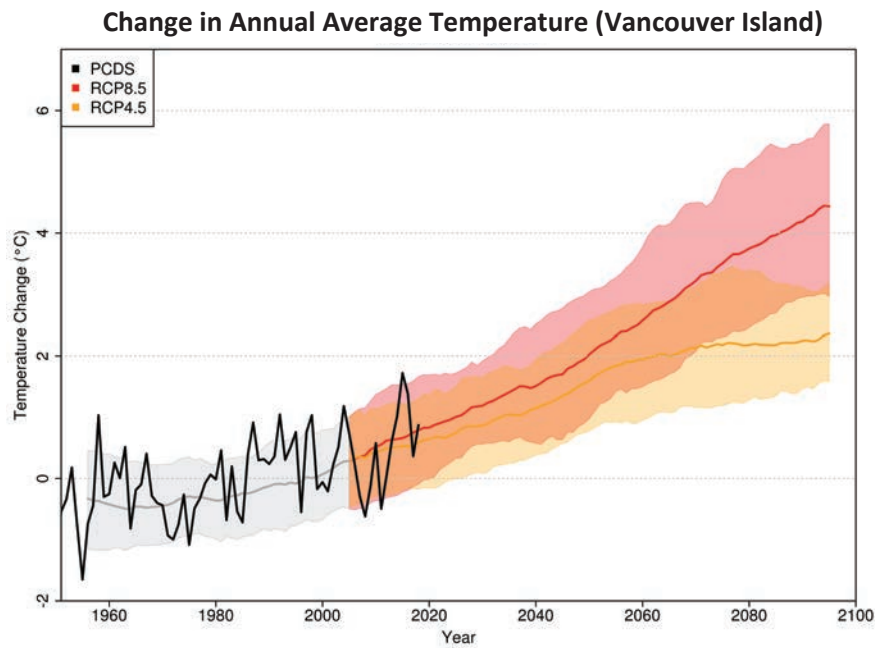




Climate Change Scenarios: 2020s, 2050s & 2080s

Temperature

Annual average temperature is **1.5°C warmer** in 2020s
(+2.5°C by 2050s) (+4.5°C by 2080s) (CCV Regional baseline¹: 8°C)



RCP (Representative Concentration Pathways) 8.5 is a high GHG (greenhouse gas) 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.

Average summer maximum temperature
(i.e. hottest day of the year)
+ 1.5°C warmer by 2020s
+3.5°C warmer by 2050s
CCV Regional baseline: 30°C
Capital baseline: 29°C
Cowichan Valley baseline: 30°C

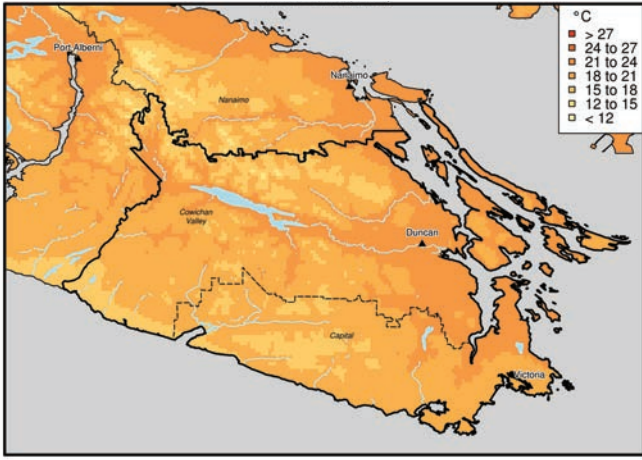
Average winter minimum temperature
(i.e. coldest day of the year)
+ 2.5°C warmer by 2020s
+ 4.0°C warmer by 2050s
CCV Regional baseline: -8°C
Capital baseline: -8°C
Cowichan Valley baseline: -9°C

- **Growing Season Length² extended by 30 days in 2020s**
(+55 days by 2050s) (+85 days by 2080s)
CCV Regional baseline: 250 days
- **25 more Frost Free Days annually in 2020s**
(+45 days by 2050s) (+60 days by 2080s)
CCV Regional baseline: 292 days
- **345 more Growing Degree Days³ annually in 2020s**
(+740 days by 2050s) (+1285 days by 2080s)
CCV Regional baseline: 1580 days

