



# The Canadian Urban Environmental Health Research Consortium

## Canue Metadata - Greenness Landsat - Annual

2026-02-25

### DATA SET INFORMATION

**Dataset Code:** GRLAN\_AMN\_YY

**Description:**

Top of Atmosphere (TOA) reflectance data in bands from the USGS Landsat 5 and Landsat 8 satellites were accessed via Google Earth Engine. CANUE staff used Google Earth Engine functions to create cloud free annual composites, and mask water features, then export the resulting band data. NDVI indices were calculated as  $(\text{band 4} - \text{Band 3}) / (\text{Band 4} + \text{Band 3})$  for Landsat 5 data, and as  $(\text{band 5} - \text{band 4}) / (\text{band 5} + \text{Band 4})$  for Landsat 8 data. These composites are created from all the scenes in each annual period beginning from the first day of the year and continuing to the last day of the year. No data were available for 2012, due to decommissioning of Landsat 5 in 2011 prior to the start of Landsat 8 in 2013. No cross-calibration between the sensors was performed, please be aware there may be small bias differences between NDVI values calculated using Landsat 5 and Landsat 8. Final NDVI metrics were linked to all 6-digit DMTI Spatial single link postal code locations in Canada, and for surrounding areas within 100m, 250m, 500m, and 1km.

**Keywords:** greenness|landsat|ndvi|satellite monitoring|normalized difference vegetation index|annual

**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 Landsat data. Users should review the documentation provided in the recommended citation, and in the supporting documentation listed.

**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:**

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.

### DATA SOURCE

**Data Source**

LandSat 5 and 8, accessed via Google Earth Engine, July 2017; DMTI Spatial Inc (postal codes). See supporting documentation.

**Spatial Resolution:** 30 metres

**Data Preparation Date:** 2017-08-01

**Beginning Date:** 1984

**End Date:** 2019

**Sampling Frequency of Data:** Annual (except 2012)

**Years Available:**

1984 - 1985 - 1986 - 1987 - 1988 - 1989 - 1990 - 1991 - 1992 - 1993 - 1994 - 1995 - 1996 - 1997 - 1998 - 1999 - 2000 - 2001 - 2002 - 2003 - 2004 - 2005 - 2006 - 2007 - 2008 - 2009 - 2010 - 2011 - 2013 - 2014 - 2015 - 2016 - 2017 - 2018 - 2019

## MAINTENANCE

**Description:** N/A

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

**File Size:** Individual year files range from 47 MB to 70 MB in size

**Number of Data Files:** 35

## 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] Gorelick, N., Hancher, M., Dixon, M., Ilyushchenko, S., Thau, D., Moore, R. (2017). Google Earth Engine: Planetary-scale geospatial analysis for everyone. Remote Sensing of Environment.
- [2] USGS Landsat 5 TM TOA Reflectance (Orthorectified), 1984 to 2011, accessed July 2017 from [https://explorer.earthengine.google.com/detail/LANDSAT/LT5\\_L1T\\_TOA](https://explorer.earthengine.google.com/detail/LANDSAT/LT5_L1T_TOA).
- [3] USGS Landsat 8 TOA Reflectance (Orthorectified), 2013 to 2017, accessed July 2017 from [https://explorer.earthengine.google.com/detail/LANDSAT/LC8\\_L1T\\_TOA](https://explorer.earthengine.google.com/detail/LANDSAT/LC8_L1T_TOA).
- [4] Landsat 5 TM Annual Greenest-Pixel TOA Reflectance Composite, 1984 to 2012, accessed July 2017 from [https://explorer.earthengine.google.com/detail/LANDSAT/LT5\\_L1T\\_ANNUAL\\_GREENEST\\_TOA](https://explorer.earthengine.google.com/detail/LANDSAT/LT5_L1T_ANNUAL_GREENEST_TOA).
- [5] Landsat 8 Annual Greenest-Pixel TOA Reflectance Composite, 2013 to 2015, accessed July 2017 from [https://explorer.earthengine.google.com/detail/LANDSAT/LC8\\_L1T\\_ANNUAL\\_GREENEST\\_TOA](https://explorer.earthengine.google.com/detail/LANDSAT/LC8_L1T_ANNUAL_GREENEST_TOA).
- [6] CanMap Postal Code Suite v2015.3. [computer file] Markham: DMTI Spatial Inc., 2015.

