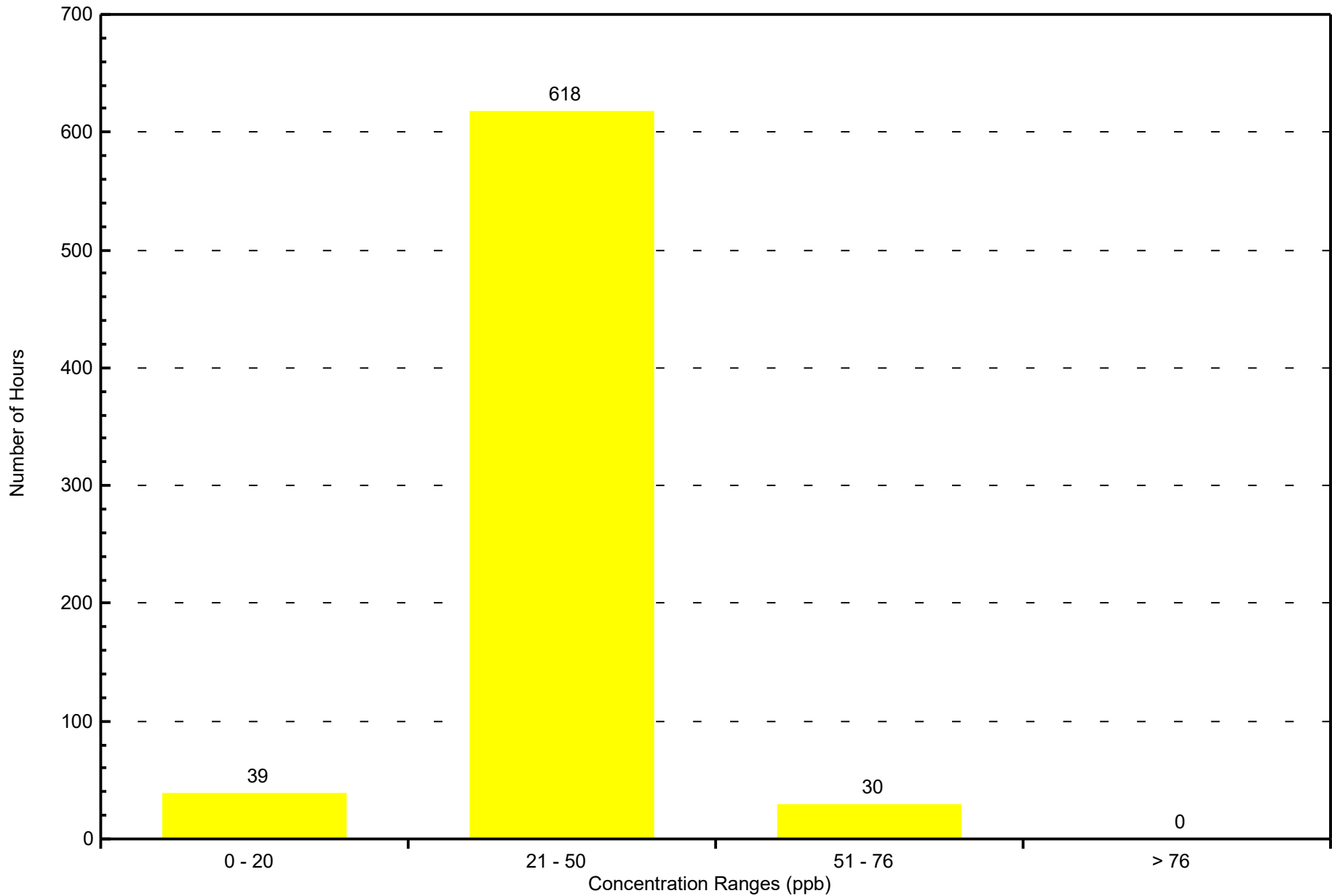
Hourly Averages

Ozone (O₃) - ppb
Henry Pirker - April 2020



Histogram of Hourly Averages

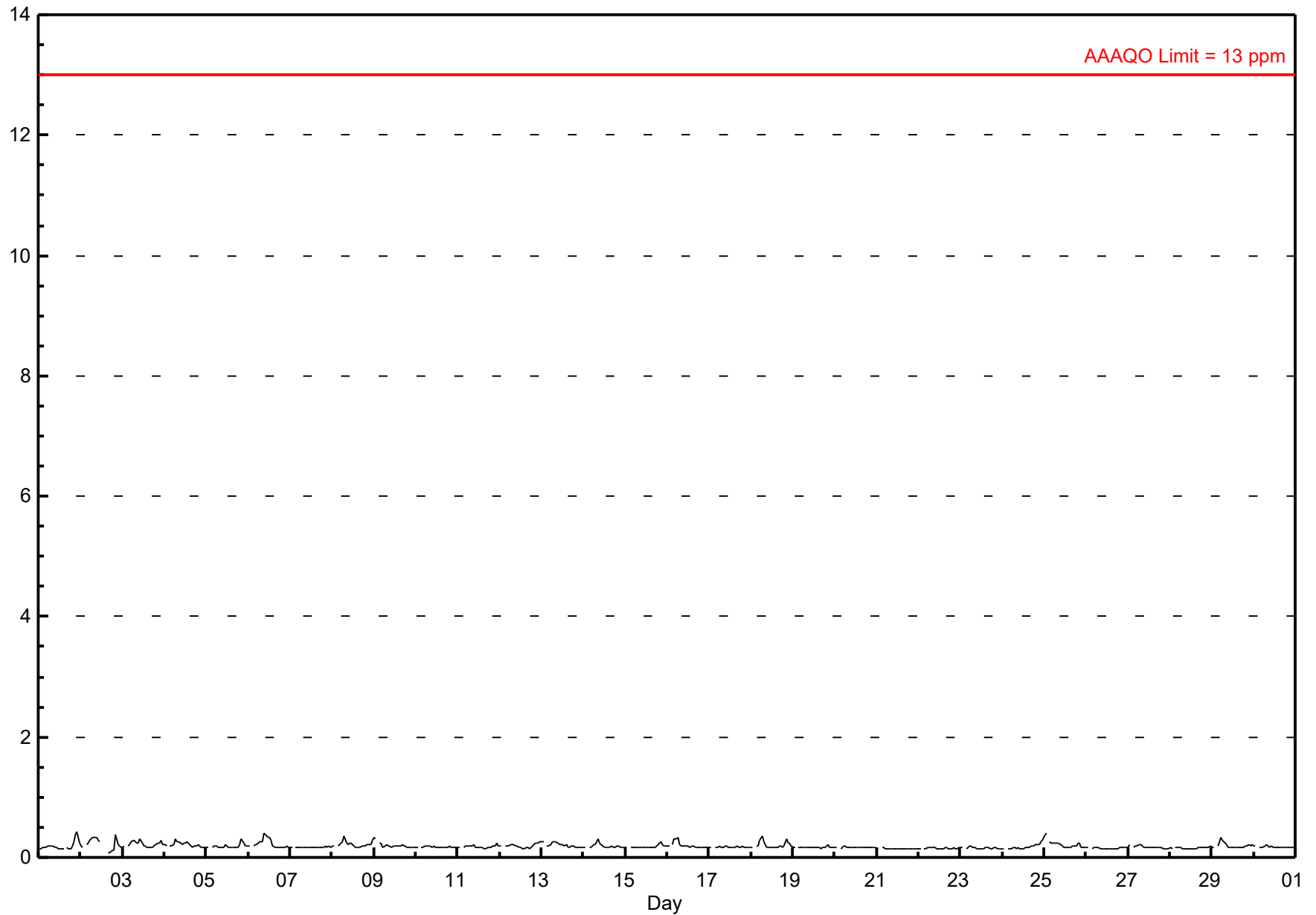
Ozone (O₃) - ppb
Henry Pirker - April 2020



