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Explained | What is causing large-scale wildfires in Canada?

PREMIUM

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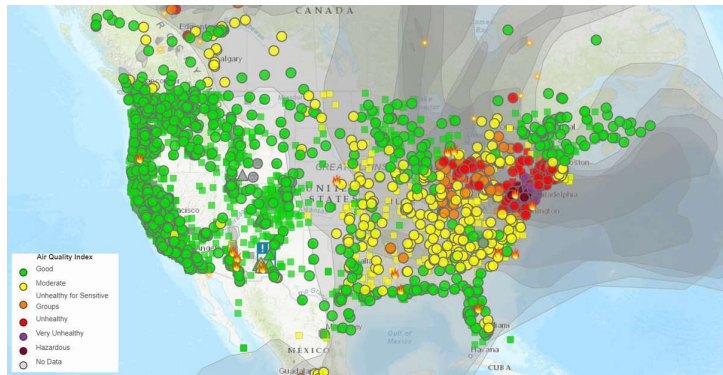


A traffic officer wears an N95 mask in New York City's Times Square amid a smoky haze from wildfires in Canada. | Photo Credit: Getty Images via AFP

The story so far: New York City's air quality is currently ranked among the worst in the world due to drifting smoke rising from wildfires in Canada. According to AirNow, areas

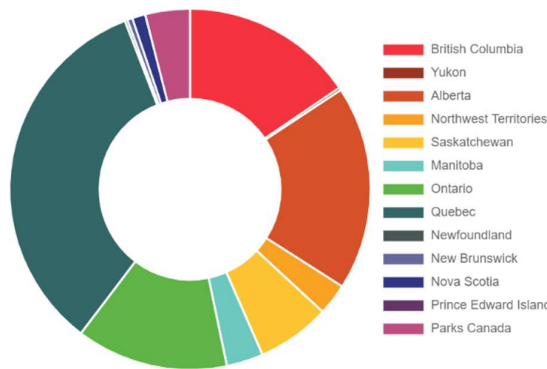


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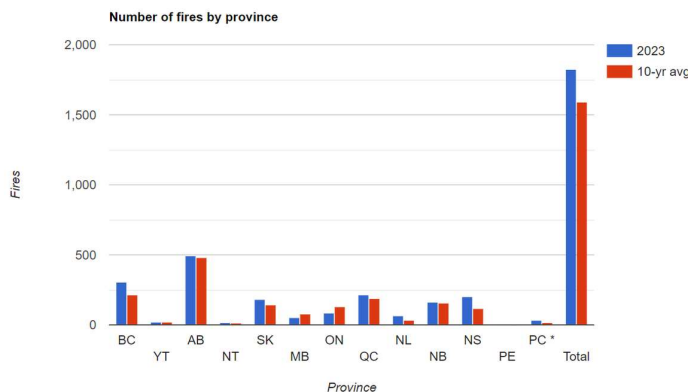


Air quality in the U.S. (as of June 8, 5.20 p.m. IST) | Photo Credit: AirNow Fire and Smoke Map

five.



Province/agency-wise distribution of active wildfires in Canada (June 8, 2023). | Photo Credit: Canadian Interagency Forest Fire Centre



According to the Canadian Interagency Forest Fire Centre, there are 426 active fires in the country as on June 8, 2023. Out of these, 232 were reportedly out of control. A major chunk of these — 144 — were reported from Quebec province alone. The organisation has also raised the national preparedness level, an indicator of wildland fire activity, to its highest level, at

What is causing the wildfires in Canada?

Wildfires in Canada’s British Columbia and Alberta province started in late April, news agency *Reuters* reported. These have now moved on to the eastern provinces of Quebec, Ontario, and Nova Scotia. Quebec is Canada’s largest province by area, and also home to most currently active wildfires. Most of these have been caused by lightning, the *Reuters* report added.

Human activities are also to be blamed for adding to the forest fires, reports have said.

According to a study published in *Nature* journal on February 10, 2023, lightning is the main precursor of natural wildfires. Laboratory experiments and field



HOWING FOR MORE THAN SOME TENS OF
milliseconds (so-called Long-Continuing-Currents, or LCC) are likely to produce fires.

According to the study, simulations suggest an increase in total global lightning and global LCC by the 2090s. The simulated globally averaged surface temperature increases by about 4 Kelvin (since Kelvin and Celsius have a linear relationship, this equals to an increase by about 4 degrees Celsius), and thus we obtain an increase in total lightning activity of 11% per Kelvin.

The estimated increase of LCC lightning over land by 47% indicates a higher risk of lightning-ignited wildfires in the future, the study says. Although the simulated relative increase of the global total lightning flash rate (43%) is similar to the relative increase of the global LCC lightning flash rates (41%), the trends are opposite in some regions including western parts of North America, North and the South of South America, parts of Central Asia, and in the Scandinavian Peninsula. Simulations suggest that in these parts, total lightning decreases, but LCC lightning increases, hence leading to an increase in wildfires.

How does lightning work?

During a storm, water droplets from warmer air and ice crystals from cooler air come together to form thunderstorm clouds. Contact between these water droplets and ice crystals produces a static electrical charge in clouds.

When opposing negative and positive charges in clouds build up, the insulating capacity of air between the charges as well as between the cloud and the ground breaks down, leading to a rapid discharge. This is what we call lightning. It can occur between opposite charges within the thunderstorm cloud, or between opposite charges in the cloud and on the ground.

Is lightning an indicator of climate change?



As global warming increases the earth's surface temperature, lightning activity is also predicted to increase.

According to American Geophysical Union's magazine *Eos*, lightning also produces nitrogen oxides. These react with other gases in the atmosphere and produce ozone, which is a strong greenhouse gas that traps earth's outgoing heat and retains it in the atmosphere, altering climate and weather patterns.

What are the other reasons behind uncontrolled wildfires in Canada?

According to *Reuters*, Atlantic Canada received low snowfall this winter, followed by an unusually dry spring. The weather of Nova Scotia province, where wildfires are not unusual but fewer than in other provinces, is influenced by the North Atlantic Ocean. Due to its proximity to the ocean, the region ordinarily has higher humidity and more moderate temperatures as compared to many other parts of the country.

This year, Nova Scotia's capital Halifax received just 120 millimetres of rain between March and May, roughly a third of the average, the *Reuters* report added. To add to the region's woes, a late-May heat wave pushed the temperature up, reaching as high as 33 degrees Celsius on Thursday.

International effort to fight wildfires in Canada


While firefighters and other disaster response officials are working towards controlling the wildfires in Canada and providing relief and rehabilitation to the affected, other countries have also announced help. U.S. President Joe Biden on Thursday announced that the country has sent more than 600 U.S. firefighters, support personnel, and firefighting assets to Canada since May. He also spoke to Canadian Prime Minister Justin Trudeau and offered additional help to control the fires, a White House statement said.

The European Commission announced that a total of 280 firefighters from France, Portugal, and Spain will be travelling to Canada to help put out the fires under the





Canada has requested to activate the [#EUCivilProtection](#) Mechanism to help put down the devastating wildfires.

 are offering the help of more than 280 firefighters.

We stand ready to provide further support.

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