

2013 Environmental Assessment Report

AIR QUALITY IN MONTRÉAL

Service de l'environnement

Montréal 

Highlights

- 53 poor air quality days, of which 15 were due to smog.
- Fine particles responsible for all poor air quality days.
- Forest fires in Labrador: Montréal blanketed by the smog from July 1st to 3rd.
- The majority of smoggy days since 2008 recorded in the wintertime.
- Fine particle concentrations remain below the criteria of Canada-wide standards.
- Network is improved following the complete reconstruction of two monitoring stations.
- DR DAS' *Envista Air Resources Manager (ARM)* data acquisition system has proven its tremendous effectiveness.
- According to the World Health Organization, outdoor air pollution is a carcinogen.



In short

True to its mandate, the Réseau de surveillance de la qualité de l'air (RSQA) measured pollutant concentrations in the ambient air to assess the situation on the territory of the agglomeration of Montréal in 2013. A total of 53 poor air quality days were recorded, of which 15 were due to the presence of smog. As was the case last year, fine particles were responsible for all poor air quality days.

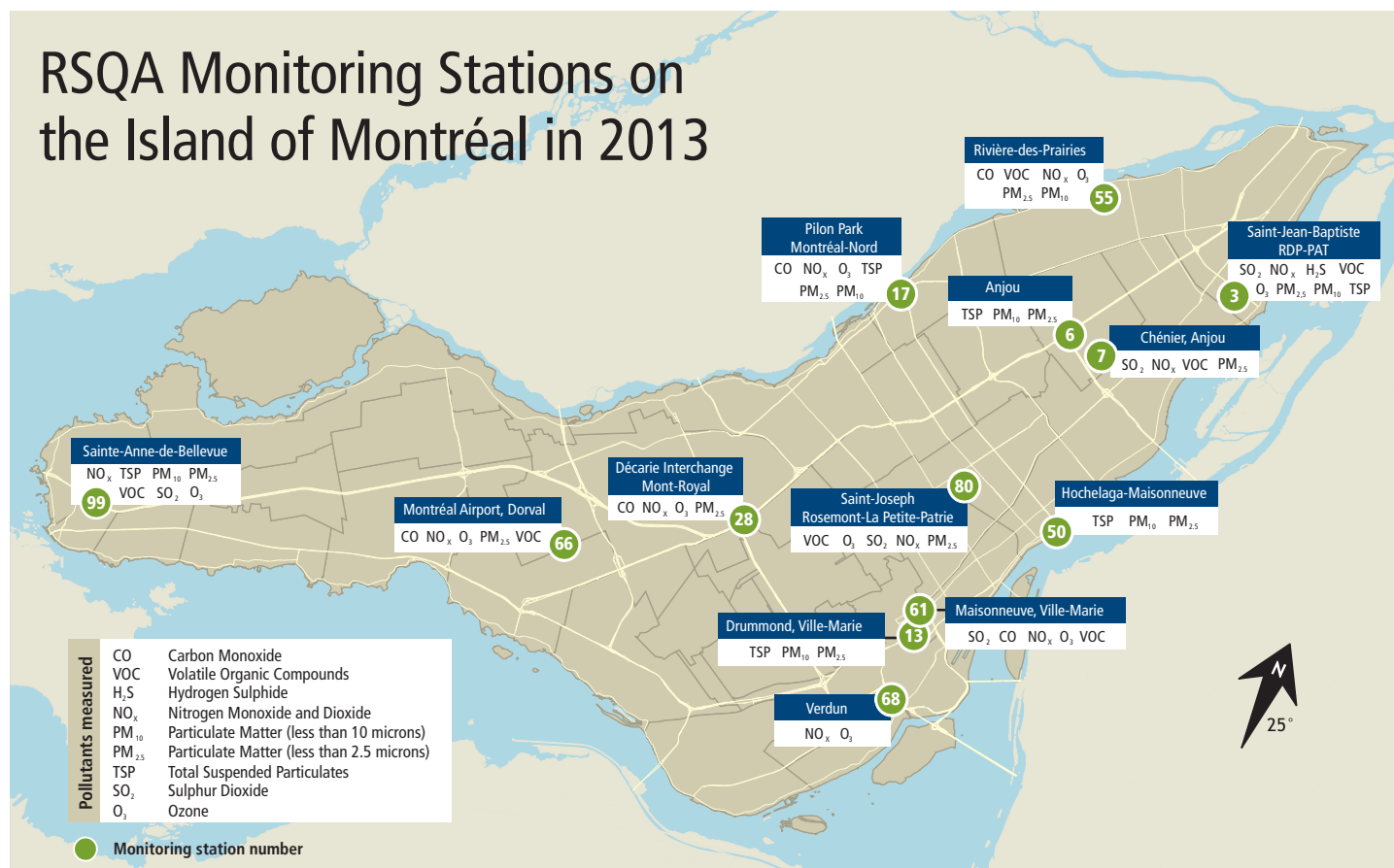
Again this year, a few monitors were replaced, as they had reached the end of their useful life. Also, two monitoring stations were completely rebuilt thus ensuring the perennity of the data collected for statistical purposes. A technical team composed of seven members checks the accuracy of the measures taken by the monitors and validates the many results collected.