Hourly Averages

Carbon Monoxide (CO) - ppm

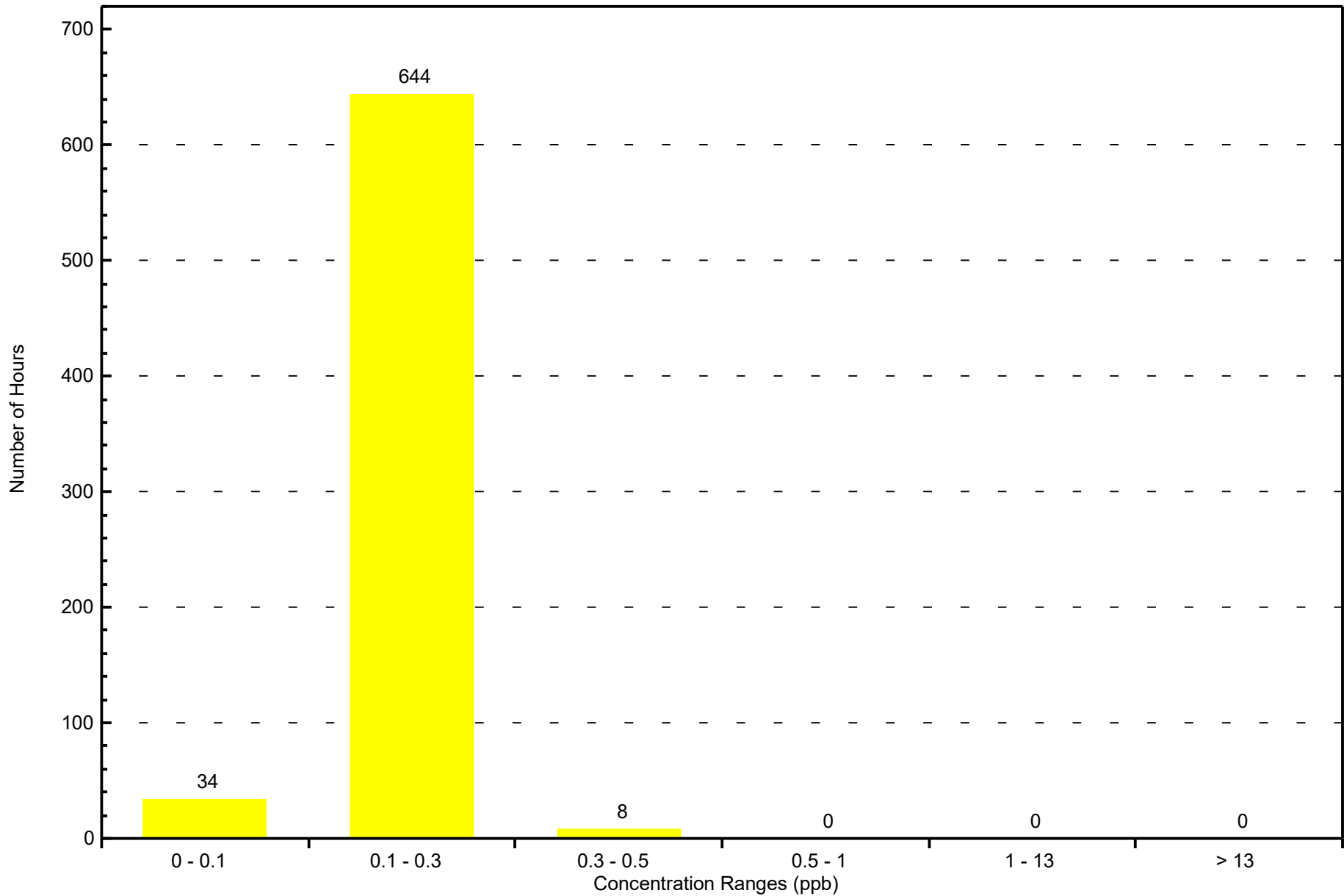
Henry Pirker - April 2020



Histogram of Hourly Averages

Carbon Monoxide (CO) - ppm

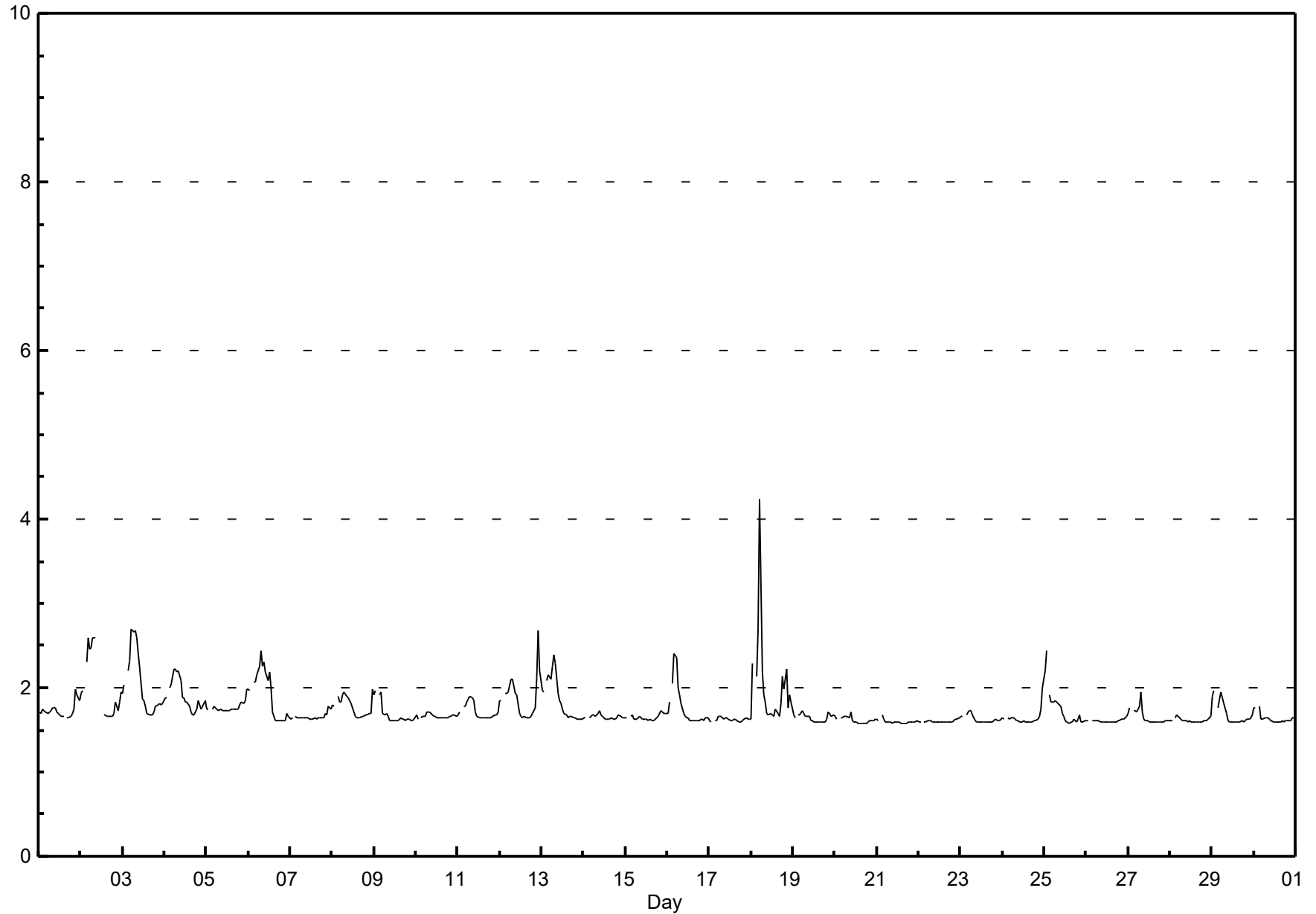
Henry Pirker - April 2020



Hourly Averages

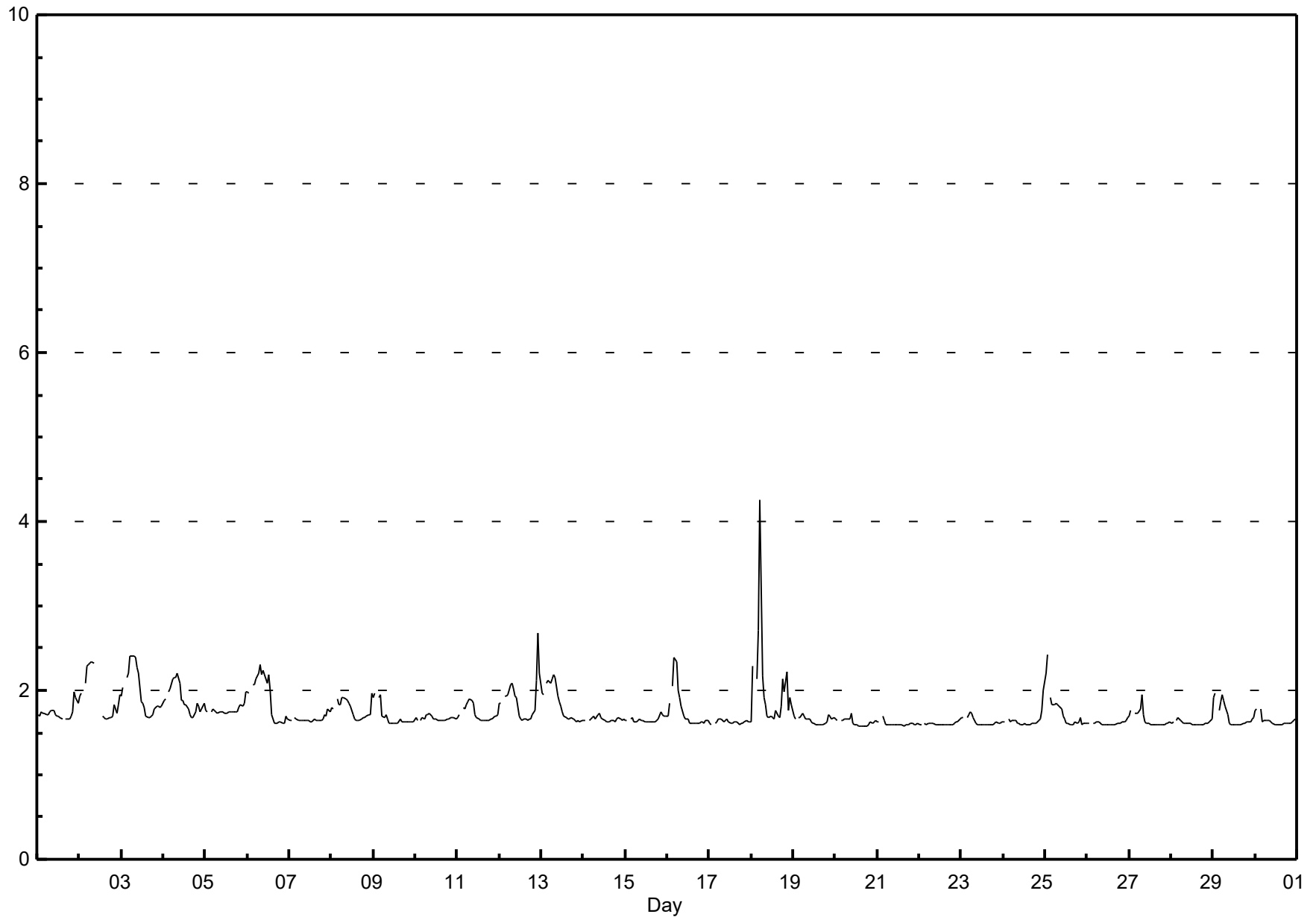
Total Hydrocarbons (THC) - ppm

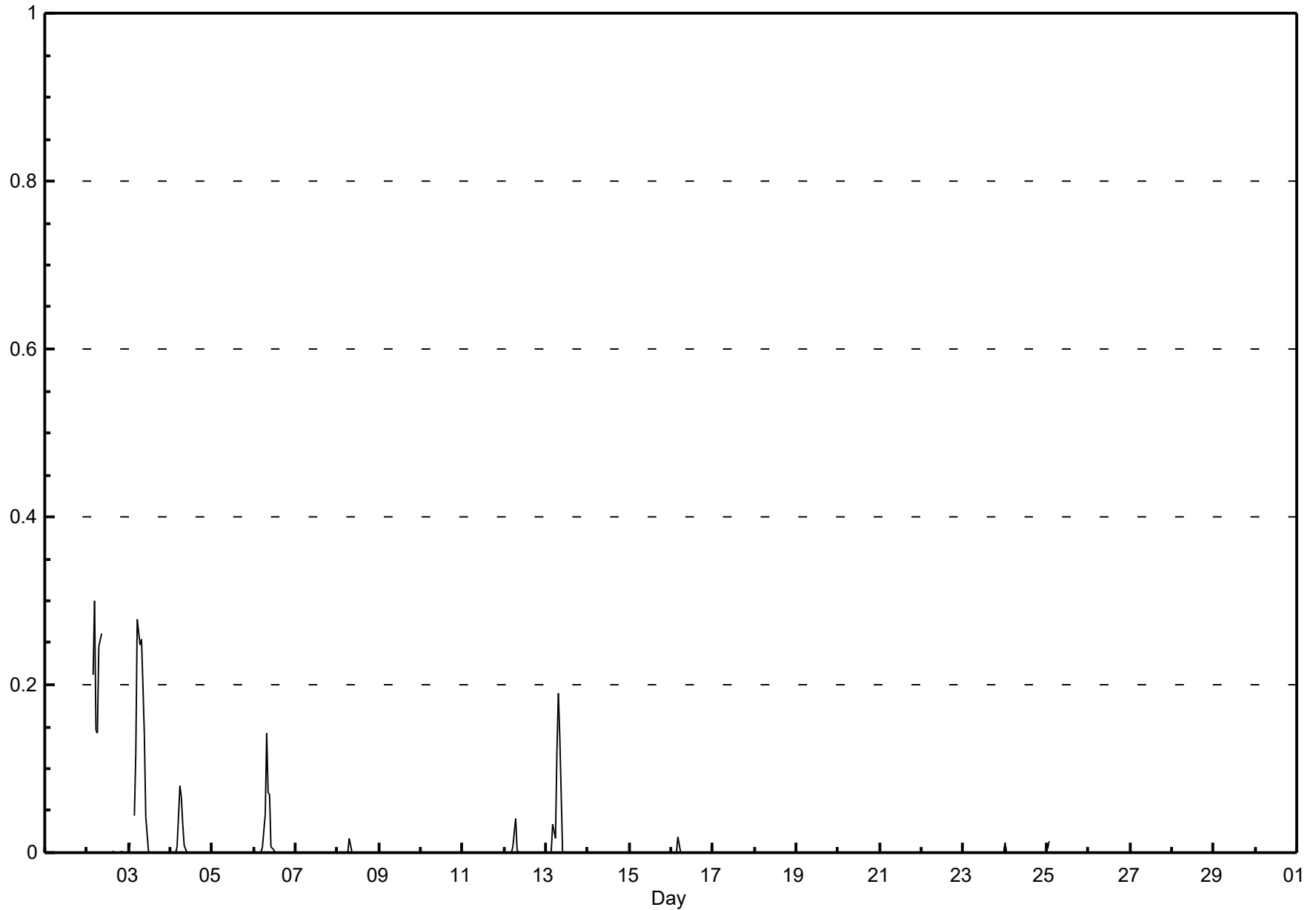
Henry Pirker - April 2020

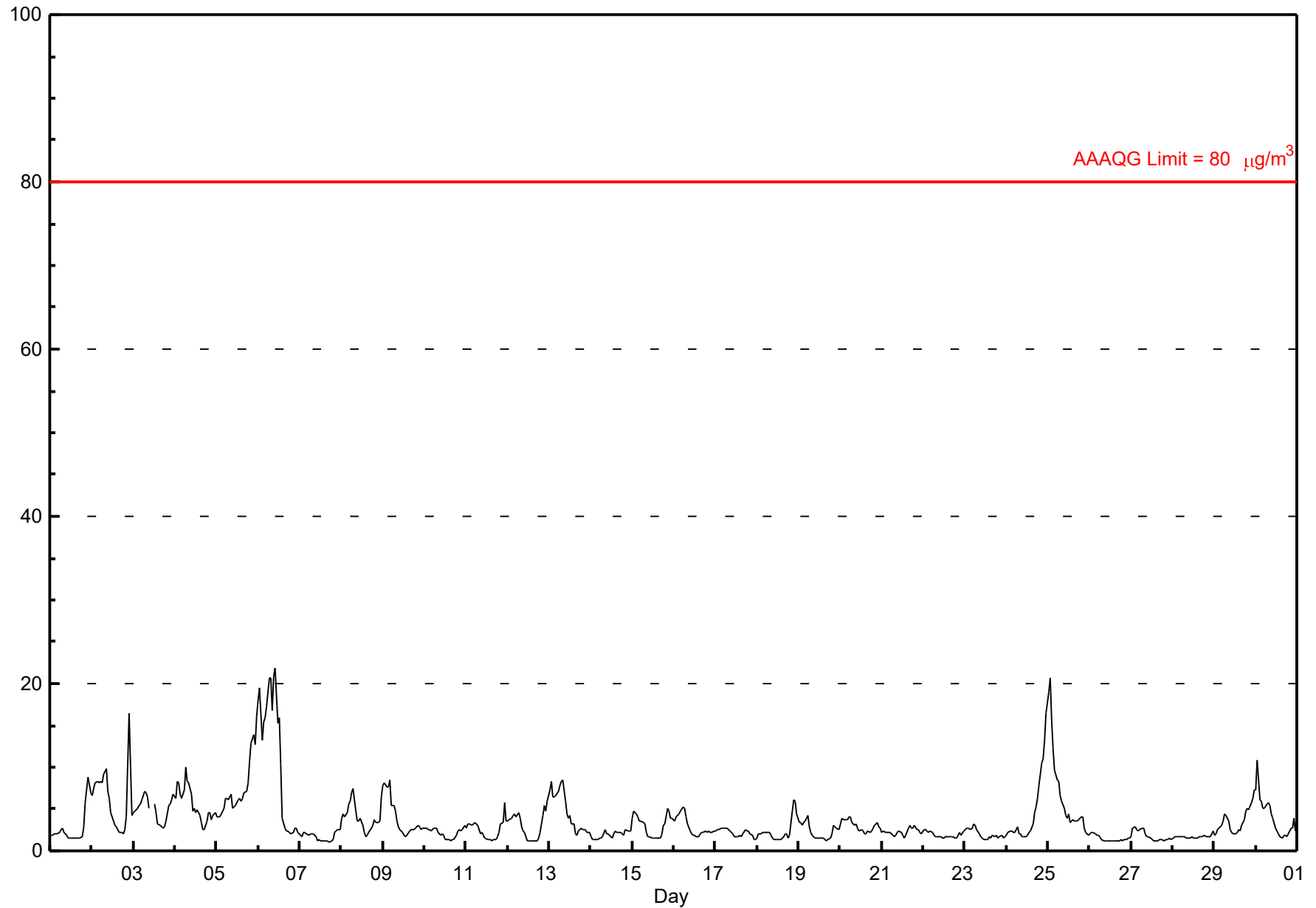


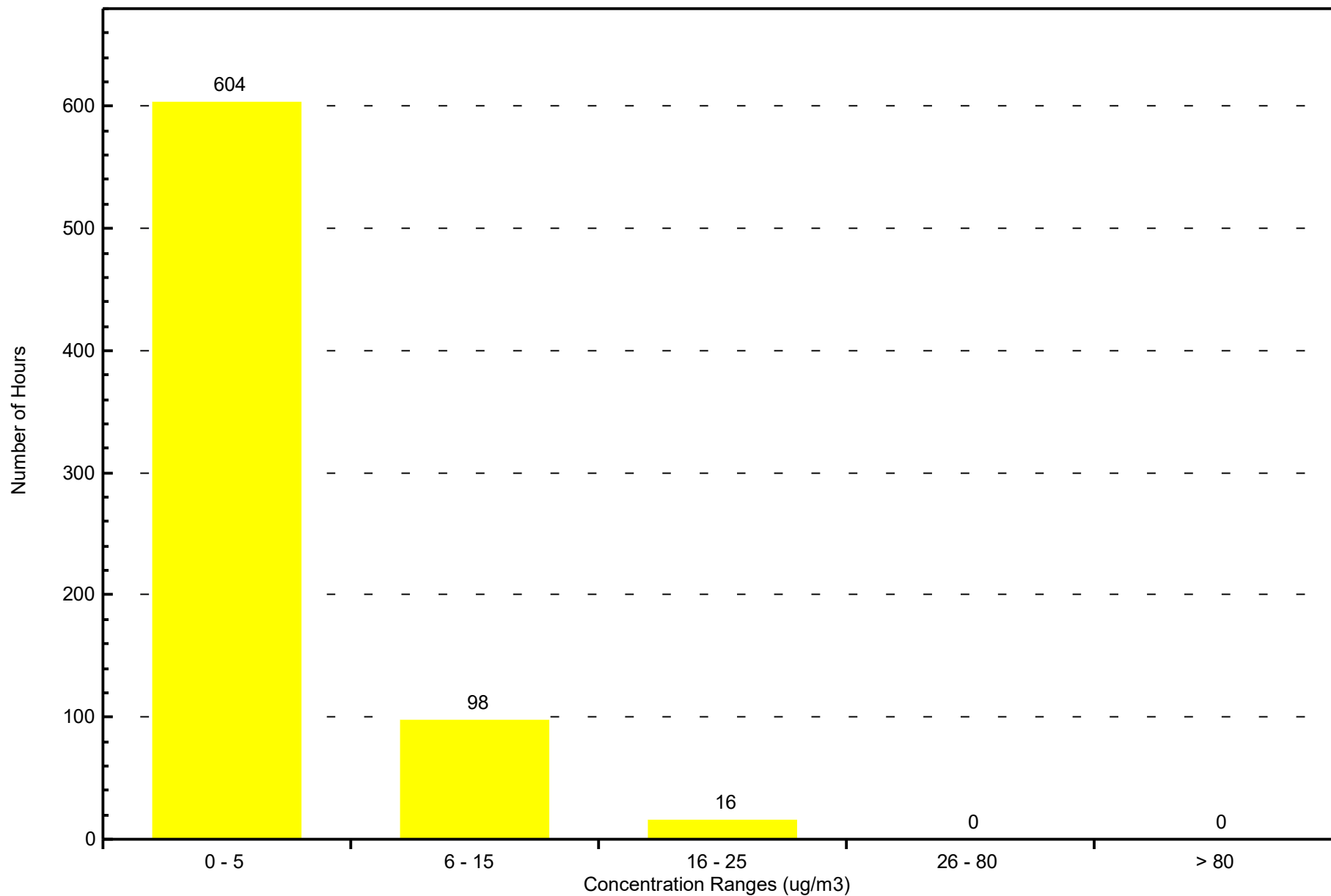
Hourly Averages

Methane (CH₄) - ppm
Henry Pirker - April 2020





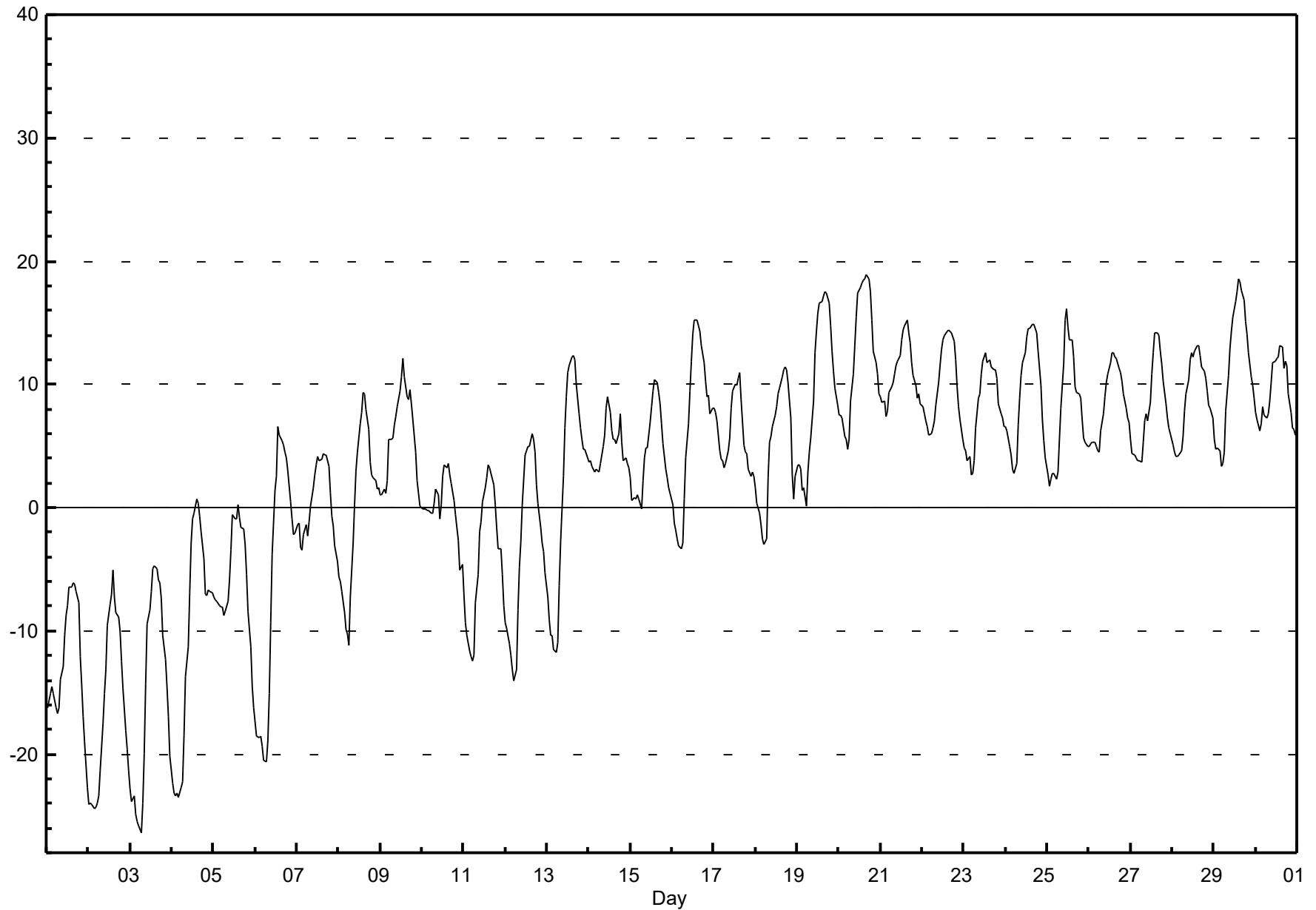




Hourly Averages

External Temperature (ET) - °C

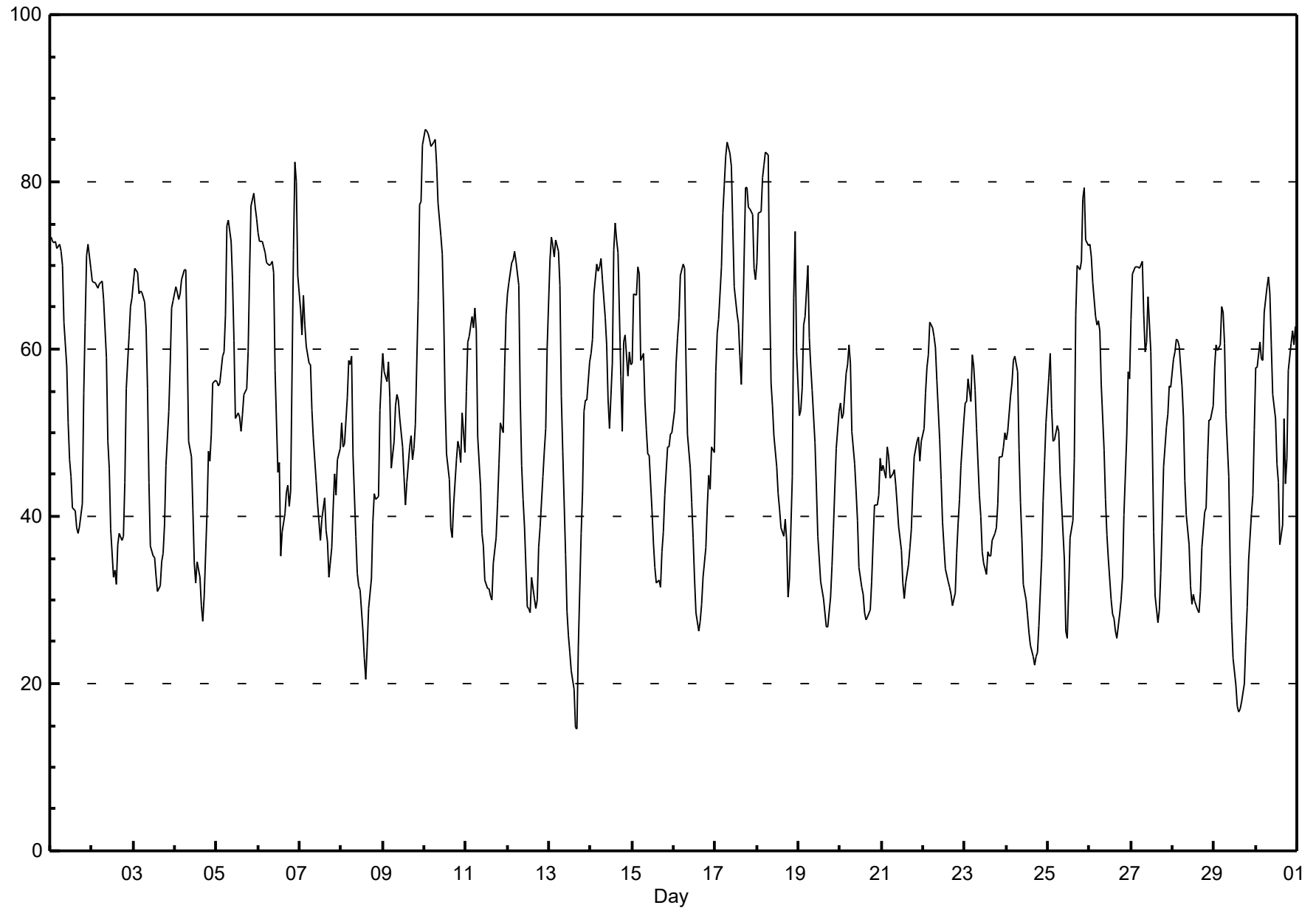
Henry Pirker - April 2020



Hourly Averages

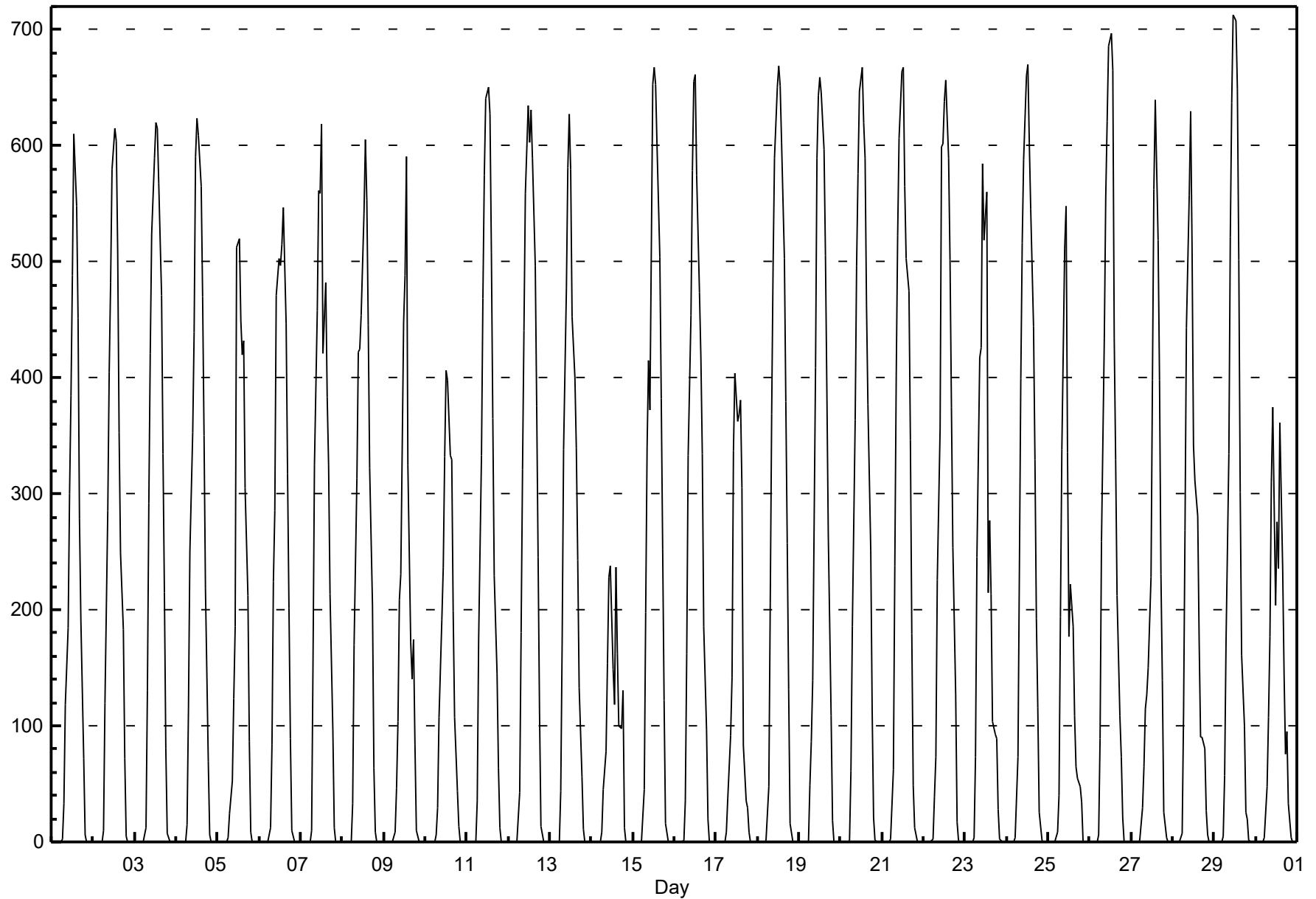
Relative Humidity (RH) - %

Henry Pirker - April 2020



Hourly Averages

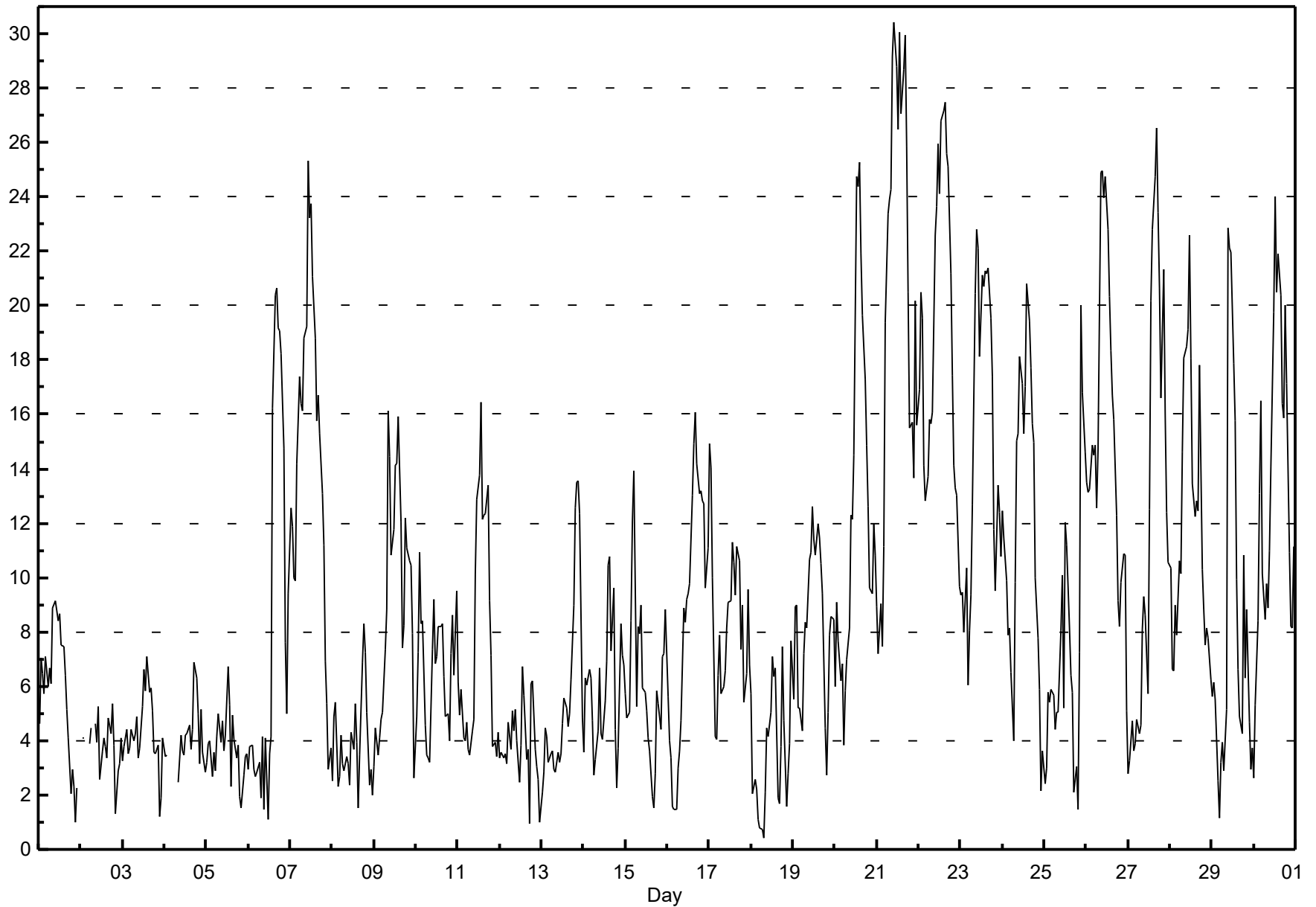
Solar Radiation (SR) - W/m²
Henry Pirker - April 2020



Hourly Averages

Wind Speed (WS) - km/h

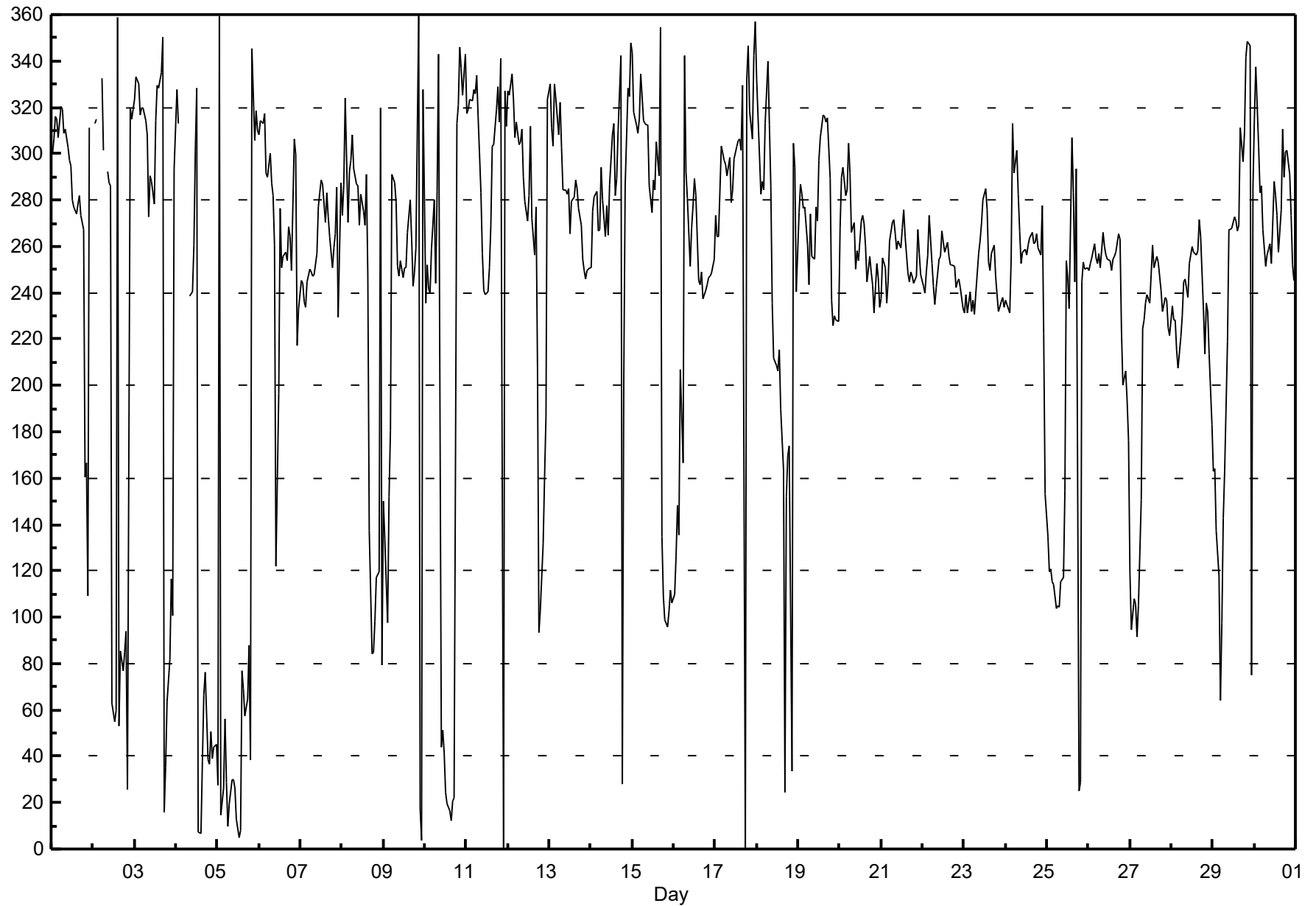
Henry Pirker - April 2020



Hourly Averages

Wind Direction (WD) - deg

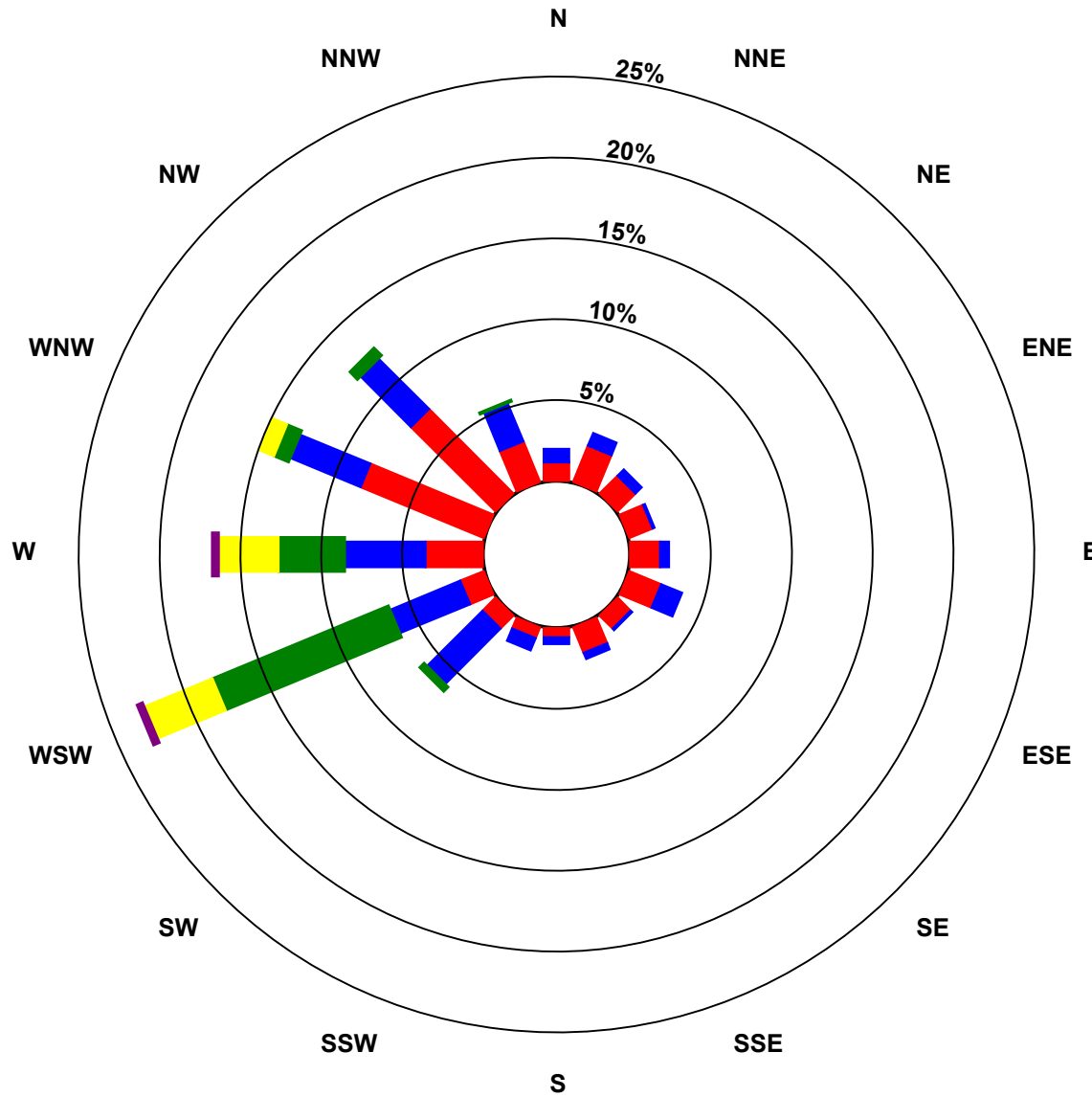
Henry Pirker - April 2020



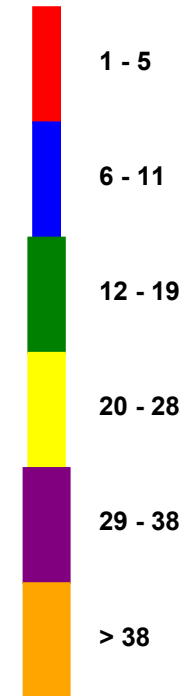
Wind Rose

Wind Speed (WS) (km/h)

Henry Pirker - April 2020



Wind Speed Classes (km/h)

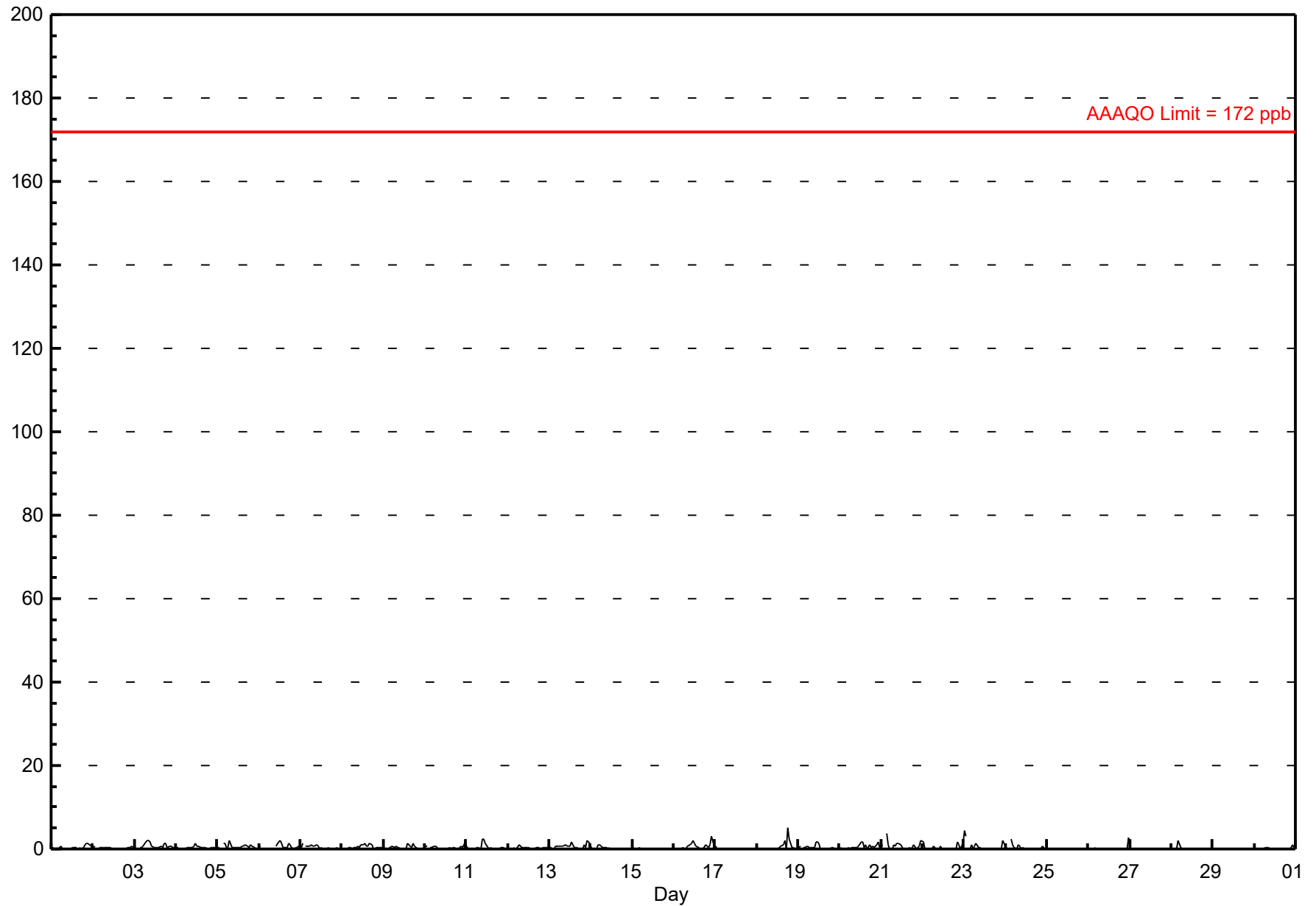


5 Smoky Heights Charts

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

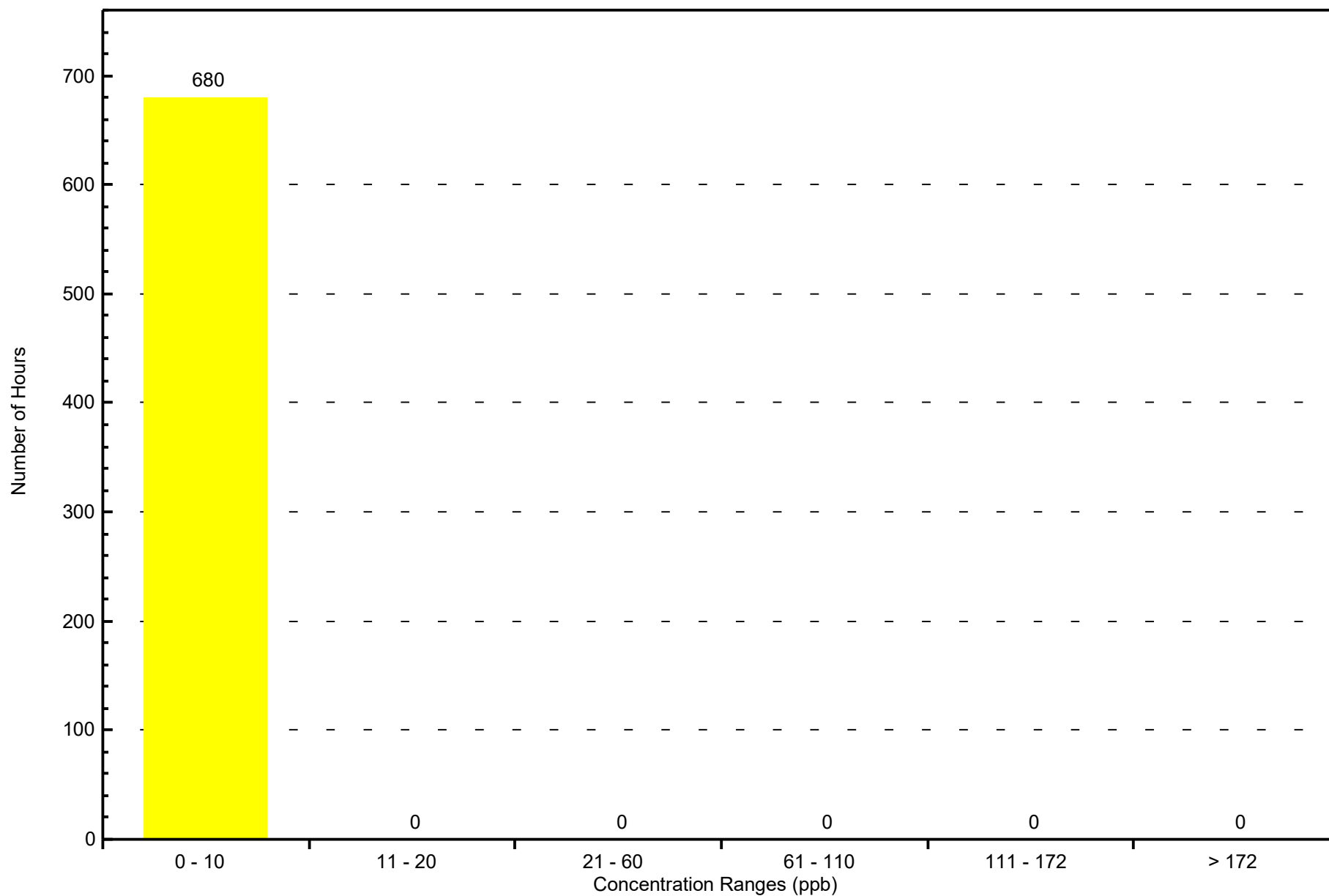
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Smoky Heights - April 2020



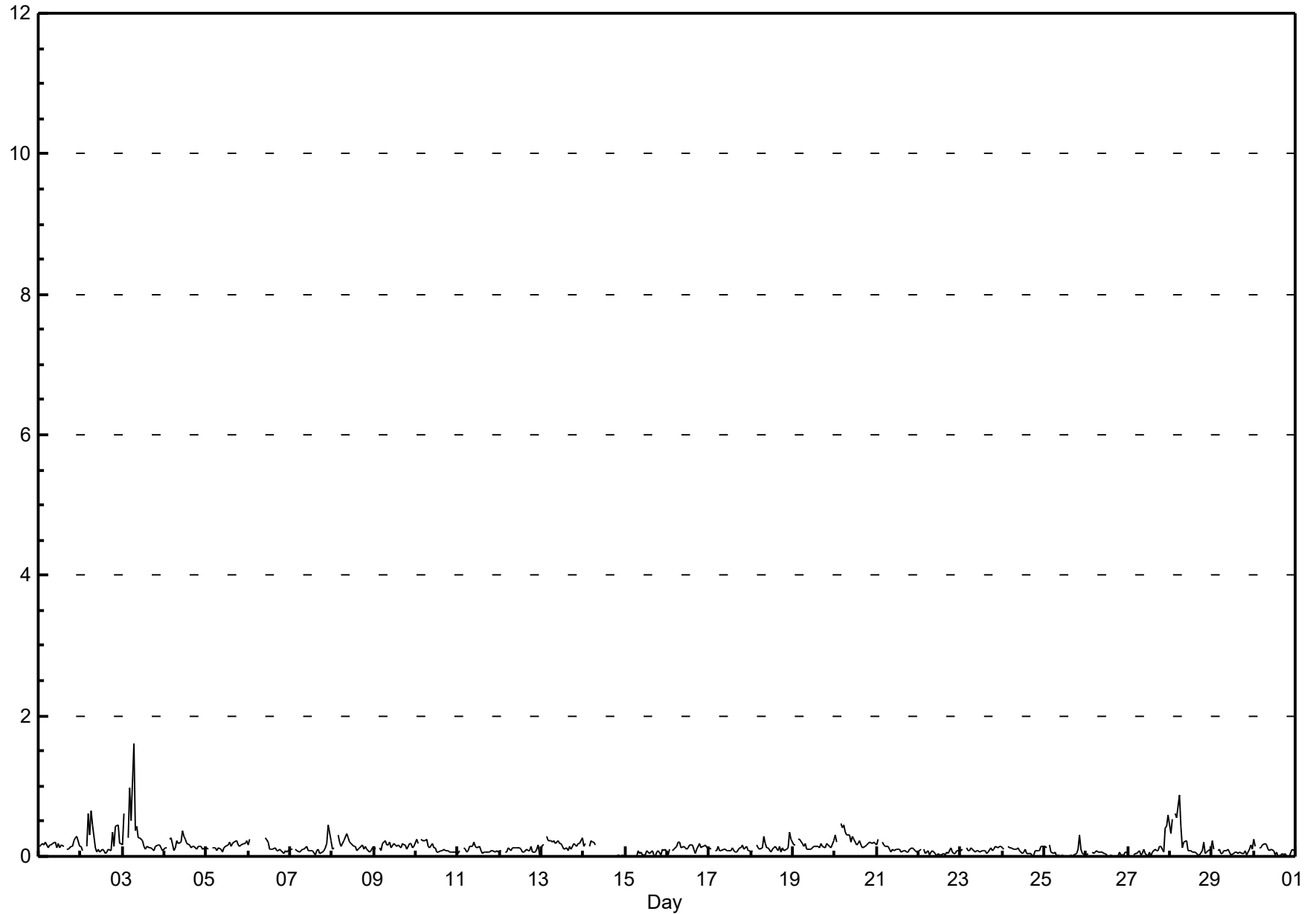
Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Smoky Heights - April 2020