**Include the following acknowledgements:**

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

## SUPPORT DOCUMENTATION

- 1 - Landsat 5 (<https://landsat.usgs.gov/landsat-5>)
- 2 - LANDSAT 8 (L8) Data Users Handbook Version 2.0 March 29, Department of the Interior, U.S. Geological Survey. (<https://landsat.usgs.gov/landsat-8-l8-data-users-handbook>)
- 3 - Robinson, N.P.; Allred, B.W.; Jones, M.O.; Moreno, A.; Kimball, J.S.; Naugle, D.E.; Erickson, T.A.; Richardson, A.D. A Dynamic Landsat Derived Normalized Difference Vegetation Index (NDVI) Product for the Conterminous United States. Remote Sensing. 2017, 9, 863. ()
- 4 - Gyanesh Chander, Brian L. Markham, Dennis L. Helder. Summary of current radiometric calibration coefficients for Landsat MSS, TM, ETM+, and EO-1 ALI sensors, Remote Sensing of Environment, Volume 113, Issue 5, 2009, Pages 893-903. ()
- 5 - Google Earth Engine - Landsat 5 ([https://explorer.earthengine.google.com/#detail/LANDSAT/LT5\\_L1T\\_TOA](https://explorer.earthengine.google.com/#detail/LANDSAT/LT5_L1T_TOA))
- 6 - Google Earth Engine - Landsat 8 ([https://explorer.earthengine.google.com/#detail/LANDSAT/LC8\\_L1T\\_TOA](https://explorer.earthengine.google.com/#detail/LANDSAT/LC8_L1T_TOA))
- 7 - Google Earth Engine - Annual Greenest Landsat 5 ([https://explorer.earthengine.google.com/#detail/LANDSAT/LT5\\_L1T\\_ANNUAL\\_GREENEST\\_TOA](https://explorer.earthengine.google.com/#detail/LANDSAT/LT5_L1T_ANNUAL_GREENEST_TOA))
- 8 - Google Earth Engine - Annual Greenest Landsat 8 ([https://explorer.earthengine.google.com/#search/LANDSAT/LC8\\_L1T\\_ANNUAL\\_GREENEST\\_TOA](https://explorer.earthengine.google.com/#search/LANDSAT/LC8_L1T_ANNUAL_GREENEST_TOA))
- 9 - Postal Code metadata (<https://canuedata.ca/docs/CANUE-Browser-Metadata-PostalCodes.pdf>)

## VARIABLES

GRLANYY\_01 - Annual Mean Value at Postal Code

Annual mean NDVI at postal code (range -1 to 1)

GRLANYY\_02 - Annual Mean of Means 100m

Mean of annual mean NDVI within 100 m (range -1 to 1)

GRLANYY\_03 - Annual Mean of Means 250m

Mean of annual mean NDVI within 250 m (range -1 to 1)

GRLANYY\_04 - Annual Mean of Means 500m

Mean of annual mean NDVI within 500 m (range -1 to 1)

GRLANYY\_05 - Annual Mean of Means 1000m

Mean of annual mean NDVI within 1000 m (range -1 to 1)

GRLANYY\_06 - Annual Max of Means 100m

Highest single value of all annual means within 100 m (range -1 to 1)

GRLANYY\_07 - Annual Max of Means 250m

Highest single value of all annual means within 250 m (range -1 to 1)

GRLANYY\_08 - Annual Max of Means 500m

Highest single value of all annual means within 500 m (range -1 to 1)

GRLANYY\_09 - Annual Max of Means 1000m

Highest single value of all annual means within 1000 m (range -1 to 1)

## SUPPORT CONTACT

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

**Affiliated Organization:**

CANUE (Canadian Urban Environmental Health Research Consortium)

Dalla Lana School of Public Health, University of Toronto

**WebSite:** <https://www.canue.ca>

**Toronto - Ontario - Canada**

## DATA SOURCE CONTACT

**Data Set Support Contact:** For questions relating to LandSat data in general

**Email:** [custserv@usgs.gov](mailto:custserv@usgs.gov)

**Affiliated Organization:**

Department of the Interior, U.S. Geological Survey (USGS)

**Sioux Falls - South Dakota - USA**