Implemented in December 2012, DR DAS' *Envista Air Resources Manager (ARM)* data acquisition system has proven its tremendous effectiveness. The *Envista ARM* has allowed us to optimize our interventions in the stations and facilitated the validation of data.

The state of air quality on the territory of Montréal can be consulted on the Web site at rsqa.qc.ca, which posts the results on an hourly basis.



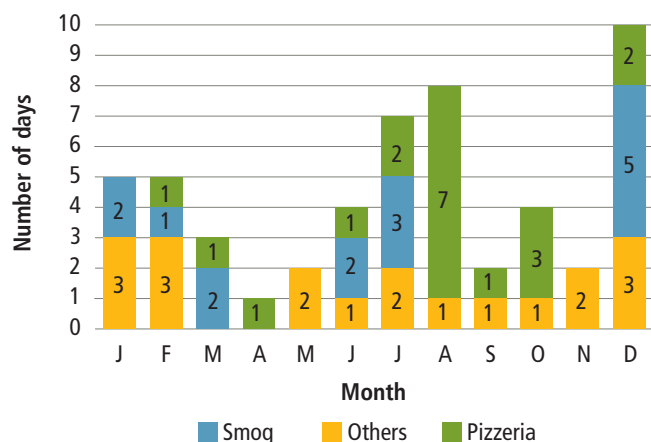
In-station equipment maintenance and monitoring



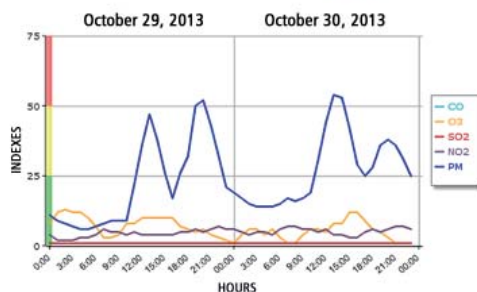
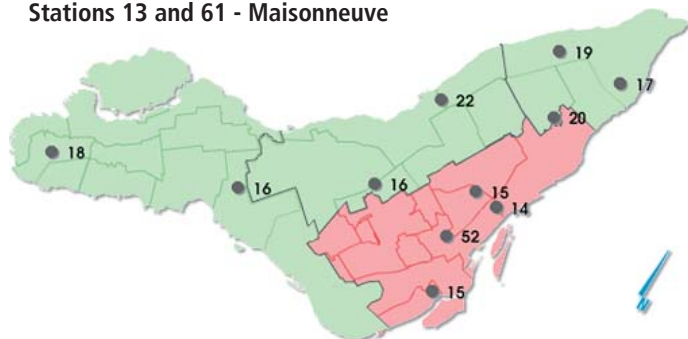
Air quality portrait

