



Wildfire Smoke Impacts in Metro Vancouver, BC

EXPERIENCES FROM 2015-2018

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US EPA 2019 Smoke Management in the Northwest, May 29, 2019

28498491



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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

Metro Vancouver

21 municipalities
one Electoral Area
and one Treaty
First Nation



Metro Vancouver

Population:
2.5 million

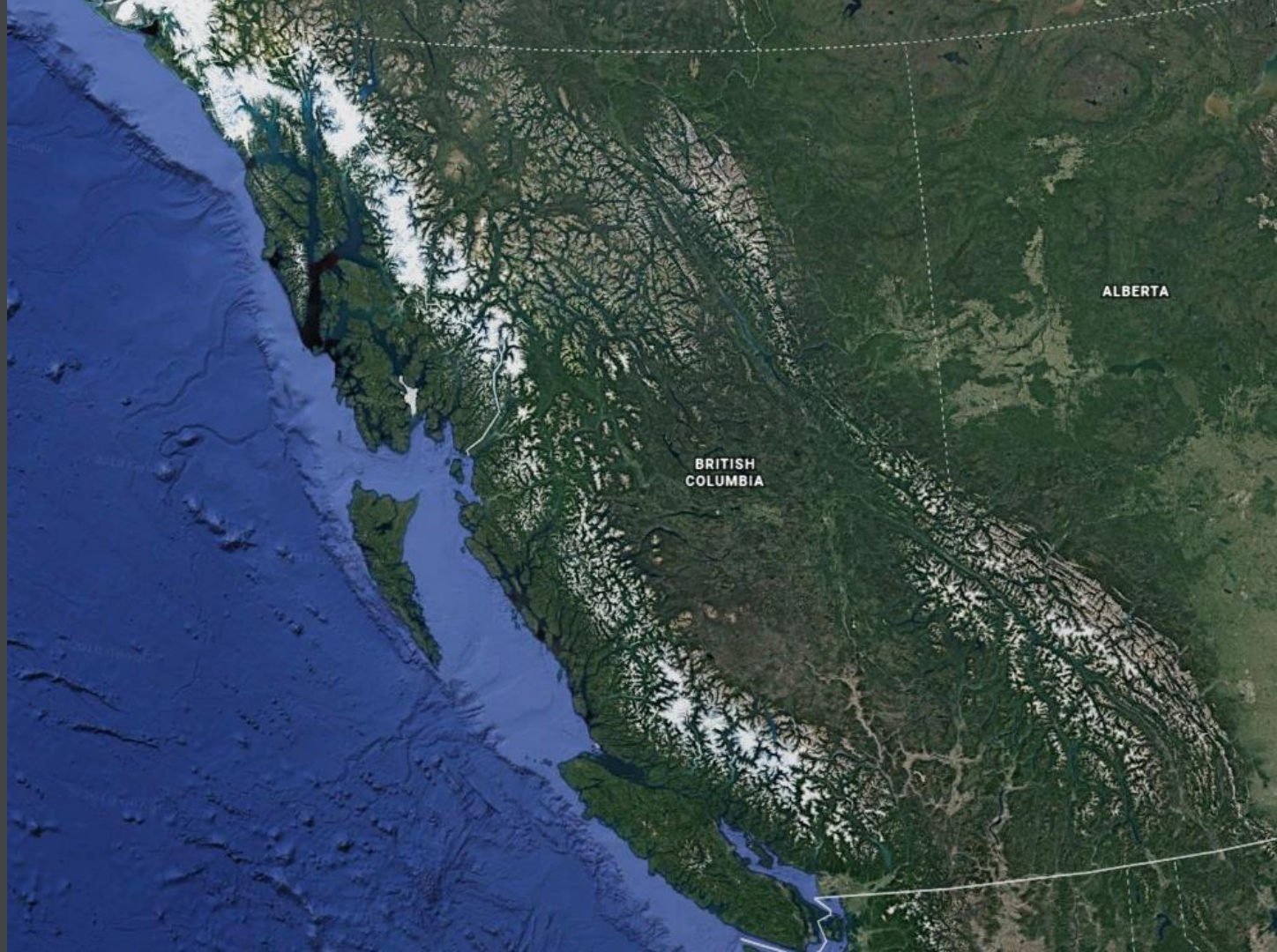
Land Area:
2877 km²



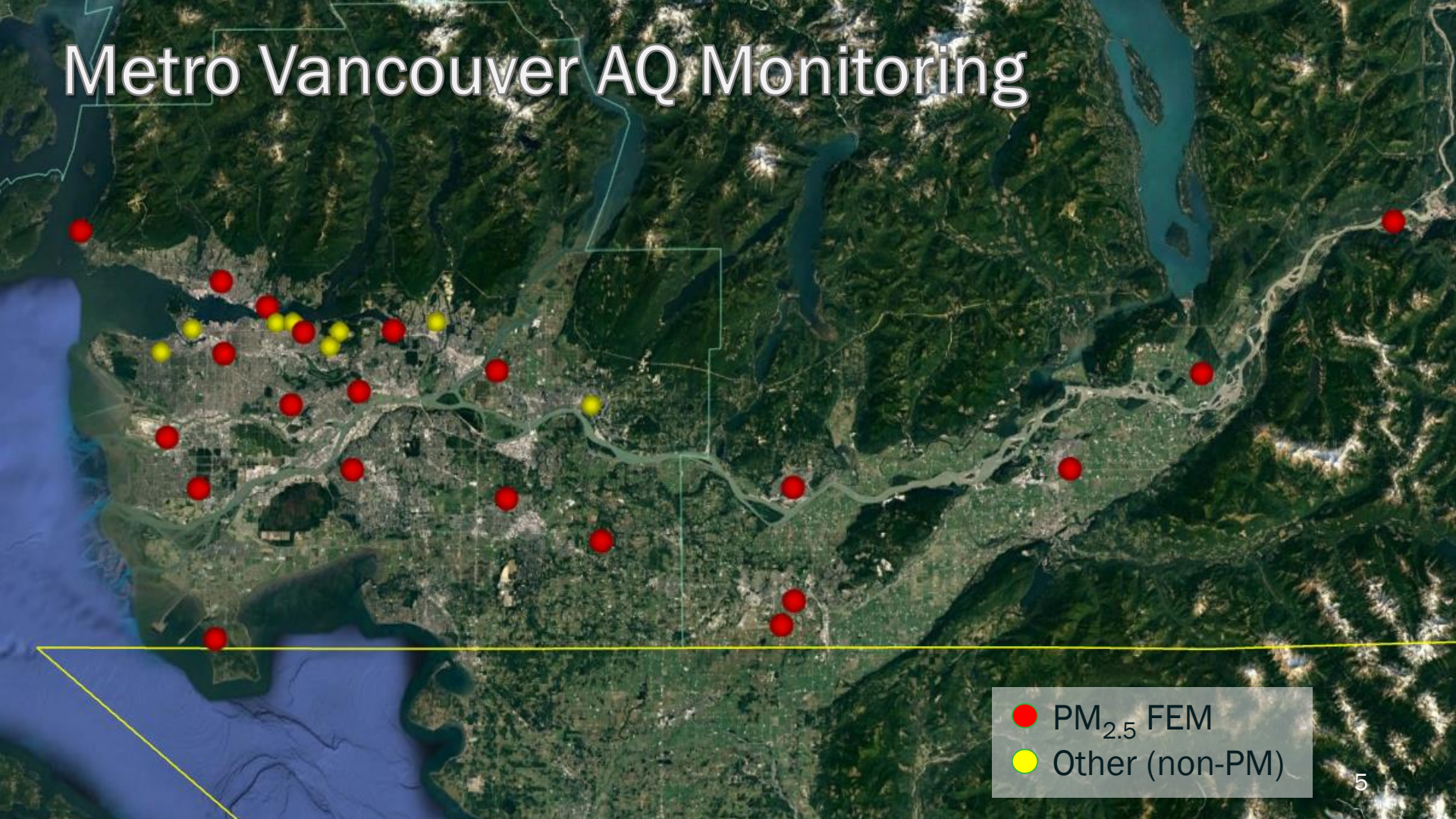
British Columbia

Population:
4.8 million

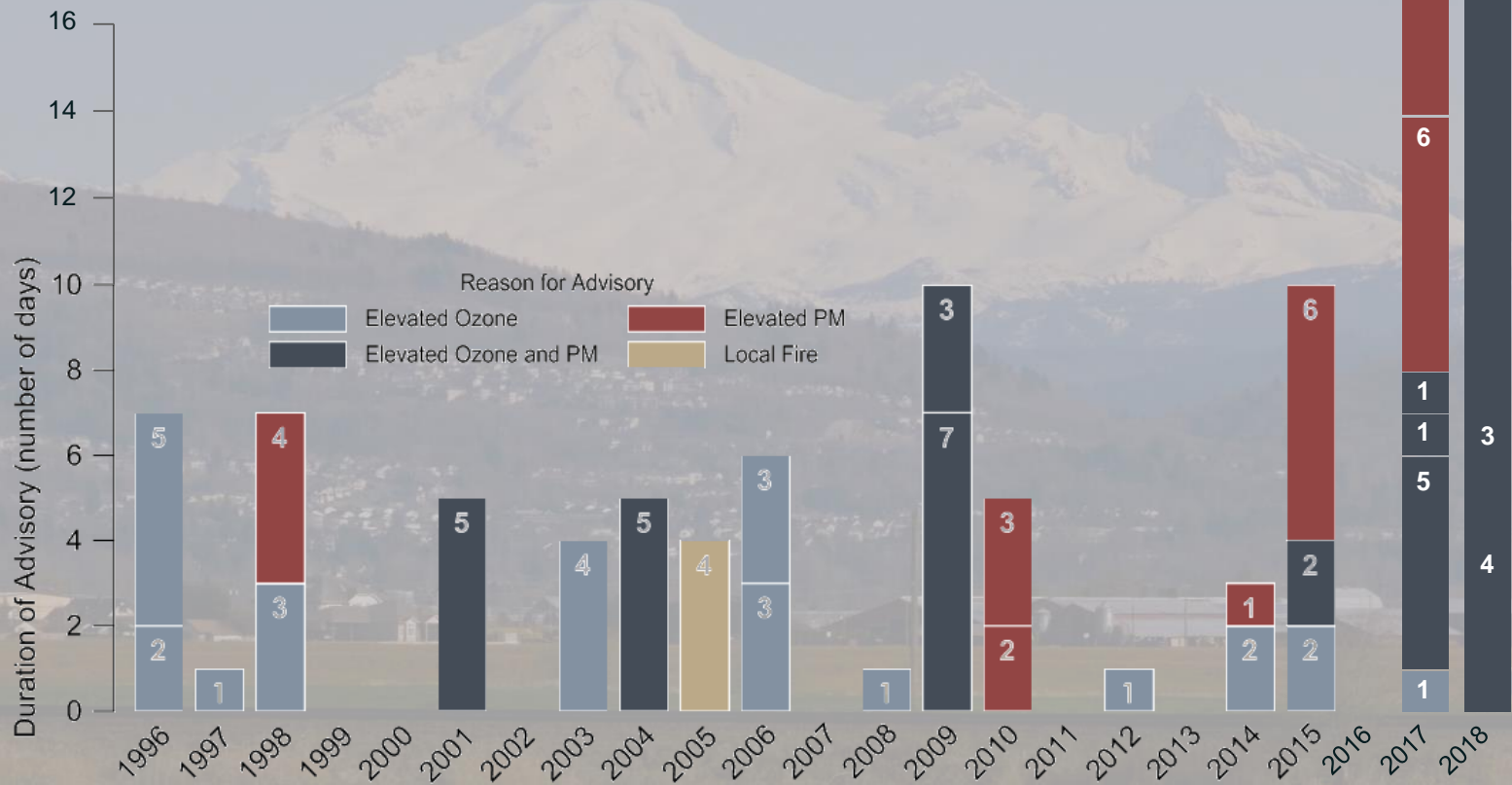
Land Area:
944,735 km²



Metro Vancouver AQ Monitoring



Air quality advisories 1996-2018



Recent British Columbia Wildfire Seasons

| Year | British Columbia Total Fires | British Columbia Area Burned (km ²) | |
|-----------------|---------------------------------|--|--|
| 2018 | 2,087 | 13,513 | |
| 2017 | 1,353 | 12,161 | |
| 2016 | 1,050 | 1,003 | |
| 2015 | 1,858 | 2,806 | |
| 10-year average | 1,673 | 2,697 | |

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Widespread wildfires and smoke impacts



