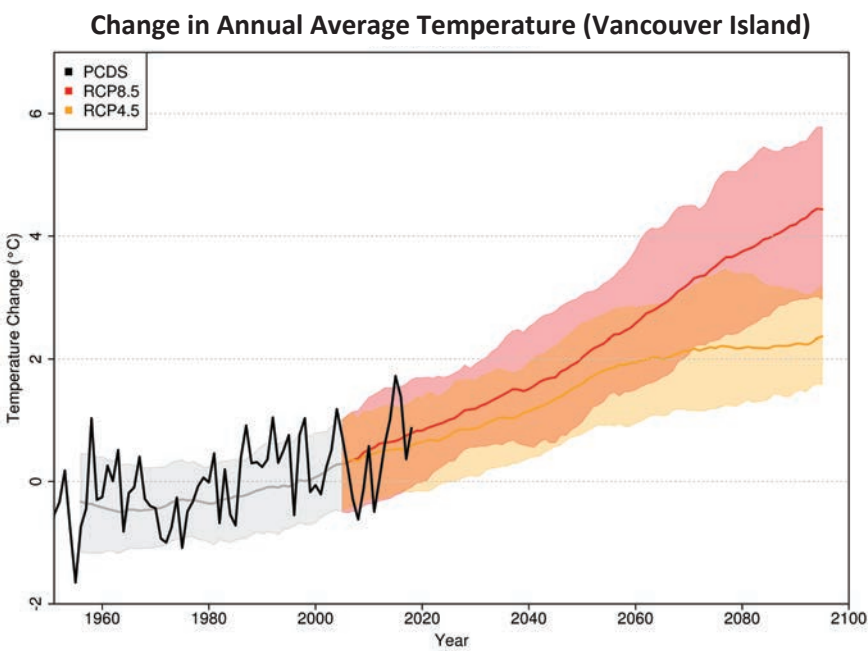




Climate Change Scenarios: 2020s, 2050s & 2080s

Temperature

Annual average temperature is **1.5°C warmer** in 2020s
(+2.5°C by 2050s) (+4.5°C by 2080s) (CVSt Regional baseline¹: 6°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.

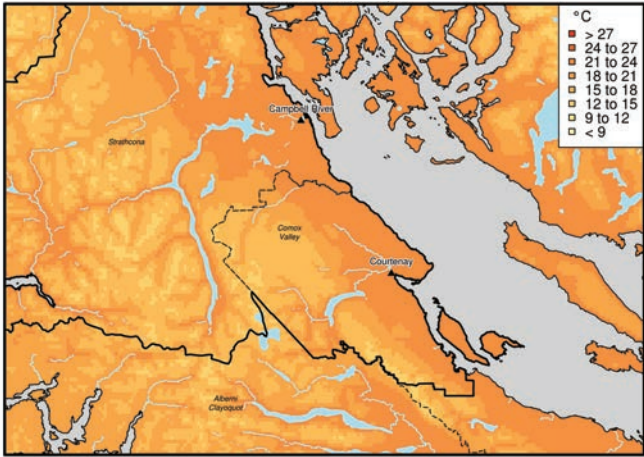
Average **summer maximum** temperature
(i.e. hottest day of the year)
+ 1.5°C warmer by 2020s
+3.5°C warmer by 2050s
CVSt Regional baseline: 27°C
Comox Valley baseline: 30°C
Sayward baseline: 29°C

Average **winter minimum** temperature
(i.e. coldest day of the year)
+ 3.0°C warmer by 2020s
+ 4.5°C warmer by 2050s
CVSt Regional baseline: -14°C
Comox Valley baseline: -11°C
Sayward baseline: -9°C

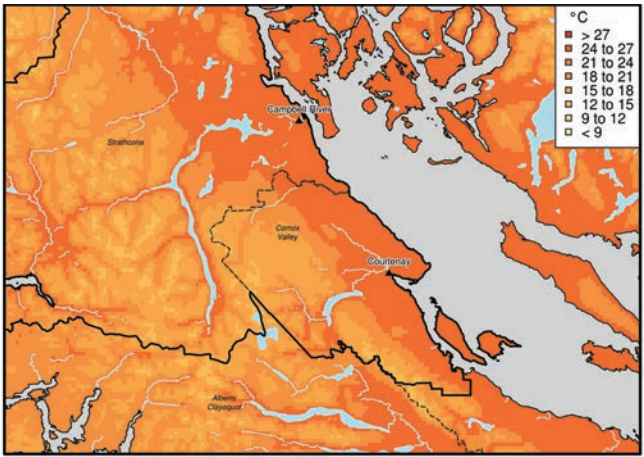
- **Growing Season Length² extended by 30 days in 2020s**
(+55 days by 2050s) (+90 days by 2080s)
CVSt Regional baseline: 196 days
- **28 more Frost Free Days annually in 2020s**
(+51 days by 2050s) (+76 days by 2080s)
CVSt Regional baseline: 236 days
- **285 more Growing Degree Days³ annually in 2020s**
(+615 days by 2050s) (+1085 days by 2080s)
CVSt Regional baseline: 1187 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.