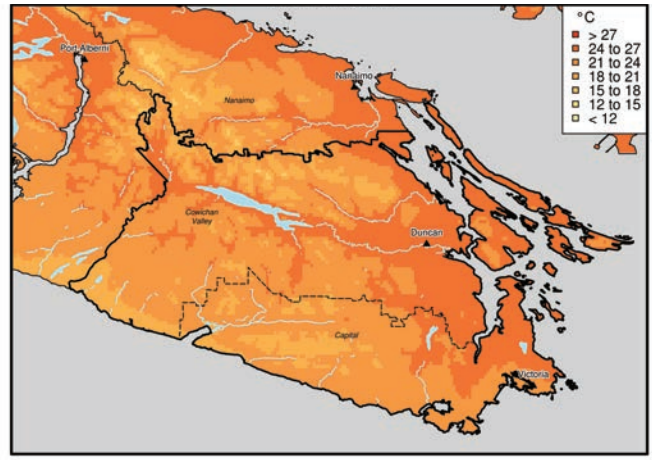
¹ Baseline (for all variables) is the period from 1971 to 2000.

² Growing Season Length (GSL) represents 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.

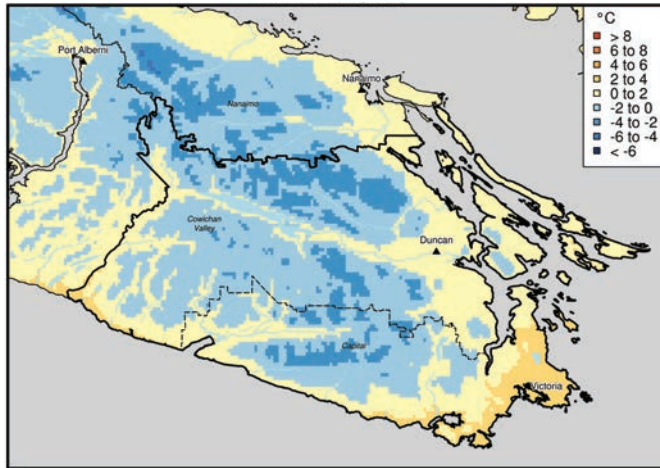
³ Growing Degree Days (GDD) is a weather-based indicator for assessing crop development. GDD are calculated by taking the average of the daily maximum and minimum temperatures compared to a base temperature 5°C. GDDs accumulate over the growing season.



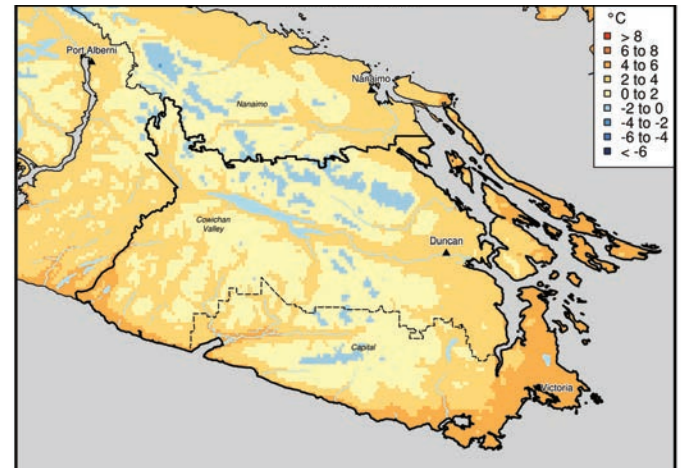
Average Summer Temperature Past (1971-2000)



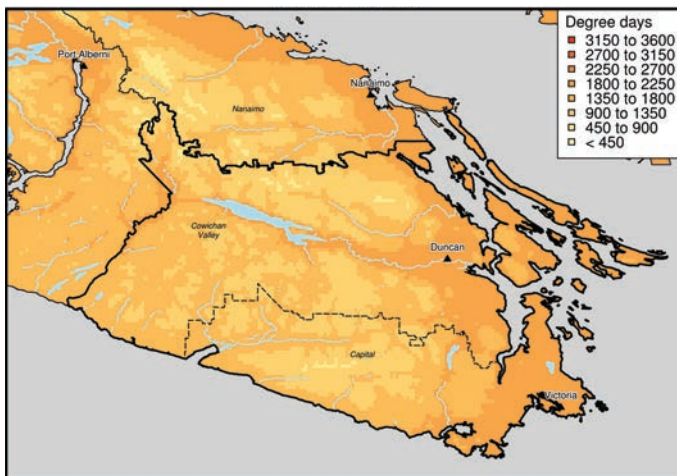
Average Summer Temperature Projections (2041-2070)



