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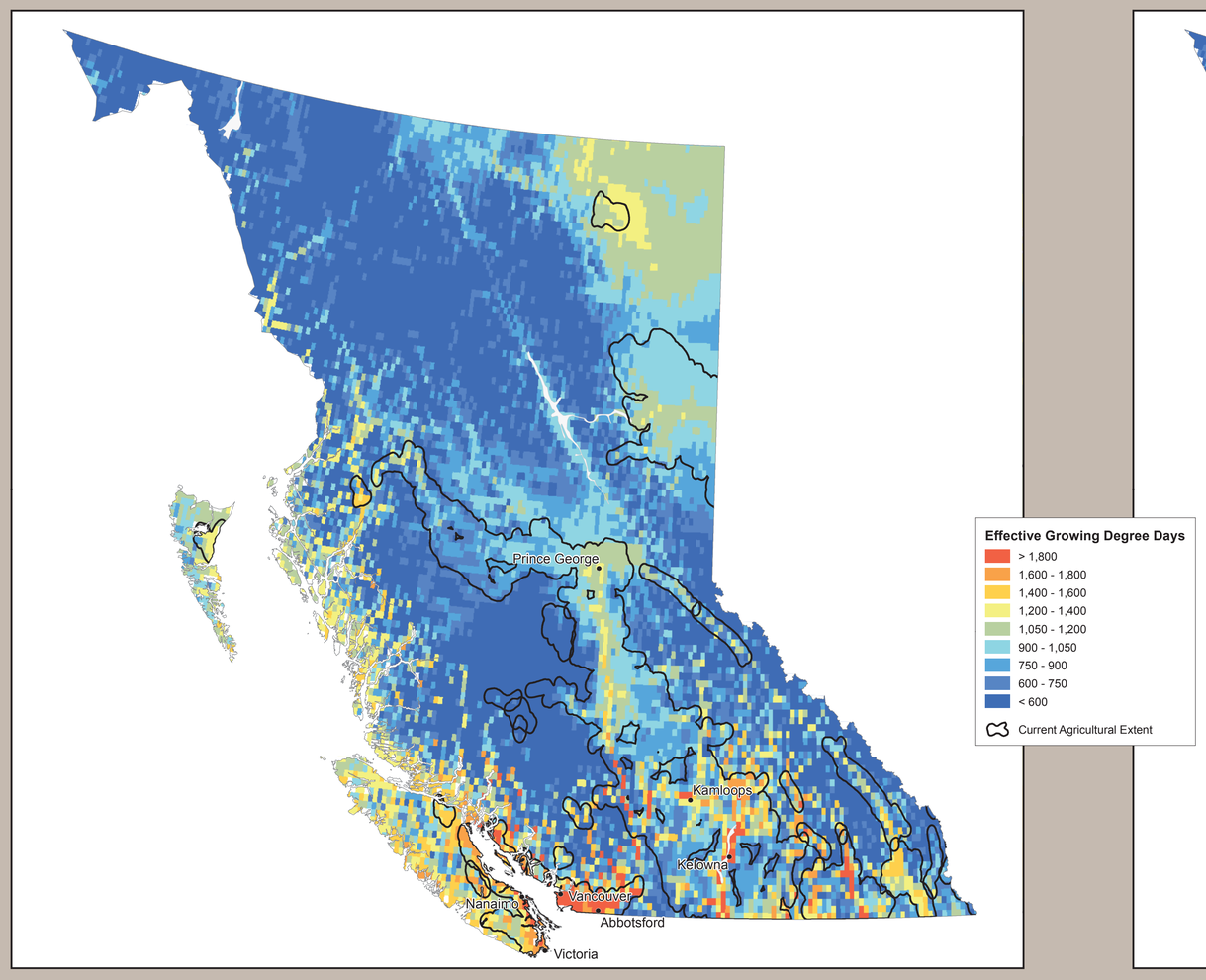
Effective Growing Degree Days

British Columbia

Effective Growing Degree Days (EGDD):

- Heat units used by spring seeded small grains (e.g. wheat, barley) and canola crops, accounting for daylength adjustments.
- Accumulated from 10 days after average daily temp is above 5°C (seeding date), until fall frost (minimum daily temperature is 0°C), or October 31