Hourly Averages

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



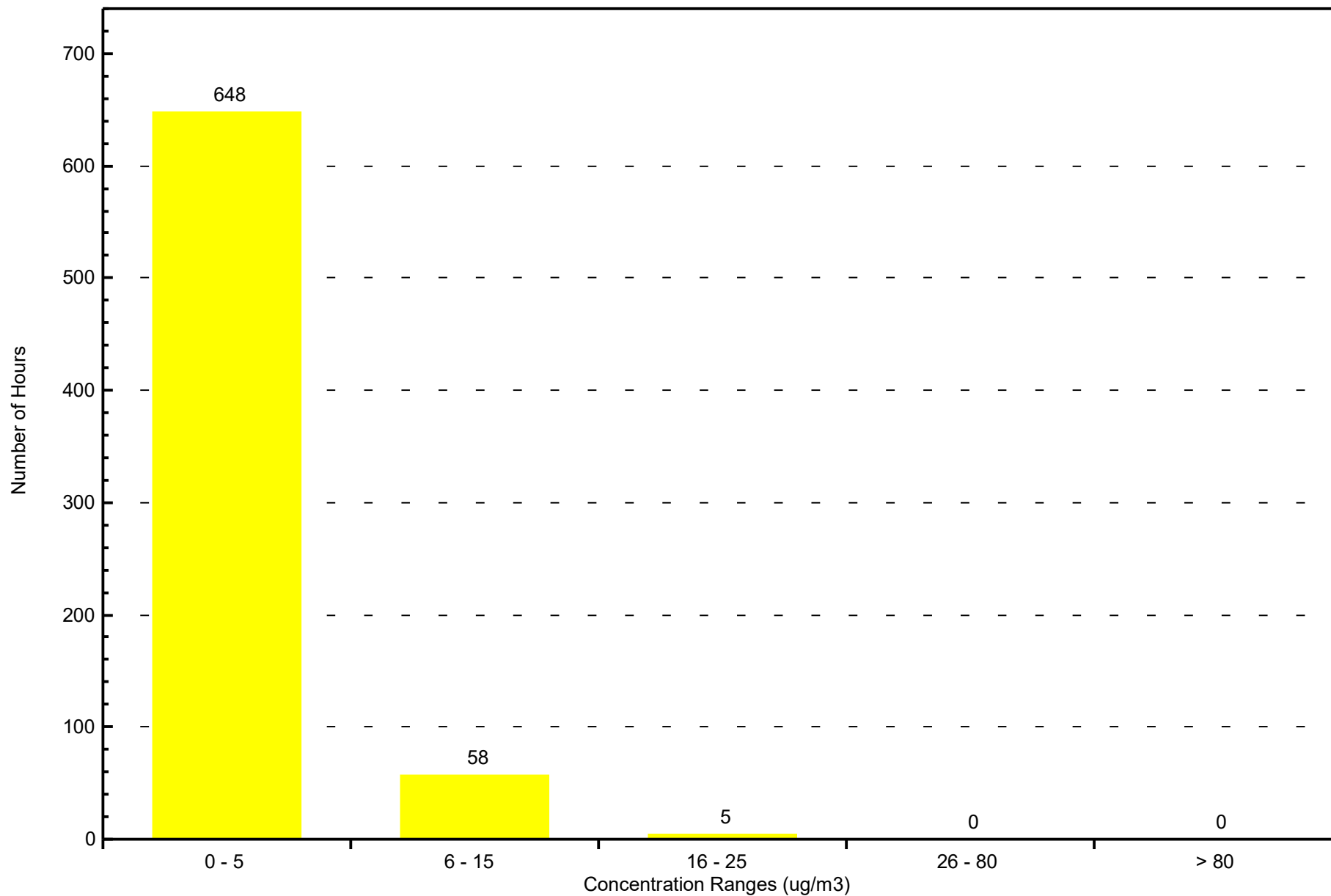
Hourly Averages

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



Histogram of Hourly Averages

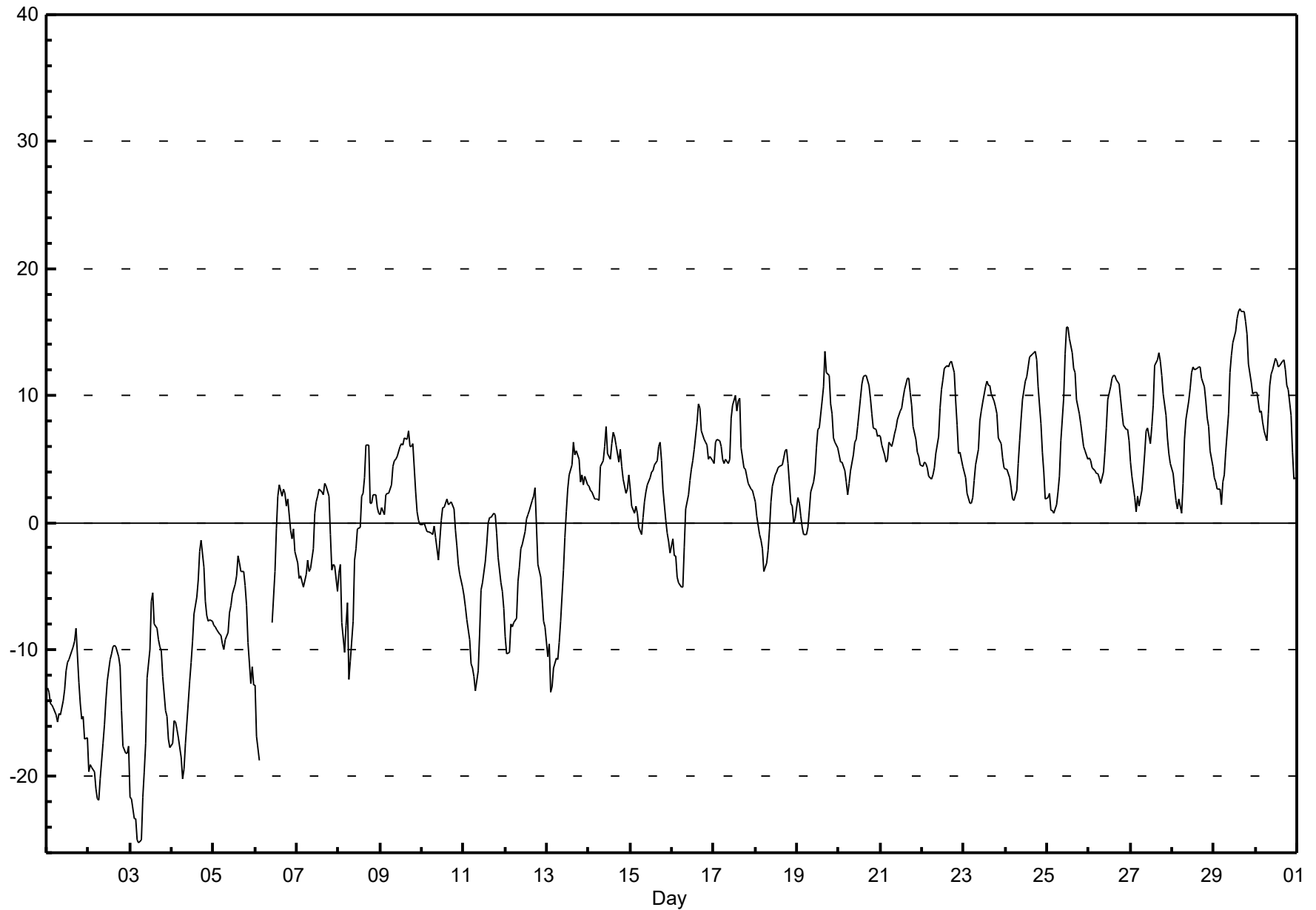
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Smoky Heights - April 2020



Hourly Averages

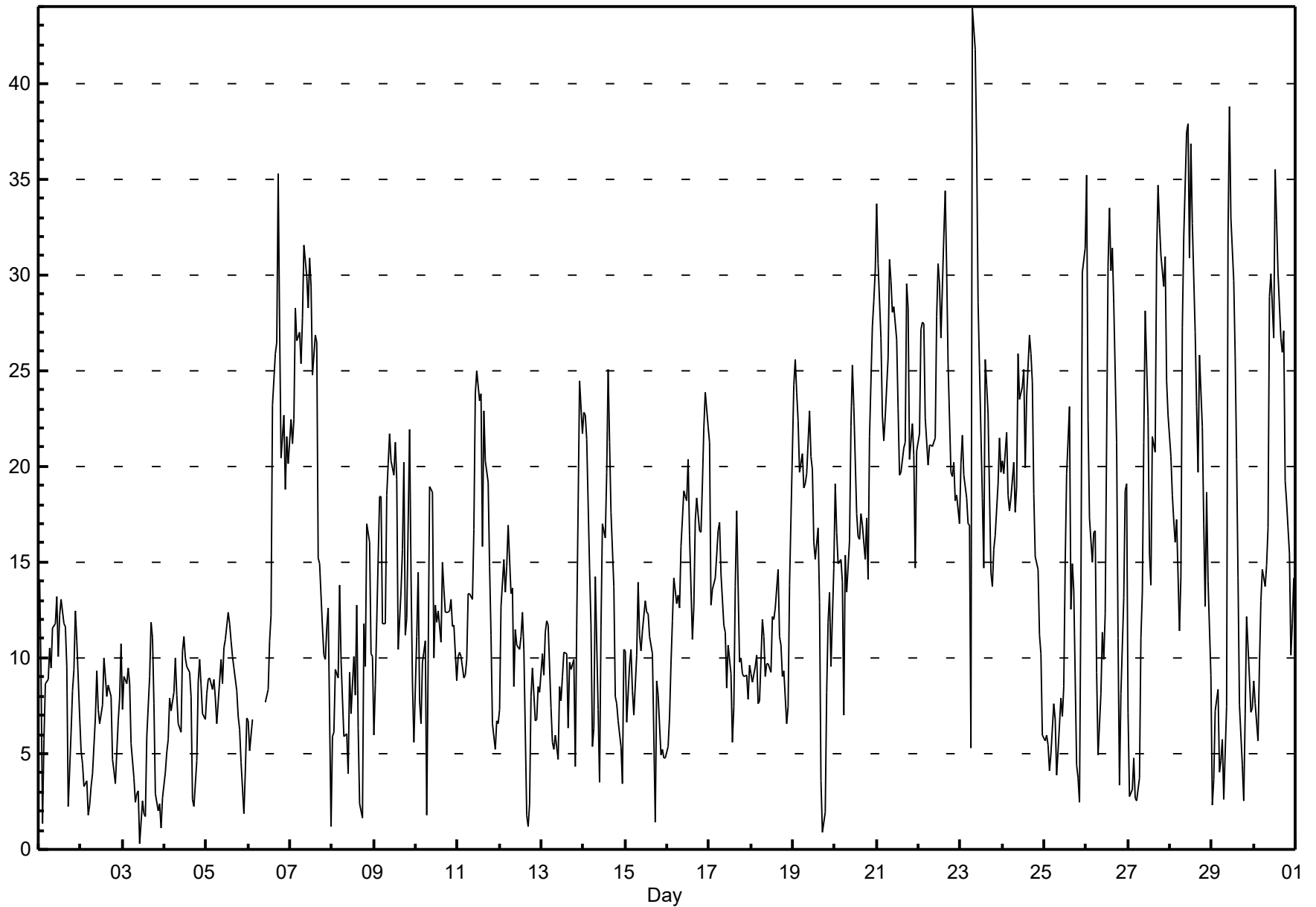
External Temperature (ET) - °C

Smoky Heights - April 2020



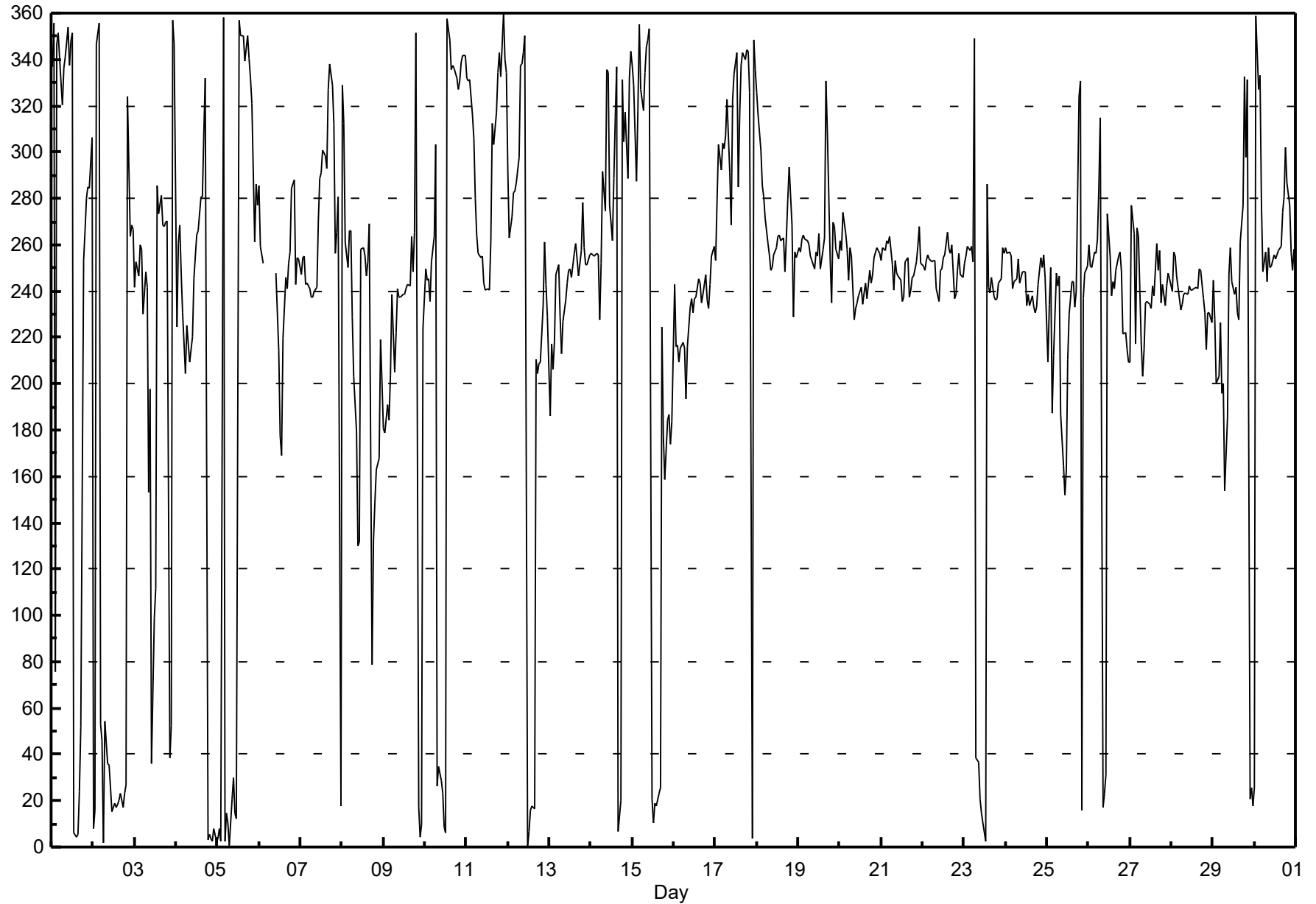
Hourly Averages

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



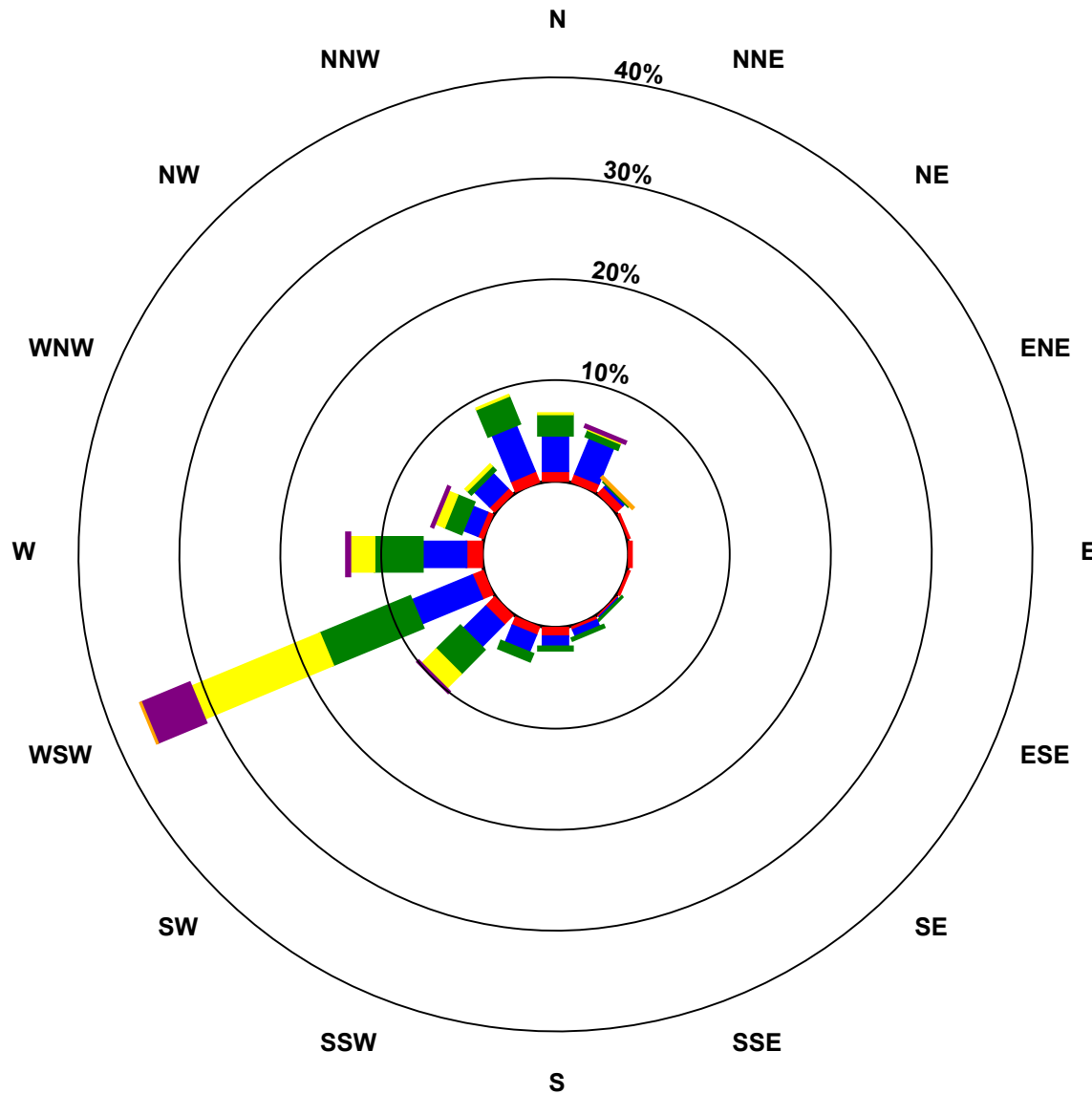
Hourly Averages

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

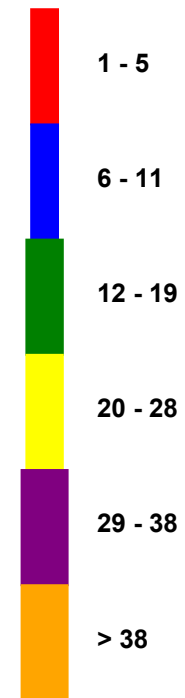


Wind Rose

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



Wind Speed Classes (km/h)

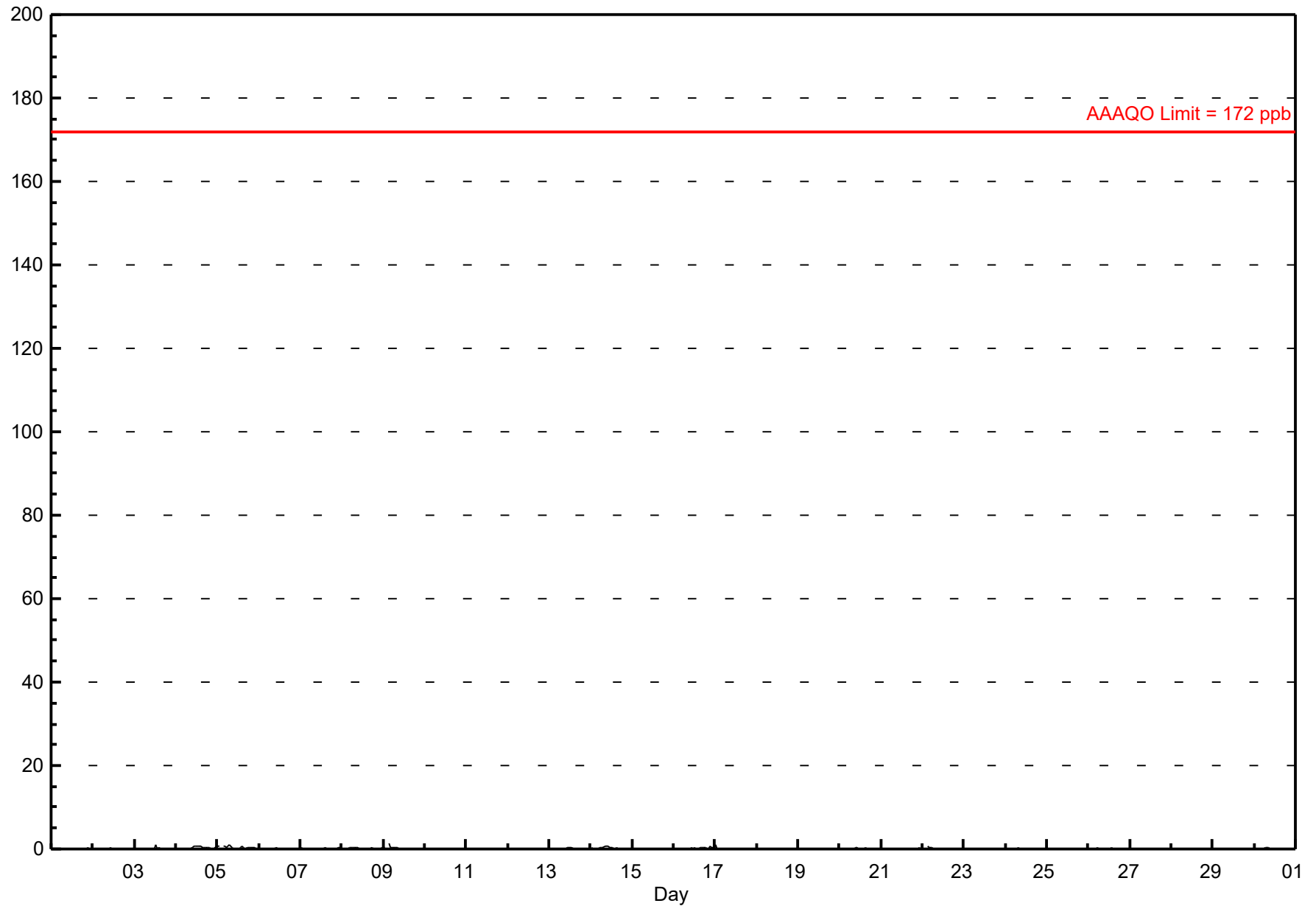


6 Valleyview Charts

The following pages include the charts and histograms for Valleyview Station

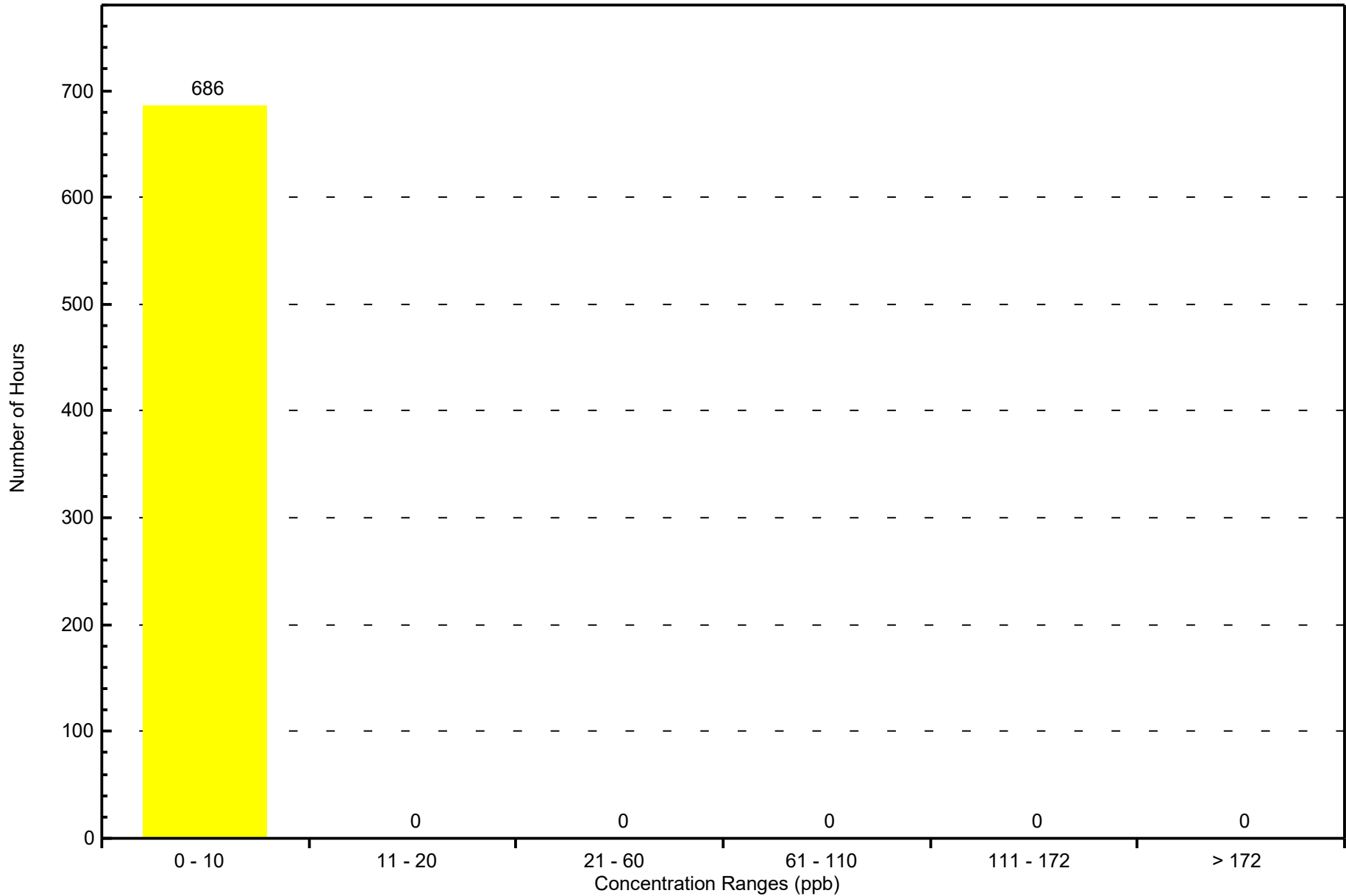
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Valleyview - April 2020



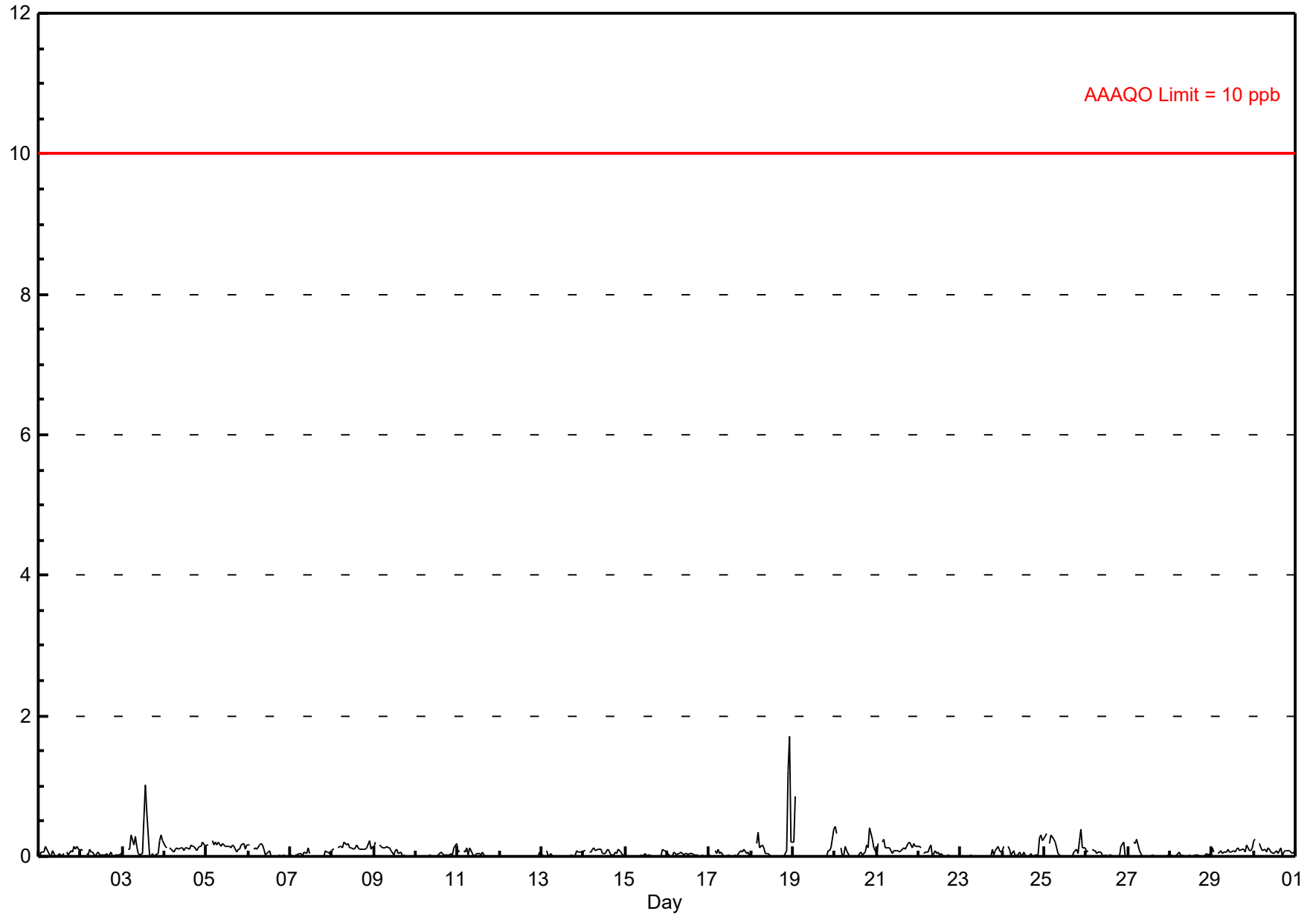
Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Valleyview - April 2020



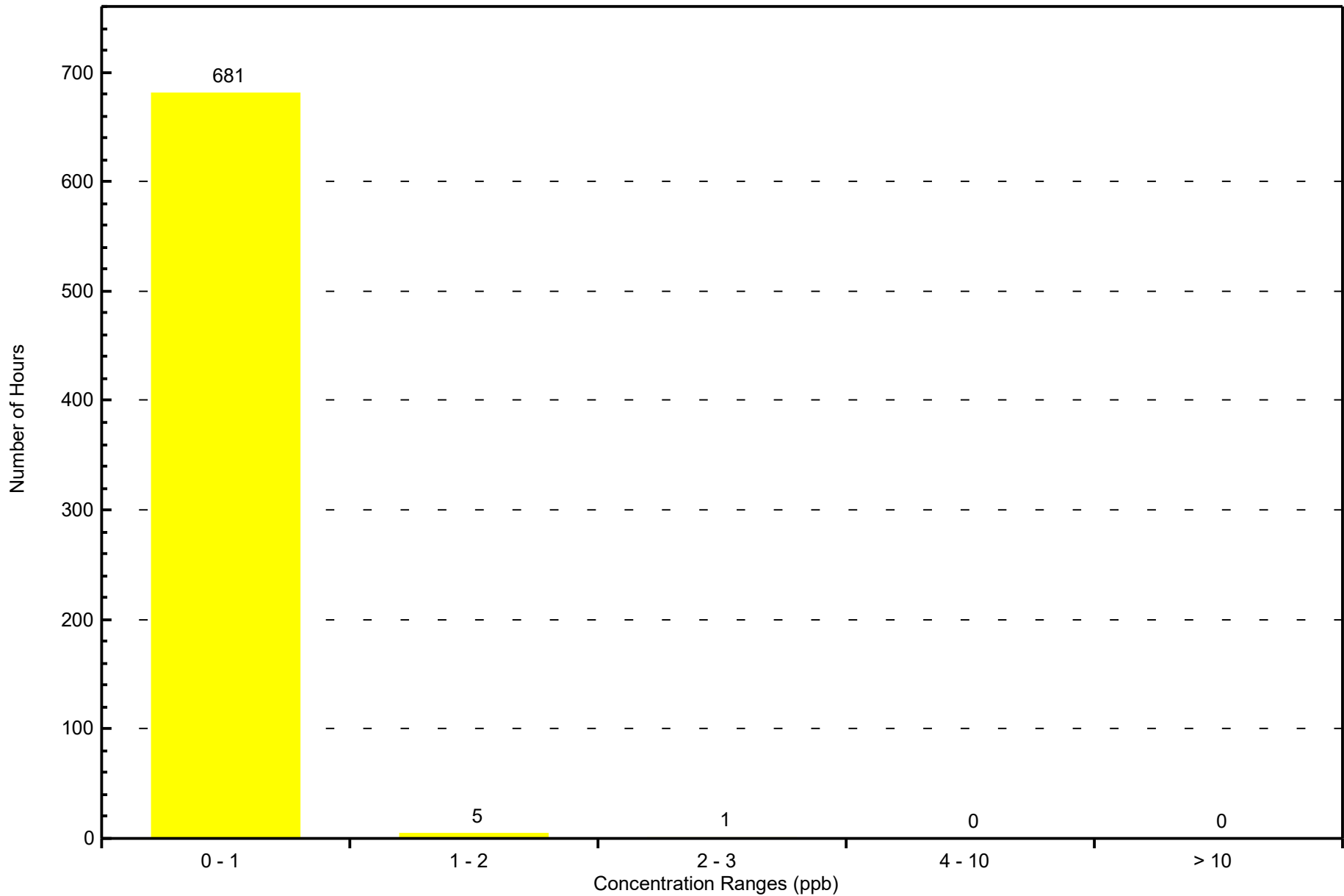
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Valleyview - April 2020



Histogram of Hourly Averages

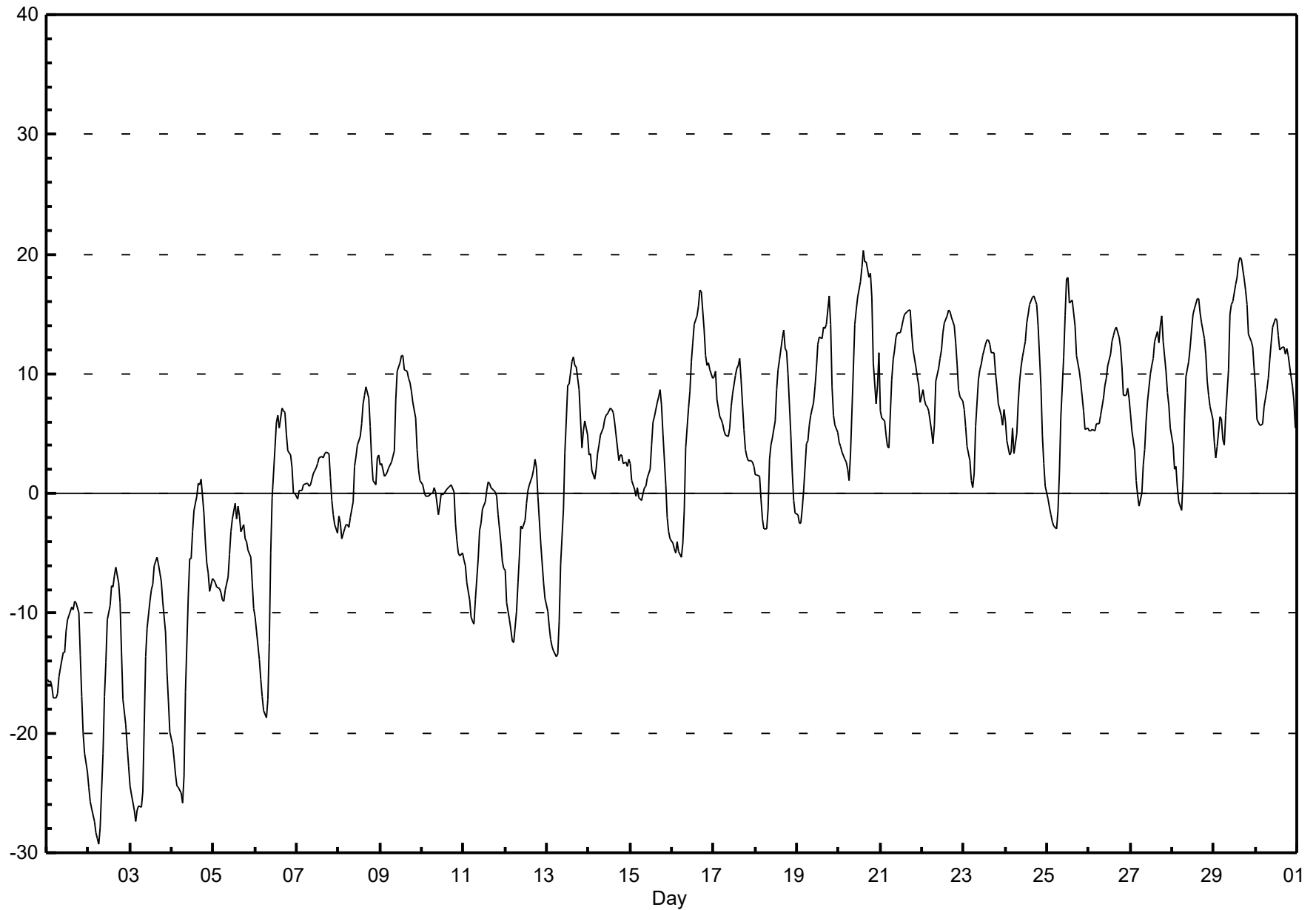
Hydrogen Sulphide (H₂S) - ppb
Valleyview - April 2020



