



# The Canadian Urban Environmental Health Research Consortium

## Canue Metadata - Air Quality Ozone (O3)

2024-03-08

### DATA SET INFORMATION

**Dataset Code:** O3CHG\_A\_YY

**Description:**

Hourly ground-level ozone (O3) concentrations were estimated with CHRONOS (Canadian Hemispherical Regional Ozone and NOx System) model from 2002 to 2009, and with GEM-MACH (Global Environmental Multi-scale Modelling Air Quality and Chemistry) model from 2010 to 2015, by Environment and Climate Change Canada staff. Estimates incorporate ground-level observation data. Please note that Environment and Climate Change Canada (ECCC) provides data air quality data directly - see the ECCC End Use Licence.pdf file referenced above under Supporting Documentation. These datasets were used by CANUE staff to calculate values of annual mean concentration of O3, for all postal codes in Canada for each year from 2002 to 2015 (DMTI Spatial, 2015). (THESE DATA ARE ALSO AVAILABLE AS MONTHLY METRICS).

**Keywords:** o3|ground level ozone|air quality|chemical transport model

**Place Keywords:** Canada|national

### GEOSPATIAL REFERENCE

**Upper Left Corner:** 65.14N , -141.02W

**Lower Right Corner:** 41.68N , -52.62W

**Coordinate System:** GCS\_WGS84 - EPSG:4326

**Geometry Type:** POINT - Units: Decimal Degree

**Geometry Data Source:** DMTI Spatial Inc. (postal codes)

### QUALITY ASSESSMENT

**QA/QC Procedures:**

CANUE did not assess the quality of the O3 data. Users should review the supporting documentation and any recommended citations.

**Geographic Coordinate Positional Accuracy:**

These metrics are linked to the corresponding annual postal codes files for mapping and analysis purposes. Refer to the postal code metadata file in Supporting Documentation for more information.

**Vertical Positional Accuracy:** N/A

**Attribute Accuracy:** N/A

**Data Validity:** NoData = -9999 (for numeric fields) - NoData=null (for category fields) - Data insufficient to calculate value = -1111

**Associated Files:** N/A

**Data Comment:**

N/A

### DATA SOURCE

**Data Source**

Files provided by Environment and Climate Change Canada, Air Quality Research Division, under the Open Government License (open.canada.ca). DMTI Spatial Inc. postal codes 2015.

**Spatial Resolution:** Data generated with the CHRONOS model (2002 - 2009) have a resolution of 21km; data generated with the GEM-MACH model (2010 - 2015) have a resolution of 10km.

**Data Preparation Date:** 2017-10-01

**Beginning Date:** 2002

**End Date:** 2015

**Sampling Frequency of Data:** Annual

**Years Available:**

2002 - 2003 - 2004 - 2005 - 2006 - 2007 - 2008 - 2009 - 2010 - 2011 - 2012 - 2013 - 2014 - 2015

## MAINTENANCE

**Description:** N/A

**File Type:** Comma separated values(.csv)

**File Size:** Individual year files are approximately 50 to 60 MB in size

**Number of Data Files:** 14

## DATA USE CONDITIONS

### The Data User is REQUIRED:

(i) to acknowledge data sources listed under Acknowledgement(s)

(ii) cite the publication(s) listed under Recommended Citation(s) as the providers and source of these data when using them in support of research, analysis, operations, policy decision or any other undertaking including publication

(iii) complete and sign the CANUE Data Use and Sharing Agreement (available at <http://canue.ca/data/>), in which the name and signature of the researcher/analyst who takes responsibility for ensuring all conditions are met.

### Data Sharing Restrictions:

These data files are provided solely for the purposes stated in the CANUE Data Sharing and Use Agreement and should not be re-distributed for any reason. These data also contain proprietary postal code data and may only be used for the project named in the CANUE Data Sharing and Use Agreement. Data can be shared only within a project team for the exclusive purposes of teaching, academic research and publishing, and/or planning of educational services in accordance to DMTI End User Agreement associated with the Spatial Mapping Academic Research Tools (SMART) Program.

### Include the following references in any publications resulting from the use of these data:

[1] Environment and Climate Change Canada, 2017. Air Quality Research Division, Toronto, Canada. Data files: CHRONOS\_Ground-Level\_O3\_NA\_2002.nc to CHRONOS\_Ground-Level\_O3\_NA\_2009.nc inclusive, generated July 2017.

[2] Environment and Climate Change Canada, 2017. Air Quality Research Division, Toronto, Canada. Data files: GEMMACH\_Ground-Level\_O3\_NA\_2010.nc to GEMMACH\_Ground-Level\_O3\_NA\_2015.nc inclusive, generated July 2017.

[3] Robichaud A, Ménard R. Multi-year objective analyses of warm season ground-level ozone and PM 2.5 over North America using real-time observations and Canadian operational air quality models. Atmospheric Chemistry and Physics. 2014 Feb 17;14(4):1769-800.

[4] Robichaud A, Ménard R, Zaitseva Y, Anselmo D. Multi-pollutant surface objective analyses and mapping of air quality health index over North America. Air Quality, Atmosphere

### Include the following acknowledgements:

1. Calculated ozone metrics indexed to DMTI Spatial Inc. postal codes were provided by CANUE (Canadian Urban Environmental Health Research Consortium).

## SUPPORT DOCUMENTATION

1 - Environment and Climate Change Canada End User Licence (<http://canue.ca/wp-content/uploads/2017/11/ECCC-End-Use-Licence.pdf>)

2 - Data Completeness report ([https://canue.ca/wp-content/uploads/2018/11/O3\\_Data\\_Completeness.pdf](https://canue.ca/wp-content/uploads/2018/11/O3_Data_Completeness.pdf))

3 - Postal Code metadata (<https://canue.ca/wp-content/uploads/2019/09/CANUE-Browser-Metadata-PostalCodes.pdf>)

## VARIABLES

O3CHGY\_01 - O3 Annual average (ppb)

Annual average with missing data threshold applied

O3CHGY\_02 - O3 Warm Season (May-Sept) Average (ppb)

Warm season (May-Sept) average

O3CHGY\_03 - O3 Annual Average of the Highest Rolling 8-Hour Average Per Day (ppb)

Annual average of the highest rolling 8-hour average per day

O3CHGY\_04 - O3 Warm Season (May-Sept) Average of the Highest Rolling 8-Hour Average Per Day (ppb)

Warm season (May-Sept) average of the highest rolling 8-hour average per day

## SUPPORT CONTACT

**Data Set Support Contact:** [info@canue.ca](mailto:info@canue.ca)

**Affiliated Organization:**

CANUE (Canadian Urban Environmental Health Research Consortium)

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## DATA SOURCE CONTACT

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