



SESAA 2020 ANNUAL REPORT

Prepared for:
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Version 1.0
May 2021
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Prepared for Southeast Saskatchewan Airshed Association Inc., May 2021

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VERSION CONTROL

Version	Date	Issue Type	Filename	Description
V0.1	2020-05-18	Draft	27415-526x R 2020 Annual Report.docx	Issued to client for review

MESSAGE FROM THE EXECUTIVE DIRECTOR

2020 was a challenging year for the Southeast Saskatchewan Airshed Association (SESAA) and for air quality monitoring in the south east region of Saskatchewan. The Covid pandemic crashed oil and gas prices and caused a world-wide economic slowdown. Even though the turbulence caused by the pandemic was significant we did receive very good financial support. SESAA is very pleased to inform our members that eight (8) continuous air monitoring sites are now operating in the region and providing real-time data on the airshed's website. SESAA will continue to explore every opportunity to collaborate with other agencies in bringing additional air quality monitoring into the region. In summary, SESAA now manages a continuous air monitoring network which consists of eight monitoring sites, including the new NAPS Station in the City of Estevan.

This monitoring initiative is multi-purpose it: a) collects real time air quality data throughout the SESAA region, b) demonstrates companies are operating in a safe, environmentally sound manner that is enabling sustainable growth, and c) provides companies considering to invest in operations in Saskatchewan with data that shows it is a safe place to invest being that the air quality is well understood and not an impediment to growth. The credibility and strength of the continuous monitoring network is scientifically and financially sound. The continuous data is available live on the internet; it includes hourly concentrations of SO₂, H₂S, NO/NO₂/NO_x, PM_{2.5} and O₃ as well as meteorological data at about two metres above the ground. The data is available on the SESAA website: <http://www.sesaa.ca>

Our goal is to collect credible and defensible air quality data and provide excellent service to our members. The credibility and strength of the continuous monitoring network is scientifically and financially sound. We have and are continuing to communicate the work we do in many ways. When we do a presentation or place an article or a story in a newspaper, we highlight our members wherever possible. We list our members on our website and do as much as we can to inform the public the names of our member companies. This communication work is very important to SESAA and to its members.

In the past three years our communication initiatives included:

- News articles in the Regina Leader Post; the Saskatoon Star Phoenix; the Weyburn Review; the Estevan Mercury; CTV Regina News Interviews; Saskatchewan Oil and Gas Show, Weyburn
- Saskatchewan Association of Rural Municipalities (SARM) the Councillor Newsletter Article
- Quarterly SESAA E-bulletins to all members to keep them informed of any new developments, meeting dates and any other pertinent air quality information.
- Quarterly meetings of Board of Directors meetings at which anyone is welcome to attend.
- We have reviewed our website and are improving our communication abilities.
- SESAA had a booth at Saskatchewan Oil Show in June 2019 which was very well attended. We gave away printed material with information about our Association as well as pens, Frisbees and balloons; all with the SESAA website address. We are booked for the Oil Show in 2021.
- SESAA has reviewed its communication plan and has decided to redesign our website. It will have all of the data for each site by month since July of 2015. There will also be a feature that will allow our members and the public to search for raw data for the past 120 days. The new website was launched the week of Clean air Day June 4 to 8, 2018.
- The SESAA Board is working with the Science Fairs in our area. We will be providing the winner of the science Fair with the SESAA Environmental Award to the best science fair entry with an environmental theme. We did present the award in 2019 to Anna Tronson and will present the Award in 2020 and every year after. Unfortunately, due to the pandemic the 2020 Science Fair was cancelled. We will participate when possible.

All of these showcase the work we do and our members' involvement. It is important that the public is comfortable and welcoming of well-run industry in their municipalities as public acceptance plays a large role in helping to foster a business-friendly environment that promotes future industrial growth. Future plans include determining the need for additional air monitoring stations and the development of more communication materials.

As a part of Clean Air Day on June 8, 2016, the SESAA announced the winners of its first ever Clean Air Poster Awards. The winners received a Family Day Pass to the Estevan Swimming Pool. The winning poster were scanned and posted on the SESAA Website. The posters were judged by an independent panel of the City of Estevan Council. SESAA thanks all students that submitted posters.

SESAA is pleased with the excellent response we received from our members. We have had a very good year financially and with our data monitoring capabilities. This is excellent news for the people of the south east area of Saskatchewan and for all of our valued members. We now have data to help inform our decision-making process. The Science committee will review all of this data and bring recommendations to the Board as to how we should proceed with managing our monitoring capabilities. The data will direct our decisions as to how to improve our monitoring network.

Although 2020 was a challenging year for the SESAA, the Association continues to maintain a high level of membership support in the region, allowing us to collect and report good air quality information to the citizens of southeast Saskatchewan. The SESAA plans to continue building on its success in 2021. Future plans include reviewing and maintaining our network monitoring needs and continuing the development and delivery of a strong communications program that reaches out to organizations such as municipalities, Chambers of Commerce, high school classes, and School Community Council meetings. SESAA thanks all of our members for their committed participation.

Our goal is to collect credible and defensible air quality data and provide excellent service to our members. SESAA thanks all of our members for their participation.

EXECUTIVE SUMMARY

The Southeast Saskatchewan Airshed Association (SESAA), established in October 2005, was Saskatchewan's first airshed association with a mandate to monitor ambient air quality in the southeast region of the Province. SESAA is a collaborative group of industry, government, nongovernment organizations and private citizens. The airshed covers an area of 36,800 square kilometres and includes 45 municipalities. Major economic activities in the region include agriculture, oil and gas, mining, power generation and transportation.

SESAA manages a continuous air monitoring network. The continuous air monitoring network currently consists of seven air monitoring stations, each equipped with an airpointer®. Monitoring stations are located in Weyburn, Esterhazy, Glen Ewen, Oxbow, Stoughton, Wauchope, and Torquay. The seven continuous monitoring stations measure real-time data for one or more of the following parameters: sulphur dioxide (SO₂), hydrogen sulphide (H₂S), nitrogen oxides (NO, NO₂, NO_x), ozone (O₃), fine particulate matter (PM_{2.5}), ambient temperature, relative humidity (RH), barometric pressure (BP), precipitation, wind speed (WS) and wind direction (WD). Continuous monitoring results are available in real-time on the SESAA website, www.sesaa.ca. An eighth monitoring station located in Estevan is operated by the Ministry of Environment and is a National Air Pollution Surveillance (NAPS) Station. The Estevan station collects the same parameters as SESAA with the addition of coarse particulate matter (PM₁₀) and black carbon (BC).

A total of four calibrations and extensive maintenance was performed throughout 2020, in accordance with practices outlined in the *Air Monitoring Guidelines for Saskatchewan* (2012). Stations are aging and some equipment is no longer serviced due to age and acquiring parts has been a challenge throughout due to aging equipment issues.

The installation and operation of continuous monitors throughout the region is helping SESAA reach its mission: to collect credible, scientifically defensible air quality data for the southeast Saskatchewan region. The data can be provided to current and future stakeholders and will mark SESAA as a region that is good to invest in.

The measured air quality was generally within the Saskatchewan Ambient Air Quality Standards (SAAQS), with the exception of H₂S, SO₂, PM_{2.5}, and PM₁₀. There was a total of 46 exceedance events for 1-hour average H₂S, one exceedance event for 1-hour average SO₂, one exceedance events for 24-hour average H₂S, three exceedance events for 24-hour average PM_{2.5}, and 14 exceedance events for 24-hour average PM₁₀.

For the 2020 annual monitoring period, three stations were used to calculate the AQHI, which includes Estevan, Esterhazy, and Weyburn. All stations showed a low risk of over 95% for the entire year with rest of the year showing a moderate risk. The following table summarizes the annual averages of air quality parameters monitored in 2020.

Pollutant	Units	Annual Average Concentrations							
		Estevan	Esterhazy	Glen Ewen	Oxbow	Stoughton	Wauchope	Torquay	Weyburn
SO ₂	ppb	1.3	a	1.4	0.7	0.6	0.3	0.3	1.0
H ₂ S	ppb	a	a	0.3	0.3	0.3	0.5	0.3	0.3
NO	ppb	1.8	0.9	0.3	0.2	0.8	a	a	0.7
NO ₂	ppb	4.5	2.0	1.6	1.5	1.5	a	a	1.9
NO _x	ppb	6.4	2.8	1.9	1.7	2.2	a	a	2.7
O ₃	ppb	25.8	27.9	26.7	a	a	a	a	26.6
PM _{2.5}	µg/m ³	6.6	5.0	a	6.2	5.2	5.7	5.5	5.9
PM ₁₀	µg/m ³	21.5	a	a	a	a	a	a	a
Black Carbon	ng/m ³	211	a	a	a	a	a	a	a

^a Parameter was not measured

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1 INTRODUCTION

1.1 History

The Southeast Saskatchewan Airshed Association (SESAA) is a collaborative group of industry, non-government organizations, government, and private citizens. SESAA was established in 2005 with a mandate to collect credible, scientifically defensible air quality data and to make this data available to the public. SESAA also provides a forum for open communication of air quality concerns among all sectors of society. Membership in the airshed association is currently voluntary, with members sharing funding responsibilities for monitoring programs and studies. SESAA covers an area of 36,800 square kilometres, including 45 municipalities. The airshed boundaries were established based on common history, meteorology, and funding considerations. Major economic activities in the region include agriculture, oil and gas, mining, power generation, and transportation.

SESAA began monitoring in March of 2010 with the installation of the Weyburn airpointer®. The second station was installed at Glen Ewen in May 2012. The Stoughton, Esterhazy, Wawota, and Wauchope stations began operation in 2013 following a grant provided to SESAA by the Western Economic Diversification Canada (WEDC) office in Saskatoon. The monitoring station at Estevan was donated to SESAA by SaskPower in 2014, and SESAA took over management of the station in summer of 2014. In 2017 the Ministry of Environment commenced operation of the Estevan station as a NAPS station. The Oxbow station began operation in December 2014 through a grant provided by the Saskatchewan Ministry of the Economy (now Energy and Resources). The Wawota station was moved in October of 2018 and is currently located near Torquay.

The current SESAA membership includes members of the agriculture, oil and gas, mining and power generation sectors. The Government of Saskatchewan Ministries of Environment, Energy and Resources, and Health, as well as representatives of the City of Estevan and Rural Municipality of Tecumseh No. 65, also participate as members of the Board of Directors. SESAA's operating budget consists of membership fees, environmental footprint, and emissions-based fees assessed to facilities operating within the airshed (SESAA, 2017).

1.2 SESAA Mission

The SESAA mission is to collect credible, scientifically defensible air quality data for the southeast Saskatchewan region, and to make this data freely available to all stakeholders. Our objective is to bring together stakeholders from all backgrounds to identify regional air quality issues and to develop innovative solutions for managing these issues (SESAA, 2017).

1.3 SESAA Air Monitoring Network

Air quality data collected by SESAA is used to investigate the trends in air quality resulting from emissions of anthropogenic sources (industry, motor vehicles, etc.) and natural processes (such as forest fires, decomposition of organic matter, etc.) (SESAA, 2017).

The SESAA air monitoring network includes seven continuous monitoring airpointer® stations: near Weyburn, Esterhazy, Glen Ewen, Oxbow, Stoughton, Wauchope and Torquay. The Estevan site is the Ministry of Environment NAPS station. See Figure 1 for a map of the SESAA air monitoring stations.

The SESAA continuous air monitoring network measures SO₂, H₂S, NO and NO₂ (collectively NO_x), O₃, PM_{2.5}, ambient temperature, relative humidity, barometric pressure, precipitation, wind speed and wind direction. Table 1 shows the parameters measured at each station. Real-time air monitoring data is available on the SESAA website at www.sesaa.ca. Four (quarterly) calibrations and substantial maintenance was performed in 2020, in best ability, in accordance to practices outlined in the Air Monitoring Guidelines for Saskatchewan (2012).

Please note, the sonic meteorological monitors at the SESAA stations have not been calibrated.

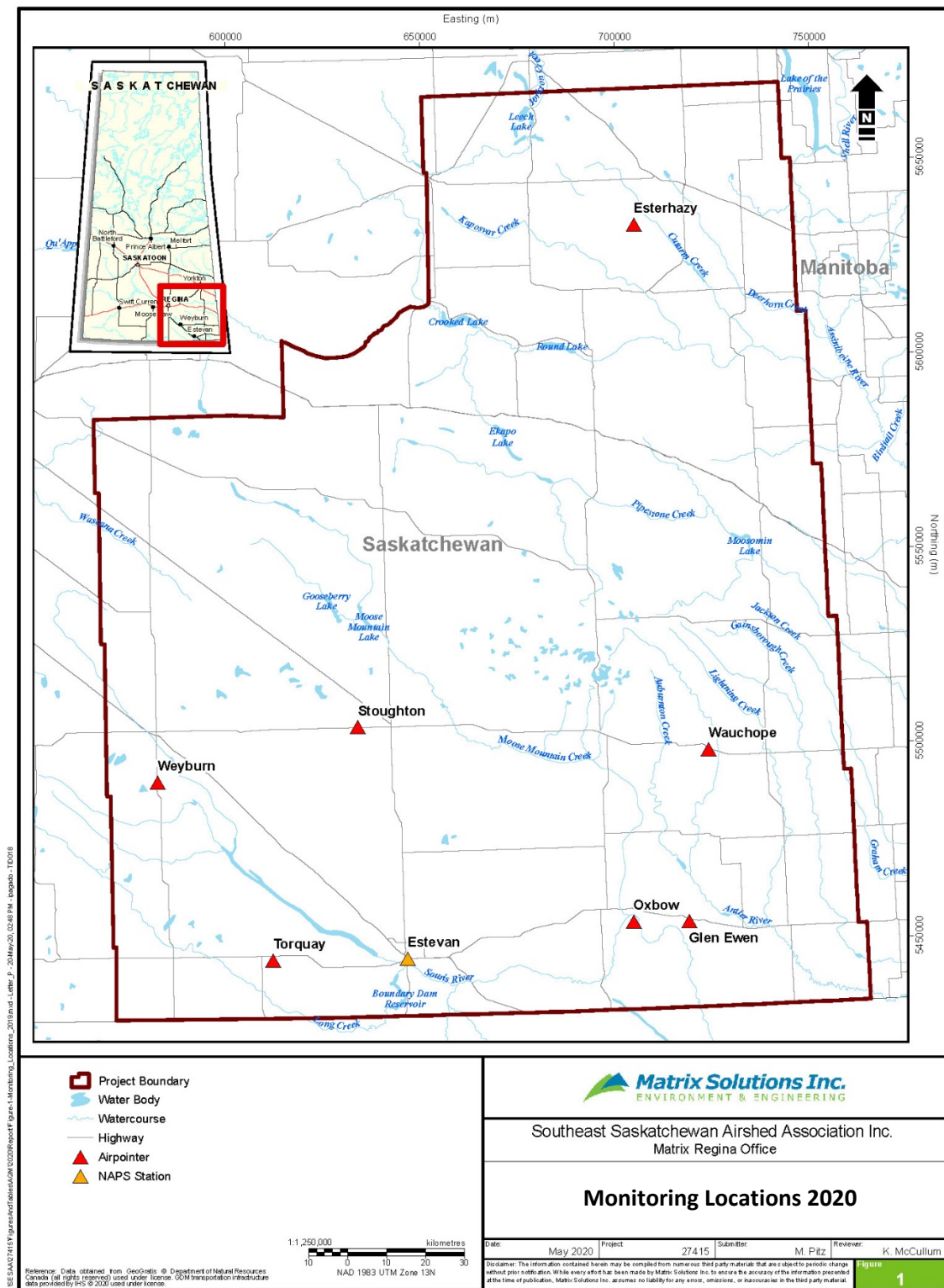


Figure 1 SESAA Monitoring Locations

Table 1 SESAA Air Quality Monitoring Parameters

Parameter	Estevan	Esterhazy	Glen Ewen	Oxbow	Stoughton	Wauchope	Torquay	Weyburn
SO ₂	✓		✓	✓	✓	✓	✓	✓
H ₂ S			✓	✓	✓	✓	✓	✓
NO	✓	✓	✓	✓	✓			✓
NO ₂	✓	✓	✓	✓	✓			✓
NO _x	✓	✓	✓	✓	✓			✓
O ₃	✓	✓	✓					✓
PM _{2.5}	✓	✓		✓	✓	✓		✓
PM ₁₀	✓							
Black Carbon	✓							
Ambient Temperature	✓	✓	✓	✓	✓	✓	✓	✓
Relative Humidity	✓	✓	✓	✓	✓	✓	✓	✓
Barometric Pressure	✓	✓	✓	✓	✓	✓	✓	✓
Precipitation	✓	✓	✓	✓	✓	✓	✓	✓
Wind Speed	✓	✓	✓	✓	✓	✓	✓	✓
Wind Direction	✓	✓	✓	✓	✓	✓	✓	✓

2 AIR QUALITY MONITORING

2.1 Exceedances Above the Saskatchewan Ambient Air Quality Standards

The SESAA air monitoring network measures air pollutant concentrations to indicate the quality of air found within the airshed's boundaries. Collected data is compared to the Saskatchewan Ambient Air Quality Standards (SAAQS) (Sask MoE 2010). Air pollutant concentrations that exceed or are near to their relevant standards are investigated and reported to government and members of SESAA. These exceedances are referred to as reportable events. Table 2 summarizes the SAAQS and the number of exceedances recorded in 2020.

Table 2 Summary of Exceedances in 2020

Parameter	Conc. Units	No. of Stations Showing Exceedances	Average Type	SAAQS	No. of Exceedances
SO ₂	ppb	1	1-Hour	172	1
		0	24-Hour	48	0
		0	Annual	8	0
H ₂ S	ppb	3	1-Hour	11	46
		1	24-Hour	3.6	1
NO ₂	ppb	0	1-Hour	159	0
		0	24-hr	106	0
		0	Annual	24	0
O ₃	ppb	0	1-Hour	82	0
	ppb	0	8-Hour	63	0
PM _{2.5}	µg/m ³	1	24-Hour	28	2
		0	Annual	10	0
PM ₁₀	µg/m ³	1	24-Hour	50	14

2.2 Wind Speed and Direction

Wind speed and direction are two important factors in relation to regional air quality. Wind speed, direction and the related air turbulence, dictate the dispersion and diffusion pathways that an air pollutant follows. As seen in Figure 2 the predominate patterns of wind flow differ according to the location sampled and the terrain in which the sampling occurs.

Figure 2 outlines the wind roses for seven of the SESAA stations and the Estevan NAPS station. The wind patterns of the stations show variation between each monitoring location. Generally, the prevailing wind direction is from the west to west northwest. Glen Ewen, Oxbow, Stoughton and Weyburn exhibited a greater portion of winds from the northwest and south east, Esterhazy exhibited a greater portion of wind from the west and northwest, Estevan exhibited a greater portion of winds from the west and east, Wauchop exhibited winds from the north and west and Torquay exhibited a greater portion of winds from the northwest and southwest. The majority of the wind speeds were in the light breeze (<3.1 m/s) classification with low frequency occurrences of winds rising above moderate breeze (<7.8 m/s) and strong breeze (<10.8 m/s).

Appendix B through J provides additional detailed summaries and annual trend graphs.

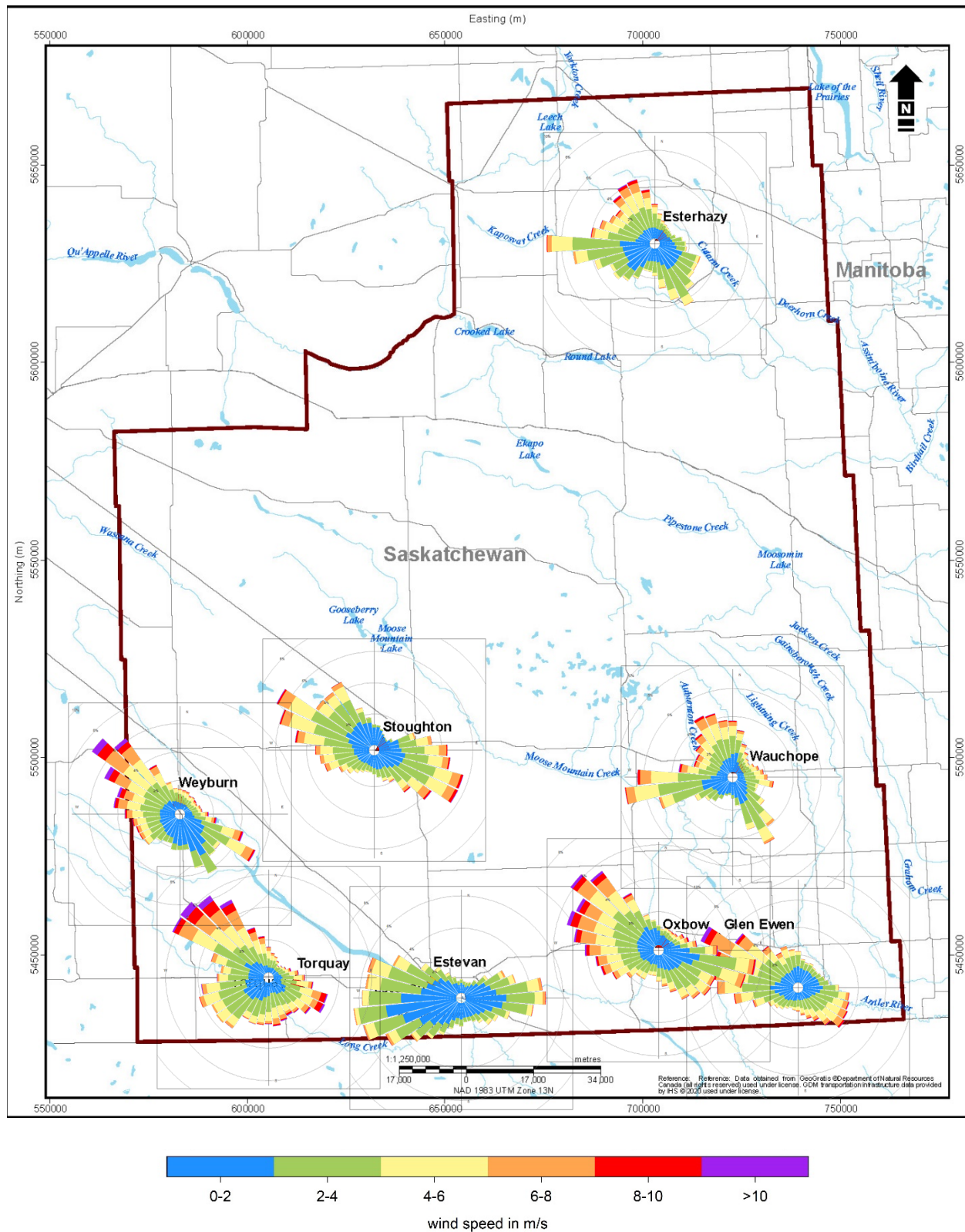


Figure 2 SESAA Wind Roses

2.3 Continuous Air Quality Data

2.3.1 Sulphur Dioxide

Sulphur dioxide (SO₂) is a pungent, colourless gas (Australian Gov. 2005). Sulphur dioxide is known to irritate the eyes, and other mucous membranes. At high concentrations, sulphur dioxide can cause irritation and inflammation within the lungs and respiratory tract. Pre-existing conditions such as asthma, bronchitis, and heart disease can be exasperated by elevated concentrations (NPS 2018a).

Sulphur dioxide contributes to a phenomenon known as acid rain. When SO₂ in the atmosphere reacts with water, acidic compounds such as sulfuric acid can be formed. These acidic compounds are then deposited through precipitation events (US EPA 2019a). Ecological impacts are most commonly found in aquatic environment. Acid rain can influence the pH of water bodies, therefore limiting its suitability for aquatic life. Additionally, acid rain can physically damage plant foliage and remove minerals and nutrients from the soil (US EPA 2017).

Sulphur dioxide is primarily produced through anthropogenic sources such as the burning of fossil fuels for transportation and industrial purposes (US EPA 2019b). Fossil fuels containing high concentrations of sulphur, gasoline and natural gas, are of particular concern.

In 2020, SESAA continuously monitored ambient SO₂ concentrations at seven locations. Instrument uptimes were greater than 90% for each of the stations. The overall annual average for SO₂ concentrations ranged between 0.3 ppb and 1.4 ppb. The maximum 1-hour and the 24-hour concentration occurred at Estevan, with values of 178.3 and 30.6 ppb, respectively. A summary of the annual SO₂ data can be found in Table 3.

Table 4 summarizes the 1-hour, 24-hour and annual SO₂ exceedances, for the duration of 2020, there was only one SO₂ exceedance.

Figure 3 presents the pollutant roses for 1-hour average concentrations for SO₂. Generally, the concentrations measured at all stations were low, with the greater portion of values falling under 5 ppb. Estevan, Glen Ewen, and Weyburn detected higher concentration events (> 5 ppb) compared with the other stations. The high concentration events in Estevan were associated with winds from the southwest quadrant, in Glen Ewen with winds from the west quadrant and in Weyburn with winds from the southwest and southeast quadrants.

Appendix B through J provides additional summaries and annual trends.

Table 3 Summary of SO₂ Concentrations

Monitoring Station	Annual Average (ppb)	Operational Time (%)	Maximum Values (ppb)			
			24-hr	Date	1-hr	Date
Esterhazy	a	a	a	a	a	a
Glen Ewen	1.4	97.5	9.3	Jan 19	62.0	Jan 19 14:00
Oxbow	0.7	99.9	4.5	Jan 10	24.7	Sep 10 11:00
Stoughton	0.6	99.7	3.7	Jan 20	16.9	Feb 19 17:00
Wauchope	0.3	94.9	2.7	Feb 21	20.8	Oct 08 05:00
Torquay	0.3	99.6	2.4	Jan 17	19.8	Aug 18 15:00
Weyburn	1.0	94.6	5.7	Jan 20	31.1	Jun 23 00:00
Estevan	1.3	99.6	30.6	Feb 05	178.3	Feb 05 01:00

^a Parameter was not measured

Table 4 Number of SO₂ Exceedance Events

Monitoring Station	Number of Exceedance Events for Saskatchewan SO ₂ Ambient Air Quality Guidelines		
	1-Hr (172 ppb)	24-hr (48 ppb)	Annual (8 ppb)
Esterhazy	a	a	a
Glen Ewen	0	0	0
Oxbow	0	0	0
Stoughton	0	0	0
Wauchope	0	0	0
Torquay	0	0	0
Weyburn	0	0	0
Estevan	1	0	0

^a Parameter was not measured

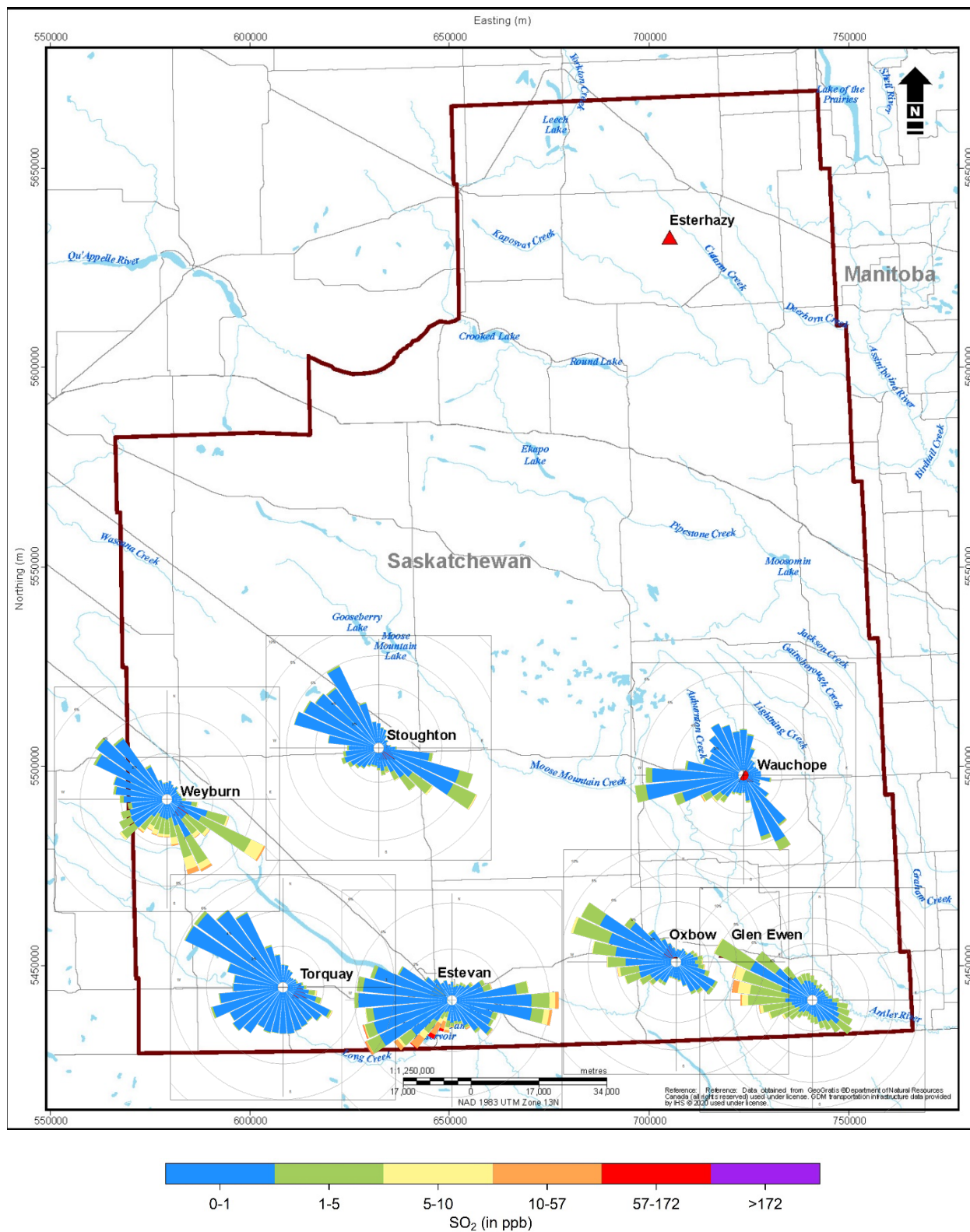


Figure 3 SESAA SO₂ Pollutant Roses

2.3.2 Hydrogen Sulfide

Hydrogen sulfide (H_2S) is a flammable, colourless gas. At low concentrations (0.0005 to 0.3 ppm), it can be described as having an odour similar to rotten eggs, at high concentrations one's sense of smell is often deadened. At low concentrations, H_2S can cause irritation to the eyes, nose, or throat. For those with pre-existing respiratory conditions such as asthma, difficulty breathing may also result (US EPA 2016a). At high concentrations, greater than 20 ppm, symptoms can include fatigue, headaches, and difficulty breathing. At concentrations greater than 100 ppm, exposure can be considered immediately dangerous to life and health (US DL 2016).

Hydrogen sulfide can be found naturally in crude petroleum, natural gas, decomposing organic matter, ponds, sloughs and natural hot springs. Anthropogenic sources include industrial processes, such as oil extraction, petroleum refining and tanneries (US EPA 2016a).

In 2020, SESAA continuously monitored ambient H_2S concentrations at six locations. All annual instrument uptimes were greater than 90%. The annual average for H_2S concentrations ranged between 0.3 ppb and 0.5 ppb. The maximum 1-hour and 24-hour concentration occurred at Wauchop, with values of 32.4 ppb and 4.1 ppb respectively. A summary of the annual H_2S data can be found in Table 5.

Table 6 summarizes the 1-hour and 24-hour H_2S exceedances. For the duration of 2020, there were a total of 46 1-hour exceedances, and one 24-hour exceedance.

Figure 4 presents the pollutant roses for 1-hour average concentrations for H_2S of those stations that had uptimes >75%. Generally, the concentrations measured at all stations were low, with the greater portion of values falling under 1 ppb. Stoughton, Wauchope and Glen Ewen detected higher concentration events (< 11 ppb and greater) compared with the other stations. The high concentration events in Wauchope were associated with winds from the north and west quadrants.

Appendix B through J provides additional summaries and annual trends.

Table 5 Summary of H₂S Concentrations

Monitoring Station	Annual Average (ppb)	Operational Time (%)	Maximum Values (ppb)			
			24-hr	Date	1-hr	Date
Esterhazy	a	a	a	a	a	a
Glen Ewen	0.3	97.5	1.1	Aug 01	5.1	Oct 25 02:00
Oxbow	0.3	99.8	2.0	Dec 04	11.6	Dec 04 05:00
Stoughton	0.3	99.7	0.9	Aug 27	3.1	May 25 06:00
Wauchope	0.5	94.9	4.1	Jul 29	32.4	Aug 19 05:00
Torquay	0.3	99.6	1.2	Aug 19	9.0	Apr 18 22:00
Weyburn	0.3	94.4	2.8	Aug 27	27.0	Aug 27 08:00
Estevan	a	a	a	a	a	a

^a Parameter not measured

Table 6 Number of H₂S Exceedances

Monitoring Station	Number of Exceedance Events for Saskatchewan H ₂ S Ambient Air Quality Guidelines	
	1-Hr (11 ppb)	24-hr (3.6 ppb)
Esterhazy	a	a
Glen Ewen	0	0
Oxbow	1	0
Stoughton	0	0
Wauchope	39	1
Torquay	0	0
Weyburn	6	0
Estevan	a	a

^a Parameter not measured

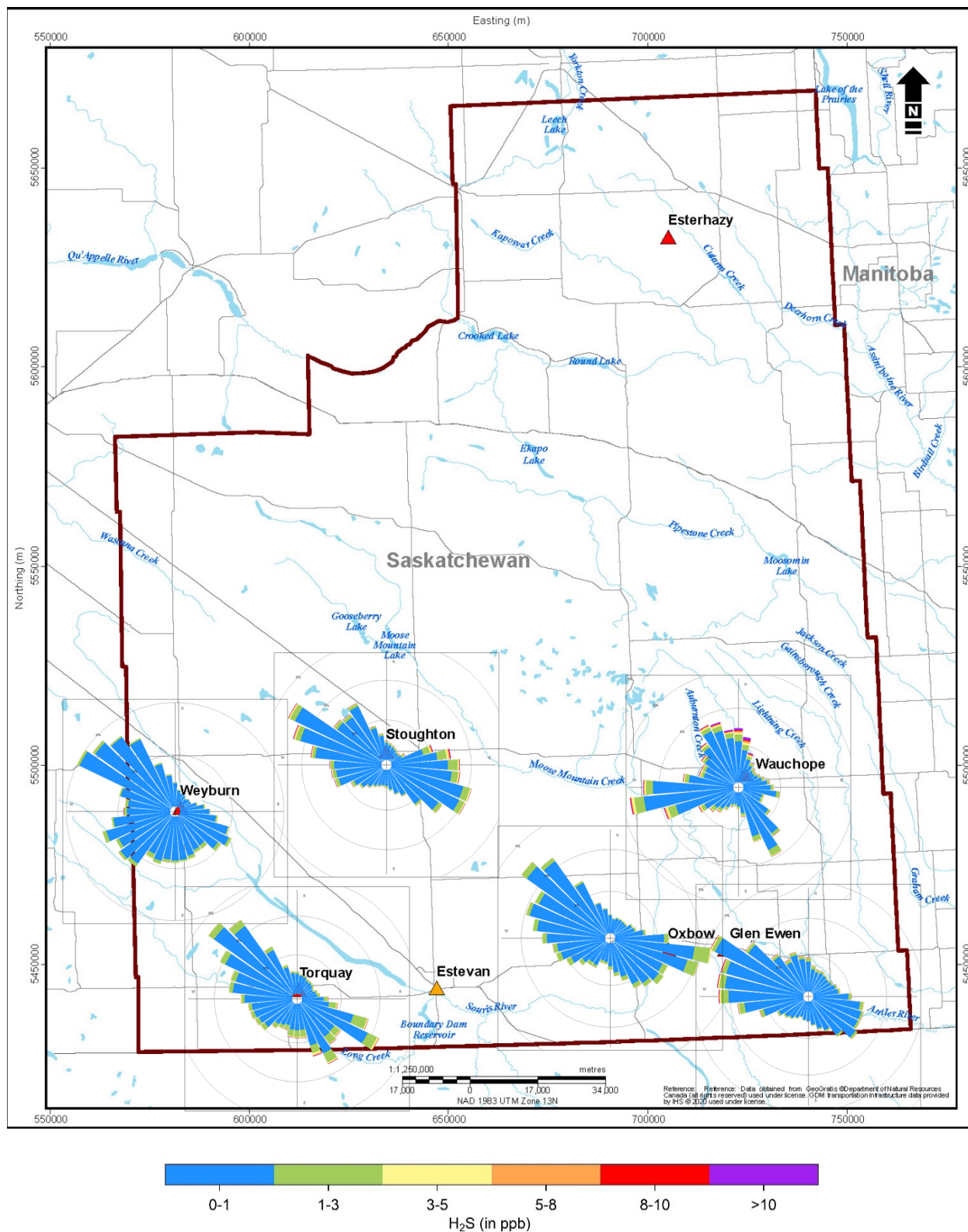


Figure 4 SESAA H₂S Pollutant Roses

2.3.3 Nitrogen Dioxide

Nitrogen dioxide (NO₂) is member of a group of highly reactive gases known as nitrogen oxides (NO_x) (US EPA 2016b). NO₂ is a reddish-brown gas with a pungent odour. Nitrogen dioxide can irritate the lungs and respiratory tract, symptoms could include coughing and wheezing. For those with suppressed lung function, exposure can increase the risk of lung infection (Gov. of Ontario 2019).

Similar to sulphur dioxide, nitrogen dioxide contributes to the formation of acid rain. Within the atmosphere, NO₂ will react with water to produce nitric acid and nitrates. Additionally, NO₂ is a component to photochemical smog. NO₂ has a role in the photochemical production of ground-level ozone, and associated nitrate particulates contribute to smog's hazy appearance.

Oxides of nitrogen is primarily introduced to the environment through anthropogenic sources. The dominant source includes activities that involve the combustion of fossil fuels such as transportation (US EPA 2016b). NO₂ can be formed naturally through an atmospheric reaction between nitrogen and oxygen, enabled through the rapid heating produced from lightning.

In 2020, SESAA continuously monitored ambient NO₂ concentrations at seven locations, including the Estevan NAPS station. All annual instrument uptimes were greater than 90%. The annual average for NO₂ concentrations ranged between 1.5 ppb and 4.5 ppb. The maximum 1-hour and 24-hour concentrations occurred at Estevan with values of 47.5 ppb and 15.9 ppb respectively. A summary of the annual NO₂ data can be found in Table 7.

Table 8 summarizes the 1-hour, 24-hour and annual NO₂ exceedances, for the duration of 2020, there was no 24 hr NO₂ exceedances.

Figure 5 presents the pollutant roses for 1-hour average concentrations for NO₂. Generally, the concentrations measured at all stations were low, with the greater portion of values falling under 5 ppb. Every station had periods of higher concentrations (<15 ppb), but Estevan, had periods of >30 ppb. The high concentration events in Estevan were associated with winds from the east quadrant.

Appendix B through J provides additional summaries and annual trends.

Table 7 Summary of NO₂ Concentrations

Monitoring Station	Annual Average (ppb)	Operational Time (%)	Maximum Values (ppb)			
			24-hr	Date	1-hr	Date
Esterhazy	2.0	97.6	10.3	Dec 31	28.3	Nov 21 19:00
Glen Ewen	1.6	97.4	5.4	Jan 22	20.7	Feb 07 08:00
Oxbow	1.5	99.4	4.1	Jan 10	17.0	Jan 10 18:00
Stoughton	1.5	92.9	7.1	Jan 20	26.7	Dec 07 17:00
Wauchope	a	a	a	a	a	a
Torquay	a	a	a	a	a	a
Weyburn	1.9	90.8	10.0	Nov 15	29.5	Nov 14 17:00
Estevan	4.5	99.5	15.9	Jan 22	47.5	Jan 20 08:00

^a Pollutant not measured

Table 8 Number of NO₂ Exceedances

Monitoring Station	Number of Exceedance Events for Saskatchewan NO ₂ Ambient Air Quality Guidelines		
	1-Hr (159 ppb)	24-hr (48 ppb)	Annual (20 ppb)
Esterhazy	0	0	0
Glen Ewen	0	0	0
Oxbow	0	0	0
Stoughton	0	0	0
Wauchope	a	a	a
Torquay	a	a	a
Weyburn	0	0	0
Estevan	0	0	0

^a Pollutant not measured

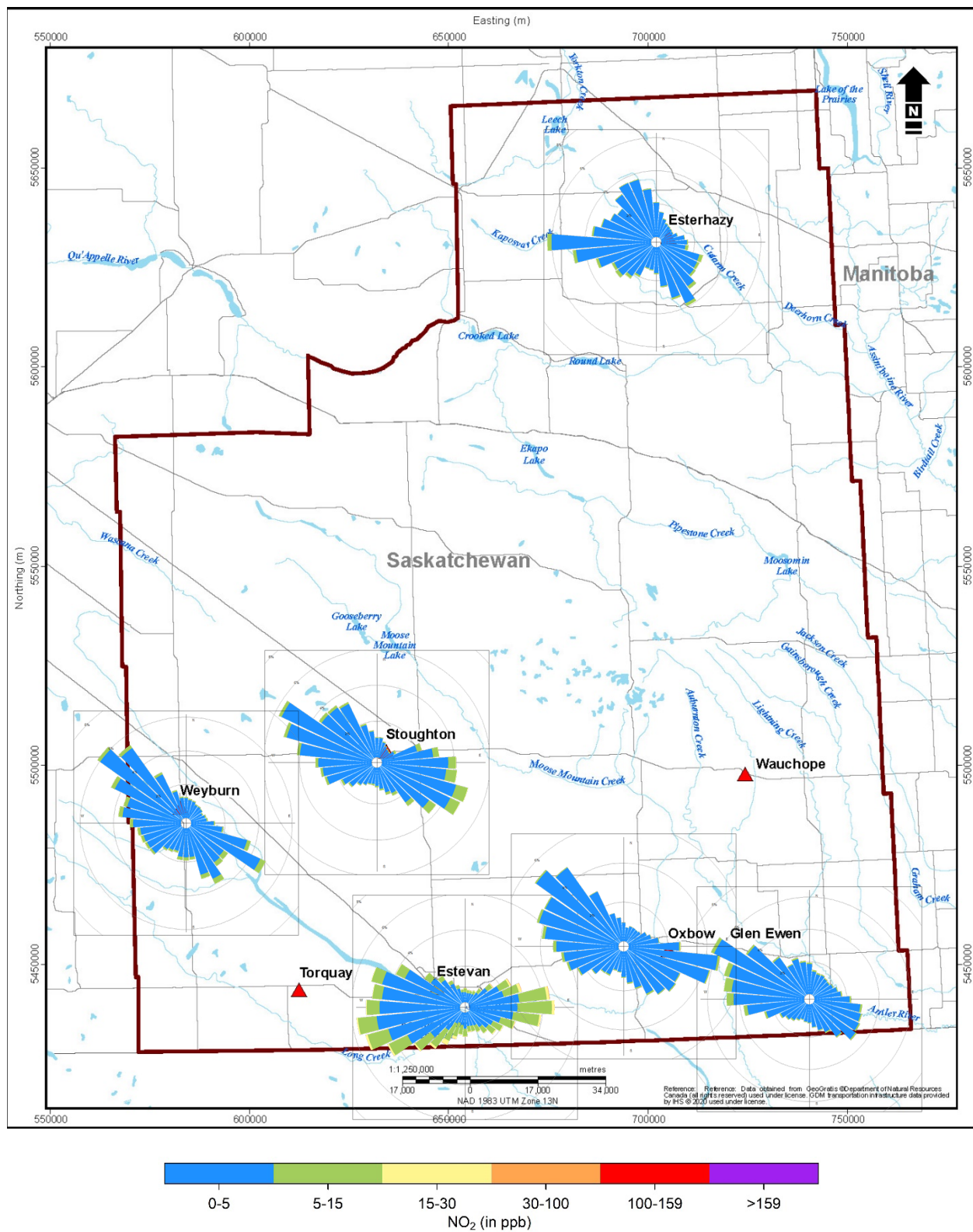


Figure 5 SESAA NO₂ Pollutant Roses

2.3.4 Ozone

Ozone (O₃), otherwise known as ground-level ozone, is considered a secondary pollutant. Ozone is produced through a photochemical reaction between NO_x and volatile organic compounds (VOCs) and can be transported from the upper atmosphere to the surface. Ozone can trigger symptoms such as coughing, chest pain, and airway irritation. Those with limited lung function or pre-existing respiratory conditions such as asthma or bronchitis are at a greater risk.

Ground-level ozone is a primary component to smog (NH DES 2015) and is also shown to negatively impact sensitive vegetation and agricultural crops, particularly during growing seasons (US EPA 2018a). Additionally, O₃ can accelerate the deterioration of rubber materials such as tires.

In 2020, SESAA continuously monitored ambient O₃ concentrations at four locations, including the government NAPS station. Instrument uptimes were greater than 90%. The annual average for O₃ concentrations ranged between 25.8 ppb and 27.9 ppb. The maximum 1-hour occurred at Glen Ewen and 24-hour concentration occurred at Esterhazy with a value of 59.5 ppb and 46.1 ppb, respectively. A summary of the annual O₃ data can be found in Table 9.

Table 10 summarizes the 4th Highest Daily Maximum 8-hour O₃ Concentrations and Table 11 summarizes the 1-hour and 8-hour O₃ exceedances, of which for the duration of 2020, there were no exceedances.

Figure 6 presents the pollutant roses for 1-hour average concentrations for O₃. Generally, the concentrations measured at all stations were less than 60 ppb, with the greater portion of values falling above 20 ppb. Typically, higher concentrations presented themselves in the northwest and east quadrants.

Appendix B through J provides additional summaries and annual trends.

Table 9 Summary of O₃ Concentrations

Monitoring Station	Annual Average (ppb)	Operational Time (%)	Maximum Values (ppb)					
			24-hr	Date	8-hr	Date	1-hr	Date
Esterhazy	27.9	99.0	46.1	May 31	54.6	May 31	58.4	Jun 26 18:00
Glen Ewen	26.7	97.5	40.0	Apr 08	53.5	May 21	59.5	Jun 14 23:00
Oxbow	a	a	a	a	a	a	a	a
Stoughton	a	a	a	a	a	a	a	a
Wauchope	a	a	a	a	a	a	a	a
Torquay	a	a	a	a	a	a	a	a
Weyburn	26.6	90.9	37.8	Apr 08	52.0	Aug 06	59.3	Aug 06 19:00
Estevan	25.8	99.6	42.4	May 18	52.0	May 21	55.5	May 21 16:00

^a Pollutant not measured

Table 10 4th Highest Daily Maximum 8-hour O₃ Concentrations

Monitoring Station	SAAQS 3-year average of the annual 4th-highest daily maximum 8-hour average concentration = 63 ppb			
	2018	2019	2020	3-yr Average
Estevan	57.4	NA	50.1	53.8
Esterhazy	62.6	57.3	53.1	57.7
Glen Ewen	53.3	58.3	51.1	54.2
Weyburn	58.7	53.2	48.9	53.6

Table 11 Number of O₃ Exceedances

Monitoring Station	Number of Exceedance Events for Saskatchewan O ₃ Ambient Air Quality Guidelines	
	1-Hr (82 ppb)	8-hr (63 ppb)
Esterhazy	0	0
Glen Ewen	0	0
Oxbow	a	a
Stoughton	a	a
Wauchope	a	a
Torquay	a	a
Weyburn	0	0
Estevan	0	0

^a Pollutant not measured

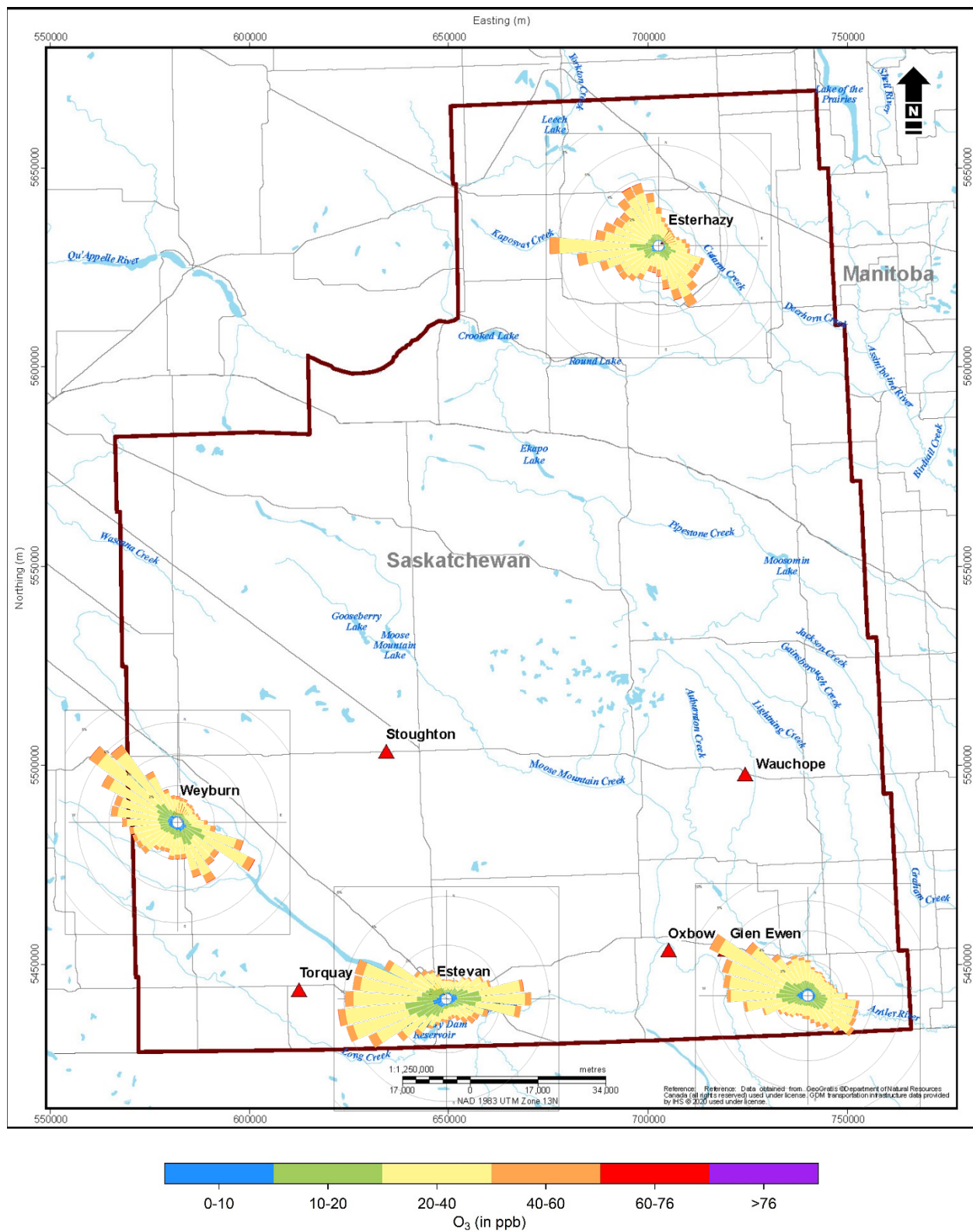


Figure 6 SESAA O₃ Pollutant Roses

2.3.5 Particulate Matter

Particulate matter is used to describes a wide variety of solid and liquid particulates often in two main size fractions PM₁₀ and PM_{2.5}. PM_{2.5} are often more identified with heath as they are considered fine inhalable particulates, which can travel far within the respiratory tract (US EPA 2018b). Health effects of PM_{2.5} often include coughing, wheezing, and nose and throat irritation. Those who have asthma are at a greater risk. There is also risk to vegetation and visibility from high levels of particulate matter.

Most particulates are produced through complex atmospheric reactions involving pollutants such as NO_x and SO₂. PM_{2.5} can also be directly emitted from a source such as fires, fossil fuel combustion, and dust.

In 2020, SESAA continuously monitored ambient PM_{2.5} concentrations at seven locations, including the government NAPS station. Instrument uptimes were greater than 90%. The annual average for PM_{2.5} concentrations ranged between 5.0 µg/m³ and 6.6 µg/m³. The maximum 1-hour concentration occurred at Stoughton with a value of 105.9 µg/m³. The maximum 24-hour concentration also occurred in Oxbow, with a value of 34.3 µg/m³. The NAPS station, Estevan also collected PM₁₀, with a maximum 1-hour concentration of 202.3 µg/m³ and a 24-hour maximum concentration at 74.0 µg/m³. A summary of the annual PM_{2.5} data can be found in Table 12, and PM₁₀ data can be found in Table 13.

The Estevan NAPS station also collects Black Carbon (BC), which is the sooty black material emitted from gas and diesel engines, coal-fired power plants, and other sources that burn fossil fuel. BC is considered a global environmental issue that has negative implications for both human health and environment. Inhalation of BC is associated with health problems including respiratory and cardiovascular disease, cancer, and even birth defects. BC also has emerged as a major contributor to climate change (US EPA, 2019c). Collection of BC at Estevan resulted in a maximum 1-hour concentration of 6,390 ng/m³ (12.00 µg/m³) and a 24-hour maximum concentration at 699 ng/m³ (1.24 µg/m³). A summary of the annual BC data can be found in Table 13.

Table 14 summarizes the 24-hour and annual exceedances for particulate matter (PM_{2.5} and PM₁₀). For the duration of 2020, 2, 24-hour exceedances occurred with no exceedance of the annual standard. As the sources of PM_{2.5} vary widely, the cause of the exceedance can be related to a number of factors (i.e. dry year, fires, etc.). Results for the PM₁₀ showed 14, 24-hour exceedances.

Figure 7 presents the pollutant roses for 1-hour average concentrations for PM_{2.5}. Due to the variability in source, pollutant direction and concentration varies greatly. In Esterhazy, Wauchope, Oxbow, Weyburn, Torquay and Stoughton, values appear to be more prominent in the northwest and southeast quadrants. In Oxbow values appear to be more prominent in the west and east quadrants. In Estevan values appear to be more prominent in the west and east quadrants. Concentrations typically are below 10 µg/m³.

Figure 8 present the pollutant rose for 1-hour average concentration of PM₁₀ and BC at the Estevan station.

Appendix B through J provides additional summaries and annual trends.

Table 12 Summary of PM_{2.5} Concentrations

Monitoring Station	Annual Average (µg/m³)	Operational Time (%)	Maximum Values (µg/m³)			
			24-hr	Date	1-hr	Date
Esterhazy	5.0	98.4	17.4	Nov 05	86.3	Nov 03 18:00
Glen Ewen	a	a	a	a	a	a
Oxbow	6.2	99.8	34.3	Jan 17	85.9	Jul 28 21:00
Stoughton	5.2	92.2	18.4	Sep 20	105.9	Sep 20 10:00
Wauchope	5.7	90.4	16.4	Sep 21	67.3	Feb 21 00:00
Torquay	5.5	99.4	23.0	Sep 19	64.1	Oct 04 19:00
Weyburn	5.9	94.4	23.2	Jul 23	68.6	Dec 05 20:00
Estevan	6.6	99.7	19.7	Sep 20	52.0	Jul 11 23:00

^a Pollutant not measured

Table 13 Summary of PM₁₀ and BC Concentrations

Monitoring Station	Annual Average	Operational Time (%)	Maximum Values			
			24-hr	Date	1-hr	Date
Estevan, PM ₁₀ µg/m³	21.5	99.5	74.0	Sep 15	202.3	Sep 14 19:00
Estevan, BC ng/m³	211	76.8	699	Jul 11	6,390	Jul 11 23:00

Table 14 Number of PM_{2.5} and PM₁₀ Exceedances

Monitoring Station	Number of Exceedance Events for Saskatchewan PM _{2.5} Air Quality Guidelines		Number of Exceedance Events for Saskatchewan PM ₁₀ Air Quality Guidelines
	24-Hr (28 µg/m³)	Annual (10 µg/m³)	24-Hr (50 µg/m³)
Esterhazy	0	0	a
Glen Ewen	a	a	a
Oxbow	2	0	a
Stoughton	0	0	a
Wauchope	0	0	a
Torquay	0	0	a
Weyburn	0	0	a
Estevan	0	0	14

^a Pollutant not measured

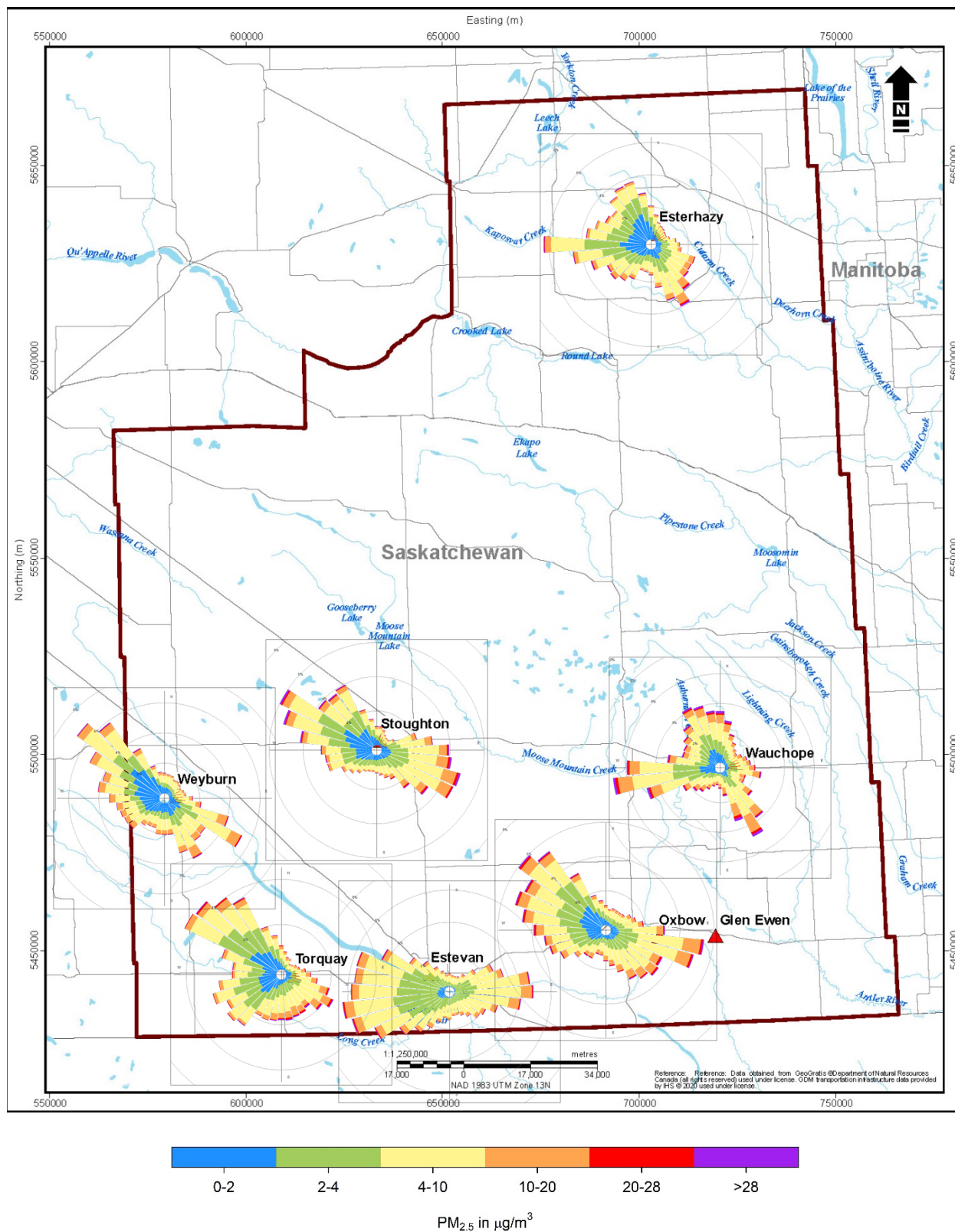


Figure 7 SESAA $PM_{2.5}$ Pollutant Roses

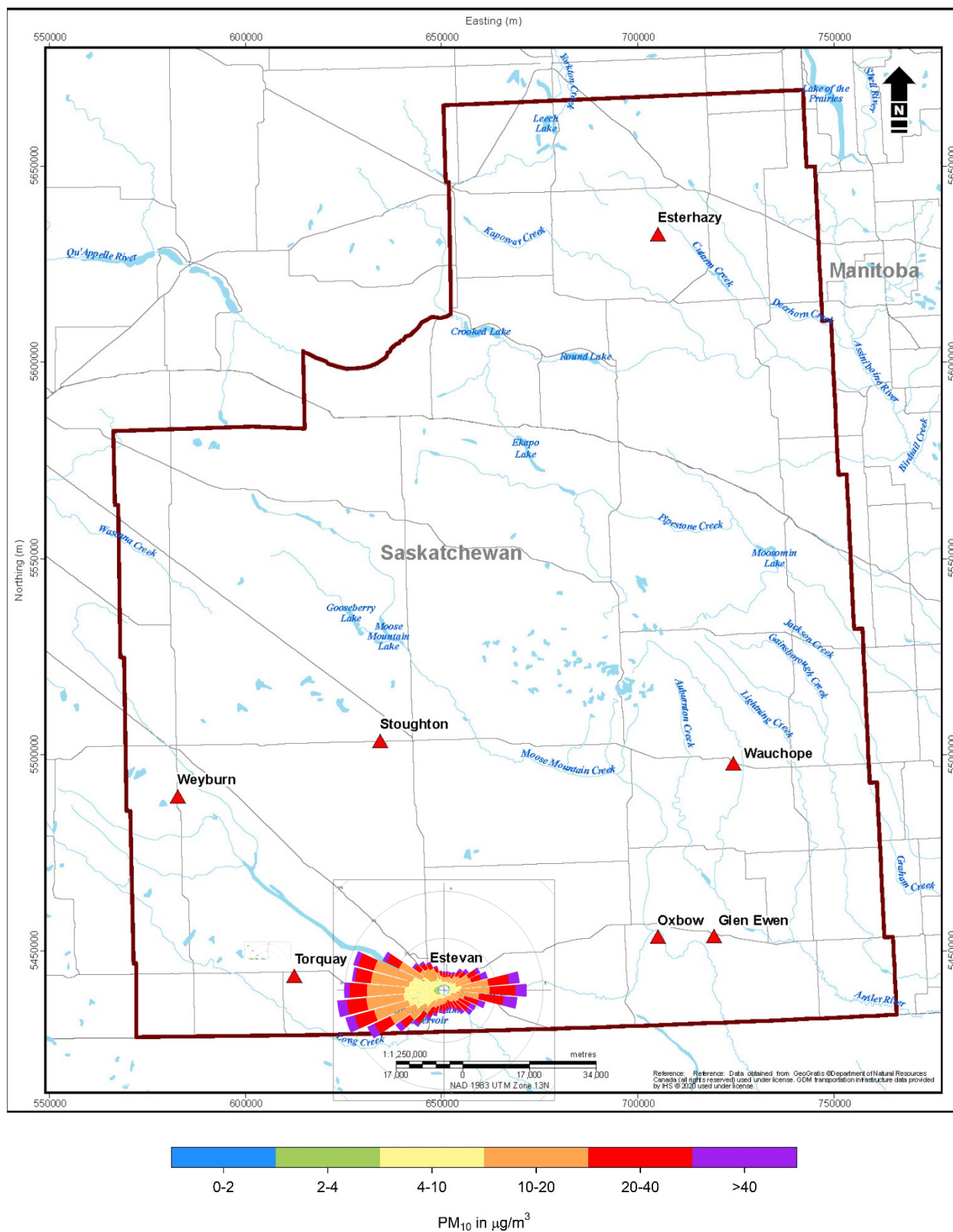


Figure 8 Estevan PM₁₀ Pollutant Rose

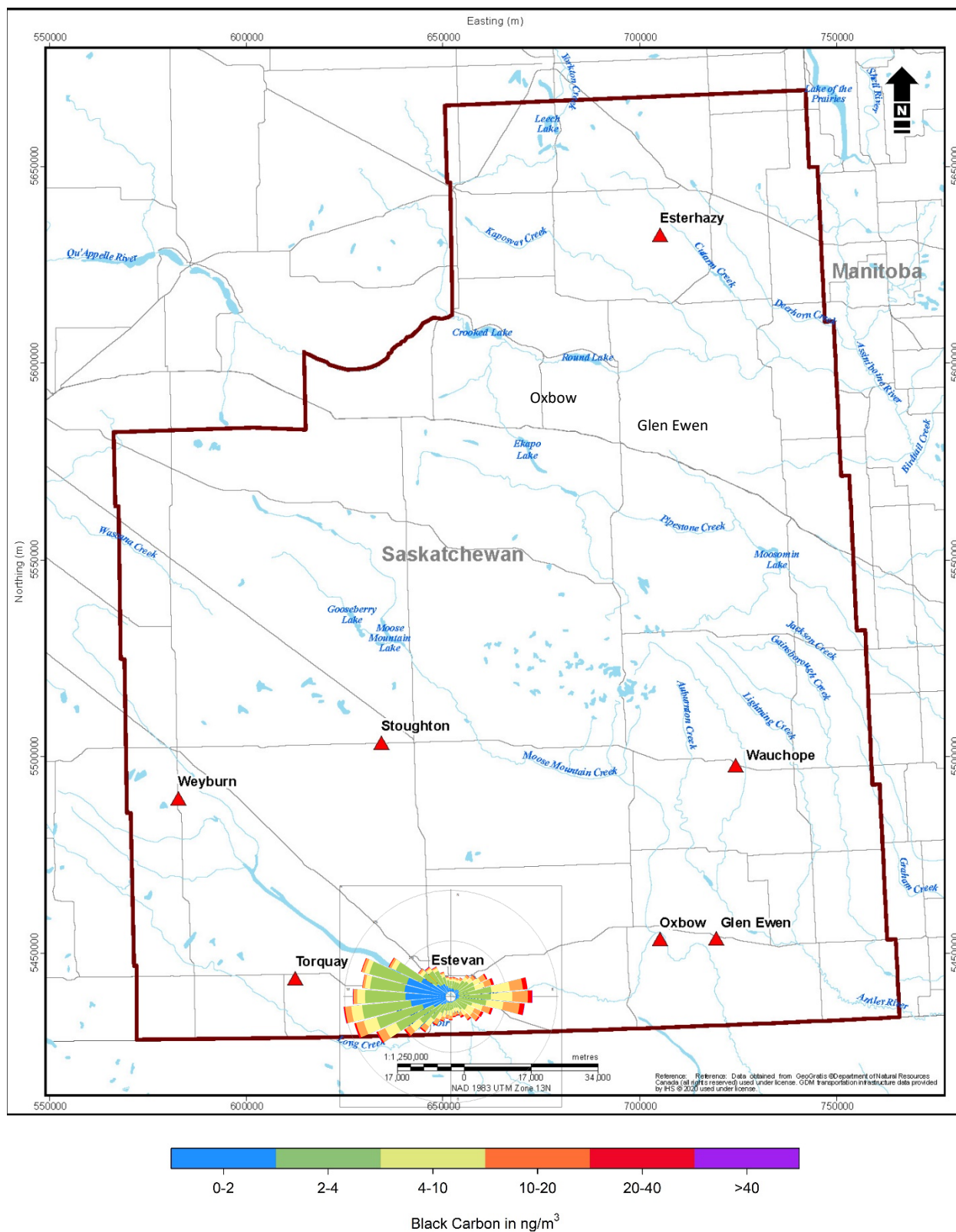


Figure 9 Estevan Black Carbon Pollutant Rose

2.4 Air Quality Health Index

The Air Quality Health Index (AQHI) is a scale designed to help the public make decisions to protect their health by limiting short-term exposure to air pollution. The AQHI uses a rolling three-hour average concentration of PM_{2.5}, NO₂, and O₃ to calculate a single numerical value to evaluate the health risk associated with air quality. The numerical value is then compared to a scale (Figure 35) that determines whether the air quality is low, moderate, high or a very high risk to one's health (GoC 2019).

