CHISASIBI CLIMATE DATA

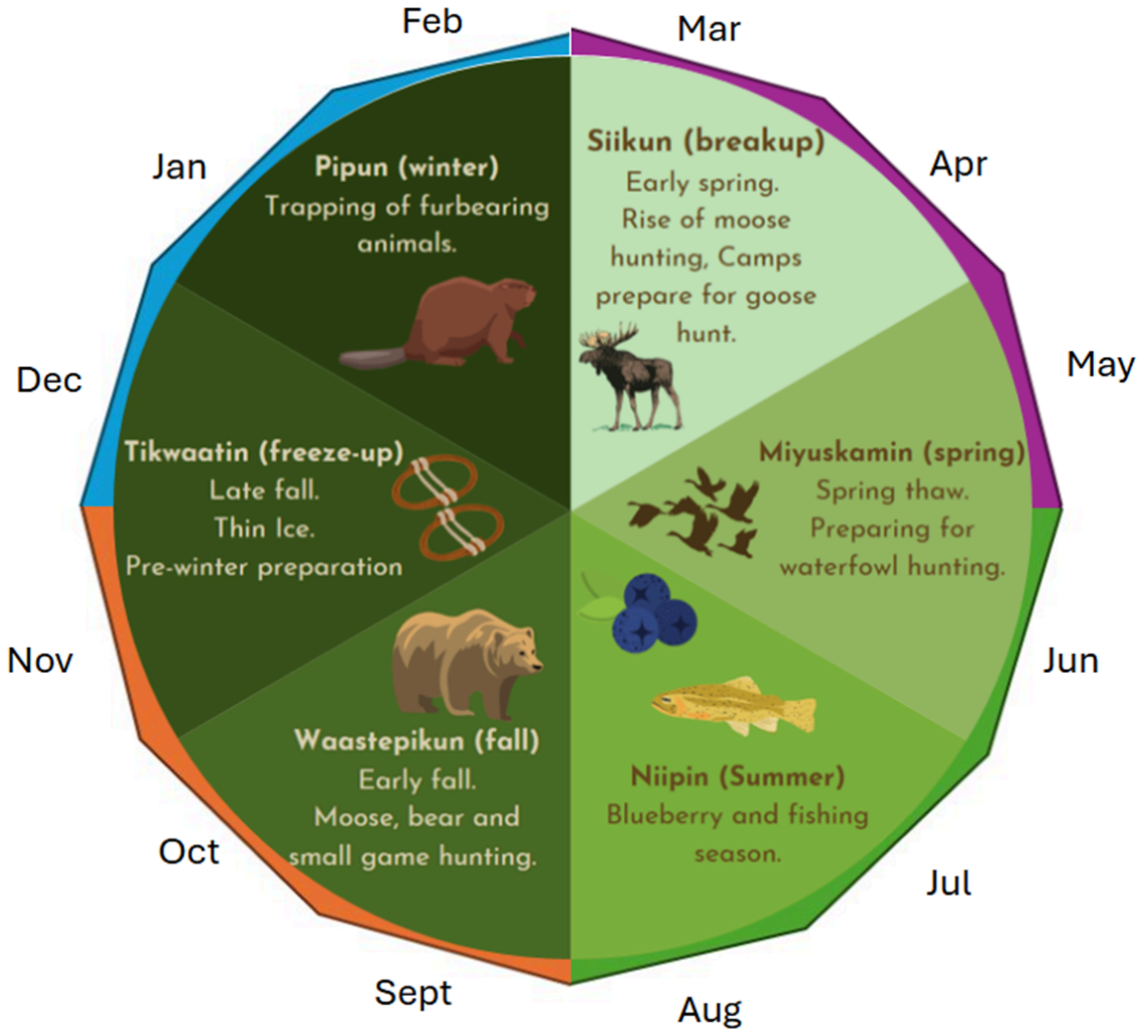
CLIMATE CHANGE ADAPTATION AND ENVIRONMENTAL EMERGENCY PREPAREDNESS WORKSHOP

CANADIAN CENTRE FOR CLIMATE SERVICES | CENTRE CANADIEN DES SERVICES CLIMATIQUES

Introduction

The Canadian Centre for Climate Services worked with the Cree Nation Government, Cree Board of Health and Social Services of James Bay and Ouranos to provide select climate information for the territory of Chisasibi. The information considers the six Cree Seasons (see figure below) as well as the 12-month calendar to facilitate a discussion on adaptation at the community level. In most cases, annual climate indices are disaggregated to the corresponding Cree season where the change will be experienced.

We know the climate is changing, thus using historical climate information alone is not sufficient to describe future climatic conditions. Climate models help us understand the range of future climates that we could experience. Where available, all data presented in this handout are from the SSP3-7.0 scenario, a high emission socioeconomic pathway in order to plan and be prepared for all of the most likely scenarios. This pathway was chosen because it represents a high emissions future that encompasses the most likely greenhouse gas emission scenarios.