Hourly Averages

External Temperature (ET) - °C

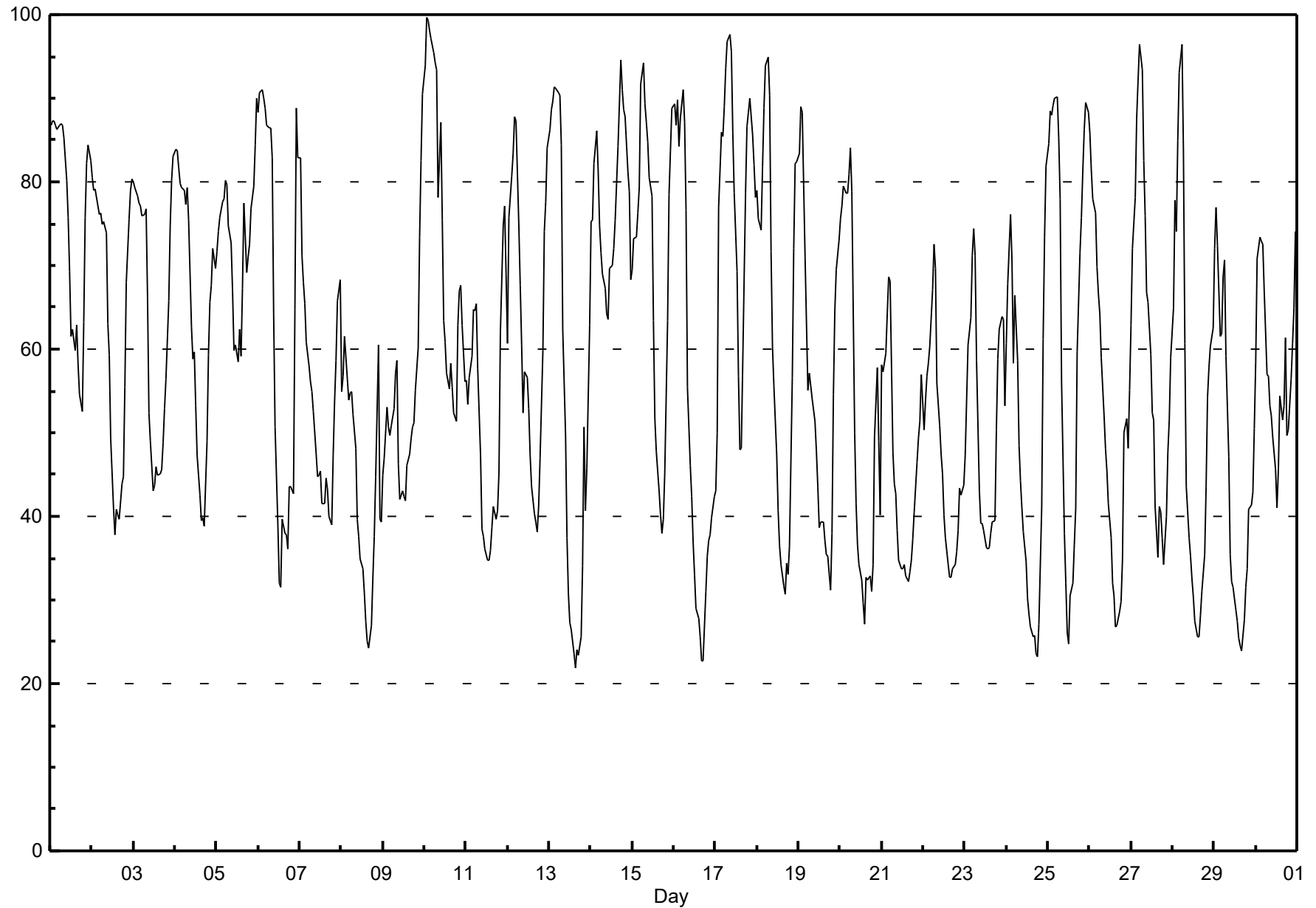
Valleyview - April 2020



Hourly Averages

Relative Humidity (RH) - %

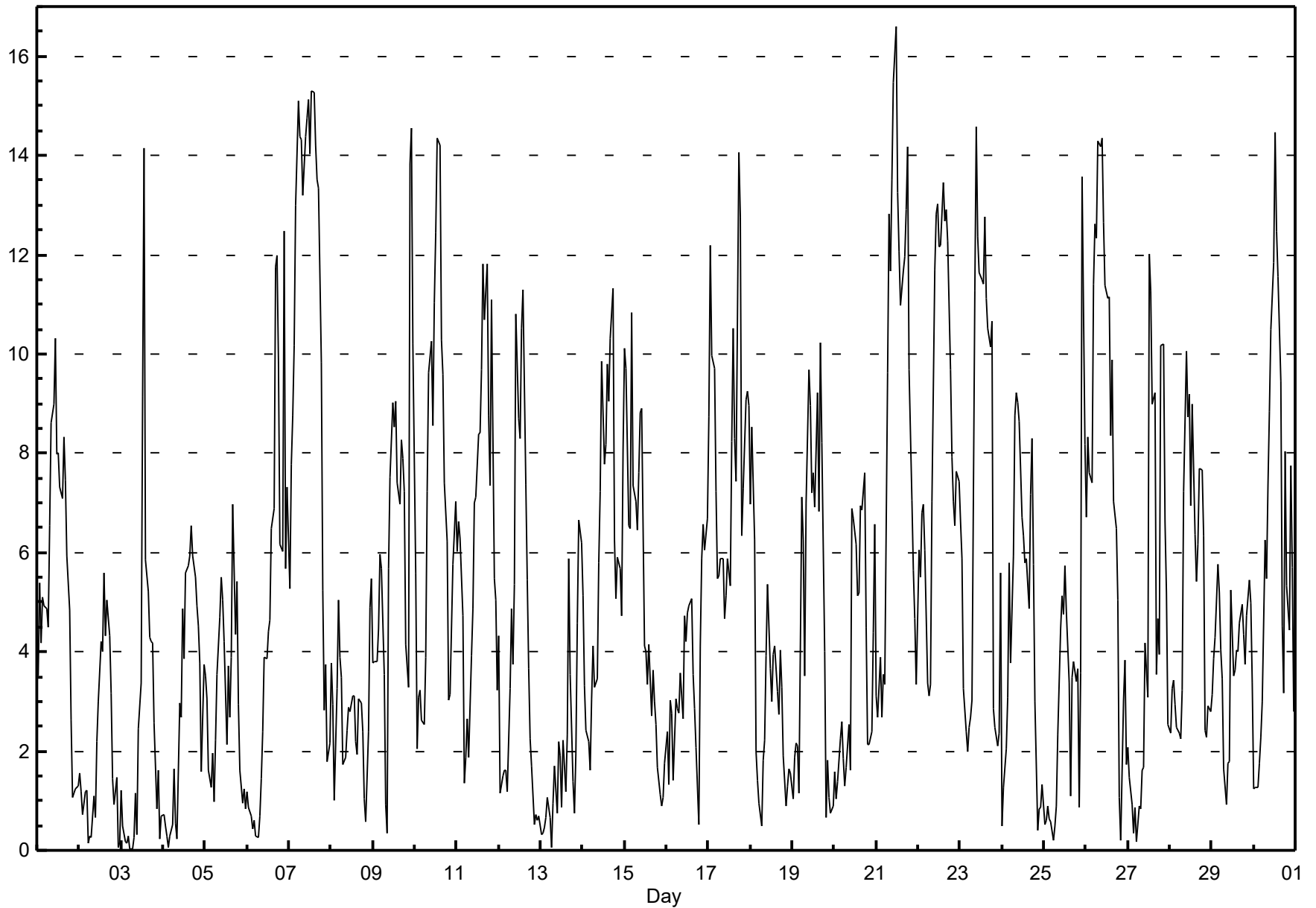
Valleyview - April 2020



Hourly Averages

Wind Speed (WS) - km/h

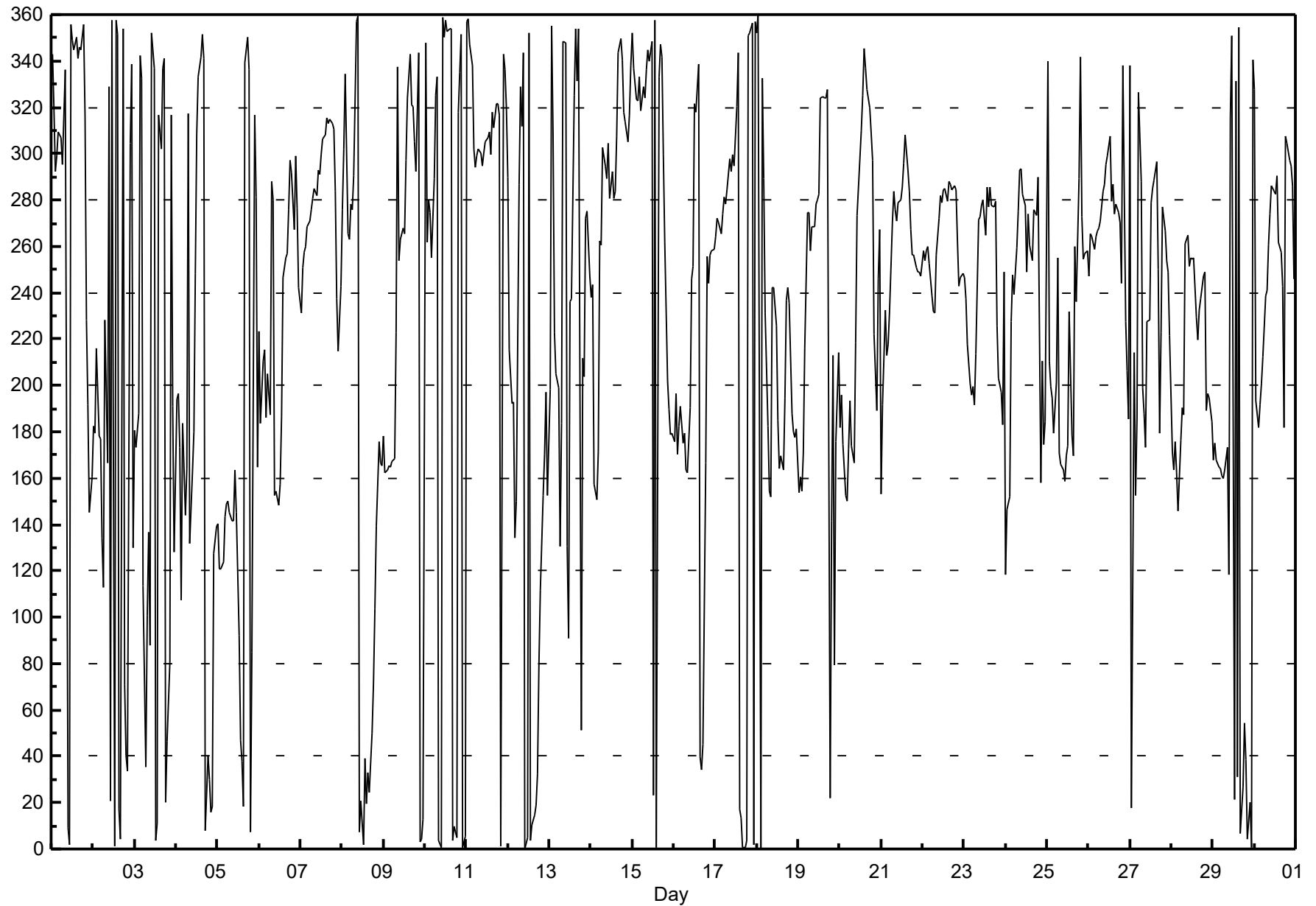
Valleyview - April 2020



Hourly Averages

Wind Direction (WD) - deg

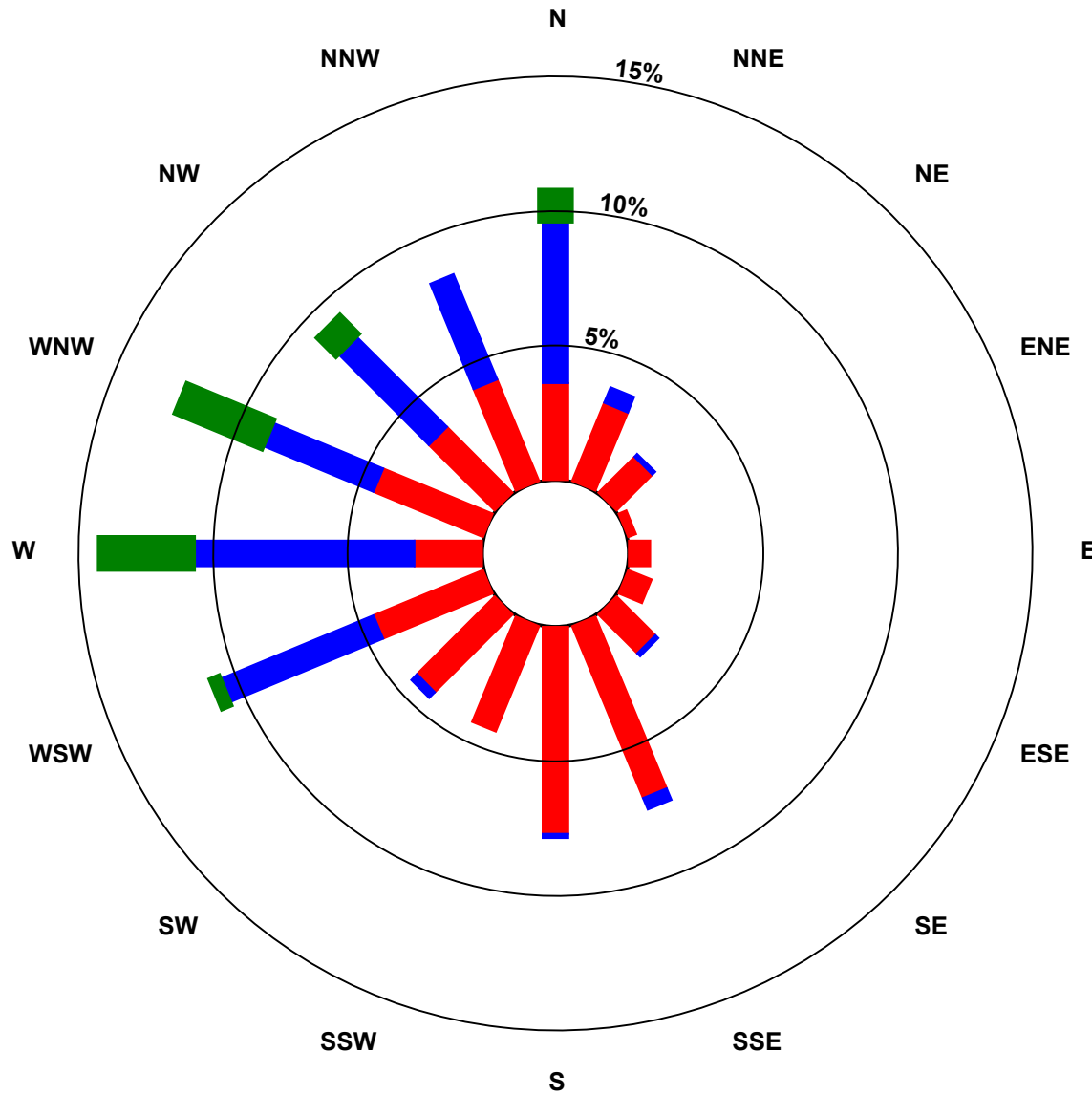
Valleyview - April 2020



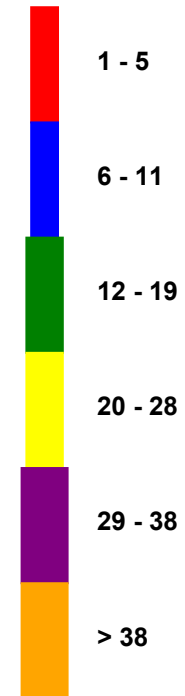
Wind Rose

Wind Speed (WS) (km/h)

Valleyview - April 2020



Wind Speed Classes (km/h)



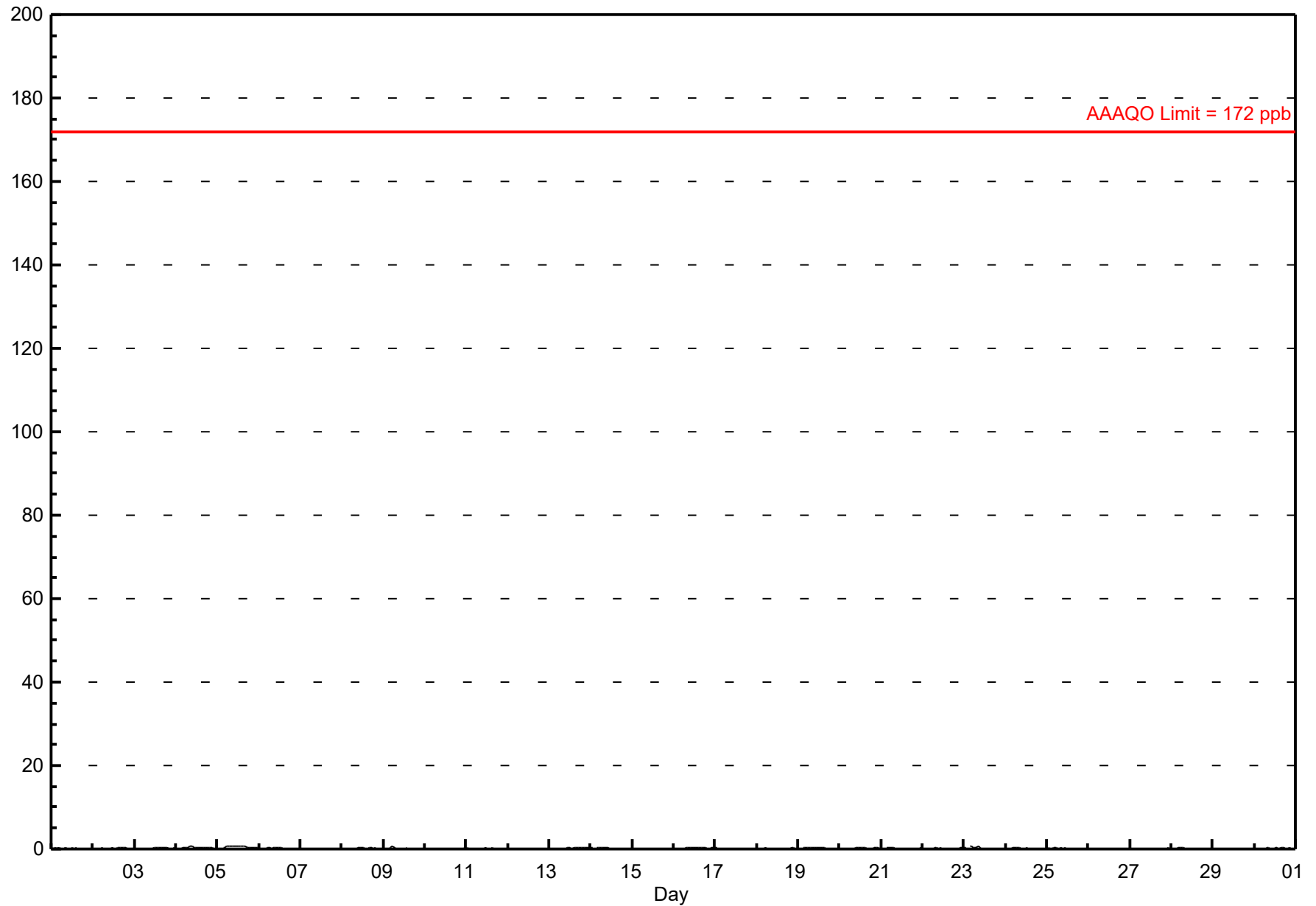
7 Donnelly Charts

The following pages include the charts and histograms for Donnelly Station

Hourly Averages

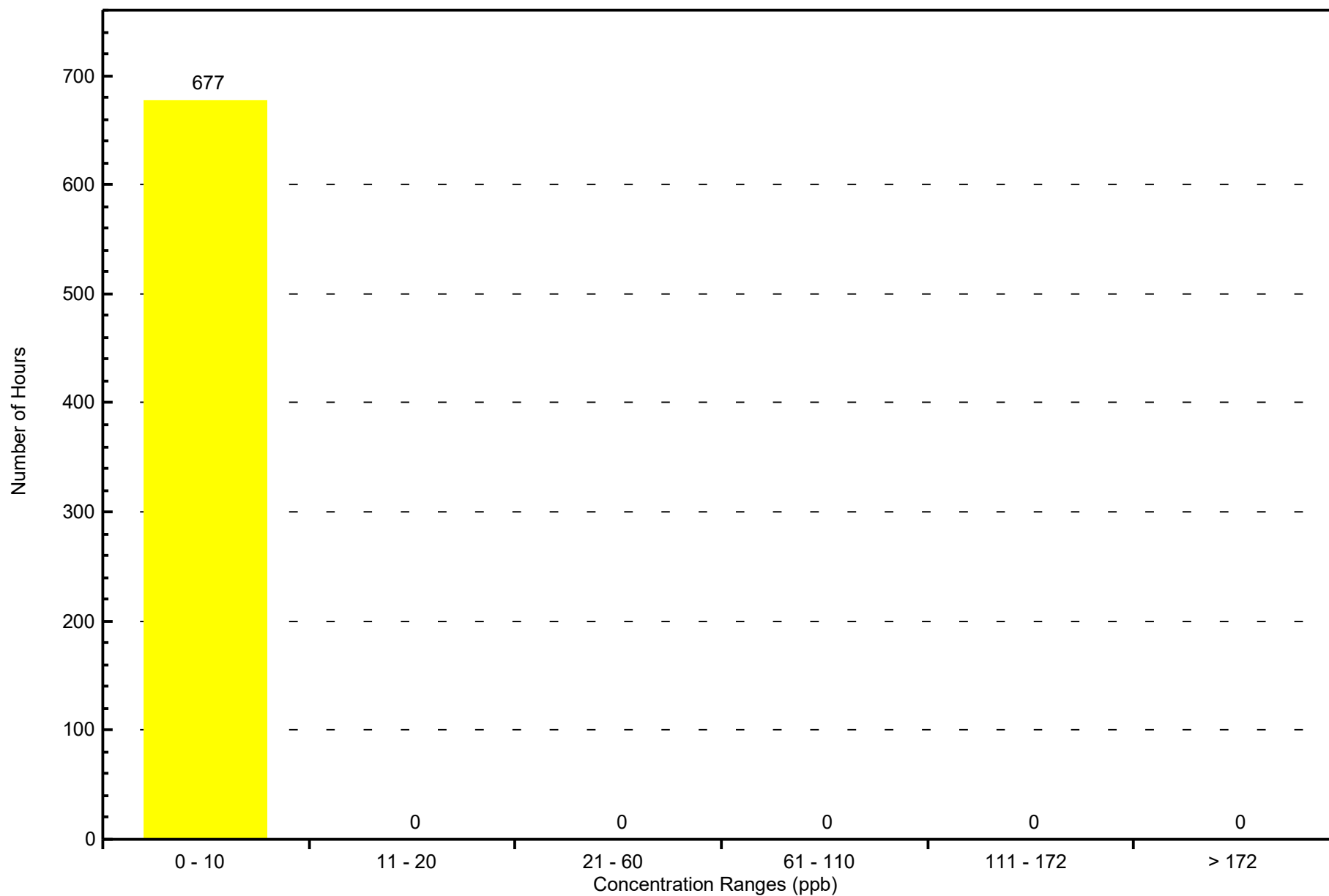
Sulphur Dioxide (SO₂) - ppb

Donnelly - April 2020



Histogram of Hourly Averages

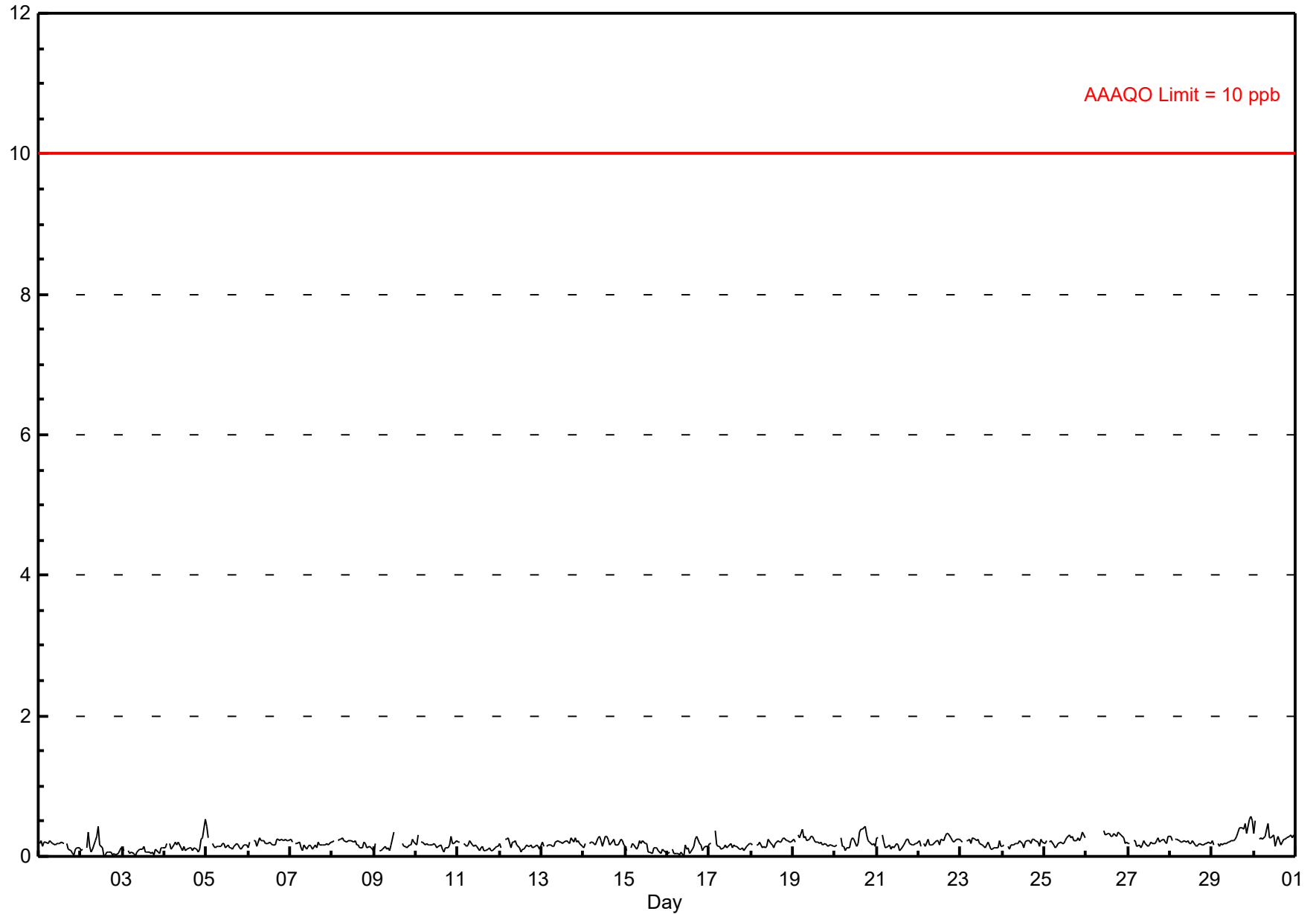
Sulphur Dioxide (SO₂) - ppb
Donnelly - April 2020



Hourly Averages

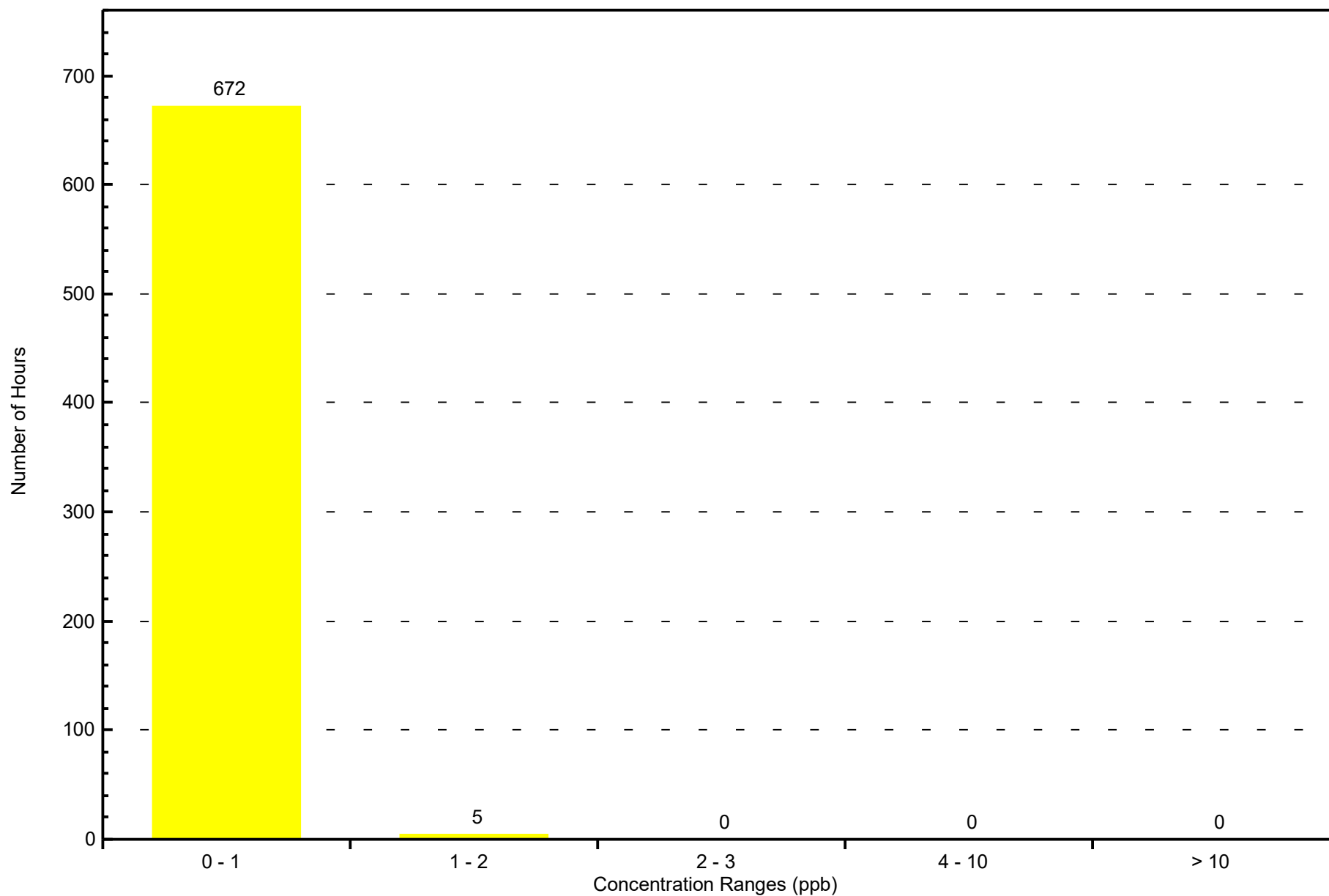
Hydrogen Sulphide (H₂S) - ppb

Donnelly - April 2020



Histogram of Hourly Averages

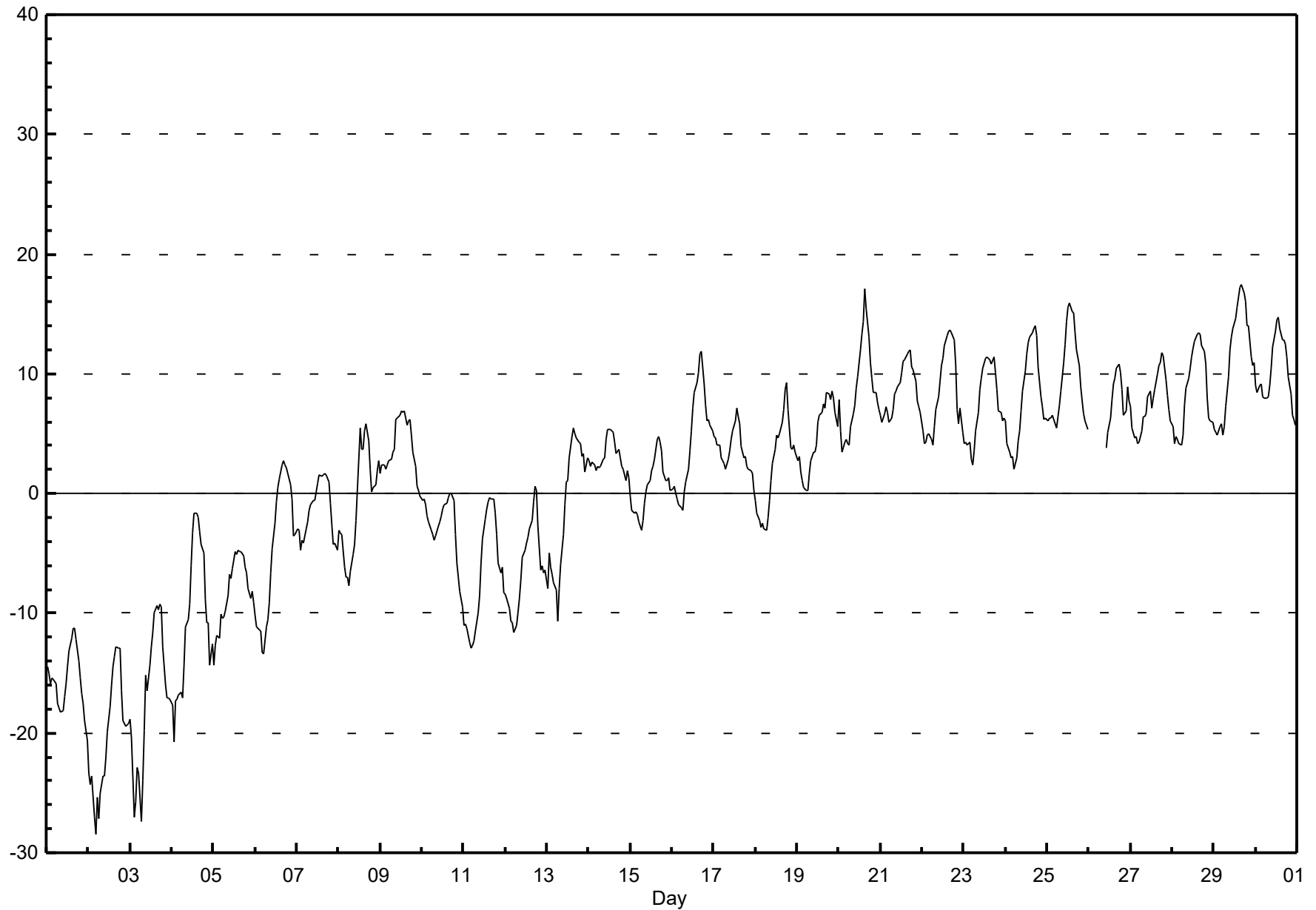
Hydrogen Sulphide (H₂S) - ppb
Donnelly - April 2020



