

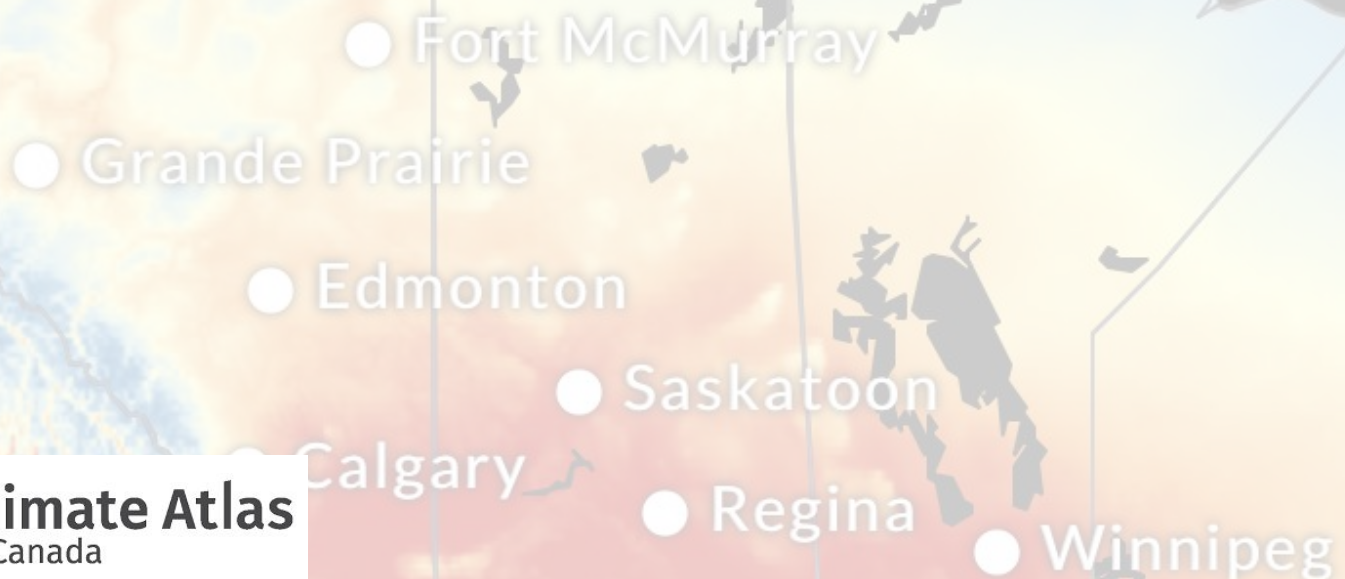


**Prairie
Climate Centre**
From Risk to Resilience

The Climate Atlas in the Classroom

A Guidebook for Educators

Navigating the Climate Atlas of
Canada in the context of
classroom education



Fort McMurray
Grande Prairie
Edmonton
Saskatoon
Calgary
Regina
Winnipeg



The Climate Atlas in the Classroom

A Guidebook for Educators

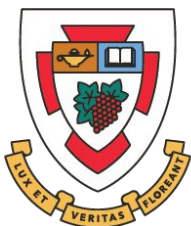
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Notes for using the Climate Atlas of Canada in the classroom

The Climate Atlas is a tool that combines science, mapping, and storytelling together to better understand and visualize climate change. These integrated knowledges are an effective way to teach climate change in the classroom.

The Climate Atlas of Canada is a free, publicly available resource for all to use.

To cite this document please use the following:

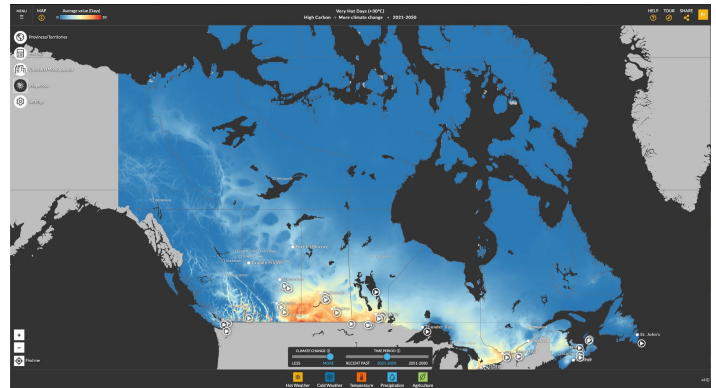
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Prairie Climate Centre. 2023. *The Climate Atlas of Canada*. University of Winnipeg, Manitoba.