*Please see page 11 of the handout for more technical information on the data

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ClimateData.ca

PAVICS

Ouranos

Overview

pipun (Jan–Feb)

The winters will be warmer, and we will see fewer cold days. There will be more snow.

siikun (Mar–Apr)

There will be a shorter freeze season, and shorter snowfall season, with less snow in the shoulder seasons. We will see a decrease in freezing rain on the coast.

miyuskamin (May–Jun)

The last frost day will be earlier in the year. There will be more potential for growth, along with more precipitation.

niipin (Jul–Aug)

Greater measures will be needed to avoid the heat. There will be more heavy rain days and there will also be a significant increase in wildfire risk.

waastepikun (Sep–Oct)

The first frost will be later in the year and there will be longer periods without frost. The rainiest day will become increasingly heavy.

tikwaatin (Nov–Dec)

The winter climate will be warmer, with snow arriving later and leaving sooner. The cold will be less intense and shorter, resulting in less ice.

Scan here to see more climate portraits from Ouranos
https://portraits.ouranos.ca/en/

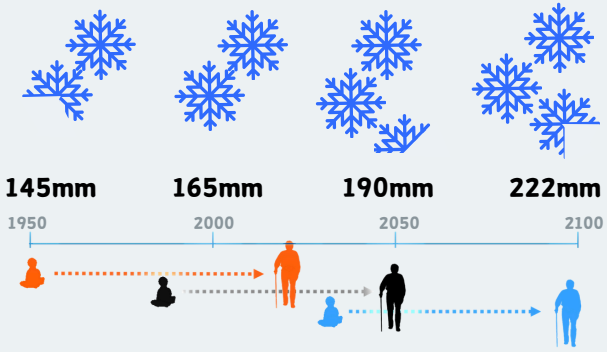
Scan here to see more projections across Canada on ClimateData.ca
https://climatedata.ca/

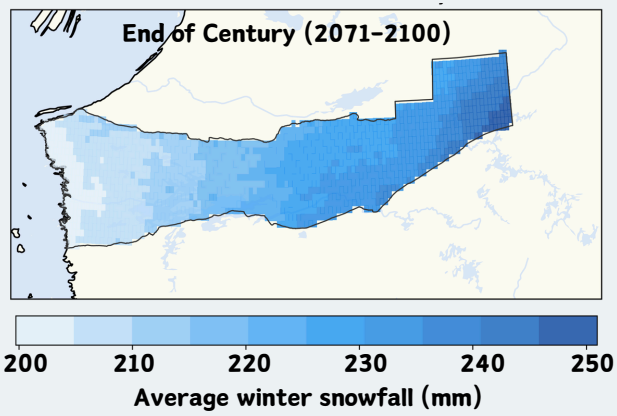
pipun (Jan–Feb)

What will change?

The winters will be warmer, and we will see fewer cold days. There will be more snow.

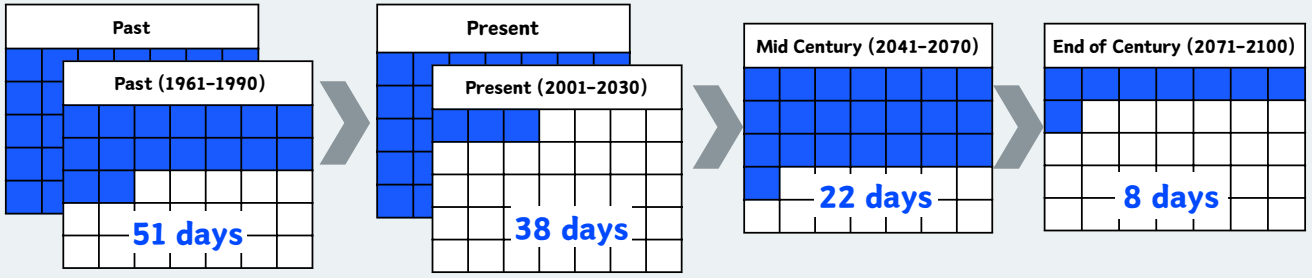
More snow





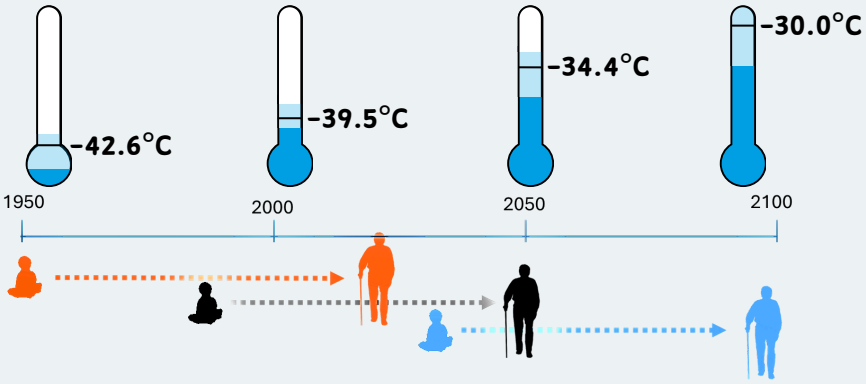
We anticipate the amount of winter snowfall to increase by close to 50% by the end of the century, compared to the past.

