

Metadata Input Form

(* Mandatory fields)

Data Identification Information (basic information about the data set)

Please use this template and save in your files as a backup of your metadata. Simply copy/paste information onto website.

Click on grey rectangles to type text

* Title of data (e.g. climate data in northern Québec):

CANDAC/PEARL DataSet - Ozone, NO₂, BrO, and OCIO Measured with the University of Toronto UT-GBS UV-Visible Ground-Based Spectrometer

* How should the data be cited (as unpublished data or a journal reference)?

Fraser, A., C. Adams, et al., The Polar Environment Atmospheric Research Laboratory UV-Visible Ground-Based Spectrometer: First Measurements of O₃, NO₂, BrO, and OCIO Columns, Journal of Quantitative Spectroscopy and Radiative Transfer, DOI.10.1016/j.jqsrt.2009.02.034, 2009.

Fraser, A., F. Goutail, et al., Intercomparison of UV-visible measurements of ozone and NO₂ during the Canadian Arctic ACE validation campaigns: 2004-2006, Atmospheric Chemistry and Physics 8: 1763-1788, 2008.

Fraser, A., Arctic and Midlatitude Stratospheric Trace Gas Measurements Using Ground-based UV-visible Spectroscopy, Ph.D. Thesis, University of Toronto Toronto, 2008.

Farahani, E., Stratospheric composition measurements in the Arctic and mid-latitudes and comparison with chemical fields from atmospheric models, Ph.D. Thesis, University of Toronto, Toronto, 2006.

(Maximum characters: 500, including spaces)

* Study site:

PEARL Observatory, Eureka, Nunavut

(Maximum characters: 50, including spaces)

* Purpose (a summary of the intentions with which the data set was developed):

These data were collected as part of the ongoing program of the Polar Environment Atmospheric Research Laboratory (PEARL) at Eureka, Nunavut (80N, 86.4W). PEARL is operated by the Canadian Network for the Detection of Atmospheric Change (CANDAC). The mission of PEARL is to characterise the atmosphere in the altitude range of 0-100km and provide data for studies of air quality, ozone and climate change.

(Maximum characters: 1500, including spaces)

* Abstract (description of methodology and data type, e.g., interviews, physical and chemical variables, imagery, recordings, maps and other spatial data, profile, etc.):

The University of Toronto Ground Based Spectrometer (UT-GBS) is a UV-visible grating spectrometer, which measures absorption spectra of sunlight. The UT-GBS has participated in Spring-time field campaigns at Eureka since 1999, and was also installed at Eureka from February 2008 through March 2009.

The spectra are used to retrieve vertical column densities (VCDs) of ozone, NO₂, BrO, and differential slant column densities (DSCDs) of OClO when concentrations of OClO are high (generally when Eureka is inside the polar vortex). VCDs are retrieved from raw spectra using the following technique. Raw spectra are corrected for dark current and bias and calibrated to wavelength against a solar spectrum using the WinDOAS software. DSCDs are retrieved using differential optical absorption spectroscopy technique with the WinDOAS software, which involves taking a ratio of spectra at twilight of the spectra at noon and simultaneously fitting cross-sections for relevant absorbers in given wavelength regions using a least-squares technique. These DSCDs are converted to VCDs using the Langley plot technique. See Fraser et al., 2009 for analysis details.

(Maximum characters: 1500, including spaces)

Plain language summary (if available, please provide the text in more than one language):

Not Applicable

(Maximum characters: 1500, including spaces)

* Data originators (e.g. name of data collector(s)):

(Do not enter duplicate originators)

Ms. Cristen Adams

Dr. Elham Farahani

Dr. Annemarie Fraser

Prof. Kimberly Strong (principal researcher) <strong@atmosph.physics.utoronto.ca>

Links to data (if available, otherwise please enter principal researcher's email address):

<http://www.candac.ca>

Prof. Kimberly Strong (principal researcher) <strong@atmosph.physics.utoronto.ca>

* Status of data: [Click on grey rectangle to view scroll down menu](#)

* Maintenance and update frequency: [Click on grey rectangle to view scroll down menu](#)

* Research program: [Select entry from scroll down menu on website; you may select more than one program.](#)

CANDAC

IPY-PEARL

Geographic Coordinates (in decimal format)

Research Area: Coordinates **MUST** be between -90 and 90 for latitudes and between -180 and 180 for longitudes. All Canadian longitudinal co-ordinates will be negative and all latitudinal co-ordinates for the Antarctic will be negative.

* North (latitude N): 80

* South (latitude N): 80

* West (longitude E): -86.4

* East (longitude E): -86.4

Time Period (during which the data was collected)

[Select entry from scroll down menu on website](#)

* Start Year: 1999

* End Year: 2009

* Start Month: February

* End Month: March

* Start Day: 20

* End Day: 31

Keywords (see keywords library)

(e.g., Alaska, Nunavik, Resolute, Active layer, Caribou, Glaciers, Migration, Stratigraphy, Diet, Salmonella, Habitat vulnerability)

[Select entry from the scroll down menu on the website or consult the Keywords Library](#)

* Keyword 1: Ellesmere Island

* Keyword 2: Eureka Sound

* Keyword 3: Photochemistry

- * Keyword 4: Atmosphere
- * Keyword 5: Gases
- Keyword 6: Monitoring
- Keyword 7: Observatory
- Keyword 8: Optics
- Keyword 9: Remote Sensing Data
- Keyword 10: Ozone

Security

- * Access: [Click on grey rectangle to view scroll down menu](#)