In 2013, 53 poor air quality days were recorded. The monthly distribution of these days is shown in the graph below. Except for two smoggy days due to sweltering temperatures (June 23rd and 24th) and three smoggy days due to the smoke plumes of the forest fires in Labrador (July 1st to July 3rd), the results indicate that 10 smoggy days occurred in the winter, more specifically in January, February, March and December. A smoggy day is characterized by concentrations of fine particles greater than 35 µg/m³ for more than three hours over 75% of the territory of the agglomeration of Montréal.

Poor air quality days in Montréal in 2013 due to fine particles (PM_{2.5})



**Poor air quality days
Stations 13 and 61 - Maisonneuve**



Cause
Smoke plume from a pizza wood-burning oven



Last October 17, 2013, outdoor air pollution was declared a carcinogen by the World Health Organization. For the municipal administration, this was considered an additional incentive to continue to implement the means to control air pollutant emission sources.

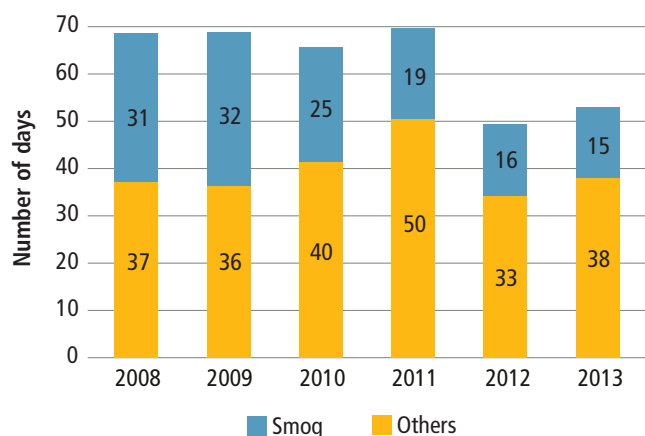
The other events responsible for poor air quality days are:

- the presence of a pizza wood-burning oven (19 days, station 13);
- the Loto-Québec fireworks, July 31st and August 1st (2 days, station 50);
- a forest fire in L'Assomption, May 5th (1 day, station 55);
- a burning building in the borough of Mercier-Hochelaga-Maisonneuve, September 1st (1 day, station 50);
- other human activities with a local impact (15 days, all stations).

In the results recorded in 2013, Station 13 is the one that has the dubious honor of having the greatest number of poor air quality days. This is mainly due to the presence of a smoke plume from the wood-burning oven of a nearby pizzeria during meal hours. Disregarding these peak hours, air quality is very similar to that measured in other stations.

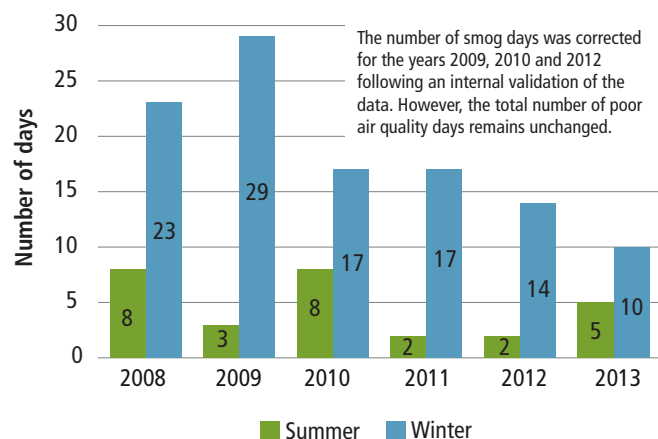
An analysis of the results collected since 2008 reveals a downturn in the number of poor air quality days. However, one needs to remain cautious, as these results are influenced by weather conditions. Indeed, winds and precipitations favor the dispersion of pollutants and contribute to an improvement of air quality.

