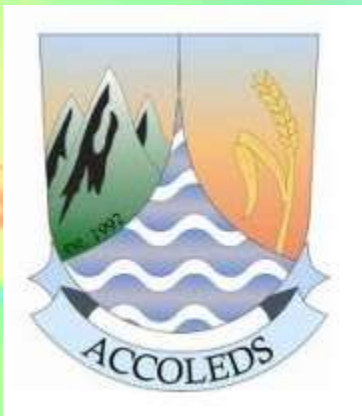




Utilising Cygwin, Python & Octave to obtain daily & hourly climate data for multiple months, years, and stations from climate.weather.gc.ca

outline

- **Why?**
 - MSc students' requests
 - (my current research)
- **Environment Canada historical climate / weather data via:**
 - web
 - Cygwin
 - Python
 - Octave
- **raster GIS data**



Historical Data

To determine data availability for a custom location and date, please complete and submit one of the following searches:

Search by Station Name

Search by Province

Search by Proximity

Name:

North Vancouver

☒ contains ☐ begins with

☒ with data available between:

1840 ▾

to

2017 ▾

☐ with data on:

2017 ▾

November ▾

22 ▾

Display results per page.

Search

Reset

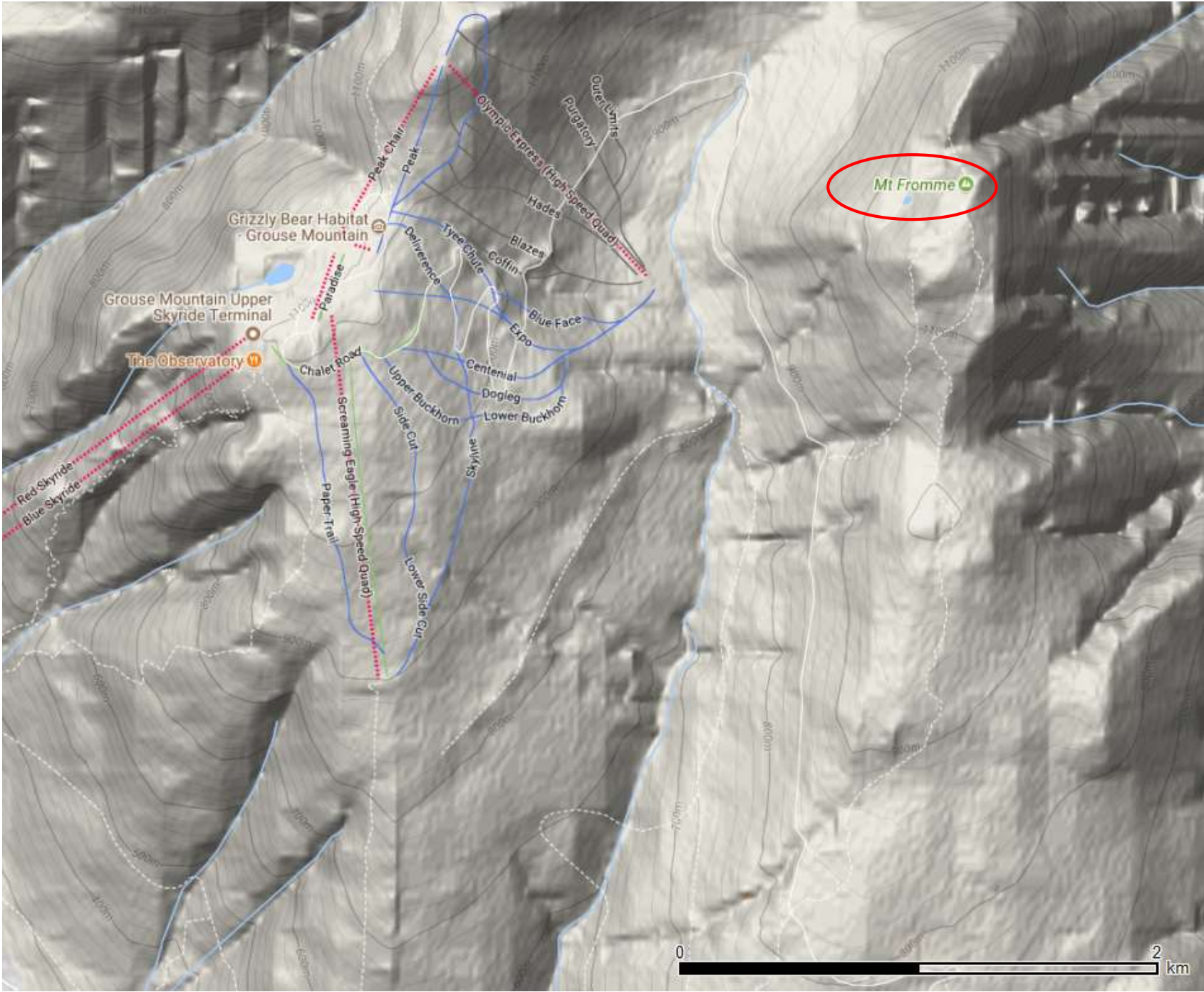
student wanted data for Mt.Fromme, BC

results for North Vancouver...
...hmmm...

5 stations found with name containing "North Vancouver", with data available between 1840 and 2017. Stations are listed in alphabetical order. Confirm the [Data Interval](#) and the date for one of the stations listed and click "GO" to display the historical data.

Station	Prov.	Data Interval	Year	Month	Day	
NORTH VANCOUVER BLUE RIDGE	BC	Daily 	1989 	Sep 	30 	Go
NORTH VANCOUVER CITY	BC	Daily 	1961 	Dec 	31 	Go
NORTH VANCOUVER DOLLARTON	BC	Daily 	1991 	Jan 	31 	Go
NORTH VANCOUVER HOLYROOD	BC	Daily 	1968 	Dec 	31 	Go
NORTH VANCOUVER NORGATE	BC	Daily 	1963 	Apr 	30 	Go

Mt.Fromme restoration



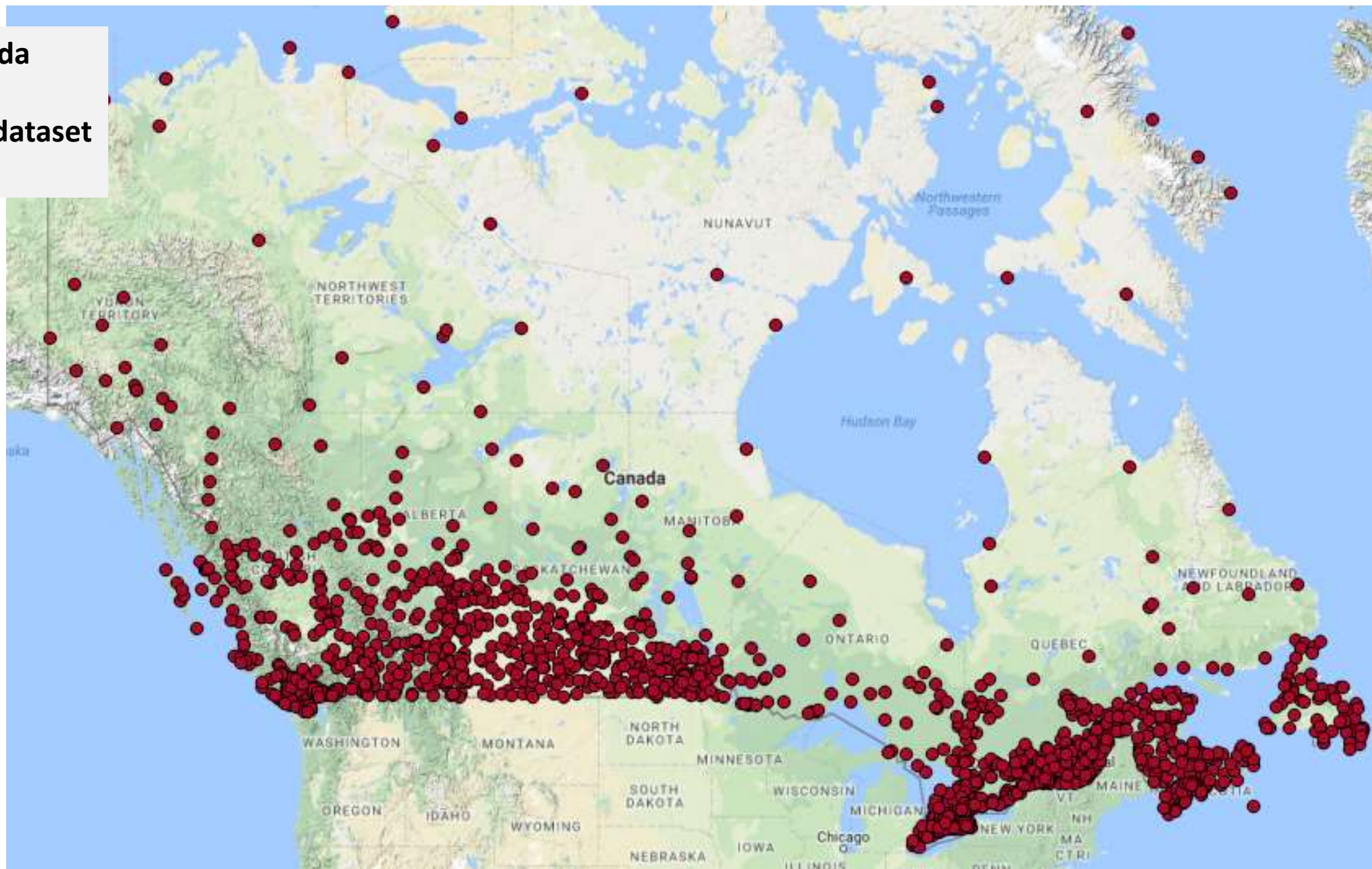


results for Grouse

1 station found with name containing "Grouse", with data available between 1840 and 2017. Stations are listed in alphabetical order. Confirm the [Data Interval](#) and the date for one of the stations listed and click "GO" to display the historical data.

!?	Station	Prov.	Data Interval	Year	Month	Day	
	N VANC GROUSE MTN RESORT	BC	Daily	2017	Nov	11	Go

EnvironmentCanada
weather stations
as of 2012 in this dataset
(not all active)

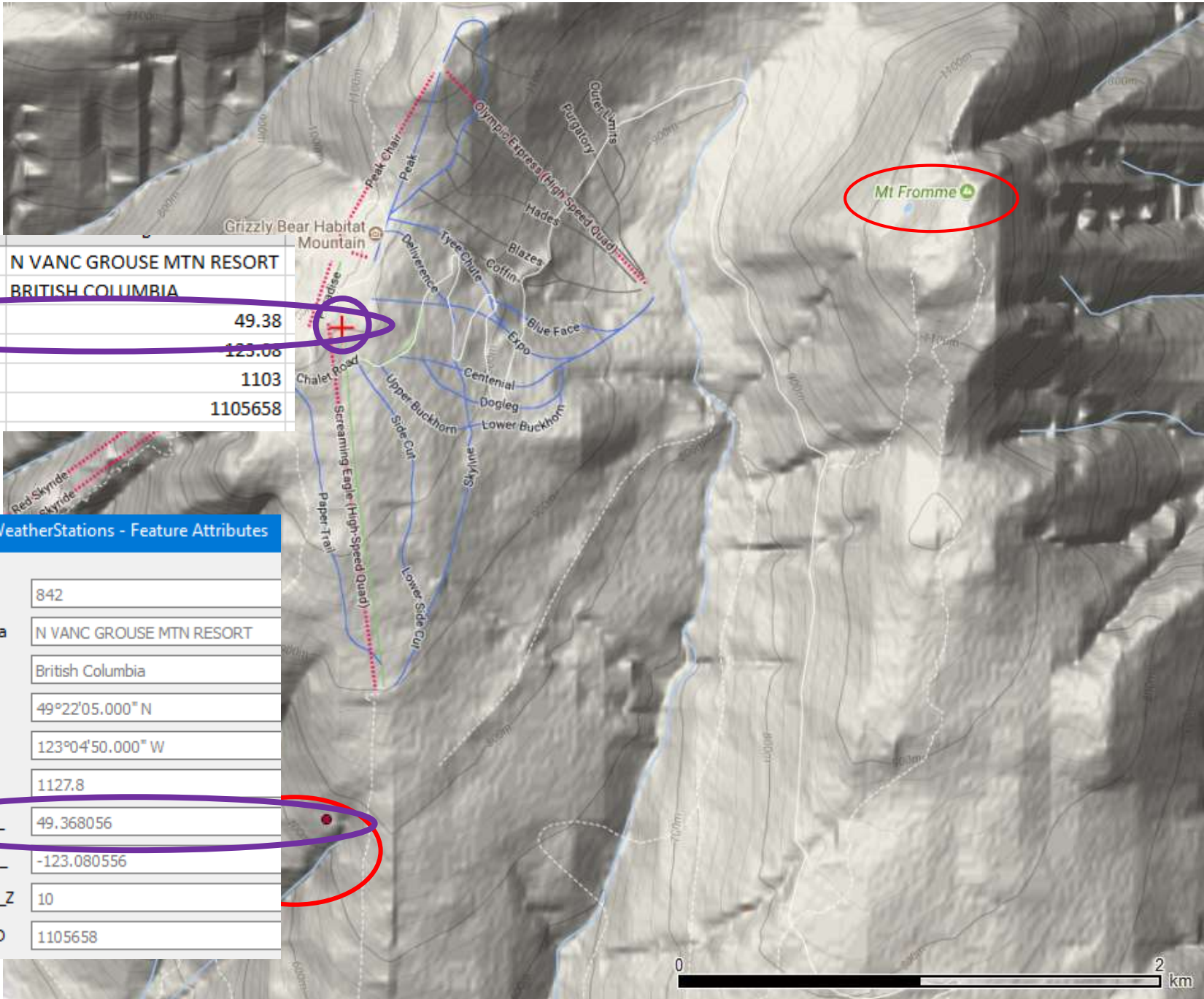


Mt.Fromme restoration

Station Name	N VANC GROUSE MTN RESORT
Province	BRITISH COLUMBIA
Latitude	49.38
Longitude	123.08
Elevation	1103
Climate Identifier	1105658