Health Risk	Air Quality Health Index	Health Messages	
		At Risk Population	General Population
Low Risk	1 – 3	Enjoy your usual outdoor activities.	Ideal air quality for outdoor activities.
Moderate Risk	4 – 6	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.
High Risk	7 – 10	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.
Very High Risk	Above 10	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

Figure 10 Health Risk Classification for Air Quality Health Index (AQHI, 2019)

As can be seen in Figure 35 the AQHI is designed to give the public information about air quality along with suggestions on how to adjust outdoor activities depending on the individual health risk. The AQHI is calculated based on the relative risks of a combination of the air pollutants PM_{2.5}, NO₂, and O₃ that is known to harm human health. All three pollutants are required to calculate the AQHI according to the following equation (Stieb, et al, 2012):

$$AQHI = \left(\frac{1000}{10.4} \right) \times [(e^{0.000537 \times O_3} - 1) + (e^{0.000871 \times NO_2} - 1) + (e^{0.000487 \times PM_{2.5}} - 1)]$$

Within the SESAA monitoring network, three stations meet the requirements to calculate AQHI; Esterhazy, Weyburn, and the government NAPS station Estevan. For the 2019 annual monitoring period, the three stations calculated an AQHI rating is summarized in Table 15.

Table 15 Station AQHI Summary

Monitoring Station	Occurrence	Hours and Frequency by AQHI Risk Rating			
		Low Risk (1-3)	Moderate Risk (4-6)	High Risk (7-10)	Very High Risk (>10)
Esterhazy	Hours	8164	24	0	0
	Frequency	99.7%	0.3%	0.0%	0.0%
Estevan	Hours	8700	39	0	0
	Frequency	99.6%	0.4%	0.0%	0.0%
Weyburn	Hours	7072	14	0	0
	Frequency	99.8%	0.2%	0.0%	0.0%

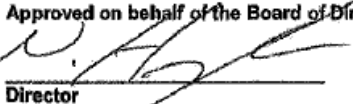
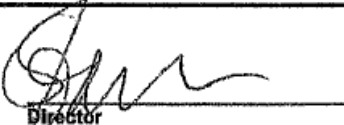
^a Data from Jan to Oct

From the summary we note that the majority (>95%) of the AQHI was rated a low risk and that there are no occurrences of high risk or very high risk in 2020.

3 AUDITED FINANCIAL STATEMENT

The 2020 audited financial summary for SESAA is presented in the following table. The complete audited report is presented in Appendix K.

Table 16 SESAA Audited Financial Statement

Southeast Saskatchewan Airshed Association Inc.		
Statement of Financial Position		
As at December 31, 2020		
	2020	2019
Assets		
Current		
Cash	119,851	162,457
Marketable securities (Note 3)	104,433	102,374
Prepaid expenses and deposits	3,833	4,778
Government remittances receivable	735	-
	228,852	269,609
Capital assets (Note 4)	215,581	261,832
	444,433	531,441
Liabilities		
Current		
Accounts payable and accruals	30,969	31,704
Deferred contributions (Note 5)	11,913	11,913
Government remittances payable	-	1,299
	42,882	44,916
Deferred contributions (Note 5)	17,870	29,783
	60,752	74,699
Net Assets		
Invested in capital assets	215,581	-
Internally restricted	104,433	-
Unrestricted	63,667	456,742
	383,681	456,742
	444,433	531,441
Approved on behalf of the Board of Directors		
		
Director	Director	

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APPENDIX A

Saskatchewan Ambient Air Quality Standards

APPENDIX A SASKATCHEWAN AMBIENT AIR QUALITY STANDARDS (SAAQS)

TABLE 20: SASKATCHEWAN AMBIENT AIR QUALITY STANDARDS ($\mu\text{g}/\text{m}^3$)				
Air Pollutant	1 Hour	8 Hours	24 Hours	Annual
Particulate Matter ($\text{PM}_{2.5}$)			28 ^a	10
Particulate Matter (PM_{10})			50	
Total Suspended Particulates (TSP)			100	60 ^b
Nitrogen Dioxide (NO_2)	300 (159 ppb)		200 (106 ppb)	45 ^c (24 ppb)
Sulphur Dioxide (SO_2)	450 (172 ppb)		125 (48 ppb)	20 ^c (8 ppb)
Hydrogen Sulphide (H_2S)	15 (11 ppb)		5 (3.6 ppb)	
Ozone (O_3)	160 (82 ppb)	124 ^d (63 ppb)		
Carbon Monoxide (CO)	15,000 (13,000 ppb)	6,000 (5,000 ppb)		

Footnotes

(a) The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations.

(b) Geometric means

(c) Arithmetic means

(d) The 3-year average of the annual 4th-highest daily maximum 8-hour average concentrations.

APPENDIX B

Esterhazy Station: Continuous Monitoring Data

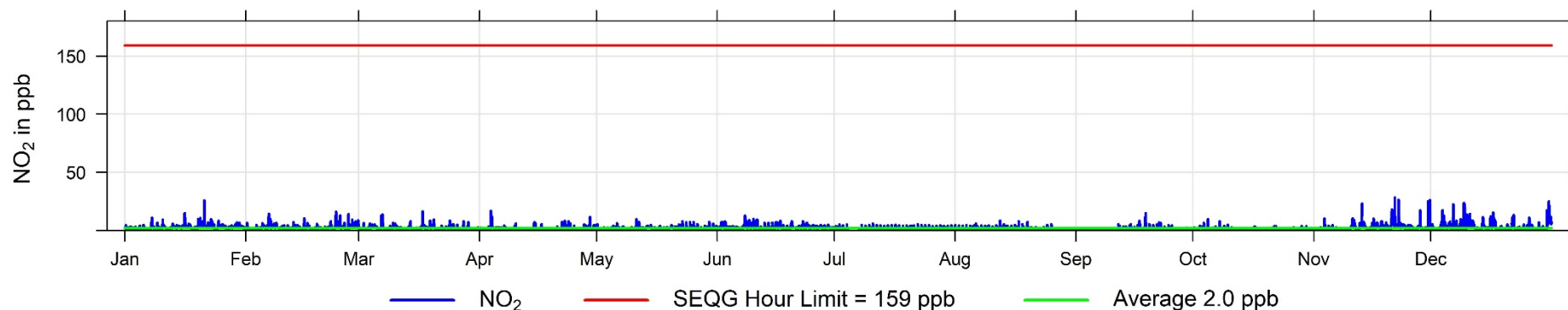
Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above SEQG & AAAQG			
		24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	Annual
Nitrogen Dioxide NO ₂ measured in ppb	2.0	10.3	Dec 31	28.3	Nov 21 19:00	97.6%	0	-	-	0
Oxides of Nitrogen NO _x measured in ppb	2.8	15.2	Nov 30	95.3	Aug 19 13:00	97.6%	-	-	-	-
Nitric Oxide NO measured in ppb	0.9	6.8	Nov 30	88.5	Aug 19 13:00	97.6%	-	-	-	-
Ozone O ₃ measured in ppb	27.9	46.1	May 31	58.4	Jun 26 18:00	99.0%	0	0	-	-
Particulate Matter PM _{2.5} measured in µg/m ³	5.0	17.4	Nov 05	86.3	Nov 03 18:00	98.4%	1	-	0	-

Nitrogen Dioxide (NO₂) Frequency Distribution at Esterhazy

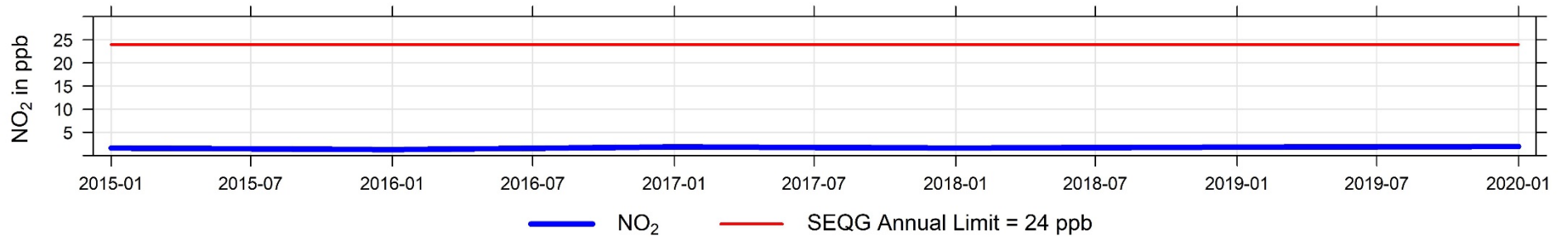
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 106ppb	1-hr 159ppb
January 2020	711	91.3%	8.4%	0.3%	0.0%	0.0%	0.0%	2.9	5.5	Jan 21	25.8	Jan 21 09:00	100.0%	0	0
February 2020	666	89.9%	9.9%	0.2%	0.0%	0.0%	0.0%	2.6	6.6	Feb 24	16.1	Feb 24 05:00	100.0%	0	0
March 2020	708	94.5%	5.4%	0.1%	0.0%	0.0%	0.0%	2.0	3.7	Mar 17	16.3	Mar 17 09:00	99.5%	0	0
April 2020	682	96.3%	3.5%	0.1%	0.0%	0.0%	0.0%	1.6	3.3	Apr 22	16.8	Apr 03 22:00	100.0%	0	0
May 2020	712	96.9%	3.1%	0.0%	0.0%	0.0%	0.0%	1.8	3.1	May 11	9.4	May 11 05:00	100.0%	0	0
June 2020	674	86.9%	13.1%	0.0%	0.0%	0.0%	0.0%	2.8	5.3	Jun 08	12.5	Jun 08 02:00	99.9%	0	0
July 2020	643	99.5%	0.5%	0.0%	0.0%	0.0%	0.0%	1.4	2.2	Jul 20	5.8	Jul 10 22:00	90.5%	0	0
August 2020	623	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%	1.2	2.1	Aug 06	7.9	Aug 17 07:00	88.0%	0	0
September 2020	645	98.1%	1.9%	0.0%	0.0%	0.0%	0.0%	0.8	2.6	Sep 17	15.0	Sep 18 21:00	94.3%	0	0
October 2020	709	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.7	1.8	Oct 03	9.7	Oct 04 20:00	99.7%	0	0
November 2020	684	88.3%	9.4%	2.3%	0.0%	0.0%	0.0%	2.7	9.8	Nov 21	28.3	Nov 21 19:00	99.3%	0	0
December 2020	705	79.6%	18.6%	1.8%	0.0%	0.0%	0.0%	3.1	10.3	Dec 31	24.8	Dec 31 07:00	99.9%	0	0
Annual	8162	93.3%	6.3%	0.4%	0.0%	0.0%	0.0%	2.0	10.3	Dec 31	28.3	Nov 21 19:00	97.6%	0	0

SEQG Objectives: Annual: 24ppb, 24-Hr: 106ppb, 1-Hr: 159ppb

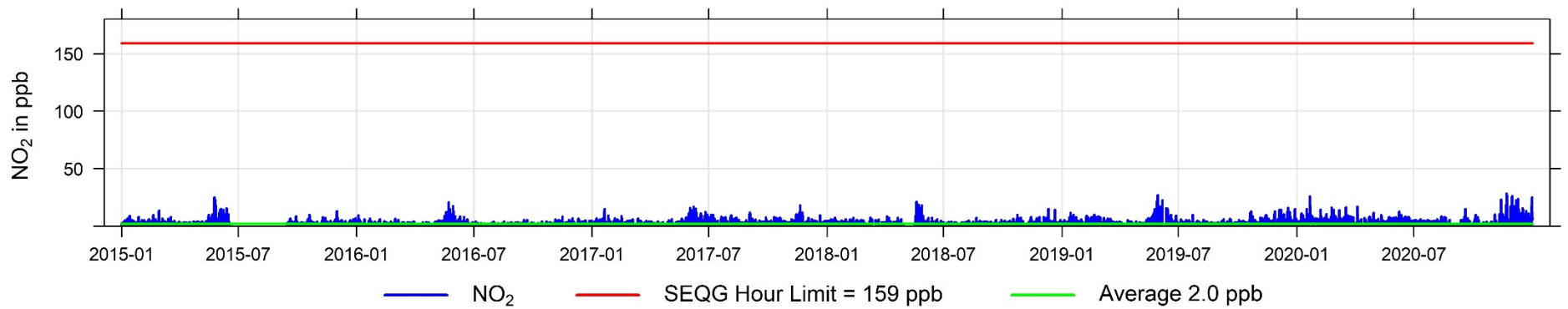
2020 Hourly Concentration Readings of NO₂ (in ppb) at Esterhazy



2015 to 2020 Annual Concentration Readings of NO₂ (in ppb) at Esterhazy



2015 to 2020 Hourly Concentration Readings of NO₂ (in ppb) at Esterhazy

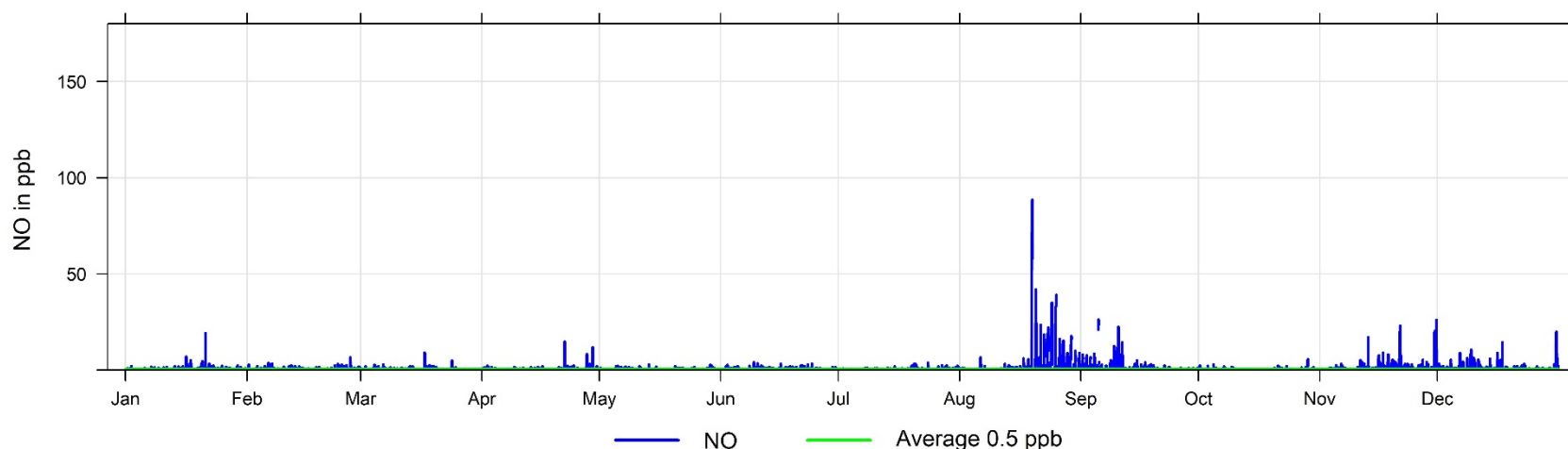


Nitric Oxide (NO) Frequency Distribution at Esterhazy

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr (ppb)	Date	
January 2020	711	99.3%	0.4%	0.3%	0.0%	0.0%	0.0%	0.7	2.3	Jan 21	19.2	Jan 21 09:00	100.0%
February 2020	666	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.6	1.4	Feb 06	6.6	Feb 27 09:00	100.0%
March 2020	708	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.5	1.3	Mar 18	9.1	Mar 17 09:00	99.5%
April 2020	682	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.5	1.7	Apr 22	14.8	Apr 22 04:00	100.0%
May 2020	712	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	1.4	May 29	2.8	May 13 16:00	100.0%
June 2020	674	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5	1.6	Jun 21	4.0	Jun 09 11:00	99.9%
July 2020	643	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4	2.2	Jul 20	3.9	Jul 23 22:00	90.5%
August 2020	623	86.8%	6.6%	4.2%	2.4%	0.0%	0.0%	3.0	3.0	Aug 26	88.5	Aug 19 13:00	88.0%
September 2020	645	94.9%	4.0%	1.1%	0.0%	0.0%	0.0%	1.2	2.4	Sep 09	26.3	Sep 05 12:00	94.3%
October 2020	709	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3	1.3	Oct 28	5.7	Oct 28 23:00	99.7%
November 2020	684	95.6%	3.4%	1.0%	0.0%	0.0%	0.0%	1.4	6.8	Nov 30	26.2	Nov 30 18:00	99.3%
December 2020	705	96.5%	3.4%	0.1%	0.0%	0.0%	0.0%	1.1	4.5	Dec 31	20.0	Dec 31 10:00	99.9%
Annual	8162	97.7%	1.6%	0.6%	0.2%	0.0%	0.0%	0.9	6.8	MAXIMUM VALUES			97.6%

SEQG Objectives: none

2020 Hourly Concentration Readings of NO (in ppb) at Esterhazy

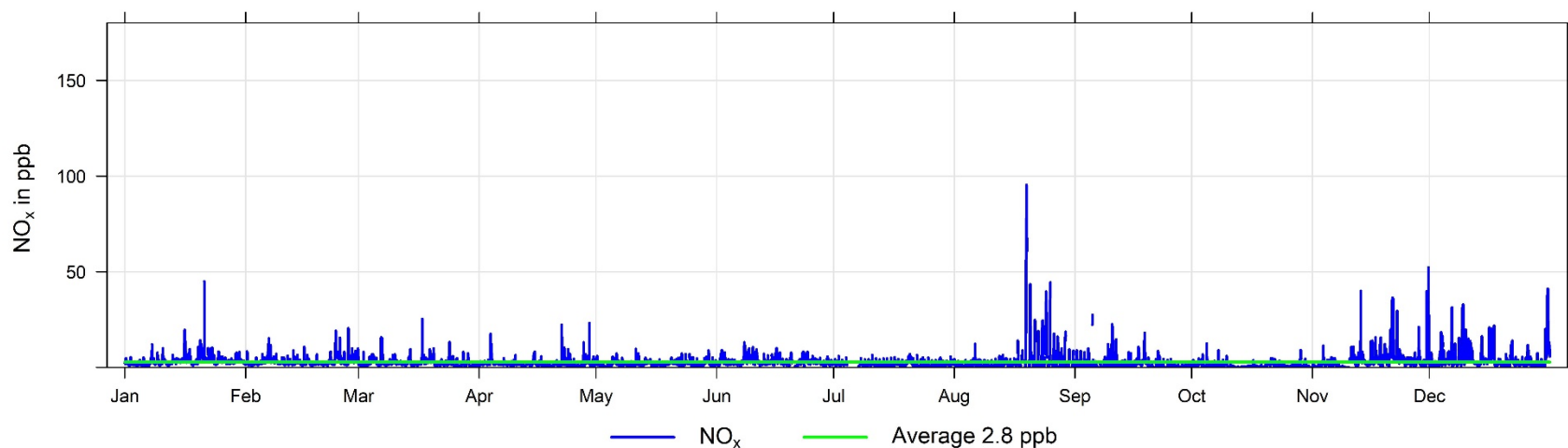


Oxides of Nitrogen (NO_x) Frequency Distribution at Esterhazy

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr (ppb)	Date	
January 2020	711	84.8%	14.6%	0.3%	0.3%	0.0%	0.0%	3.5	7.8	Jan 21	45.0	Jan 21 09:00	100.0%
February 2020	666	85.1%	14.3%	0.6%	0.0%	0.0%	0.0%	3.2	7.9	Feb 24	20.5	Feb 27 09:00	100.0%
March 2020	708	92.2%	7.3%	0.4%	0.0%	0.0%	0.0%	2.4	4.9	Mar 17	25.4	Mar 17 09:00	99.5%
April 2020	682	94.7%	4.5%	0.7%	0.0%	0.0%	0.0%	2.1	5.0	Apr 22	23.3	Apr 29 07:00	100.0%
May 2020	712	96.1%	3.9%	0.0%	0.0%	0.0%	0.0%	2.0	3.9	May 29	9.8	May 11 05:00	100.0%
June 2020	674	85.0%	15.0%	0.0%	0.0%	0.0%	0.0%	3.1	5.8	Jun 08	13.2	Jun 08 02:00	99.9%
July 2020	643	97.5%	2.5%	0.0%	0.0%	0.0%	0.0%	1.7	4.4	Jul 20	6.9	Jul 20 13:00	90.5%
August 2020	623	85.2%	7.7%	4.7%	2.4%	0.0%	0.0%	4.0	3.3	Aug 26	95.3	Aug 19 13:00	88.0%
September 2020	645	91.9%	7.0%	1.1%	0.0%	0.0%	0.0%	1.9	4.3	Sep 18	27.5	Sep 05 12:00	94.3%
October 2020	709	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%	1.0	2.4	Oct 21	12.6	Oct 04 20:00	99.7%
November 2020	684	78.9%	17.5%	2.0%	1.5%	0.0%	0.0%	4.0	15.2	Nov 30	52.2	Nov 30 18:00	99.3%
December 2020	705	74.5%	22.0%	2.7%	0.9%	0.0%	0.0%	4.2	14.8	Dec 31	41.3	Dec 31 10:00	99.9%
Annual	8162	88.7%	9.8%	1.0%	0.4%	0.0%	0.0%	2.8	15.2	MAXIMUM VALUES			97.6%
										Nov 30	95.3	Aug 19 13:00	

SEQG Objectives: none

2020 Hourly Concentration Readings of NO_x (in ppb) at Esterhazy

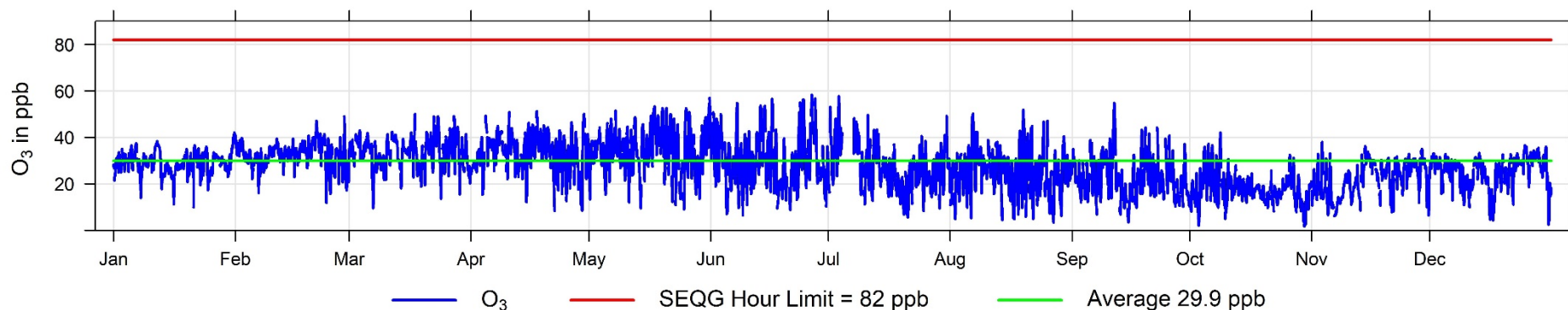


Ozone (O₃) Frequency Distribution at Esterhazy

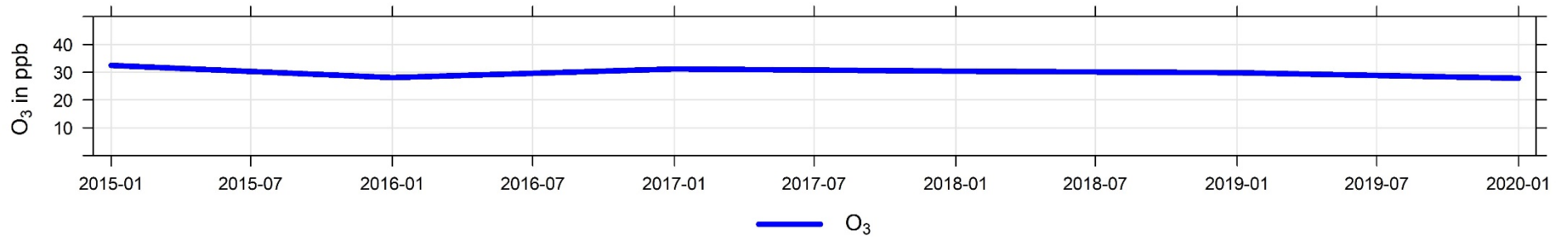
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 10 (ppb)	10 to 20 (ppb)	20 to 40 (ppb)	40 to 60 (ppb)	60 to 76 (ppb)	> 76 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		8-hr 63ppb	1-hr 82ppb
January 2020	711	0.1%	2.4%	96.1%	1.4%	0.0%	0.0%	29.2	38.4	Jan 31	42.1	Jan 31 18:00	100.0%	0	0
February 2020	666	0.0%	2.3%	93.1%	4.7%	0.0%	0.0%	32.7	40.6	Feb 21	49.0	Feb 28 18:00	100.0%	0	0
March 2020	708	0.1%	2.4%	81.4%	16.1%	0.0%	0.0%	33.8	41.0	Mar 23	50.1	Mar 17 18:00	99.5%	0	0
April 2020	682	0.6%	5.7%	71.1%	22.6%	0.0%	0.0%	33.5	41.4	Apr 17	51.3	Apr 17 18:00	100.0%	0	0
May 2020	712	0.3%	8.3%	60.7%	30.8%	0.0%	0.0%	34.5	46.1	May 31	57.0	May 31 17:00	100.0%	0	0
June 2020	675	2.1%	19.0%	56.9%	22.1%	0.0%	0.0%	30.5	43.7	Jun 27	58.4	Jun 26 18:00	100.0%	0	0
July 2020	645	3.3%	22.8%	62.6%	11.3%	0.0%	0.0%	27.1	41.6	Jul 03	57.8	Jul 03 15:00	90.7%	0	0
August 2020	709	7.2%	22.1%	64.2%	6.5%	0.0%	0.0%	24.9	32.1	Aug 06	51.8	Aug 19 14:00	99.6%	0	0
September 2020	682	3.8%	35.9%	56.2%	4.1%	0.0%	0.0%	23.2	39.8	Sep 11	54.9	Sep 11 17:00	99.3%	0	0
October 2020	710	7.9%	63.2%	28.7%	0.1%	0.0%	0.0%	17.8	26.4	Oct 05	42.2	Oct 08 18:00	99.9%	0	0
November 2020	684	5.7%	32.9%	61.4%	0.0%	0.0%	0.0%	22.1	31.6	Nov 15	38.0	Nov 03 15:00	99.4%	0	0
December 2020	705	2.7%	16.5%	80.9%	0.0%	0.0%	0.0%	25.4	33.8	Dec 25	36.6	Dec 25 06:00	100.0%	0	0
Annual	8289	2.8%	19.5%	67.8%	10.0%	0.0%	0.0%	27.9	46.1	May 31	58.4	Jun 26 18:00	99.0%	0	0

SEQG Objectives: 8-Hr: 63ppb, 1-Hr: 82ppb

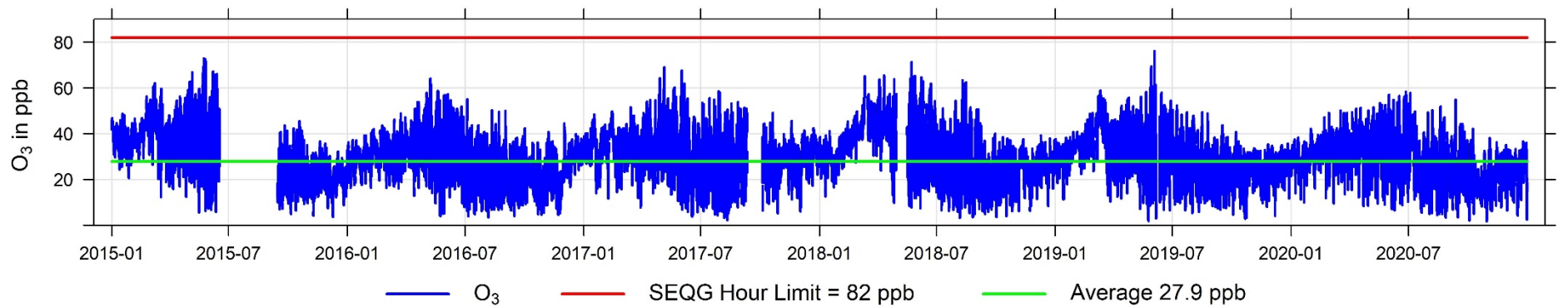
2020 Hourly Concentration Readings of O₃ (in ppb) at Esterhazy



2015 to 2020 Annual Concentration Readings of O₃ (in ppb) at Esterhazy



2015 to 2020 Hourly Concentration Readings of O₃ (in ppb) at Esterhazy

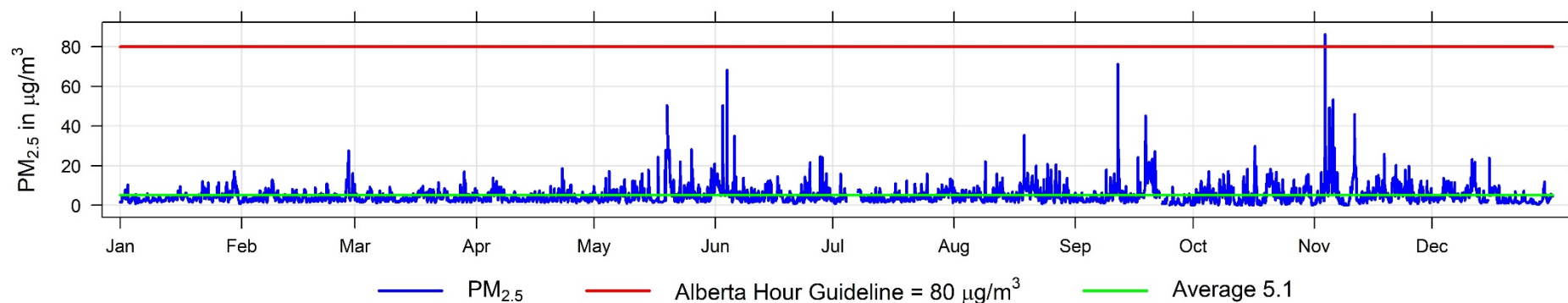


Particulate Matter (PM_{2.5}) Frequency Distribution at Esterhazy

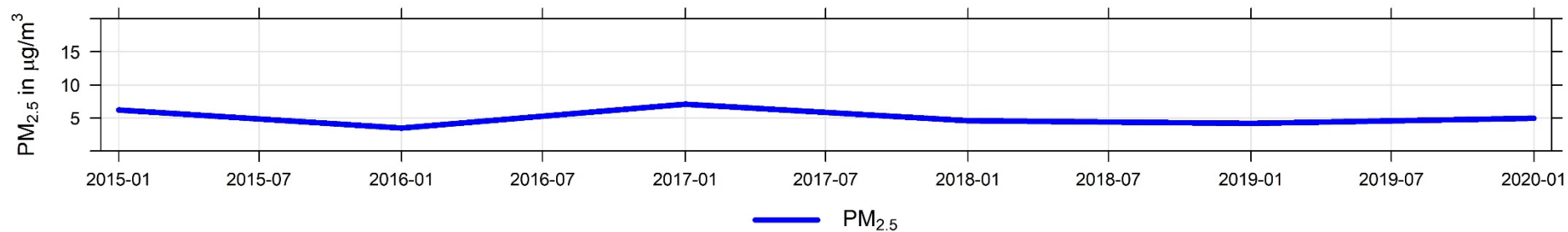
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m³)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 2 (µg/m³)	2 to 4 (µg/m³)	4 to 10 (µg/m³)	10 to 20 (µg/m³)	20 to 29 (µg/m³)	> 29 (µg/m³)		24-hr (µg/m³)	Date	1-hr (µg/m³)	Date		24-hr 28 µg/m³	1-hr 80 µg/m³
January 2020	744	12.6%	47.2%	36.4%	3.8%	0.0%	0.0%	4.1	10.7	Jan 30	17.3	Jan 30 03:00	100.0%	0	0
February 2020	696	11.1%	53.2%	30.9%	4.3%	0.6%	0.0%	4.2	9.6	Feb 28	27.6	Feb 28 09:00	100.0%	0	0
March 2020	740	12.4%	49.1%	37.0%	1.5%	0.0%	0.0%	4.0	6.4	Mar 17	17.1	Mar 28 21:00	99.5%	0	0
April 2020	720	10.6%	50.6%	36.8%	2.1%	0.0%	0.0%	4.1	8.2	Apr 05	18.8	Apr 22 22:00	100.0%	0	0
May 2020	696	12.5%	32.8%	42.4%	9.1%	2.3%	1.0%	6.0	15.0	May 20	50.5	May 19 16:00	93.5%	0	0
June 2020	715	13.6%	30.8%	44.3%	10.1%	0.6%	0.7%	5.6	13.7	Jun 01	68.3	Jun 03 00:00	99.7%	0	0
July 2020	675	13.5%	44.7%	38.7%	3.1%	0.0%	0.0%	4.2	7.8	Jul 31	15.9	Jul 25 02:00	90.7%	0	0
August 2020	741	11.2%	29.0%	49.9%	9.2%	0.5%	0.1%	5.6	10.5	Aug 19	35.4	Aug 18 21:00	99.6%	0	0
September 2020	692	28.9%	29.8%	27.9%	10.0%	2.5%	1.0%	5.2	16.1	Sep 11	71.3	Sep 11 20:00	97.9%	0	0
October 2020	743	27.9%	22.6%	34.3%	14.7%	0.4%	0.1%	5.2	13.4	Oct 20	29.8	Oct 16 20:00	99.9%	0	0
November 2020	718	16.3%	22.7%	42.1%	14.6%	2.2%	2.1%	7.0	17.4	Nov 05	86.3	Nov 03 18:00	99.7%	0	1
December 2020	738	28.9%	28.7%	36.9%	4.9%	0.7%	0.0%	4.3	12.4	Dec 11	24.0	Dec 15 16:00	100.0%	0	0
Annual	8618	16.6%	36.8%	38.1%	7.3%	0.8%	0.4%	5.0	MAXIMUM VALUES				98.4%	0	1

SEQG Objectives: 24-Hr: 28 µg/m³, Alberta Guideline: 1-Hr: 80 µg/m³

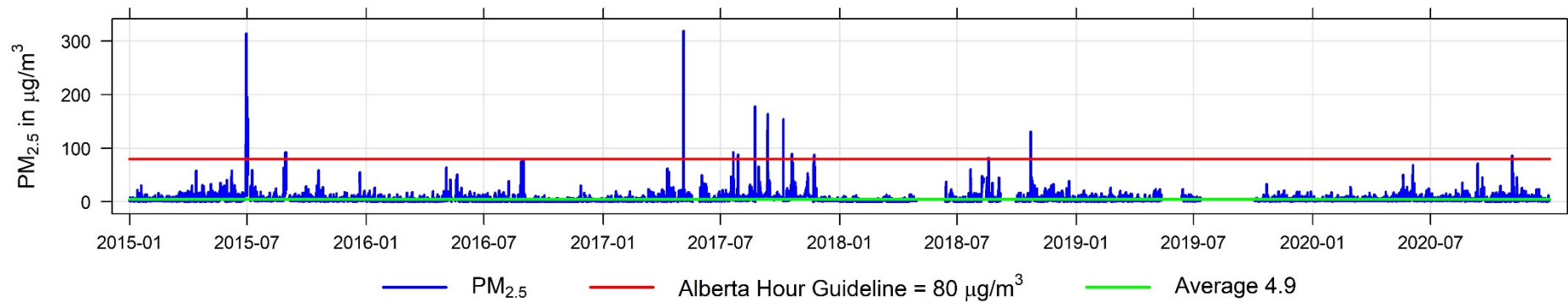
2020 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Esterhazy



2015 to 2020 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Esterhazy



2015 to 2020 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Esterhazy



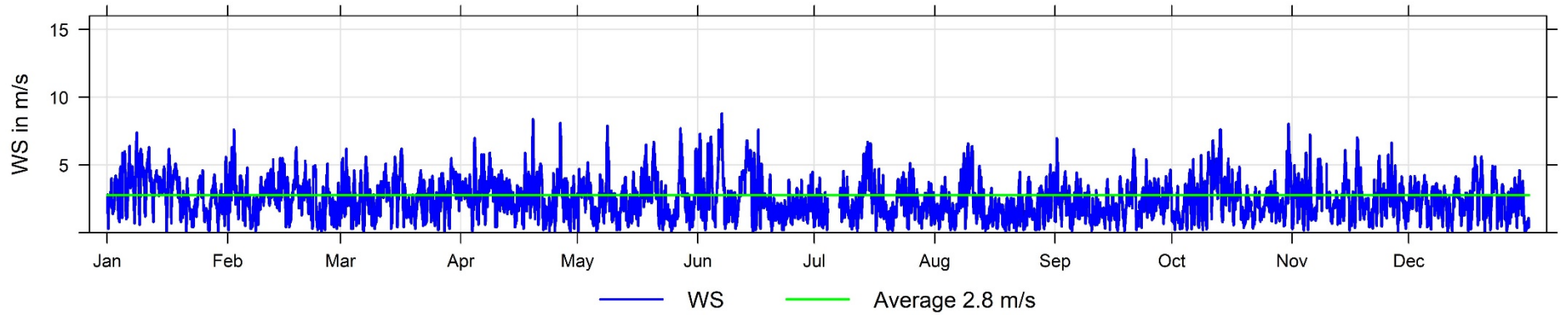
Wind Speed Frequency Distribution of 1-hr Averages - Esterhazy

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (m/s)	MAXIMUM VALUES				Operational time (%)
		0 to 2 (m/s)	2 to 4 (m/s)	4 to 6 (m/s)	6 to 8 (m/s)	8 to 10 (m/s)	> 10 (m/s)		24-hr (m/s)	Date	1-hr (m/s)	Date	
January 2020	744	29.8%	43.5%	24.9%	1.7%	0.0%	0.0%	3.0	5.0	Jan 11	7.4	Jan 08 14:00	100.0%
February 2020	696	33.2%	51.4%	13.8%	1.6%	0.0%	0.0%	2.6	5.0	Feb 02	7.6	Feb 02 15:00	100.0%
March 2020	740	35.7%	48.4%	15.4%	0.5%	0.0%	0.0%	2.6	5.0	Mar 16	6.2	Mar 16 18:00	99.5%
April 2020	720	31.8%	52.2%	13.8%	1.8%	0.4%	0.0%	2.8	4.6	Apr 26	8.4	Apr 19 14:00	100.0%
May 2020	744	40.9%	44.8%	10.6%	3.8%	0.0%	0.0%	2.6	5.3	May 27	7.9	May 08 18:00	100.0%
June 2020	720	43.2%	35.6%	13.8%	7.1%	0.4%	0.0%	2.7	5.9	Jun 06	8.8	Jun 07 05:00	100.0%
July 2020	675	46.2%	44.4%	7.9%	1.5%	0.0%	0.0%	2.3	4.8	Jul 14	6.7	Jul 14 18:00	90.7%
August 2020	741	58.4%	34.1%	5.8%	1.6%	0.0%	0.0%	2.0	4.5	Aug 10	6.6	Aug 09 14:00	99.6%
September 2020	718	46.9%	44.8%	7.8%	0.4%	0.0%	0.0%	2.2	3.9	Sep 21	7.0	Sep 01 11:00	99.7%
October 2020	743	41.6%	42.0%	13.6%	2.7%	0.1%	0.0%	2.6	5.1	Oct 13	8.0	Oct 31 02:00	99.9%
November 2020	677	42.7%	43.6%	11.8%	1.9%	0.0%	0.0%	2.5	4.0	Nov 17	7.3	Nov 05 15:00	94.0%
December 2020	744	42.7%	50.3%	7.0%	0.0%	0.0%	0.0%	2.3	3.9	Dec 19	5.6	Dec 19 17:00	100.0%
Annual	8662	41.1%	44.6%	12.2%	2.1%	0.1%	0.0%	2.5	5.9	Jun 06	8.8	Jun 07 05:00	98.6%

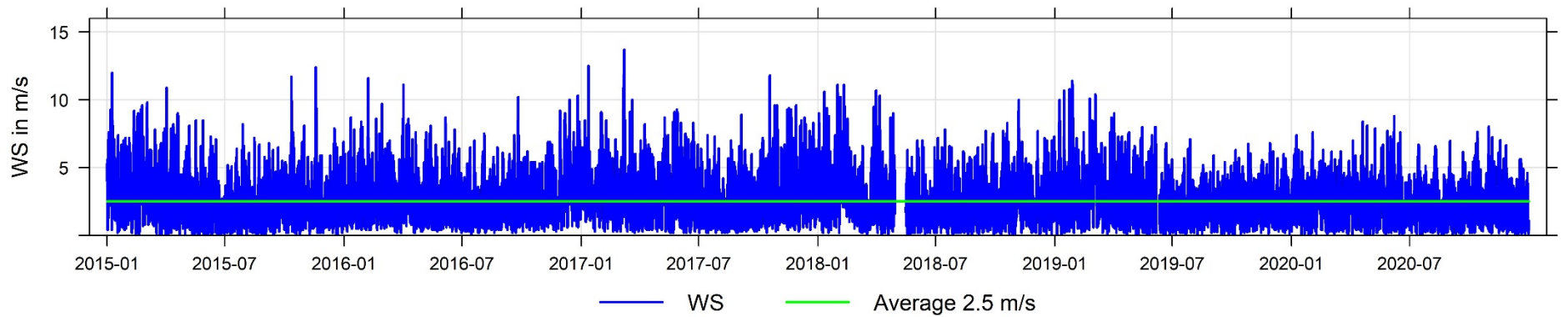
Wind Speed and Wind Direction Frequency Distribution at Esterhazy

Direction	Number of Readings	% of wind speed range (m/s)						Total %
		0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	
N	400	0.1%	0.5%	1.3%	2.2%	0.4%	0.1%	4.6%
NNE	243	0.2%	0.6%	1.0%	1.0%	0.0%	0.0%	2.8%
NE	207	0.1%	0.8%	1.1%	0.5%	0.0%	0.0%	2.4%
ENE	269	0.2%	0.8%	1.8%	0.3%	0.0%	0.0%	3.1%
E	394	0.3%	1.1%	2.4%	0.7%	0.0%	0.0%	4.5%
ESE	587	0.3%	0.9%	2.4%	3.0%	0.1%	0.0%	6.7%
SE	388	0.3%	0.8%	1.6%	1.6%	0.1%	0.0%	4.4%
SSE	298	0.2%	0.8%	1.3%	1.0%	0.1%	0.0%	3.4%
S	264	0.3%	1.0%	1.1%	0.5%	0.1%	0.0%	3.0%
SSW	321	0.3%	0.9%	1.6%	0.8%	0.0%	0.0%	3.7%
SW	728	0.2%	1.1%	4.1%	2.8%	0.0%	0.0%	8.3%
WSW	1163	0.2%	0.8%	6.3%	5.9%	0.0%	0.0%	13.3%
W	776	0.2%	0.5%	3.0%	5.0%	0.2%	0.0%	8.9%
WNW	1045	0.1%	0.4%	2.2%	7.3%	1.3%	0.7%	11.9%
NW	1216	0.1%	0.3%	2.0%	6.9%	2.4%	2.1%	13.9%
NNW	462	0.1%	0.4%	1.5%	2.9%	0.4%	0.1%	5.3%
Total	8,761	41.1%	44.6%	12.2%	2.1%	0.1%	0.0%	100.0%

2020 Hourly Readings of Wind Speed (in m/s) at Esterhazy



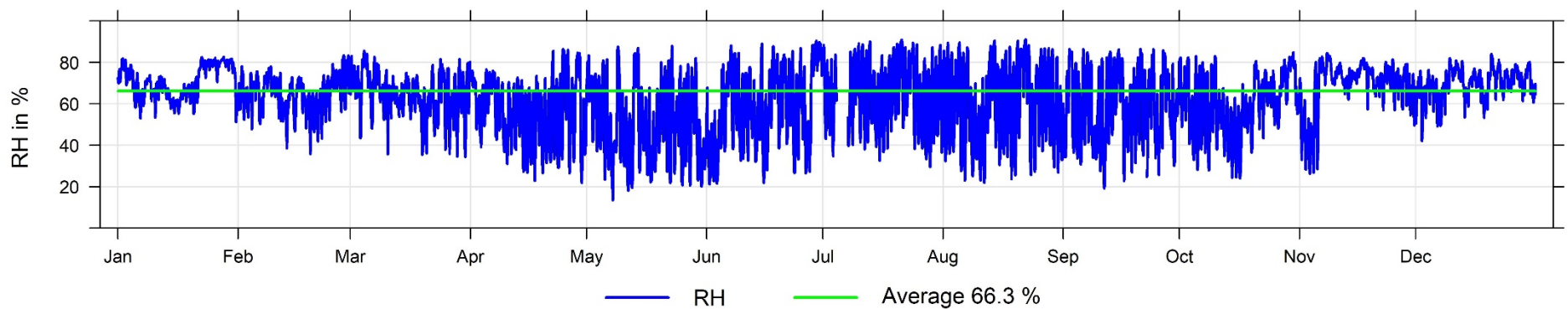
2015 to 2020 Hourly Readings of Wind Speed (in m/s) at Esterhazy



Relative Humidity (RH) Frequency Distribution at Esterhazy

Month	Monthly Average (%)	Maximum Values				Operational time (%)
		24-hr (%)	Date	1-hr (%)	Date	
January 2020	70.8	80.6	Jan 28	82.6	Jan 28 08:00	100.0%
February 2020	64.8	75.4	Feb 29	83.4	Feb 28 08:00	100.0%
March 2020	64.4	81.4	Mar 04	85.7	Mar 04 14:00	99.5%
April 2020	56.5	76.4	Apr 28	86.4	Apr 24 22:00	100.0%
May 2020	50.1	75.3	May 13	87.9	May 23 01:00	100.0%
June 2020	58.6	84.7	Jun 29	90.4	Jun 29 07:00	100.0%
July 2020	65.4	78.1	Jul 23	91.0	Jul 21 08:00	90.7%
August 2020	60.5	81.0	Aug 21	91.0	Aug 22 08:00	99.6%
September 2020	59.3	76.6	Sep 15	86.5	Sep 20 23:00	99.7%
October 2020	59.9	80.0	Oct 30	84.9	Oct 30 10:00	99.9%
November 2020	68.6	82.8	Nov 08	84.5	Nov 08 03:00	99.7%
December 2020	69.7	78.3	Dec 20	84.0	Dec 20 13:00	100.0%
	AVERAGE 62.4	MAXIMUM VALUES				
		84.7	Jun 29	91.0	Aug 22 08:00	99.1%

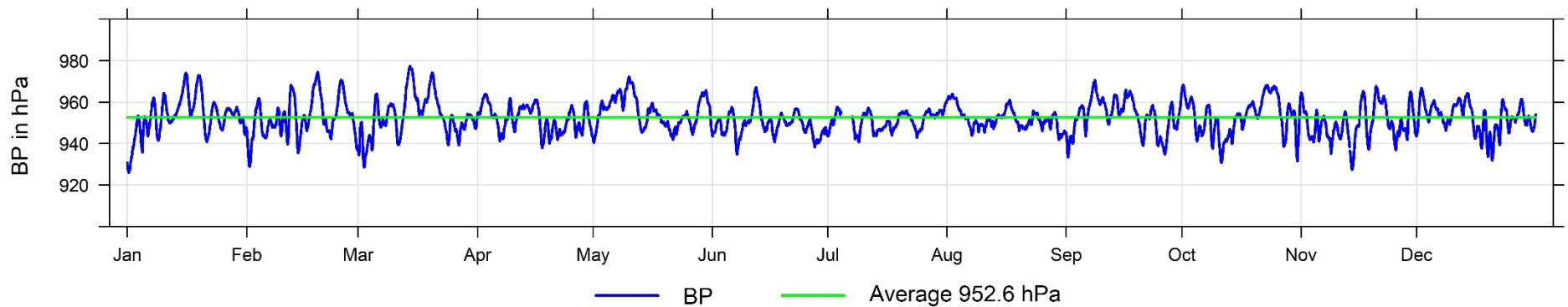
2020 Hourly Readings of Relative Humidity (in %) at Esterhazy



Barometric Pressure (BP) Frequency Distribution at Esterhazy

Month	Monthly Average (hPa)	Maximum Values				Operational time (%)
		24-hr (hPa)	Date	1-hr (hPa)	Date	
January 2020	953.2	971.7	Jan 19	974.1	Jan 16 05:00	100.0%
February 2020	952.7	972.0	Feb 19	974.4	Feb 19 12:00	100.0%
March 2020	953.4	976.1	Mar 14	977.5	Mar 14 11:00	99.5%
April 2020	952.0	962.0	Apr 03	964.0	Apr 03 03:00	100.0%
May 2020	955.4	970.5	May 10	972.3	May 10 09:00	100.0%
June 2020	949.4	965.0	Jun 12	967.2	Jun 12 08:00	100.0%
July 2020	951.1	958.6	Jul 31	961.0	Jul 31 00:00	90.7%
August 2020	951.9	962.8	Aug 02	964.1	Aug 02 10:00	99.6%
September 2020	953.5	967.8	Sep 08	970.8	Sep 08 10:00	99.7%
October 2020	953.1	966.5	Oct 23	968.4	Oct 01 08:00	99.9%
November 2020	949.6	965.2	Nov 20	967.8	Nov 20 12:00	99.7%
December 2020	952.6	964.3	Dec 02	966.9	Dec 02 07:00	100.0%
	AVERAGE 952.3	MAXIMUM VALUES 976.1 Mar 14 977.5 Mar 14 11:00				99.1%

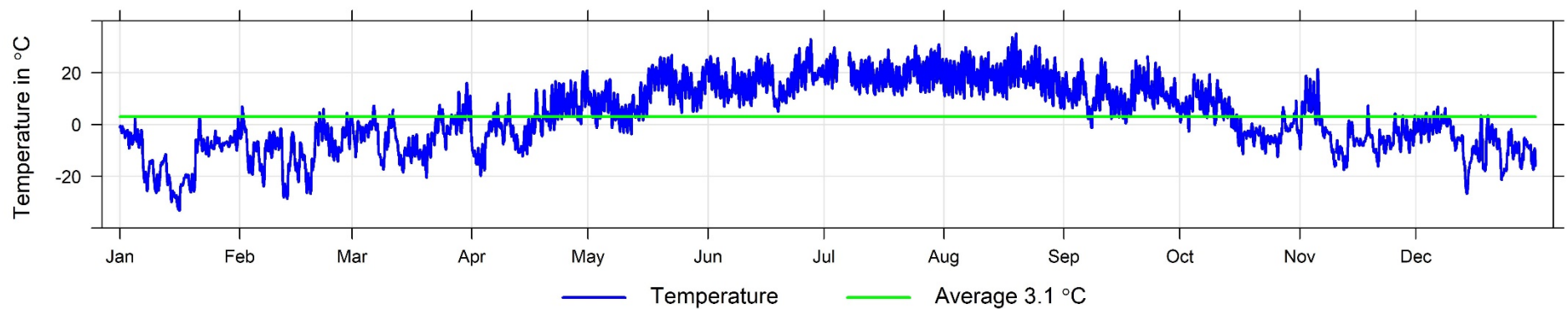
2020 Hourly Readings of Barometric Pressure (in hPa) at Esterhazy



Temperature (ET) Frequency Distribution at Esterhazy

Month	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)
		24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date	
January 2020	-12.8	-1.7	Jan 01	2.5	Jan 21 16:00	-28.7	Jan 15	-33.3	Jan 16 10:00	100.0%
February 2020	-9.9	0.3	Feb 01	7.0	Feb 01 15:00	-24.8	Feb 12	-28.6	Feb 13 06:00	100.0%
March 2020	-4.2	8.0	Mar 30	16.1	Mar 30 16:00	-13.5	Mar 13	-20.5	Mar 20 07:00	99.5%
April 2020	0.9	14.5	Apr 30	20.8	Apr 30 18:00	-13.3	Apr 03	-19.8	Apr 03 07:00	100.0%
May 2020	11.4	20.0	May 19	26.9	May 22 16:00	1.9	May 09	-3.6	May 12 06:00	100.0%
June 2020	17.0	25.0	Jun 27	32.9	Jun 27 15:00	8.4	Jun 18	5.1	Jun 19 04:00	100.0%
July 2020	19.9	24.7	Jul 24	30.9	Jul 30 17:00	16.4	Jul 19	11.2	Jul 21 06:00	90.7%
August 2020	18.8	24.3	Aug 19	35.1	Aug 19 16:00	10.9	Aug 31	6.4	Aug 31 06:00	99.6%
September 2020	11.8	18.7	Sep 05	26.3	Sep 22 15:00	4.6	Sep 08	-1.3	Sep 08 07:00	99.7%
October 2020	1.9	13.8	Oct 05	19.5	Oct 08 17:00	-7.8	Oct 26	-12.4	Oct 26 07:00	99.9%
November 2020	-3.7	10.5	Nov 02	21.3	Nov 05 15:00	-14.8	Nov 12	-17.4	Nov 12 09:00	99.7%
December 2020	-7.0	2.2	Dec 08	6.8	Dec 06 16:00	-21.0	Dec 14	-26.7	Dec 14 04:00	100.0%
	AVERAGE 3.7	MAXIMUM VALUES				MINIMUM VALUES				99.1%
		25.0	Jun 27	35.1	Aug 19 16:00	-28.7	Jan 15	-33.3	Jan 16 10:00	

2020 Hourly Temperature Readings (in °C) at Esterhazy



APPENDIX C

Glen Ewen Station: Continuous Monitoring Data

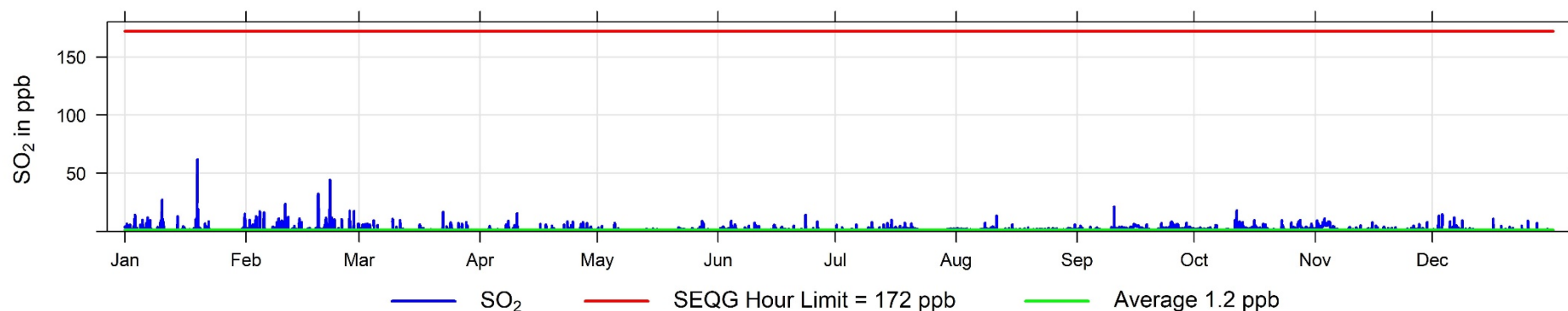
Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above SEQG & AAAQG			
		24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	Annual
Sulphur Dioxide SO ₂ measured in ppb	1.4	9.3	Jan 19	62.0	Jan 19 14:00	97.5%	0	-	0	0
Nitrogen Dioxide NO ₂ measured in ppb	1.6	5.4	Jan 22	20.7	Feb 07 08:00	97.4%	0	-	-	0
Oxides of Nitrogen NO _x measured in ppb	1.9	6.0	Jan 22	24.3	Feb 07 08:00	97.4%	-	-	-	-
Nitric Oxide NO measured in ppb	0.3	1.5	Dec 17	9.6	Dec 17 09:00	97.4%	-	-	-	-
Ozone O ₃ measured in ppb	26.7	40.0	Apr 08	59.5	Jun 14 23:00	97.5%	0	0	-	-
Hydrogen Sulphide H ₂ S measured in ppb	0.3	1.1	Aug 01	5.1	Oct 25 02:00	97.5%	0	-	0	-

Sulphur Dioxide (SO₂) Frequency Distribution at Glen Ewen

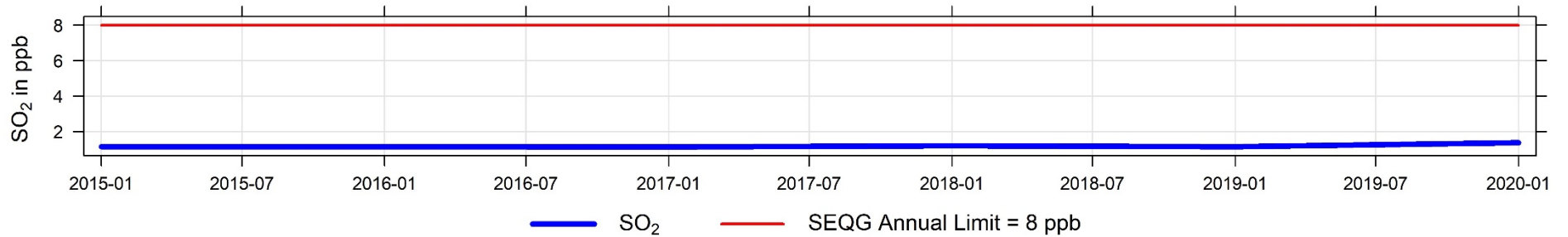
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 48ppb	1-hr 172ppb
January 2020	712	69.5%	23.5%	4.1%	2.8%	0.1%	0.0%	1.5	9.3	Jan 19	62.0	Jan 19 14:00	100.0%	0	0
February 2020	664	52.3%	36.7%	7.2%	3.8%	0.0%	0.0%	2.2	7.2	Feb 22	44.2	Feb 22 12:00	99.9%	0	0
March 2020	696	78.3%	18.1%	3.3%	0.3%	0.0%	0.0%	1.0	2.1	Mar 09	16.7	Mar 22 12:00	99.2%	0	0
April 2020	689	83.6%	13.9%	2.3%	0.1%	0.0%	0.0%	0.8	1.8	Apr 10	15.5	Apr 10 11:00	100.0%	0	0
May 2020	697	65.0%	34.4%	0.6%	0.0%	0.0%	0.0%	1.0	2.2	May 27	8.6	May 27 21:00	98.1%	0	0
June 2020	678	47.1%	50.6%	2.1%	0.3%	0.0%	0.0%	1.3	3.1	Jun 04	14.1	Jun 23 10:00	100.0%	0	0
July 2020	539	42.3%	55.5%	2.2%	0.0%	0.0%	0.0%	1.4	2.8	Jul 15	9.8	Jul 15 10:00	75.7%	0	0
August 2020	711	38.5%	60.8%	0.6%	0.1%	0.0%	0.0%	1.2	2.6	Aug 08	13.3	Aug 11 09:00	100.0%	0	0
September 2020	672	31.8%	63.7%	4.3%	0.1%	0.0%	0.0%	2.0	4.5	Sep 15	21.1	Sep 10 11:00	98.6%	0	0
October 2020	712	32.2%	62.6%	4.9%	0.3%	0.0%	0.0%	1.8	4.0	Oct 11	17.8	Oct 11 21:00	100.0%	0	0
November 2020	677	56.6%	36.8%	6.2%	0.4%	0.0%	0.0%	1.6	7.1	Nov 03	10.8	Nov 03 10:00	98.9%	0	0
December 2020	704	83.4%	13.6%	2.3%	0.7%	0.0%	0.0%	0.7	2.3	Dec 03	14.6	Dec 03 13:00	100.0%	0	0
Annual	8151	56.7%	39.2%	3.3%	0.8%	0.0%	0.0%	1.4	9.3	Jan 19	62.0	Jan 19 14:00	97.5%	0	0

SEQG Objectives: Annual: 8ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

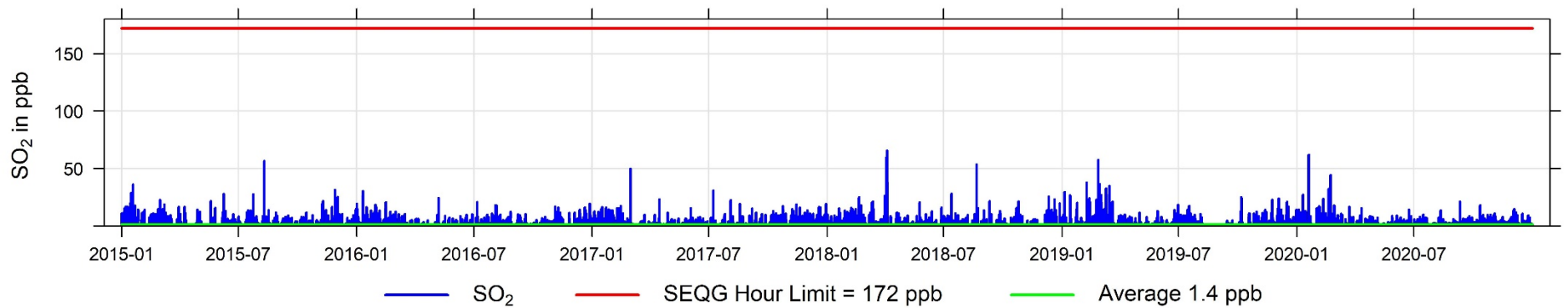
2020 Hourly Concentration Readings of SO₂ (in ppb) at Glen Ewen