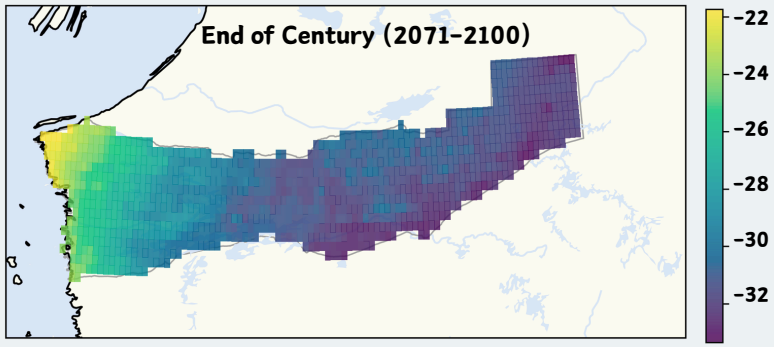
Fewer cold days



Elders today see 14 fewer cold days (below -25°C) than in their youth, while today's youth will face 28 fewer cold days by the time they become Elders.

Extreme colds will be warmer





By the end of the century, we expect the coldest night of the year to be about 10 degrees warmer than it is now. The coldest night is already 3 degrees warmer than in the 60s.

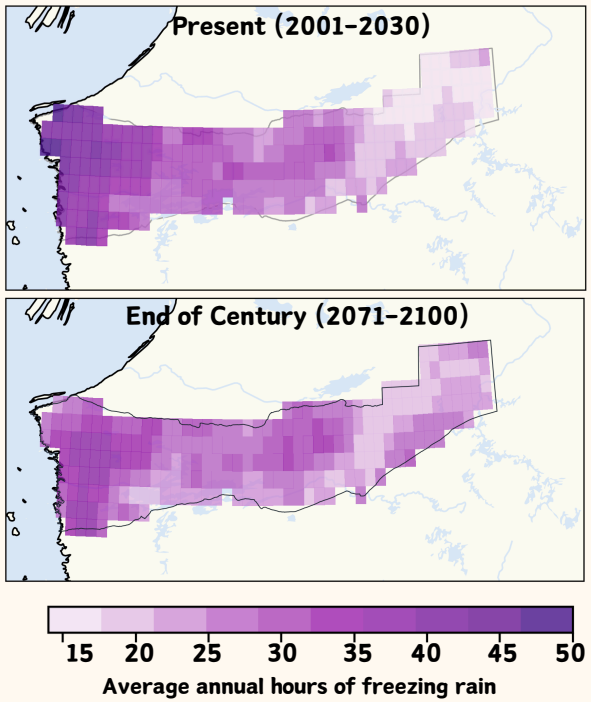
The coast will warm faster than inland, meaning there will be more variation across the territory.

siikun (Mar–Apr)

What will change?

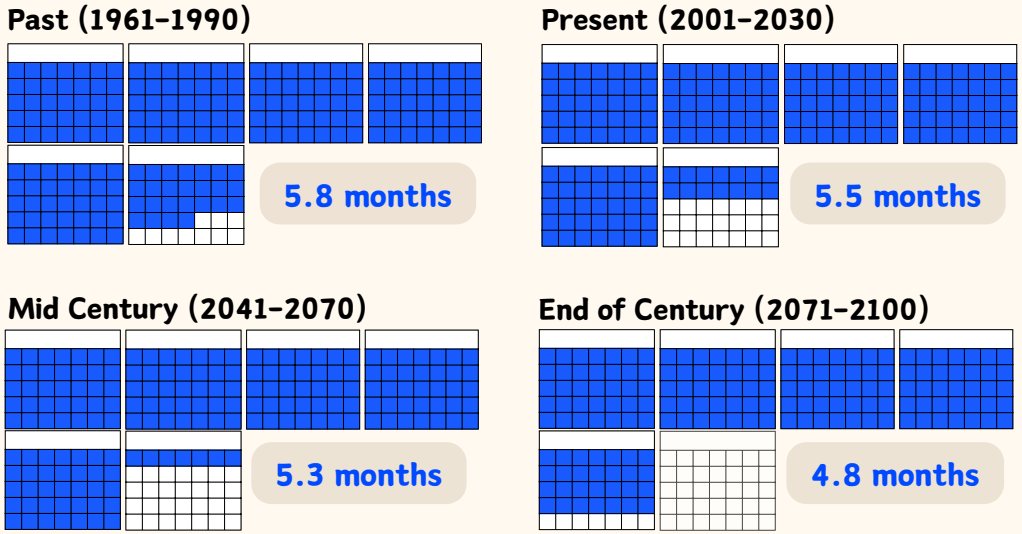
There will be a shorter freeze season, and shorter snowfall season, with less snow in the shoulder seasons. We will see a decrease in freezing rain on the coast.