British Columbia

Alberta

Metro
Vancouver

Terra MODIS: August 18, 2018

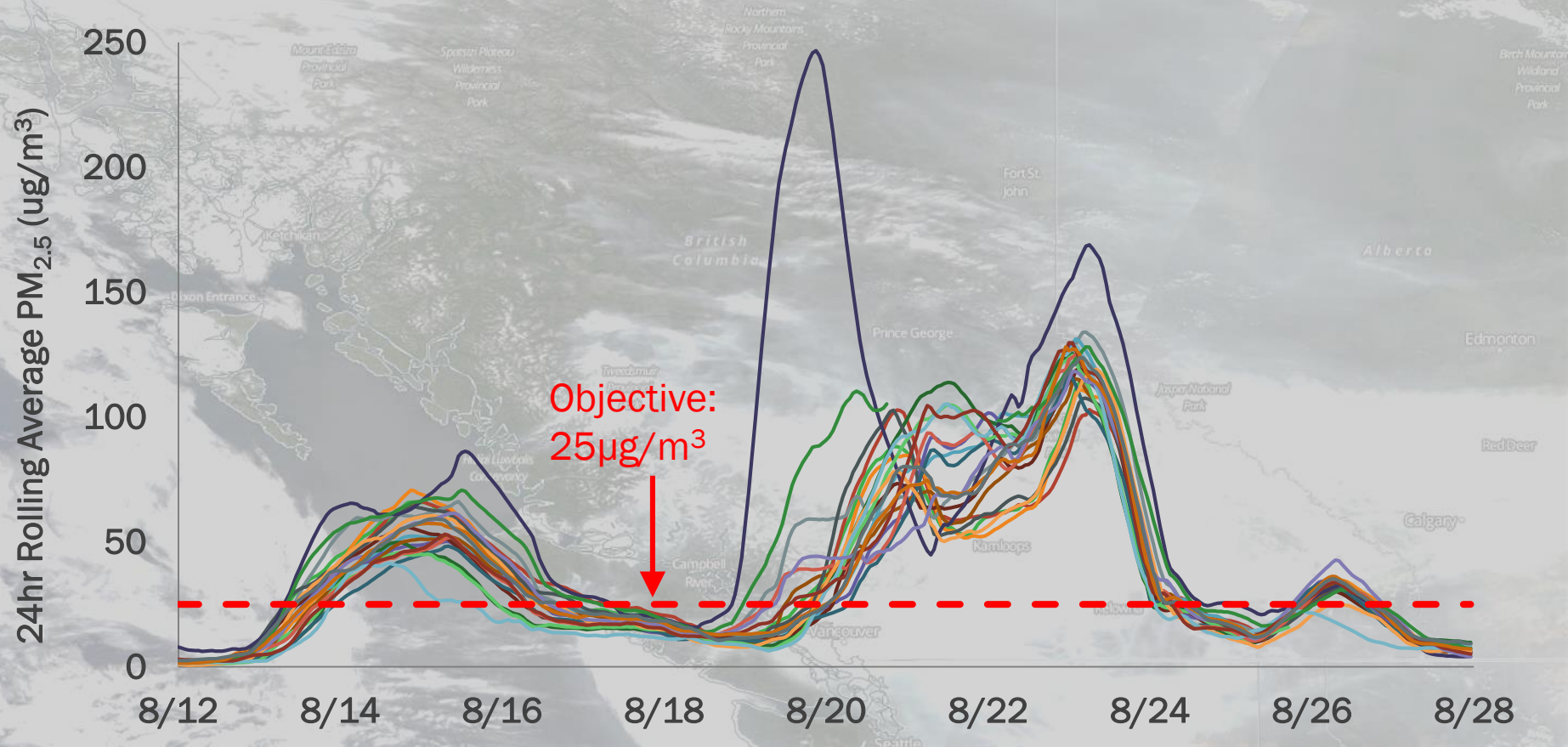
Washington

Idaho

10

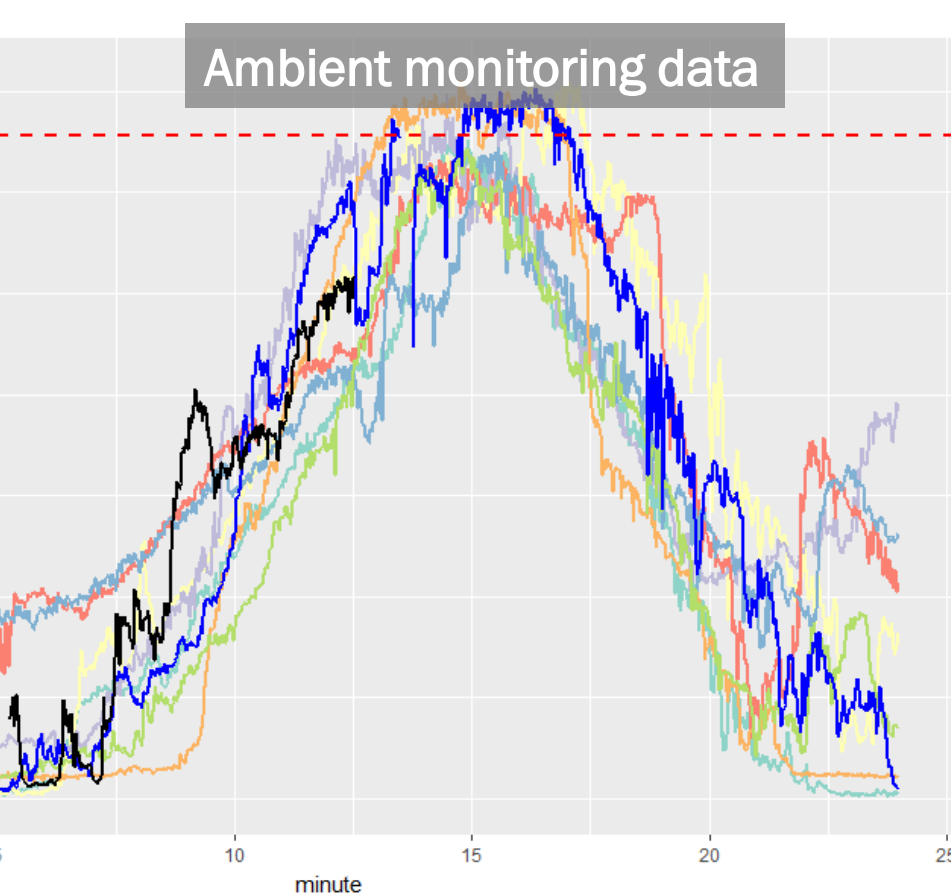
Mont

Record PM_{2.5} Levels, Record Duration

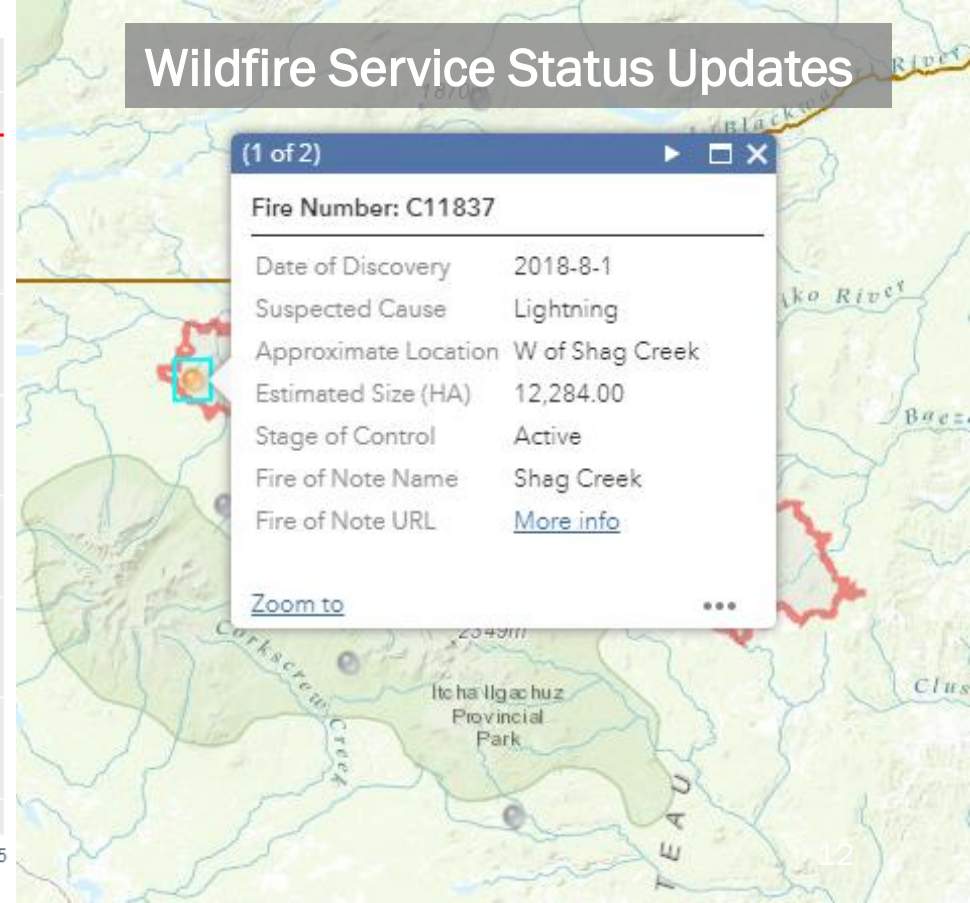


Decision Support: Traditional tools

Ambient monitoring data

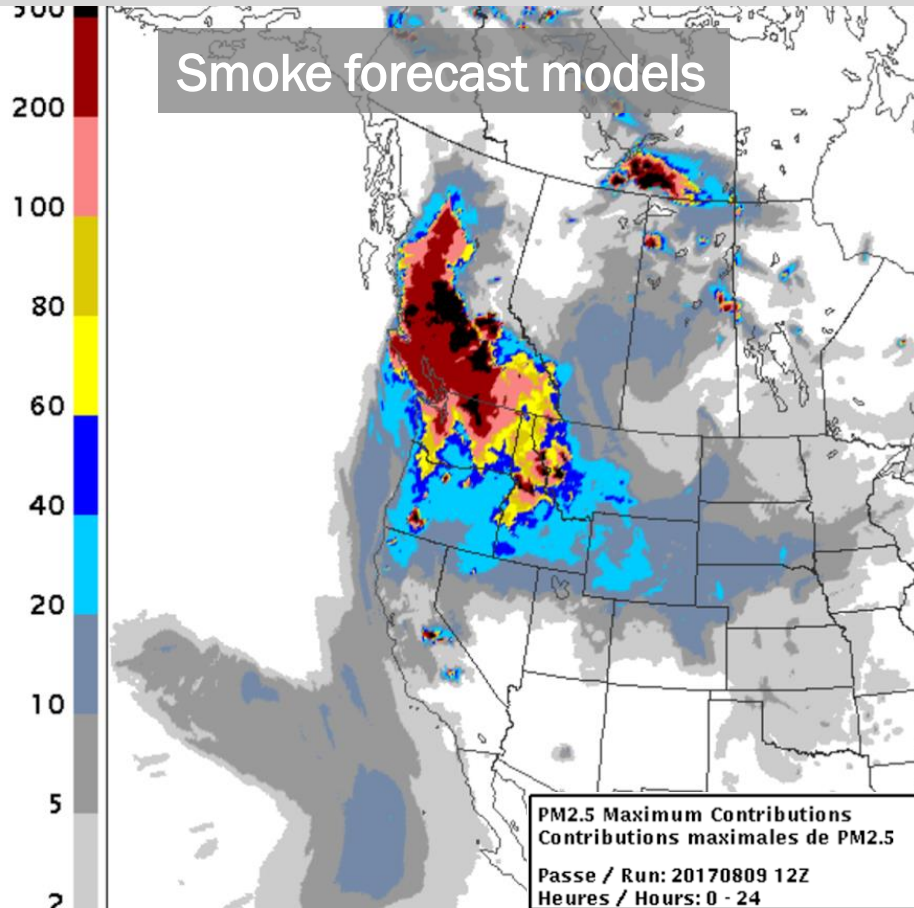


Wildfire Service Status Updates

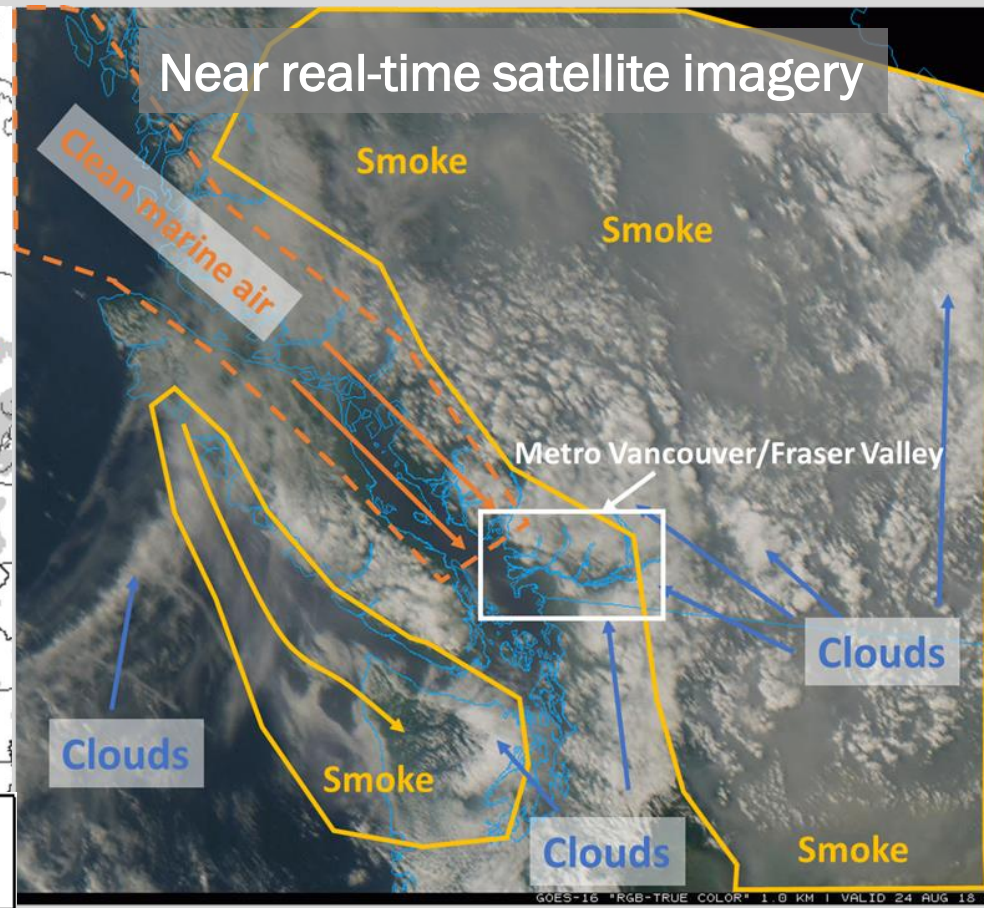


Decision Support: Modern tools

Smoke forecast models



Near real-time satellite imagery



Advisory program partner agencies

Federal



Environment and
Climate Change Canada

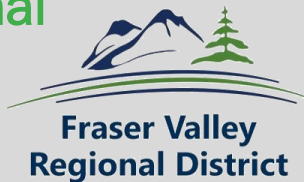


Health
Canada

Public Health



Regional



NGO



Provincial



BC Centre for Disease Control

Municipal

Metro Vancouver member
municipalities

Advisory program partner agencies

Federal



Environment and
Climate Change Canada



Health
Canada

Provincial



Ministry of
Environment and
Climate Change Strategy



BC Centre for Disease Control

Regional



Fraser Valley
Regional District

Public Health



NGO



Municipal

Metro Vancouver member
municipalities

Communications: Getting the word out

