

User Guide for NRC’s Building Simulation Climate Data

The users of NRC’s Building Simulation Climate Data can find the following instructions useful to easily and accurately acquire and interpret the climate files. Below, a series of steps have been performed to demonstrate the process of searching, downloading and interpreting climate files for the Ottawa International Airport. The process can be extended to any of the 564 locations part of this database.

1. Download the “Full list of stations (Excel)” file available on the database webpage under the “Downloads” section. This file contains the list of all 564 locations for which the building simulation climate data has been prepared. Users can use this file to search for a particular location by their name and/or climate ID (if known). For example, the “OTTAWA INTL A” is the entry that corresponds to the Ottawa International Airport. The row corresponding to this entry is highlighted below. The highlighted row contains metadata consisting of the data version, name, province, climate ID, Latitude, Longitude, UTC offset, and elevation associated with the Ottawa International Airport.

1	Version / Version	Name / Nom	Province	Country	Climate ID	Latitude	Longitude	UTC offset	Elevation	Historical / Historique (file / fichier)	Historical / Historique (URL / URL)
381	NRCV12022	HAMILTON A	ON	CAN	6153193	43.17	-79.93	-5	237.7	Weatherfile_Historical_6153193.zip	https://nrc-digital-repository.canada.ca/4
382	NRCV12022	HAMILTON RBG CS	ON	CAN	6153301	43.29	-79.91	-5	102	Weatherfile_Historical_6153301.zip	https://nrc-digital-repository.canada.ca/4
383	NRCV12022	HARROW CDA AUTO	ON	CAN	6133362	42.03	-82.9	-5	191	Weatherfile_Historical_6133362.zip	https://nrc-digital-repository.canada.ca/4
384	NRCV12022	KAPUSKASING A	ON	CAN	6073976	49.41	-82.47	-5	226.5	Weatherfile_Historical_6073976.zip	https://nrc-digital-repository.canada.ca/4
385	NRCV12022	KEMPTVILLE CS	ON	CAN	6104027	45	-75.63	-5	99.4	Weatherfile_Historical_6104027.zip	https://nrc-digital-repository.canada.ca/4
386	NRCV12022	KENORA A	ON	CAN	6034076	49.79	-94.36	-6	409.7	Weatherfile_Historical_6034076.zip	https://nrc-digital-repository.canada.ca/4
387	NRCV12022	KILLARNEY (AUT)	ON	CAN	605D125	45.97	-81.48	-5	196.3	Weatherfile_Historical_605D125.zip	https://nrc-digital-repository.canada.ca/4
388	NRCV12022	KIRKLAND LAKE CS	ON	CAN	6074211	48.15	-80	-5	324	Weatherfile_Historical_6074211.zip	https://nrc-digital-repository.canada.ca/4
389	NRCV12022	LAGOON CITY	ON	CAN	6114295	44.55	-79.22	-5	220.7	Weatherfile_Historical_6114295.zip	https://nrc-digital-repository.canada.ca/4
390	NRCV12022	LANSDOWNE HOUSE (AUT)	ON	CAN	6014353	52.2	-87.94	-5	253.4	Weatherfile_Historical_6014353.zip	https://nrc-digital-repository.canada.ca/4
391	NRCV12022	LONDON A	ON	CAN	6144473	43.03	-81.15	-5	278	Weatherfile_Historical_6144473.zip	https://nrc-digital-repository.canada.ca/4
392	NRCV12022	MOOSONEE	ON	CAN	6075420	51.29	-80.61	-5	9.1	Weatherfile_Historical_6075420.zip	https://nrc-digital-repository.canada.ca/4
393	NRCV12022	MOUNT FOREST (AUT)	ON	CAN	6145504	43.98	-80.75	-5	414.5	Weatherfile_Historical_6145504.zip	https://nrc-digital-repository.canada.ca/4
394	NRCV12022	MUSKOKA	ON	CAN	6115529	44.97	-79.3	-5	281.9	Weatherfile_Historical_6115529.zip	https://nrc-digital-repository.canada.ca/4
395	NRCV12022	NAGAGAMI (AUT)	ON	CAN	6075543	49.75	-84.16	-5	264	Weatherfile_Historical_6075543.zip	https://nrc-digital-repository.canada.ca/4
396	NRCV12022	NORTH BAY A	ON	CAN	6085680	46.36	-79.42	-5	370.3	Weatherfile_Historical_6085680.zip	https://nrc-digital-repository.canada.ca/4
397	NRCV12022	OTTAWA INTL A	ON	CAN	6106001	45.32	-75.67	-5	114.9	Weatherfile_Historical_6106001.zip	https://nrc-digital-repository.canada.ca/4
398	NRCV12022	PARRY SOUND CCG	ON	CAN	6116257	45.34	-80.04	-5	176.3	Weatherfile_Historical_6116257.zip	https://nrc-digital-repository.canada.ca/4
399	NRCV12022	PEAWANUCK (AUT)	ON	CAN	6016295	54.99	-85.44	-5	52.7	Weatherfile_Historical_6016295.zip	https://nrc-digital-repository.canada.ca/4
400	NRCV12022	PETERBOROUGH	ON	CAN	6166415	44.23	-78.36	-5	191.4	Weatherfile_Historical_6166415.zip	https://nrc-digital-repository.canada.ca/4
401	NRCV12022	PICKLE LAKE (AUT)	ON	CAN	6016525	51.45	-90.22	-5	390.8	Weatherfile_Historical_6016525.zip	https://nrc-digital-repository.canada.ca/4
402	NRCV12022	POINT PELEE CS	ON	CAN	613P001	41.95	-82.52	-5	176.8	Weatherfile_Historical_613P001.zip	https://nrc-digital-repository.canada.ca/4
403	NRCV12022	POINT PETRE (AUT)	ON	CAN	6156559	43.83	-77.15	-5	78.6	Weatherfile_Historical_6156559.zip	https://nrc-digital-repository.canada.ca/4
404	NRCV12022	PORT WELLER (AUT)	ON	CAN	6136699	43.25	-79.22	-5	79	Weatherfile_Historical_6136699.zip	https://nrc-digital-repository.canada.ca/4
405	NRCV12022	PUKASKWA (AUT)	ON	CAN	6046768	48.61	-86.29	-5	191.5	Weatherfile_Historical_6046768.zip	https://nrc-digital-repository.canada.ca/4
406	NRCV12022	SAULT STE MARIE A	ON	CAN	6057591	46.49	-84.51	-5	192	Weatherfile_Historical_6057591.zip	https://nrc-digital-repository.canada.ca/4
407	NRCV12022	SIOUX LOOKOUT A	ON	CAN	6037776	50.11	-91.91	-6	383.1	Weatherfile_Historical_6037776.zip	https://nrc-digital-repository.canada.ca/4