CanadianWeatherStations - Feature Attributes

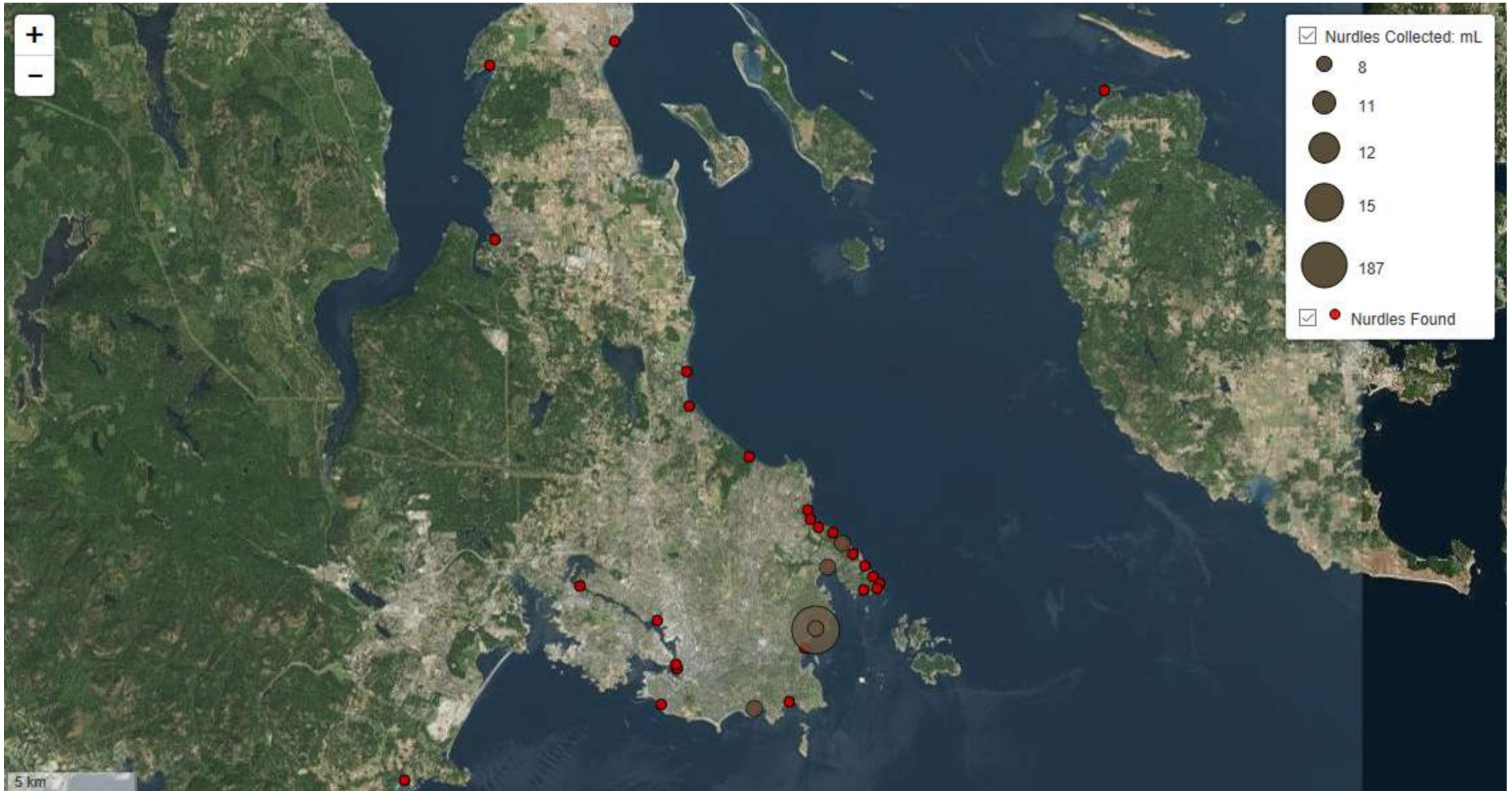
ID	842
Station_Na	N VANC GROUSE MTN RESORT
Province	British Columbia
Latitude	49°22'05.000" N
Longitude	123°04'50.000" W
Elevation	1127.8
Latitude__	49.368056
Longitude_	-123.080556
UTM_Grid_Z	10
Climate_ID	1105658



Nurdles (pellets used to make #2-HDPE, #4-LDPE & #5-PP plastics) on Victoria beaches & waterfronts



Nurdles on Victoria beaches & waterfronts



Nurdles were observed at **red** sites on map;
10 Litre samples of beach surface debris, plastics, wood, etc, were collected at 5 **sites** and nurdles measured in milliLitres

High tide and high winds
MonNov13, 1pm



Willows Beach





Historical Data

To determine data availability for a custom location and date, please complete and submit one of the following searches:

Search by Station Name

Search by Province

Search by Proximity

[How to Use - Search by Station Name](#)

Name:

Victoria Int

☒ contains ☐ begins with

☒ with data available between:

1840

to

2017

☐ with data on:

2017

November

6

Display results per page.

Search

Reset

Station Results - Historical Data

2 stations found with name containing "Victoria Int", with data available between 1840 and 2017. Stations are listed in alphabetical order. Confirm the [Data Interval](#) and the date for one of the stations listed and click "GO" to display the historical data.

Station	Prov.	Data Interval	Year	Month	Day	
VICTORIA INT'L A	BC	Hourly	1953	Jan	1	Go
			1953			Go
			1954			
			1955			
			1956			Historical Data
			1957			
			1958			
			1959			
			1960			
			1961			
			1962			
			1963			
VICTORIA INTL A	BC	Hourly	2013	Jul	9	Go
			2013			Historical Data
			2014			
			2015			
			2016			
			2017			



Search by Station Name

Search by Province

Search by Proximity

25 ▾

kilometres away from:

☒ a city,

Select City ▾

☐ a National Park,

Select Park ▾

☐ location coordinates:

latitude:

° ' " North

longitude:

° ' " West

☒ with data available between:

1840 ▾

to

2017 ▾

☐ with data on:

2017 ▾

November ▾

22 ▾

Google maps to obtain Lat / Long

The image shows a Google Maps interface with a map of the Kamloops area in British Columbia. On the left, a blue sidebar displays the coordinates **50°22'18.8"N 120°01'08.5"W** and **50.371894, -120.019035**, which are circled in red. A 'Directions' button is visible below the coordinates. On the right, a map shows the Kamloops region with various towns and roads. A context menu is open over the map, with the option 'What's here?' circled in red. At the bottom right, a location card for 'Thompson-Nicola L' is shown, with the coordinates **50.371894, -120.019035** circled in red.

50.371894, -120.019035

50°22'18.8"N 120°01'08.5"W
50.371894, -120.019035

Directions

Directions from here
Directions to here
What's here?
Search nearby
Print
Add a missing place
Report a data problem
Measure distance

Thompson-Nicola L
British Columbia
50.371894, -120.019035



Search by Station Name

Search by Province

Search by Proximity

25 ▾

kilometres away from:

☒ a city,

Select City ▾

☐ a National Park,

Select Park ▾

☐ location coordinates:

latitude:

° ' " North

longitude:

° ' " West

☒ with data available between:

1840 ▾

to

2017 ▾

☐ with data on:

2017 ▾

November ▾

22 ▾

via the web...

If hourly needed, only by 1 year and 1 month and 1 day at a time...

Station	Prov.	Data Interval	Year	Month	Day
VICTORIA INT'L A	BC	Hourly	2010	Jan	1

If daily needed, only by 1 year and 1 month at a time

VICTORIA INT'L A	BC	Daily	2013	Jul	10
------------------	----	-------	------	-----	----

If monthly needed, only by 1 year at a time

VICTORIA INT'L A	BC	Monthly	2013	Jul	1
------------------	----	---------	------	-----	---



1 station found with name containing "grouse", with data available between 1840 and 2017. Stations are listed in alphabetical order. Confirm the [Data Interval](#) and the date for one of the stations listed and click "GO" to display the historical data.

Station	Prov.	Data Interval	Year	Month	Day	
N VANC GROUSE MTN RESORT	BC	Daily	2013	Dec	31	Go

Daily Data Report for December 2013

N VANC GROUSE MTN RESORT BRITISH COLUMBIA

<u>Latitude:</u>	49°22'52.002" N	<u>Longitude:</u>	123°04'42.004" W	<u>Elevation:</u>	1,103.00 m
<u>Climate ID:</u>	1105658	<u>WMO ID:</u>		<u>TC ID:</u>	

Related Data

[1981-2010 Climate Normals](#)

Additional Search Options

[Nearby Stations with Data](#)

[Historical Data Search](#)

Download Data

Daily Data (2013)

☒ CSV ☐ XML

[Download Data](#)

[Get More Data](#)

for Daily (data)

.csv output provides entire month...

...but not multiple months or multiple years

Date/Time	Year	Month	Day	Time	Temp (°C)	Dew Point Temp (°C)	Rel Hum (%)	Wind Dir (10s deg)	Wind Spd (km/h)	Visibility (km)	Stn Press (kPa)	Hmdx	Wind Chill	Weather	
2010-01-01 0:00	2010	1	1	0:00	4.3	4	98	25	6	8	100.64			Fog	
2010-01-01 1:00	2010	1	1	1:00	4.4	4.1	98	28	7	8	100.61			Fog	
2010-01-01 2:00	2010	1	1	2:00	4.5	4.4	99	32	4	9.7	100.48			Fog	
2010-01-01 3:00	2010	1	1	3:00	4.9	4.8	99		0	8	100.53			Fog	
2010-01-01 4:00	2010	1	1	4:00	4.9	4.8	99	30	4	8	100.29			Fog	
2010-01-01 5:00	2010	1	1	5:00	5.4	5.2	99	30	7	6.4	100.24			Rain,Fog	
2010-01-01 6:00	2010	1	1	6:00	5.6	5.5	99	27	4	4.8	100.18			Rain,Fog	
2010-01-01 7:00	2010	1	1	7:00	5.5	5.3	99		0	12.9	100.14			Rain	
2010-01-01 8:00	2010	1	1	8:00	5.5	5.5	100		0	16.1	100.12			Rain	
2010-01-01 9:00	2010	1	1	9:00	6.2	6.1	99	12	7	16.1	100.09			Rain	
2010-01-01 10:00	2010	1	1	10:00	7.1	6.9	99	14	9	19.3	100.06			Rain	
2010-01-01 11:00	2010	1	1	11:00	8.3	7.7	96	16	11	12.9	100.12			Rain	
2010-01-01 12:00	2010	1	1	12:00	9.3	8.2	93	13	13	24.1	100.02			Rain	
2010-01-01 13:00	2010	1	1	13:00	9.5	8.2	92	14	15	12.9	100.07			Rain	
2010-01-01 14:00	2010	1	1	14:00	9.2	8.1	93	17	20	16.1	100.1			Rain	
2010-01-01 15:00	2010	1	1	15:00	8.8	7.9	94	17	20	4.8	100.19			Moderate Rain,Fog	
2010-01-01 16:00	2010	1	1	16:00	8.2	7.7	97	14	15	3.2	100.24			Rain,Fog	
2010-01-01 17:00	2010	1	1	17:00	8.6	7.7	94	18	20	6.4	100.3			Rain,Fog	
2010-01-01 18:00	2010	1	1	18:00	9.1	7.2	88	21	17	6.4	100.43			Rain,Fog	
2010-01-01 19:00	2010	1	1	19:00	8.7	7.7	93	14	9	4.8	100.57			Rain,Fog	
2010-01-01 20:00	2010	1	1	20:00	8.8	7.5	92	23	11	16.1	100.71			Rain	
2010-01-01 21:00	2010	1	1	21:00	7.9	7.4	97	24	4	19.3	100.84			Rain	
2010-01-01 22:00	2010	1	1	22:00	7.9	6.9	93	20	15	24.1	100.94			Rain	
2010-01-01 23:00	2010	1	1	23:00	9.1	6.7	85	23	15	32.2	101.03			Rain	
2010-01-02 0:00	2010	1	2	0:00	9.1	6.7	85	24	13	24.1	101.13			Rain	
2010-01-02 1:00	2010	1	2	1:00	9	6.2	83	24	20	24.1	101.23			Rain	
2010-01-02 2:00	2010	1	2	2:00	8.9	5.7	80	23	22	24.1	101.35			Mostly Cloudy	
2010-01-02 3:00	2010	1	2	3:00	8.8	5.6	80	22	22	32.2	101.43			Mostly Cloudy	
2010-01-02 4:00	2010	1	2	4:00	8.8	5.3	79	24	7	32.2	101.51			Cloudy	19
2010-01-02 5:00	2010	1	2	5:00	8.8	5.2	78	22	8	49.2	101.55			Cloudy	

for Daily or Hourly (data)
b/c .csv does not provide...
...multiple months or multiple years

Hourly Data Report for January 01, 2010

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

VICTORIA INTL A BRITISH COLUMBIA

<u>Latitude:</u>	48°38'50.010" N	<u>Longitude:</u>	123°25'33.000" W	<u>Elevation:</u>	19.50 m
<u>Climate ID:</u>	1018620	<u>WMO ID:</u>	71799	<u>TC ID:</u>	YYJ

Related Data

[Almanac Averages & Extremes \(January 01\)](#)

[Daily Data \(January 2010\)](#)

[Monthly Data \(2010\)](#)

[1981-2010 Climate Normals](#)

Additional Search Options

[Nearby Stations with Data](#)

[Historical Data Search](#)

Download Data

Hourly Data (January 2010)

☒ CSV ☐ XML

Download Data

[Get More Data](#)

Cygwin and script

Index of ftp://client_climate@ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/

 Up to higher level directory

Name	Size	Last Modified	
 Lisezmoi.txt	3 KB	2016-05-11	12:00:00 AM
 Readme.txt	3 KB	2016-12-20	12:00:00 AM
 Répertoire des stations FR.csv	1302 KB	2017-11-05	8:32:00 PM
 Station Inventory EN.csv	1293 KB	2017-11-05	8:32:00 PM
 Suggestions_on_installing_Cygwin_and_running_the_command_line_to_download_dat...	107 KB	2017-10-05	12:41:00 PM

EC instructions to install Cygwin

Cygwin: Unix-like environment and command-line interface for Windows...

