Executive Summary

The 2018-2020 air zone reporting period is the first to apply the 2020 Canadian Ambient Air Quality Standards (CAAQS) for fine particulate matter and ozone, and the first to include nitrogen dioxide and sulphur dioxide. In this report, the Central Interior Air Zone is assigned "red" management level for fine particulate matter, "orange" for nitrogen dioxide, and "yellow" for ozone and sulphur dioxide. The Central Interior Air Zone did not achieve the 2020 CAAQS for $PM_{2.5}$.

Table 1. Management levels in the Central Interior based on the 2018-2020 air zone reporting period**.**

Air Zone	$PM_{2.5}$	Ozone	NO_2	SO_2
Central Interior	Red	Yellow	Orange	Yellow

Introduction

This is the eighth annual air zone report for the Central Interior Air Zone. Air zone reporting is a commitment under the national Air Quality Management System (AQMS). This report describes achievement of the Canadian Ambient Air Quality Standards (CAAQS) for fine particulate matter ($PM_{2.5}$), ground-level ozone (O_3), nitrogen dioxide (NO_2), and sulphur dioxide (SO_2), the associated management levels and recent actions to improve air quality.

Air Quality Management System

The AQMS is the comprehensive and collaborative approach of managing air quality by federal, provincial, and territorial governments in Canada. Under the AQMS, the CAAQS are developed to drive actions to protect human health and the environment based on the principles of continuous improvement and keeping clean areas clean. Air zones are defined under the AQMS as areas with similar air quality characteristics, issues, and trends, and serve as the basis for monitoring, reporting, and actions to improve air quality. Under the AQMS, progressively more rigorous actions are expected as air quality approaches or exceeds the CAAQS. The level of action is guided by the Air Zone Management Framework (Table 2).

Table 2. AQMS management levels and objectives for air pollutants based on the 2020 CAAQS.

Management Level	Objectives	$PM_{2.5}$		Ozone	NO_2		SO_2	
		Annual ($\mu g/m^3$)	24-hour ($\mu g/m^3$)	8-hour (ppb)	Annual (ppb)	1-hour (ppb)	Annual (ppb)	1-hour (ppb)
Red	Achieve CAAQS	>8.8	>27	>62	>17.0	>60	>5.0	>70
Orange	Prevent CAAQS Exceedance	>6.4 and ≤8.8	>19 and ≤27	>56 and ≤62	>7.0 and ≤17.0	>31 and ≤60	>3.0 and ≤5.0	>50 and ≤70
Yellow	Prevent Air Quality Deterioration	>4.0 and ≤6.4	>10 and ≤19	>50 and ≤56	>2.0 and ≤7.0	>20 and ≤31	>2.0 and ≤3.0	>30 and ≤50
Green	Keep Clean Areas Clean	≤4.0	≤10	≤50	≤2.0	≤20	≤2.0	≤30

Central Interior Air Zone

The Central Interior Air Zone (see Figure 1) is one of seven broad air zones across B.C. It covers parts of the Skeena, Omineca, and the Cariboo Regions and includes population centres such as Smithers, Prince George, Quesnel, and Williams Lake. Air quality monitoring stations in the Central Interior Air Zone include those operated by the Ministry, by a community through an airshed management roundtable, and by industry. Stations are concentrated around major populations centres and near major industrial sources. In recent years, this region has experienced major air quality events due to increasing frequency of large-scale wildfires.

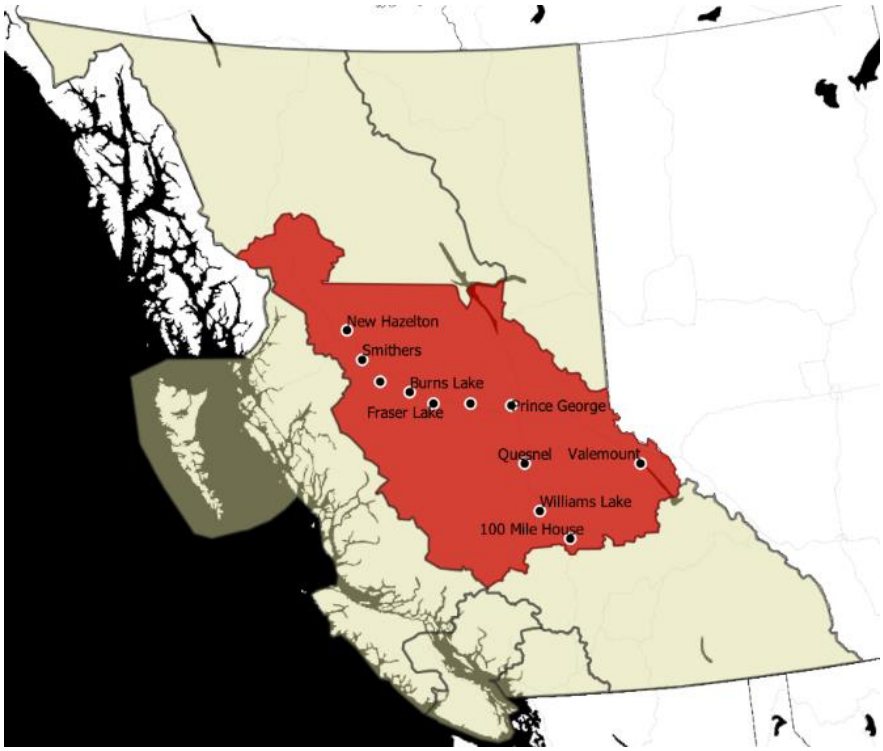


Figure 1. Map of B.C. highlighting the Central Interior Air Zone and major population centres.

$PM_{2.5}$ Levels

$PM_{2.5}$ refers to solid particles and liquid droplets suspended in air that are smaller than or equal to 2.5 micrometres (µm) in aerodynamic diameter. When inhaled, these particles travel deep into the lungs and the bloodstream and can cause adverse health effects, such as cardiovascular and respiratory diseases. $PM_{2.5}$ is considered a non-threshold pollutant, that is there are associated adverse health effects at any level of exposure.

Air zone reporting of $PM_{2.5}$ summarizes the 24-hour[1] and annual[2] metrics to estimate the short-term and long-term exposures of the pollutant, respectively. In the 2018-2020 reporting period, there are seven sites in the Central Interior Air Zone with enough data to calculate at least the 24-hour metrics (Figure 2). In six of these sites, the new national standard (2020 CAAQS) of 27 µg/m^3 for the 24-hour metric was exceeded, and three of these also exceeded the annual national standard of 8.8 µg/m^3. When adjusted for wildfire smoke following the methodology for transboundary flow/exceptional event (TF/EE) adjustments, the 24-hour metrics decrease and CAAQS is achieved at all locations other than Houston, Valemount, and Vanderhoof. After TF/EE adjustments, Houston and Quesnel still exceeded the 2020 CAAQS annual metrics. There were not enough data during 2018-2020 to calculate the metrics for Prince George, and there were only partial data available at Vanderhoof and Valemount, enough to report the 24-hour metric but not the annual metric.