2015 to 2020 Annual Concentration Readings of SO₂ (in ppb) at Glen Ewen



2015 to 2020 Hourly Concentration Readings of SO₂ (in ppb) at Glen Ewen

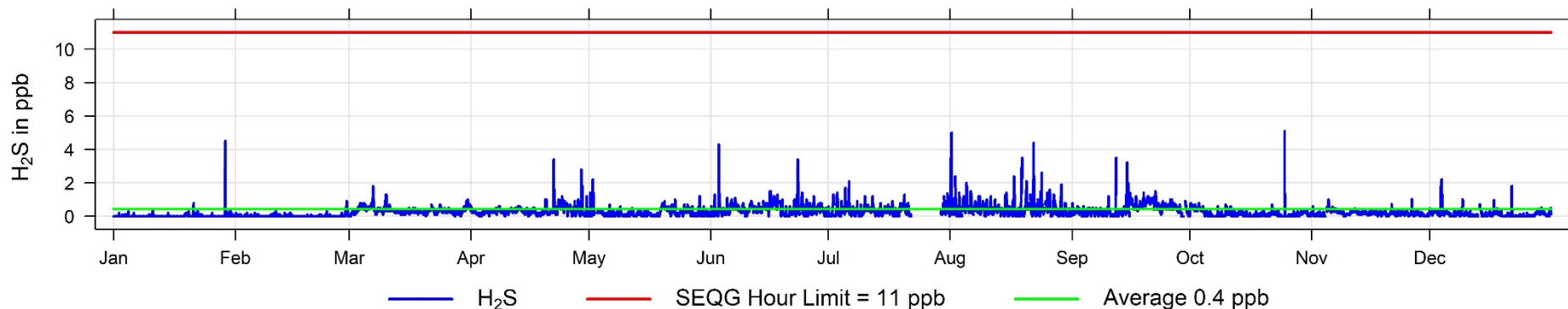


Hydrogen Sulphide (H₂S) Frequency Distribution at Glen Ewen

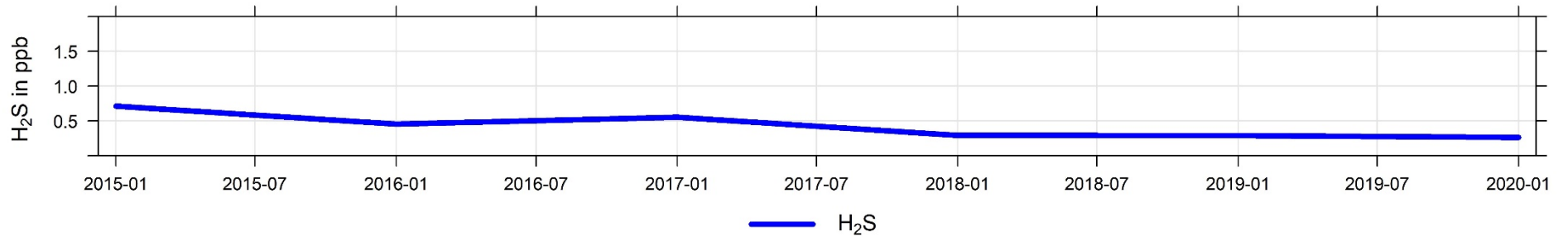
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 3.6ppb	1-hr 11ppb
January 2020	712	99.7%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0	0.4	Jan 29	4.5	Jan 29 12:00	100.0%	0	0
February 2020	664	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.3	Feb 29	0.9	Feb 13 12:00	99.9%	0	0
March 2020	696	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.4	0.7	Mar 31	1.8	Mar 07 02:00	99.2%	0	0
April 2020	689	98.5%	1.3%	0.1%	0.0%	0.0%	0.0%	0.3	0.7	Apr 24	3.4	Apr 22 02:00	100.0%	0	0
May 2020	694	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	May 20	2.2	May 01 00:00	97.7%	0	0
June 2020	678	95.0%	4.7%	0.3%	0.0%	0.0%	0.0%	0.4	1.0	Jun 16	4.3	Jun 03 01:00	100.0%	0	0
July 2020	539	95.4%	4.6%	0.0%	0.0%	0.0%	0.0%	0.4	0.6	Jul 30	2.1	Jul 06 06:00	75.7%	0	0
August 2020	711	86.6%	12.7%	0.6%	0.1%	0.0%	0.0%	0.5	1.1	Aug 01	5.0	Aug 01 07:00	100.0%	0	0
September 2020	671	93.4%	6.3%	0.3%	0.0%	0.0%	0.0%	0.5	1.0	Sep 20	3.5	Sep 12 06:00	98.5%	0	0
October 2020	712	99.6%	0.3%	0.0%	0.1%	0.0%	0.0%	0.2	0.6	Oct 01	5.1	Oct 25 02:00	100.0%	0	0
November 2020	677	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Nov 05	1.0	Nov 26 11:00	98.9%	0	0
December 2020	704	98.9%	1.1%	0.0%	0.0%	0.0%	0.0%	0.1	0.4	Dec 03	2.2	Dec 04 01:00	100.0%	0	0
Annual	8147	97.1%	2.8%	0.1%	0.0%	0.0%	0.0%	0.3	MAXIMUM VALUES				97.5%	0	0

SEQG Objectives: 24-Hr: 3.6ppb, 1-Hr: 11ppb

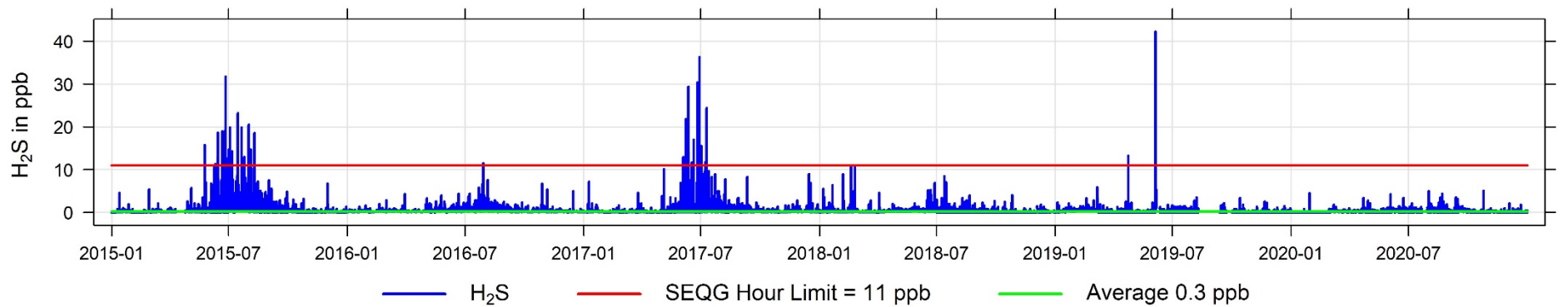
2020 Hourly Concentration Readings of H₂S (in ppb) at Glen Ewen



2015 to 2020 Annual Concentration Readings of H₂S (in ppb) at Glen Ewen



2015 to 2020 Hourly Concentration Readings of H₂S (in ppb) at Glen Ewen

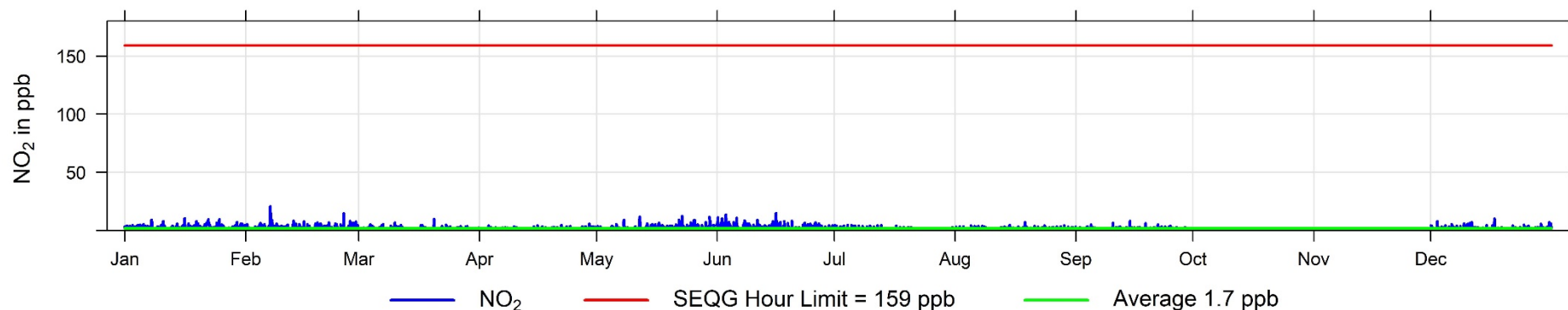


Nitrogen Dioxide (NO₂) Frequency Distribution at Glen Ewen

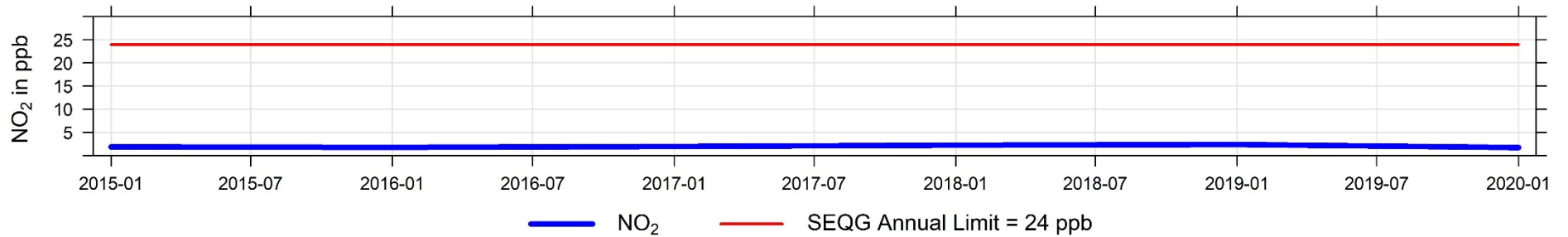
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 106ppb	1-hr 159ppb
January 2020	712	93.5%	6.5%	0.0%	0.0%	0.0%	0.0%	2.7	5.4	Jan 22	10.4	Jan 16 09:00	100.0%	0	0
February 2020	663	92.0%	7.5%	0.5%	0.0%	0.0%	0.0%	2.6	4.5	Feb 07	20.7	Feb 07 08:00	99.9%	0	0
March 2020	697	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	1.6	2.8	Mar 10	9.9	Mar 20 08:00	99.3%	0	0
April 2020	689	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	1.3	2.2	Apr 29	5.5	Apr 29 03:00	100.0%	0	0
May 2020	697	93.3%	6.7%	0.0%	0.0%	0.0%	0.0%	2.2	3.7	May 22	12.3	May 22 23:00	98.1%	0	0
June 2020	677	87.1%	12.9%	0.0%	0.0%	0.0%	0.0%	2.5	4.7	Jun 03	14.9	Jun 16 01:00	99.9%	0	0
July 2020	531	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7	1.6	Jul 03	4.7	Jul 04 10:00	74.6%	0	0
August 2020	711	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.9	1.7	Aug 13	7.1	Aug 18 22:00	100.0%	0	0
September 2020	670	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	1.2	1.9	Sep 22	8.2	Sep 14 20:00	98.3%	0	0
October 2020	712	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.6	1.6	Oct 21	5.9	Oct 21 19:00	100.0%	0	0
November 2020	675	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	1.5	2.8	Nov 30	5.4	Nov 30 22:00	98.6%	0	0
December 2020	702	97.3%	2.7%	0.0%	0.0%	0.0%	0.0%	1.4	4.0	Dec 10	10.0	Dec 17 09:00	99.7%	0	0
Annual	8136	96.8%	3.2%	0.0%	0.0%	0.0%	0.0%	1.6	5.4	Jan 22	20.7	Feb 07 08:00	97.4%	0	0

SEQG Objectives: Annual: 24ppb, 24-Hr: 106ppb, 1-Hr: 159ppb

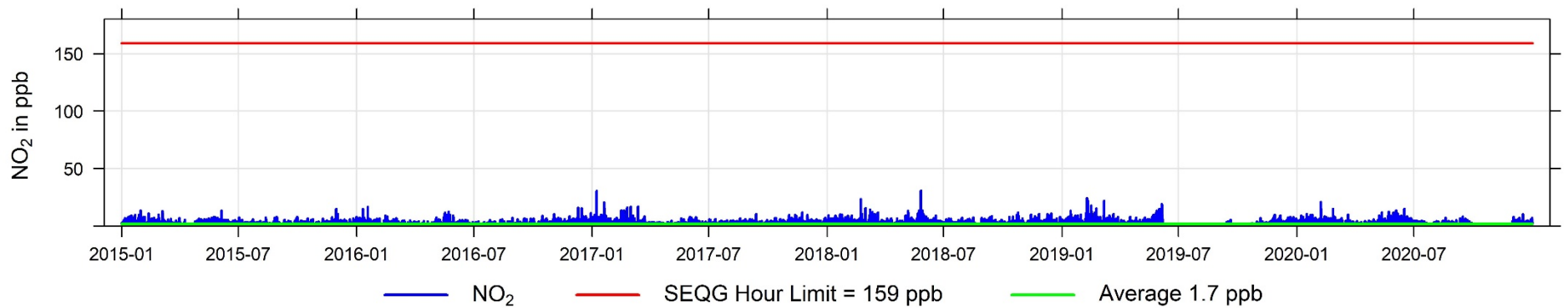
2020 Hourly Concentration Readings of NO₂ (in ppb) at Glen Ewen



2015 to 2020 Annual Concentration Readings of NO₂ (in ppb) at Glen Ewen



2015 to 2020 Hourly Concentration Readings of NO₂ (in ppb) at Glen Ewen

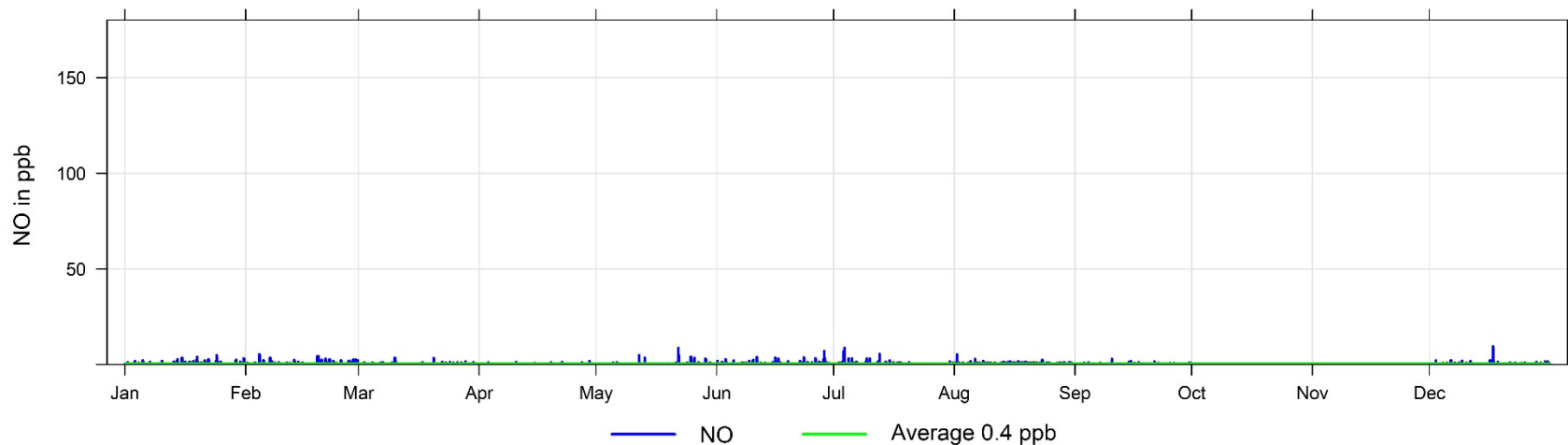


Nitric Oxide (NO) Frequency Distribution at Glen Ewen

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date	
January 2020	712	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	1.1	Jan 24	4.9	Jan 24 13:00	100.0%
February 2020	663	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.4	1.0	Feb 19	5.4	Feb 04 13:00	99.9%
March 2020	697	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	Mar 10	3.6	Mar 10 08:00	99.3%
April 2020	689	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.4	Apr 10	1.7	Apr 29 08:00	100.0%
May 2020	697	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3	1.0	May 25	8.6	May 22 03:00	98.1%
June 2020	677	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.4	1.5	Jun 28	7.0	Jun 28 14:00	99.9%
July 2020	531	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.4	1.5	Jul 03	8.7	Jul 03 19:00	74.6%
August 2020	711	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.6	0.9	Aug 15	5.3	Aug 01 17:00	100.0%
September 2020	670	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.6	Sep 10	2.9	Sep 10 11:00	98.3%
October 2020	712	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Oct 03	1.6	Oct 23 11:00	100.0%
November 2020	675	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	Nov 18	2.5	Nov 18 13:00	98.6%
December 2020	702	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.3	1.5	Dec 17	9.6	Dec 17 09:00	99.7%
Annual	8136	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3	MAXIMUM VALUES				97.4%
									1.5	Dec 17	9.6	Dec 17 09:00	

SEQG Objectives: none

2020 Hourly Concentration Readings of NO (in ppb) at Glen Ewen

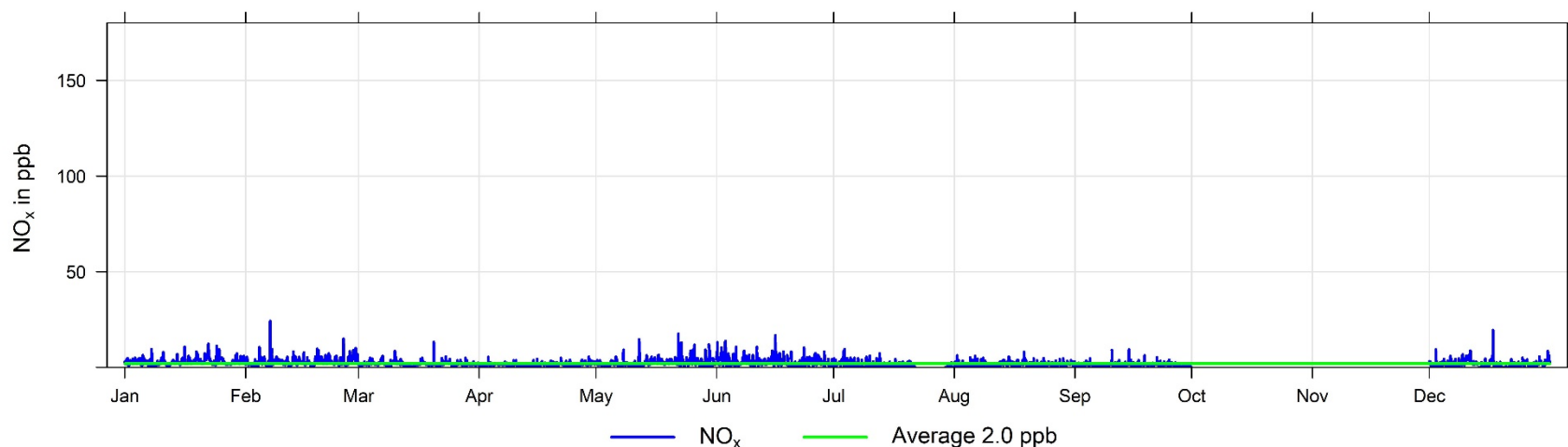


Oxides of Nitrogen (NO_x) Frequency Distribution at Glen Ewen

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr (ppb)	Date	
January 2020	712	90.4%	9.6%	0.0%	0.0%	0.0%	0.0%	3.0	6.0	Jan 22	12.3	Jan 22 10:00	100.0%
February 2020	663	86.7%	12.7%	0.6%	0.0%	0.0%	0.0%	3.0	5.1	Feb 07	24.3	Feb 07 08:00	99.9%
March 2020	697	98.1%	1.9%	0.0%	0.0%	0.0%	0.0%	1.8	3.3	Mar 10	13.3	Mar 20 08:00	99.3%
April 2020	689	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	1.4	2.4	Apr 29	5.8	Apr 29 03:00	100.0%
May 2020	697	91.1%	8.8%	0.1%	0.0%	0.0%	0.0%	2.4	4.6	May 22	17.7	May 22 03:00	98.1%
June 2020	677	83.2%	16.5%	0.3%	0.0%	0.0%	0.0%	2.9	5.1	Jun 16	16.7	Jun 16 01:00	99.9%
July 2020	531	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	1.0	3.0	Jul 03	9.6	Jul 03 19:00	74.6%
August 2020	711	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%	1.5	2.4	Aug 18	8.1	Aug 18 22:00	100.0%
September 2020	670	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	1.2	2.0	Sep 22	9.4	Sep 14 20:00	98.3%
October 2020	712	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%	0.8	2.0	Oct 30	6.4	Oct 21 21:00	100.0%
November 2020	675	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	1.5	2.8	Nov 18	6.6	Nov 18 14:00	98.6%
December 2020	702	96.6%	3.1%	0.3%	0.0%	0.0%	0.0%	1.7	4.2	Dec 11	19.5	Dec 17 09:00	99.7%
Annual	8136	95.1%	4.8%	0.1%	0.0%	0.0%	0.0%	1.9	6.0	MAXIMUM VALUES			97.4%

SEQG Objectives: none

2020 Hourly Concentration Readings of NO_x (in ppb) at Glen Ewen

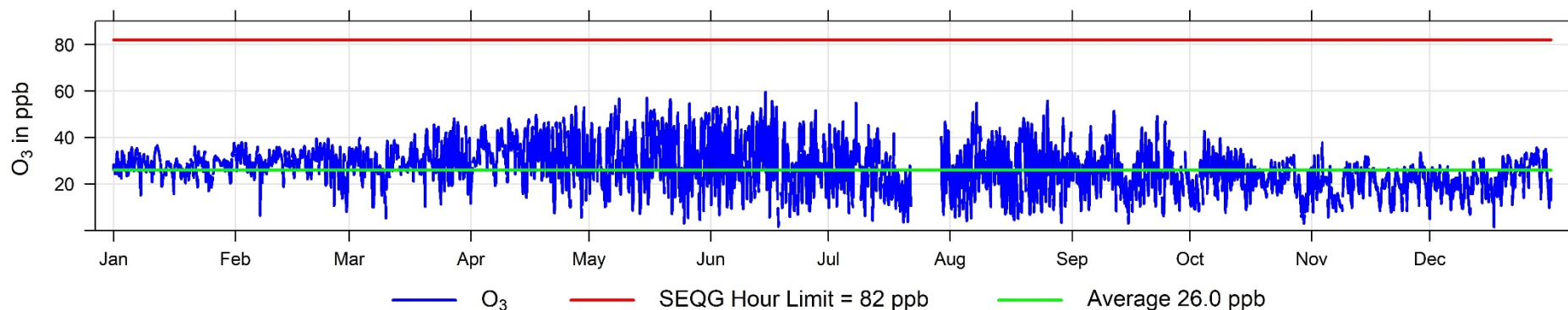


Ozone (O₃) Frequency Distribution at Glen Ewen

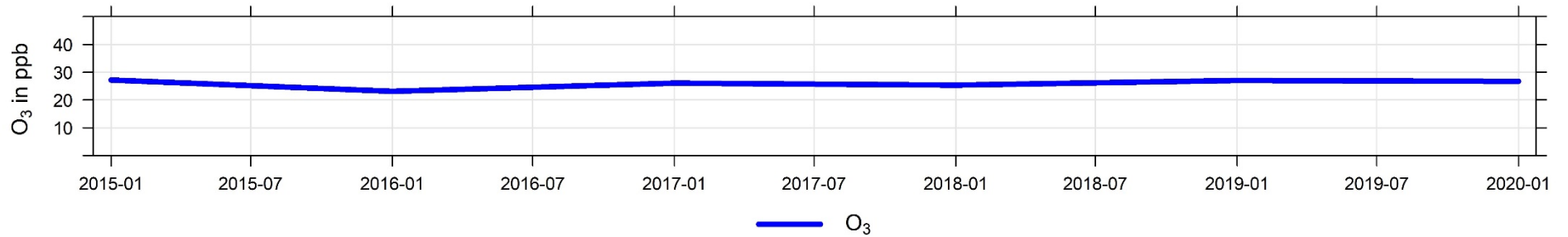
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 10 (ppb)	10 to 20 (ppb)	20 to 40 (ppb)	40 to 60 (ppb)	60 to 76 (ppb)	> 76 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		8-hr 63ppb	1-hr 82ppb
January 2020	712	0.0%	2.8%	97.2%	0.0%	0.0%	0.0%	28.0	34.0	Jan 31	37.7	Jan 31 17:00	100.0%	0	0
February 2020	664	0.6%	4.7%	94.7%	0.0%	0.0%	0.0%	29.4	33.8	Feb 02	39.4	Feb 24 16:00	99.9%	0	0
March 2020	697	0.6%	8.5%	83.4%	7.6%	0.0%	0.0%	29.4	34.5	Mar 12	48.1	Mar 27 17:00	99.3%	0	0
April 2020	689	1.5%	6.4%	64.3%	27.9%	0.0%	0.0%	33.3	40.0	Apr 08	53.3	Apr 27 17:00	100.0%	0	0
May 2020	697	2.7%	17.4%	50.6%	29.3%	0.0%	0.0%	31.2	38.9	May 18	57.0	May 15 19:00	98.1%	0	0
June 2020	678	4.7%	19.5%	51.0%	24.8%	0.0%	0.0%	29.5	39.3	Jun 14	59.5	Jun 14 23:00	100.0%	0	0
July 2020	539	8.2%	28.0%	57.0%	6.9%	0.0%	0.0%	24.9	35.1	Jul 08	54.9	Jul 07 00:00	75.7%	0	0
August 2020	711	7.9%	26.3%	53.7%	12.1%	0.0%	0.0%	25.8	32.2	Aug 25	55.7	Aug 25 18:00	100.0%	0	0
September 2020	672	4.8%	28.7%	60.1%	6.4%	0.0%	0.0%	24.4	35.6	Sep 11	51.4	Sep 11 16:00	98.6%	0	0
October 2020	712	6.0%	29.5%	63.9%	0.6%	0.0%	0.0%	22.4	29.0	Oct 06	42.7	Oct 04 16:00	100.0%	0	0
November 2020	675	5.0%	41.9%	53.0%	0.0%	0.0%	0.0%	20.1	25.5	Nov 09	37.7	Nov 03 16:00	98.6%	0	0
December 2020	704	2.3%	35.9%	61.8%	0.0%	0.0%	0.0%	22.2	31.4	Dec 28	35.6	Dec 28 06:00	100.0%	0	0
Annual	8150	3.7%	20.8%	65.9%	9.6%	0.0%	0.0%	26.7	MAXIMUM VALUES				97.5%	0	0

SEQG Objectives: 8-Hr: 63ppb, 1-Hr: 82ppb

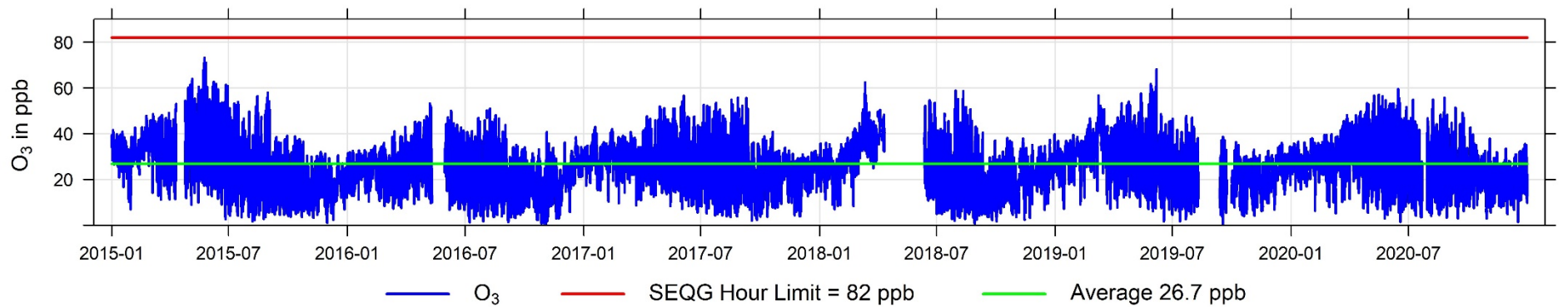
2020 Hourly Concentration Readings of O₃ (in ppb) at Glen Ewen



2015 to 2020 Annual Concentration Readings of O₃ (in ppb) at Glen Ewen



2015 to 2020 Hourly Concentration Readings of O₃ (in ppb) at Glen Ewen



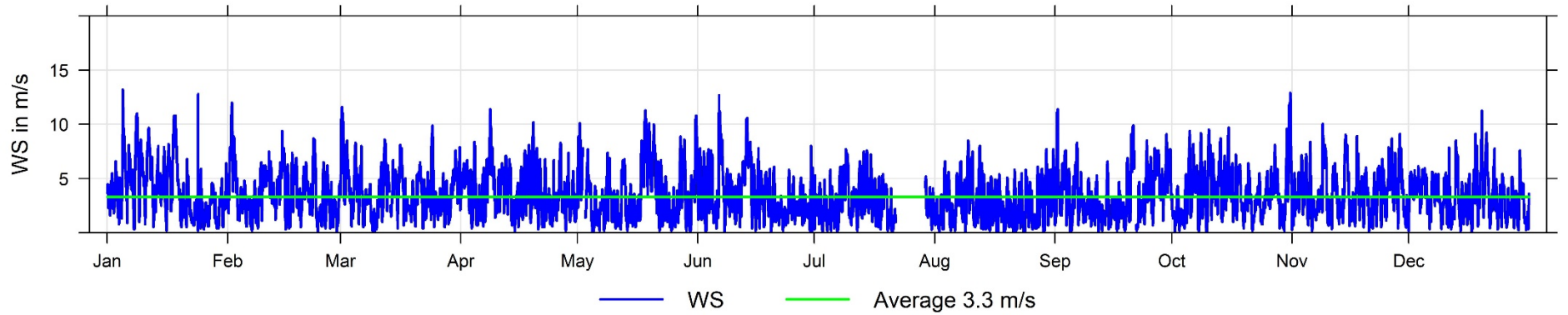
Wind Speed Frequency Distribution of 1-hr Averages - Glen Ewen

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (m/s)	MAXIMUM VALUES				Operational time (%)
		0 to 2 (m/s)	2 to 4 (m/s)	4 to 6 (m/s)	6 to 8 (m/s)	8 to 10 (m/s)	> 10 (m/s)		24-hr (m/s)	Date	1-hr (m/s)	Date	
January 2020	744	21.8%	32.7%	24.5%	12.5%	6.3%	2.3%	4.1	9.0	Jan 18	13.2	Jan 04 00:00	100.0%
February 2020	695	24.2%	34.5%	26.3%	12.4%	1.9%	0.7%	3.7	7.9	Feb 02	12.0	Feb 02 02:00	99.9%
March 2020	739	22.7%	35.2%	28.3%	9.3%	3.2%	1.2%	3.8	8.2	Mar 01	11.6	Mar 01 10:00	99.3%
April 2020	720	23.8%	34.9%	25.7%	12.8%	2.4%	0.6%	3.8	7.6	Apr 08	11.4	Apr 08 14:00	100.0%
May 2020	730	32.3%	30.3%	17.0%	13.2%	4.9%	2.3%	3.7	8.3	May 18	11.3	May 18 13:00	98.1%
June 2020	720	32.4%	31.0%	20.7%	12.1%	2.1%	1.8%	3.5	7.5	Jun 13	12.7	Jun 06 12:00	100.0%
July 2020	562	37.4%	36.5%	19.0%	7.1%	0.0%	0.0%	2.9	5.5	Jul 09	7.7	Jul 09 03:00	75.5%
August 2020	744	43.8%	29.8%	19.8%	6.2%	0.4%	0.0%	2.7	4.8	Aug 09	8.5	Aug 09 15:00	100.0%
September 2020	711	31.6%	32.2%	20.1%	12.8%	2.8%	0.4%	3.5	6.0	Sep 27	11.4	Sep 01 16:00	98.8%
October 2020	744	26.6%	30.9%	25.7%	10.5%	4.7%	1.6%	3.8	8.7	Oct 31	12.9	Oct 31 13:00	100.0%
November 2020	717	27.2%	35.0%	22.7%	12.1%	2.8%	0.1%	3.6	6.5	Nov 09	10.0	Nov 08 21:00	99.6%
December 2020	744	27.7%	37.2%	26.9%	6.5%	1.5%	0.3%	3.4	5.6	Dec 13	11.3	Dec 19 20:00	100.0%
Annual	8570	29.3%	33.3%	23.1%	10.6%	2.7%	0.9%	3.5	9.0	Jan 18	13.2	Jan 04 00:00	97.6%

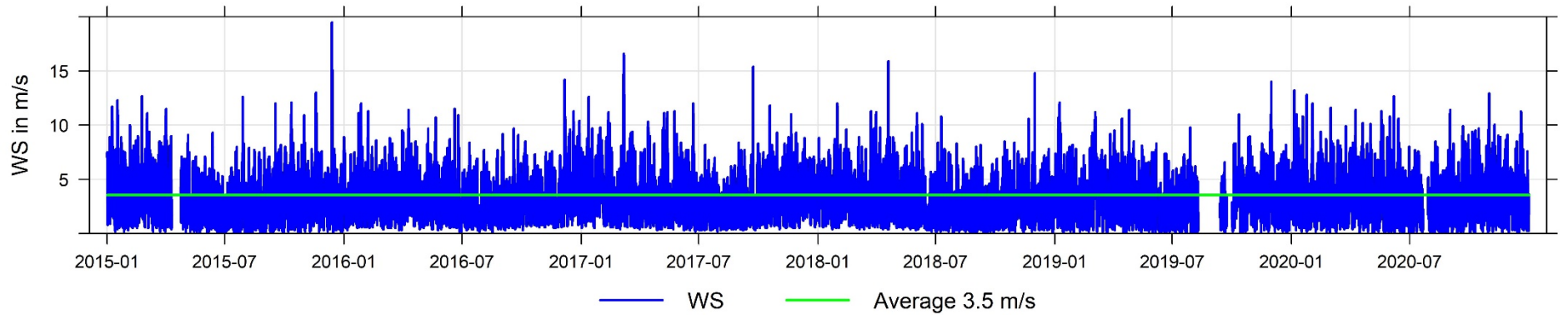
Wind Speed and Wind Direction Frequency Distribution at Glen Ewen

Direction	Number of Readings	% of wind speed range (m/s)						Total %
		0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	
N	400	0.1%	0.5%	1.3%	2.2%	0.4%	0.1%	4.6%
NNE	243	0.2%	0.6%	1.0%	1.0%	0.0%	0.0%	2.8%
NE	207	0.1%	0.8%	1.1%	0.5%	0.0%	0.0%	2.4%
ENE	269	0.2%	0.8%	1.8%	0.3%	0.0%	0.0%	3.1%
E	394	0.3%	1.1%	2.4%	0.7%	0.0%	0.0%	4.5%
ESE	587	0.3%	0.9%	2.4%	3.0%	0.1%	0.0%	6.7%
SE	388	0.3%	0.8%	1.6%	1.6%	0.1%	0.0%	4.4%
SSE	298	0.2%	0.8%	1.3%	1.0%	0.1%	0.0%	3.4%
S	264	0.3%	1.0%	1.1%	0.5%	0.1%	0.0%	3.0%
SSW	321	0.3%	0.9%	1.6%	0.8%	0.0%	0.0%	3.7%
SW	728	0.2%	1.1%	4.1%	2.8%	0.0%	0.0%	8.3%
WSW	1163	0.2%	0.8%	6.3%	5.9%	0.0%	0.0%	13.3%
W	776	0.2%	0.5%	3.0%	5.0%	0.2%	0.0%	8.9%
WNW	1045	0.1%	0.4%	2.2%	7.3%	1.3%	0.7%	11.9%
NW	1216	0.1%	0.3%	2.0%	6.9%	2.4%	2.1%	13.9%
NNW	462	0.1%	0.4%	1.5%	2.9%	0.4%	0.1%	5.3%
Total	8,761	29.3%	33.3%	23.1%	10.6%	2.7%	0.9%	100.0%

2020 Hourly Readings of Wind Speed (in m/s) at Glen Ewen



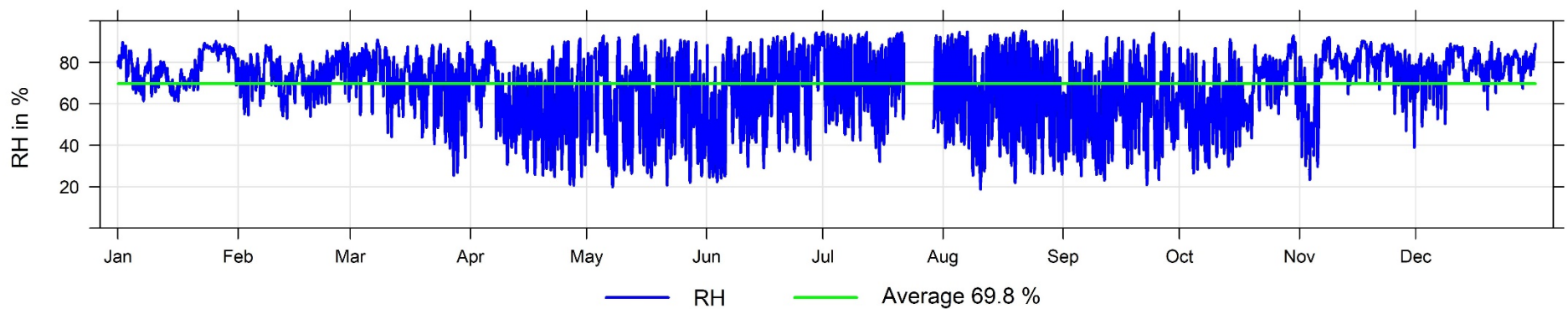
2015 to 2020 Hourly Readings of Wind Speed (in m/s) at Glen Ewen



Relative Humidity (RH) Frequency Distribution at Glen Ewen

Month	Monthly Average (%)	Maximum Values				Operational time (%)
		24-hr (%)	Date	1-hr (%)	Date	
January 2020	77.5	87.9	Jan 23	90.3	Jan 26 07:00	100.0%
February 2020	73.8	85.7	Feb 08	89.5	Feb 28 02:00	99.9%
March 2020	71.4	83.8	Mar 08	91.0	Mar 07 00:00	99.3%
April 2020	60.6	84.6	Apr 05	91.4	Apr 29 07:00	100.0%
May 2020	60.3	82.9	May 13	93.4	May 14 05:00	98.1%
June 2020	65.3	90.9	Jun 30	94.4	Jun 29 07:00	100.0%
July 2020	72.4	82.4	Jul 20	94.7	Jul 01 03:00	75.5%
August 2020	64.0	77.6	Aug 14	95.3	Aug 21 09:00	100.0%
September 2020	59.0	74.4	Sep 23	94.2	Sep 24 09:00	98.8%
October 2020	65.0	88.6	Oct 30	92.9	Oct 30 12:00	100.0%
November 2020	75.5	89.8	Nov 17	92.2	Nov 08 16:00	99.6%
December 2020	77.7	86.8	Dec 11	89.7	Dec 20 14:00	100.0%
	AVERAGE 68.5	MAXIMUM VALUES				97.6%
		90.9	Jun 30	95.3	Aug 21 09:00	

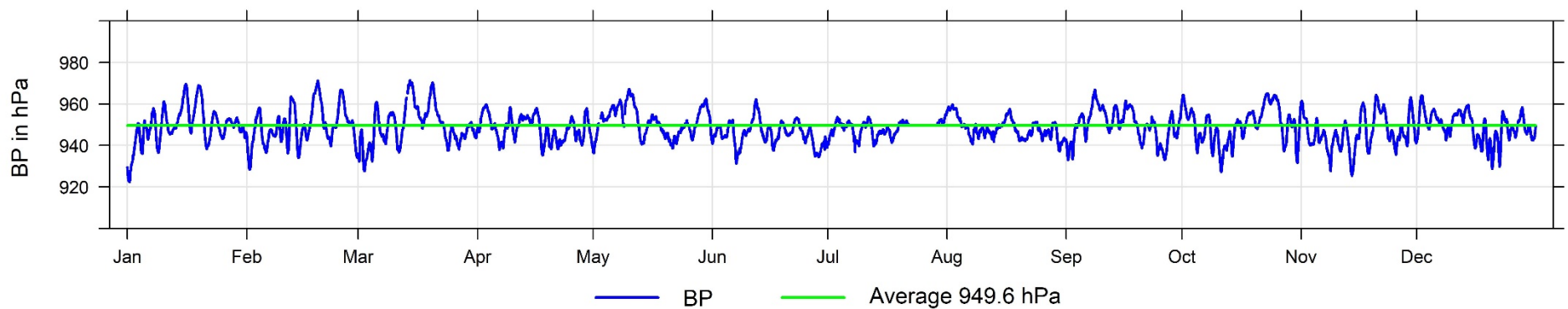
2020 Hourly Readings of Relative Humidity (in %) at Glen Ewen



Barometric Pressure (BP) Frequency Distribution at Glen Ewen

Month	Monthly Average (hPa)	Maximum Values				Operational time (%)
		24-hr (hPa)	Date	1-hr (hPa)	Date	
January 2020	949.6	967.6	Jan 19	969.6	Jan 16 05:00	100.0%
February 2020	949.5	968.8	Feb 19	971.2	Feb 19 12:00	99.9%
March 2020	949.5	969.8	Mar 14	971.4	Mar 14 11:00	99.3%
April 2020	948.2	958.0	Apr 03	959.8	Apr 03 06:00	100.0%
May 2020	951.4	965.5	May 10	967.1	May 10 09:00	98.1%
June 2020	945.6	959.9	Jun 12	962.1	Jun 12 09:00	100.0%
July 2020	948.1	953.6	Jul 31	956.5	Jul 31 00:00	75.5%
August 2020	948.0	958.3	Aug 02	959.7	Aug 02 10:00	100.0%
September 2020	950.0	964.3	Sep 08	966.9	Sep 08 11:00	98.8%
October 2020	949.8	963.0	Oct 23	965.0	Oct 23 06:00	100.0%
November 2020	946.3	961.7	Nov 20	964.4	Nov 20 12:00	99.6%
December 2020	949.0	961.7	Dec 02	964.1	Dec 02 08:00	100.0%
	AVERAGE 948.7	MAXIMUM VALUES 969.8 Mar 14 971.4 Mar 14 11:00				97.6%

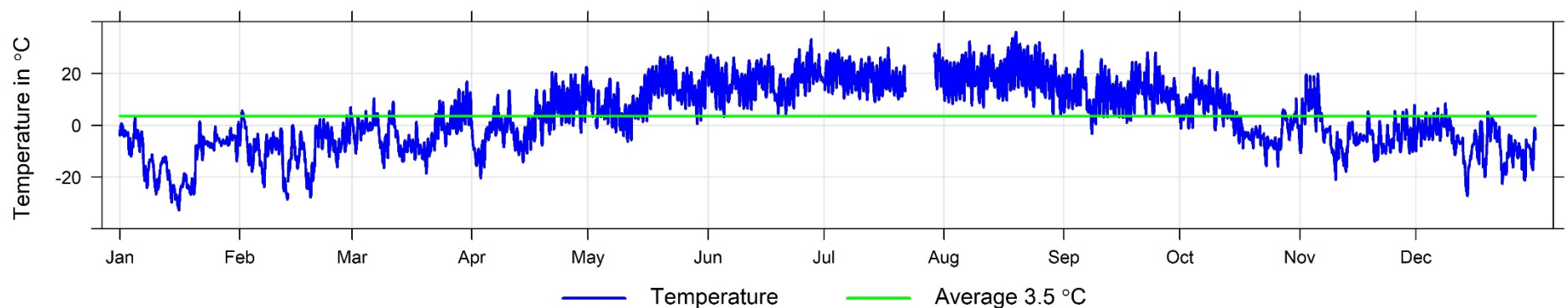
2020 Hourly Readings of Barometric Pressure (in hPa) at Glen Ewen



Temperature (ET) Frequency Distribution at Glen Ewen

Month	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)
		24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date	
January 2020	-12.4	-1.1	Jan 01	3.5	Jan 04 22:00	-27.8	Jan 16	-32.8	Jan 16 07:00	100.0%
February 2020	-8.9	1.7	Feb 01	7.0	Feb 29 16:00	-21.6	Feb 12	-28.6	Feb 13 08:00	99.9%
March 2020	-2.5	7.7	Mar 30	16.9	Mar 30 17:00	-11.7	Mar 20	-18.6	Mar 20 05:00	99.3%
April 2020	1.6	13.4	Apr 30	22.6	Apr 30 15:00	-12.7	Apr 03	-20.4	Apr 03 07:00	100.0%
May 2020	11.0	19.0	May 21	26.7	May 21 18:00	1.2	May 09	-6.2	May 11 06:00	98.1%
June 2020	17.1	23.9	Jun 27	33.2	Jun 27 17:00	10.9	Jun 18	3.4	Jun 05 04:00	100.0%
July 2020	19.2	23.0	Jul 30	31.4	Jul 30 16:00	15.6	Jul 20	9.1	Jul 14 05:00	75.5%
August 2020	19.1	25.5	Aug 19	36.1	Aug 19 15:00	11.3	Aug 31	4.0	Aug 31 04:00	100.0%
September 2020	12.4	18.1	Sep 05	28.9	Sep 05 16:00	3.9	Sep 08	-3.3	Sep 08 07:00	98.8%
October 2020	2.1	13.8	Oct 05	22.2	Oct 04 16:00	-9.6	Oct 23	-15.8	Oct 26 08:00	100.0%
November 2020	-3.1	10.4	Nov 04	20.0	Nov 05 16:00	-14.2	Nov 12	-21.0	Nov 10 07:00	99.6%
December 2020	-6.7	2.4	Dec 08	8.5	Dec 08 15:00	-20.4	Dec 14	-27.3	Dec 14 08:00	100.0%
	AVERAGE 4.1	MAXIMUM VALUES				MINIMUM VALUES				97.6%
		25.5	Aug 19	36.1	Aug 19 15:00	-27.8	Jan 16	-32.8	Jan 16 07:00	

2020 Hourly Temperature Readings (in °C) at Glen Ewen



APPENDIX D

Oxbow Station: Continuous Monitoring Data

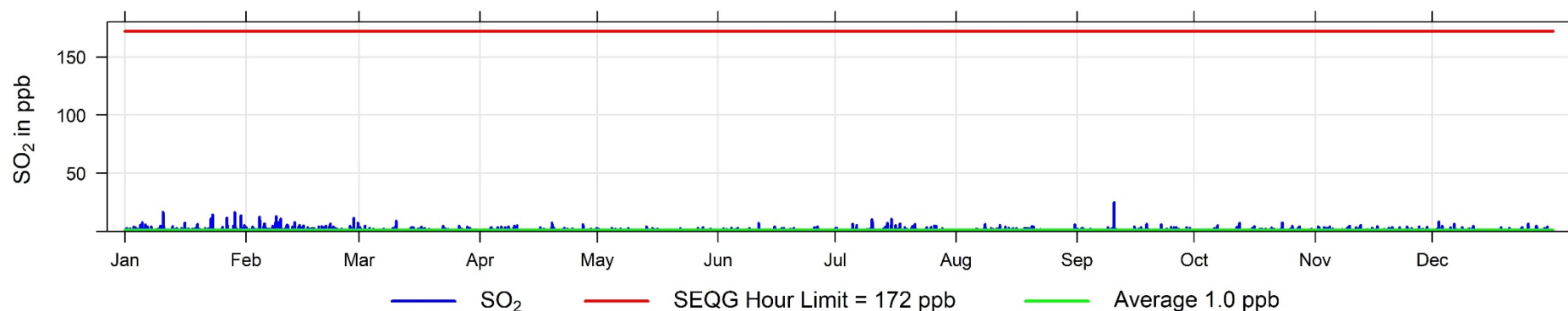
Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above SEQG & AAAQG			
		24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	Annual
Sulphur Dioxide SO ₂ measured in ppb	0.7	4.5	Jan 10	24.7	Sep 10 11:00	99.9%	0	-	0	0
Nitrogen Dioxide NO ₂ measured in ppb	1.5	4.1	Jan 10	17.0	Jan 10 18:00	99.4%	0	-	-	0
Oxides of Nitrogen NO _x measured in ppb	1.7	4.3	Jan 22	17.7	Jan 10 18:00	99.4%	-	-	-	-
Nitric Oxide NO measured in ppb	0.2	1.0	Jun 11	7.2	Oct 23 16:00	99.4%	-	-	-	-
Hydrogen Sulphide H ₂ S measured in ppb	0.3	2.0	Dec 04	11.6	Dec 04 05:00	99.8%	1	-	0	-
Particulate Matter PM _{2.5} measured in µg/m ³	6.2	34.3	Jan 17	85.9	Jul 28 21:00	99.8%	2	-	2	-

Sulphur Dioxide (SO₂) Frequency Distribution at Oxbow

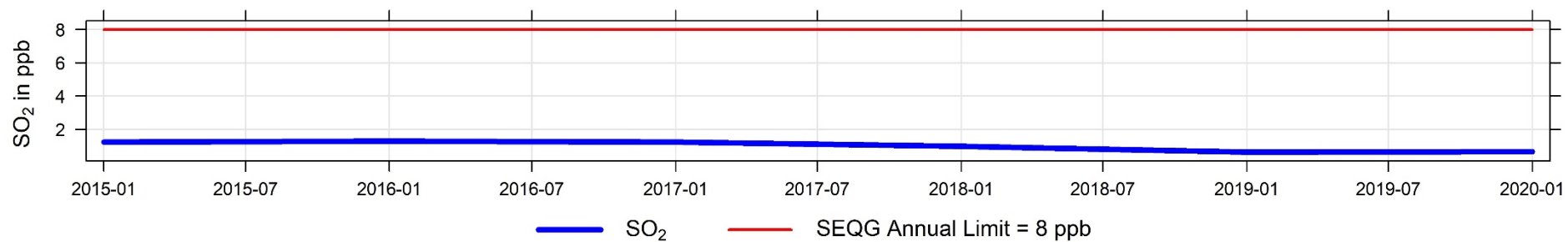
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 48ppb	1-hr 172ppb
January 2020	712	59.7%	36.9%	2.2%	1.1%	0.0%	0.0%	1.3	4.5	Jan 10	16.4	Jan 10 18:00	100.0%	0	0
February 2020	665	59.7%	37.4%	2.3%	0.6%	0.0%	0.0%	1.2	2.8	Feb 08	12.9	Feb 08 18:00	99.9%	0	0
March 2020	694	83.4%	16.3%	0.3%	0.0%	0.0%	0.0%	0.6	1.5	Mar 10	8.8	Mar 10 12:00	99.3%	0	0
April 2020	688	85.8%	13.7%	0.6%	0.0%	0.0%	0.0%	0.6	1.6	Apr 19	7.3	Apr 19 10:00	100.0%	0	0
May 2020	711	93.2%	6.8%	0.0%	0.0%	0.0%	0.0%	0.3	0.9	May 15	3.8	May 13 16:00	100.0%	0	0
June 2020	678	91.6%	8.3%	0.1%	0.0%	0.0%	0.0%	0.4	0.9	Jun 11	7.0	Jun 11 09:00	100.0%	0	0
July 2020	712	86.1%	11.9%	1.8%	0.1%	0.0%	0.0%	0.6	2.4	Jul 10	10.7	Jul 15 10:00	100.0%	0	0
August 2020	712	86.7%	12.9%	0.4%	0.0%	0.0%	0.0%	0.6	1.6	Aug 20	6.1	Aug 08 10:00	100.0%	0	0
September 2020	670	84.8%	14.3%	0.7%	0.1%	0.0%	0.0%	0.6	2.3	Sep 10	24.7	Sep 10 11:00	99.7%	0	0
October 2020	711	85.2%	13.6%	1.1%	0.0%	0.0%	0.0%	0.6	2.2	Oct 23	7.3	Oct 23 12:00	99.9%	0	0
November 2020	686	82.2%	17.5%	0.3%	0.0%	0.0%	0.0%	0.6	1.4	Nov 09	5.3	Nov 12 15:00	99.9%	0	0
December 2020	705	84.8%	14.5%	0.7%	0.0%	0.0%	0.0%	0.5	1.2	Dec 25	8.1	Dec 02 16:00	100.0%	0	0
Annual	8344	81.9%	17.0%	0.9%	0.2%	0.0%	0.0%	0.7	MAXIMUM VALUES				99.9%	0	0

SEQG Objectives: Annual: 8ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

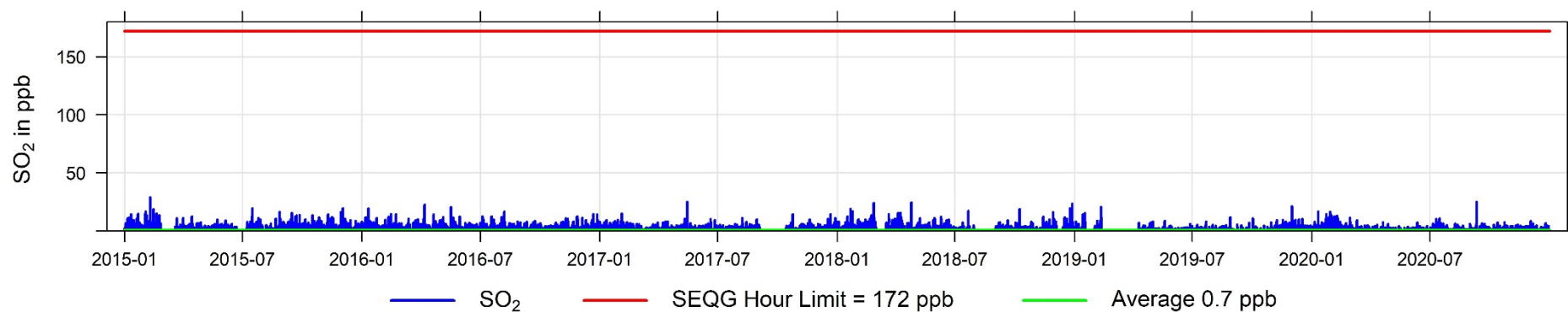
2020 Hourly Concentration Readings of SO₂ (in ppb) at Oxbow



2015 to 2020 Annual Concentration Readings of SO₂ (in ppb) at Oxbow



2015 to 2020 Hourly Concentration Readings of SO₂ (in ppb) at Oxbow

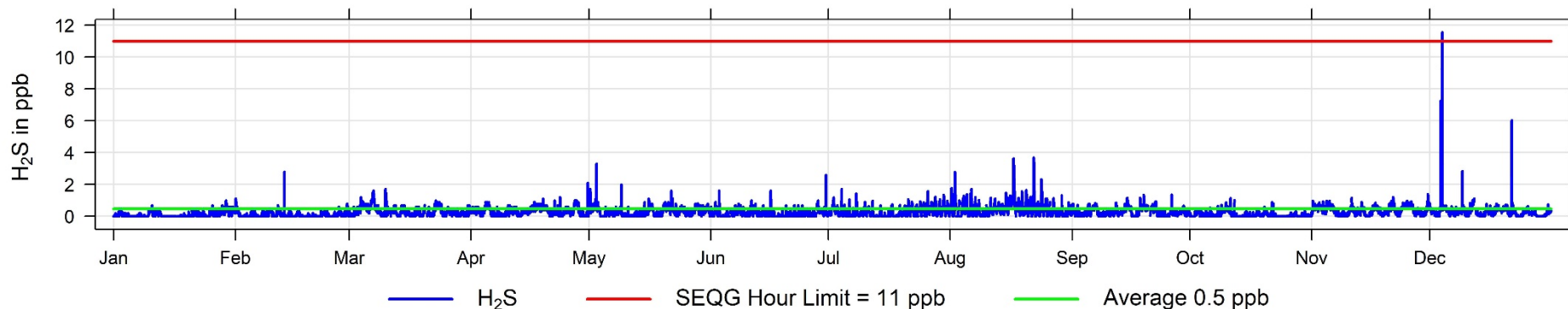


Hydrogen Sulphide (H₂S) Frequency Distribution at Oxbow

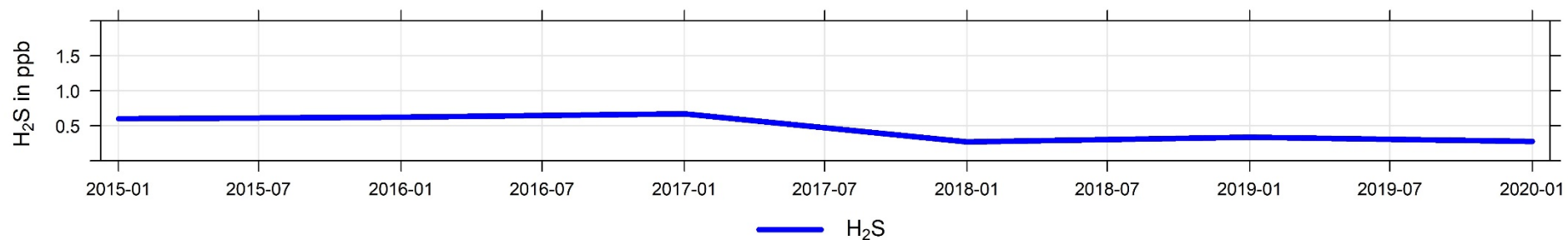
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)			Date	1-hr (ppb) Date		24-hr 3.6ppb	1-hr 11ppb
January 2020	711	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.4	Jan 29	1.0 Jan 29 15:00	100.0%	0	0
February 2020	665	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1	0.5	Feb 01	2.8 Feb 13 12:00	99.9%	0	0
March 2020	693	97.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.9	Mar 07	1.7 Mar 10 06:00	99.1%	0	0
April 2020	689	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.7	Apr 27	2.1 Apr 30 18:00	100.0%	0	0
May 2020	709	98.0%	1.7%	0.3%	0.0%	0.0%	0.0%	0.3	1.0	May 02	3.3 May 02 00:00	99.7%	0	0
June 2020	678	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Jun 28	2.6 Jun 30 08:00	99.9%	0	0
July 2020	712	97.5%	2.5%	0.0%	0.0%	0.0%	0.0%	0.3	0.6	Jul 26	1.7 Jul 04 08:00	100.0%	0	0
August 2020	712	88.6%	10.8%	0.6%	0.0%	0.0%	0.0%	0.5	1.1	Aug 17	3.7 Aug 22 05:00	100.0%	0	0
September 2020	671	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%	0.3	0.7	Sep 19	1.4 Sep 26 08:00	99.4%	0	0
October 2020	710	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1	0.5	Oct 10	1.1 Oct 11 08:00	99.6%	0	0
November 2020	686	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.4	0.8	Nov 21	1.4 Nov 30 13:00	99.7%	0	0
December 2020	705	98.0%	0.7%	0.4%	0.6%	0.1%	0.1%	0.4	2.0	Dec 04	11.6 Dec 04 05:00	100.0%	0	1
Annual	8341	97.9%	1.9%	0.1%	0.0%	0.0%	0.0%	0.3	2.0	MAXIMUM VALUES		99.8%	0	1

SEQG Objectives: 24-Hr: 3.6ppb, 1-Hr: 11ppb

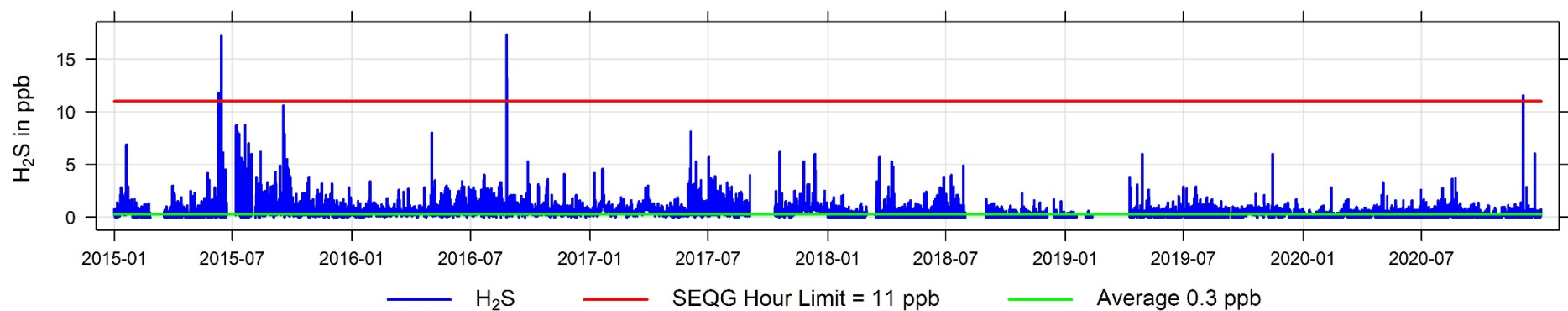
2020 Hourly Concentration Readings of H₂S (in ppb) at Oxbow



2015 to 2020 Annual Concentration Readings of H₂S (in ppb) at Oxbow



2015 to 2020 Hourly Concentration Readings of H₂S (in ppb) at Oxbow

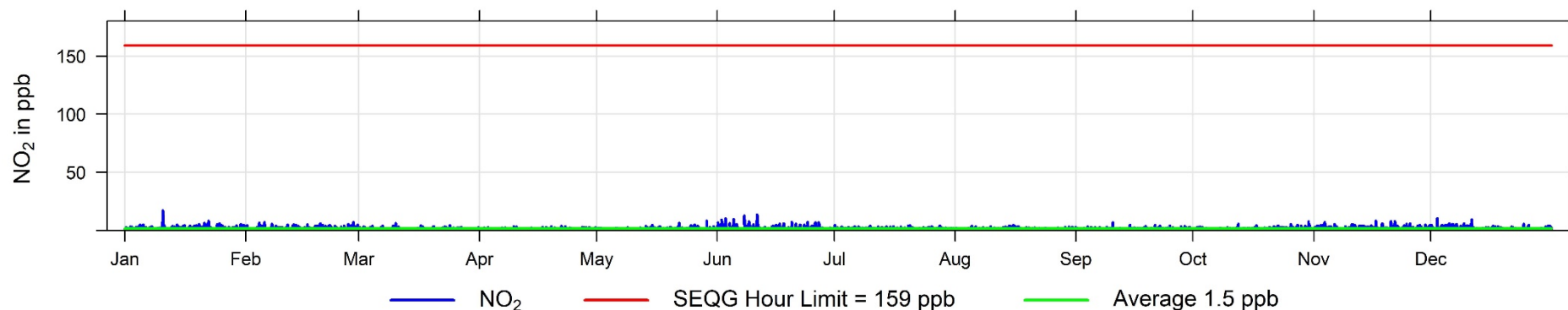


Nitrogen Dioxide (NO₂) Frequency Distribution at Oxbow

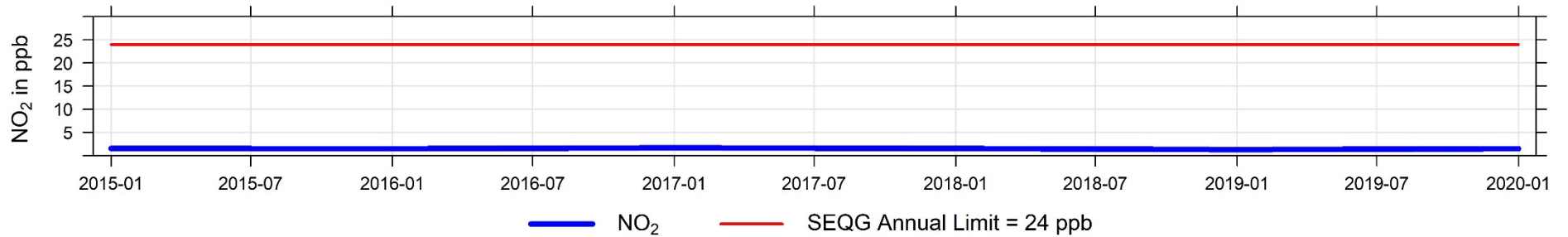
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 106ppb	1-hr 159ppb
January 2020	712	97.2%	2.7%	0.1%	0.0%	0.0%	0.0%	2.2	4.1	Jan 10	17.0	Jan 10 18:00	100.0%	0	0
February 2020	665	97.9%	2.1%	0.0%	0.0%	0.0%	0.0%	2.0	3.6	Feb 20	6.9	Feb 05 20:00	99.9%	0	0
March 2020	694	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	1.2	2.5	Mar 10	6.1	Mar 10 12:00	99.3%	0	0
April 2020	689	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0	1.6	Apr 10	3.7	Apr 22 01:00	100.0%	0	0
May 2020	712	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	1.1	2.3	May 26	8.1	May 29 06:00	100.0%	0	0
June 2020	678	91.6%	8.4%	0.0%	0.0%	0.0%	0.0%	1.8	3.3	Jun 11	13.6	Jun 11 05:00	100.0%	0	0
July 2020	705	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2	1.9	Jul 06	4.6	Jul 01 04:00	99.1%	0	0
August 2020	678	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9	2.0	Aug 15	4.5	Aug 15 22:00	95.3%	0	0
September 2020	673	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	1.1	2.1	Sep 18	6.8	Sep 10 11:00	99.6%	0	0
October 2020	711	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%	1.5	3.2	Oct 30	7.6	Oct 30 16:00	100.0%	0	0
November 2020	688	97.4%	2.6%	0.0%	0.0%	0.0%	0.0%	2.2	3.6	Nov 21	8.0	Nov 16 22:00	99.9%	0	0
December 2020	706	97.7%	2.3%	0.0%	0.0%	0.0%	0.0%	1.7	3.6	Dec 11	10.4	Dec 02 16:00	100.0%	0	0
Annual	8311	98.4%	1.6%	0.0%	0.0%	0.0%	0.0%	1.5	4.1	Jan 10	17.0	Jan 10 18:00	99.4%	0	0

SEQG Objectives: Annual: 24ppb, 24-Hr: 106ppb, 1-Hr: 159ppb

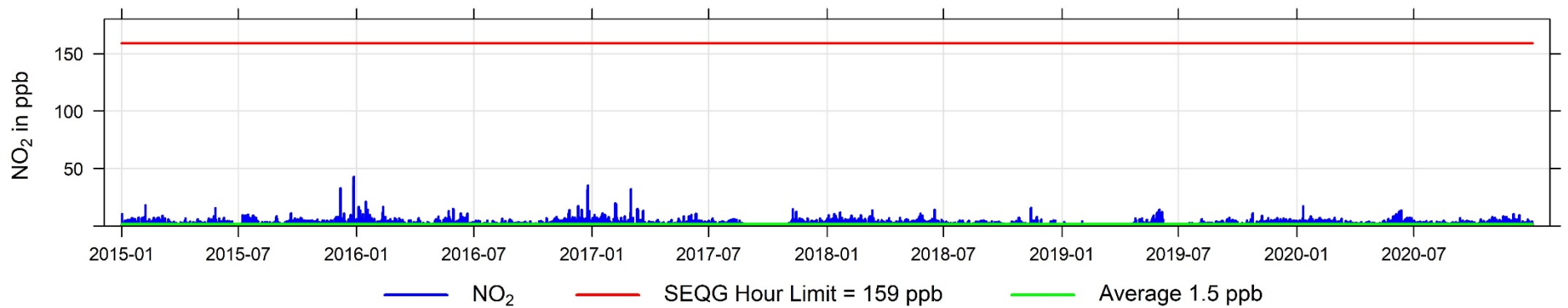
2020 Hourly Concentration Readings of NO₂ (in ppb) at Oxbow



