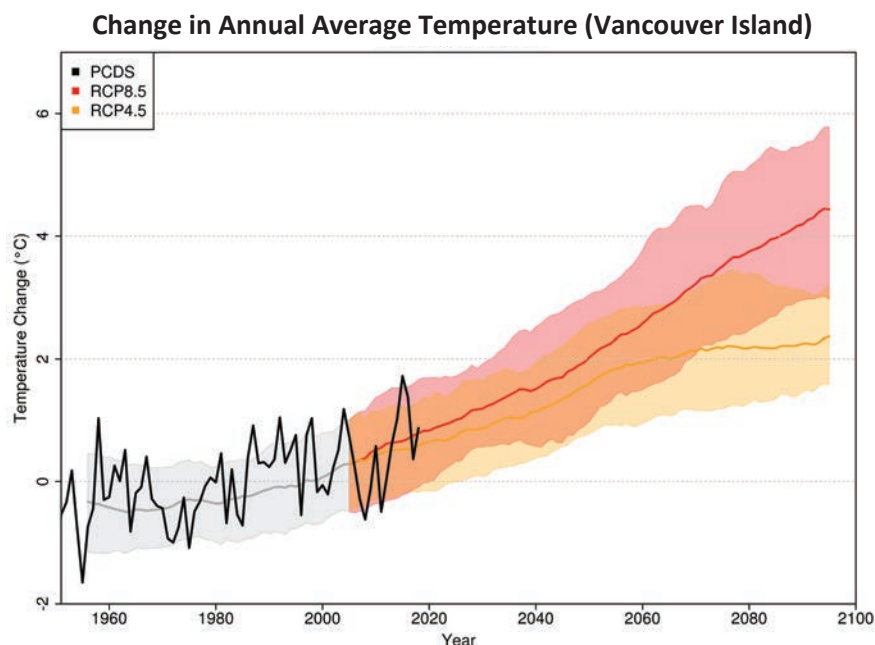




Climate Change Scenarios: 2020s, 2050s & 2080s

Temperature

Annual average temperature (in 2020s) is 1.5°C warmer
(+2.5°C by 2050s) (+4.0°C by 2080s) (NAC 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
+3.0°C warmer by 2050s
NAC Regional baseline: 29°C
Alberni-Clayoquot baseline: 34°C
Nanaimo baseline: 31°C

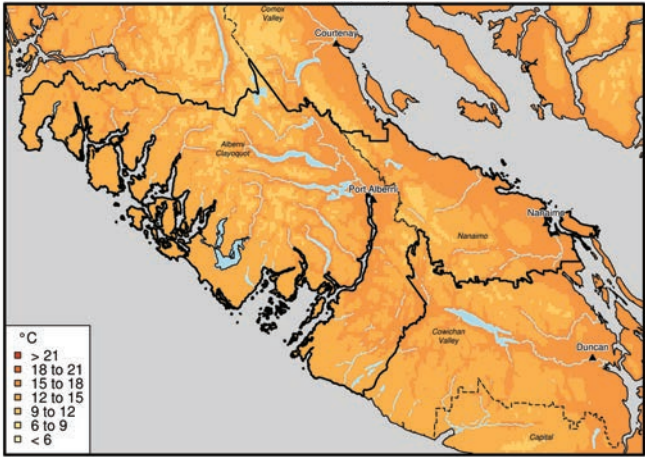
Average winter minimum temperature
(i.e. coldest day of the year)
+ 2.5°C warmer by 2020s
+ 4.0°C warmer by 2050s
NAC Regional baseline: -9°C
Alberni-Clayoquot baseline: -9°C
Nanaimo baseline: -7°C

- **Growing Season Length² extended by 30 days in 2020s**
(+60 days by 2050s)(+90 days by 2080s)
NAC Regional baseline: 239 days
- **30 more Frost Free Days annually in 2020s**
(+45 days by 2050s) (+65 days by 2080s)
NAC Regional baseline: 282 days
- **320 more Growing Degree Days³ annually in 2020s**
(+680 days by 2050s)(+1180 days by 2080s)
NAC Regional baseline: 1500 days

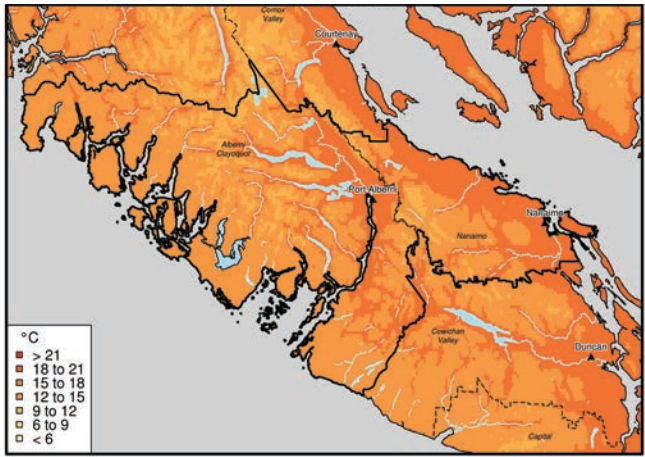
¹ Baseline (for all variables) is the period from 1971 to 2000.

