



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

**Ambient Air Quality Monitoring Program
Monthly Report
May 2019**

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June 30th, 2019

Alberta Environment and Parks

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

RE: Peace Airshed Zone Association (PAZA) – May 2019 Ambient Air Quality Monitoring Report

Enclosed is the PAZA Ambient Air Quality Monitoring Network Report for the month of May 2019.

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

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

Program Manager

Box 21135

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This report was prepared by Andersen Science Consulting and reviewed by Mandeep Dhaliwal.

PAZA has retained the services of WSP Canada Inc. to conduct continuous ambient monitoring and Andersen Science Consulting to provide data validation and reporting on its behalf.

This report is submitted by PAZA on behalf of the industrial member companies to satisfy the requirements of the following facility Operating Approvals:

Company	Facility	LSD	EPEA Approval Number
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	16-31-78-11-W6M	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

Company	Facility	LSD	EPEA Approval Number
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
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

Company	Facility	LSD	EPEA Approval Number
	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
Spectra Energy 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

Included in this report is a summary of the monthly passive monitoring and continuous monitoring programs and detailed hourly average reports. Operational summaries can be found on the “Continuous Ambient Network Equipment and Results Summary” pages of the report.

Continuous Monitoring: Seven (7) Stations including Henry Pirker (Grande Prairie), Evergreen Park, Smoky Heights, Beaverlodge, Valleyview, Donnelly and Wembley-Portable.

Calibration and Data Submission

Hourly data for May 2019 were submitted to Alberta’s Ambient Air Data Warehouse for all stations. This report and calibration reports were emailed to Air.Reporting@gov.ab.ca

During the month of May, the following events were noted:

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

There was 1 1-hour exceedance of the AAAQO for O₃ (76 ppb) in May. This exceedance is attributed to ozone formation due to wildfire smoke.

Station Name	Date	Start Time	End Time	O ₃ Concentration	Reference Number
		(MST)	(MST)	(ppb)	
Henry Pirker	31-May-19	13:00	14:00	88.0	354129

There were 158 1-hour and 16 24-hour exceedances of the AAAQO for PM_{2.5} (80/29 µg/m³) in May. These exceedances are attributed to wildfire smoke.

Station Name	Date	Start Time	End Time	PM _{2.5} Concentration	Reference Number
		(MST)	(MST)	(µg/m ³)	
Beaverlodge	30-May-19	15:00	16:00	442.7	354021
Beaverlodge	30-May-19	16:00	17:00	306.6	354021
Beaverlodge	30-May-19	17:00	18:00	195.7	354021
Beaverlodge	30-May-19	18:00	19:00	142.3	354021
Beaverlodge	30-May-19	20:00	21:00	136.3	354021
Beaverlodge	30-May-19	21:00	22:00	245.9	354021
Beaverlodge	30-May-19	22:00	23:00	412.8	354021
Beaverlodge	30-May-19	23:00	00:00	468.5	354021
Beaverlodge	31-May-19	00:00	01:00	533.3	354038
Beaverlodge	31-May-19	01:00	02:00	672.4	354038
Beaverlodge	31-May-19	02:00	03:00	595.3	354038
Beaverlodge	31-May-19	03:00	04:00	567.3	354038
Beaverlodge	31-May-19	04:00	05:00	536.1	354038
Beaverlodge	31-May-19	05:00	06:00	507.4	354038
Beaverlodge	31-May-19	06:00	07:00	497.4	354038
Beaverlodge	31-May-19	07:00	08:00	486.8	354038
Beaverlodge	31-May-19	08:00	09:00	508.0	354038
Beaverlodge	31-May-19	09:00	10:00	451.8	354038
Beaverlodge	31-May-19	10:00	11:00	366.2	354038
Beaverlodge	31-May-19	11:00	12:00	247.6	354038
Beaverlodge	31-May-19	12:00	13:00	151.1	354038
Evergreen Park	30-May-19	06:00	07:00	81.1	353987
Evergreen Park	30-May-19	07:00	08:00	125.3	353987
Evergreen Park	30-May-19	08:00	09:00	104.3	353987
Evergreen Park	30-May-19	09:00	10:00	114.4	353987
Evergreen Park	30-May-19	10:00	11:00	118.5	353987
Evergreen Park	30-May-19	11:00	12:00	196.7	353987
Evergreen Park	30-May-19	12:00	13:00	267.9	353987
Evergreen Park	30-May-19	13:00	14:00	364.1	353987
Evergreen Park	30-May-19	14:00	15:00	404.4	353987
Evergreen Park	30-May-19	15:00	16:00	256.0	353987
Evergreen Park	30-May-19	16:00	17:00	177.6	353987
Evergreen Park	30-May-19	17:00	18:00	88.7	353987
Evergreen Park	30-May-19	19:00	20:00	102.6	353987
Evergreen Park	30-May-19	20:00	21:00	177.9	353987
Evergreen Park	30-May-19	21:00	22:00	249.1	353987
Evergreen Park	30-May-19	22:00	23:00	293.1	353987

Station Name	Date	Start Time	End Time	PM _{2.5} Concentration	Reference Number
Evergreen Park	30-May-19	23:00	00:00	277.7	353987
Evergreen Park	31-May-19	00:00	01:00	280.2	354042
Evergreen Park	31-May-19	01:00	02:00	283.9	354042
Evergreen Park	31-May-19	02:00	03:00	303.2	354042
Evergreen Park	31-May-19	03:00	04:00	323.2	354042
Evergreen Park	31-May-19	04:00	05:00	341.1	354042
Evergreen Park	31-May-19	05:00	06:00	339.9	354042
Evergreen Park	31-May-19	06:00	07:00	345.9	354042
Evergreen Park	31-May-19	07:00	08:00	381.8	354042
Evergreen Park	31-May-19	08:00	09:00	293.7	354042
Evergreen Park	31-May-19	09:00	10:00	287.0	354042
Evergreen Park	31-May-19	10:00	11:00	242.6	354042
Evergreen Park	31-May-19	11:00	12:00	238.5	354042
Evergreen Park	31-May-19	12:00	13:00	214.2	354042
Evergreen Park	31-May-19	13:00	14:00	154.8	354042
Evergreen Park	31-May-19	15:00	16:00	103.6	354042
Henry Pirker	23-May-19	12:00	13:00	92.7	353597
Henry Pirker	30-May-19	04:00	05:00	97.9	353966
Henry Pirker	30-May-19	05:00	06:00	128.6	353966
Henry Pirker	30-May-19	06:00	07:00	156.4	353966
Henry Pirker	30-May-19	07:00	08:00	206.5	353966
Henry Pirker	30-May-19	08:00	09:00	125.9	353966
Henry Pirker	30-May-19	09:00	10:00	148.4	353966
Henry Pirker	30-May-19	10:00	11:00	90.7	353966
Henry Pirker	30-May-19	11:00	12:00	134.6	353966
Henry Pirker	30-May-19	12:00	13:00	406.2	353966
Henry Pirker	30-May-19	13:00	14:00	435.9	353966
Henry Pirker	30-May-19	14:00	15:00	448.0	353966
Henry Pirker	30-May-19	15:00	16:00	278.9	353966
Henry Pirker	30-May-19	16:00	17:00	247.3	353966
Henry Pirker	30-May-19	17:00	18:00	116.2	353966
Henry Pirker	30-May-19	19:00	20:00	176.3	353966
Henry Pirker	30-May-19	20:00	21:00	272.2	353966
Henry Pirker	30-May-19	21:00	22:00	384.9	353966
Henry Pirker	30-May-19	22:00	23:00	427.2	353966
Henry Pirker	30-May-19	23:00	00:00	441.4	353966
Henry Pirker	31-May-19	00:00	01:00	449.5	354043
Henry Pirker	31-May-19	01:00	02:00	450.0	354043
Henry Pirker	31-May-19	02:00	03:00	450.0	354043
Henry Pirker	31-May-19	03:00	04:00	450.0	354043
Henry Pirker	31-May-19	04:00	05:00	450.0	354043

Station Name	Date	Start Time	End Time	PM _{2.5} Concentration	Reference Number
Henry Pirker	31-May-19	05:00	06:00	450.0	354043
Henry Pirker	31-May-19	06:00	07:00	450.0	354043
Henry Pirker	31-May-19	07:00	08:00	450.0	354043
Henry Pirker	31-May-19	08:00	09:00	418.2	354043
Henry Pirker	31-May-19	09:00	10:00	406.1	354043
Henry Pirker	31-May-19	10:00	11:00	336.0	354043
Henry Pirker	31-May-19	11:00	12:00	274.7	354043
Henry Pirker	31-May-19	12:00	13:00	249.8	354043
Henry Pirker	31-May-19	13:00	14:00	195.2	354043
Henry Pirker	31-May-19	14:00	15:00	86.6	354043
Smoky Heights	23-May-19	08:00	09:00	120.9	353573
Smoky Heights	23-May-19	09:00	10:00	85.6	353573
Smoky Heights	23-May-19	11:00	12:00	81.3	353573
Smoky Heights	23-May-19	12:00	13:00	105.9	353573
Smoky Heights	28-May-19	21:00	22:00	115.4	353846
Smoky Heights	29-May-19	20:00	21:00	97.6	353933
Smoky Heights	29-May-19	22:00	23:00	81.0	353933
Smoky Heights	30-May-19	00:00	01:00	92.9	353956
Smoky Heights	30-May-19	04:00	05:00	87.7	353956
Smoky Heights	30-May-19	05:00	06:00	135.6	353956
Smoky Heights	30-May-19	06:00	07:00	165.0	353956
Smoky Heights	30-May-19	07:00	08:00	344.9	353956
Smoky Heights	30-May-19	08:00	09:00	286.6	353956
Smoky Heights	30-May-19	09:00	10:00	478.5	353956
Smoky Heights	30-May-19	10:00	11:00	670.0	353956
Smoky Heights	30-May-19	11:00	12:00	968.1	353956
Smoky Heights	30-May-19	12:00	13:00	936.0	353956
Smoky Heights	30-May-19	13:00	14:00	439.5	353956
Smoky Heights	30-May-19	14:00	15:00	305.0	353956
Smoky Heights	30-May-19	15:00	16:00	132.5	353956
Smoky Heights	30-May-19	19:00	20:00	218.4	353956
Smoky Heights	30-May-19	20:00	21:00	433.1	353956
Smoky Heights	30-May-19	21:00	22:00	416.3	353956
Smoky Heights	30-May-19	22:00	23:00	422.3	353956
Smoky Heights	30-May-19	23:00	00:00	421.5	353956
Smoky Heights	31-May-19	00:00	01:00	414.7	354034
Smoky Heights	31-May-19	01:00	02:00	370.7	354034
Smoky Heights	31-May-19	02:00	03:00	381.0	354034
Smoky Heights	31-May-19	03:00	04:00	443.8	354034
Smoky Heights	31-May-19	04:00	05:00	497.8	354034
Smoky Heights	31-May-19	05:00	06:00	460.7	354034

Station Name	Date	Start Time	End Time	PM _{2.5} Concentration	Reference Number
Smoky Heights	31-May-19	06:00	07:00	429.5	354034
Smoky Heights	31-May-19	07:00	08:00	414.6	354034
Smoky Heights	31-May-19	08:00	09:00	382.2	354034
Smoky Heights	31-May-19	09:00	10:00	355.7	354034
Smoky Heights	31-May-19	10:00	11:00	341.0	354034
Smoky Heights	31-May-19	11:00	12:00	332.0	354034
Smoky Heights	31-May-19	12:00	13:00	301.7	354034
Smoky Heights	31-May-19	13:00	14:00	246.0	354034
Smoky Heights	31-May-19	14:00	15:00	186.0	354034
Smoky Heights	31-May-19	15:00	16:00	121.2	354034
Portable-Wembley	30-May-19	05:00	06:00	128.1	353968
Portable-Wembley	30-May-19	06:00	07:00	116.0	353968
Portable-Wembley	30-May-19	07:00	08:00	83.1	353968
Portable-Wembley	30-May-19	08:00	09:00	86.6	353968
Portable-Wembley	30-May-19	13:00	14:00	208.6	353968
Portable-Wembley	30-May-19	14:00	15:00	308.3	353968
Portable-Wembley	30-May-19	15:00	16:00	406.5	353968
Portable-Wembley	30-May-19	16:00	17:00	282.5	353968
Portable-Wembley	30-May-19	17:00	18:00	188.7	353968
Portable-Wembley	30-May-19	18:00	19:00	105.3	353968
Portable-Wembley	30-May-19	19:00	20:00	84.8	353968
Portable-Wembley	30-May-19	20:00	21:00	124.3	353968
Portable-Wembley	30-May-19	21:00	22:00	205.3	353968
Portable-Wembley	30-May-19	22:00	23:00	284.9	353968
Portable-Wembley	30-May-19	23:00	00:00	339.5	353968
Portable-Wembley	31-May-19	00:00	01:00	352.6	354039
Portable-Wembley	31-May-19	01:00	02:00	357.8	354039
Portable-Wembley	31-May-19	02:00	03:00	359.2	354039
Portable-Wembley	31-May-19	03:00	04:00	364.1	354039
Portable-Wembley	31-May-19	04:00	05:00	366.5	354039
Portable-Wembley	31-May-19	05:00	06:00	370.6	354039
Portable-Wembley	31-May-19	06:00	07:00	381.2	354039
Portable-Wembley	31-May-19	07:00	08:00	397.3	354039
Portable-Wembley	31-May-19	08:00	09:00	383.7	354039
Portable-Wembley	31-May-19	09:00	10:00	325.0	354039
Portable-Wembley	31-May-19	10:00	11:00	244.4	354039
Portable-Wembley	31-May-19	11:00	12:00	218.6	354039
Portable-Wembley	31-May-19	12:00	13:00	181.6	354039
Portable-Wembley	31-May-19	14:00	15:00	110.8	354039

Station Name	Date	24 hour PM _{2.5} Concentration	Reference Number
		(µg/m ³)	
Beaverlodge	30-May-19	114.2	354021
Beaverlodge	31-May-19	264.3	354038
Evergreen Park	30-May-19	148.7	353987
Evergreen Park	31-May-19	192.6	354042
Henry Pirker	26-May-19	29.5	353747
Henry Pirker	30-May-19	202.3	353966
Henry Pirker	31-May-19	241.3	354043
Smoky Heights	23-May-19	37.8	353573
Smoky Heights	24-May-19	29.1	353678
Smoky Heights	27-May-19	32.7	353810
Smoky Heights	28-May-19	31.3	353846
Smoky Heights	29-May-19	36.1	353933
Smoky Heights	30-May-19	292.9	353956
Smoky Heights	31-May-19	245.3	354034
Portable-Wembley	30-May-19	135.4	353968
Portable-Wembley	31-May-19	202.6	354039

Operational times less than 90 percent:

None to report.

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 May 4, 2019.

Passive Monitoring - 32 Stations throughout the PAZA zone:

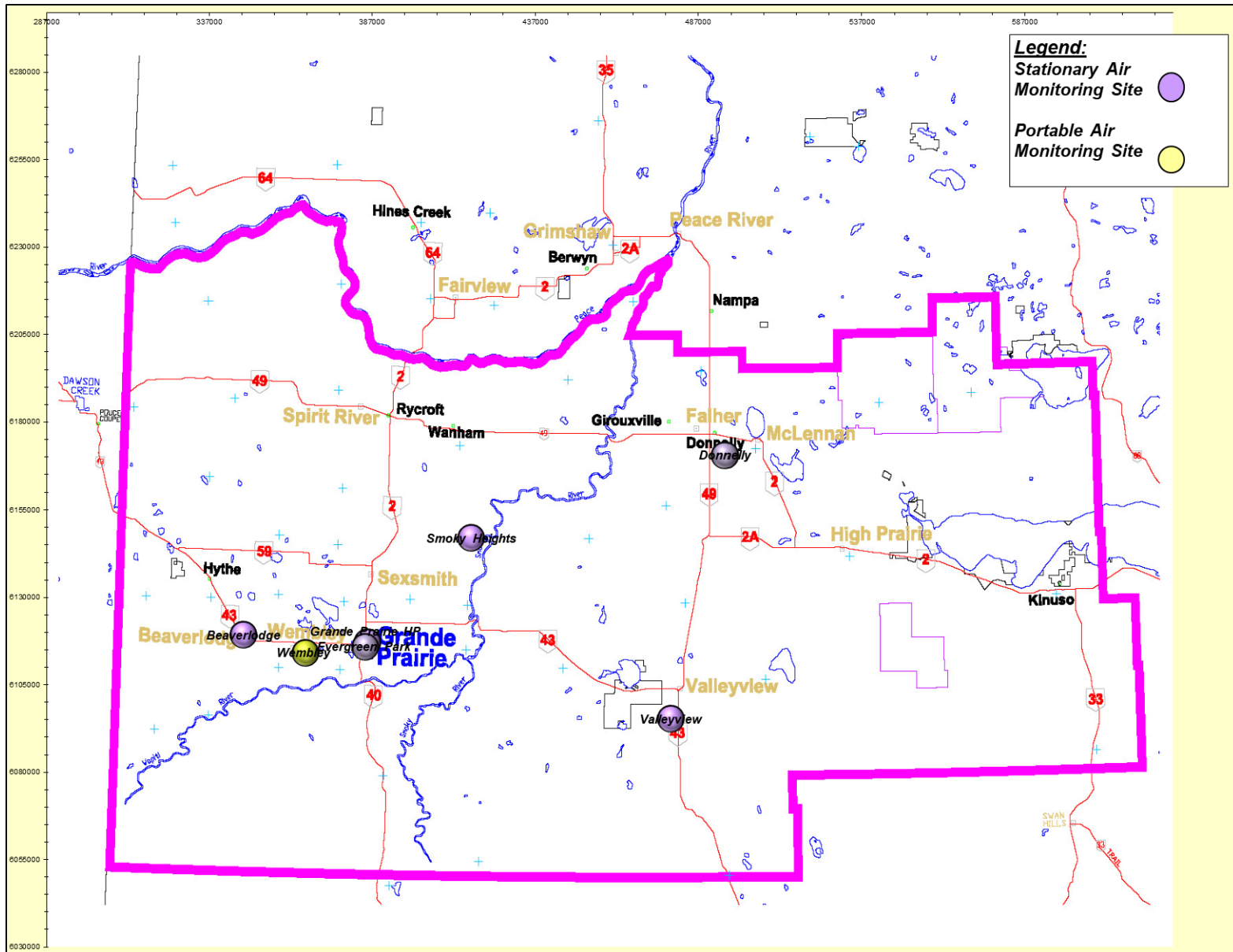
There were six duplicate sites sampled in the month of May: Boone Creek, Wanham, Little Smoky (SO₂), Crooked Creek (O₃), Spirit River, Webber Creek, Little Smoky (NO₂), and Girouxville 3 (H₂S). The passive sample analyses were performed by MAXXAM Analytics Inc. There were no exceedances of the AAAQOs 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.

X

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

Location of PAZA Continuous Monitoring Stations



Continuous Ambient Network Equipment and Results Summary

Beaverlodge Air Monitoring Station

May-2019 Peace Airshed Zone Association									Maximum Recorded Values							
									1-hr		24-hr / 8-hr					
Parameter (units)	Objectives			Station	Monthly Average	Min	Exceedence			Conc	Day		Conc	Day	Operational Time (%)	Calibration Date
	1-hr	24-hr	30-day				1-hr	24-hr	30-day							
SO ₂ (ppb)	172	48	8	Beaverlodge	0.4	0.0	0	0	0	6.2	May-05 06:00	1.3	May-19	100.0	May-07	
NO (ppb)					0.2	0.0	-	-	-	2.6	May-02 13:00	0.5	May-25	100.0	May-07	
NO ₂ (ppb)	159	106			2.4	0.0	0	0	-	12.9	May-31 08:00	6.5	May-31	100.0	May-07	
NO _x (ppb)					2.6	0.3	-	-	-	14.8	May-31 08:00	6.9	May-31	100.0	May-07	
O ₃ (ppb)	76				37.7	8.3	0	-	-	61.7	May-26 18:00	47.6	May-12	100.0	May-07	
O ₃ (ppb) - 8-hr							-	-	-			57.4	May-26		-	
PM _{2.5} (µg/m3)	80	29			19.4	0.4	21	2	-	672.4	May-31 02:00	264.3	May-31	100.0	Mar-19	
RH (%)					57.3	13.6	-	-	-	100.0	May-03 03:00	92.0	May-03	100.0	-	
Temp (°C)					10.9	-5.1	-	-	-	28.3	May-28 17:00	20.8	May-29	100.0	-	
WSPD v (km/hr)					4.5	0.4	-	-	-	35.2	May-11 18:00	25.9	May-16	100.0	01/06/2017	
WDIR				ENE		-	-	-	-	-	-	-	100.0	01/06/2017		

Parameter	Analyzer		Notes
	Make	Model	
SO ₂	TECO	43I	
NO/NO ₂ /NO _x	TECO	42I	
O ₃	TECO	49I	
PM _{2.5}	SHARP	5030	
ET/RH			
WS/WD	MetOne	50.5	

Evergreen Park Air Monitoring Station

May-2019 Peace Airshed Zone Association										Maximum Recorded Values					
Parameter (units)	Objectives			Station	Monthly Average	Min	Exceedence			1-hr		24-hr / 8-hr		Operational Time (%)	Calibration Date
	1-hr	24-hr	30-day				1-hr	24-hr	30-day	Conc	Day	Conc	Day		
SO ₂ (ppb)	172	48	8	Evergreen Park	0.2	0.0	0	0	0	7.2	May-12 00:00	1.0	May-31	100.0	May-22
TRS (ppb)					0.5	0.0	-	-	-	2.0	May-30 15:00	0.9	May-30	100.0	May-22
PM _{2.5} (µg/m3)	80	29			17.1	0.0	32	2	-	404.4	May-30 15:00	192.6	May-31	99.3	May-22
RH (%)					57.4	11.3	-	-	-	98.9	May-07 09:00	90.3	May-15	100.0	-
Temp (°C)					10.9	-5.5	-	-	-	29.8	May-28 17:00	20.5	May-29	100.0	-
WSPD v (km/hr)					1.2	0.0	-	-	-	31.2	May-12 15:00	15.5	May-12	100.0	-
WDIR					ENE		-	-	-	-	-	-	-	100.0	-

Parameter	Analyzer		Notes
	Make	Model	
SO ₂	TECO	43I	
TRS	TECO	43I	
PM _{2.5}	SHARP	5030	Analyzer maintenance performed May 22. Sample filter replaced May 31 due to heavy loading.
ET/RH			
WS/WD	Gil	MetPak	

Henry Pirker Air Monitoring Station

May-2019 Peace Airshed Zone Association									Maximum Recorded Values						
									1-hr		24-hr / 8-hr				
Parameter (units)	Objectives			Station	Monthly Average	Min	Exceedence			Conc	Day	Conc	Day	Operational Time (%)	Calibration Date
	1-hr	24-hr	30-day				1-hr	24-hr	30-day						
SO ₂ (ppb)	172	48	8	Henry Pirker	0.2	0.0	0	0	0	6.9	May-31 12:00	1.2	May-31	100.0	May-16
H ₂ S (ppb)					0.2	0.0	0	0	-	1.5	May-07 02:00	0.5	May-31	99.9	May-09
NO (ppb)					0.7	0.0	-	-	-	16.1	May-08 06:00	2.2	May-08	100.0	May-16
NO ₂ (ppb)	159	106			5.3	0.4	0	0	-	28.5	May-25 23:00	10.4	May-31	100.0	May-16
NO _x (ppb)					6.1	0.4	-	-	-	35.6	May-27 07:00	11.2	May-31	100.0	May-16
O ₃ (ppb)	76				35.4	1.3	1	-	-	88.0	May-31 14:00	46.4	May-20	100.0	May-16
O ₃ (ppb) - 8-hr							-	-	-			64.5	May-31		-
CO (ppm)	13				0.23	0.0	0	0	-	3.1	May-30 15:00	1.4	May-31	99.9	May-21
CO (ppm) - 8-hr	5						0					2.4	May-31		-
THC (ppm)					2.1	1.9	-	-	-	5.2	May-28 05:00	2.3	May-28	99.9	May-13
CH ₄ (ppm)					2.1	1.9	-	-	-	4.6	May-28 05:00	2.3	May-28	99.9	May-13
NMHC (ppm)					0.0	0.0	-	-	-	0.6	May-28 05:00	0.0	May-28	99.9	May-13
PM _{2.5} (µg/m3)	80	29			22.4	0.4	35	3	-	450.0	May-31 04:00	241.3	May-31	100.0	May-16
RH (%)					51.5	12.4	-	-	-	89.3	May-07 08:00	79.1	May-15	99.9	-
SR (W/m ²)					207.3	0.0	-	-	-	832.2	May-20 13:00	311.3	May-19	99.9	-
Temp (°C)					12.0	-4.7	-	-	-	30.9	May-28 16:00	22.1	May-29	99.9	-
WSPD v (km/hr)					1.8	0.1	-	-	-	22.6	May-12 17:00	14.2	May-20	99.9	01/07/2017
WDIR					E		-	-	-	-	-	-	-	99.9	01/07/2017

Parameter	Analyzer		Notes
	Make	Model	
SO ₂	TECO	43I	
H ₂ S	TECO	450I	Analyzer disconnected from logger during May 16 calibration period
NO/NO ₂ /NO _x	TECO	42I	
O ₃	TECO	49I	
CO	TECO	48I-TLE/48C-TLE	48C swapped for 48I May 8. Recalibrated May 21 to adjust zeroes.
			Analyzer disconnected from logger during May 16 calibration period
THC/CH ₄ /NMHC	TECO	55I	Daily zero completing improperly May 11 and 12, analyzer service performed May 13 and recalibrated
			Analyzer disconnected from logger during May 16 calibration period
PM _{2.5}	SHARP	5030	
ET/RH			Equipment disconnected from logger during May 16 calibration period
SR			Equipment disconnected from logger during May 16 calibration period
WS/WD	MetOne	50.5	Equipment disconnected from logger during May 16 calibration period

Smoky Heights Air Monitoring Station

May-2019 Peace Airshed Zone Association										Maximum Recorded Values					
Parameter (units)	Objectives			Station	Monthly Average	Min	Exceedence			1-hr		24-hr / 8-hr		Operational Time (%)	Calibration Date
	1-hr	24-hr	30-day				1-hr	24-hr	30-day	Conc	Day	Conc	Day		
SO ₂ (ppb)	172	48	8	Smoky Heights	0.2	0.0	0	0	0	2.3	May-09 08:00	0.4	May-04	100.0	May-24
TRS (ppb)					0.5	0.3	-	-	-	2.9	May-30 12:00	1.3	May-30	100.0	May-24
PM _{2.5} (µg/m3)	80	29			26.0	0.0	41	7	-	968.1	May-30 12:00	292.9	May-30	99.9	Feb-25
Temp (°C)					11.1	-8.0	-	-	-	28.8	May-28 15:00	20.6	May-29	99.9	-
WSPD v (km/hr)					1.9	0.6	-	-	-	37.4	May-17 16:00	23.6	May-18	100.0	04/06/2019
WDIR					ESE		-	-	-	-	-	-	-	100.0	04/06/2019

Parameter	Analyzer		Notes
	Make	Model	
SO ₂	TECO	43I	
TRS	TECO	43I	
PM _{2.5}	SHARP	5030	Routine maintenance May 24
ET			
WS/WD	MetOne	50.5	

Valleyview Air Monitoring Station

May-2019 Peace Airshed Zone Association										Maximum Recorded Values					
Parameter (units)	Objectives			Station	Monthly Average	Min	Exceedence			1-hr		24-hr / 8-hr		Operational Time (%)	Calibration Date
	1-hr	24-hr	30-day				1-hr	24-hr	30-day	Conc	Day	Conc	Day		
SO ₂ (ppb)	172	48	8	Valleyview	0.1	0.0	0	0	0	4.1	May-22 21:00	0.4	May-22	100.0	May-23
H ₂ S (ppb)	10	3			0.1	0.0	0	0	-	2.2	May-30 12:00	0.6	May-30	100.0	May-23
RH (%)					60.4	16.8	-	-	-	100.0	May-03 06:00	94.4	May-15	100.0	-
Temp (°C)					13.5	-2.5	-	-	-	31.2	May-28 17:00	21.9	May-29	100.0	-
WSPD v (km/hr)					0.5	0.0	-	-	-	17.8	May-17 12:00	10.6	May-18	100.0	-
WDIR					E		-	-	-	-	-	-	-	100.0	-

Parameter	Analyzer		Notes
	Make	Model	
SO ₂	TECO	43I	
H ₂ S	TECO	450I	
ET/RH			
WS/WD	Gil	MetPak	

Donnelly Air Monitoring Station

May-2019 Peace Airshed Zone Association										Maximum Recorded Values					
Parameter (units)	Objectives			Station	Monthly Average	Min	Exceedence			1-hr		24-hr / 8-hr		Operational Time (%)	Calibration Date
	1-hr	24-hr	30-day				1-hr	24-hr	30-day	Conc	Day	Conc	Day		
SO ₂ (ppb)	172	48	8	Donnelly	0.1	0.0	0	0	0	1.0	May-31 11:00	0.3	May-31	100.0	May-23
H ₂ S (ppb)	10	3			0.1	0.0	0	0	-	2.5	May-30 09:00	0.9	May-30	100.0	May-23
Temp (°C)					11.8	-7.1	-	-	-	29.5	May-28 17:00	22.5	May-29	100.0	-
WSPD v (km/hr)					2.4	0.1	-	-	-	33.3	May-18 11:00	19.7	May-18	100.0	01/06/2017
WDIR					SE		-	-	-	-	-	-	-	100.0	01/06/2017

Parameter	Analyzer		Notes
	Make	Model	
SO ₂	TECO	43I	
H ₂ S	TECO	450I	
ET/RH			
WS/WD	RMYoung	5103	

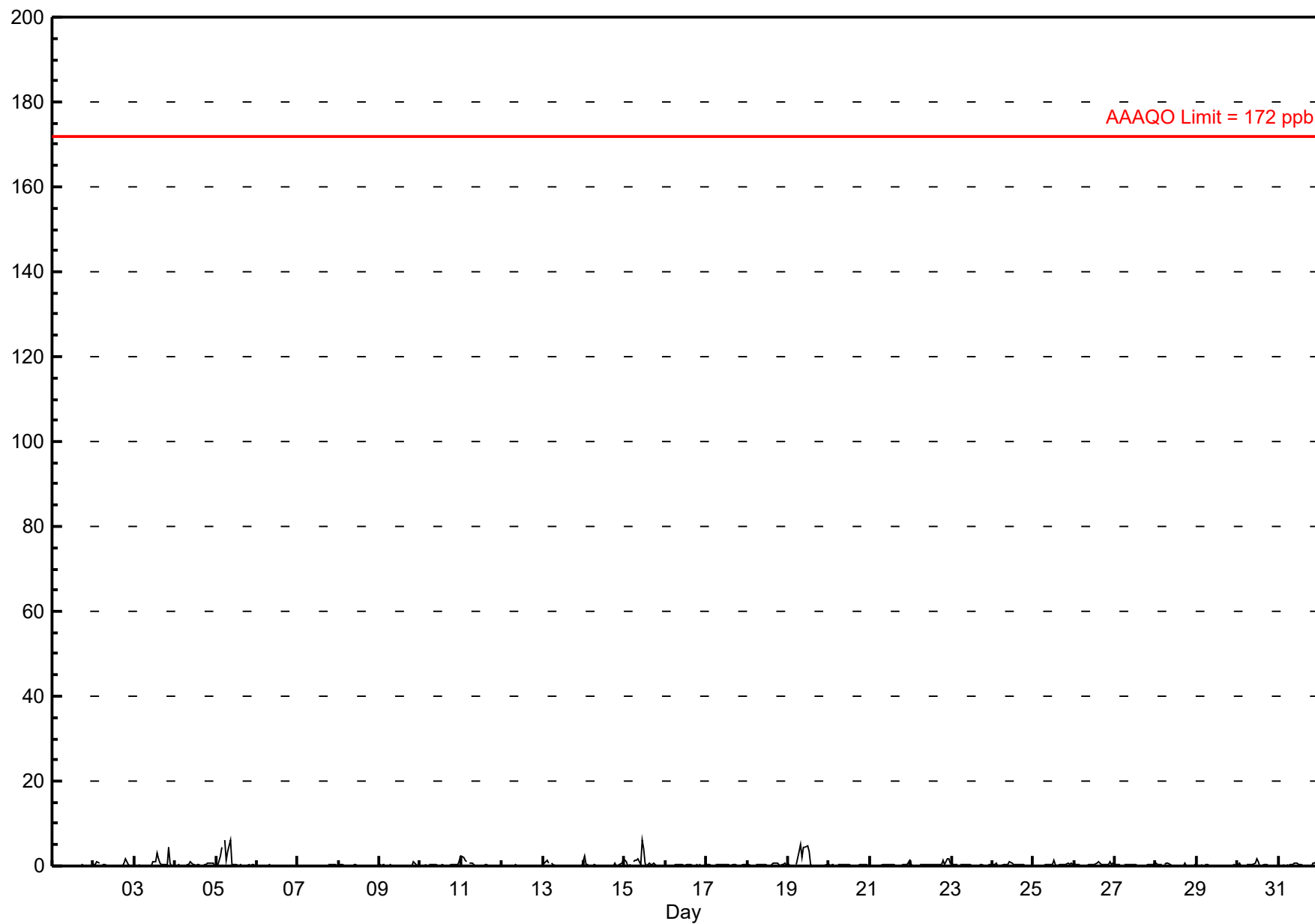
Wembley-Portable Air Monitoring Station

May-2019 Peace Airshed Zone Association									Maximum Recorded Values						
									1-hr			24-hr / 8-hr			
Parameter (units)	Objectives			Station	Monthly Average	Min	Exceedence			Conc	Day	Conc	Day	Operational Time (%)	Calibration Date
	1-hr	24-hr	30-day				1-hr	24-hr	30-day						
SO ₂ (ppb)	172	48	8	Wembley-Portable	0.2	0.0	0	0	0	13.5	May-31 13:00	1.5	May-31	99.5	May-14
TRS (ppb)					0.1	0.0	-	-	-	0.6	May-30 16:00	0.3	May-30	99.5	May-13
NO (ppb)					0.3	0.0	-	-	-	11.0	May-13 05:00	1.1	May-31	99.5	May-14
NO ₂ (ppb)	159	106			2.2	0.2	0	0	-	16.7	May-31 02:00	6.9	May-31	99.5	May-14
NO _x (ppb)					2.5	0.2	-	-	-	26.6	May-13 05:00	8.1	May-31	99.5	May-14
O ₃ (ppb)	76				35.7	5.7	0	-	-	60.1	May-26 18:00	44.8	May-20	99.5	May-14
O ₃ (ppb) - 8-hr							-	-	-			56.6	May-26		-
THC (ppm)					1.9	1.8	-	-	-	2.3	May-31 09:00	2.1	May-31	92.3	May-13
CH ₄ (ppm)					1.9	1.8	-	-	-	2.3	May-31 09:00	2.1	May-31	92.3	May-13
NMHC (ppm)					0.0	0.0	-	-	-	0.0	May-04 14:00	0.0	May-04	92.3	May-13
PM _{2.5} (µg/m3)	80	29			15.7	0.0	29	2	-	406.5	May-30 16:00	202.6	May-31	99.3	Mar-13
Temp (°C)					11.1	-5.8	-	-	-	29.3	May-28 17:00	21.0	May-29	99.5	-
WSPD v (km/hr)					2.2	0.2	-	-	-	24.9	May-20 15:00	15.8	May-16	100.0	19/12/2017
WDIR					ENE		-	-	-	-	-	-	-	100.0	19/12/2017

Parameter	Analyzer		Notes
	Make	Model	
SO ₂	TECO	43I	Power outage May 25
TRS	TECO	43I	
NO/NO ₂ /NO _x	TECO	42I	
O ₃	TECO	49I	
THC/CH ₄ /NMHC	TECO	55I	Nitrogen cylinder expired May 11. No spare available, replacement acquired May 13 and installed.
PM _{2.5}	TEOM		Sample filter replaced May 31 due to heavy loading.
ET/RH			
WS/WD	MetOne	50.5	

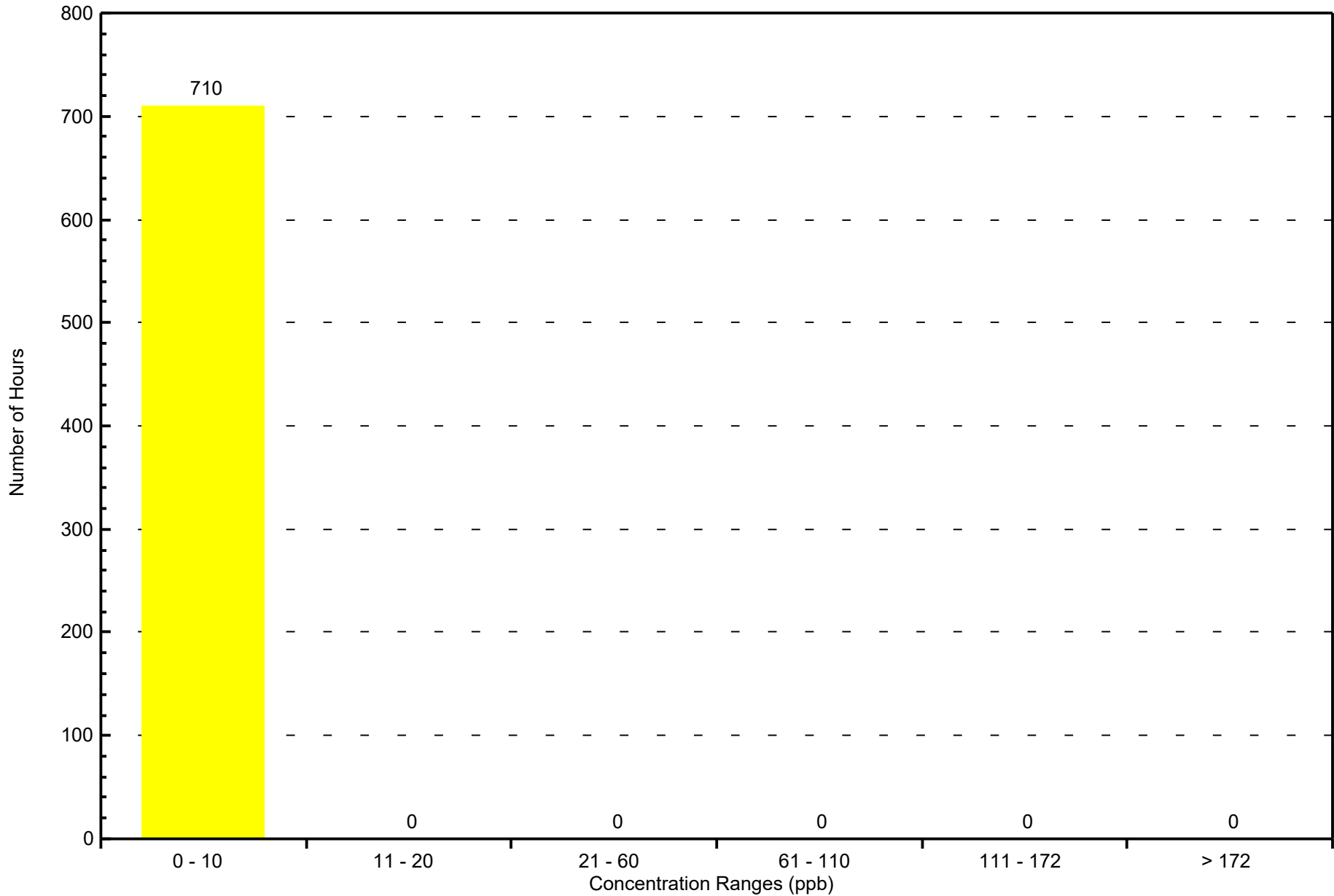
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Beaverlodge - May 2019



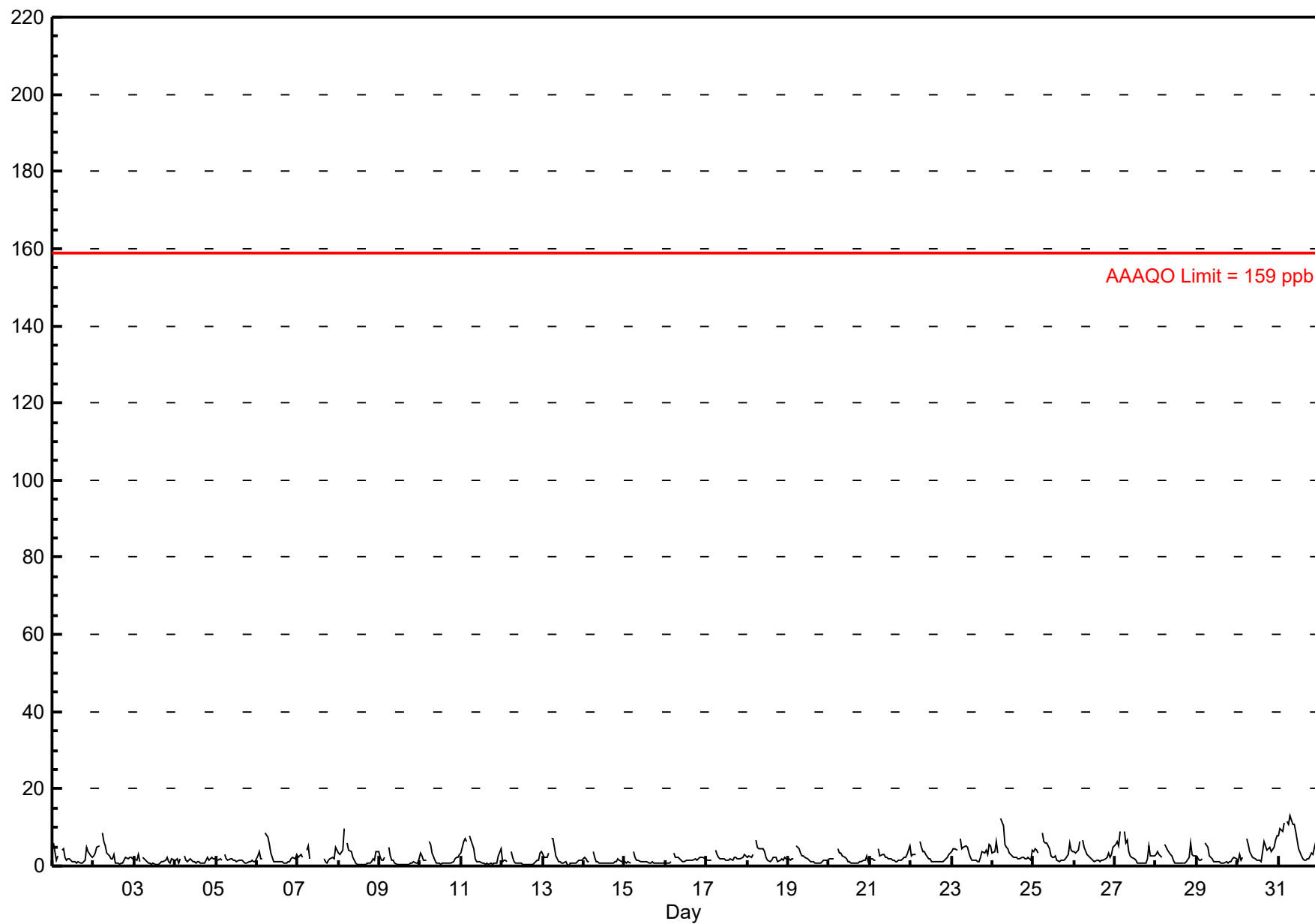
Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Beaverlodge - May 2019



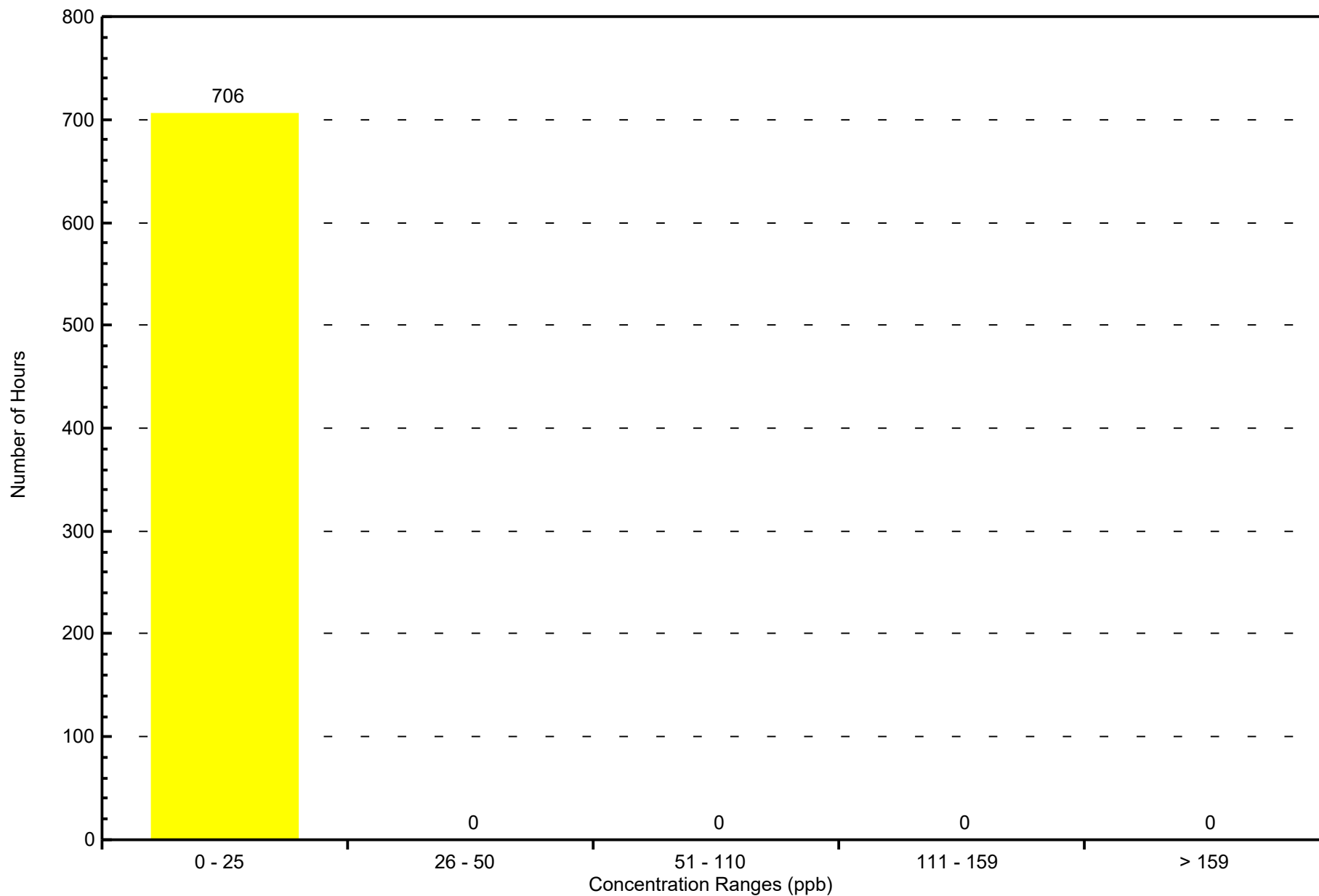
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Beaverlodge - May 2019



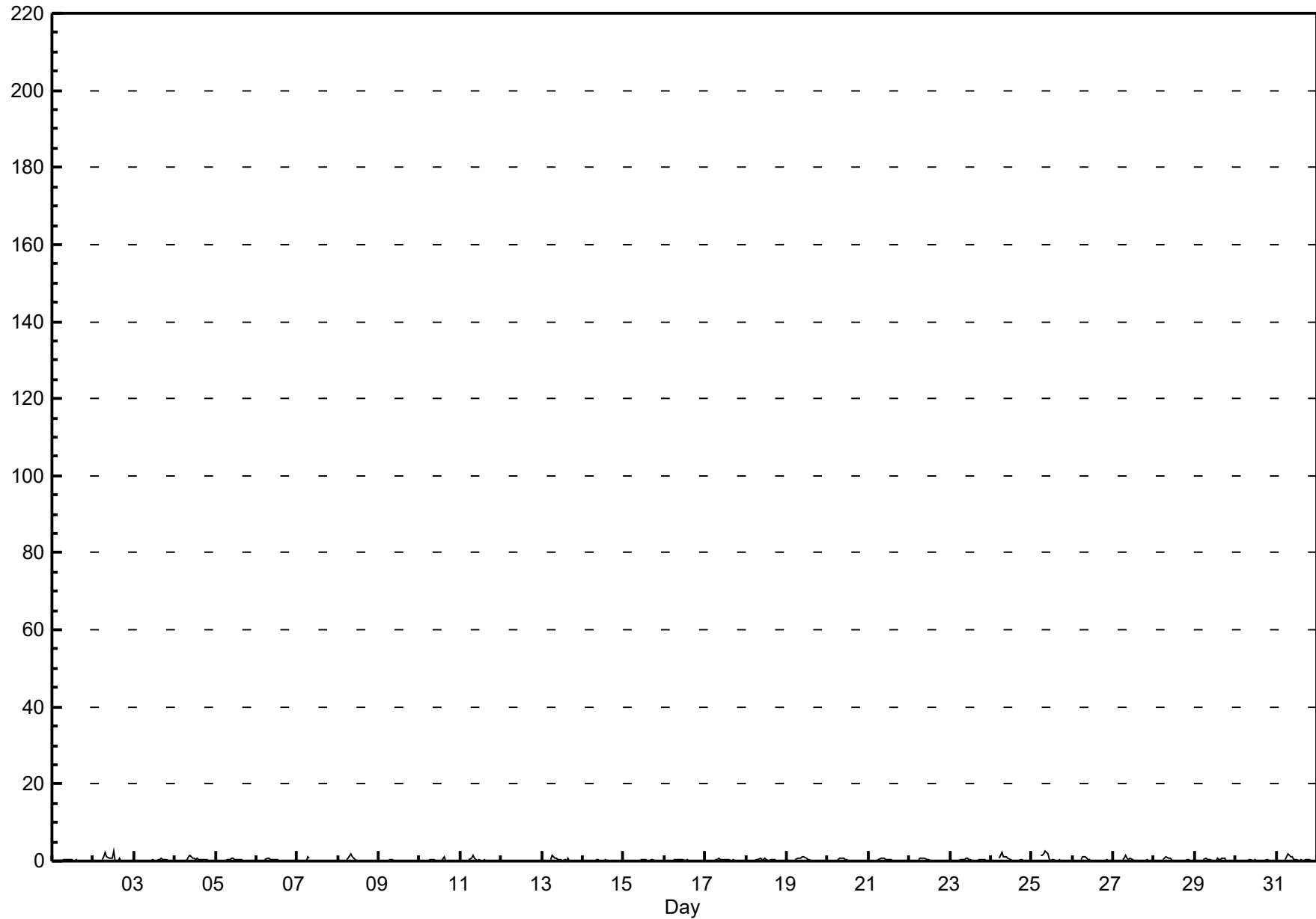
Histogram of Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Beaverlodge - May 2019