2015 to 2020 Annual Concentration Readings of NO₂ (in ppb) at Oxbow



2015 to 2020 Hourly Concentration Readings of NO₂ (in ppb) at Oxbow

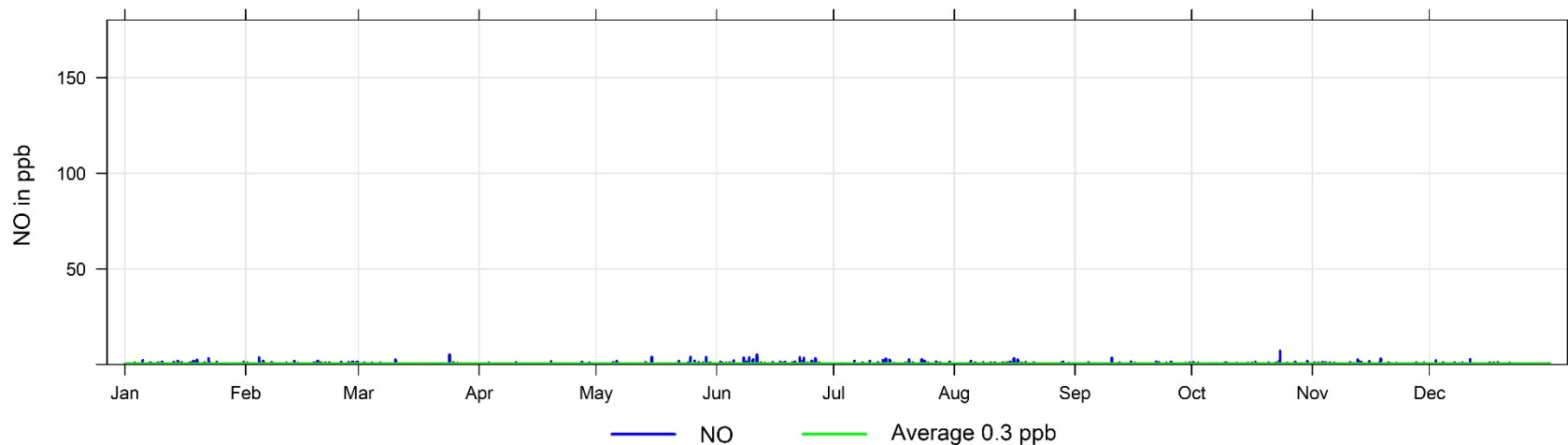


Nitric Oxide (NO) Frequency Distribution at Oxbow

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date	
January 2020	712	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	Jan 19	3.3	Jan 22 12:00	100.0%
February 2020	665	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.5	Feb 19	3.7	Feb 04 12:00	99.9%
March 2020	694	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Mar 10	5.2	Mar 24 09:00	99.3%
April 2020	689	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Apr 28	1.6	Apr 19 10:00	100.0%
May 2020	712	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.8	May 25	4.0	May 15 08:00	100.0%
June 2020	678	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.4	1.0	Jun 11	5.2	Jun 11 07:00	100.0%
July 2020	705	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.7	Jul 20	3.1	Jul 14 11:00	99.1%
August 2020	678	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4	0.7	Aug 17	3.2	Aug 16 08:00	95.3%
September 2020	673	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Sep 22	3.6	Sep 10 11:00	99.6%
October 2020	711	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.9	Oct 23	7.2	Oct 23 16:00	100.0%
November 2020	688	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.8	Nov 18	3.1	Nov 18 13:00	99.9%
December 2020	706	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Dec 21	2.7	Dec 11 12:00	100.0%
Annual	8311	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	1.0	Jun 11	7.2	Oct 23 16:00	99.4%

SEQG Objectives: none

2020 Hourly Concentration Readings of NO (in ppb) at Oxbow

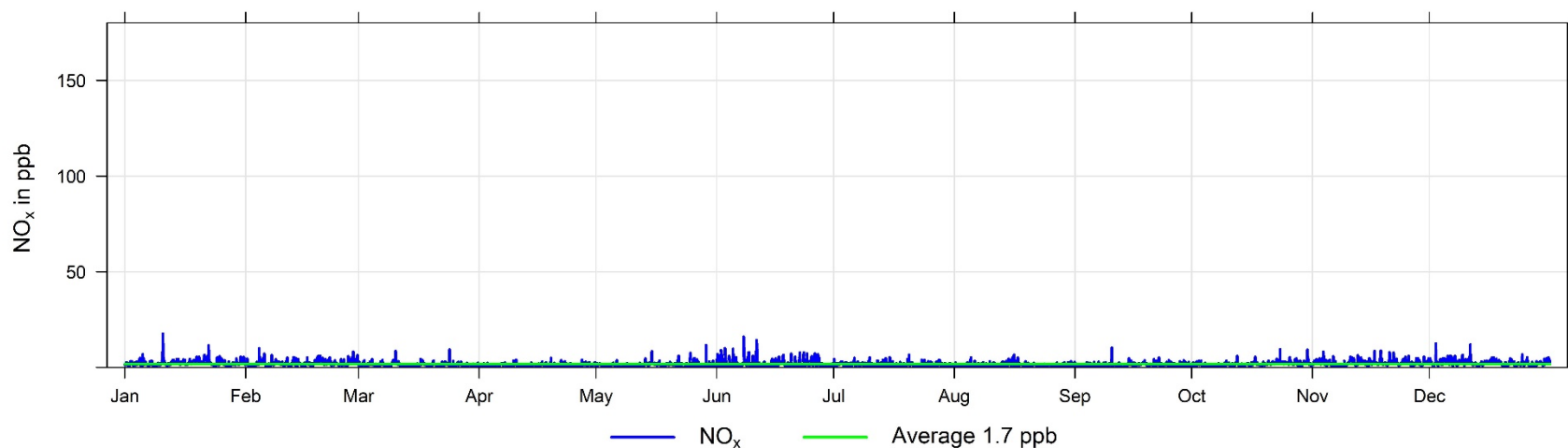


Oxides of Nitrogen (NO_x) Frequency Distribution at Oxbow

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr (ppb)	Date	
January 2020	712	95.5%	4.4%	0.1%	0.0%	0.0%	0.0%	2.4	4.3	Jan 22	17.7	Jan 10 18:00	100.0%
February 2020	665	95.5%	4.5%	0.0%	0.0%	0.0%	0.0%	2.3	4.0	Feb 20	10.1	Feb 04 12:00	99.9%
March 2020	694	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	1.3	3.0	Mar 10	9.4	Mar 24 09:00	99.3%
April 2020	689	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1	1.8	Apr 10	5.0	Apr 19 10:00	100.0%
May 2020	712	98.9%	1.1%	0.0%	0.0%	0.0%	0.0%	1.3	2.7	May 26	11.8	May 29 06:00	100.0%
June 2020	678	87.5%	12.4%	0.1%	0.0%	0.0%	0.0%	2.2	4.3	Jun 11	16.1	Jun 07 22:00	100.0%
July 2020	705	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	1.4	2.5	Jul 20	6.7	Jul 20 09:00	99.1%
August 2020	678	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	1.1	2.5	Aug 15	6.7	Aug 16 08:00	95.3%
September 2020	673	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	1.2	2.3	Sep 18	10.4	Sep 10 11:00	99.6%
October 2020	711	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%	1.7	3.5	Oct 30	9.5	Oct 23 16:00	100.0%
November 2020	688	96.1%	3.9%	0.0%	0.0%	0.0%	0.0%	2.4	3.7	Nov 21	8.8	Nov 18 13:00	99.9%
December 2020	706	96.3%	3.7%	0.0%	0.0%	0.0%	0.0%	2.5	4.0	Dec 11	12.5	Dec 02 16:00	100.0%
Annual	8311	97.2%	2.8%	0.0%	0.0%	0.0%	0.0%	1.7	4.3	MAXIMUM VALUES			99.4%

SEQG Objectives: none

2020 Hourly Concentration Readings of NO_x (in ppb) at Oxbow

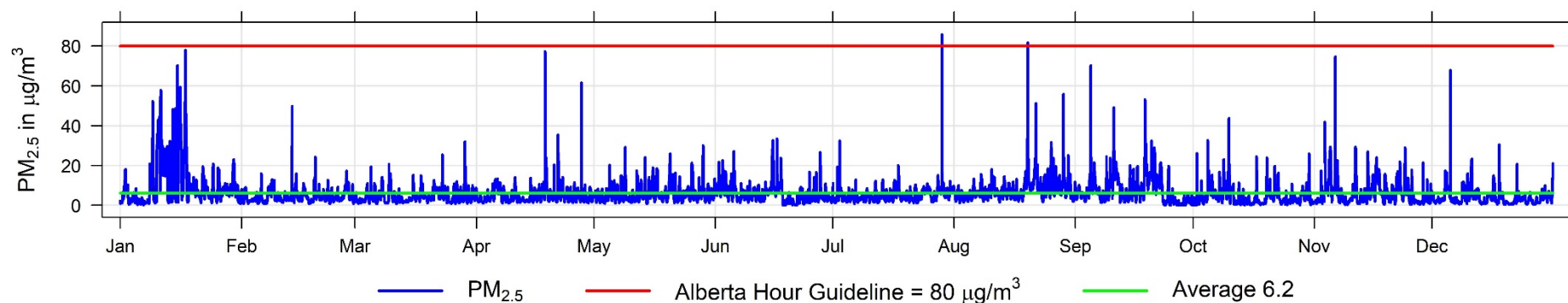


Particulate Matter (PM_{2.5}) Frequency Distribution at Oxbow

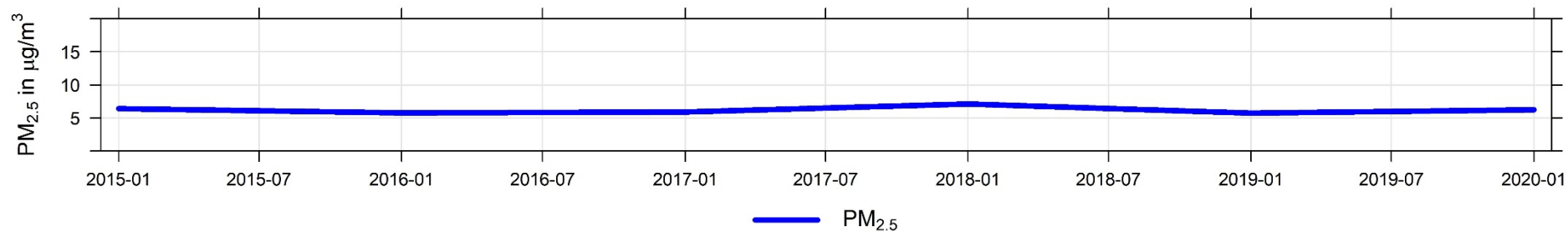
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m³)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 2 (µg/m³)	2 to 4 (µg/m³)	4 to 10 (µg/m³)	10 to 20 (µg/m³)	20 to 29 (µg/m³)	> 29 (µg/m³)		24-hr (µg/m³)	Date	1-hr (µg/m³)	Date		24-hr 28 µg/m³	1-hr 80 µg/m³
January 2020	744	21.9%	11.3%	35.1%	14.5%	5.9%	11.3%	11.4	34.3	Jan 17	77.9	Jan 17 16:00	100.0%	2	0
February 2020	695	16.4%	39.0%	37.8%	6.3%	0.1%	0.3%	4.7	8.8	Feb 27	49.8	Feb 13 22:00	99.9%	0	0
March 2020	737	24.3%	29.6%	37.7%	7.7%	0.5%	0.1%	4.8	8.9	Mar 23	32.1	Mar 29 02:00	99.1%	0	0
April 2020	720	17.2%	30.0%	44.2%	6.9%	1.0%	0.7%	5.5	19.6	Apr 18	77.3	Apr 18 13:00	100.0%	0	0
May 2020	744	14.5%	23.8%	46.2%	13.8%	1.3%	0.3%	6.1	11.8	May 20	30.1	May 28 22:00	100.0%	0	0
June 2020	714	16.4%	25.9%	46.4%	8.7%	2.1%	0.6%	5.8	16.0	Jun 15	33.6	Jun 16 18:00	100.0%	0	0
July 2020	744	11.8%	33.3%	48.5%	5.9%	0.1%	0.3%	5.3	11.4	Jul 28	85.9	Jul 28 21:00	100.0%	0	1
August 2020	744	2.6%	18.0%	55.6%	20.2%	2.6%	1.1%	8.1	19.5	Aug 19	81.9	Aug 19 20:00	100.0%	0	1
September 2020	715	21.0%	15.1%	34.4%	23.4%	4.6%	1.5%	7.9	16.9	Sep 18	70.2	Sep 04 21:00	99.3%	0	0
October 2020	744	36.8%	22.6%	30.9%	8.6%	0.8%	0.3%	4.5	9.2	Oct 05	43.8	Oct 10 05:00	100.0%	0	0
November 2020	719	26.6%	19.1%	34.4%	15.7%	3.6%	0.7%	6.5	14.8	Nov 06	74.7	Nov 06 08:00	99.9%	0	0
December 2020	738	34.3%	31.7%	25.9%	6.5%	1.4%	0.3%	4.2	9.4	Dec 11	67.8	Dec 05 18:00	100.0%	0	0
Annual	8758	20.3%	24.9%	39.8%	11.5%	2.0%	1.4%	6.2	MAXIMUM VALUES				99.8%	2	2

SEQG Objectives: 24-Hr: 28 µg/m³, Alberta Guideline: 1-Hr: 80 µg/m³

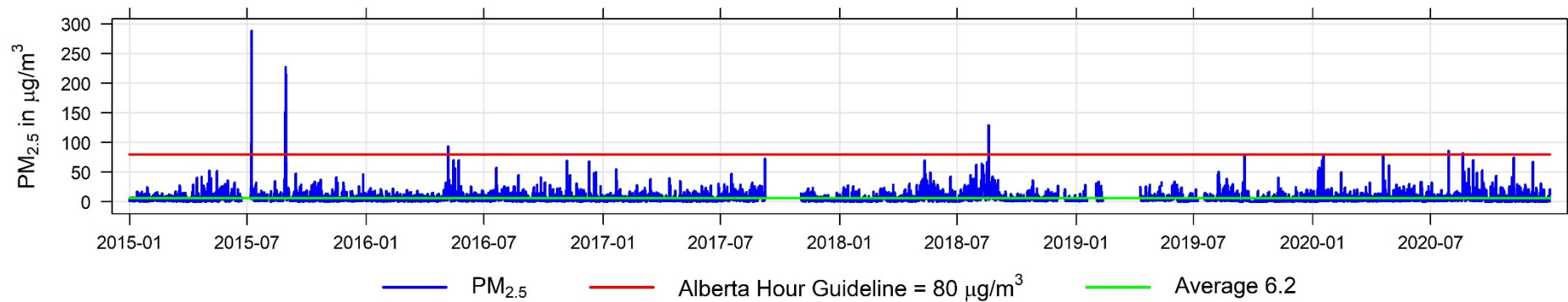
2020 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Oxbow



2015 to 2020 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Oxbow



2015 to 2020 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Oxbow



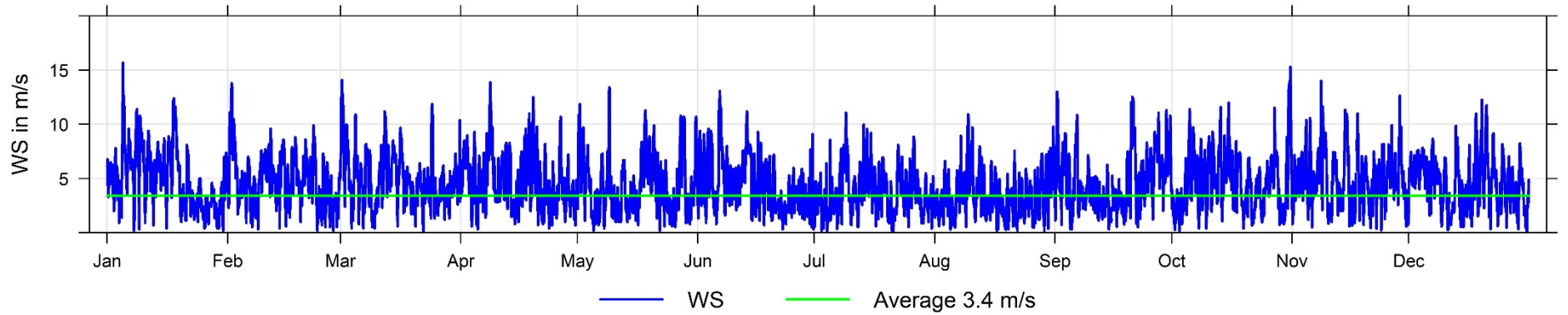
Wind Speed Frequency Distribution of 1-hr Averages - Oxbow

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (m/s)	MAXIMUM VALUES				Operational time (%)
		0 to 2 (m/s)	2 to 4 (m/s)	4 to 6 (m/s)	6 to 8 (m/s)	8 to 10 (m/s)	> 10 (m/s)		24-hr (m/s)	Date	1-hr (m/s)	Date	
January 2020	741	14.4%	26.2%	24.7%	20.9%	9.2%	4.6%	5.0	10.3	Jan 18	15.7	Jan 05 01:00	99.6%
February 2020	695	11.1%	27.6%	32.4%	20.7%	6.0%	2.2%	4.8	9.5	Feb 02	13.8	Feb 02 01:00	99.9%
March 2020	737	10.3%	28.5%	34.9%	16.8%	4.9%	4.6%	4.9	10.1	Mar 01	14.1	Mar 01 10:00	99.1%
April 2020	720	11.4%	34.9%	23.8%	18.5%	8.1%	3.5%	4.8	9.8	Apr 08	13.9	Apr 08 14:00	100.0%
May 2020	744	19.8%	34.1%	21.6%	12.4%	7.8%	4.3%	4.4	8.1	May 18	13.4	May 09 06:00	100.0%
June 2020	720	14.4%	38.5%	21.0%	16.9%	6.8%	2.4%	4.4	8.4	Jun 06	13.1	Jun 06 16:00	100.0%
July 2020	744	20.3%	38.2%	27.7%	9.3%	4.3%	0.3%	3.8	6.9	Jul 09	11.1	Jul 09 03:00	100.0%
August 2020	744	26.9%	37.6%	23.4%	8.9%	2.7%	0.5%	3.5	6.4	Aug 09	10.9	Aug 09 14:00	100.0%
September 2020	717	14.5%	33.5%	24.3%	15.3%	7.9%	4.5%	4.7	7.6	Sep 27	13.0	Sep 01 12:00	99.6%
October 2020	744	15.2%	28.6%	24.2%	21.4%	5.9%	4.7%	4.8	10.5	Oct 31	15.3	Oct 31 13:00	100.0%
November 2020	715	12.7%	24.6%	30.6%	21.1%	8.1%	2.8%	4.9	7.6	Nov 09	14.0	Nov 08 11:00	99.3%
December 2020	737	13.7%	26.5%	32.3%	20.4%	5.6%	1.6%	4.6	7.1	Dec 13	12.3	Dec 19 20:00	99.1%
Annual	8758	15.4%	31.6%	26.7%	16.9%	6.4%	3.0%	4.5	MAXIMUM VALUES				99.7%

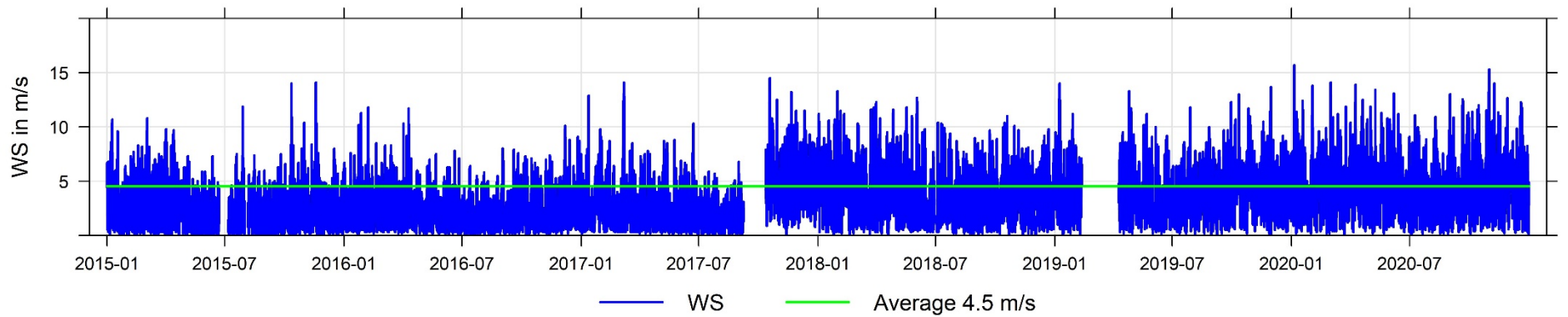
Wind Speed and Wind Direction Frequency Distribution at Oxbow

Direction	Number of Readings	% of wind speed range (m/s)						Total %
		0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	
N	400	0.1%	0.5%	1.3%	2.2%	0.4%	0.1%	4.6%
NNE	243	0.2%	0.6%	1.0%	1.0%	0.0%	0.0%	2.8%
NE	207	0.1%	0.8%	1.1%	0.5%	0.0%	0.0%	2.4%
ENE	269	0.2%	0.8%	1.8%	0.3%	0.0%	0.0%	3.1%
E	394	0.3%	1.1%	2.4%	0.7%	0.0%	0.0%	4.5%
ESE	587	0.3%	0.9%	2.4%	3.0%	0.1%	0.0%	6.7%
SE	388	0.3%	0.8%	1.6%	1.6%	0.1%	0.0%	4.4%
SSE	298	0.2%	0.8%	1.3%	1.0%	0.1%	0.0%	3.4%
S	264	0.3%	1.0%	1.1%	0.5%	0.1%	0.0%	3.0%
SSW	321	0.3%	0.9%	1.6%	0.8%	0.0%	0.0%	3.7%
SW	728	0.2%	1.1%	4.1%	2.8%	0.0%	0.0%	8.3%
WSW	1163	0.2%	0.8%	6.3%	5.9%	0.0%	0.0%	13.3%
W	776	0.2%	0.5%	3.0%	5.0%	0.2%	0.0%	8.9%
WNW	1045	0.1%	0.4%	2.2%	7.3%	1.3%	0.7%	11.9%
NW	1216	0.1%	0.3%	2.0%	6.9%	2.4%	2.1%	13.9%
NNW	462	0.1%	0.4%	1.5%	2.9%	0.4%	0.1%	5.3%
Total	8,761	15.4%	31.6%	26.7%	16.9%	6.4%	3.0%	100.0%

2020 Hourly Readings of Wind Speed (in m/s) at Oxbow



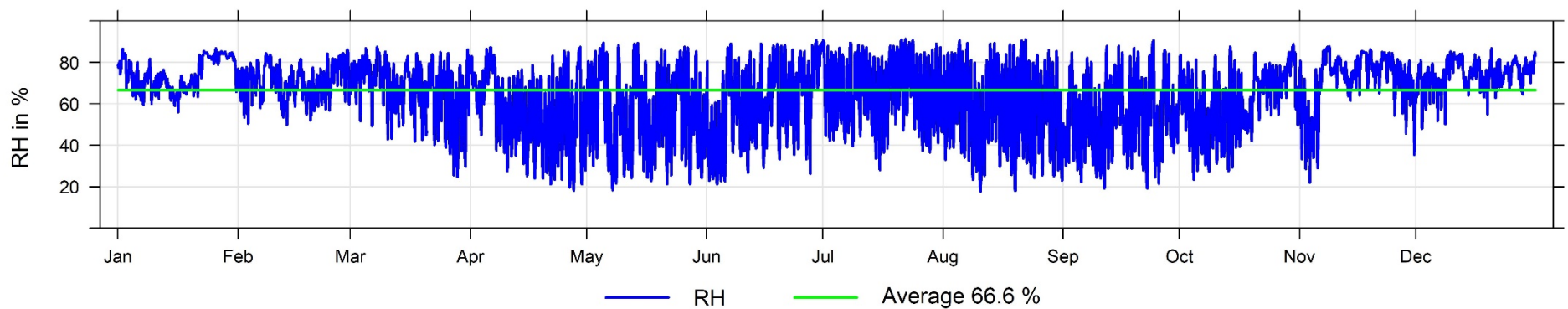
2015 to 2020 Hourly Readings of Wind Speed (in m/s) at Oxbow



Relative Humidity (RH) Frequency Distribution at Oxbow

Month	Monthly Average (%)	Maximum Values				Operational time (%)
		24-hr (%)	Date	1-hr (%)	Date	
January 2020	74.4	84.6	Jan 23	86.8	Jan 26 07:00	100.0%
February 2020	70.9	82.3	Feb 08	86.2	Feb 29 05:00	99.9%
March 2020	67.4	80.0	Mar 08	87.5	Mar 07 22:00	99.1%
April 2020	56.4	80.7	Apr 06	87.5	Apr 29 08:00	100.0%
May 2020	55.6	78.4	May 04	89.5	May 05 09:00	100.0%
June 2020	60.5	86.1	Jun 30	90.7	Jun 29 07:00	100.0%
July 2020	66.9	78.2	Jul 23	91.4	Jul 22 08:00	100.0%
August 2020	58.0	72.1	Aug 04	91.2	Aug 22 08:00	100.0%
September 2020	54.1	70.8	Sep 27	90.6	Sep 24 09:00	99.6%
October 2020	61.5	83.4	Oct 30	88.9	Oct 30 11:00	100.0%
November 2020	71.8	85.4	Nov 08	87.8	Nov 08 17:00	99.9%
December 2020	74.1	82.0	Dec 11	86.8	Dec 20 14:00	100.0%
AVERAGE		MAXIMUM VALUES				
	64.3	86.1	Jun 30	91.4	Jul 22 08:00	99.9%

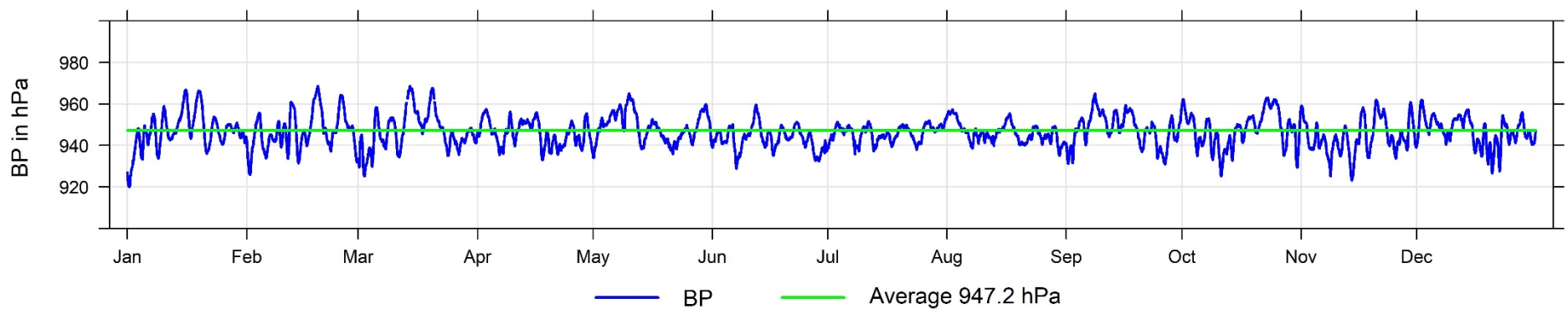
2020 Hourly Readings of Relative Humidity (in %) at Oxbow



Barometric Pressure (BP) Frequency Distribution at Oxbow

Month	Monthly Average (hPa)	Maximum Values				Operational time (%)
		24-hr (hPa)	Date	1-hr (hPa)	Date	
January 2020	947.0	965.1	Jan 19	966.9	Jan 16 05:00	100.0%
February 2020	947.0	966.3	Feb 19	968.6	Feb 19 12:00	99.9%
March 2020	946.9	967.0	Mar 14	968.6	Mar 14 11:00	99.1%
April 2020	945.9	955.6	Apr 03	957.5	Apr 03 07:00	100.0%
May 2020	949.0	963.2	May 10	964.9	May 10 09:00	100.0%
June 2020	943.4	957.4	Jun 12	959.6	Jun 12 08:00	100.0%
July 2020	946.0	951.6	Jul 31	954.4	Jul 31 00:00	100.0%
August 2020	946.0	956.2	Aug 02	957.4	Aug 02 10:00	100.0%
September 2020	948.0	962.3	Sep 08	964.9	Sep 08 11:00	99.6%
October 2020	947.7	961.0	Oct 23	963.0	Oct 23 07:00	100.0%
November 2020	944.1	959.4	Nov 20	962.0	Nov 20 12:00	99.9%
December 2020	946.8	959.6	Dec 02	961.9	Dec 02 07:00	100.0%
	AVERAGE 946.5	MAXIMUM VALUES 967.0 Mar 14 968.6 Mar 14 11:00				99.9%

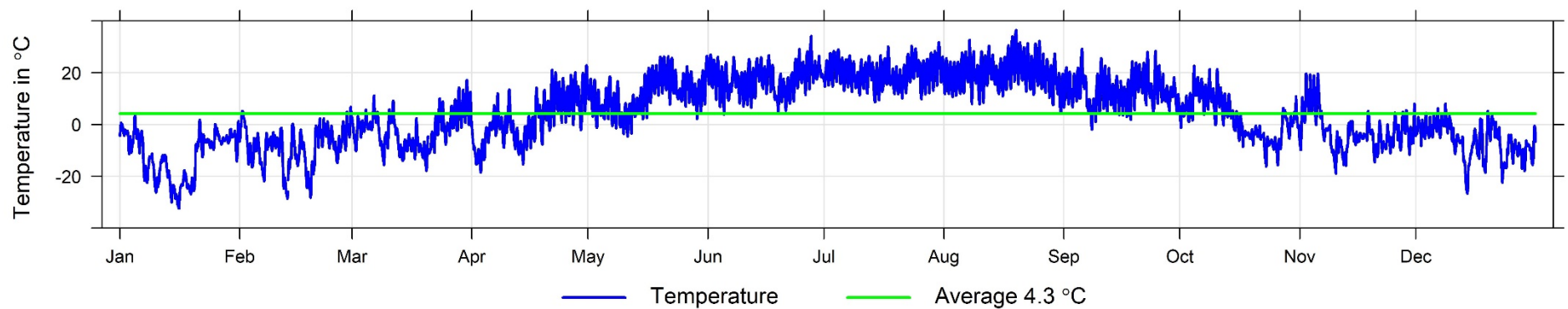
2020 Hourly Readings of Barometric Pressure (in hPa) at Oxbow



Temperature (ET) Frequency Distribution at Oxbow

Month	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)
		24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date	
January 2020	-12.0	-1.2	Jan 01	3.7	Jan 04 22:00	-27.9	Jan 15	-32.4	Jan 16 06:00	100.0%
February 2020	-8.6	1.9	Feb 01	6.8	Feb 29 16:00	-21.2	Feb 12	-28.6	Feb 13 08:00	99.9%
March 2020	-2.2	8.2	Mar 30	17.2	Mar 30 17:00	-11.8	Mar 20	-17.8	Mar 20 05:00	99.1%
April 2020	1.9	13.9	Apr 30	22.9	Apr 30 15:00	-12.6	Apr 02	-18.5	Apr 03 07:00	100.0%
May 2020	11.4	19.3	May 21	26.5	May 31 18:00	1.7	May 09	-4.6	May 11 06:00	100.0%
June 2020	17.5	24.4	Jun 27	34.2	Jun 27 17:00	10.7	Jun 18	3.9	Jun 05 04:00	100.0%
July 2020	20.0	23.9	Jul 24	31.8	Jul 30 17:00	16.4	Jul 20	8.8	Jul 14 05:00	100.0%
August 2020	19.9	26.9	Aug 19	36.5	Aug 19 17:00	11.7	Aug 31	4.6	Aug 31 04:00	100.0%
September 2020	13.0	19.1	Sep 05	29.2	Sep 05 17:00	4.5	Sep 08	-1.9	Sep 08 07:00	99.6%
October 2020	2.3	14.0	Oct 05	22.6	Oct 04 17:00	-9.9	Oct 23	-16.2	Oct 23 07:00	100.0%
November 2020	-2.7	10.8	Nov 04	19.7	Nov 05 16:00	-13.4	Nov 12	-18.9	Nov 10 08:00	99.9%
December 2020	-6.3	2.4	Dec 08	8.0	Dec 08 15:00	-20.1	Dec 14	-26.7	Dec 14 07:00	100.0%
AVERAGE		MAXIMUM VALUES				MINIMUM VALUES				
4.5		26.9	Aug 19	36.5	Aug 19 17:00	-27.9	Jan 15	-32.4	Jan 16 06:00	99.9%

2020 Hourly Temperature Readings (in °C) at Oxbow



APPENDIX E

Stoughton Station: Continuous Monitoring Data

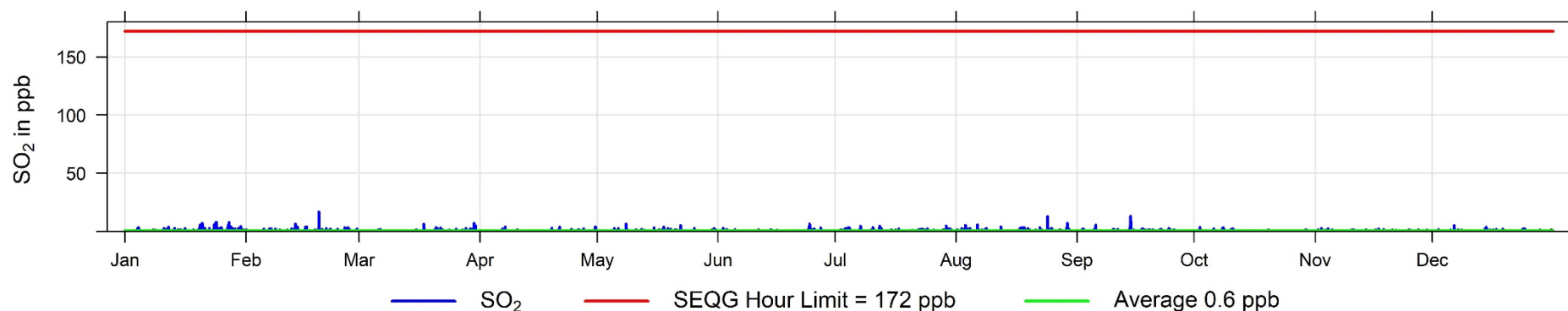
Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above SEQG & AAAQG			
		24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	Annual
Sulphur Dioxide SO ₂ measured in ppb	0.6	3.7	Jan 20	16.9	Feb 19 17:00	99.7%	0	-	0	0
Nitrogen Dioxide NO ₂ measured in ppb	1.5	7.1	Jan 20	26.7	Dec 07 17:00	92.9%	0	-	-	0
Oxides of Nitrogen NO _x measured in ppb	2.2	8.9	Dec 07	82.3	Dec 07 17:00	92.9%	-	-	-	-
Nitric Oxide NO measured in ppb	0.8	3.3	Dec 07	54.7	Dec 07 17:00	92.9%	-	-	-	-
Hydrogen Sulphide H ₂ S measured in ppb	0.3	0.9	Aug 27	3.1	May 25 06:00	99.7%	0	-	0	-
Particulate Matter PM _{2.5} measured in µg/m ³	5.2	18.4	Sep 20	105.9	Sep 20 10:00	92.2%	4	-	0	-

Sulphur Dioxide (SO₂) Frequency Distribution at Stoughton

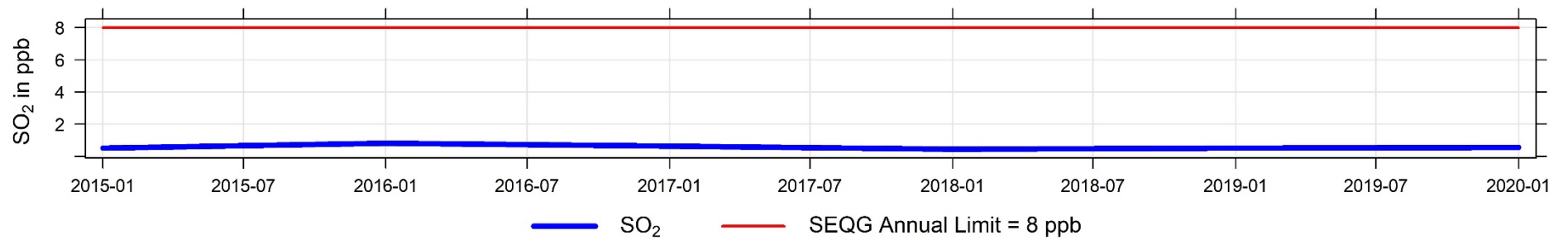
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 48ppb	1-hr 172ppb
January 2020	712	74.7%	23.2%	2.1%	0.0%	0.0%	0.0%	0.8	3.7	Jan 20	7.9	Jan 24 11:00	99.7%	0	0
February 2020	665	83.5%	16.1%	0.3%	0.2%	0.0%	0.0%	0.5	1.7	Feb 19	16.9	Feb 19 17:00	100.0%	0	0
March 2020	703	93.2%	6.3%	0.6%	0.0%	0.0%	0.0%	0.3	2.3	Mar 30	7.2	Mar 30 11:00	99.9%	0	0
April 2020	665	93.2%	6.8%	0.0%	0.0%	0.0%	0.0%	0.4	1.0	Apr 30	4.0	Apr 30 13:00	96.7%	0	0
May 2020	711	91.1%	8.4%	0.4%	0.0%	0.0%	0.0%	0.4	1.4	May 08	6.5	May 08 10:00	100.0%	0	0
June 2020	674	94.8%	5.0%	0.1%	0.0%	0.0%	0.0%	0.4	1.8	Jun 24	6.3	Jun 24 11:00	100.0%	0	0
July 2020	712	86.1%	13.9%	0.0%	0.0%	0.0%	0.0%	0.7	1.4	Jul 12	4.8	Jul 29 10:00	100.0%	0	0
August 2020	711	82.7%	16.3%	0.8%	0.1%	0.0%	0.0%	0.8	1.7	Aug 24	13.0	Aug 24 10:00	100.0%	0	0
September 2020	679	90.7%	8.7%	0.3%	0.3%	0.0%	0.0%	0.6	2.8	Sep 14	13.2	Sep 14 16:00	100.0%	0	0
October 2020	712	94.9%	5.1%	0.0%	0.0%	0.0%	0.0%	0.4	1.1	Oct 02	3.6	Oct 02 12:00	100.0%	0	0
November 2020	687	94.2%	5.8%	0.0%	0.0%	0.0%	0.0%	0.6	0.9	Nov 10	2.7	Nov 02 13:00	100.0%	0	0
December 2020	706	91.9%	7.9%	0.1%	0.0%	0.0%	0.0%	0.5	1.6	Dec 14	5.1	Dec 06 14:00	100.0%	0	0
Annual	8337	89.3%	10.3%	0.4%	0.0%	0.0%	0.0%	0.6	3.7	Jan 20	16.9	Feb 19 17:00	99.7%	0	0

SEQG Objectives: Annual: 8ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

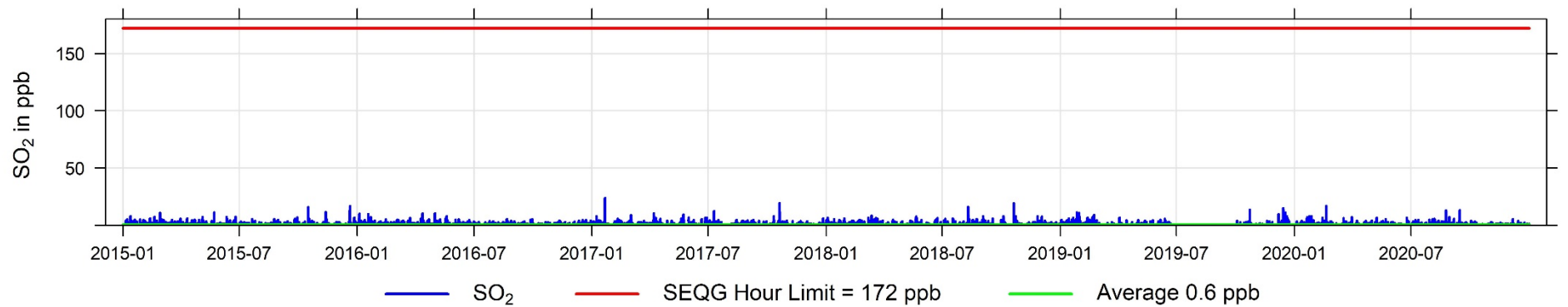
2020 Hourly Concentration Readings of SO₂ (in ppb) at Stoughton



2015 to 2020 Annual Concentration Readings of SO₂ (in ppb) at Stoughton



2015 to 2020 Hourly Concentration Readings of SO₂ (in ppb) at Stoughton

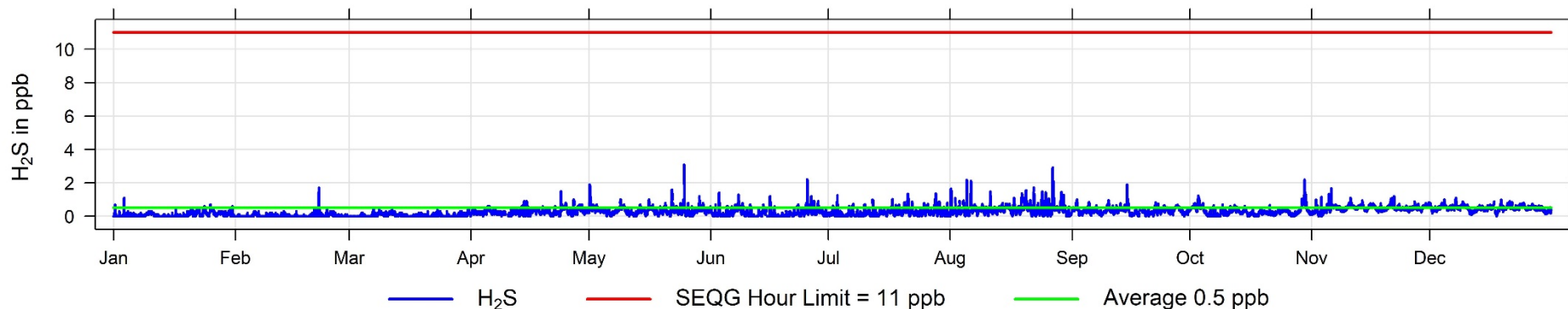


Hydrogen Sulphide (H₂S) Frequency Distribution at Stoughton

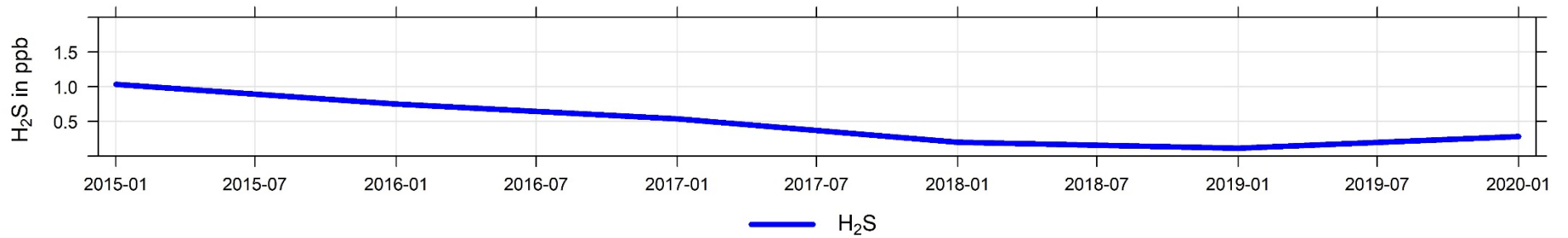
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES		Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)			Date	1-hr (ppb) Date		24-hr 3.6ppb	1-hr 11ppb
January 2020	712	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1	0.3	Jan 26	1.1 Jan 03 17:00	100.0%	0	0
February 2020	665	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0	0.3	Feb 22	1.7 Feb 22 07:00	100.0%	0	0
March 2020	703	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.4	Mar 31	0.7 Mar 31 13:00	99.9%	0	0
April 2020	669	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.3	0.5	Apr 24	1.5 Apr 23 22:00	97.1%	0	0
May 2020	711	98.0%	1.8%	0.1%	0.0%	0.0%	0.0%	0.3	0.7	May 01	3.1 May 25 06:00	100.0%	0	0
June 2020	679	99.1%	0.9%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Jun 08	2.2 Jun 25 14:00	100.0%	0	0
July 2020	712	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Jul 28	1.4 Jul 28 07:00	100.0%	0	0
August 2020	711	93.5%	6.5%	0.0%	0.0%	0.0%	0.0%	0.5	0.9	Aug 27	2.9 Aug 27 02:00	100.0%	0	0
September 2020	679	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.3	0.6	Sep 27	1.9 Sep 14 00:00	100.0%	0	0
October 2020	711	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.3	0.8	Oct 30	2.2 Oct 30 04:00	99.9%	0	0
November 2020	688	98.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.5	0.9	Nov 21	1.7 Nov 05 00:00	100.0%	0	0
December 2020	706	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.5	0.7	Dec 24	1.1 Dec 07 17:00	100.0%	0	0
Annual	8346	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%	0.3	0.9	MAXIMUM VALUES		99.7%	0	0

SEQG Objectives: 24-Hr: 3.6ppb, 1-Hr: 11ppb

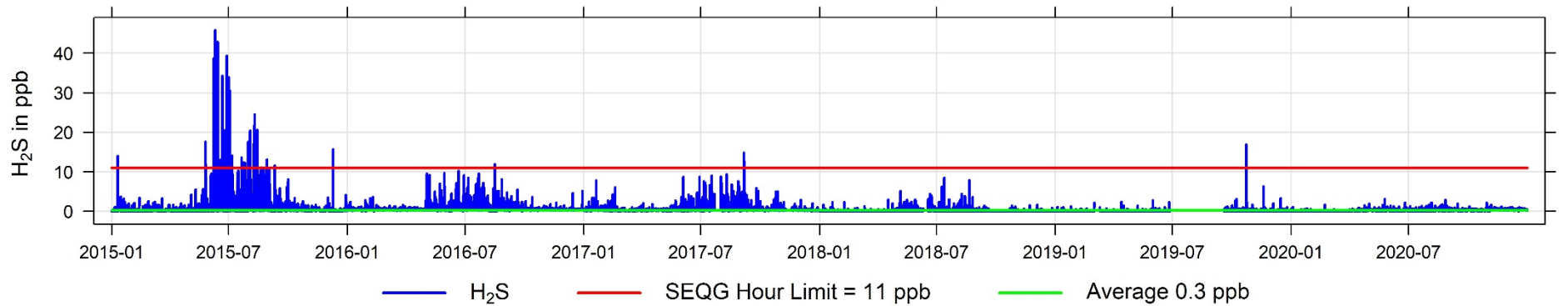
2020 Hourly Concentration Readings of H₂S (in ppb) at Stoughton



2015 to 2020 Annual Concentration Readings of H₂S (in ppb) at Stoughton



2015 to 2020 Hourly Concentration Readings of H₂S (in ppb) at Stoughton

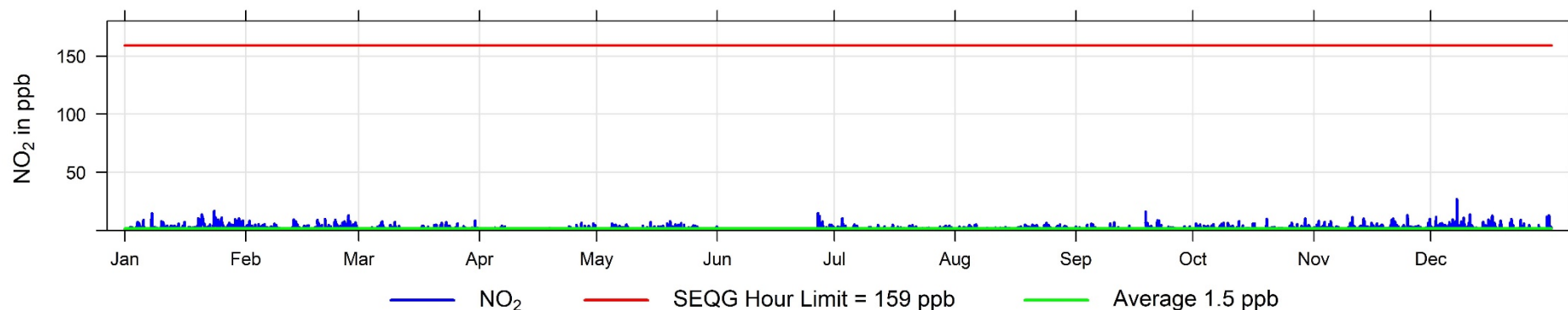


Nitrogen Dioxide (NO₂) Frequency Distribution at Stoughton

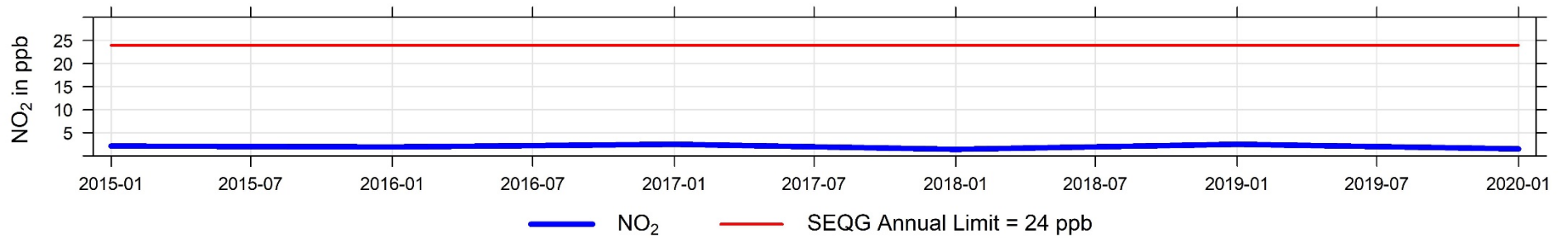
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 106ppb	1-hr 159ppb
January 2020	712	86.8%	13.1%	0.1%	0.0%	0.0%	0.0%	2.7	7.1	Jan 20	16.7	Jan 23 22:00	100.0%	0	0
February 2020	665	94.9%	5.1%	0.0%	0.0%	0.0%	0.0%	1.8	4.2	Feb 27	12.8	Feb 27 09:00	100.0%	0	0
March 2020	703	98.4%	1.6%	0.0%	0.0%	0.0%	0.0%	1.0	2.8	Mar 23	8.5	Mar 30 20:00	99.9%	0	0
April 2020	659	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.6	2.5	Apr 30	6.3	Apr 27 03:00	95.7%	0	0
May 2020	709	98.9%	1.1%	0.0%	0.0%	0.0%	0.0%	1.1	3.0	May 19	8.0	May 19 21:00	99.7%	0	0
June 2020	142	89.4%	10.6%	0.0%	0.0%	0.0%	0.0%	2.0	4.6	Jun 27	14.9	Jun 26 20:00	21.4%	0	0
July 2020	712	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	1.1	3.1	Jul 03	10.5	Jul 03 01:00	100.0%	0	0
August 2020	711	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	1.3	2.5	Aug 27	6.4	Aug 24 10:00	100.0%	0	0
September 2020	671	97.8%	2.1%	0.1%	0.0%	0.0%	0.0%	1.0	3.2	Sep 22	16.0	Sep 18 21:00	98.9%	0	0
October 2020	710	97.6%	2.4%	0.0%	0.0%	0.0%	0.0%	1.5	3.1	Oct 29	10.0	Oct 29 19:00	99.7%	0	0
November 2020	688	94.3%	5.7%	0.0%	0.0%	0.0%	0.0%	2.3	5.9	Nov 21	13.1	Nov 24 00:00	100.0%	0	0
December 2020	706	91.9%	7.9%	0.1%	0.0%	0.0%	0.0%	2.0	4.8	Dec 07	26.7	Dec 07 17:00	100.0%	0	0
Annual	7788	95.7%	4.2%	0.0%	0.0%	0.0%	0.0%	1.5	7.1	Jan 20	26.7	Dec 07 17:00	92.9%	0	0

SEQG Objectives: Annual: 24ppb, 24-Hr: 106ppb, 1-Hr: 159ppb

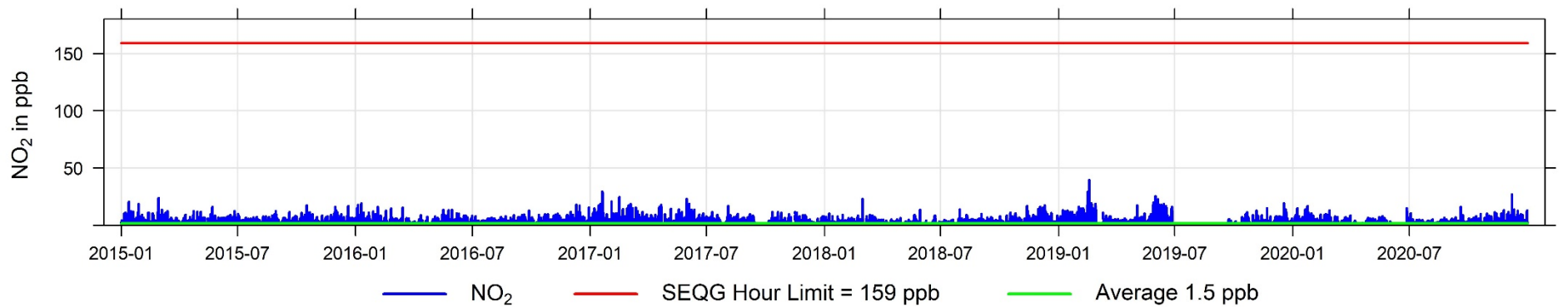
2020 Hourly Concentration Readings of NO₂ (in ppb) at Stoughton



2015 to 2020 Annual Concentration Readings of NO₂ (in ppb) at Stoughton



2015 to 2020 Hourly Concentration Readings of NO₂ (in ppb) at Stoughton

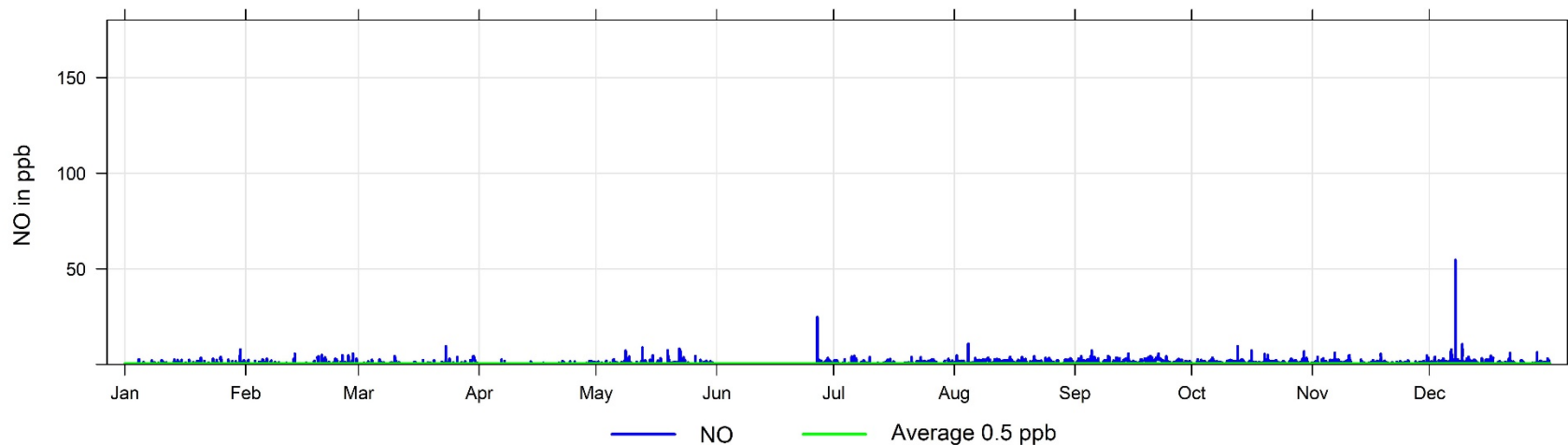


Nitric Oxide (NO) Frequency Distribution at Stoughton

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr (ppb)	Date	
January 2020	712	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.5	1.6	Jan 30	7.9	Jan 30 15:00	100.0%
February 2020	665	99.5%	0.5%	0.0%	0.0%	0.0%	0.0%	0.5	1.2	Feb 13	5.7	Feb 28 14:00	100.0%
March 2020	703	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.5	2.8	Mar 30	9.5	Mar 23 11:00	99.9%
April 2020	659	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.9	Apr 29	2.7	Apr 06 17:00	95.7%
May 2020	709	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.5	1.5	May 08	8.9	May 12 21:00	99.7%
June 2020	142	99.3%	0.0%	0.7%	0.0%	0.0%	0.0%	1.1	2.2	Jun 29	24.9	Jun 26 20:00	21.4%
July 2020	712	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7	2.0	Jul 30	4.5	Jul 06 07:00	100.0%
August 2020	711	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	1.2	2.6	Aug 09	10.9	Aug 04 14:00	100.0%
September 2020	671	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	1.4	3.3	Sep 22	7.3	Sep 05 08:00	98.9%
October 2020	710	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	1.1	2.2	Oct 20	9.5	Oct 12 18:00	99.7%
November 2020	688	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.9	2.1	Nov 10	6.3	Nov 06 17:00	100.0%
December 2020	706	98.9%	1.0%	0.0%	0.1%	0.0%	0.0%	1.1	3.3	Dec 07	54.7	Dec 07 17:00	100.0%
Annual	7788	99.6%	0.4%	0.1%	0.0%	0.0%	0.0%	0.8	3.3	MAXIMUM VALUES			92.9%
										Dec 07	54.7	Dec 07 17:00	

SEQG Objectives: none

2020 Hourly Concentration Readings of NO (in ppb) at Stoughton

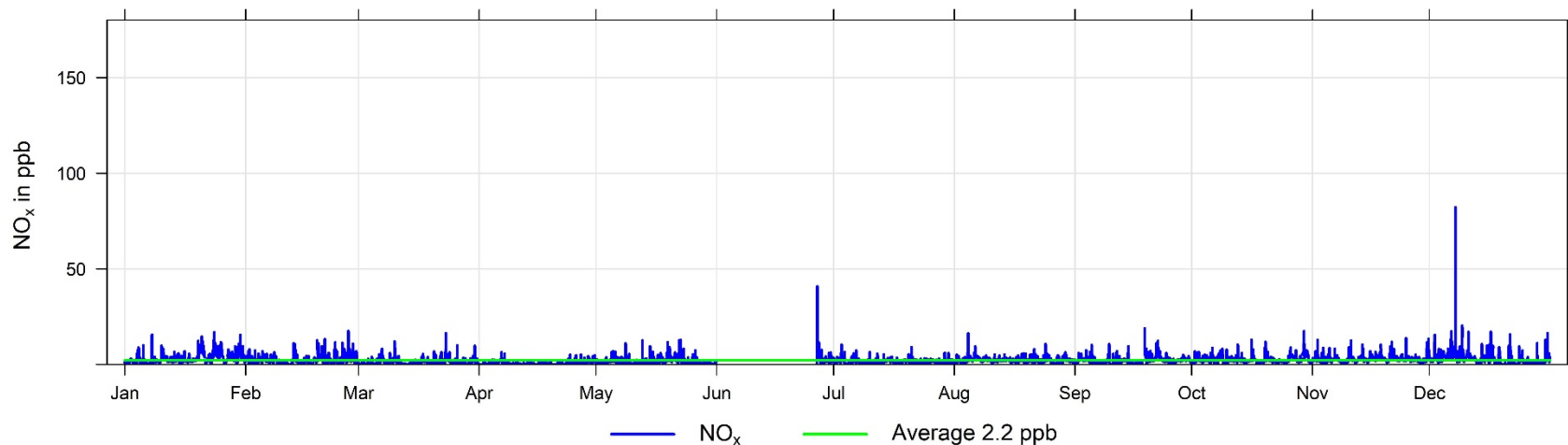


Oxides of Nitrogen (NO_x) Frequency Distribution at Stoughton

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date	
January 2020	712	80.9%	18.5%	0.6%	0.0%	0.0%	0.0%	3.2	8.2	Jan 20	17.0	Jan 23 22:00	100.0%
February 2020	665	91.1%	8.7%	0.2%	0.0%	0.0%	0.0%	2.3	5.2	Feb 27	17.7	Feb 27 09:00	100.0%
March 2020	703	96.0%	3.8%	0.1%	0.0%	0.0%	0.0%	1.4	4.0	Mar 23	16.5	Mar 23 11:00	99.9%
April 2020	659	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.8	2.1	Apr 06	6.6	Apr 06 17:00	95.7%
May 2020	709	95.6%	4.4%	0.0%	0.0%	0.0%	0.0%	1.5	4.4	May 19	12.8	May 22 17:00	99.7%
June 2020	142	88.0%	11.3%	0.0%	0.7%	0.0%	0.0%	2.7	4.6	Jun 27	40.9	Jun 26 20:00	21.4%
July 2020	712	97.2%	2.8%	0.0%	0.0%	0.0%	0.0%	1.6	3.2	Jul 06	10.5	Jul 03 01:00	100.0%
August 2020	711	96.2%	3.7%	0.1%	0.0%	0.0%	0.0%	2.4	4.6	Aug 06	16.4	Aug 04 14:00	100.0%
September 2020	671	93.4%	6.4%	0.1%	0.0%	0.0%	0.0%	2.3	5.8	Sep 22	18.8	Sep 18 21:00	98.9%
October 2020	710	90.0%	9.9%	0.1%	0.0%	0.0%	0.0%	2.7	5.4	Oct 29	17.5	Oct 29 19:00	99.7%
November 2020	688	88.5%	11.5%	0.0%	0.0%	0.0%	0.0%	3.2	6.6	Nov 21	13.9	Nov 24 00:00	100.0%
December 2020	706	84.4%	14.3%	1.1%	0.1%	0.0%	0.0%	3.0	8.9	Dec 07	82.3	Dec 07 17:00	100.0%
Annual	7788	91.7%	8.0%	0.2%	0.1%	0.0%	0.0%	2.2	8.9	Dec 07	82.3	Dec 07 17:00	92.9%

SEQG Objectives: none

2020 Hourly Concentration Readings of NO_x (in ppb) at Stoughton

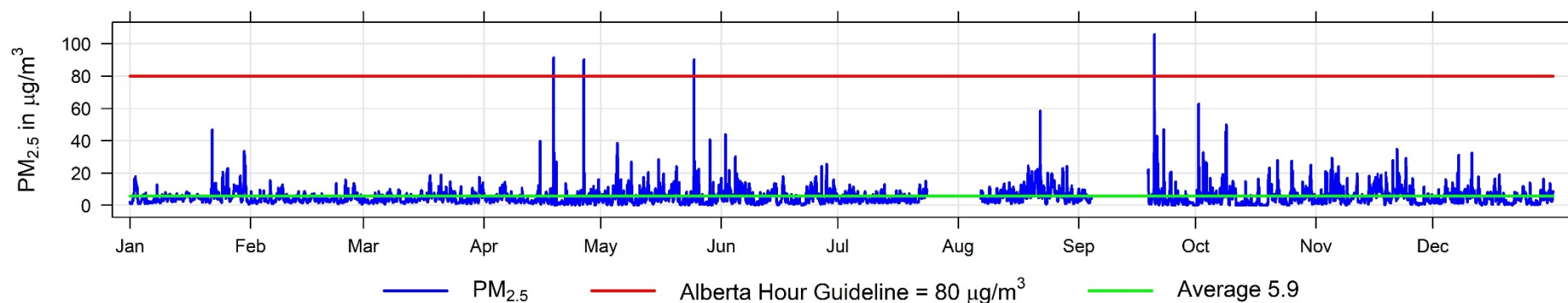


Particulate Matter (PM_{2.5}) Frequency Distribution at Stoughton

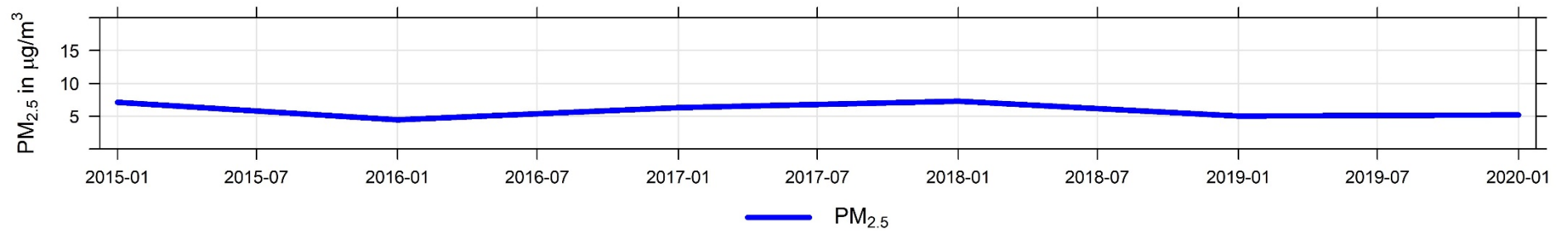
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m³)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 2 (µg/m³)	2 to 4 (µg/m³)	4 to 10 (µg/m³)	10 to 20 (µg/m³)	20 to 29 (µg/m³)	> 29 (µg/m³)		24-hr (µg/m³)	Date	1-hr (µg/m³)	Date		24-hr 28 µg/m³	1-hr 80 µg/m³
January 2020	744	13.7%	27.6%	45.4%	11.3%	1.6%	0.4%	5.7	15.1	Jan 30	47.0	Jan 22 04:00	100.0%	0	0
February 2020	696	14.2%	44.0%	37.9%	3.9%	0.0%	0.0%	4.1	8.2	Feb 27	15.9	Feb 25 10:00	100.0%	0	0
March 2020	743	17.4%	35.9%	41.6%	5.1%	0.0%	0.0%	4.5	9.0	Mar 18	18.9	Mar 20 23:00	99.9%	0	0
April 2020	720	27.8%	32.8%	34.2%	4.2%	0.4%	0.7%	4.4	11.4	Apr 26	91.5	Apr 18 23:00	100.0%	0	2
May 2020	744	28.8%	21.2%	33.1%	14.5%	1.6%	0.8%	5.7	13.0	May 25	90.2	May 25 01:00	100.0%	0	1
June 2020	710	29.4%	22.0%	35.2%	12.5%	0.6%	0.3%	5.2	9.2	Jun 25	43.9	Jun 02 03:00	99.7%	0	0
July 2020	552	26.1%	26.8%	43.5%	3.6%	0.0%	0.0%	4.4	8.7	Jul 23	15.2	Jul 23 15:00	74.2%	0	0
August 2020	607	12.5%	15.8%	47.1%	21.6%	2.8%	0.2%	7.4	13.6	Aug 21	58.4	Aug 22 01:00	81.6%	0	0
September 2020	371	37.5%	21.8%	29.4%	5.9%	3.0%	2.4%	5.5	18.4	Sep 20	105.9	Sep 20 10:00	51.5%	0	1
October 2020	744	36.4%	17.3%	34.5%	9.4%	1.5%	0.8%	5.0	13.8	Oct 08	62.7	Oct 01 20:00	100.0%	0	0
November 2020	720	22.2%	19.9%	39.0%	16.5%	1.9%	0.4%	6.3	13.0	Nov 16	34.9	Nov 21 19:00	100.0%	0	0
December 2020	738	32.1%	19.8%	41.2%	6.2%	0.3%	0.4%	4.6	9.2	Dec 11	32.5	Dec 11 02:00	100.0%	0	0
Annual	8089	24.8%	25.4%	38.5%	9.6%	1.1%	0.5%	5.2	MAXIMUM VALUES				92.2%	0	4