Changes in freezing rain

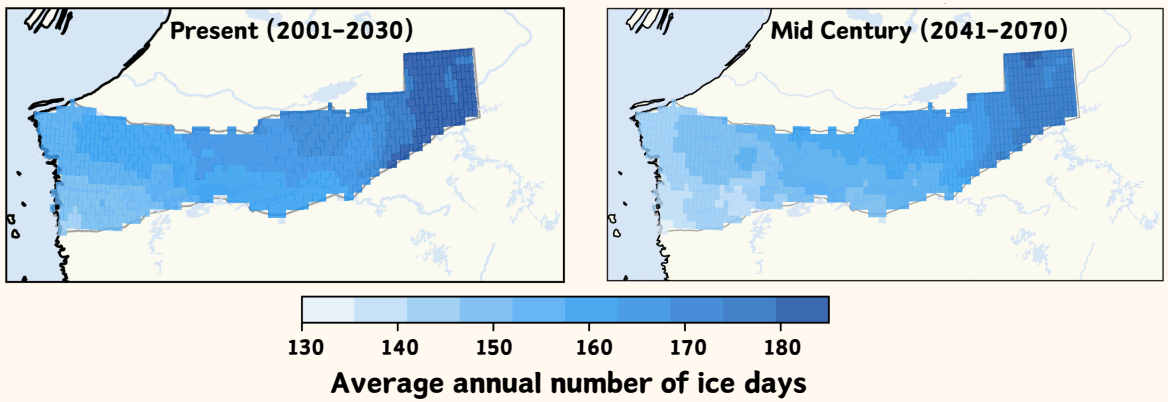


In the future, there will be less freezing rain on the coast than there is now. However, inland will see an increase in freezing rain.

Shorter freezing season



Number of days below freezing gives an idea of the length of the freezing season. There are currently 5-6 months across the region, with higher values inland. By the end of the century, we expect about a month less of freezing days. In the extreme warm years, this value will drop to just 3-4 months.



miyuskamin (May–Jun)

What will change?

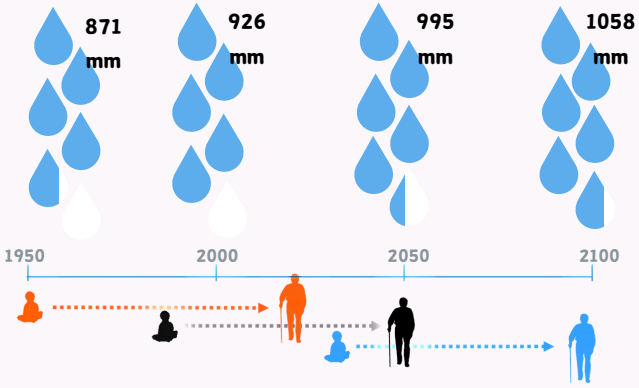
The last frost day will be earlier in the year. There will be more potential for growth, along with more precipitation.

Earlier last frost

Past (1961–1990)	Present (2001–2030)	Mid Century (2041–2070)	End of Century (2071–2100)
June 1st	May 28th	May 24th	May 18th

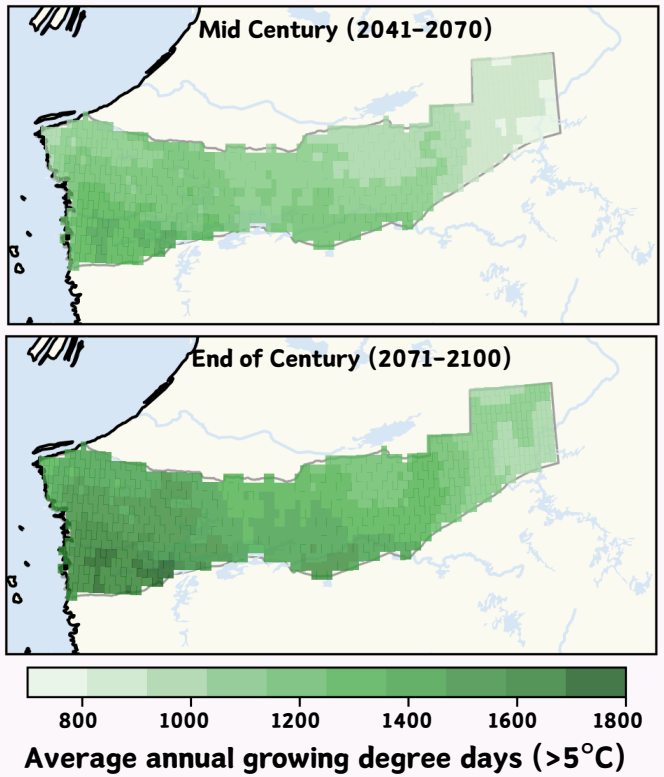
By the end of the century, the last spring frost will occur about 10 days earlier than it does now. This will mean an earlier start to the growing season.

More rain



We expect a 10% increase in annual precipitation by the end of the century, compared to now. We have already seen a 5% increase since the 1950s. Most of the increase in precipitation is as rain.