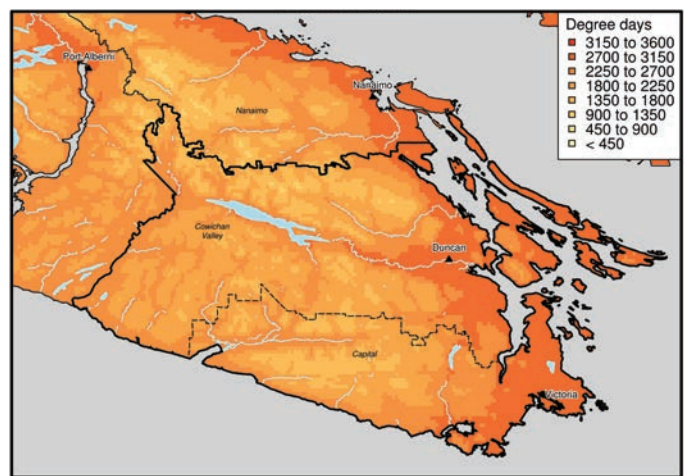
Winter Minimum Temperature Past (1971-2000)



Winter Minimum Temperature Projections (2041-2070)



Growing Degree Days Past (1971-2000)



Growing Degree Days Projections (2041-2070)

Extreme Heat

More than twice the number of days over 25°C by 2050s

CCV Regional baseline: 16 days (+24 days by 2050s) (+44 days by 2080s)

Capital baseline: 12 days (+24 days by 2050s) (+36 days by 2080s)

Cowichan Valley baseline: 18 days (+23 days by 2050s) (+43 days by 2080s)

More than 4 times the number of days over 30°C by 2050s

CCV Regional baseline: 2 days (+7 days by 2050s) (+17 days by 2080s)

Capital baseline: 1 day (+6 days by 2050s) (+15 days by 2080s)

Cowichan Valley baseline: 3 days (+8 days by 2050s) (+18 days by 2080s)

Hydrology

- Substantial projected decrease in spring snowfall and an overall decrease in snowpack
- Increased peak streamflows in fall and winter due to increased precipitation
- Decreased streamflows in summer
- River flooding and ocean storm surge events may increase in frequency and magnitude

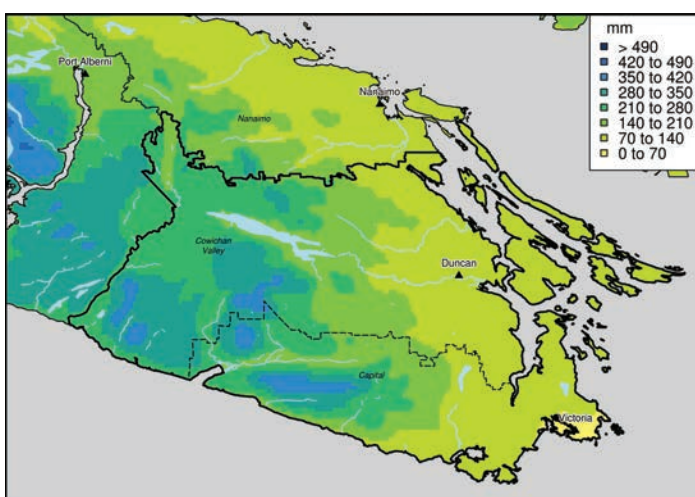
Seasonal Precipitation

Capital Regional District: Seasonal Average Precipitation (2020s and 2050s)