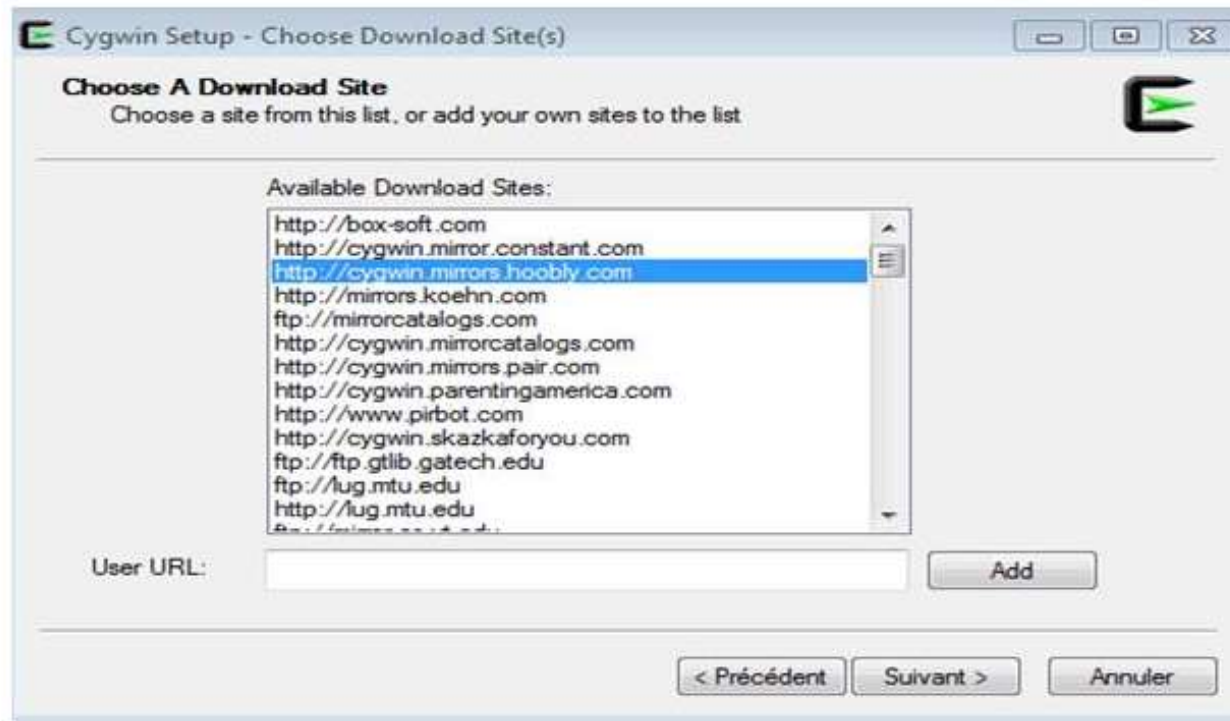
Version: 2016-10-02

Suggestions on installing Cygwin, and running command lines to download data:

1. **Installing Cygwin.**

Further to downloading the compatible bit-version of Cygwin in your computer (32/64 bit), one of the reasons why the command line may not generate csv files with data is because there may a little installation missteps when setting up Cygwin. The following are some directions that you may follow in order to set the program properly and solve issues:

- When prompt to the window "Available Download Sites" select the option "cygwin.mirrors.hoobly.com"



**I got mixed up confusion
Man, it's a-killing me...**

**Well, my head's full of questions
My temperature's rising fast
Well, I'm looking for some answers
But I don't know who to ask...**

(Mixed up confusion, 1962, with apologies to Nobel Laureate Bob Dylan)



**So while waiting for answers from EC,
one person from EC suggested...**

Python 2.7.11

```
import sys
import os.path
import string
import os
import urllib2
import csv

#=====
#
# Title:          Bulk CDO download for daily data only from Climate data online
# Author:         Monique Lapalme
# Last modified:  le 11 avril 2016
# Comments:       This program downloads bulk data from CDO It requires the user to change the following:
#                 HOMEDIR: make sure you put a folder that exists on your computer
#                 stn_input.txt: this file must be in the HOMEDIR folder and must contain the stnID in a column. See the attached example
#The outPut file is called output.csv and will be located in your HOMEDIR
#=====

#-----
# Set directories
# ATTENTION - MAKE SURE TO PUT THE "/" AT THE END OF THE FOLDER NAME
#MAKE SURE TO FOLLOW THIS FORMAT: 'E:/climate/tools/wget/'
#CaSe SENsiTive, so make sure that is exactly correct also

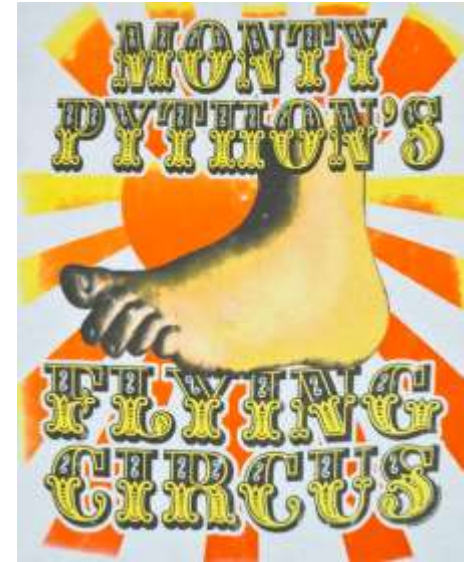
#HOMEDIR= 'C:/bramwellg/Data_Sources/Python/Updated_Scripts_July_2016/Giselle/'

HOMEDIR= 'C:\Data\EnvrnCan\ECanPython/'

#-----
#step 1 - open up the station list and put the IDs in a list
stnFile = HOMEDIR + "stn_input.txt"
stnList = []
with open(stnFile, 'r') as lines:
    for line in lines:
        stnID = line.strip()
        for intYr in range(2015,2016+1):
            for intMnt in range(1,12+1):
                #build the query
                strQry = 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=' + stnID + "&Year=" + str(intYr) + '&Month=' + str(intMnt) + "&timeframe=1&submit=Download+Data"
                #print strQry
                print 'Querying station ' + stnID + ' for year ' + str(intYr) + ' and month ' + str(intMnt)
                try:
                    response = urllib2.urlopen(strQry)
                    with open(HOMEDIR + 'outputH.csv', 'a') as output:
                        output.write(response.read())
                except Exception, e:
                    print 'Failure getting data for ' + stnID + ' for year ' + str(intYr)
```



- **widely used programming language for general-purpose**
- **created by Guido van Rossum and first released in 1991**



Python 2.7.11

must be 2.7.11



The image shows the top portion of the Python.org website. At the top left is the Python logo. To its right is a search bar with the word "Search" inside. Below these is a navigation bar with links: "About", "Downloads", "Documentation", "Community", "Success Stories", and "News". The main content area has a dark blue background. On the left, there's a section titled "Download the latest version for Windows" in yellow. Below this title are two yellow buttons: "Download Python 3.6.3" and "Download Python 2.7.14". To the right of these buttons is an illustration of two parachutes with cargo boxes hanging from them. Below the buttons, there are three lines of text with links: "Wondering which version to use? [Here's more about the difference between Python 2 and 3.](#)", "Looking for Python with a different OS? Python for [Windows](#), [Linux/UNIX](#), [Mac OS X](#), [Other](#)", and "Want to help test development versions of Python? [Pre-releases](#)".

Looking for a specific release?

Python releases by version number:

Release version	Release date	Click for more	
Python 2.7.12	2016-06-25	 Download	Release Notes
Python 3.4.4	2015-12-21	 Download	Release Notes
Python 3.5.1	2015-12-07	 Download	Release Notes
Python 2.7.11	2015-12-05	 Download	Release Notes
Python 3.5.0	2015-09-13	 Download	Release Notes

Files

Version	Operating System	Description	MD5 Sum	File Size	GPG
Gzipped source tarball	Source release		6b6076ec9e93f05dd63e47eb9c15728b	16856409	SIG
XZ compressed source tarball	Source release		1dbcc848b4cd8399a8199d000f9f823c	12277476	SIG
Mac OS X 32-bit i386/PPC installer	Mac OS X	for Mac OS X 10.5 and later	8d563a63b261fc3868c101471442b601	24018001	SIG
Mac OS X 64-bit/32-bit installer	Mac OS X	for Mac OS X 10.6 and later	cacd8b6a05c5a5c0f0e19f684a0c7f10	22162527	SIG
Windows debug information files	Windows		b5ebe6703d69ee97d1d648d20df6ee55	24359078	SIG
Windows debug information files for 64-bit binaries	Windows		34b3e9342b7a9dd58e0f20c6108e72e6	25104550	SIG
Windows help file	Windows		0d8044f1da197c8381be0789c2d5cc98	6171837	SIG
Windows x86-64 MSI installer	Windows	for AMD64/EM64T/x64	25acca42662d4b02682eee0df3f3446d	19550208	SIG
Windows x86 MSI installer	Windows		241bf8e097ab4e1047d9bb4f59602095	18636800	SIG

Python 2.7.11

Name	Date modified	Type	Size
stn_input.txt	2017-10-08 12:10 ...	Text Document	1 KB
CDO_Daily_Data_Bulk_Download.py	2017-10-08 12:27 ...	Python File	3 KB
CDO_Hourly_Data_Bulk_Download.py	2017-11-17 8:56 AM	Python File	3 KB

right-click

stn_input.txt
CDO_Daily_Data_Bulk_Download.py
CDO_Hourly_Data_Bulk_Download.py

2017-10-08 12:10 ... Text Document

Open

Edit with IDLE

Edit with IDLE (ArcGIS Pro)

Run with ArcGIS Pro

7-Zip >

CRC SHA >

Edit with Notepad++

Scan for Viruses...

Share

Open with...

Restore previous versions

Send to >

Cut

Copy

Create shortcut

Delete

Rename

Properties

Python 2.7.11

File Edit Format Run Options Window Help

About IDLE

IDLE Help

Python Docs F1

```
import sys
import os.path
import string
import os
import urllib2
import csv
```

```
#=====
#
# Title:          Bulk CDO download for daily
# Author:         Monique Lapalme
# Last modified:  le 11 avril 2016
# Comments:       This program downloads bulk
#                 HOMEDIR: make sure you put
#                 stn_input.txt: this file
#The outPut file is called output.csv and will be
#=====
```

```
#-----
# Set directories
# ATTENTION - ATTENTION - MAKE SURE TO PUT THE '
#MAKE SURE TO FOLLOW THIS FORMAT: 'E:/climate/tool
#CaSe SENSiTiVe, so make sure that is exactly cor
#HOMEDIR= 'C:/bramwellg/Data_Sources/Python/Update
HOMEDIR= 'C:\Data\EnvrnCan\ECanPython/'
```

About IDLE

IDLE

Python's Integrated DeveLopment Environment

email: idle-dev@python.org

<https://docs.python.org/2.7/library/idle.html>

Python version: 2.7.11 Tk version: 8.5.15

License

Copyright

Credits

IDLE version: 2.7.11

README

NEWS

Credits

Python 2.7.11

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import sys
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# Author:         Monique Lapalme
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# Comments:       This program downloads bulk data from CDO It requires the user to change the following:
#                 HOMEDIR: make sure you put a folder that exists on your computer
#                 stn_input.txt: this file must be in the HOMEDIR folder and must contain the stnID in a column. See the attached example
#The outPut file is called output.csv and will be located in your HOMEDIR
#=====

#-----
# Set directories
# ATTENTION - ATTENTION - MAKE SURE TO PUT THE "/" AT THE END OF THE FOLDER NAME
#MAKE SURE TO FOLLOW THIS FORMAT: 'E:/climate/tools/wget/'
#CaSe SENSiTive, so make sure that is exactly correct also

#HOMEDIR= 'C:/bramwellg/Data Sources/Python/Updated_Scripts_July_2016/Giselle/'
HOMEDIR= 'C:\Data\EnvrnCan\ECanPython/'

#-----
#step 1 - open up the station list and put the IDs in a list
stnFile = HOMEDIR + "stn_input.txt"
stnList = []
with open(stnFile, 'r') as lines:
    for line in lines:
        stnID = line.strip()
        for intYr in range(2015,2016+1):
            for intMnt in range(1,12+1):
                #build the query
                strQry = 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=' + stnID + "&Year=" + str(intYr) + '&Month=' + str(intMnt) + "&timeframe=1&submit=Download+Data"
                #print strQry
                print 'Querying station ' + stnID + ' for year ' + str(intYr) + ' and month ' + str(intMnt)
                try:
                    response = urllib2.urlopen(strQry)
                    with open(HOMEDIR + 'outputH.csv', 'a') as output:
                        output.write(response.read())
                except Exception, e:
                    print 'Failure getting data for ' + stnID + ' for year ' + str(intYr)
```

Python 2.7.11

```
import sys
import os.path
import string
import os
import urllib2
import csv

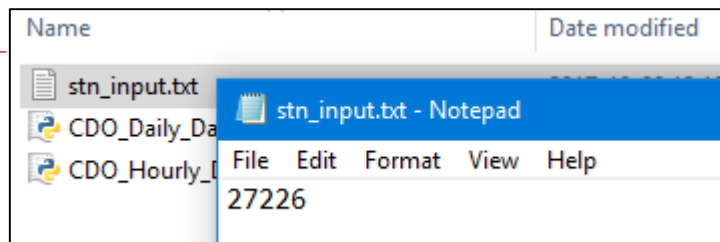
#=====
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# Title:          Bulk CDO download for daily data only from Climate data online
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# Comments:       This program downloads bulk data from CDO It requires the user to change the following:
#                 HOMEDIR: make sure you put a folder that exists on your computer
#                 stn_input.txt: this file must be in the HOMEDIR folder and must contain the stnID in a column. See the attached example
#The outPut file is called output.csv and will be located in your HOMEDIR
#=====

#-----
# Set directories
# ATTENTION - MAKE SURE TO PUT THE '/' AT THE END OF THE FOLDER NAME
#MAKE SURE TO FOLLOW THIS FORMAT: 'E:/climate/tools/wget/'
#CaSe SENSiTiVe, so make sure that is exactly correct also

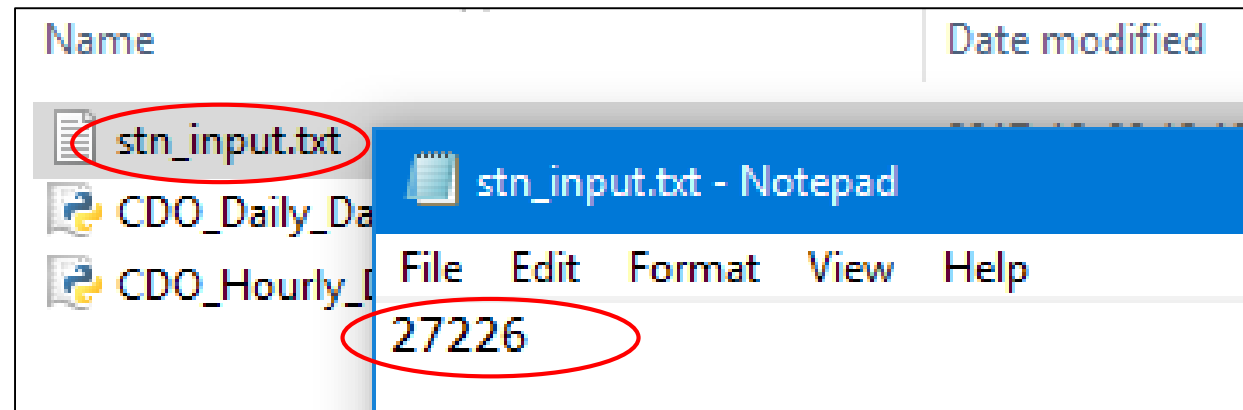
#HOMEDIR= 'C:/bramwellg/Data_Sources/Python/Updated_Scripts_July_2016/Giselle/'

HOMEDIR= 'C:\Data\EnvrnCan\ECanPython/'

#-----
#step 1 - open up the station list and put the IDs in a list
stnFile = HOMEDIR + "stn_input.txt"
stnList = []
with open(stnFile, 'r') as lines:
    for line in lines:
        stnID = line.strip()
        for intYr in range(2015,2016+1):
            for intMnt in range(1,12+1):
                #build the query
                strQry = 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=' + stnID + "&Year=" + str(intYr) + '&Month=' + str(intMnt) + "&timeframe=1&submit=Download+Data"
                #print strQry
                print 'Querying station ' + stnID + ' for year ' + str(intYr) + ' and month ' + str(intMnt)
                try:
                    response = urllib2.urlopen(strQry)
                    with open(HOMEDIR + 'outputH.csv', 'a') as output:
                        output.write(response.read())
                except Exception, e:
                    print 'Failure getting data for ' + stnID + ' for year ' + str(intYr)
```