SEQG Objectives: 24-Hr: 28 µg/m³, Alberta Guideline: 1-Hr: 80 µg/m³

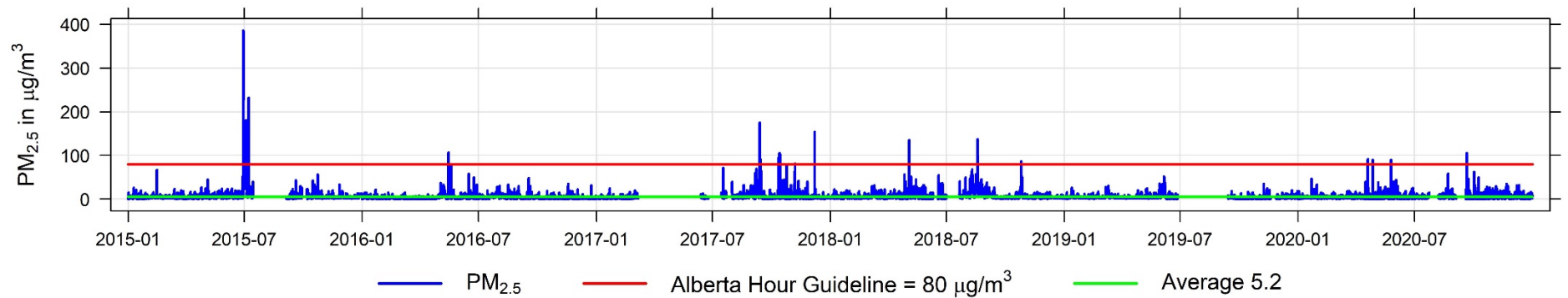
2020 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Stoughton



2015 to 2020 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Stoughton



2015 to 2020 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Stoughton



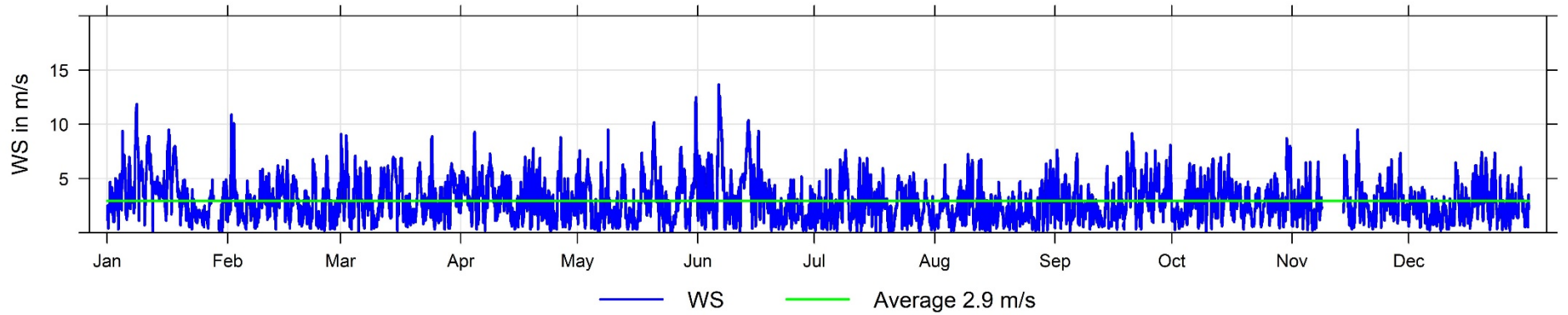
Wind Speed Frequency Distribution of 1-hr Averages - Stoughton

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (m/s)	MAXIMUM VALUES				Operational time (%)
		0 to 2 (m/s)	2 to 4 (m/s)	4 to 6 (m/s)	6 to 8 (m/s)	8 to 10 (m/s)	> 10 (m/s)		24-hr (m/s)	Date	1-hr (m/s)	Date	
January 2020	697	28.8%	32.0%	24.0%	10.0%	4.3%	0.9%	3.7	8.5	Jan 08	11.9	Jan 08 14:00	93.7%
February 2020	696	37.1%	39.5%	19.4%	3.3%	0.4%	0.3%	2.8	5.7	Feb 02	10.9	Feb 01 00:00	100.0%
March 2020	743	30.7%	33.8%	26.5%	7.7%	1.3%	0.0%	3.3	5.3	Mar 01	9.1	Mar 01 04:00	99.9%
April 2020	720	34.2%	33.2%	25.4%	6.3%	1.0%	0.0%	3.1	5.9	Apr 08	9.3	Apr 04 14:00	100.0%
May 2020	743	41.3%	29.5%	19.8%	6.9%	1.5%	1.1%	3.0	7.7	May 31	12.5	May 31 13:00	99.9%
June 2020	718	37.7%	29.7%	18.8%	7.7%	3.6%	2.5%	3.3	10.0	Jun 06	13.7	Jun 06 09:00	99.7%
July 2020	744	42.3%	38.3%	17.1%	2.3%	0.0%	0.0%	2.5	4.4	Jul 09	7.6	Jul 09 02:00	100.0%
August 2020	744	48.8%	39.1%	8.9%	3.2%	0.0%	0.0%	2.3	4.3	Aug 09	7.3	Aug 09 13:00	100.0%
September 2020	719	34.4%	37.8%	19.2%	7.6%	1.0%	0.0%	3.1	5.6	Sep 20	9.2	Sep 20 18:00	99.9%
October 2020	742	32.6%	42.5%	18.1%	6.2%	0.7%	0.0%	3.0	5.8	Oct 31	8.7	Oct 30 15:00	99.7%
November 2020	574	37.5%	43.7%	13.2%	4.9%	0.7%	0.0%	2.8	5.1	Nov 17	9.5	Nov 17 21:00	79.7%
December 2020	744	41.5%	41.4%	14.5%	2.6%	0.0%	0.0%	2.5	4.9	Dec 19	7.4	Dec 19 19:00	100.0%
Annual	8584	37.2%	36.7%	18.7%	5.7%	1.2%	0.4%	3.0	MAXIMUM VALUES				97.7%
									10.0	Jun 06	13.7	Jun 06 09:00	

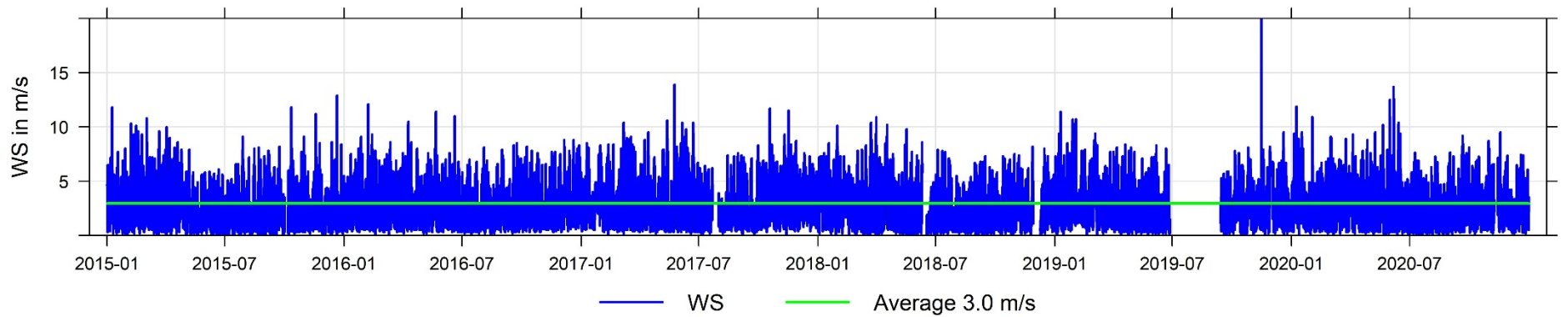
Wind Speed and Wind Direction Frequency Distribution at Stoughton

Direction	Number of Readings	% of wind speed range (m/s)						Total %
		0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	
N	400	0.1%	0.5%	1.3%	2.2%	0.4%	0.1%	4.6%
NNE	243	0.2%	0.6%	1.0%	1.0%	0.0%	0.0%	2.8%
NE	207	0.1%	0.8%	1.1%	0.5%	0.0%	0.0%	2.4%
ENE	269	0.2%	0.8%	1.8%	0.3%	0.0%	0.0%	3.1%
E	394	0.3%	1.1%	2.4%	0.7%	0.0%	0.0%	4.5%
ESE	587	0.3%	0.9%	2.4%	3.0%	0.1%	0.0%	6.7%
SE	388	0.3%	0.8%	1.6%	1.6%	0.1%	0.0%	4.4%
SSE	298	0.2%	0.8%	1.3%	1.0%	0.1%	0.0%	3.4%
S	264	0.3%	1.0%	1.1%	0.5%	0.1%	0.0%	3.0%
SSW	321	0.3%	0.9%	1.6%	0.8%	0.0%	0.0%	3.7%
SW	728	0.2%	1.1%	4.1%	2.8%	0.0%	0.0%	8.3%
WSW	1163	0.2%	0.8%	6.3%	5.9%	0.0%	0.0%	13.3%
W	776	0.2%	0.5%	3.0%	5.0%	0.2%	0.0%	8.9%
WNW	1045	0.1%	0.4%	2.2%	7.3%	1.3%	0.7%	11.9%
NW	1216	0.1%	0.3%	2.0%	6.9%	2.4%	2.1%	13.9%
NNW	462	0.1%	0.4%	1.5%	2.9%	0.4%	0.1%	5.3%
Total	8,761	37.2%	36.7%	18.7%	5.7%	1.2%	0.4%	100.0%

2020 Hourly Readings of Wind Speed (in m/s) at Stoughton



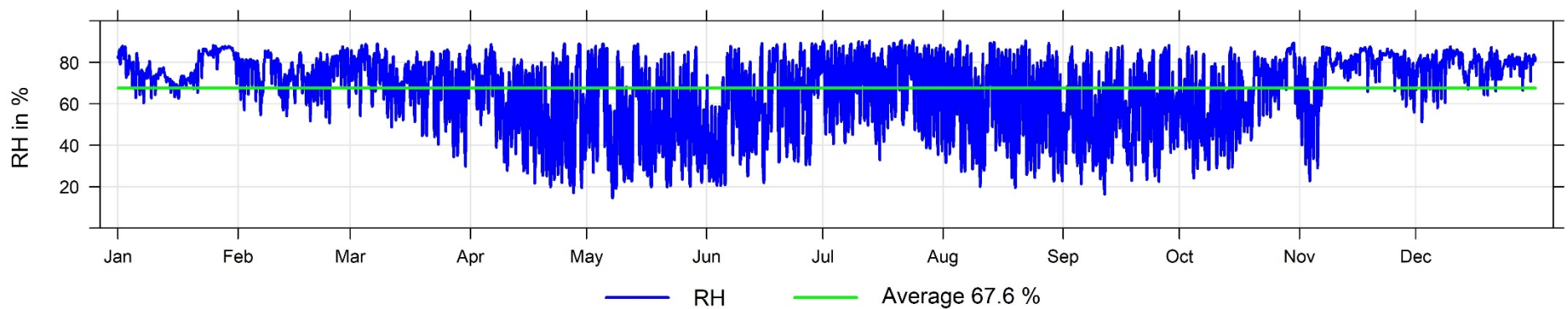
2015 to 2020 Hourly Readings of Wind Speed (in m/s) at Stoughton



Relative Humidity (RH) Frequency Distribution at Stoughton

Month	Monthly Average (%)	Maximum Values				Operational time (%)
		24-hr (%)	Date	1-hr (%)	Date	
January 2020	77.4	87.4	Jan 29	88.2	Jan 25 15:00	100.0%
February 2020	74.4	84.4	Feb 08	87.7	Feb 28 01:00	100.0%
March 2020	71.2	84.3	Mar 04	89.0	Mar 07 00:00	99.9%
April 2020	58.6	79.1	Apr 06	89.1	Apr 25 07:00	100.0%
May 2020	53.1	79.4	May 13	89.1	May 05 06:00	99.9%
June 2020	59.0	83.3	Jun 30	90.1	Jun 30 00:00	99.7%
July 2020	69.9	82.3	Jul 20	90.8	Jul 24 06:00	100.0%
August 2020	60.0	75.6	Aug 13	90.6	Aug 22 08:00	100.0%
September 2020	56.5	72.8	Sep 27	88.2	Sep 28 08:00	99.9%
October 2020	63.8	86.0	Oct 29	89.6	Oct 30 13:00	100.0%
November 2020	76.1	86.4	Nov 17	87.8	Nov 19 05:00	100.0%
December 2020	78.3	84.9	Dec 11	87.7	Dec 09 00:00	100.0%
AVERAGE		MAXIMUM VALUES				
	66.5	87.4	Jan 29	90.8	Jul 24 06:00	99.9%

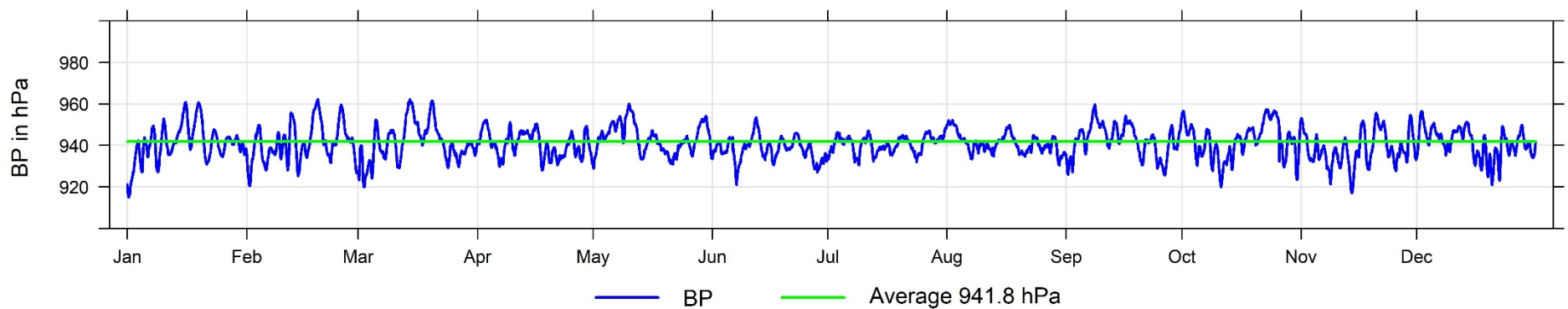
2020 Hourly Readings of Relative Humidity (in %) at Stoughton



Barometric Pressure (BP) Frequency Distribution at Stoughton

Month	Monthly Average (hPa)	Maximum Values				Operational time (%)
		24-hr (hPa)	Date	1-hr (hPa)	Date	
January 2020	941.1	959.4	Jan 19	960.8	Jan 16 04:00	100.0%
February 2020	941.2	960.1	Feb 19	962.3	Feb 19 12:00	100.0%
March 2020	941.3	960.8	Mar 14	962.1	Mar 14 11:00	99.9%
April 2020	940.6	950.0	Apr 02	952.2	Apr 03 08:00	99.9%
May 2020	943.5	958.2	May 10	960.0	May 10 09:00	99.9%
June 2020	938.1	951.3	Jun 12	953.5	Jun 12 09:00	99.7%
July 2020	940.7	947.3	Jul 31	949.8	Jul 31 00:00	100.0%
August 2020	940.9	950.8	Aug 02	952.2	Aug 02 10:00	100.0%
September 2020	942.8	956.6	Sep 08	959.7	Sep 08 10:00	99.9%
October 2020	942.2	955.3	Oct 23	957.3	Oct 22 23:00	100.0%
November 2020	938.2	953.5	Nov 20	955.7	Nov 20 12:00	100.0%
December 2020	941.2	954.1	Dec 02	956.4	Dec 02 11:00	100.0%
	AVERAGE 941.0	MAXIMUM VALUES 960.8 Mar 14 962.3 Feb 19 12:00				99.9%

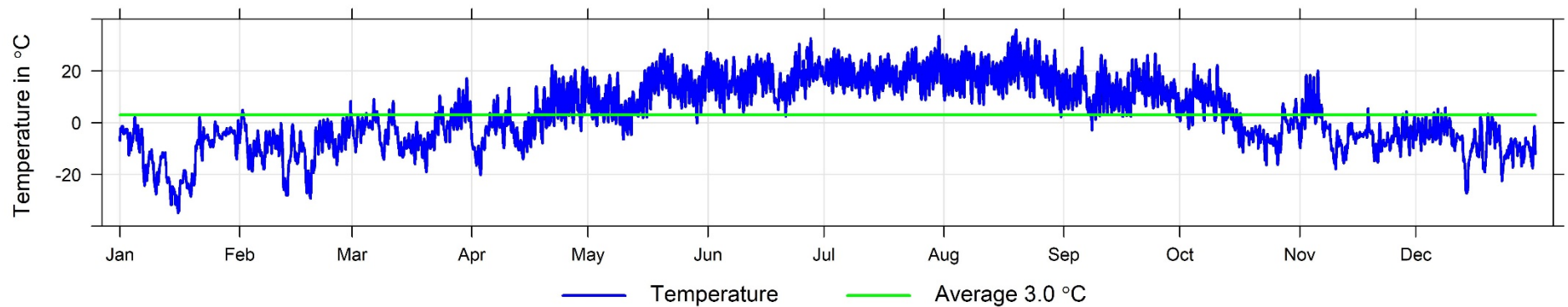
2020 Hourly Readings of Barometric Pressure (in hPa) at Stoughton



Temperature (ET) Frequency Distribution at Stoughton

Month	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)
		24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date	
January 2020	-12.4	-2.8	Jan 01	2.3	Jan 04 21:00	-29.8	Jan 15	-34.8	Jan 16 01:00	100.0%
February 2020	-9.3	0.9	Feb 01	8.4	Feb 29 16:00	-22.7	Feb 18	-29.2	Feb 19 07:00	100.0%
March 2020	-2.9	7.4	Mar 30	17.2	Mar 30 16:00	-10.7	Mar 19	-19.1	Mar 20 06:00	99.9%
April 2020	1.4	13.1	Apr 30	22.2	Apr 21 17:00	-13.2	Apr 02	-20.1	Apr 03 06:00	100.0%
May 2020	11.3	19.8	May 20	28.3	May 20 16:00	1.7	May 10	-6.4	May 10 04:00	99.9%
June 2020	16.8	23.1	Jun 27	32.6	Jun 27 14:00	8.9	Jun 18	2.5	Jun 21 03:00	99.7%
July 2020	19.0	24.3	Jul 30	33.5	Jul 30 17:00	15.2	Jul 20	8.7	Jul 14 05:00	100.0%
August 2020	18.8	25.4	Aug 19	35.9	Aug 19 16:00	10.5	Aug 31	2.2	Aug 31 07:00	100.0%
September 2020	12.1	17.9	Sep 05	29.0	Sep 05 16:00	4.9	Sep 08	-2.8	Sep 08 07:00	99.9%
October 2020	1.6	13.4	Oct 05	22.7	Oct 04 17:00	-10.4	Oct 26	-16.4	Oct 23 08:00	100.0%
November 2020	-3.7	8.6	Nov 04	20.2	Nov 05 16:00	-13.1	Nov 12	-18.0	Nov 10 07:00	100.0%
December 2020	-7.4	-0.3	Dec 08	5.9	Dec 08 15:00	-20.4	Dec 14	-27.3	Dec 14 03:00	100.0%
	AVERAGE 3.8	MAXIMUM VALUES				MINIMUM VALUES				99.9%
		25.4	Aug 19	35.9	Aug 19 16:00	-29.8	Jan 15	-34.8	Jan 16 01:00	

2020 Hourly Temperature Readings (in °C) at Stoughton



APPENDIX F

Wauchope Station: Continuous Monitoring Data

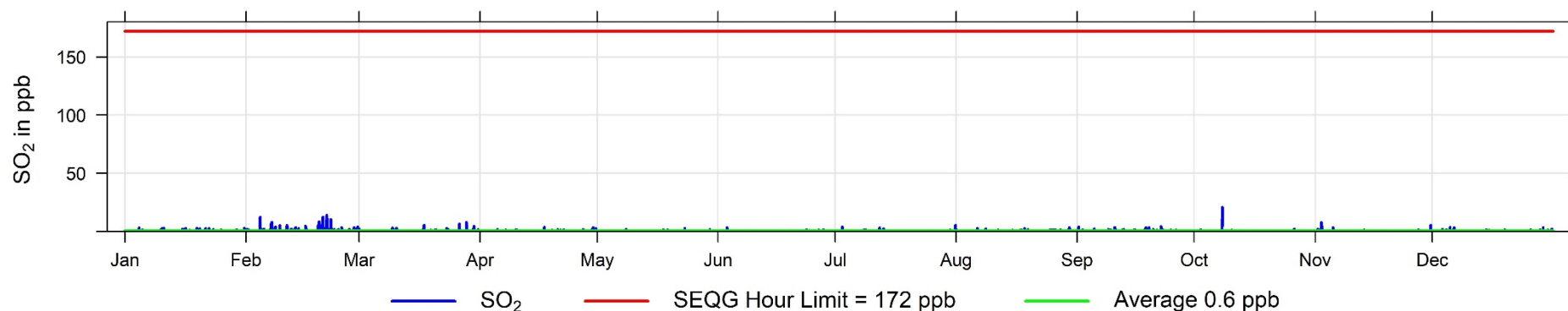
Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above SEQG & AAAQG			
		24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	Annual
Sulphur Dioxide SO ₂ measured in ppb	0.3	2.7	Feb 21	20.8	Oct 08 05:00	94.9%	0	-	0	0
Hydrogen Sulphide H ₂ S measured in ppb	0.5	4.1	Jul 29	32.4	Aug 19 05:00	94.9%	39	-	1	-
Particulate Matter PM _{2.5} measured in µg/m ³	5.7	16.4	Sep 21	67.3	Feb 21 00:00	90.4%	0	-	0	-

Sulphur Dioxide (SO₂) Frequency Distribution at Wachoupe

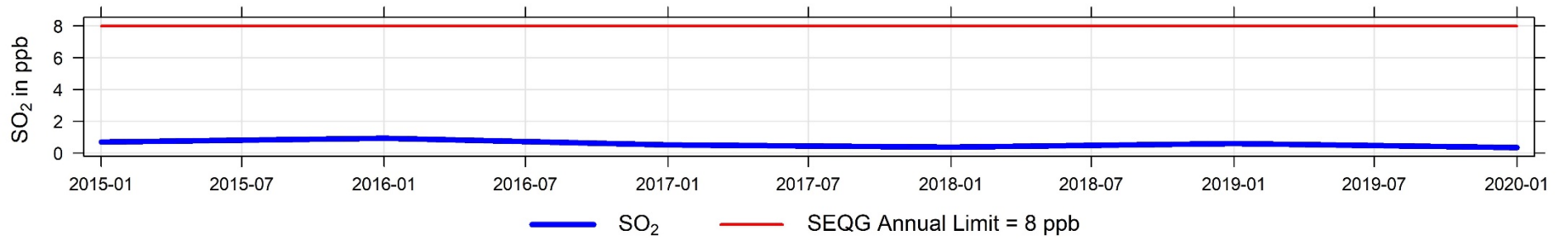
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)			Date	1-hr (ppb)	Date		24-hr 48ppb	1-hr 172ppb
January 2020	704	90.3%	9.7%	0.0%	0.0%	0.0%	0.0%	0.4	1.2	Jan 31	3.1	Jan 04 15:00	99.5%	0	0
February 2020	662	75.2%	21.8%	2.1%	0.9%	0.0%	0.0%	0.9	2.7	Feb 21	13.9	Feb 21 17:00	99.6%	0	0
March 2020	708	91.0%	8.2%	0.8%	0.0%	0.0%	0.0%	0.4	1.3	Mar 17	7.9	Mar 28 12:00	99.5%	0	0
April 2020	682	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.7	Apr 30	3.7	Apr 17 11:00	100.0%	0	0
May 2020	711	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	May 19	2.6	May 23 11:00	100.0%	0	0
June 2020	678	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%	0.2	0.6	Jun 03	3.2	Jun 03 07:00	99.2%	0	0
July 2020	358	94.7%	5.0%	0.3%	0.0%	0.0%	0.0%	0.3	0.8	Jul 02	5.4	Jul 31 20:00	50.5%	0	0
August 2020	654	95.4%	4.6%	0.0%	0.0%	0.0%	0.0%	0.3	0.5	Aug 27	3.2	Aug 30 01:00	92.2%	0	0
September 2020	681	92.7%	7.3%	0.0%	0.0%	0.0%	0.0%	0.4	1.0	Sep 10	4.2	Sep 22 12:00	99.7%	0	0
October 2020	712	98.7%	1.0%	0.0%	0.3%	0.0%	0.0%	0.2	1.9	Oct 08	20.8	Oct 08 05:00	100.0%	0	0
November 2020	679	96.3%	3.2%	0.4%	0.0%	0.0%	0.0%	0.3	1.9	Nov 02	7.7	Nov 02 13:00	98.8%	0	0
December 2020	706	95.8%	4.2%	0.0%	0.0%	0.0%	0.0%	0.3	0.8	Dec 31	3.7	Dec 05 13:00	100.0%	0	0
Annual	7935	93.6%	6.0%	0.3%	0.1%	0.0%	0.0%	0.3	2.7	MAXIMUM VALUES			94.9%	0	0

SEQG Objectives: Annual: 8ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

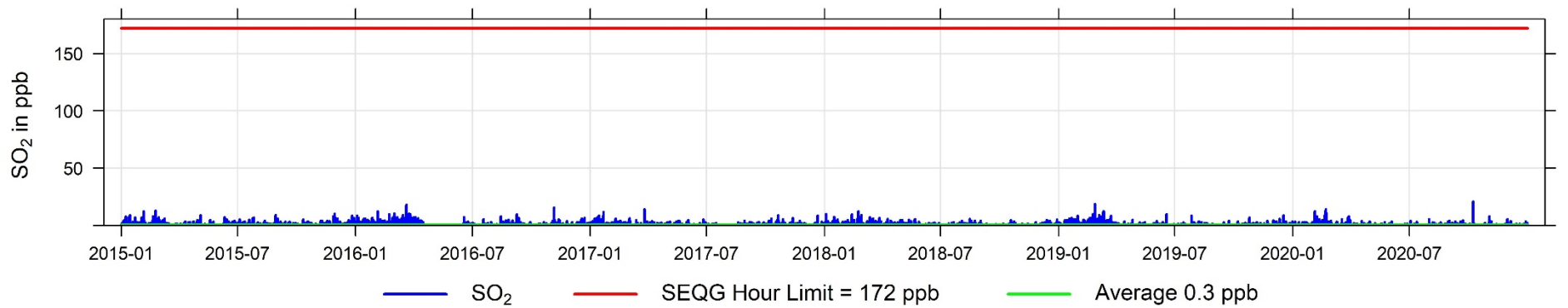
2020 Hourly Concentration Readings of SO₂ (in ppb) at Wachoupe



2015 to 2020 Annual Concentration Readings of SO₂ (in ppb) at Wachoupe



2015 to 2020 Hourly Concentration Readings of SO₂ (in ppb) at Wachoupe

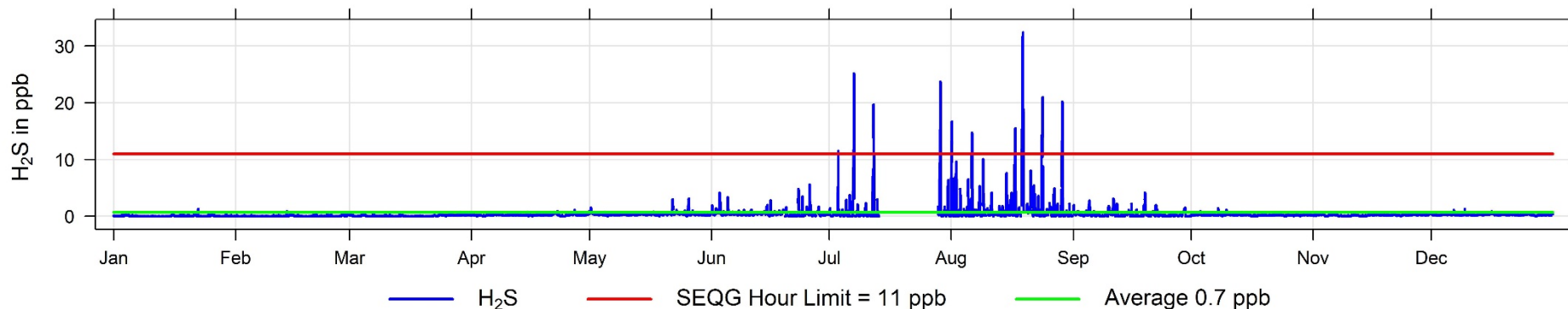


Hydrogen Sulphide (H₂S) Frequency Distribution at Wachoupe

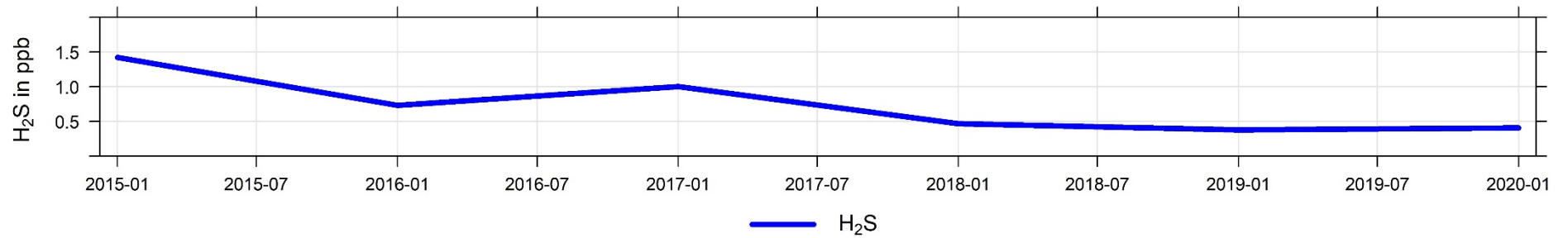
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 3.6ppb	1-hr 11ppb
January 2020	704	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Jan 21	1.3	Jan 22 13:00	99.5%	0	0
February 2020	662	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.2	Feb 29	0.9	Feb 14 01:00	99.6%	0	0
March 2020	708	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.5	Mar 31	0.8	Mar 29 03:00	99.6%	0	0
April 2020	682	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2	0.5	Apr 22	1.1	Apr 27 05:00	100.0%	0	0
May 2020	711	97.6%	2.1%	0.3%	0.0%	0.0%	0.0%	0.4	0.8	May 22	3.1	May 26 06:00	100.0%	0	0
June 2020	678	90.6%	8.1%	1.2%	0.1%	0.0%	0.0%	0.5	1.1	Jun 03	5.6	Jun 25 23:00	99.2%	0	0
July 2020	357	81.2%	9.2%	2.8%	2.2%	1.4%	3.1%	1.2	4.1	Jul 29	25.2	Jul 07 06:00	50.7%	1	11
August 2020	654	68.3%	17.0%	6.0%	2.6%	1.2%	4.9%	1.7	3.5	Aug 01	32.4	Aug 19 05:00	92.2%	0	28
September 2020	681	91.6%	7.8%	0.6%	0.0%	0.0%	0.0%	0.4	1.1	Sep 19	4.2	Sep 19 06:00	99.7%	0	0
October 2020	712	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Oct 09	1.4	Oct 07 20:00	100.0%	0	0
November 2020	678	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Nov 30	0.6	Nov 30 16:00	98.6%	0	0
December 2020	706	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.3	0.5	Dec 16	1.3	Dec 09 13:00	100.0%	0	0
Annual	7933	94.0%	3.8%	0.9%	0.4%	0.2%	0.7%	0.5	MAXIMUM VALUES				94.9%	1	39

SEQG Objectives: 24-Hr: 3.6ppb, 1-Hr: 11ppb

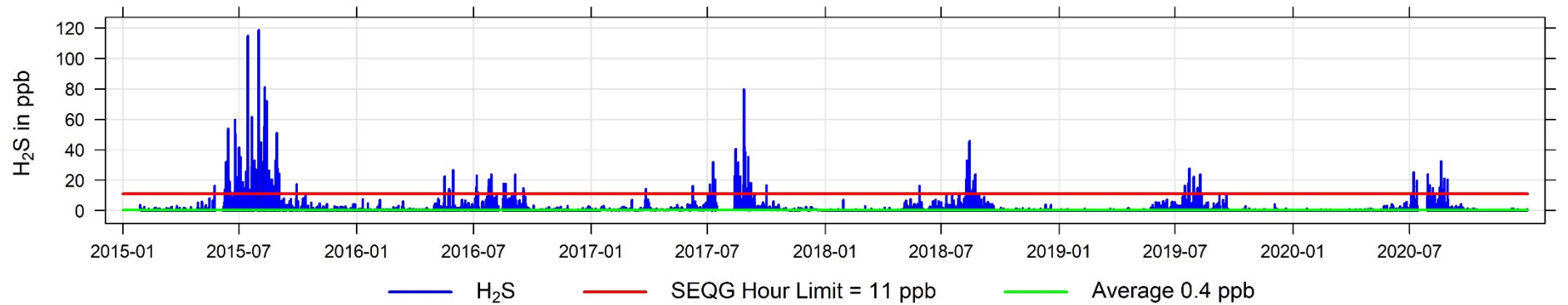
2020 Hourly Concentration Readings of H₂S (in ppb) at Wachoupe



2015 to 2020 Annual Concentration Readings of H₂S (in ppb) at Wachoupe



2015 to 2020 Hourly Concentration Readings of H₂S (in ppb) at Wachoupe

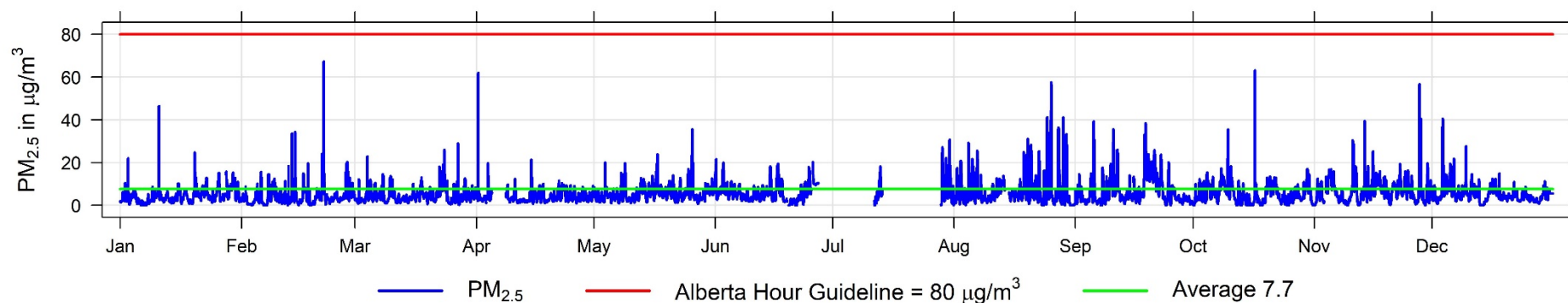


Particulate Matter (PM_{2.5}) Frequency Distribution at Wachoupe

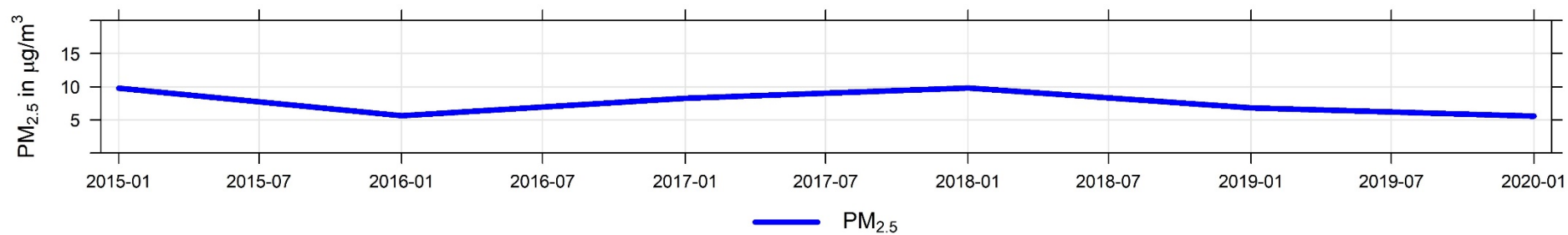
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m ³)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 2 (µg/m ³)	2 to 4 (µg/m ³)	4 to 10 (µg/m ³)	10 to 20 (µg/m ³)	20 to 29 (µg/m ³)	> 29 (µg/m ³)		24-hr (µg/m ³)	Date	1-hr (µg/m ³)	Date		24-hr 28 µg/m ³	1-hr 80 µg/m ³
January 2020	741	22.1%	32.7%	39.7%	5.1%	0.3%	0.1%	4.4	10.0	Jan 29	46.5	Jan 10 22:00	99.6%	0	0
February 2020	695	33.1%	28.3%	30.2%	7.5%	0.4%	0.4%	4.3	10.4	Feb 27	67.3	Feb 21 00:00	99.9%	0	0
March 2020	742	19.5%	33.8%	38.8%	7.3%	0.5%	0.0%	4.7	12.0	Mar 23	28.9	Mar 27 07:00	99.7%	0	0
April 2020	629	18.8%	40.7%	38.2%	1.9%	0.3%	0.2%	4.2	7.1	Apr 01	61.9	Apr 01 11:00	88.3%	0	0
May 2020	743	10.5%	25.4%	53.3%	9.6%	0.7%	0.5%	5.9	10.9	May 26	35.6	May 26 03:00	99.9%	0	0
June 2020	618	13.8%	23.0%	47.4%	15.5%	0.3%	0.0%	6.0	10.1	Jun 26	21.6	Jun 01 05:00	86.7%	0	0
July 2020	131	18.3%	19.8%	35.1%	19.1%	6.9%	0.8%	7.5	11.8	Jul 30	30.7	Jul 30 20:00	17.6%	0	0
August 2020	710	20.3%	25.1%	33.9%	12.8%	4.9%	3.0%	7.1	15.9	Aug 25	57.6	Aug 25 19:00	95.4%	0	0
September 2020	716	19.7%	26.4%	31.8%	16.2%	4.5%	1.4%	6.8	16.4	Sep 21	39.3	Sep 05 15:00	99.4%	0	0
October 2020	744	26.5%	20.7%	39.0%	12.9%	0.5%	0.4%	5.4	12.1	Oct 08	63.2	Oct 16 20:00	100.0%	0	0
November 2020	711	19.0%	14.8%	44.6%	20.5%	0.4%	0.7%	6.7	12.8	Nov 05	56.6	Nov 27 21:00	98.8%	0	0
December 2020	738	11.5%	31.3%	47.6%	8.9%	0.4%	0.3%	5.3	10.9	Dec 05	40.5	Dec 03 19:00	100.0%	0	0
Annual	7918	19.4%	26.8%	40.0%	11.4%	1.7%	0.6%	5.7	MAXIMUM VALUES				90.4%	0	0

SEQG Objectives: 24-Hr: 28 µg/m³, Alberta Guideline: 1-Hr: 80 µg/m³

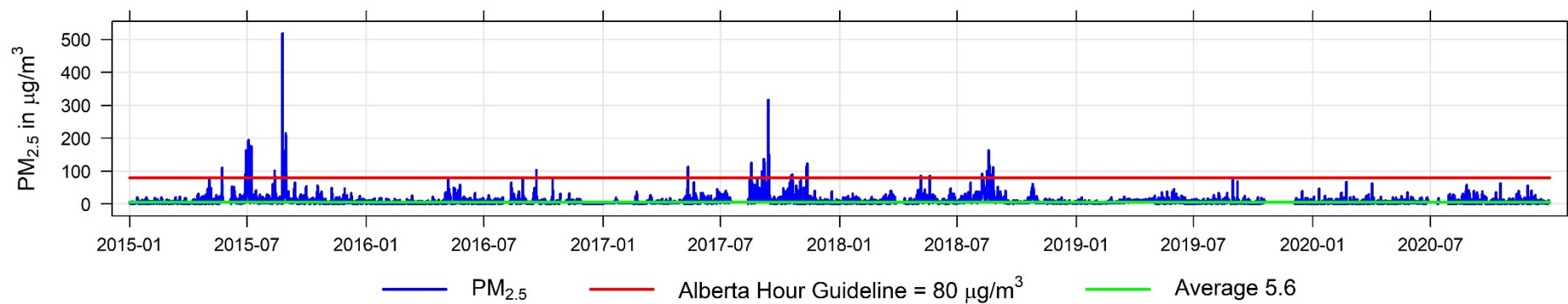
2020 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Wachoupe



2015 to 2020 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Wachoupe



2015 to 2020 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Wachoupe



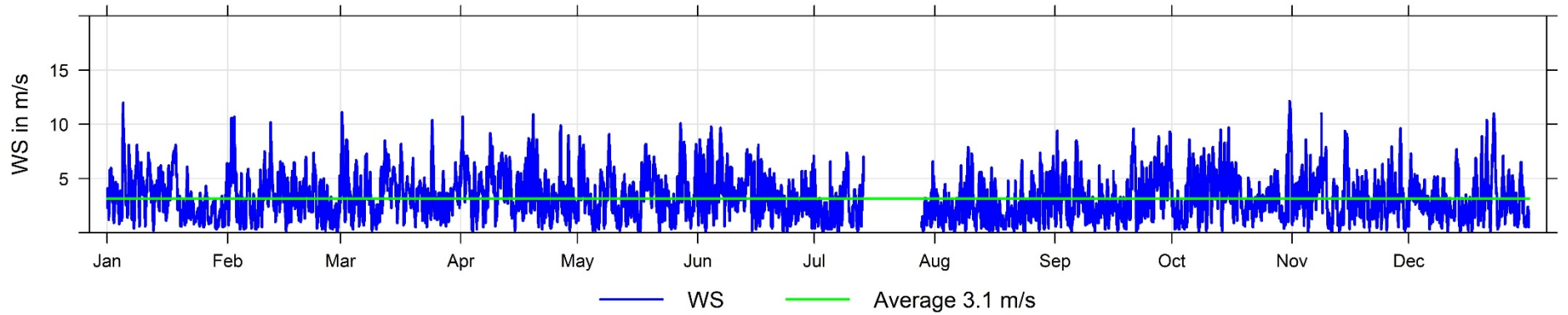
Wind Speed Frequency Distribution of 1-hr Averages - Wachoupe

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (m/s)	MAXIMUM VALUES				Operational time (%)
		0 to 2 (m/s)	2 to 4 (m/s)	4 to 6 (m/s)	6 to 8 (m/s)	8 to 10 (m/s)	> 10 (m/s)		24-hr (m/s)	Date	1-hr (m/s)	Date	
January 2020	741	31.8%	36.2%	22.3%	8.0%	1.2%	0.5%	3.3	6.8	Jan 18	12.0	Jan 05 02:00	99.6%
February 2020	695	30.5%	37.7%	23.2%	6.2%	1.9%	0.6%	3.3	7.7	Feb 02	10.7	Feb 02 17:00	99.9%
March 2020	740	24.1%	38.4%	25.0%	9.2%	2.7%	0.7%	3.6	6.4	Mar 01	11.1	Mar 01 10:00	99.5%
April 2020	720	21.3%	34.2%	25.7%	13.8%	4.4%	0.7%	3.9	7.2	Apr 01	10.9	Apr 19 16:00	100.0%
May 2020	743	29.2%	33.2%	24.1%	9.7%	3.6%	0.1%	3.5	6.2	May 27	10.1	May 27 14:00	99.9%
June 2020	720	21.1%	41.1%	23.5%	11.1%	3.2%	0.0%	3.6	6.6	Jun 06	9.8	Jun 04 11:00	100.0%
July 2020	379	48.5%	36.9%	10.8%	3.7%	0.0%	0.0%	2.3	5.3	Jul 09	7.4	Jul 09 09:00	50.9%
August 2020	744	46.9%	34.0%	15.2%	3.9%	0.0%	0.0%	2.5	4.5	Aug 28	7.9	Aug 09 15:00	100.0%
September 2020	718	31.5%	33.6%	20.5%	10.6%	3.9%	0.0%	3.4	6.7	Sep 30	9.6	Sep 21 04:00	99.7%
October 2020	744	28.8%	37.4%	20.3%	9.3%	3.0%	1.3%	3.5	8.7	Oct 31	12.1	Oct 31 08:00	100.0%
November 2020	712	31.0%	36.8%	22.3%	7.7%	1.8%	0.3%	3.2	5.5	Nov 09	11.5	Nov 08 16:00	98.9%
December 2020	744	32.1%	41.9%	17.2%	5.5%	2.4%	0.8%	3.1	6.4	Dec 22	11.0	Dec 22 22:00	100.0%
Annual	8400	31.4%	36.8%	20.8%	8.2%	2.3%	0.4%	3.3	8.7	Oct 31	12.1	Oct 31 08:00	95.7%

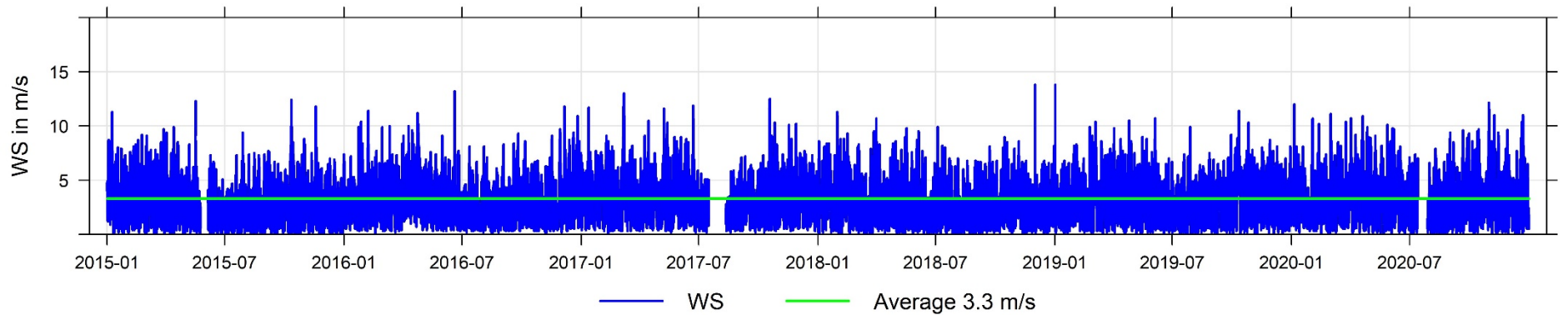
Wind Speed and Wind Direction Frequency Distribution at Wachoupe

Direction	Number of Readings	% of wind speed range (m/s)						Total %
		0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	
N	400	0.1%	0.5%	1.3%	2.2%	0.4%	0.1%	4.6%
NNE	243	0.2%	0.6%	1.0%	1.0%	0.0%	0.0%	2.8%
NE	207	0.1%	0.8%	1.1%	0.5%	0.0%	0.0%	2.4%
ENE	269	0.2%	0.8%	1.8%	0.3%	0.0%	0.0%	3.1%
E	394	0.3%	1.1%	2.4%	0.7%	0.0%	0.0%	4.5%
ESE	587	0.3%	0.9%	2.4%	3.0%	0.1%	0.0%	6.7%
SE	388	0.3%	0.8%	1.6%	1.6%	0.1%	0.0%	4.4%
SSE	298	0.2%	0.8%	1.3%	1.0%	0.1%	0.0%	3.4%
S	264	0.3%	1.0%	1.1%	0.5%	0.1%	0.0%	3.0%
SSW	321	0.3%	0.9%	1.6%	0.8%	0.0%	0.0%	3.7%
SW	728	0.2%	1.1%	4.1%	2.8%	0.0%	0.0%	8.3%
WSW	1163	0.2%	0.8%	6.3%	5.9%	0.0%	0.0%	13.3%
W	776	0.2%	0.5%	3.0%	5.0%	0.2%	0.0%	8.9%
WNW	1045	0.1%	0.4%	2.2%	7.3%	1.3%	0.7%	11.9%
NW	1216	0.1%	0.3%	2.0%	6.9%	2.4%	2.1%	13.9%
NNW	462	0.1%	0.4%	1.5%	2.9%	0.4%	0.1%	5.3%
Total	8,761	31.4%	36.8%	20.8%	8.2%	2.3%	0.4%	100.0%

2020 Hourly Readings of Wind Speed (in m/s) at Wachoupe



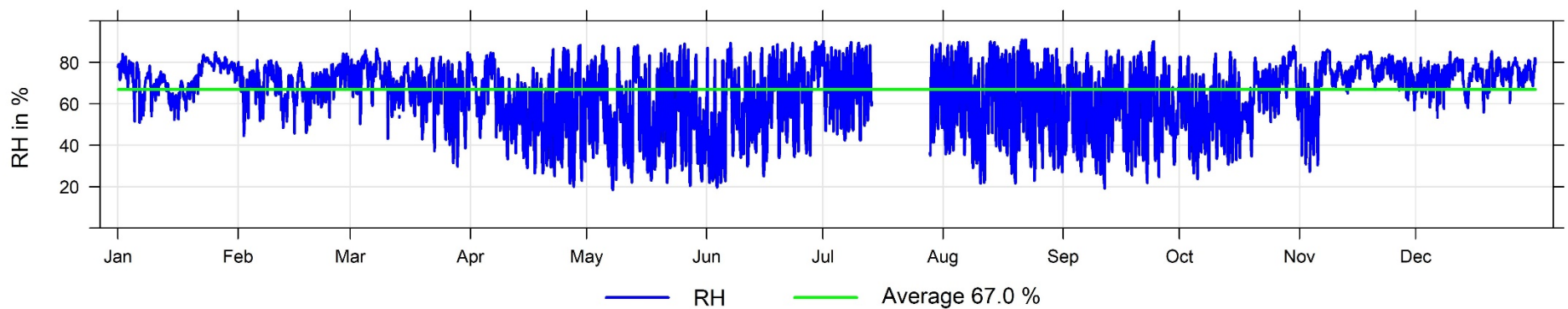
2015 to 2020 Hourly Readings of Wind Speed (in m/s) at Wachoupe



Relative Humidity (RH) Frequency Distribution at Wachoupe

Month	Monthly Average (%)	Maximum Values				Operational time (%)
		24-hr (%)	Date	1-hr (%)	Date	
January 2020	72.1	82.2	Jan 26	84.9	Jan 26 04:00	99.6%
February 2020	69.2	77.1	Feb 09	84.2	Feb 29 01:00	99.9%
March 2020	68.6	81.5	Mar 04	86.6	Mar 07 19:00	99.7%
April 2020	58.3	79.4	Apr 06	88.4	Apr 29 08:00	100.0%
May 2020	54.9	81.5	May 13	89.0	May 26 06:00	99.9%
June 2020	60.3	83.6	Jun 30	90.0	Jun 29 02:00	100.0%
July 2020	68.1	72.7	Jul 09	90.2	Jul 01 03:00	50.9%
August 2020	61.4	75.5	Aug 21	91.0	Aug 21 09:00	100.0%
September 2020	57.7	72.8	Sep 23	90.2	Sep 24 09:00	99.7%
October 2020	61.7	84.8	Oct 30	87.9	Oct 30 13:00	100.0%
November 2020	73.0	84.2	Nov 08	86.1	Nov 08 06:00	99.9%
December 2020	73.8	79.9	Dec 11	85.3	Dec 20 15:00	100.0%
AVERAGE		MAXIMUM VALUES				
	64.9	84.8	Oct 30	91.0	Aug 21 09:00	95.8%

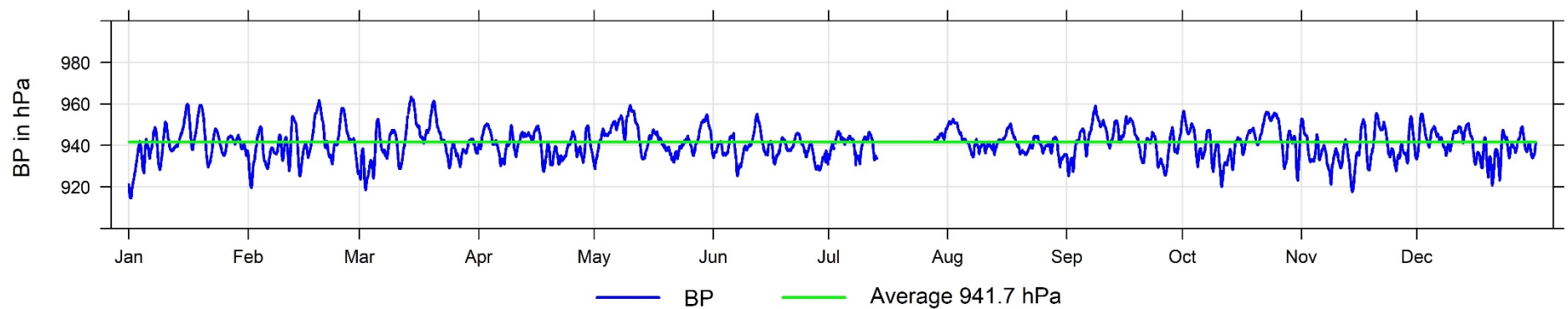
2020 Hourly Readings of Relative Humidity (in %) at Wachoupe



Barometric Pressure (BP) Frequency Distribution at Wachoupe

Month	Monthly Average (hPa)	Maximum Values				Operational time (%)
		24-hr (hPa)	Date	1-hr (hPa)	Date	
January 2020	940.9	958.2	Jan 19	960.0	Jan 16 05:00	99.6%
February 2020	940.8	959.4	Feb 19	961.7	Feb 19 12:00	99.9%
March 2020	941.4	961.9	Mar 14	963.4	Mar 14 11:00	99.7%
April 2020	940.2	949.1	Apr 03	950.5	Apr 03 02:00	100.0%
May 2020	944.0	957.7	May 10	959.3	May 10 10:00	99.9%
June 2020	938.5	953.1	Jun 12	955.1	Jun 12 10:00	100.0%
July 2020	941.5	946.8	Jul 31	949.5	Jul 31 00:00	50.9%
August 2020	941.3	951.5	Aug 02	952.8	Aug 02 10:00	100.0%
September 2020	942.7	956.5	Sep 08	959.1	Sep 08 11:00	99.7%
October 2020	941.9	954.4	Oct 23	956.5	Oct 01 09:00	100.0%
November 2020	938.1	953.0	Nov 20	955.5	Nov 20 12:00	99.9%
December 2020	940.7	953.1	Dec 02	955.2	Dec 02 07:00	100.0%
	AVERAGE 941.0	MAXIMUM VALUES 961.9 Mar 14 963.4 Mar 14 11:00				95.8%

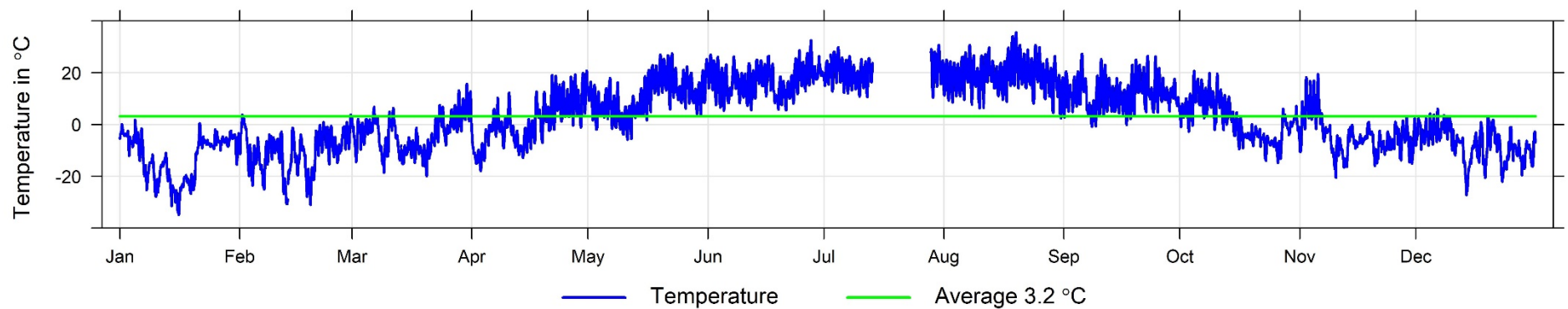
2020 Hourly Readings of Barometric Pressure (in hPa) at Wachoupe



Temperature (ET) Frequency Distribution at Wachoupe

Month	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)
		24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date	
January 2020	-12.9	-2.6	Jan 01	1.8	Jan 04 23:00	-28.6	Jan 16	-34.8	Jan 16 06:00	99.6%
February 2020	-10.6	-0.9	Feb 01	3.8	Feb 29 16:00	-23.5	Feb 13	-31.0	Feb 19 08:00	99.9%
March 2020	-3.6	7.6	Mar 30	15.7	Mar 30 17:00	-12.3	Mar 20	-19.9	Mar 20 08:00	99.7%
April 2020	1.1	12.7	Apr 30	20.8	Apr 30 16:00	-12.6	Apr 02	-17.9	Apr 03 07:00	100.0%
May 2020	11.0	19.2	May 19	27.5	May 22 18:00	1.1	May 09	-5.9	May 11 05:00	99.9%
June 2020	17.1	23.6	Jun 27	32.5	Jun 27 16:00	10.3	Jun 18	5.4	Jun 05 03:00	100.0%
July 2020	20.2	23.3	Jul 04	30.8	Jul 30 17:00	17.1	Jul 09	10.5	Jul 29 05:00	50.9%
August 2020	18.8	25.3	Aug 19	35.6	Aug 19 16:00	10.0	Aug 31	2.4	Aug 31 06:00	100.0%
September 2020	11.8	18.0	Sep 05	27.3	Sep 05 16:00	4.1	Sep 08	-0.8	Sep 08 07:00	99.7%
October 2020	1.5	13.8	Oct 05	20.7	Oct 04 17:00	-10.0	Oct 26	-14.8	Oct 26 08:00	100.0%
November 2020	-4.5	8.4	Nov 04	19.5	Nov 05 16:00	-14.3	Nov 12	-20.5	Nov 10 08:00	99.9%
December 2020	-7.5	0.8	Dec 08	6.1	Dec 06 15:00	-20.5	Dec 14	-27.2	Dec 14 02:00	100.0%
	AVERAGE 3.5	MAXIMUM VALUES				MINIMUM VALUES				95.8%
		25.3	Aug 19	35.6	Aug 19 16:00	-28.6	Jan 16	-34.8	Jan 16 06:00	

2020 Hourly Temperature Readings (in °C) at Wachoupe



APPENDIX G

Torquay Station: Continuous Monitoring Data

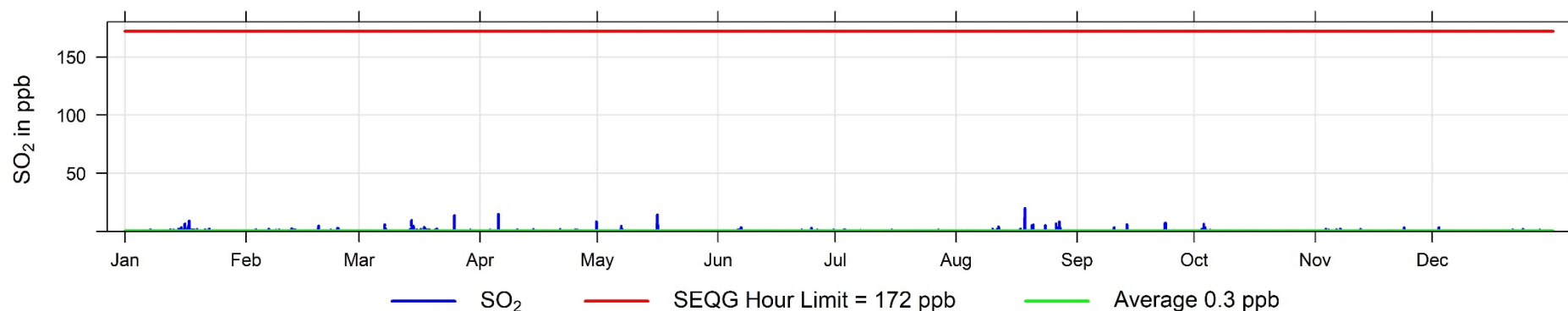
Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above SEQG & AAAQG			
		24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	Annual
Sulphur Dioxide SO ₂ measured in ppb	0.3	2.4	Jan 17	19.8	Aug 18 15:00	99.6%	0	-	0	0
Hydrogen Sulphide H ₂ S measured in ppb	0.3	1.2	Aug 19	9.0	Apr 18 22:00	99.6%	0	-	0	-
Particulate Matter PM _{2.5} measured in µg/m ³	5.5	23.0	Sep 19	64.1	Oct 04 19:00	99.4%	0	-	0	-

Sulphur Dioxide (SO₂) Frequency Distribution at Torquay

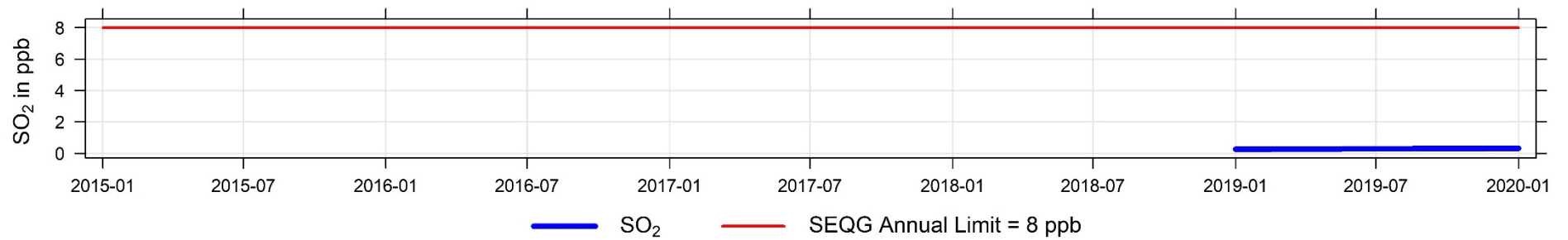
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 48ppb	1-hr 172ppb
January 2020	712	90.7%	8.4%	0.8%	0.0%	0.0%	0.0%	0.5	2.4	Jan 17	9.1	Jan 17 11:00	100.0%	0	0
February 2020	659	95.1%	4.9%	0.0%	0.0%	0.0%	0.0%	0.3	0.9	Feb 24	4.8	Feb 19 15:00	99.1%	0	0
March 2020	707	95.5%	4.0%	0.4%	0.1%	0.0%	0.0%	0.3	1.4	Mar 14	13.8	Mar 25 10:00	100.0%	0	0
April 2020	688	98.0%	1.7%	0.1%	0.1%	0.0%	0.0%	0.2	0.9	Apr 05	15.0	Apr 05 17:00	99.9%	0	0
May 2020	709	98.4%	1.1%	0.3%	0.1%	0.0%	0.0%	0.2	1.5	May 16	14.4	May 16 10:00	99.7%	0	0
June 2020	682	97.1%	2.9%	0.0%	0.0%	0.0%	0.0%	0.4	1.0	Jun 06	3.5	Jun 06 21:00	99.9%	0	0
July 2020	712	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%	0.4	0.6	Jul 23	1.2	Jul 15 12:00	100.0%	0	0
August 2020	697	94.8%	4.0%	0.9%	0.3%	0.0%	0.0%	0.5	2.1	Aug 18	19.8	Aug 18 15:00	98.1%	0	0
September 2020	682	98.2%	1.3%	0.4%	0.0%	0.0%	0.0%	0.2	1.4	Sep 23	7.4	Sep 23 15:00	99.6%	0	0
October 2020	712	98.2%	1.7%	0.1%	0.0%	0.0%	0.0%	0.3	1.3	Oct 03	6.2	Oct 03 11:00	100.0%	0	0
November 2020	685	98.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.6	Nov 07	3.0	Nov 23 19:00	99.6%	0	0
December 2020	698	99.1%	0.9%	0.0%	0.0%	0.0%	0.0%	0.3	0.5	Dec 28	3.2	Dec 02 16:00	99.1%	0	0
Annual	8343	96.9%	2.8%	0.3%	0.1%	0.0%	0.0%	0.3	2.4	MAXIMUM VALUES			99.6%	0	0

