



## Canadian Urban Environmental Health Research Consortium

CANUE Metadata PM2.5 DAL  
2018-01-25

| DATA SET INFORMATION          |  |
|-------------------------------|--|
| Data Set Title:               | <b>Fine Particulate Matter (PM2.5) North American Estimates - Atmospheric Composition Analysis Group at Dalhousie University</b>   |
| Description:                  | <p>Ground-level fine particulate matter (PM2.5) over North America was estimated by combining a 0.01 degree x 0.01 degree resolution optimal estimate-based Aerosol Optical Depth (AOD) retrieval from the NASA MODIS instrument with aerosol vertical profile and scattering properties simulated by the GEOS-Chem chemical transport model. A geographically weighted regression (GWR) that incorporates ground-based observations to adjust for any residual bias in the satellite-derived PM2.5 estimates was then applied. Values prior to 2004 apply the temporal variation of Boys et al., to the GWR-adjusted period.</p> <p>Data are provided at 3-year running averages, labelled as the last year included (i.e., average of 1998, 1999 and 2000 is labelled as 2000)</p> <p>These annual 0.01 x 0.01 degree gridded surface datasets were used by CANUE staff to impute values of annual mean concentration of PM2.5, for all postal codes in Canada for each year from 2000 to 2012 (DMTI Spatial, 2015).</p> |
| Theme Keywords:               | PM2.5, fine particulate matter, air quality, satellite monitoring, chemical transport model, gridded   |
| Place Keywords:               | Canada national  |
| Data preparation date:        | 2017-10-01   |
| File Names                    | PM25DAL_A_YY.csv, where YY is the last two digits of a specific year   |
| File Type:                    | Comma separated values (.csv)  |
| Beginning Date:               | 2000   |
| End Date:                     | 2012   |
| Sampling Frequency of Data:   | Annual   |
| Number of Data Files:         | 13   |
| File Size                     | Individual files range from 8 MB to 9 MB in size, all files total 150 MB in size.  |
| Data Sources:                 | North American Estimates with Ground-Monitor Based Adjustment (V4.NA.01) files were downloaded from <a href="http://fizz.phys.dal.ca/~atmos/martin/?page_id=140">http://fizz.phys.dal.ca/~atmos/martin/?page_id=140</a>  |
| Spatial Resolution:           | 0.01° x 0.01° (~ 1 km)   |
| Detection Range or Limit:     | N/A  |
| Log of Changes:               | 2018-01-25: Field name PM25DALYY_PCODE changed to POSTALCODEYY.  |
|                               | 2018-01-25: Added attribute PM25DALYY_02   |
|                               | 2018-01-25: Replaced blanks with -9999 for numeric fields.   |
|                               | 2018-01-25: Changed metadata document and file names from PM25 ACAG to PM25 DAL  |
| Maintenance Description:      | Indices for subsequent years will be added when available.   |
| GEOSPATIAL REFERENCE          |  |
| Geographic Coverage           | Canada   |
| West Bounding Coordinate      | N/A  |
| East Bounding Coordinate      | N/A  |
| North Bounding Coordinate     | N/A  |
| South Bounding Coordinate     | N/A  |
| Geometry Type:                | N/A  |
| Point Data Source:            | N/A  |
| Coordinates have Z values:    | N/A  |
| Geographic Coordinate System: | N/A  |
| Datum                         | N/A  |
| Unit:                         | N/A  |



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### QUALITY ASSESSMENT

|  |  |
|--|--|
| QA/QC procedures:                          | CANUE did not assess the quality of the PM2.5 data. Users should review the documentation provided in the recommended citation, and in the supporting documentation listed below.  |
| Geographic Coordinate Positional Accuracy: | These metrics can be linked to the corresponding annual postal codes files for mapping and analysis purposes, using the 6-digit postal code as a unique identifier in both files. Refer to the following metadata file for additional information on opportunities for assessing the spatial representativeness of postal code locations when these metrics are linked:<br><br><a href="#">CANUE Metadata Postal Codes.pdf</a> |
| Vertical Positional Accuracy:              | N/A  |
| Attribute Accuracy:                        | N/A  |
| Data Validity :                            | NoData = -9999 for numeric fields.   |
| Associated Files:                          | N/A  |
| Data Comment:                              | N/A  |