```
#-----  
#step 1 - open up the station list and put the IDs in a list  
#-----  
stnFile = HOMEDIR + "stn_input.txt"  
stnList = []
```



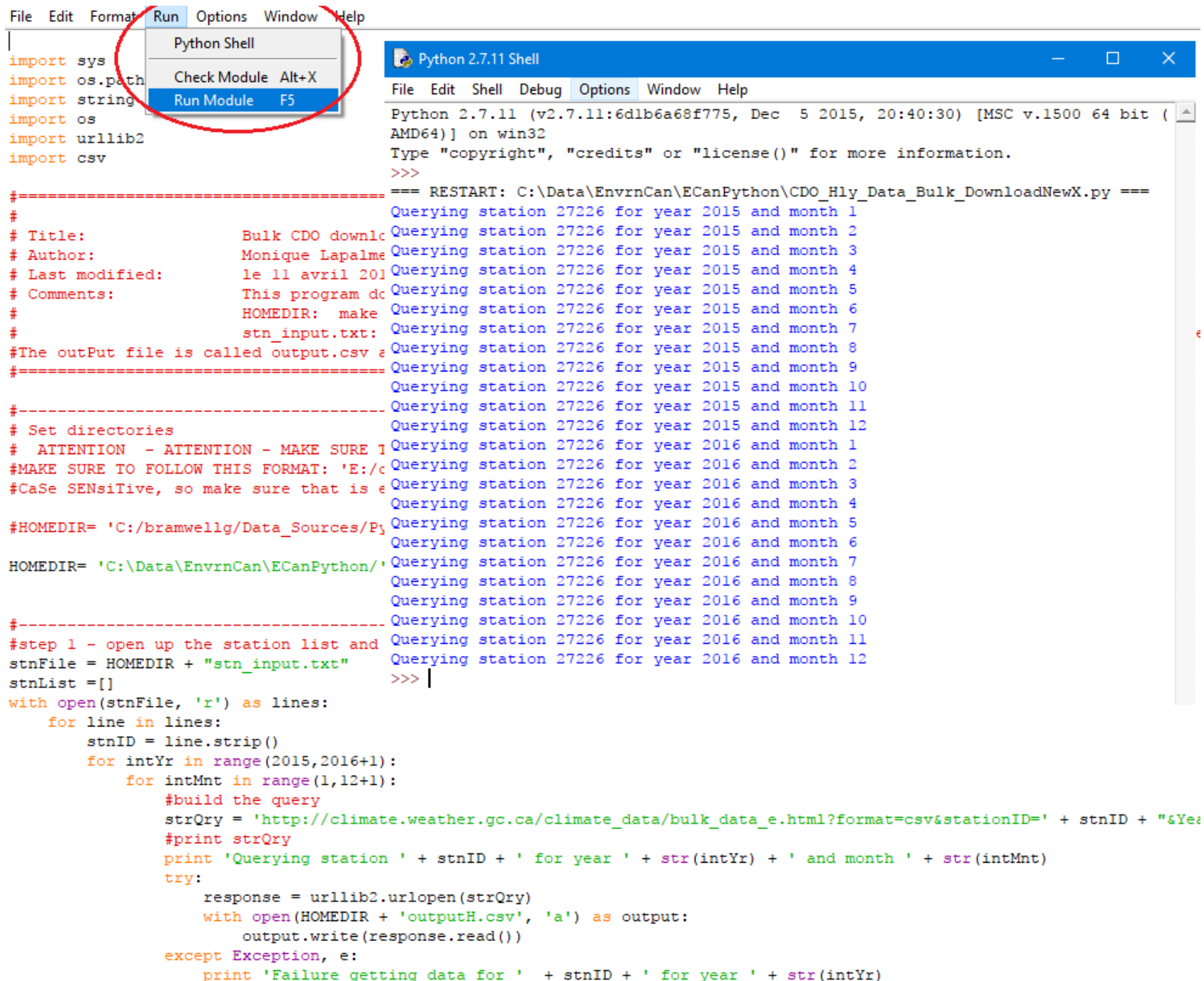
Python 2.7.11

```
#step 1 - open up the station list and put the IDs in a list
stnFile = HOMEDIR + "stn_input.txt"
stnList = []
with open(stnFile, 'r') as lines:
    for line in lines:
        stnID = line.strip()
        for intYr in range(2013,2016+1):
            for intMnt in range(1,12+1):
                #build the query
                strQry = 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=' + stnID + "&Year=" + str(intYr) + '&Month=' + str(intMnt) + "&timeframe=1&submit=Download+Data"
                #print strQry
                print 'Querying station ' + stnID + ' for year ' + str(intYr) + ' and month ' + str(intMnt)
                try:
                    response = urllib2.urlopen(strQry)
                    with open(HOMEDIR + 'outputX.csv', 'a') as output:
                        output.write(response.read())
                except Exception, e:
                    print "Voila. C'est fini" + stnID + ' for year ' + str(intYr)
```

```
for intYr in range(2013,2016+1):
    for intMnt in range(1,12+1):
```

retrieve data from
year range 2013-2016; the +1 is necessary
month range 1-12; the +1 is necessary

Python 2.7.11



```
File Edit Format Run Options Window Help
Python Shell
Check Module Alt+X
Run Module F5

import sys
import os.path
import string
import os
import urllib2
import csv

#=====
#
# Title: Bulk CDO downlo
# Author: Monique Lapalme
# Last modified: 1e 11 avril 201
# Comments: This program dc
#
# HOMEDIR: make
#
# stn_input.txt:
#The outPut file is called output.csv
#=====

#-----
# Set directories
# ATTENTION - ATTENTION - MAKE SURE T
#MAKE SURE TO FOLLOW THIS FORMAT: 'E:/c
#CaSe SENSiTiVe, so make sure that is e

#HOMEDIR= 'C:/bramwellg/Data_Sources/Pj
HOMEDIR= 'C:\Data\EnvrnCan\ECanPython/'

#-----
#step 1 - open up the station list and
stnFile = HOMEDIR + "stn_input.txt"
stnList = []
with open(stnFile, 'r') as lines:
    for line in lines:
        stnID = line.strip()
        for intYr in range(2015,2016+1):
            for intMnt in range(1,12+1):
                #build the query
                strQry = 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=' + stnID + "&Ye
                #print strQry
                print 'Querying station ' + stnID + ' for year ' + str(intYr) + ' and month ' + str(intMnt)
                try:
                    response = urllib2.urlopen(strQry)
                    with open(HOMEDIR + 'outputH.csv', 'a') as output:
                        output.write(response.read())
                except Exception, e:
                    print 'Failure getting data for ' + stnID + ' for year ' + str(intYr)

===== RESTART: C:\Data\EnvrnCan\ECanPython\CDO_Hly_Data_Bulk_DownloadNewX.py =====
Querying station 27226 for year 2015 and month 1
Querying station 27226 for year 2015 and month 2
Querying station 27226 for year 2015 and month 3
Querying station 27226 for year 2015 and month 4
Querying station 27226 for year 2015 and month 5
Querying station 27226 for year 2015 and month 6
Querying station 27226 for year 2015 and month 7
Querying station 27226 for year 2015 and month 8
Querying station 27226 for year 2015 and month 9
Querying station 27226 for year 2015 and month 10
Querying station 27226 for year 2015 and month 11
Querying station 27226 for year 2015 and month 12
Querying station 27226 for year 2016 and month 1
Querying station 27226 for year 2016 and month 2
Querying station 27226 for year 2016 and month 3
Querying station 27226 for year 2016 and month 4
Querying station 27226 for year 2016 and month 5
Querying station 27226 for year 2016 and month 6
Querying station 27226 for year 2016 and month 7
Querying station 27226 for year 2016 and month 8
Querying station 27226 for year 2016 and month 9
Querying station 27226 for year 2016 and month 10
Querying station 27226 for year 2016 and month 11
Querying station 27226 for year 2016 and month 12
>>> |
```

output

Name	Date modified	Type
 CDO_Daily_Data_Bulk_Download.py	2017-10-08 12:27 ...	Python File
 CDO_Hourly_Data_Bulk_Download.py	2017-11-17 8:56 AM	Python File
 stn_input.txt	2017-10-08 12:10 ...	Text Document
 outputH.csv	2017-11-17 9:33 AM	Microsoft Excel

Python 2.7.11

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
751	2015-01-31 13:00	2015	1	31	13:00		6.5		4.2		85		2		20
752	2015-01-31 14:00	2015	1	31	14:00		6.6		4.3		86		2		22
753	2015-01-31 15:00	2015	1	31	15:00		6.8		4.2		84		2		22
754	2015-01-31 16:00	2015	1	31	16:00		7.3		5		85		36		20
755	2015-01-31 17:00	2015	1	31	17:00		7.3		5.3		87		2		19
756	2015-01-31 18:00	2015	1	31	18:00		7.3		5.6		89		2		19
757	2015-01-31 19:00	2015	1	31	19:00		7.1		5.2		88		3		12
758	2015-01-31 20:00	2015	1	31	20:00		6.9		5.1		88		3		11
759	2015-01-31 21:00	2015	1	31	21:00		7		5.1		88		3		16
760	2015-01-31 22:00	2015	1	31	22:00		6.9		5.6		92		36		21
761	2015-01-31 23:00	2015	1	31	23:00		6.9		5.6		91		2		21
762	"Station Name"	DISCOVERY ISLAND													
763	Province	BRITISH COLUMBIA													
764	Latitude	48.42													
765	Longitude	-123.23													
766	Elevation	18.9													
767	Climate Identifier	1012475													
768	WMO Identifier	71031													
769	TC Identifier	WDR													
770	All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.														
771															
772	Legend														
773	E	Estimated													
774	M	Missing													
775	NA	Not Available													
776	‡	Partner data that is not subject to review by the National Climate Archives													
777															
778	Date/Time	Year	Month	Day	Time	Data Qual	Temp (°C)	Temp Flag	Dew Point	Dew Point	Rel Hum (%)	Rel Hum F	Wind Dir (°)	Wind Dir F	Wind Spd V
779	2015-02-01 0:00	2015	2	1	0:00		7.1		5.6		90		1		18
780	2015-02-01 1:00	2015	2	1	1:00		7.5		5.3		86		2		21
781	2015-02-01 2:00	2015	2	1	2:00		7.2		5.3		87		2		20
782	2015-02-01 3:00	2015	2	1	3:00		7.4		5.3		86		36		22
783	2015-02-01 4:00	2015	2	1	4:00		7.6		4.9		83		36		21
784	2015-02-01 5:00	2015	2	1	5:00		7.6		5.5		86		3		19
785	2015-02-01 6:00	2015	2	1	6:00		7.4		5		85		5		14
786	2015-02-01 7:00	2015	2	1	7:00		7.6		5.8		88		11		13
787	2015-02-01 8:00	2015	2	1	8:00		7.7		5.3		85		11		13
788	2015-02-01 9:00	2015	2	1	9:00		7.7		5.4		85		12		27
789	2015-02-01 10:00	2015	2	1	10:00		7.3		5.2		86		10		15
790	2015-02-01 11:00	2015	2	1	11:00		7.4		5.4		87		8		10
791	2015-02-01 12:00	2015	2	1	12:00		7.4		5.9		91		11		13
792	2015-02-01 13:00	2015	2	1	13:00		7.5		6.1		91		12		9
793	2015-02-01 14:00	2015	2	1	14:00		7.5		6.1		91		14		7
794	2015-02-01 15:00	2015	2	1	15:00		7.9		6.6		91		15		14
795	2015-02-01 16:00	2015	2	1	16:00		8.1		6.4		89		20		16

If want to sort, etc
need to strip out (extraneous) station info repeated between

If want to sort, etc
need to strip out (extraneous) station info repeated between each month / year

Python 2.7.11: How long will it be supported?

If Python 2.7 converted to Python 3.6 (via 2to3.py)
can (historical) climate data still be extracted from EC?

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.16299.19]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>C:\Users\danielbm\Python36\Tools\scripts\2to3.py -w C:\Data\EnvrnCan\ECanPython\CDO_Daily_Data_Bulk_Download.py
RefactoringTool: Skipping optional fixer: buffer
RefactoringTool: Skipping optional fixer: idioms
RefactoringTool: Skipping optional fixer: set_literal
RefactoringTool: Skipping optional fixer: ws_comma
RefactoringTool: Refactored C:\Data\EnvrnCan\ECanPython\CDO_Daily_Data_Bulk_Download.py
--- C:\Data\EnvrnCan\ECanPython\CDO_Daily_Data_Bulk_Download.py (original)
+++ C:\Data\EnvrnCan\ECanPython\CDO_Daily_Data_Bulk_Download.py (refactored)
@@ -3,7 +3,7 @@
import os.path
import string
import os
-import urllib2
+import urllib.request, urllib.error, urllib.parse
import csv
import datetime

@@ -40,10 +40,10 @@
    for intYr in range(2011,2012+1):
        #build the query
        strQry ="http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=" + stnID + "&Year=" + str(intYr) + "&timeframe=2&submit=Download+Data"
-        print 'Querying station ' + stnID + ' for year ' + str(intYr)
+        print('Querying station ' + stnID + ' for year ' + str(intYr))
        try:
            response = urllib2.urlopen(strQry)
+            response = urllib.request.urlopen(strQry)
            with open(HOMEDIR + 'outputD.csv', 'a') as output:
                output.write(response.read())
        except Exception, e:
-            print 'Failure getting data for ' + stnID + ' for year ' + str(intYr)
+            print('Failure getting data for ' + stnID + ' for year ' + str(intYr))
        except Exception as e:
+            print('Failure getting data for ' + stnID + ' for year ' + str(intYr))
RefactoringTool: Files that were modified:
RefactoringTool: C:\Data\EnvrnCan\ECanPython\CDO_Daily_Data_Bulk_Download.py
```

Python 2.7.11: How long will it be supported?

email to EC:



**Government
of Canada**

**Gouvernement
du Canada**

**IF I convert the script to Python 3.6,
will the EC server(s) "understand" Python 3.6?**

(Or is historical weather data only set-up for Python 2.7?)

Reply:

...if EC is still using the version which uses the urllib2 library...