Hourly Averages

External Temperature (ET) - °C

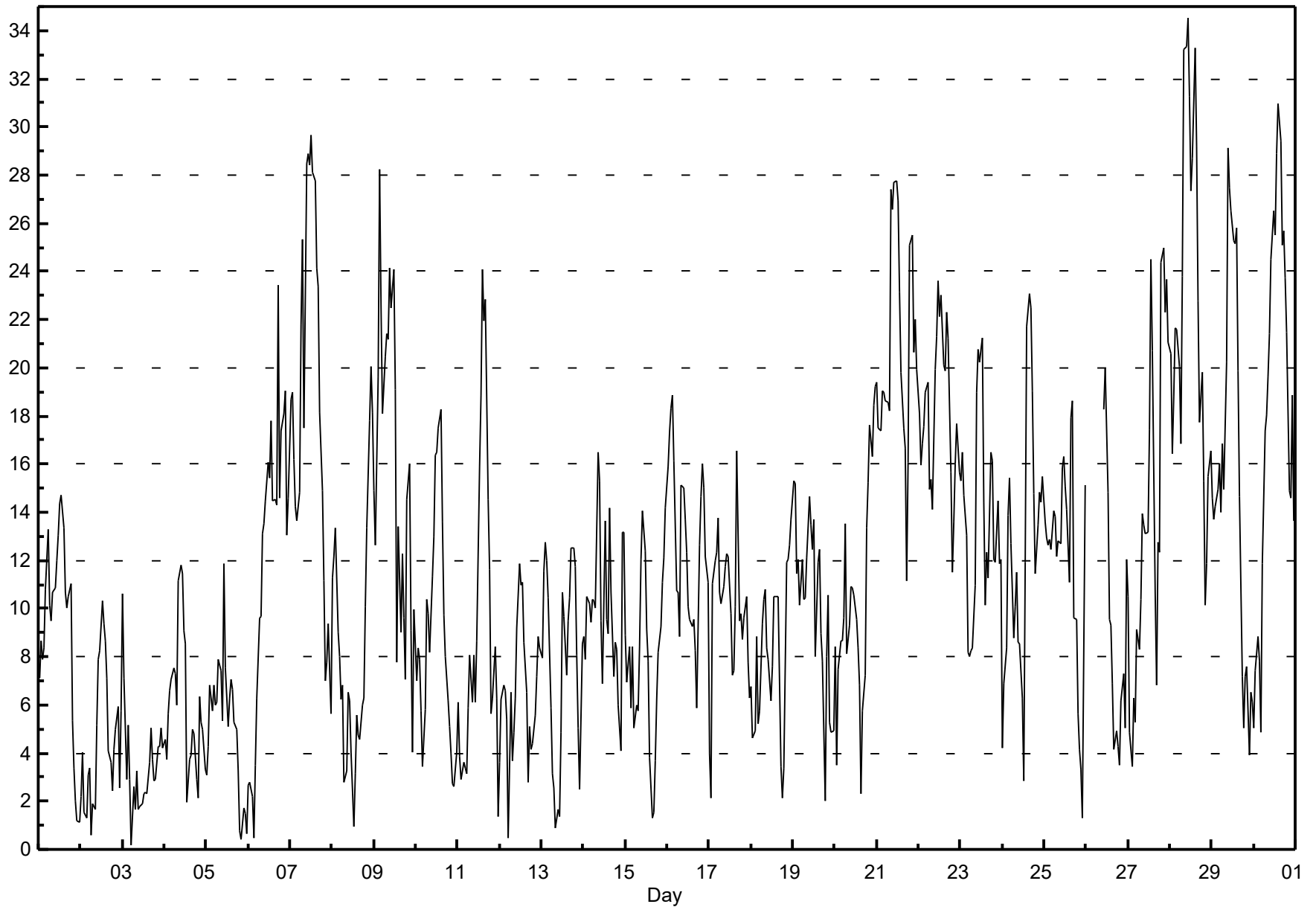
Donnelly - April 2020



Hourly Averages

Wind Speed (WS) - km/h

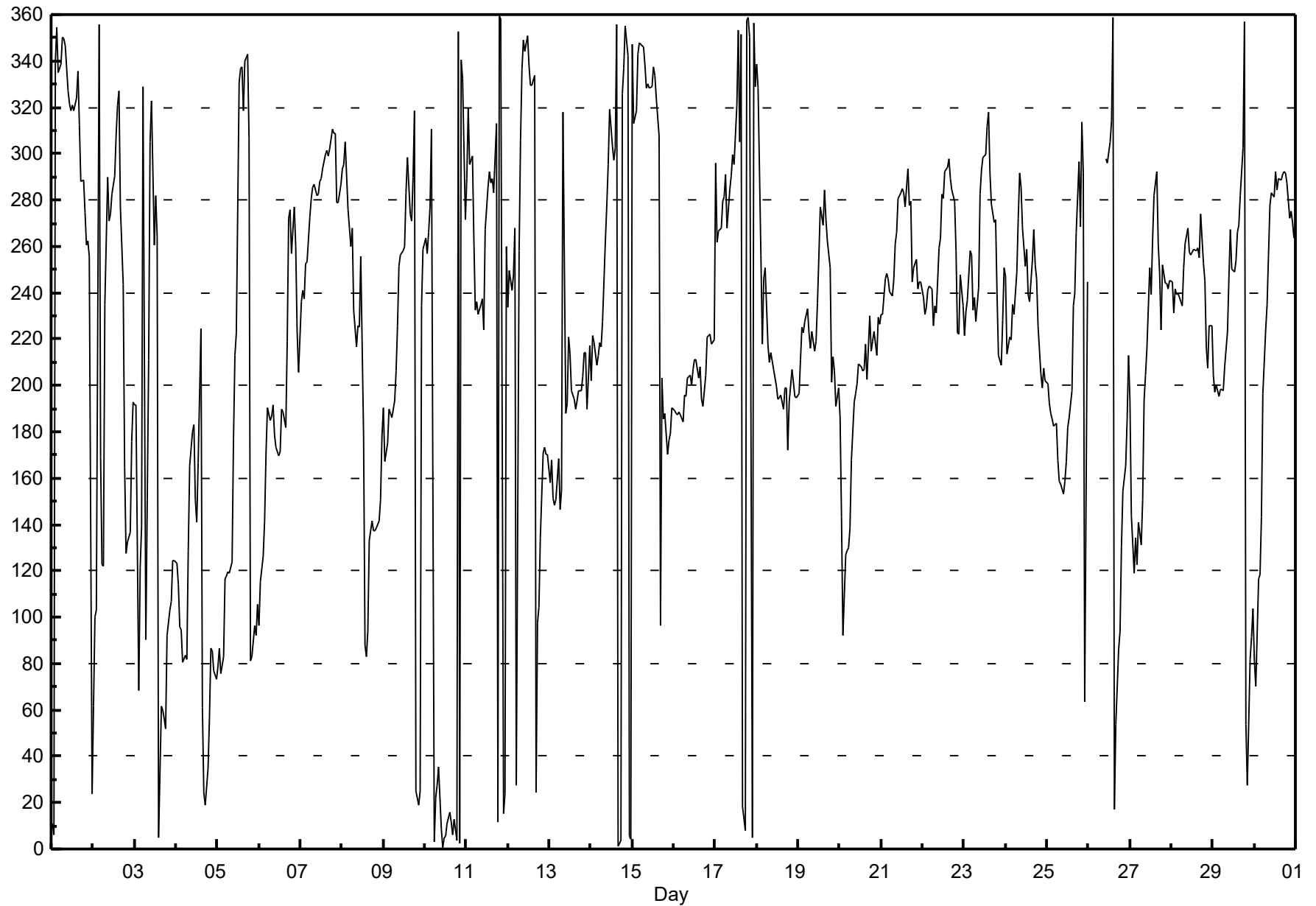
Donnelly - April 2020



Hourly Averages

Wind Direction (WD) - deg

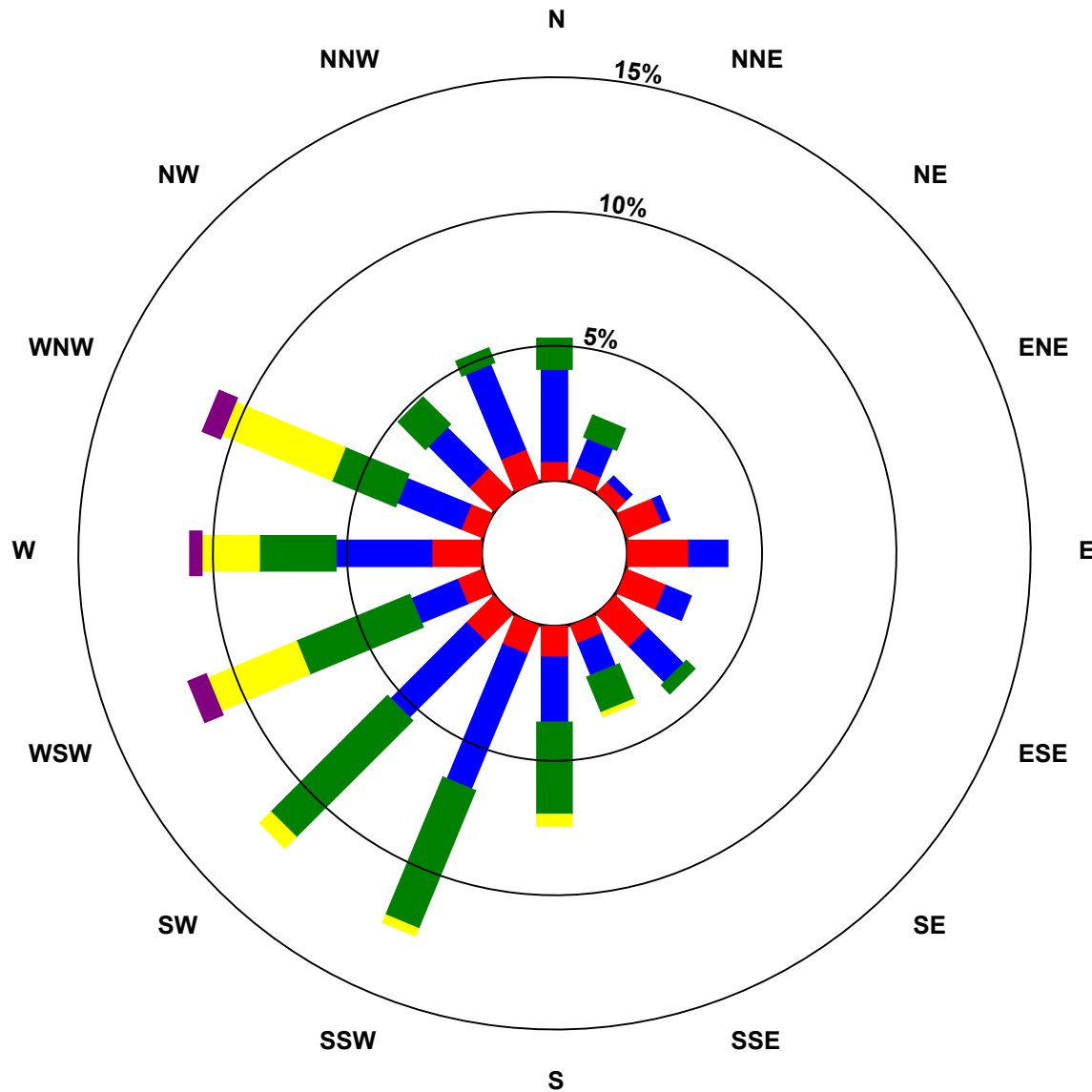
Donnelly - April 2020



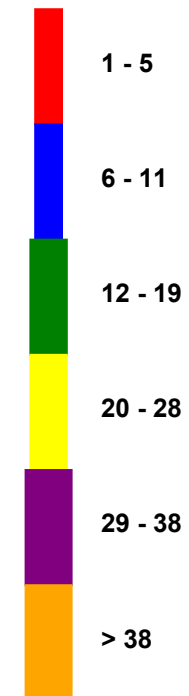
Wind Rose

Wind Speed (WS) (km/h)

Donnelly - April 2020



Wind Speed Classes (km/h)



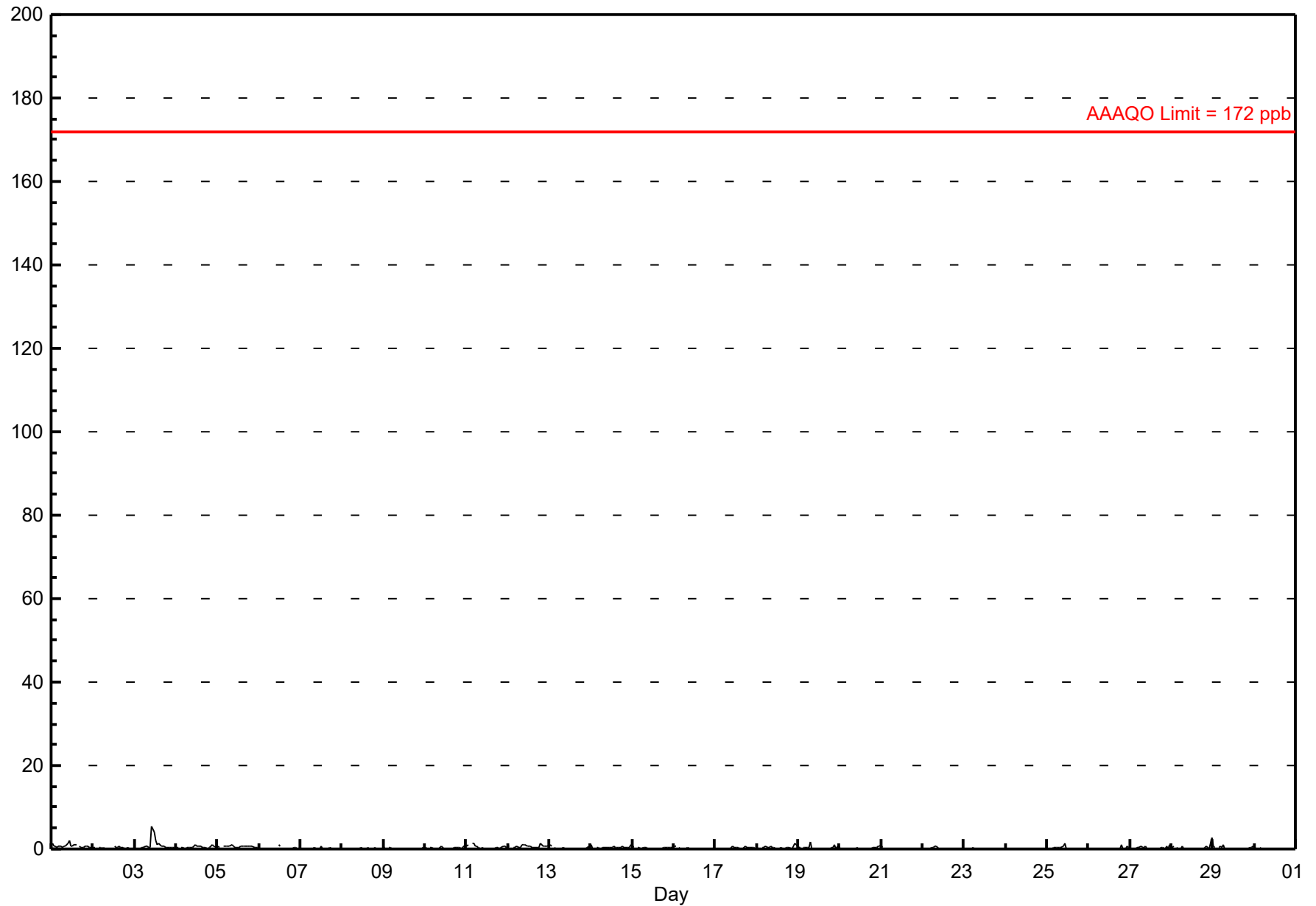
8 Wembley (Portable) Charts

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

Hourly Averages

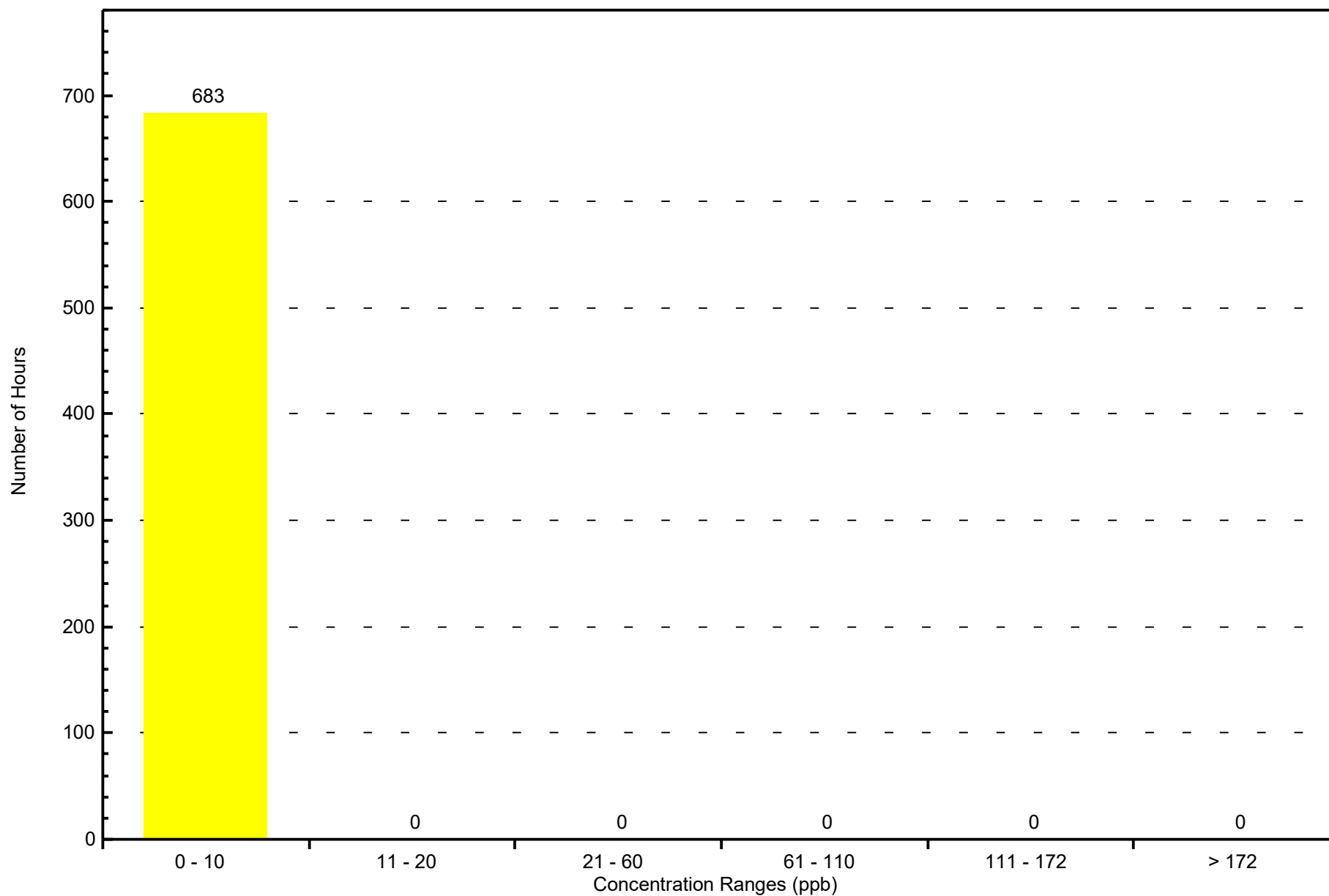
Sulphur Dioxide (SO₂) - ppb

Wembley - April 2020



Histogram of Hourly Averages

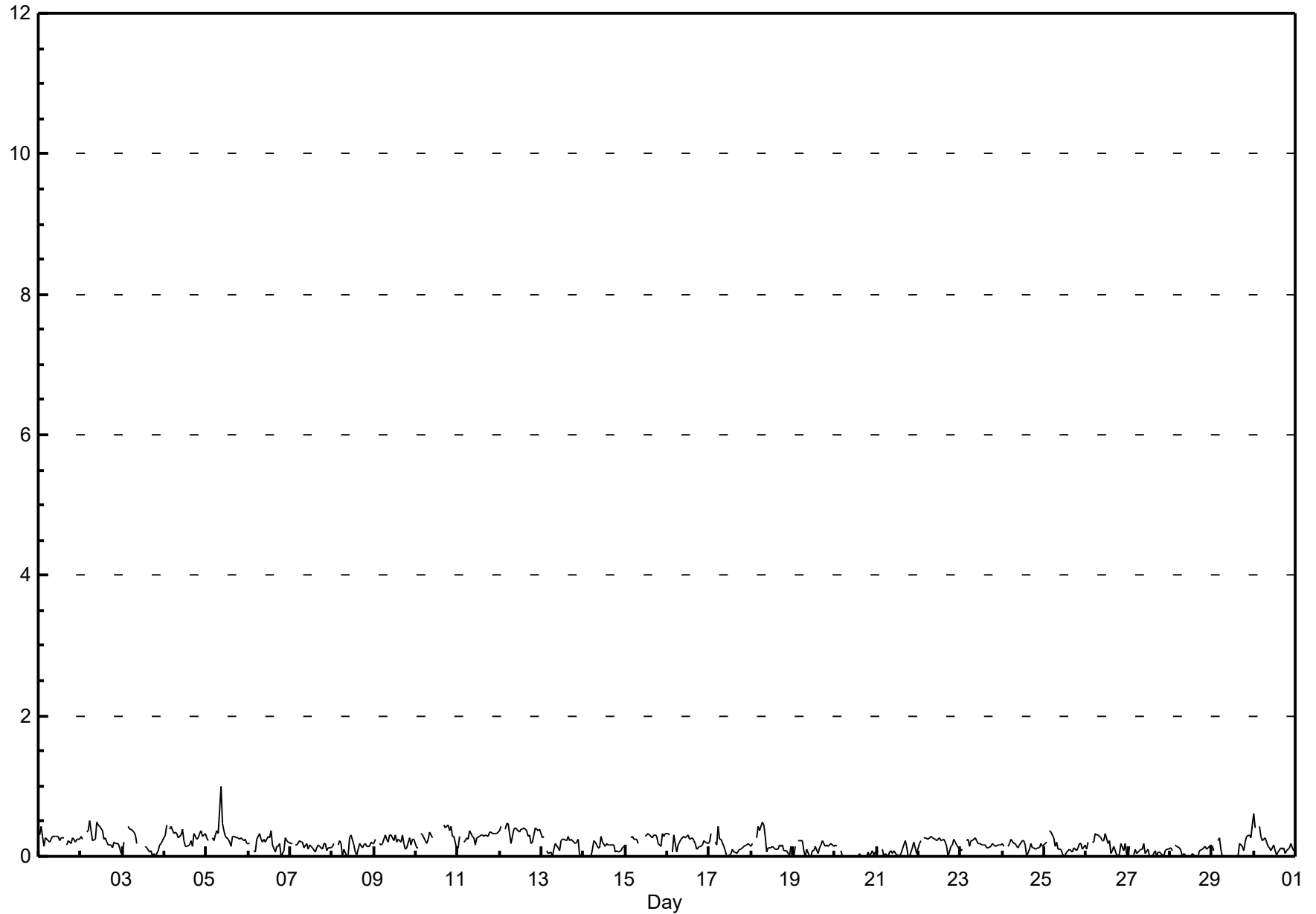
Sulphur Dioxide (SO₂) - ppb
Wembley - April 2020



Hourly Averages

Total Reduced Sulphur (TRS) - ppb

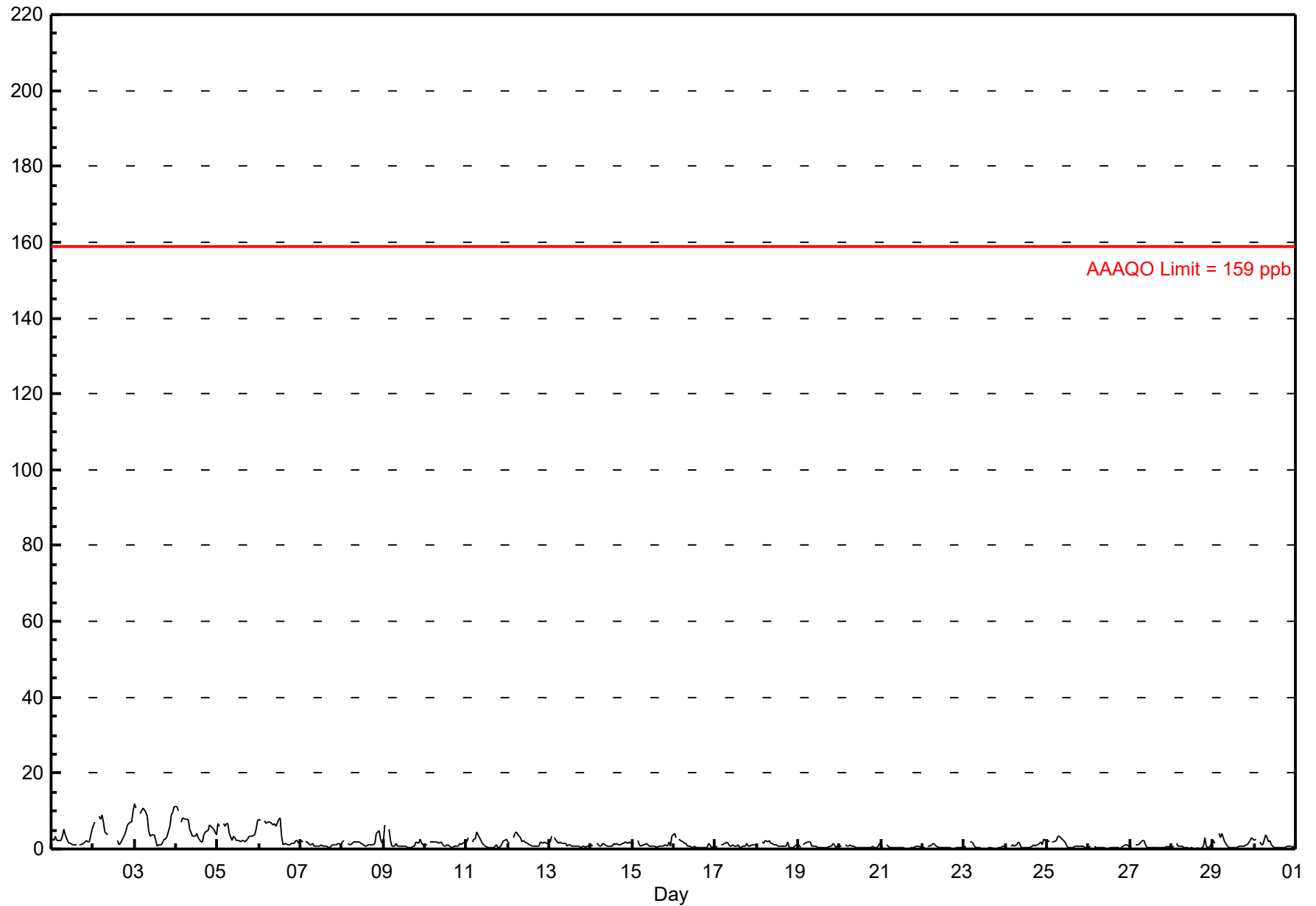
Wembley - April 2020



Hourly Averages

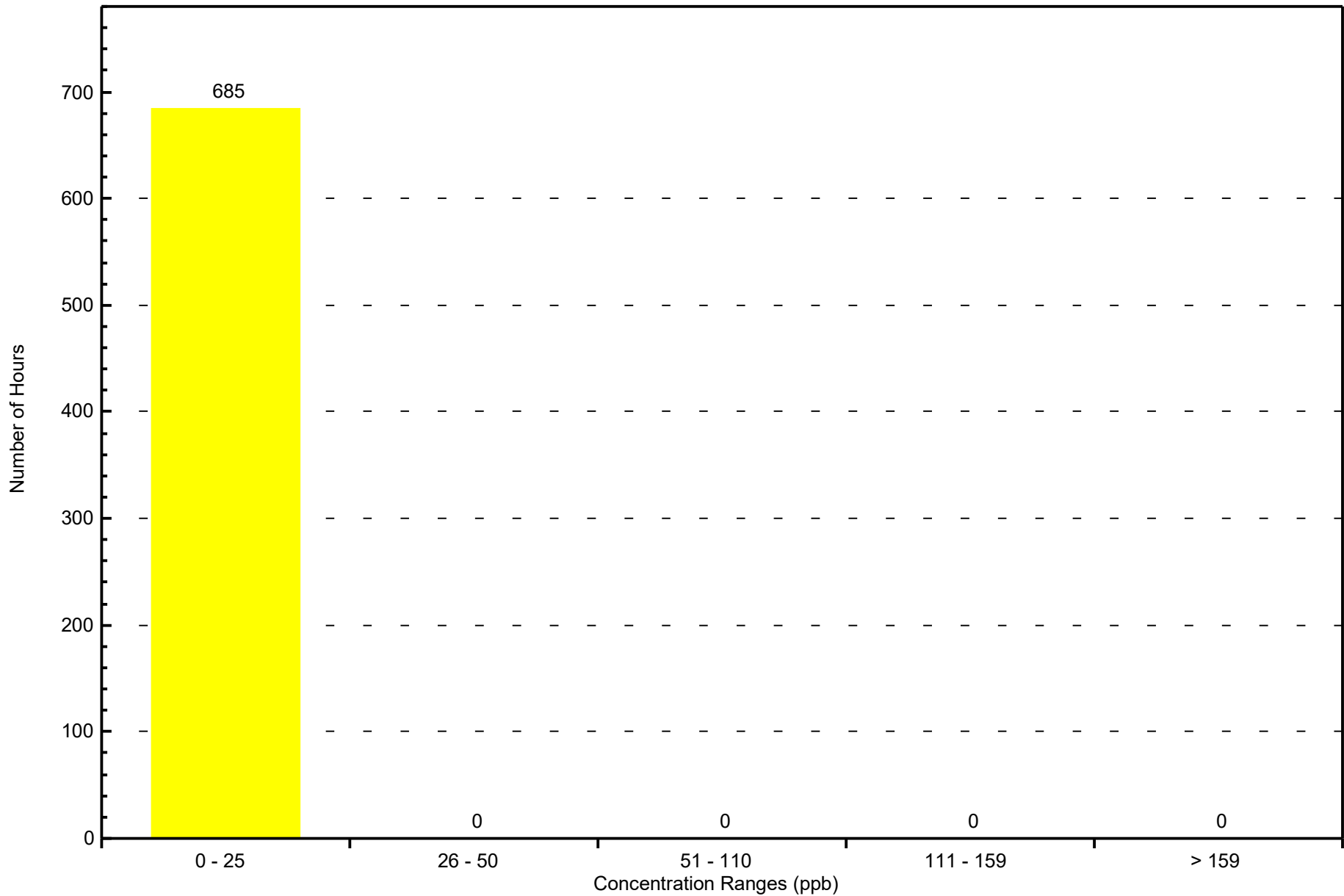
Nitrogen Dioxide (NO₂) - ppb

Wembley - April 2020



Histogram of Hourly Averages

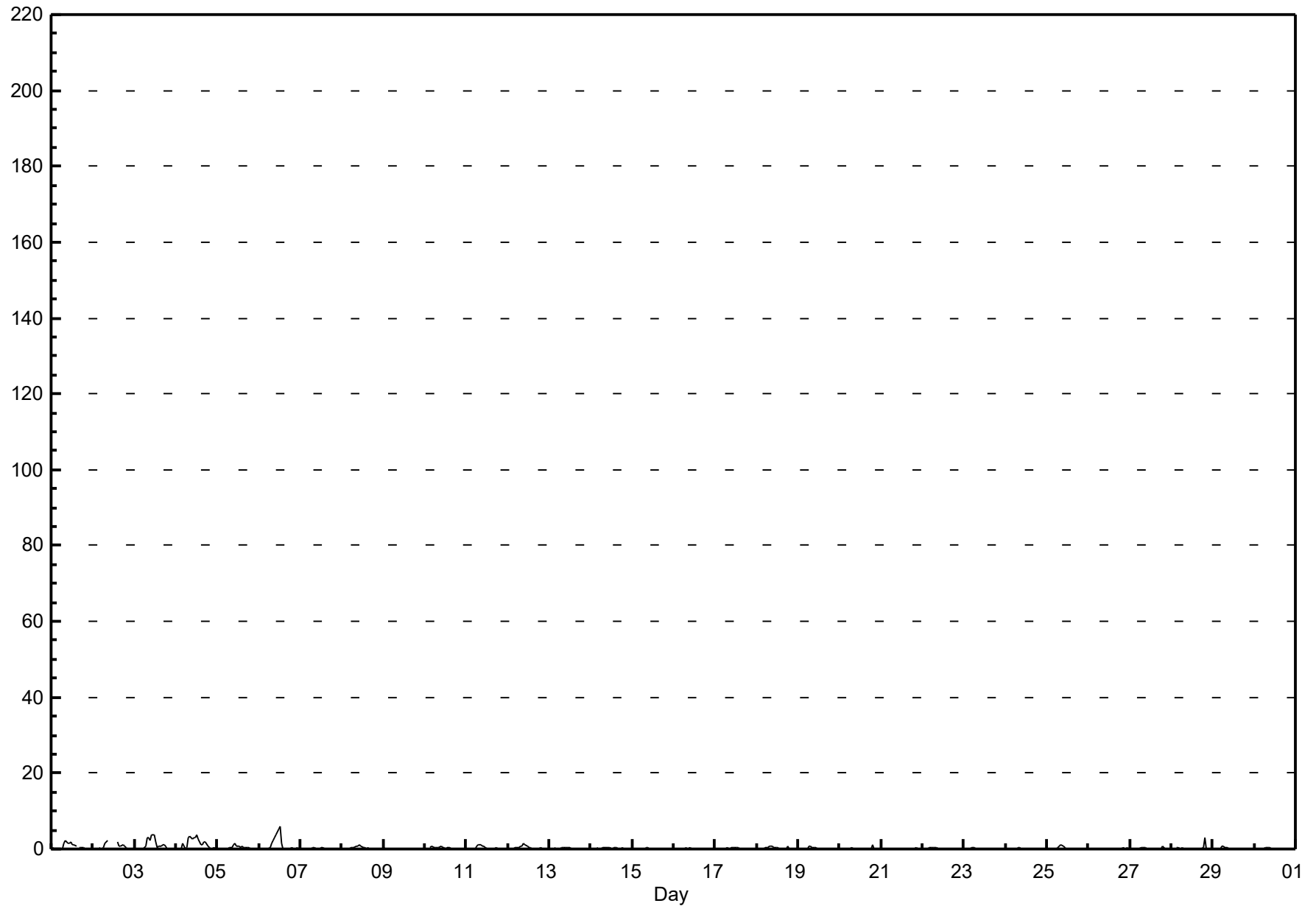
Nitrogen Dioxide (NO₂) - ppb
Wembley - April 2020



