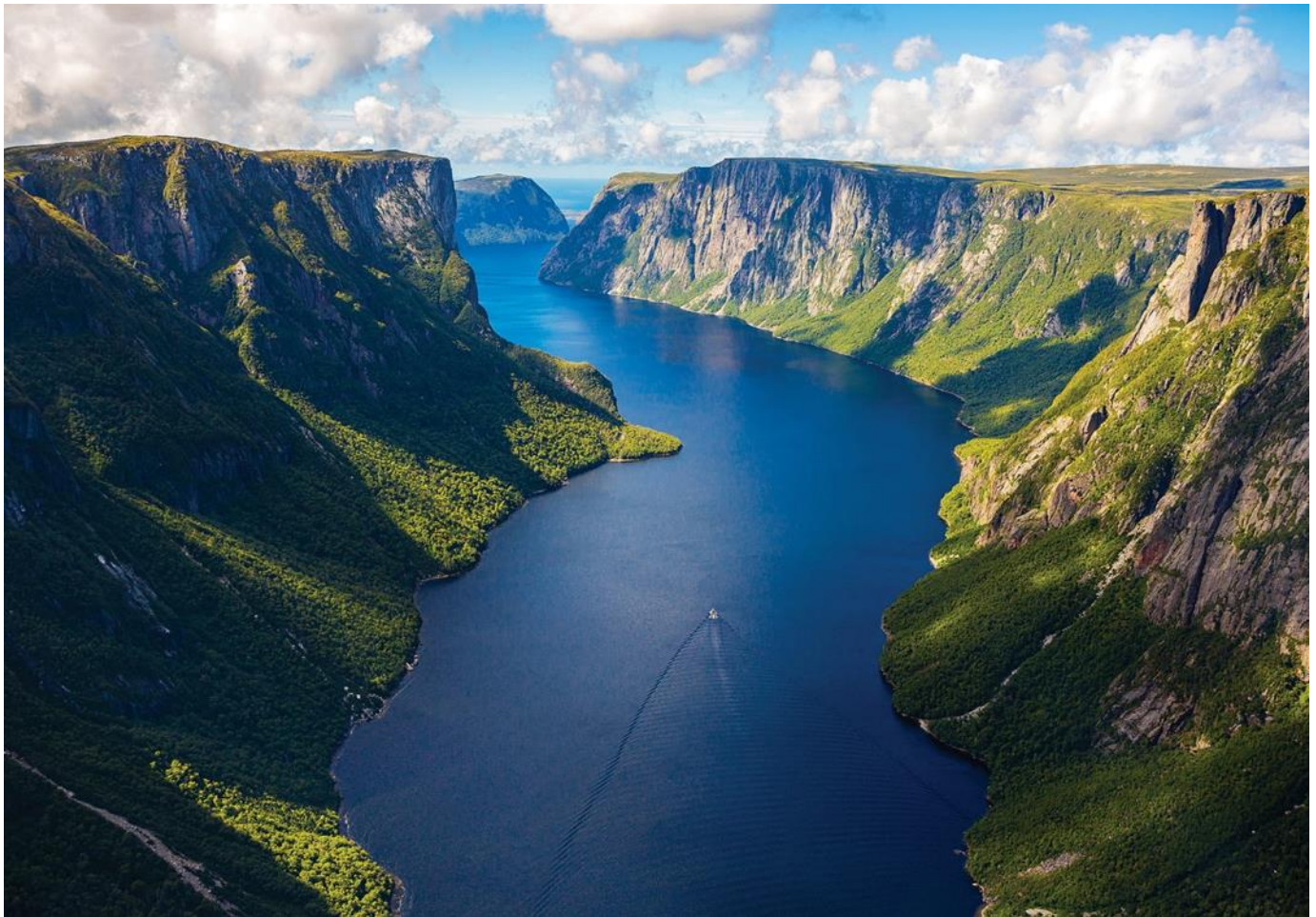




DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE

2021 - 2023 AIR ZONE MANAGEMENT REPORT

April 2024



Background

The Air Quality Management System (AQMS) is a comprehensive approach for improving air quality in Canada and is the product of unprecedented collaboration by the federal, provincial and territorial governments and stakeholders. It is comprised of four main elements: Canadian Ambient Air Quality Standards (CAAQS); Airshed and Air Zone-based air quality management; Baseline Industrial Emission Requirements (BLIERs); and actions for the reduction of mobile source emissions. In October 2012, jurisdictions agreed to begin implementing AQMS by 2013.