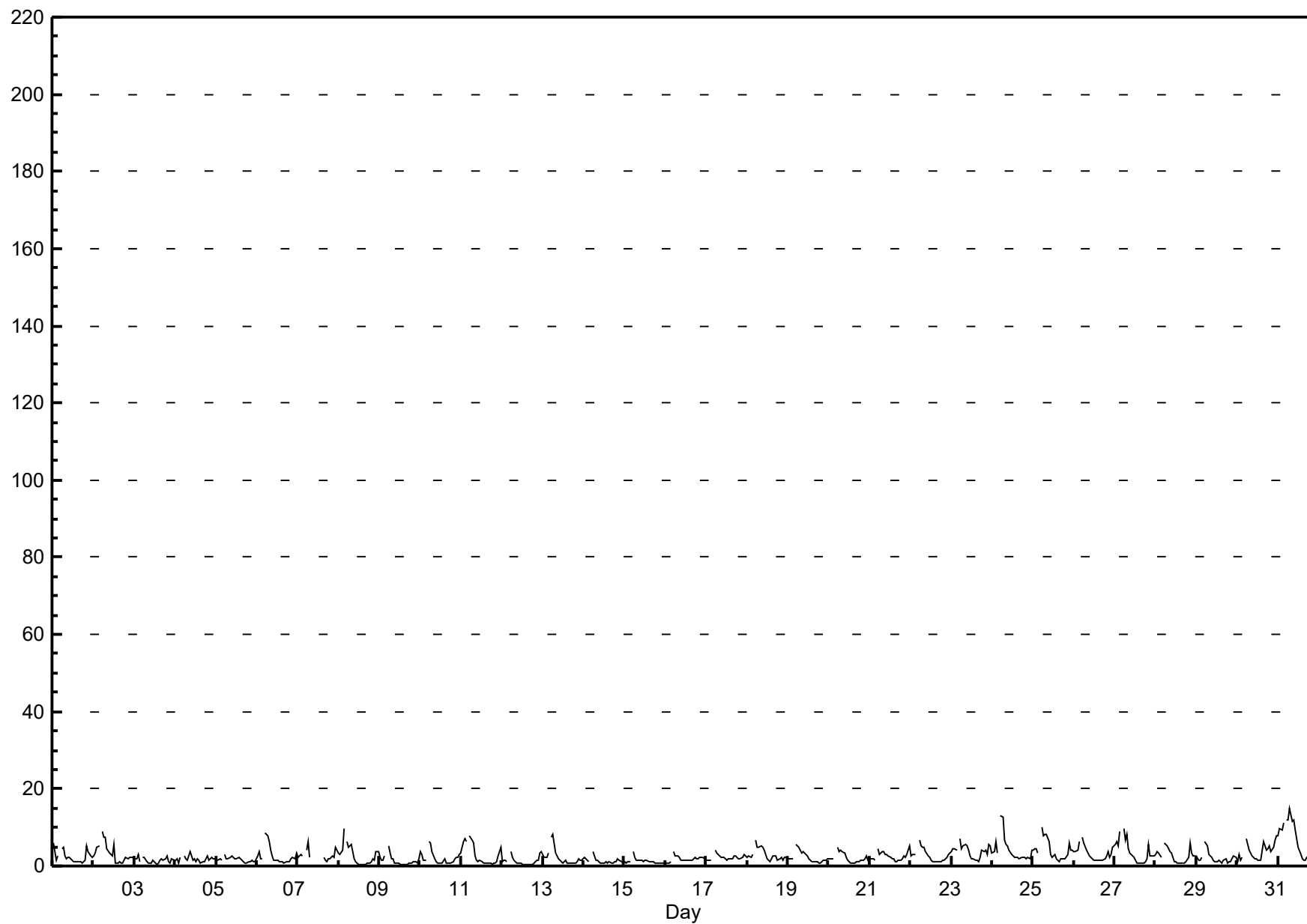
Hourly Averages

Nitrogen Oxide (NO) - ppb
Beaverlodge - May 2019



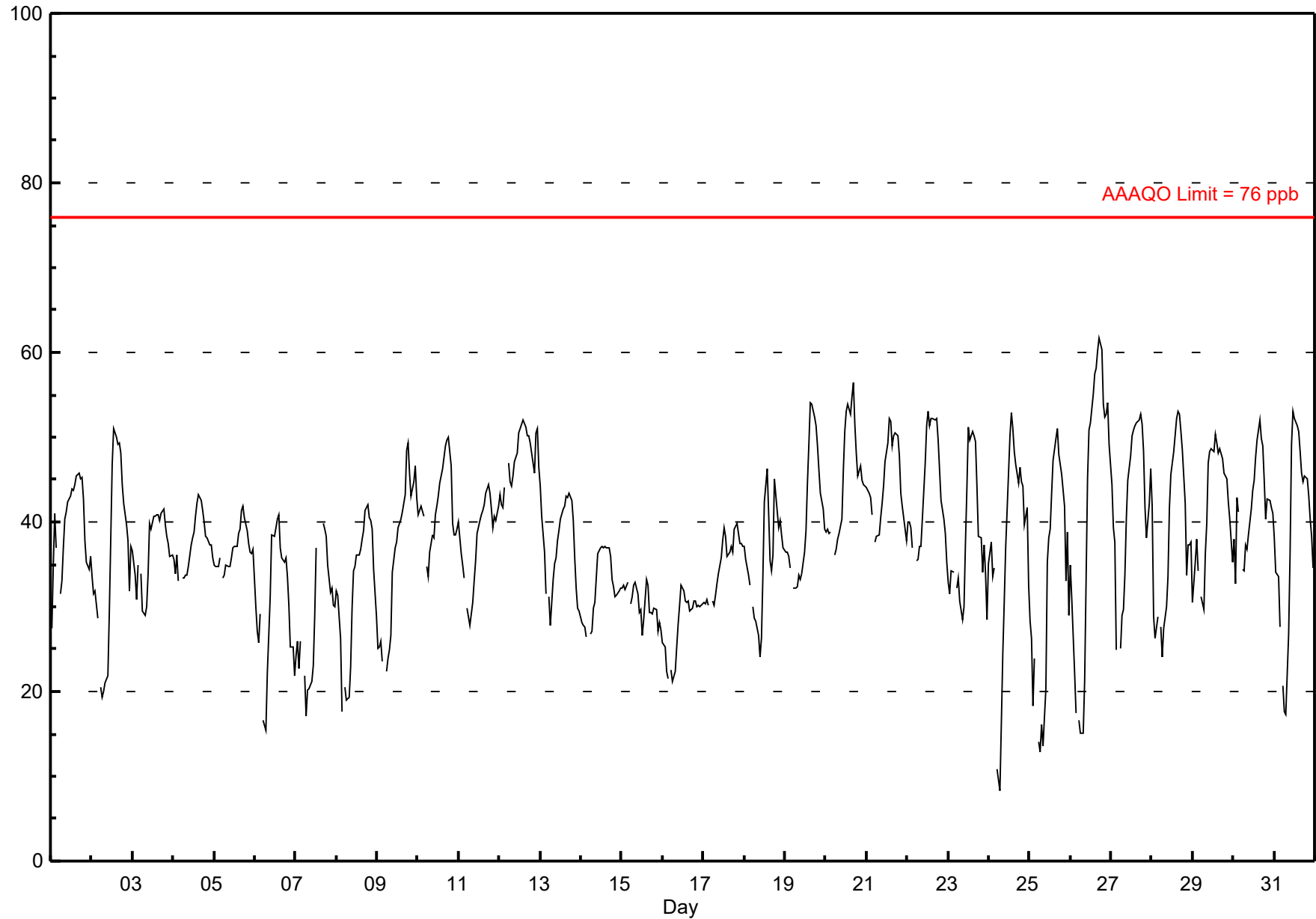
Hourly Averages

Oxides of Nitrogen (NO_x) - ppb
Beaverlodge - May 2019



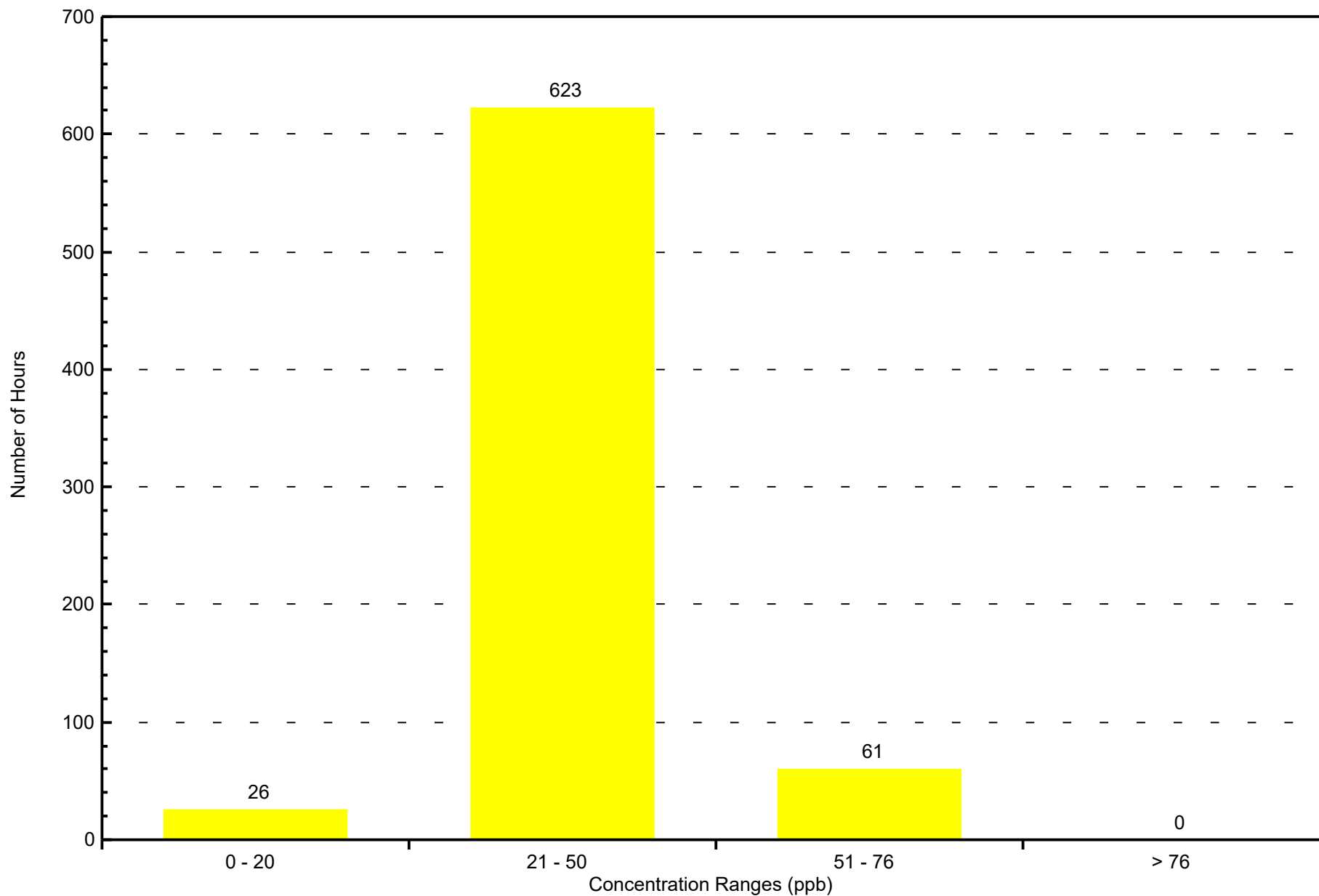
Hourly Averages

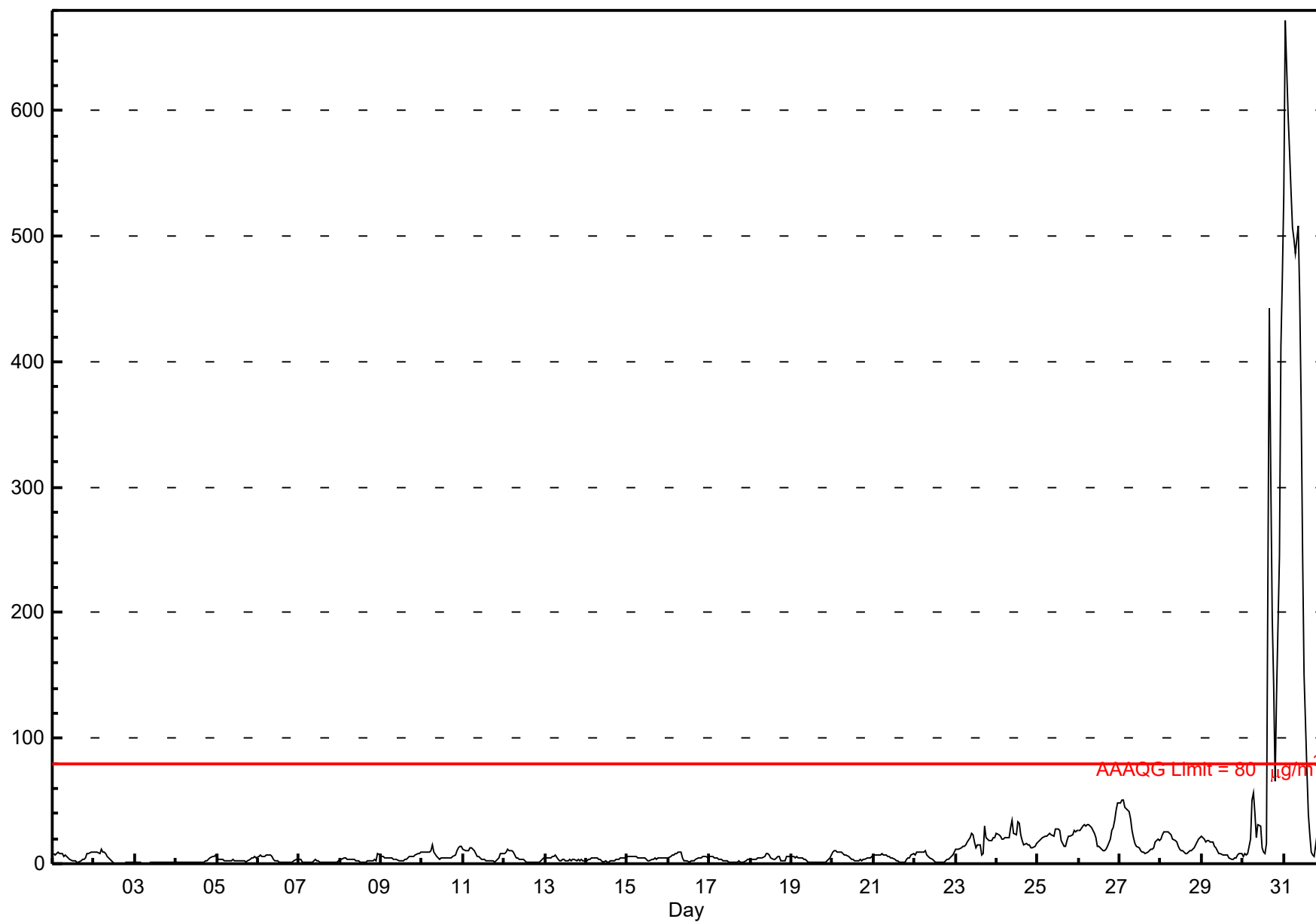
Ozone (O₃) - ppb
Beaverlodge - May 2019

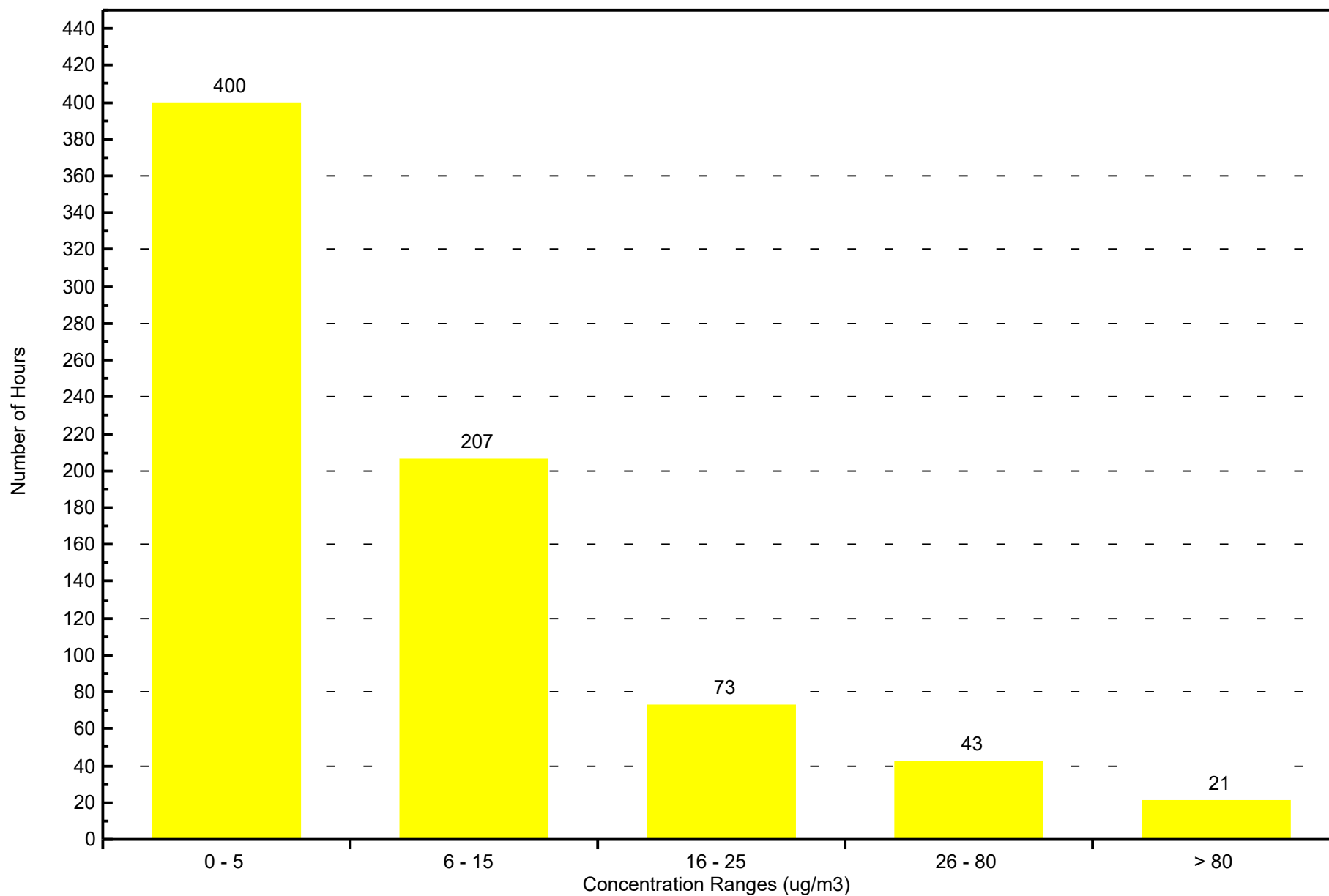


Histogram of Hourly Averages

Ozone (O₃) - ppb
Beaverlodge - May 2019



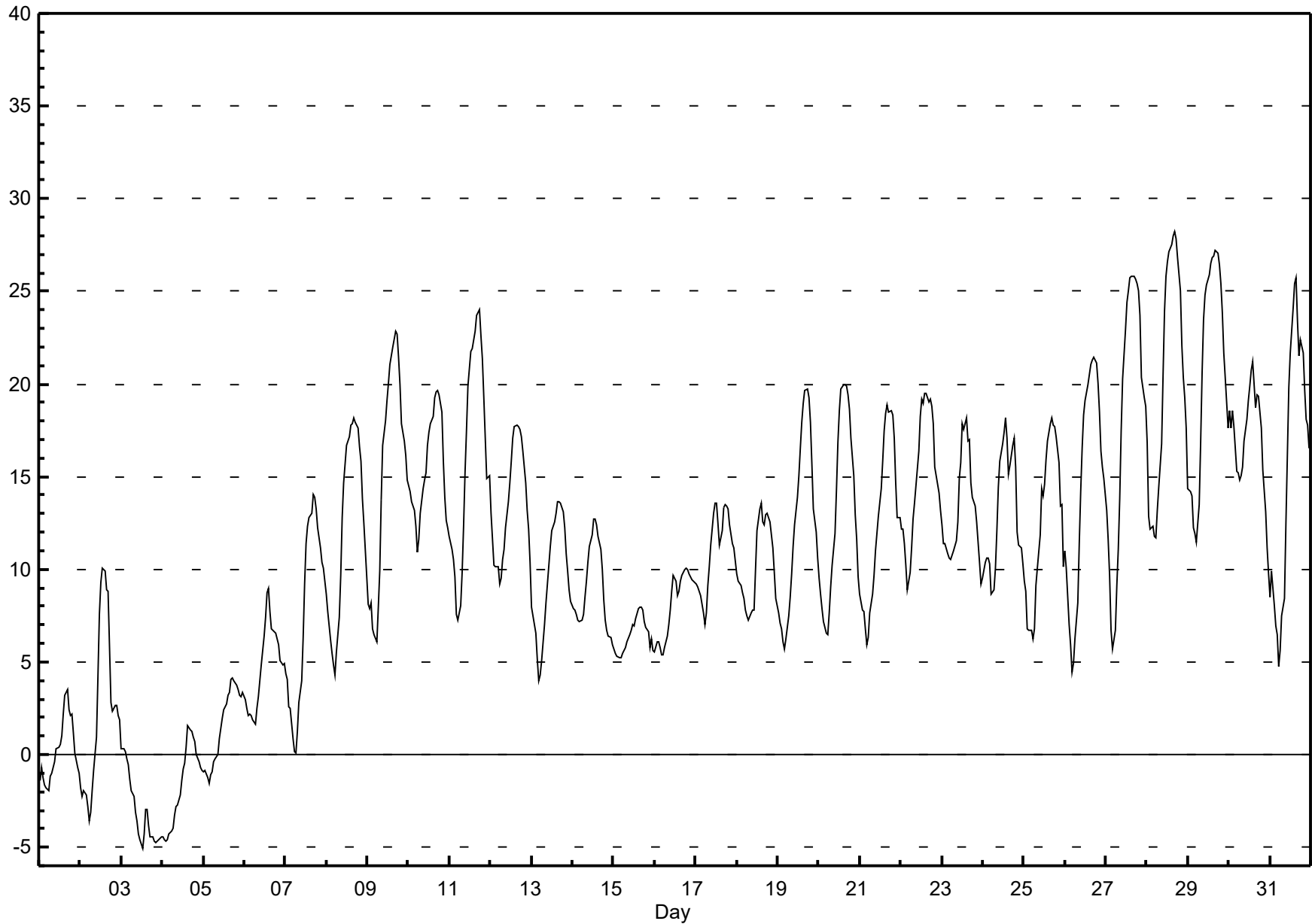




Hourly Averages

External Temperature (ET) - °C

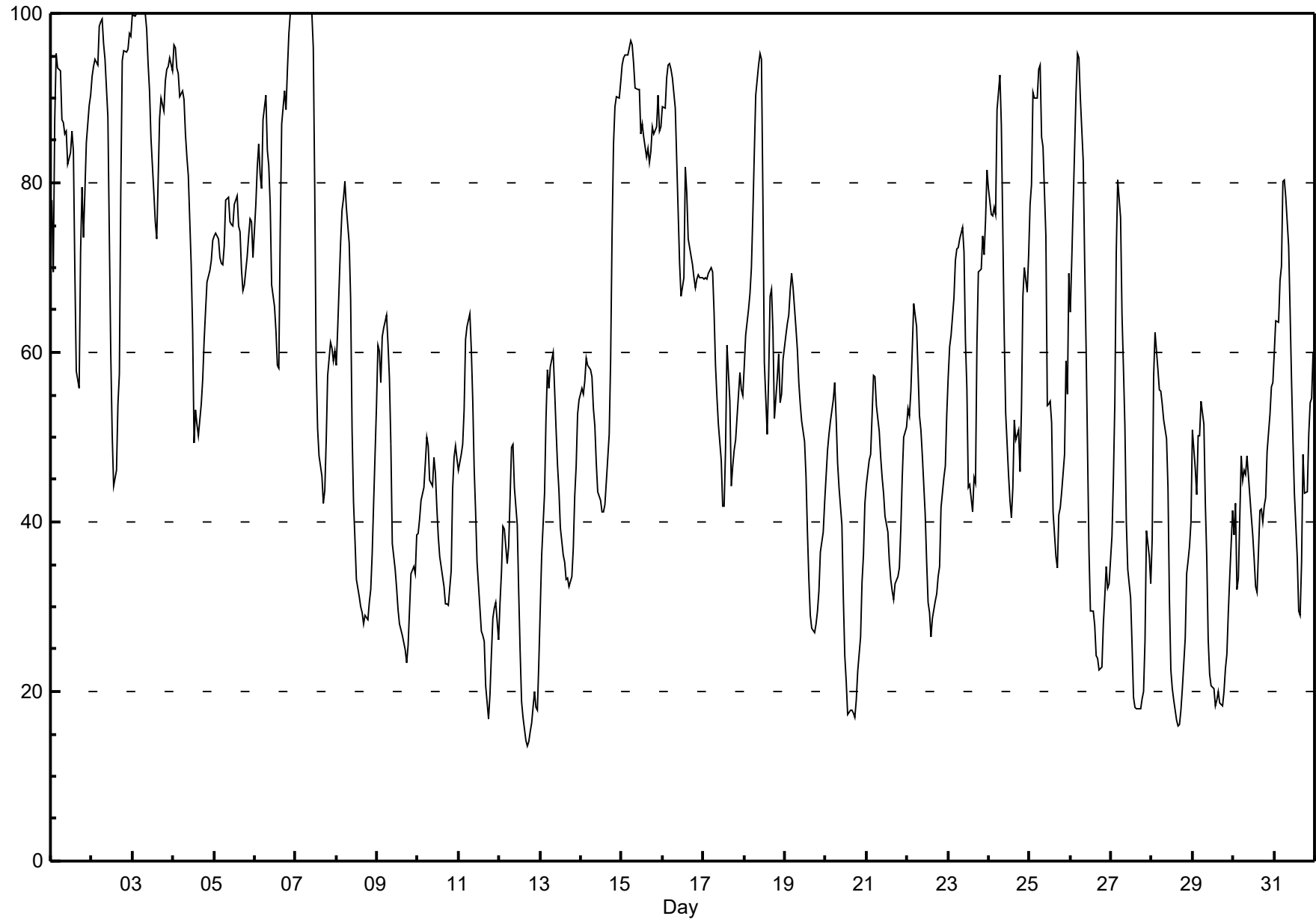
Beaverlodge - May 2019



Hourly Averages

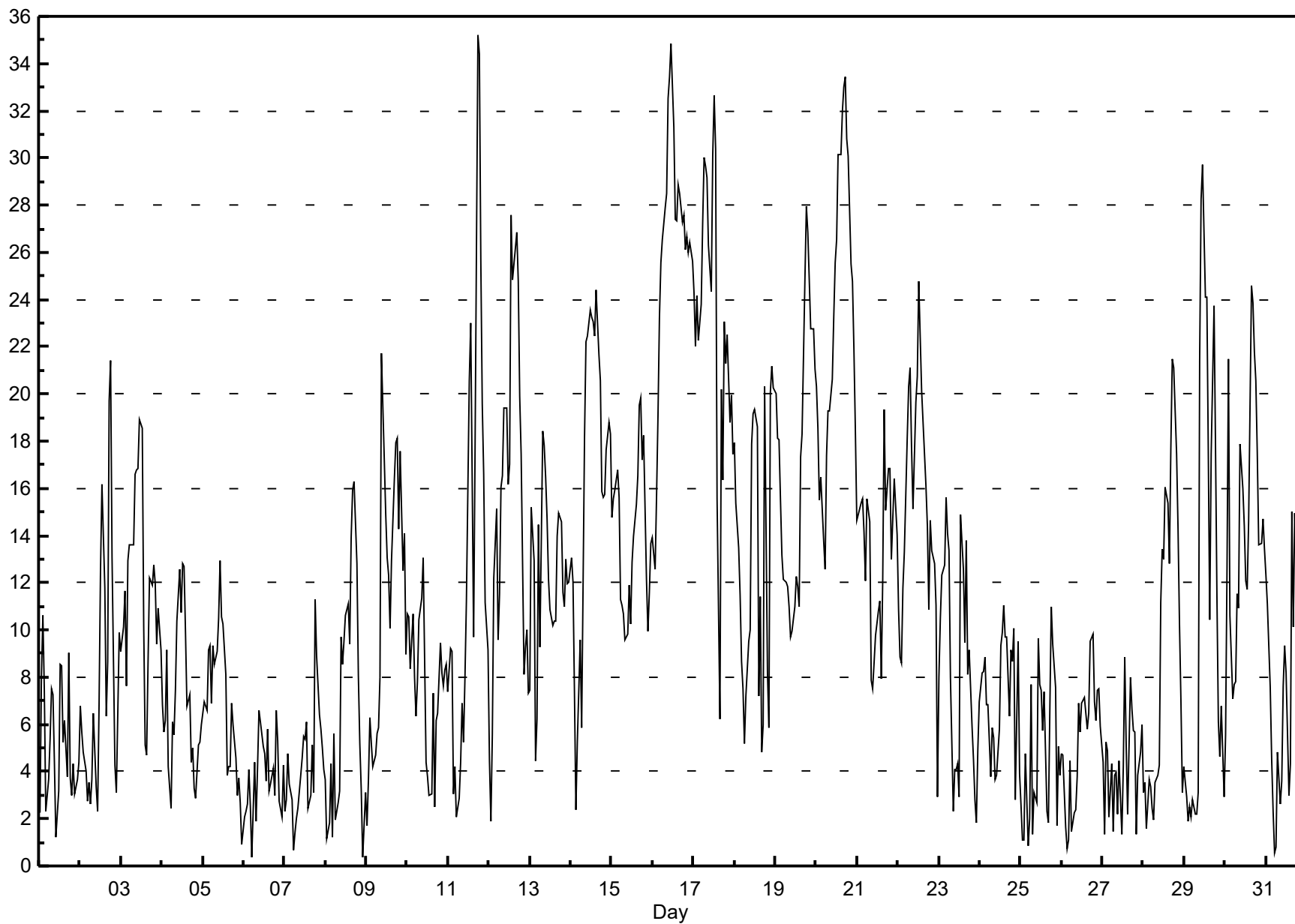
Relative Humidity (RH) - %

Beaverlodge - May 2019



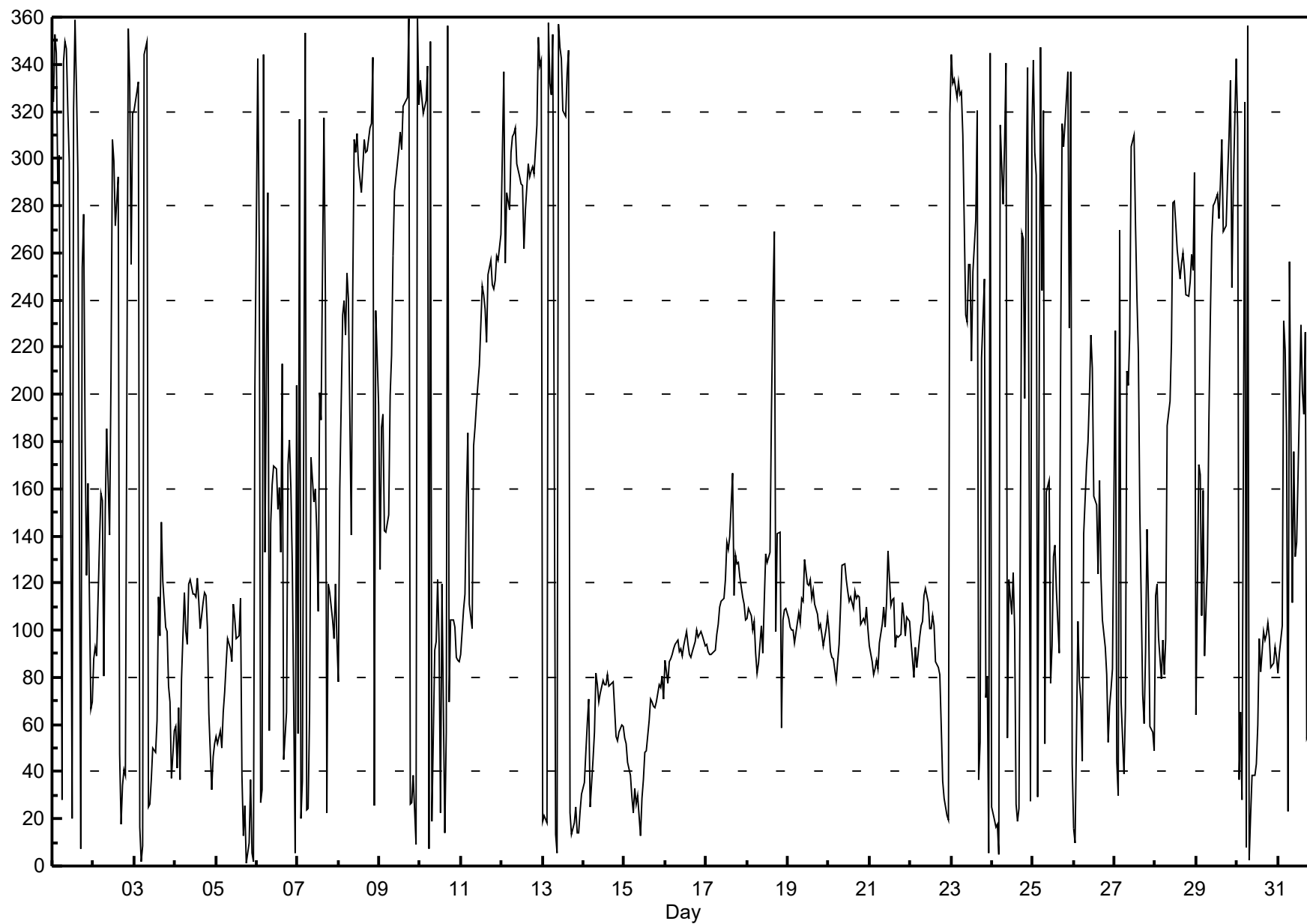
Hourly Averages

Wind Speed (WS) - km/h
Beaverlodge - May 2019



Hourly Averages

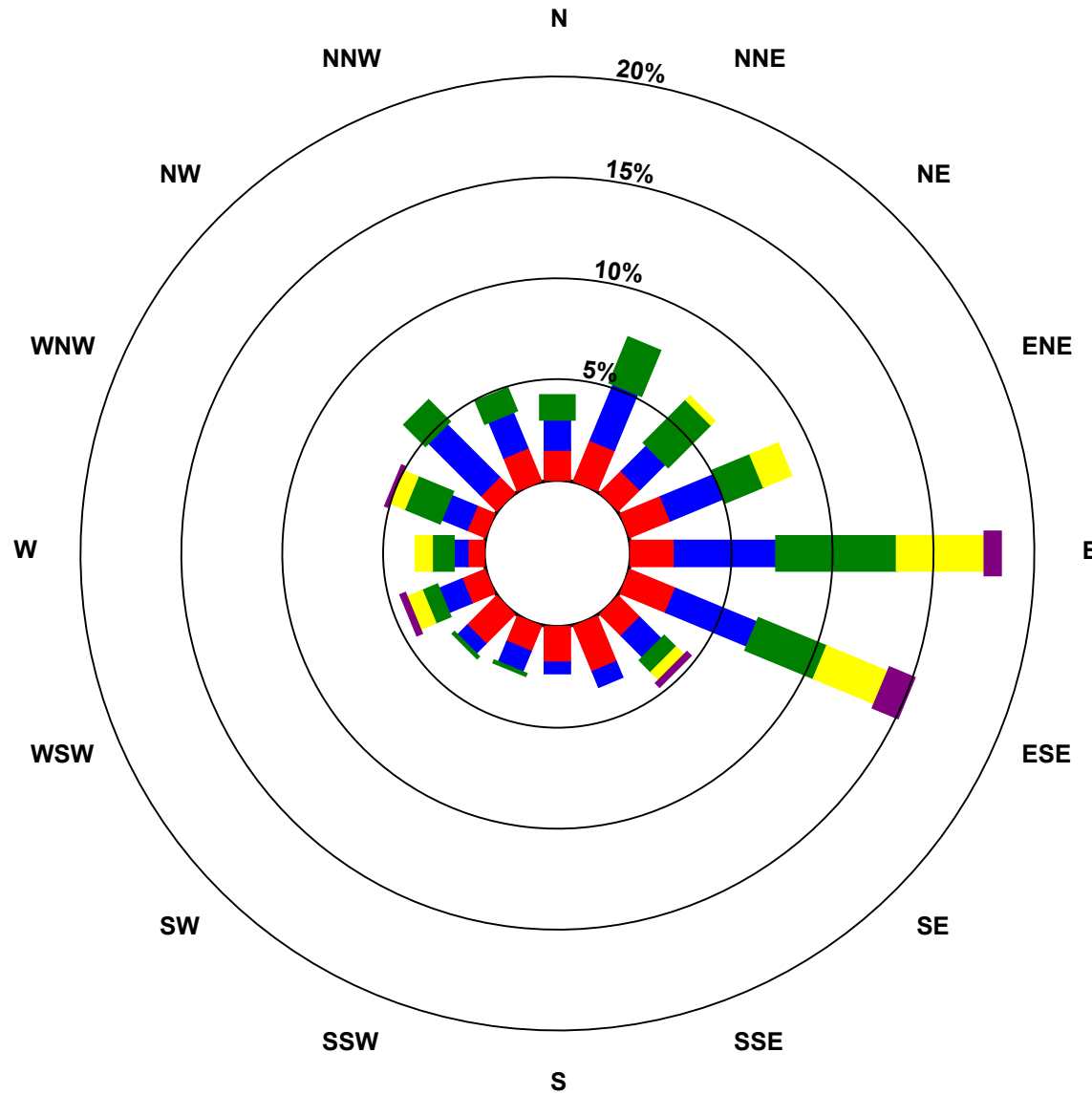
Wind Direction (WD) - deg
Beaverlodge - May 2019



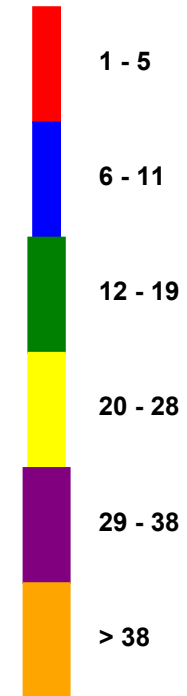
Wind Rose

Wind Speed (WS) (km/h)

Beaverlodge - May 2019

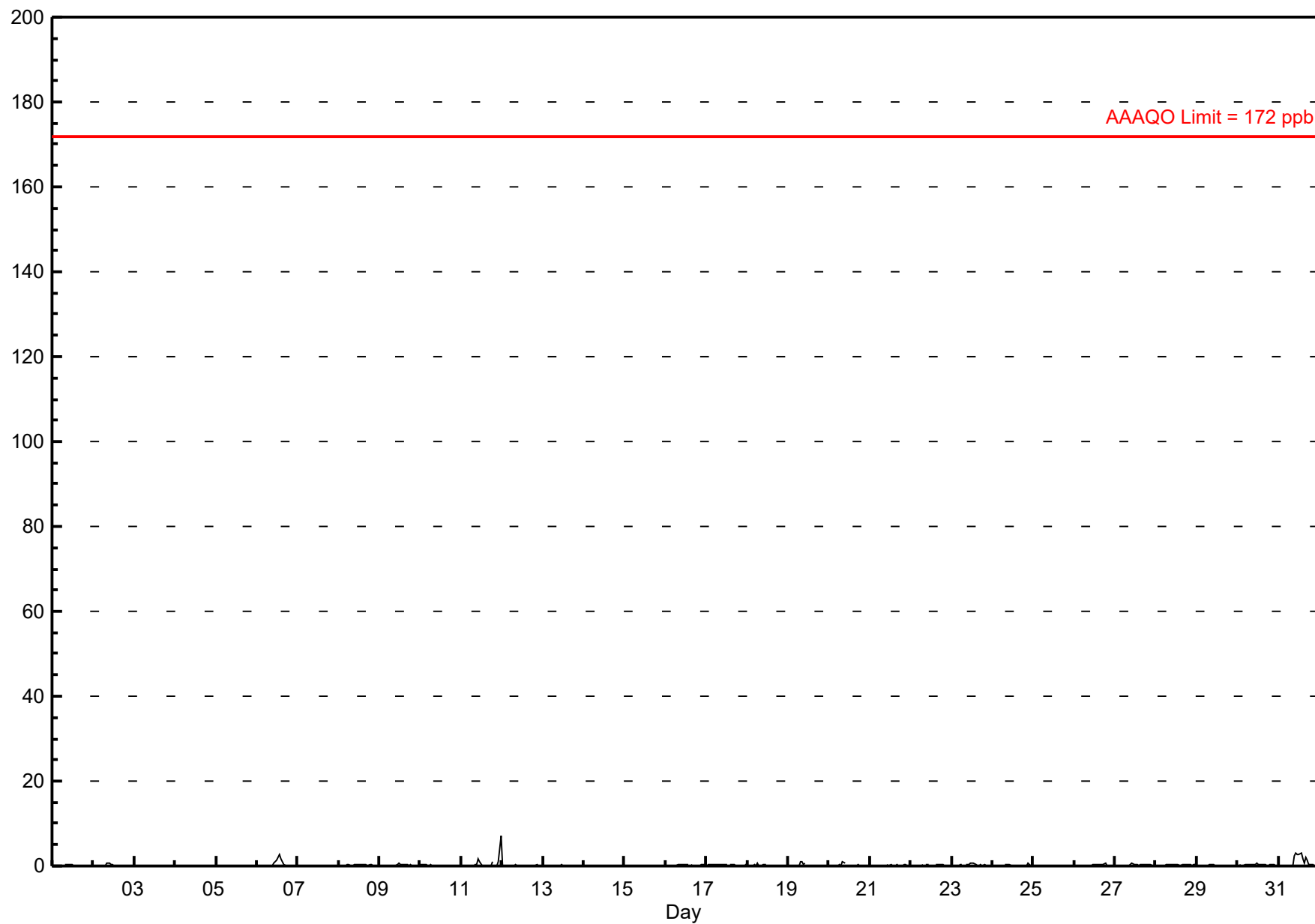


Wind Speed Classes (km/h)



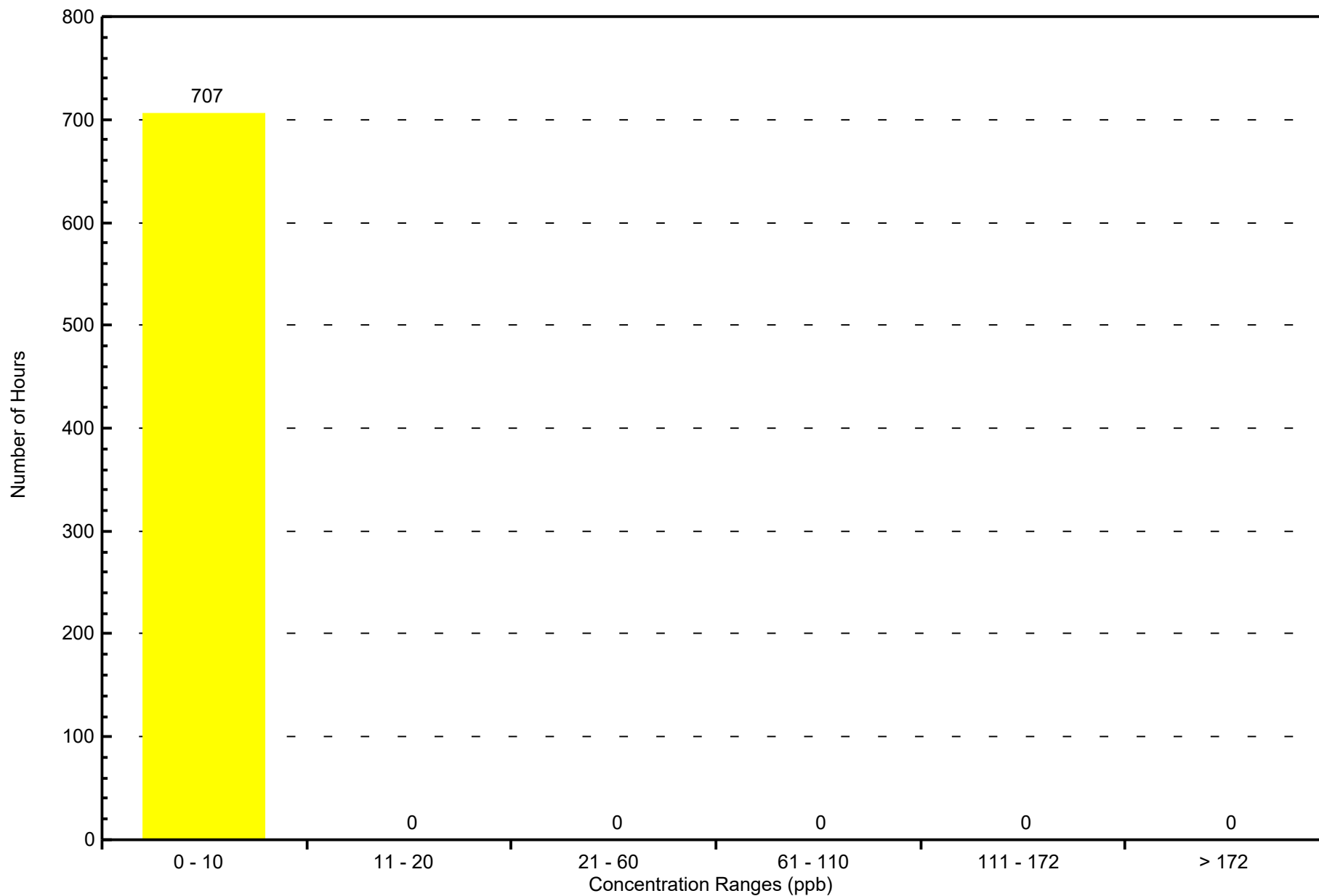
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Evergreen Park - May 2019



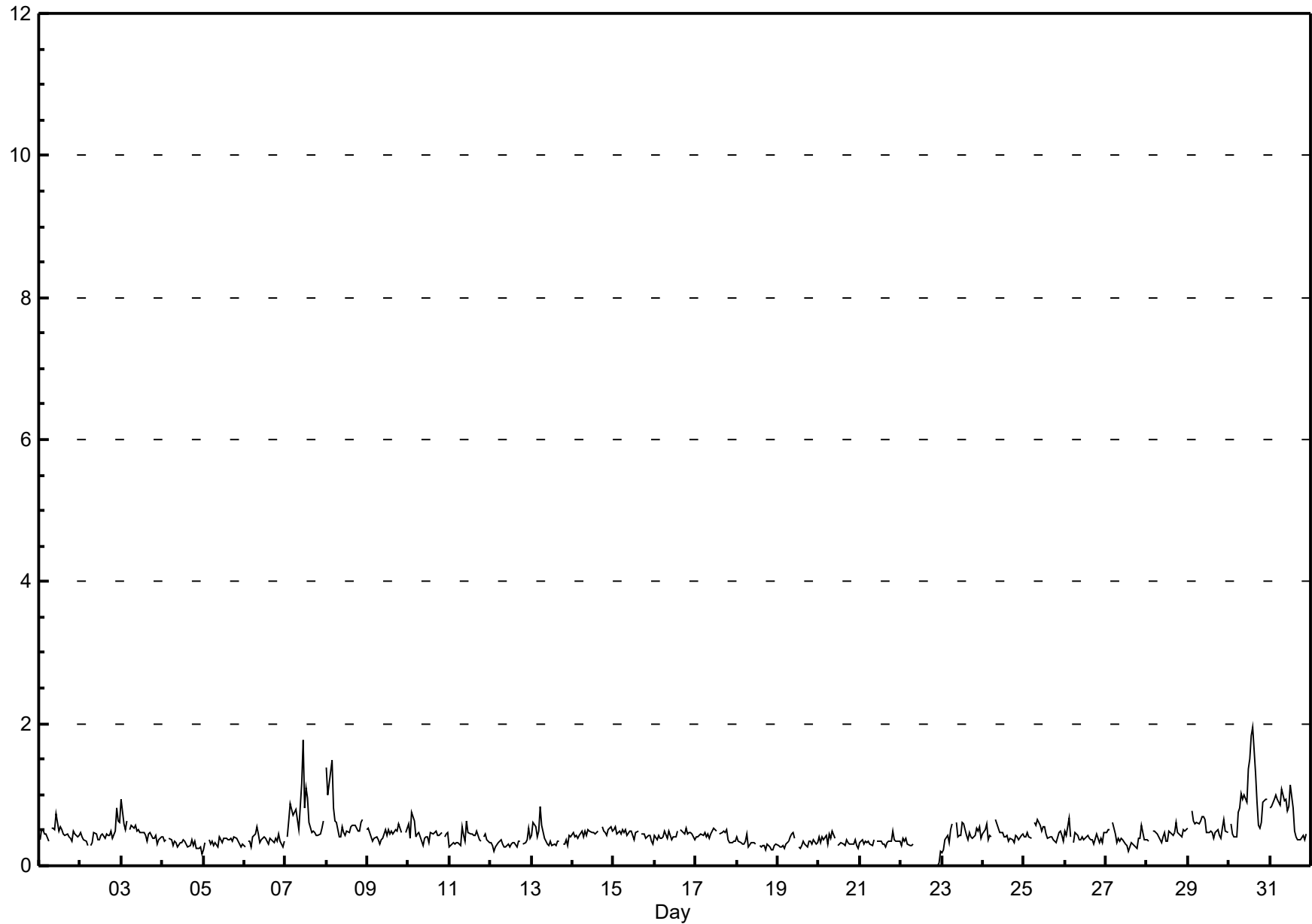
Histogram of Hourly Averages

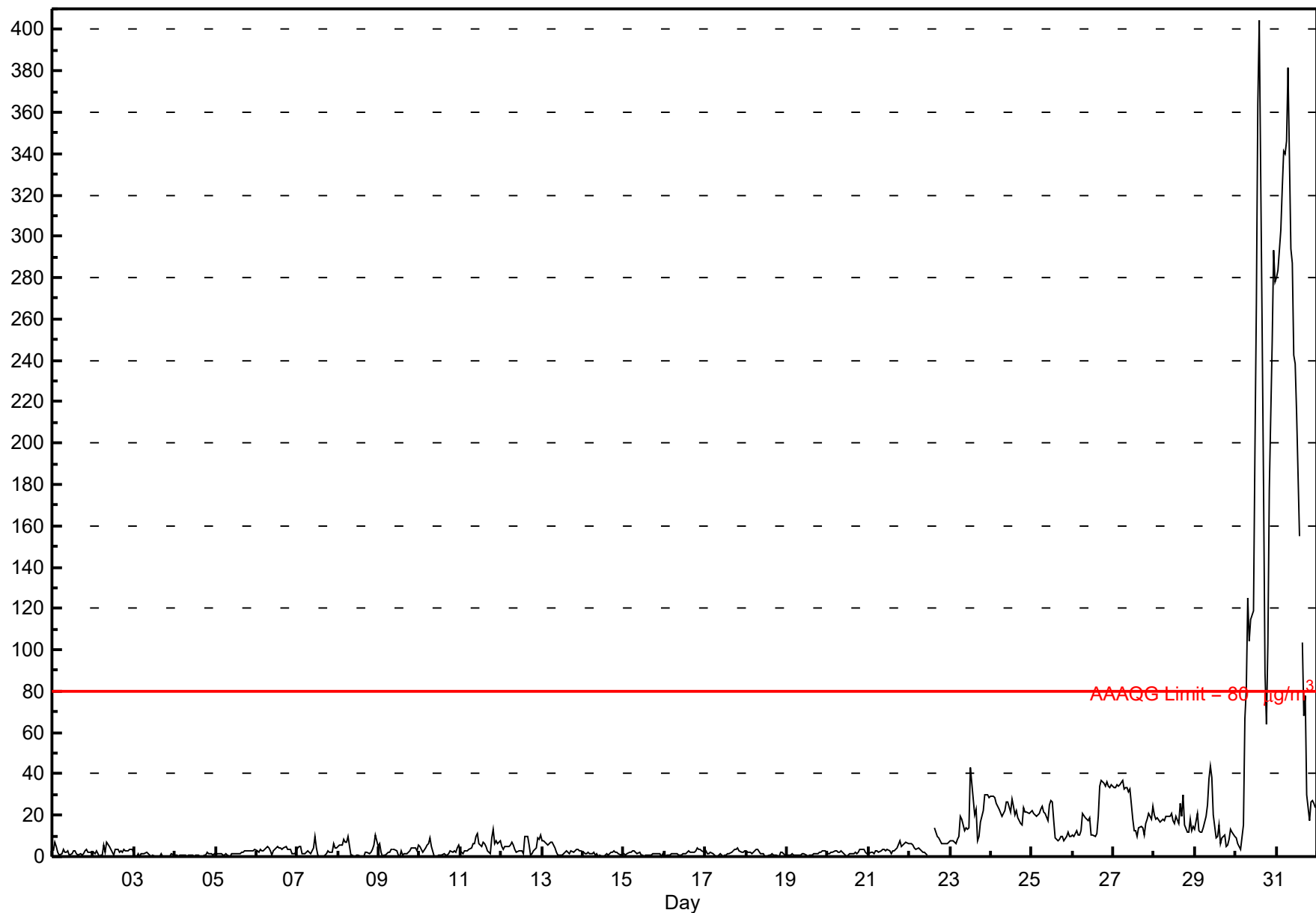
Sulphur Dioxide (SO₂) - ppb
Evergreen Park - May 2019

