Climate Atlas Report

Municipality: Grand Falls

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	1048	942	1120	1297	984	1174	1384
Precipitation (mm)	spring	232	172	250	329	191	270	358
Precipitation (mm)	summer	292	224	309	406	208	312	425
Precipitation (mm)	fall	278	200	290	392	201	299	408
Precipitation (mm)	winter	246	193	272	352	205	293	389
Mean Temperature (°C)	annual	4	4.9	6.2	7.5	7	8.4	10
Mean Temperature (°C)	spring	2.9	2.8	4.9	7.2	4.5	6.9	9.7
Mean Temperature (°C)	summer	17.1	17.6	19.1	20.6	19.4	21.3	23.2
Mean Temperature (°C)	fall	6.2	6.7	8.3	9.9	8.6	10.3	12
Mean Temperature (°C)	winter	-10.4	-10.5	-7.8	-5.2	-7.7	-5.2	-2.7
Tropical Nights	annual	1	0	3	7	3	12	25
Very hot days (+30°C)	annual	5	5	14	25	14	32	52
Very cold days (-30°C)	annual	3	0	1	3	0	0	0
Date of Last Spring Frost	annual	May 15	April 18	May 6	May 22	April 4	April 25	May 13
Date of First Fall Frost	annual	Sep. 23	Sep. 20	Oct. 7	Oct. 25	Sep. 29	Oct. 19	Nov. 7
Frost-Free Season (days)	annual	128	126	151	181	143	173	207

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	1048	939	1115	1310	963	1144	1344
Precipitation (mm)	spring	232	175	248	326	176	255	340
Precipitation (mm)	summer	292	212	305	402	223	312	412
Precipitation (mm)	fall	279	194	291	401	202	299	405
Precipitation (mm)	winter	246	187	271	362	195	278	365
Mean Temperature (°C)	annual	4	4.7	5.9	7.3	5.5	6.9	8.5
Mean Temperature (°C)	spring	3	2.6	4.7	6.9	3.4	5.7	8.3
Mean Temperature (°C)	summer	17.1	17.3	18.8	20.2	18.1	19.8	21.5
Mean Temperature (°C)	fall	6.2	6.5	8	9.4	7.2	8.9	10.5
Mean Temperature (°C)	winter	-10.4	-10.8	-8	-5.4	-9.5	-6.8	-4
Tropical Nights	annual	1	0	2	6	0	5	12
Very hot days (+30°C)	annual	5	3	12	22	7	19	34
Very cold days (-30°C)	annual	3	0	1	3	0	0	2
Date of Last Spring Frost	annual	May 16	April 17	May 6	May 23	April 11	May 2	May 18
Date of First Fall Frost	annual	Sep. 23	Sep. 17	Oct. 4	Oct. 23	Sep. 21	Oct. 10	Oct. 29
Frost-Free Season (days)	annual	128	122	148	178	131	159	191

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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