### SUPPORTING DOCUMENTATION

|                           |   |
|---------------------------|---|
| Additional documentation: | Please visit <a href="http://fizz.phys.dal.ca/~atmos/martin/?page_id=140">http://fizz.phys.dal.ca/~atmos/martin/?page_id=140</a> for additional information |
|---------------------------|---|

### DATA DICTIONARY

| Field Name (YY = last two digits of specific year of data) | Description   | Data Type |
|--|---|-----------|
| POSTALCODEYY   | 6-digital postal code with no space between the FSA and LDU. (i.e. L1R2H2).                               | Text      |
| PM25DALYY_01   | Annual average PM2.5 concentration in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )             | Numeric   |
| PM25DALYY_02   | Annual average PM2.5 concentration in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) within 10km | Numeric   |

### DATA SET CONTACTS

|                               |  |
|-------------------------------|--|
| Data Support:                 | Contact CANUE via the email below.   |
| Email:                        | <a href="mailto:info@canue.ca">info@canue.ca</a>   |
| Affiliated Organization:      | CANUE (Canadian Urban Environmental Health Research Consortium)<br>Dalla Lana School of Public Health, University of Toronto |
| Website:                      | <a href="http://www.canue.ca">www.canue.ca</a>   |
| City:                         | Toronto  |
| Prov/State:                   | Ontario  |
| Country:                      | Canada   |
| Exposure Data Source Contact: | Principal Investigator   |
| Email:                        | <a href="mailto:Aaron.van.Donkelaar@dal.ca">Aaron.van.Donkelaar@dal.ca</a>   |
| Phone:                        | 902-494-1820   |
| First Name:                   | Aaron  |
| Last Name:                    | van Donkerlaar   |
| Affiliated Organization:      | Department of Physics and Atmospheric Science, Dalhousie University  |
| City:                         | Halifax  |
| Prov/State:                   | Nova Scotia  |
| Country:                      | Canada   |



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### DATA USE CONDITIONS

|                                   |  |
|-----------------------------------|--|
| <p>Conditions of Use:</p>         | <p>The Data User is REQUIRED:</p> <ul style="list-style-type: none"> <li>(i) to acknowledge data sources listed under Acknowledgement(s);</li> <li>(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; and</li> <li>(iii) complete and sign the CANUE Data Use and Sharing Agreement (available at <a href="http://canue.ca/data/">http://canue.ca/data/</a>), in which the name and signature of the researcher/analyst who takes responsibility for ensuring all conditions are met.</li> </ul>  |
| <p>Data Sharing Restrictions:</p> | <p>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.</p> <p>Data can be shared only within a project team, with those members who have access to a Research Data Centre (RDC) or are affiliated with an academic institution 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.</p>  |
| <p>Required Citation</p>          | <p>Include the following references in any publications resulting from the use of these data:</p> <ul style="list-style-type: none"> <li>[1] van Donkelaar, A., R. V. Martin, R. J. D. Spurr and R. T. Burnett, High-resolution satellite-derived PM2.5 from optimal estimation and geographically weighted regression over North America, Environ. Sci. and Tech., doi 10.1021/acs.est.5b02076 [Link]</li> <li>[2] Boys, B.L., Martin, R.V., van Donkelaar, A., MacDonell, R., Hsu, N.C., Cooper, M.J., Yantosca, R.M., Lu, Z., Streets, D.G., Zhang, Q., Wang, S., Fifteen-year global time series of satellite-derived fine particulate matter, Environ. Sci. Technol, 10.1021/es502113p, 2014.</li> <li>[3] CanMap Postal Code Suite v2015.3. [computer file] Markham: DMTI Spatial Inc., 2015.</li> </ul> |
| <p>Acknowledgment:</p>            | <p>Include the following acknowledgements:</p> <ul style="list-style-type: none"> <li>1. PM2.5 metrics, indexed to DMTI Spatial Inc. postal codes, were provided by CANUE (Canadian Urban Environmental Health Research Consortium);</li> <li>2. PM2.5 data were provided by the Atmospheric Composition Analysis Group at Dalhousie University, Halifax, Canada (<a href="http://fizz.phys.dal.ca/~atmos/martin/?page_id=140">http://fizz.phys.dal.ca/~atmos/martin/?page_id=140</a>)</li> </ul>  |