(If yes)

then no, a version of Python of 3.1 or higher will not work with this script

Reply#2:

EC does not support this way of database extraction...

for Daily (data)
b/c .csv does not provide...
...multiple months or multiple years

Hourly Data Report for January 01, 2010

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

VICTORIA INT'L A BRITISH COLUMBIA

<u>Latitude:</u>	48°38'50.010" N	<u>Longitude:</u>	123°25'33.000" W	<u>Elevation:</u>	19.50 m
<u>Climate ID:</u>	1018620	<u>WMO ID:</u>	71799	<u>TC ID:</u>	YYJ

Related Data

[Almanac Averages & Extremes \(January 01\)](#)

[Daily Data \(January 2010\)](#)

[Monthly Data \(2010\)](#)

[1981-2010 Climate Normals](#)

Additional Search Options

[Nearby Stations with Data](#)

[Historical Data Search](#)

Download Data

Hourly Data (January 2010)

☒ CSV ☐ XML

Download Data

[Get More Data](#)

Index of ftp://client_climate@ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/



Up to higher level directory

Name	Size	Last Modified	
 Lisezmoi.txt	3 KB	2016-05-11	12:00:00 AM
 Readme.txt	3 KB	2016-12-20	12:00:00 AM
 Répertoire des stations FR.csv	1302 KB	2017-11-05	8:32:00 PM
 Station Inventory EN.csv	1293 KB	2017-11-05	8:32:00 PM
 Suggestions_on_installing_Cygwin_and_running_the_command_line_to_download_dat...	107 KB	2017-10-05	12:41:00 PM

EC instructions to install Cygwin

Cygwin: Unix-like environment and command-line interface for Windows

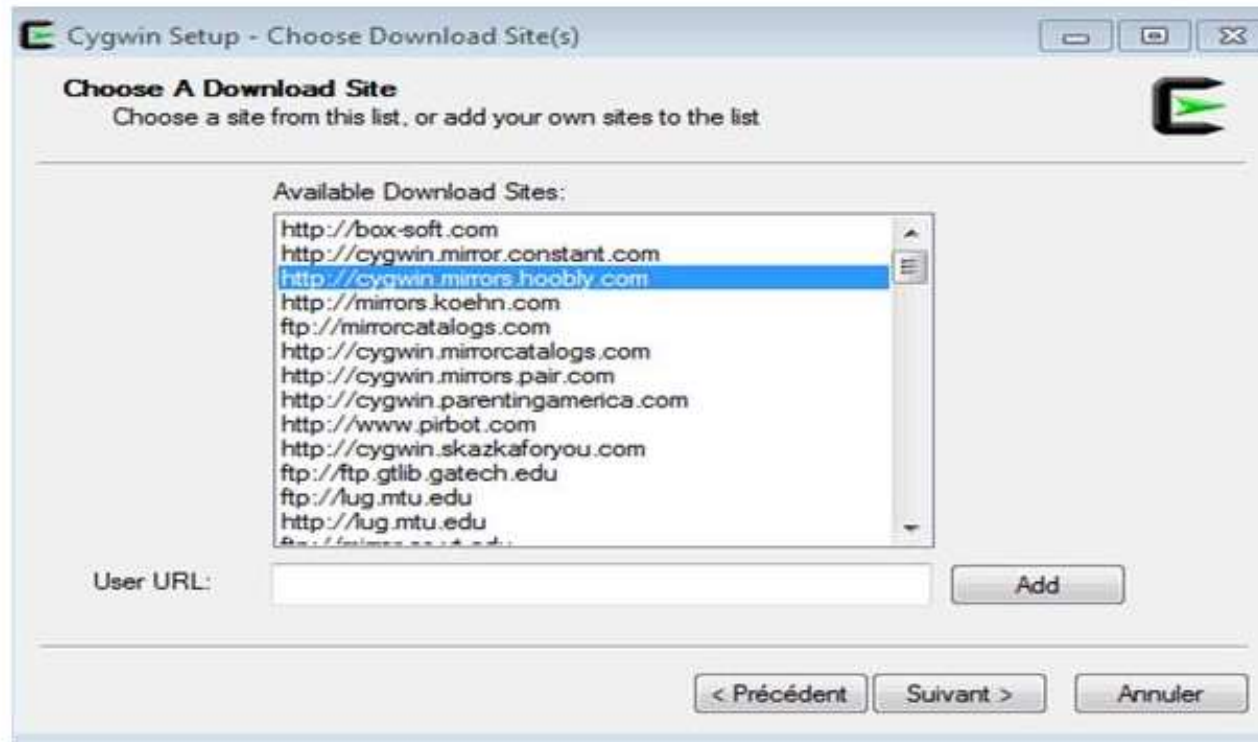
Version: 2016-10-02

Suggestions on installing Cygwin, and running command lines to download data:

1. Installing Cygwin.

Further to downloading the compatible bit-version of Cygwin in your computer (32/64 bit), one of the reasons why the command line may not generate csv files with data is because there may a little installation missteps when setting up Cygwin. The following are some directions that you may follow in order to set the program properly and solve issues:

- When prompt to the window "Available Download Sites" select the option "cygwin.mirrors.hoobly.com"



Cygwin and script

Index of ftp://client_climate@ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/

 Up to higher level directory

Name	Size	Last Modified	
 Lisezmoi.txt	3 KB	2016-05-11	12:00:00 AM
 Readme.txt	3 KB	2016-12-20	12:00:00 AM
 Répertoire des stations FR.csv	1302 KB	2017-11-05	8:32:00 PM
 Station Inventory EN.csv	1293 KB	2017-11-05	8:32:00 PM
 Suggestions_on_installing_Cygwin_and_running_the_command_line_to_download_dat...	107 KB	2017-10-05	12:41:00 PM

this includes the command line script!

EC instructions to install Cygwin

Cygwin: Unix-like environment and command-line interface for Windows

Readme.txt

URL based procedure to automatically download data in bulk from Climate Website
(<http://www.climate.weather.gc.ca>)
Version: 2016-05-10

ENVIRONMENT AND CLIMATE CHANGE CANADA

Command line:

```
for year in `seq 1998 2008`;do for month in `seq 1 12`;do wget --content-disposition "http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=1706&Year=${year}&Month=${month}&Day=14&timeframe=1&submit= Download+Data" ;done;done
```

NOTE: spaces are important! Copy from EC as 1(one) continuous line

```
for year in `seq 2006 2008`;do for month in `seq 1 12`;do wget --content-disposition  
"http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=27226&Year=${year}&Month=${month}&Day=14&timeframe=1&submit= Download+Data" ;  
done;done
```

WHERE;

- year = change values in command line (`seq 1998 2008)
- month = change values in command line (`seq 1 12)
- format= [csv|xml]: the format output
- timeframe = 1: for hourly data
- timeframe = 2: for daily data
- timeframe = 3 for monthly data
- Day: the value of the "day" variable is not used and can be an arbitrary value
- For another station, change the value of the variable stationID
- For the data in XML format, change the value of the variable format to xml in the URL.

```
~  
danielbm@LPRE-040 ~  
$ for year in `seq 2006 2008`;do for month in `seq 1 12`;do wget --content-disposition "http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=27226&Year=${year}&Month=${month}&Day=14&timeframe=1&submit= Download+Data" ;done;done
```

```
~  
Length: unspecified [application/force-download]  
Saving to: 'eng-hourly-08012008-08312008.csv'  
  
eng-hourly-08012008-08312008.csv [ <=>  
  
2017-11-17 11:18:26 (729 KB/s) - 'eng-hourly-08012008-08312008.csv' saved [88187]  
  
--2017-11-17 11:18:26-- http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=27226&Year=2008&Month=9&Day=14&timeframe=1&submit=%20Download+Data  
Resolving climate.weather.gc.ca... 205.189.10.46  
Connecting to climate.weather.gc.ca|205.189.10.46|:80... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: unspecified [application/force-download]  
Saving to: 'eng-hourly-09012008-09302008.csv'  
  
eng-hourly-09012008-09302008.csv [ <=>  
  
2017-11-17 11:18:26 (703 KB/s) - 'eng-hourly-09012008-09302008.csv' saved [85278]  
  
--2017-11-17 11:18:26-- http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=27226&Year=2008&Month=10&Day=14&timeframe=1&submit=%20Download+Data  
Resolving climate.weather.gc.ca... 205.189.10.46  
Connecting to climate.weather.gc.ca|205.189.10.46|:80... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: unspecified [application/force-download]  
Saving to: 'eng-hourly-10012008-10312008.csv'  
  
eng-hourly-10012008-10312008.csv [ <=>  
  
2017-11-17 11:18:27 (701 KB/s) - 'eng-hourly-10012008-10312008.csv' saved [87718]  
  
--2017-11-17 11:18:27-- http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=27226&Year=2008&Month=11&Day=14&timeframe=1&submit=%20Download+Data  
Resolving climate.weather.gc.ca... 205.189.10.46  
Connecting to climate.weather.gc.ca|205.189.10.46|:80... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: unspecified [application/force-download]  
Saving to: 'eng-hourly-11012008-11302008.csv'  
  
eng-hourly-11012008-11302008.csv [ <=>  
  
2017-11-17 11:18:27 (682 KB/s) - 'eng-hourly-11012008-11302008.csv' saved [84861]  
  
--2017-11-17 11:18:27-- http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=27226&Year=2008&Month=12&Day=14&timeframe=1&submit=%20Download+Data  
Resolving climate.weather.gc.ca... 205.189.10.46  
Connecting to climate.weather.gc.ca|205.189.10.46|:80... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: unspecified [application/force-download]  
Saving to: 'eng-hourly-12012008-12312008.csv'  
  
eng-hourly-12012008-12312008.csv [ <=>  
  
2017-11-17 11:18:29 (482 KB/s) - 'eng-hourly-12012008-12312008.csv' saved [87978]
```

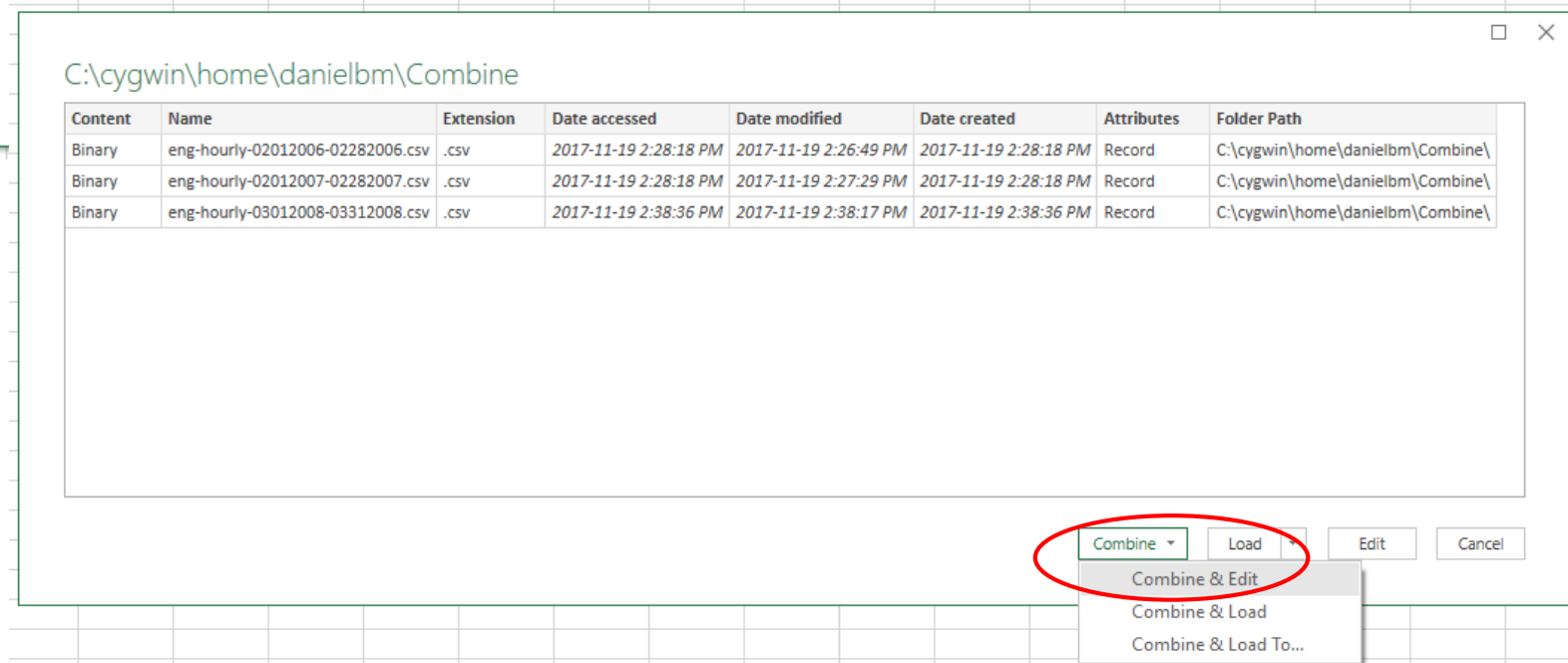
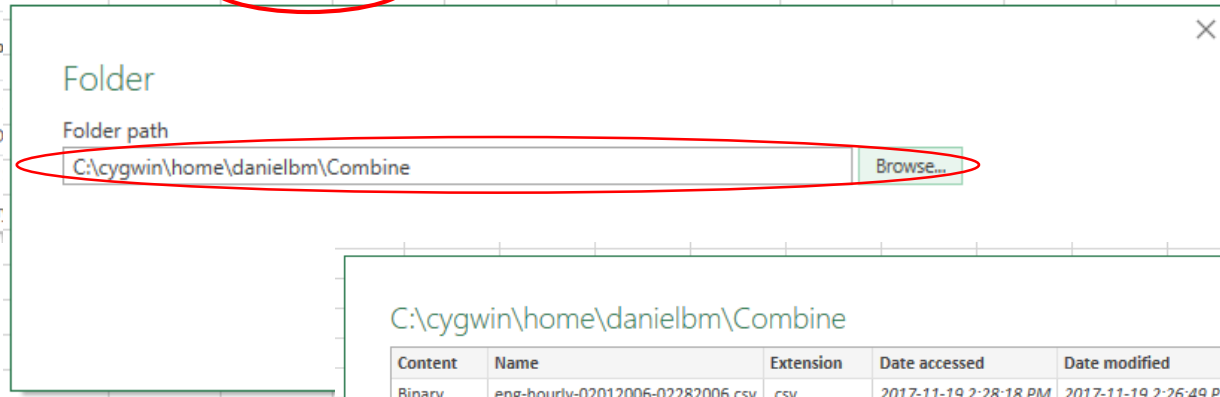
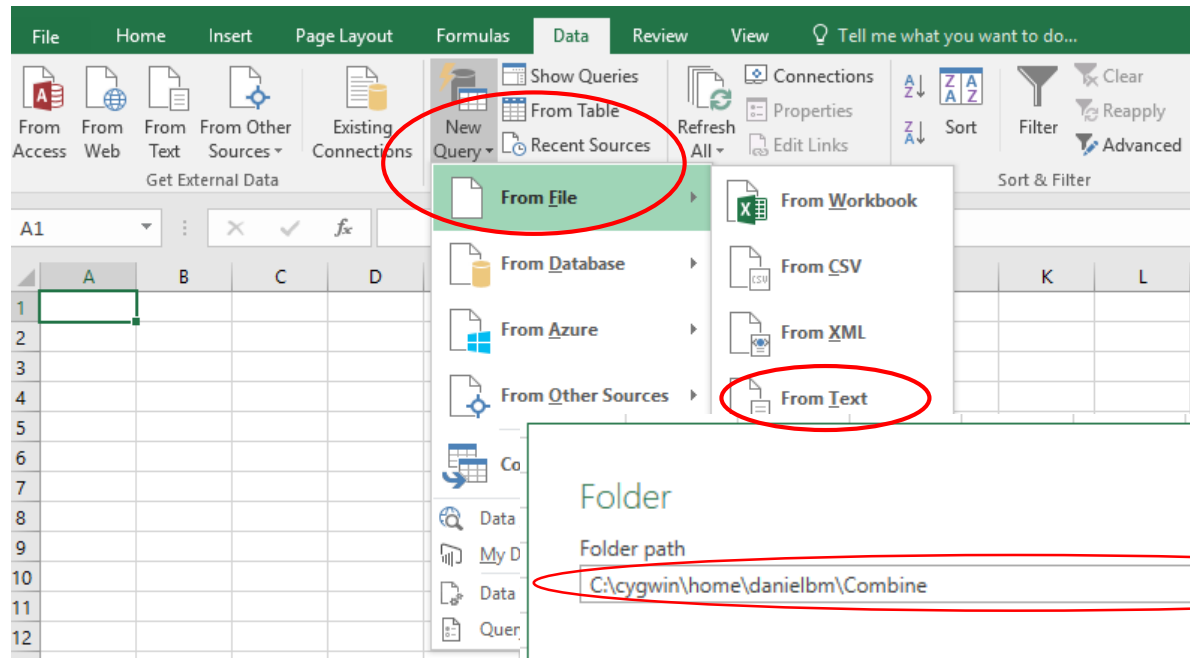
Cygwin