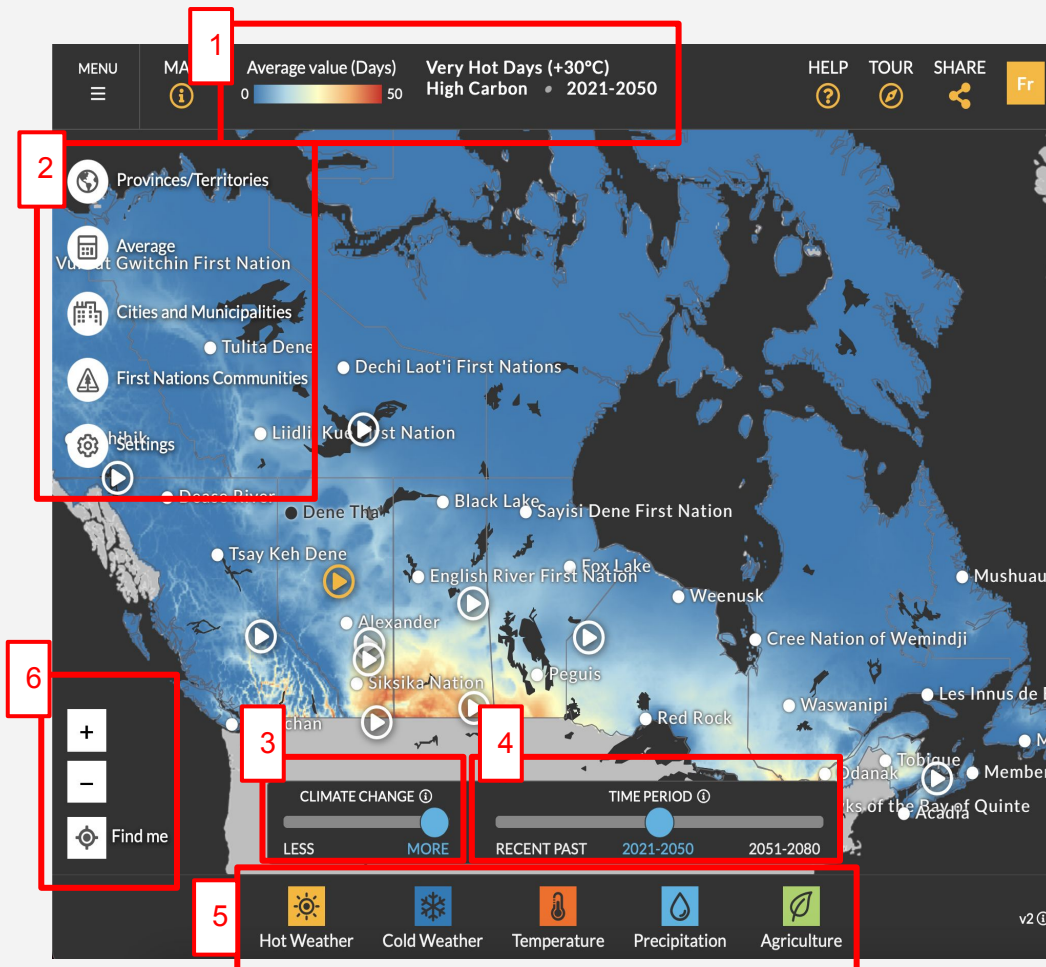
Navigating the Atlas

How to get there: Home > [Map](#)



What you'll find:

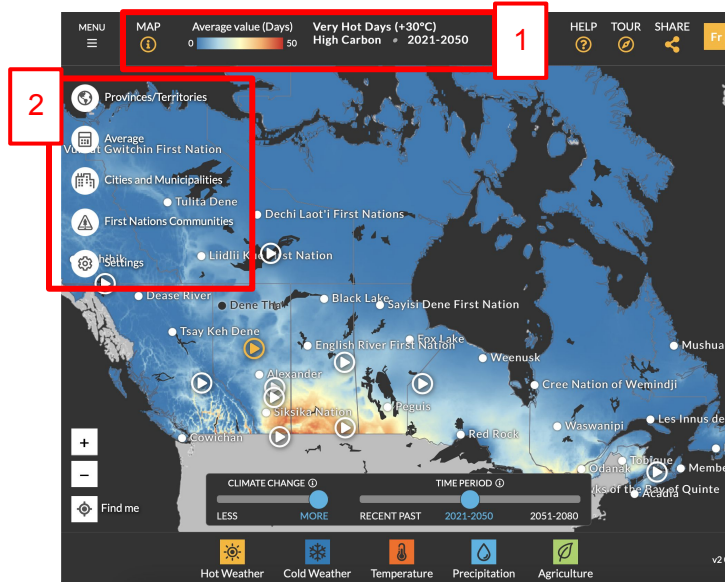
The Climate Atlas is an interactive map that allows users to see how climate variables are expected to change through time across Canada



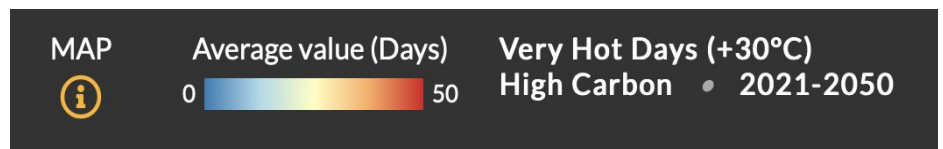
1. Legend
2. Map settings
3. Climate Change scenarios
4. Time periods
5. Climate Variables
6. Zoom feature