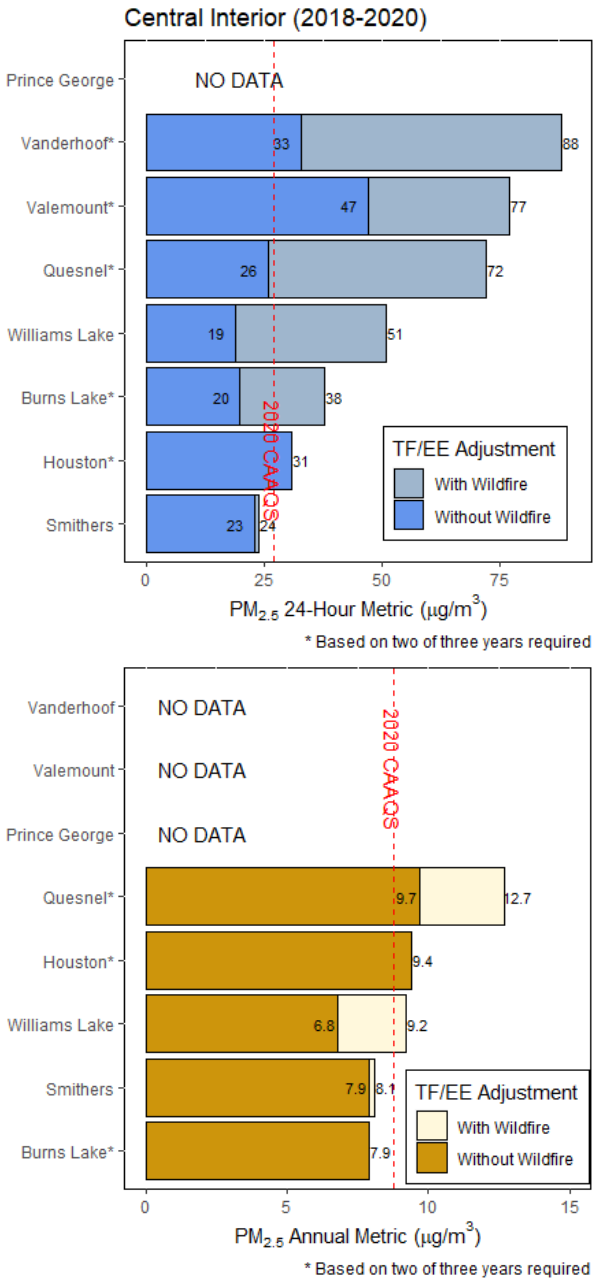


Figure 2. $PM_{2.5}$ concentrations in the Central Interior Air Zone. Upper plot based on 24-hour metric (annual 98th percentile, averaged over 2018-2020). Lower plot based on annual mean concentration (averaged over 2018-2020). The red dashed lines identify CAAQS of 27 µg/m^3 (upper plot) and 8.8 µg/m^3 (lower plot).

[1] $PM_{2.5}$ 24-hour metric is the annual 98th percentile of the 24-hour value, averaged over three years (2018-2020).
[2] $PM_{2.5}$ annual metric is the annual average of 24-hour values, averaged over three years (2018-2020).

Figure 3 shows the wildfire-adjusted $PM_{2.5}$ levels for the 24-hour and annual metrics in the Central Interior Air Zone. The figure shows the 2015 and 2020 CAAQS, and the colour-based management levels on the reporting period where the standards apply. Table 2 is a more detailed summary of the AQMS management levels of communities in the air zone and for the entire air zone. Overall management level for the entire air zone is based on the highest metric reported from those communities in the air zone.

As shown in Figure 3 and Table 2, the 24-hour metrics exceed the 2020 CAAQS in the communities of Vanderhoof, Valemount, and Houston for the majority of reporting periods. The annual metrics exceed CAAQS at Houston (2012-2015) and Valemount (2017-2018), and more recently at Quesnel and Valemount after the more stringent 2020 CAAQS was implemented. Because several communities have exceeded CAAQS since the beginning of air zone reporting, the Central Interior Air Zone has continually been under "red" management level for $PM_{2.5}$. Under "red" management level, most stringent $PM_{2.5}$-related actions are recommended to ensure achievement of CAAQS.

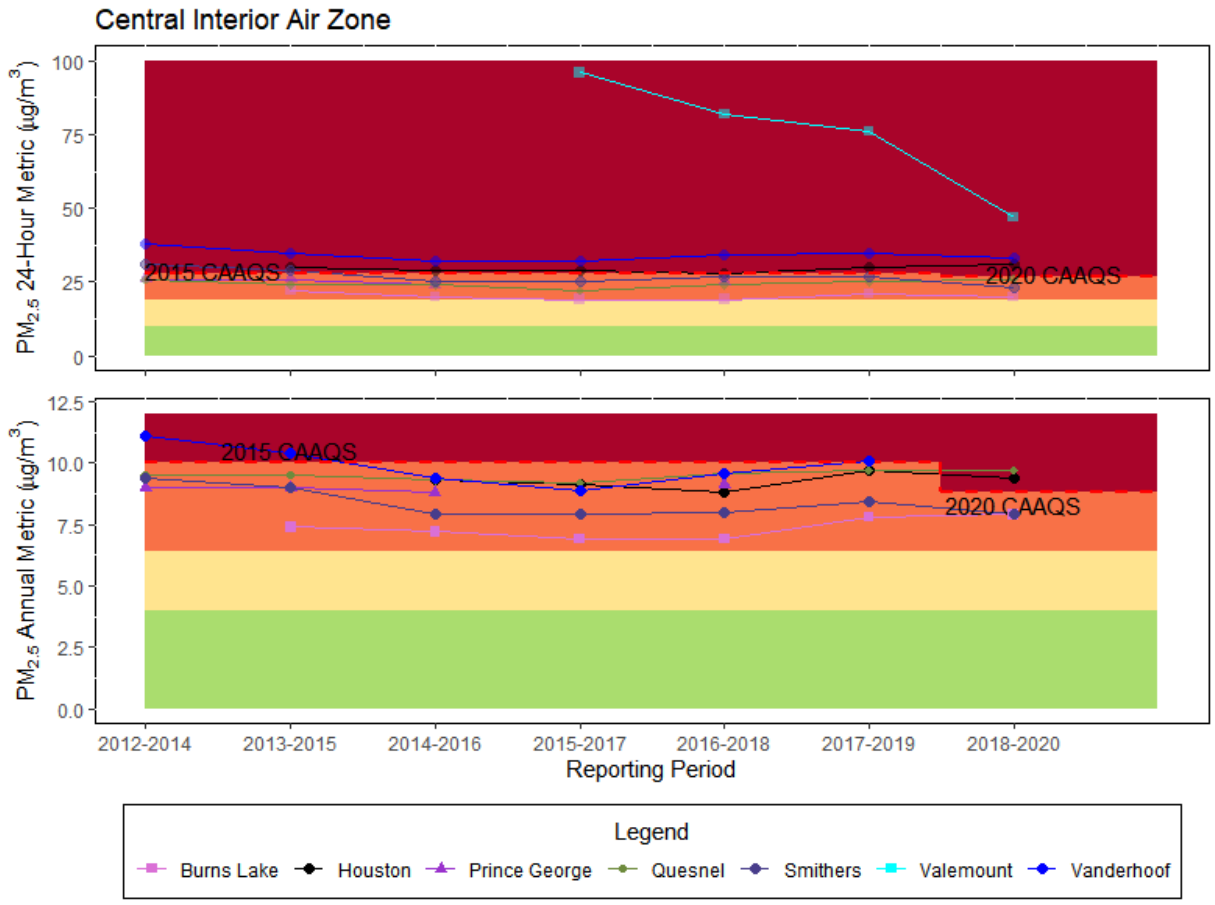


Figure 3. Wildfire-adjusted trends in the 24-hour and annual metrics of $PM_{2.5}$ from 2012 to 2020 for the communities in the Central Interior. Valemount has reported the highest levels of the 24-hour metrics from 2017-2020, and highest annual metrics from 2017-2018. The red dashed lines show the 2015 and 2020 CAAQS presented on the period where applicable.

