



Climate Change Scenarios: 2020, 2050 & 2080

TEMPERATURE (by 2020 & 2050)

- Annual average is 1.6°C warmer (by 2020) (+3.2°C by 2050) Baseline¹: 2.5°C
- 24 more frost free days annually (by 2020) (+49 days by 2050) Baseline: 155 days
- 266 more growing degree days² annually (by 2020) (+580 days by 2050) Baseline: 969 days

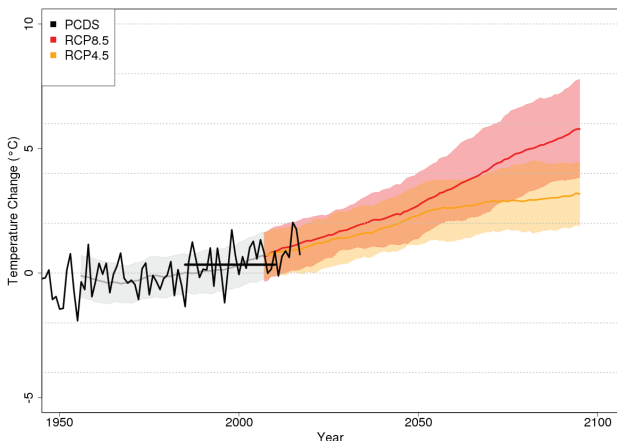
¹ Baseline (for all variables) is the average of the variables from 1971 to 2000.

² Growing degree days (GDD) is a weather-based indicator for assessing crop development. GDD are calculated by taking the average of the daily maximum and minimum temperatures compared to a base temperature (usually 10°C for grapes; 5°C for cereals and many grasses). GDD accumulate over the growing season.

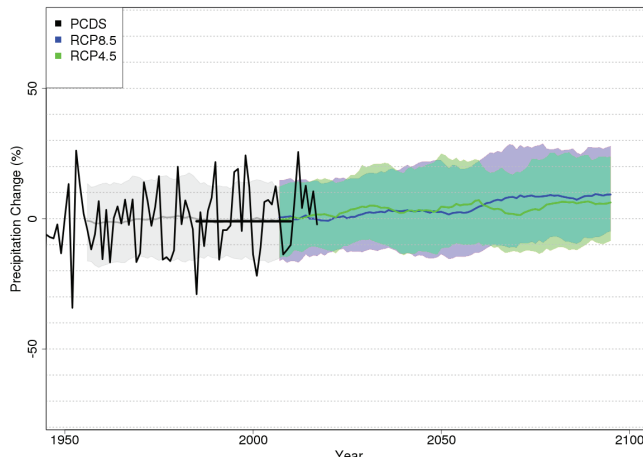
PRECIPITATION (by 2050)

- Grand Forks
 - Spring +12% (baseline: 150mm)
 - Summer -15% (baseline: 125mm)
 - Winter +7% (baseline: 150mm)
- Creston
 - Spring +11% (baseline: 156mm)
 - Summer -13% (baseline: 133mm)
 - Winter +6% (baseline: 192mm)
- Cranbrook
 - Spring +12% (baseline: 111mm)
 - Summer -11% (baseline: 146mm)
 - Winter +7% (baseline: 119mm)
- Invermere
 - Spring +13% (baseline: 83mm)
 - Summer -9% (baseline: 144mm)
 - Winter +8% (baseline: 79mm)

Change in Annual Average Temperature in Kootenay and Boundary



Change in Annual Average Precipitation in Kootenay and Boundary



RCP (Representative Concentration Pathways) 8.5 is a high GHG emissions model. RCP 4.5 is a medium GHG emissions model. The bold coloured lines indicate the mid-point of the models, shading indicates the projected model range. The black line represents PCDS (Provincial Climate Data Set) and is the historic climate data collected from BC.

Source (both graphs): Pacific Climate Impacts Consortium. Additional info at: <https://pacificclimate.org/data/statistically-downscaled-climate-scenarios>

HYDROLOGY

- Less precipitation falling as snow due to warmer temperatures, less snow pack building and converting to spring runoff
- Increased streamflow in winter (Columbia & Kootenay River watersheds)
- Decreased streamflow in summer (Columbia -1%, Kootenay -36%)
- Snowpack may melt more quickly in spring, increasing flows

EXTREMES (2050)

- Over twice the number of days over 25°C
Baseline: 19 days. +25 days by 2050 (+48 days by 2080)
- Over 3 times the number of days over 30°C
Baseline: 4 days. +13 days by 2050 (+26 days by 2080)
- Increased frequency and magnitude of extreme rainfall events (particularly in winter and fall)
- 23% reduction in annual frost days (nights when the minimum temperature drops below 0°C)
Baseline: 210 days. -49 days by 2050 (-82 days by 2080)

Hydrology and Extremes Source: Pacific Climate Impacts Consortium

Climate Projections for the Kootenay and Boundary (KB) Region

Source: Pacific Climate Impacts Consortium (www.pacificclimate.org)

Climate change projections for the 2050s			
Climate Variable	Time of Year	Projected Change from 1971-2000 Baseline	
		KB (range)	KB (average)
Mean Temperature (°C)	Annual	+2°C to +4°C	+3°C
Precipitation (%)	Spring	+0% to +19%	+12%
	Summer	-33% to +2%	-12%
	Fall	-1% to +15%	+7%
	Winter	-1% to +13%	+7%
Growing Degree Days*	Annual	+323 to +824 GDD	+580 GDD
Icing Days*	Annual	-38 to -20 icing days	-30 icing days
Growing Season Length*	Annual	+24 to +53 days	+39 days

Climate change projections for the 2080s			
Climate Variable	Time of Year	Projected Change from 1971-2000 Baseline	
		KB (range)	KB (average)
Mean Temperature (°C)	Annual	+4°C to +7°C	+5°C
Precipitation (%)	Spring	+12% to +22%	+18%
	Summer	-44% to -2%	-20%
	Fall	+3% to +22%	+14%
	Winter	+1% to +26%	+14%
Growing Degree Days*	Annual	+631 to +1451 GDD	+1019 GDD
Icing Days*	Annual	-58 to -40 icing days	-48 icing days
Growing Season Length*	Annual	+30 to +56 days	+42 days

Baseline is the average of all values during the period of 1971-2000.

* **Growing Degree-Days (GDD)** are a measure of heat accumulation, and represent the cumulative number of degrees that the average daily temperature is above a base temperature of 5°C, for all days of the year.

* **Icing Days (ID)** represent the number of days the maximum 24 hour temperature remains below freezing.

* **Growing Season Length (GSL)** represent the number of days between the first span of six consecutive days with a daily mean temperature above 6°C and the last day with a daily mean temperature above 6°C.