SEQG Objectives: Annual: 8ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

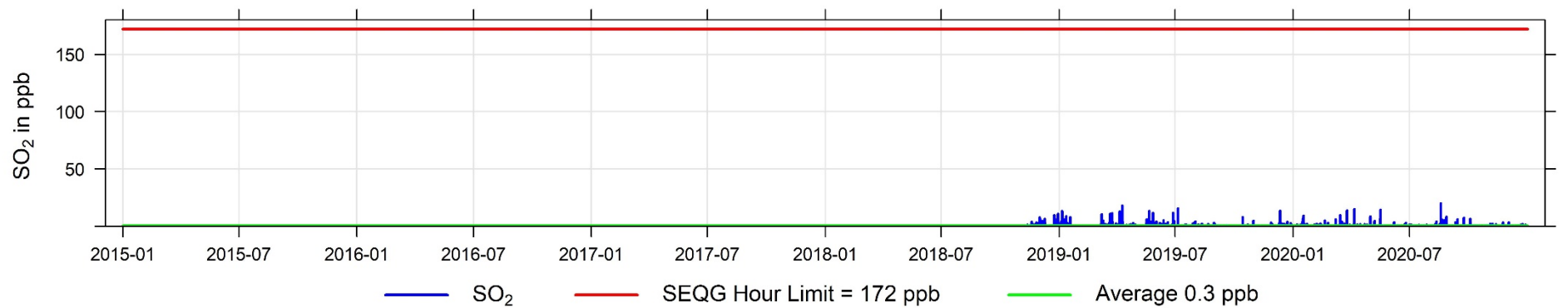
2020 Hourly Concentration Readings of SO₂ (in ppb) at Torquay



2015 to 2020 Annual Concentration Readings of SO₂ (in ppb) at Torquay



2015 to 2020 Hourly Concentration Readings of SO₂ (in ppb) at Torquay

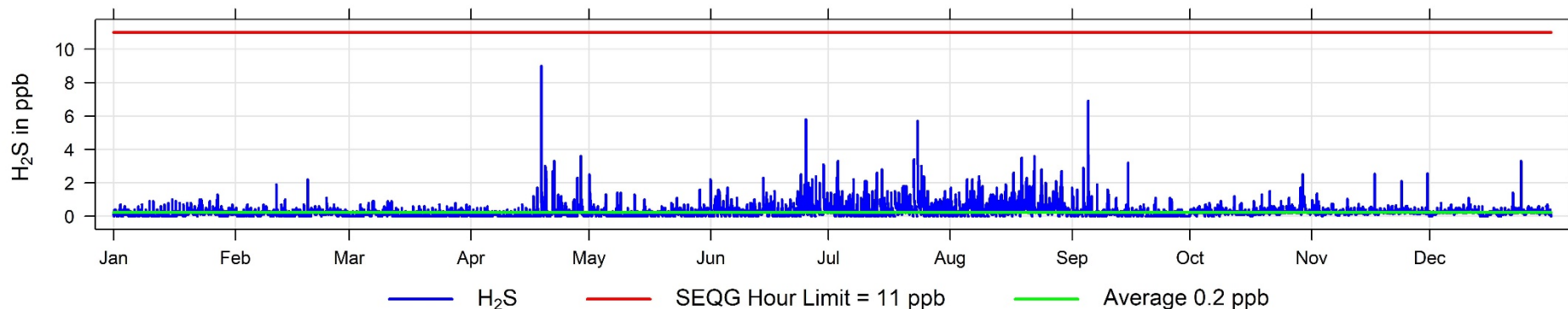


Hydrogen Sulphide (H₂S) Frequency Distribution at Torquay

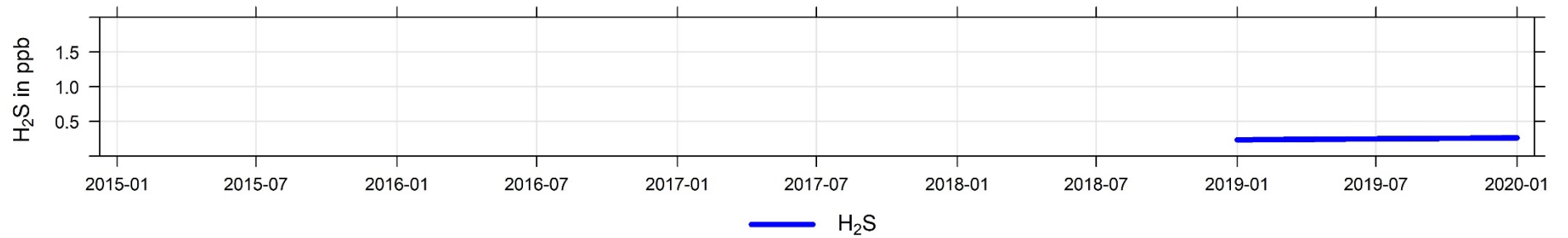
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 3.6ppb	1-hr 11ppb
January 2020	712	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	Jan 23	1.3	Jan 27 11:00	100.0%	0	0
February 2020	659	99.5%	0.5%	0.0%	0.0%	0.0%	0.0%	0.2	0.3	Feb 24	2.2	Feb 19 10:00	99.1%	0	0
March 2020	707	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1	0.4	Mar 07	0.9	Mar 10 19:00	99.9%	0	0
April 2020	688	97.5%	2.0%	0.3%	0.0%	0.1%	0.0%	0.2	0.6	Apr 18	9.0	Apr 18 22:00	99.9%	0	0
May 2020	709	98.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.2	0.4	May 01	2.5	May 01 03:00	99.7%	0	0
June 2020	682	93.4%	6.3%	0.1%	0.1%	0.0%	0.0%	0.4	1.0	Jun 25	5.8	Jun 25 06:00	99.9%	0	0
July 2020	712	89.3%	10.0%	0.6%	0.1%	0.0%	0.0%	0.4	0.9	Jul 24	5.7	Jul 23 16:00	100.0%	0	0
August 2020	697	85.5%	14.1%	0.4%	0.0%	0.0%	0.0%	0.5	1.2	Aug 19	3.6	Aug 22 09:00	98.1%	0	0
September 2020	682	97.2%	2.3%	0.3%	0.1%	0.0%	0.0%	0.2	0.8	Sep 05	6.9	Sep 05 02:00	99.6%	0	0
October 2020	712	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.3	0.8	Oct 29	2.5	Oct 29 17:00	100.0%	0	0
November 2020	684	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.3	0.4	Nov 06	2.6	Nov 30 10:00	99.4%	0	0
December 2020	698	99.4%	0.4%	0.1%	0.0%	0.0%	0.0%	0.2	0.4	Dec 10	3.3	Dec 24 06:00	99.1%	0	0
Annual	8342	96.5%	3.3%	0.2%	0.0%	0.0%	0.0%	0.3	MAXIMUM VALUES				99.6%	0	0

SEQG Objectives: 24-Hr: 3.6ppb, 1-Hr: 11ppb

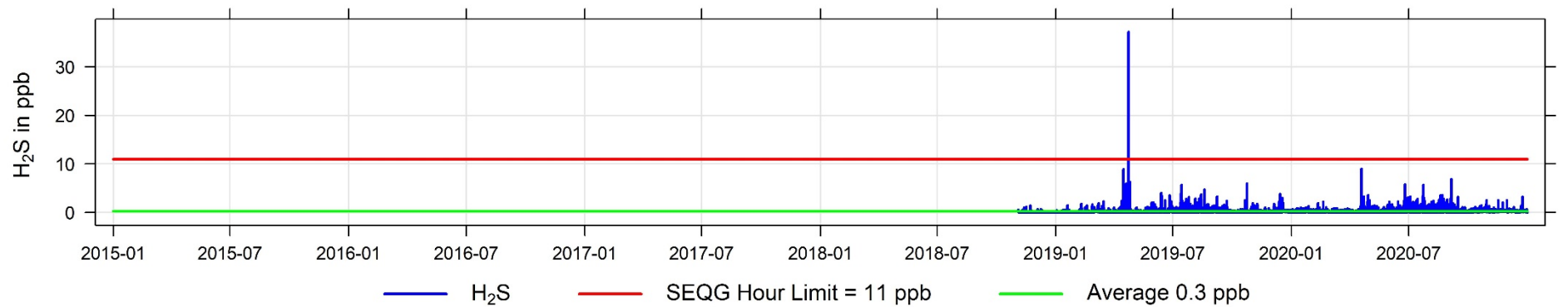
2020 Hourly Concentration Readings of H₂S (in ppb) at Torquay



2015 to 2020 Annual Concentration Readings of H₂S (in ppb) at Torquay



2015 to 2020 Hourly Concentration Readings of H₂S (in ppb) at Torquay

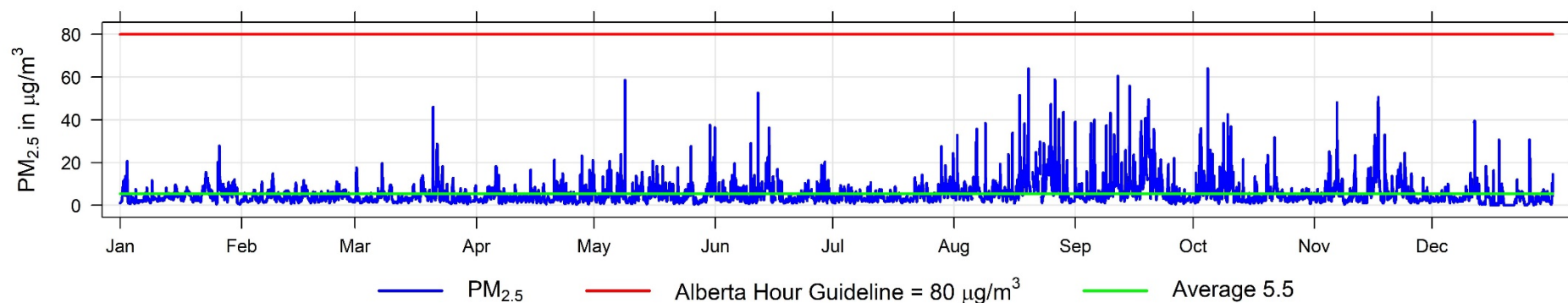


Particulate Matter (PM_{2.5}) Frequency Distribution at Torquay

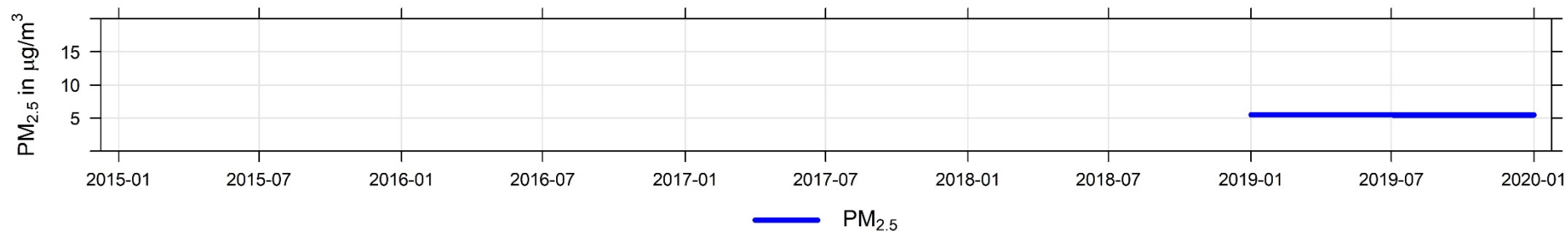
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m³)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 2 (µg/m³)	2 to 4 (µg/m³)	4 to 10 (µg/m³)	10 to 20 (µg/m³)	20 to 29 (µg/m³)	> 29 (µg/m³)		24-hr (µg/m³)	Date	1-hr (µg/m³)	Date		24-hr 28 µg/m³	1-hr 80 µg/m³
January 2020	744	18.3%	29.6%	44.2%	7.3%	0.7%	0.0%	4.8	11.6	Jan 26	27.9	Jan 26 08:00	100.0%	0	0
February 2020	696	21.0%	35.6%	41.2%	2.2%	0.0%	0.0%	4.0	7.5	Feb 08	14.9	Feb 08 23:00	100.0%	0	0
March 2020	731	23.7%	39.4%	29.8%	5.9%	1.0%	0.3%	4.5	9.1	Mar 21	46.0	Mar 20 22:00	98.3%	0	0
April 2020	720	25.0%	36.8%	32.9%	4.9%	0.4%	0.0%	4.2	8.9	Apr 30	23.3	Apr 27 22:00	100.0%	0	0
May 2020	742	21.4%	26.1%	40.0%	11.2%	0.8%	0.4%	5.4	9.8	May 30	58.6	May 08 23:00	99.7%	0	0
June 2020	711	20.5%	33.5%	37.1%	8.0%	0.4%	0.4%	4.9	11.9	Jun 14	52.7	Jun 11 22:00	99.9%	0	0
July 2020	744	16.4%	39.0%	38.7%	5.5%	0.4%	0.0%	4.5	9.4	Jul 31	27.6	Jul 28 18:00	100.0%	0	0
August 2020	710	8.0%	17.6%	46.6%	20.3%	4.4%	3.1%	8.7	19.0	Aug 25	64.0	Aug 19 23:00	95.4%	0	0
September 2020	717	8.9%	26.6%	40.9%	13.7%	5.2%	4.7%	8.4	23.0	Sep 19	60.6	Sep 11 19:00	99.6%	0	0
October 2020	744	15.3%	32.4%	37.4%	12.0%	1.6%	1.3%	6.0	16.2	Oct 10	64.1	Oct 04 19:00	100.0%	0	0
November 2020	720	17.8%	27.2%	34.6%	16.1%	2.5%	1.8%	6.7	19.9	Nov 17	50.7	Nov 17 08:00	100.0%	0	0
December 2020	735	37.1%	30.5%	27.2%	4.1%	0.4%	0.7%	3.7	8.0	Dec 12	39.6	Dec 11 22:00	100.0%	0	0
Annual	8714	19.5%	31.2%	37.6%	9.2%	1.5%	1.1%	5.5	MAXIMUM VALUES				99.4%	0	0

SEQG Objectives: 24-Hr: 28 µg/m³, Alberta Guideline: 1-Hr: 80 µg/m³

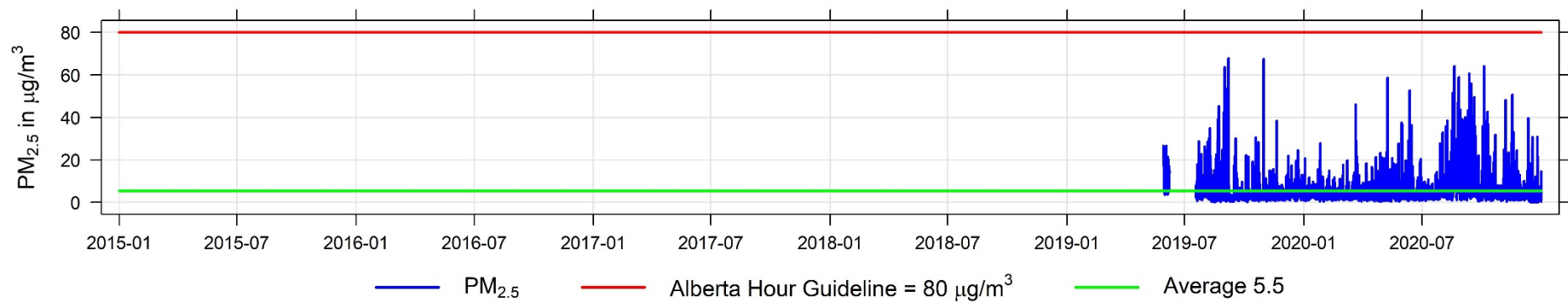
2020 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Torquay



2015 to 2020 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Torquay



2015 to 2020 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Torquay



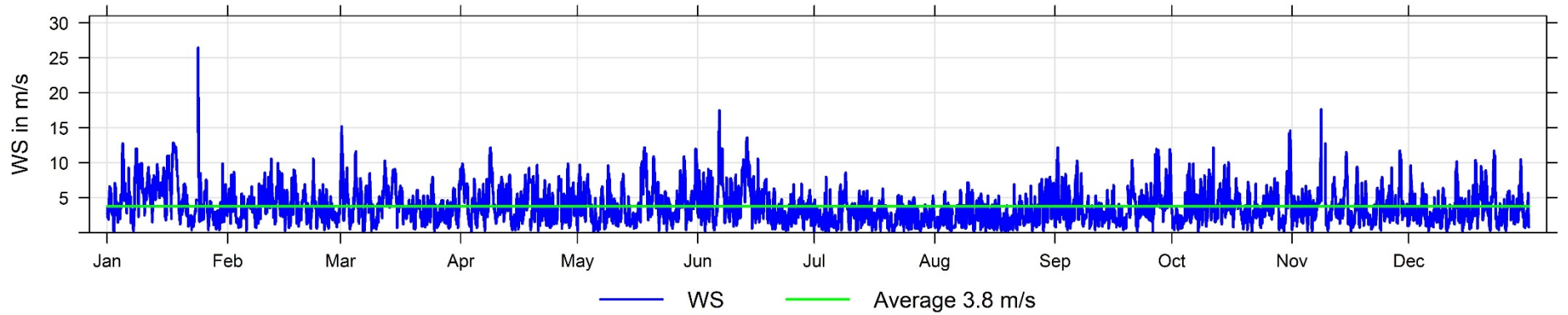
Wind Speed Frequency Distribution of 1-hr Averages - Torquay

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (m/s)	MAXIMUM VALUES				Operational time (%)
		0 to 2 (m/s)	2 to 4 (m/s)	4 to 6 (m/s)	6 to 8 (m/s)	8 to 10 (m/s)	> 10 (m/s)		24-hr (m/s)	Date	1-hr (m/s)	Date	
January 2020	738	13.7%	30.4%	23.2%	15.6%	10.0%	7.2%	5.1	11.4	Jan 18	26.5	Jan 24 10:00	99.2%
February 2020	696	19.1%	35.1%	31.0%	10.8%	3.6%	0.4%	3.9	6.0	Feb 14	10.6	Feb 12 05:00	100.0%
March 2020	744	21.5%	34.4%	25.9%	11.2%	4.4%	2.6%	4.0	8.7	Mar 01	15.2	Mar 01 08:00	100.0%
April 2020	719	22.3%	29.1%	23.1%	18.5%	6.0%	1.1%	4.2	8.4	Apr 08	12.2	Apr 08 15:00	99.9%
May 2020	742	25.1%	31.5%	21.7%	10.9%	6.3%	4.4%	4.2	9.5	May 18	12.2	May 18 05:00	99.7%
June 2020	719	21.7%	32.3%	19.7%	16.1%	5.0%	5.1%	4.4	10.3	Jun 06	17.5	Jun 06 14:00	99.9%
July 2020	744	44.4%	38.3%	15.3%	1.7%	0.3%	0.0%	2.5	4.6	Jul 08	8.6	Jul 09 02:00	100.0%
August 2020	734	45.6%	31.6%	15.5%	7.2%	0.0%	0.0%	2.7	5.3	Aug 30	8.0	Aug 30 16:00	98.7%
September 2020	717	24.1%	35.3%	22.2%	9.9%	5.0%	3.5%	4.0	7.5	Sep 27	12.2	Sep 01 17:00	99.6%
October 2020	744	25.8%	34.5%	22.0%	10.9%	4.6%	2.2%	3.9	8.5	Oct 31	14.6	Oct 31 12:00	100.0%
November 2020	698	22.8%	39.7%	22.6%	10.2%	2.6%	2.1%	3.7	6.6	Nov 14	17.6	Nov 08 11:00	96.9%
December 2020	744	28.4%	39.9%	18.5%	6.9%	4.7%	1.6%	3.5	6.6	Dec 13	11.7	Dec 22 23:00	100.0%
Annual	8739	26.2%	34.3%	21.7%	10.8%	4.4%	2.5%	3.8	MAXIMUM VALUES				99.5%

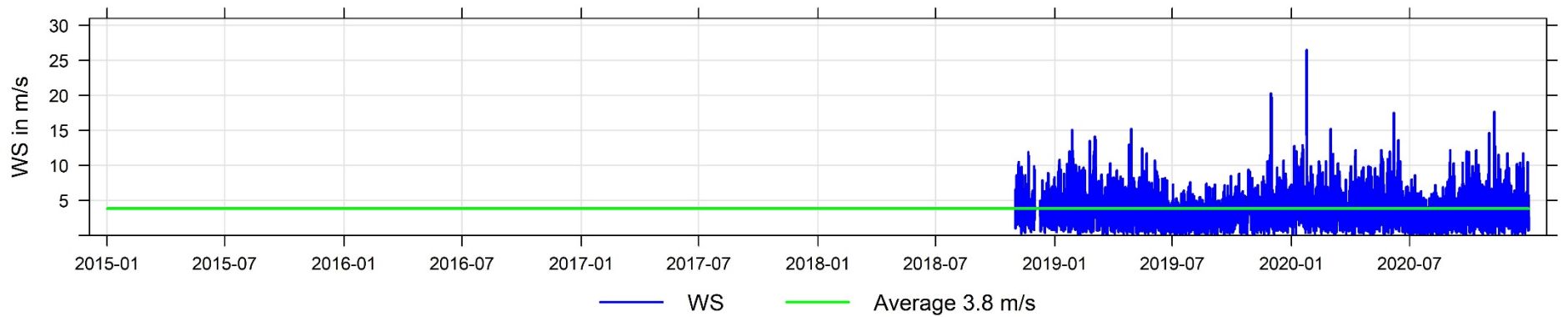
Wind Speed and Wind Direction Frequency Distribution at Torquay

Direction	Number of Readings	% of wind speed range (m/s)						Total %
		0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	
N	400	0.1%	0.5%	1.3%	2.2%	0.4%	0.1%	4.6%
NNE	243	0.2%	0.6%	1.0%	1.0%	0.0%	0.0%	2.8%
NE	207	0.1%	0.8%	1.1%	0.5%	0.0%	0.0%	2.4%
ENE	269	0.2%	0.8%	1.8%	0.3%	0.0%	0.0%	3.1%
E	394	0.3%	1.1%	2.4%	0.7%	0.0%	0.0%	4.5%
ESE	587	0.3%	0.9%	2.4%	3.0%	0.1%	0.0%	6.7%
SE	388	0.3%	0.8%	1.6%	1.6%	0.1%	0.0%	4.4%
SSE	298	0.2%	0.8%	1.3%	1.0%	0.1%	0.0%	3.4%
S	264	0.3%	1.0%	1.1%	0.5%	0.1%	0.0%	3.0%
SSW	321	0.3%	0.9%	1.6%	0.8%	0.0%	0.0%	3.7%
SW	728	0.2%	1.1%	4.1%	2.8%	0.0%	0.0%	8.3%
WSW	1163	0.2%	0.8%	6.3%	5.9%	0.0%	0.0%	13.3%
W	776	0.2%	0.5%	3.0%	5.0%	0.2%	0.0%	8.9%
WNW	1045	0.1%	0.4%	2.2%	7.3%	1.3%	0.7%	11.9%
NW	1216	0.1%	0.3%	2.0%	6.9%	2.4%	2.1%	13.9%
NNW	462	0.1%	0.4%	1.5%	2.9%	0.4%	0.1%	5.3%
Total	8,761	26.2%	34.3%	21.7%	10.8%	4.4%	2.5%	100.0%

2020 Hourly Readings of Wind Speed (in m/s) at Torquay



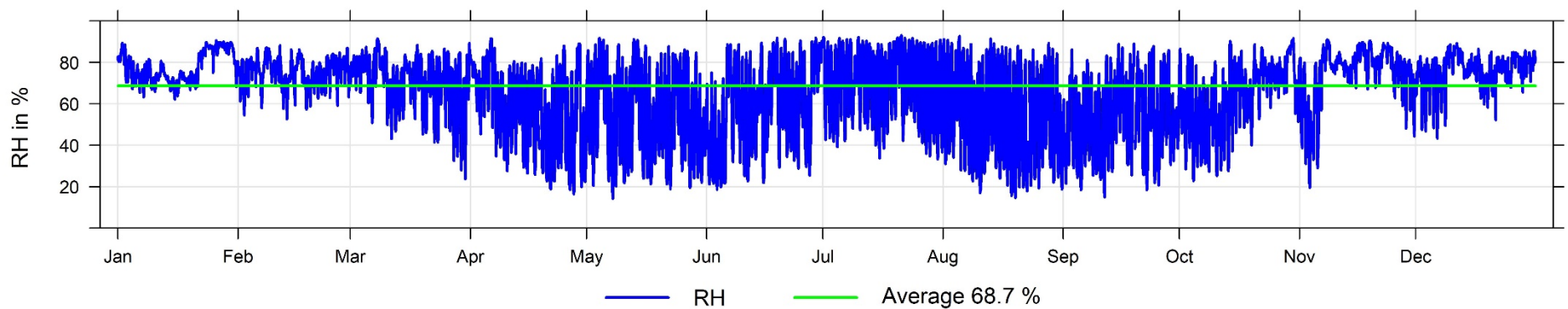
2015 to 2020 Hourly Readings of Wind Speed (in m/s) at Torquay



Relative Humidity (RH) Frequency Distribution at Torquay

Month	Monthly Average (%)	Maximum Values				Operational time (%)
		24-hr (%)	Date	1-hr (%)	Date	
January 2020	77.7	89.0	Jan 27	90.6	Jan 26 09:00	100.0%
February 2020	75.0	83.9	Feb 08	88.3	Feb 11 21:00	100.0%
March 2020	70.9	84.2	Mar 08	91.5	Mar 08 01:00	100.0%
April 2020	57.7	78.4	Apr 01	91.6	Apr 06 11:00	99.9%
May 2020	55.9	83.0	May 04	91.7	May 04 08:00	99.7%
June 2020	59.3	87.5	Jun 30	91.9	Jun 29 04:00	99.9%
July 2020	70.2	84.9	Jul 20	93.1	Jul 21 06:00	100.0%
August 2020	55.3	69.5	Aug 04	92.8	Aug 05 06:00	98.7%
September 2020	53.6	69.8	Sep 15	89.0	Sep 19 07:00	99.6%
October 2020	64.2	86.8	Oct 29	91.7	Oct 30 11:00	100.0%
November 2020	74.7	88.0	Nov 08	91.0	Nov 08 03:00	100.0%
December 2020	76.1	86.8	Dec 11	89.2	Dec 11 15:00	100.0%
AVERAGE		MAXIMUM VALUES				
	65.9	89.0	Jan 27	93.1	Jul 21 06:00	99.8%

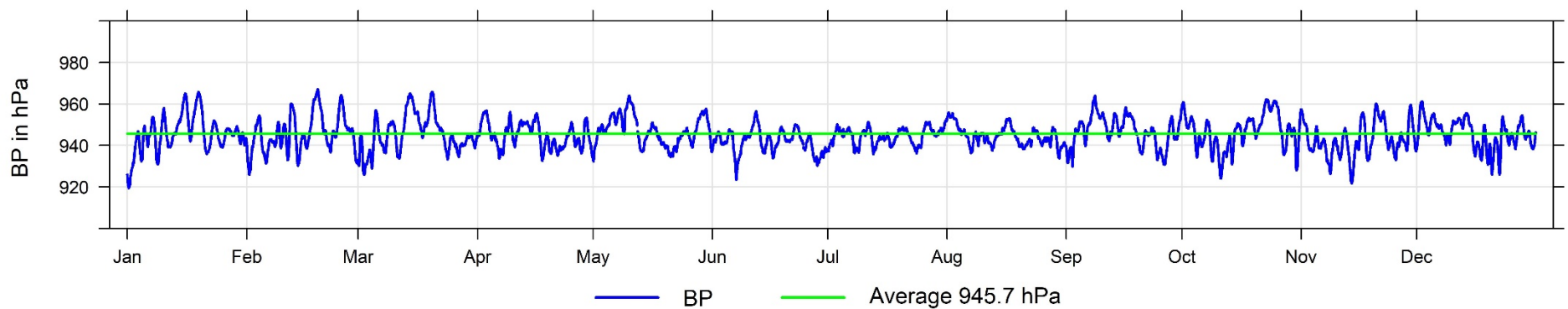
2020 Hourly Readings of Relative Humidity (in %) at Torquay



Barometric Pressure (BP) Frequency Distribution at Torquay

Month	Monthly Average (hPa)	Maximum Values				Operational time (%)
		24-hr (hPa)	Date	1-hr (hPa)	Date	
January 2020	945.6	964.3	Jan 19	965.7	Jan 19 12:00	100.0%
February 2020	945.8	964.7	Feb 19	967.1	Feb 19 12:00	100.0%
March 2020	945.6	963.8	Mar 14	965.8	Mar 20 07:00	100.0%
April 2020	944.8	954.7	Apr 02	956.7	Apr 03 08:00	99.9%
May 2020	947.2	962.0	May 10	964.0	May 10 09:00	99.7%
June 2020	941.9	954.1	Jun 12	956.4	Jun 12 10:00	99.9%
July 2020	944.5	950.7	Jul 31	953.3	Jul 31 00:00	100.0%
August 2020	944.5	954.4	Aug 01	955.9	Aug 01 10:00	98.7%
September 2020	946.8	960.9	Sep 08	963.9	Sep 08 10:00	99.6%
October 2020	946.6	960.2	Oct 25	962.1	Oct 22 22:00	100.0%
November 2020	942.7	958.0	Nov 20	960.2	Nov 20 12:00	100.0%
December 2020	945.7	958.9	Dec 02	961.2	Dec 02 12:00	100.0%
	AVERAGE 945.1	MAXIMUM VALUES				
		964.7	Feb 19	967.1	Feb 19 12:00	99.8%

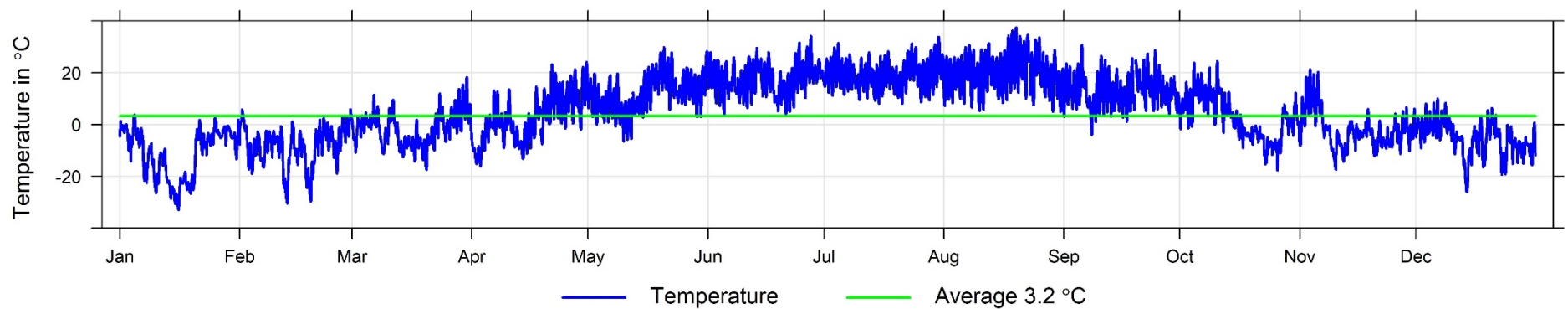
2020 Hourly Readings of Barometric Pressure (in hPa) at Torquay



Temperature (ET) Frequency Distribution at Torquay

Month	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)
		24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date	
January 2020	-11.2	-1.0	Jan 01	3.7	Jan 04 20:00	-28.8	Jan 15	-33.0	Jan 16 05:00	100.0%
February 2020	-8.3	2.6	Feb 01	5.9	Feb 29 15:00	-22.2	Feb 19	-30.5	Feb 13 08:00	100.0%
March 2020	-1.7	8.7	Mar 30	18.3	Mar 30 17:00	-9.9	Mar 20	-17.5	Mar 20 07:00	100.0%
April 2020	2.4	15.3	Apr 30	24.1	Apr 30 15:00	-12.3	Apr 02	-16.1	Apr 03 06:00	99.9%
May 2020	11.9	21.1	May 20	29.8	May 20 16:00	2.7	May 10	-6.5	May 10 06:00	99.7%
June 2020	17.6	24.6	Jun 27	34.2	Jun 27 15:00	9.7	Jun 18	4.0	Jun 21 04:00	99.9%
July 2020	19.4	24.7	Jul 30	33.9	Jul 30 16:00	14.8	Jul 20	8.0	Jul 21 05:00	100.0%
August 2020	19.8	25.9	Aug 19	37.5	Aug 19 16:00	12.0	Aug 31	4.0	Aug 31 00:00	98.7%
September 2020	13.1	19.5	Sep 05	30.7	Sep 05 16:00	4.4	Sep 08	-4.0	Sep 08 06:00	99.6%
October 2020	2.5	14.5	Oct 05	24.5	Oct 10 16:00	-11.2	Oct 26	-17.6	Oct 26 06:00	100.0%
November 2020	-2.2	10.5	Nov 05	21.3	Nov 03 16:00	-11.3	Nov 12	-17.4	Nov 10 08:00	100.0%
December 2020	-5.5	2.8	Dec 08	10.0	Dec 06 15:00	-17.9	Dec 14	-26.1	Dec 14 06:00	100.0%
	AVERAGE 4.8	MAXIMUM VALUES				MINIMUM VALUES				99.8%
		25.9	Aug 19	37.5	Aug 19 16:00	-28.8	Jan 15	-33.0	Jan 16 05:00	

2020 Hourly Temperature Readings (in °C) at Torquay



APPENDIX H

Weyburn Station: Continuous Monitoring Data

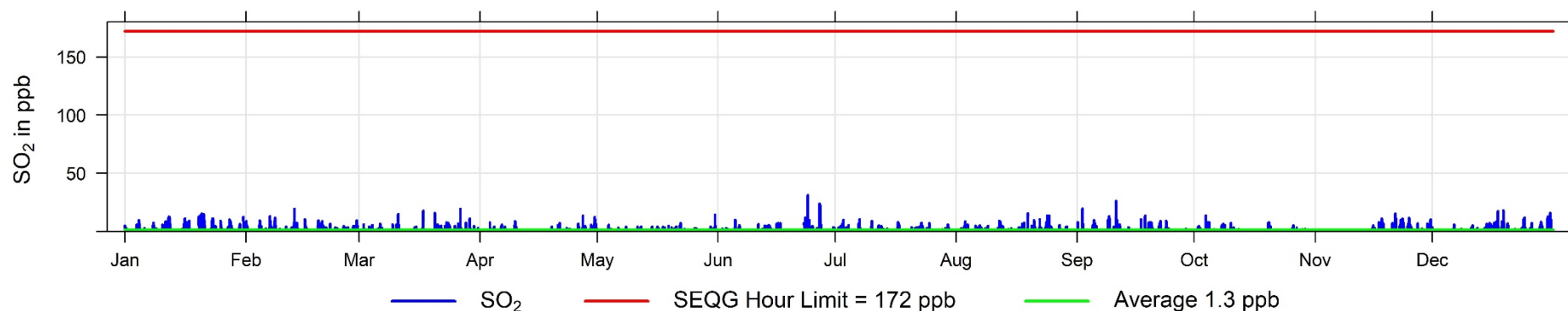
Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above SEQG & AAAQG			
		24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	Annual
Sulphur Dioxide SO ₂ measured in ppb	1.0	5.7	Jan 20	31.1	Jun 23 00:00	94.6%	0	-	0	0
Nitrogen Dioxide NO ₂ measured in ppb	1.9	10.0	Nov 15	29.5	Nov 14 17:00	90.8%	0	-	-	0
Oxides of Nitrogen NO _x measured in ppb	2.7	14.4	Jun 08	84.4	Jun 08 01:00	90.8%	-	-	-	-
Nitric Oxide NO measured in ppb	0.7	9.9	May 29	68.8	Jun 08 01:00	90.8%	-	-	-	-
Ozone O ₃ measured in ppb	26.6	37.8	Apr 08	59.3	Aug 06 19:00	90.9%	0	0	-	-
Hydrogen Sulphide H ₂ S measured in ppb	0.3	2.8	Aug 27	27.0	Aug 27 08:00	94.4%	6	-	0	-
Particulate Matter PM _{2.5} measured in µg/m ³	5.9	23.2	Jul 23	68.6	Dec 05 20:00	94.4%	0	-	0	-

Sulphur Dioxide (SO₂) Frequency Distribution at Weyburn

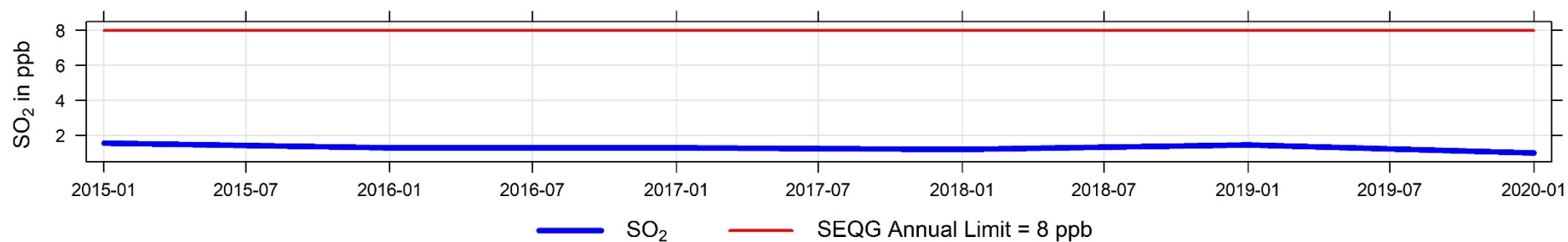
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 48ppb	1-hr 172ppb
January 2020	702	67.5%	21.2%	8.7%	2.6%	0.0%	0.0%	1.6	5.7	Jan 20	15.2	Jan 20 17:00	100.0%	0	0
February 2020	663	71.3%	22.9%	5.1%	0.6%	0.0%	0.0%	1.2	3.4	Feb 13	19.4	Feb 13 10:00	99.7%	0	0
March 2020	639	75.0%	21.3%	2.7%	1.1%	0.0%	0.0%	1.0	2.5	Mar 26	19.3	Mar 26 23:00	91.8%	0	0
April 2020	689	83.7%	13.6%	2.2%	0.4%	0.0%	0.0%	0.7	3.4	Apr 30	13.3	Apr 27 09:00	100.0%	0	0
May 2020	710	85.1%	14.2%	0.6%	0.1%	0.0%	0.0%	0.6	1.9	May 31	14.3	May 31 05:00	99.9%	0	0
June 2020	677	78.1%	17.6%	3.2%	1.0%	0.0%	0.0%	1.0	4.4	Jun 27	31.1	Jun 23 00:00	99.6%	0	0
July 2020	703	77.4%	20.2%	2.3%	0.1%	0.0%	0.0%	0.8	2.4	Jul 23	10.4	Jul 07 07:00	98.8%	0	0
August 2020	708	77.4%	19.5%	2.4%	0.7%	0.0%	0.0%	0.9	2.9	Aug 24	15.4	Aug 19 09:00	99.5%	0	0
September 2020	677	77.1%	17.3%	4.6%	1.0%	0.0%	0.0%	1.0	3.3	Sep 19	25.9	Sep 10 23:00	99.6%	0	0
October 2020	656	82.8%	14.8%	2.3%	0.2%	0.0%	0.0%	0.7	2.8	Oct 04	13.5	Oct 03 23:00	92.3%	0	0
November 2020	375	57.3%	32.5%	8.5%	1.6%	0.0%	0.0%	1.8	4.6	Nov 21	15.2	Nov 21 13:00	54.4%	0	0
December 2020	704	71.4%	21.4%	5.8%	1.3%	0.0%	0.0%	1.3	4.9	Dec 17	18.1	Dec 19 05:00	99.9%	0	0
Annual	7903	75.4%	19.7%	4.0%	0.9%	0.0%	0.0%	1.0	5.7	Jan 20	31.1	Jun 23 00:00	94.6%	0	0

SEQG Objectives: Annual: 8ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

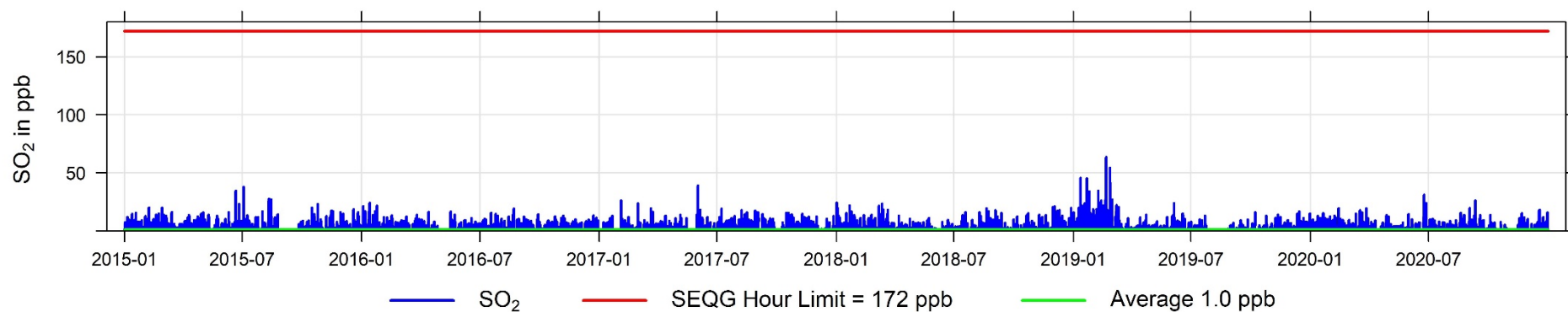
2020 Hourly Concentration Readings of SO₂ (in ppb) at Weyburn



2015 to 2020 Annual Concentration Readings of SO₂ (in ppb) at Weyburn



2015 to 2020 Hourly Concentration Readings of SO₂ (in ppb) at Weyburn

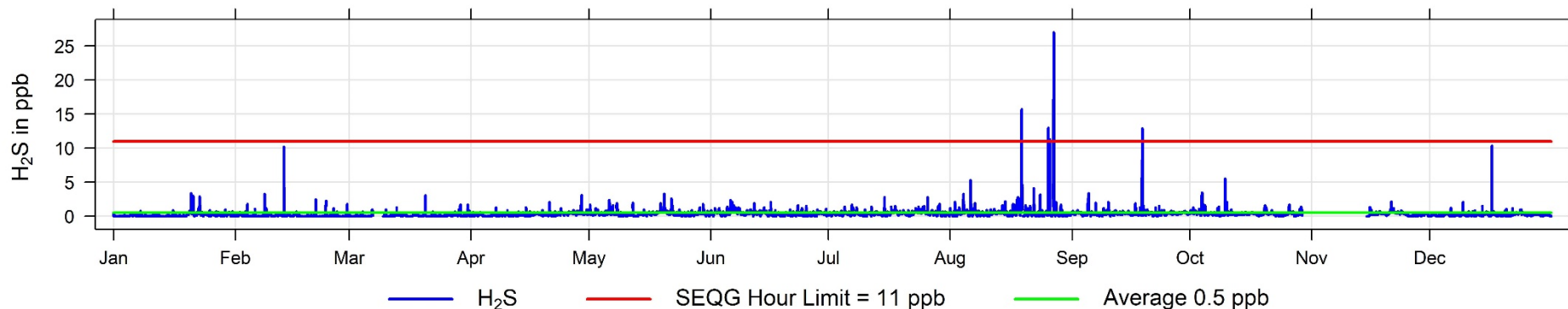


Hydrogen Sulphide (H₂S) Frequency Distribution at Weyburn

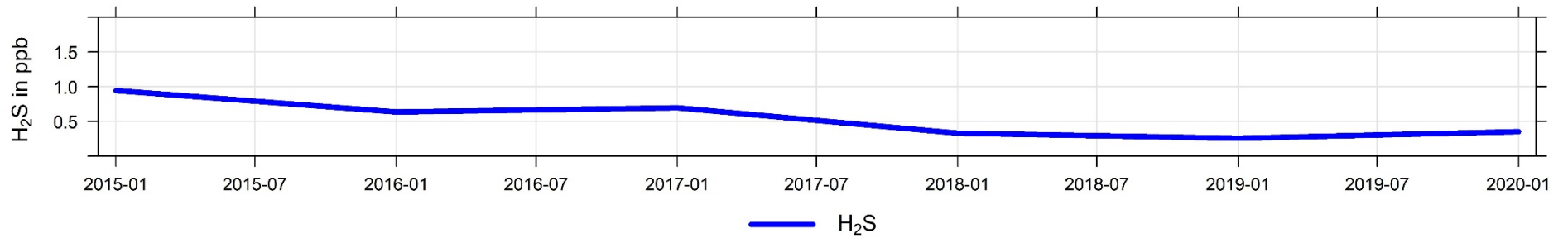
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 3 (ppb)	3 to 5 (ppb)	5 to 8 (ppb)	8 to 10 (ppb)	> 10 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 3.6ppb	1-hr 11ppb
January 2020	702	98.4%	1.1%	0.4%	0.0%	0.0%	0.0%	0.2	0.8	Jan 20	3.4	Jan 20 18:00	100.0%	0	0
February 2020	662	98.0%	1.5%	0.3%	0.0%	0.0%	0.2%	0.1	0.7	Feb 13	10.2	Feb 13 09:00	99.6%	0	0
March 2020	639	98.0%	1.9%	0.2%	0.0%	0.0%	0.0%	0.1	0.6	Mar 31	3.1	Mar 20 10:00	89.8%	0	0
April 2020	689	98.8%	0.9%	0.3%	0.0%	0.0%	0.0%	0.3	0.7	Apr 29	3.1	Apr 29 04:00	100.0%	0	0
May 2020	710	93.5%	6.3%	0.1%	0.0%	0.0%	0.0%	0.4	1.1	May 20	3.3	May 20 04:00	99.9%	0	0
June 2020	677	92.2%	7.8%	0.0%	0.0%	0.0%	0.0%	0.5	1.3	Jun 06	2.4	Jun 06 02:00	99.6%	0	0
July 2020	703	95.4%	4.6%	0.0%	0.0%	0.0%	0.0%	0.4	0.8	Jul 23	2.8	Jul 26 05:00	98.8%	0	0
August 2020	708	86.3%	11.2%	1.3%	0.4%	0.0%	0.8%	0.7	2.8	Aug 27	27.0	Aug 27 08:00	99.5%	0	5
September 2020	677	96.0%	3.2%	0.1%	0.3%	0.1%	0.1%	0.5	1.8	Sep 18	12.9	Sep 18 21:00	99.6%	0	1
October 2020	657	94.5%	5.0%	0.3%	0.2%	0.0%	0.0%	0.4	1.0	Oct 04	5.5	Oct 09 23:00	92.3%	0	0
November 2020	374	98.1%	1.9%	0.0%	0.0%	0.0%	0.0%	0.3	0.9	Nov 21	2.2	Nov 21 06:00	54.3%	0	0
December 2020	704	98.6%	1.3%	0.0%	0.0%	0.0%	0.1%	0.2	0.7	Dec 16	10.3	Dec 16 21:00	99.9%	0	0
Annual	7902	95.7%	3.9%	0.3%	0.1%	0.0%	0.1%	0.3	2.8	Aug 27	27.0	Aug 27 08:00	94.4%	0	6

SEQG Objectives: 24-Hr: 3.6ppb, 1-Hr: 11ppb

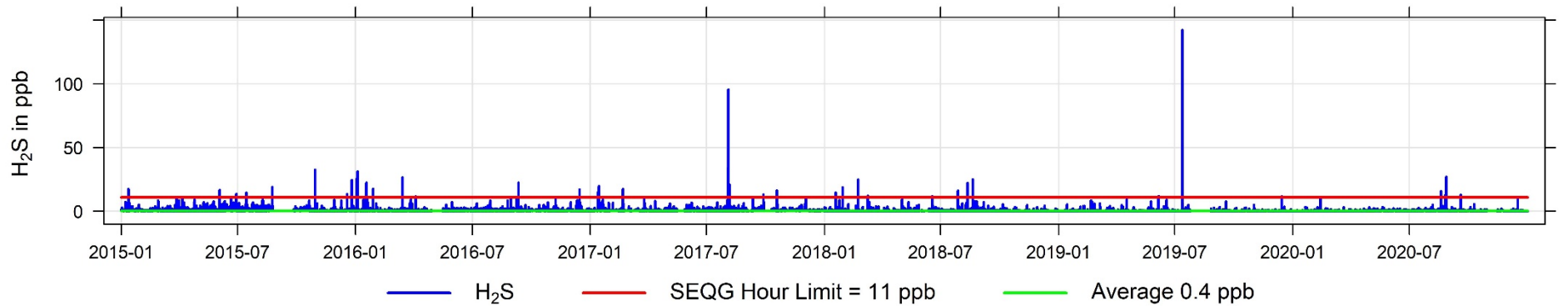
2020 Hourly Concentration Readings of H₂S (in ppb) at Weyburn



2015 to 2020 Annual Concentration Readings of H₂S (in ppb) at Weyburn



2015 to 2020 Hourly Concentration Readings of H₂S (in ppb) at Weyburn

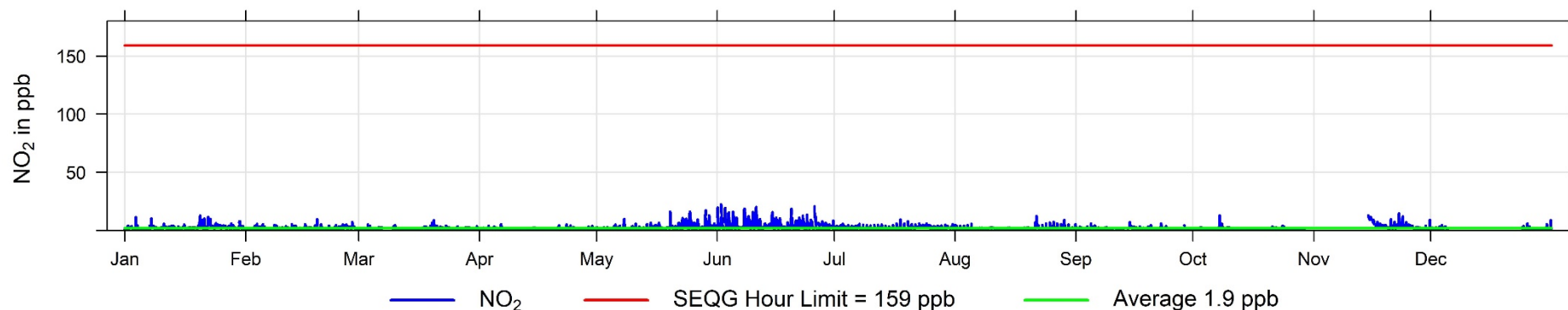


Nitrogen Dioxide (NO₂) Frequency Distribution at Weyburn

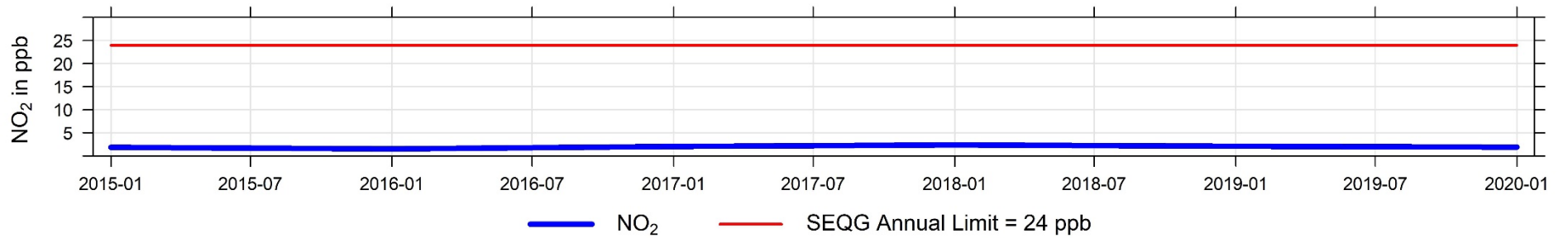
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 106ppb	1-hr 159ppb
January 2020	702	92.9%	7.1%	0.0%	0.0%	0.0%	0.0%	2.5	6.3	Jan 20	12.5	Jan 20 08:00	100.0%	0	0
February 2020	659	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	1.7	3.1	Feb 26	9.6	Feb 19 08:00	99.1%	0	0
March 2020	638	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	1.3	2.2	Mar 20	8.7	Mar 20 07:00	91.7%	0	0
April 2020	689	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	1.1	2.1	Apr 06	5.2	Apr 06 12:00	100.0%	0	0
May 2020	710	88.9%	10.4%	0.7%	0.0%	0.0%	0.0%	2.5	5.7	May 24	17.3	May 28 00:00	99.9%	0	0
June 2020	675	71.4%	25.0%	3.6%	0.0%	0.0%	0.0%	4.4	7.2	Jun 10	22.3	Jun 01 23:00	99.3%	0	0
July 2020	701	98.0%	2.0%	0.0%	0.0%	0.0%	0.0%	1.8	3.6	Jul 24	9.2	Jul 17 23:00	98.4%	0	0
August 2020	685	97.4%	2.6%	0.0%	0.0%	0.0%	0.0%	1.2	3.0	Aug 21	12.4	Aug 21 21:00	96.5%	0	0
September 2020	601	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.9	2.0	Sep 05	7.1	Sep 14 19:00	88.5%	0	0
October 2020	628	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%	0.9	2.4	Oct 07	13.0	Oct 07 20:00	88.4%	0	0
November 2020	375	80.0%	18.7%	1.3%	0.0%	0.0%	0.0%	3.9	10.0	Nov 15	29.5	Nov 14 17:00	54.4%	0	0
December 2020	509	96.7%	3.3%	0.0%	0.0%	0.0%	0.0%	1.1	1.9	Dec 04	14.6	Dec 13 05:00	73.0%	0	0
Annual	7572	93.5%	6.1%	0.5%	0.0%	0.0%	0.0%	1.9	10.0	Nov 15	29.5	Nov 14 17:00	90.8%	0	0

SEQG Objectives: Annual: 24ppb, 24-Hr: 106ppb, 1-Hr: 159ppb

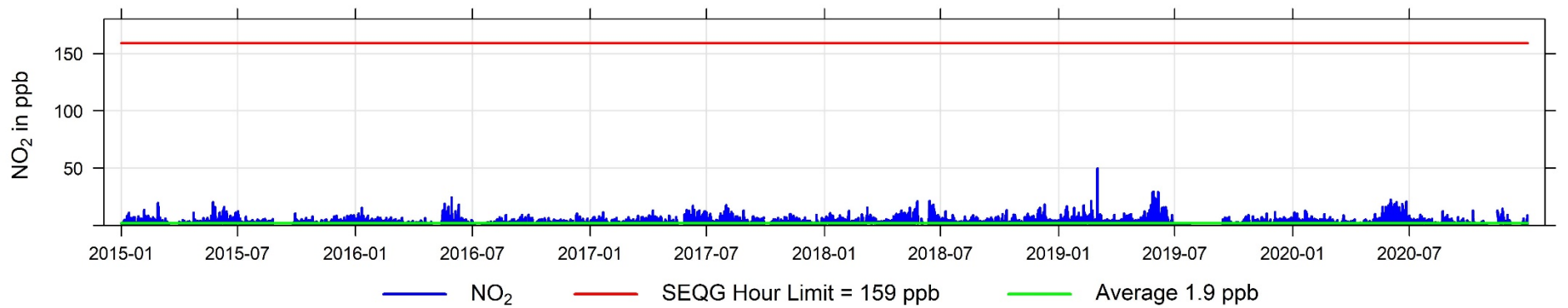
2020 Hourly Concentration Readings of NO₂ (in ppb) at Weyburn



2015 to 2020 Annual Concentration Readings of NO₂ (in ppb) at Weyburn



2015 to 2020 Hourly Concentration Readings of NO₂ (in ppb) at Weyburn

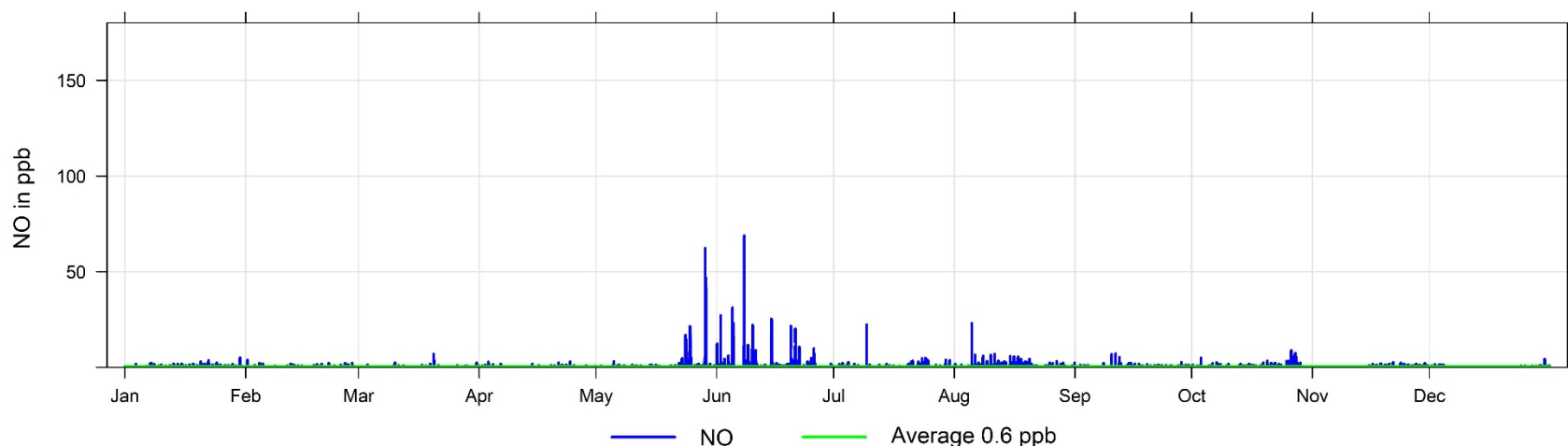


Nitric Oxide (NO) Frequency Distribution at Weyburn

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr (ppb)	Date	
January 2020	702	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4	1.0	Jan 22	5.0	Jan 30 13:00	100.0%
February 2020	659	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.7	Feb 12	3.9	Feb 01 11:00	99.1%
March 2020	638	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2	0.9	Mar 20	7.0	Mar 20 07:00	91.7%
April 2020	689	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	0.5	Apr 04	3.2	Apr 24 08:00	100.0%
May 2020	710	97.0%	1.4%	1.0%	0.6%	0.0%	0.0%	0.9	9.9	May 29	62.4	May 29 01:00	99.9%
June 2020	675	92.7%	4.4%	2.4%	0.4%	0.0%	0.0%	1.8	7.8	Jun 08	68.8	Jun 08 01:00	99.3%
July 2020	701	99.9%	0.0%	0.1%	0.0%	0.0%	0.0%	0.4	1.9	Jul 24	22.2	Jul 09 11:00	98.4%
August 2020	685	98.7%	1.2%	0.1%	0.0%	0.0%	0.0%	0.5	1.6	Aug 05	23.1	Aug 05 11:00	96.5%
September 2020	601	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.4	0.7	Sep 28	7.2	Sep 11 10:00	88.5%
October 2020	628	98.7%	1.1%	0.0%	0.2%	0.0%	0.0%	0.6	2.3	Oct 27	38.7	Oct 24 21:00	88.4%
November 2020	375	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6	0.9	Nov 21	2.6	Nov 21 17:00	54.4%
December 2020	509	89.0%	8.3%	2.6%	0.2%	0.0%	0.0%	1.9	4.2	Dec 08	33.1	Dec 16 11:00	73.0%
Annual	7572	97.9%	1.4%	0.5%	0.1%	0.0%	0.0%	0.7	9.9	MAXIMUM VALUES			90.8%
										May 29	68.8	Jun 08 01:00	

SEQG Objectives: none

2020 Hourly Concentration Readings of NO (in ppb) at Weyburn

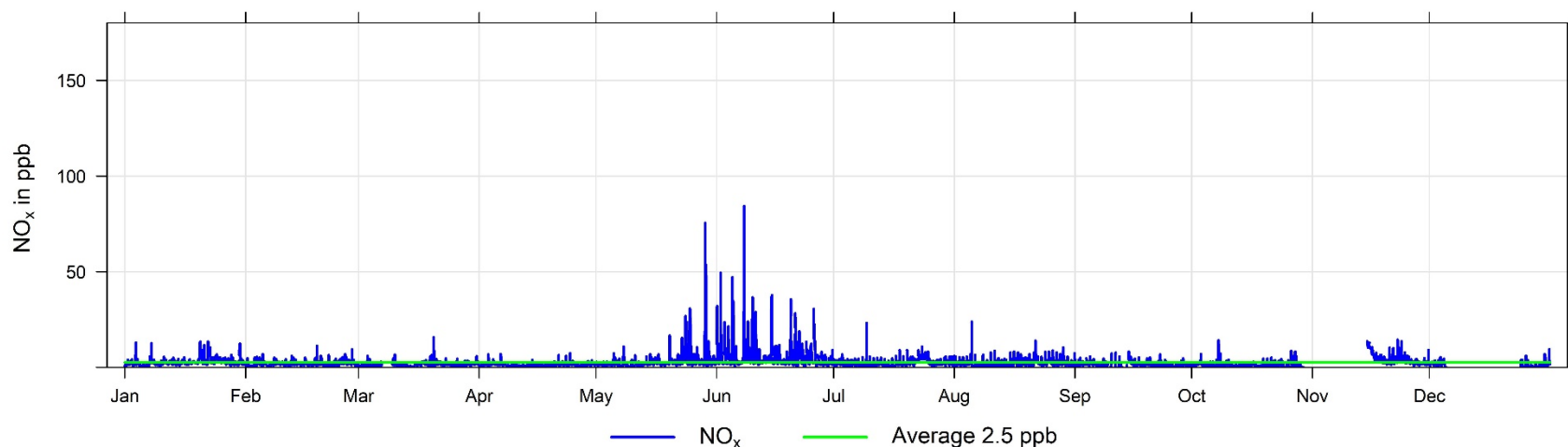


Oxides of Nitrogen (NO_x) Frequency Distribution at Weyburn

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	24-hr (ppb)	MAXIMUM VALUES			Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)			Date	1-hr (ppb)	Date	
January 2020	702	90.6%	9.4%	0.0%	0.0%	0.0%	0.0%	2.9	7.0	Jan 20	13.5	Jan 20 09:00	100.0%
February 2020	659	96.5%	3.5%	0.0%	0.0%	0.0%	0.0%	2.0	3.8	Feb 26	11.2	Feb 19 08:00	99.1%
March 2020	638	98.6%	1.3%	0.2%	0.0%	0.0%	0.0%	1.5	3.0	Mar 20	15.8	Mar 20 07:00	91.7%
April 2020	689	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%	1.4	2.5	Apr 06	7.5	Apr 24 08:00	100.0%
May 2020	710	85.5%	11.0%	2.7%	0.8%	0.0%	0.0%	3.4	14.1	May 29	75.5	May 29 01:00	99.9%
June 2020	675	65.2%	26.4%	6.1%	2.4%	0.0%	0.0%	6.2	14.4	Jun 08	84.4	Jun 08 01:00	99.3%
July 2020	701	91.6%	8.3%	0.1%	0.0%	0.0%	0.0%	2.3	5.8	Jul 24	23.2	Jul 09 11:00	98.4%
August 2020	685	93.3%	6.6%	0.1%	0.0%	0.0%	0.0%	2.1	4.2	Aug 21	23.9	Aug 05 11:00	96.5%
September 2020	601	97.8%	2.2%	0.0%	0.0%	0.0%	0.0%	1.5	2.6	Sep 15	8.4	Sep 14 19:00	88.5%
October 2020	628	97.6%	2.2%	0.0%	0.2%	0.0%	0.0%	1.4	2.9	Oct 07	44.3	Oct 24 21:00	88.4%
November 2020	375	72.3%	25.9%	1.6%	0.3%	0.0%	0.0%	4.5	11.1	Nov 15	30.5	Nov 14 17:00	54.4%
December 2020	509	84.7%	11.8%	3.3%	0.2%	0.0%	0.0%	2.8	5.3	Dec 08	33.0	Dec 16 11:00	73.0%
Annual	7572	89.4%	9.1%	1.2%	0.3%	0.0%	0.0%	2.7	14.4	MAXIMUM VALUES			90.8%