Table 2. Summary of $PM_{2.5}$ metrics and air zone management levels for the Central Interior Air Zone.

	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	**2018-2020**
CENTRAL INTERIOR (CAAQS)	RED (2015)	RED (2015)	RED (2015)	RED (2015)	RED (2015)	RED (2015)	RED (2020)
Burns Lake		22/7.4	20/7.2	19/6.9	19/6.9	21/7.8	20/7.9
Houston		30/-	29/9.3	29/9.1	28/8.8	30/9.7	31/9.4
Prince George	26/9	26/9	24/8.8		25/9.1		
Prince George-Gladstone	20/5	21/5.1					
Quesnel	26/9.5	24/9.5	24/9.3	22/9.2	24/9.6	25/9.7	26/9.7
Quesnel-Maple Drive	27/7.1	23/6.8					
Smithers	31/9.4	29/9	25/7.9	25/7.9	27/8	27/8.4	23/7.9
Valemount				96/14.5	82/14.5	76/-	47/-
Vanderhoof	38/11.1	35/10.4	32/9.4	32/8.9	34/9.6	35/10.1	33/-
Williams Lake		23/7.6	20/7	17/6.3	19/7.1	20/7.8	19/6.8

Management Goals for $PM_{2.5}$ based on the Air Quality Management System

Achieve CAAQS	Prevent CAAQS Exceedance	Prevent Air Quality Deterioration	Keep Clean Areas Clean	Not Available

Ozone Levels

Ground-level ozone is a colourless and irritating gaseous pollutant. It forms just above the earth's surface through chemical reactions between "ozone precursor" emissions. Unlike naturally occurring ozone in the ozone layer, ground-level ozone can be harmful to people, animals, and plants.

Figure 4 gives a summary of ozone levels in the Central Interior Air Zone for the 2018-2020 reporting period. Ozone levels based on the 8-hour metric[3] ranged from 46 part per billion (ppb) at Smithers to 52 ppb at Williams Lake. All sites achieved and are well below the new national standard of 62 ppb for ozone. Data adjustments for transboundary flow and exceptional events (TF/EE) such as wildfire were not performed because ozone levels were lower than CAAQS.

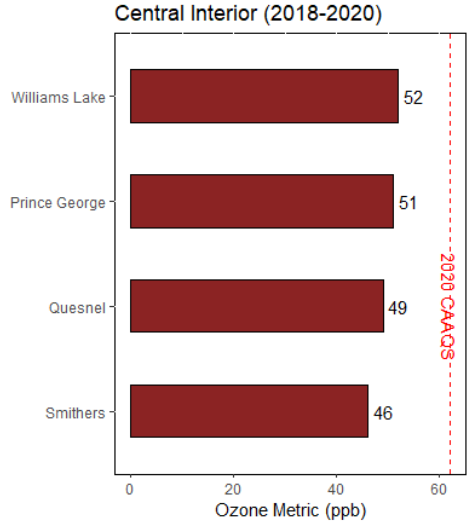


Figure 4. Ozone levels in the Central Interior Air Zone based on the 8-hour metric. Red dashed line identifies the 2020 CAAQS of 62 ppb.

[3] Ozone 8-hour metric are based on the 4th highest daily 8-hour maximum, averaged over three years (2018-2020).

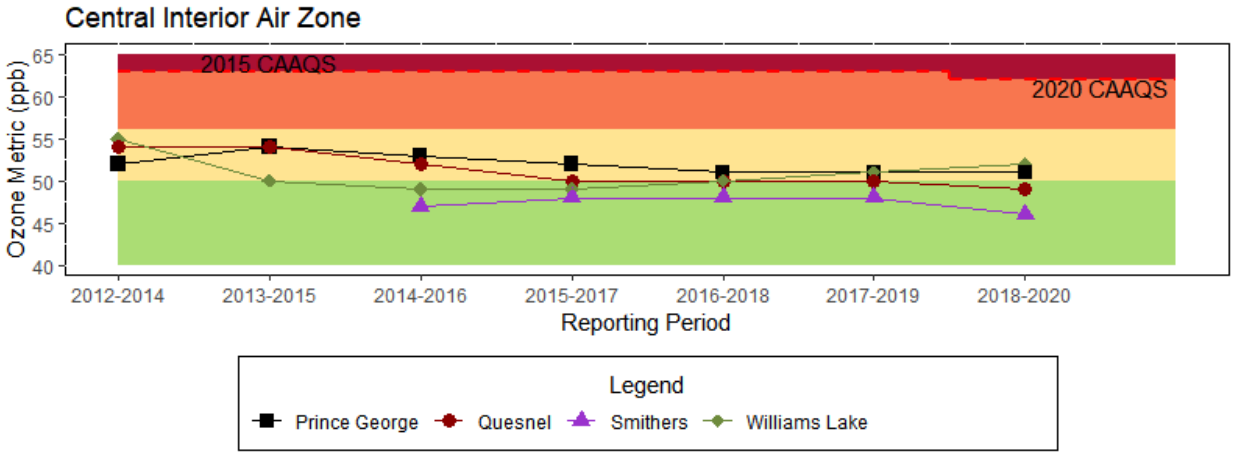


Figure 5. Trends in ozone concentrations based on the annual 4th highest daily 8-hour maximums averaged over three consecutive years. Red dashed line identifies the 2015 and 2020 CAAQS on the reporting period where it applies**.** Background colour shows management levels for the metric.

Table 3. Summary of ozone metrics and air zone management levels for the Central Interior Air Zone.

	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	**2018-2020**
CENTRAL INTERIOR (CAAQS)	YELLOW (2015)	YELLOW (2015)	YELLOW (2015)	YELLOW (2015)	YELLOW (2015)	YELLOW (2015)	**YELLOW (2020)**
Prince George	52	54	53	52	51	51	51
Quesnel	54	54	52	50	50	50	49
Smithers			47	48	48	48	46
Williams Lake	55	50	49	49	50	51	52

Management Goals for Ozone based on the Air Quality Management System

Achieve CAAQS	Prevent CAAQS Exceedance	Prevent Air Quality Deterioration	Keep Clean Areas Clean	Not Available

Annual trends in the ozone metric and their associated AQMS management levels are presented in Figure 5 and summarized in Table 3. Reporting stations in the Central Interior Air Zone achieved CAAQS throughout all the reporting periods and had been under a “yellow” management level at Prince George, and “green” management level at Smithers. Ozone levels at Quesnel has shown steady reductions and had improved from yellow to green management level since the 2015-2017 reporting period. Meanwhile at Williams Lake, the ozone levels started increasing after the 2014-2016 period and had moved from “green” to “yellow” management level. Overall, the Central Interior Air Zone had been under “yellow” management level because at least one reporting station is under this management level. Under “yellow” management level, ozone-related actions are recommended to prevent the deterioration of air quality.