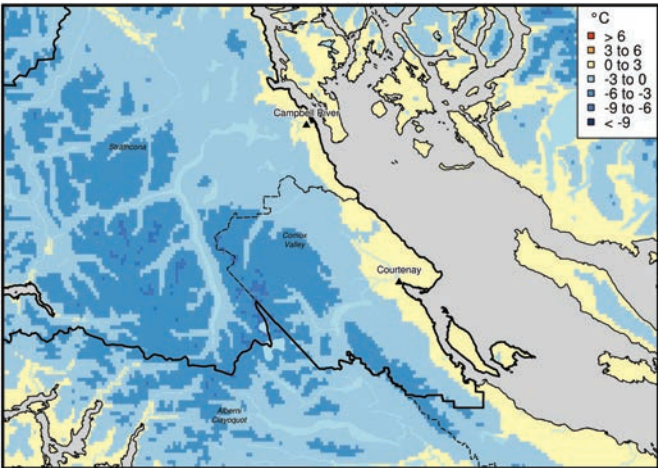
Climate change projections provided by the Pacific Climate Impacts Consortium.
Additional information at <https://pacificclimate.org/data/statistically-downscaled-climate-scenarios>



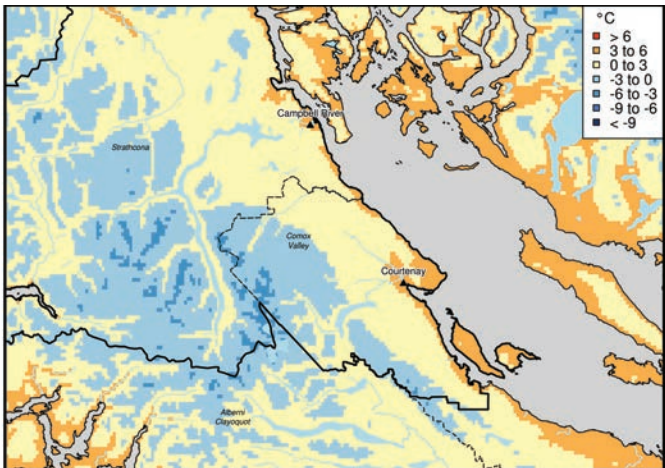
Average Summer Temperature Past (1971-2000)



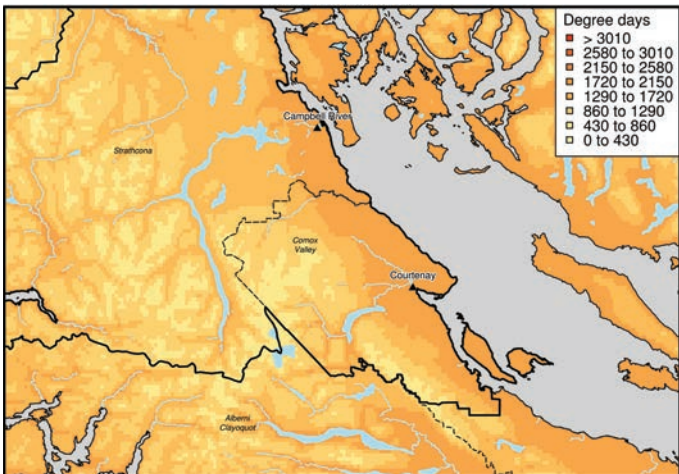
Average Summer Temperature Projections (2041-2070)



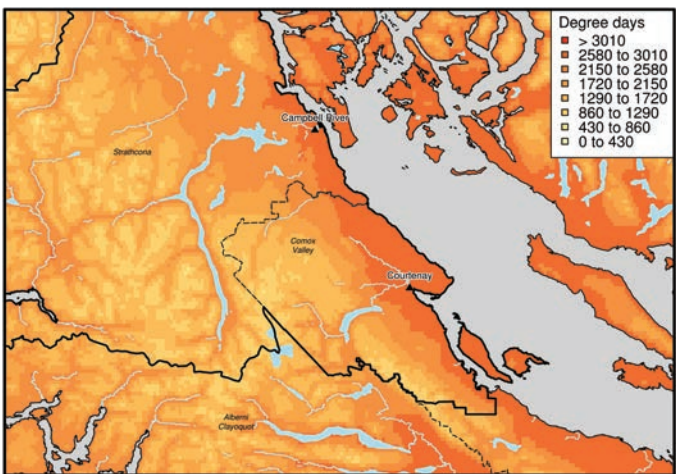
Winter Minimum Temperature Past (1971-2000)



Winter Minimum Temperature Projections (2041-2070)



Growing Degree Days Past (1971-2000)