SEQG Objectives: none

2020 Hourly Concentration Readings of NO_x (in ppb) at Weyburn

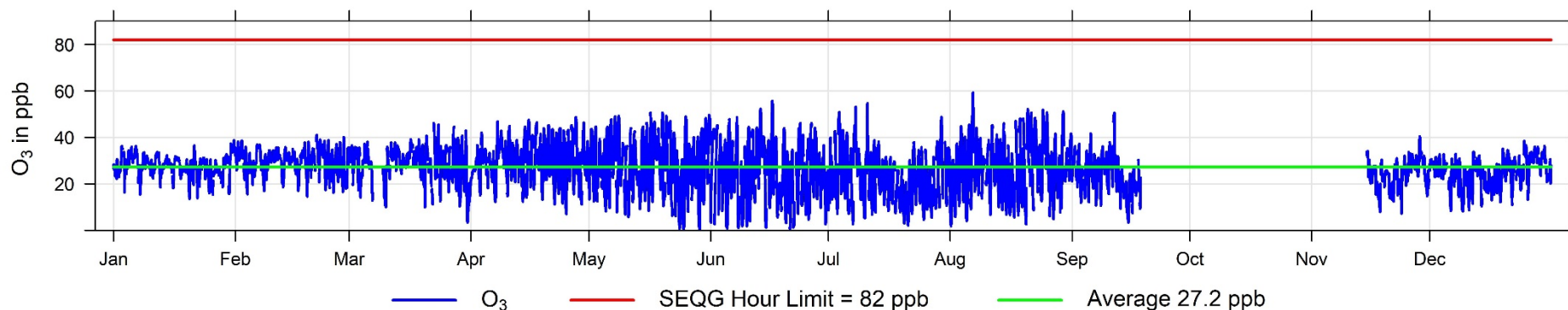


Ozone (O₃) Frequency Distribution at Weyburn

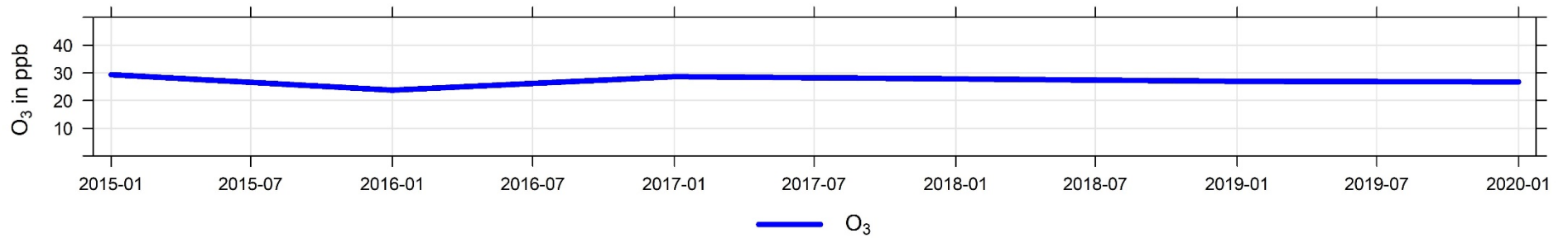
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 10 (ppb)	10 to 20 (ppb)	20 to 40 (ppb)	40 to 60 (ppb)	60 to 76 (ppb)	> 76 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		8-hr 63ppb	1-hr 82ppb
January 2020	702	0.0%	7.3%	92.7%	0.0%	0.0%	0.0%	27.7	35.4	Jan 31	38.7	Jan 31 16:00	100.0%	0	0
February 2020	662	0.0%	6.5%	92.9%	0.6%	0.0%	0.0%	29.7	34.7	Feb 21	41.1	Feb 21 17:00	99.6%	0	0
March 2020	639	1.6%	12.5%	81.7%	4.2%	0.0%	0.0%	28.6	34.4	Mar 16	46.2	Mar 22 12:00	90.7%	0	0
April 2020	689	0.6%	13.1%	69.5%	16.8%	0.0%	0.0%	30.3	37.8	Apr 08	48.7	Apr 27 17:00	100.0%	0	0
May 2020	710	7.3%	22.5%	48.5%	21.7%	0.0%	0.0%	28.1	36.2	May 18	50.7	May 16 16:00	99.9%	0	0
June 2020	677	15.4%	24.2%	44.9%	15.5%	0.0%	0.0%	24.9	35.8	Jun 13	55.7	Jun 16 17:00	99.6%	0	0
July 2020	703	11.5%	33.9%	48.4%	6.3%	0.0%	0.0%	22.6	31.8	Jul 08	54.7	Jul 10 22:00	98.8%	0	0
August 2020	708	9.7%	21.2%	52.5%	16.5%	0.0%	0.0%	27.1	36.0	Aug 25	59.3	Aug 06 19:00	99.5%	0	0
September 2020	389	4.4%	30.1%	63.2%	2.3%	0.0%	0.0%	23.7	35.7	Sep 11	50.6	Sep 11 18:00	57.8%	0	0
October 2020	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
November 2020	374	1.3%	19.8%	78.3%	0.5%	0.0%	0.0%	24.5	32.2	Nov 28	40.4	Nov 28 12:00	54.3%	0	0
December 2020	704	1.4%	17.6%	81.0%	0.0%	0.0%	0.0%	25.1	32.5	Dec 28	38.6	Dec 25 02:00	99.9%	0	0
Annual	6957	4.8%	19.0%	68.5%	7.7%	0.0%	0.0%	26.6	37.8	Apr 08	59.3	Aug 06 19:00	90.9%	0	0

SEQG Objectives: 8-Hr: 63ppb, 1-Hr: 82ppb

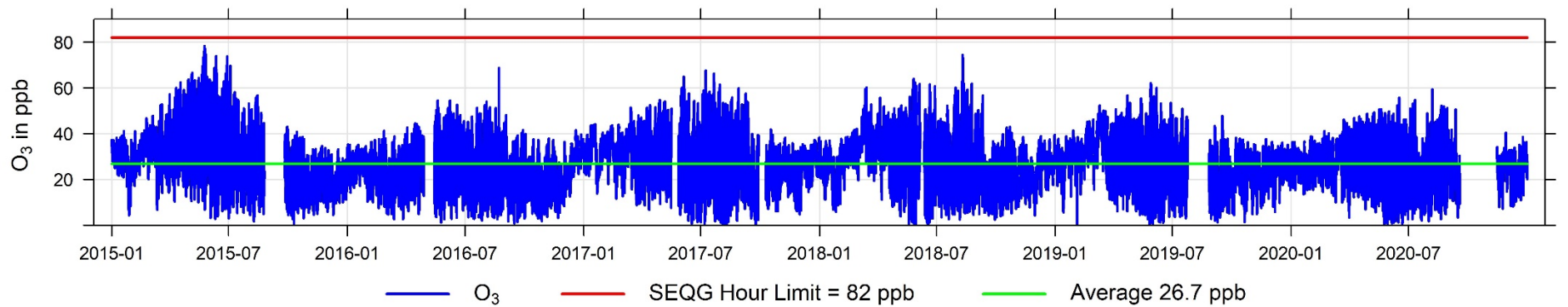
2020 Hourly Concentration Readings of O₃ (in ppb) at Weyburn



2015 to 2020 Annual Concentration Readings of O₃ (in ppb) at Weyburn



2015 to 2020 Hourly Concentration Readings of O₃ (in ppb) at Weyburn

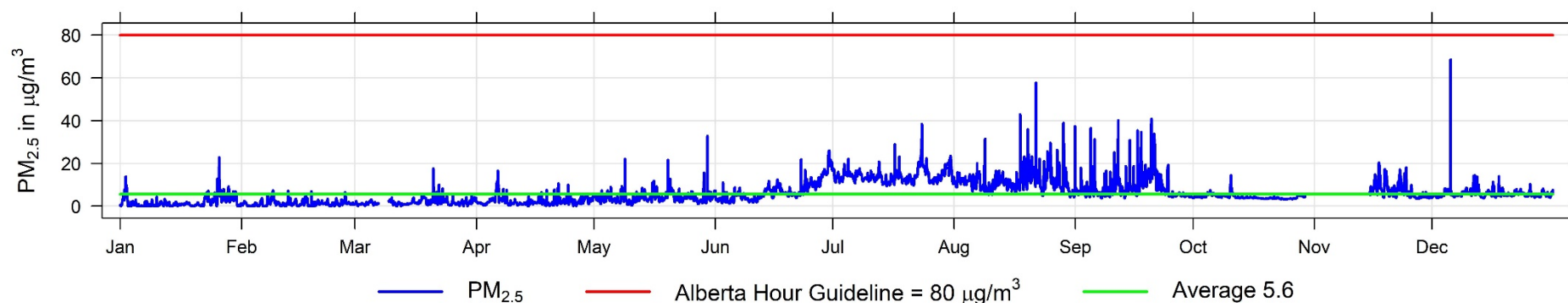


Particulate Matter (PM_{2.5}) Frequency Distribution at Weyburn

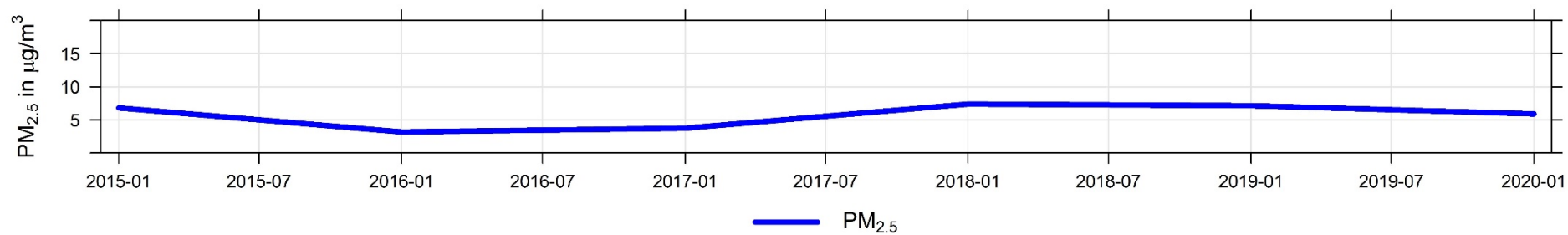
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m³)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 2 (µg/m³)	2 to 4 (µg/m³)	4 to 10 (µg/m³)	10 to 20 (µg/m³)	20 to 29 (µg/m³)	> 29 (µg/m³)		24-hr (µg/m³)	Date	1-hr (µg/m³)	Date		24-hr 28 µg/m³	1-hr 80 µg/m³
January 2020	729	67.4%	15.8%	15.5%	1.2%	0.1%	0.0%	2.0	7.6	Jan 26	22.9	Jan 26 07:00	98.0%	0	0
February 2020	688	82.4%	13.8%	3.8%	0.0%	0.0%	0.0%	1.3	2.9	Feb 17	7.4	Feb 09 01:00	98.9%	0	0
March 2020	683	66.3%	27.2%	6.0%	0.4%	0.0%	0.0%	1.9	4.1	Mar 18	17.6	Mar 20 00:00	91.8%	0	0
April 2020	720	58.1%	30.8%	9.9%	1.3%	0.0%	0.0%	2.3	8.2	Apr 06	16.6	Apr 06 11:00	100.0%	0	0
May 2020	743	11.2%	47.5%	39.8%	1.1%	0.3%	0.1%	4.1	7.9	May 20	32.8	May 29 00:00	99.9%	0	0
June 2020	716	6.1%	23.3%	51.0%	17.2%	2.4%	0.0%	7.0	20.1	Jun 30	26.0	Jun 30 03:00	99.4%	0	0
July 2020	735	0.0%	0.0%	1.4%	93.6%	4.5%	0.5%	14.3	23.2	Jul 23	38.4	Jul 23 19:00	98.8%	0	0
August 2020	740	0.0%	0.0%	37.6%	57.6%	3.5%	1.4%	11.7	17.7	Aug 21	57.8	Aug 21 21:00	99.5%	0	0
September 2020	717	0.0%	1.0%	72.4%	22.0%	2.8%	1.8%	9.0	20.1	Sep 20	40.9	Sep 20 10:00	99.6%	0	0
October 2020	687	0.0%	40.3%	59.0%	0.7%	0.0%	0.0%	4.4	7.3	Oct 10	14.5	Oct 10 17:00	92.3%	0	0
November 2020	392	0.0%	9.4%	72.2%	17.9%	0.5%	0.0%	7.3	12.3	Nov 17	20.3	Nov 17 12:00	54.4%	0	0
December 2020	737	0.0%	1.6%	95.8%	2.3%	0.1%	0.1%	5.9	9.5	Dec 11	68.6	Dec 05 20:00	100.0%	0	0
Annual	8287	24.3%	17.6%	38.7%	17.9%	1.2%	0.3%	5.9	MAXIMUM VALUES				94.4%	0	0

SEQG Objectives: 24-Hr: 28 µg/m³, Alberta Guideline: 1-Hr: 80 µg/m³

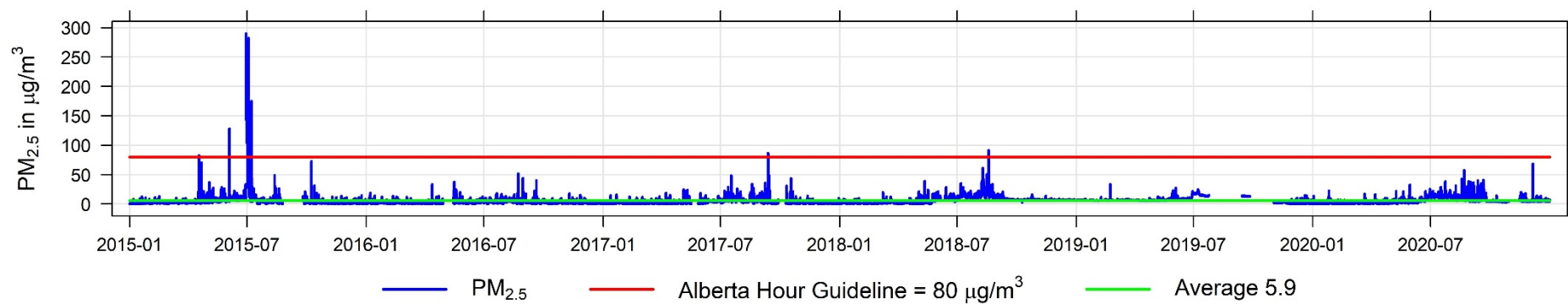
2020 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Weyburn



2015 to 2020 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Weyburn



2015 to 2020 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Weyburn



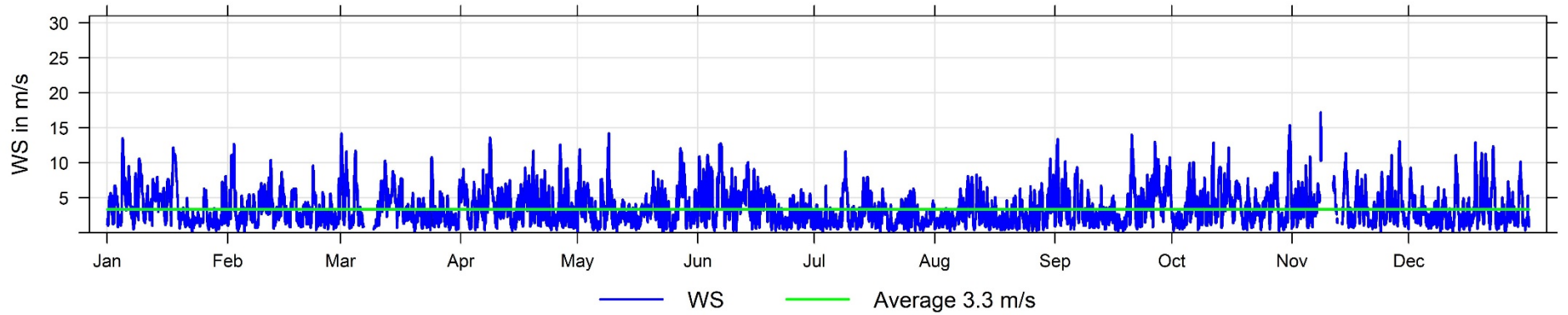
Wind Speed Frequency Distribution of 1-hr Averages - Weyburn

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (m/s)	24-hr (m/s)	MAXIMUM VALUES			Operational time (%)
		0 to 2 (m/s)	2 to 4 (m/s)	4 to 6 (m/s)	6 to 8 (m/s)	8 to 10 (m/s)	> 10 (m/s)			Date	1-hr (m/s)	Date	
January 2020	744	33.5%	25.4%	21.2%	11.6%	4.3%	4.0%	3.9	9.8	Jan 18	13.5	Jan 04 23:00	100.0%
February 2020	694	33.1%	33.9%	22.8%	7.1%	1.7%	1.4%	3.4	8.0	Feb 02	12.7	Feb 02 15:00	99.7%
March 2020	683	32.5%	31.8%	18.0%	8.6%	5.6%	3.5%	3.7	8.3	Mar 01	14.2	Mar 01 07:00	91.8%
April 2020	720	29.9%	24.3%	22.2%	16.5%	4.0%	3.1%	4.0	9.6	Apr 08	13.6	Apr 08 12:00	100.0%
May 2020	743	31.5%	37.8%	16.2%	9.2%	2.8%	2.6%	3.4	8.3	May 27	14.2	May 09 03:00	99.9%
June 2020	720	27.9%	27.6%	23.3%	11.0%	6.4%	3.8%	4.1	9.9	Jun 06	12.8	Jun 06 22:00	100.0%
July 2020	735	49.9%	33.6%	10.3%	5.4%	0.3%	0.4%	2.5	5.8	Jul 08	11.6	Jul 09 01:00	98.8%
August 2020	740	43.2%	36.2%	12.6%	6.6%	1.1%	0.3%	2.7	5.7	Aug 30	10.6	Aug 30 18:00	99.5%
September 2020	719	32.0%	26.3%	19.3%	11.5%	6.3%	4.6%	4.0	7.4	Sep 26	14.0	Sep 20 17:00	99.9%
October 2020	744	27.2%	30.0%	22.8%	10.8%	5.6%	3.6%	4.0	9.3	Oct 31	15.4	Oct 31 10:00	100.0%
November 2020	615	27.2%	30.4%	21.5%	12.4%	5.2%	3.4%	4.0	7.6	Nov 14	17.2	Nov 08 09:00	85.4%
December 2020	744	38.8%	32.8%	13.0%	7.5%	4.8%	3.0%	3.3	7.0	Dec 22	12.9	Dec 18 04:00	100.0%
Annual	8601	33.9%	30.8%	18.6%	9.8%	4.0%	2.8%	3.6	MAXIMUM VALUES				97.9%

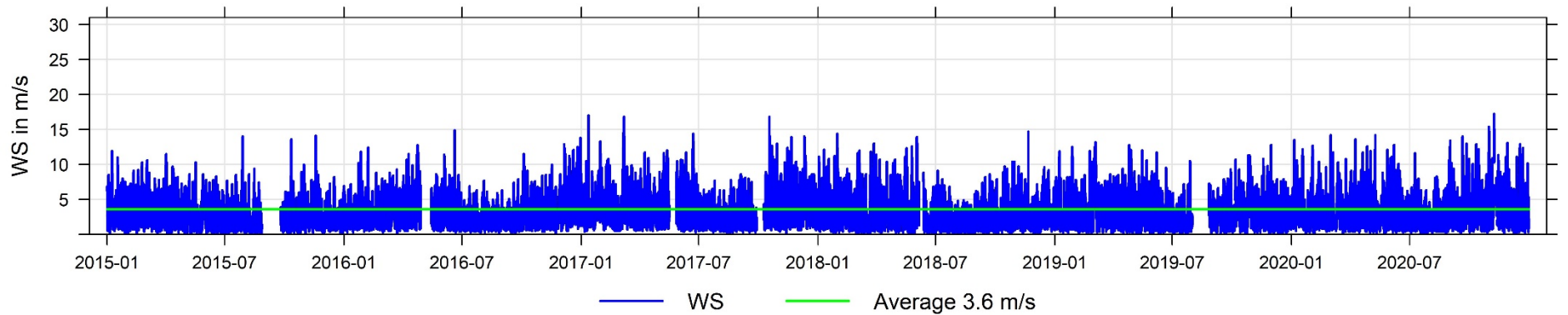
Wind Speed and Wind Direction Frequency Distribution at Weyburn

Direction	Number of Readings	% of wind speed range (m/s)						Total %
		0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	
N	400	0.1%	0.5%	1.3%	2.2%	0.4%	0.1%	4.6%
NNE	243	0.2%	0.6%	1.0%	1.0%	0.0%	0.0%	2.8%
NE	207	0.1%	0.8%	1.1%	0.5%	0.0%	0.0%	2.4%
ENE	269	0.2%	0.8%	1.8%	0.3%	0.0%	0.0%	3.1%
E	394	0.3%	1.1%	2.4%	0.7%	0.0%	0.0%	4.5%
ESE	587	0.3%	0.9%	2.4%	3.0%	0.1%	0.0%	6.7%
SE	388	0.3%	0.8%	1.6%	1.6%	0.1%	0.0%	4.4%
SSE	298	0.2%	0.8%	1.3%	1.0%	0.1%	0.0%	3.4%
S	264	0.3%	1.0%	1.1%	0.5%	0.1%	0.0%	3.0%
SSW	321	0.3%	0.9%	1.6%	0.8%	0.0%	0.0%	3.7%
SW	728	0.2%	1.1%	4.1%	2.8%	0.0%	0.0%	8.3%
WSW	1163	0.2%	0.8%	6.3%	5.9%	0.0%	0.0%	13.3%
W	776	0.2%	0.5%	3.0%	5.0%	0.2%	0.0%	8.9%
WNW	1045	0.1%	0.4%	2.2%	7.3%	1.3%	0.7%	11.9%
NW	1216	0.1%	0.3%	2.0%	6.9%	2.4%	2.1%	13.9%
NNW	462	0.1%	0.4%	1.5%	2.9%	0.4%	0.1%	5.3%
Total	8,761	33.9%	30.8%	18.6%	9.8%	4.0%	2.8%	100.0%

2020 Hourly Readings of Wind Speed (in m/s) at Weyburn



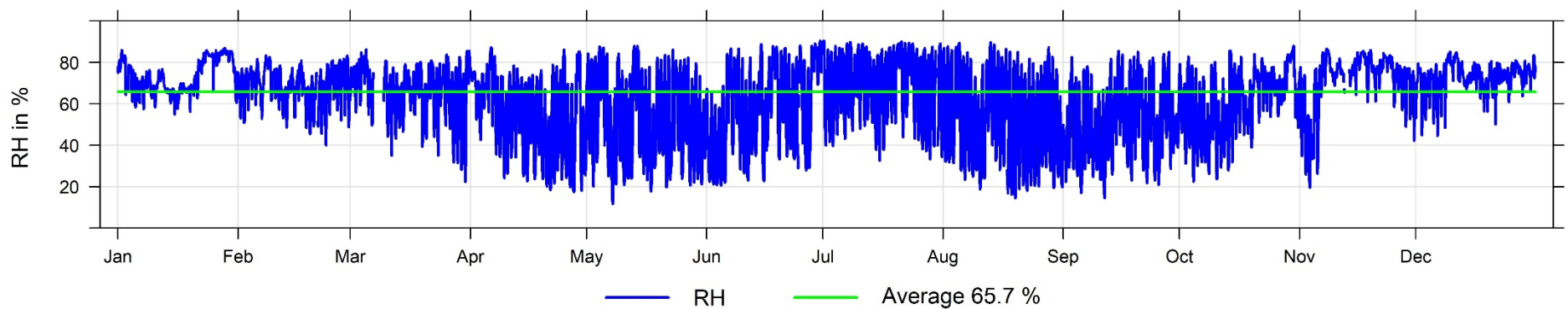
2015 to 2020 Hourly Readings of Wind Speed (in m/s) at Weyburn



Relative Humidity (RH) Frequency Distribution at Weyburn

Month	Monthly Average (%)	Maximum Values				Operational time (%)
		24-hr (%)	Date	1-hr (%)	Date	
January 2020	73.1	85.3	Jan 28	86.9	Jan 28 15:00	100.0%
February 2020	68.7	80.3	Feb 08	83.3	Feb 29 05:00	99.7%
March 2020	66.5	80.9	Mar 31	86.3	Mar 05 02:00	91.8%
April 2020	54.5	76.4	Apr 06	87.2	Apr 06 09:00	100.0%
May 2020	53.3	77.1	May 04	87.9	May 13 08:00	99.9%
June 2020	58.7	86.2	Jun 30	90.4	Jun 30 08:00	99.4%
July 2020	69.3	84.6	Jul 20	90.4	Jul 01 06:00	98.8%
August 2020	53.6	71.4	Aug 04	89.7	Aug 13 07:00	99.5%
September 2020	51.4	69.5	Sep 20	85.6	Sep 15 07:00	99.9%
October 2020	61.1	82.8	Oct 29	88.0	Oct 30 13:00	100.0%
November 2020	71.3	83.9	Nov 17	86.5	Nov 08 01:00	95.8%
December 2020	72.9	82.8	Dec 11	85.1	Dec 09 21:00	100.0%
AVERAGE		MAXIMUM VALUES				
	62.9	86.2	Jun 30	90.4	Jun 30 08:00	98.7%

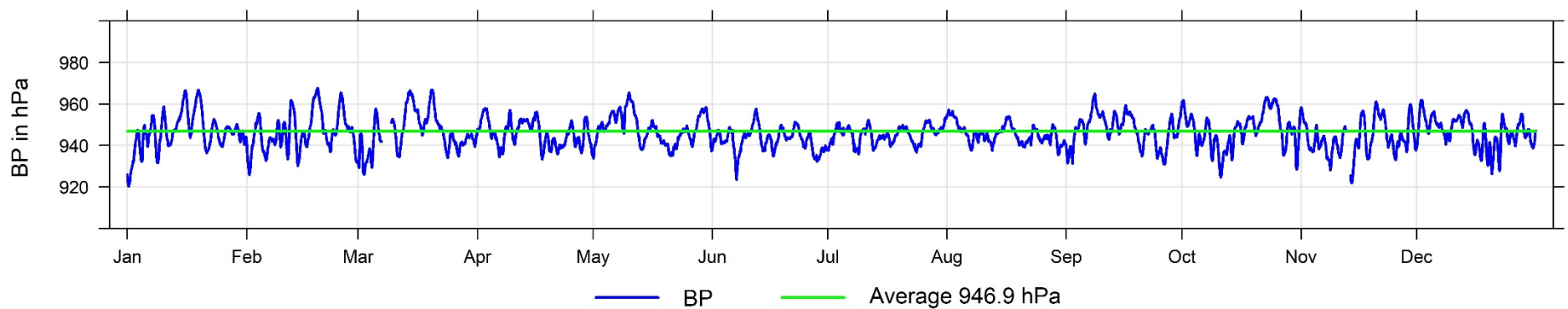
2020 Hourly Readings of Relative Humidity (in %) at Weyburn



Barometric Pressure (BP) Frequency Distribution at Weyburn

Month	Monthly Average (hPa)	Maximum Values				Operational time (%)
		24-hr (hPa)	Date	1-hr (hPa)	Date	
January 2020	946.5	965.3	Jan 19	966.7	Jan 19 11:00	100.0%
February 2020	946.5	965.3	Feb 19	967.6	Feb 19 12:00	99.7%
March 2020	946.6	965.1	Mar 14	966.9	Mar 20 03:00	91.8%
April 2020	945.7	956.1	Apr 02	957.8	Apr 02 22:00	100.0%
May 2020	948.1	963.3	May 10	965.4	May 10 09:00	99.9%
June 2020	942.7	955.0	Jun 12	957.7	Jun 12 09:00	99.4%
July 2020	945.3	952.2	Jul 31	954.6	Jul 31 00:00	98.8%
August 2020	945.4	955.6	Aug 01	957.2	Aug 01 10:00	99.5%
September 2020	947.6	961.5	Sep 08	964.9	Sep 08 10:00	99.9%
October 2020	947.4	961.0	Oct 25	963.1	Oct 22 22:00	100.0%
November 2020	943.6	958.9	Nov 20	961.1	Nov 20 12:00	95.8%
December 2020	946.6	959.6	Dec 02	961.9	Dec 02 07:00	100.0%
	AVERAGE 946.0	MAXIMUM VALUES				
		965.3	Feb 19	967.6	Feb 19 12:00	98.7%

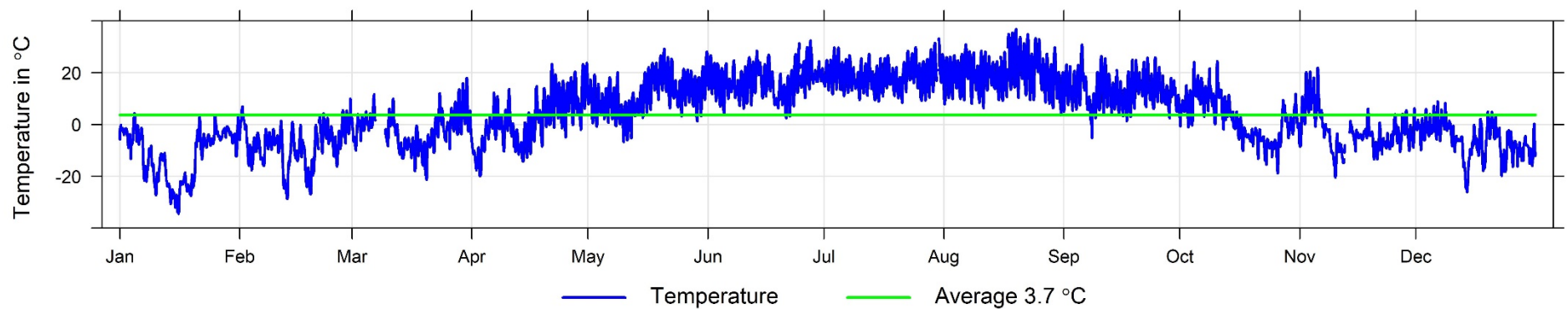
2020 Hourly Readings of Barometric Pressure (in hPa) at Weyburn



Temperature (ET) Frequency Distribution at Weyburn

Month	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)
		24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date	
January 2020	-11.7	-1.7	Jan 01	4.4	Jan 04 18:00	-29.7	Jan 15	-34.5	Jan 16 04:00	100.0%
February 2020	-7.9	2.9	Feb 01	9.9	Feb 29 14:00	-21.7	Feb 12	-28.7	Feb 13 06:00	99.7%
March 2020	-2.4	7.8	Mar 30	18.0	Mar 30 16:00	-11.9	Mar 19	-21.3	Mar 20 07:00	91.8%
April 2020	1.7	15.2	Apr 30	23.8	Apr 30 16:00	-14.2	Apr 02	-19.9	Apr 03 01:00	100.0%
May 2020	11.6	20.4	May 20	29.3	May 20 17:00	2.2	May 10	-6.7	May 10 06:00	99.9%
June 2020	16.9	23.2	Jun 27	32.5	Jun 27 13:00	8.7	Jun 18	2.5	Jun 21 06:00	99.4%
July 2020	19.0	22.9	Jul 24	33.2	Jul 30 16:00	14.5	Jul 20	8.5	Jul 21 06:00	98.8%
August 2020	19.6	25.3	Aug 19	36.8	Aug 19 16:00	11.7	Aug 31	3.6	Aug 31 07:00	99.5%
September 2020	12.9	19.7	Sep 05	30.9	Sep 05 16:00	4.7	Sep 08	-5.2	Sep 08 07:00	99.9%
October 2020	2.2	14.2	Oct 05	24.5	Oct 10 17:00	-10.3	Oct 26	-18.8	Oct 26 07:00	100.0%
November 2020	-2.7	10.4	Nov 04	21.9	Nov 05 15:00	-12.2	Nov 10	-20.4	Nov 10 04:00	95.8%
December 2020	-6.1	1.7	Dec 08	9.0	Dec 06 15:00	-18.7	Dec 14	-26.0	Dec 14 06:00	100.0%
	AVERAGE 4.4	MAXIMUM VALUES				MINIMUM VALUES				98.7%
		25.3	Aug 19	36.8	Aug 19 16:00	-29.7	Jan 15	-34.5	Jan 16 04:00	

2020 Hourly Temperature Readings (in °C) at Weyburn



APPENDIX I

Estevan Station: Continuous Monitoring Data

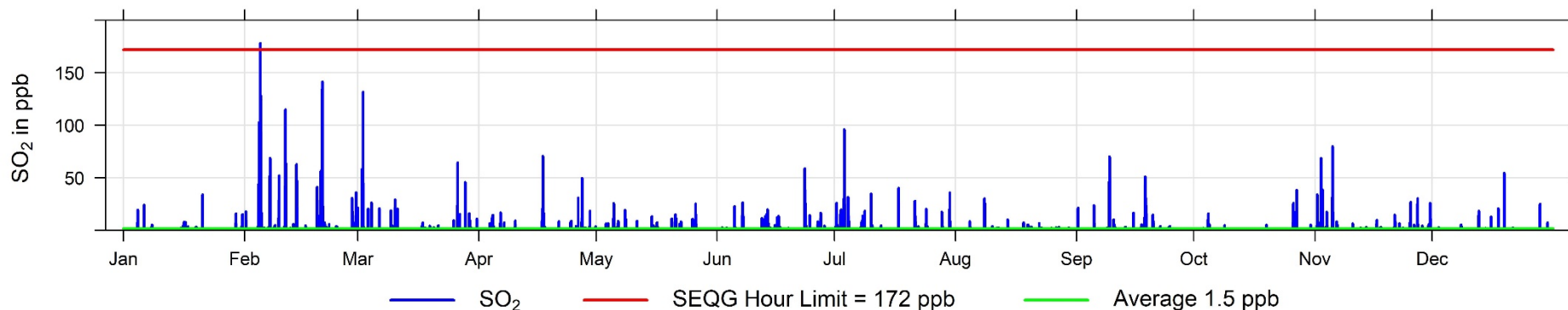
Parameter	Annual Average	Maximum Values				Operational Time (%)	Readings above SEQG & AAAQG			
		24-hr	Date	1-hr	Date		1-hr	8-hr	24-hr	Annual
Sulphur Dioxide SO ₂ measured in ppb	1.3	30.6	Feb 05	178.3	Feb 05 01:00	99.6%	1	-	0	0
Nitrogen Dioxide NO ₂ measured in ppb	4.5	15.9	Jan 22	47.5	Jan 20 08:00	99.5%	0	-	-	0
Oxides of Nitrogen NO _x measured in ppb	6.4	27.8	Jan 22	158.3	Oct 21 15:00	99.5%	-	-	-	-
Nitric Oxide NO measured in ppb	1.8	12.7	Oct 21	138.2	Oct 21 15:00	99.5%	-	-	-	-
Ozone O ₃ measured in ppb	25.8	42.4	May 18	55.5	May 21 16:00	99.5%	0	0	-	-
Particulate Matter PM _{2.5} measured in µg/m ³	6.6	19.7	Sep 20	52.0	Jul 11 23:00	99.7%	0	-	0	-
Particulate Matter PM ₁₀ measured in µg/m ³	21.5	74.0	Sep 15	202.3	Sep 14 19:00	99.5%	-	-	14	-
Black Carbon BC measured in ng/m ³	211	699	Jul 11	6390	Jul 11 23:00	76.8%	-	-	-	-

Sulphur Dioxide (SO₂) Frequency Distribution at Estevan

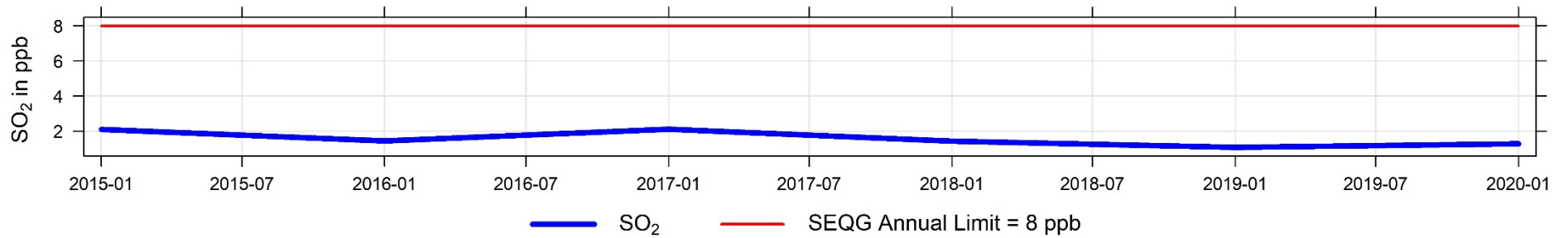
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 1 (ppb)	1 to 5 (ppb)	5 to 10 (ppb)	10 to 57 (ppb)	57 to 172 (ppb)	> 172 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 48ppb	1-hr 172ppb
January 2020	735	83.8%	14.1%	1.1%	1.0%	0.0%	0.0%	0.8	2.8	Jan 16	33.9	Jan 21 06:00	99.1%	0	0
February 2020	695	73.5%	17.3%	2.3%	4.9%	1.9%	0.1%	4.4	30.6	Feb 05	178.3	Feb 05 01:00	99.9%	0	1
March 2020	744	84.0%	11.0%	1.3%	3.2%	0.4%	0.0%	1.5	12.5	Mar 02	131.8	Mar 02 08:00	100.0%	0	0
April 2020	712	88.2%	7.3%	2.1%	2.2%	0.1%	0.0%	1.0	8.1	Apr 17	70.6	Apr 17 09:00	98.9%	0	0
May 2020	744	87.5%	8.1%	2.7%	1.7%	0.0%	0.0%	0.8	3.3	May 05	25.7	May 05 12:00	100.0%	0	0
June 2020	720	84.7%	7.4%	3.9%	3.9%	0.1%	0.0%	1.3	8.7	Jun 13	58.7	Jun 23 10:00	100.0%	0	0
July 2020	744	87.2%	6.7%	2.0%	3.8%	0.3%	0.0%	1.5	9.6	Jul 03	96.1	Jul 03 12:00	100.0%	0	0
August 2020	737	92.7%	5.8%	0.9%	0.5%	0.0%	0.0%	0.5	3.6	Aug 08	30.1	Aug 08 10:00	99.2%	0	0
September 2020	716	90.6%	5.0%	1.0%	3.2%	0.1%	0.0%	1.3	11.5	Sep 18	70.0	Sep 09 10:00	99.4%	0	0
October 2020	743	95.4%	2.7%	0.7%	1.2%	0.0%	0.0%	0.5	4.6	Oct 27	38.1	Oct 27 08:00	99.9%	0	0
November 2020	710	84.9%	9.4%	3.0%	2.1%	0.6%	0.0%	1.4	11.4	Nov 02	79.9	Nov 05 13:00	98.6%	0	0
December 2020	744	94.9%	3.4%	0.5%	1.2%	0.0%	0.0%	0.6	5.0	Dec 19	54.3	Dec 19 11:00	100.0%	0	0
Annual	8744	87.3%	8.2%	1.8%	2.4%	0.3%	0.0%	1.3	30.6	Feb 05	178.3	Feb 05 01:00	99.6%	0	1

SEQG Objectives: Annual: 8ppb, 24-Hr: 48ppb, 1-Hr: 172ppb

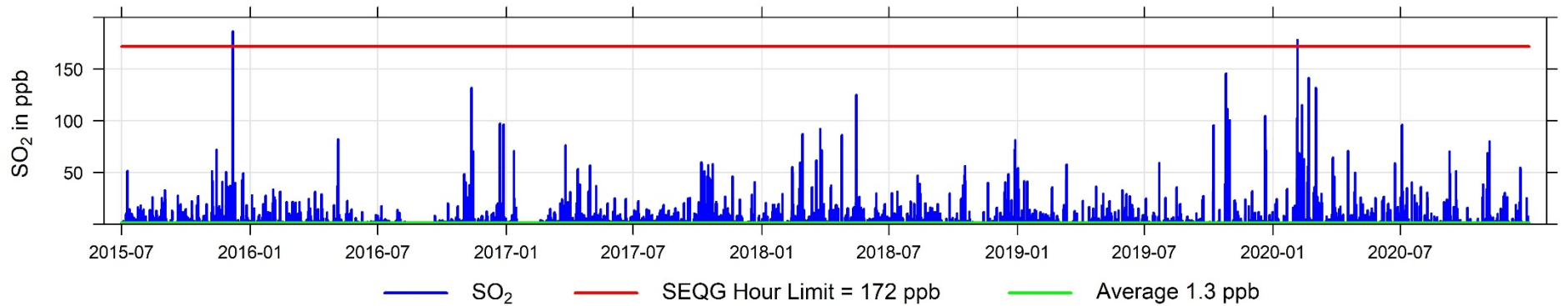
2020 Hourly Concentration Readings of SO₂ (in ppb) at Estevan



2015 to 2020 Annual Concentration Readings of SO₂ (in ppb) at Estevan



2015 to 2020 Hourly Concentration Readings of SO₂ (in ppb) at Estevan

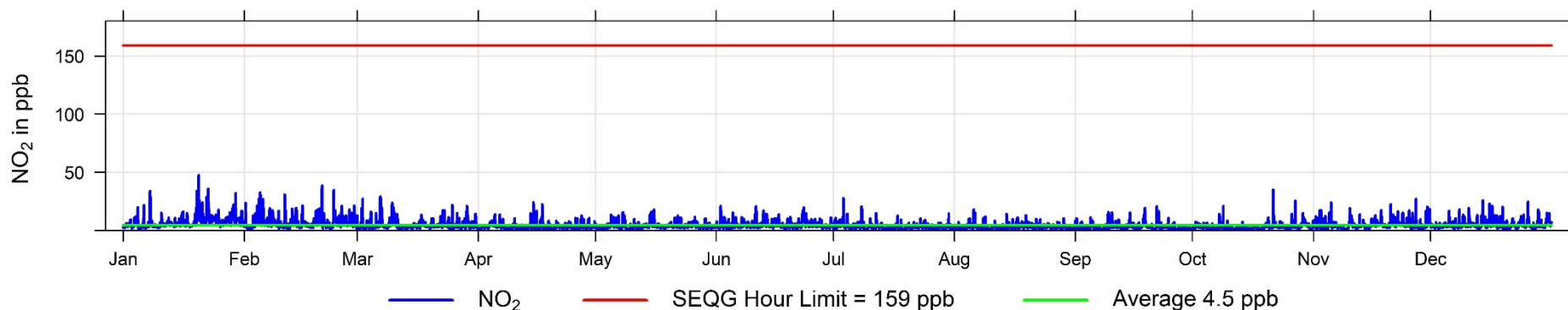


Nitrogen Dioxide (NO₂) Frequency Distribution at Estevan

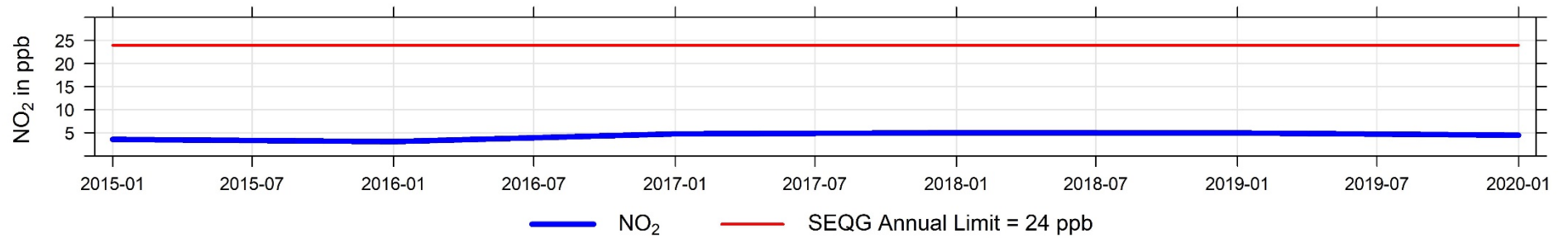
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		24-hr 106ppb	1-hr 159ppb
January 2020	734	38.0%	54.6%	6.4%	1.0%	0.0%	0.0%	7.5	15.9	Jan 22	47.5	Jan 20 08:00	99.1%	0	0
February 2020	695	46.9%	45.3%	6.6%	1.2%	0.0%	0.0%	7.0	14.4	Feb 20	38.6	Feb 20 23:00	99.9%	0	0
March 2020	744	72.0%	23.5%	4.4%	0.0%	0.0%	0.0%	4.8	10.2	Mar 09	29.0	Mar 06 21:00	100.0%	0	0
April 2020	712	85.3%	13.9%	0.8%	0.0%	0.0%	0.0%	3.3	6.9	Apr 15	24.1	Apr 15 02:00	98.9%	0	0
May 2020	742	78.6%	20.9%	0.5%	0.0%	0.0%	0.0%	3.8	6.4	May 08	17.6	May 15 23:00	99.7%	0	0
June 2020	720	62.1%	36.4%	1.5%	0.0%	0.0%	0.0%	5.0	10.1	Jun 23	21.0	Jun 02 02:00	100.0%	0	0
July 2020	743	87.3%	12.1%	0.5%	0.0%	0.0%	0.0%	3.1	7.4	Jul 03	27.8	Jul 03 12:00	99.9%	0	0
August 2020	737	85.5%	14.2%	0.3%	0.0%	0.0%	0.0%	3.2	5.9	Aug 06	17.9	Aug 05 22:00	99.2%	0	0
September 2020	714	86.7%	12.3%	1.0%	0.0%	0.0%	0.0%	3.0	7.7	Sep 18	20.7	Sep 21 20:00	99.2%	0	0
October 2020	743	85.2%	14.1%	0.5%	0.1%	0.0%	0.0%	3.2	8.2	Oct 29	35.2	Oct 21 16:00	100.0%	0	0
November 2020	708	66.1%	31.1%	2.8%	0.0%	0.0%	0.0%	4.9	9.3	Nov 30	27.2	Nov 27 06:00	98.3%	0	0
December 2020	744	67.1%	30.2%	2.7%	0.0%	0.0%	0.0%	5.0	9.4	Dec 16	25.7	Dec 14 09:00	100.0%	0	0
Annual	8736	71.7%	25.7%	2.4%	0.2%	0.0%	0.0%	4.5	15.9	Jan 22	47.5	Jan 20 08:00	99.5%	0	0

SEQG Objectives: Annual: 24ppb, 24-Hr: 106ppb, 1-Hr: 159ppb

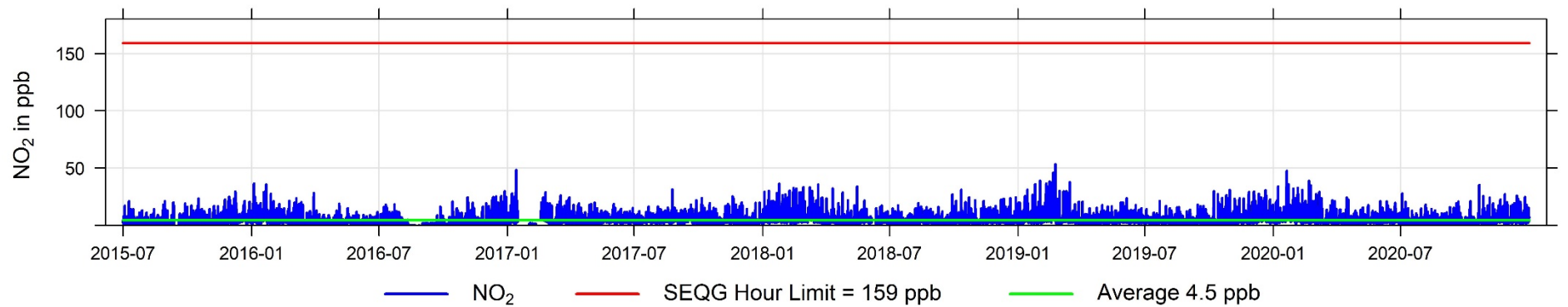
2020 Hourly Concentration Readings of NO₂ (in ppb) at Estevan



2015 to 2020 Annual Concentration Readings of NO₂ (in ppb) at Estevan



2015 to 2020 Hourly Concentration Readings of NO₂ (in ppb) at Estevan

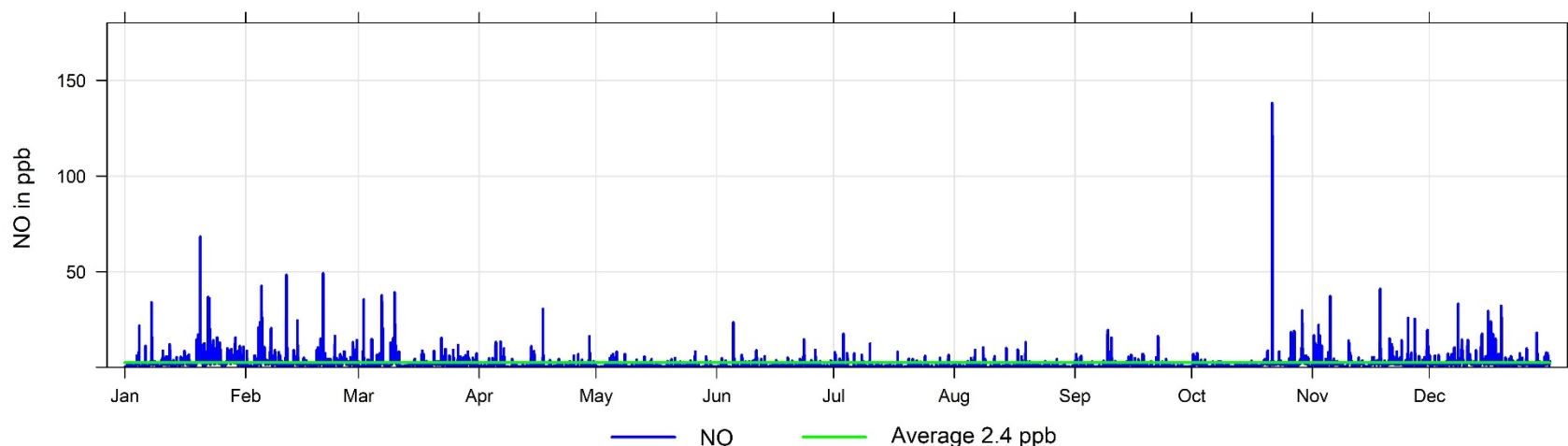


Nitric Oxide (NO) Frequency Distribution at Estevan

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date	
January 2020	734	80.1%	17.0%	2.0%	0.8%	0.0%	0.0%	3.5	11.8	Jan 22	68.4	Jan 20 08:00	99.1%
February 2020	695	83.7%	12.9%	2.6%	0.7%	0.0%	0.0%	3.3	10.3	Feb 05	49.2	Feb 20 22:00	99.9%
March 2020	744	89.1%	9.3%	0.9%	0.7%	0.0%	0.0%	2.4	8.2	Mar 10	39.2	Mar 10 07:00	100.0%
April 2020	712	96.6%	3.1%	0.1%	0.1%	0.0%	0.0%	1.1	3.5	Apr 05	30.6	Apr 17 09:00	98.9%
May 2020	742	98.4%	1.6%	0.0%	0.0%	0.0%	0.0%	0.8	2.3	May 05	8.4	May 26 11:00	99.7%
June 2020	720	97.6%	2.2%	0.1%	0.0%	0.0%	0.0%	0.9	3.2	Jun 05	23.5	Jun 05 06:00	100.0%
July 2020	743	97.7%	2.2%	0.1%	0.0%	0.0%	0.0%	0.8	2.1	Jul 03	17.6	Jul 03 12:00	99.9%
August 2020	737	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.7	1.6	Aug 08	13.2	Aug 19 08:00	99.2%
September 2020	714	96.6%	2.7%	0.7%	0.0%	0.0%	0.0%	1.1	3.7	Sep 09	19.5	Sep 09 10:00	99.2%
October 2020	743	95.4%	3.5%	0.8%	0.0%	0.3%	0.0%	2.1	12.7	Oct 21	138.2	Oct 21 15:00	100.0%
November 2020	708	88.4%	9.5%	1.8%	0.3%	0.0%	0.0%	2.6	6.7	Nov 18	41.0	Nov 18 09:00	98.3%
December 2020	744	89.0%	9.5%	1.2%	0.3%	0.0%	0.0%	2.7	6.4	Dec 16	33.2	Dec 08 09:00	100.0%
Annual	8736	92.6%	6.2%	0.9%	0.2%	0.0%	0.0%	1.8	12.7	Oct 21	138.2	Oct 21 15:00	99.5%

SEQG Objectives: none

2020 Hourly Concentration Readings of NO (in ppb) at Estevan

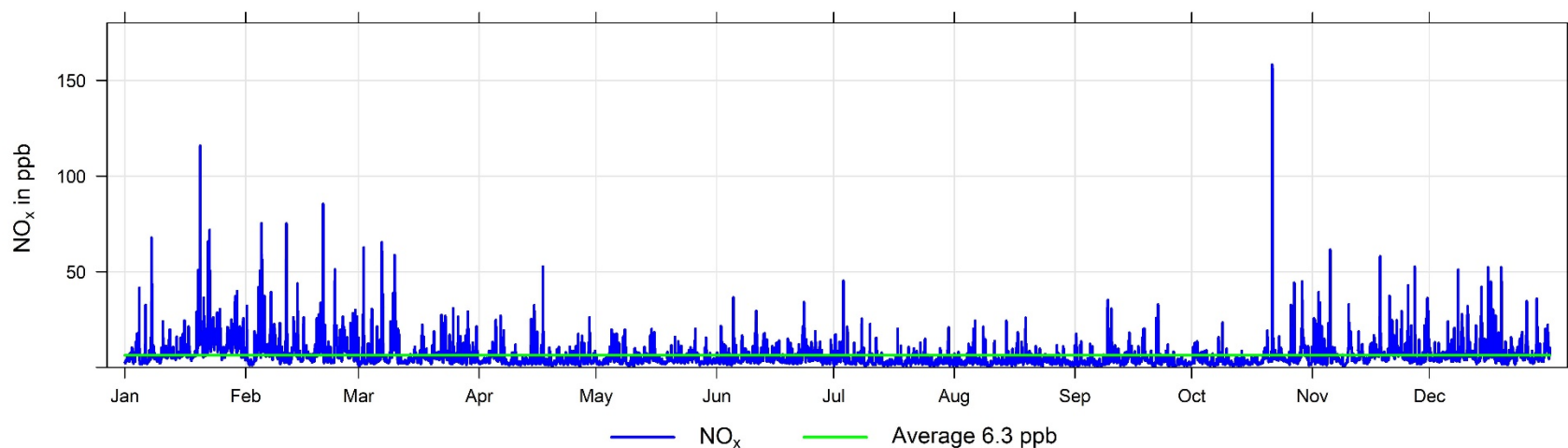


Oxides of Nitrogen (NO_x) Frequency Distribution at Estevan

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)
		0 to 5 (ppb)	5 to 15 (ppb)	15 to 30 (ppb)	30 to 100 (ppb)	100 to 159 (ppb)	> 159 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date	
January 2020	734	21.0%	57.4%	17.3%	4.2%	0.1%	0.0%	11.1	27.8	Jan 22	115.9	Jan 20 08:00	99.1%
February 2020	695	29.5%	52.7%	13.8%	4.0%	0.0%	0.0%	10.3	24.3	Feb 05	85.6	Feb 20 22:00	99.9%
March 2020	744	55.0%	34.3%	8.2%	2.6%	0.0%	0.0%	7.3	18.2	Mar 10	65.5	Mar 06 23:00	100.0%
April 2020	712	75.0%	21.5%	3.2%	0.3%	0.0%	0.0%	4.5	8.8	Apr 05	52.7	Apr 17 09:00	98.9%
May 2020	742	69.4%	28.3%	2.3%	0.0%	0.0%	0.0%	4.7	8.4	May 05	20.2	May 15 06:00	99.7%
June 2020	720	53.1%	43.1%	3.6%	0.3%	0.0%	0.0%	6.0	13.0	Jun 23	36.7	Jun 05 06:00	100.0%
July 2020	743	80.1%	17.6%	2.2%	0.1%	0.0%	0.0%	3.9	9.6	Jul 03	45.4	Jul 03 12:00	99.9%
August 2020	737	78.6%	19.9%	1.5%	0.0%	0.0%	0.0%	3.9	7.2	Aug 06	26.0	Aug 19 08:00	99.2%
September 2020	714	76.5%	20.9%	2.1%	0.6%	0.0%	0.0%	4.1	10.2	Sep 18	35.3	Sep 09 10:00	99.2%
October 2020	743	68.6%	28.3%	2.0%	0.8%	0.3%	0.0%	5.3	19.1	Oct 21	158.3	Oct 21 15:00	100.0%
November 2020	708	45.5%	44.2%	8.2%	2.1%	0.0%	0.0%	7.6	14.6	Nov 30	61.6	Nov 05 13:00	98.3%
December 2020	744	42.2%	47.8%	8.3%	1.6%	0.0%	0.0%	7.8	15.8	Dec 16	52.5	Dec 16 02:00	100.0%
Annual	8736	57.9%	34.7%	6.1%	1.4%	0.0%	0.0%	6.4	27.8	Jan 22	158.3	Oct 21 15:00	99.5%

SEQG Objectives: none

2020 Hourly Concentration Readings of NO_x (in ppb) at Estevan

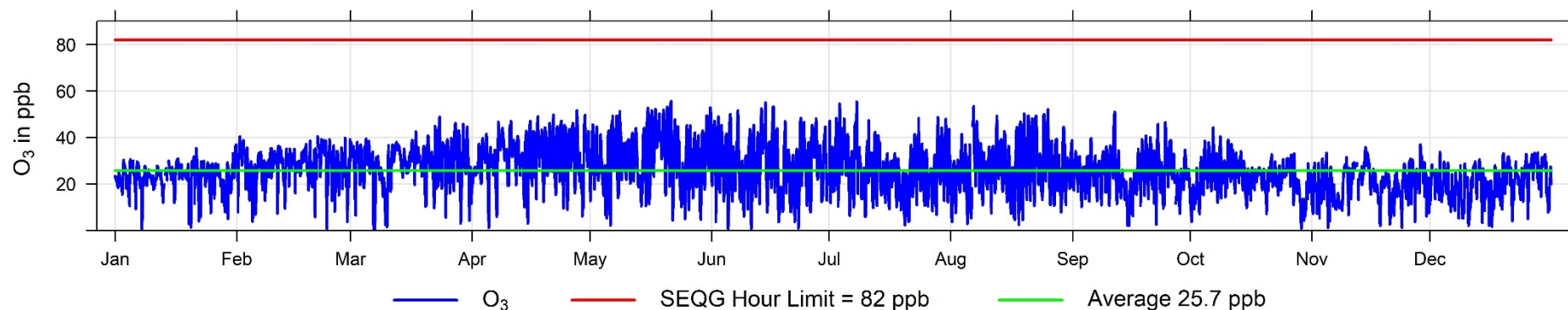


Ozone (O₃) Frequency Distribution at Estevan

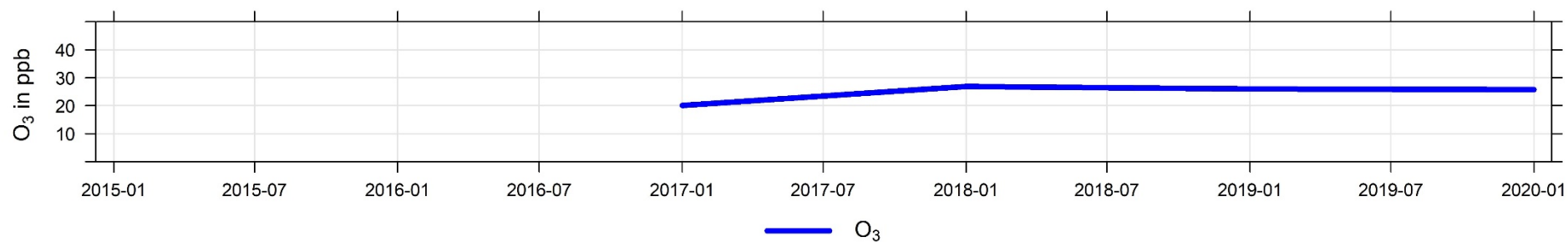
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ppb)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 10 (ppb)	10 to 20 (ppb)	20 to 40 (ppb)	40 to 60 (ppb)	60 to 76 (ppb)	> 76 (ppb)		24-hr (ppb)	Date	1-hr (ppb)	Date		8-hr 63ppb	1-hr 82ppb
January 2020	735	2.9%	22.4%	74.7%	0.0%	0.0%	0.0%	22.8	31.4	Jan 31	36.9	Jan 31 20:00	99.1%	0	0
February 2020	695	2.9%	11.2%	85.5%	0.4%	0.0%	0.0%	27.7	34.7	Feb 02	40.5	Feb 01 19:00	99.9%	0	0
March 2020	744	4.6%	10.6%	79.4%	5.4%	0.0%	0.0%	28.5	34.9	Mar 12	48.8	Mar 23 17:00	100.0%	0	0
April 2020	712	3.4%	7.7%	66.4%	22.5%	0.0%	0.0%	31.8	39.3	Apr 08	51.7	Apr 27 16:00	98.9%	0	0
May 2020	744	3.6%	15.9%	53.8%	26.7%	0.0%	0.0%	30.9	42.4	May 18	55.5	May 21 16:00	100.0%	0	0
June 2020	720	7.8%	21.3%	51.8%	19.2%	0.0%	0.0%	27.9	38.0	Jun 14	55.0	Jun 14 18:00	100.0%	0	0
July 2020	744	6.0%	25.9%	57.7%	10.3%	0.0%	0.0%	25.7	37.1	Jul 04	55.3	Jul 07 00:00	100.0%	0	0
August 2020	737	6.2%	23.1%	57.3%	13.4%	0.0%	0.0%	26.9	36.0	Aug 25	53.4	Aug 06 19:00	99.2%	0	0
September 2020	716	3.8%	28.1%	65.2%	2.9%	0.0%	0.0%	24.2	36.7	Sep 11	51.1	Sep 11 17:00	99.4%	0	0
October 2020	743	6.3%	27.2%	65.8%	0.7%	0.0%	0.0%	22.5	30.2	Oct 06	44.3	Oct 06 19:00	99.9%	0	0
November 2020	707	8.2%	39.5%	52.3%	0.0%	0.0%	0.0%	20.0	29.6	Nov 14	37.0	Nov 28 15:00	98.2%	0	0
December 2020	744	7.4%	37.4%	55.2%	0.0%	0.0%	0.0%	20.7	30.1	Dec 27	33.7	Dec 03 14:00	100.0%	0	0
Annual	8741	5.3%	22.5%	63.8%	8.5%	0.0%	0.0%	25.8	42.4	May 18	55.5	May 21 16:00	99.5%	0	0

SEQG Objectives: 8-Hr: 63ppb, 1-Hr: 82ppb

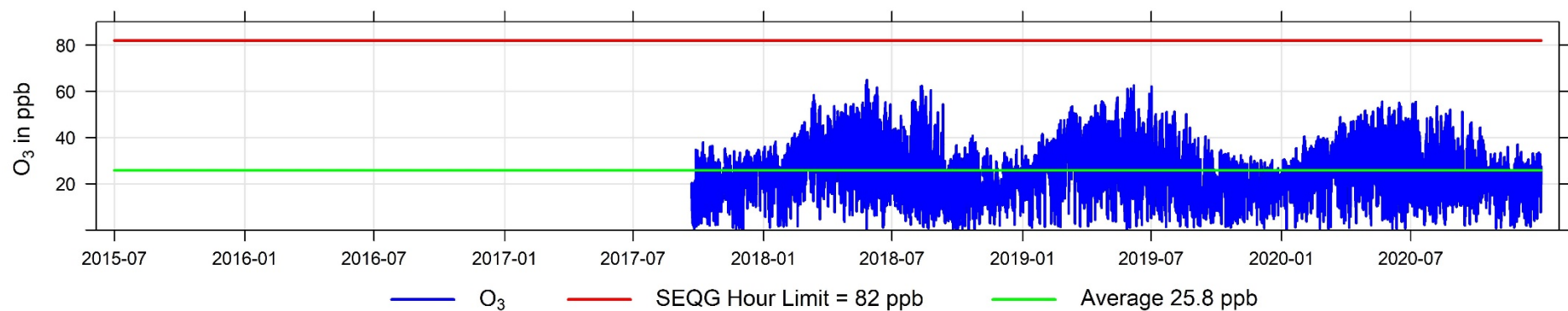
2020 Hourly Concentration Readings of O₃ (in ppb) at Estevan