Nitrogen Dioxide Levels

Nitrogen Dioxide (NO_2) is a gaseous pollutant formed along with other nitrogen oxides (NO_x) during the high temperature combustion of fossil fuels. It plays a major role in atmospheric reactions that form ground-level ozone and smog.

There are four stations in the Central Interior that are equipped to measure NO_2 and have enough data to

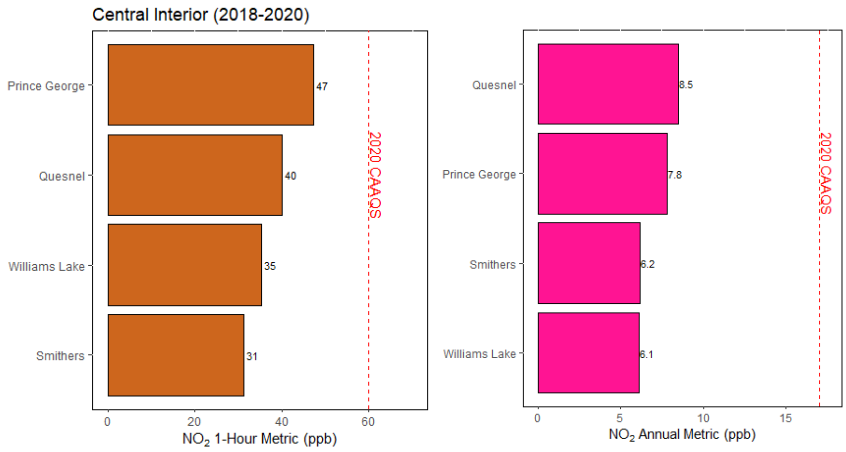


Figure 6. NO_2 concentrations in the Central Interior Air Zone based on the 1-hour (left) and annual (right) metrics. The red dashed lines identify the 2020 CAAQS of 60 ppb for the 1-hour metric, and 17 ppb for the annual metric.

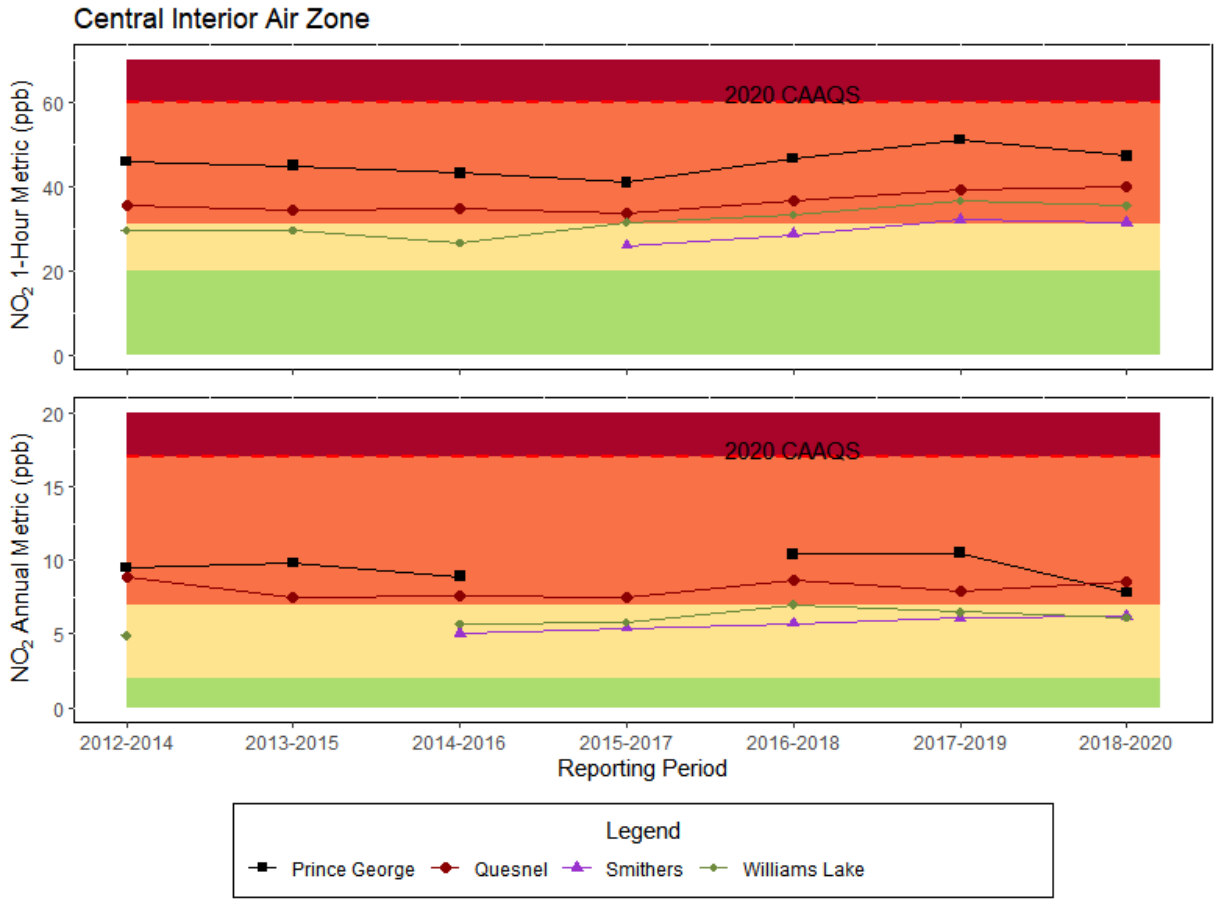


Figure 7. Trends in the 1-hour and annual metrics of NO_2 in the Central Interior Air Zone. The 2020 CAAQS for NO_2 (red dashed lines) only applies during the 2018-2020 reporting period but presented throughout all reporting periods to visualize trends. The background colour shows the AQMS management levels.

report NO_2 metrics for the 2018-2020 reporting period. Figure 6 summarizes the NO_2 metrics for this reporting period. It shows the 1-hour metric[4] varies from 31.3 ppb at Smithers to 47.2 ppb at Prince George, and annual metric[5] from 6.1 ppb at Williams Lake to 8.5 ppb at Quesnel. These levels are well below the 2020 CAAQS of 60 ppb for the 1-hour metric, and 17 ppb for the annual metric.

Table 4. Summary of NO_2 metrics (shown in box as 1-hour/annual metrics) and air zone management levels for the LFV Air Zone based on the 2020 CAAQS.

