



Canadian Urban Environmental Health Research Consortium

CANUE Metadata Monthly NO₂ LUR
2018-03-05

DATA SET INFORMATION

Data Set Title:	National Nitrogen Dioxide (NO₂) regression-based monthly concentration estimate
Description:	<p>The national NO₂ (ppb) land use regression model was developed from 2006 national air pollution surveillance (NAPS) monitoring data, following methods reported in Hystad et al. (2011) (see Required Citation below). Background and regional components were estimated in the LUR using satellite-derived NO₂ estimates and geographic variables, while local scale variation was modeled using deterministic gradients. The final LUR model includes: road length within 10 km; 2005-2011 satellite NO₂ estimates; area of industrial land use within 2 km; and summer rainfall. This model explained 73% of the variation in NAPS measurements with a root mean square error (RMSE) of 2.9 ppb. Local scale variation was modeled using deterministic gradient from the literature and kernel density measures and added to the final LUR model results to produce the final NO₂ estimates in this dataset. Dr. Perry Hystad (Oregon State University) produced the final estimates for all unique locations of DMTI Spatial Inc. single link postal codes active at any time between 1983 and 2015.</p> <p>Annual measured NO₂ levels from National Air Pollution Surveillance monitoring stations for 24 Census Divisions have been used to produce the estimated annual average levels for 1984 through 2012. (See Supplementary documentation below for more details). For each year, the annual estimate was adjusted using ratios of measured monthly data over measured annual average from NAPS stations across Canada (see NO₂ Monthly Adjustment Supplementary Methods Document below).</p>
Theme Keywords:	NO ₂ , nitrogen dioxide, land use regression, air quality
Place Keywords:	Canada, national, monthly
Data preparation date:	2018-11-15
File Names:	NO2LUR_M_YY.csv
File Type:	Comma separated values (.csv)
Beginning Date:	1984
End Date:	2012
Sampling Frequency of Data:	Circa 2006 with annual monitoring data
Number of Data Files:	29
File Size:	~ 100 MB each, 2.5 GB in total
Data Sources:	
Spatial Resolution:	Individual 6-digit postal code locations
Detection Range or Limit:	N/A
Log of Changes:	N/A
Maintenance Description:	
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 original LUR NO ₂ estimates 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: CANUE Metadata Postal Codes.pdf
Vertical Positional Accuracy:	N/A
Attribute Accuracy:	N/A
Data Validity :	N/A
Associated Files:	N/A
Data Comment:	N/A
Data Comment:	N/A

SUPPORTING DOCUMENTATION

Additional documentation:	Hystad Canada NO2 LUR description.pdf
	In preparation: NO2 Monthly Supplementary Methods Documentation.pdf (contact info@canue.ca for more information)
	NO2 Supplementary Methods Documentation.pdf

DATA DICTIONARY

Field Name:	Description	Data Type
POSTALCODEYY	6 digit postal code with no space between the FSA and LDU. (i.e. L1R2H2).	Text
NO2LUR_MMM_YY	Average monthly concentration (ppb) where MMM indicates month and YY indicates year - note there are 12 columns of data, one for each month.	Numeric

DATA SET CONTACTS

Data Support:	Contact CANUE via the email below.
Email:	info@canue.ca
Affiliated Organization:	CANUE (Canadian Urban Environmental Health Research Consortium) Dalla Lana School of Public Health, University of Toronto
Website:	www.canue.ca
City:	Toronto
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Country:	Canada
Exposure Data Source Contact:	Dr. Perry Hystad
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Phone:	
First Name:	Perry
Last Name:	Hystad
Affiliated Organization:	Oregon State University
City:	Corvallis
Prov/State:	Oregon
Country:	USA



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DATA USE CONDITIONS

Conditions of Use:	<p>The Data User is REQUIRED:</p> <ul style="list-style-type: none"> (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; and (iii) complete and sign the CANUE Data Use and Sharing Agreement (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:	<p>These data files are provided solely for the purposes stated in the CANUE Data Use and Sharing 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 Use and Sharing Agreement.</p> <p>Data can be shared 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.</p>
Required Citation:	<p>Include the following references in any publications resulting from the use of these data:</p> <ul style="list-style-type: none"> [1] Hystad P, Setton E, Cervantes A, Poplawski K, Deschenes S, Brauer M, et al. 2011. Creating National Air Pollution Models for Population Exposure Assessment in Canada. <i>Environ. Health Perspect.</i> 119:1123–1129; doi:10.1289/ehp.1002976. [2] Setton E, Shooshtari M. 2018. NO₂ Monthly Supplementary Methods Documentation (please contact info@canue.ca for complete citation). [3] CanMap Postal Code Suite v2015.3. [computer file] Markham: DMTI Spatial Inc., 2015.
Acknowledgment:	<p>Include the following acknowledgements:</p> <p>Monthly estimates indexed to DMTI Spatial Inc. postal codes were provided by CANUE (Canadian Urban Environmental Health Research Consortium)</p>