More growth potential



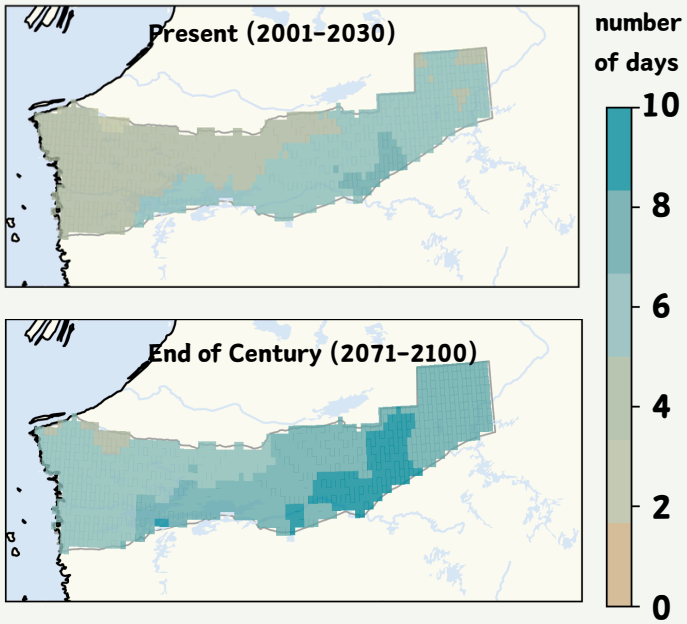
Growing degree days measure the potential for growth of plants and insects. By the end of century, we see almost twice as much growth opportunity across the territory. The coastal region, where the community is located, will see 70% more potential for growth compared to the inland region.

niipin (Jul–Aug)

What will change?

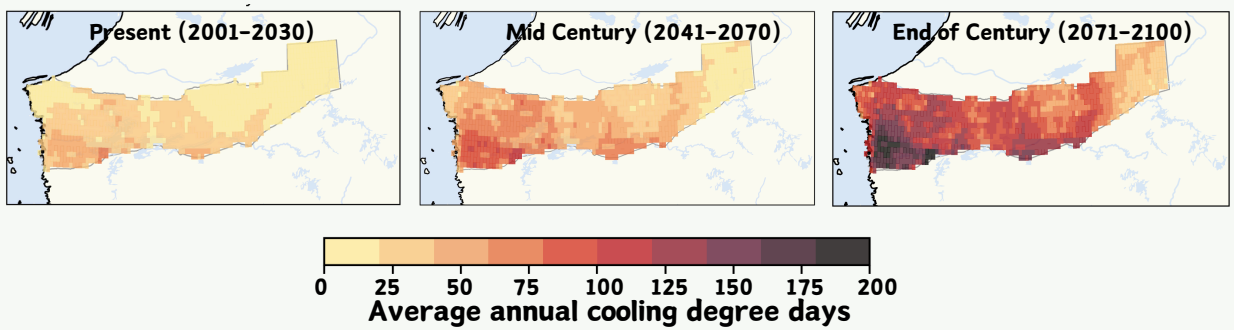
Greater measures will be required to avoid the heat. There will be more heavy rain days and there will also be a significant increase in wildfire risk.

More days with heavy rainfall



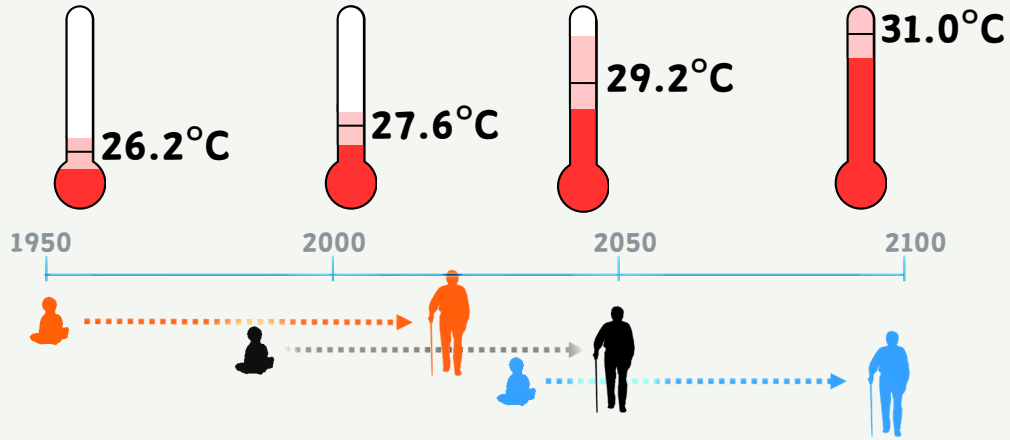
We expect an increase in the number of very rainy days, where precipitation is above 20mm, by the end of century. There will be increasing concerns about flash flooding.

More uncomfortable heat



Cooling degree days measure the amount of discomfort due to heat. We expect this to **quadruple** by the end of the century in the community of Chisasibi. Increased efforts to cool down and avoid the heat will be required.

The hottest days will become hotter



The Elders today experience the hottest day to be a degree warmer than in their youth. The youth of today will see a 4 degree increase in the hottest day within their lifetime.