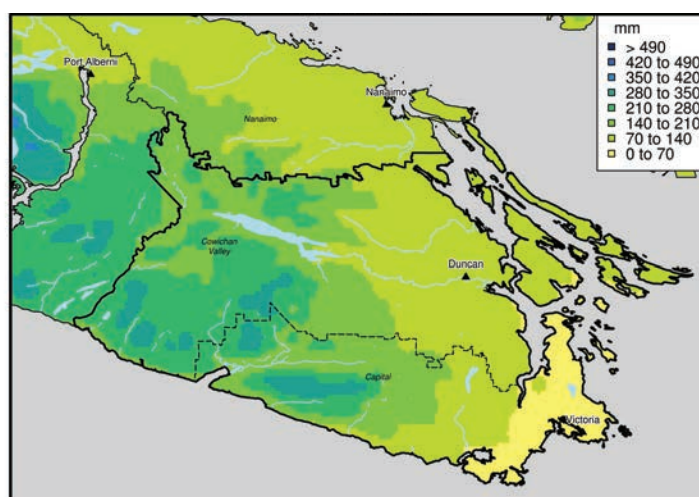
Season	Change	Range	Baseline
Winter 2020s	+35mm (+4%)	-19mm to +88mm	839mm
Winter 2050s	+29mm (+3%)	-29mm to +85mm	
Spring 2020s	+4mm (+1%)	-26mm to +39mm	439mm
Spring 2050s	+13mm (+3%)	-32mm to +44mm	
Summer 2020s	-14mm (-9%)	-53mm to +18mm	164mm
Summer 2050s	-29mm (-17%)	-64mm to +6mm	
Fall 2020s	+12mm (+2%)	-40mm to +78mm	665mm
Fall 2050s	+60mm (+9%)	-33mm to +157mm	

Cowichan Valley Regional District: Seasonal Average Precipitation (2020s and 2050s)

Season	Change	Range	Baseline
Winter 2020s	+46mm (+5%)	-13mm to +115mm	1,037mm
Winter 2050s	+39mm (+4%)	-33mm to +108mm	
Spring 2020s	+4mm (+1%)	-40mm to +47mm	546mm
Spring 2050s	+16mm (+3%)	-38mm to +50mm	
Summer 2020s	-18mm (-9%)	-61mm to +21mm	201mm
Summer 2050s	-35mm (-17%)	-80mm to +5mm	
Fall 2020s	+16mm (+2%)	-52mm to +91mm	777mm
Fall 2050s	+75mm (+10%)	-28mm to +187mm	



Average Summer Precipitation Past (1971-2000)



Average Summer Precipitation Projections (2041-2070)

Extreme Rainfall

Increased frequency and magnitude of extreme rainfall events

+22% more rain falling on “wet days”⁴ by 2050s

+44% more rain falling on “wet days” by 2080s

CCV Regional baseline: 538mm

Capital baseline: 486mm

Cowichan Valley baseline: 572mm

⁴ “Wet Days” references annual total precipitation that falls on days where precipitation exceeds the 95th / 99th percentile of precipitation



Climate Change Projections for Vancouver Island and the Gulf Islands

Climate change projections for the 2050s			
Climate Variable	Time of Year	Projected Change from 1971-2000 Baseline	
		VI (range)	VI (average)
Mean Temperature (°C)	Annual	+2°C to +4°C	+2°C
Precipitation (%)	Spring	-5% to +11%	+2%
	Summer	-32% to +6%	-13%
	Fall	+3% to +25%	+12%
	Winter	-2% to +10%	+4%
Growing Degree Days*	Annual	+390 to +940 GDD	+660 GDD
Frost Free Days*	Annual	+35 to +60 days	+48 days
Growing Season Length*	Annual	+35 to +70 days	+57 days

Climate change projections for the 2080s			
Climate Variable	Time of Year	Projected Change from 1971-2000 Baseline	
		VI (range)	VI (average)
Mean Temperature (°C)	Annual	+3°C to +6°C	+4°C
Precipitation (%)	Spring	-4% to +13%	+5%
	Summer	-48% to -3%	- 22%
	Fall	+7% to +33%	+20%
	Winter	+1% to + 24%	+12%
Growing Degree Days*	Annual	+7530 to +1590 GDD	+1154 GDD
Frost Free Days*	Annual	+55 to +75 days	+67 days
Growing Season Length*	Annual	+65 to +100 days	+88 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.

* **Frost Free Days (FFD)** represents the number of days in a calendar year that remain above 0°C.

* **Growing Season Length (GSL)** represents 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.