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.

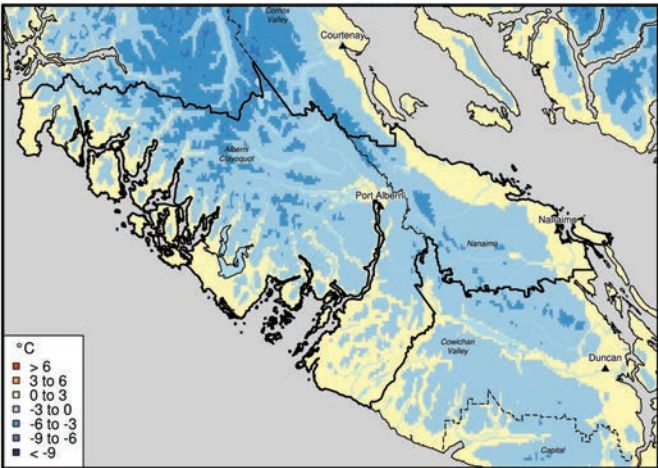
³ Growing Degree Days (GDD) is a weather-based indicator for assessing crop development. GDD are calculated by taking the average of the daily maximum and minimum temperatures compared to a base temperature 5°C. GDDs accumulate over the growing season.



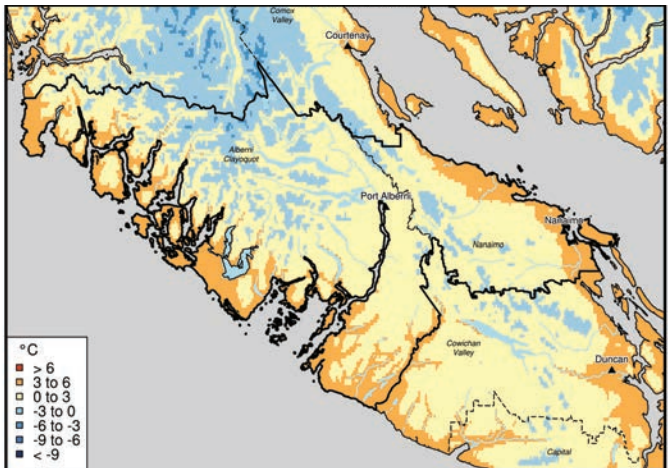
Average Summer Temperature Past (1971-2000)



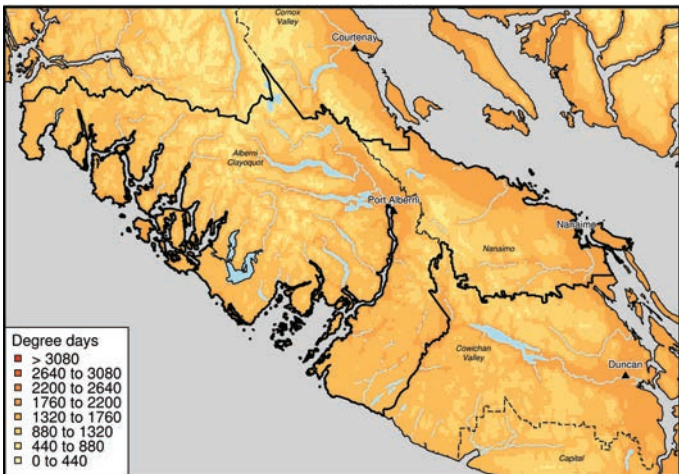
Average Summer Temperature Projections (2041-2070)



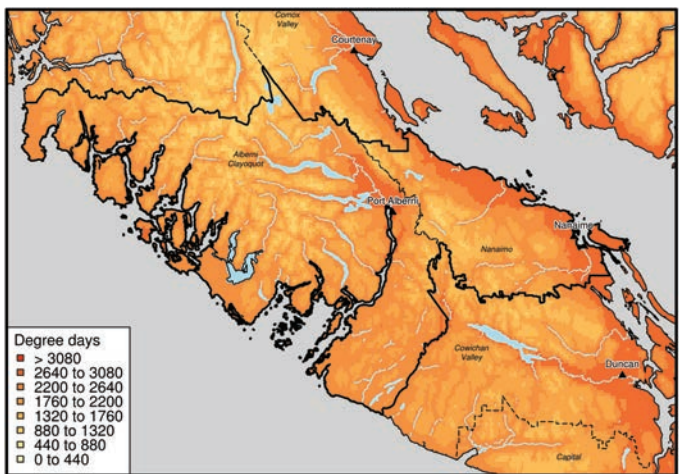
Winter Minimum Temperature Past (1971-2000)



Winter Minimum Temperature Projections (2041-2070)



