Climate Atlas Report

Municipality: Petawawa

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	808	711	860	1017	733	888	1062
Precipitation (mm)	spring	184	132	202	279	145	215	295
Precipitation (mm)	summer	227	149	229	317	145	225	316
Precipitation (mm)	fall	227	164	239	319	165	244	334
Precipitation (mm)	winter	171	133	189	249	142	203	269
Mean Temperature (°C)	annual	5.1	5.9	7.3	8.8	8	9.6	11.6
Mean Temperature (°C)	spring	4.5	3.9	6.5	9.4	5.8	8.5	11.9
Mean Temperature (°C)	summer	18.4	19	20.5	22.1	20.8	22.8	24.9
Mean Temperature (°C)	fall	7.3	7.7	9.5	11.2	9.6	11.5	13.4
Mean Temperature (°C)	winter	-10	-10.4	-7.5	-4.5	-7.7	-4.8	-1.8
Tropical Nights	annual	1	1	7	14	7	20	35
Very hot days (+30°C)	annual	13	13	29	46	29	53	77
Very cold days (-30°C)	annual	5	0	2	5	0	0	1
Date of Last Spring Frost	annual	May 14	April 12	May 4	May 21	March 31	April 24	May 14
Date of First Fall Frost	annual	Sep. 26	Sep. 21	Oct. 10	Oct. 29	Oct. 3	Oct. 21	Nov. 9
Frost-Free Season (days)	annual	133	128	156	188	147	178	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	808	709	849	1000	714	877	1047
Precipitation (mm)	spring	184	130	195	268	137	204	283
Precipitation (mm)	summer	227	155	233	321	150	234	328
Precipitation (mm)	fall	227	161	236	323	167	246	333
Precipitation (mm)	winter	170	129	185	247	136	192	255
Mean Temperature (°C)	annual	5.1	5.7	7.1	8.5	6.5	8.1	9.9
Mean Temperature (°C)	spring	4.5	3.9	6.3	9	4.7	7.2	10.3
Mean Temperature (°C)	summer	18.4	18.7	20.2	21.6	19.3	21.2	23.1
Mean Temperature (°C)	fall	7.3	7.4	9.2	10.9	8.2	10	11.9
Mean Temperature (°C)	winter	-10	-10.6	-7.7	-4.8	-9.5	-6.4	-3.3
Tropical Nights	annual	1	1	5	11	2	10	21
Very hot days (+30°C)	annual	13	11	26	43	16	37	58
Very cold days (-30°C)	annual	5	0	2	5	0	1	3
Date of Last Spring Frost	annual	May 14	April 15	May 6	May 26	April 6	May 2	May 22
Date of First Fall Frost	annual	Sep. 26	Sep. 19	Oct. 7	Oct. 25	Sep. 24	Oct. 13	Nov. 1
Frost-Free Season (days)	annual	133	122	151	181	130	162	199

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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