See next page for breakdown of map features

Navigating the Atlas



1. Legend & Title



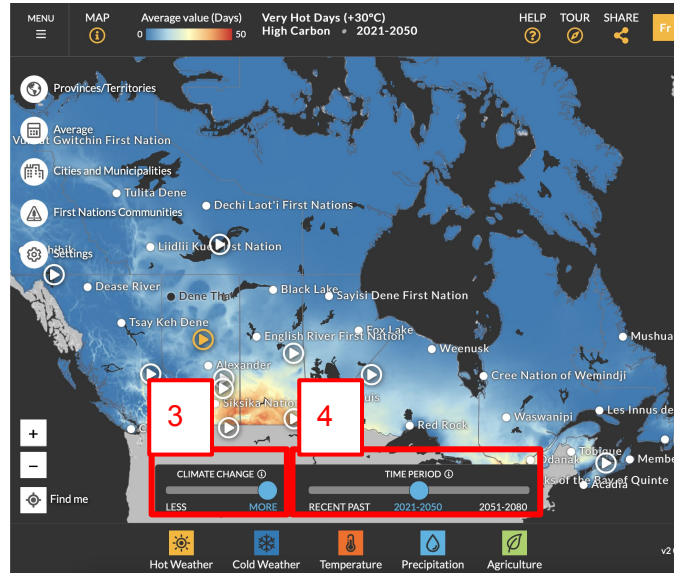
- Describes what the current map is displaying
- Defines the values of colours on the map
- Explains what variable is being viewed, in which carbon emission scenario, and during which time period selected.
- See the map info icon for more information on what the map is displaying

2. Map settings

- Select the scale you want for regions shown on the map by area size or provinces/territories
- The map can show average values for a future time period, or the amount of change between recent past and a future time period
- Cities, municipalities, and Indigenous markers options



Navigating the Atlas



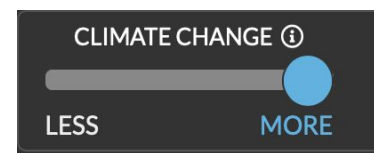
3. Climate Change Scenarios

More Climate Change, or "High Carbon" Scenario

This is the "business as usual" scenario, and assumes that world greenhouse gas emissions continue to increase at current rates through the end of the century.

Less Climate Change, or "Low Carbon" Scenario

This scenario assumes that greenhouse gas emissions increase until about 2050 and then rapidly decline.



4. Time Periods

The Recent Past (1976-2005) - The "baseline" maps and data describe climate conditions in the recent past generated by climate models and have been shown to accurately represent observed records.

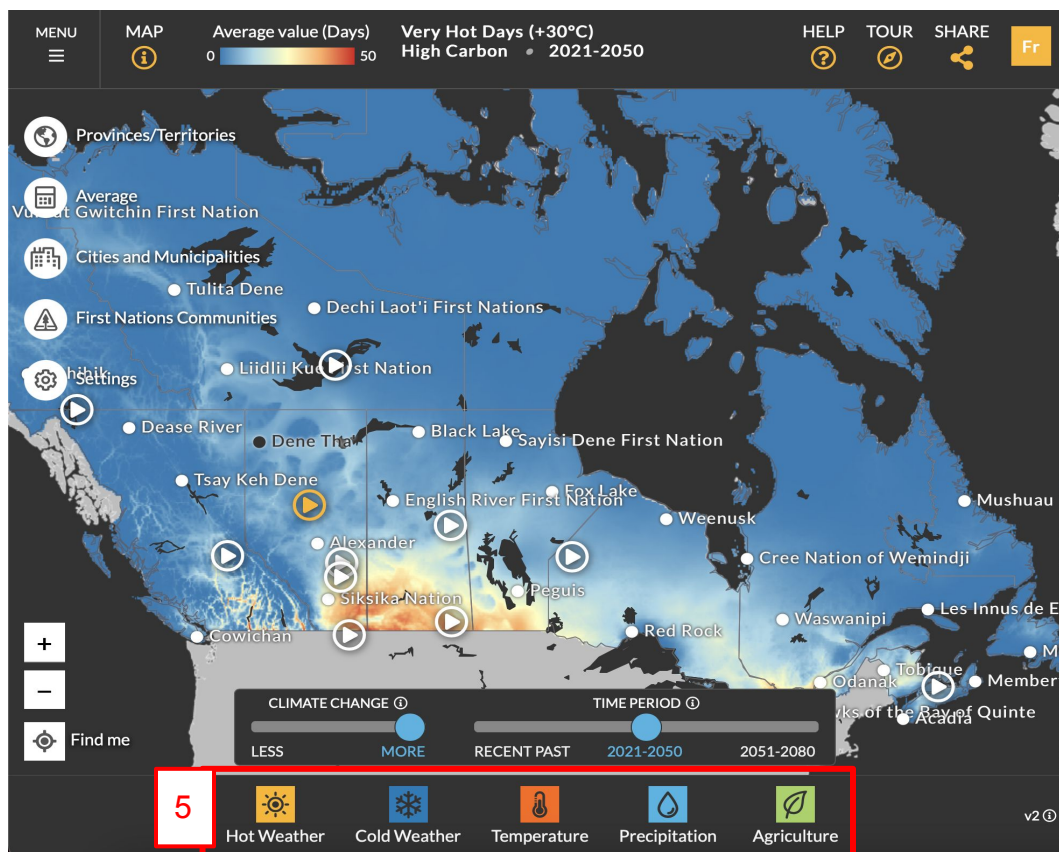
The Immediate Future (2021-2050) - This period of time has just begun, and we'll be in the middle of it in about 10 years. Most Canadians will see these changes come to pass.

The Near Future (2051-2080) - Younger Canadians will likely experience all of these changes, and many older Canadians will at least see them begin.