	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018-2020
CENTRAL INTERIOR (CAAQS)	2020 CAAQS for NO_2 not applicable before 2018-2020 period. Data shown for illustration only.						**ORANGE (2020)**
Prince George	46/9.5	45/9.8	43/8.9	41/-	47/10.4	51/10.5	47/7.8
Quesnel	36/8.9	34/7.5	35/7.6	34/7.5	37/8.7	39/7.9	40/8.5
Smithers			-/5	26/5.4	29/5.7	32/6.1	31/6.2
Williams Lake	30/4.9	30/-	27/5.7	32/5.8	33/7	37/6.5	35/6.1

Management Goals for NO_2 based on the Air Quality Management System

Achieve CAAQS	Prevent CAAQS Exceedance	Prevent Air Quality Deterioration	Keep Clean Areas Clean	Not Available

Figure 7 and Table 4 summarizes NO_2 metrics, CAAQS achievement, and AQMS management levels. Reporting periods from 2012-2014 to 2018-2020 are all included to illustrate annual trends even though the 2020 CAAQS for NO_2 were not implemented before the 2018-2020 reporting period. Prince George and Quesnel had been under "orange" management level since the 2012-2014 reporting period. Smithers and Williams Lake were originally under "yellow" management level but NO_2 levels, particularly the 1-hour metric, have increased and the management level has moved up into "orange" for both communities. Overall, the Central Interior Air Zone is assigned "orange" management level. Under an "orange" management level, NO_2-related actions are recommended to prevent the future exceedance of CAAQS. To prevent future exceedance, the 1-hour metric must remain below 60 ppb, and the annual metric below 17 ppb. Improvement to the yellow management level will require dropping the 1-hour metrics below 31 ppb and the annual metrics below 7 ppb.

[4] NO_2 1-hour metrics are based on the 98th percentile of daily 1-hour maximum over three consecutive years (2018-2020).

[5] NO_2 annual metrics are based on the average of 1-hour readings over a single calendar year (2020).

Sulphur Dioxide Levels

Sulphur dioxide (SO_2) is a toxic gas produced from volcanic eruptions, use of sulfur-bearing fossil fuels, and industrial emissions. SO_2 emissions can form secondary fine particulate matter and acid rain.

There are several stations in the Central Interior equipped to monitor SO_2 but only the stations at Prince George Plaza 400

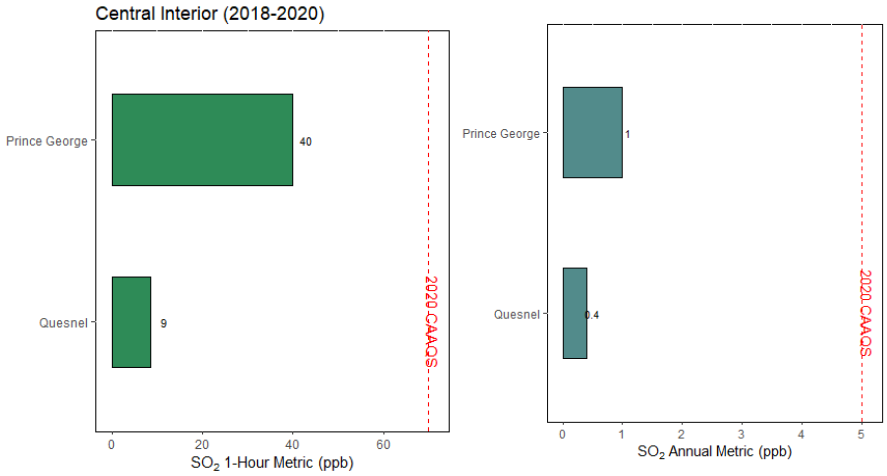


Figure 8. SO_2 levels in the Central Interior Air Zone based on the 1-hour (left) and annual (right) metrics. The red dashed lines identify the 2020 CAAQS of 70 ppb for the 1-hour metric, and 5 ppb for the annual metric.

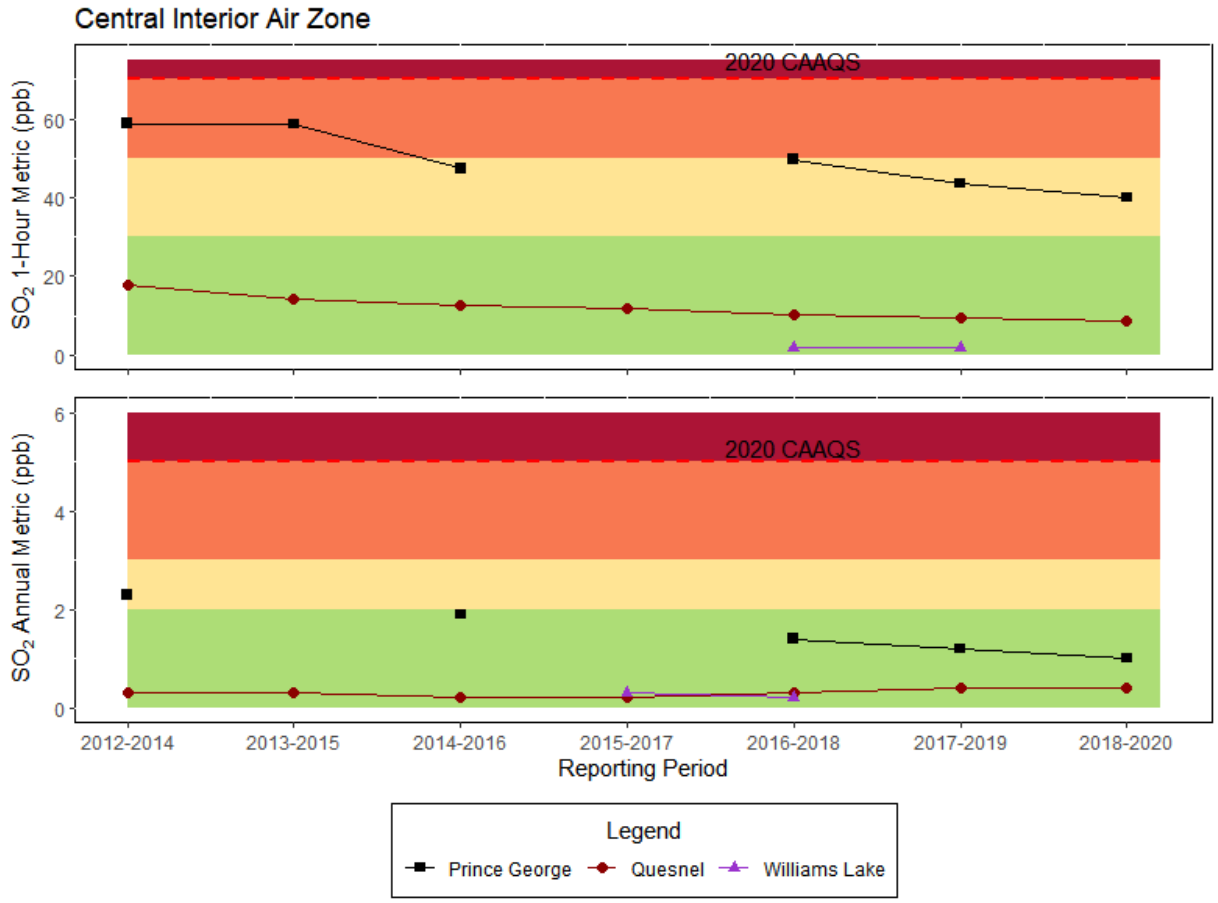


Figure 9. Trends in the 1-hour and annual metrics of SO_2 from 2012 to 2020 in the Central Interior Air Zone. CAAQS for SO_2 (red dashed lines) only applies after the 2020 reporting period but presented here to visualize trends.

and Quesnel at Kinchant St. represent the community-level measurements required for the 2018-2020 CAAQS reporting period. Figure 8 shows the levels of SO_2 at Prince George and Quesnel based on the 1-hour and annual metrics. Both locations achieved the 2020 CAAQS for SO_2 based on the 2018-2020 data and reports values of 8.5 to 40 ppb on the 1-hour metric, and 0.4 to 1.0 ppb on the annual metric. These are significantly lower than the 2020 CAAQS for SO_2 of 70 ppb for the 1-hour metric, and 5 ppb for the annual metric. Both communities have been reporting decreasing trends in the 1-hour metric (Figure 9).

