The Canadian Urban Environmental Health Research Consortium

Canue Metadata - Air Quality Fine Particulate Matter (PM2.5 v3)

2021-02-24

DATA SET INFORMATION

Dataset Code: PM25DALC_A_YY

Description:

Ground-level fine particulate matter (PM2.5) total and compositional mass concentrations over North America were estimated by combining Aerosol Optical Depth (AOD) retrievals from the NASA MODIS, MISR, and SeaWIFS instruments with the GEOS-Chem chemical transport model, and subsequently calibrated to regional ground-based observations of both total and compositional mass using Geographically Weighted Regression (GWR) as detailed in the below reference for V4.NA.02. |V4.NA.03 further modified the V4.NA.02 GWR method with additional developments as part of the MAPLE (Mortality–Air Pollution Associations in Low-Exposure Environments) project, and uses V4.GL.03 PM2.5 estimates as geophysical input. The GWR method of individual components remains unchanged from V4.NA.02, but are provided are percentages to ensure mass closure and recommended to be applied to the V4.NA.03 total PM2.5. |These annual 0.01 x 0.01 degree gridded surface datasets were used by CANUE staff to assign values of annual mean concentration of PM2.5, for all postal codes in Canada for each year from 2000 to 2018.

Keywords: pm2.5|fine particulate matter|air quality|satellite monitoring|chemical transport model|gridded surface|ground monitoring

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 PM2.5 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:

Attribute Accuracy:

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

Associated Files:

Data Comment:

DATA SOURCE

Data Source

North American Estimates with Ground-Monitor Based Adjustment (V4.NA.03), DMTI Spatial Inc. postal codes. See Supporting Documentation.

Spatial Resolution: 0.01° × 0.01°(~ 1 km)

Data Preparation Date: 2021-02-15

Beginning Date: 2000

End Date: 2018

Sampling Frequency of Data: Annual

Years Available:
2000 - 2001 - 2002 - 2003 - 2004 - 2005 - 2006 - 2007 - 2008 - 2009 - 2010 - 2011 - 2012 - 2013 - 2014 - 2015 - 2016 - 2017 - 2018

MAINTENANCE

Description:

File Type: Comma separated values(.csv)

File Size:

Number of Data Files: 19

DATA USE CONDITIONS

The Data User is REQUIRED:
(i) to acknowledge data sources listed under Acknowledgement(s)
(ii) cite the publication(s) listed under References 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, 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] Hammer, M. S.; van Donkelaar, A.; Li, C.; Lyapustin, A.; Sayer, A. M.; Hsu, N. C.; Levy, R. C.; Garay, M. J.; Kalashnikova, O. V.; Kahn, R. A.; Brauer, M.; Apte, J. S.; Henze, D. K.; Zhang, L.; Zhang, Q.; Ford, B.; Pierce, J. R.; and Martin, R. V., Global Estimates and Long-Term Trends of Fine Particulate Matter Concentrations (1998-2018)., Environ. Sci. Technol, doi: 10.1021/acs.est.0c01764, 2020.
[2] CanMap Postal Code Suite (various years). [computer files] Markham, ON : DMTI Spatial Inc.

Include the following acknowledgements:
PM2.5 metrics, indexed to DMTI Spatial Inc. postal codes , were provided by CANUE (Canadian Urban Environmental Health Research Consortium).

SUPPORT DOCUMENTATION

1 - Source data link (http://fizz.phys.dal.ca/~atmos/martin/?page_id=140)

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

VARIABLES

PM25DALYY_01 - Annual average PM2.5 Concentration (ug/m3)

Annual average PM2.5 concentration in micrograms per cubic meter (ug/m3)

SUPPORT CONTACT

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