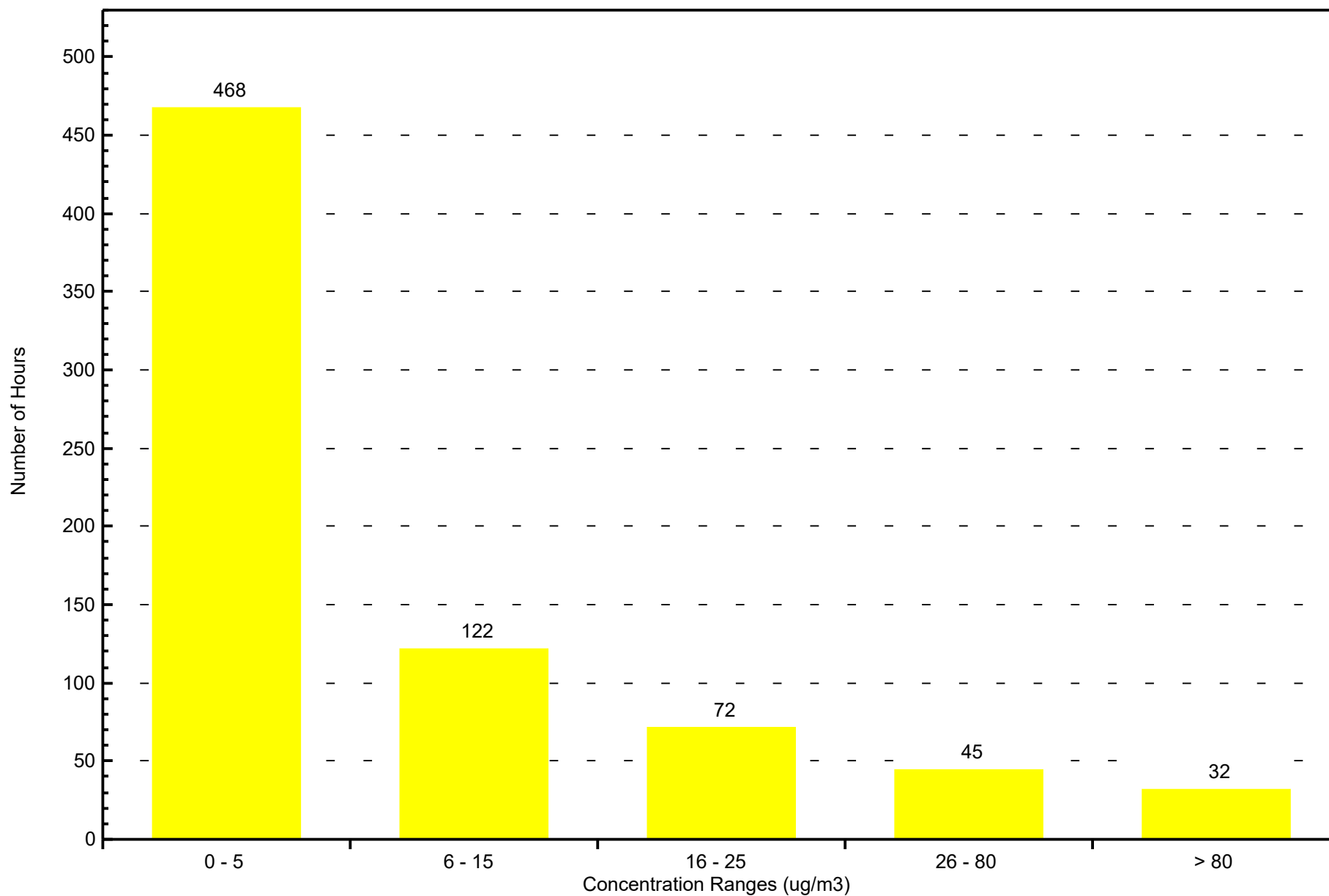


Hourly Averages

Total Reduced Sulphur (TRS) - ppb
Evergreen Park - May 2019



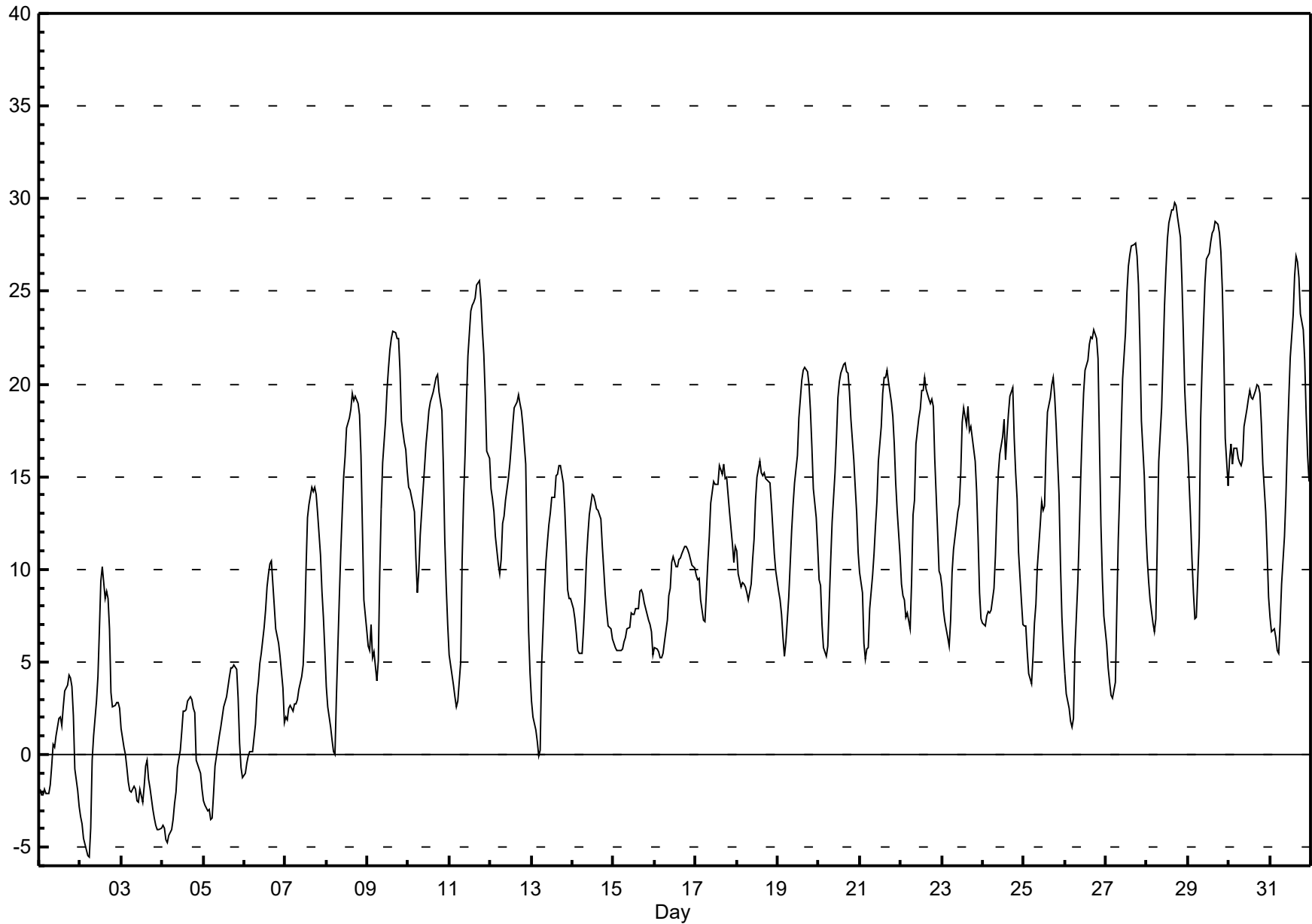




Hourly Averages

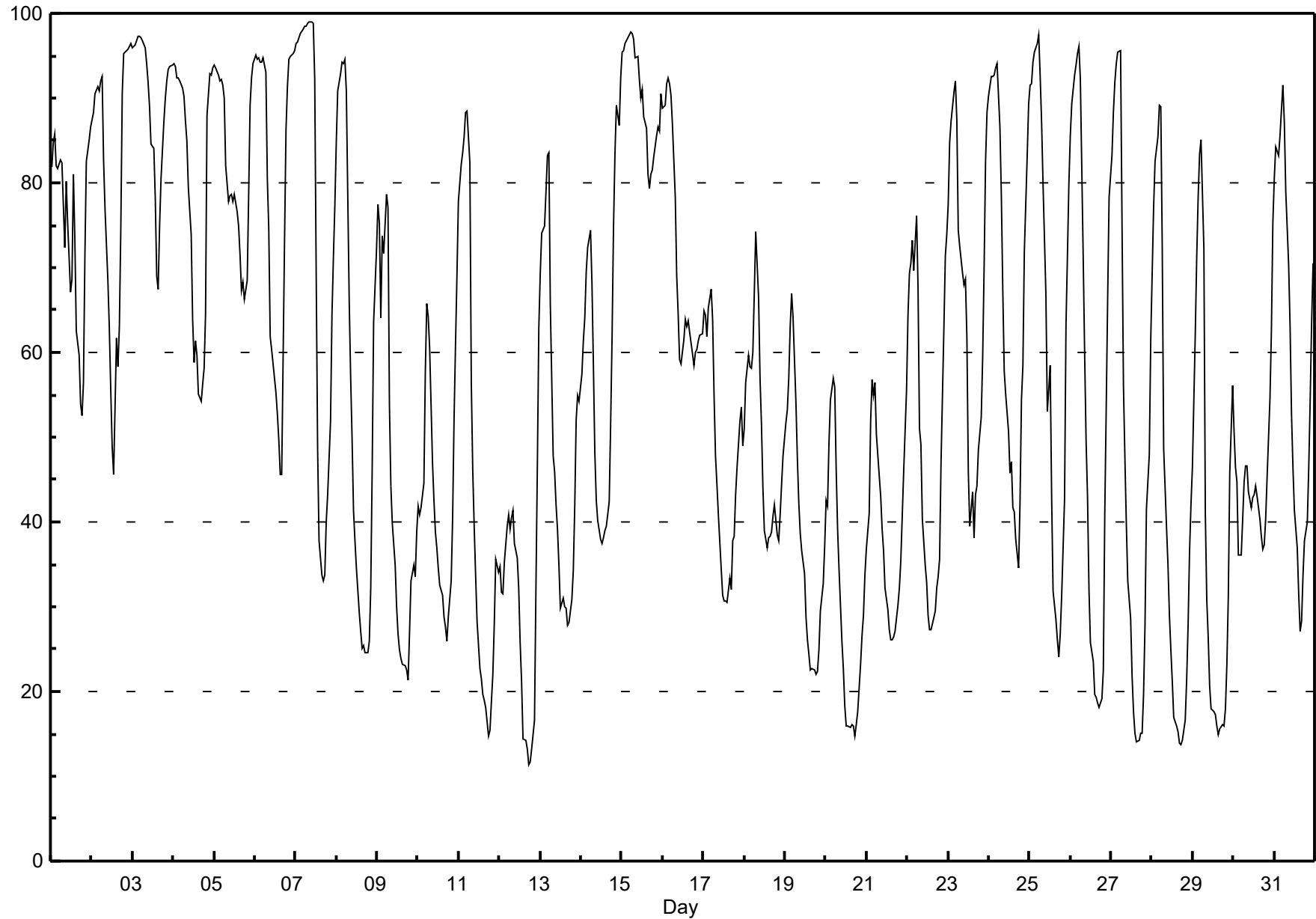
External Temperature (ET) - °C

Evergreen Park - May 2019



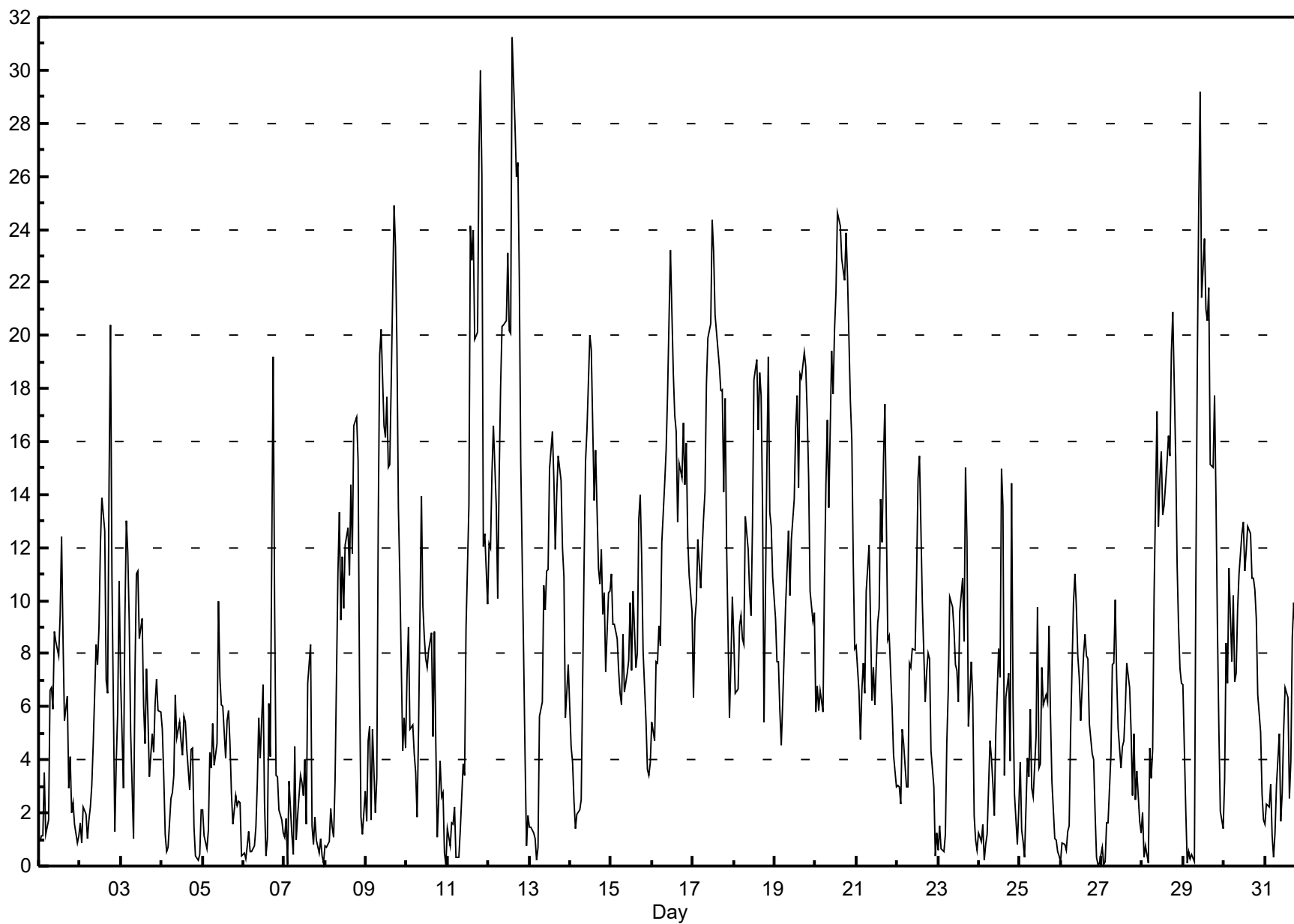
Hourly Averages

Relative Humidity (RH) - %
Evergreen Park - May 2019



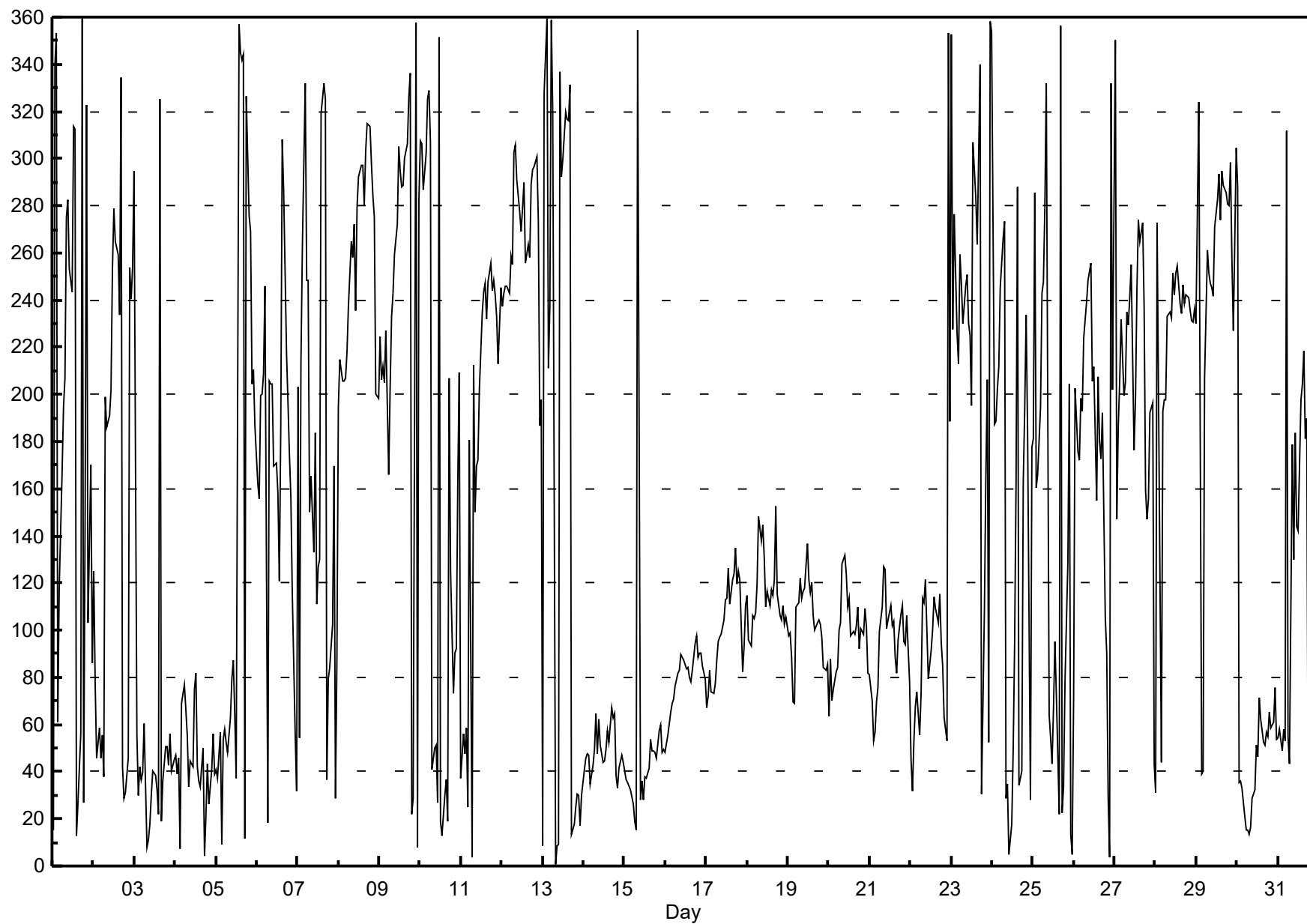
Hourly Averages

Wind Speed (WS) - km/h
Evergreen Park - May 2019



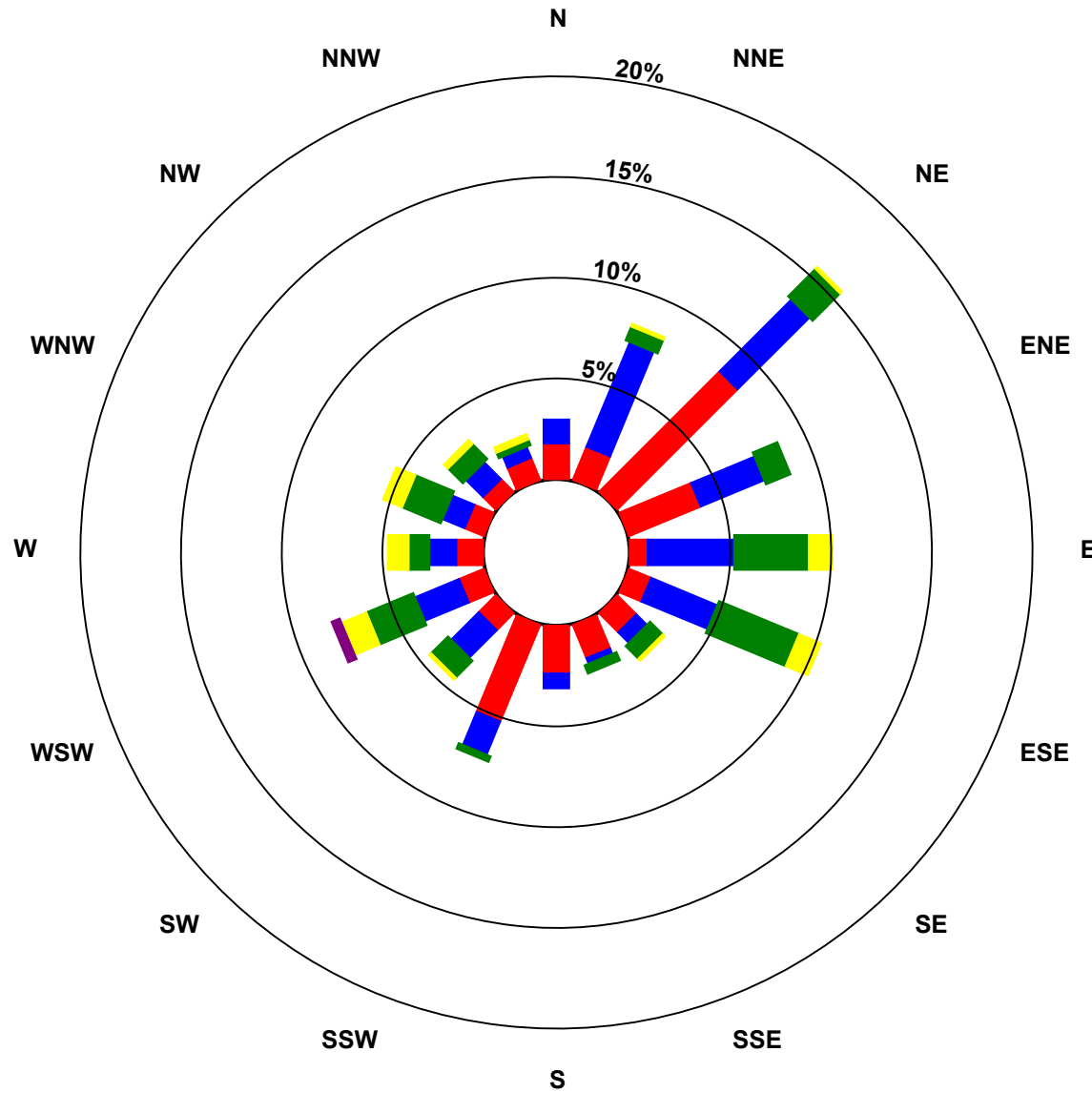
Hourly Averages

Wind Direction (WD) - deg
Evergreen Park - May 2019

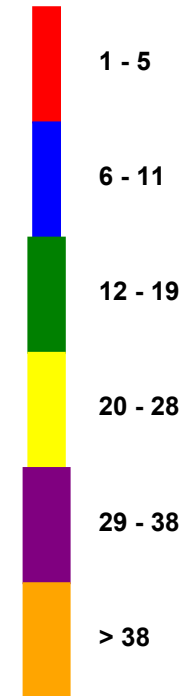


Wind Rose

Wind Speed (WS) (km/h)
Evergreen Park - May 2019



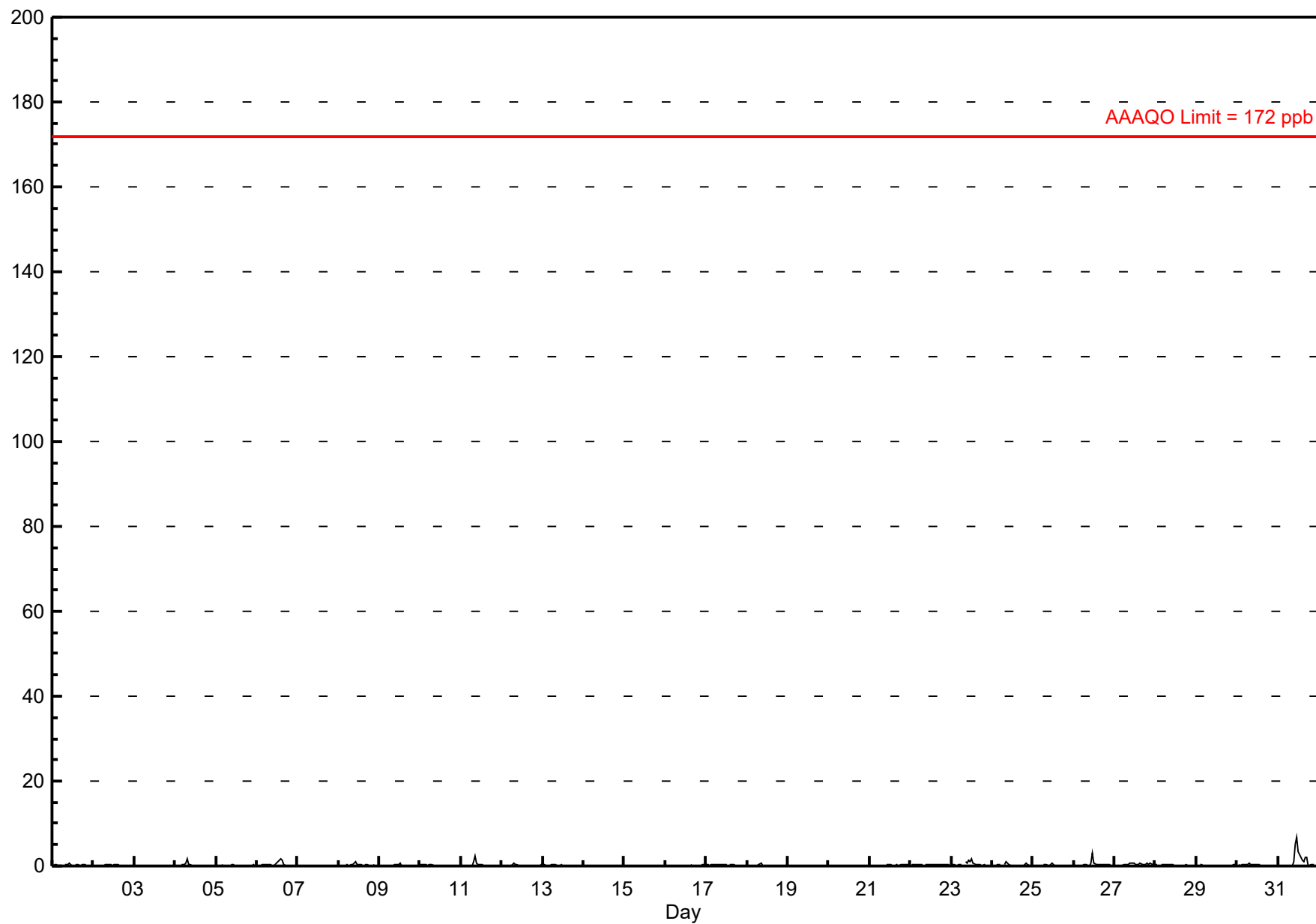
Wind Speed Classes (km/h)



Hourly Averages

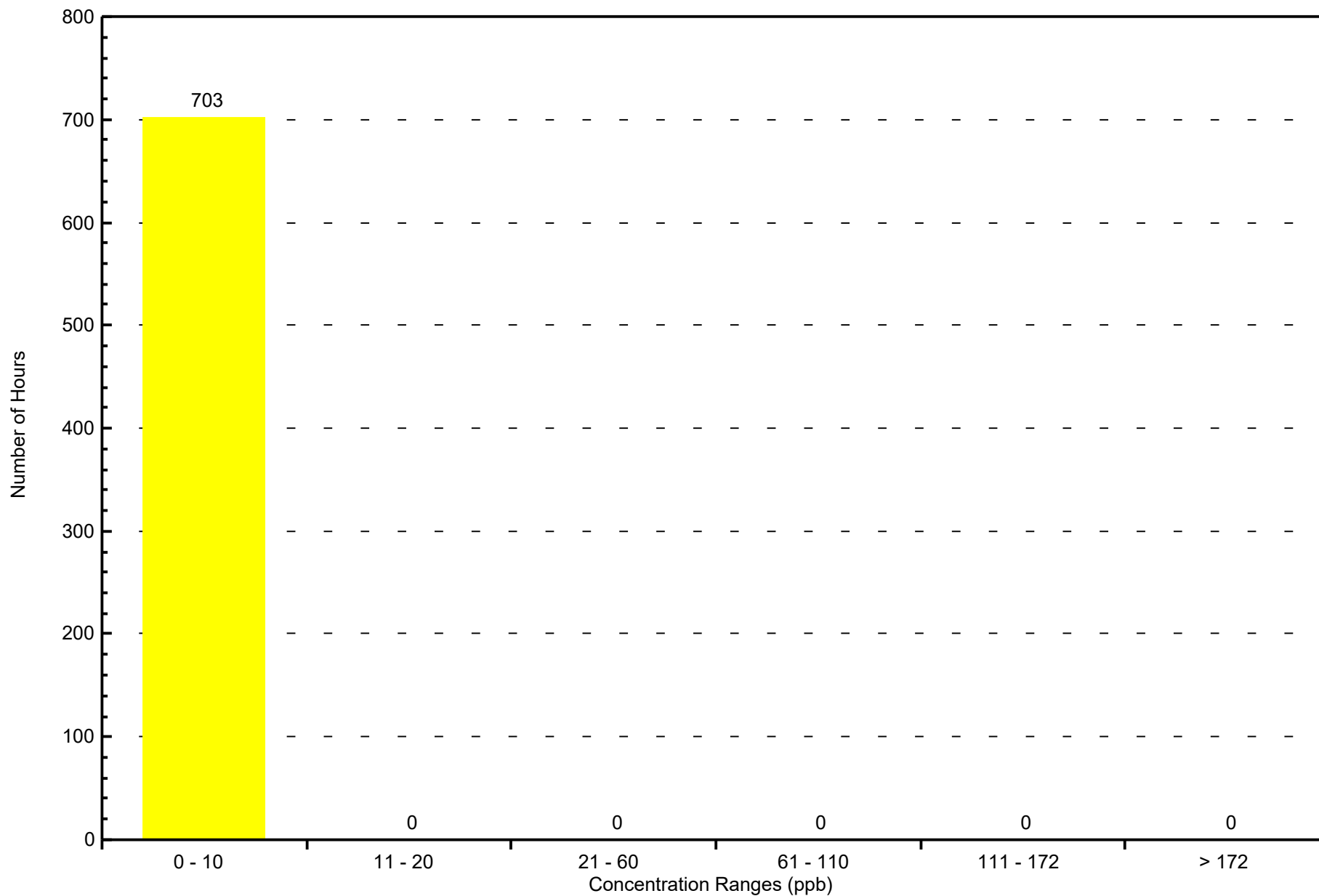
Sulphur Dioxide (SO₂) - ppb

Henry Pirker - May 2019



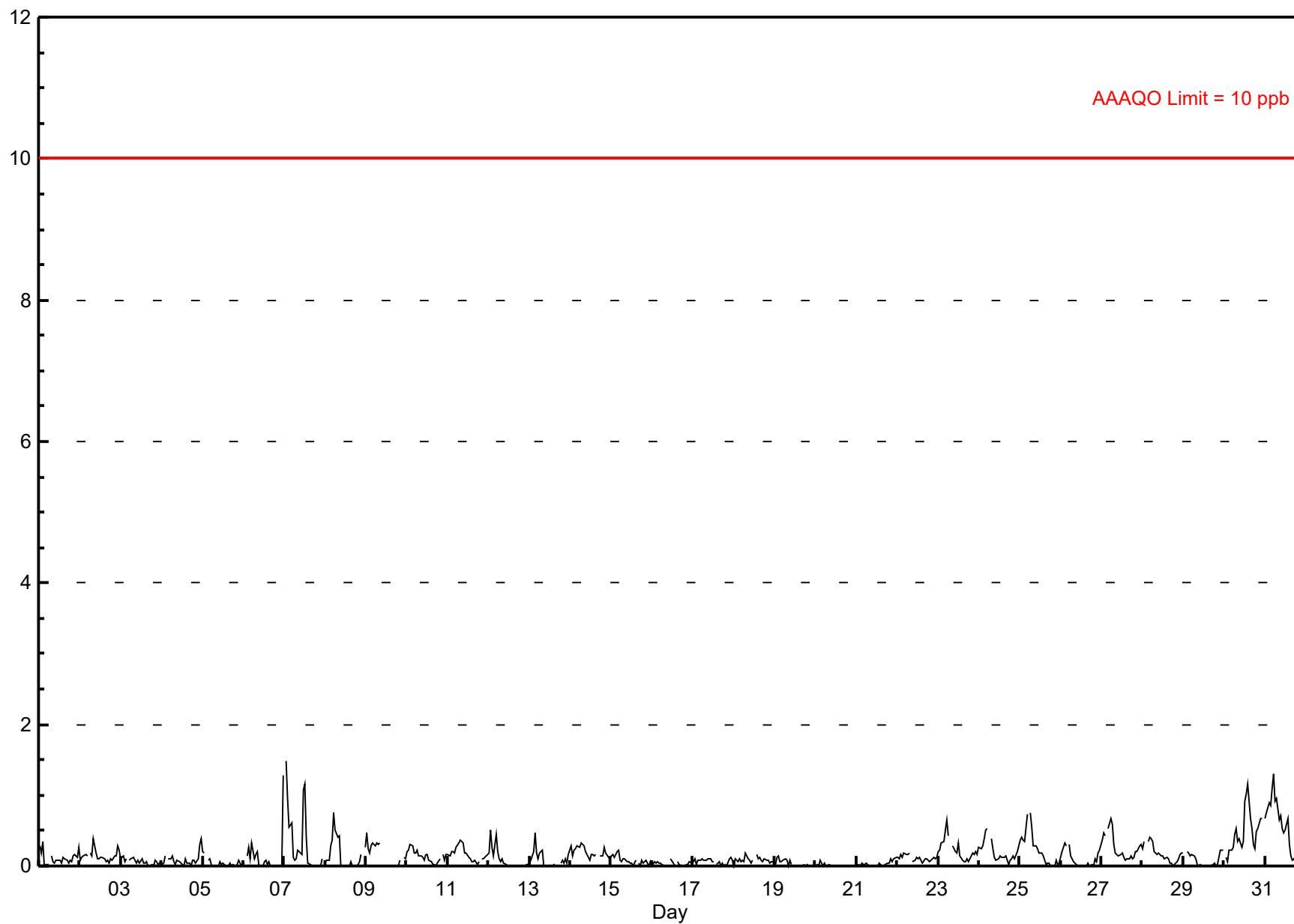
Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Henry Pirker - May 2019



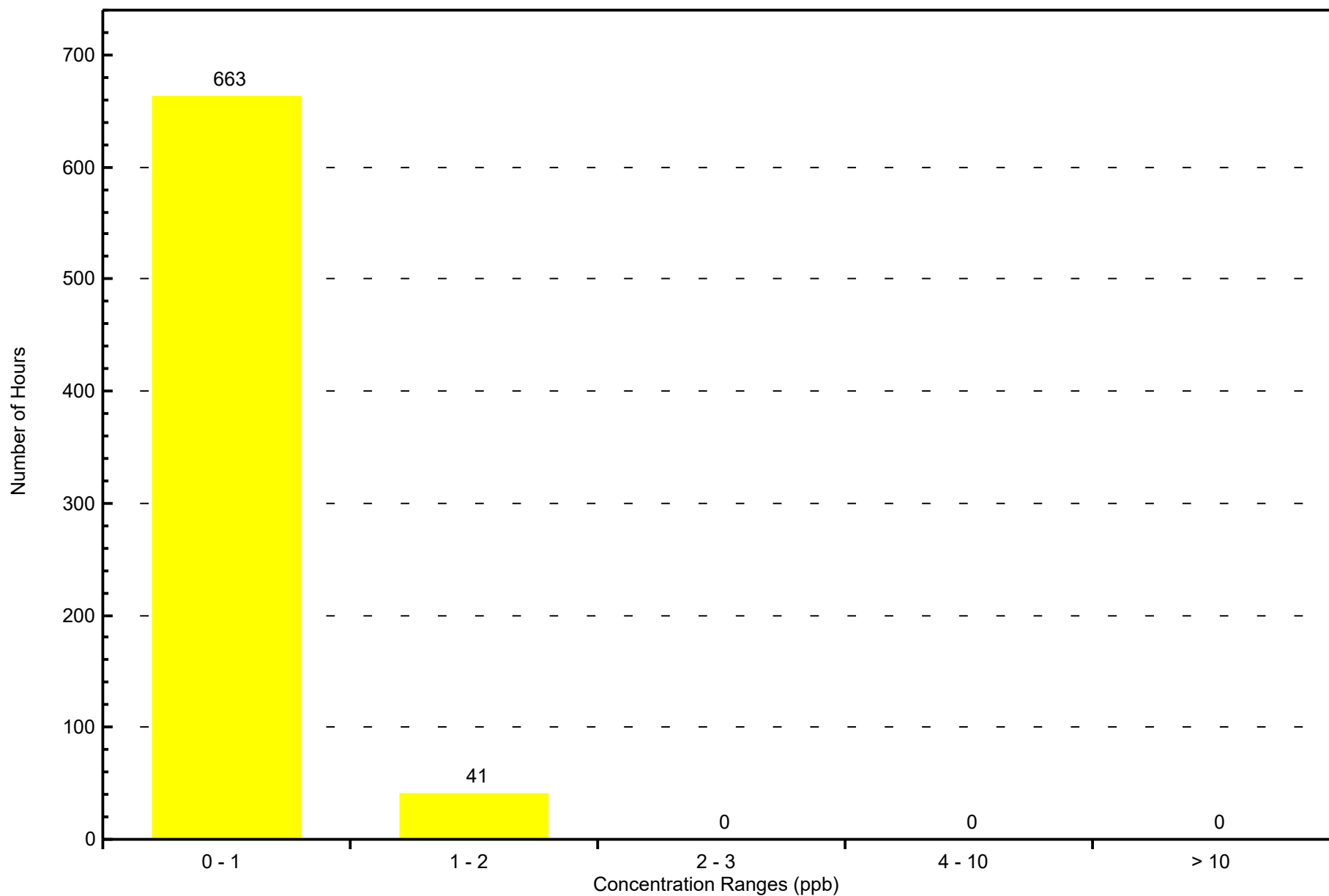
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Henry Pirker - May 2019



Histogram of Hourly Averages

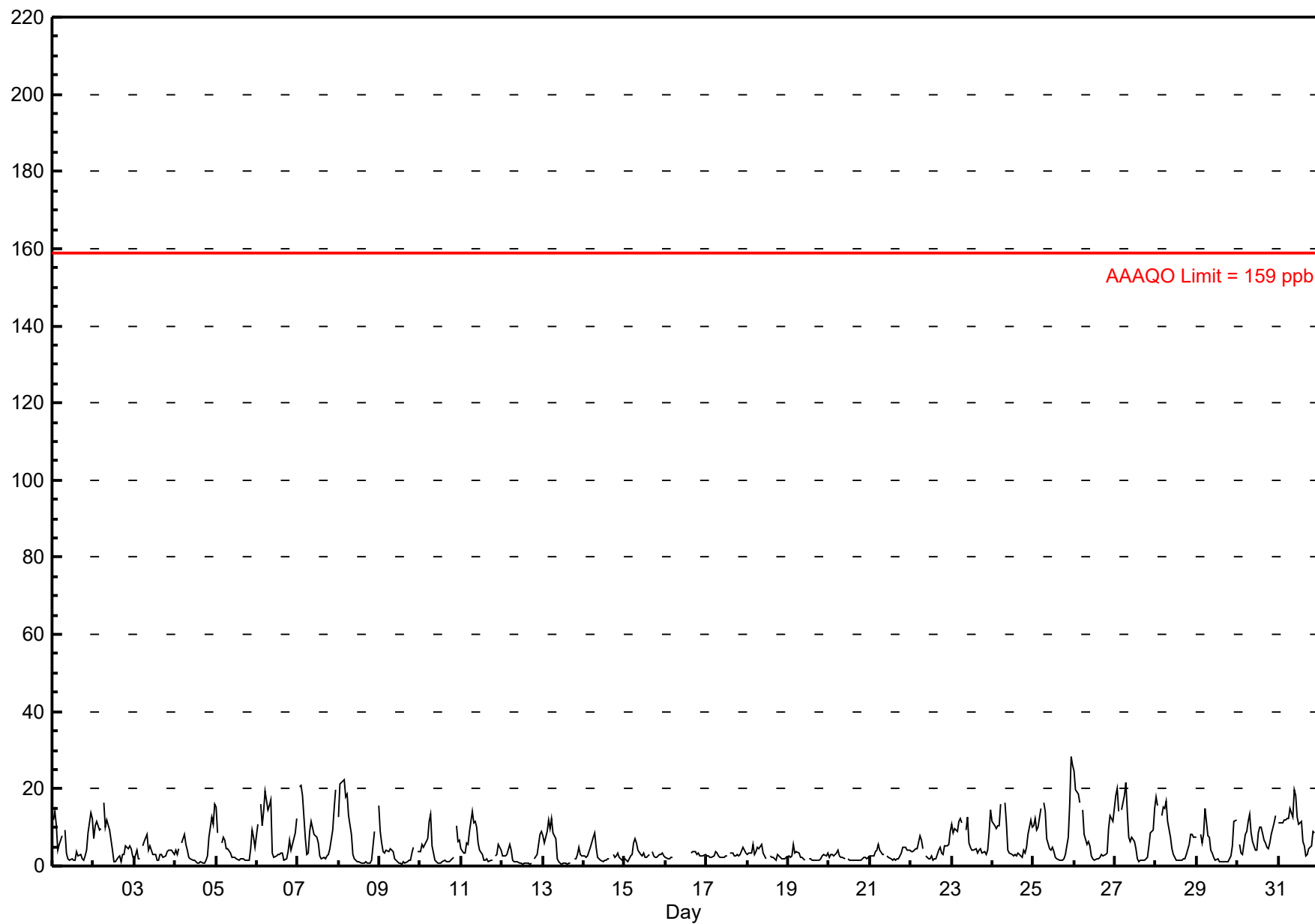
Hydrogen Sulphide (H₂S) - ppb
Henry Pirker - May 2019



Hourly Averages

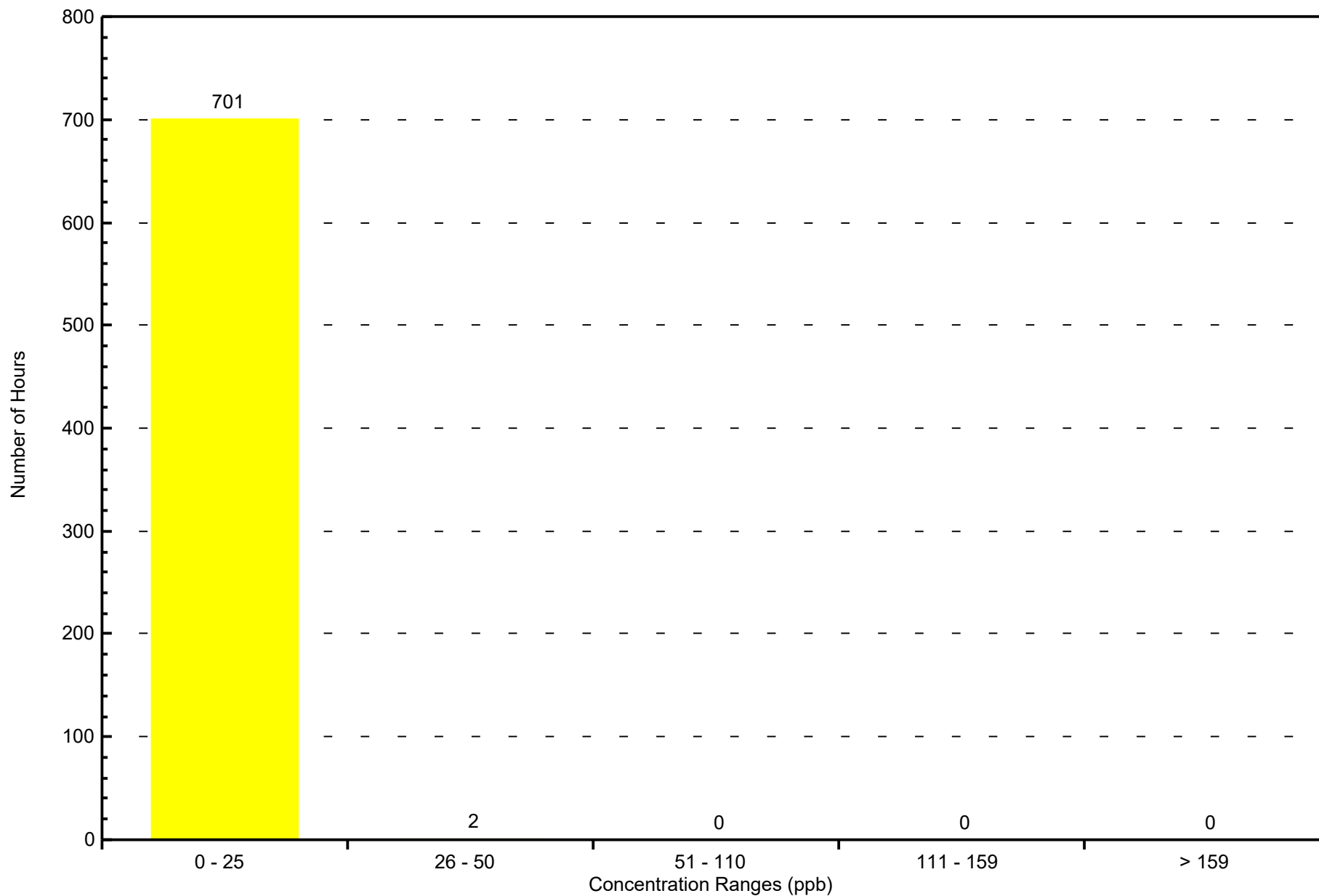
Nitrogen Dioxide (NO₂) - ppb

Henry Pirker - May 2019



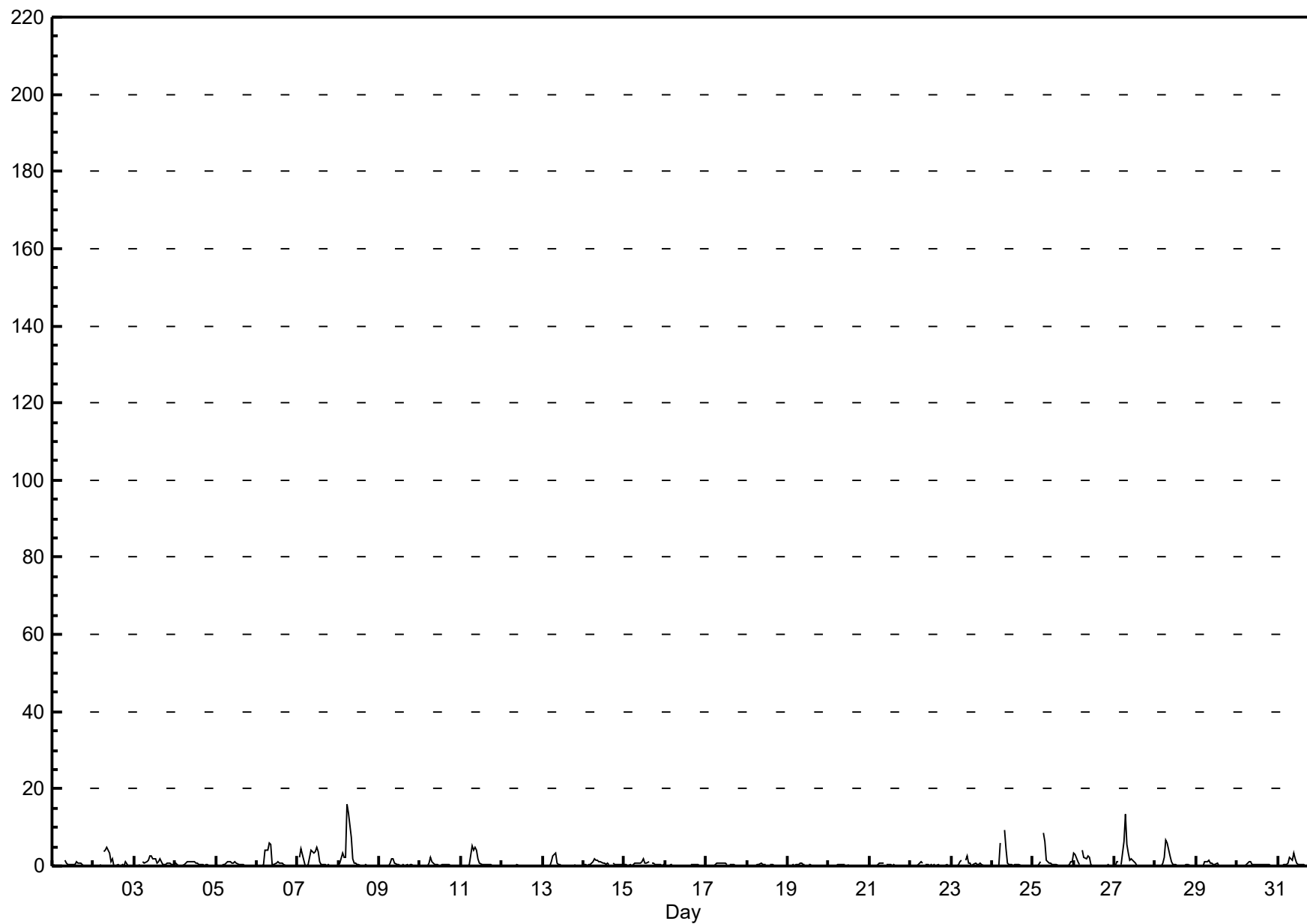
Histogram of Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Henry Pirker - May 2019