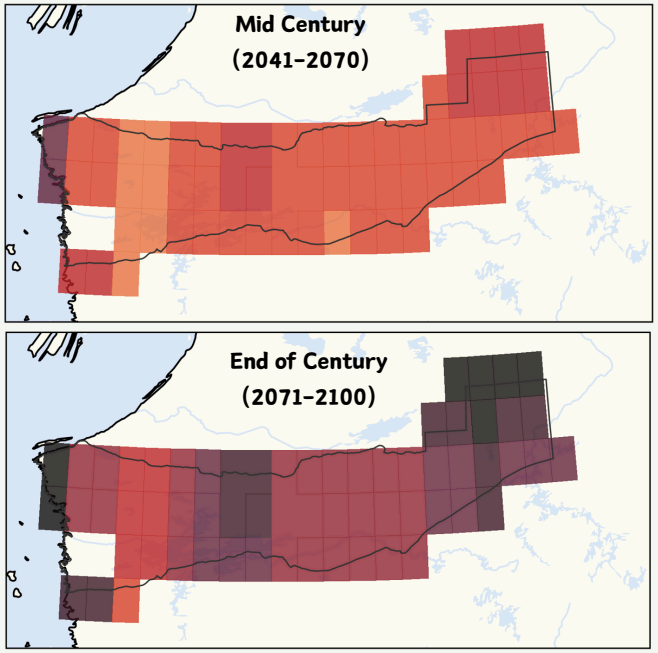
Wildfire Risk

The **Fire Weather Index (FWI)** is a tool used for assessing how easily a wildfire could start and spread based on weather conditions.

FWI does not consider:

- **Ignition** sources and their impact,
- **Vegetation** – e.g. a parking lot experiences the same fire weather as a forest.

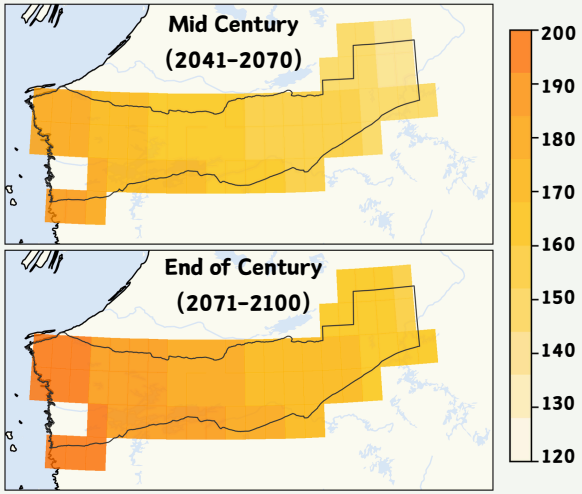
Fire Weather Index (% change)



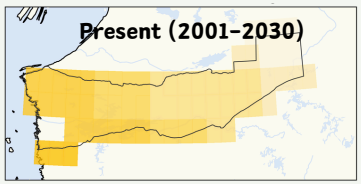
Fire Weather Index is an overall measure of potential wildfire intensity.

By the end of the century, we expect wildfire risk to be about 65% higher than it was in 1971-2000.

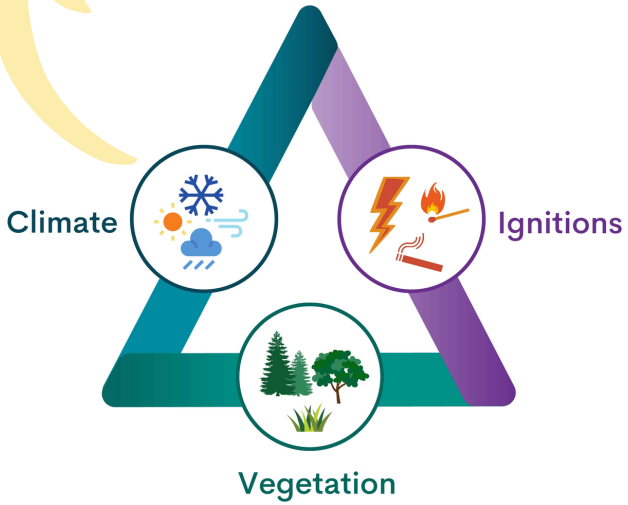
Fire Season Length (# days)



The fire season is the part of the year when the weather is warm enough for wildfires to grow and spread. Currently most of the territory sees about 4 months with potential for wildfire.



By the end of the century we expect this to exceed 6 months along the coast.



waastepikun

(Sep–Oct)

What will change?

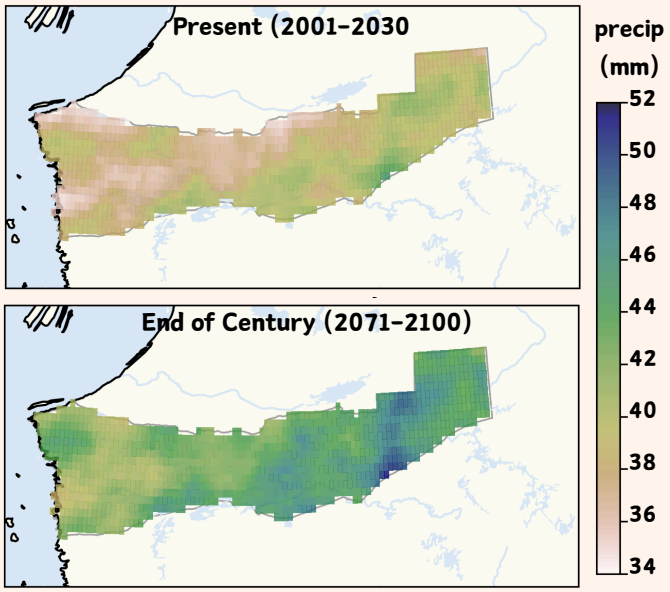
The first frost will be later in the year and there will be longer periods without frost. The rainiest day will become rainier.

