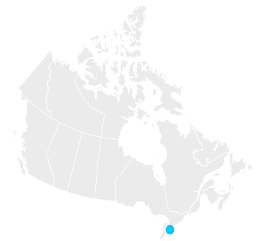


Climate Atlas Report

Municipality: Hamilton



RCP 8.5: High Carbon climate future

GHG emissions continue to increase at current rates

Variable	Period	1976-2005	2021-2050			2051-2080		
		Mean	Low	Mean	High	Low	Mean	High
Precipitation (mm)	annual	844	716	898	1087	742	923	1120
Precipitation (mm)	spring	217	161	240	330	171	254	348
Precipitation (mm)	summer	217	128	219	320	125	217	325
Precipitation (mm)	fall	223	144	232	332	142	232	337
Precipitation (mm)	winter	187	138	207	284	147	221	304
Mean Temperature (°C)	annual	8.3	9.1	10.4	11.7	11	12.5	14.1
Mean Temperature (°C)	spring	6.7	6.3	8.5	10.7	8.2	10.4	12.7
Mean Temperature (°C)	summer	20.2	20.8	22.3	23.8	22.6	24.5	26.3
Mean Temperature (°C)	fall	10.1	10.7	12.3	14	12.5	14.3	16
Mean Temperature (°C)	winter	-3.9	-4.1	-1.6	1.1	-1.9	0.8	3.4
Tropical Nights	annual	7	8	19	33	22	40	61
Very hot days (+30°C)	annual	16	18	37	57	38	63	88
Very cold days (-30°C)	annual	0	0	0	0	0	0	0
Date of Last Spring Frost	annual	April 26	March 30	April 15	May 2	March 15	April 6	April 24
Date of First Fall Frost	annual	Oct. 20	Oct. 14	Nov. 1	Nov. 23	Oct. 22	Nov. 15	Dec. 10
Frost-Free Season (days)	annual	174	171	198	228	190	220	253

RCP 4.5: Low Carbon climate future

GHG emissions much reduced

Variable	Period	1976-2005	2021-2050			2051-2080		
		Mean	Low	Mean	High	Low	Mean	High
Precipitation (mm)	annual	846	714	886	1065	721	910	1113
Precipitation (mm)	spring	218	154	233	320	161	241	329
Precipitation (mm)	summer	218	134	221	323	127	220	327
Precipitation (mm)	fall	223	143	229	330	148	239	341
Precipitation (mm)	winter	187	132	204	281	139	211	286
Mean Temperature (°C)	annual	8.3	8.9	10.2	11.5	9.7	11.2	12.8
Mean Temperature (°C)	spring	6.7	6.3	8.4	10.5	7.2	9.3	11.6
Mean Temperature (°C)	summer	20.1	20.4	21.9	23.4	21.1	23	24.9
Mean Temperature (°C)	fall	10.1	10.4	12.1	13.7	11.1	12.9	14.7
Mean Temperature (°C)	winter	-3.9	-4.4	-1.8	0.8	-3.3	-0.6	2.1
Tropical Nights	annual	6	6	16	29	10	24	44
Very hot days (+30°C)	annual	16	15	34	55	22	46	70
Very cold days (-30°C)	annual	0	0	0	0	0	0	0
Date of Last Spring Frost	annual	April 26	March 30	April 16	May 3	March 25	April 13	May 3
Date of First Fall Frost	annual	Oct. 20	Oct. 12	Oct. 30	Nov. 20	Oct. 15	Nov. 4	Nov. 26
Frost-Free Season (days)	annual	174	168	195	223	172	202	233

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).

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) 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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