Navigating the Atlas

5. Climate Change Variables



HOT WEATHER [X]

- ☒ Very Hot Days (+30°C)
- ☐ Tropical Nights
- ☐ Warmest Maximum Temperature
- ☐ Summer Days
- ☐ Cooling Degree Days
- ☐ Number of Heat Waves
- ☐ Average Length of Heat Waves
- ☐ Longest Spell of +30 °C Days
- ☐ Hot (+30 °C) Season
- ☐ Extremely Hot Days (+32 °C)
- ☐ Extremely Hot Days (+34 °C)

COLD WEATHER [X]

- ☐ Very Cold Days (-30°C)
- ☐ Freeze-Thaw Cycles
- ☐ Frost Days
- ☐ Icing Days
- ☐ Coldest Minimum Temperature
- ☐ Heating Degree Days
- ☐ Freezing Degree Days
- ☐ Mild Winter Days (-5 °C)
- ☐ Winter Days (-15 °C)

TEMPERATURE [X]

- ▶ Mean Temperature
- ▶ Maximum Temperature
- ▶ Minimum Temperature

PRECIPITATION [X]

- ▶ Precipitation
- ☐ Heavy Precipitation Days (10 mm)
- ☐ Heavy Precipitation Days (20 mm)
- ☐ Wet Days
- ☐ Dry Days
- ☐ Max 1-Day Precipitation
- ☐ Max 3-Day Precipitation
- ☐ Max 5-Day Precipitation

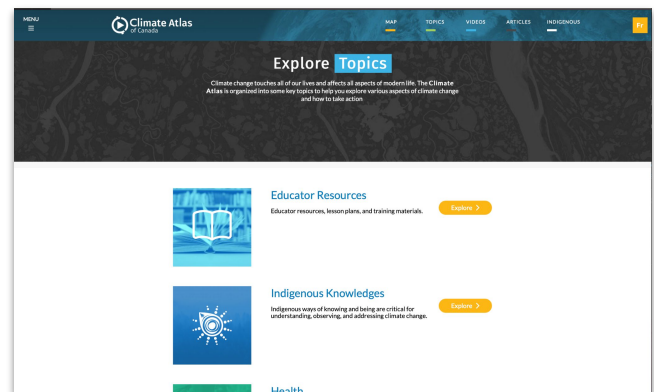
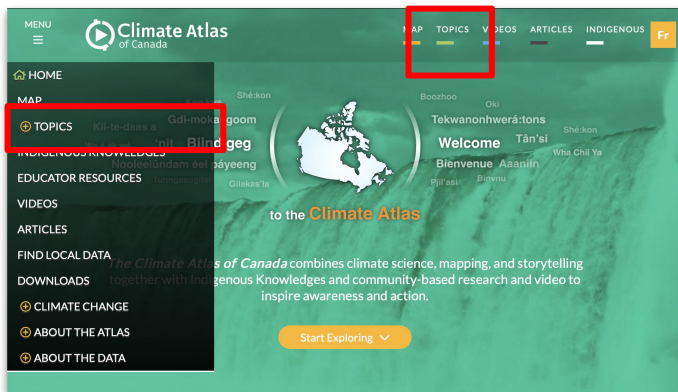
AGRICULTURE [X]

- ☐ Frost-Free Season
- ☐ Date of First Fall Frost
- ☐ Date of Last Spring Frost
- ☐ Corn Heat Units
- ☐ Growing Degree Days (Base 5 °C)
- ☐ Growing Degree Days (Base 10 °C)
- ☐ Growing Degree Days (Base 15 °C)
- ☐ Growing Degree Days (Base 4 °C)

 **Hot Weather**  **Cold Weather**  **Temperature**  **Precipitation**  **Agriculture**

Climate Change Topics

How to get there: Home > [Topics](#)



What you'll find:

The topics page allows users to narrow down the climate change content they want to see based on the listed topics they are interested in exploring



Educator Resources

Educator resources, lesson plans, and training materials.

[Explore >](#)



Indigenous Knowledges

Indigenous ways of knowing and being are critical for understanding, observing, and addressing climate change.

[Explore >](#)



Health

Hot summer days may sound like a good thing, but they come with many risks to human health. On top of increased risks of heat stroke and exhaustion, hot temperatures can lead to more forest fires smoke problems, promote the development of smog and favour the spread of infectious diseases and pests.

[Explore >](#)



Agriculture

From the largest farm to the smallest market garden, agriculture thoroughly depends on climate. Learn more about how crops and livestock will be affected, and how farms and farmers can rise to the challenge of climate change.

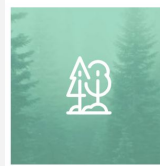
[Explore >](#)



Cities

The climate determines almost everything about how we design, build, and live in our cities. Now, with our climate changing, we need to re-think important aspects of how we live our urban lives.

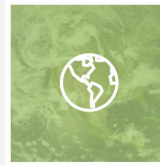
[Explore >](#)



Forests

Canada's forests stretch across the country and have enormous economic, cultural, environmental, and recreational value. Find out what climate change means for Canada's forests and trees.

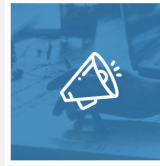
[Explore >](#)



Climate Science

Global warming is happening because human activity is increasing the concentration of greenhouse gases in Earth's atmosphere. Learn more about the science behind our understanding of the planet's climate system.