 eng-hourly-01012006-01312006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-01012007-01312007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-01012008-01312008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-02012006-02282006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	77 KB
 eng-hourly-02012007-02282007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	78 KB
 eng-hourly-02012008-02292008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	80 KB
 eng-hourly-03012006-03312006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-03012007-03312007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-03012008-03312008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-04012006-04302006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	83 KB
 eng-hourly-04012007-04302007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	83 KB
 eng-hourly-04012008-04302008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	83 KB
 eng-hourly-05012006-05312006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-05012007-05312007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-05012008-05312008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-06012006-06302006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	84 KB
 eng-hourly-06012007-06302007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	84 KB
 eng-hourly-06012008-06302008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	83 KB
 eng-hourly-07012006-07312006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	87 KB
 eng-hourly-07012007-07312007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	87 KB
 eng-hourly-07012008-07312008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	87 KB
 eng-hourly-08012006-08312006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	87 KB
 eng-hourly-08012007-08312007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-08012008-08312008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	87 KB
 eng-hourly-09012006-09302006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	84 KB
 eng-hourly-09012007-09302007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	84 KB
 eng-hourly-09012008-09302008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	84 KB
 eng-hourly-10012006-10312006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-10012007-10312007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
 eng-hourly-10012008-10312008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	86 KB
eng-hourly-11012006-11302006.csv	2017-11-17 11:18 ...	Microsoft Excel C...	83 KB
eng-hourly-11012007-11302007.csv	2017-11-17 11:18 ...	Microsoft Excel C...	82 KB
eng-hourly-11012008-11302008.csv	2017-11-17 11:18 ...	Microsoft Excel C...	83 KB

**separate files for each month...
...bit of a pain?....**

...combine / merge multiple .csv (or .xls)

NOTE: the following is for Excel 2016



...combine / merge multiple .csv (or .xls)

Combine Files

Specify the settings for each file. [Learn more](#)

Example File:

First file

File Origin

65001: Unicode (UTF-8)

Delimiter

Comma

Data Type Detection

Based on entire dataset

NA	Not Available							
‡	Partner data that is not subject to review by the Nation...							
Date/Time	Year	Month	Day	Time	Data Quality	Temp (°C)	Temp Flag	Dew Point
2006-04-01 00:00	2006	04	01	00:00		9.4		

☐ Skip files with errors

OK

Cancel

...combine / merge multiple .csv (or .xls)

The screenshot shows the Power Query interface. The ribbon includes tabs for File, Home, Transform, Add Column, and View. The Transform tab is active, showing options like Remove Columns, Remove Rows, Split Column, Group By, Data Type, Use First Row as Headers, Replace Values, Merge Queries, Append Queries, Combine Files, Manage Parameters, Data source settings, and New Source. The 'Remove Columns' and 'Remove Rows' buttons are circled in red. The main area displays a data table with columns for Source.Name, Column1, Column2, and various weather-related columns. The right sidebar shows the 'Query Settings' pane with 'PROPERTIES' and 'APPLIED STEPS' sections.

	Source.Name	Column1	Column2	Col...	Col...	Col...	Col...	Col...	Col...	Col...	Col...
1	eng-hourly-04012006-04302006.csv	Station Name	DISCOVERY ISLAND								
2	eng-hourly-04012006-04302006.csv	Province	BRITISH COLUMBIA								
3	eng-hourly-04012006-04302006.csv	Latitude	48.42								
4	eng-hourly-04012006-04302006.csv	Longitude	-123.23								
5	eng-hourly-04012006-04302006.csv	Elevation	18.90								
6	eng-hourly-04012006-04302006.csv	Climate Identifier	1012475								
7	eng-hourly-04012006-04302006.csv	WMO Identifier	71031								
8	eng-hourly-04012006-04302006.csv	TC Identifier	WDR								
9	eng-hourly-04012006-04302006.csv	All times are sp...									
10	eng-hourly-04012006-04302006.csv										
11	eng-hourly-04012006-04302006.csv	Legend									
12	eng-hourly-04012006-04302006.csv	E	Estimated								
13	eng-hourly-04012006-04302006.csv	M	Missing								
14	eng-hourly-04012006-04302006.csv	NA	Not Available								
15	eng-hourly-04012006-04302006.csv	‡	Partner data that i...								
16	eng-hourly-04012006-04302006.csv										
17	eng-hourly-04012006-04302006.csv	Date/Time	Year	Month	Day	Time	Data Qual...	Temp (°C)	Wind Dir (1...	Wind Spd (...)	
18	eng-hourly-04012006-04302006.csv	2006-04-01 00:...	2006	04	01	00:00		9.4	35	13	
19	eng-hourly-04012006-04302006.csv	2006-04-01 01:...	2006	04	01	01:00		9.4	34	15	
20	eng-hourly-04012006-04302006.csv	2006-04-01 02:...	2006	04	01	02:00		9.1	27	6	
21											

Query Settings x

- PROPERTIES
 - Name: Combine2
 - All Properties
- APPLIED STEPS
 - Source
 - Invoke Custo...
 - Renamed Col...
 - Removed Oth...
 - Expanded Ta...
 - Changed Type
 - X Removed Col...

combined / merged files after Excel 2016 (obtained via Cygwin)

Date/Time	Year	Month	Day	Time	Temp (°C)	Dew Point Temp (°C)	Rel Hum (%)	Wind Dir (10s deg)	Wind Spd (km/h)	Visibility (km)	Stn Press (kPa)	Hmdx	Wind Chill	Weather	
2010-01-01 0:00	2010	1	1	0:00	4.3	4	98	25	6	8	100.64			Fog	
2010-01-01 1:00	2010	1	1	1:00	4.4	4.1	98	28	7	8	100.61			Fog	
2010-01-01 2:00	2010	1	1	2:00	4.5	4.4	99	32	4	9.7	100.48			Fog	
2010-01-01 3:00	2010	1	1	3:00	4.9	4.8	99		0	8	100.53			Fog	
2010-01-01 4:00	2010	1	1	4:00	4.9	4.8	99	30	4	8	100.29			Fog	
2010-01-01 5:00	2010	1	1	5:00	5.4	5.2	99	30	7	6.4	100.24			Rain,Fog	
2010-01-01 6:00	2010	1	1	6:00	5.6	5.5	99	27	4	4.8	100.18			Rain,Fog	
2010-01-01 7:00	2010	1	1	7:00	5.5	5.3	99		0	12.9	100.14			Rain	
2010-01-01 8:00	2010	1	1	8:00	5.5	5.5	100		0	16.1	100.12			Rain	
2010-01-01 9:00	2010	1	1	9:00	6.2	6.1	99	12	7	16.1	100.09			Rain	
2010-01-01 10:00	2010	1	1	10:00	7.1	6.9	99	14	9	19.3	100.06			Rain	
2010-01-01 11:00	2010	1	1	11:00	8.3	7.7	96	16	11	12.9	100.12			Rain	
2010-01-01 12:00	2010	1	1	12:00	9.3	8.2	93	13	13	24.1	100.02			Rain	
2010-01-01 13:00	2010	1	1	13:00	9.5	8.2	92	14	15	12.9	100.07			Rain	
2010-01-01 14:00	2010	1	1	14:00	9.2	8.1	93	17	20	16.1	100.1			Rain	
2010-01-01 15:00	2010	1	1	15:00	8.8	7.9	94	17	20	4.8	100.19			Moderate Rain,Fog	
2010-01-01 16:00	2010	1	1	16:00	8.2	7.7	97	14	15	3.2	100.24			Rain,Fog	
2010-01-01 17:00	2010	1	1	17:00	8.6	7.7	94	18	20	6.4	100.3			Rain,Fog	
2010-01-01 18:00	2010	1	1	18:00	9.1	7.2	88	21	17	6.4	100.43			Rain,Fog	
2010-01-01 19:00	2010	1	1	19:00	8.7	7.7	93	14	9	4.8	100.57			Rain,Fog	
2010-01-01 20:00	2010	1	1	20:00	8.8	7.5	92	23	11	16.1	100.71			Rain	
2010-01-01 21:00	2010	1	1	21:00	7.9	7.4	97	24	4	19.3	100.84			Rain	
2010-01-01 22:00	2010	1	1	22:00	7.9	6.9	93	20	15	24.1	100.94			Rain	
2010-01-01 23:00	2010	1	1	23:00	9.1	6.7	85	23	15	32.2	101.03			Rain	
2010-01-02 0:00	2010	1	2	0:00	9.1	6.7	85	24	13	24.1	101.13			Rain	
2010-01-02 1:00	2010	1	2	1:00	9	6.2	83	24	20	24.1	101.23			Rain	
2010-01-02 2:00	2010	1	2	2:00	8.9	5.7	80	23	22	24.1	101.35			Mostly Cloudy	
2010-01-02 3:00	2010	1	2	3:00	8.8	5.6	80	22	22	32.2	101.43			Mostly Cloudy	
2010-01-02 4:00	2010	1	2	4:00	8.8	5.3	79	24	7	32.2	101.51			Cloudy	
2010-01-02 5:00	2010	1	2	5:00	8.8	5.2	78	22	8	48.2	101.55			Cloudy	

...bit of a pain?....



another method: Octave

- programming language primarily intended for numerical computations
- mostly compatible with Matlab
- free open source
- originally released 1988



 [jasonbrodeur](#) / [EC_Wx_tools](#)

Tools to facilitate batch downloading of historical station data from Environment Canada

 **16** commits

 **1** branch

 **0** releases

 **1** contributor

Branch: **master** ▾

New pull request

Find file

Clone or download ▾

 [jasonbrodeur](#) added cd lines Latest commit 78198ec 5 days ago

 Data	added documentation	6 days ago
 EC Documentation	upgraded scripts	11 days ago
 README.md	Update README.md	5 days ago
 csvwrite_with_headers.m	updated function for octave and compiled data	26 days ago
 csvwrite_with_headers_license.txt	updated function for octave and compiled data	26 days ago
 get_EC_Wx.m	added cd lines	5 days ago
 get_EC_Wx_octave.m	added cd lines	5 days ago
 readtext.m	updated function for octave and compiled data	26 days ago
 readtext_license.txt	updated function for octave and compiled data	26 days ago

as of Nov21

 jasonbrodeur added cd lines

78198ec 5 days ago

1 contributor

131 lines (121 sloc) 7.86 KB

Raw

Blame

History



```
1 % Automated download of EC station data -- Octave-friendly version
2 % Using instructions found here: ftp://client_climate@ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Suggestions_on_installing_Cygwin_a
3 % and here: ftp://ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Readme.txt
4 % Station inventory (to Identify Station ID numbers): ftp://ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Station%20Inventory%20EN.csv
5 % For example, a url that will work (for testing purposes) is: 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stati
6 %
7 % Created by JJB, November, 2017
8 % Tested and verified using Octave 4.0.0 on Windows 10 and Ubuntu 16.04 LTS
9 %
10 % ## Configuring and running in Octave (for full instrucitons: https://github.com/jasonbrodeur/EC_Wx_tools):
11 %- in the command window, change to the EC_Wx_tools-master directory
12 %- --- e.g. cd('D:\Mystuff\EC_Wx_tools-master') (Replace D:\Mystuff with your actual directory
13 %- Open the get_EC_Wx_octave.m function in the Octave editor
14 %- modify the value of save_dir to match your working directory
15 %- --- e.g. in the example provided above, you would change it to 'D:\Mystuff\EC_Wx_tools-master\Data\' (note that the trailing slash is imp
16 %- edit the values for start_year and end_year to match your requirements
17 %- edit the list provided in station_ids, to match the IDs of the stations you want to download from ([here is a link](ftp://ftp.tor.ec.gc.
18 %- --- be sure that each id number is separated by a semicolon (this will make an nx1 column vector)
19 %- If you want to compile the data into a single (long) csv for all years at a given site, keep compile_flag=1; If you want to download ind
20 %- Once you've done this, you should be able to click 'Run'. It should then work its way through the sites, downloading monthly files to a
21
22 url_base = 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html'; % Don't change
23
24 %% Editable parameters
25 save_dir = 'D:\Local\EC_Wx\Data\'; % Location to save data files.
26 if isdir(save_dir)==0
27     mkdir(save_dir);
28 end
29
30 timeframe = 1; % 1 = hourly; 2 = daily; 3 = monthly
31 station_ids = [27600; 31688]; % The station ID numbers
32 start_year = 2016;
33 end_year = 2017;
34 compile_flag = 1; % If set to 0, script will download separate files to disk; If set to 1, will compile data for all years for a single sta
35
```



```
% Automated download of EC station data -- Octave-friendly version
% Using instructions found here:
ftp://client_climate@ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Suggestions_on_installing_Cygwin_and_running_the_command_line_to_download_data.docx
% and here: ftp://ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Readme.txt
% Station inventory (to identify station ID numbers): ftp://ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Station%20Inventory%20EN.csv
% For example, a url that will work (for testing purposes) is: 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html?
format=csv&stationID=1705&Year=2010&Month=1&Day=14&timeframe=2&submit= Download+Data'
%
% Created by JJB, November, 2017
% Tested and verified using Octave 4.0.0 on Windows 10 and Ubuntu 16.04 LTS
%
% ## Configuring and running in Octave (for full instructions: https://github.com/jasonbrodeur/EC_Wx_tools):
%- in the command window, change to the EC_Wx_tools-master directory
%---- e.g. cd('D:\Mystuff\EC_Wx_tools-master') (Replace D:\Mystuff with your actual directory)
%- Open the get_EC_Wx_octave.m function in the Octave editor
%- modify the value of save_dir to match your working directory
%---- e.g. in the example provided above, you would change it to 'D:\Mystuff\EC_Wx_tools-master\Data\' (note that the trailing slash is important and
necessary)
%- edit the values for start_year and end_year to match your requirements
%- edit the list provided in station_ids, to match the IDs of the stations you want to download from ([here is a link]
(ftp://ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Station%20Inventory%20EN.csv) to the Station directory). Use values found in the "Station ID"
field.
%---- be sure that each id number is separated by a semicolon (this will make an nx1 column vector)
%- If you want to compile the data into a single (long) csv for all years at a given site, keep compile_flag=1; If you want to download individual monthly
files, change its value to 0;
%- Once you've done this, you should be able to click 'Run'. It should then work its way through the sites, downloading monthly files to a file called
'tmp.csv', reopening that file and appending it to the master list, which will be saved at the end.

url_base = 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html'; % Don't change

%% Editable parameters
save_dir = 'D:\Local\EC_Wx\Data\'; % Location to save data files.
if isdir(save_dir)==0
    mkdir(save_dir);
end

timeframe = 1; % 1 = hourly; 2 = daily; 3 = monthly
station_ids = [27600; 31688]; % The station ID numbers
start_year = 2016;
end_year = 2017;
compile_flag = 1; % If set to 0, script will download separate files to disk; If set to 1, will compile data for all years for a single station.

%% Try to automatically cd into the proper directory (assuming the
```

change what you want here... or....

