Climate Atlas Report Municipality: Grand Falls-Windsor

RCP 8.5: High Carbon climate future

GHG emissions continue to increase at current rates

		1976-2005		2021-2050		2051-2080		
Variable	Period	Mean	Low	Mean	High	Low	Mean	High
Precipitation (mm)	annual	1060	973	1133	1311	1012	1194	1382
Precipitation (mm)	spring	235	182	257	338	194	270	349
Precipitation (mm)	summer	259	193	273	361	199	288	385
Precipitation (mm)	fall	290	215	300	398	220	313	415
Precipitation (mm)	winter	276	227	303	383	241	322	410
Mean Temperature (°C)	annual	4.4	4.9	6.3	7.7	6.6	8.2	9.9
Mean Temperature (°C)	spring	1.8	1.3	3.4	5.4	3	5.1	7.6
Mean Temperature (°C)	summer	15.4	15.2	17.1	19	16.9	19.1	21.3
Mean Temperature (°C)	fall	6.6	6.9	8.4	10	8.6	10.2	11.9
Mean Temperature (°C)	winter	-6.2	-6.2	-4	-1.5	-4.3	-1.7	0.7
Tropical Nights	annual	0	0	1	4	0	5	13
Very Hot Days (+30°C)	annual	3	1	7	15	6	18	33
Very Cold Days (-30°C)	annual	0	0	0	0	0	0	0
Date of Last Spring Frost	annual	May 27	April 24	May 14	June 5	April 12	May 5	May 27
Date of First Fall Frost	annual	Oct. 2	Sep. 27	Oct. 17	Nov. 4	Oct. 10	Oct. 28	Nov. 18
Frost-Free Season (days)	annual	125	122	153	183	143	174	206

RCP 4.5: Low Carbon climate future

GHG emissions much reduced —

		1976-2005		2021-2050		2051-2080		
Variable	Period	Mean	Low	Mean	High	Low	Mean	High
Precipitation (mm)	annual	1060	970	1126	1294	992	1151	1323
Precipitation (mm)	spring	236	182	254	328	189	259	340
Precipitation (mm)	summer	259	190	268	358	197	275	361
Precipitation (mm)	fall	290	213	303	401	220	310	413
Precipitation (mm)	winter	275	228	301	382	227	307	391
Mean Temperature (°C)	annual	4.4	4.8	6.1	7.4	5.4	7	8.5
Mean Temperature (°C)	spring	1.8	1.2	3.2	5.2	2	4.1	6.3
Mean Temperature (°C)	summer	15.4	14.9	16.9	18.8	15.7	17.7	19.9
Mean Temperature (°C)	fall	6.6	6.6	8.1	9.6	7.3	8.9	10.6
Mean Temperature (°C)	winter	-6.2	-6.6	-4.1	-1.9	-5.7	-3.1	-0.7
Tropical Nights	annual	0	0	1	4	0	2	7
Very Hot Days (+30°C)	annual	3	1	7	14	2	10	21
Very Cold Days (-30°C)	annual	0	0	0	1	0	0	0
Date of Last Spring Frost	annual	May 27	April 27	May 17	June 7	April 19	May 11	June 3
Date of First Fall Frost	annual	Oct. 2	Sep. 24	Oct. 13	Oct. 30	Sep. 29	Oct. 20	Nov. 7
Frost-Free Season (days)	annual	125	116	147	179	127	159	192

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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