[Explore >](#)



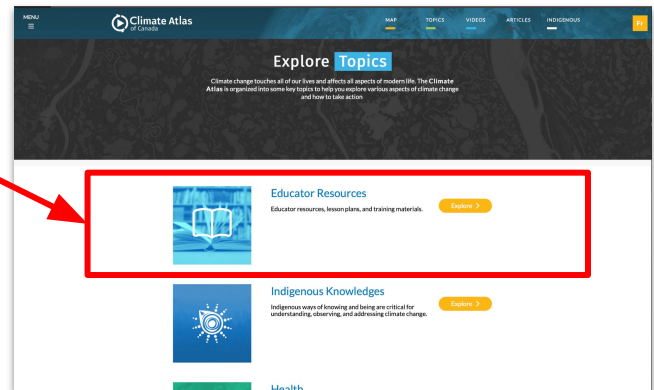
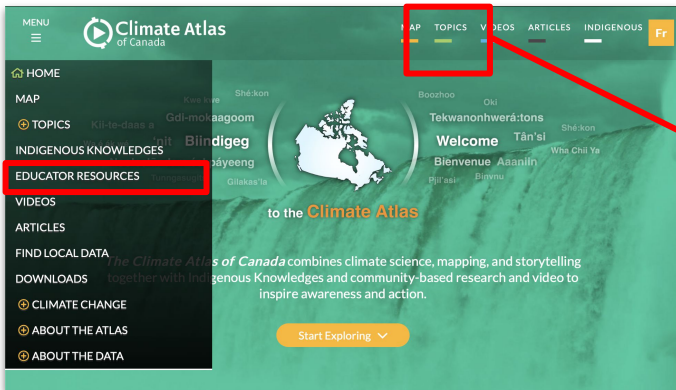
Take Action

Climate change impacts all of us. Its causes and effects are deeply linked to all aspects of modern life, which means there are many meaningful choices we can make that will help.

[Explore >](#)

Educator Resources

How to get there: Home > Topics > [Educator Resources](#)



What you'll find:
In the Educator Resources topic, you'll find lesson plans, activity sheets, answer-key downloads, and more!

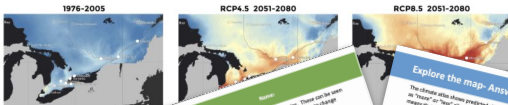
Lesson Plan 1 **Carbon** and Climate Change

Overview

In this lesson, students will examine the impact of a high carbon scenario or "business as usual" greenhouse gas emissions on climate change variables across Canada and at a local scale. The goal is to understand the connection between increasing carbon in the atmosphere and associated impacts on our environment and wellbeing.

Background

The Climate Atlas of Canada shows different possible future scenarios based on "high" and "low" carbon scenarios. Future projections are calculated using two possible greenhouse gas emissions scenarios that result in more or less severe levels of climate change. Comparing the two possible scenarios demonstrates the importance of taking climate action. For example, these images show the projections for the number of very hot days in southern Ontario for the recent past and for 2051-2080 under the high carbon (RCP8.5) and low carbon (RCP4.5) scenarios. Only reducing greenhouse gas emissions can make the difference between these possible climate futures. Read more in our [High vs Low Carbon](#) article. The "high" carbon scenario, or "more" climate change, is the projection based on current rates of greenhouse gas emissions.



Student Learning

- Investigate and describe how rising carbon emission will impact climate change.
- Understand the varying levels of climate change under different scenarios.
- Give examples of the impacts of climate change on the environment and human health.

Downloads

[Full Lesson Plan](#)

Lesson Plan 2 **Climate Change and Health**

Overview

In this lesson, students will learn the impacts that climate change has on human health. By learning how health is impacted by climate change we can better understand how to protect ourselves immediately and in the long-term by taking steps and adapting our behaviours to reducing climate change.

Background

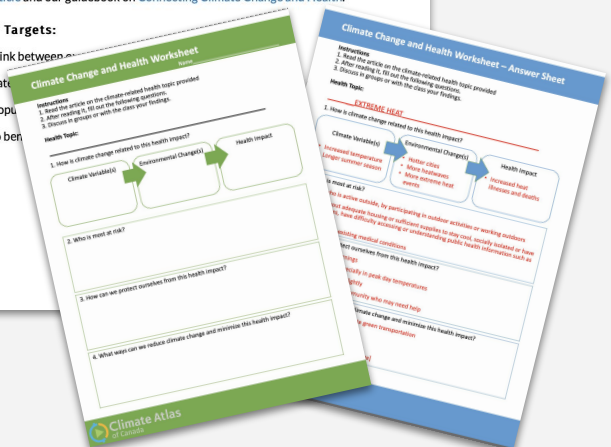
We often think about climate change as something abstract or remote. We hear scientists talking about melting ice caps, see images of drought in faraway places, or browse through news coverage of exotic weather disasters. However, climate change is having effects right here and right now in Canada. And the risks aren't just theoretical or abstract. The effects of climate change are up close and personal, affecting the everyday lives and health of Canadians. For more information read our [Climate Change and Health](#) article and our guidebook on [Connecting Climate Change and Health](#).

Student Learning Targets:

- Understand the link between climate change and human health.
- Identify the climate change impacts on human health.
- Discuss at-risk populations.
- Describe ways to better protect ourselves from climate change impacts.