Install

Source

GNU/Linux

macOS

BSD

Windows

The latest stable version is GNU Octave 4.2.1:

- [octave-4.2.1-w32-installer.exe](#) (~ 170 MB) [\[signature\]](#)
- [octave-4.2.1-w64-installer.exe](#) (~ 184 MB) [\[signature\]](#)
- [octave-4.2.1-w32.zip](#) (~ 280 MB) [\[signature\]](#)
- [octave-4.2.1-w64.zip](#) (~ 378 MB) [\[signature\]](#)

All Windows binaries with corresponding source code can be downloaded from <https://ftp.gnu.org/gnu/octave/windows/>.

paste code into Octave
Editor pane

...change script here...

```

Editor
File Edit View Debug Run Help

OctaveTest.m
1 % Automated download of EC station data -- Octave-friendly version
2 % Using instructions found here: ftp://client_climate@ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Suggestions_on_installing_Cygwin_and_running_the_c
3 % and here: ftp://ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Readme.txt
4 % Station inventory (to identify station ID numbers): ftp://ftp.tor.ec.gc.ca/Pub/Get_More_Data_Plus_de_donnees/Station%20Inventory%20EN.csv
5 % For example, a url that will work (for testing purposes) is: 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html?format=csv&stationID=1705&Year=2
6 url_base = 'http://climate.weather.gc.ca/climate_data/bulk_data_e.html'; % Don't change
7
8 %% Editable parameters
9 save_dir = 'C:\Data\EnvrnCan\ECanOctave\'; % Location to save data files.
10 if isdir(save_dir)==0
11     mkdir(save_dir);
12 end
13
14 timeframe = 2; % 1 = hourly; 2 = daily; 3 = monthly
15 station_ids = [31688]; % The station ID numbers
16 start_year = 2015;
17 end_year = 2016;
18 compile_flag = 1; % If set to 0, script will download separate files to disk; If set to 1, will compile data for all years for a single station.
19
20 %% Prepare output headers for hourly and daily datasets. Only output
21 % numeric fields (i.e. flags are not outputted).
22 switch timeframe
23     case 1 % if hourly
24         month_list = 12;
25         fname_label = 'hourly';
26         % headers = {'Year','Month','Day','Max Temp (°C)','Min Temp (°C)','Mean Temp (°C)','Total Precip (mm)'};
27         headers = {'Year',1,'Month',1,'Day',1,'Time',1,'Data Quality',0,'Temp (°C)',1,'Temp Flag',0,'Dew Point Temp (°C)',1,...
28             'Dew Point Temp Flag',0,'Rel Hum (%)',1,'Rel Hum Flag',0,'Wind Dir (10s deg)',1,'Wind Dir Flag',0,'Wind Spd (km/h)',1,...
29             'Wind Spd Flag',0,'Visibility (km)',1,'Visibility Flag',0,'Stn Press (kPa)',1,'Stn Press Flag',0,'Hmdx',1,'Hmdx Flag',0,...
30             'Wind Chill',1,'Wind Chill Flag',0,'Weather',0};
31
32     case 2 % if daily
33         month_list = 1; % When daily values are being collected, as the entire year of data is returned
34         fname_label = 'daily';
35         % headers = {'Year','Month','Day','Max Temp (°C)','Min Temp (°C)','Mean Temp (°C)','Heat Deg Days (°C)','Cool Deg Days (°C)','Total Rain (m
36             'Snow on Grnd (cm)','Dir of Max Gust (10s deg)','Spd of Max Gust (km/h)'};
37         headers = {'Year',1,'Month',1,'Day',1,'Data Quality',0,'Max Temp (°C)',1,'Max Temp Flag',0,'Min Temp (°C)',1,'Min Temp Flag',0,...
38             'Mean Temp (°C)',1,'Mean Temp Flag',0,'Heat Deg Days (°C)',1,'Heat Deg Days Flag',0,'Cool Deg Days (°C)',1,'Cool Deg Days Flag',0,...
39             'Total Rain (mm)',1,'Total Rain Flag',0,'Total Snow (cm)',1,'Total Precip (mm)',1,'Total Precip Flag',0,...
40             'Snow on Grnd (cm)',1,'Snow on Grnd Flag',0,'Dir of Max Gust (10s deg)',1,'Dir of Max Gust Flag',0,'Spd of Max Gust (km/h)',1,...
41             'Spd of Max Gust Flag',0};
42 end
43 %%% Keep only headers that are numeric
44 ind = find(cell2mat(headers(:,2))==1); % pull out numeric fields only:
45 headers = headers(ind,1);
46 headers_out = headers;
47 % Header that's used for printing final compiled file:
48 headers_out = strrep(headers_out,'Å',''); % remove the escape character.
49 if timeframe ==1; headers_out(strcmp(headers_out(:,1),'Time')==1,1) = 'Hour';end % Swap out 'Time' for 'Hour' in header for hourly data.
50
51 %% Run the main loop
52 for i = 1:size(station_ids,1) % Cycle through sites
53     out = [];
54     for year = start_year:end_year
55         for month = 1:month_list(end)

```

line: 1 col: 1 encoding: SYSTEM eol: CRLF

Command Window Editor Documentation

```
9 save_dir = 'C:\Data\EnvrnCan\ECanOctave\'; % Location to save data files.
```

```
14 timeframe = 2; % 1 = hourly; 2 = daily; 3 = monthly
15 station_ids = [27600; 31688]; % The station ID numbers
16 start_year = 2015;
17 end_year = 2016;
18 compile_flag = 1; % If set to 0, script will download separate files to disk; If set to 1, will compile data for all years for a single station.
```

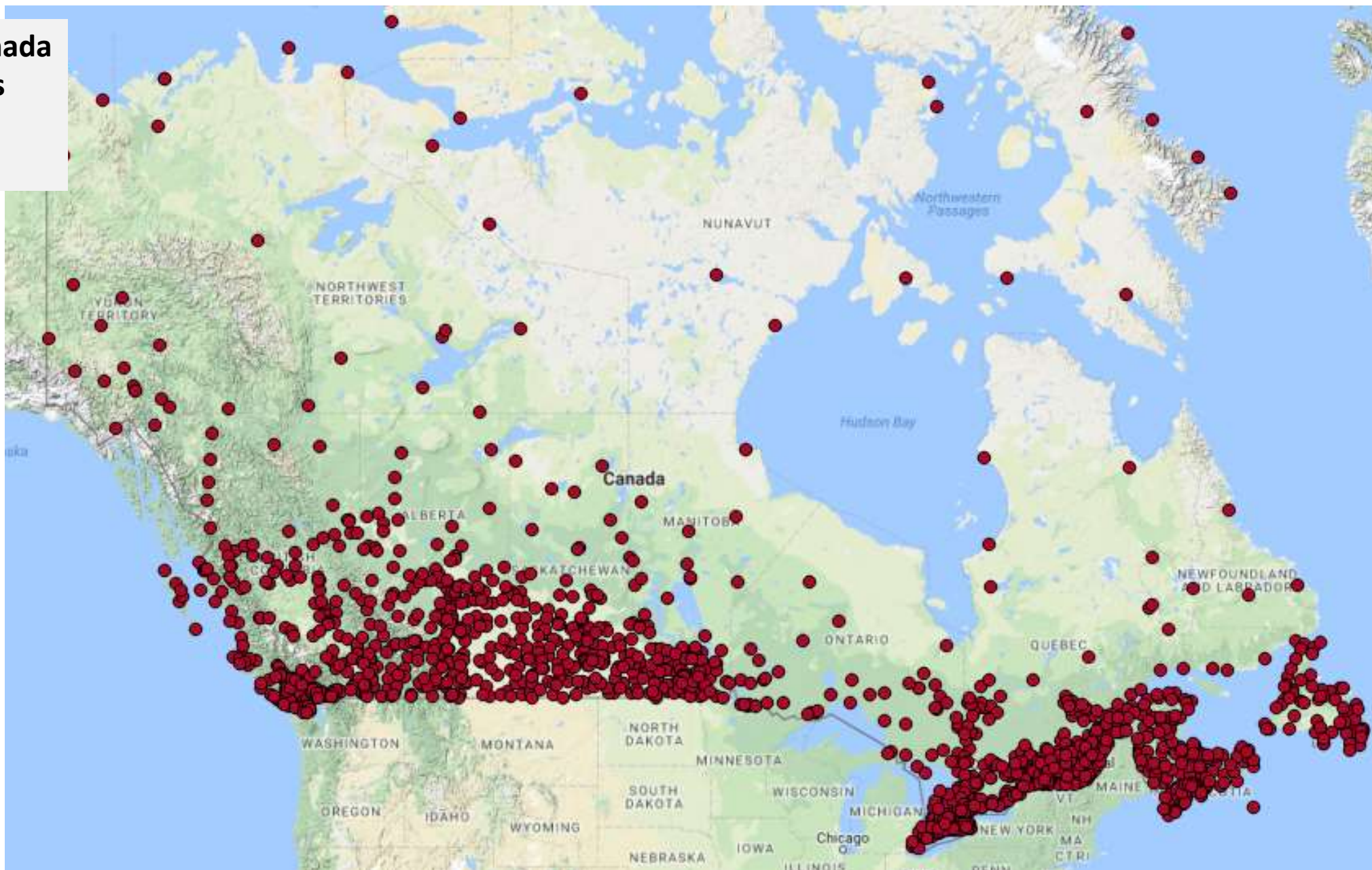
```
65 filename = [save_dir 'tmp.csv']; saved file name
```

	A	B	C	D	E	F	G	H	I	J
	Year	Month	Day	Max Temp (°C)	Min Temp (°C)	Mean Temp (°C)	Heat Deg Days (°C)	Cool Deg Days (°C)	Total Rain (mm)	T
67	2016	12	21	1.3	-4.6	-1.7	19.7	0	NaN	N
68	2016	12	22	4.1	0.8	2.5	15.5	0	NaN	N
69	2016	12	23	3.7	-1.1	1.3	16.7	0	NaN	N
70	2016	12	24	4.7	1.7	3.2	14.8	0	NaN	N
71	2016	12	25	3.8	-2.2	0.8	17.2	0	NaN	N
72	2016	12	26	10.1	-2	4.1	13.9	0	NaN	N
73	2016	12	27	8.5	-2	3.3	14.7	0	NaN	N
74	2016	12	28	1.5	-2.4	-0.5	18.5	0	NaN	N
75	2016	12	29	2.8	-0.1	1.4	16.6	0	NaN	N
76	2016	12	30	0.9	-2.3	-0.7	18.7	0	NaN	N
77	2016	12	31	NaN	-2.3	NaN	NaN	NaN	NaN	N
78	2017	1	1	3.1	-0.5	1.3	16.7	0	NaN	N
79	2017	1	2	5.5	0.7	3.1	14.9	0	NaN	N
80	2017	1	3	4.8	2.4	3.6	14.4	0	NaN	N
81	2017	1	4	3.8	-7.6	-1.9	19.9	0	NaN	N
82	2017	1	5	-5.3	-10.3	-7.8	25.8	0	NaN	N
83	2017	1	6	-5.9	-11.8	-8.9	26.9	0	NaN	N
84	2017	1	7	-6.4	-11.8	-9.1	27.1	0	NaN	N
85	2017	1	8	-8.2	-11.1	-9.7	27.7	0	NaN	N

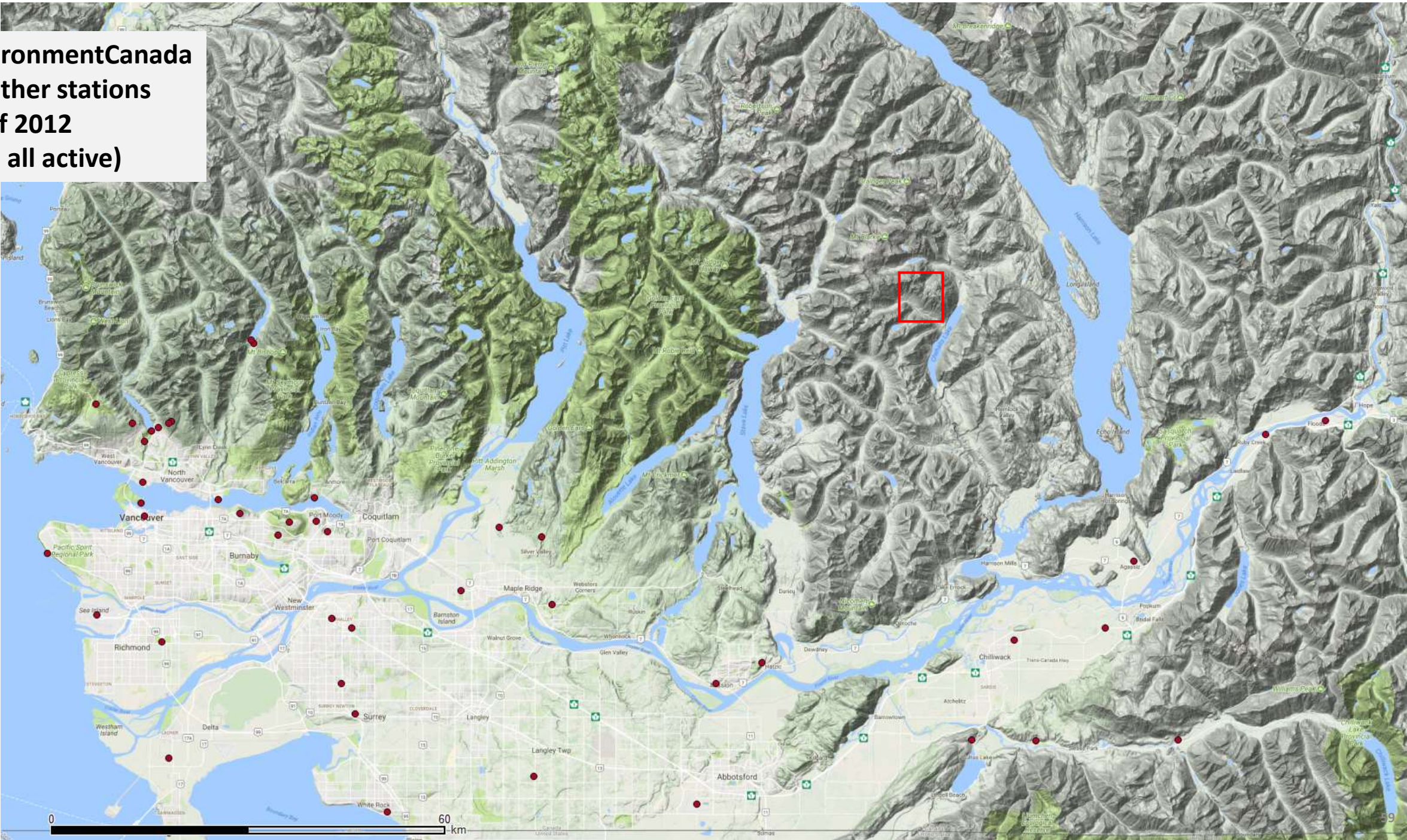
separate years in one .csv...