Growing Degree Days Past (1971-2000)



Growing Degree Days Projections (2041-2070)

Extreme Heat

More than twice as many days over 25°C by 2050s

NAC Regional baseline: 14 days (+18 days by 2050s) (+35 days by 2080s)

Alberni-Clayoquot baseline: 12 days (+17 days by 2050s) (+33 days by 2080s)

Nanaimo baseline: 17 days (+24 days by 2050s) (+43 days by 2080s)

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

NAC Regional baseline: 2 days (+6 days by 2050s) (+13 days by 2080s)

Alberni-Clayoquot baseline: 2 days (+5 days by 2050s) (+11 days by 2080s)

Nanaimo baseline: 2 days (+8 days by 2050s) (+19 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**

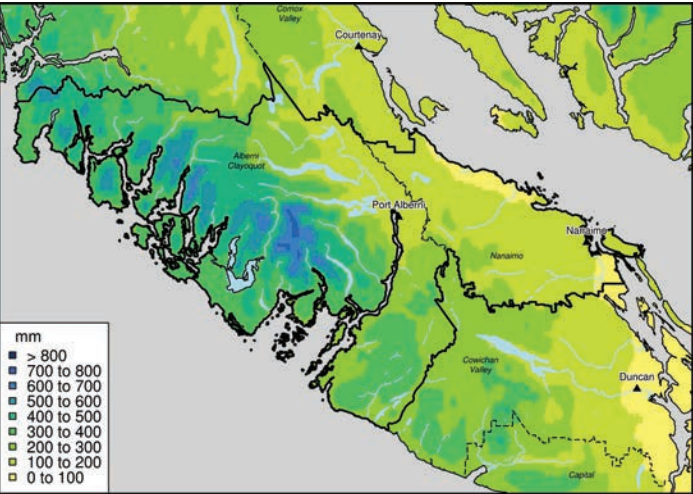
Seasonal Precipitation

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

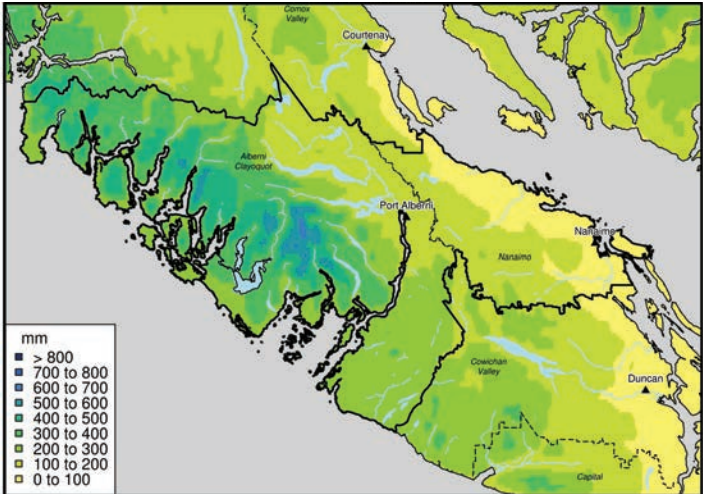
Season	Change	Range	Baseline
Winter 2020s	+34mm (+5%)	-4mm to +87mm	736mm
Winter 2050s	+29mm (+4%)	-23mm to +78mm	
Spring 2020s	+3mm (+1%)	-27mm to +33mm	371mm
Spring 2050s	+12mm (+3%)	-24mm to +38mm	
Summer 2020s	-12mm (-9%)	-40mm to +11mm	139mm
Summer 2050s	-24mm (-17%)	-52mm to +2mm	
Fall 2020s	+14mm (+3%)	-35mm to +64mm	538mm
Fall 2050s	+56mm (+11%)	-15mm to +133mm	

Alberni-Clayoquot Regional District: Seasonal Average Precipitation (2020s and 2050s)

Season	Change	Range	Baseline
Winter 2020s	+78mm (+5%)	-9mm to +187mm	1,528mm
Winter 2050s	+66mm (+4%)	-44mm to +168mm	
Spring 2020s	-1mm (0%)	-94mm to +81mm	864mm
Spring 2050s	+18mm (+2%)	-48mm to +89mm	
Summer 2020s	-28mm (-8%)	-98mm to +34mm	347mm
Summer 2050s	-52mm (-15%)	-114mm to +15mm	
Fall 2020s	+38mm (+3%)	-91mm to +168mm	1,243mm
Fall 2050s	+137mm (+11%)	+12mm to +313mm	



Average Summer Precipitation Past (1971-2000)



Average Summer Precipitation Projections (2041-2070)

Extreme Rainfall

Increased frequency and magnitude of extreme rainfall events

+24% more rain falling on “wet days”⁴ by 2050s

+48% more rain falling on “wet days” by 2080s

NAC Regional baseline: 775mm
Alberni-Clayoquot baseline: 530mm
Nanaimo baseline: 221mm

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.