Traditional media

CBC MENU

news Sections

The National

VIDEO

Wildfire smoke creates air quality concerns in B.C.

Posted: Aug 14, 2018 9:28 PM ET | Last Updated: August 14, 2018



Francis Ries
Senior Project Engineer,
Metro Vancouver


00:51 / 02:08

Smoke from wildfires in B.C. is creating air quality concerns around the province and raising questions about the long term exposure to that kind of pollution. 2:08

Social media

Metro Vancouver @MetroVancouver · 20 Aug 2018

The #AirQuality Advisory is continuing. Smoke still blankets Metro Vancouver and the Fraser Valley from wildfires throughout the province and western U.S. The region may see some improvements later in the week. ow.ly/XY4P30lu7XY @CODMeteorology @FVRD1



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Metro Vancouver @MetroVancouver · 19 Aug 2018

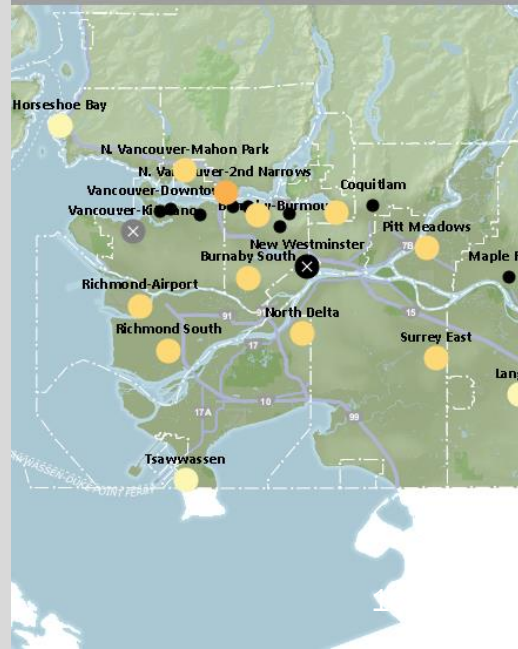
Continued #AirQuality Advisory for Metro Vancouver & Fraser Valley due to high concentrations of fine particulate matter due to smoke from wildfires in B.C. and the western U.S. Elevated levels will persist until there change in fire or weather conditions. bit.ly/2fBuuk0

Public data feed

metrovancover GIS - AirMap

