Climate Atlas Report

Region: KING CHRISTIAN ISLAND

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	130	119	154	194	140	186	237
Precipitation (mm)	spring	22	16	26	37	18	30	45
Precipitation (mm)	summer	53	36	60	90	39	69	104
Precipitation (mm)	fall	36	29	45	63	36	56	79
Precipitation (mm)	winter	18	15	23	33	19	31	47
Mean Temperature (°C)	annual	-17.8	-15.9	-14.1	-11.8	-12.8	-10.1	-6
Mean Temperature (°C)	spring	-23	-22.3	-20	-17.7	-19.6	-17	-13.7
Mean Temperature (°C)	summer	1.5	1.1	2.6	4.5	1.5	3.8	6.9
Mean Temperature (°C)	fall	-16.9	-14.3	-10.9	-6.9	-9.2	-5.2	1.1
Mean Temperature (°C)	winter	-33.3	-31.2	-28.5	-24.8	-27.1	-22.5	-15.2
Tropical Nights	annual	0	0	0	0	0	0	0
Very Hot Days (+30°C)	annual	0	0	0	0	0	0	0
Very Cold Days (-30°C)	annual	138	59	90	116	6	42	74
Date of Last Spring Frost	annual	July 10	June 13	July 3	July 30	June 6	July 2	Aug. 8
Date of First Fall Frost	annual	July 31	July 19	Aug. 13	Sep. 9	July 31	Sep. 5	Oct. 12
Frost-Free Season (days)	annual	17	12	37	77	22	61	106

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	130	112	149	189	125	166	214
Precipitation (mm)	spring	22	15	24	35	17	27	39
Precipitation (mm)	summer	54	33	60	90	36	65	99
Precipitation (mm)	fall	36	28	43	61	32	49	68
Precipitation (mm)	winter	18	15	22	31	17	25	37
Mean Temperature (°C)	annual	-17.8	-16.6	-14.7	-12.4	-15	-12.7	-9.1
Mean Temperature (°C)	spring	-23	-22.8	-20.5	-18.1	-21.5	-18.9	-16.1
Mean Temperature (°C)	summer	1.5	1	2.5	4.3	1.2	2.9	5.3
Mean Temperature (°C)	fall	-16.9	-15.2	-11.7	-7.5	-12.7	-8.8	-2.5
Mean Temperature (°C)	winter	-33.3	-32.1	-29.2	-25.7	-30	-26.4	-20.6
Tropical Nights	annual	0	0	0	0	0	0	0
Very Hot Days (+30°C)	annual	0	0	0	0	0	0	0
Very Cold Days (-30°C)	annual	138	66	99	124	24	72	104
Date of Last Spring Frost	annual	July 9	June 13	July 2	July 28	June 10	July 4	Aug. 5
Date of First Fall Frost	annual	July 31	July 16	Aug. 10	Sep. 4	July 22	Aug. 21	Sep. 27
Frost-Free Season (days)	annual	17	11	35	71	13	44	86

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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