Hourly Averages

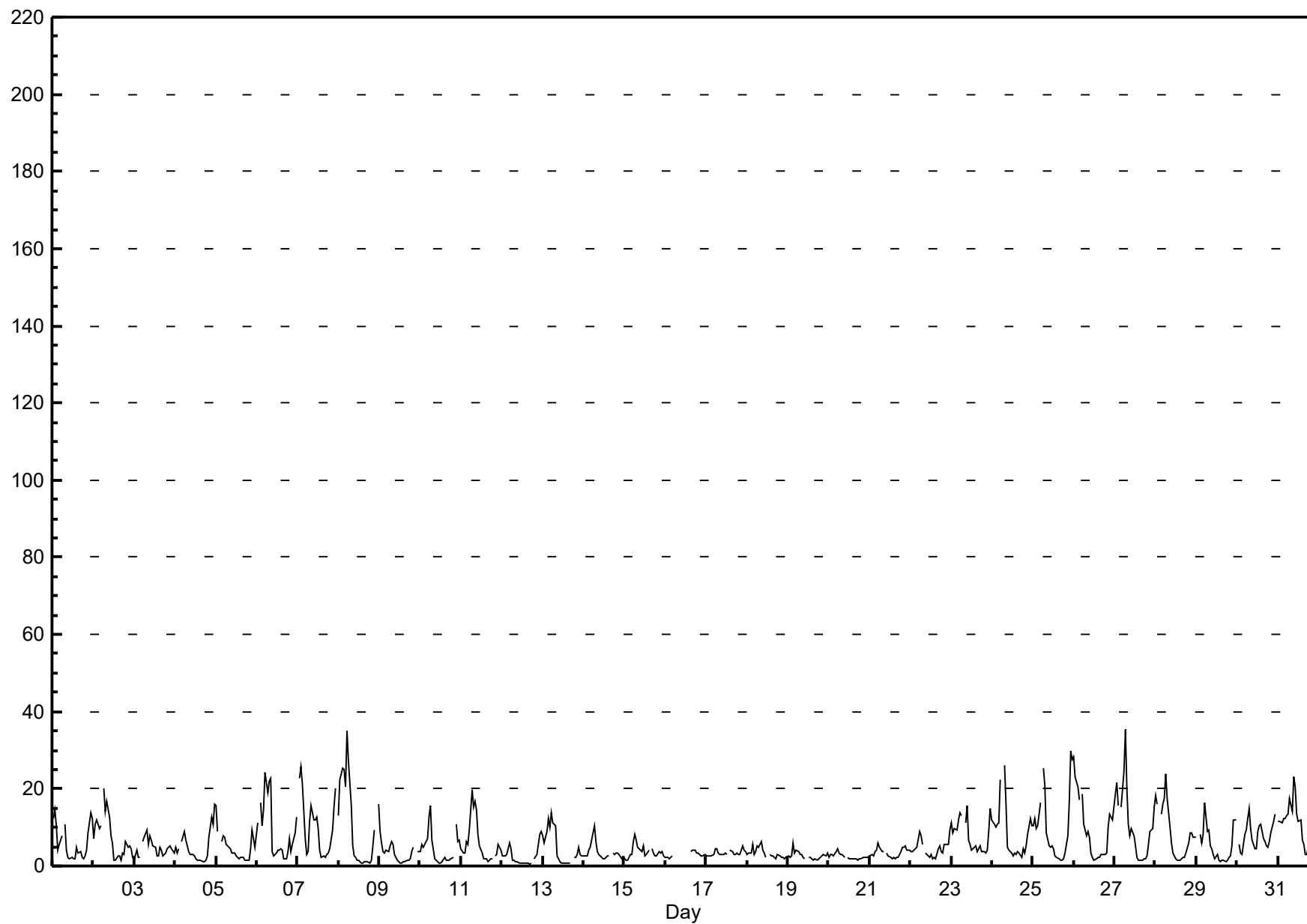
Nitrogen Oxide (NO) - ppb
Henry Pirker - May 2019



Hourly Averages

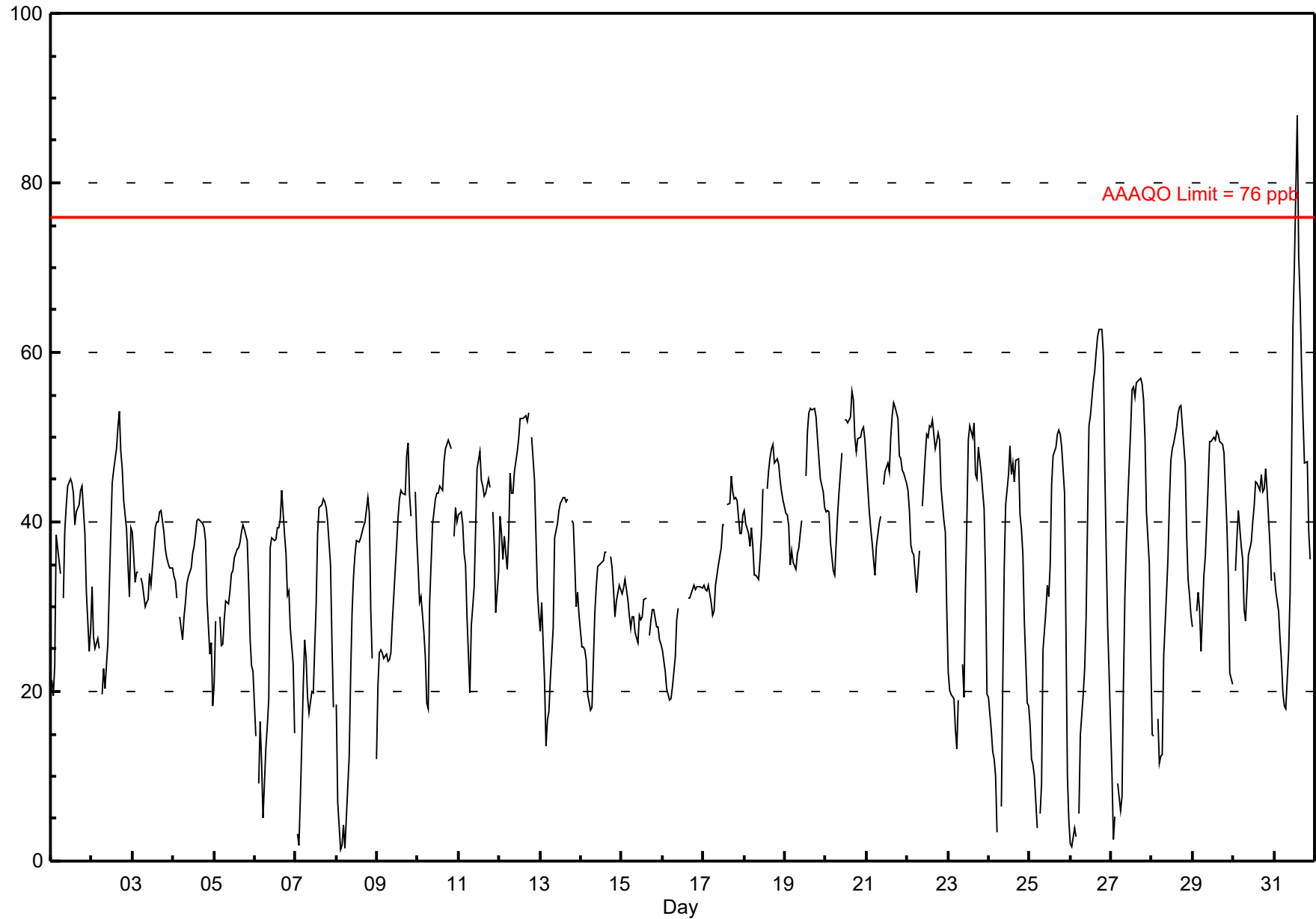
Oxides of Nitrogen (NO_x) - ppb

Henry Pirker - May 2019



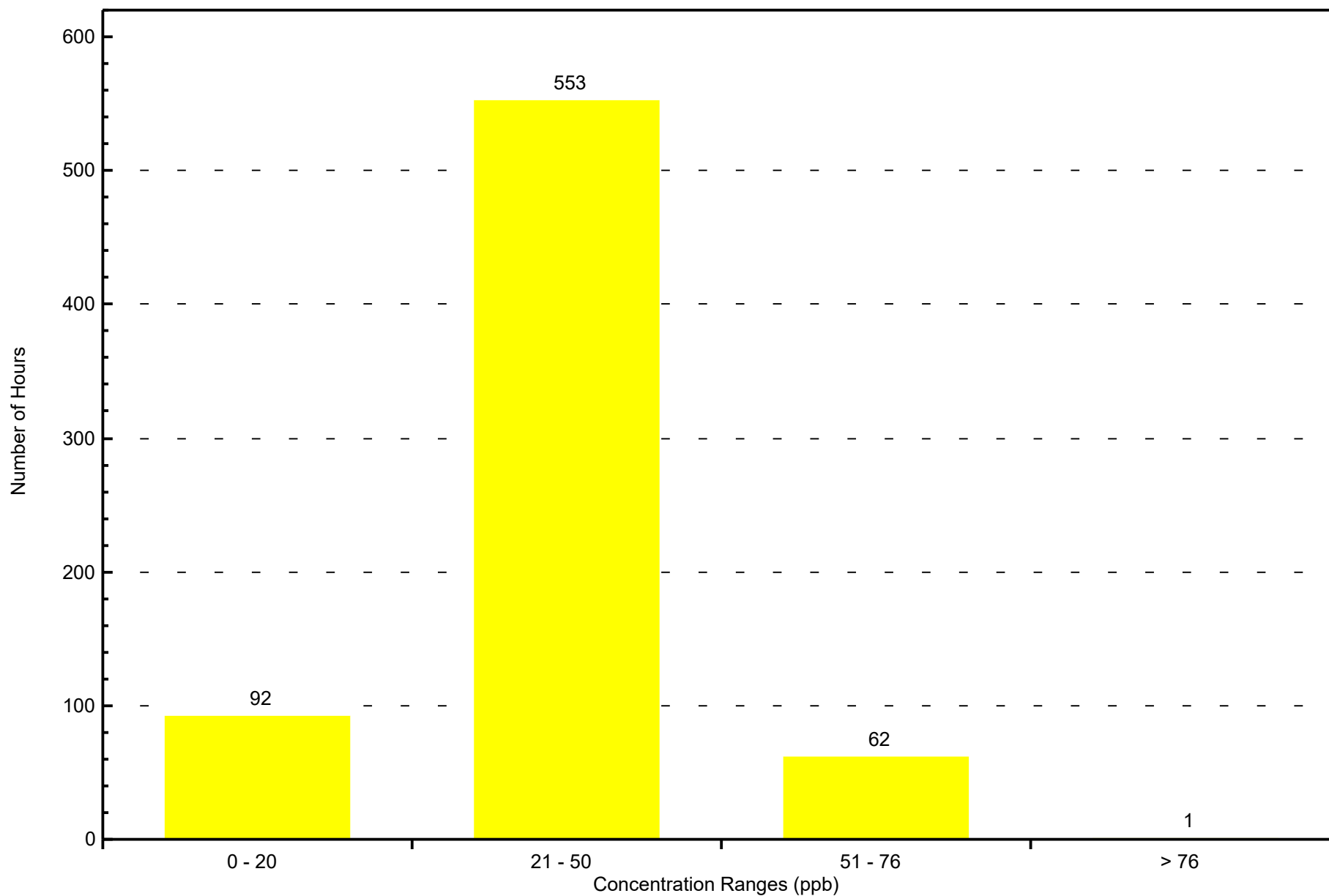
Hourly Averages

Ozone (O₃) - ppb
Henry Pirker - May 2019



Histogram of Hourly Averages

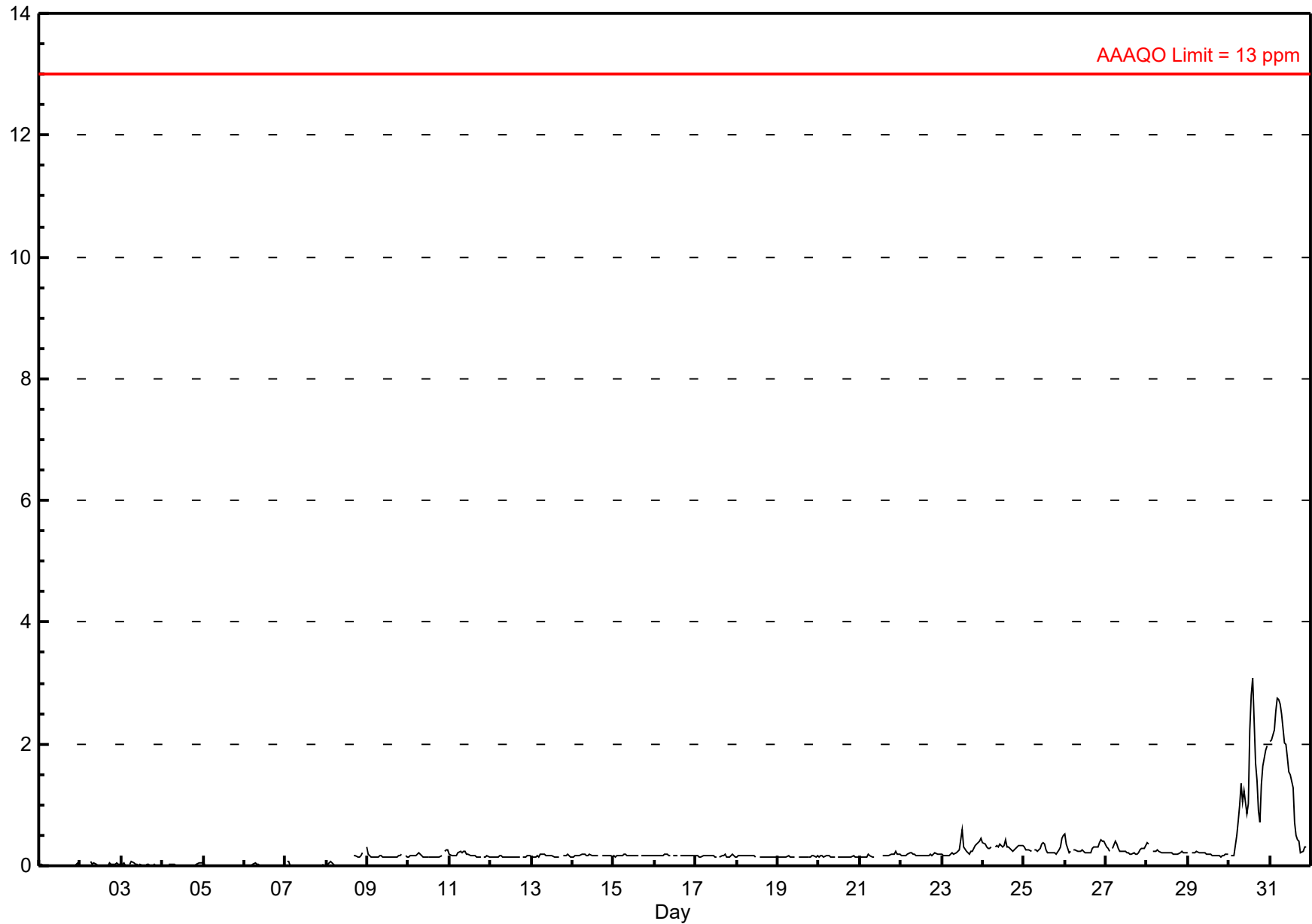
Ozone (O₃) - ppb
Henry Pirker - May 2019



Hourly Averages

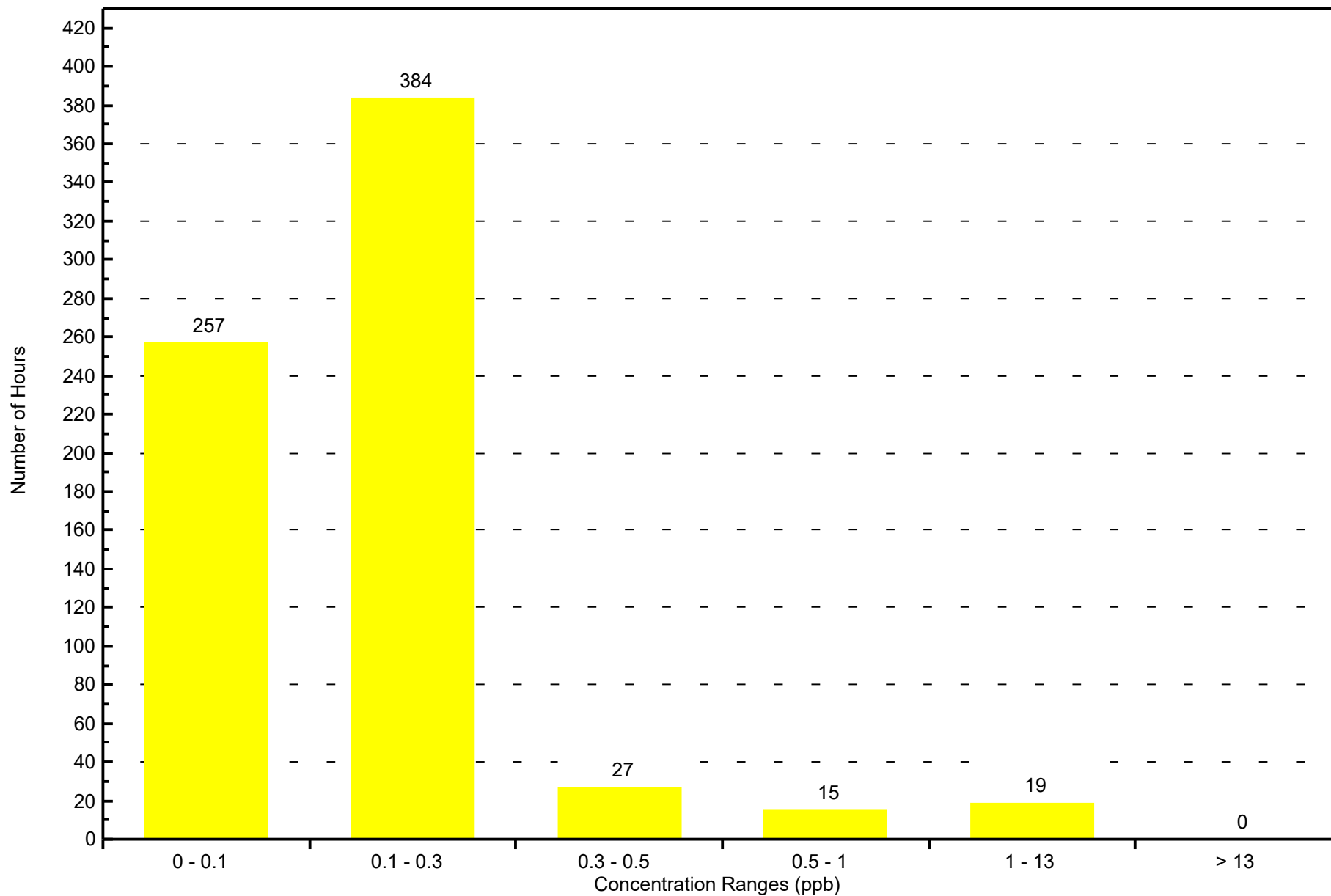
Carbon Monoxide (CO) - ppm

Henry Pirker - May 2019



Histogram of Hourly Averages

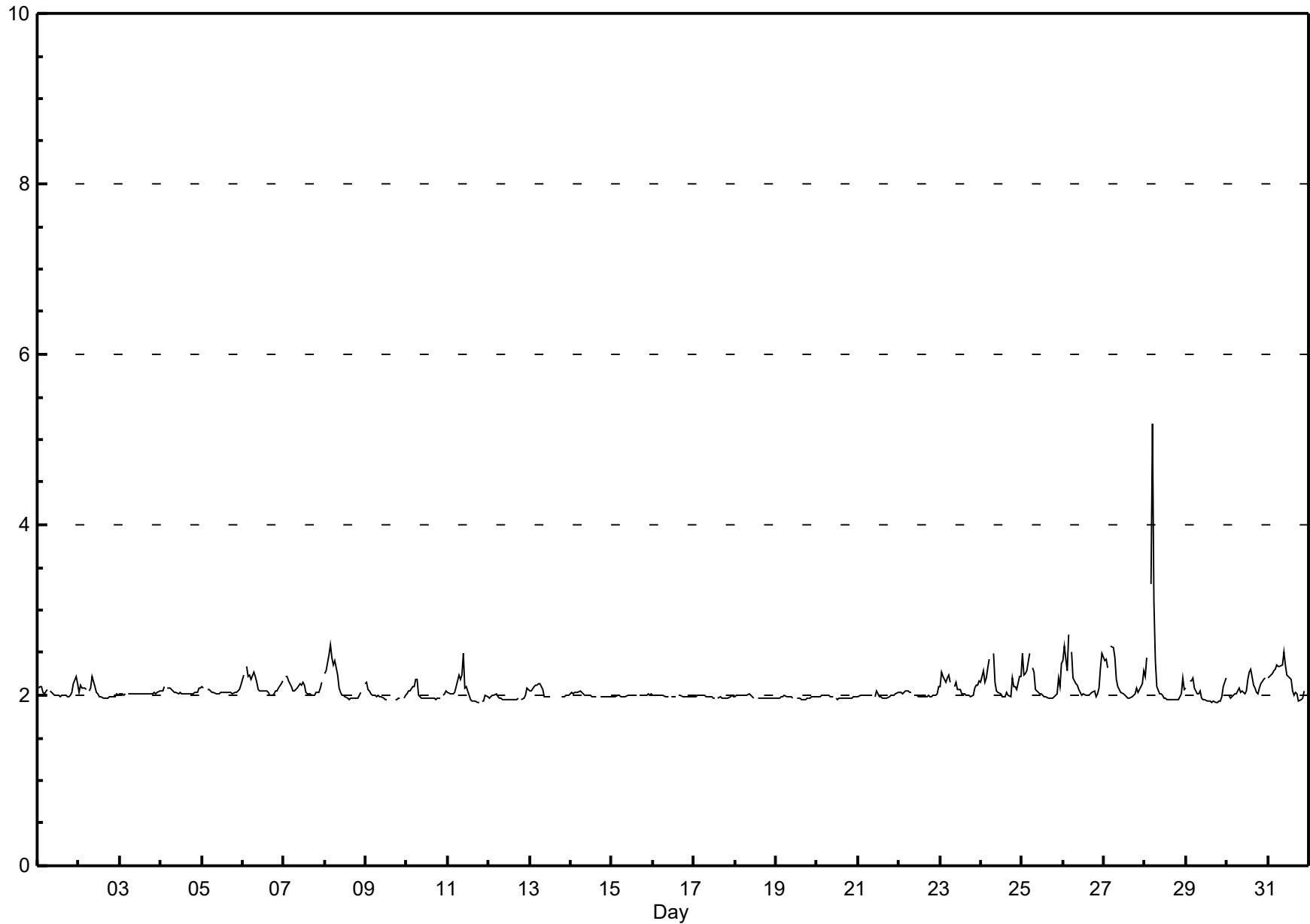
Carbon Monoxide (CO) - ppm
Henry Pirker - May 2019



Hourly Averages

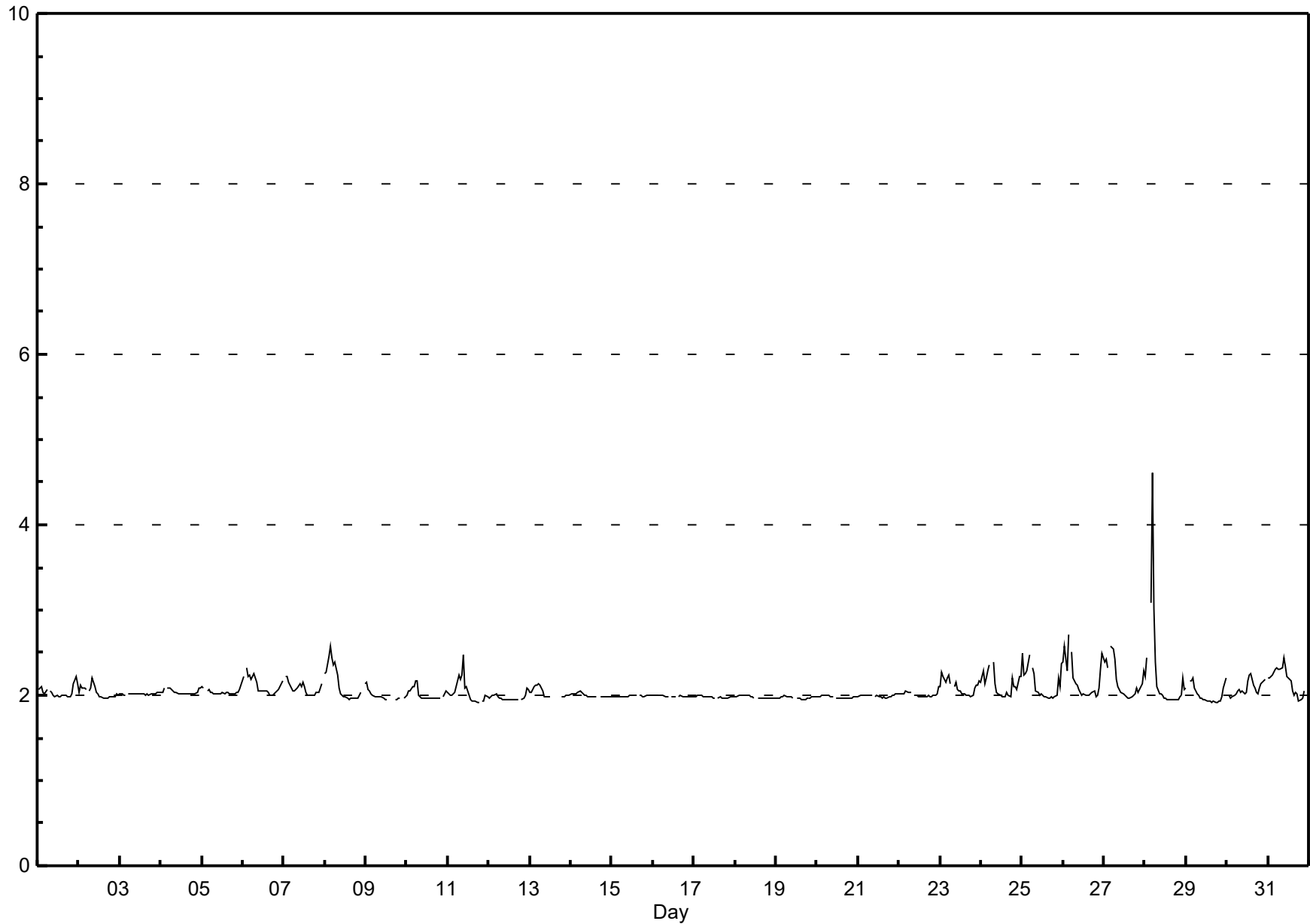
Total Hydrocarbons (THC) - ppm

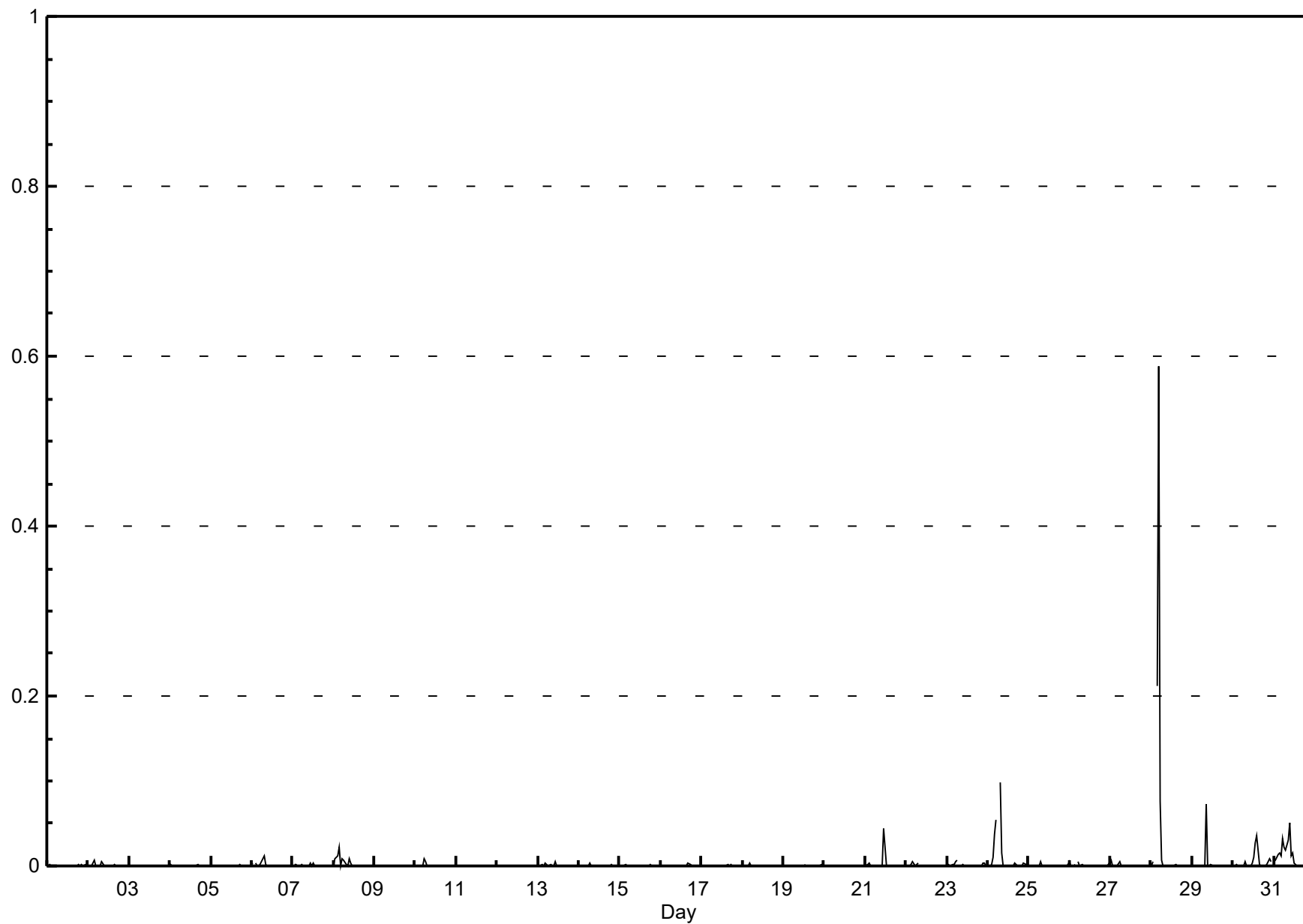
Henry Pirker - May 2019

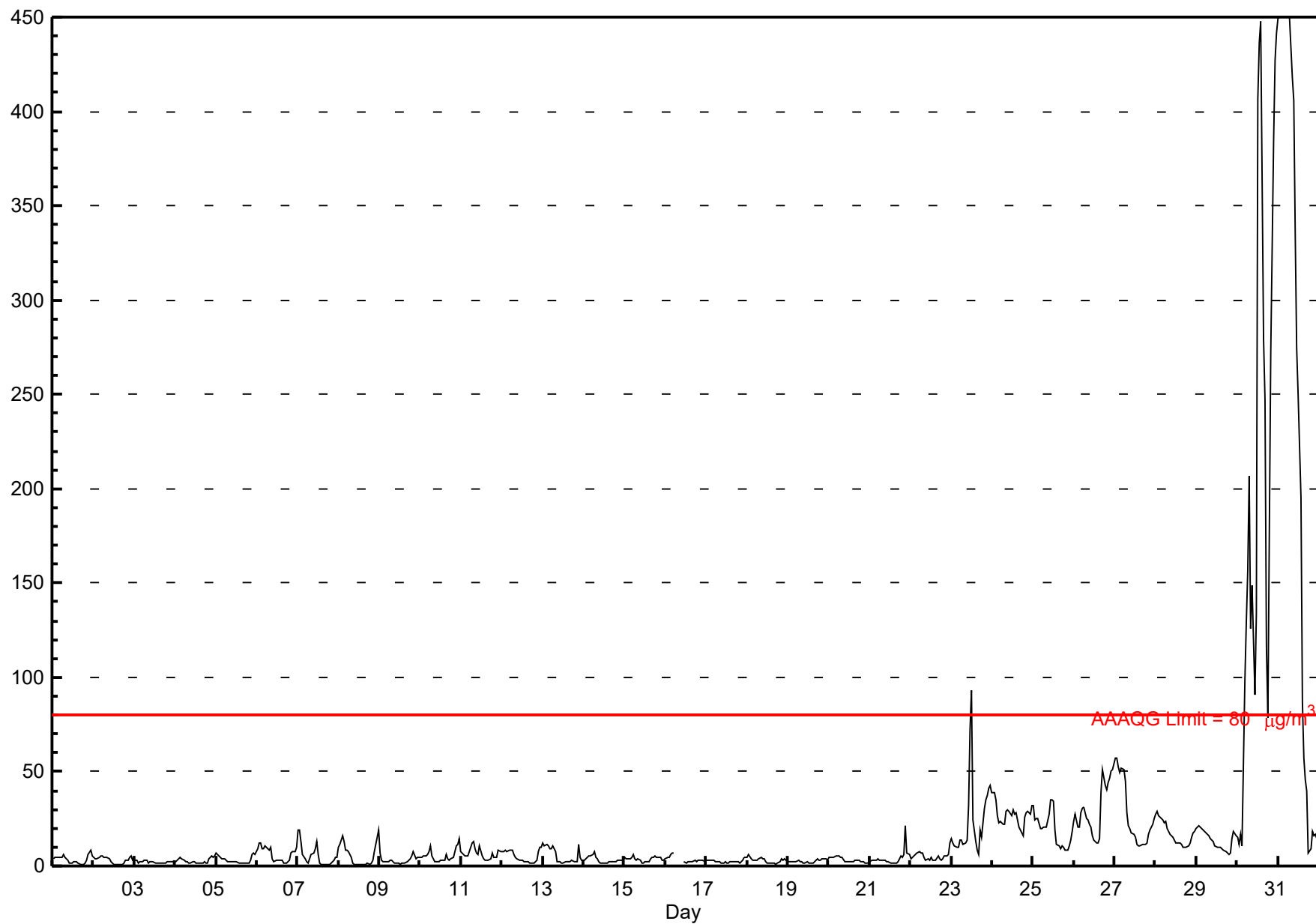


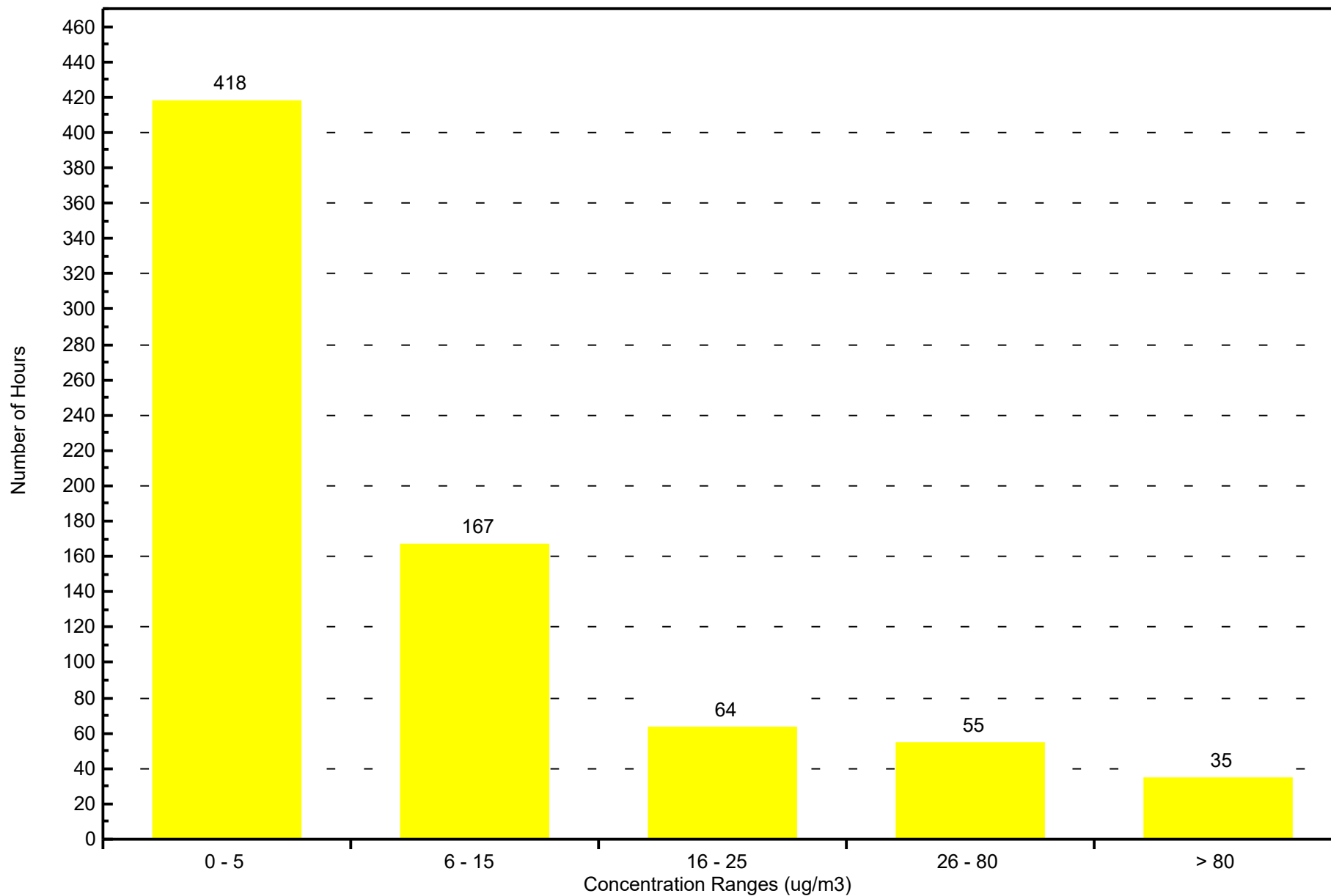
Hourly Averages

Methane (CH₄) - ppm
Henry Pirker - May 2019





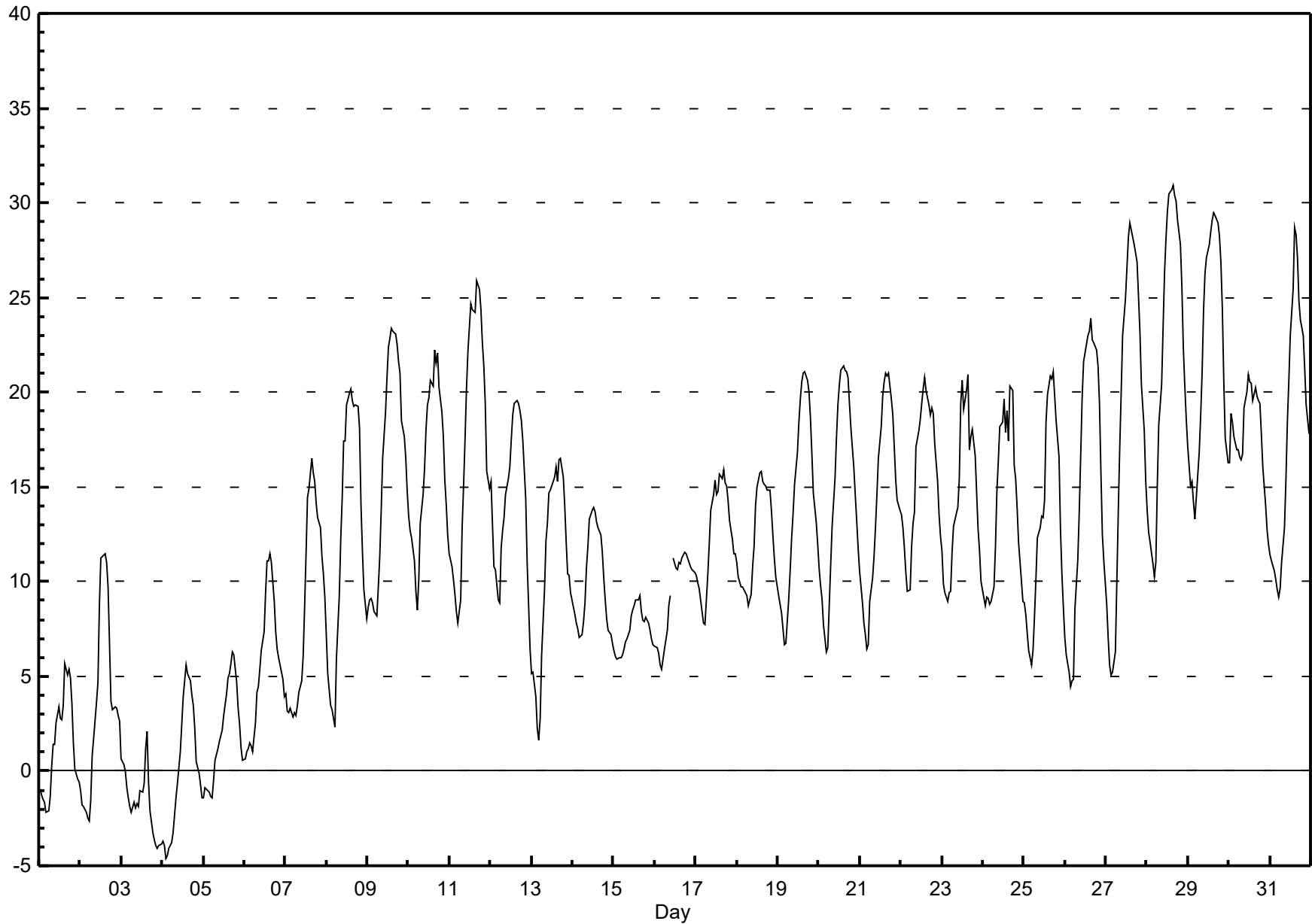




Hourly Averages

External Temperature (ET) - °C

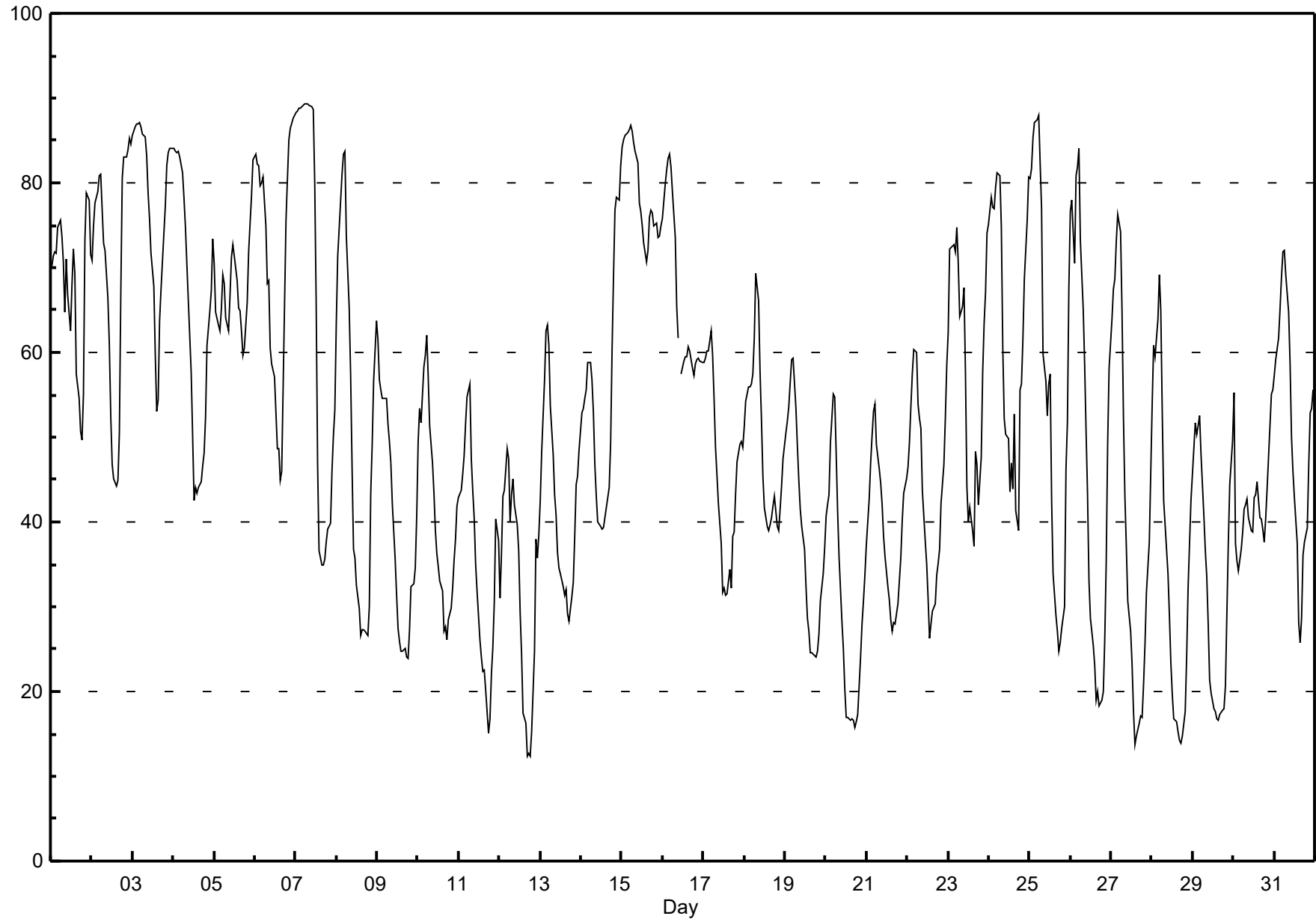
Henry Pirker - May 2019



Hourly Averages

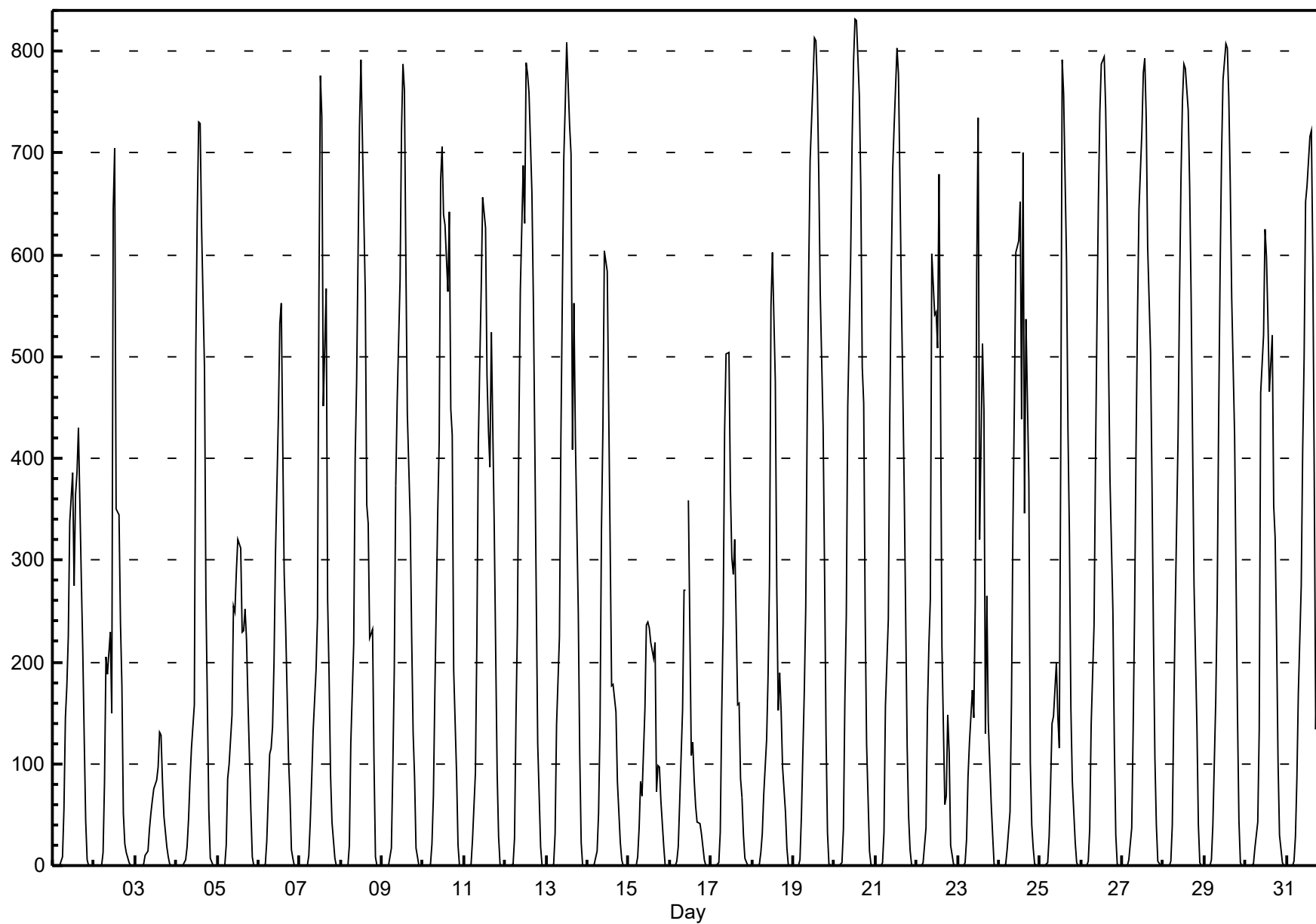
Relative Humidity (RH) - %

Henry Pirker - May 2019



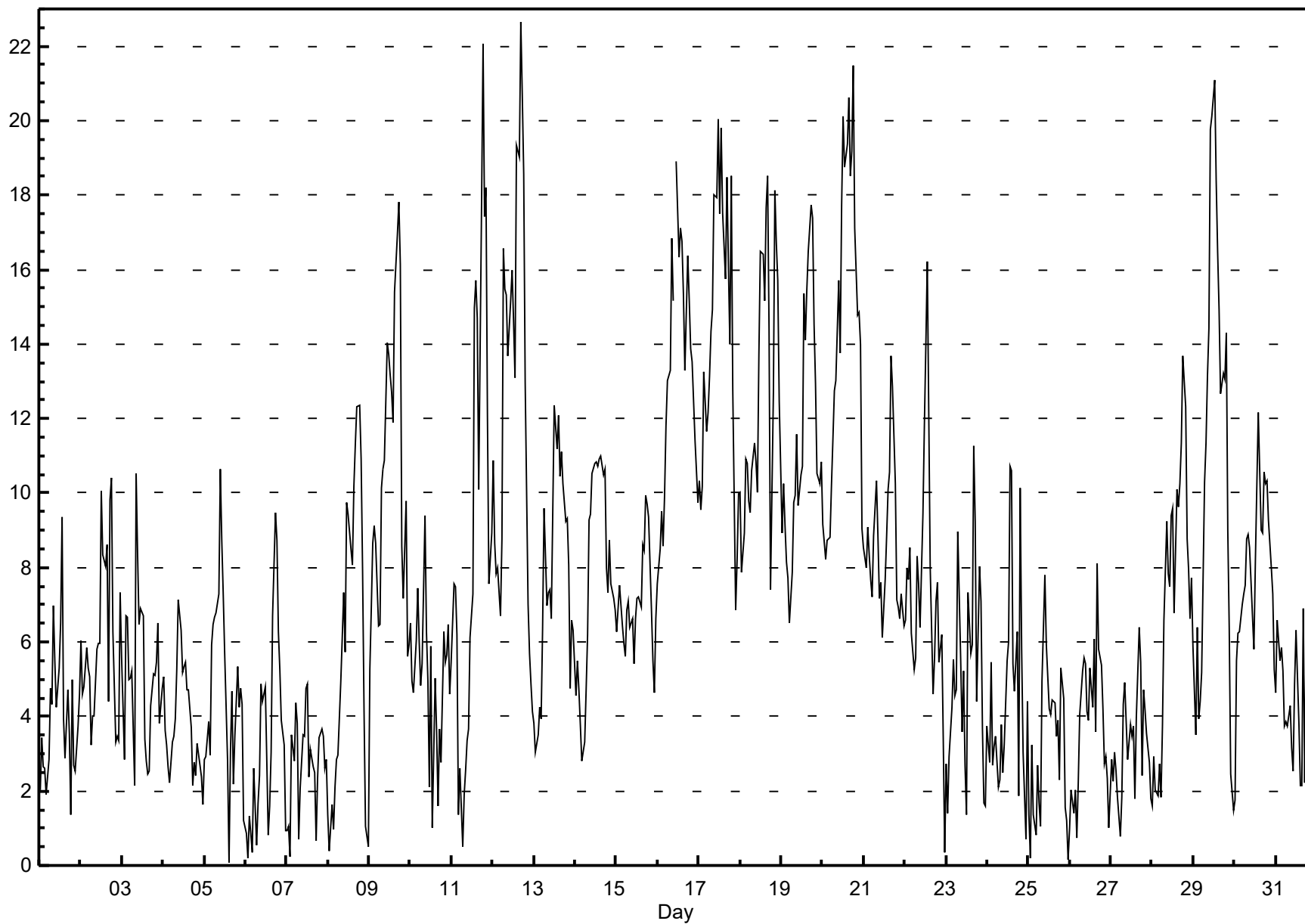
Hourly Averages

Solar Radiation (SR) - W/m²
Henry Pirker - May 2019



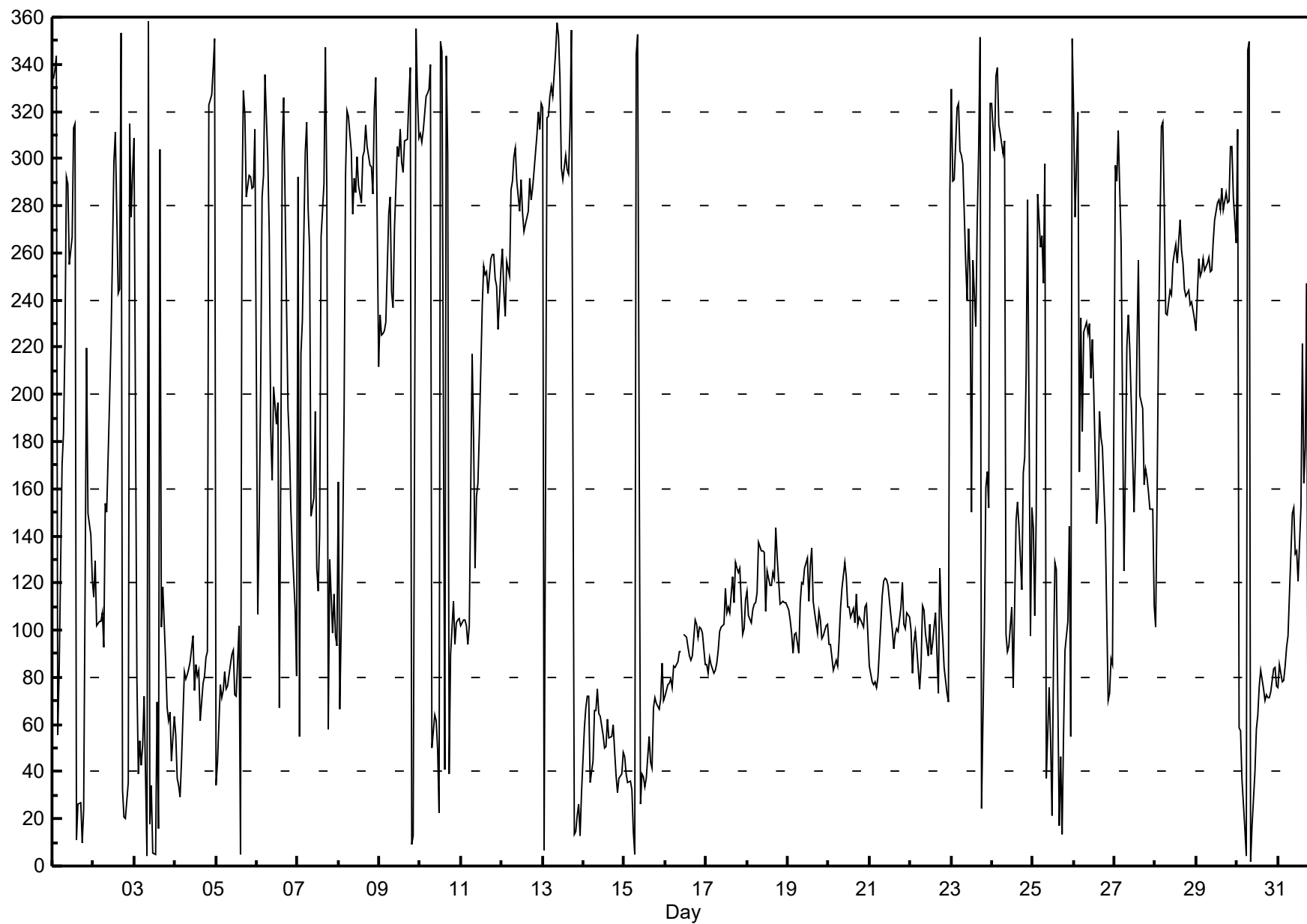
Hourly Averages

Wind Speed (WS) - km/h
Henry Pirker - May 2019



Hourly Averages

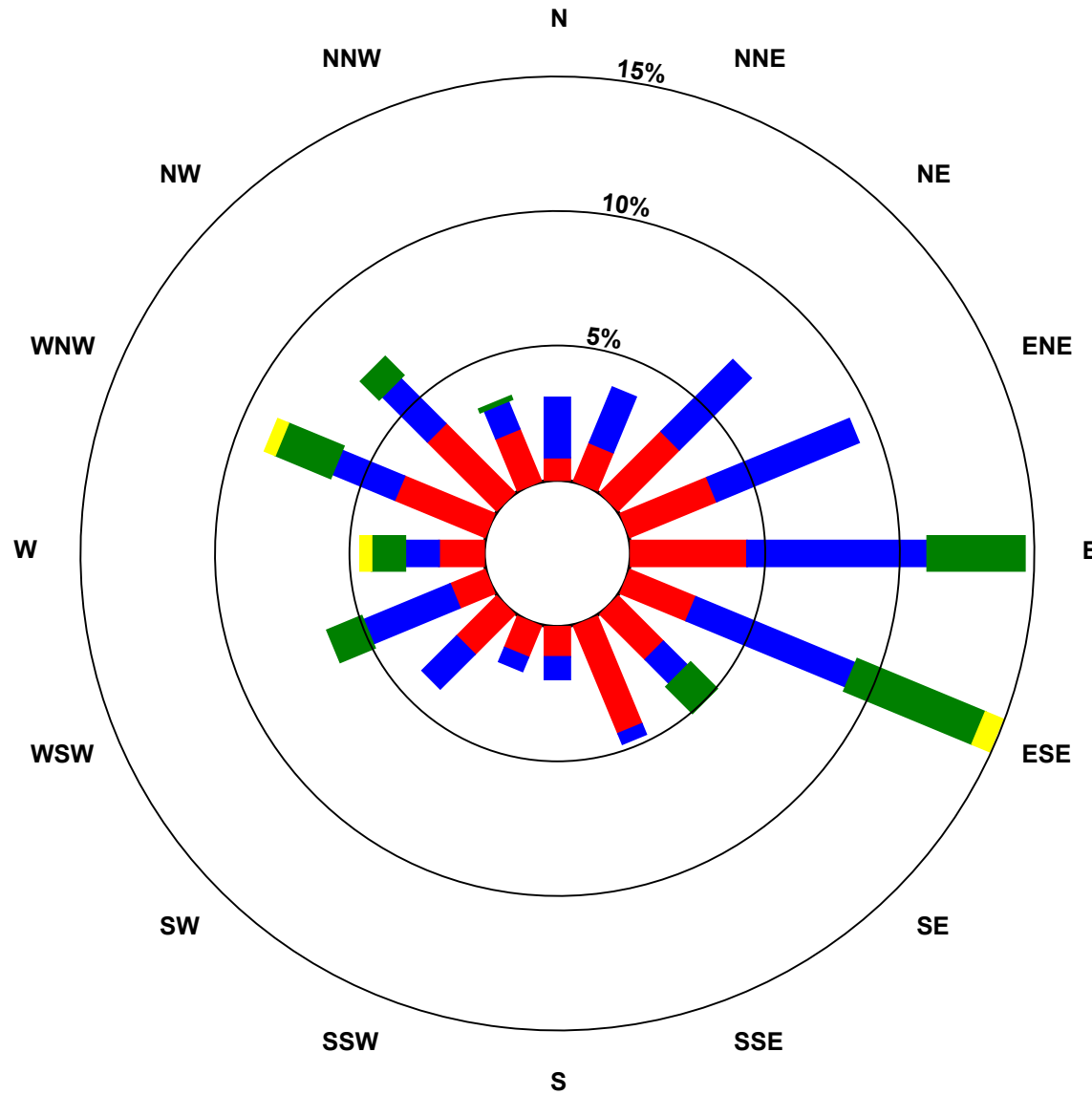
Wind Direction (WD) - deg
Henry Pirker - May 2019