Later first frost

Past (1961–1990)	Present (2001–2030)	Mid Century (2041–2070)	End of Century (2071–2100)
Sept 26th	Oct 2nd	Oct 8th	Oct 16th

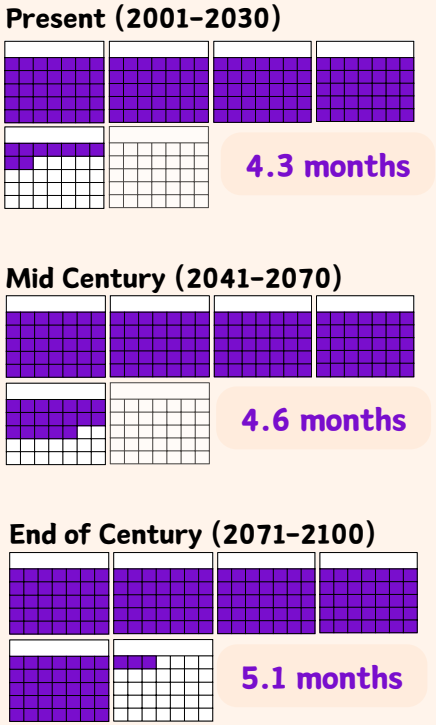
We can expect the first fall frost of the year to be 2 weeks later than it currently is, by the end of the century.

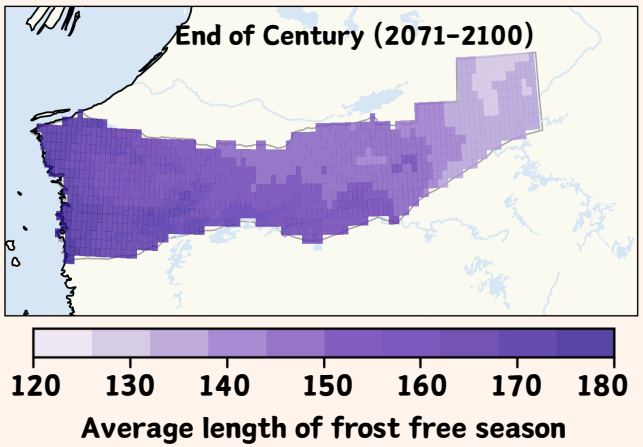
More rain on the rainiest day



We expect the rainiest day to be about 15% wetter than it is now by the end of the century. This could contribute to more flooding.

Longer frost free season





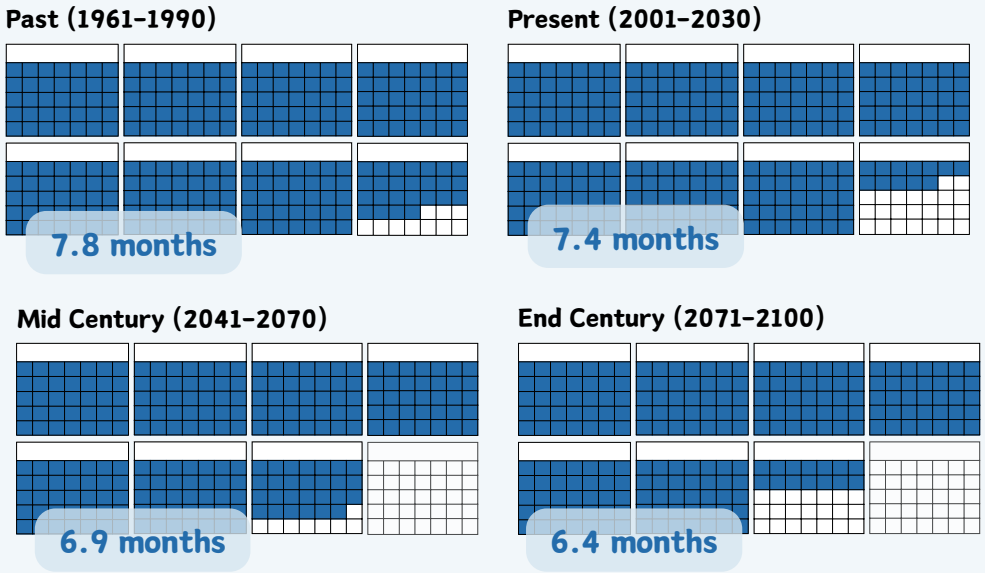
The frost free season will become about 4 weeks longer by the end of the century, which could impact the growing season. The longest frost free season is along the coast.

tikwaatin (Nov–Dec)

What will change?

