









## Significance

The number and size of wildfires in North America have been increasing over the past few decades. This has been caused by increasing dry/hot conditions related to climate change, changes in land-use, and fire management practices. In the future, higher temperatures will lead to greater fire risk<sup>4</sup> and the annual burn area in the boreal forest is projected to increase, with some of the largest increases predicted in north-eastern Alberta<sup>5</sup>.

Therefore, wildfire smoke is an emerging air quality issue in Alberta and is a priority area of Alberta Environment and Parks (AEP). AEP is actively researching the impact of wildfire smoke emissions on air quality, with a recent focus on the 2016 Fort McMurray Horse River Wildfire. AEP is also evaluating and improving monitoring of wildfire smoke to effectively support air quality forecasting and reporting to the public.

## Project Contact

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## Air Quality Resources

Real-time air quality data is available from the Air Quality Health Index at [airquality.alberta.ca/map](http://airquality.alberta.ca/map).

Wildfire smoke forecasts are available from [firesmoke.ca](http://firesmoke.ca) and [weather.gc.ca/fire/smoke](http://weather.gc.ca/fire/smoke).

## Air Quality Advisories

Environment and Climate Change Canada issues Special Air Quality Statements, available at: [weather.gc.ca/warnings](http://weather.gc.ca/warnings)

Alberta Health Services may also issue air quality advisories: [albertahealthservices.ca/news/air.aspx](http://albertahealthservices.ca/news/air.aspx)

## Wildfire Smoke Research

Alberta Environment and Parks' researchers are actively involved in studies about wildfire smoke and air quality. Recent publications examine PM<sub>2.5</sub> and other air pollutants during the Horse River Wildfire in the Fort McMurray area.

Adams et al. 2019. [Satellite-derived emissions of carbon monoxide, ammonia, and nitrogen dioxide from the 2016 Horse River wildfire in the Fort McMurray area](#). *Atmospheric Chemistry and Physics*, 19, 2577-2599

Wentworth et al. 2018. [Impacts of a large boreal wild fire on ground level atmospheric concentrations of PAHs, VOCs, and ozone](#). *Atmospheric Environment*, 178, 19-30.

Landis et al. 2018. [The impact of the 2016 Fort McMurray Horse River Wildfire on ambient air pollution levels in the Athabasca Oil Sands Region, Alberta, Canada](#). *Science of the Total Environment*, 618, 1665-1676.

<sup>4</sup> Bush, E. and Lemmen, D.S., editors (2019): Canada's Changing Climate Report; Government of Canada, Ottawa, ON. 444 p., available at: [https://changingclimate.ca/site/assets/uploads/sites/2/2019/04/CCCR\\_FULLREPORT-EN-FINAL.pdf](https://changingclimate.ca/site/assets/uploads/sites/2/2019/04/CCCR_FULLREPORT-EN-FINAL.pdf)

<sup>5</sup> Boulanger, Y., Gauthier, S., & Burton, P. J. (2014). A refinement of models projecting future Canadian fire regimes using homogeneous fire regime zones. *Canadian Journal of Forest Research*, 44(4), 365-376. <https://doi.org/10.1139/cjfr-2013-0372>