No advisories at this time.

Search Metro Vancouver



Communications: advisory messaging

- What, where, when, why
- Acknowledgement of variability, uncertainty
- Health risks, affected groups
- Exposure mitigation measures
 - Limit outdoor activity, seek clean air spaces
 - Includes HEPA filter messaging, silent on masks unless asked
- Who to contact, how to contact
- Referrals to health agencies

The banner features the Metro Vancouver logo in the top left corner. The background is a wide-angle photograph of a coastal landscape with a blue sky, white clouds, and a body of water. The text "Air Quality Advisory" is prominently displayed in white, bold, sans-serif font across the middle of the image.

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Air Quality Advisory

August 13, 2018

AIR QUALITY ADVISORY

Metro Vancouver is now issuing an Air Quality Advisory for Metro Vancouver and the Fraser Valley because of high concentrations of **fine particulate matter** due to wildfire smoke from fires burning throughout the Pacific Northwest.

Smoke concentrations can vary widely across the region as winds and temperatures change, and as fire behaviour changes.

On Saturday clean marine air swept through our region resulting in a clearing of the smoke from last week. As we transitioned to the next weather pattern the winds changed to a northwest flow and by late evening on Sunday (yesterday) smoke was measured throughout the region. Elevated levels of fine particulate matter are expected to persist until there is a change in fire and/or weather conditions.

Fine particulate matter, also known as PM_{2.5}, refers to airborne solid or liquid droplets with a diameter of 2.5 micrometres (µm) or less. PM_{2.5} can easily penetrate indoors because of its small size.

Persons with chronic underlying medical conditions should postpone strenuous exercise until the advisory is lifted. Exposure is particularly a concern for infants, the elderly and those who have diabetes, and lung or heart disease. If you are experiencing symptoms such as chest discomfort, shortness of breath, coughing or wheezing, follow the advice of your healthcare provider. As we are in the summer season with warm temperatures, it is also important to stay cool and hydrated. Indoor spaces with air conditioning may offer relief from both heat and air pollution.