Downloads

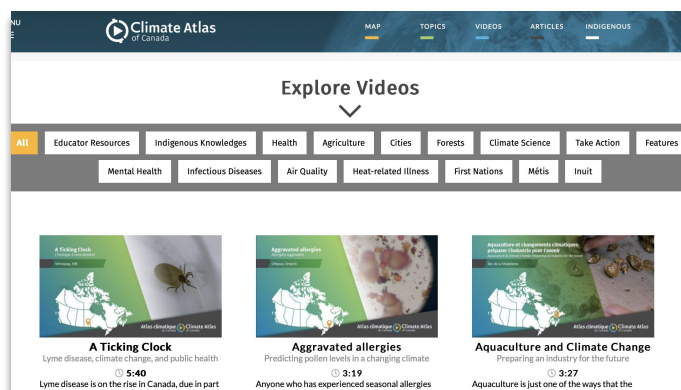
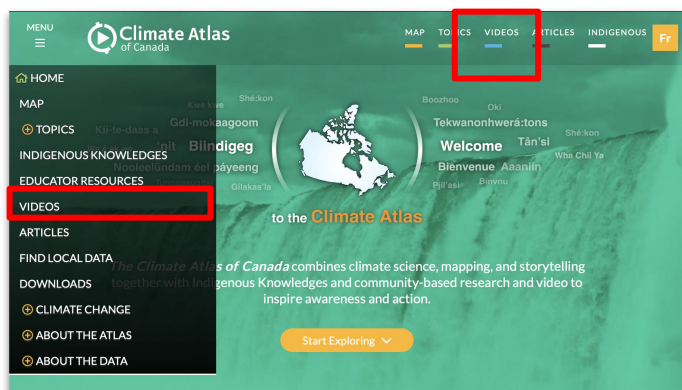
- [Full Lesson Plan](#)
- [Worksheet](#)
- [Answer Key](#)



Go to: [Lesson 1](#) & [Lesson 2](#)

Climate Change Content

How to get there: Home > [Videos](#)



What you'll find:

Videos on numerous climate change topics that bring together real life examples of the stories behind climate change, along with the science.



Hotter Summers Greener Lakes
Algal blooms, climate change, and human health



Quality Control
Wildfire, water, and our health



We Didn't Start the Fire
Youth Activism, Climate Crisis and Mental Health



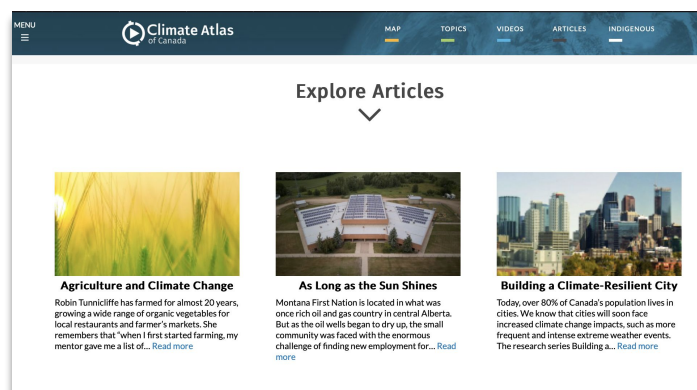
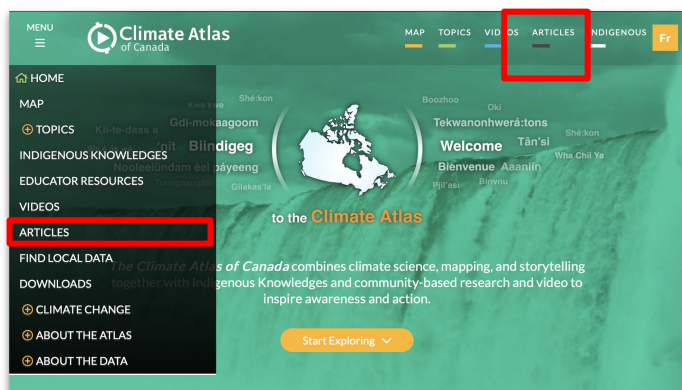
Aggravated allergies
Predicting pollen levels in a changing climate

How to use it:

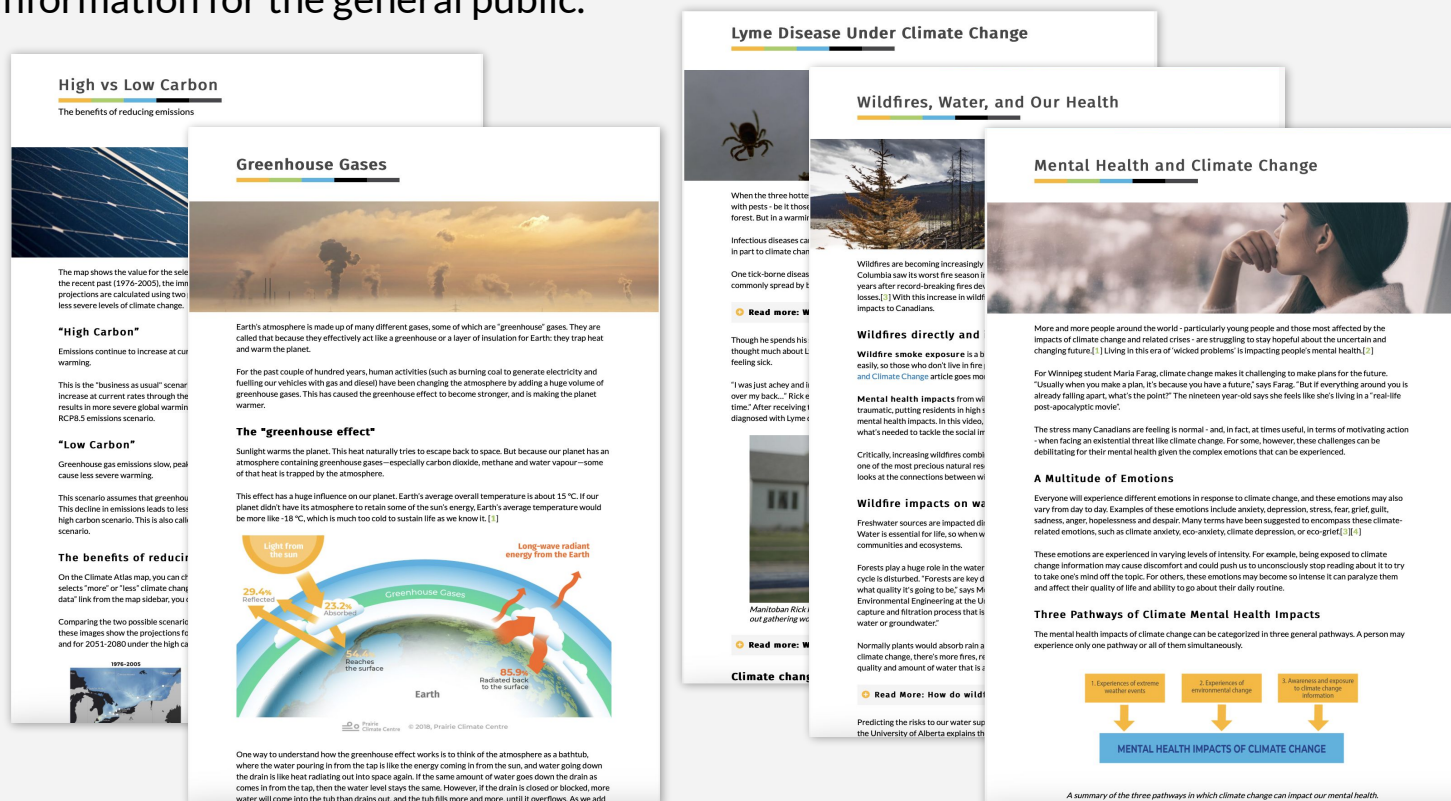
The combination of science and storytelling makes educational topics more relatable for students. Use our videos to promote discussions, inform projects, introduce classroom topics, and accompany other topics that intersect with climate change.

Climate Change Content

How to get there: Home > [Articles](#)



What you'll find:
Articles on numerous climate change topics that simplify complex scientific information for the general public.

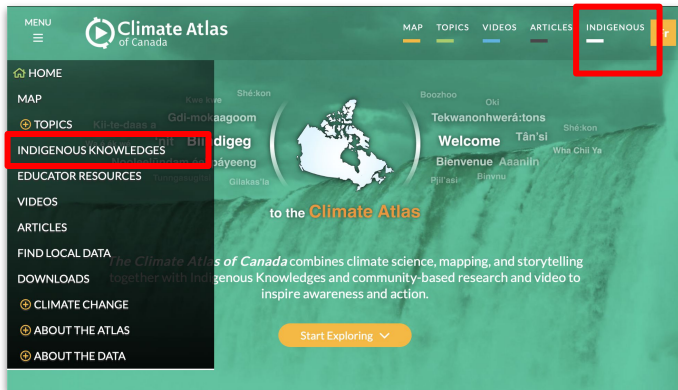


How to use it:

These articles can be used in classrooms for article reviews, group discussions, and many other ways. See our lesson plan for Lesson 1 to get started using our Climate Atlas articles in your classroom.