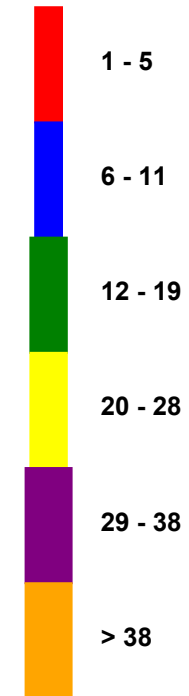
Wind Rose

Wind Speed (WS) (km/h)

Henry Pirker - May 2019

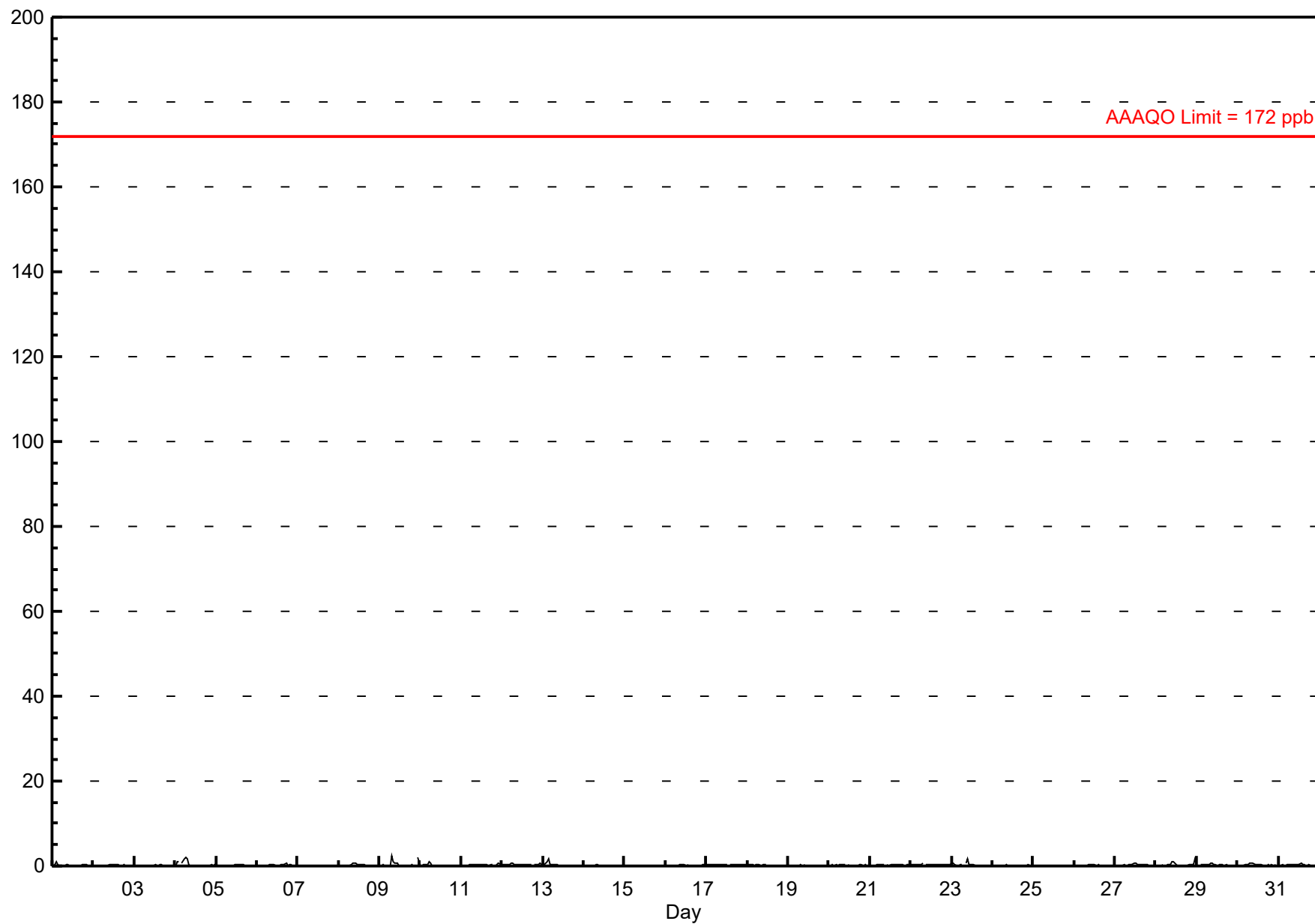


Wind Speed Classes (km/h)



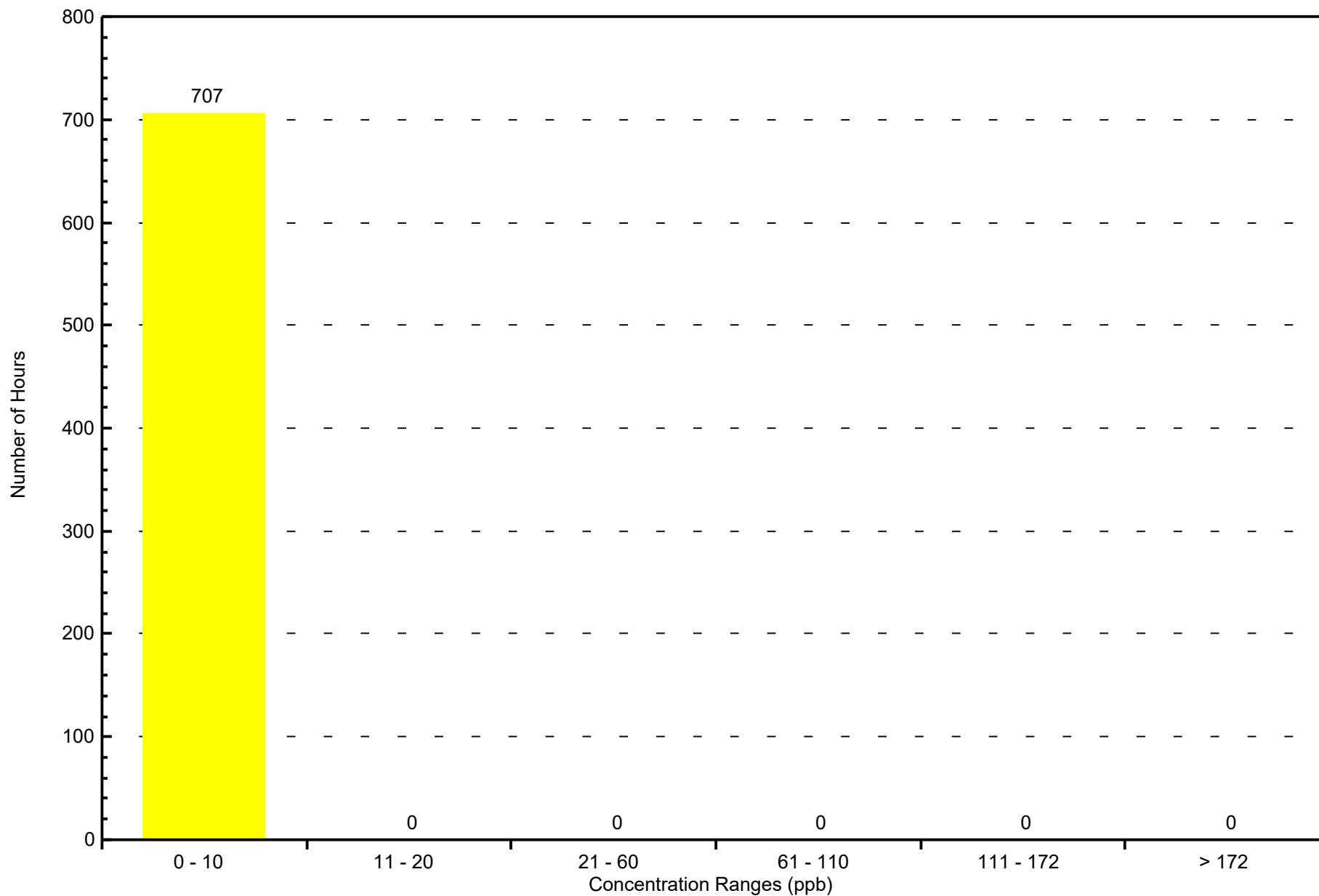
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Smoky Heights - May 2019



Histogram of Hourly Averages

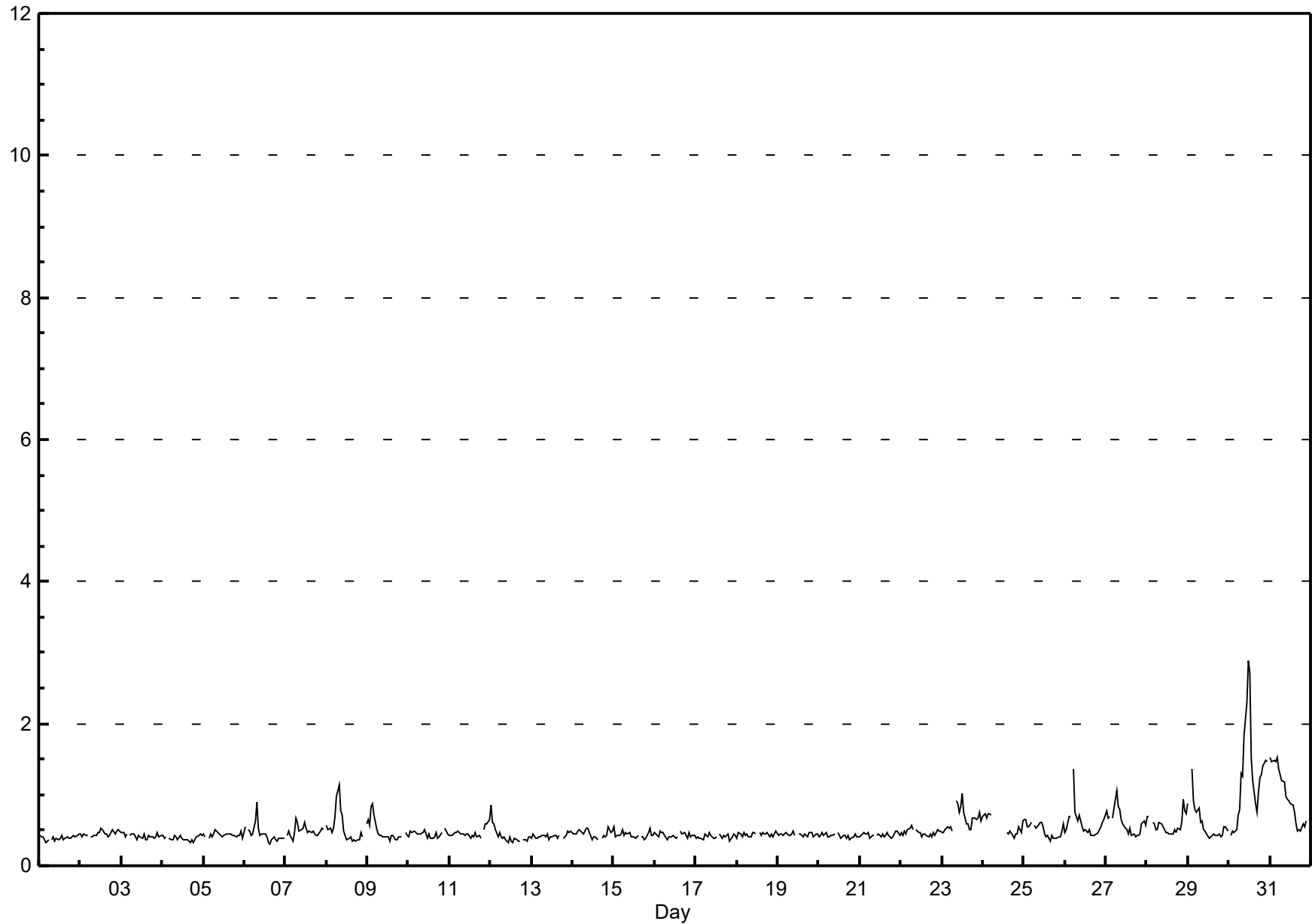
Sulphur Dioxide (SO₂) - ppb
Smoky Heights - May 2019

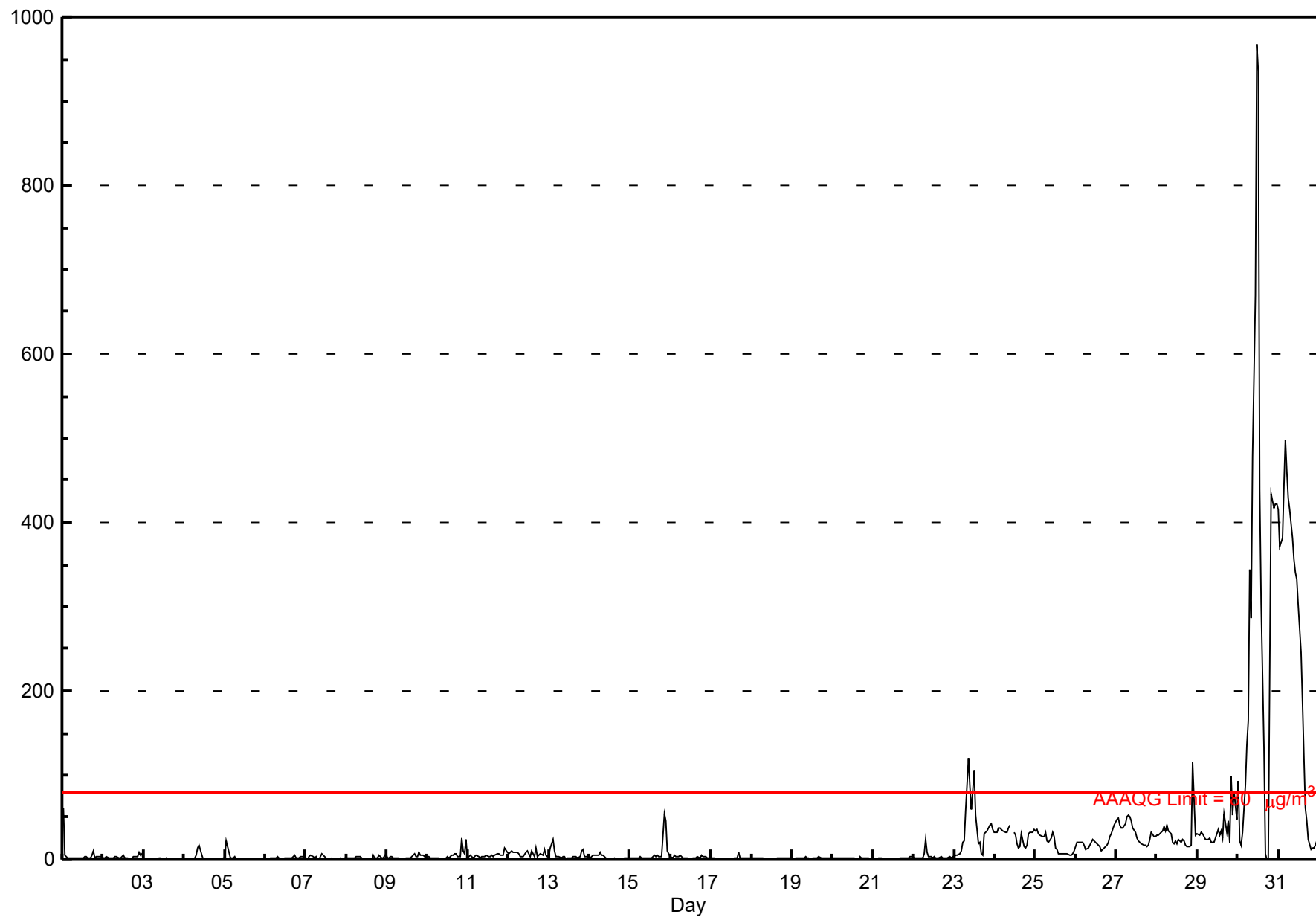


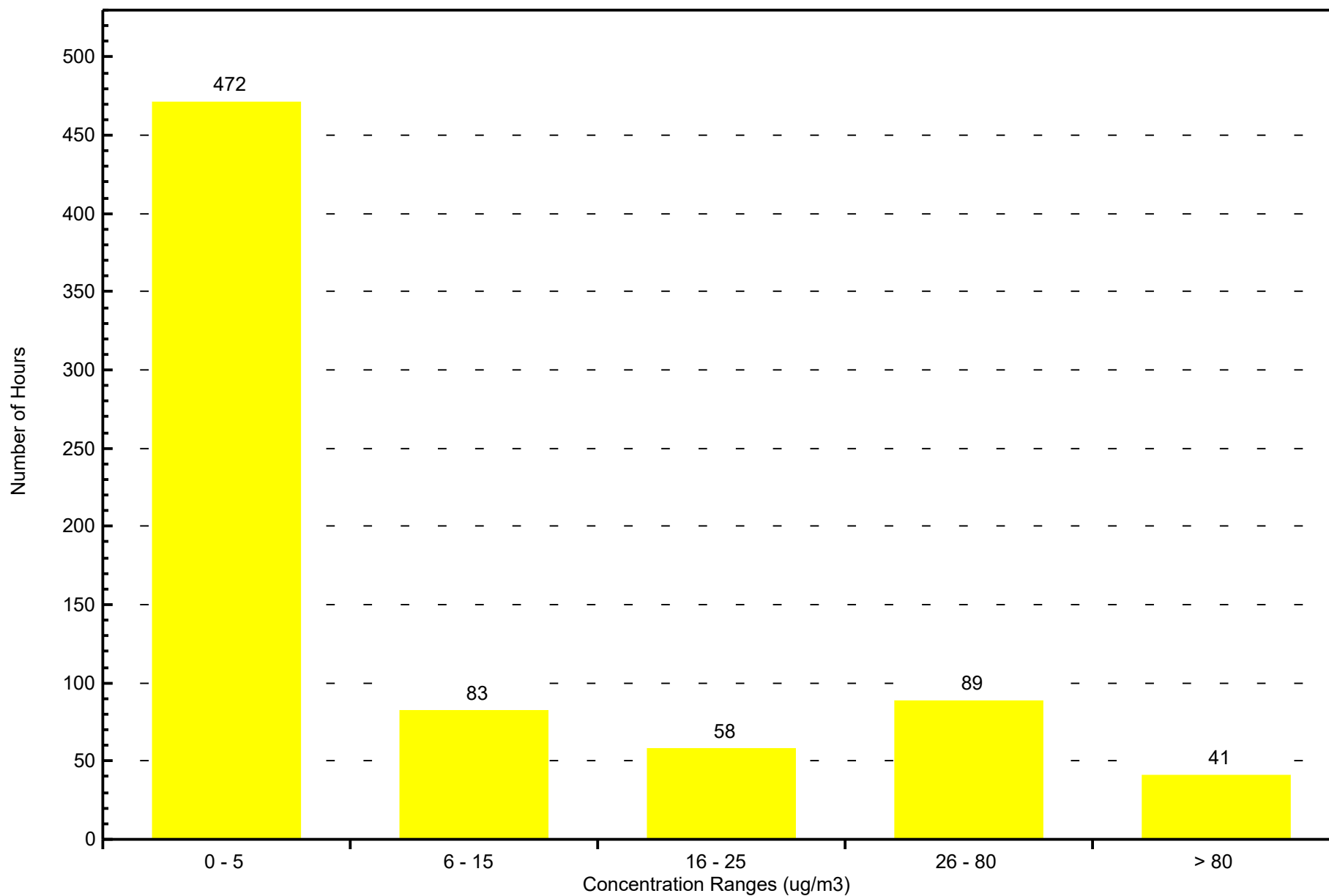
Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Smoky Heights - May 2019



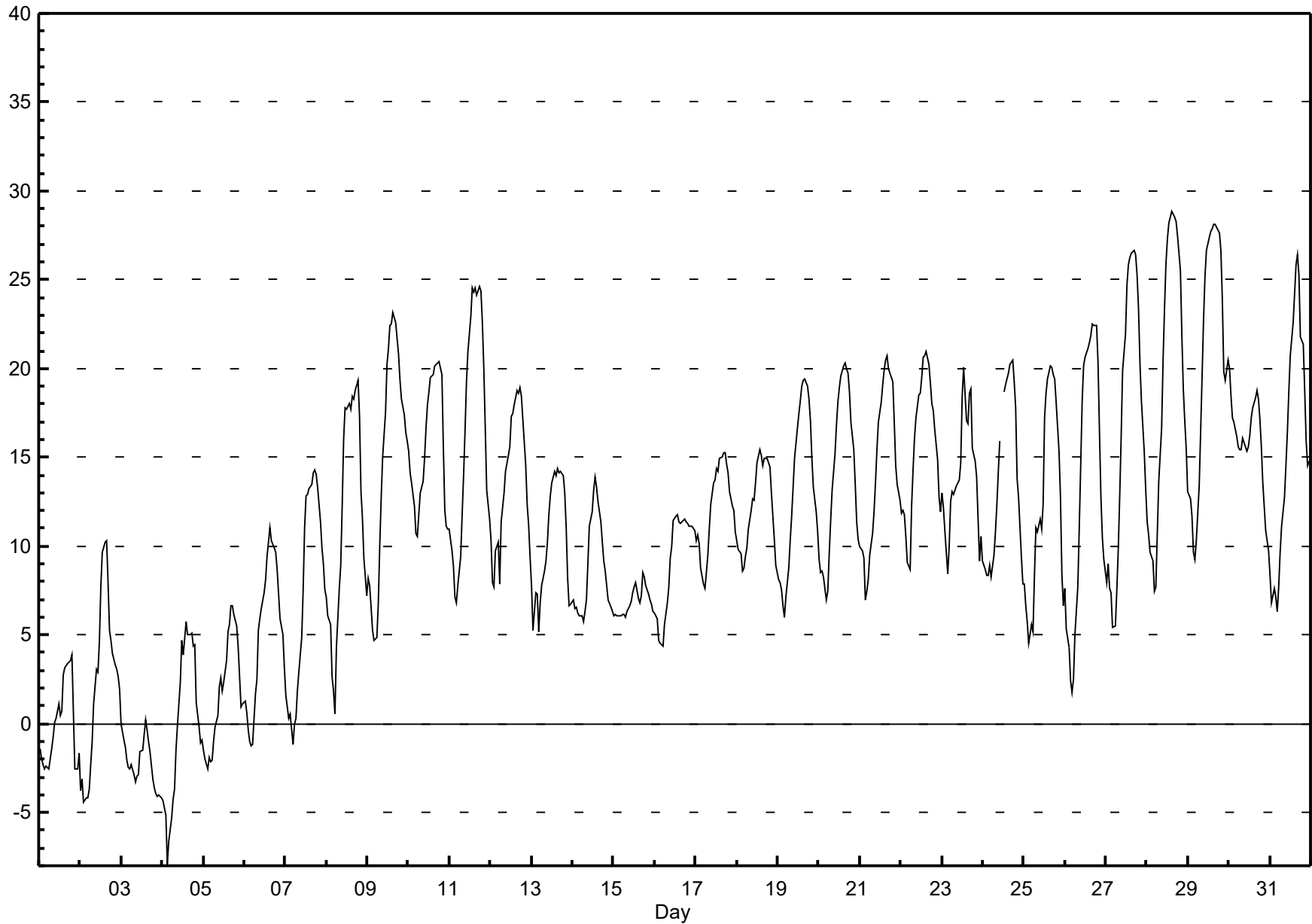




Hourly Averages

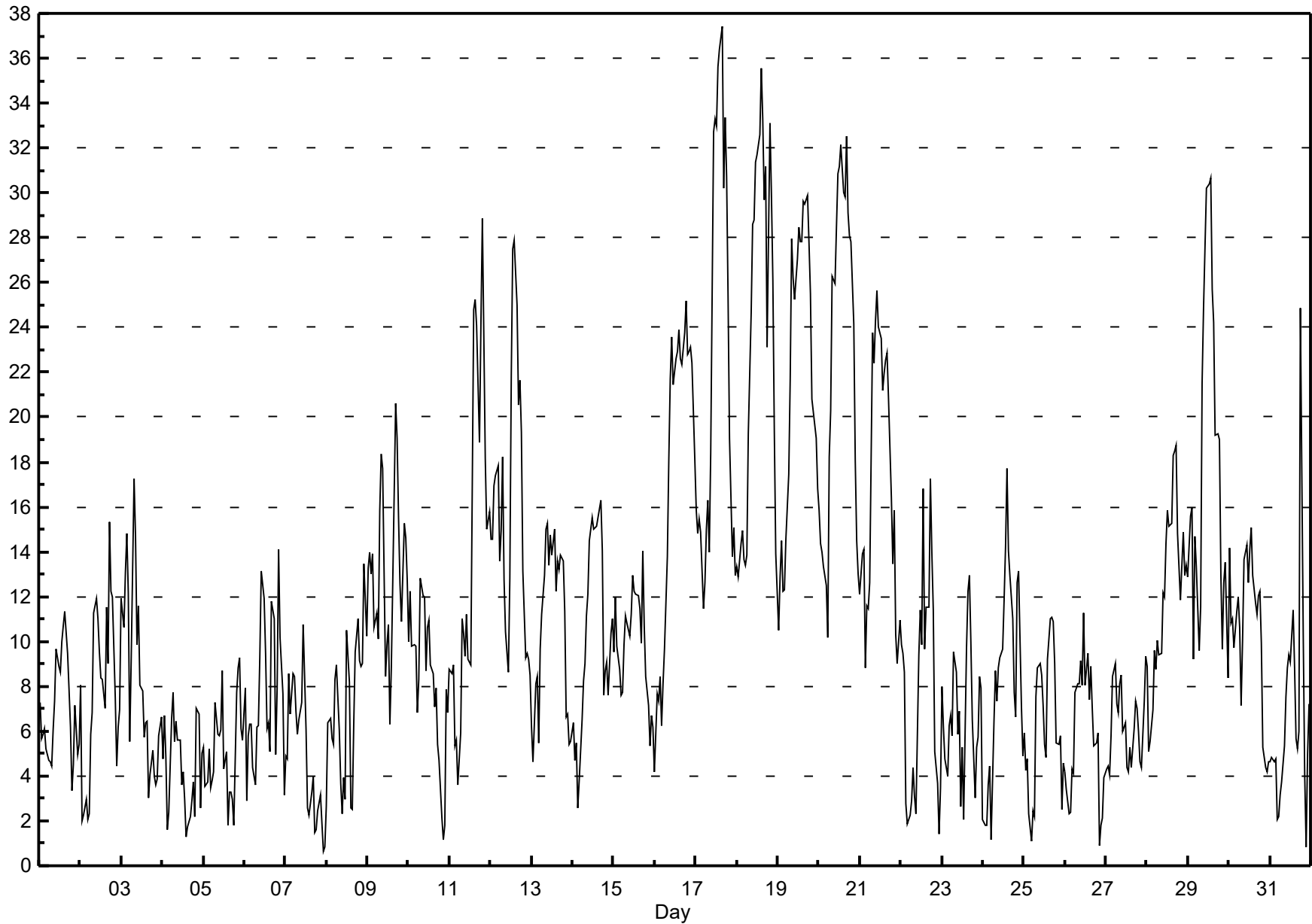
External Temperature (ET) - °C

Smoky Heights - May 2019



Hourly Averages

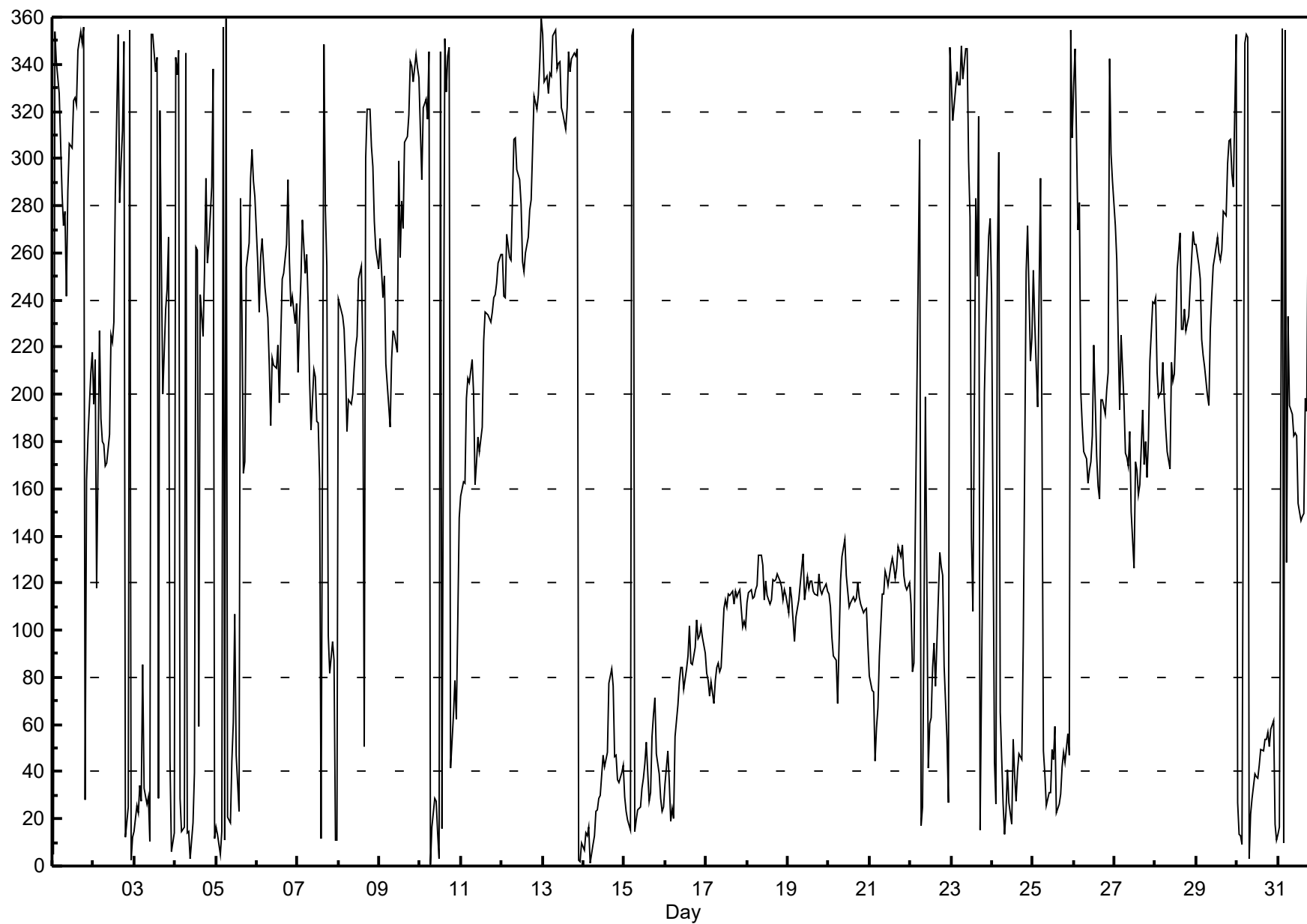
Wind Speed (WS) - km/h
Smoky Heights - May 2019



Hourly Averages

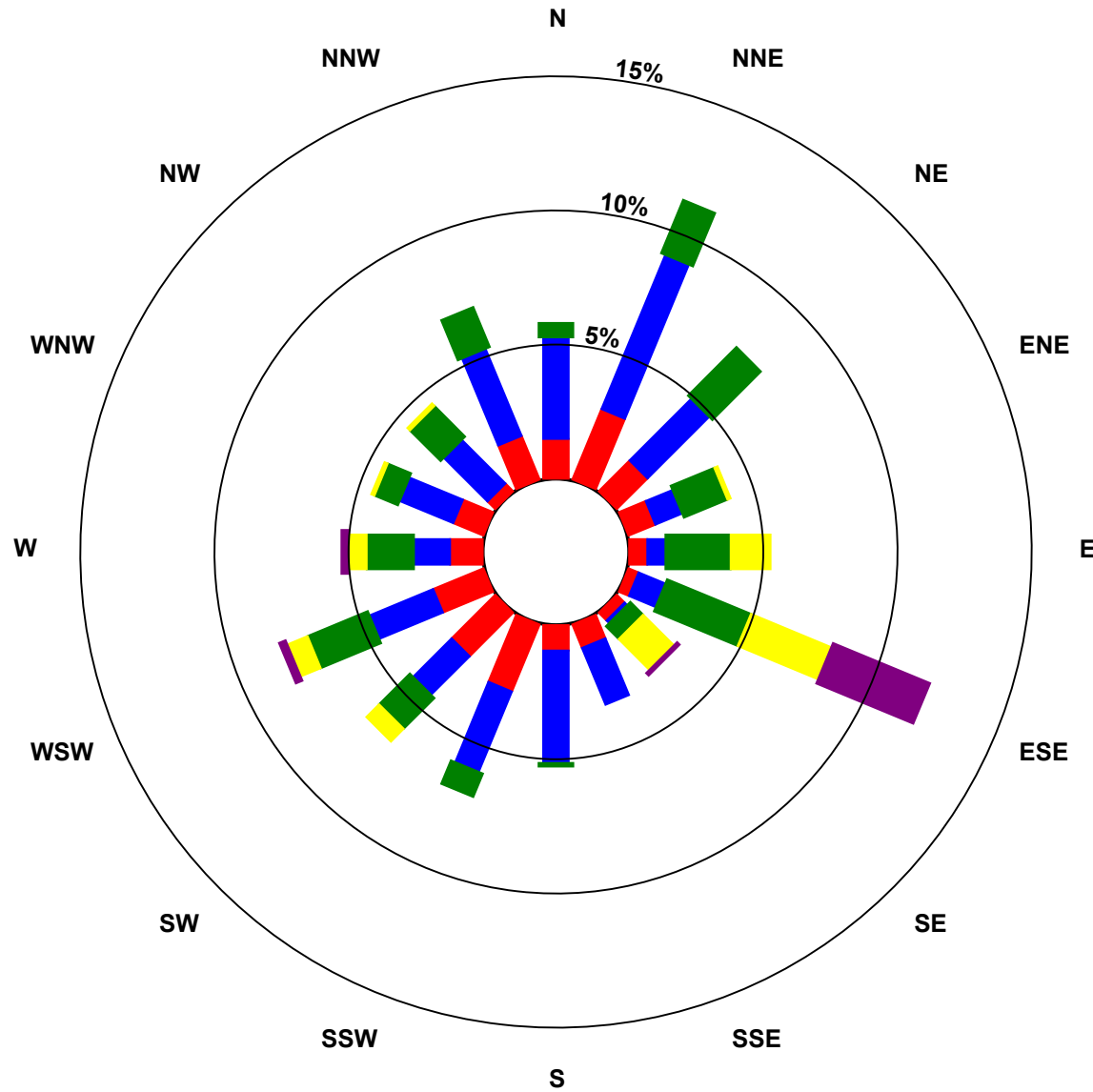
Wind Direction (WD) - deg

Smoky Heights - May 2019

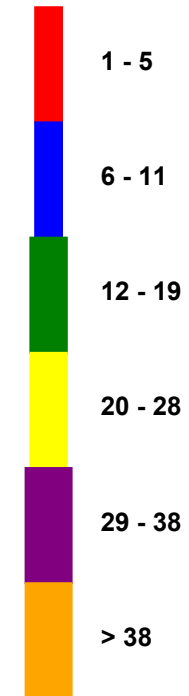


Wind Rose

Wind Speed (WS) (km/h)
Smoky Heights - May 2019

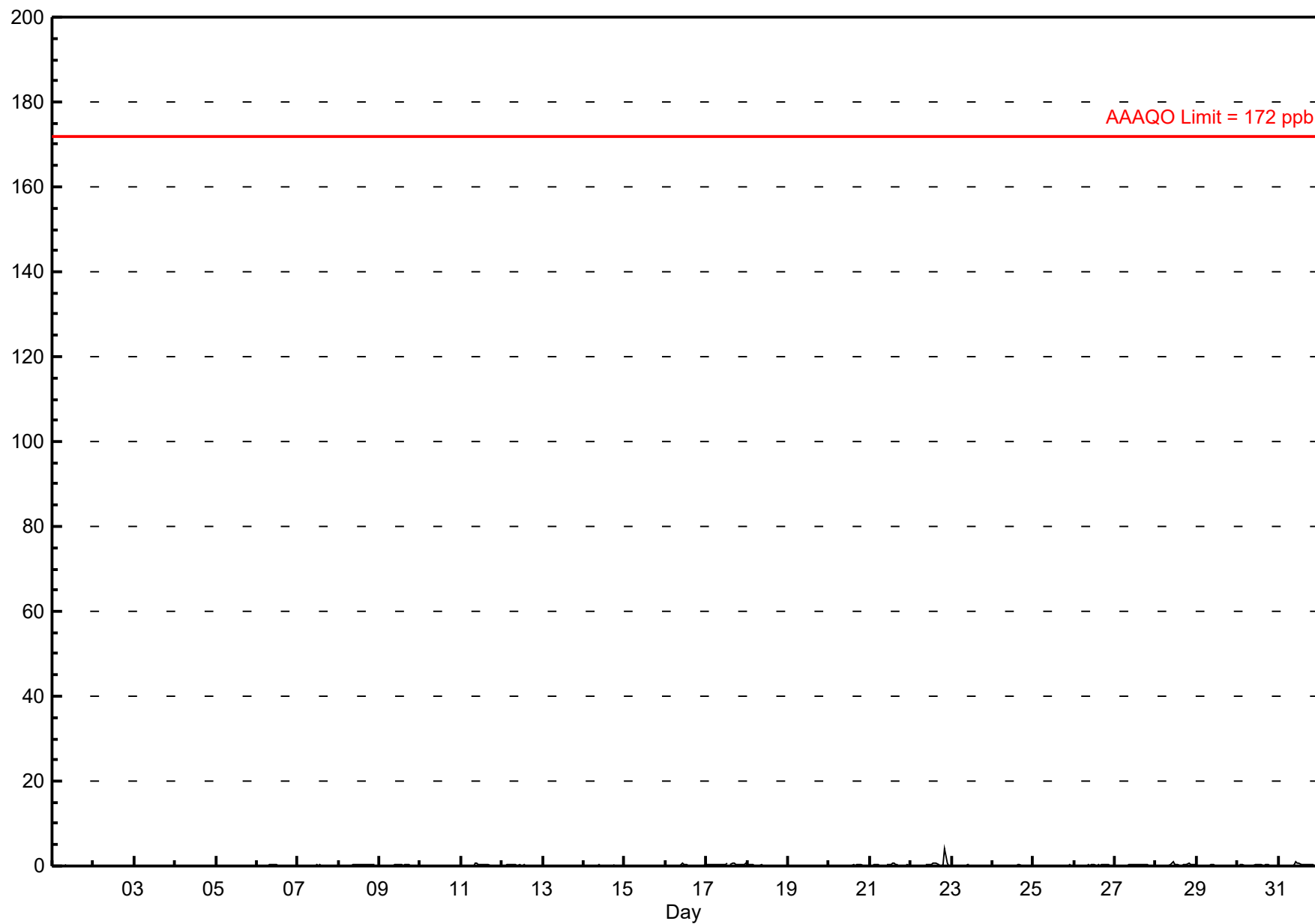


Wind Speed Classes (km/h)



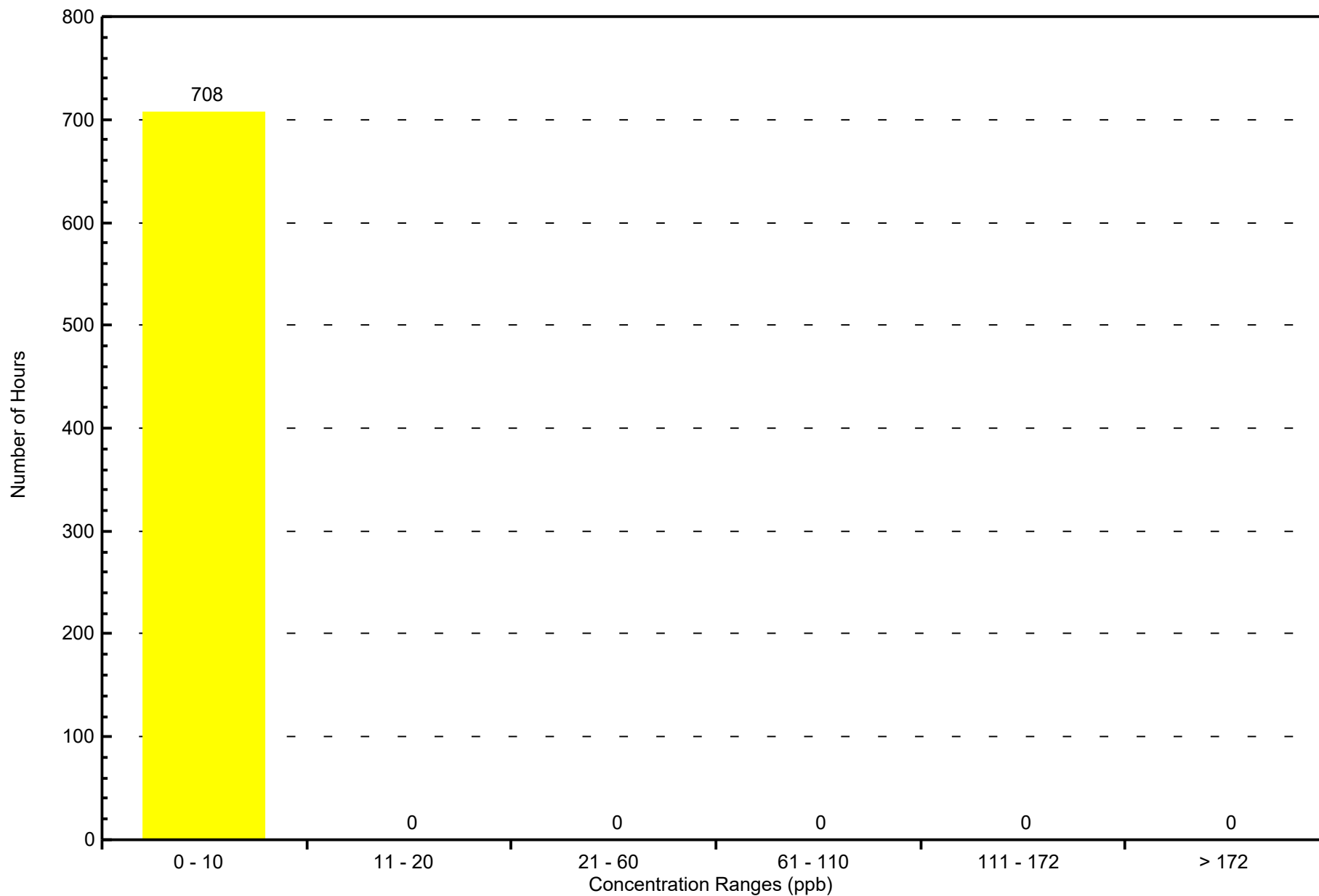
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Valleyview - May 2019