Hourly Averages

Nitrogen Oxide (NO) - ppb

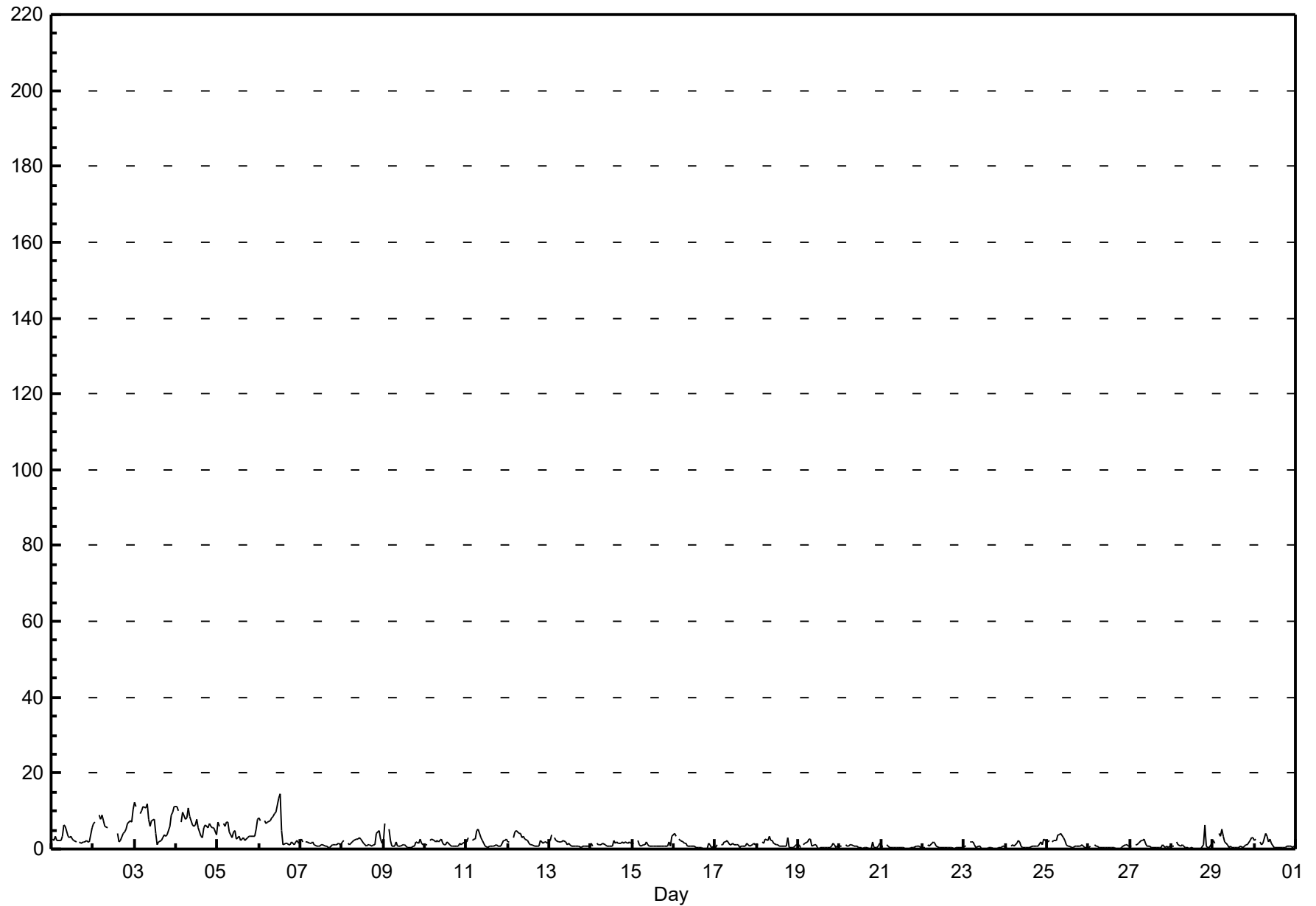
Wembley - April 2020



Hourly Averages

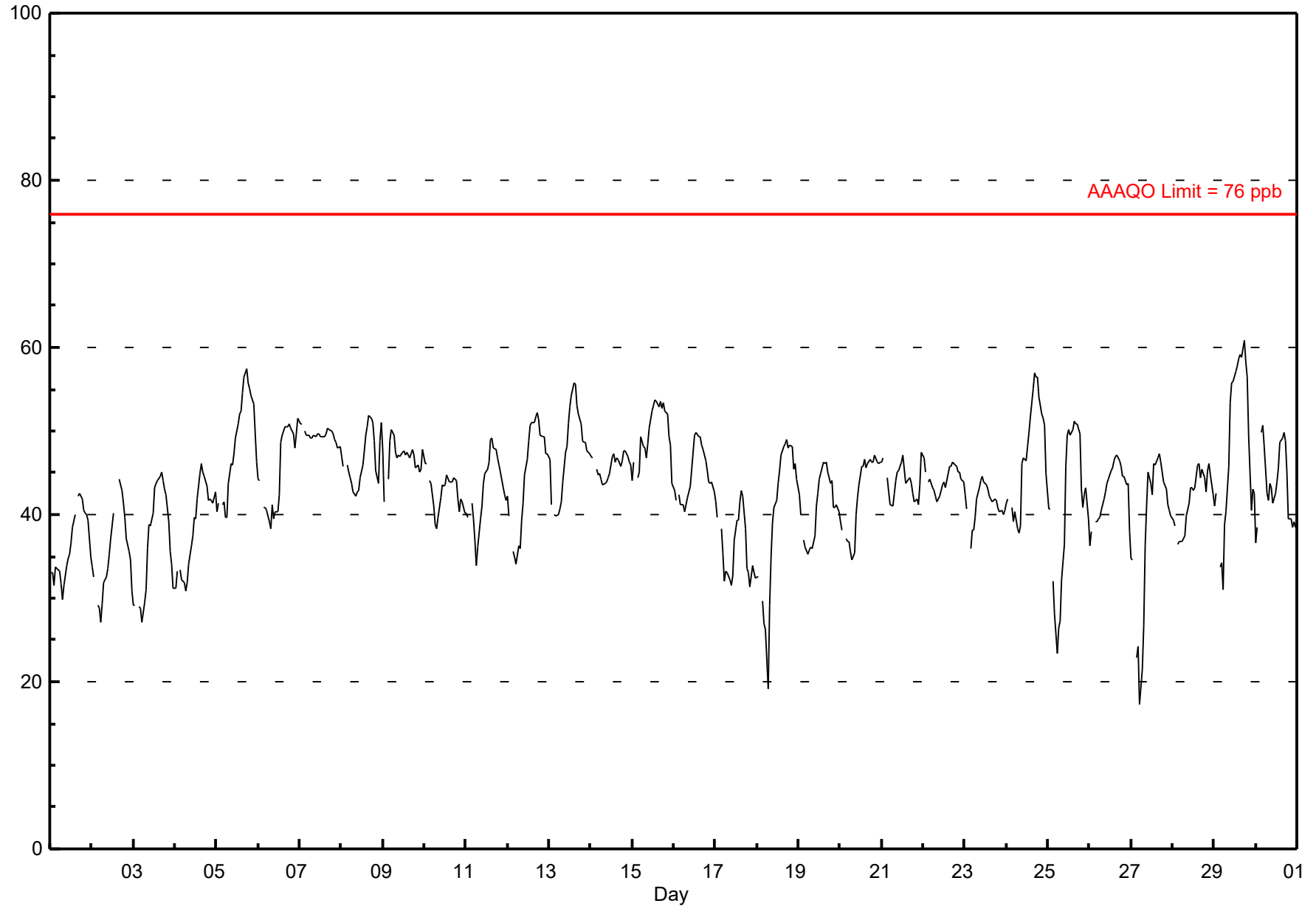
Oxides of Nitrogen (NO_x) - ppb

Wembley - April 2020



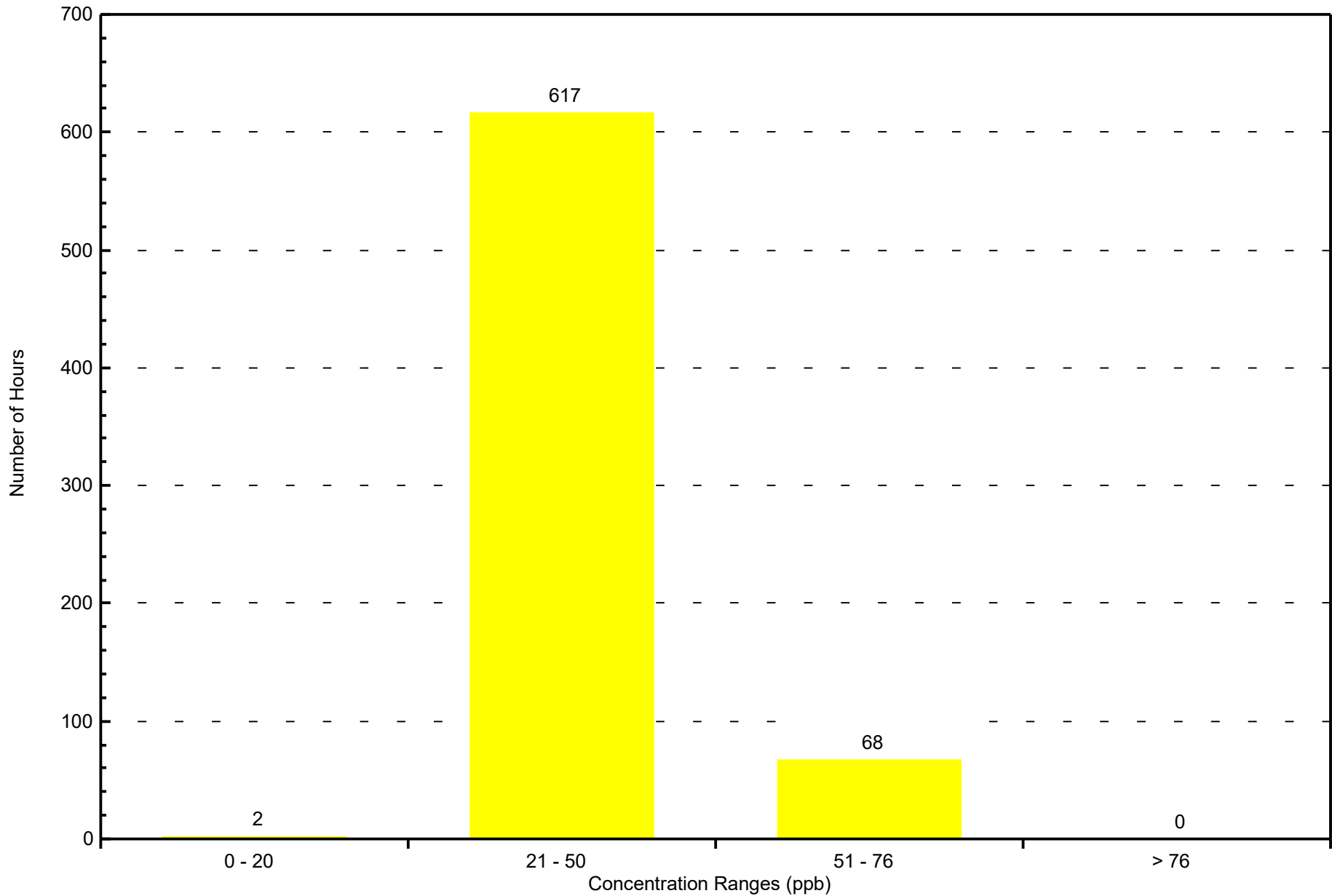
Hourly Averages

Ozone (O₃) - ppb
Wembley - April 2020



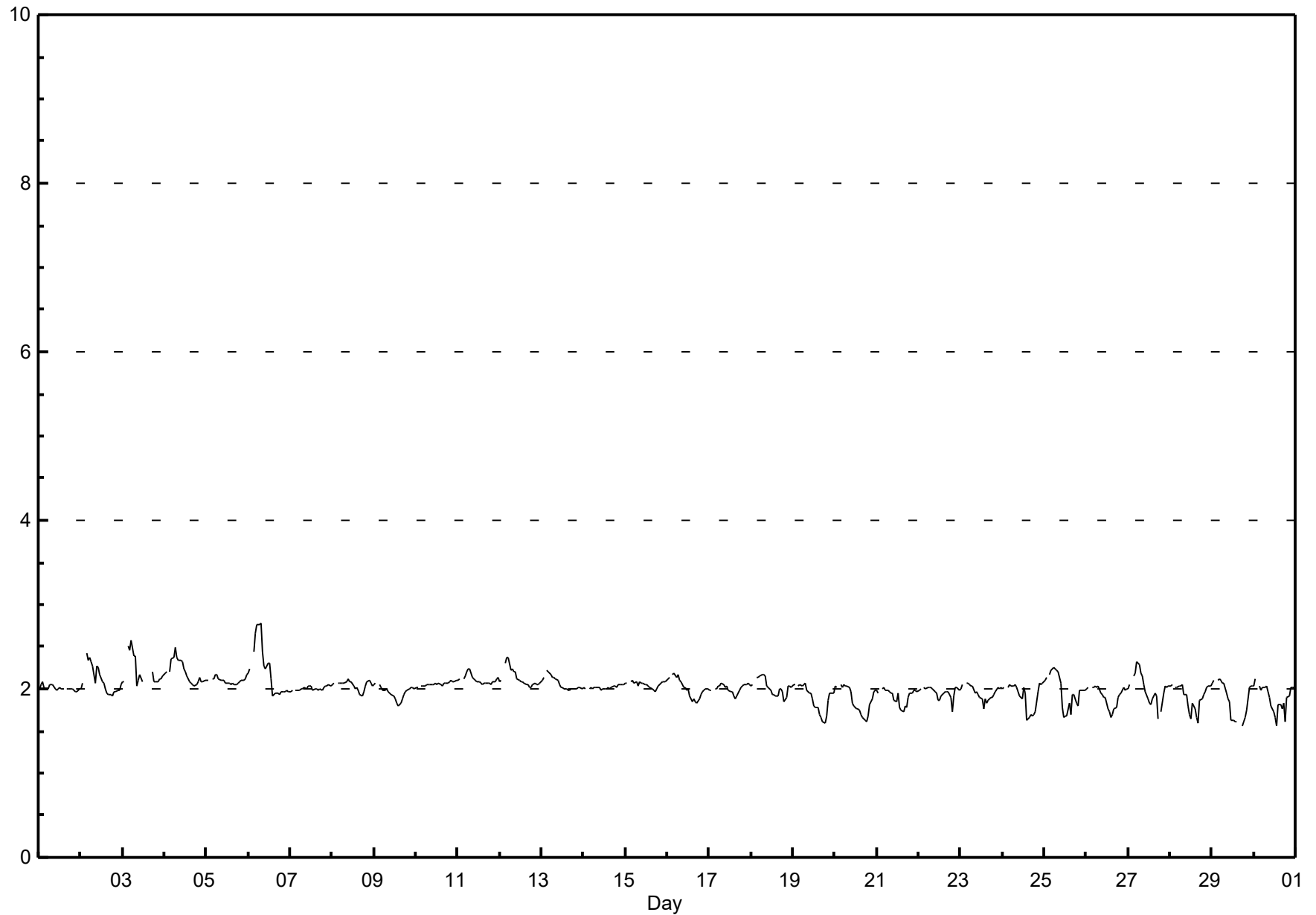
Histogram of Hourly Averages

Ozone (O₃) - ppb
Wembley - April 2020



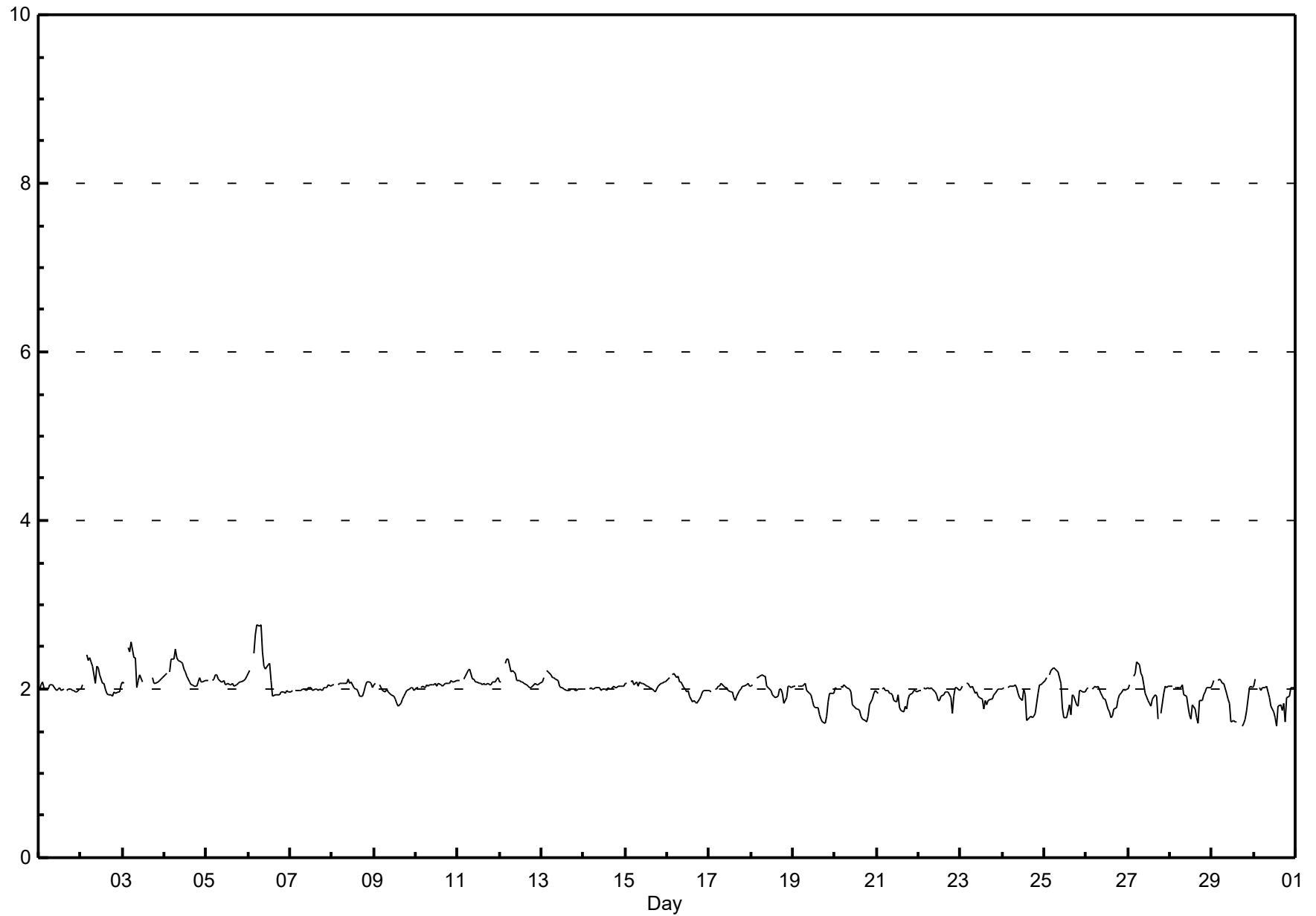
Hourly Averages

Total Hydrocarbons (THC) - ppm
Wembley - April 2020



Hourly Averages

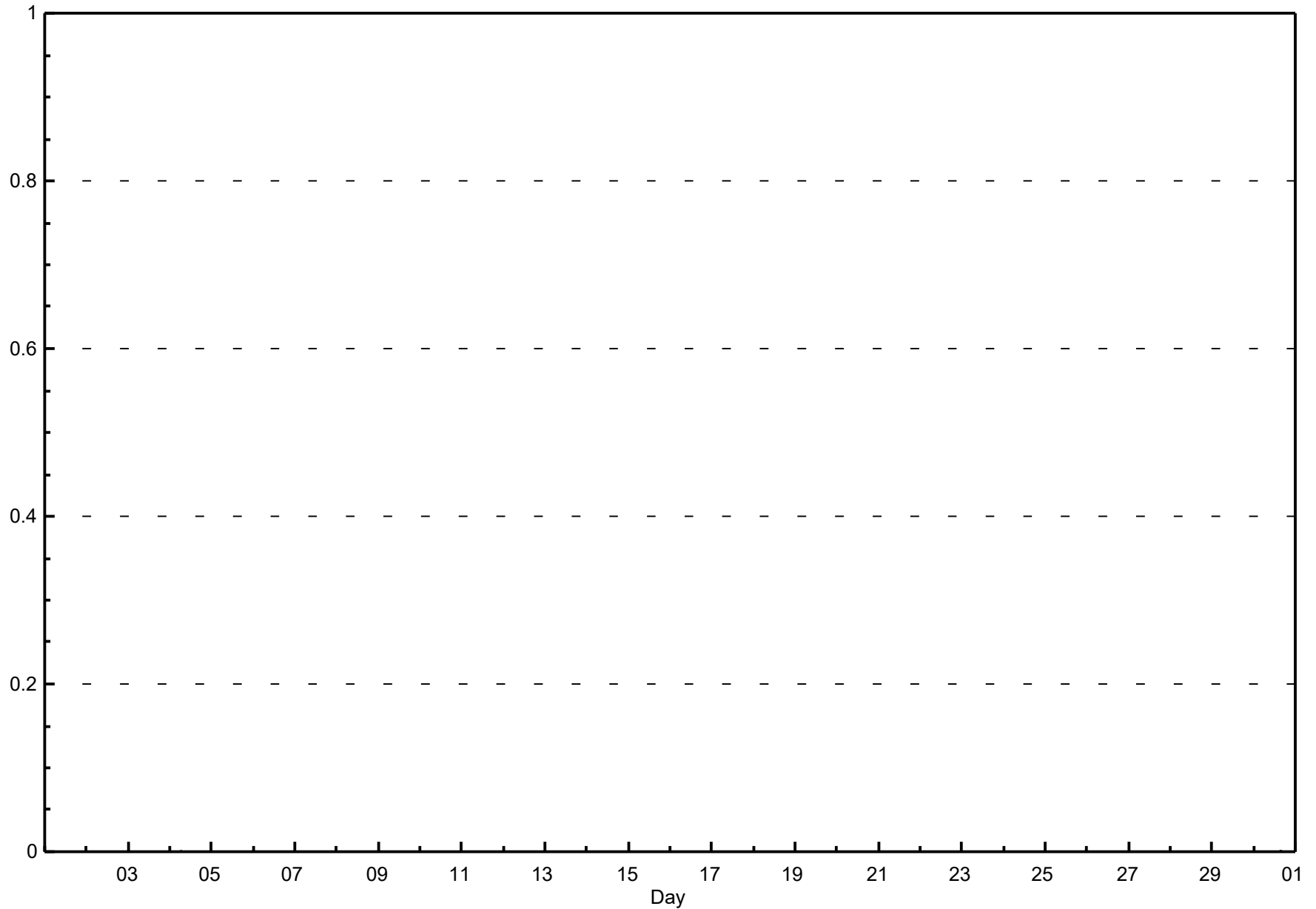
Methane (CH₄) - ppm
Wembley - April 2020



Hourly Averages

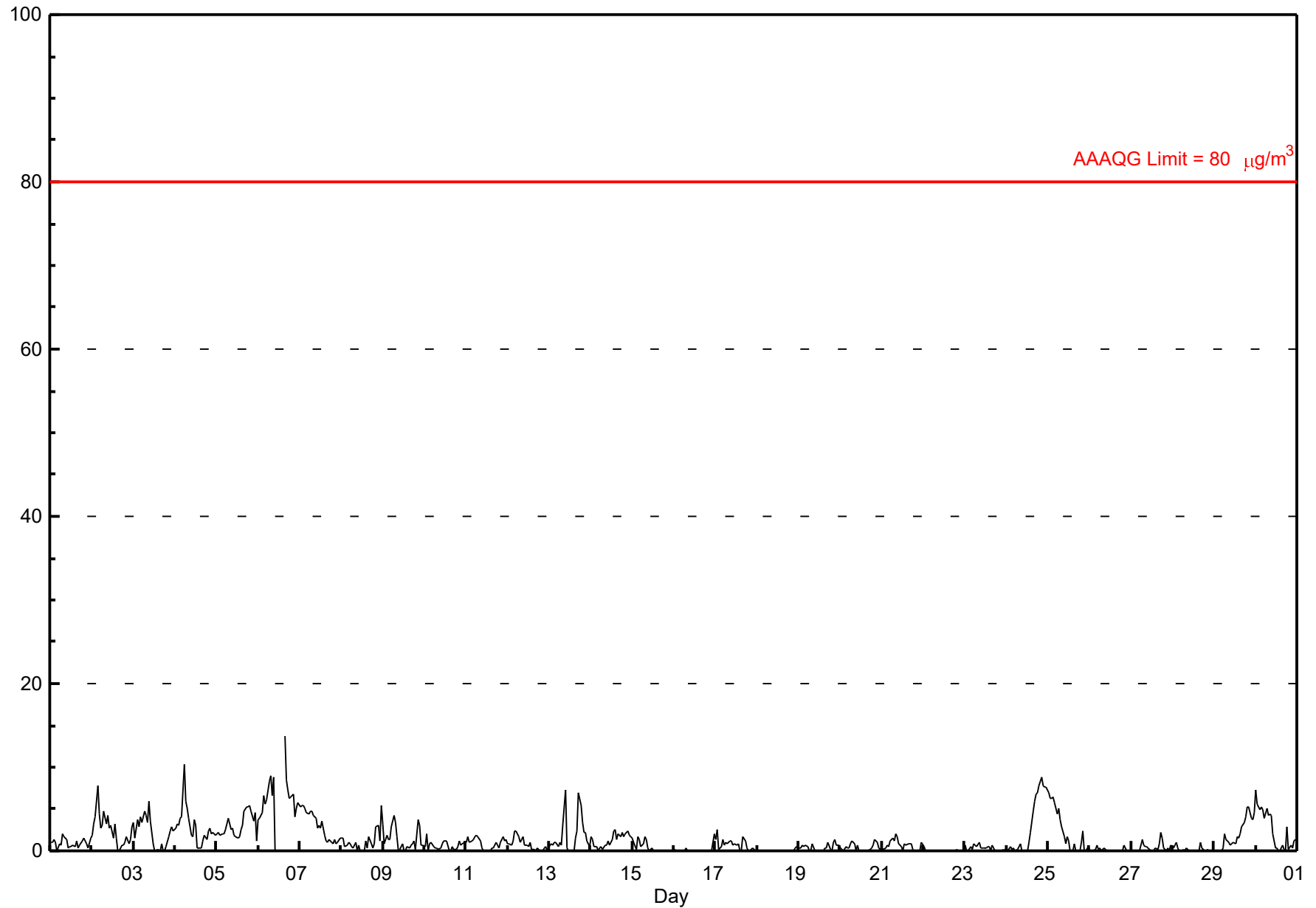
Non Methane Hydrocarbon (NMHC) - ppm

Wembley - April 2020



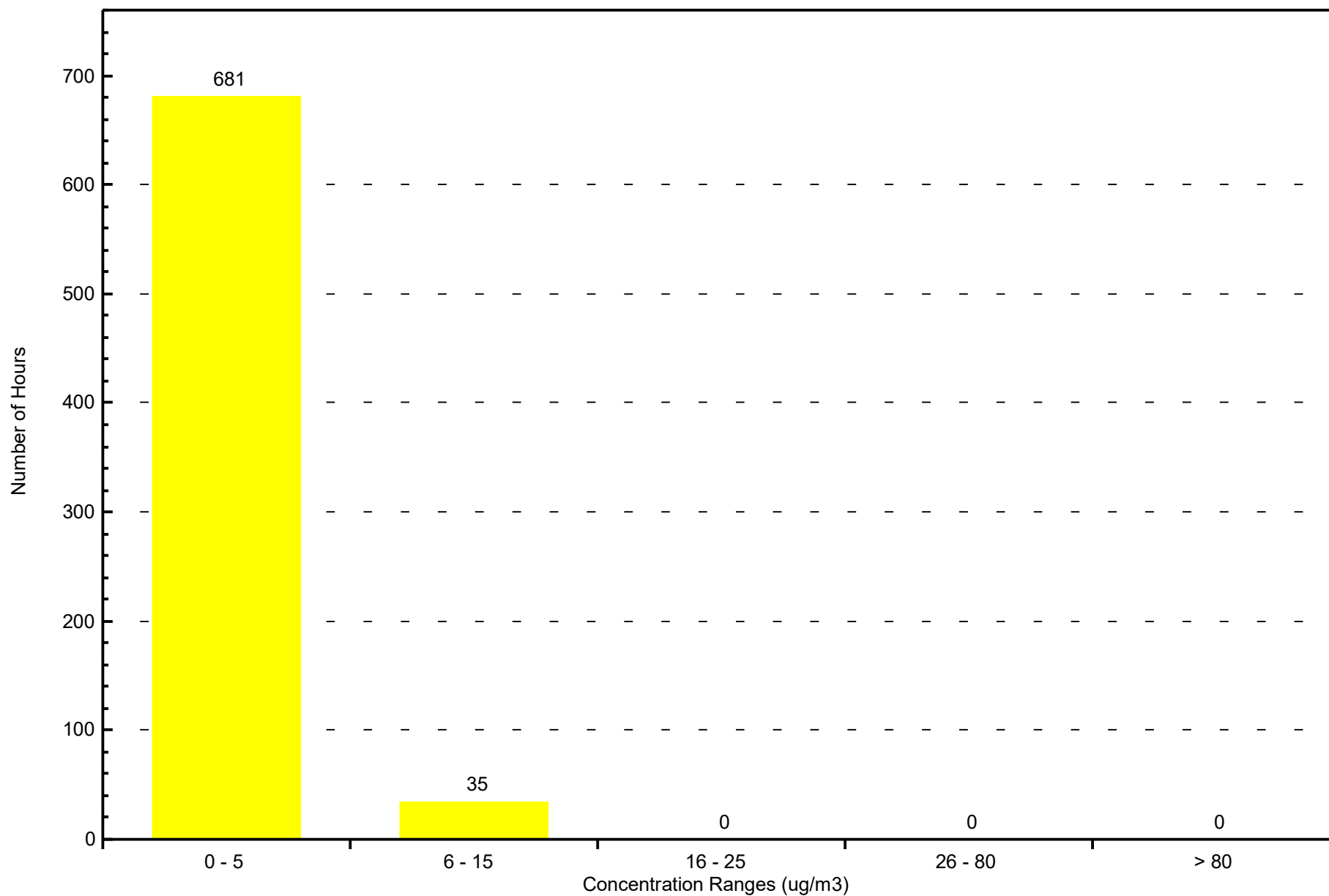
Hourly Averages

PM_{2.5} (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wembley - April 2020