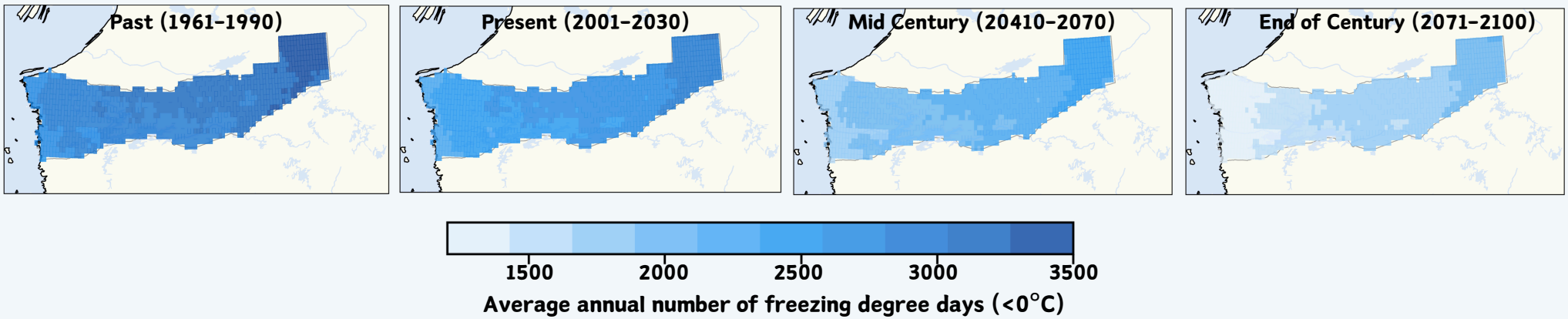
The winter climate will be warmer, with snow arriving later and leaving sooner. The cold will be less intense and shorter, resulting in less ice.

Shorter snowfall season



The length of the snowfall season will decrease by about a month and a half, compared to past and present day, by the end of the century. Snow will arrive later in the season, and end sooner.

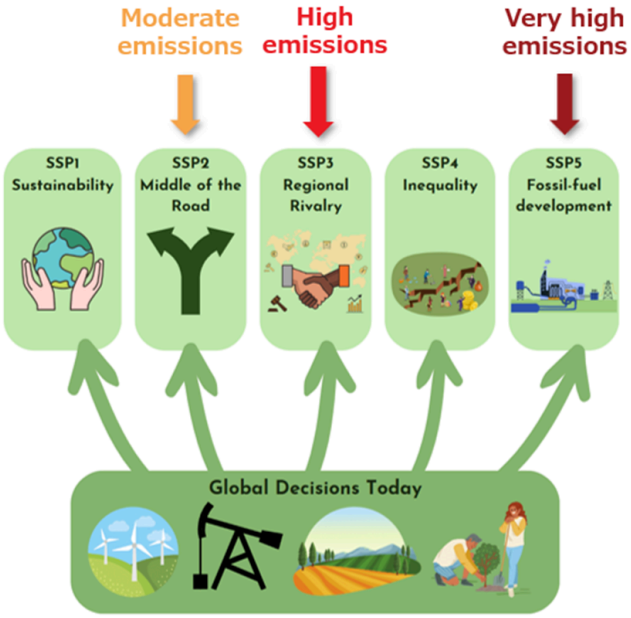
Less freezing potential



Freezing degree days speak to the potential for water to freeze. We expect a significant decrease in freezing degree days, meaning shorter periods of ice coverage, with less ice integrity.

Additional Information

The future is uncertain, and we use different scenarios to model future greenhouse gas emissions pathways. Shared Socioeconomic Pathways (SSP) are a set of narratives describing possible future development pathways for human society, particularly in relation to its use of fossil fuels and the social and economic factors which drive fossil fuel use. The SSP3-7.0 (Regional Rivalry) pathway is a high emissions scenario, which relies heavily on fossil fuels and an increased use of coal. In this pathway, nationalism drives policy, with focus placed on regional and local issues rather than on global issues (ClimateData.ca, Understanding Shared Socio-economic Pathways (SSPs)). Almost all of the information in this handout is from SSP3-7.0 scenario of the Ouranos ESPO-G6-R2v1 dataset and can be explored through the Ouranos: Climate Portraits website. The snowfall data (coming in 2025) and fire weather data can be explored on ClimateData.ca. The fire weather and freezing rain data displays the Representative Concentration Pathway 8.5, which is a previous iteration of SSP5 (SSP3 is not available for these variables).



When a single value is presented, it is the area-weighted average for the territory of Chisasibi, from the median (50th percentile) of the ensemble models. The maps also present the median value (50th percentile) of the models.

Further data and information, including the calculations performed, is available for each index in the accompanying technical document. Two additional socioeconomic pathways are also available in the technical document, SSP2 (Middle of the Road) and SSP5 (Fossil-fueled development). The technical document will be available upon request from the Cree Nation Government (CNG).

For additional information on climate data in Quebec, you can reach out to Contact us | Ouranos or the Canadian Centre of Climate Services Support Desk for anywhere in Canada.