Table 5. Summary of SO_2 metrics (shown in box as 1-hour/annual metrics) and air zone management levels for the Central Interior Air Zone based on the 2020 CAAQS.

	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018-2020
CENTRAL INTERIOR (CAAQS)	2020 CAAQS for SO_2 not applicable before 2018-2020 period. Data shown for illustration only.						**YELLOW (2020)**
Prince George	59/2.3	59/-	47/1.9		50/1.4	44/1.2	40/1
Prince George-Gladstone School	35/1.3	35/-					
Quesnel	18/0.3	14/0.3	13/0.2	12/0.2	10/0.3	10/0.4	9/0.4
Williams Lake				-/0.3	2/0.2	2/-	

Management Goals for SO_2 based on the Air Quality Management System

Achieve CAAQS	Prevent CAAQS Exceedance	Prevent Air Quality Deterioration	Keep Clean Areas Clean	Not Available

The 2018-2020 air zone report is the first to implement the 2020 CAAQS and include SO_2. The assessment of SO_2 levels for CAAQS achievement and assignment of management levels for earlier reporting periods is not required but is presented in Figure 9 and Table 5 to illustrate trends. Figure 9 shows the 1-hour and annual metrics are within the "green" management level for Quesnel and Williams Lake, and "yellow" management level in Prince George. Overall, the Central Interior Air Zone is assigned to a "yellow" management level based on, the "yellow" management level in Prince George. Under a "yellow" management level, SO_2-related management actions are recommended to prevent the deterioration of air quality.

Actions to Protect Air Quality

The reduction of $PM_{2.5}$ emissions continues to be a major air quality priority in many areas of B.C., including the Central Interior Air Zone.

In 2016, the Province adopted a new Solid Fuel Burning Domestic Appliance Regulation that requires nearly all wood burning appliances sold in B.C. to be certified to meet particulate emissions standards set by the US Environmental Protection Agency (EPA) in 2015, or similar standards set by the Canadian Standards Association (CSA) in 2010. The regulation also specifies the types of fuels that can be burnt

and has provisions around the sale and installation of outdoor wood boilers. For more information on the regulation, see: https://www2.gov.bc.ca/gov/content/environment/air-land-water/air/air-pollution/smoke-burning/regulations/solid-fuel-burning-domestic-appliance-regulation.

In 2019 the Ministry updated the Open Burning Smoke Control Regulation (OBSCR) to reduce the smoke from open burning. The revised OBSCR has shorter burn periods to discourage smoldering piles. It also increases the required setbacks between open burning and neighbouring residences and businesses. The OBSCR allows a Ministry director to prohibit open burning when there is a risk of pollution and also to vary requirements of the regulation when doing so is necessary to protect the environment or to meet the intent of the regulation.

The Provincial Wood Stove Exchange Program encourages residents to change out their older, smoky wood stoves for low-emission appliances including heat pumps, natural gas or pellet stoves, or new emissions-certified wood stoves. Between 2018 and 2020, wood stove change-out programs were active in the Bulkley Valley-Lakes District, Prince George, and Vanderhoof.

The Province has supported several community-led initiatives within the Central Interior Air Zone between 2018 and 2020. A few highlights include:

- the North Central Clean Air Forum 2018 hosted by the Prince George Airshed Roundtable (https://www.pgairquality.com/uploads/North_Central_Clean_Air_Forum_Summary_Report_2018%20(1).pdf); and
- the Village of Valemount formed a Clean Air Task Force in 2019 and has engaged in airshed management activities including implementation of an anti-idling bylaw, and conducting a residential heating and air quality survey;
- The Prince George Air Improvement Roundtable (PGAIR) is currently developing its next five year strategic plan for 2022-2026 and is supporting a UNBC led project to update the $PM_{2.5}$ micro-emissions inventory and dispersion modelling for the airshed

For additional information on community-led action within the Central Interior Air Zone, please see the following webpages:

- Bulkley Valley-Lakes District Airshed Management Society: https://cleanairplan.ca/the-airshed-management-society/
- Prince George Air Improvement Roundtable (PGAIR): https://www.pgairquality.com/
- Quesnel: https://quesnelairshed.wordpress.com/contact-us/
- Williams Lake Air Quality Roundtable: https://breatheasywilliamslake.org/roundtable/

Appendix I – Approach to Identify Wildfire-influenced Data

Summertime air quality in British Columbia is periodically influenced by wildfire smoke – from local fires as well as long-range transport from outside of the province. The wildfire season in B.C. typically occurs between May and September, when warm and dry conditions prevail.

A myriad of different pollutants is emitted from wildfires. These include $PM_{2.5}$ and gases such as nitrogen oxides and volatile organic compounds that can react in the atmosphere to form ground-level ozone and additional $PM_{2.5}$.

Given that smoke-affected areas may be extensive, and that smoke may linger for days before being fully dispersed from an airshed, the current analysis has focussed on those periods when wildfire smoke may have contributed to an exceedance of the CAAQS levels for ground-level ozone or $PM_{2.5}$. Process to flag and assess data for wildfire influence are outlined below:

- Examination of 24-hour $PM_{2.5}$ concentrations in excess of the CAAQS level of 28 $\mu g/m^3$ and/or 8-hour daily maximum ozone concentrations in excess of the CAAQS level of 63 ppb between May and September;
- Identification of wildfires of interest based on data from the B.C. Wildfire Service;
- Review Smoky Skies bulletins that were issued by the Ministry to notify the public of rapidly changing smoke conditions;
- Examine NASA satellite images for evidence of regional smoke impacts; and
- Analysis of data from multiple monitoring sites around the area with elevated pollutant levels, suggesting a common source or contributing source.

Wildfire-influenced data were excluded from the calculation of air zone management levels. Excluded data are as summarized in Appendix II.

Appendix II – Wildfire-influenced Data in the Central Interior Air Zone (2018-2020)

Ozone and $PM_{2.5}$ data from 2018-2020 for the Central Interior Air Zone were evaluated based on the criteria set out in Appendix I for TF/EE influences. Various pieces of evidence were used to support identification of wildfire-influenced periods. These included the following:

- Wildfires of note – either due to size or proximity to populated areas – are tracked by the BC Wildfire Service (see: https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary).
    - The 2018 wildfire season was a record-breaking year with 1.35 million hectares of land area burned from several large fires (see Table II-1)
    - The 2020 wildfire season was severe in the Western United States. Smoke from major fires there impacted air quality in British Columbia.
- Days flagged as wildfire-influenced (Table II-2) coincided with Smoky Skies Bulletins issued by the Ministry of Environment and Climate Change Strategy.
- Satellite images during this period (see Figures II-1 to II-4) provide additional information on both the number of wildfires and the spatial extent of wildfire smoke in and adjacent to the Central Interior Air Zone.