Figure 1. The entry corresponding to the Ottawa International Airport in the “Full list of stations (Excel)” file.

2. Additionally the highlighted row contains the direct download links for all climate files available for the Ottawa International Airport for the different scenarios. For example, the direct download link for the “historical” scenario is: <https://nrc-digital-repository.canada.ca/eng/view/dataset/?id=bd339698-5eb8-4635-b411-63d4f670382b&dp=3321>. This direct download web-link can be simply clicked on, or copy-pasted in a web browser to start the download of the historical climate file prepared for the Ottawa International Airport. Similarly, direct download links for

climate files for other locations and scenarios are provided in the “Full list of stations (Excel)” file.

3. The names of the downloaded climate files include a string denoting the scenario and climate ID of the location they correspond to. For instance, a file: “Weatherfile_GW0.5_830P001.csv” is a climate file that corresponds to a scenario: global warming (GW) level of 0.5°C. Eight different values of scenarios are possible: “Historical”, “GW0.5”, “GW1.0”, “GW1.5”, “GW2.0”, “GW2.5”, “GW3.0”, and “GW3.5”. The climate ID associated with this file is: 830P001.
4. Finally, each climate file contains 18 columns as described in Table 1. Please note that the column names ending with “f100” contain climate variables whose values have been scaled by a factor of 100 so they need to be un-scaled by dividing the values by 100 before they are used for building simulations.

Table 1. The description of variables present in the climate files.

S. No.	Column name	Description
1	RUN	Run number (R1-R15) of Canadian Regional Climate Model, CanRCM4 large ensemble
2	YEAR	Year associated with the record
3	MONTH	Month associated with the record
4	DAY	Day of the month associated with the record
5	HOUR	Hour associated with the record
6	YDAY	Day of the year associated with the record
7	DRI_kJperM2_f100	Direct horizontal irradiance in kJ/m ² (total from previous HOUR to the HOUR indicated). The data provided has been multiplied by a factor of 100.
8	DHI_kJperM2_f100	Diffused horizontal irradiance in kJ/m ² (total from previous HOUR to the HOUR indicated). The data provided has been multiplied by a factor of 100.
9	DNI_kJperM2_f100	Direct normal irradiance in kJ/m ² (total from previous HOUR to the HOUR indicated). The data provided has been multiplied by a factor of 100.
10	GHI_kJperM2_f100	Global horizontal irradiance in kJ/m ² (total from previous HOUR to the HOUR indicated). The data provided has been multiplied by a factor of 100.

11	TCC_Percent_f100	Instantaneous total cloud cover at the HOUR in % (range: 0-100). The data provided has been multiplied by a factor of 100.
12	RAIN_Mm_f100	Total rainfall in mm (total from previous HOUR to the HOUR indicated). The data provided has been multiplied by a factor of 100.
13	WDIR_ClockwiseDegFromNorth_f100	Instantaneous wind direction at the HOUR in degrees (measured clockwise from the North). The data provided has been multiplied by a factor of 100.
14	WSP_MPerSec_f100	Instantaneous wind speed at the HOUR in meters/sec. The data provided has been multiplied by a factor of 100.
15	RHUM_Percent_f100	Instantaneous relative humidity at the HOUR in %. The data provided has been multiplied by a factor of 100.
16	TEMP_K_f100	Instantaneous temperature at the HOUR in Kelvin. The data provided has been multiplied by a factor of 100.
17	ATMPR_Pa_f100	Instantaneous atmospheric pressure at the HOUR in Pa. The data provided has been multiplied by a factor of 100.
18	SnowC_Yes1No0	Instantaneous snow-cover code at the HOUR (1 - snow; 0 - no snow)