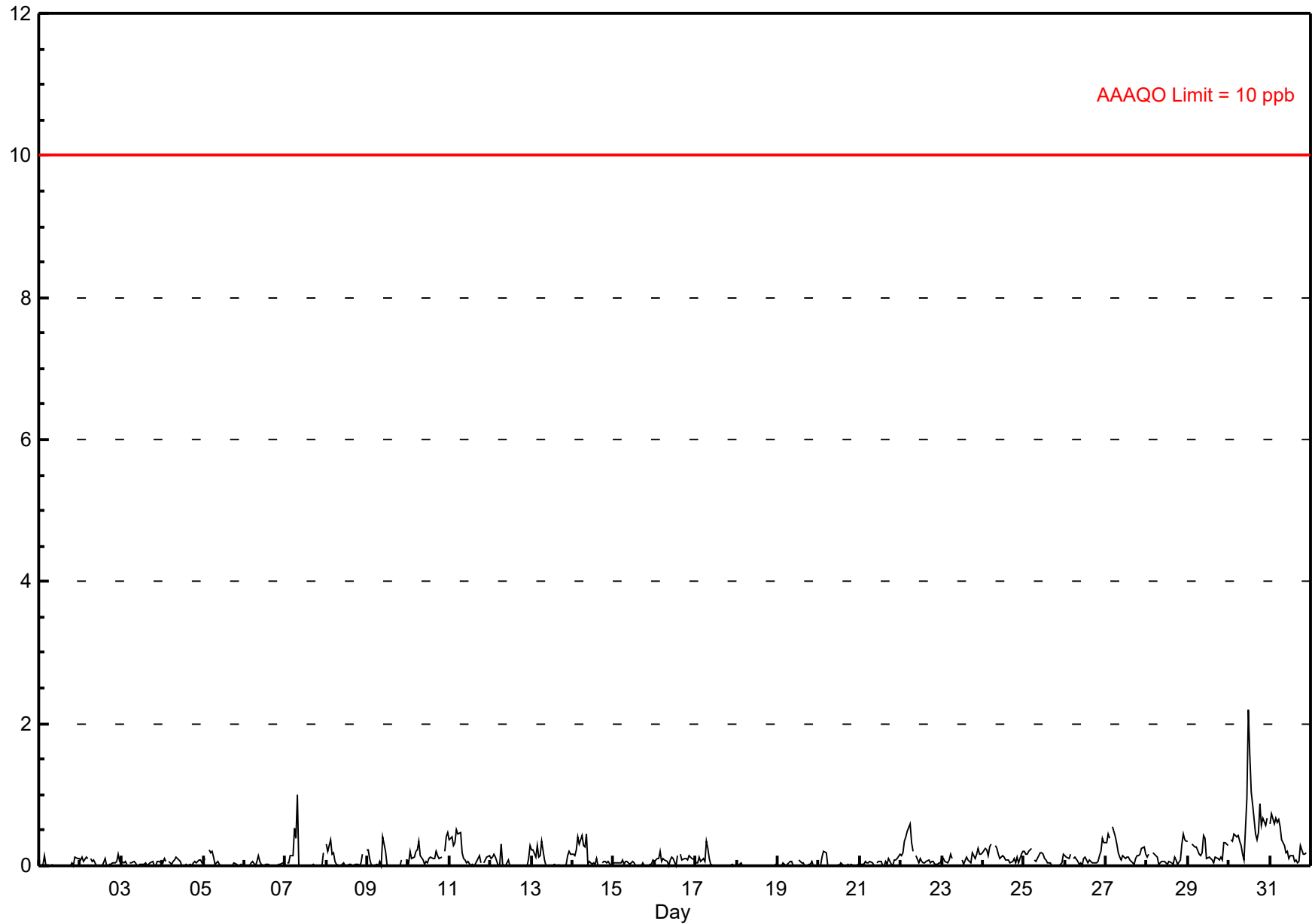
Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Valleyview - May 2019



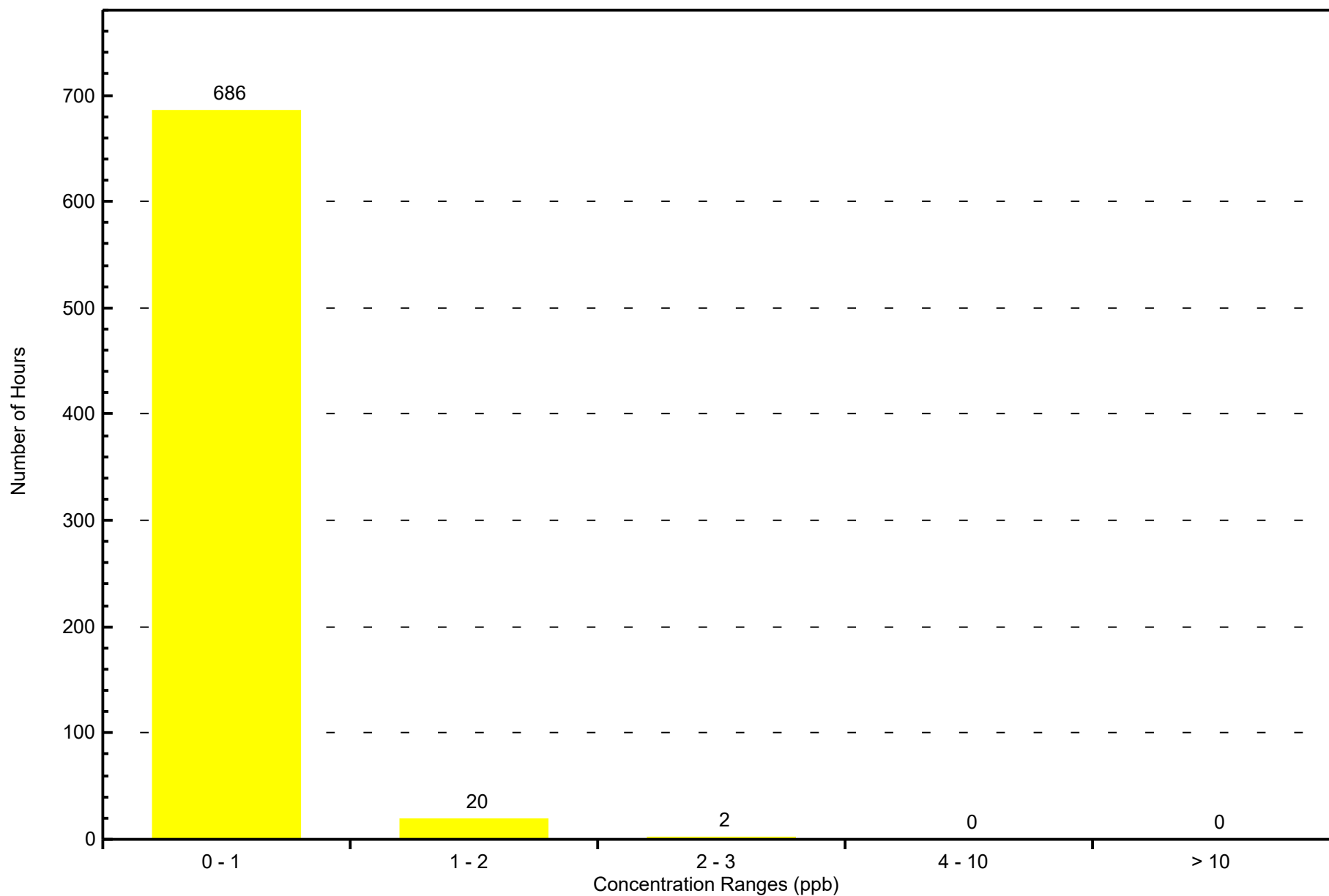
Hourly Averages

Hydrogen Sulphide (H_2S) - ppb
Valleyview - May 2019



Histogram of Hourly Averages

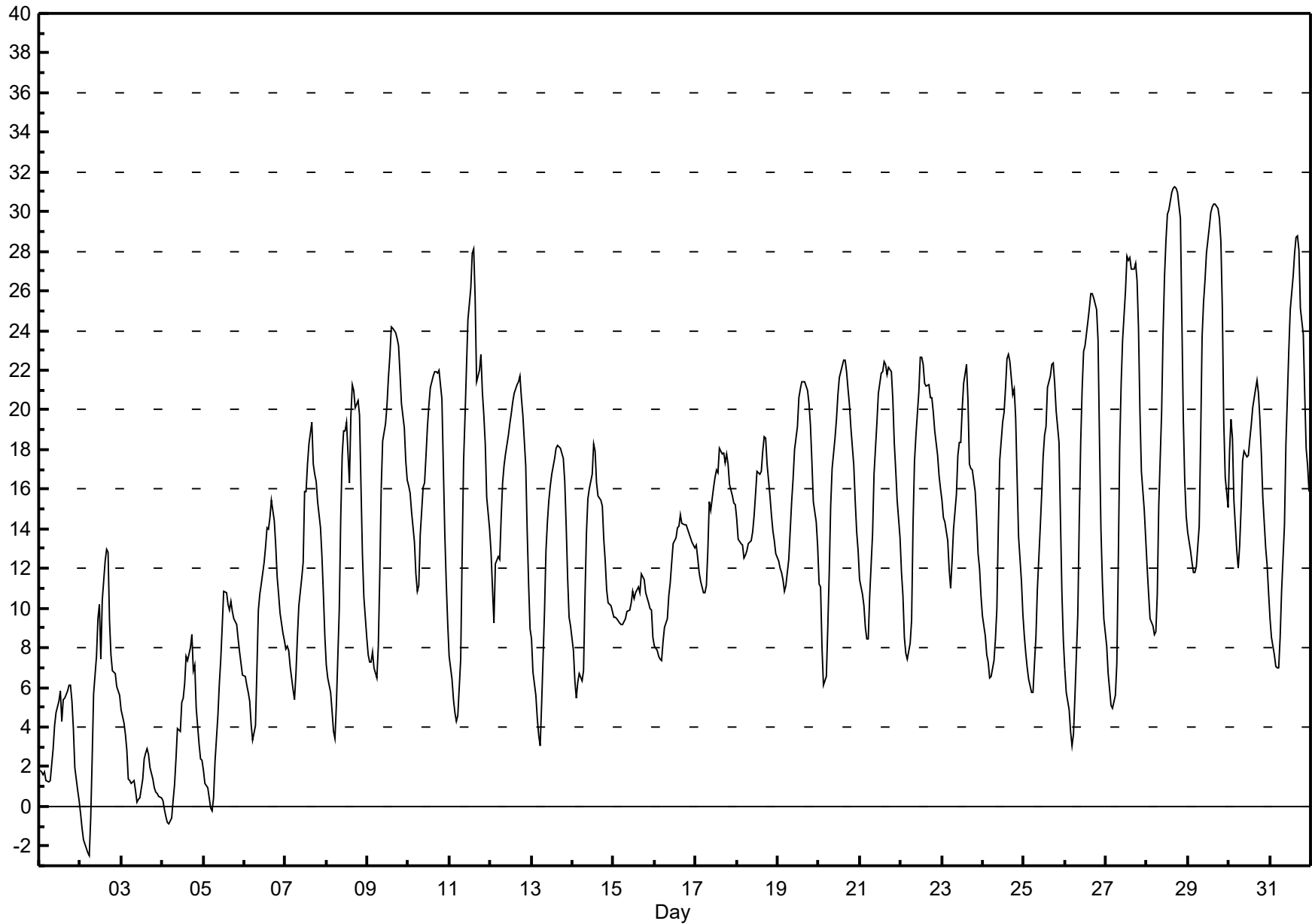
Hydrogen Sulphide (H₂S) - ppb
Valleyview - May 2019



Hourly Averages

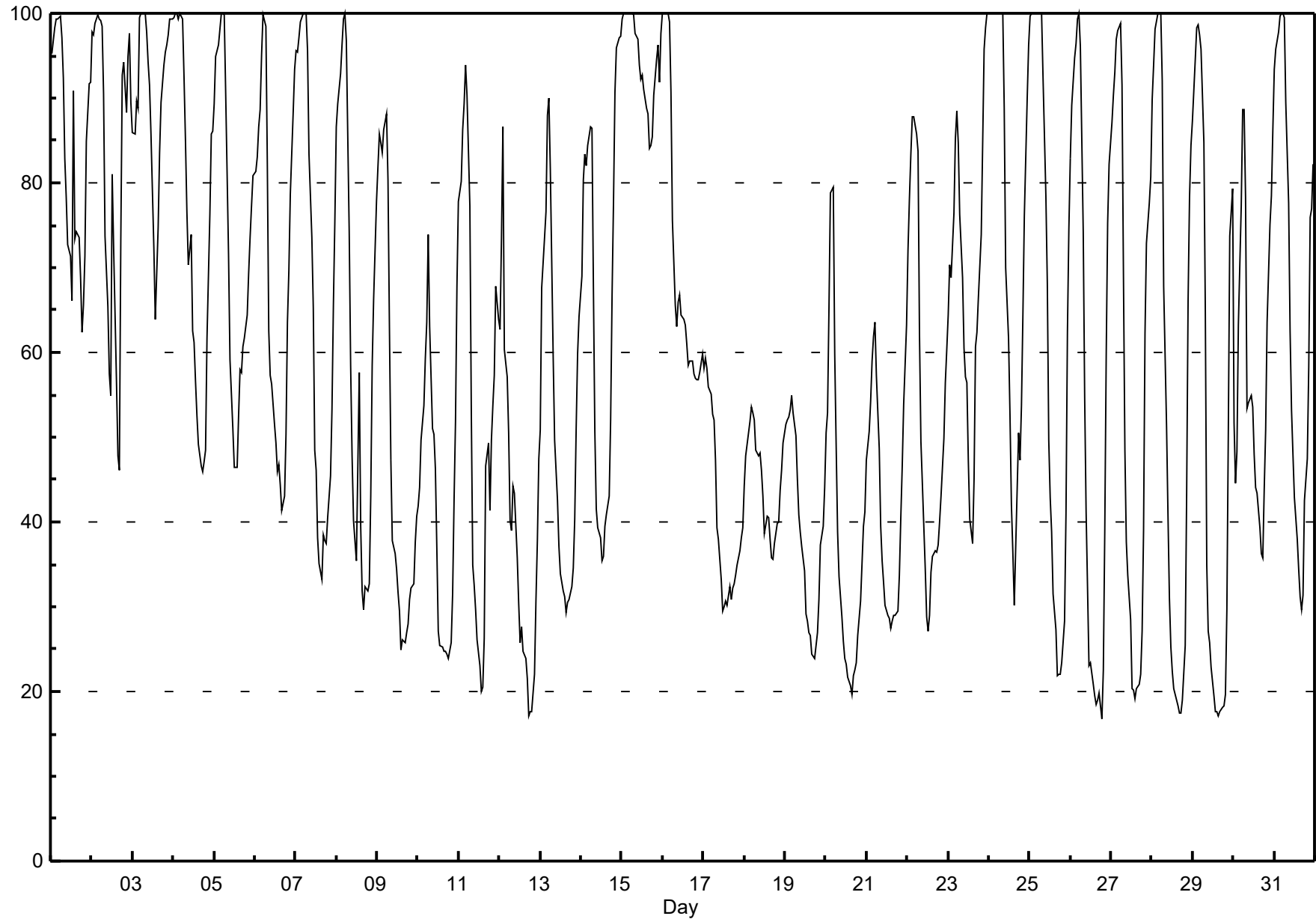
External Temperature (ET) - °C

Valleyview - May 2019



Hourly Averages

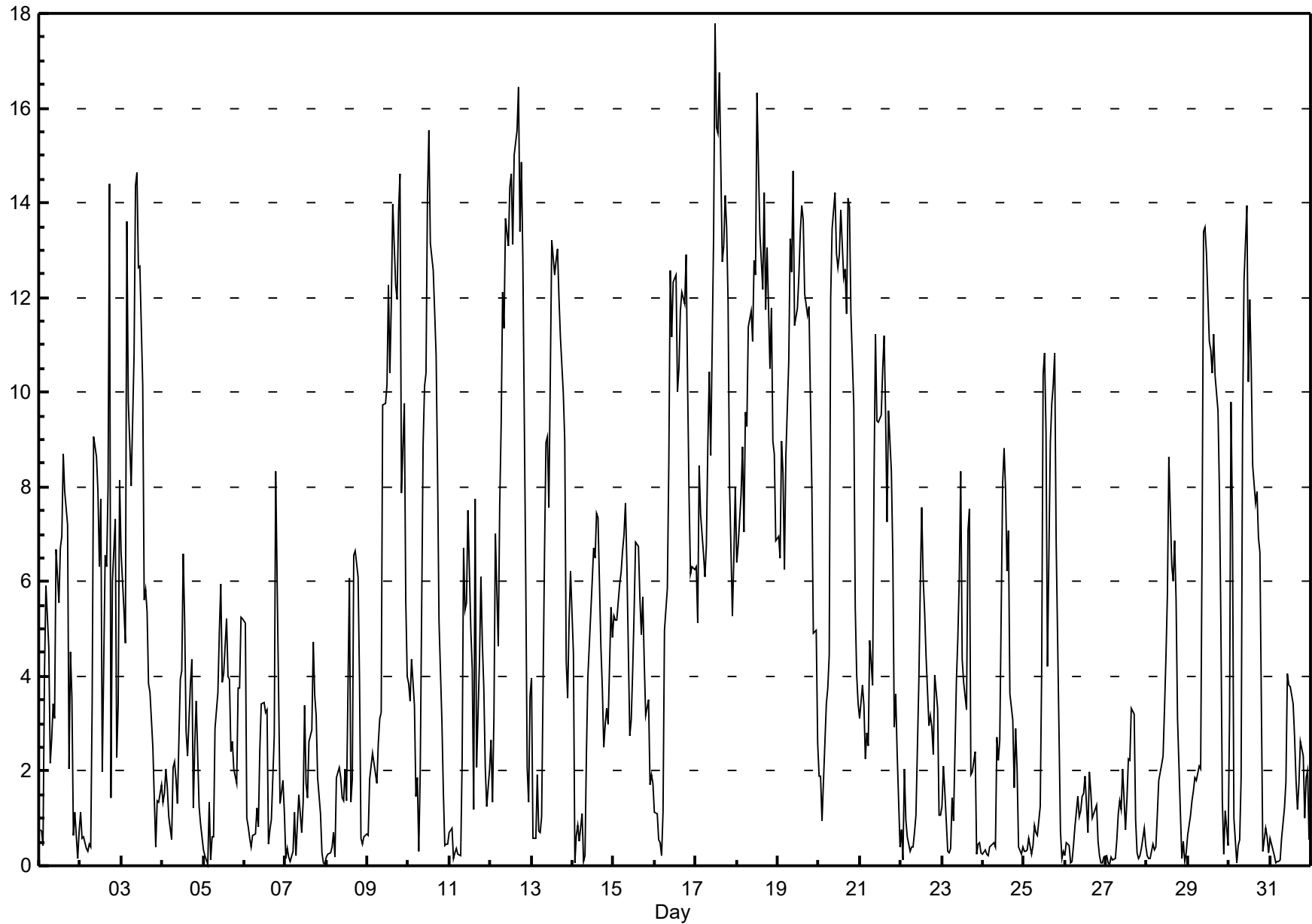
Relative Humidity (RH) - %
Valleyview - May 2019



Hourly Averages

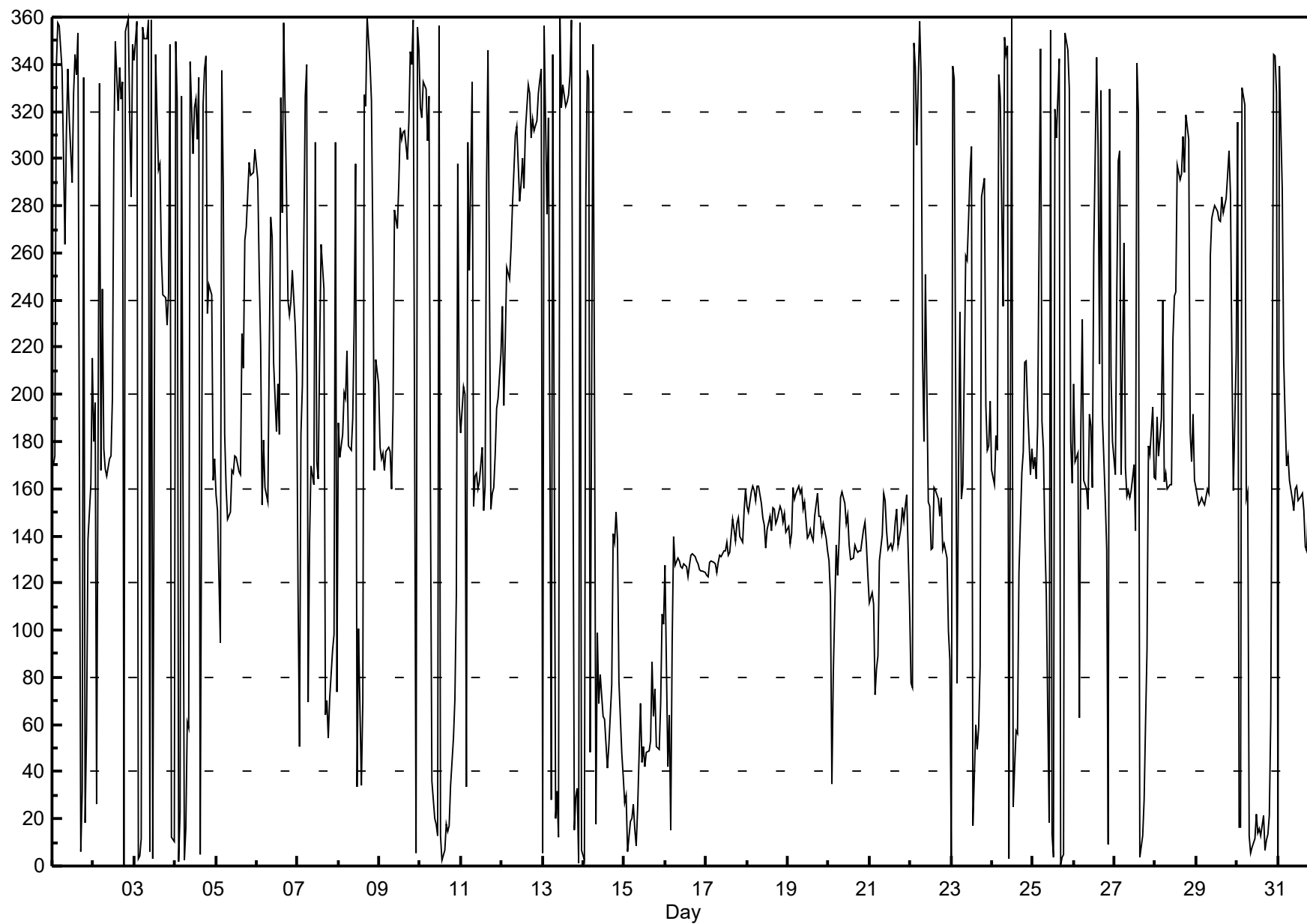
Wind Speed (WS) - km/h

Valleyview - May 2019



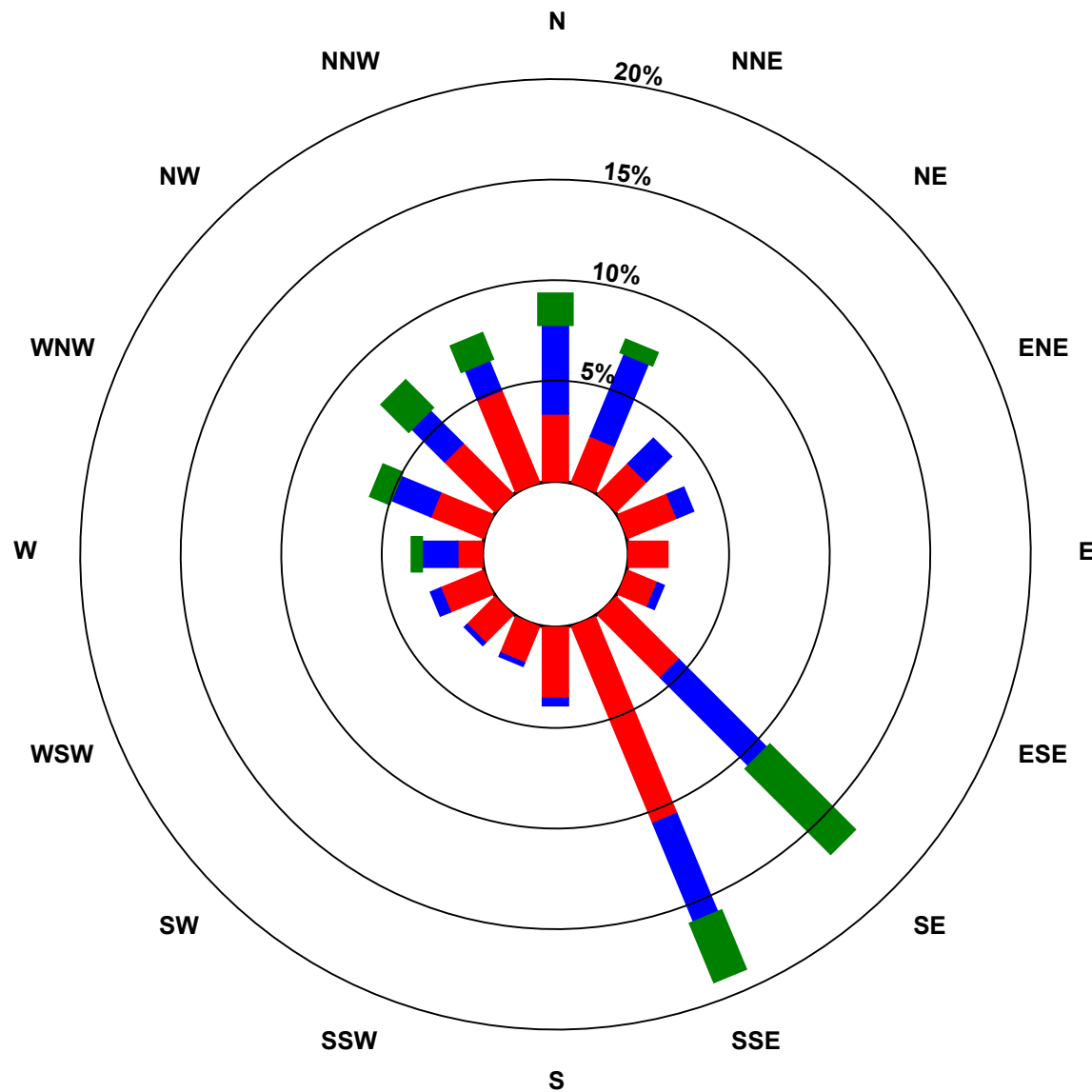
Hourly Averages

Wind Direction (WD) - deg
Valleyview - May 2019

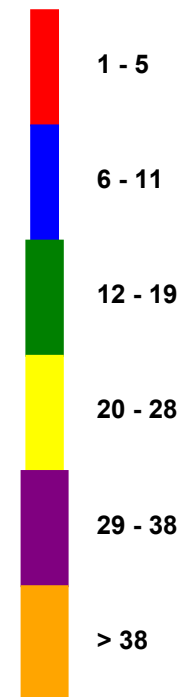


Wind Rose

Wind Speed (WS) (km/h)
Valleyview - May 2019



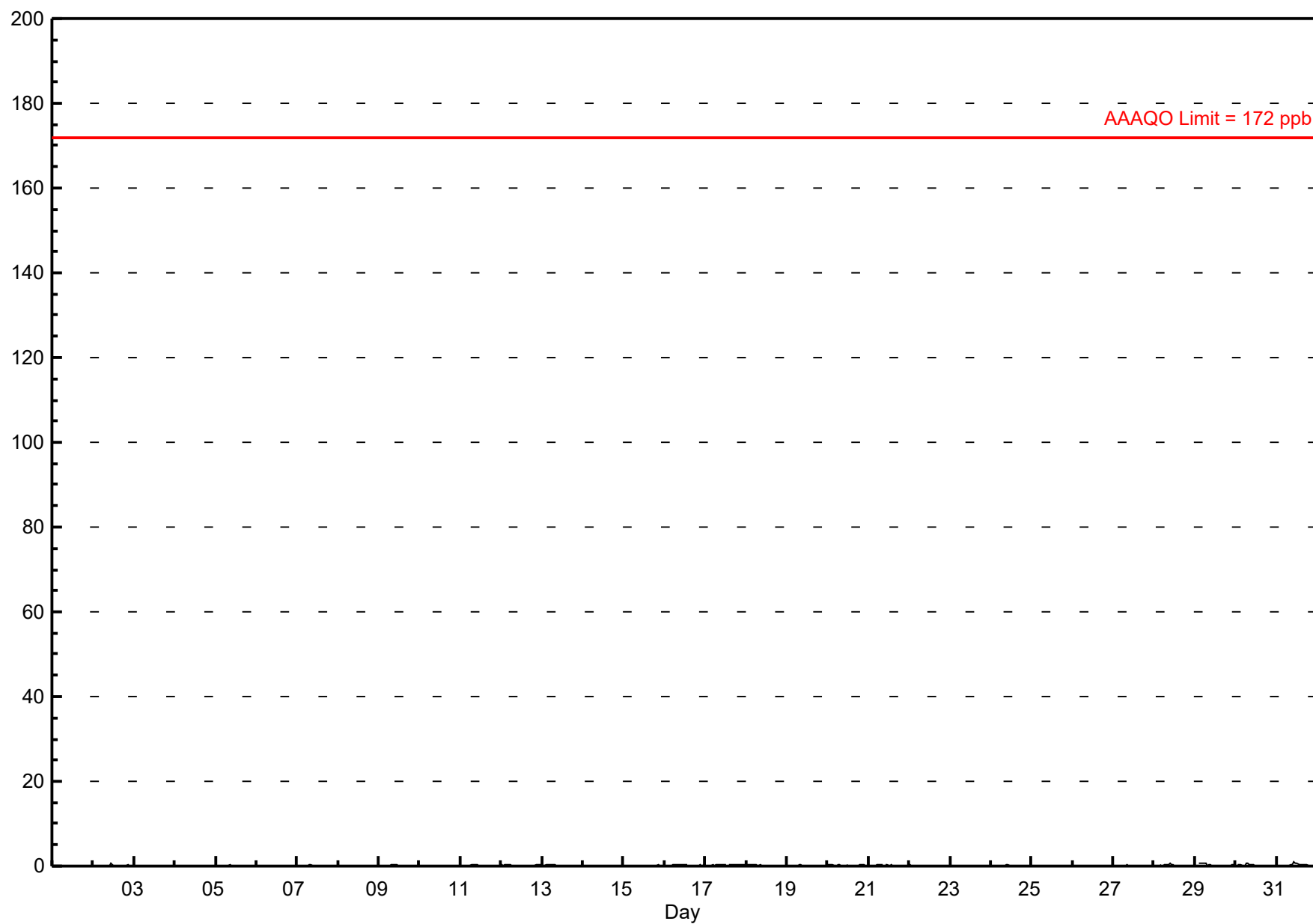
Wind Speed Classes (km/h)



Hourly Averages

Sulphur Dioxide (SO₂) - ppb

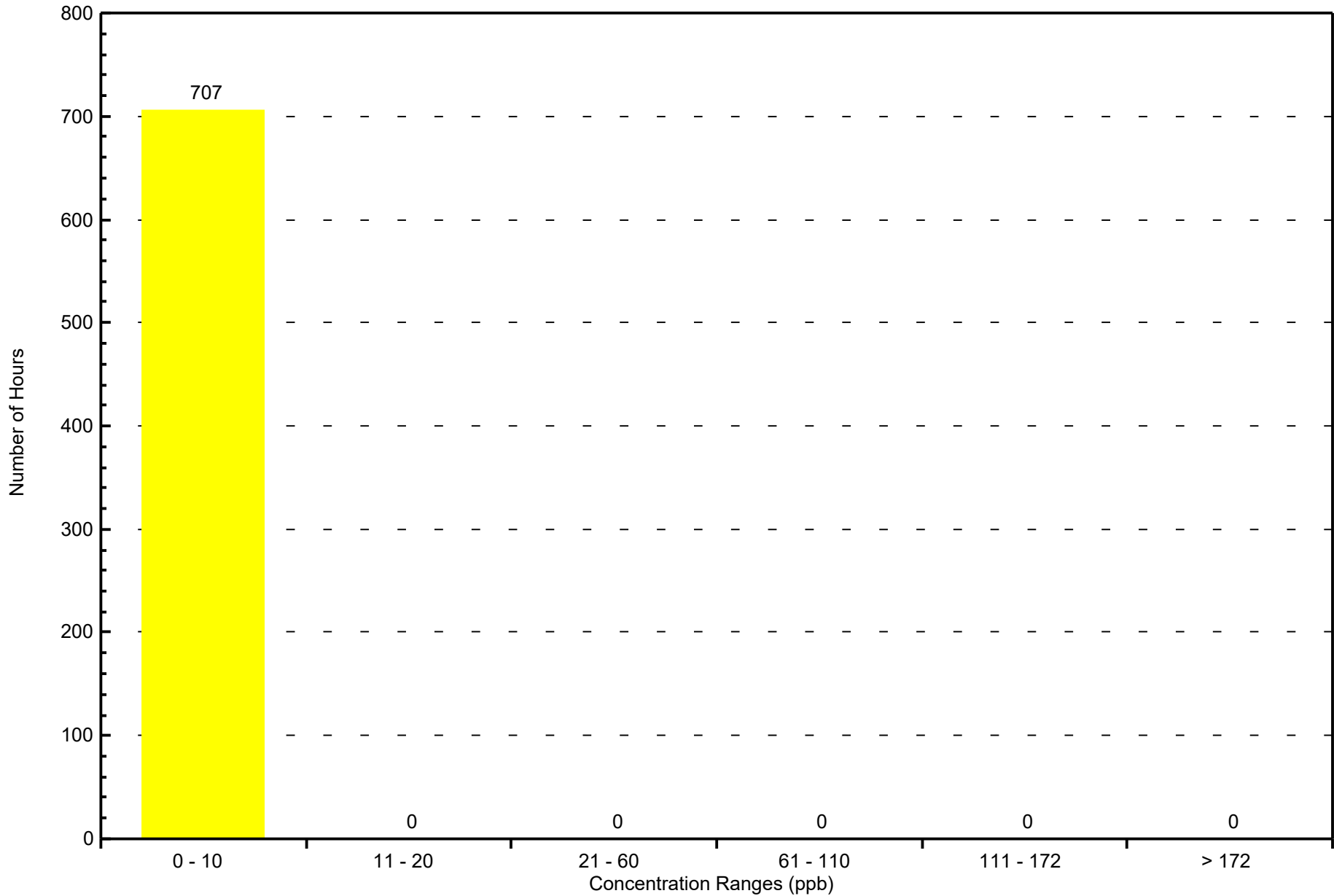
Donnelly - May 2019



Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb

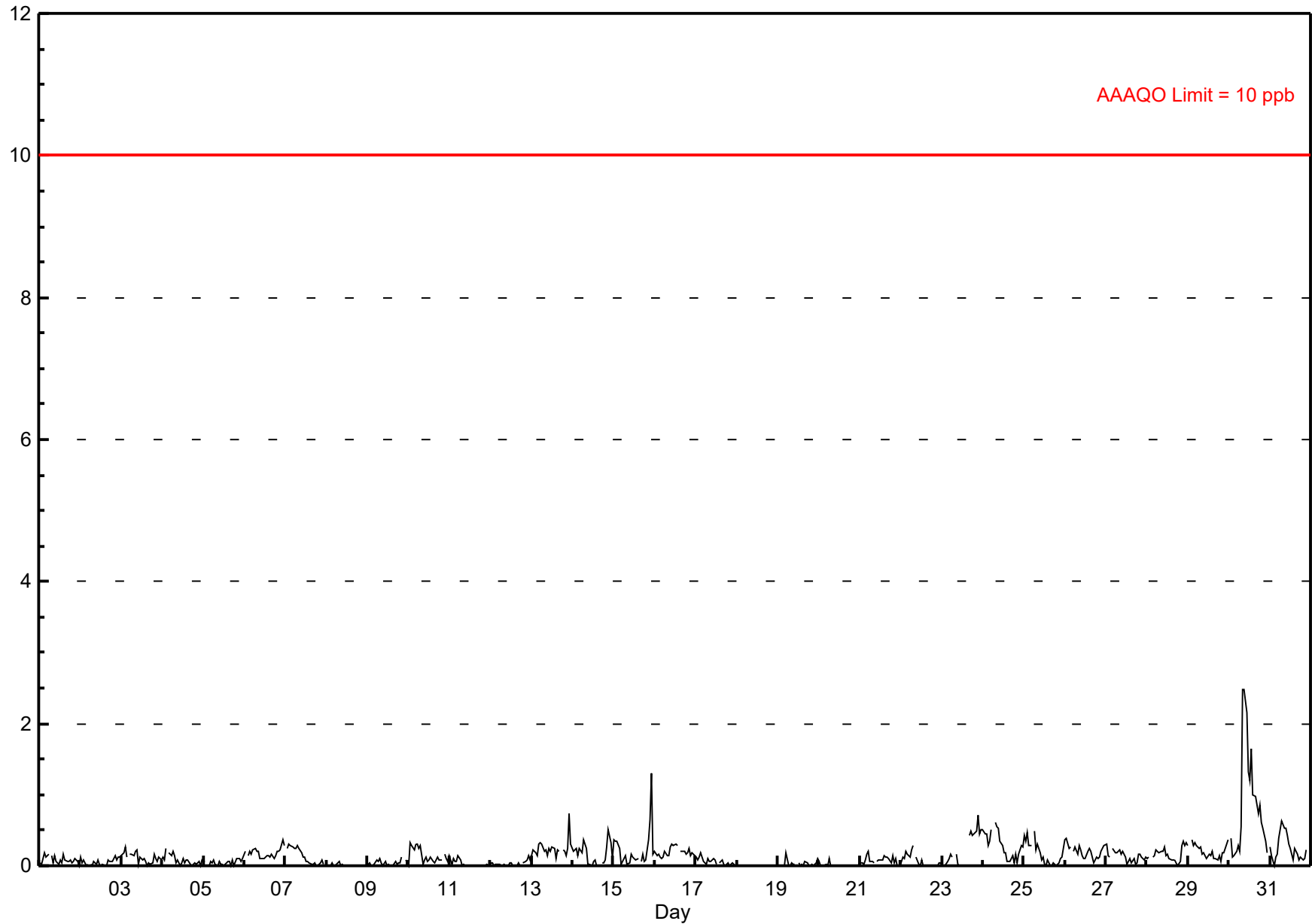
Donnelly - May 2019



Hourly Averages

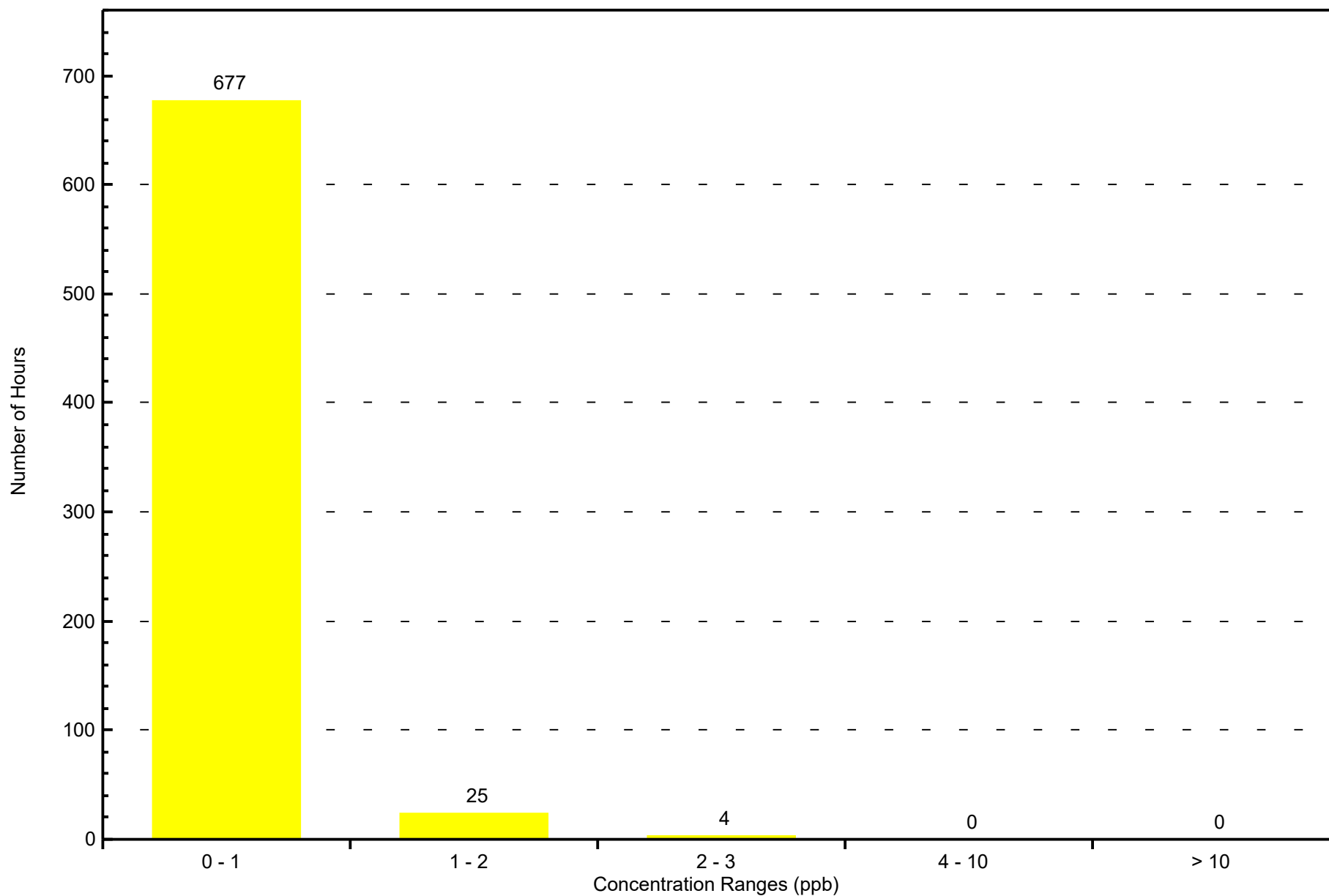
Hydrogen Sulphide (H₂S) - ppb

Donnelly - May 2019



Histogram of Hourly Averages

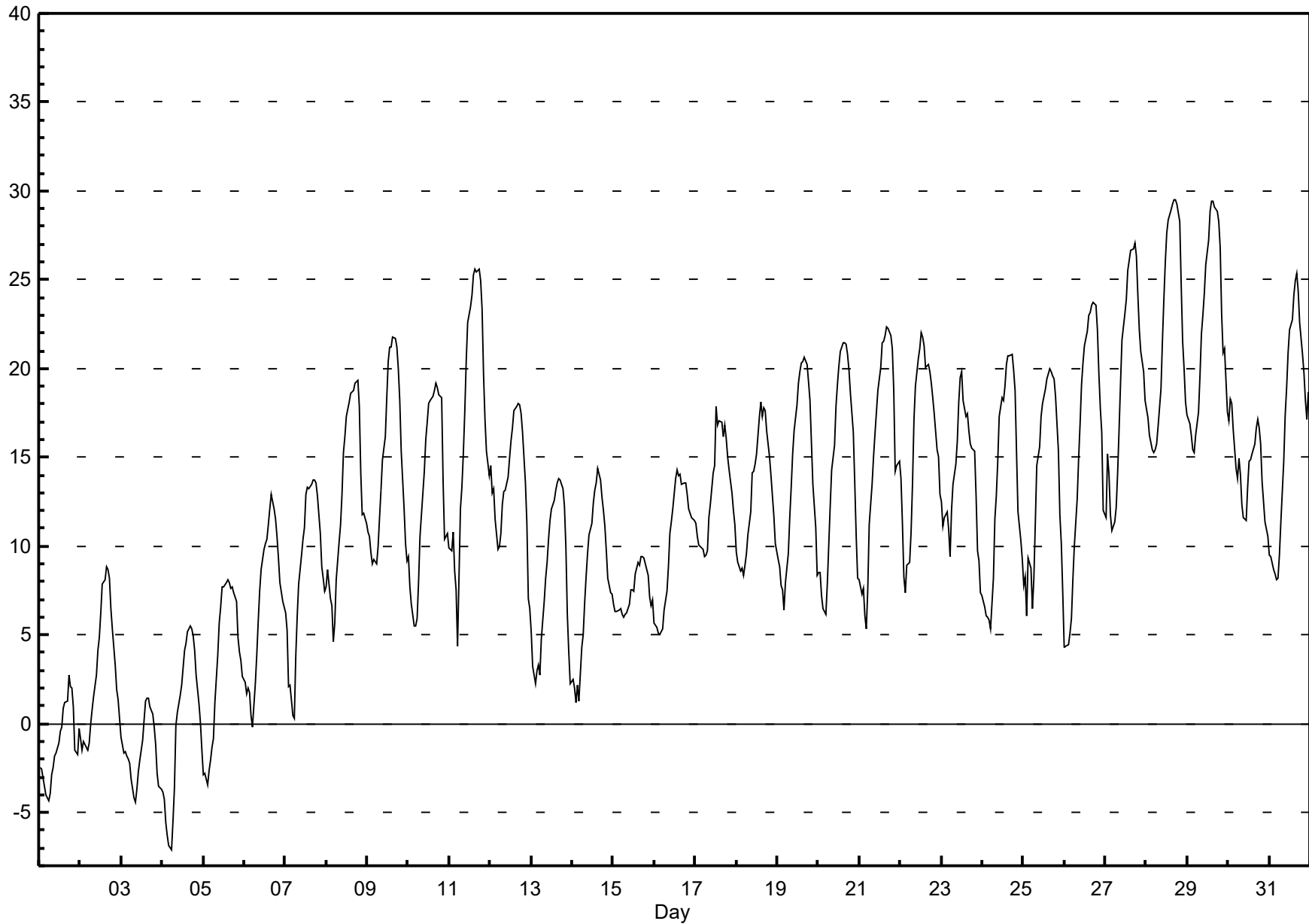
Hydrogen Sulphide (H₂S) - ppb
Donnelly - May 2019



Hourly Averages

External Temperature (ET) - °C

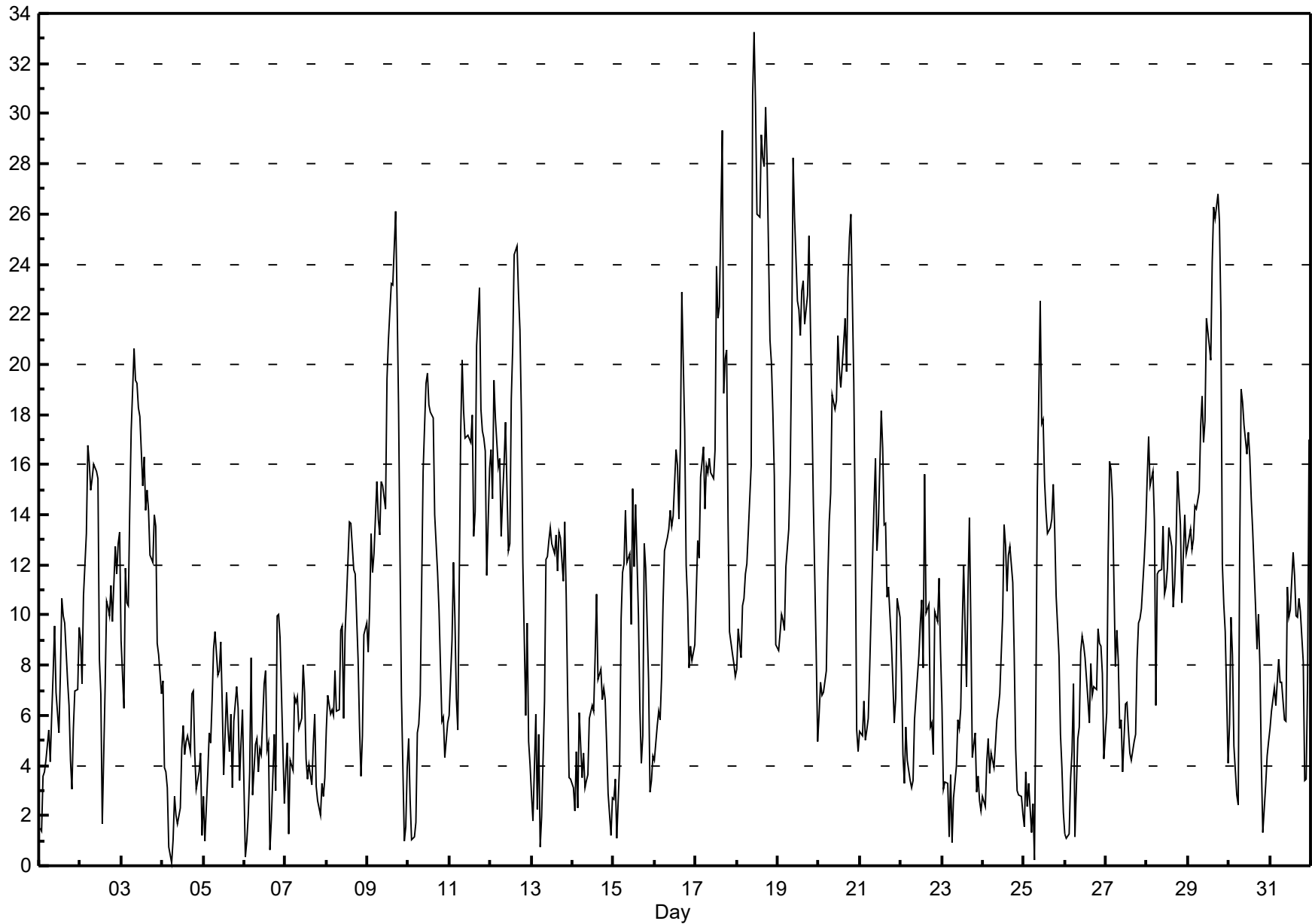
Donnelly - May 2019



Hourly Averages

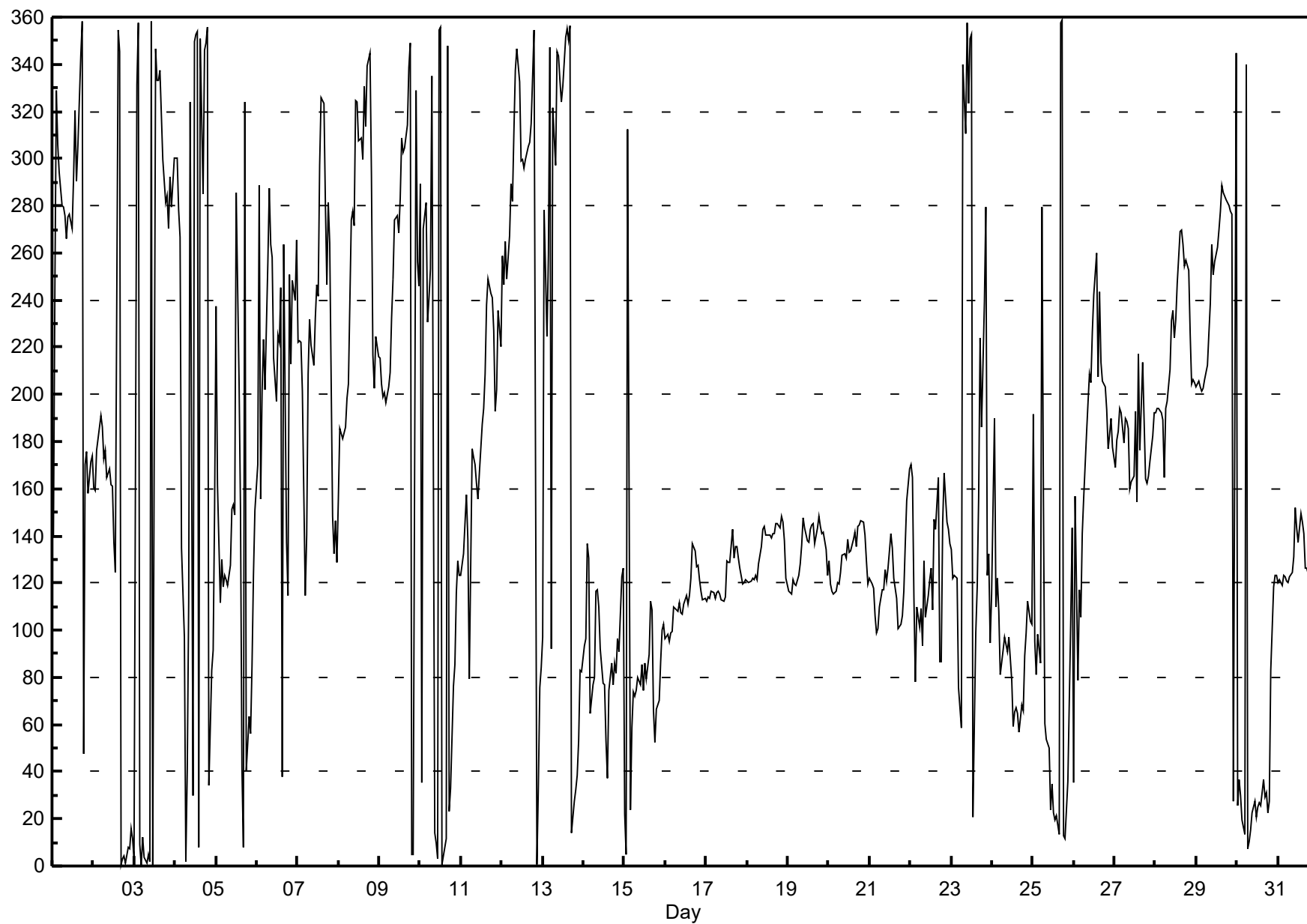
Wind Speed (WS) - km/h

Donnelly - May 2019



Hourly Averages

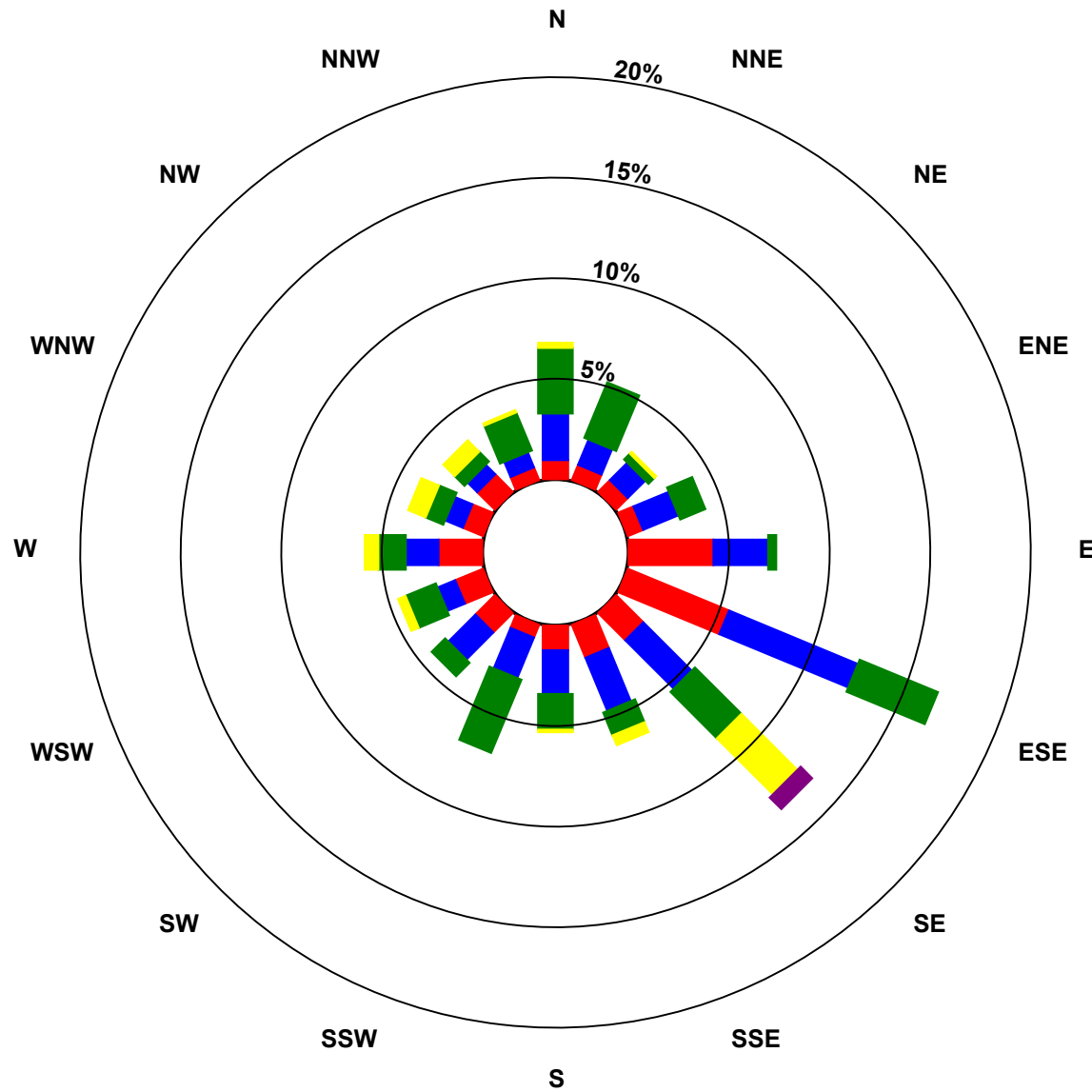
Wind Direction (WD) - deg
Donnelly - May 2019