Table II-1. Examples of notable wildfires in the Central Interior Air Zone during 2018-2020 reporting period.

Date Discovered	Size (ha)	Geographic Location	Description
2018-07-27	92,412	Fraser Complex - Shovel Lake	6.7 km northwest of Endako; caused by equipment use
2018-07-30	20,813	Fraser Complex-Chutanli Lake	11 km northeast of Tatelkuz Lake; caused by equipment use
2018-07-30	10,2602	Fraser Complex-Tezzeron Lake	106 km northwest of Vanderhoof; lightning-caused
2018-07-31	79,394	Tweedsmuir Complex – Ramsey Creek	Tweedsmuir Provincial Park; lightning-caused
2018-08-01	21,381	Fraser Complex - Island Lake	Adjacent to Island Lake; lightning-caused
2018-08-01	44,817	Tweedsmuir Complex - Dean River	Tweedsmuir Provincial Park; lightning-caused
2018-08-01	12,322	Baezaeko Complex-Shag Creek	Lightning-caused
2018-08-01	8,278	Baezako Complex-Blackwater River	Lightning-caused
2018-08-01	13,433	Baezako Complex-North Baezaeko	South of Kluskoil Lake Park, 85 km west of Quesnel; lightning-caused
2018-08-03	60,631	Tweedsmuir Complex – Pondosy Bay	Tweedsmuir Provincial Park; lightning-caused
2020-09-07	130,000	Cold Springs, Washington, USA	Historic fire event caused by extreme drought conditions in the Pacific Northwest

Table II-2 – Wildfire-influenced $PM_{2.5}$ data from 2018-2020. All dates shown coincided with a Smoky Skies Bulletin for the areas of interest.

Location	Date	Daily $PM_{2.5}$ ($\mu g/m^3$)
Burns Lake	2018-07-31	31.1
Burns Lake	2018-08-10	71.7
Burns Lake	2018-08-11	70.2
Burns Lake	2018-08-12	40.8
Burns Lake	2018-08-14	79
Burns Lake	2018-08-16	178.2
Burns Lake	2018-08-19	33.9
Burns Lake	2018-08-20	83.6
Burns Lake	2018-08-21	883
Burns Lake	2018-08-22	251.2
Burns Lake	2018-08-27	71.7
Burns Lake	2018-09-02	51
Burns Lake	2018-09-04	51.7
Burns Lake	2018-09-05	51.2
Burns Lake	2018-09-06	57.1
Burns Lake	2018-09-07	60
Prince George	2018-07-25	28.1
Prince George	2018-07-26	30.8
Prince George	2018-07-27	31.4
Prince George	2018-07-28	32.1
Prince George	2018-07-29	28.3
Prince George	2018-08-02	30.5
Prince George	2018-08-07	56.7
Prince George	2018-08-08	102.9
Prince George	2018-08-09	130.5
Prince George	2018-08-10	112.6
Prince George	2018-08-11	45.8
Prince George	2018-08-13	92.2
Prince George	2018-08-15	59.8
Prince George	2018-08-16	151.6
Prince George	2018-08-17	366.2
Prince George	2018-08-18	206.9
Prince George	2018-08-19	128.5

Location	Date	Daily $PM_{2.5}$ ($\mu g/m^3$)
Prince George	2018-08-21	60
Prince George	2018-08-22	276.2
Prince George	2018-08-23	120.1
Prince George	2018-08-24	102.4
Prince George	2018-08-25	88.7
Prince George	2018-08-28	66.7
Prince George	2018-08-29	36.8
Prince George	2018-08-30	33.3
Prince George	2018-08-31	41.1
Prince George	2018-09-01	49.3
Prince George	2018-09-02	39.6
Prince George	2018-09-06	30
Prince George	2020-09-16	55.0
Prince George	2020-09-17	56.9
Prince George	2020-09-18	47.8
Prince George	2020-10-02	27.7
Quesnel	2018-07-30	35.6
Quesnel	2018-08-07	96.1
Quesnel	2018-08-08	88.2
Quesnel	2018-08-09	89.9
Quesnel	2018-08-10	136.3
Quesnel	2018-08-11	45.5
Quesnel	2018-08-13	81.8
Quesnel	2018-08-14	118.5
Quesnel	2018-08-15	112.7
Quesnel	2018-08-16	161
Quesnel	2018-08-17	296.3
Quesnel	2018-08-18	185.9
Quesnel	2018-08-19	77.4
Quesnel	2018-08-20	32.3
Quesnel	2018-08-21	43.6
Quesnel	2018-08-22	215.5
Quesnel	2018-08-23	179.4

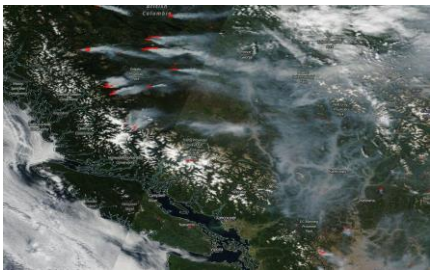
Table II-2 (continued)

Location	Date	Daily $PM_{2.5}$ ($\mu g/m^3$)
Quesnel	2018-08-24	157.1
Quesnel	2018-08-25	88.3
Quesnel	2018-08-28	53.3
Quesnel	2018-08-31	45.1
Quesnel	2018-09-01	62.4
Quesnel	2018-09-03	36.8
Quesnel	2020-09-17	41.5
Smithers	2018-08-20	34.8
Smithers	2018-08-21	127.5
Smithers	2018-09-06	35.4
Valemount	2018-08-07	62.1
Valemount	2018-08-08	56.4
Valemount	2018-08-09	43.4
Valemount	2018-08-10	111.8
Valemount	2018-08-11	116.1
Valemount	2018-08-14	80.6
Valemount	2018-08-15	103.3
Valemount	2018-08-16	92.2
Valemount	2018-08-17	148.3
Valemount	2018-08-18	126.4
Valemount	2018-08-19	33.4
Valemount	2018-08-21	59.6
Valemount	2018-08-22	83.7
Valemount	2018-08-23	180.8
Valemount	2018-08-24	133.6
Valemount	2018-08-25	113.5
Valemount	2020-09-13	32.6
Valemount	2020-09-14	42.6
Valemount	2020-09-16	27.7
Valemount	2020-09-18	33.1
Valemount	2020-09-19	32.3
Vanderhoof	2018-08-02	32.2
Vanderhoof	2018-08-06	29.9
Vanderhoof	2018-08-07	67.5
Vanderhoof	2018-08-08	86
Vanderhoof	2018-08-09	99.1