(but has not worked for me yet...)

**EnvironmentCanada
weather stations
as of 2012
(not all active)**



EnvironmentCanada
weather stations
as of 2012
(not all active)



other climate data possibilities... using GIS

WorldClim - Global Climate Data

Free climate data for ecological modeling and GIS

WorldClim

WorldClim is a set of global climate layers (gridded climate data) with a spatial resolution of about 1 km². These data can be used for mapping and spatial modeling.

The *new* **Version 2.0** is now available (current climate only --- more coming soon)

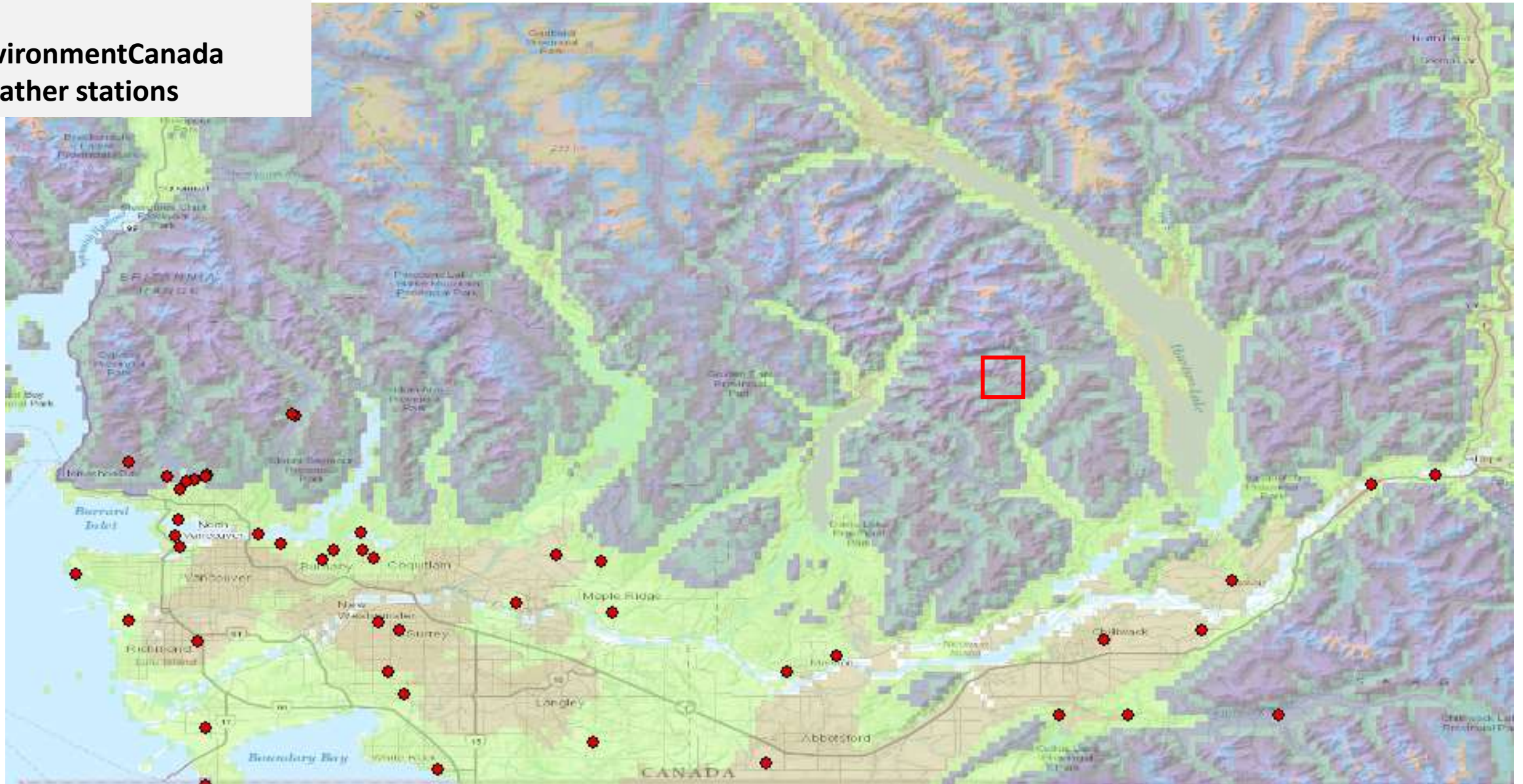
The old version is **Version 1.4**.

For this version you can get data for past, current and future climates.

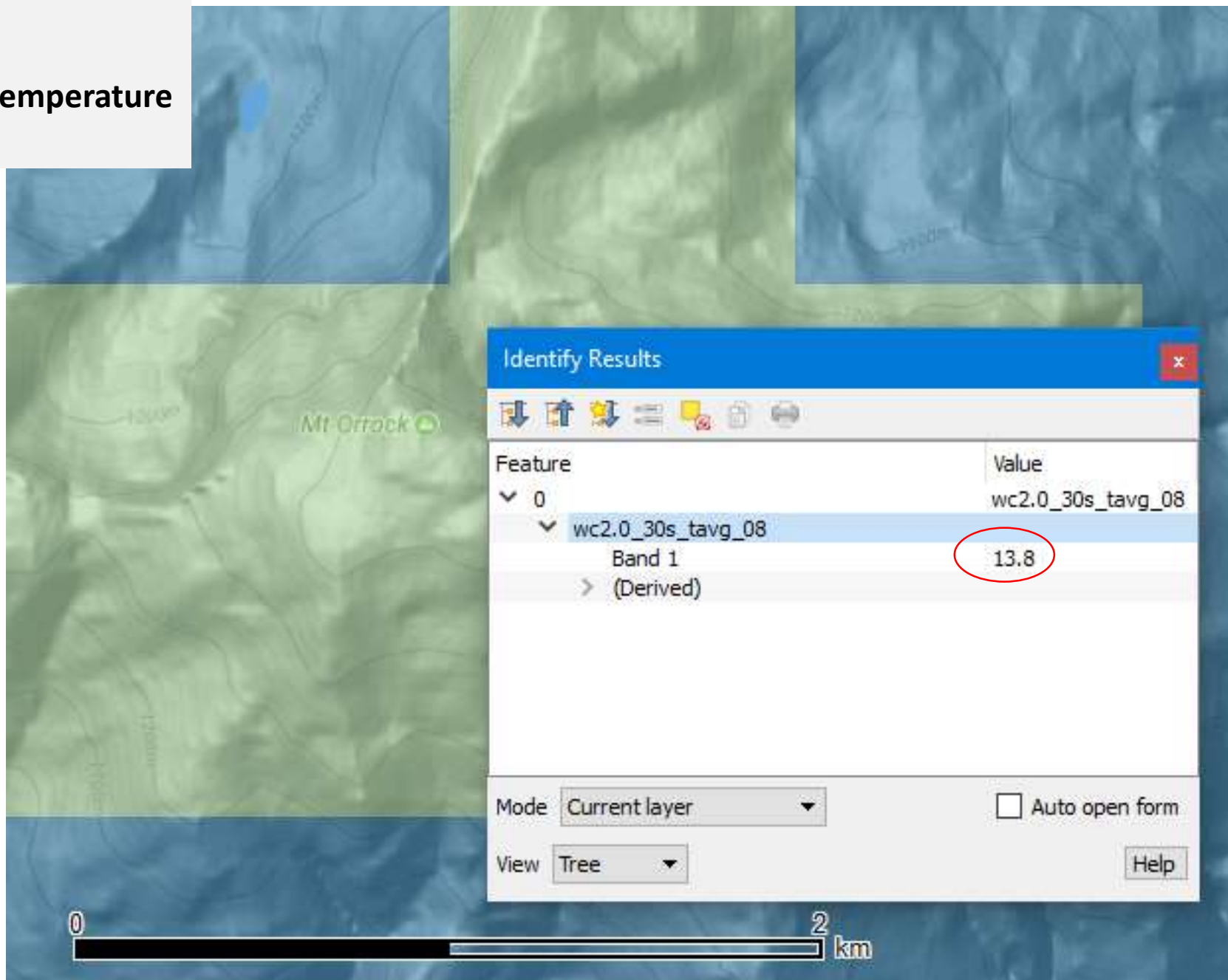
**data interpolated to
1 square kilometre grid**

**Version2: gridded raster climate data of minimum, mean, maximum temperature and precipitation
for 1970-2000 averages
by months Jan-Dec**

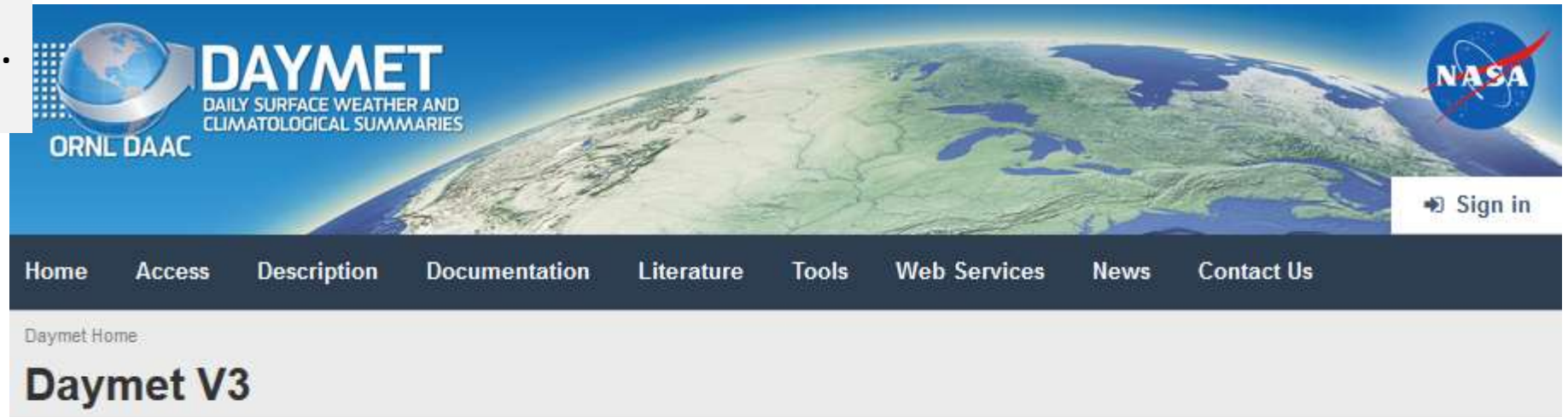
**WorldClim.org raster data
&
EnvironmentCanada
weather stations**



WorldClim
raster data
average August temperature
1970-2000



DayMet
much more complicated...
...but possible...



Data Access

Direct

[Daymet Data Sets](#)
[THREDDS Data Server](#)

Tools

[Single Pixel Extraction](#)
[Daymet Tile Selection](#)

Cite Daymet

[How to cite Daymet data](#)

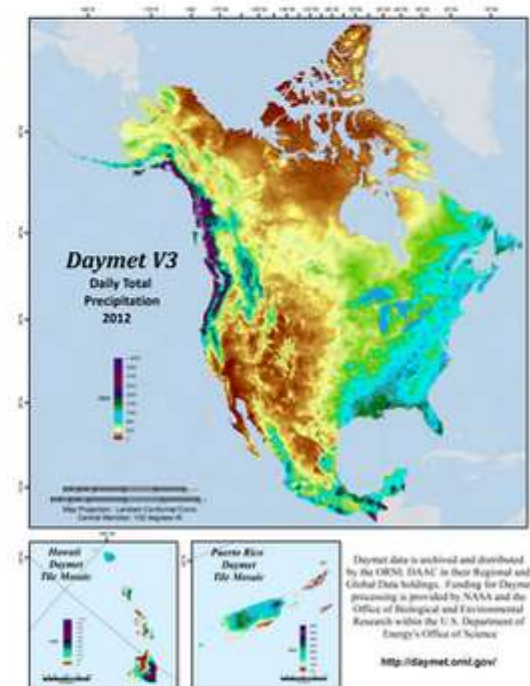
Daymet

What's new in Version 3

Archived and distributed through the [ORNL DAAC](#), the Daymet data set provides gridded estimates of daily weather parameters for North America, including daily continuous surfaces of minimum and maximum temperature, precipitation occurrence and amount, humidity, shortwave radiation, snow water equivalent, and day length. The daily time step, 1 km x 1 km spatial resolution, and North American spatial extent of the data set makes it a unique and valuable contribution to scientific, research, and educational communities. The literature shows that Daymet data have been broadly applied to fields including hydrology, terrestrial vegetation growth models, carbon cycle science, and regional to large scale climate change analysis.

Access to the Daymet data set is available through a variety of tools and formats allowing a rich resource of daily surface meteorology.

Daymet data are available for 1980 through the latest full calendar year and includes the United States, Mexico, Canada, Hawaii, and Puerto Rico.



Daily Annual Total Precipitation, 2012

Summary

- **Python 2.7 script**
 - 'simplest' script but need to strip out station information when downloading multiple months, years
 - long term support??
- **Cygwin**
 - separate .csv's need to be combined / merged
- **Octave**
 - complex script
 - currently for me not compiling multiple months, years in one .csv
- **WorldClim: 20 year averages; raster data for GIS**
- **DayMet: NetCDF files need to be converted to raster for GIS**