

research snapshot

summarize | mobilize



Climate Change and Air Quality

What is this research about?

Climate change, sometimes described as the global warming of the atmosphere, has become one of the most urgent challenges of our time. Air quality, the level of air pollutants in a certain area, is another source of public concern. During the past few decades, many researchers have studied how air quality impacts on climate change. However, the interaction between air quality and climate change is a two-way street. In other words, climate change also has an impact on air quality. It is thought that as the climate changes, the high pressure systems in the northern US and southern Ontario will trap more and more pollution. As a result, air quality will grow poorer over time. But do climate change trends over Ontario and upwind US states significantly affect the air quality in Ontario?

What did the researcher do?

Researchers led by Professor Peter Taylor at York University set out to investigate how the climate in Ontario has changed between 1979 and 2007. They used data from the North American Regional Reanalysis (NARR), which can be found at nomads.ncdc.noaa.gov. NARR, a project of the National Centers for

What you need to know:

The climate in Ontario has changed between 1979 and 2007. Climate change can have an impact on air quality.

Environmental Prediction (NCEP) in the United States, provides long-term, high-resolution, and high-frequency climate data, 8 times daily, for North America.

Professor Taylor and his researchers looked at a number of factors: air temperature, the height of the Planet Boundary Layer (PBL), high level cloud cover, low level cloud cover, relative humidity, and total precipitation – all of which can have a large impact on air quality. The study was supported by the Ontario Ministry of the Environment through an agreement with York University.

What did the researcher find?

The researchers found that climate change, especially increasing temperatures, are

happening in Ontario. Climate change differs, however, depending on the region of Ontario and the season. It also differs across different spans of time. In short, the climate in Ontario has been changing over time, and may be having an impact on air quality.

How can you use this research?

Policymakers should be aware that climate change in Ontario is real. In fact, it has been happening for decades. More research, however, is needed on the impact of climate change on air quality in Ontario.

About the Researcher

Peter Taylor is Professor of Atmospheric Science in the Department of Earth & Space Science & Engineering at York University.

pat@yorku.ca

Citation

Li, P., Liu, J., & Taylor, P. *Troposphere Climate Change and Associated Impacts on Air Quality in Ontario. Part 1: Climate Changes As Revealed by NARR Data*. Data available online at bit.ly/OoVI9s

Keywords

Air quality, Climate change, High resolution, NCEP, NARR, Troposphere

Knowledge Mobilization at York

York's Knowledge Mobilization Unit provides services for faculty, graduate students, community and government seeking to maximize the impact of academic research and expertise on public policy, social programming, and professional practice. This summary has been supported by the Office of the Vice-President Research and Innovation at York and project funding from SSHRC and CIHR.

kmbunit@yorku.ca

www.researchimpact.ca

