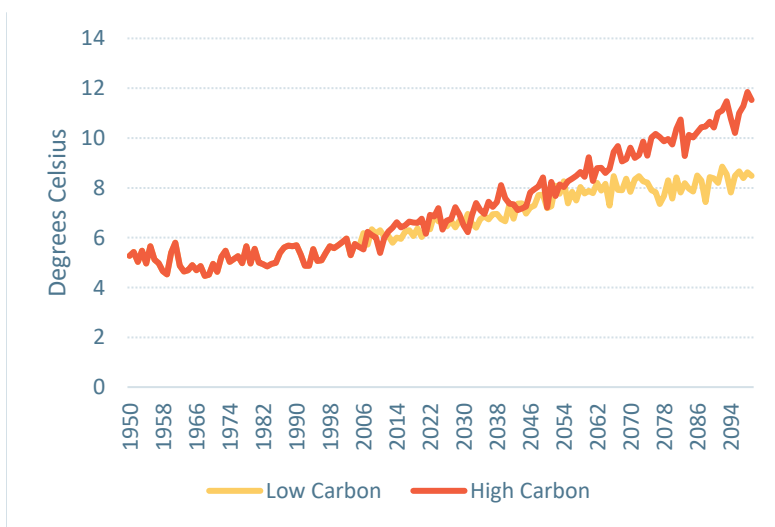


Overview of Climate Change in the Columbia Basin

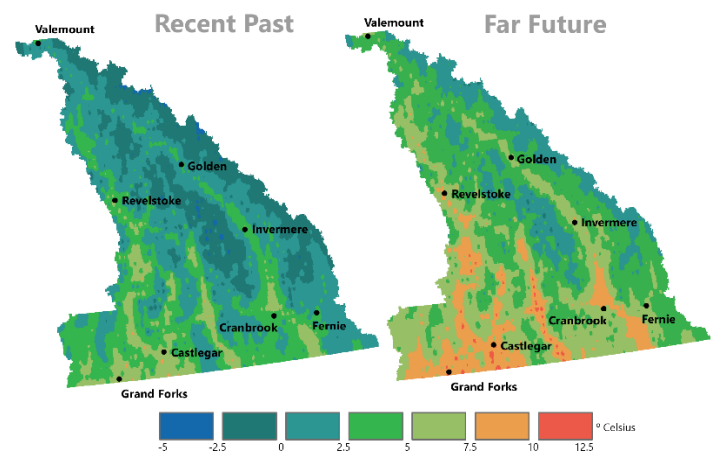
The Canadian Columbia Basin is already experiencing hotter, drier summers, warmer, wetter winters, and more extreme weather, and climate scientists are projecting these trends to continue into the future.^[1] Average annual temperatures in the Basin have increased by 1.6°C over the last century, and the rate of warming has increased to 3.1°C per century over the last 5 decades. Annual average precipitation has increased by about 20% since the early 1900s, though the rates vary by location and season. Looking ahead to the 2050s, current global climate models are projecting average annual temperatures to be 2.7°C to 3.6°C warmer compared to the recent past (1951 to 1980). Winter and summer precipitation are expected to change by as much as +19% and -24% respectively. Without substantial global reductions in greenhouse gas emissions, Basin residents can expect, depending on their location, up to 42 more days per year with maximum daytime temperatures over 25°C. In addition, the maximum precipitation falling on one day in any given year is projected to increase between 6% and 35%.

Community Data ^[2]

Variable	Period	Recent Past (1951-1980)	Near Future (2021-2050)		Far Future (2051-2080)	
			Low Carbon ⁱⁱ	High Carbon ⁱⁱⁱ	Low Carbon	High Carbon
Mean daily temperature (°C)	Annual	5.0	6.8	7.2	7.9	9.1
	Spring	5.1	7.0	7.3	8.1	8.7
	Summer	15.8	18.1	18.4	19.2	20.7
	Fall	4.9	6.6	6.8	7.5	8.7
	Winter	-6.0	-4.1	-4.1	-3.3	-2.2
Total precipitation (mm)	Annual	439	452	449	462	476
	Spring	93	102	104	113	121
	Summer	119	104	106	95	97
	Fall	98	103	99	104	105
	Winter	121	132	119	128	139
Days with max temp >25C (days)	Annual	46	67	70.3	78.3	93
Max 1-day precipitation (mm)	Annual	20	24	24	24	26
Longest dry spell (days)	Annual	21.0	22.0	21.8	22.0	23.0
Growing season length (days)	Annual	186.3	205.5	208.3	217.3	230.5



Modeled mean annual temperature for Cranbrook from 1950 to 2099



Modeled mean annual temperature for Basin-Boundary region; recent past (1951-1980) vs. far future (2051-2080); high carbon future scenario.