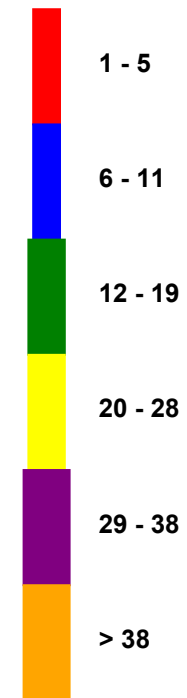
Wind Rose

Wind Speed (WS) (km/h)

Donnelly - May 2019

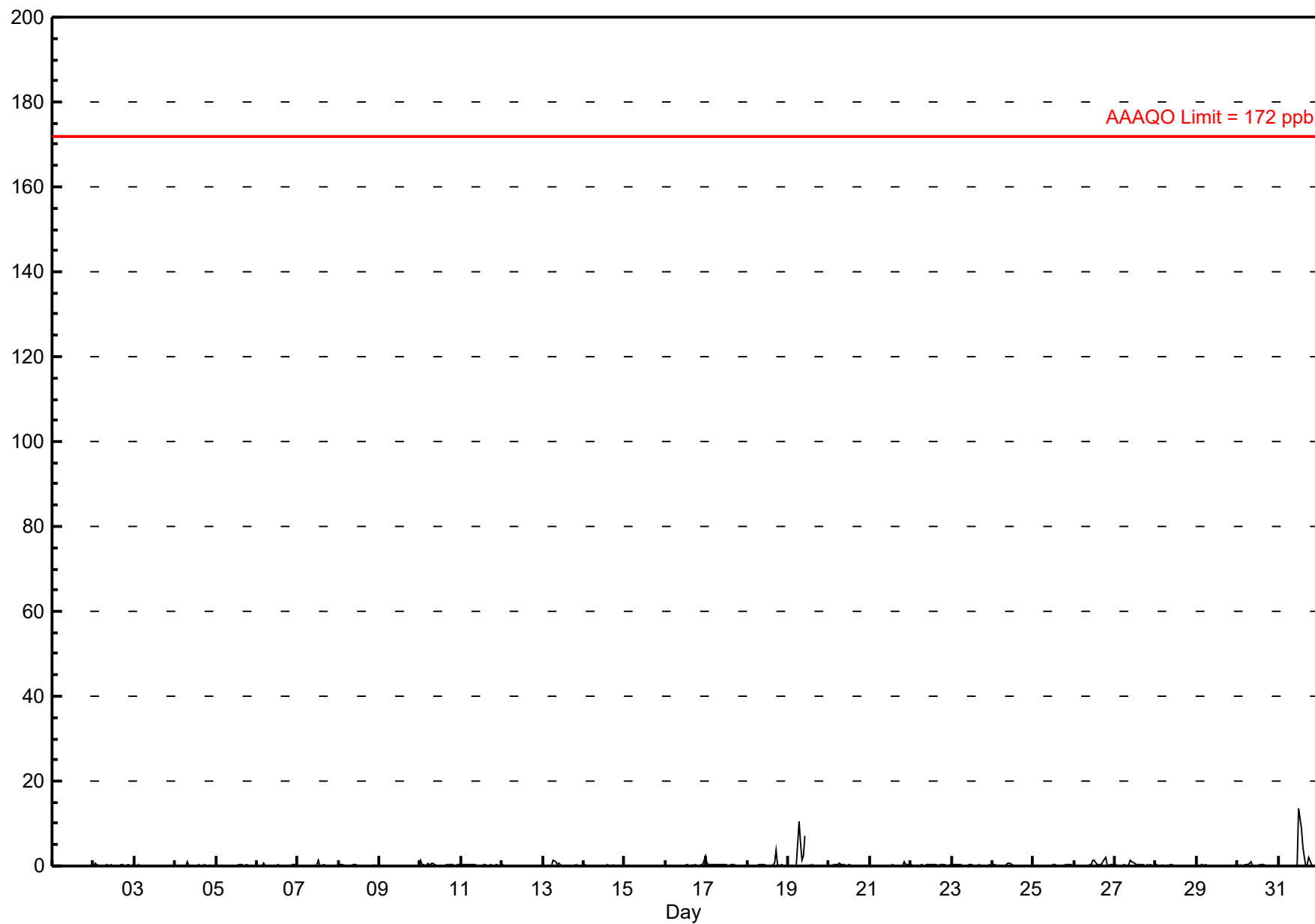


Wind Speed Classes (km/h)



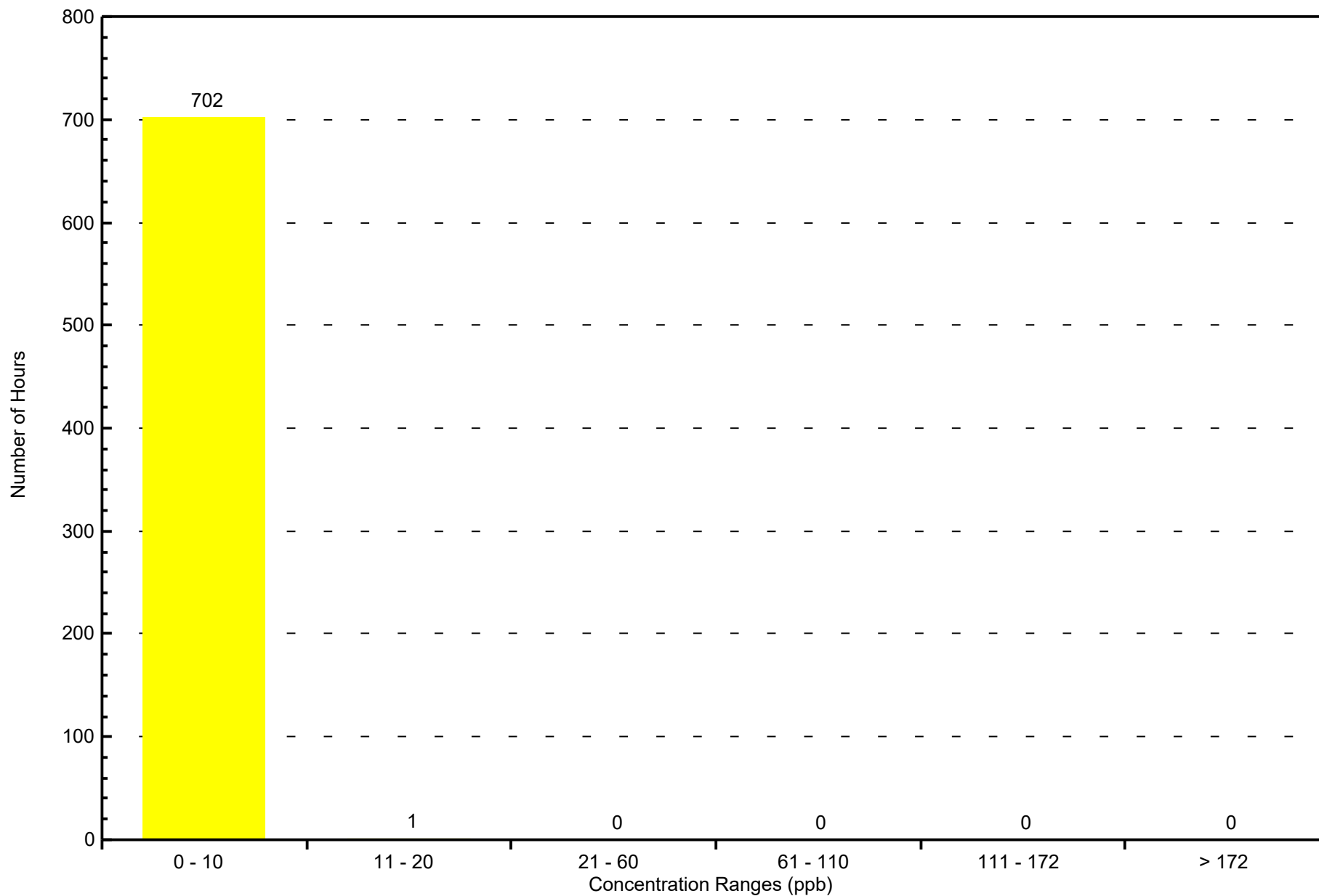
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Wembley - May 2019



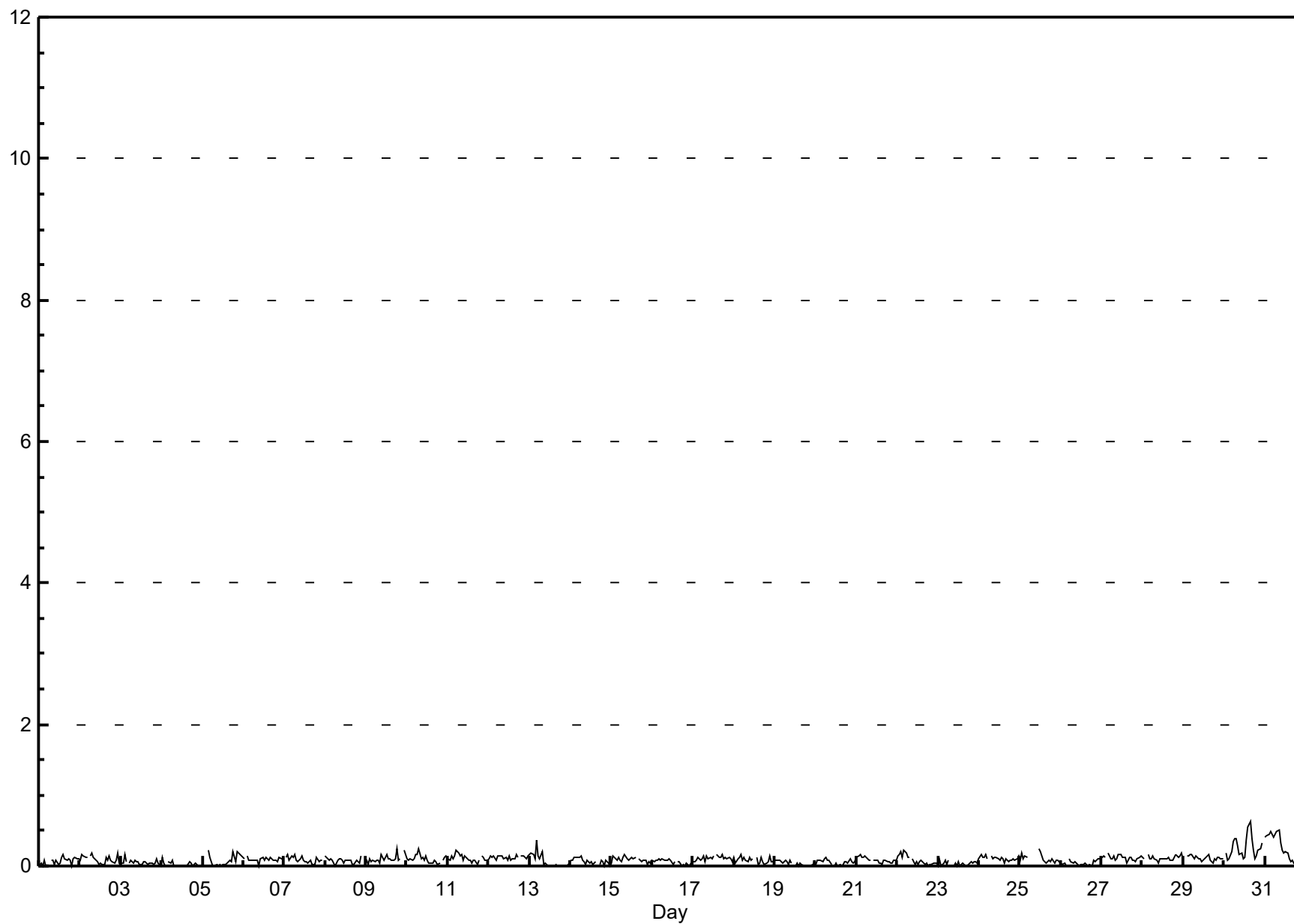
Histogram of Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Wembley - May 2019



Hourly Averages

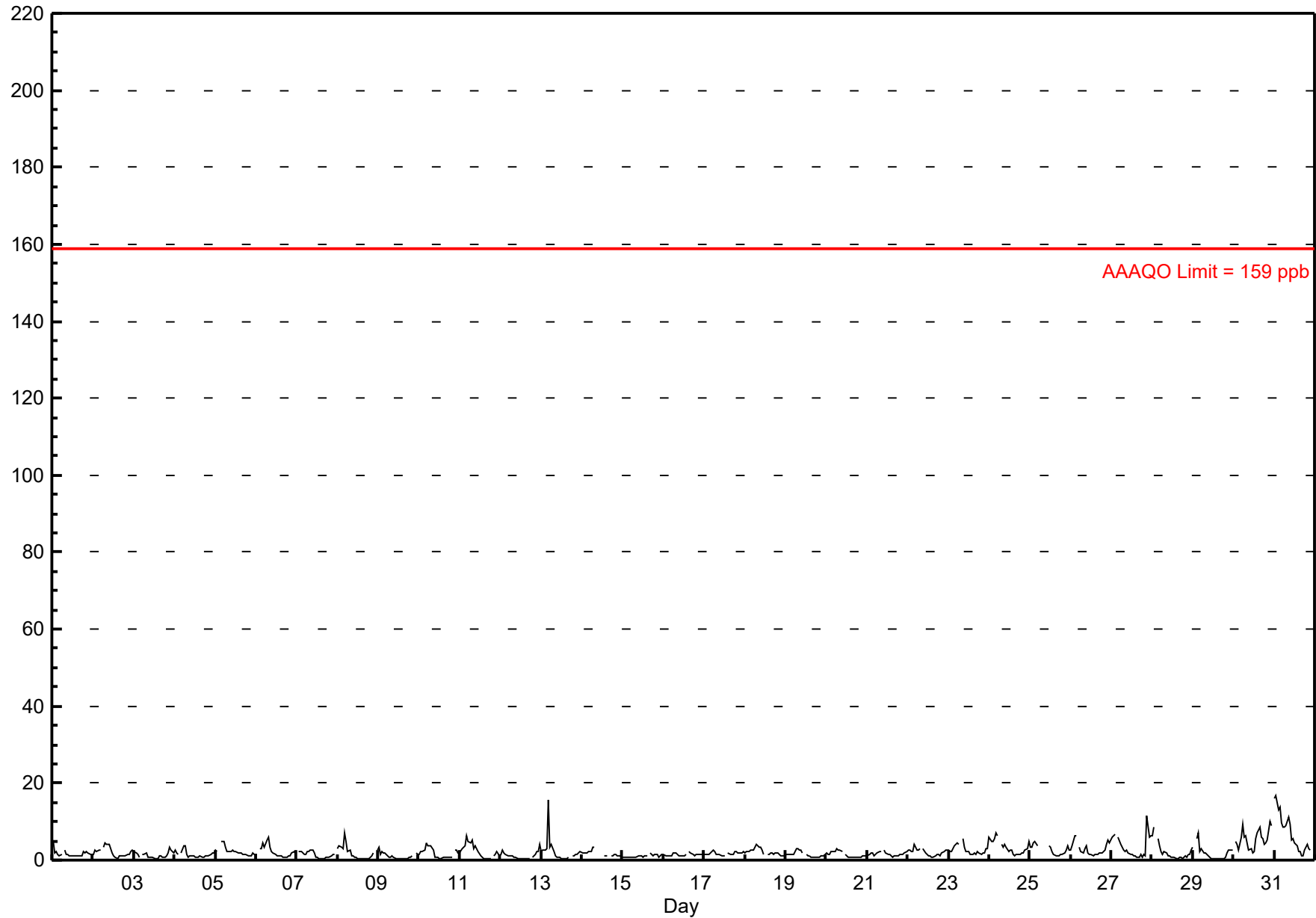
Total Reduced Sulphur (TRS) - ppb
Wembley - May 2019



Hourly Averages

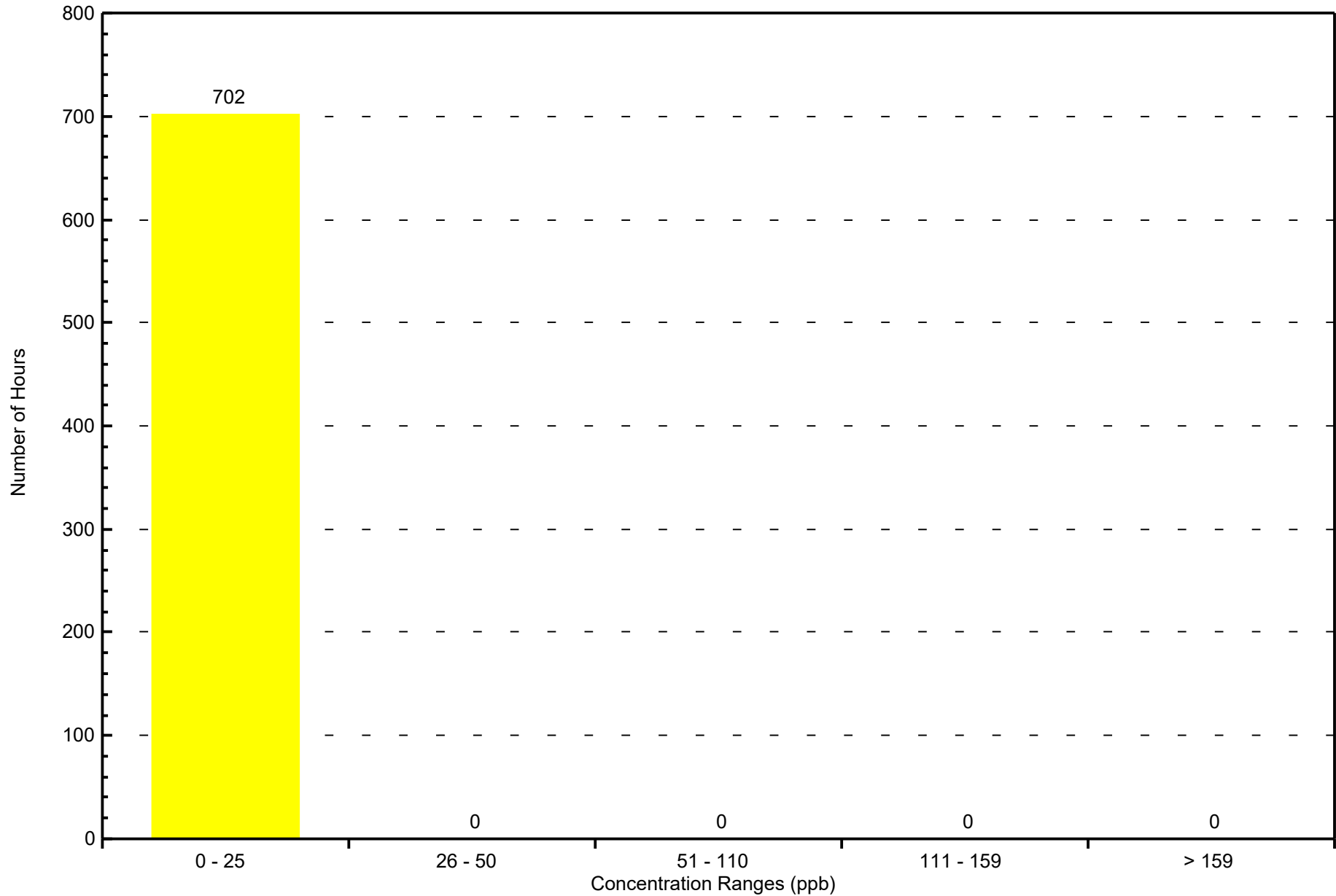
Nitrogen Dioxide (NO₂) - ppb

Wembley - May 2019



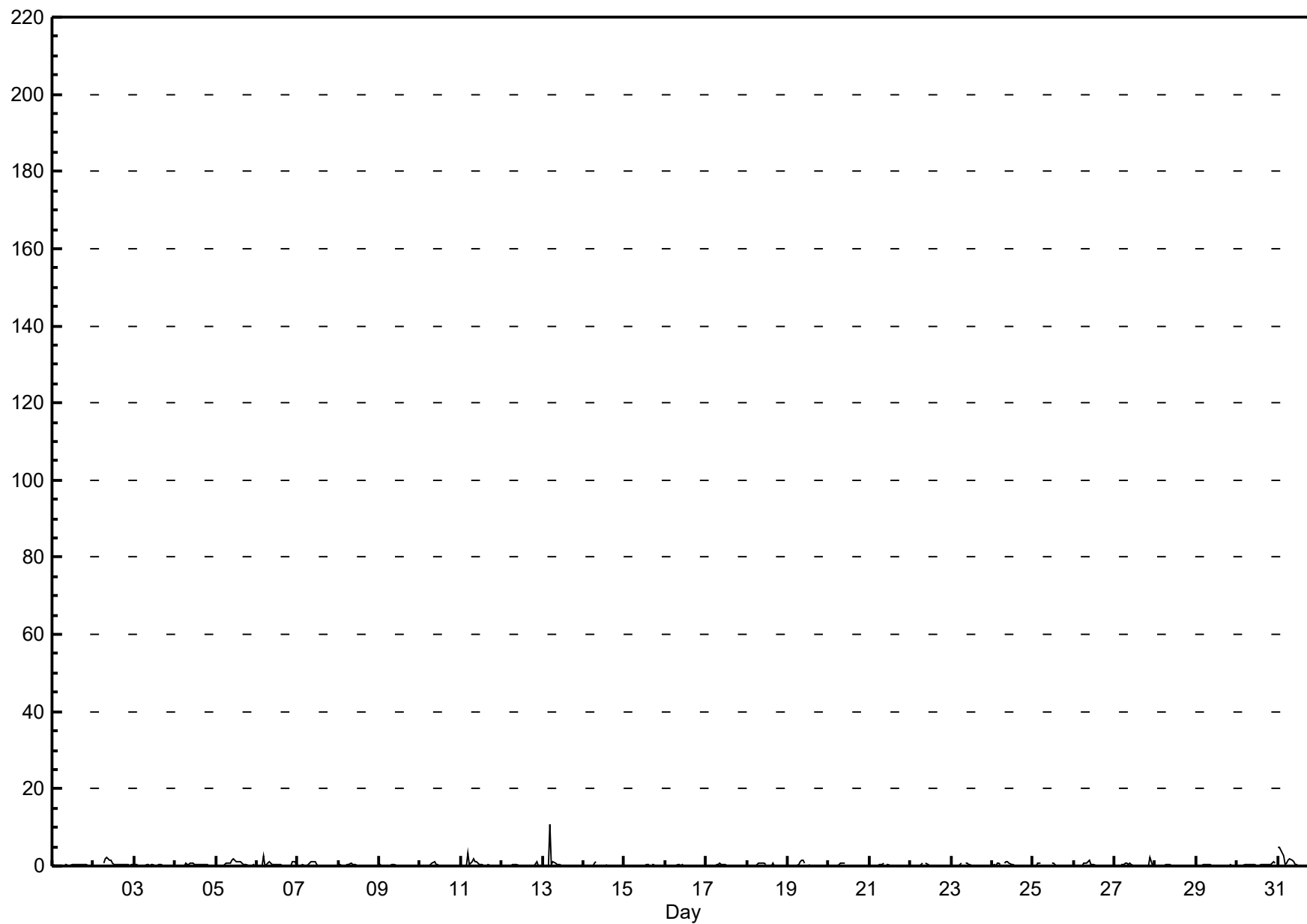
Histogram of Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Wembley - May 2019



Hourly Averages

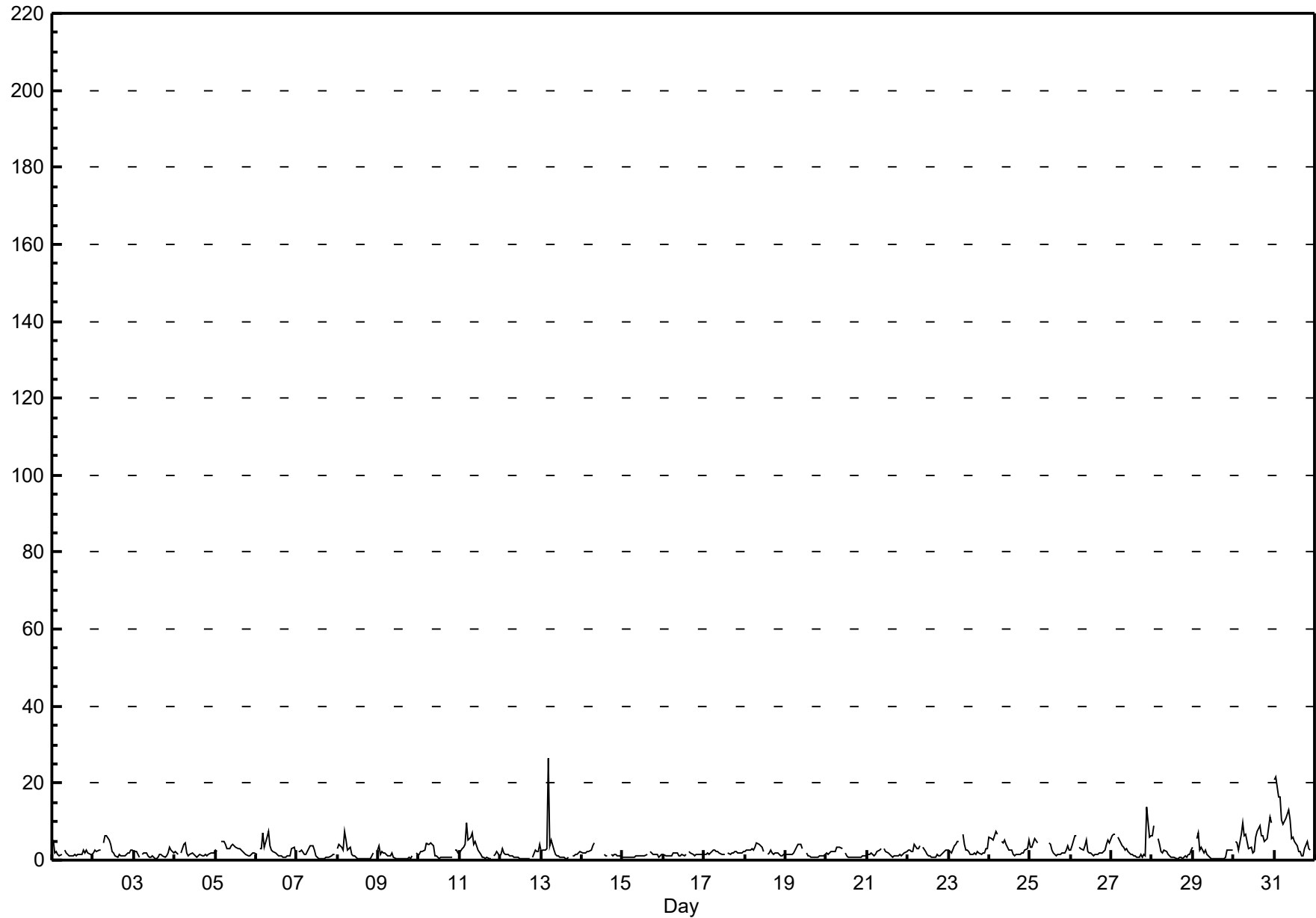
Nitrogen Oxide (NO) - ppb
Wembley - May 2019



Hourly Averages

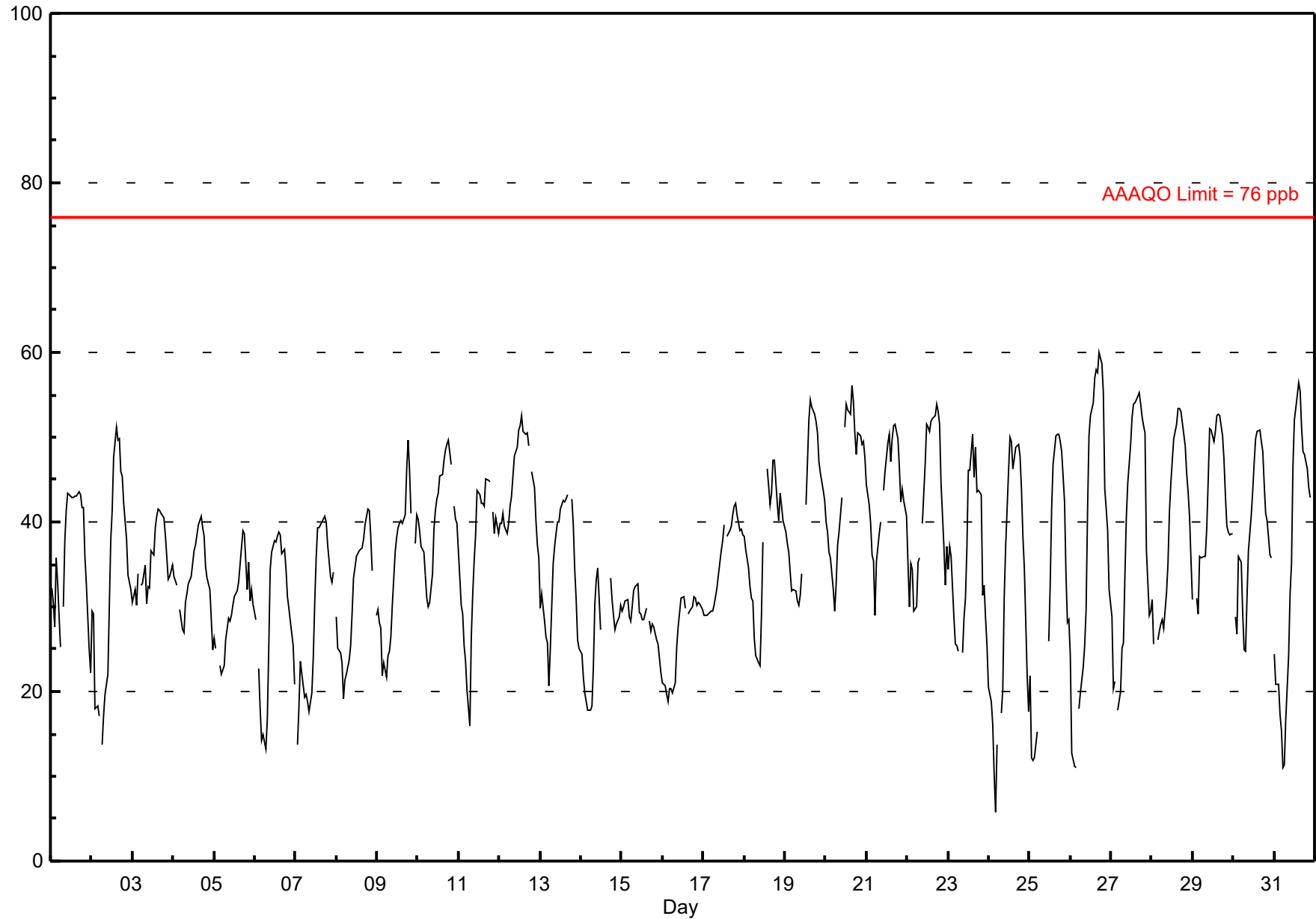
Oxides of Nitrogen (NO_x) - ppb

Wembley - May 2019



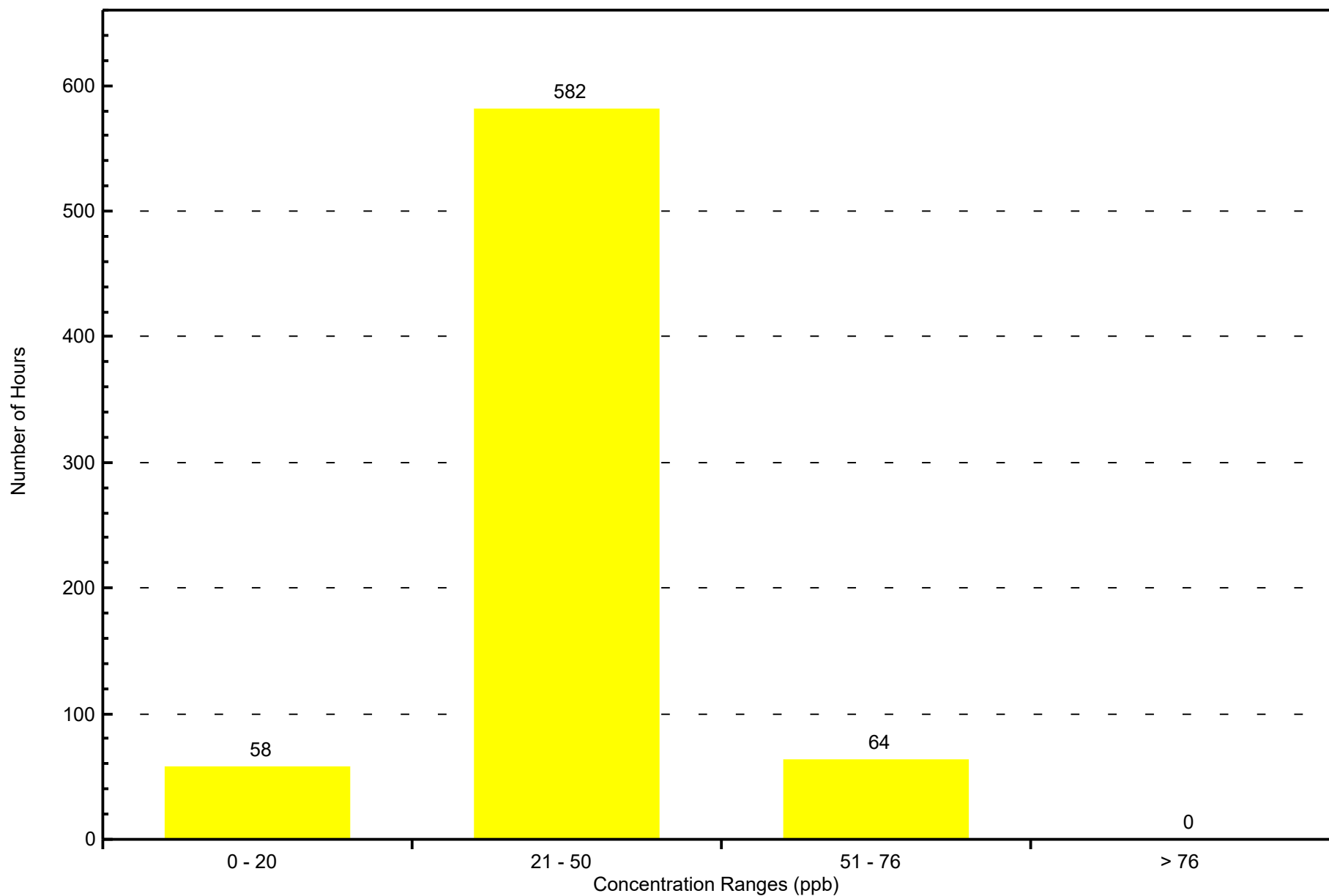
Hourly Averages

Ozone (O₃) - ppb
Wembley - May 2019



Histogram of Hourly Averages

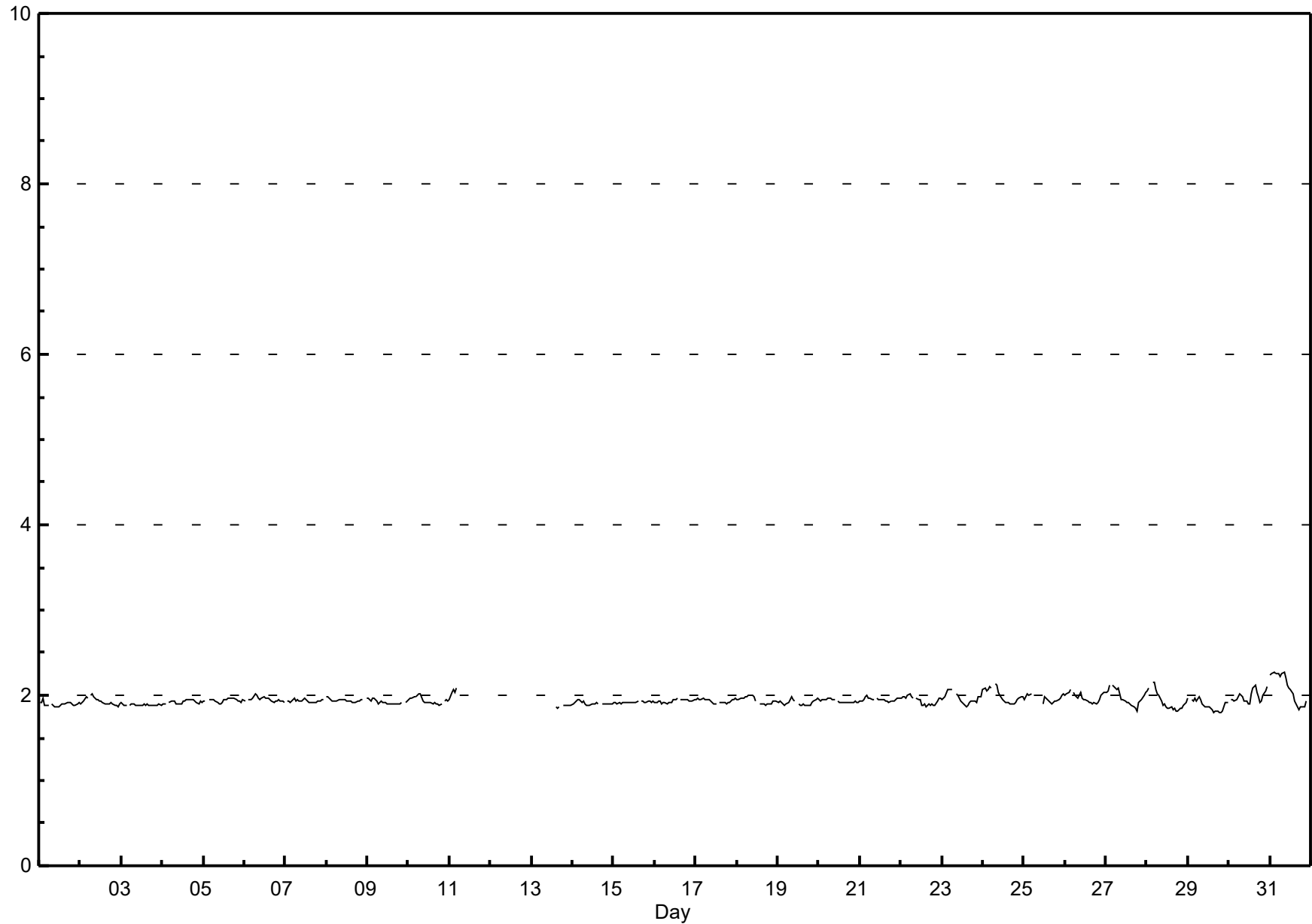
Ozone (O₃) - ppb
Wembley - May 2019



Hourly Averages

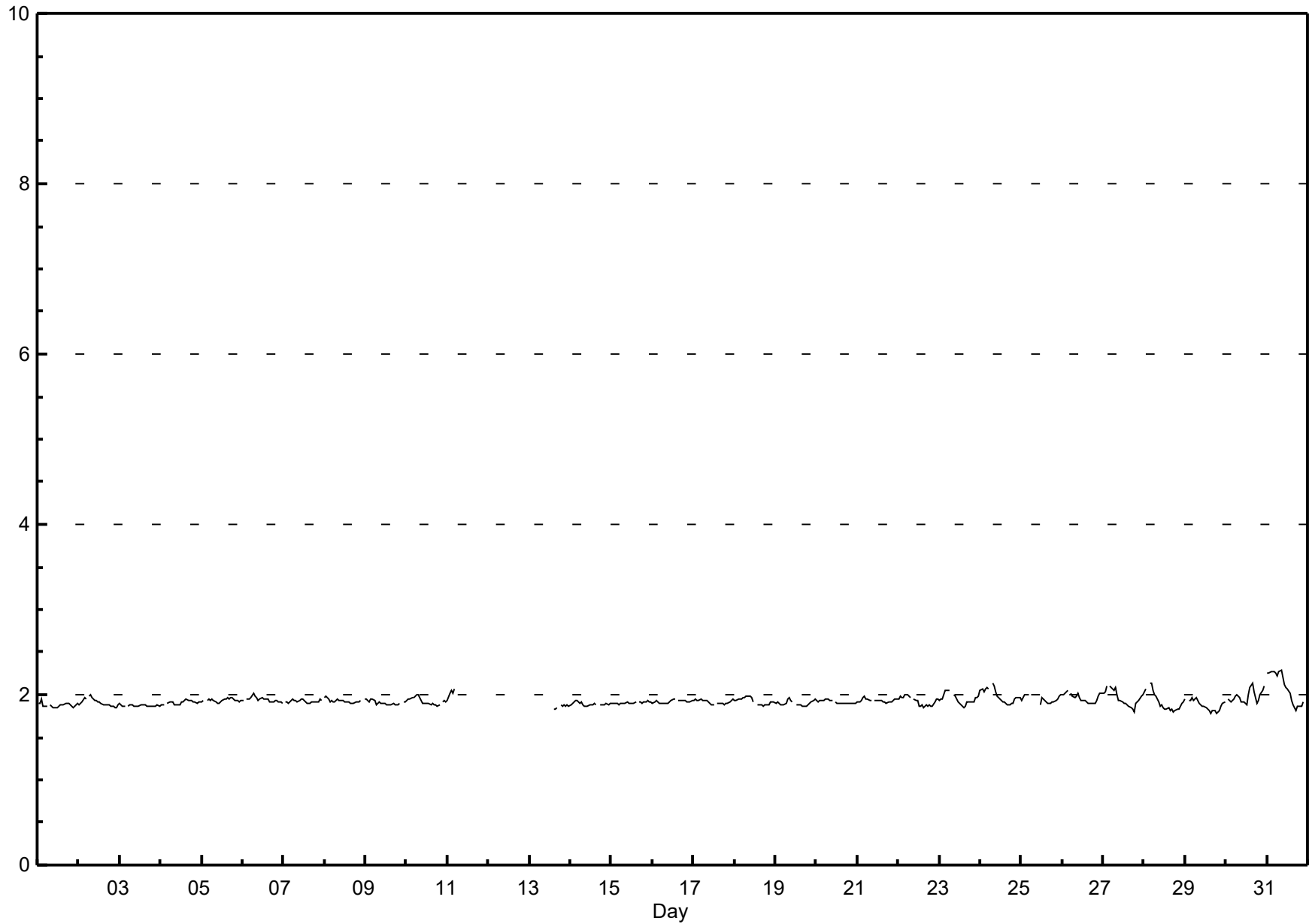
Total Hydrocarbons (THC) - ppm

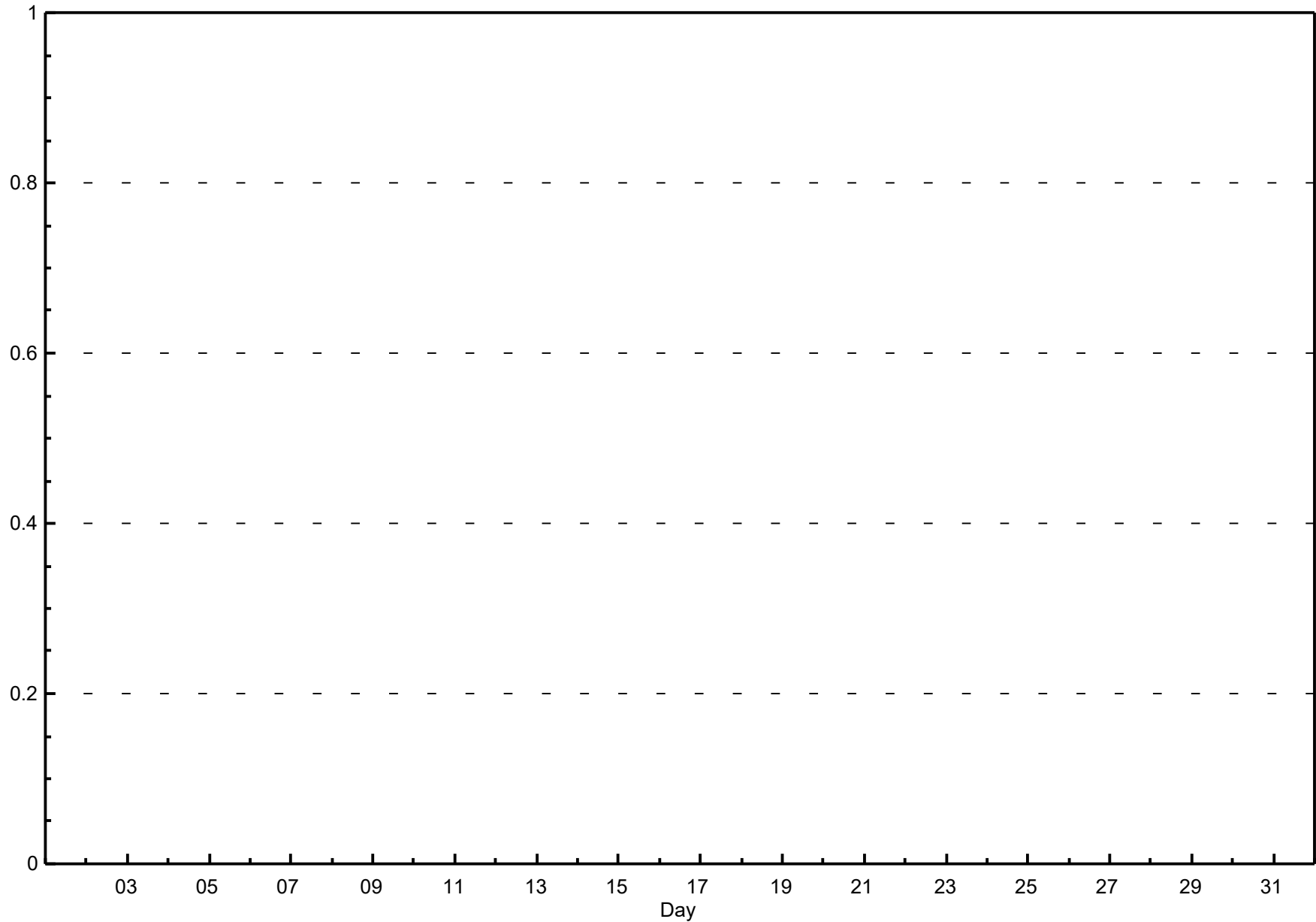
Wembley - May 2019



Hourly Averages

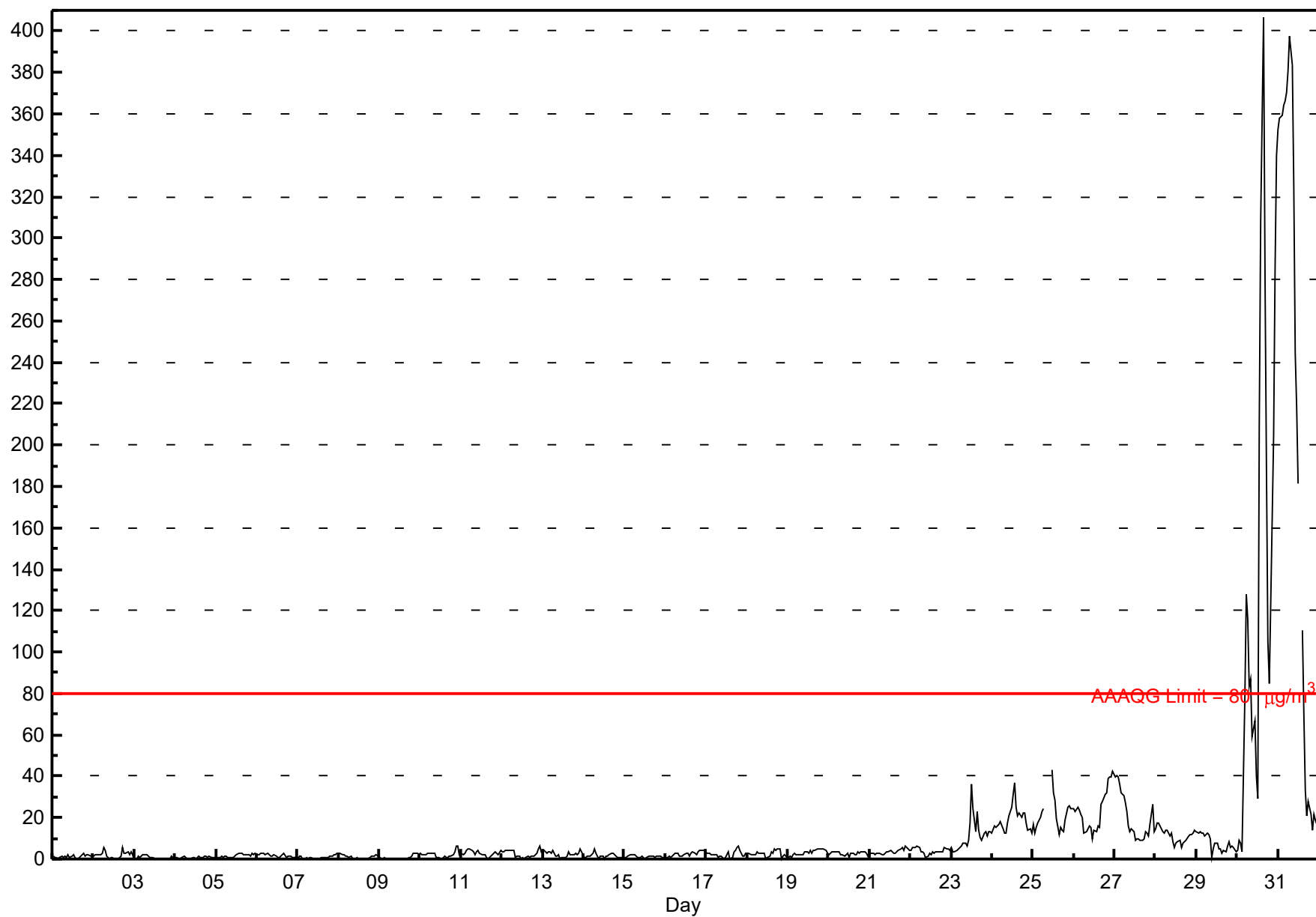
Methane (CH₄) - ppm
Wembley - May 2019





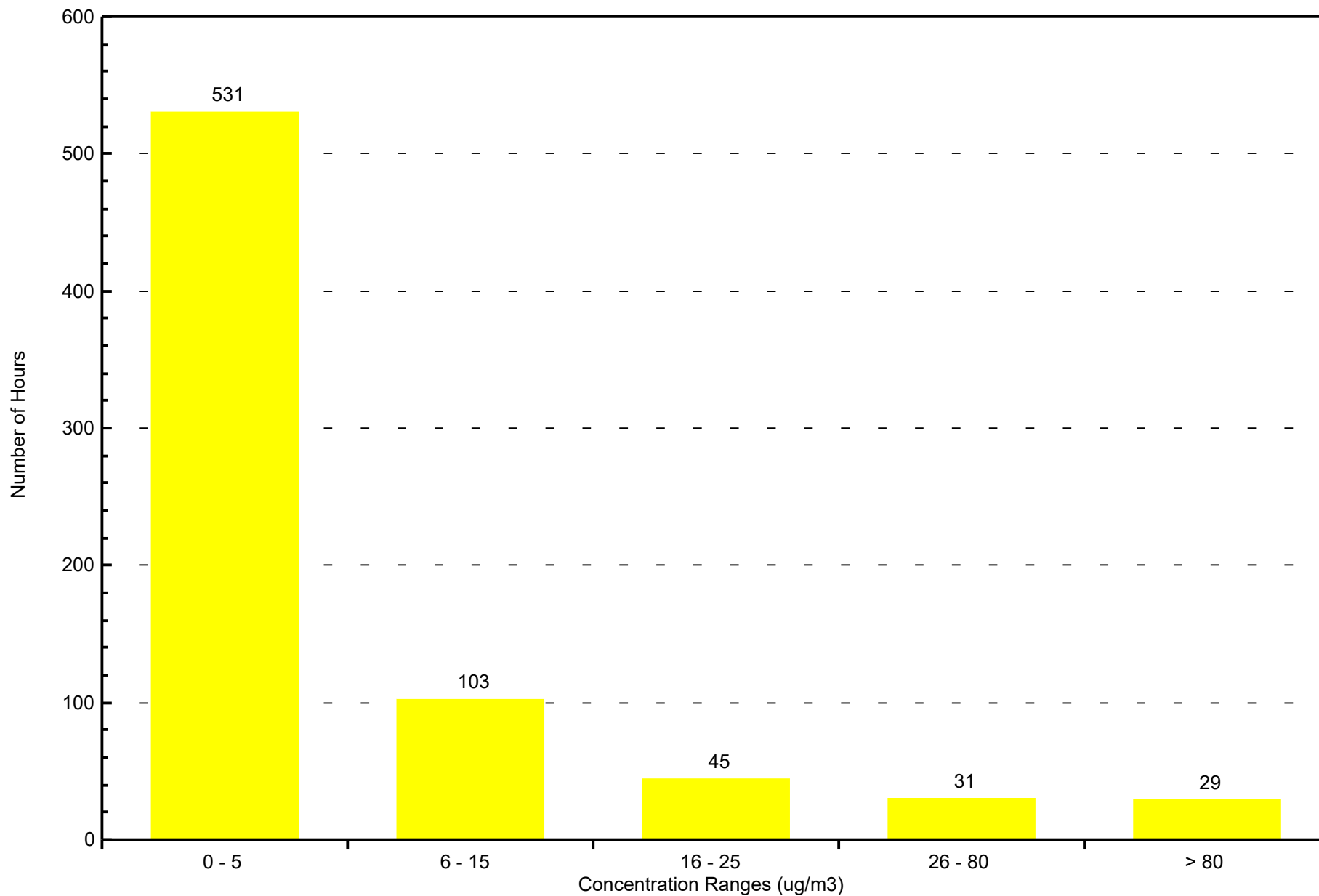
Hourly Averages

PM_{2.5} (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wembley - May 2019