AQMS is the avenue to meet the CAAQS and to drive continuous improvement in ambient air quality. To achieve this, each jurisdiction has established Air Zones which are meant to serve as the primary arena for air quality management. The goal in all Air Zones is to maintain air quality such that the CAAQS are not exceeded. In the province, two Air Zones have been established, one being the island of Newfoundland and the other as Labrador. Within each Air Zone, the levels of four air pollutants are quantified, namely sulphur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃) and fine particulate matter less than or equal to 2.5 microns in size (PM_{2.5})

Complementary to the CAAQS, an Air Zone Management Threshold Table has been established for each pollutant to ensure, improve and maintain good air quality. Table 1 provides the thresholds for the CAAQS pollutants.

Disclaimer

Though all data presented in this report has been subjected to quality assurance and quality control procedures, the Department of Environment and Climate Change (DECC) does not warrant any data contained herein or the use of this data for other purposes. The Department accepts no liability for inaccurate data, or any misrepresentation or misuse of the data contained in this report.

All data presented herein may be subject to future revision.

Table 1 Air Management Threshold Table

Management level	Ozone (ppb)	PM _{2.5} (µg/m ³)		SO ₂ (ppb)		NO ₂ (ppb)	
	8-hour	24-hour	Annual	1-hour	Annual	1-hour	Annual
	Effective 2025	Effective 2020	Effective 2020	Effective 2025	Effective 2025	Effective 2025	Effective 2025
Red Ensure that CAAQS are not exceeded through advanced air management actions	> 60 (CAAQS)	> 27 (CAAQS)	> 8.8 (CAAQS)	> 65 (CAAQS)	> 4.0 (CAAQS)	> 42 (CAAQS)	> 12.0 (CAAQS)
Orange Improve air quality through active air management and prevent exceedance of the CAAQS	57 to 60	20 to 27	6.5 to 8.8	51 to 65	3.1 to 4.0	32 to 42	7.1 to 12.0
Yellow Improve air quality using early and ongoing actions for continuous improvement	51 to 56	11 to 19	4.1 to 6.4	31 to 50	2.1 to 3.0	21 to 31	2.1 to 7.0
Green Maintain good air quality through proactive air management measures to keep clean areas clean	≤ 50	≤ 10	≤ 4.0	≤ 30	≤ 2.0	≤ 20	≤ 2.0

Current Air Quality Status

During 2023, the long range transport of pollutants, at times, dominated the air quality in the province. In particular, wildfires in northern Quebec in the spring and early summer affected the air quality in Labrador, while wildfires in northern Alberta and the Northwest Territories in late summer and early autumn affected the air quality across the entire province. The effects of these wildfires can be readily seen in elevated PM_{2.5} concentrations compared to historical levels.

The Air Zone Management guidance allows for the adjustment of reported CAAQS data based on exceptional events. While the impacts of the wildfires may be candidates for such data adjustments, it was deemed more important to report on actual pollutant concentrations as opposed to adjusted concentrations, noting that exceptional events may become normal events in the future.

Table 2 presents the Newfoundland Air Zone and Labrador Air Zone status for PM_{2.5} and O₃ for the period 2021 to 2023. The air quality status for each Air Zone is based on the maximum level recorded at any designated monitoring location within the Air Zone.

For SO₂, NO₂ and O₃, the Air Zone determination, the comparison is against the more stringent 2025 standard as opposed to the 2020 standard. The air quality status for each Air Zone is based on the maximum level recorded at any designated monitoring location within the Air Zone. The SO₂ and NO₂ Air Zone determination is included in Table 3. Also note that SO₂ is no longer monitored at both the Scott Avenue / Grand Falls Windsor, and Main Street / Burin monitoring locations.

Table 4 presents the historical air quality status for the Newfoundland Air Zone for the various pollutants, whereas Table 5 presents the historical air quality status for the Labrador Air Zone.

For interpretation of the colour coding, refer to Table 1.

Table 2 Air Zone Air Quality 2021 to 2023, PM_{2.5} and Ozone

Location	Air Zone	Operator	8-hour Ozone (ppb)	24-hour PM _{2.5} (µg/m ³)	Annual PM _{2.5} (µg/m ³)
Water Street St. John's	Newfoundland	DECC / NAPS	45	16	6.7
Old Placentia Road Mount Pearl	Newfoundland	DECC / NAPS	47	11	4.9
Macpherson Avenue Corner Brook	Newfoundland	DECC / NAPS	48	10	4.5
Scott Avenue Grand Falls Windsor	Newfoundland	DECC / NAPS	47	12	4.8
Fisher Street Port aux Choix	Newfoundland	DECC / NAPS	nd	---	---
Main Street Burin	Newfoundland	DECC / NAPS	43	12	5.1
Newfoundland Air Zone			48	16	6.7
Hudson Drive Labrador City	Labrador	Industry / NAPS	63	19	4.6
Labrador Air Zone			63	19	4.6