Communications: Health Messaging

Public health

Health topics A-Z



Communicable diseases & immunizations



Pregnancy & early childhood

Children, youth & schools



Care facility licensing



Outdoor air quality

Outdoor air pollutants can reach levels that may adversely affect our health and the health of the environment generated from a variety of sources including emissions from cars, industry, burning of wood and other fuels, agricultural activities, forest fires and more.

Wildfire smoke

Wildfire smoke is a complex mixture of different air pollutants. It causes episodes of the worst air quality we ever experience in British Columbia. People with chronic conditions such as asthma, heart disease, and other respiratory conditions are at higher risk.

Collaborative Messaging

Portable Air Cleaners for Wildfire Smoke

Wildfire smoke is a complex mixture of air pollutants, including small particles that can cause irritation and respiratory problems.

Health NGOs

BRITISH COLUMBIA

< [VISIT NATIONAL SITE](#)

BRITISH COLUMBIA LUNG ASSOCIATION

[Home](#) > [News](#) > [Latest News](#) > [Wildfires: what you should know](#)

Wildfires: what you should know

August 15th, 2018



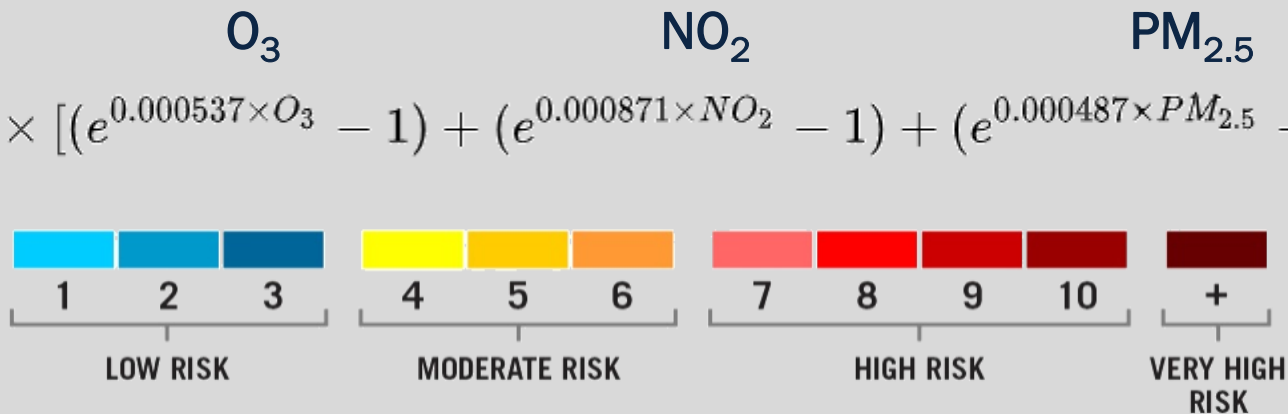
Every year, fire seasons are getting longer and more intense, leading to the worst air quality and health problems, including lung disease.

Wildfire smoke is a complex mixture of different pollutants, including particulate matter (PM2.5), carbon monoxide, nitrogen compounds, and trace amounts of heavy metals. It can be inhaled through the nose and mouth, as well as through the skin. Although wildfire smoke can be inhaled indoors through windows, doors, vents, and other openings, it is not recommended to stay indoors during wildfire smoke events.

Communications: Air Quality Health Index

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

3-hour
average



| | Low Risk | Moderate Risk | High Risk | Very High Risk |
|--------------------|----------|-------------------|-------------------|----------------|
| At Risk Population | Enjoy | Consider reducing | Reduce | Avoid |
| General Population | Ideal | No need to modify | Consider reducing | Reduce |

Communications: Challenges

- Concentrations vs Air Quality Health Index
- Advisory vs bulletin / warning / statement
- Visual air quality vs measured levels
- Keeping the media on-message
- Countering Internet misinformation
- Responding to calls to action
- The rise of small sensors / citizen science

Communications: Continuous Improvement

- Air Quality Health Index Plus
- Ongoing revision of website, media templates
- Off-season messaging and outreach
- Working with media / meteorology community
- Collaboration with cities on air quality shelters
- AirAware: Air Quality and Citizen Science
- Engagement with peer organizations

An aerial photograph of Vancouver, British Columbia, Canada. The image shows the city's dense urban landscape, including the downtown skyline with numerous skyscrapers, the harbor with several large red container cranes, and the surrounding mountains. The water of the harbor is a deep blue, and the city extends up the hillsides. A dark blue horizontal band is overlaid across the middle of the image, containing the text 'Questions?'.

Questions?



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