Poor air quality days since 2008



As far as the number of smog days per season is concerned, these occurrences are greater in the wintertime than in the summertime. Also, a summer season without any heat waves will likely result in fewer smog episodes than a hot and muggy summer, given that ozone and fine particles, responsible for summer smog, are caused by the action of sunrays on volatile organic compounds and nitrogen oxides.

Number of smog days by season since 2008



Residential wood and solid fuel heating

In August 2013, the municipal council stated that it was favorable to the adoption of an amendment of section 12 of Bylaw 11-018 on the construction and transformation of buildings in order to render inoperative, through a permanent fixture, any equipment or fireplace allowing for the use of solid fuel. Despite this prohibition, only pellet-burning EPA or CAN/CSA-B415.1 certified equipment would be authorized. This amendment would be effective in the City only as of December 31, 2020. The other cities within the agglomeration could, should they wish to do so, adopt the same bylaw or a different one.

This decision is the logical result of the comments expressed by a majority of citizens, during a public hearing held in March 2009, to the effect that the City's administration was not doing enough, given that it was not enacting legislation on existing equipment (stoves and fireplaces). However, despite the adoption of the August 2013 motion in favor of this amendment, the bylaw has not yet been adopted since it requires a public consultation. The objective of the consultation is to listen to citizens in order to clarify the issues and, if need be, improve the draft bylaw.

The public hearing for this consultation is taking place in the fall of 2014, but no date has yet been set. All citizens will be invited to attend in order to voice their concerns and submit a brief. For further information, please visit the *Transport et Environnement* section of the Web site of the *Commissions permanentes* at ville.montreal.qc.ca/commissions.

Feu Vert program

The Feu Vert replacement program, implemented following the adoption by the City of its first bylaw in 2009, offered an attractive financial incentive for citizens wishing to remove or replace their solid-fuel-burning appliance for a less polluting one. The program ended in December 2013. Discussions have been initiated with the Government of Québec to extend the program for a period corresponding to the future bylaw.

Network improvement

Closing and relocation of Station 29 in Montréal-Nord

Station 29, located in Pilon Park in the borough of Montréal-Nord since 1975, would have required considerable work to update it. Also, the transformation of the Henri-Bourassa and Pie IX crossroad precluded the relocation of the station within the park. Given that it was essential to continue to monitor air quality in this sector of the city, the new station was installed in the fire station located at 4240 Charleroi Street. The monitoring station occupies an area of 16 square metres on the mezzanine of the garage and has a direct access to the rooftop. The Pilon Park Station was definitely decommissioned on April 9th while the one set up in fire station 17 was commissioned on April 14th. The data collected in this station are provided to the Ministère des Transports du Québec (MTQ) within the framework of the extension of Autoroute 25, as was agreed between Ville de Montréal and the MTQ in 2010.



The Pilon Park Station closed on April 9th. Relocated in fire station 17, the new station was commissioned on April 14th.