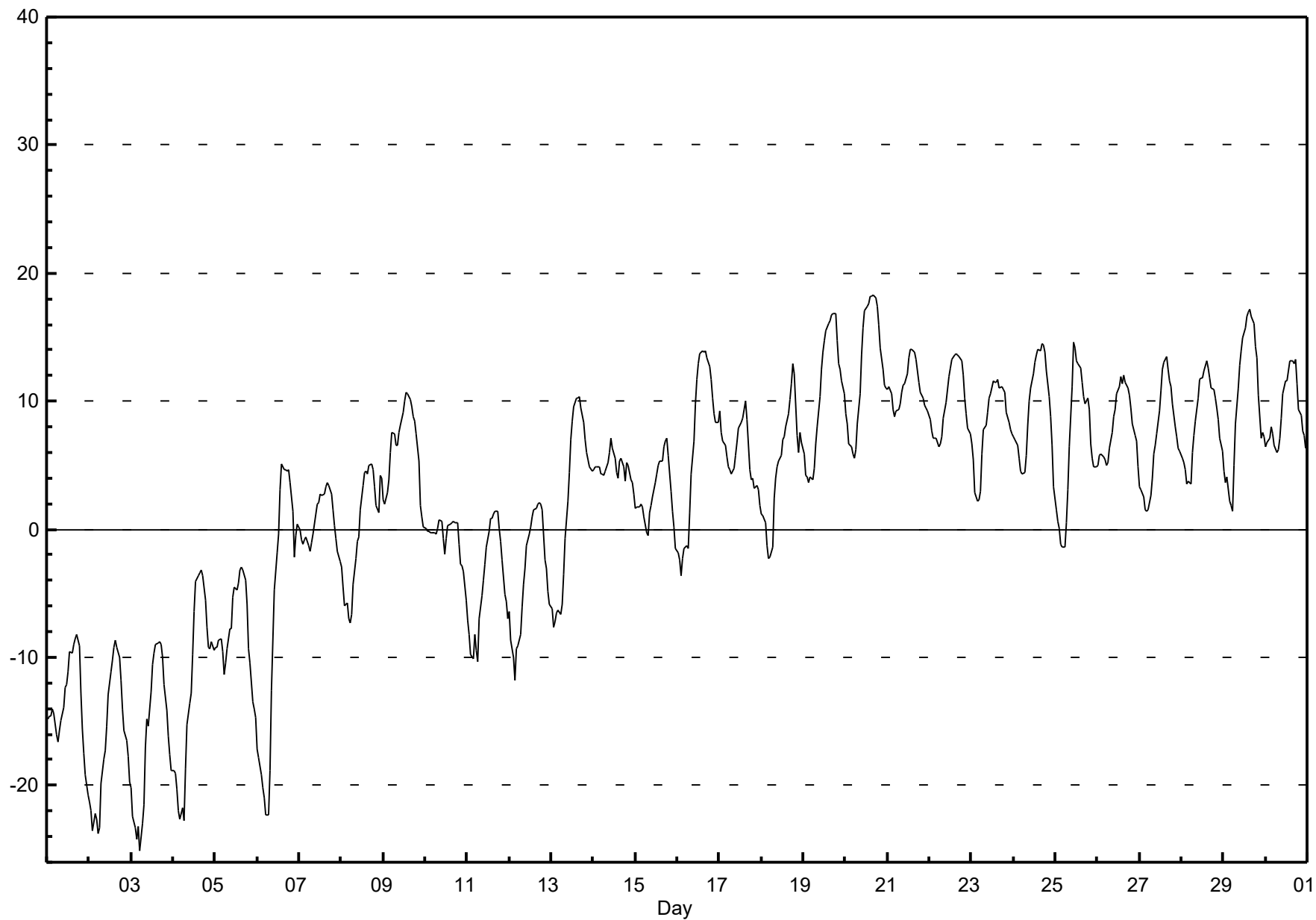
Histogram of Hourly Averages

PM_{2.5} (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wembley - April 2020



Hourly Averages

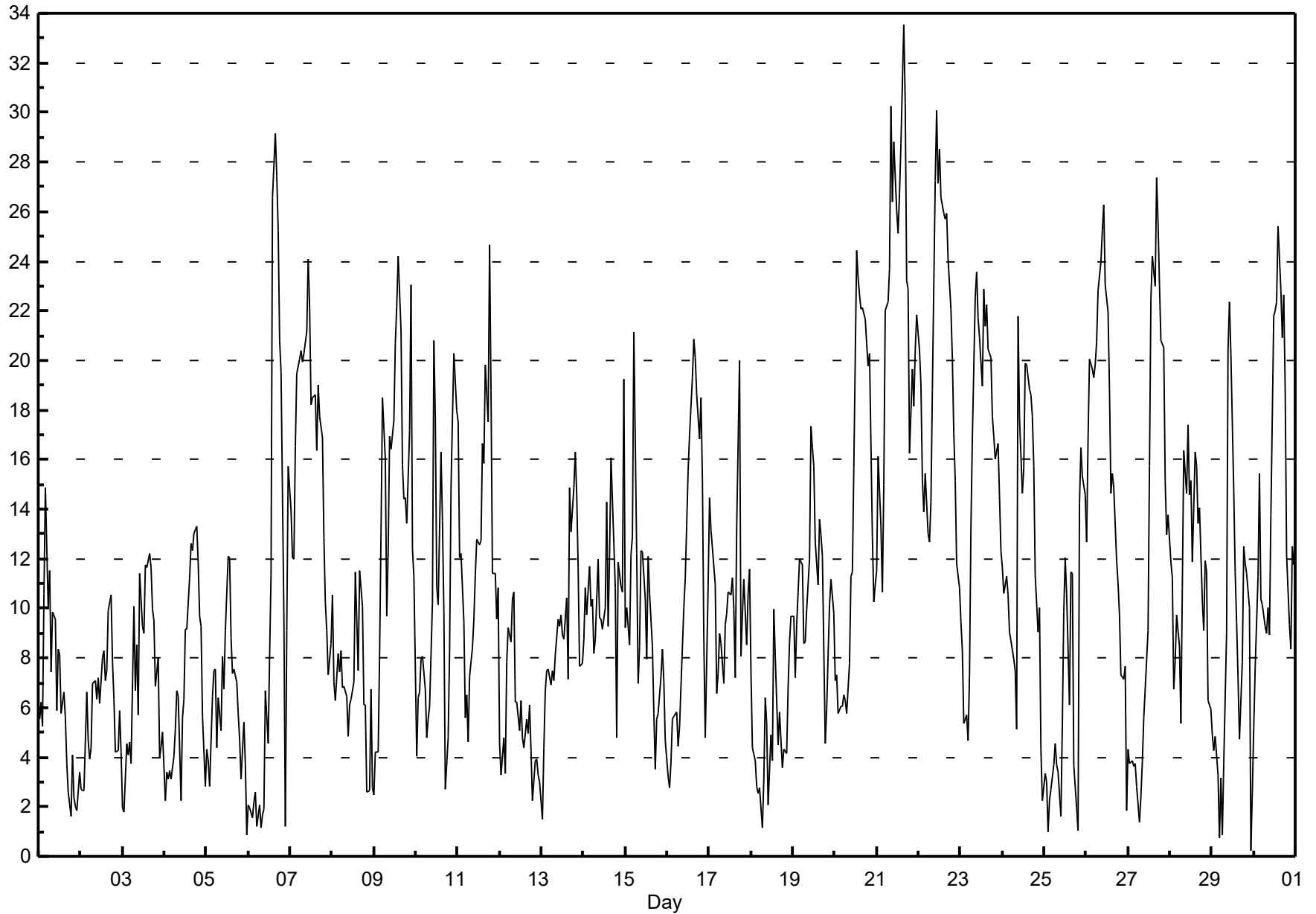
External Temperature (ET) - °C
Wembley - April 2020



Hourly Averages

Wind Speed (WS) - km/h

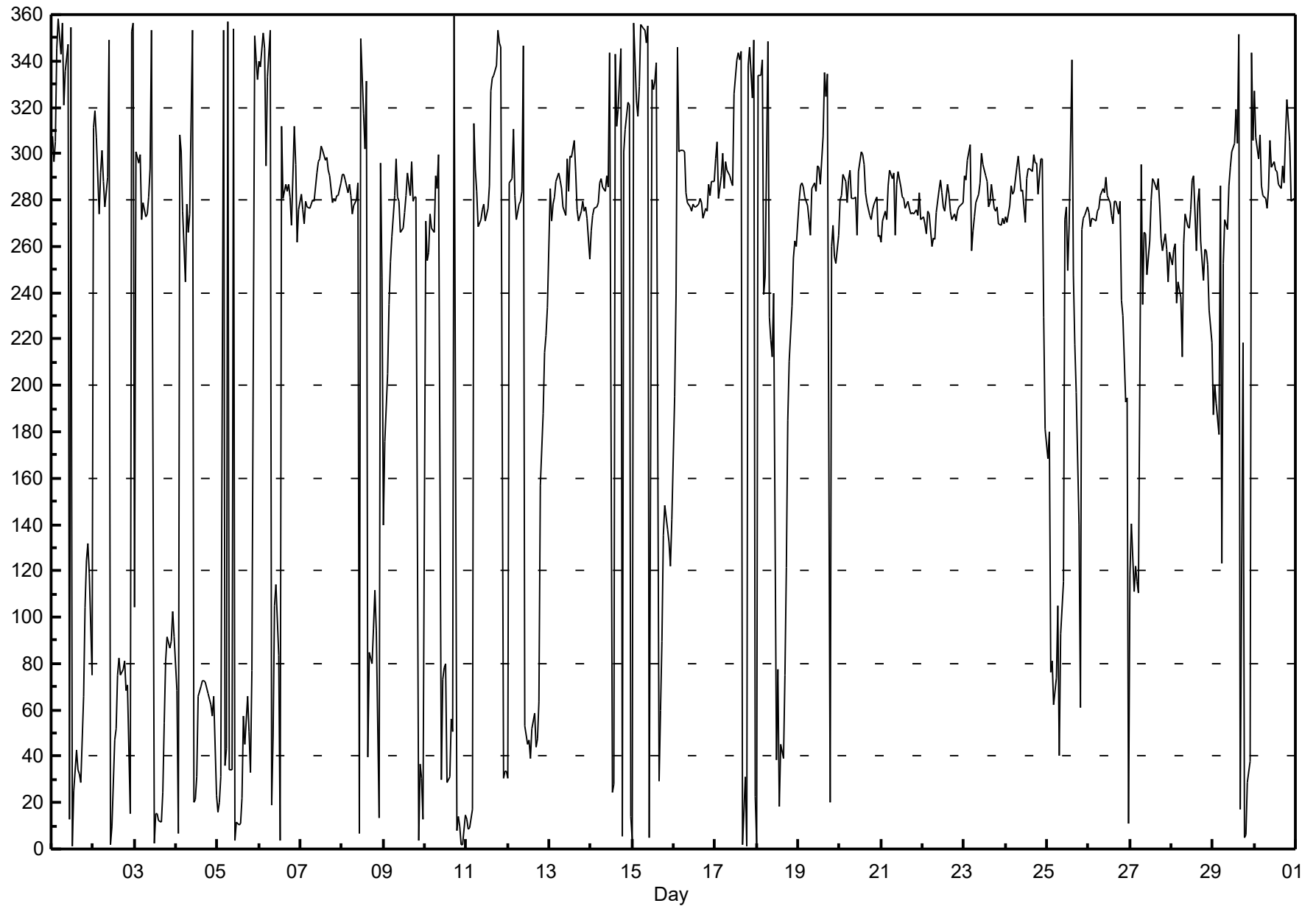
Wembley - April 2020



Hourly Averages

Wind Direction (WD) - deg

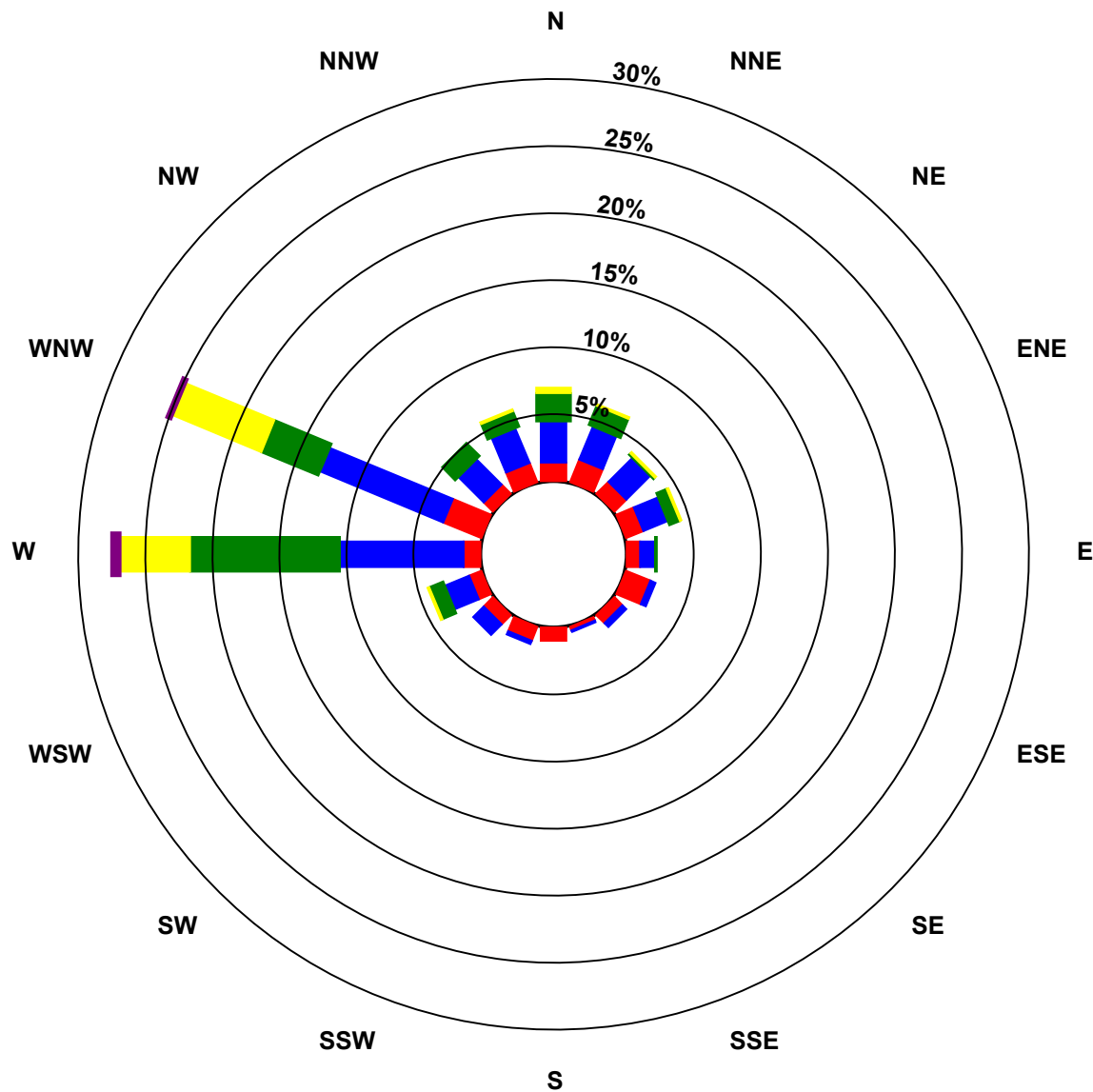
Wembley - April 2020



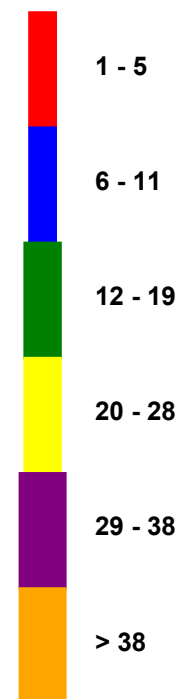
Wind Rose

Wind Speed (WS) (km/h)

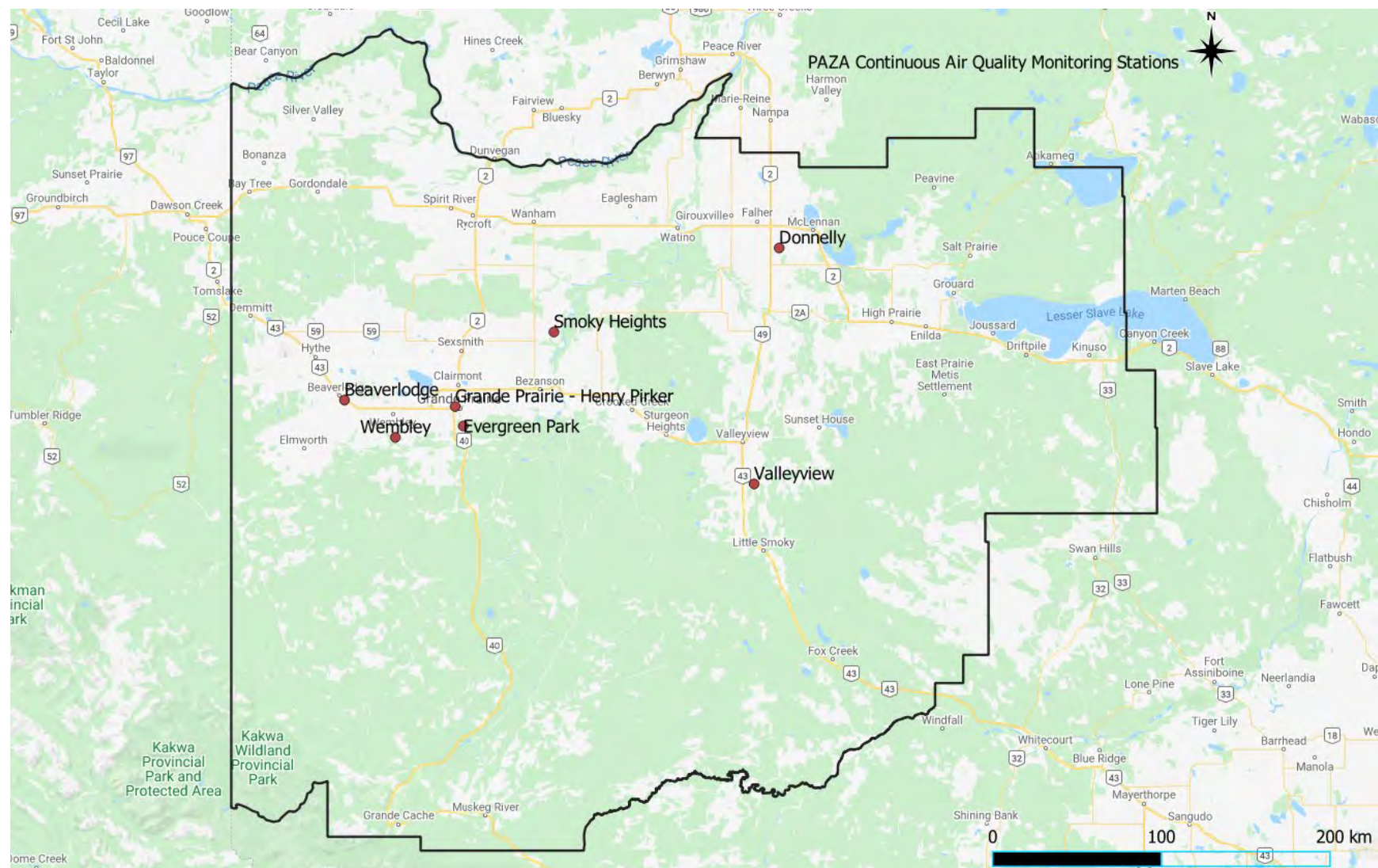
Wembley - April 2020



Wind Speed Classes (km/h)

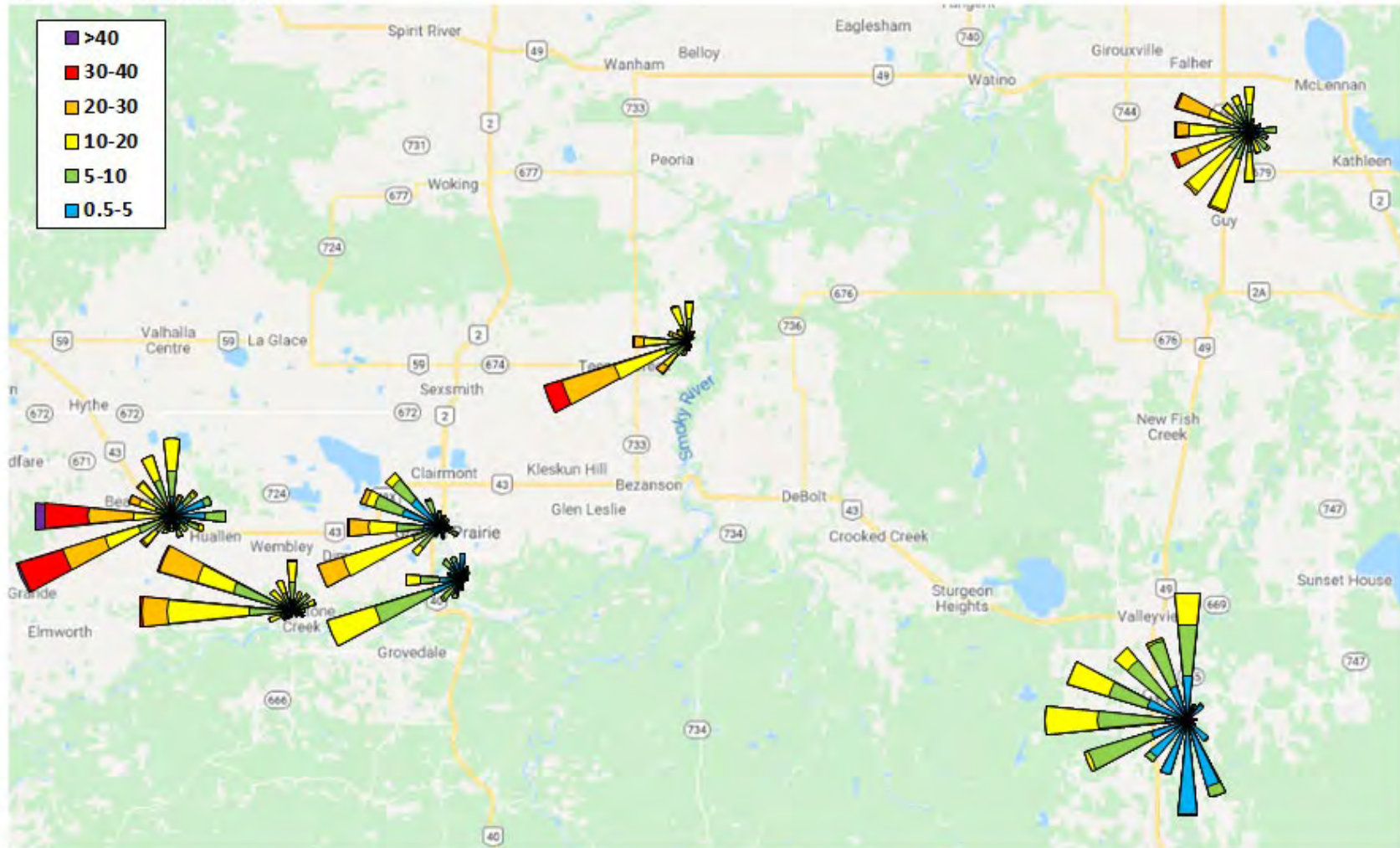


9 Concentration Roses for PAZA

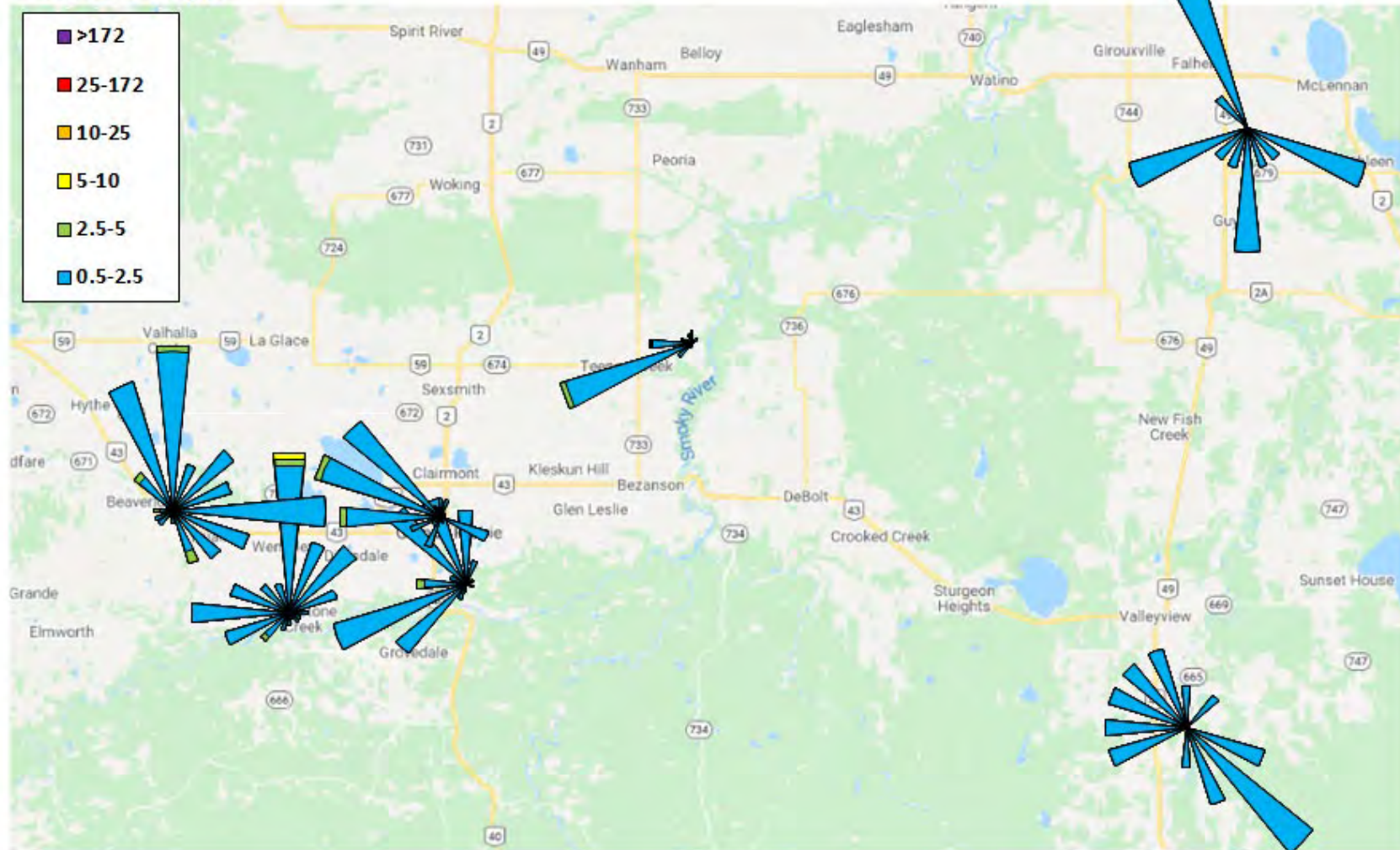


9.1 Wind Roses

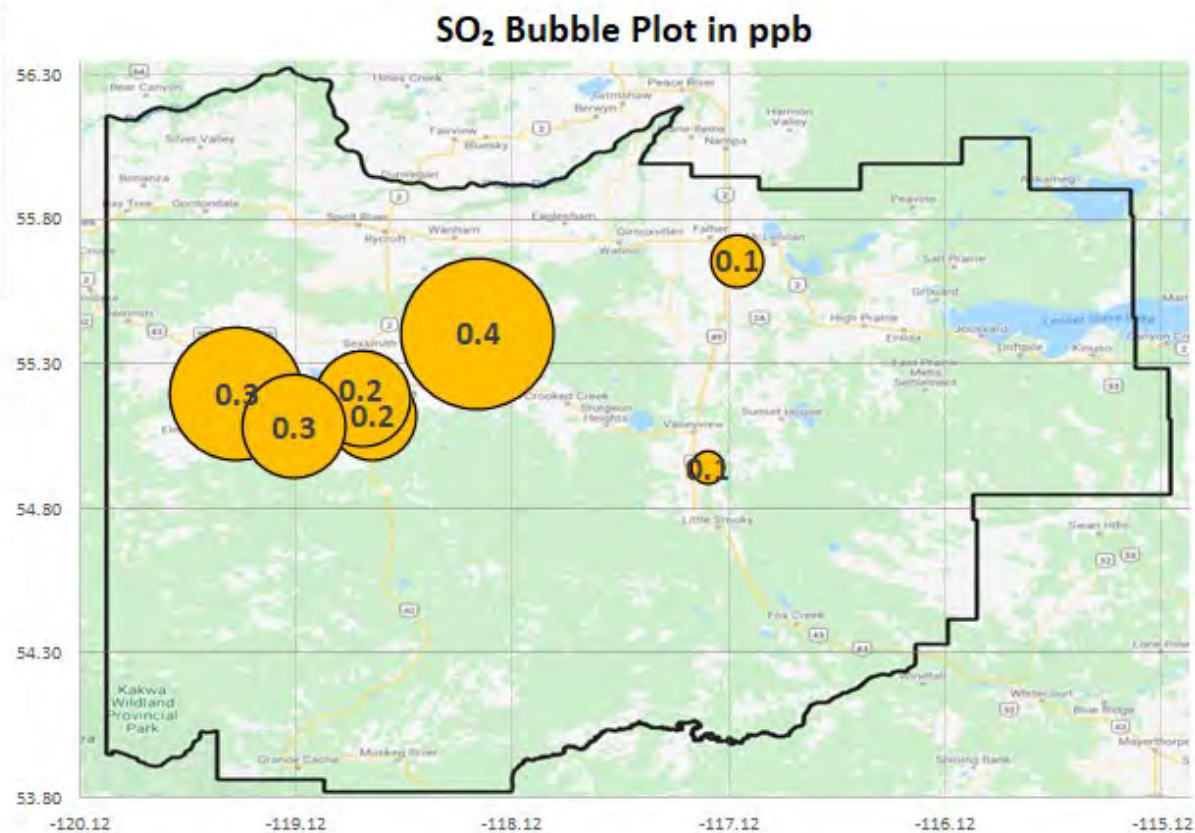
Wind Roses in km/hr



9.2 Sulphur Dioxide Plots

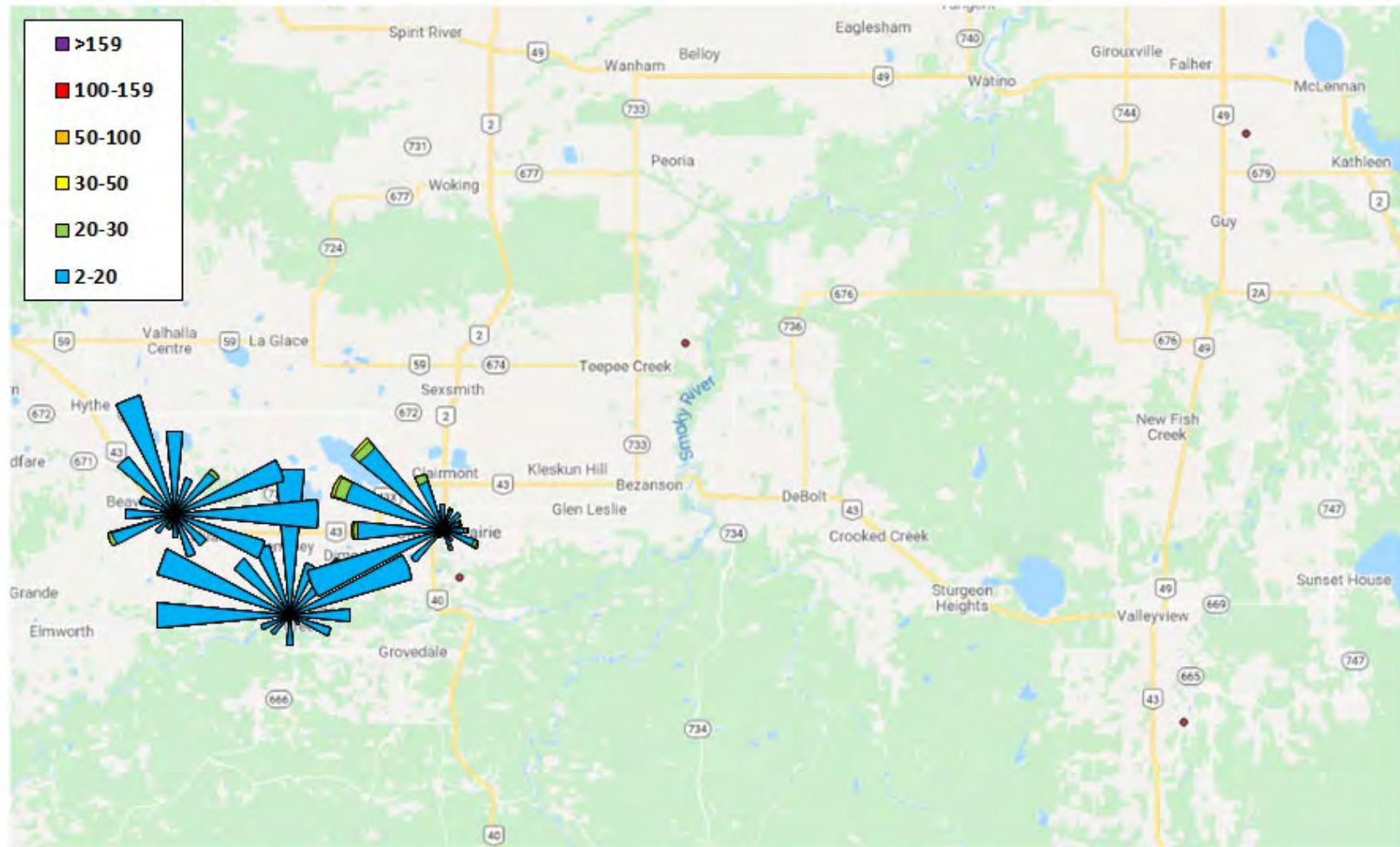


April 2020 SO ₂ Summary	
Station	Avg (ppb)
Evergreen Park	0.2
Henry Pirker	0.2
Smoky Heights	0.4
Beaverlodge	0.3
Valleyview	0.1
Donnelly	0.1
Wembley	0.3