2015 to 2020 Annual Concentration Readings of O₃ (in ppb) at Estevan



2015 to 2020 Hourly Concentration Readings of O₃ (in ppb) at Estevan

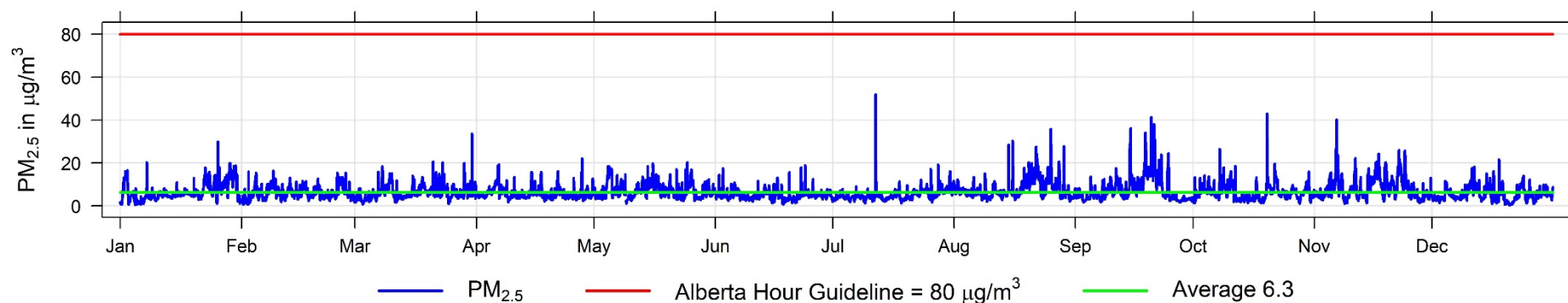


Particulate Matter (PM_{2.5}) Frequency Distribution at Estevan

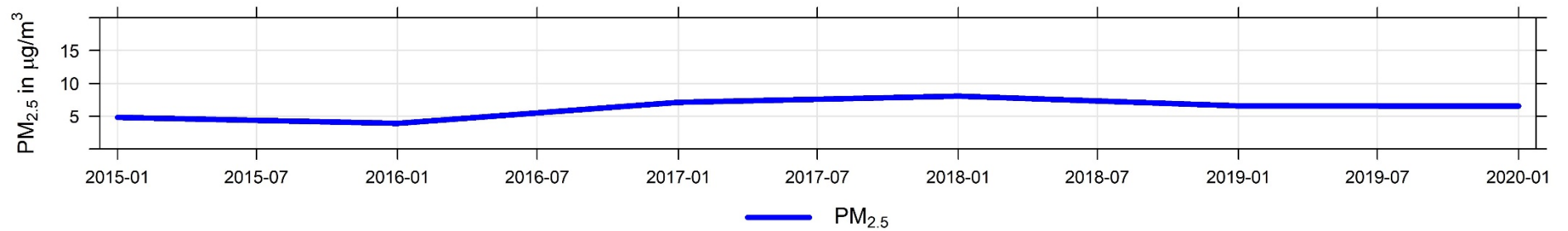
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m³)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents	
		0 to 2 (µg/m³)	2 to 4 (µg/m³)	4 to 10 (µg/m³)	10 to 20 (µg/m³)	20 to 29 (µg/m³)	> 29 (µg/m³)		24-hr (µg/m³)	Date	1-hr (µg/m³)	Date		24-hr 28 µg/m³	1-hr 80 µg/m³
January 2020	742	9.0%	17.1%	53.0%	20.1%	0.7%	0.1%	6.8	14.5	Jan 29	30.1	Jan 25 00:00	99.7%	0	0
February 2020	695	3.9%	27.5%	56.0%	12.7%	0.0%	0.0%	6.1	11.0	Feb 26	16.4	Feb 09 03:00	99.9%	0	0
March 2020	744	3.5%	16.7%	66.7%	12.8%	0.3%	0.1%	6.4	10.2	Mar 09	33.6	Mar 30 20:00	100.0%	0	0
April 2020	716	0.1%	21.9%	70.8%	6.8%	0.3%	0.0%	5.9	12.0	Apr 06	22.2	Apr 27 00:00	99.4%	0	0
May 2020	739	0.7%	18.0%	62.4%	18.8%	0.1%	0.0%	7.2	12.7	May 04	20.4	May 24 20:00	99.3%	0	0
June 2020	717	4.6%	30.7%	60.8%	3.9%	0.0%	0.0%	5.0	7.3	Jun 23	18.9	Jun 23 23:00	99.6%	0	0
July 2020	743	1.5%	34.9%	59.1%	4.2%	0.1%	0.3%	5.2	9.2	Jul 30	52.0	Jul 11 23:00	99.9%	0	0
August 2020	741	0.0%	13.5%	62.2%	21.9%	2.2%	0.3%	8.0	16.3	Aug 22	35.9	Aug 25 17:00	99.6%	0	0
September 2020	716	3.4%	27.1%	43.7%	20.9%	3.1%	1.8%	8.0	19.7	Sep 20	41.4	Sep 20 09:00	99.4%	0	0
October 2020	744	4.7%	26.3%	57.1%	11.3%	0.3%	0.3%	6.3	11.0	Oct 10	42.9	Oct 19 22:00	100.0%	0	0
November 2020	717	3.2%	18.4%	48.1%	27.2%	2.6%	0.4%	8.4	17.0	Nov 22	40.2	Nov 06 17:00	99.6%	0	0
December 2020	744	9.7%	29.4%	51.6%	9.1%	0.1%	0.0%	5.5	10.7	Dec 11	21.6	Dec 18 04:00	100.0%	0	0
Annual	8758	3.7%	23.5%	57.6%	14.1%	0.8%	0.3%	6.6	MAXIMUM VALUES				99.7%	0	0

SEQG Objectives: 24-Hr: 28 µg/m³, Alberta Guideline: 1-Hr: 80 µg/m³

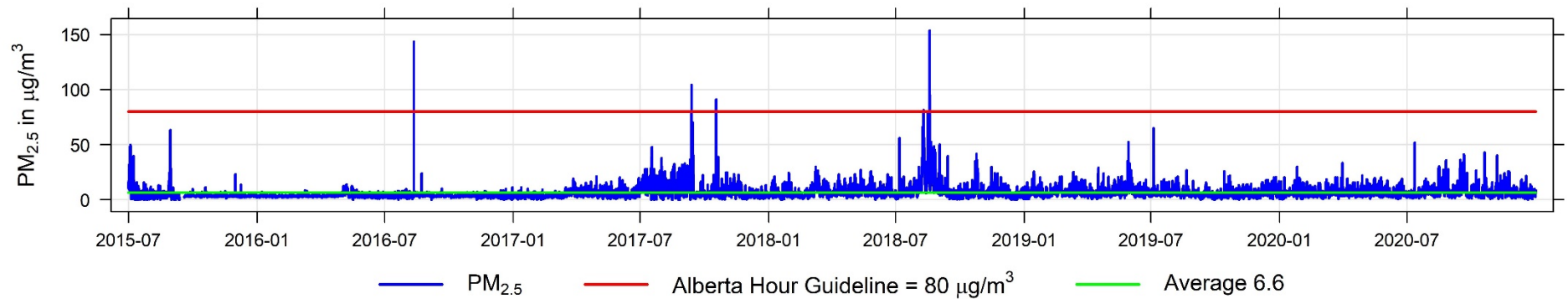
2020 Hourly Concentration Readings of PM_{2.5} in µg/m³ at Estevan



2015 to 2020 Annual Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Estevan



2015 to 2020 Hourly Concentration Readings of PM_{2.5} in $\mu\text{g}/\text{m}^3$ at Estevan

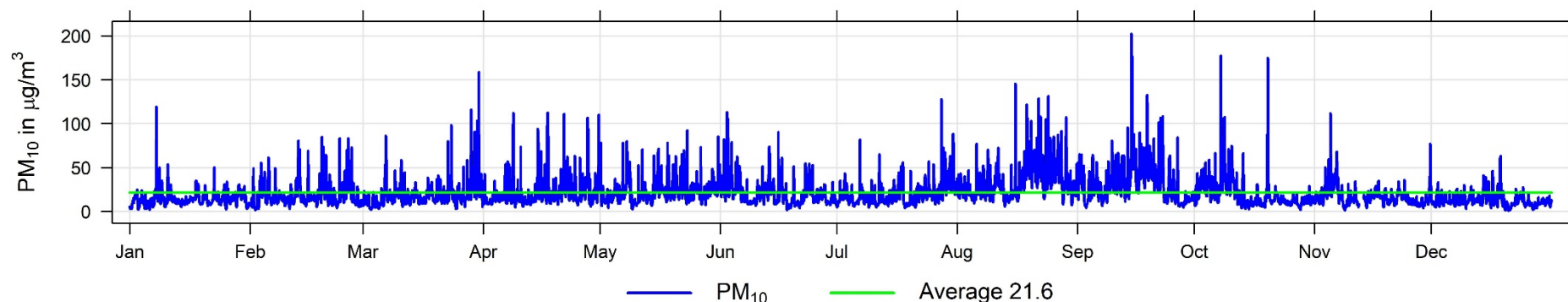


Particulate Matter (PM₁₀) Frequency Distribution at Estevan

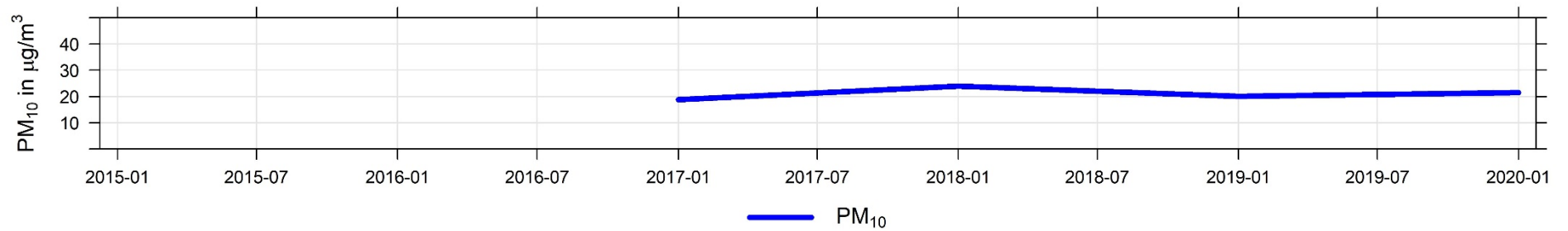
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (µg/m³)	MAXIMUM VALUES				Operational time (%)	Reportable Incidents 24-hr 50 µg/m³
		0 to 10 (µg/m³)	10 to 20 (µg/m³)	20 to 30 (µg/m³)	30 to 40 (µg/m³)	40 to 50 (µg/m³)	> 50 (µg/m³)		24-hr (µg/m³)	Date	1-hr (µg/m³)	Date		
January 2020	742	32.2%	50.5%	13.3%	2.6%	0.4%	0.9%	14.6	29.5	Jan 07	119.4	Jan 07 20:00	99.7%	0
February 2020	695	23.6%	44.0%	15.8%	7.8%	5.3%	3.5%	19.3	37.7	Feb 26	84.9	Feb 19 11:00	99.9%	0
March 2020	744	23.0%	40.7%	23.0%	7.4%	2.2%	3.8%	19.5	46.1	Mar 30	158.4	Mar 30 20:00	100.0%	0
April 2020	717	13.5%	45.7%	20.5%	9.9%	3.9%	6.4%	22.7	40.3	Apr 27	112.5	Apr 17 13:00	99.6%	0
May 2020	743	9.0%	37.6%	33.1%	10.0%	4.4%	5.9%	23.4	37.3	May 08	92.4	May 23 12:00	99.9%	0
June 2020	720	20.0%	38.9%	23.6%	9.0%	3.5%	5.0%	20.9	38.4	Jun 03	113.0	Jun 02 17:00	100.0%	0
July 2020	743	19.4%	43.3%	22.5%	9.8%	1.7%	3.2%	19.6	45.9	Jul 30	128.0	Jul 27 22:00	99.9%	0
August 2020	741	1.9%	25.2%	26.6%	17.0%	10.1%	19.2%	34.6	62.6	Aug 19	145.5	Aug 15 23:00	99.6%	7
September 2020	716	9.4%	23.5%	19.1%	16.8%	12.8%	18.4%	33.7	74.0	Sep 15	202.3	Sep 14 19:00	99.4%	6
October 2020	740	27.8%	38.4%	14.2%	10.1%	3.9%	5.5%	20.3	51.4	Oct 08	177.6	Oct 07 20:00	99.5%	1
November 2020	694	26.1%	45.5%	18.9%	5.5%	2.3%	1.7%	17.2	39.9	Nov 06	111.6	Nov 05 02:00	96.4%	0
December 2020	744	42.3%	44.5%	10.2%	1.9%	0.8%	0.3%	12.7	26.6	Dec 18	63.4	Dec 18 21:00	100.0%	0
Annual	8739	20.7%	39.8%	20.1%	9.0%	4.3%	6.2%	21.5	MAXIMUM VALUES				99.5%	14

SEQG Objectives: 24-Hr: 50 µg/m³

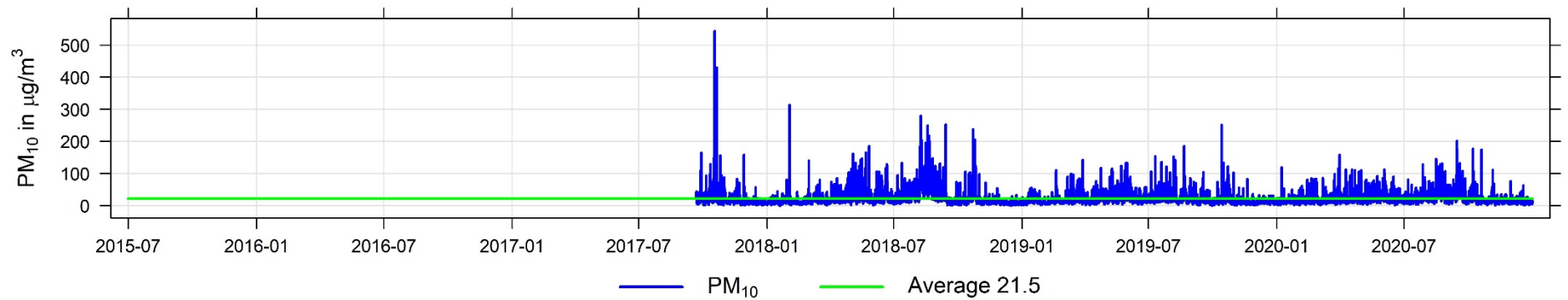
2020 Hourly Concentration Readings of PM₁₀ in µg/m³ at Estevan



2015 to 2020 Annual Concentration Readings of PM₁₀ in $\mu\text{g}/\text{m}^3$ at Estevan



2015 to 2020 Hourly Concentration Readings of PM₁₀ in $\mu\text{g}/\text{m}^3$ at Estevan

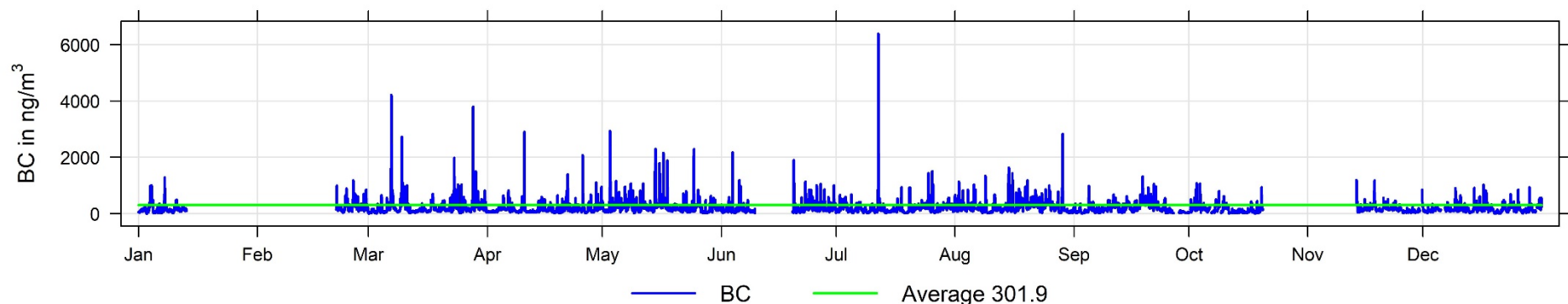


Black Carbon (BC) Frequency Distribution at Estevan

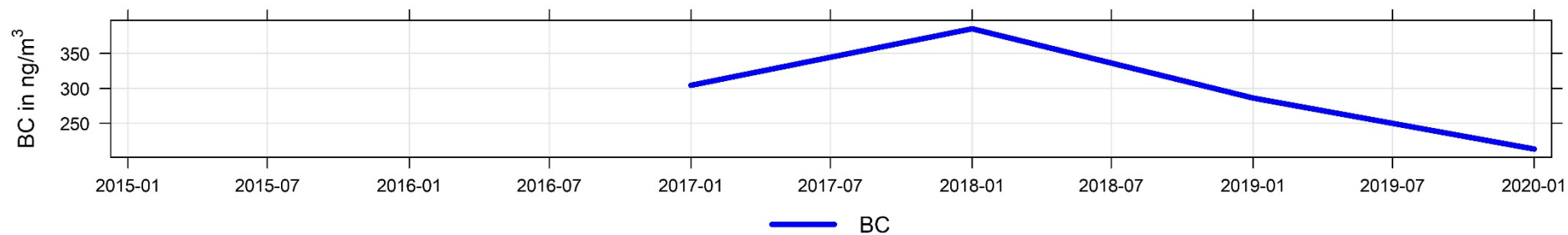
Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (ng/m ³)	MAXIMUM VALUES				Operational time (%)
		0 to 100 (ng/m ³)	100 to 200 (ng/m ³)	200 to 300 (ng/m ³)	300 to 500 (ng/m ³)	500 to 800 (ng/m ³)	> 800 (ng/m ³)		24-hr (ng/m ³)	Date	1-hr (ng/m ³)	Date	
January 2020	302	38.7%	38.7%	9.9%	8.3%	2.0%	2.3%	170	456	Jan 04	1283	Jan 07 20:00	40.6%
February 2020	203	13.3%	35.5%	18.7%	18.7%	11.3%	2.5%	269	427	Feb 26	1183	Feb 25 00:00	29.2%
March 2020	744	32.8%	33.2%	12.1%	13.3%	4.7%	3.9%	234	652	Mar 06	4215	Mar 06 23:00	100.0%
April 2020	717	41.3%	34.4%	13.1%	6.3%	3.5%	1.4%	172	430	Apr 21	2905	Apr 10 15:00	99.6%
May 2020	742	21.4%	32.7%	20.9%	14.0%	6.3%	4.6%	266	501	May 24	2934	May 02 00:00	99.7%
June 2020	484	33.3%	32.0%	15.7%	11.8%	3.7%	3.5%	212	364	Jun 03	2185	Jun 03 23:00	67.2%
July 2020	744	33.3%	29.7%	19.8%	11.7%	3.8%	1.7%	211	699	Jul 11	6390	Jul 11 23:00	100.0%
August 2020	739	23.1%	28.4%	18.1%	18.5%	7.6%	4.2%	265	455	Aug 19	2829	Aug 29 01:00	99.3%
September 2020	686	35.9%	24.8%	15.9%	18.5%	3.9%	1.0%	200	480	Sep 18	1325	Sep 18 21:00	95.3%
October 2020	397	44.6%	25.7%	14.4%	10.6%	3.0%	1.8%	170	407	Oct 02	1079	Oct 02 00:00	53.4%
November 2020	361	29.4%	39.3%	16.3%	11.6%	1.9%	1.4%	186	367	Nov 18	1197	Nov 13 16:00	50.1%
December 2020	651	35.6%	33.9%	16.4%	9.5%	3.2%	1.2%	178	328	Dec 17	1025	Dec 16 19:00	87.5%
Annual	6770	31.9%	32.4%	15.9%	12.7%	4.6%	2.5%	211	MAXIMUM VALUES				76.8%

SEQG Objectives: none

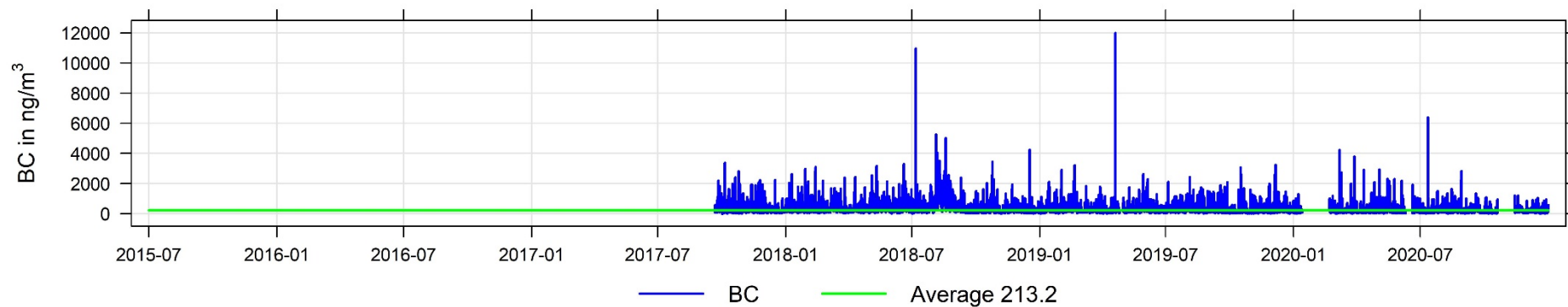
2020 Hourly Concentration Readings of Black Carbon in ng/m³ at Estevan



2015 to 2020 Annual Concentration Readings of Concentration Readings of Black Carbon in ng/m^3 at Estevan



2015 to 2020 Hourly Concentration Readings of Black Carbon in ng/m^3 at Estevan



Wind Speed Frequency Distribution of 1-hr Averages - Estevan

Month	Valid Hours	% of Readings in Concentration Range						Monthly Average (m/s)	MAXIMUM VALUES				Operational time (%)
		0 to 2 (m/s)	2 to 4 (m/s)	4 to 6 (m/s)	6 to 8 (m/s)	8 to 10 (m/s)	> 10 (m/s)		24-hr (m/s)	Date	1-hr (m/s)	Date	
January 2020	744	37.8%	44.9%	13.6%	3.4%	0.4%	0.0%	2.7	5.1	Jan 08	9.2	Jan 04 22:00	100.0%
February 2020	695	34.0%	53.7%	11.7%	0.4%	0.3%	0.0%	2.6	4.3	Feb 02	8.6	Feb 01 22:00	99.9%
March 2020	744	29.6%	46.4%	16.3%	6.5%	0.9%	0.4%	3.1	6.3	Mar 01	10.5	Mar 01 06:00	100.0%
April 2020	718	30.8%	40.0%	23.4%	5.0%	0.8%	0.0%	3.2	5.6	Apr 08	8.2	Apr 19 10:00	99.7%
May 2020	744	35.6%	39.0%	19.4%	6.0%	0.0%	0.0%	2.9	5.9	May 18	7.8	May 08 18:00	100.0%
June 2020	720	42.1%	39.4%	11.8%	4.7%	1.4%	0.6%	2.8	7.1	Jun 06	10.5	Jun 29 23:00	100.0%
July 2020	744	47.7%	40.7%	9.1%	2.0%	0.3%	0.1%	2.3	5.0	Jul 08	10.1	Jul 09 02:00	100.0%
August 2020	744	47.7%	46.6%	5.0%	0.7%	0.0%	0.0%	2.1	3.7	Aug 10	7.0	Aug 10 17:00	100.0%
September 2020	716	38.0%	45.7%	12.0%	3.5%	0.8%	0.0%	2.7	5.6	Sep 20	9.7	Sep 20 20:00	99.4%
October 2020	744	33.2%	44.9%	17.3%	3.9%	0.7%	0.0%	2.9	6.0	Oct 31	9.3	Oct 31 13:00	100.0%
November 2020	718	32.7%	45.5%	17.7%	4.0%	0.0%	0.0%	2.8	4.7	Nov 14	7.2	Nov 15 01:00	99.7%
December 2020	744	40.7%	44.8%	13.0%	1.5%	0.0%	0.0%	2.5	4.4	Dec 22	7.4	Dec 19 14:00	100.0%
Annual	8775	37.5%	44.3%	14.2%	3.5%	0.5%	0.1%	2.7	MAXIMUM VALUES				99.9%
									7.1	Jun 06	10.5	Jun 29 23:00	

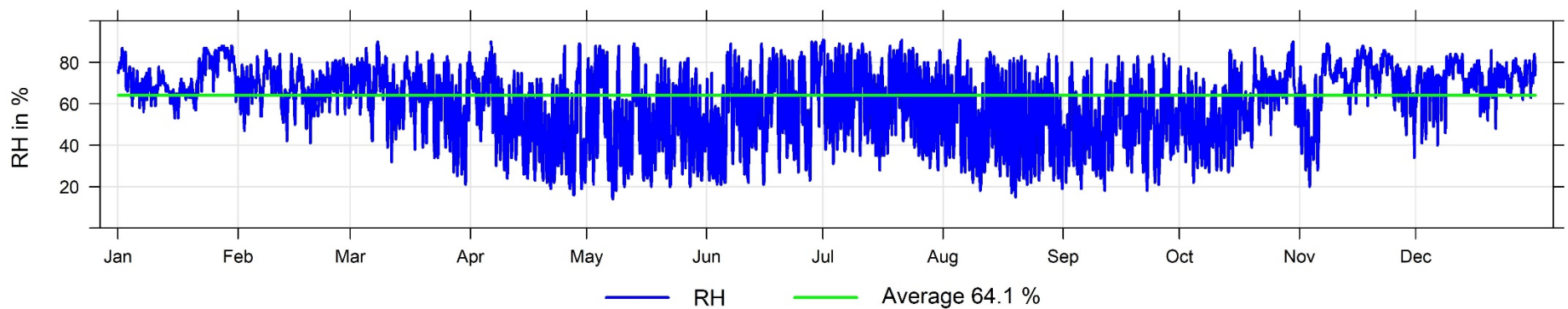
Wind Speed and Wind Direction Frequency Distribution at Estevan

Direction	Number of Readings	% of wind speed range (m/s)						Total %
		0 to 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	
N	400	0.1%	0.5%	1.3%	2.2%	0.4%	0.1%	4.6%
NNE	243	0.2%	0.6%	1.0%	1.0%	0.0%	0.0%	2.8%
NE	207	0.1%	0.8%	1.1%	0.5%	0.0%	0.0%	2.4%
ENE	269	0.2%	0.8%	1.8%	0.3%	0.0%	0.0%	3.1%
E	394	0.3%	1.1%	2.4%	0.7%	0.0%	0.0%	4.5%
ESE	587	0.3%	0.9%	2.4%	3.0%	0.1%	0.0%	6.7%
SE	388	0.3%	0.8%	1.6%	1.6%	0.1%	0.0%	4.4%
SSE	298	0.2%	0.8%	1.3%	1.0%	0.1%	0.0%	3.4%
S	264	0.3%	1.0%	1.1%	0.5%	0.1%	0.0%	3.0%
SSW	321	0.3%	0.9%	1.6%	0.8%	0.0%	0.0%	3.7%
SW	728	0.2%	1.1%	4.1%	2.8%	0.0%	0.0%	8.3%
WSW	1163	0.2%	0.8%	6.3%	5.9%	0.0%	0.0%	13.3%
W	776	0.2%	0.5%	3.0%	5.0%	0.2%	0.0%	8.9%
WNW	1045	0.1%	0.4%	2.2%	7.3%	1.3%	0.7%	11.9%
NW	1216	0.1%	0.3%	2.0%	6.9%	2.4%	2.1%	13.9%
NNW	462	0.1%	0.4%	1.5%	2.9%	0.4%	0.1%	5.3%
Total	8,761	37.5%	44.3%	14.2%	3.5%	0.5%	0.1%	100.0%

Relative Humidity (RH) Frequency Distribution at Estevan

Month	Monthly Average (%)	Maximum Values				Operational time (%)
		24-hr (%)	Date	1-hr (%)	Date	
January 2020	72.5	86.8	Jan 27	88.0	Jan 27 20:00	100.0%
February 2020	68.2	78.4	Feb 08	86.0	Feb 08 07:00	99.9%
March 2020	64.1	77.6	Mar 08	90.0	Mar 08 02:00	100.0%
April 2020	52.3	74.6	Apr 06	90.0	Apr 06 06:00	99.7%
May 2020	51.6	78.6	May 04	89.0	May 13 04:00	100.0%
June 2020	57.0	83.6	Jun 30	90.0	Jun 28 03:00	100.0%
July 2020	62.3	77.5	Jul 20	91.0	Jul 01 01:00	100.0%
August 2020	51.6	67.6	Aug 04	91.0	Aug 05 08:00	100.0%
September 2020	50.3	66.3	Sep 15	84.0	Sep 26 23:00	99.4%
October 2020	59.2	80.8	Oct 29	90.0	Oct 30 08:00	100.0%
November 2020	69.3	85.3	Nov 17	89.0	Nov 08 03:00	99.0%
December 2020	71.4	81.6	Dec 11	86.0	Dec 20 12:00	100.0%
AVERAGE		MAXIMUM VALUES				
	60.8	86.8	Jan 27	91.0	Jul 01 01:00	99.8%

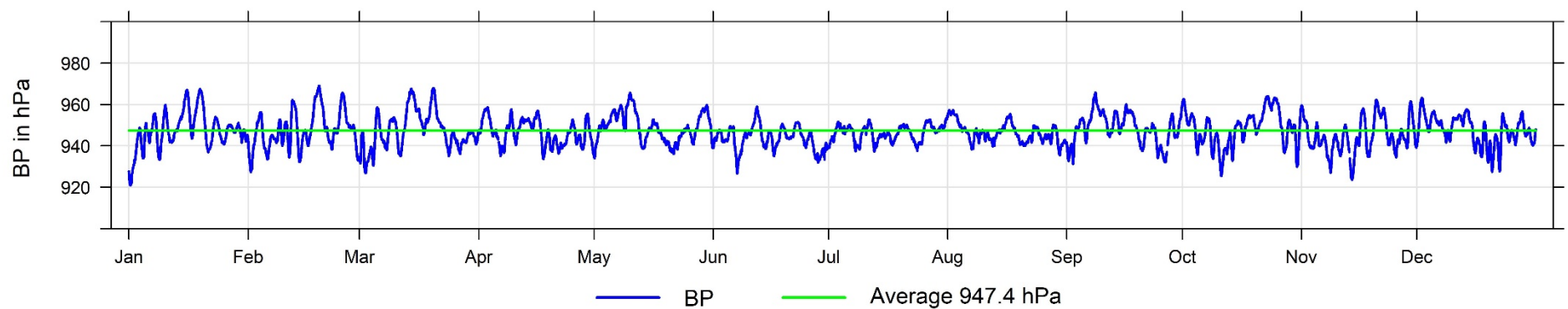
2020 Hourly Readings of Relative Humidity (in %) at Estevan



Barometric Pressure (BP) Frequency Distribution at Estevan

Month	Monthly Average (hPa)	Maximum Values				Operational time (%)
		24-hr (hPa)	Date	1-hr (hPa)	Date	
January 2020	947.5	966.0	Jan 19	967.4	Jan 19 12:00	100.0%
February 2020	947.6	966.8	Feb 19	969.1	Feb 19 12:00	99.9%
March 2020	947.4	966.2	Mar 14	967.9	Mar 20 07:00	100.0%
April 2020	946.5	956.4	Apr 02	958.6	Apr 03 07:00	99.7%
May 2020	949.0	963.7	May 10	965.6	May 10 09:00	100.0%
June 2020	943.6	956.5	Jun 12	958.9	Jun 12 09:00	100.0%
July 2020	946.2	952.1	Jul 31	954.9	Jul 31 00:00	100.0%
August 2020	946.2	956.0	Aug 01	957.3	Aug 01 10:00	100.0%
September 2020	948.6	962.8	Sep 08	965.7	Sep 08 11:00	99.4%
October 2020	948.4	961.8	Oct 23	963.9	Oct 23 02:00	100.0%
November 2020	944.6	960.0	Nov 20	962.3	Nov 20 12:00	99.6%
December 2020	947.5	960.7	Dec 02	963.1	Dec 02 07:00	100.0%
	AVERAGE 946.9	MAXIMUM VALUES				
		966.8	Feb 19	969.1	Feb 19 12:00	99.9%

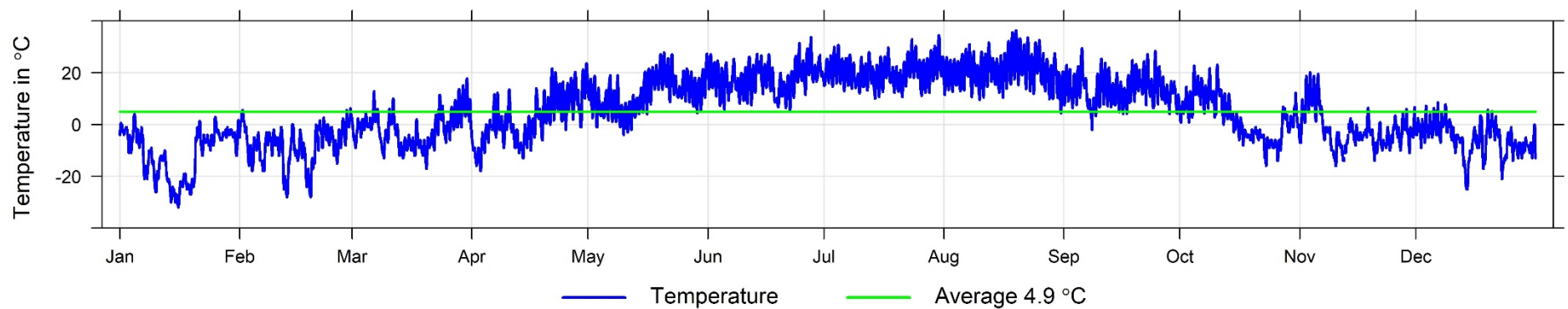
2020 Hourly Readings of Barometric Pressure (in hPa) at Estevan



Temperature (ET) Frequency Distribution at Estevan

Month	Monthly Average (°C)	Maximum Values				Minimum Values				Operational time (%)
		24-hr (°C)	Date	1-hr (°C)	Date	24-hr (°C)	Date	1-hr (°C)	Date	
January 2020	-11.4	-1.4	Jan 04	4.0	Jan 04 19:00	-28.3	Jan 15	-32.0	Jan 16 03:00	100.0%
February 2020	-8.0	2.7	Feb 01	6.2	Feb 29 15:00	-20.8	Feb 19	-28.0	Feb 13 03:00	99.9%
March 2020	-1.8	9.8	Mar 30	17.8	Mar 30 17:00	-10.4	Mar 20	-17.0	Mar 20 05:00	100.0%
April 2020	2.3	16.6	Apr 30	23.7	Apr 30 15:00	-12.4	Apr 02	-18.0	Apr 03 06:00	99.7%
May 2020	12.0	20.4	May 20	27.9	May 20 16:00	3.2	May 10	-4.0	May 10 06:00	100.0%
June 2020	17.9	25.6	Jun 27	33.8	Jun 27 16:00	9.8	Jun 18	5.0	Jun 22 05:00	100.0%
July 2020	20.6	26.6	Jul 30	34.5	Jul 30 17:00	16.2	Jul 20	10.1	Jul 14 06:00	100.0%
August 2020	20.8	27.3	Aug 19	36.4	Aug 19 15:00	12.6	Aug 31	4.3	Aug 31 07:00	100.0%
September 2020	13.7	20.0	Sep 05	29.5	Sep 05 16:00	5.0	Sep 08	-2.0	Sep 08 07:00	99.4%
October 2020	2.7	14.6	Oct 05	23.2	Oct 10 16:00	-10.0	Oct 23	-16.0	Oct 23 07:00	100.0%
November 2020	-2.1	11.1	Nov 04	20.2	Nov 03 16:00	-11.4	Nov 12	-16.0	Nov 10 06:00	99.6%
December 2020	-5.7	2.1	Dec 08	8.6	Dec 06 16:00	-18.3	Dec 14	-25.0	Dec 14 03:00	100.0%
	AVERAGE 5.1	MAXIMUM VALUES				MINIMUM VALUES				99.9%
		27.3	Aug 19	36.4	Aug 19 15:00	-28.3	Jan 15	-32.0	Jan 16 03:00	

2020 Hourly Temperature Readings (in °C) at Estevan



APPENDIX J

Summary of Exceedances

Weyburn H₂S 1-Hour Detailed Exceedance Summary

Date and Time	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)	O ₃ (ppb)	SO ₂ (ppb)	H ₂ S (ppb)	PM _{2.5} (µg/m ³)	T (°C)	RH (%)	WS (m/s)	WD (deg)	BP (hPa)
Wed August-19-20 04:00	0.0	1.0	1.3	13.4	0.3	15.7	15.9	15.8	77.3	0.6	155.1	944
Tue August-25-20 23:00	0.2	1.0	2.1	24.1	0.0	13.0	11.1	19.2	53.0	4.1	22.0	943
Wed August-26-20 08:00	1.0	3.7	5.7	10.0	0.1	11.3	13.4	15.0	74.5	1.7	22.5	944
Thu August-27-20 07:00	3.3	3.5	7.8	4.8	0.0	17.2	16.5	8.6	80.3	0.4	356.7	945
Thu August-27-20 08:00	2.3	1.4	4.7	8.5	0.2	27.0	26.4	11.1	76.7	1.0	107.9	945
Fri September-18-20 21:00	0.7	0.0	0.6	M	0.2	12.9	19.4	13.9	48.3	1.8	121.2	949

Oxbow H₂S 1-Hour Detailed Exceedance Summary

Date and Time	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)	O ₃ (ppb)	SO ₂ (ppb)	H ₂ S (ppb)	PM _{2.5} (µg/m ³)	T (°C)	RH (%)	WS (m/s)	WD (deg)	BP (hPa)
Fri December-04-20 05:00	0.0	2.2	2.0		1.1	11.6	2.5	-3.3	75.8	7.2	261.9	945

Wauchope H₂S 1-Hour Detailed Exceedance Summary

Date and Time	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)	O ₃ (ppb)	SO ₂ (ppb)	H ₂ S (ppb)	PM _{2.5} (µg/m ³)	T (°C)	RH (%)	WS (m/s)	WD (deg)	BP (hPa)
Fri July-03-20 06:00					0.2	11.5	N	13.4	85.7	0.1	129.2	945
Tue July-07-20 04:00					0.1	11.8	M	12.7	85.8	0.1	198.8	943
Tue July-07-20 05:00					0.0	22.0	M	12.1	87.0	0.2	353.2	943
Tue July-07-20 06:00					0.1	25.2	M	13.1	84.1	0.0	87.8	943
Sun July-12-20 04:00					0.0	15.8	1.0	10.7	87.5	0.5	17.1	943
Sun July-12-20 05:00					0.0	19.7	1.5	10.7	87.8	0.6	4.6	943
Sun July-12-20 06:00					0.1	13.8	2.0	10.7	87.6	0.3	305.6	943
Sun July-12-20 07:00					0.1	11.2	3.8	14.4	82.6	0.2	242.0	943
Wed July-29-20 04:00					0.0	15.3	10.0	11.8	88.1	0.2	350.4	942
Wed July-29-20 05:00					0.0	23.7	6.1	10.5	86.9	0.4	8.5	942
Wed July-29-20 06:00					0.0	18.1	11.7	10.7	88.0	0.4	3.4	943
Sat August-01-20 02:00					0.7	13.4	3.5	11.4	80.1	1.2	338.2	950
Sat August-01-20 03:00					0.4	16.7	3.9	11.3	81.5	1.5	331.1	950
Sat August-01-20 04:00					0.3	13.2	4.5	11.5	82.9	1.6	329.0	950
Sat August-01-20 05:00					0.1	12.8	4.0	12.0	82.0	1.7	335.2	950
Thu August-06-20 03:00					0.2	11.2	2.9	12.3	88.4	0.4	2.7	941
Thu August-06-20 06:00					0.3	14.7	2.7	9.6	89.6	0.5	6.0	941
Thu August-06-20 07:00					0.4	13.0	2.8	11.2	89.7	0.4	30.7	941
Mon August-17-20 04:00					0.0	11.2	4.1	9.8	83.9	0.3	341.5	950
Mon August-17-20 06:00					0.0	15.5	3.9	8.8	85.4	0.3	22.8	950
Mon August-17-20 07:00					0.0	11.3	3.8	11.2	81.1	0.1	25.3	950
Tue August-18-20 23:00					0.4	11.9	14.1	18.0	80.0	0.4	320.0	941
Wed August-19-20 00:00					0.3	15.4	15.6	17.1	81.6	0.3	305.1	941
Wed August-19-20 01:00					0.4	21.4	11.9	16.7	81.1	0.4	341.6	940
Wed August-19-20 02:00					0.3	31.6	9.5	16.0	83.5	0.4	335.6	940
Wed August-19-20 03:00					0.3	27.7	8.0	15.5	85.5	0.6	290.1	940
Wed August-19-20 04:00					0.3	18.8	8.4	15.6	85.0	0.3	317.2	940
Wed August-19-20 05:00					0.3	32.4	7.5	15.1	87.0	0.3	321.5	939
Wed August-19-20 06:00					0.3	19.0	8.7	15.0	87.4	0.4	277.5	940
Wed August-19-20 07:00					0.3	18.4	7.3	16.1	84.6	0.4	310.4	940
Sun August-23-20 23:00					0.0	13.2	16.3	11.4	75.0	0.6	349.1	944
Mon August-24-20 00:00					0.0	11.1	16.1	10.4	77.1	0.8	352.6	944
Mon August-24-20 01:00					0.0	14.4	11.2	9.8	77.5	0.5	345.7	944
Mon August-24-20 02:00					0.0	13.7	5.6	8.9	79.7	0.1	123.1	944
Mon August-24-20 04:00					0.1	13.9	4.0	8.6	78.6	0.1	272.2	944
Mon August-24-20 05:00					0.1	21.0	2.3	8.2	78.5	0.3	306.5	944
Sat August-29-20 04:00					0.0	13.3	1.9	5.2	82.8	0.4	355.0	943
Sat August-29-20 05:00					0.0	20.2	1.3	5.0	83.4	0.3	355.3	943
Sat August-29-20 06:00					0.0	14.5	0.4	4.6	82.5	0.5	3.2	943

Estevan SO₂ 1-Hour Detailed Exceedance Summary

Date and Time	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)	O ₃ (ppb)	SO ₂ (ppb)	H ₂ S (ppb)	PM _{2.5} (µg/m ³)	T (°C)	RH (%)	WS (m/s)	WD (deg)	BP (hPa)
Wed February-05-20 01:00	42.7	32.6	75.4	3.8	178.3		N	-6.0	68.0	3.6	207.0	942

Estevan PM₁₀ 24-Hour Detailed Exceedance Summary

Date and Time	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)	O ₃ (ppb)	SO ₂ (ppb)	PM _{2.5} (µg/m ³)	PM ₁₀ (µg/m ³)	BC (ng/m ³)	T (°C)	RH (%)	WS (m/s)	WD (deg)	BP (hPa)
Tue August-18-20	1.0	4.2	5.3	27.7	1.4	9.1	52.6	328.3	25.8	46.4	1.3	57	947
Wed August-19-20	1.5	5.5	7.0	28.2	0.9	12.5	62.6	455.3	27.3	45.0	1.3	214	943
Thu August-20-20	0.7	3.6	4.4	31.2	0.5	13.0	55.5	318.8	24.5	52.4	1.7	66	941
Fri August-21-20	0.2	3.4	3.7	32.4	0.2	14.2	51.3	400.8	24.5	54.9	1.9	271	941
Sat August-22-20	0.6	3.5	4.2	31.2	0.8	16.3	61.3	406.5	24.1	49.0	1.4	128	944
Wed August-26-20	0.4	2.7	3.1	22.8	0.6	9.2	52.0	207.3	20.2	51.8	1.4	39	944
Thu August-27-20	0.8	3.5	4.4	24.8	0.7	12.2	52.4	310.3	19.4	61.3	2.1	66	944
Mon September-14-20	1.7	4.8	6.5	15.7	0.1	10.3	61.8	264.4	13.3	56.8	2.0	115	950
Tue September-15-20	2.5	3.7	6.3	10.3	1.5	12.9	74.0	259.8	10.9	66.3	1.5	281	951
Thu September-17-20	1.1	2.9	4.1	25.2	1.1	9.6	51.5	203.2	11.9	42.0	2.2	99	957
Fri September-18-20	2.4	7.7	10.2	24.6	11.5	16.6	59.5	479.7	16.2	49.5	1.2	157	953
Sat September-19-20	0.9	3.1	4.0	28.6	0.2	15.1	50.6	403.4	16.9	59.7	3.3	96	946
Tue September-22-20	1.7	5.3	7.1	29.2	0.4	13.2	51.7	367.9	18.1	40.0	1.9	318	947
Thu October-08-20	1.4	4.4	5.8	28.3	0.6	8.6	51.4	N	13.7	39.9	3.0	131	942

Wauchope H₂S 24-Hour Detailed Exceedance Summary

Date and Time	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)	O ₃ (ppb)	SO ₂ (ppb)	H ₂ S (ppb)	PM _{2.5} (µg/m ³)	T (°C)	RH (%)	WS (m/s)	WD (deg)	BP (hPa)
Wed July-29-20					0.0	4.1	9.6	20.7	65.0	1.7	149.6	944

Oxbow PM_{2.5} 24-Hour Detailed Exceedance Summary

Date and Time	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)	O ₃ (ppb)	SO ₂ (ppb)	H ₂ S (ppb)	PM _{2.5} (µg/m ³)	T (°C)	RH (%)	WS (m/s)	WD (deg)	BP (hPa)
Sat January-11-20	0.0	1.9	1.7		0.4	0.2	32.3	-16.4	71.1	7.1	122.6	946
Thu January-16-20	0.2	2.2	2.4		1.4	0.0	31.8	-27.4	62.8	5.6	101.5	962
Fri January-17-20	0.3	2.3	2.6		0.9	0.0	34.3	-20.6	70.0	6.6	27.3	946

APPENDIX K

SESAA Financial Statements

Southeast Saskatchewan Airshed Association Inc.
Financial Statements
December 31, 2020

Management's Responsibility

To the Members of Southeast Saskatchewan Airshed Association:

Management is responsible for the preparation and presentation of the accompanying financial statements, including responsibility for significant accounting judgments and estimates in accordance with Canadian accounting standards for not-for-profit organizations. This responsibility includes selecting appropriate accounting principles and methods, and making decisions affecting the measurement of transactions in which objective judgment is required.

In discharging its responsibilities for the integrity and fairness of the financial statements, management designs and maintains the necessary accounting systems and related internal controls to provide reasonable assurance that transactions are authorized, assets are safeguarded and financial records are properly maintained to provide reliable information for the preparation of financial statements.

The Board of Directors is composed entirely of Directors who are neither management nor employees of the Organization. The Board is responsible for overseeing management in the performance of its financial reporting responsibilities and for approving the financial information. The Board fulfils these responsibilities by reviewing the financial information prepared by management and discussing relevant matters with management and external auditors.

MNP LLP is appointed by the directors to audit the financial statements and report directly to them; their report follows. The external auditors have full and free access to, and may meet periodically and separately with, both the Board and management to discuss their audit findings.

March 22, 2021



Independent Auditor's Report

To the Board of Southeast Saskatchewan Airshed Association:

Opinion

We have audited the financial statements of Southeast Saskatchewan Airshed Association (the "Organization"), which comprise the statement of financial position as at December 31, 2020, and the statements of revenues and expenses, changes in net assets and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Organization as at December 31, 2020, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Organization in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Organization's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Organization or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Organization's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Organization's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Organization's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Organization to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Estevan, Saskatchewan

March 19, 2021

Chartered Professional Accountants

Southeast Saskatchewan Airshed Association Inc.
Statement of Financial Position

As at December 31, 2020

	2020	2019
Assets		
Current		
Cash	119,851	162,457
Marketable securities (Note 3)	104,433	102,374
Prepaid expenses and deposits	3,833	4,778
Government remittances receivable	735	-
	228,852	269,609
Capital assets (Note 4)	215,581	261,832
	444,433	531,441
Liabilities		
Current		
Accounts payable and accruals	30,969	31,704
Deferred contributions (Note 5)	11,913	11,913
Government remittances payable	-	1,299
	42,882	44,916
Deferred contributions (Note 5)	17,870	29,783
	60,752	74,699
Net Assets		
Invested in capital assets	215,581	-
Internally restricted	104,433	-
Unrestricted	63,667	456,742
	383,681	456,742
	444,433	531,441

Approved on behalf of the Board of Directors

Director

Director

The accompanying notes are an integral part of these financial statements

Southeast Saskatchewan Airshed Association Inc.
Statement of Revenue and Expenses
For the year ended December 31, 2020

	2020	2019
Revenue		
Membership fees	216,202	237,071
Amortization of deferred contributions <i>(Note 5)</i>	11,913	27,363
	228,115	264,434
Expenses		
Advertising	4,704	1,681
Air monitoring	120,474	108,634
Amortization	53,046	65,457
Bank charges	108	134
Insurance	7,895	10,475
Management fees <i>(Note 8)</i>	46,620	45,450
Meetings	-	840
Office	8,389	6,315
Professional fees	6,775	7,540
Repairs and maintenance	54,869	50,188
Travel	355	1,504
	303,235	298,218
Deficiency of revenue over expenses before other items	(75,120)	(33,784)
Other items		
Interest income	2,059	560
Deficiency of revenue over expenses	(73,061)	(33,224)

The accompanying notes are an integral part of these financial statements

Southeast Saskatchewan Airshed Association Inc.
Statement of Changes in Net Assets

For the year ended December 31, 2020

	<i>Restricted net assets</i>	<i>Unrestricted</i>	<i>Invested in capital assets</i>	2020	2019
Net assets, beginning of year	-	456,742	-	456,742	489,966
Deficiency of revenue over expenses	-	(20,015)	(53,046)	(73,061)	(33,224)
Interfund transfer (Note 6)	104,433	(373,060)	268,627	-	-
Net assets, end of year	104,433	63,667	215,581	383,681	456,742

The accompanying notes are an integral part of these financial statements

Southeast Saskatchewan Airshed Association Inc.

Statement of Cash Flows

For the year ended December 31, 2020

	2020	2019
Cash provided by (used for) the following activities:		
Operating		
Cash receipts from membership fees	216,202	237,071
Cash paid to suppliers	(252,013)	(226,105)
Cash receipts from interest	2,059	560
	(33,752)	11,526
Investing		
Purchase of capital assets	(6,795)	-
Purchase of marketable securities	(104,433)	(102,374)
Redemption of marketable securities	102,374	101,814
	(8,854)	(560)
(Decrease) increase in cash resources	(42,606)	10,966
Cash resources, beginning of year	162,457	151,491
Cash resources, end of year	119,851	162,457

The accompanying notes are an integral part of these financial statements

Southeast Saskatchewan Airshed Association Inc.

Notes to the Financial Statements

For the year ended December 31, 2020

1. Incorporation and nature of the organization

Southeast Saskatchewan Airshed Association (the "Organization") was incorporated under The Non-Profit Corporations Act, 1995 on October 7, 2005, and is exempt from income taxes. In order to maintain its status as a not-for-profit organization under the Act, the Organization must meet certain requirements within the Act. In the opinion of management these requirements have been met.

The Organization collects and monitors ambient air quality data in Southeast Saskatchewan and makes this data available to all members.

2. Significant accounting policies

The financial statements have been prepared in accordance with Canadian accounting standards for Not-for-profit organizations as issued by the Accounting Standards Board in Canada and include the following significant accounting policies:

Cash and cash equivalents

Cash and cash equivalents include balances with banks and short-term investments with maturities of three months or less.

Marketable securities

Marketable securities with prices quoted in an active market are measured at fair value while those that are not quoted in an active market are measured at cost less impairment.

Capital assets

Purchased capital assets are recorded at cost. Contributed capital assets are recorded at fair value at the date of contribution if fair value can be reasonably determined.

Amortization is provided using the declining balance method at rates intended to amortize the cost of assets over their estimated useful lives.

	Rate
Equipment	20 %
Fence	10 %

Revenue recognition

The Organization follows the deferral method of accounting for contributions. Restricted contributions are recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions, including membership fees are recognized as revenue when received.

Financial instruments

The Organization recognizes its financial instruments when the Organization becomes party to the contractual provisions of the financial instrument. All financial instruments are initially recorded at their fair value, including financial assets and liabilities originated and issued in a related party transaction with management.

At initial recognition, the Organization may irrevocably elect to subsequently measure any financial instrument at fair value. The Organization has not made such an election during the year. The Organization subsequently measures marketable securities with prices quoted in an active market at fair value. All other financial assets and liabilities are subsequently measured at amortized cost.

Transaction costs and financing fees are added to the carrying amount for those financial instruments subsequently measured at amortized cost or cost.

Southeast Saskatchewan Airshed Association Inc.

Notes to the Financial Statements

For the year ended December 31, 2020

2. Significant accounting policies (Continued from previous page)

Financial asset impairment

The Organization assesses impairment of all of its financial assets measured at cost or amortized cost. The Organization groups assets for impairment testing when available information is not sufficient to permit identification of each individually impaired financial asset in the group. When there is an indication of impairment, the Organization determines whether it has resulted in a significant adverse change in the expected timing or amount of future cash flows during the year. If so, the Organization reduces the carrying amount of any impaired financial assets to the highest of: the present value of cash flows expected to be generated by holding the assets; the amount that could be realized by selling the assets; and the amount expected to be realized by exercising any rights to collateral held against those assets. Any impairment, which is not considered temporary, is included in current year excess of revenue over expenses.

The Organization reverses impairment losses on financial assets when there is a decrease in impairment and the decrease can be objectively related to an event occurring after the impairment loss was recognized. The amount of the reversal is recognized in the excess of revenue over expenses in the year the reversal occurs.

Measurement uncertainty

The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period.

Amortization is based on the estimated useful lives of equipment.

These estimates and assumptions are reviewed periodically and, as adjustments become necessary they are reported in excess of revenue over expenses in the periods in which they become known.

Long-lived assets

Long-lived assets consist of equipment. Long-lived assets held (or used) are measured and amortized as described in the applicable accounting policies.

When the Organization determines that a long-lived asset no longer has any long-term service potential to the Organization, the excess of its net carrying amount over any residual value is recognized as an expense in the statement of revenue and expenses. Write-downs are not reversed.

3. Marketable securities

	2020	2019
Measured at cost:		
CIBC GIC	104,433	102,374

The GIC was issued December 21, 2020 (2019 - December 19, 2019) and matures December 21, 2021 (2019 - December 21, 2020), bearing interest at 0.60% (2019 - 2.00%) per annum. The GIC is internally restricted for purposes of future capital purchase requirements.

4. Capital assets

	Cost	Accumulated amortization	2020 Net book value	2019 Net book value
Equipment	931,101	721,635	209,466	261,832
Fence	6,795	680	6,115	-
	937,896	722,315	215,581	261,832

Southeast Saskatchewan Airshed Association Inc.

Notes to the Financial Statements

For the year ended December 31, 2020

5. Deferred contributions

Deferred capital contributions consist of the unamortized amount of contributions received for the purchase of equipment. Recognition of these amounts as revenue is deferred to periods when the related equipment are amortized. Changes in deferred capital contributions are as follows:

	2020	2019
Balance, beginning of year	41,696	69,059
Less: Amount recognized as revenue during the year	(11,913)	(27,363)
Balance, end of year	29,783	41,696
Less: current portion	11,913	11,913
Balance, end of year	17,870	29,783

6. Interfund transactions

During the year, the Board of Directors internally restricted \$104,333 (2019 - \$nil) relating to the CIBC GIC included in marketable securities to be used for future capital asset purchases. Additionally, the Organization presented an invested in capital assets to account for the total value of general funds invested in capital.

7. Financial instruments

The Organization, as part of its operations, carries a number of financial instruments. It is management's opinion that the Organization is not exposed to significant interest, currency, credit, liquidity or other price risks arising from these financial instruments except otherwise disclosed.

Liquidity risk

Liquidity risk is the risk that the Organization will encounter difficulty in meeting obligations associated with financial liabilities. The Organization's exposure to liquidity risk is dependent on the collection of membership fee revenue and obligations to sustain operations.

Interest rate risk

Interest rate risk is the risk that the value of a financial instrument might be adversely affected by a change in the interest rates. Changes in market interest rates may have an effect on the cash flows associated with some financial assets and liabilities, known as cash flow risk, and on the fair value of other financial assets or liabilities, known as price risk.

Marketable securities are subject to interest rate price risk as the bear interest at 0.60% (2019 - 2.00%) per annum, and matures December 21, 2021 (2019 - December 21, 2020).

8. Related party transactions

The Organization has entered into a contract agreement for management services with Terry Gibson Consulting Inc., expiring November 30, 2021. The contract is based on hours required, to a maximum of \$60,000. Any overage is required to be approved by the Board of Directors. Included in expenses for the current year are \$46,620 (2019 - \$45,450) of management fees. The expenses were incurred in the normal course of operations and measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

9. Commitment

The entity has the following commitment for operations:

2021	\$45,500
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Southeast Saskatchewan Airshed Association Inc.
Notes to the Financial Statements
For the year ended December 31, 2020

10. Significant event

During the fiscal year, there was a global outbreak of COVID-19 (coronavirus), which has had a significant impact on businesses through the restrictions put in place by the Canadian, provincial and municipal governments regarding travel, business operations and isolation/quarantine orders. At this time, it is unknown the extent of the impact the COVID-19 outbreak may still have on Southeast Saskatchewan Airshed Association as this will depend on future developments that are highly uncertain and that cannot be predicted with confidence. These uncertainties arise from the inability to predict the ultimate geographic spread of the disease, and the duration of the outbreak, including the duration of travel restrictions, business closures or disruptions, and quarantine/isolation measures that are currently, or may be put, in place by Canada and other countries to fight the virus. While the extent of the impact is unknown, we anticipate this outbreak may cause reduced customer demand, supply chain disruptions and increased government regulations, all of which may negatively impact the Organization's business and financial condition.

APPENDIX L

Board of Directors

Neil Hungle

EHSS Senior Manager (Board Chair)



Mr. Hungle was born and raised in rural Saskatchewan (Dilke) and has a BaSc Degree from University of Regina (Industrial Systems Engineering). He started career in 1999 and joined Mosaic Potash in 2005. Neil started at Belle Plaine as a maintenance engineer, Production Supt and Maintenance Supt. (8 years), transferred to working in Esterhazy as the EHSS Senior Manager for K1, K2 and Inflow.

Stuart Goranson

Field Regulatory Coordinator, Crescent Point Energy (Secretary Treasurer)



Stuart Goranson is a Field Regulatory Coordinator with Crescent Point Energy. Stuart's main focus is ensuring operational regulatory compliance in Crescent Point's Saskatchewan operations. Stuart is a registered Professional Engineer with a degree in Environmental Systems Engineering.

Kristin Waroma

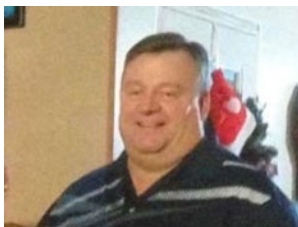
Health Representative



Kristin Waroma is the Senior Public Health Inspector for Sun Country Health Region based in the Weyburn office. She has been working in public health since 2008. Her health inspector duties include water, wastewater, food safety, communicable disease control, recreational water, land use reviews, tobacco control, indoor and outdoor air quality and many other programs. She enjoys the challenges of working in busy Southeastern Saskatchewan.

Gerald Knibbs

Councillor, Rural Municipality of Tecumseh Number 65



Mr. Knibbs is an organic grain farmer near Stoughton. He currently serves as a counsellor for the R.M. of Tecumseh. He and his wife Dawn were born and raised in the area and are currently raising their family in their community. Air and water quality are important issues now and in the future.



Twila Walkeden is the Executive Director of the Weyburn Chamber of Commerce and Weyburn Regional Economic Development. She has past professional expertise in the environmental science sector working with both oil and gas companies and regulators in southern Saskatchewan. Twila represents the City of Weyburn on the SESAA Board of Directors.

Kelly Gervais**Senior Production Engineer, Whitecap Resources Inc.**

Kelly was born and raised in Redvers, Saskatchewan. After graduating from University of Saskatchewan in 2005 with bachelor's degree in Mechanical Engineering, he moved to Calgary to start a career in oil and gas industry. He has been a Production Engineer Whitecap Resources (previously Cenovus/EnCana) for the past 15 years and has been living in Weyburn since 2011.

Randal Miiller**Manager, Estevan District Area IV, Saskatchewan Ministry of Energy & Resources**

Randal is a longtime rural Estevan resident who grew up surrounded by the local farming and S.E. Saskatchewan oilfield activities. In 1985 he started his career in the oil industry and have thoroughly enjoyed all the challenges and rewards encountered over the years. In 2007 Randal began his career with the Ministry of Energy & Resources and currently is the Manager for Estevan District Area IV.

Dennis Moore**Urban Municipality**

Dennis was born and raised on farm in the Carlyle area. He has worked in retail for over 40 years and has owned and operated two retail stores. Mr. Moore has been an active Rotarian for 38 years and is in his 3rd term as Councillor for the City of Estevan. He is the Chairman for South East Transportation Planning Committee advising the Minister of Highways on road conditions in south east Sask. Dennis is an active volunteer and is on many committees.

Clayton Stenhouse

Senior Environmental Planner, Westmoreland Mining Holdings LLC



Clayton grew up in the Regina area before attending the University of Lethbridge and Lethbridge College where he earned a Bachelor's Degree in Environmental Science with a specialization in Fish and Wildlife Technology. Clayton stepped into the mining industry after 12 years as an environmental consultant and certified infrared optical gas imaging specialist throughout Alberta and Saskatchewan. As a registered Professional Agrologist and active Commissioner for Oaths in Saskatchewan, he now hangs his hat in the Estevan area as a Senior Environmental Planner with Westmoreland Mining LLC – Estevan Mine.

Terry Gibson

Executive Director



Mr. Gibson brings nearly 35 years of Public Health/Environmental Health experience to the position. He has held the positions of President of the Saskatchewan Public Health Association and Vice-Chair of the Saskatchewan Epidemiology Association. He teaches Public Health Protection at the University of Saskatchewan Master of Public Health Program and has served on many provincial and national boards and committees. Terry is committed to working with industry and regulators in a consensus decision making process to ensure that the health of the environment of south east Saskatchewan is always protected.

APPENDIX M

SESAA Members

- ❖ 101033165 Saskatchewan Ltd.
- ❖ 618555 Saskatchewan Ltd.
- ❖ TDL Petroleum
- ❖ Abenteuer Resources Corp.
- ❖ Admiralty Oils
- ❖ Advantage Oil and Gas
- ❖ Aldon Oils Ltd.
- ❖ Antoinway Resources
- ❖ Apache Canada Ltd.
- ❖ ARC Resources
- ❖ Astra Oil Corp
- ❖ ATCO Energy Solutions
- ❖ AvenEx Energy
- ❖ Barracuda Energy
- ❖ Base Resources Inc.
- ❖ Baytex
- ❖ Black Rider Resources Inc.
- ❖ Bluebird Resources
- ❖ Bonterra Energy
- ❖ Border Energy Ltd
- ❖ Brown Bros. Resources
- ❖ Brownstone Resources Ltd.
- ❖ Bulldog Oil
- ❖ Gas Burgess Creek
- ❖ Caje Holdings Ltd.
- ❖ Canada Capital Energy
- ❖ Canadian Natural Resources Limited
- ❖ Can Era Energy Corp.
- ❖ Canamax Energy Capital Energy Corp.
- ❖ Caprice Resources Cenovus Energy Inc.
- ❖ C-Group Energy Cheveyo Energy
- ❖ Chinook Iteration Clan Oil
- ❖ Coast Resources
- ❖ Condor Canada
- ❖ Conoco Phillips
- ❖ Contact Exploration
- ❖ Crescent Point Resources Partnership
- ❖ Daylight Energy
- ❖ Devon Canada Corporation
- ❖ Diaz Resources Ltd.
- ❖ EERG Energy ULC
- ❖ Elanco Exploration
- ❖ Elkhorn Resources
- ❖ Elswick Energy Ltd.
- ❖ Enermark Inc.
- ❖ Enerplus Corporation
- ❖ Fairborne Energy Ltd.
- ❖ Federated Co-op
- ❖ Firesky Energy
- ❖ Flagstone Energy
- ❖ Frank R. Lee Investments
- ❖ Freehold Royalties
- ❖ Freemantle Petroleum
- ❖ GKN Resources Ltd.
- ❖ Golden Key Oil
- ❖ Gold River Oil and Gas
- ❖ Grand Bow Petroleum Limited
- ❖ Halvar Resources
- ❖ Harvest Operations
- ❖ Highrock Energy
- ❖ Hillsdale Drilling
- ❖ Hummingbird Energy Inc. (Virtus Group)
- ❖ Husky Oil Operations Limited
- ❖ JDM Petroleum
- ❖ Jedi Exploration & Development
- ❖ K and S Investments Ltd.
- ❖ Kenwood Resources Ltd.
- ❖ Keystone Royalty
- ❖ Kinwest 2008 Energy
- ❖ Kiwi Resources Ltd.
- ❖ Kootenay Energy
- ❖ Lakeco Holdings
- ❖ Lakeview Energy
- ❖ Legacy Oil and Gas
- ❖ Lightstream Resources Ltd.
- ❖ Long Fortune Petroleum
- ❖ Longview Oil
- ❖ Magellan Resources Ltd.
- ❖ Mancal Energy Inc.
- ❖ Marquee Energy LTD
- ❖ Midale Petroleums Ltd.
- ❖ Molopo Energy
- ❖ Mosaic
- ❖ NAL Resources Limited

- ❖ Nexxtep Resources
- ❖ Noramera Bioenergy
- ❖ Novus Energy Inc.
- ❖ Nuloch Resources Inc.
- ❖ Omatius Oil & Gas Ltd.
- ❖ Oneex Operations
- ❖ Openfield Oil
- ❖ Painted Pony Petroleum
- ❖ Pemoco Ltd.
- ❖ Penn West Petroleum Ltd.
- ❖ Petrex Energy
- ❖ Petro One Energy
- ❖ Pinecrest Energy
- ❖ Phase Energy Ltd.
- ❖ Pinto Resources
- ❖ Plains Midstream
- ❖ Potash Corp.
- ❖ Powder Mountain
- ❖ Prairie Mines and Royalty
- ❖ Primrose Drilling Ventures Ltd.
- ❖ Questerre Energy Corporation Red Beds Resources Ltd.
- ❖ Regent Resources Ltd.
- ❖ Renegade Petroleum
- ❖ Ridgeback Resources
- ❖ Rife Resources
- ❖ Runcible Oil Corp.
- ❖ Saskatchewan Environmental Industry and Managers Association SEIMA
- ❖ SaskEnergy Incorporated/Transgas Limited
- ❖ SaskPower
- ❖ Prairie Mines & Royalty ULC
- ❖ Silver Bay Resources Ltd.
- ❖ Skywest Energy
- ❖ Southern Exploration
- ❖ Spartan Energy
- ❖ Spectrum Resources Group
- ❖ Spyglass Resources
- ❖ Southern Exploration
- ❖ Steel Reef
- ❖ Sure Energy Inc.

- ❖ T-45 Oil Corporation
- ❖ TAQA North
- ❖ T. Bird Oil Ltd.
- ❖ Tetonka Resources
- ❖ Texalta Petroleum Ltd.
- ❖ TORC Oil and Gas
- ❖ Triwest Exploration
- ❖ Valleyview Petroleums Ltd.
- ❖ Vermilion Energy
- ❖ Villanova Resources Inc.
- ❖ Villanova 4 Oil
- ❖ Viterra Inc.
- ❖ Willbrow Resources
- ❖ Williston Hunter Canada Inc.
- ❖ Zargon Oil & Gas Lt

APPENDIX N

Site Photographs