Histogram of Hourly Averages

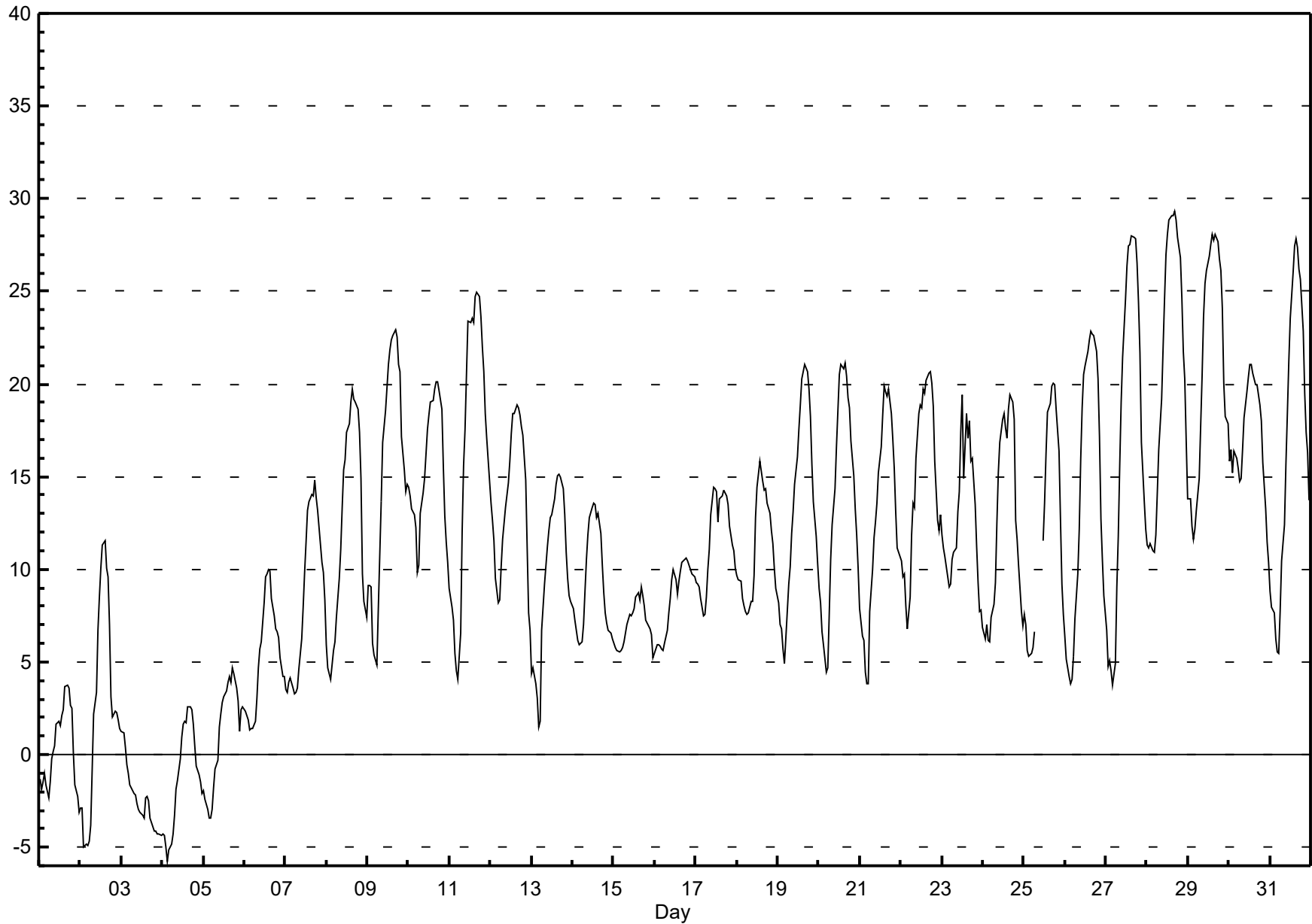
PM_{2.5} (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wembley - May 2019



Hourly Averages

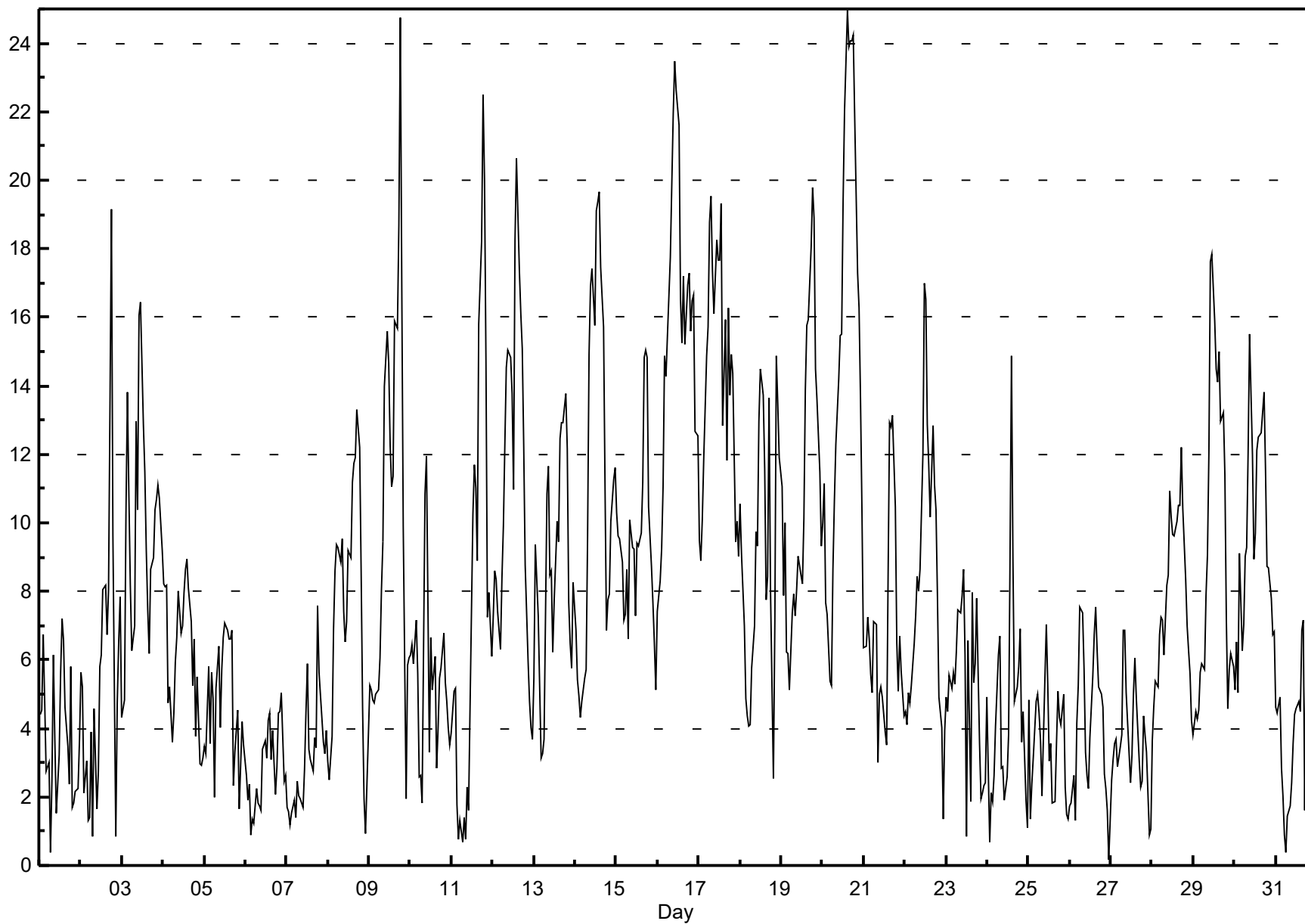
External Temperature (ET) - °C

Wembley - May 2019



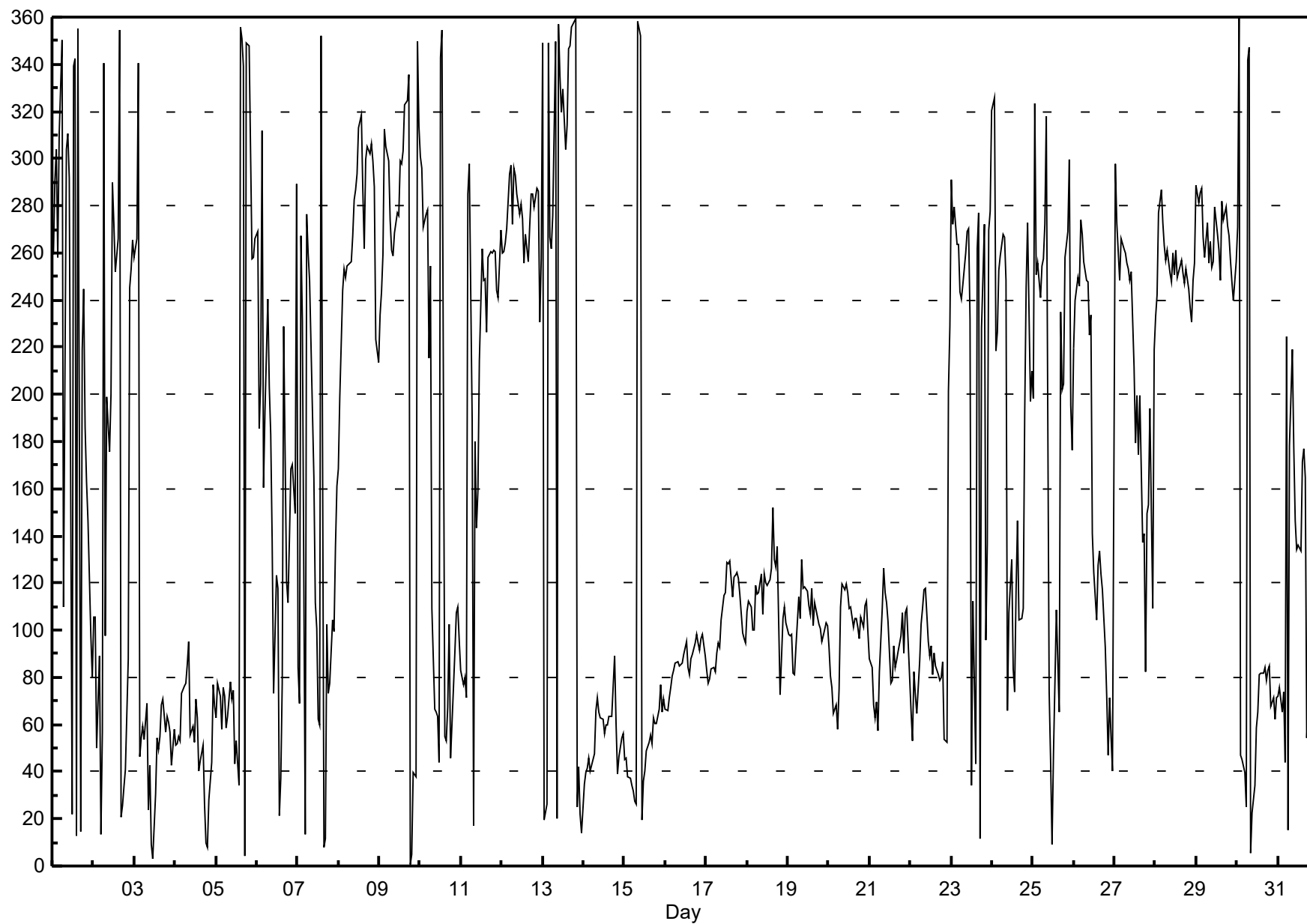
Hourly Averages

Wind Speed (WS) - km/h
Wembley - May 2019



Hourly Averages

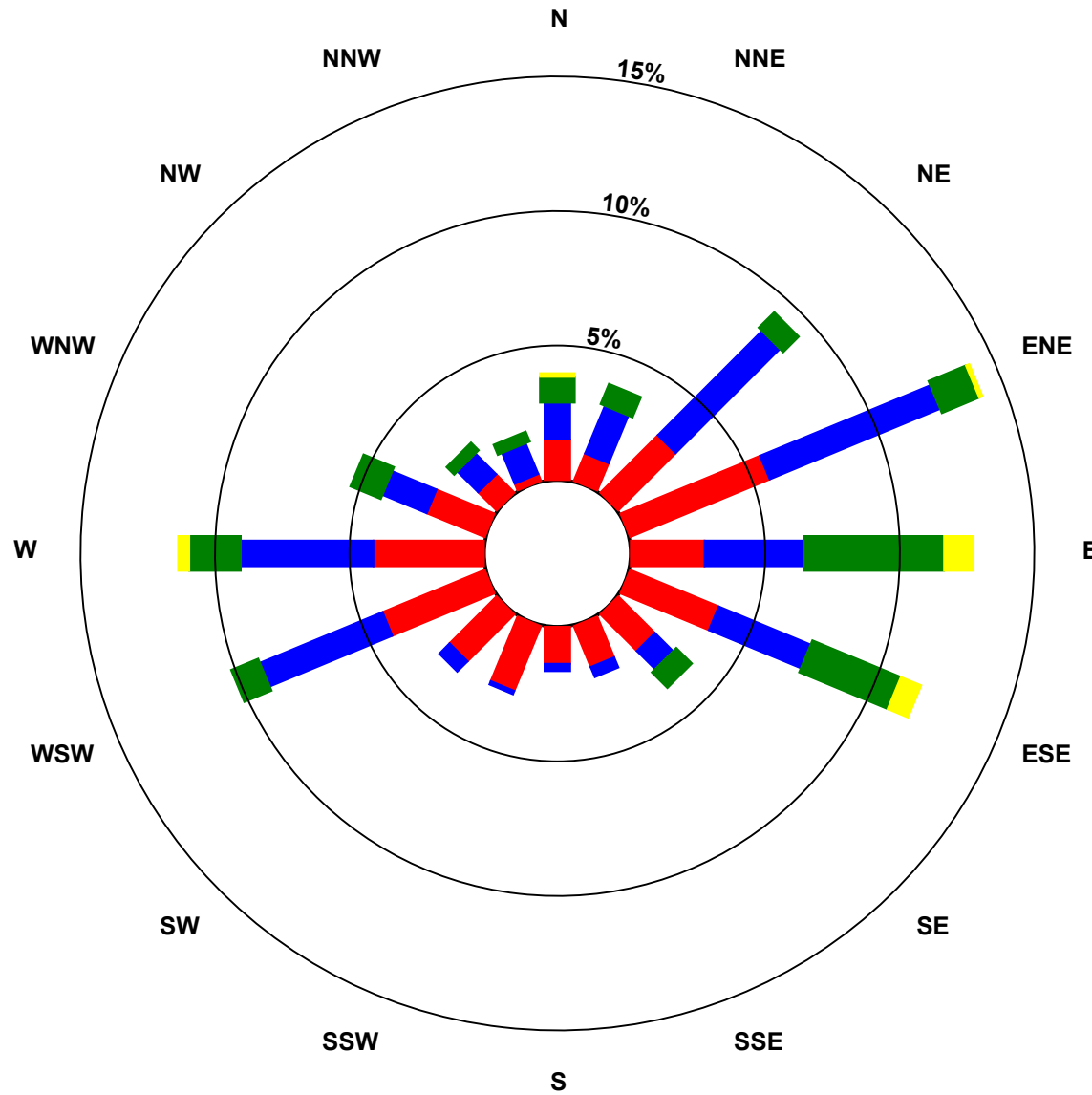
Wind Direction (WD) - deg
Wembley - May 2019



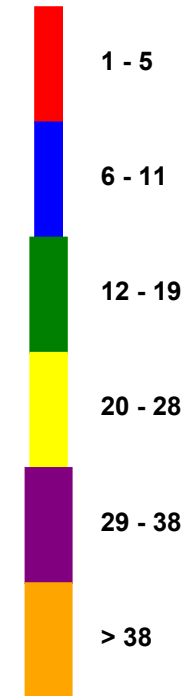
Wind Rose

Wind Speed (WS) (km/h)

Wembley - May 2019



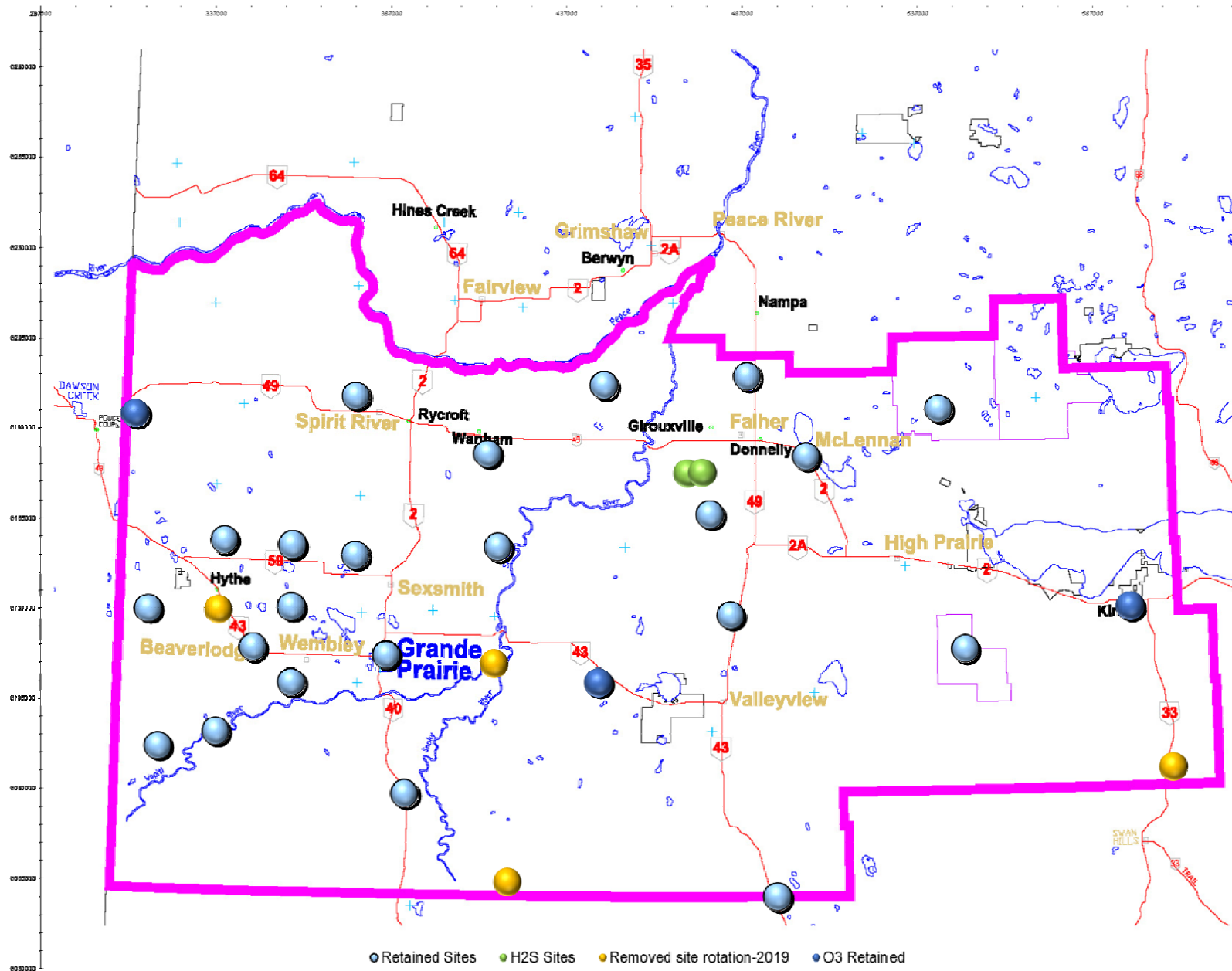
Wind Speed Classes (km/h)



PAZA

Monthly Passive Data Summary

Location of PAZA Passive Monitoring Stations



Peace Airshed Zone Association - PAZA Passive Stations
May 2019

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	H2S ppb	Site Legal
Duplicates						
5a	Boone Creek	0.2				
5b	Boone Creek	0.2				
9a	Spirit River			1.1		
9b	Spirit River			1.2		
11a	Webber Creek			2.2		
11b	Webber Creek			1.9		
19a	Wanham	0.2				
19b	Wanham	0.2				
37a	Crooked Creek		43.2			
37b	Crooked Creek		39.0			
46a	Little Smoky	0.2		1.3		
46b	Little Smoky	0.2		1.3		
63a	Girouxville 3				Missing	
63b	Girouxville 3				0.5	
2	Bay Tree	0.2	36.3	0.2		13-16-078-13 W6M
5	Boone Creek	0.2		0.6		16-36-074-11 W6M
7	Steeprock Creek	0.3		0.3		09-35-072-13 W6M
9	Spirit River	0.3		1.1		08-12-079-07 W6M
11	Webber Creek	0.3		2.1		09-36-074-09 W6M
12	Hythe	0.3		0.3		14-36-072-11 W6M
14	Sylvester	0.1		0.1		08-06-069-12 W6M
16	Beaverlodge	0.4		0.9		15-36-071-10 W6M
17	Poplar	0.5		1.5		13-06-073-08 W6M
18	Saddle Hills	0.2		0.4		04-25-074-07 W6M
19	Wanham	0.2		0.6		16-22-077-03 W6M
21	Eaglesham	0.1		1.6		16-21-079-25 W5M
24	Wembley	0.2		2.0		12-31-070-08 W6M
25	Pinto Creek	0.3		0.5		04-24-069-11 W6M
27	Grande Prairie I	0.2		2.9		08-15-071-06 W6M
29	Smoky Heights	0.3		0.3		04-06-075-02 W6M
32	Gold Creek	1.2		1.6		06-33-067-05 W6M
33	Wapiti	0.2		0.6		02-25-071-03 W6M
35	Jean Cote	0.2		2.1		12-35-079-21 W5M
36	Guy	0.1		2.0	0.1	03-04-076-22 W5M
37	Crooked Creek	0.1	41.1	1.1		16-01-071-26 W5M
38	Karr Creek	0.1		0.8		10-16-065-02 W6M
39	Clouston Creek	0.1		1.4		12-01-073-22 W5M
40	McLennan	0.1		1.4		03-29-077-19 W5M
44	Peavine	0.1		0.3		03-05-079-15 W5M
46	Little Smoky	0.2		1.3		12-01-065-21 W5M
47	Kinuso	0.1	41.5	0.4		12-10-073-10 W5M
48	Deer Mountain 2	0.1		0.3		*
49	Grande Prairie HP	0.2		1.7		17-26-071-06 W6M
50	East Prairie	0.1		0.2		13-02-072-15 W5M
63	Girouxville 3				0.5	14-02-077-23 W5M
64	Girouxville 4				0.3	4-08-077-22 W5M

*BDL = Below Detection Level

*N/S - No sample

Passive Summary for May 2018

Stats	Sulphur Dioxide SO ₂	Ozone O ₃	Nitrogen Dioxide NO ₂	Hydrogen Sulphide H ₂ S
	ppb	ppb	ppb	ppb

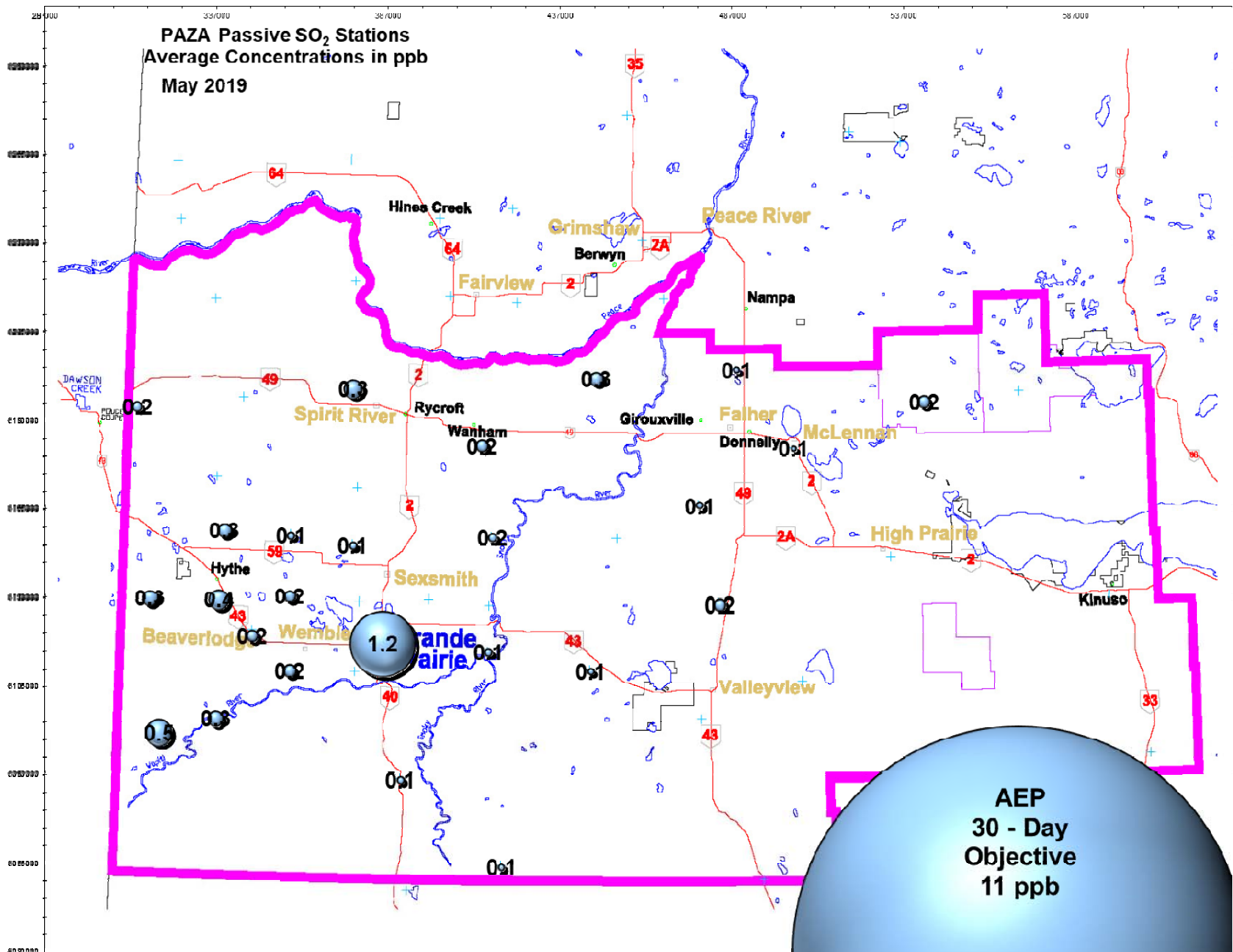
Passive Summary for May 2019 (PAZA Zone)				
Mean	0.2	39.7	1.0	0.3
Standard Deviation	0.2	2.9	0.7	0.3
Minimum	0.1	36.3	0.1	0.1
Minimum At	Kinuso (#47)	Bay Tree (#2)	Sylvester (#14)	Guy (#36)
Maximum	1.2	41.5	2.9	0.5
Maximum At	Gold Creek (#32)	Kinuso (#47)	Grande Prairie I (#27)	Girouxville 3 (#63b)

Comparison between Continuous and Passive monitoring at Beaverlodge (passive #16 Beaverlodge)

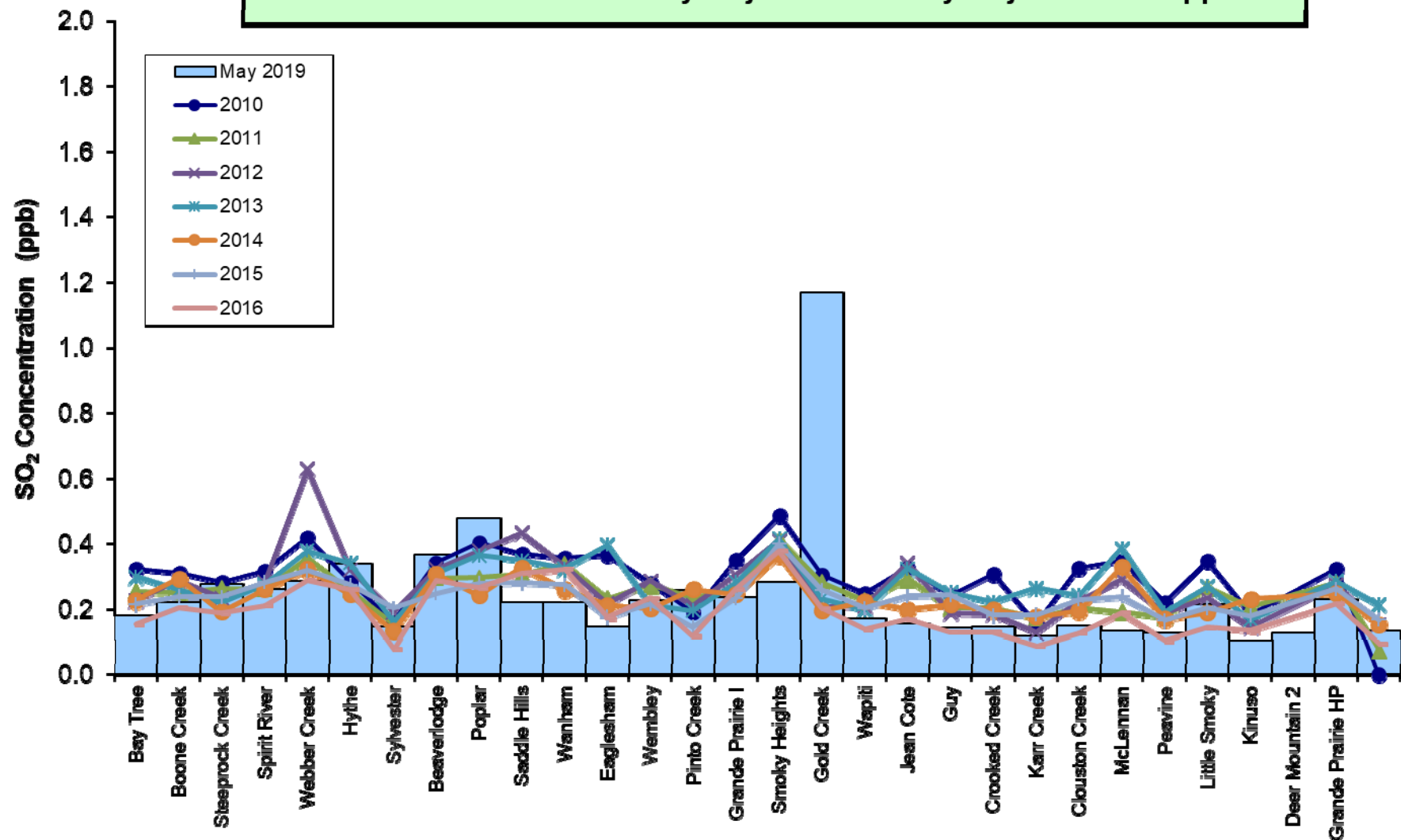
	SO ₂	NO ₂
PAZA Beaverlodge station	0.4	2.4
PAZA Beaverlodge passive	0.1	0.1

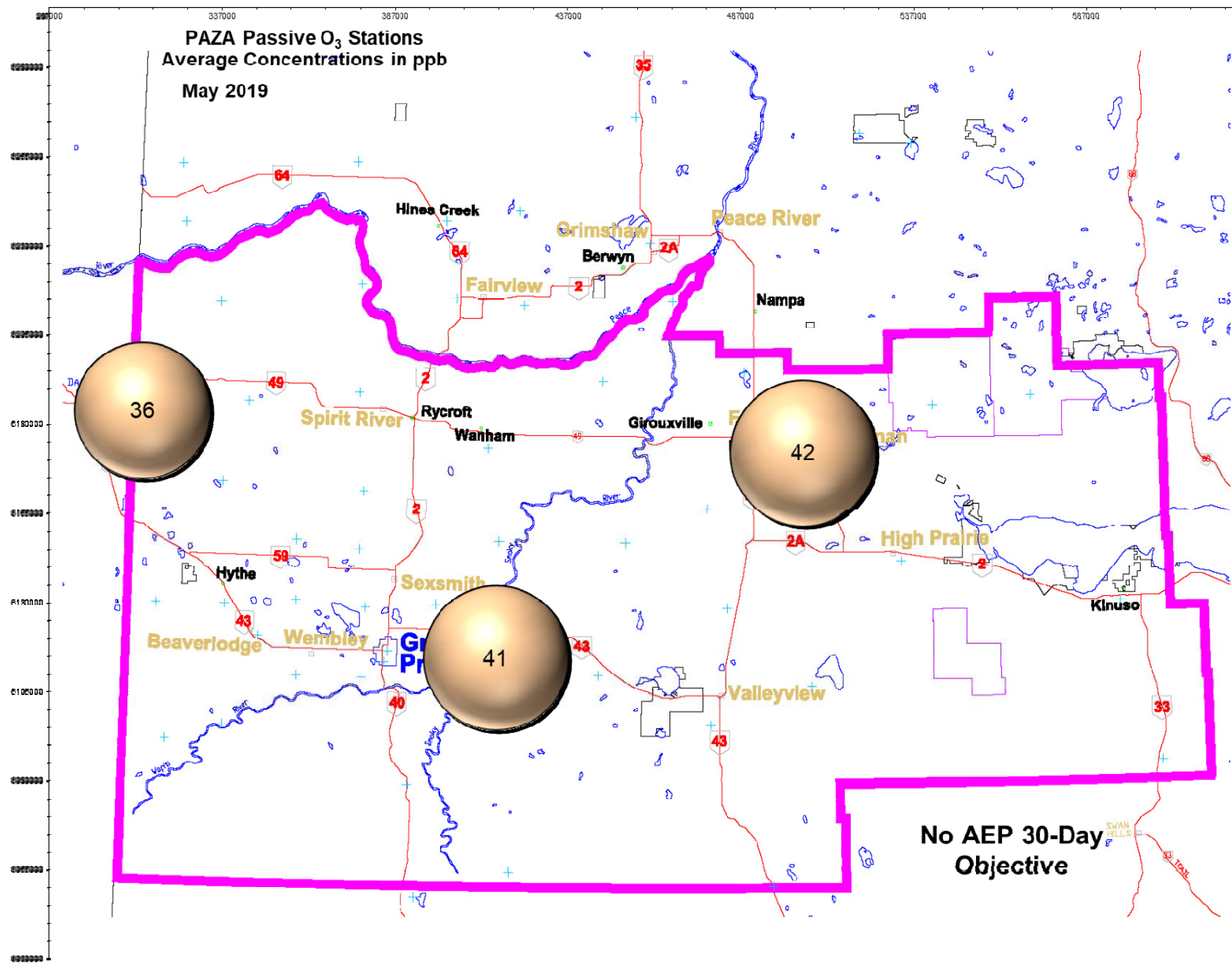
Comparison between Continuous and Passive monitoring at Henry Pirker (passive #49 Grande Prairie HP)

	SO ₂	NO ₂
PAZA Henry Pirker station	0.2	5.3
PAZA Grande Prairie passive	0.3	0.5

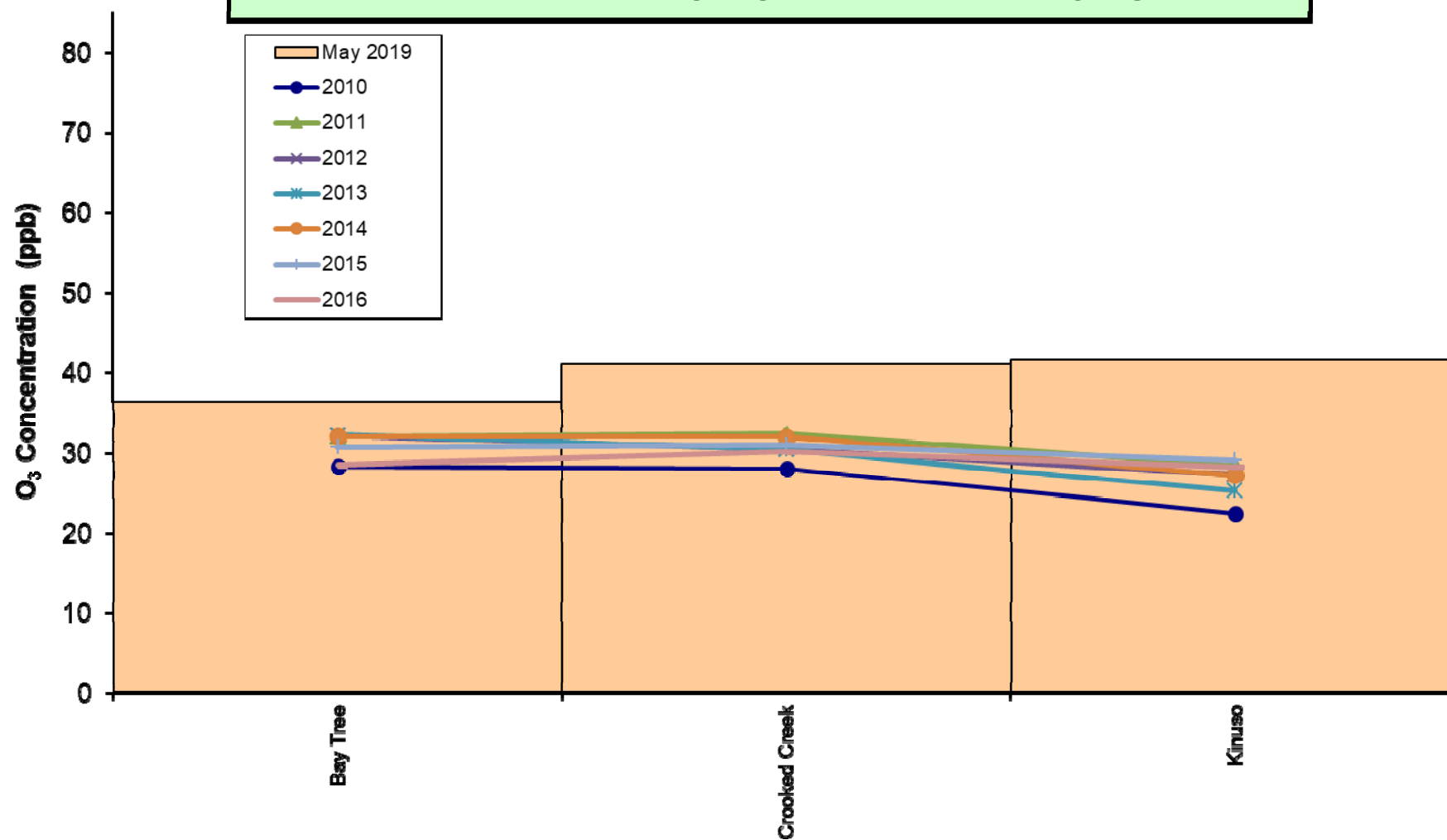


Alberta Ambient Air Quality Objective - 30-day Objective is 11 ppb

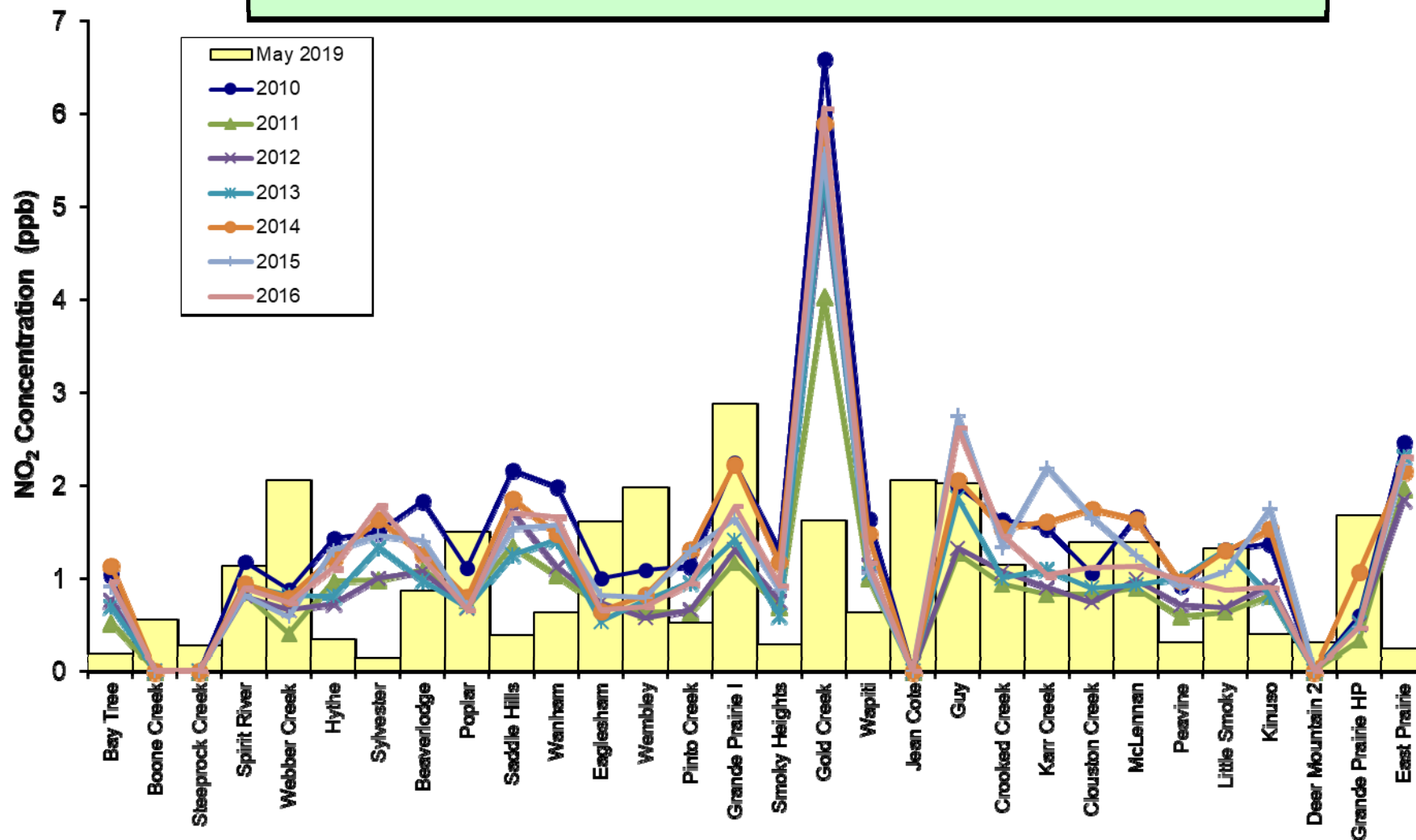


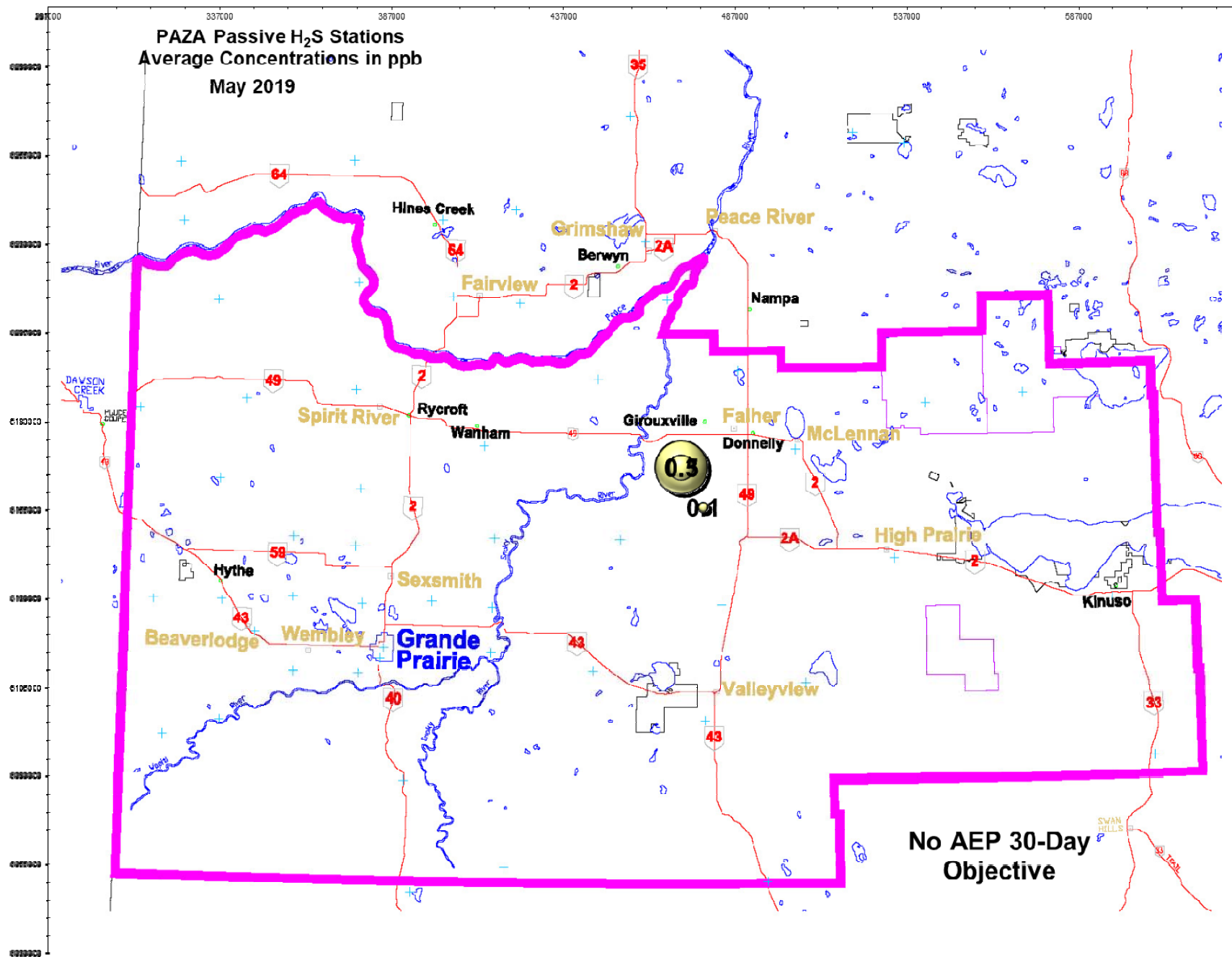


Alberta Ambient Air Quality Objective - No Annual O₃ Objective



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





**End of Report
PAZA
May 2019
Ambient Air Monitoring Report**