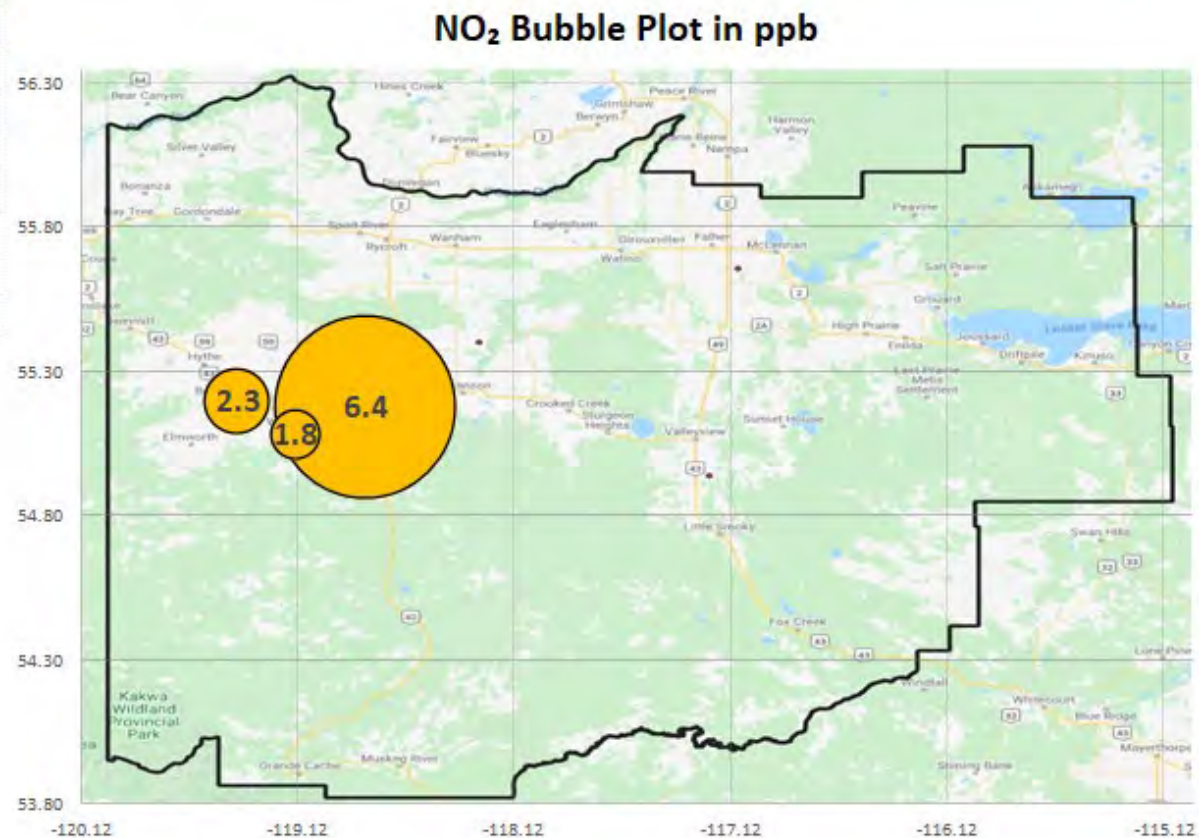


9.3 Nitrogen Dioxide Plots

NO₂ Roses in ppb

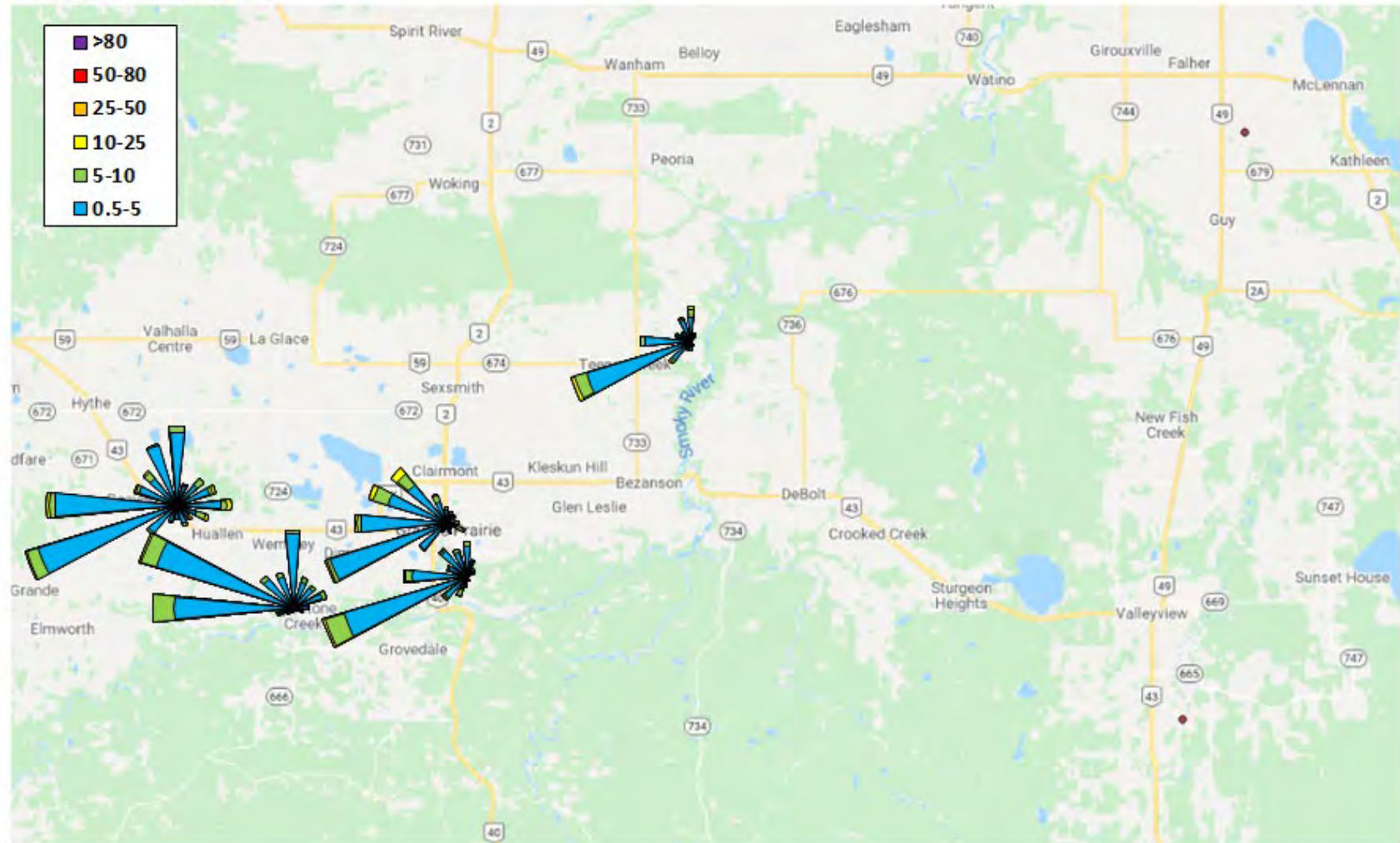


April 2020 NO ₂ Summary	
Station	Avg (ppb)
Evergreen Park	-
Henry Pirker	6.4
Smoky Heights	-
Beaverlodge	2.3
Valleyview	-
Donnelly	-
Wembley	1.8



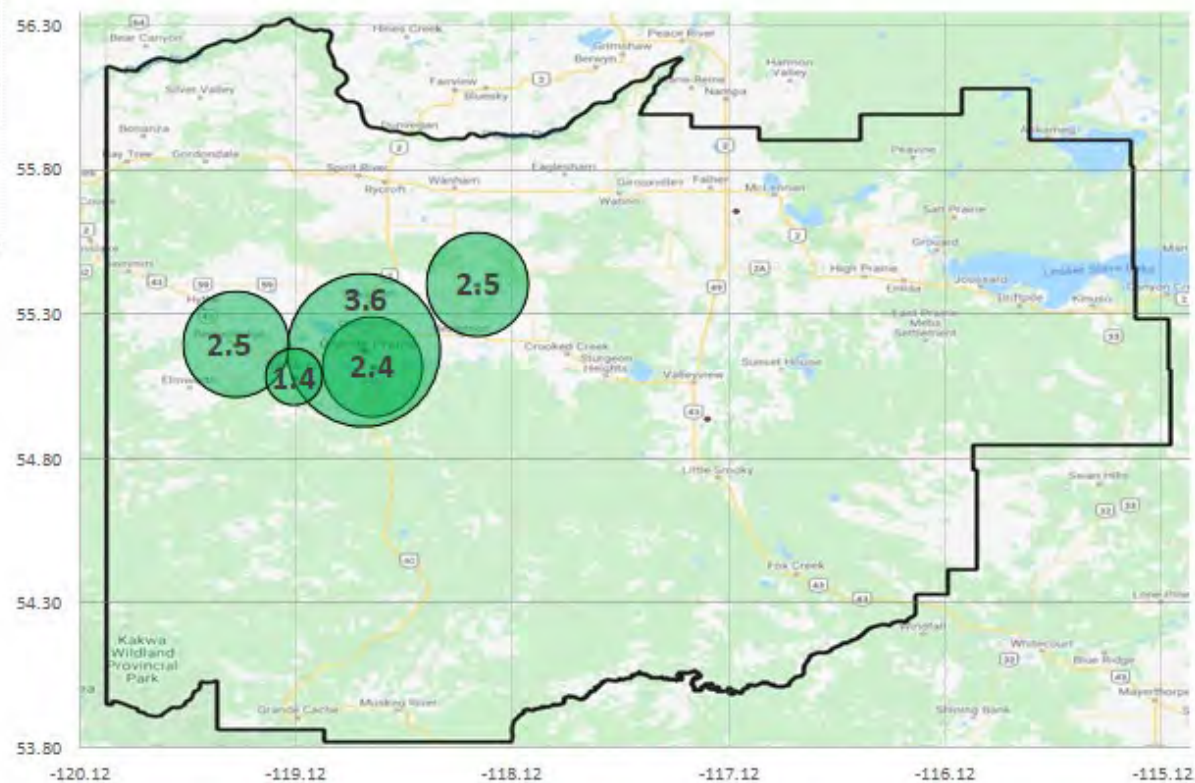
9.4 Fine Particulate Matter (PM_{2.5}) Plots

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



April 2020 PM2.5 Summary	
Station	Avg ($\mu\text{g}/\text{m}^3$)
Evergreen Park	2.4
Henry Pirkar	3.6
Smoky Heights	2.5
Beaverlodge	2.5
Valleyview	-
Donnelly	-
Wembley	1.4

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



10 Passive Monitoring Data

Peace Airshed Zone Association - PAZA Passive Stations for April 2020

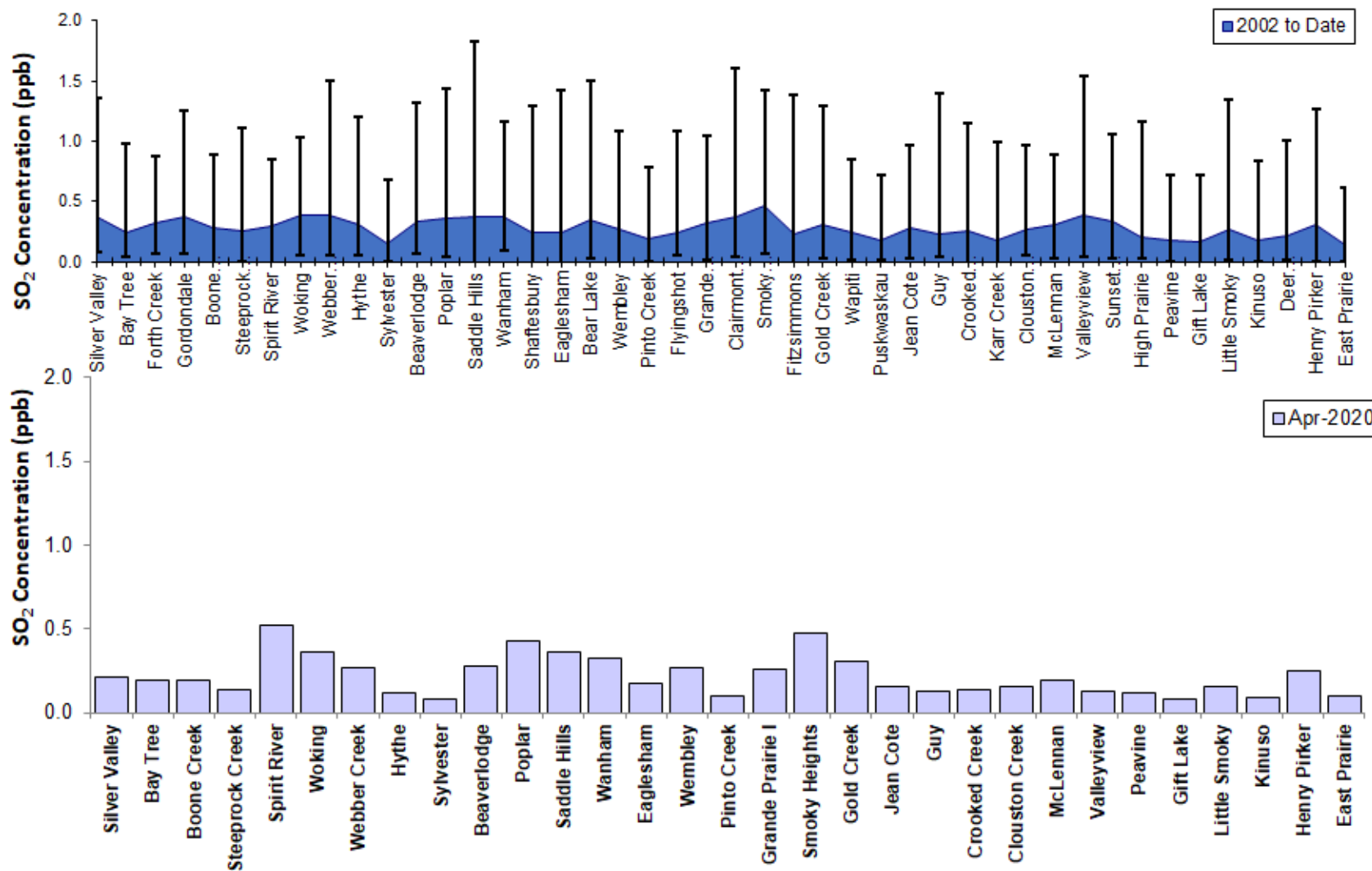
Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	LSD
Duplicates						
1a	Silver Valley			0.1		
1b	Silver Valley			0.1		
14a	Sylvester	0.1				
14b	Sylvester	0.1				
21a	Eaglesham	0.2				
21b	Eaglesham	0.2				
24a	Wembley			0.2		
24b	Wembley			0.2		
45a	Gift Lake	0.1				
45b	Gift Lake	0.1				
46a	Little Smoky			0.2		
46b	Little Smoky			0.2		
47a	Kinuso		38.6			
47b	Kinuso		35.0			

1	Silver Valley	0.2	-	0.1	-	08-27-081-11 W6M
2	Bay Tree	0.2	36.2	0.0	-	13-16-078-13 W6M
5	Boone Creek	0.2	-	0.0	-	01-23-076-11 W6M
7	Steepprock Creek	0.1	-	0.0	-	09-35-072-13 W6M
9	Spirit River	0.5	-	0.1	-	08-12-079-07 W6M
10	Woking	0.4	-	0.0	-	01-13-076-07 W6M
11	Webber Creek	0.3	-	0.7	-	09-36-074-09 W6M
12	Hythe	0.1	-	0.0	-	14-36-072-11 W6M
14	Sylvester	0.1	-	0.0	-	08-06-069-12 W6M
16	Beaverlodge	0.3	-	0.1	-	15-36-071-10 W6M
17	Poplar	0.4	-	0.2	-	13-06-073-08 W6M
18	Saddle Hills	0.4	-	0.0	-	04-25-074-07 W6M
19	Wanham	0.3	-	0.0	-	16-22-077-03 W6M
21	Eaglesham	0.2	-	0.0	-	16-21-079-25 W5M
24	Wembley	0.3	-	0.2	-	12-31-070-08 W6M
25	Pinto Creek	0.1	-	0.0	-	04-24-069-11 W6M
27	Grande Prairie I	0.3	-	1.4	-	08-15-071-06 W6M
29	Smoky Heights	0.5	-	0.2	-	04-06-075-02 W6M
32	Gold Creek	0.3	-	0.4	-	06-33-067-05 W6M
35	Jean Cote	0.2	-	0.0	-	12-35-079-21 W5M
36	Guy	0.1	-	0.0	0.1	03-04-076-22 W5M
37	Crooked Creek	0.1	40.4	0.0	-	16-01-071-26 W5M
39	Clouston Creek	0.2	-	0.0	-	12-01-073-22 W5M
40	McLennan	0.2	-	0.0	-	03-29-077-19 W5M
41	Valleyview	0.1	-	0.0	-	09-30-069-22 W5M
44	Peavine	0.1	-	0.0	-	03-05-079-15 W5M
45	Gift Lake	0.1	-	0.0	-	10-07-079-12 W5M
46	Little Smoky	0.2	-	0.2	-	12-01-065-21 W5M
47	Kinuso	0.1	36.8	0.0	-	12-10-073-10 W5M
49	Henry Pirker	0.3	-	1.3	-	17-26-071-06 W6M
50	East Prairie	0.1	-	0.0	-	11-13-079-08 W6M
63	Girouxville 3	-	-	-	0.3	14-02-077-23 W5M
64	Girouxville 4	-	-	-	0.2	04-08-077-22 W5M

Passive Summary for April 2020

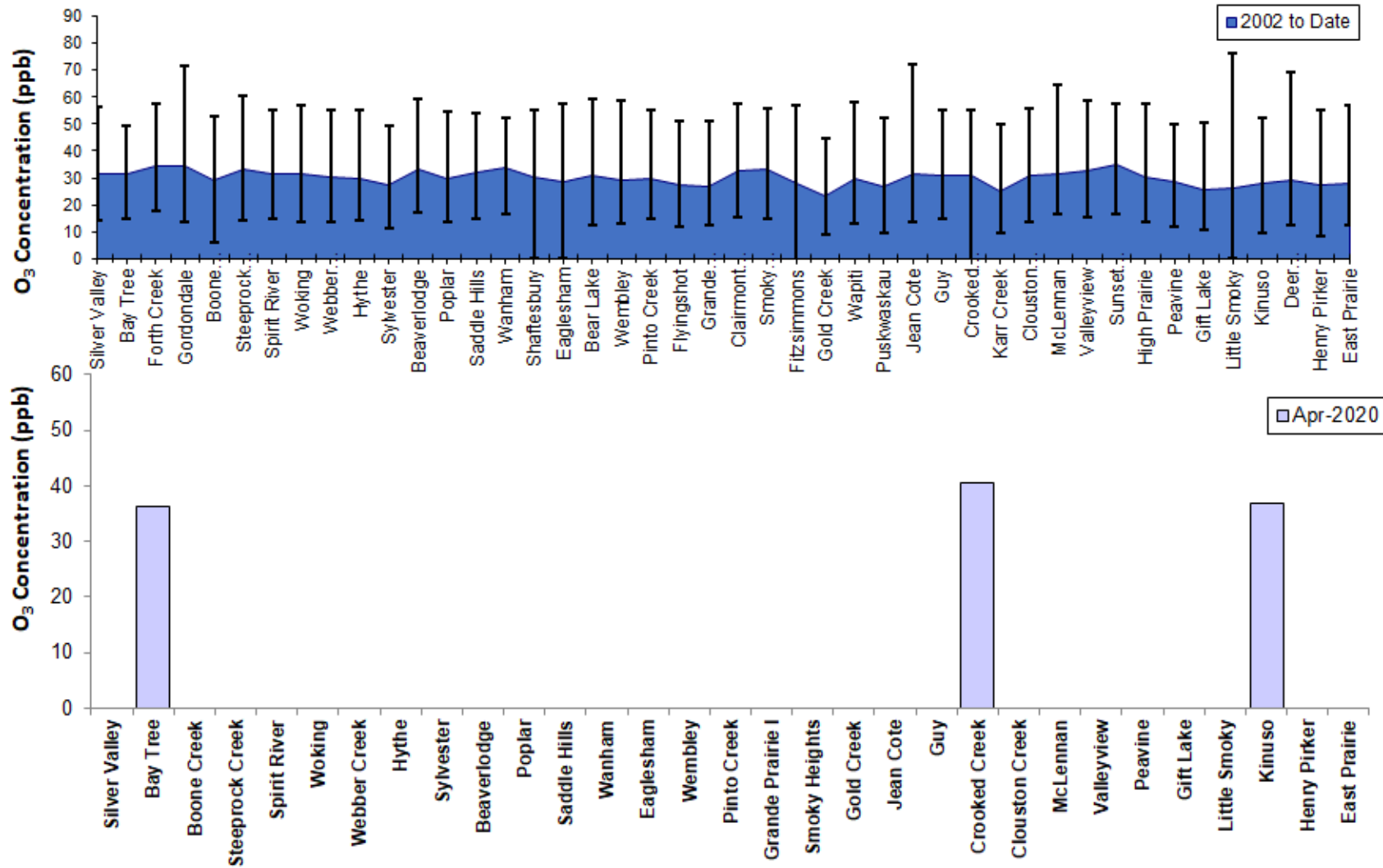
Stats	Sulphur Dioxide	Ozone	Nitrogen Dioxide	Hydrogen Sulphide
	SO ₂	O ₃	NO ₂	H ₂ S
	ppb	ppb	ppb	ppb
Passive Summary for April 2020 (PAZA)				
Mean	0.2	37.8	0.2	0.2
Standard Deviation	0.1	2.3	0.3	0.1
Minimum	0.1	36.2	0.0	0.1
	Gift Lake (#45)	Bay Tree (#2)	Bay Tree (#2)	Guy (#36)
Maximum	0.5	40.4	1.4	0.3
	Spirit River (#9)	Crooked Creek (#37)	Grande Prairie I (#27)	Girouxville 3 (#63)
Continuous and Passive Monitoring Comparision				
PAZA Beaverlodge Station	0.3	42.4	2.3	-
Beaverlodge Passive (#16)	0.3	-	0.1	-
PAZA Henry Pirker Station	0.2	37.2	6.4	0.2
Henry Pirker passive (#49)	0.3	-	1.3	-

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

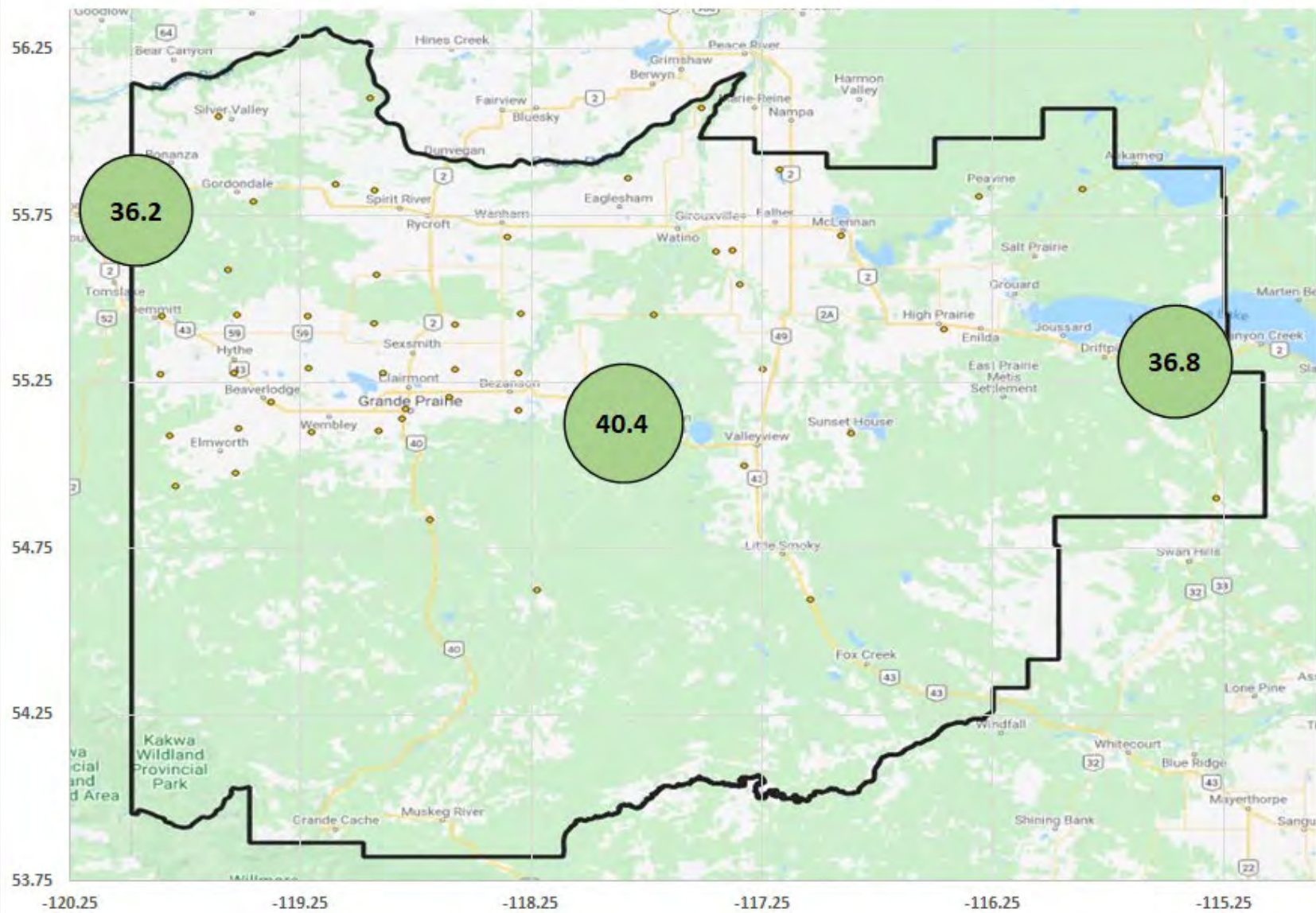


[illegible]

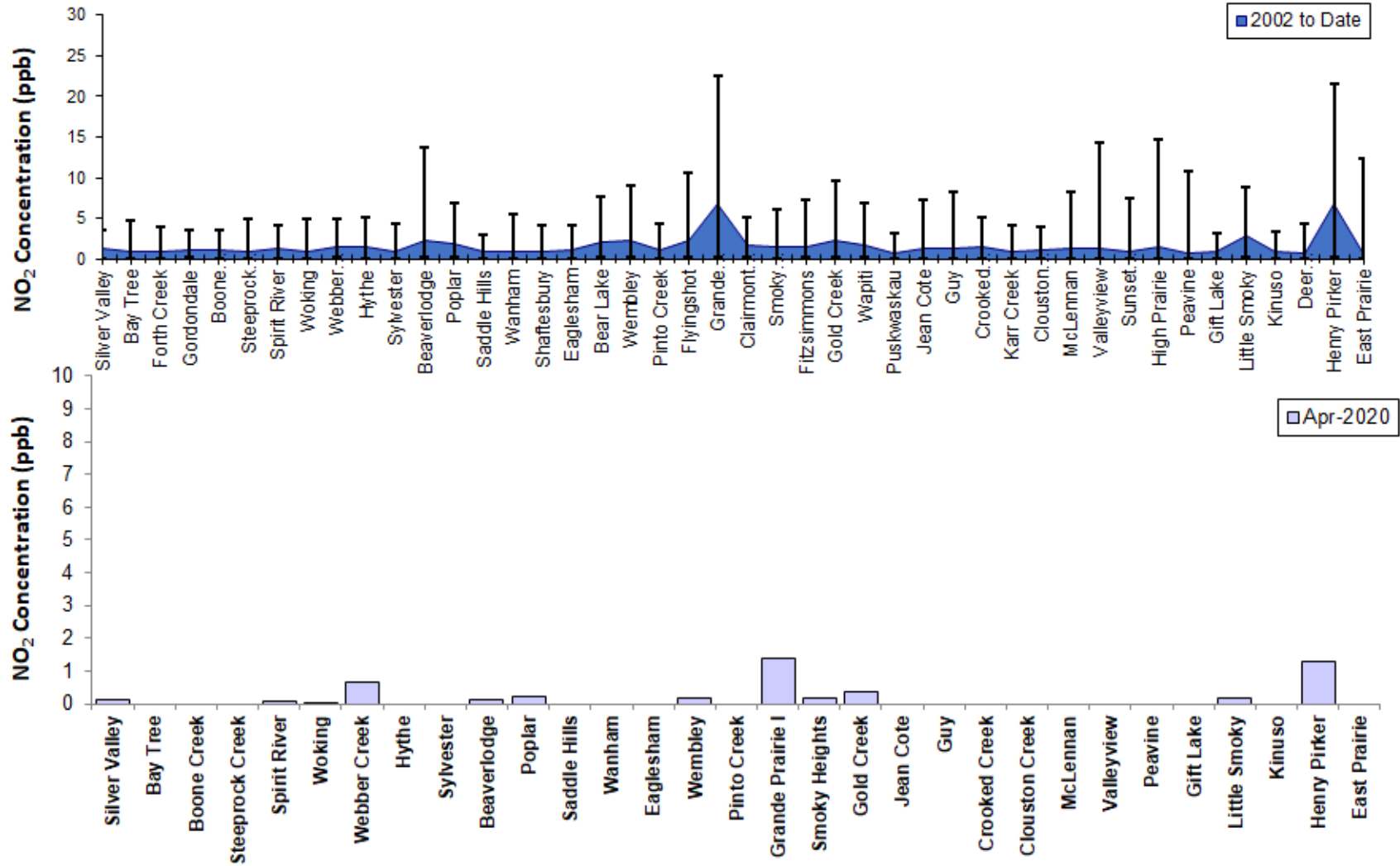
No Monthly or Annual Alberta Ambient Air Quality Objective for O₃



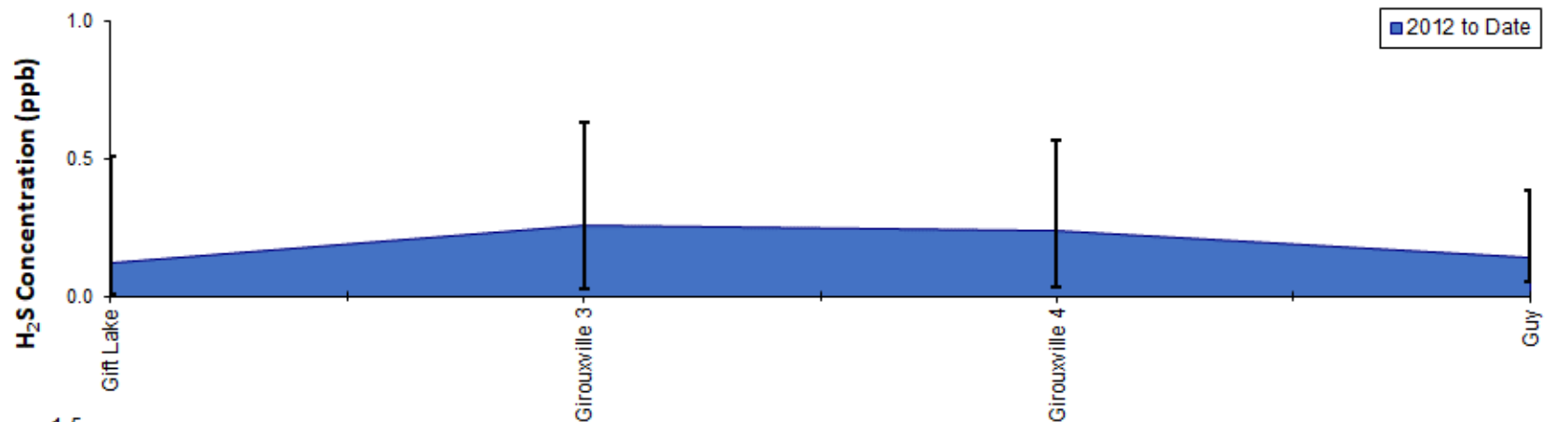
O₃ Monthly Average (units in ppb)



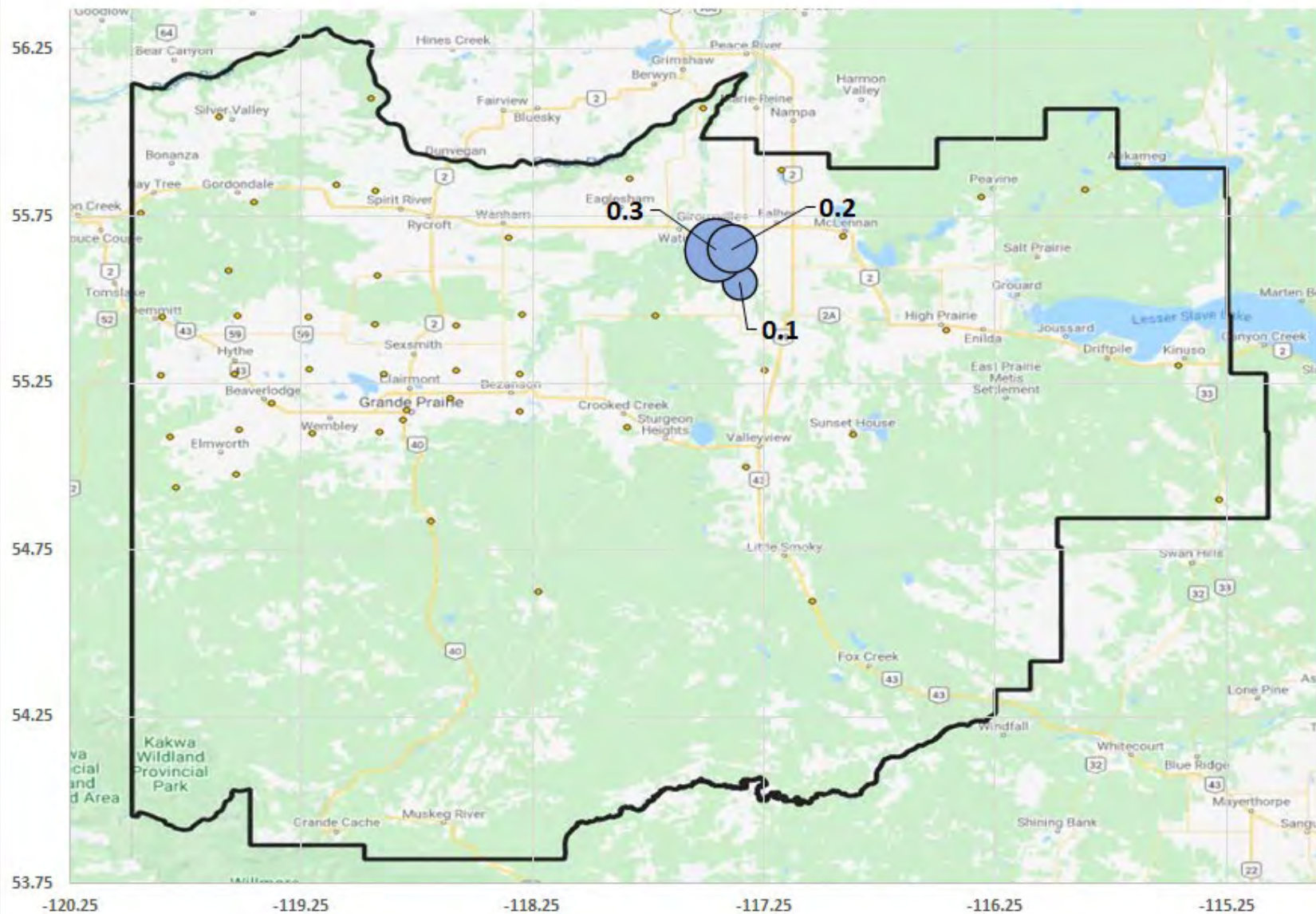
Alberta Ambient Air Quality Objective - Annual NO₂ Objective is 24 ppb



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

April 2020