--- indicates that data was not collected at this site

nd indicates the data did not comply with data completeness requirements

Table 3 Air Zone Air Quality 2021 to 2023, SO₂ and NO₂

Location	Air Zone	Operator	1-hour SO ₂ (ppb)	Annual SO ₂ (ppb)	1-hour NO ₂ (ppb)	Annual NO ₂ (ppb)
Water Street St. John's	Newfoundland	DECC / NAPS	2	0.2	33	4.5
Old Placentia Road Mount Pearl	Newfoundland	DECC / NAPS	3	nd	14	1.0
Macpherson Avenue Corner Brook	Newfoundland	DECC / NAPS	1	0.2	21	2.2
Scott Avenue Grand Falls Windsor	Newfoundland	DECC / NAPS	---	---	nd	nd
Main Street Burin	Newfoundland	DECC / NAPS	---	---	7	0.4
Newfoundland Air Zone			3	0.2	33	4.5
Hudson Drive Labrador City	Labrador	Industry / NAPS	18	0.3	32	2.6
Labrador Air Zone			18	0.3	32	2.6

--- indicates that data was not collected at this site

nd indicates the data did not comply with data completeness requirements

Table 4 Historical Newfoundland Air Zone Air Quality

Data Period	8-hour Ozone (ppb)	24-hour PM _{2.5} (µg/m ³)	Annual PM _{2.5} (µg/m ³)	1-hour SO ₂ (ppb)	Annual SO ₂ (ppb)	1-hour NO ₂ (ppb)	Annual NO ₂ (ppb)
2012 – 2014	53	15	5.8	10	0.6	41	6.2
2013 – 2015	51	14	6.3	8	0.4	40	4.8
2014 – 2016	50	14	6.6	7	0.5	37	5.4
2015 – 2017	52	13	6.2	8	1.1	36	6.9
2016 – 2018	48	14	6.7	9	0.9	36	5.3
2017 – 2019	49	14	6.8	8	0.8	37	3.0
2018 – 2020	48	12	6.2	8	0.5	34 **	3.3 **
2019 – 2021	48	11	5.4	6	0.7	33 **	4.1
2020 – 2022	48	12	5.9	5	0.2	33	4.1
2021 – 2023	48	16	6.7	3	0.2	33	4.5

** indicates the data did not comply with data completeness requirements for the first quarter of 2020, but is the estimated concentration based on available data

Table 5 Historical Labrador Air Zone Air Quality

Data Period	8-hour Ozone (ppb)	24-hour PM _{2.5} (µg/m ³)	Annual PM _{2.5} (µg/m ³)	1-hour SO ₂ (ppb)	Annual SO ₂ (ppb)	1-hour NO ₂ (ppb)	Annual NO ₂ (ppb)
2012 – 2014	nd	17 / 9 *	3.2 / 2.6 *	---	---	---	---
2013 – 2015	54	17 / 9 *	3.4 / 2.8 *	ins	ins	ins	ins
2014 – 2016	ins	ins	ins	ins	0.6	ins	2.9
2015 – 2017	59	8	2.3	31	0.4	34	2.7
2016 – 2018	58	8	3.0	33	0.5	33	2.2
2017 – 2019	55	8	2.7	30	0.3	33	2.2
2018 – 2020	57	8	2.3	31	0.4	31	2.4
2019 – 2021	59	9	2.7	26	0.3	31	2.5
2020 – 2022	65 **	9	3.3	26	0.3	32	2.6
2021 – 2023	63	19	4.6	18	0.3	32	2.6

--- indicates that data was not collected at this site

nd indicates the data did not comply with data completeness requirements

ins indicates metric cannot be determined as the monitoring location was moved and had been in operation for less than two years

* indicates that a major forest fire near the monitoring location in 2013 constituted an exceptional event. The larger value is the metric including the exceptional event whereas the lower value is with the effects of the forest fire removed

** indicates the data did not comply with data completeness requirements for the fourth quarter of 2022, but is the estimated concentration based on available data

Air Zone Management

It is recognized that the air quality in both the Labrador and Newfoundland Air Zones is largely affected by emissions from sources outside the province through long-range transport and as such, limits the number of mitigation measures available to maintain and reduce the impacts in the province. The province supports national and international initiatives that will reduce the effects of air pollution resulting from long range transport and improve air quality globally.

The Province also continues to work with major industrial operations in the province to reduce particulate, sulphur dioxide and nitrogen dioxide emissions and those emissions which are precursors to the formation of ozone. Additionally recent amendments to the *Air Pollution Control Regulations, 2022* will lower emissions in the province. Should further actions be necessary to reduce ambient levels in both Air Zones, the Province is prepared to take actions as appropriate.

Additional information on AQMS can be found at the Department of Environment and Climate Change website:

<https://www.gov.nl.ca/ecc/env-protection/science/aqms/>

and the Canadian Council of Ministers of the Environment website:

<https://ccme.ca/en/current-activities/air>