Location	Date	Daily $PM_{2.5}$ ($\mu g/m^3$)
Vanderhoof	2018-08-10	78.2
Vanderhoof	2018-08-11	104.1
Vanderhoof	2018-08-12	124.4
Vanderhoof	2018-08-13	73
Vanderhoof	2018-08-14	145.4
Vanderhoof	2018-08-15	194.8
Vanderhoof	2018-08-16	291.3
Vanderhoof	2018-08-17	232.5
Vanderhoof	2018-08-18	124.8
Vanderhoof	2018-08-19	105.8
Vanderhoof	2018-08-20	101.7
Vanderhoof	2018-08-21	220.7
Vanderhoof	2018-08-22	631.5
Vanderhoof	2018-08-23	98.3
Vanderhoof	2018-08-24	151
Vanderhoof	2018-08-25	55.5
Vanderhoof	2018-08-27	39.5
Vanderhoof	2018-08-28	79.9
Vanderhoof	2018-08-29	47.1
Vanderhoof	2018-08-30	57.1
Vanderhoof	2018-08-31	60.6
Vanderhoof	2018-09-01	91.4
Vanderhoof	2018-09-02	39.7
Vanderhoof	2018-09-07	38.8
Williams Lake	2018-08-06	37.9
Williams Lake	2018-08-09	35.8
Williams Lake	2018-08-10	103.5
Williams Lake	2018-08-11	112.4
Williams Lake	2018-08-12	117.2
Williams Lake	2018-08-13	101.3
Williams Lake	2018-08-14	97.1
Williams Lake	2018-08-15	115.4
Williams Lake	2018-08-16	140
Williams Lake	2018-08-17	527.5
Williams Lake	2018-08-18	292.3
Williams Lake	2018-08-19	124.4

Table II-2 (continued)

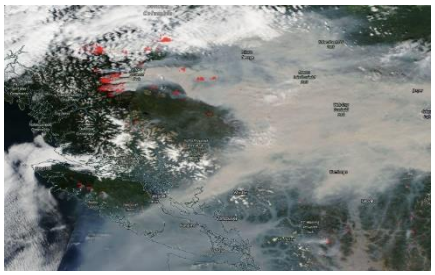
Location	Date	Daily $PM_{2.5}$ ($\mu g/m^3$)
Williams Lake	2018-08-21	29.6
Williams Lake	2018-08-22	110.5
Williams Lake	2018-08-23	218.6
Williams Lake	2018-08-24	138.9
Williams Lake	2018-08-25	66.8
Williams Lake	2018-09-01	28.6
Williams Lake	2018-09-03	32.6



a. NASA EOSDIS, 7 August 2018

b. NASA EOSDIS, 8 August 2018

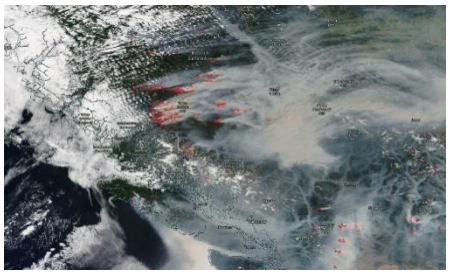
c. NASA EOSDIS, 10 August 2018



d. NASA EOSDIS, 14 August 2018

e. NASA EOSDIS, 17 August 2018

f. NASA EOSDIS, 20 August 2018

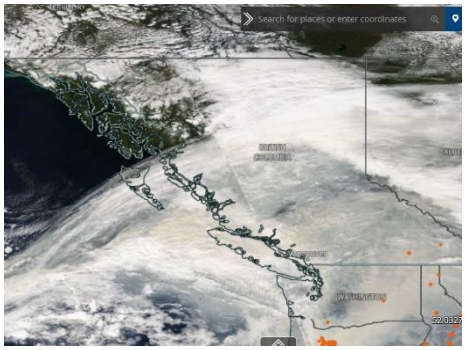


g. NASA EOSDIS, 22 August 2018

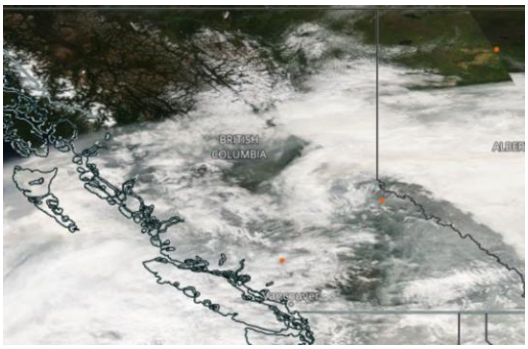
h. NASA EOSDIS, 24 August 2018

i. NASA EOSDIS, 4 September 2018

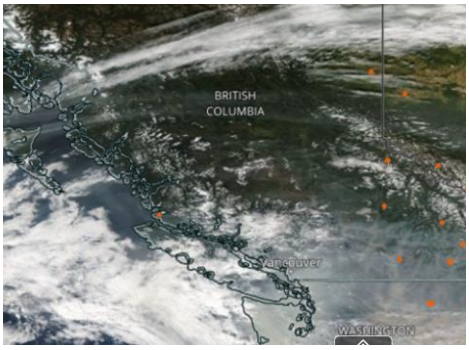
Figure II-1. Corrected reflectance satellite images from NASA's Earth Observing System Data and Information System (EOSDIS) on 7 August to 4 September 2018, showing smoke (grey plumes) over the province, including the Central Interior Air Zone. Red dots indicate fires and thermal anomalies. Source of images: NASA EOSDIS Snapshots at: https://worldview.earthdata.nasa.gov/.



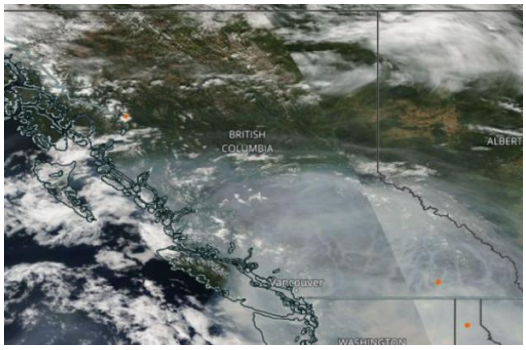
a. NASA EOSDIS, 13 September 2020



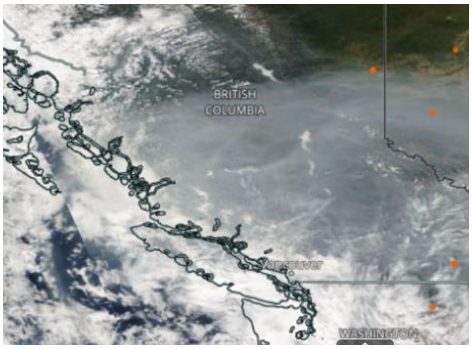
b. NASA EOSDIS, 14 September 2020



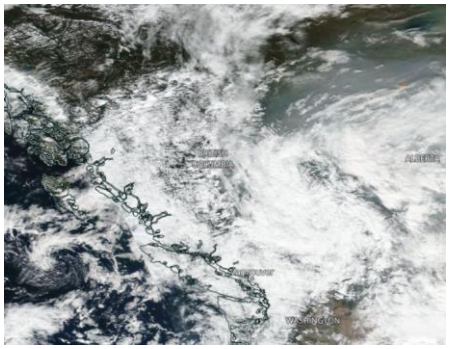
c. NASA EOSDIS, 16 September 2020



d. NASA EOSDIS, 17 September 2020



e. NASA EOSDIS, 18 September 2020



f. NASA EOSDIS, 19 September 2020

g. NASA EOSDIS, 2 October 2020

Figure II-2. Corrected reflectance satellite images from NASA's Earth Observing System Data and Information System (EOSDIS) on September 13, 2020 to October 2, 2020, showing smoke (grey plumes) over the Central Interior Air Zone. Red dots indicate fires and thermal anomalies. Source of images: NASA EOSDIS Snapshots at: https://worldview.earthdata.nasa.gov/.