Growing Degree Days Projections (2041-2070)

Extreme Heat

Almost three times more days over 25°C by 2050s

CVSt Regional baseline: 10 days (+18 days by 2050s) (+35 days by 2080s)

Comox Valley baseline: 18 days (+23 days by 2050s) (+41 days by 2080s)

Sayward baseline: 11 days (+29 days by 2050s) (+54 days by 2080s)

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

CVSt Regional baseline: 1 days (+5 days by 2050s) (+12 days by 2080s)

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

Sayward baseline: 1 days (+5 days by 2050s) (+15 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**

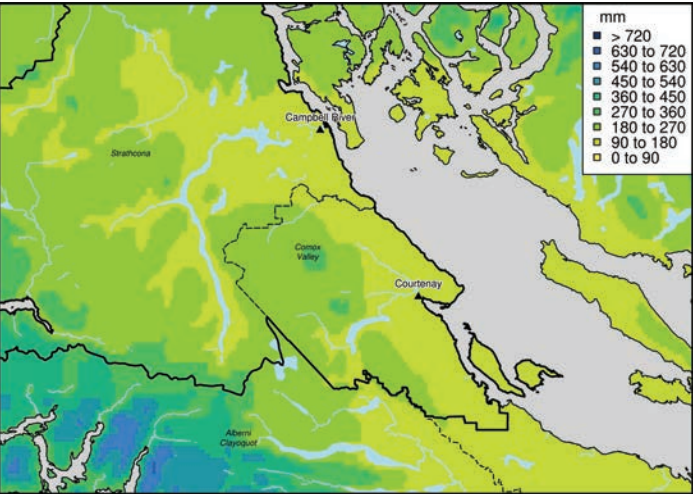
Seasonal Precipitation

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

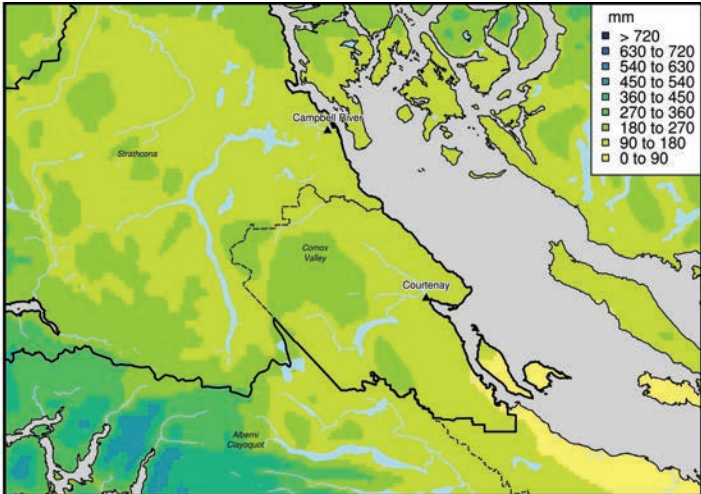
| Season | Change | Range | Baseline |
|--------------|--------------|----------------|----------|
| Winter 2020s | +42mm (+5%) | -1mm to +98mm | 824mm |
| Winter 2050s | +36mm (+4%) | -23mm to +78mm | |
| Spring 2020s | +1mm (0%) | -41mm to +42mm | 422mm |
| Spring 2050s | +11mm (+3%) | -23mm to +47mm | |
| Summer 2020s | -14mm (-8%) | -47mm to +19mm | 177mm |
| Summer 2050s | -28mm (-16%) | -64mm to +9mm | |
| Fall 2020s | +22mm (+4%) | -35mm to +86mm | 648mm |
| Fall 2050s | +75mm (+12%) | +1mm to +167mm | |

Sayward: Seasonal Average Precipitation (2020s and 2050s)

| Season | Change | Range | Baseline |
|--------------|----------------|-----------------|----------|
| Winter 2020s | +37mm (+5%) | 0mm to +90mm | 710mm |
| Winter 2050s | +35mm (+5%) | -9mm to +78mm | |
| Spring 2020s | no change (0%) | -51mm to +47mm | 442mm |
| Spring 2050s | +12mm (+3%) | -27mm to +58mm | |
| Summer 2020s | -17mm (-7%) | -56mm to +35mm | 242mm |
| Summer 2050s | -34mm (-14%) | -80mm to +19mm | |
| Fall 2020s | +31mm (+4%) | -8mm to +76mm | 729mm |
| Fall 2050s | +91mm (+13%) | +35mm to +171mm | |



Average Summer Precipitation Past (1971-2000)



Average Summer Precipitation Projections (2041-2070)

Extreme Rainfall

Increased frequency and magnitude of extreme rainfall events

+29% more rain falling on “wet days”⁴ by 2050s

+56% more rain falling on “wet days” by 2080s

CVSt Regional baseline: 601mm

Comox Vally baseline: 456mm

Sayward baseline: 309mm

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.