

Climate Atlas Report

Municipality: Fredericton



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	1111	995	1182	1382	1040	1237	1464
Precipitation (mm)	spring	265	199	285	382	209	304	405
Precipitation (mm)	summer	264	192	279	374	186	284	398
Precipitation (mm)	fall	297	207	307	423	213	315	431
Precipitation (mm)	winter	285	217	312	407	232	333	450
Mean Temperature (°C)	annual	5.6	6.5	7.7	9	8.5	9.9	11.4
Mean Temperature (°C)	spring	4.2	4.2	6.1	8.2	5.9	8	10.3
Mean Temperature (°C)	summer	18	18.5	20	21.4	20.3	22.2	24
Mean Temperature (°C)	fall	7.7	8.2	9.8	11.4	10	11.7	13.4
Mean Temperature (°C)	winter	-7.8	-7.9	-5.4	-2.9	-5.3	-2.8	-0.5
Tropical Nights	annual	1	0	4	9	5	15	30
Very hot days (+30°C)	annual	8	10	21	34	22	42	63
Very cold days (-30°C)	annual	1	0	0	1	0	0	0
Date of Last Spring Frost	annual	May 9	April 14	April 30	May 14	April 2	April 20	May 7
Date of First Fall Frost	annual	Sep. 29	Sep. 25	Oct. 13	Oct. 29	Oct. 8	Oct. 25	Nov. 12
Frost-Free Season (days)	annual	141	139	163	191	159	185	213

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	1112	977	1182	1393	993	1206	1436		
Precipitation (mm)	spring	265	198	283	383	197	290	398		
Precipitation (mm)	summer	264	185	278	384	189	281	390		
Precipitation (mm)	fall	297	205	310	420	207	320	440		
Precipitation (mm)	winter	285	216	311	413	221	315	416		
Mean Temperature (°C)	annual	5.6	6.3	7.5	8.7	7.1	8.4	9.9		
Mean Temperature (°C)	spring	4.2	4	5.9	7.9	4.8	6.8	9.1		
Mean Temperature (°C)	summer	18	18.2	19.7	21.2	19	20.7	22.4		
Mean Temperature (°C)	fall	7.7	8.1	9.5	10.9	8.7	10.3	12		
Mean Temperature (°C)	winter	-7.8	-8.1	-5.5	-3	-6.9	-4.4	-1.8		
Tropical Nights	annual	1	0	3	8	1	7	15		
Very hot days (+30°C)	annual	8	7	19	32	12	28	45		
Very cold days (-30°C)	annual	1	0	0	1	0	0	0		
Date of Last Spring Frost	annual	May 9	April 13	May 2	May 16	April 9	April 27	May 14		
Date of First Fall Frost	annual	Sep. 30	Sep. 23	Oct. 10	Oct. 27	Sep. 27	Oct. 16	Nov. 3		
Frost-Free Season (days)	annual	141	135	159	186	142	169	198		

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>

Disclaimer

The information disseminated by the Prairie Climate Centre -- including but not restricted to maps, tables, statistics and interpretations -- is provided as a public service. It is provided without any warranty or representation, express or implied, as to its accuracy or completeness. Any reliance you place upon the information contained here is your sole responsibility and strictly at your own risk. In no event will the Prairie Climate Centre be liable for any loss or damage whatsoever, including without limitation, indirect or consequential loss or damage, arising from reliance upon the data or derived information.