New structure for the airport's Station 66

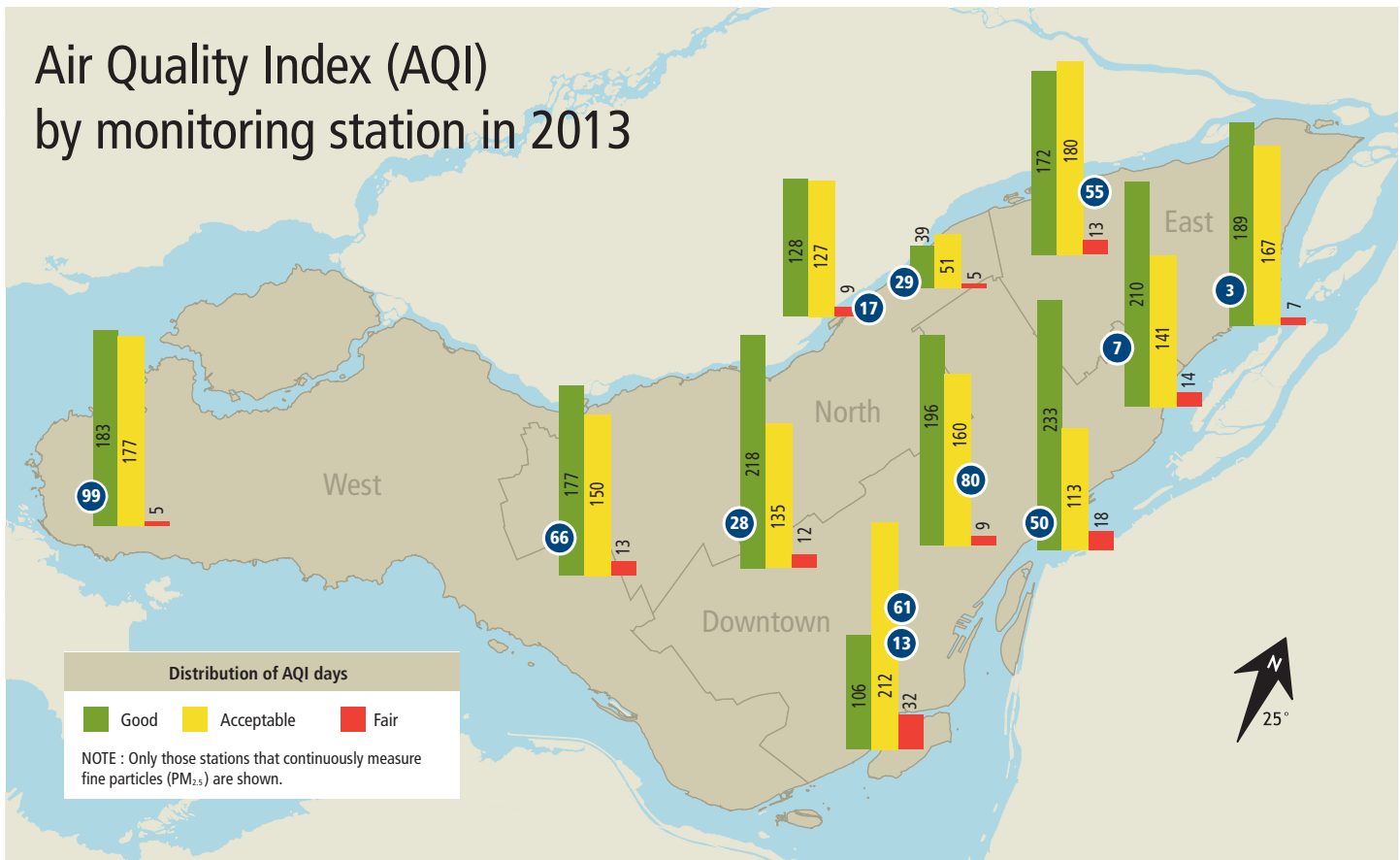
Located on the grounds of Montréal-Trudeau Airport, Station 66 required a rejuvenation. Once all of the necessary authorizations were obtained, a new building was constructed on the same site. This new construction satisfies all of the recognized criteria in the field of air monitoring and greatly facilitates the work of the technical staff who must access the rooftop for maintenance purposes. The interior layout of the station, more spacious than the old structure, enabled the installation of a new apparatus

to conduct a study comparing the two methods of measuring particulate matter ($PM_{2.5}$) in order to establish the existing correlation between them.



