

# Climate Atlas Report

## Municipality: Brampton



### RCP 8.5: High Carbon climate future

GHG emissions continue to increase at current rates

Variable	Period	1976-2005 Mean	2021-2050			2051-2080		
			Low	Mean	High	Low	Mean	High
Precipitation (mm)	annual	790	668	842	1026	692	867	1059
Precipitation (mm)	spring	203	147	224	314	157	238	329
Precipitation (mm)	summer	207	122	209	307	119	206	311
Precipitation (mm)	fall	208	133	217	312	131	219	325
Precipitation (mm)	winter	172	125	191	266	133	204	284
Mean Temperature (°C)	annual	8.3	9.1	10.4	11.7	11.1	12.5	14.1
Mean Temperature (°C)	spring	6.6	6.3	8.5	10.7	8.2	10.4	12.8
Mean Temperature (°C)	summer	20.1	20.7	22.2	23.7	22.5	24.4	26.3
Mean Temperature (°C)	fall	10.1	10.7	12.3	13.9	12.5	14.3	16
Mean Temperature (°C)	winter	-3.9	-4.1	-1.5	1.2	-1.8	0.9	3.6
Tropical Nights	annual	6	8	19	33	22	40	62
Very Hot Days (+30°C)	annual	14	15	33	52	34	59	83
Very Cold Days (-30°C)	annual	0	0	0	0	0	0	0
Date of Last Spring Frost	annual	April 23	March 28	April 15	May 3	March 14	April 5	April 26
Date of First Fall Frost	annual	Oct. 22	Oct. 14	Nov. 3	Nov. 24	Oct. 24	Nov. 17	Dec. 11
Frost-Free Season (days)	annual	178	170	199	230	190	223	255

### RCP 4.5: Low Carbon climate future

GHG emissions much reduced

Variable	Period	1976-2005 Mean	2021-2050			2051-2080		
			Low	Mean	High	Low	Mean	High
Precipitation (mm)	annual	792	668	830	1001	669	854	1048
Precipitation (mm)	spring	204	142	218	303	148	225	310
Precipitation (mm)	summer	208	126	210	307	121	211	316
Precipitation (mm)	fall	208	131	215	317	135	224	330
Precipitation (mm)	winter	172	120	188	263	127	195	267
Mean Temperature (°C)	annual	8.3	8.9	10.2	11.5	9.6	11.2	12.8
Mean Temperature (°C)	spring	6.6	6.3	8.4	10.4	7.1	9.3	11.6
Mean Temperature (°C)	summer	20.1	20.4	21.9	23.3	21.1	22.9	24.8
Mean Temperature (°C)	fall	10.1	10.4	12.1	13.7	11.1	12.9	14.6
Mean Temperature (°C)	winter	-3.9	-4.3	-1.7	0.9	-3.2	-0.5	2.2
Tropical Nights	annual	6	6	16	29	9	25	44
Very Hot Days (+30°C)	annual	14	13	31	50	19	42	65
Very Cold Days (-30°C)	annual	0	0	0	0	0	0	0
Date of Last Spring Frost	annual	April 23	March 30	April 16	May 3	March 25	April 13	May 3
Date of First Fall Frost	annual	Oct. 22	Oct. 14	Nov. 2	Nov. 22	Oct. 16	Nov. 6	Nov. 29
Frost-Free Season (days)	annual	179	171	197	225	173	204	236

## Where did this data come from?

Global Climate Models (GCMs) are used to depict how the climate is likely to change in the future. Since no one climate model can be considered 'correct', it is important to use many GCMs to capture a range of possible conditions. The GCM data we used were obtained from the Pacific Climate Impacts Consortium (PCIC). PCIC collected temperature and precipitation data produced by 24 different models and used advanced statistical techniques to create high-resolution (daily, 10km) versions of the data for all of Canada (for more information visit [pacificclimate.org](http://pacificclimate.org)).

## What are the RCP 8.5 and RCP 4.5 future climate scenarios?

One of the most important inputs into GCM simulations of the future climate is the expected concentration of greenhouse gases (GHGs; especially carbon dioxide) in the atmosphere as a result of human activity. In the scientific literature these future GHG concentrations are used to calculate Representative Concentration Pathways (RCPs). The High Carbon scenario (RCP8.5) assumes that we continue to emit very large amounts of carbon dioxide from the burning of fossil fuels; the Low Carbon scenario (RCP4.5) assumes that drastic reductions of emissions in the coming decades will stabilize the concentration of GHGs in the atmosphere by the end of this century. We did not use RCP2.6, an even lower emissions scenario.

## How are the minimum, mean, and maximum calculated?

We used an ensemble of 24 different GCMs to analyze the future climate. The mean values are the average values of this ensemble over the 1976-2005, 2021-2050 and 2051-2080 periods. The range of values in each time period is indicated by the High (90th percentile) and Low (10th percentile) values in the tables. This means about 10% of the predicted values are above the "High" value, and 10% are lower than the "Low" value.

## The Climate Atlas of Canada

The Climate Atlas of Canada ([climateatlas.ca](http://climateatlas.ca)) is an interactive tool for citizens, researchers, businesses, and community and political leaders to learn about climate change in Canada. It combines climate science, mapping and storytelling to bring the global issue of climate change closer to home, and is designed to inspire local, regional, and national action and solutions.

## Source

Prairie Climate Centre (2019). Climate Atlas of Canada, version 2 (July 10, 2019). <https://climateatlas.ca>

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