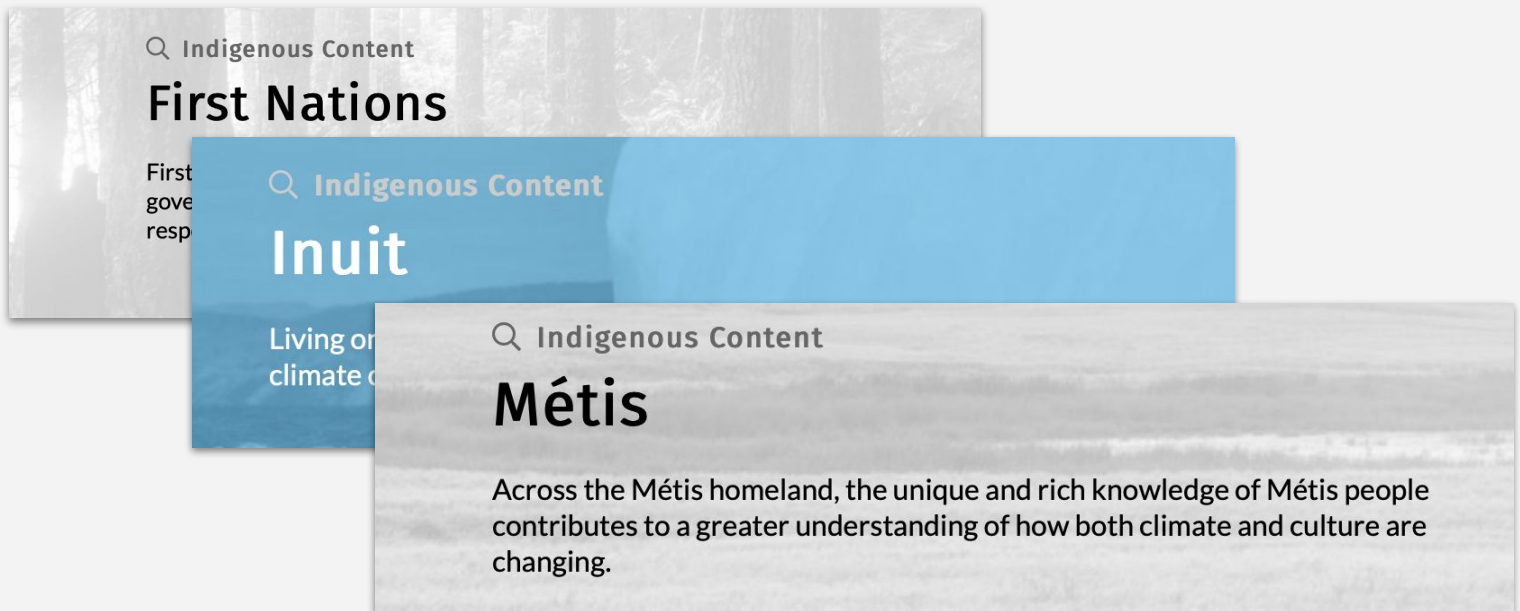
Indigenous Climate Change Content

How to get there: Home > [Indigenous](#)



What you'll find:

Within the Indigenous content, you'll find climate change content organized into First Nations, Inuit, and Métis subtopics.



How to use it:

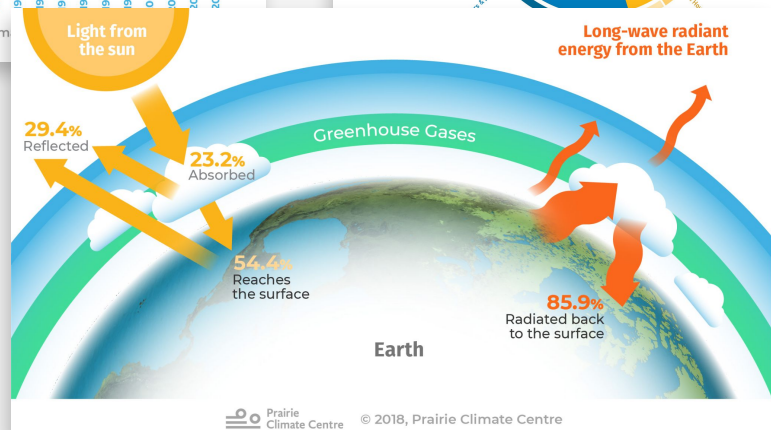
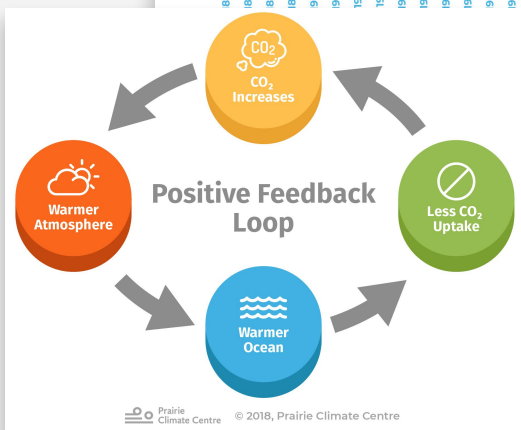
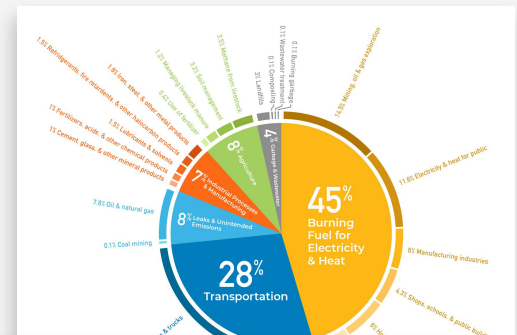
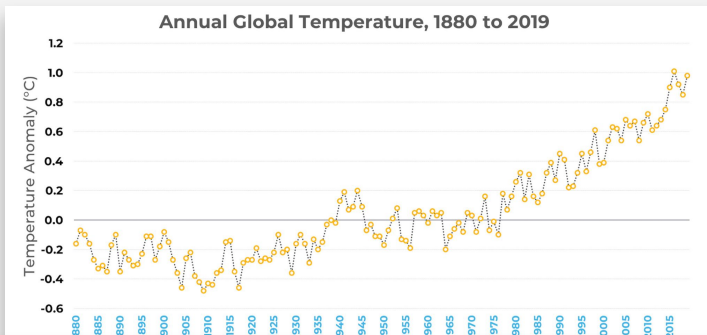
Indigenous knowledges on climate change are not only important in understanding the historic observed changes in climate, but they will also help us navigate and adapt to changes to come. Using Indigenous Knowledges in the classroom allow for a diverse world of information beyond western worldviews. Use articles and videos in this topic to foster discussions, guide projects, and introduce the topic of climate change in the classroom.

Downloadable Materials

How to get there: Home > Menu > [Downloads](#)



What you'll find:
Downloadable infographics on climate change



How to use it:

Downloadable content can be used to support teaching material, such as useful images explaining climate change concepts, maps, and graphs. These downloads can be printed to be displayed on walls or inserted into slide decks to be presented to the classroom.

More Resources

[The Climate Atlas of Canada Tour](#) (video walkthrough)



[Student Introduction to the Climate Atlas of Canada](#) (slide-deck)

