



Canadian Urban Environmental Health Research Consortium

**CANUE Metadata NDVI MODIS
2018-01-25**

DATA SET INFORMATION

Data Set Title:	Normalized Difference Vegetation Index (NDVI) MODIS Time Series
Description:	<p>Normalized difference vegetation index (NDVI) data from the Moderate Resolution Imaging Spectroradiometer (MODIS) onboard the TERRA satellites were accessed via Google Earth Engine (https://explorer.earthengine.google.com/#detail/MODIS%2F006%2FMOD13Q1). These NDVI data are provided as 16-Day composites at 250 m spatial resolution for all of Canada as far back as 2000. The MODIS NDVI product is computed from atmospherically corrected surface reflectances that have been masked for water, clouds, and aerosols .</p> <p>CANUE staff created annual and growing season composites from the 16-day day, and exported the results within the bounding coordinates -140 to -52 degrees longitude and 41 to 60 degrees latitude. These were then used to calculate annual and growing season (defined as May 1st through August 31st) metrics for all 6-digit DMTI Spatial single link postal code locations in Canada, and for surrounding areas within 500 m and 1 km.</p>
Theme Keywords:	Greenness, MODIS Terra, NDVI, satellite monitoring, normalized difference vegetation index, annual, growing season
Place Keywords:	Canada national
Data preparation date:	2017-08-01
File Names	GRMOD_AMN_YY.csv (annual mean NDVI); GRMOD_AMX_YY.csv (annual maximum NDVI); GRMOD_GM
File Type:	Comma separated values (.csv)
Beginning Date:	2000 (2004-02-04)
End Date:	2015
Sampling Frequency of Data:	Annual
Number of Data Files:	16 files each for annual mean NDVI, annual maximum NDVI, annual growing season mean NDVI, and annual growing season maximum NDVI.
File Size	Individual year files range from 54 MB to 77 MB in size, all 16 files for each metric are between 1 and 1.2 GB in size, all files for all metrics total 4.2 GB in size.
Data Sources:	See Data Description and Supporting Documentation
Spatial Resolution:	250 metres
Detection Range or Limit:	-1 to +1
Log of Changes:	2018-01-25: Field Name. GRMODYY_PC changed to POSTALCODEYY 2018-01-25: Changed Nan and -inf to -9999 to indicate no data
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



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Unit: N/A



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QUALITY ASSESSMENT

QA/QC procedures:	CANUE did not assess the quality of the MODIS 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 :	NoData = -9999 for numeric fields
Associated Files:	N/A
Data Comment:	Maximum NDVI values of +1 may indicate residual cloud contamination or other image anomalies. Interannual anomalies in NDVI values may be reduced through the use of temporal averaging.

SUPPORTING DOCUMENTATION

Additional documentation:	<p>Additional technical and supporting publications:</p> <p>[1] LP DAAC, Land Processes Distributed Active Archive Center. https://lpdaac.usgs.gov/dataset_discovery/modis/modis_products_table/mod13q1. Accessed, October 2, 2017.</p> <p>[2] Google Earth Engine Explorer. MOD13Q1.005 Vegetation Indices 16-Day Global 250m. https://explorer.earthengine.google.com/#detail/MODIS%2FMOD13Q1. Accessed, October 2, 2017.</p>
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DATA DICTIONARY

Field Name (YY = last two digits of specific year of data)	Description	Data Type
GRMOD_AMN_YY.csv files		
POSTALCODEYY	6-digital postal code with no space between the FSA and LDU. (i.e. L1R2H2)	Text
GRMODYY_01	Annual mean NDVI at postal code (range -1 to +1)	Numeric
GRMODYY_02	Mean of annual mean NDVI within 500 m (range -1 to +1)	Numeric
GRMODYY_03	Mean of annual mean NDVI within 1000 m (range -1 to +1)	Numeric
GRMODYY_04	Maximum of annual mean NDVI within 500 m (range -1 to +1)	Numeric
GRMODYY_05	Maximum of annual mean NDVI within 1000 m (range -1 to +1)	Numeric
GRMOD_AMX_YY.csv files		
POSTALCODEYY	6-digital postal code with no space between the FSA and LDU. (i.e. L1R2H2)	Text
GRMODYY_06	Annual maximum NDVI at postal code (range -1 to +1)	Numeric
GRMODYY_07	Mean of annual maximum NDVI within 500 m (range -1 to +1)	Numeric
GRMODYY_08	Mean of annual maximum NDVI within 1000 m (range -1 to +1)	Numeric
GRMODYY_09	Maximum of annual maximum NDIV within 500 m (range -1 to +1)	Numeric
GRMODYY_10	Maximum of annual maximum NDIV within 1000 m (range -1 to +1)	Numeric



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GRMOD_GMN_YY.csv		
POSTALCODEYY	6-digital postal code with no space between the FSA and LDU. (i.e. L1R2H2)	Text
GRMODYY_11	Growing season mean NDVI at postal code (range -1 to +1)	Numeric
GRMODYY_12	Mean of growing season mean NDVI within 500 m (range -1 to +1)	Numeric
GRMODYY_13	Mean of growing season mean NDVI within 1000 m (range -1 to +1)	Numeric
GRMODYY_14	Maximum of growing season mean NDVI within 500 m (range -1 to +1)	Numeric
GRMODYY_15	Maximum of growing season mean NDVI within 1000 m (range -1 to +1)	Numeric
GRMOD_GMX_YY.csv		
POSTALCODEYY	6-digital postal code with no space between the FSA and LDU. (i.e. L1R2H2)	Text
GRMODYY_16	Growing season maximum NDVI at postal code (range -1 to +1)	Numeric
GRMODYY_17	Mean of growing season maximum NDVI within 500 m (range -1 to +1)	Numeric
GRMODYY_18	Mean of growing season maximum NDVI within 1000 m (range -1 to +1)	Numeric
GRMODYY_19	Maximum of growing season maximum NDVI within 500 m (range -1 to +1)	Numeric
GRMODYY_20	Maximum of growing season maximum NDVI within 1000 m (range -1 to +1)	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	
Prov/State:	Ontario	
Country:	Canada	
Exposure Data Source Contact:	For questions relating to MODIS data in general:	
Email:	custserv@usgs.gov	
Phone:	800-252-4547	
First Name:	N/A	
Last Name:	N/A	
Affiliated Organization:	Department of the Interior, U.S. Geological Survey (USGS)	
City:	Sioux Falls	
Prov/State:	South Dakota	
Country:	USA	



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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"> (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 (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.
<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"> [1] Gorelick, N., Hancher, M., Dixon, M., Ilyushchenko, S., Thau, D., & Moore, R. (2017). Google Earth Engine: Planetary-scale geospatial analysis for everyone. <i>Remote Sensing of Environment</i>. [2] MOD13Q1 Vegetation Indices 16-Day L3 Global 250m data. Land Processes Distributed Active Archive Center (LP DAAC), U.S. Geological Survey (https://lpdaac.usgs.gov/dataset_discovery/modis/modis_products_table/mod13q1) [3] CanMap Postal Code Suite v2015.3. [computer file] Markham: DMTI Spatial Inc., 2015.
<p>Acknowledgment:</p>	<p>Include the following acknowledgements:</p> <ul style="list-style-type: none"> 1. NDVI metrics, indexed to DMTI Spatial Inc. postal codes, were provided by CANUE (Canadian Urban Environmental Health Research Consortium); 2. NDVI data were provided by the Land Processes Distributed Active Archive Center (LP DAAC), U.S. Geological Survey via Google Earth Engine.