Baseline: 1971 - 2000



Climate Change Scenario: 2010-2039

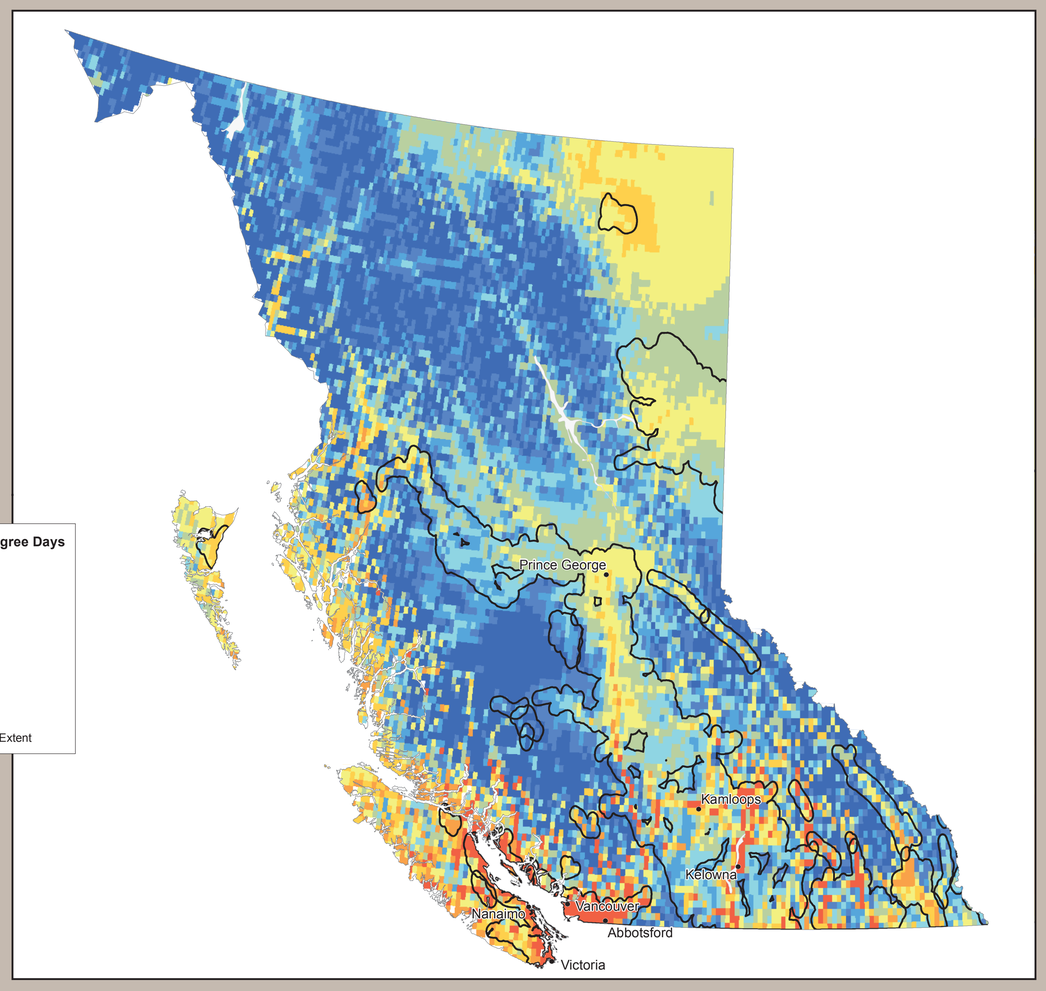


Table 1: Climate Suitability Ratings for Spring Seeded Small Grains

Effective Growing Degree Days	Suitability Rating and Description
1,600	No limitations - Class 1
1,200	Moderate limitations - Class 3
1,050	Severe limitations - Class 4
900	Very severe limitations - Class 5
500	Not suitable - Class 7

Note: Class 1 to Class 3 are considered suitable for continual crop growth.

For more information on suitability ratings for spring seeded small grains:
http://sis.agr.gc.ca/cansis/publications/manuals/lsrs.pdf

Table 2: Summary of EGDD comparing 1971-2000 to projected climate change in 2010-2039

Effective Growing Degree Days	1971 - 2000 Baseline	2010 - 2039 CGCM 3.1
	Percent of total area	
> 1,800	1.1	2.4
1,600 - 1,800	1.3	2.4
1,400 - 1,600	2.3	5.1
1,200 - 1,400	4.9	13.5
1,050 - 1,200	11.1	13.2
900 - 1,050	12.9	13.3
750 - 900	14.2	13.2
600 - 750	12.8	13.0
< 600	39.7	23.9

- The CGCM 3.1 model predicts an increase of 1 degree Celsius by 2010-2039 in the average monthly temperature during the growing season in British Columbia.

Climate Data and Future Scenario:

- 30 year average monthly climate data (Tmax, Tmin, ppt) was used to calculate:
  - Effective Growing Degree Days,
  - Moisture Deficits (P-PE) and
  - Length of Growing Season (seeding date until fall frost).
- Baseline data (1971-2000) provided by Natural Resources Canada (Great Lakes Forestry Centre).
- Climate Change Scenario (2010-2039)
  - Global Climate Change Model (GCM) used: Canada's Coupled Global Climate Model (CGCM3.1) developed by the Canadian Centre for Climate Modelling and Analysis.
  - Climate data was spatially interpolated using ANUSPLIN software (2.5° grid interpolated to ~10km grid).

Limitations:

- Represents only a single climate change model result, using the A2 climate change scenario from the Intergovernmental Panel on Climate Change (IPCC).
- Seasonal and inter-seasonal variability in the 30 year average monthly climate data was not considered (e.g. extreme events such as drought and excess spring moisture).
- Method used to interpolate climate data (e.g. precipitation) is not as accurate in highly variable terrain, as in British Columbia.

Prepared by Agriculture and Agri-Food Canada's Agri-Environmental Services Branch (AESB), in partnership with Research Branch and Environment Canada's National Service Office-Agriculture

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