Key Climate Impacts and Opportunities for Action

Housing, Buildings and Infrastructure

Wildfires, flooding, extreme storms, and water shortages all represent threats to the safety and well-being of our communities. These threats are anticipated to become more pronounced with climate change, which will either physically endanger our homes and buildings, or challenge our infrastructure's ability to serve community needs. Take action:

- Protect your property from wildfire: <https://bit.ly/2M5rZAn>
- Conserve water at your home or business: <https://bit.ly/3qBwfa3>
- Improve your level of emergency preparedness: <https://bit.ly/2ZsuKyl>

Economies

Changing weather patterns present risks *and* opportunities for Basin businesses and the economy. Most vulnerable are enterprises that cannot adapt successfully to new climate and environmental conditions or transition to a low carbon economy. However, businesses and sectors that can capitalize on the new climate or support a transition away from fossil fuels are well positioned to succeed.

- Connect with climate-resilient businesses: <https://bit.ly/2NPTazT>
- Learn how your business can account for climate change impacts: <https://bit.ly/2NsYg5b>
- Adapt to climate change on your farm: <https://bit.ly/3k6hOZO>

Nature

As temperature and precipitation patterns shift and change, ecosystems in the Basin can be expected to change, too. This includes more natural disturbances such as wildfire and pests, changes to the water cycle and water availability, and the emergence of new compositions of plant and animal species.

- Prevent the spread of invasive species: <https://bit.ly/2ZxfuAO>
- Learn about natural solutions to climate change: <https://bit.ly/3dqGudv>
- Become a citizen scientist and help monitor ecosystem change: <https://bit.ly/2wpJ3oZ>

Quality of Life

Climate change presents a risk to our health and lifestyles. Our physical and mental health will be increasingly challenged by rising temperatures (and related impacts, such as more frequent wildfires and the spread of vector-borne infectious diseases) and extreme weather events. Vulnerable individuals - the elderly, young children, those with chronic conditions - are at greater risk. Some cultural, recreation, and lifestyle practices may have to be adapted to new climate and environmental conditions.

- Learn more about climate-related health risks: <https://bit.ly/37vvO9u>
- Take action to protect your favourite winter sport: <https://bit.ly/3k2xXyH>
- Meet your neighbours and tackle climate change together: <https://bit.ly/3bjCo49>

References

- [1] Columbia Basin Trust, "Climate Action in the Columbia Basin," Castlegar, 2017.
[2] Climatic Resources Consulting, "Community Climate Datasets (Custom)," Nelson, 2018.

ⁱ All figures are median outputs from 12 models for the given time period. Community data is based on calculations for a 10x10km grid with centerpoint: 49.512, -115.765.

ⁱⁱ RCP 4.5 (low carbon) scenarios assume global greenhouse gas emissions are drastically reduced from current levels

ⁱⁱⁱ RCP 8.5 (high carbon) scenarios assume greenhouse gas emissions continue increasing at current rates

Local Action Stories

Cranbrook Watershed Monitoring

The City has several resources and initiatives to help prevent flooding of homes and businesses. Automated stream flow monitoring stations support community water supply and allow for flood risk planning and action.

Rancher Sprayer Program: Grassland and Rangeland Enhancement Program

Ranchers know their land best. This program funds ranchers to treat their own Crown Range Tenure to protect against invasive species and maintain the health of native ecosystems.

Ktunaxa Solar Array

The Ktunaxa Nation government building has 119 roof top solar panels and an electric car charging station. A partnership with Solar Now, Columbia Basin Trust, and Accelerate Kootenays, the system will generate 45,000 kilowatt-hours of electricity each year.