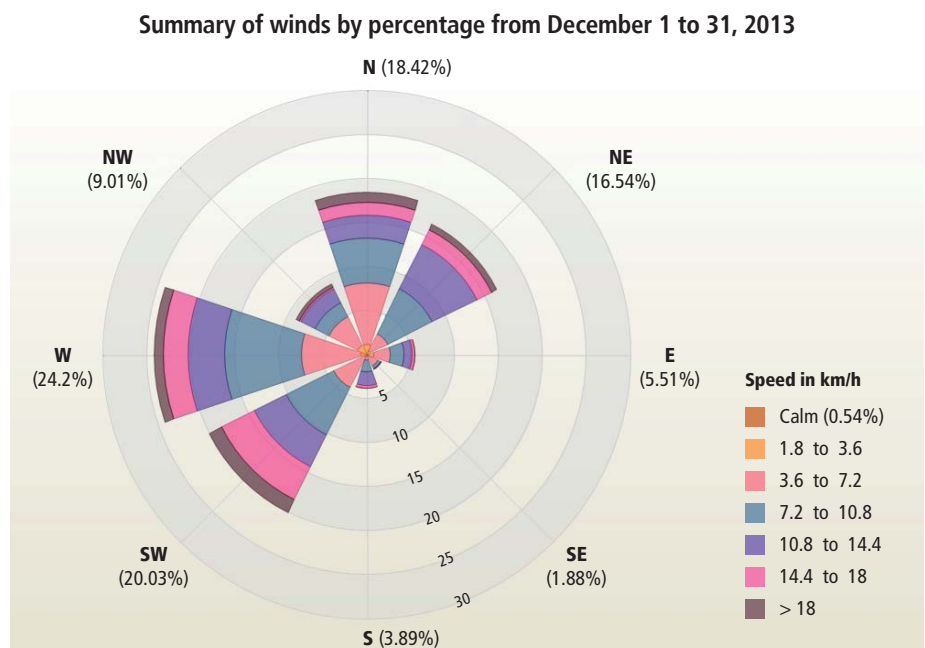
Views of the exterior and interior of Station 66, located on the grounds of the Montréal-Trudeau Airport.

Annual Summary of air quality



Addition of a meteorological sensor

Meteorological data, such as wind direction and velocity, are essential to validate and interpret air quality data. Presently, the data used by the RSQA are collected at Montréal-Trudeau Airport by Environment Canada. To make certain comparisons or assess certain situations that are more local in nature, a meteorological sensor was set up in Station 7, located near the Chénier Arena in the borough of Anjou. Here is an example of the data that may be obtained directly from the new installations. This information will prove very useful for future air quality assessments for this sector of the Island of Montréal.





Canadawide standards

Concerned about the significant levels of particulate matter ($PM_{2.5}$) and ozone in the ambient air and their adverse effects on human health and the environment, the Canadian Council of Ministers of the Environment (CCME) adopted Canadawide standards in June 2000.

The schedules opposite compare the results obtained in the different monitoring stations with the Canadawide standards. The comparison is made even though all guidelines from the federal Guidance document were not respected, as doing so would have required a much more complex exercise exceeding the scope of this report.

An analysis of the results of the past three years, according to the method of calculation of the Canadawide standards, reveals a decrease in concentrations of $PM_{2.5}$ throughout the territory of Montréal. Also, no exceedance was observed with respect to ozone concentrations.

Fine particles ($PM_{2.5}$), criteria: 30 $\mu g/m^3$

Station	Annual variation / 98 th percentile			3-year average
	2011	2012	2013	
3	27	24	24	25
7	25	25	27	26
13	29	31	28	29
28	26	28	24	26
29	25	29	Closed	27
50	23	30	27	27
55	26	28	24	26
66	26	29	26	27
80	26	27	26	26
99	21	22	22	22
Annual average	25	27	25	26

Ozone (O_3), criteria: 127 $\mu g/m^3$

Station	4 th daily maximum / 8-hr rolling avg			3-year average
	2011	2012	2013	
3	118	116	110	115
28	92	104	95	97
29	110	126	Closed	118
55	112	123	112	116
61	94	112	97	101
66	113	125	109	115
68	99	118	113	110
80	108	120	108	112
99	106	127	110	114
Annual average	106	119	107	111

VILLE DE MONTRÉAL

PRODUCTION

Service de l'environnement
Division de la planification et
du suivi environnemental
Réseau de surveillance
de la qualité de l'air (RSQA)

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