



An intro to climate services: Nova Scotia Federation of Municipalities

April 24, 2024

Casey Clunas and Frances Delaney

Canadian Centre for Climate Services

Speaker introductions

HELLO FROM THE CANADIAN CENTRE FOR CLIMATE SERVICES (CCCS)



CASEY CLUNAS
Policy Analyst, CCCS

FRANCES DELANEY
Outreach and Engagement
Specialist, Policy Analyst, CCCS



What to expect

OUTLINE FOR TODAY

Introduction to Climate and Risk

Introduction to the CCCS

Trusted Climate Data + Tools

Support Moving Forward

Where are we now?

OBSERVED CLIMATE CHANGES

Impacts and Risks

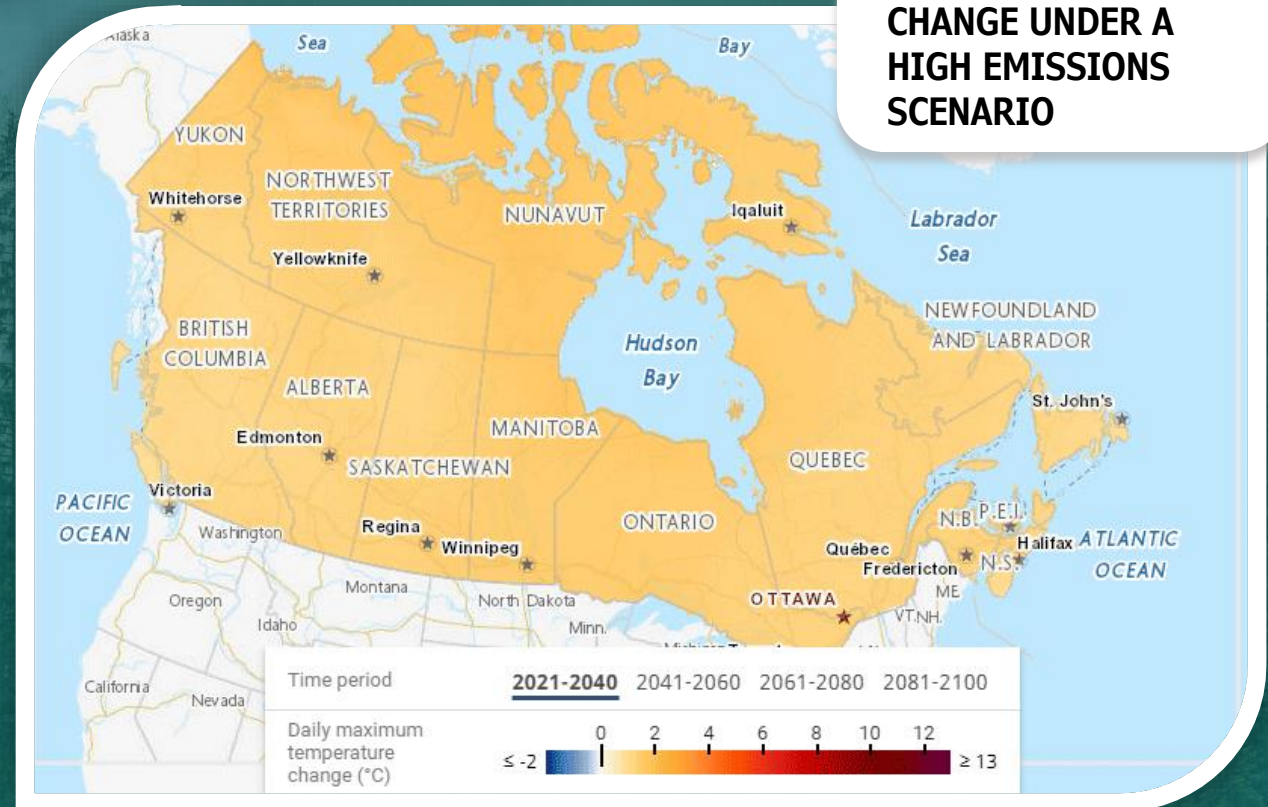
TEMPERATURES CONTINUE TO WARM

Global temperature has increased almost 1.5 °C over the past 150 years

- Canada has warmed 2x the global rate
- 3x in the North

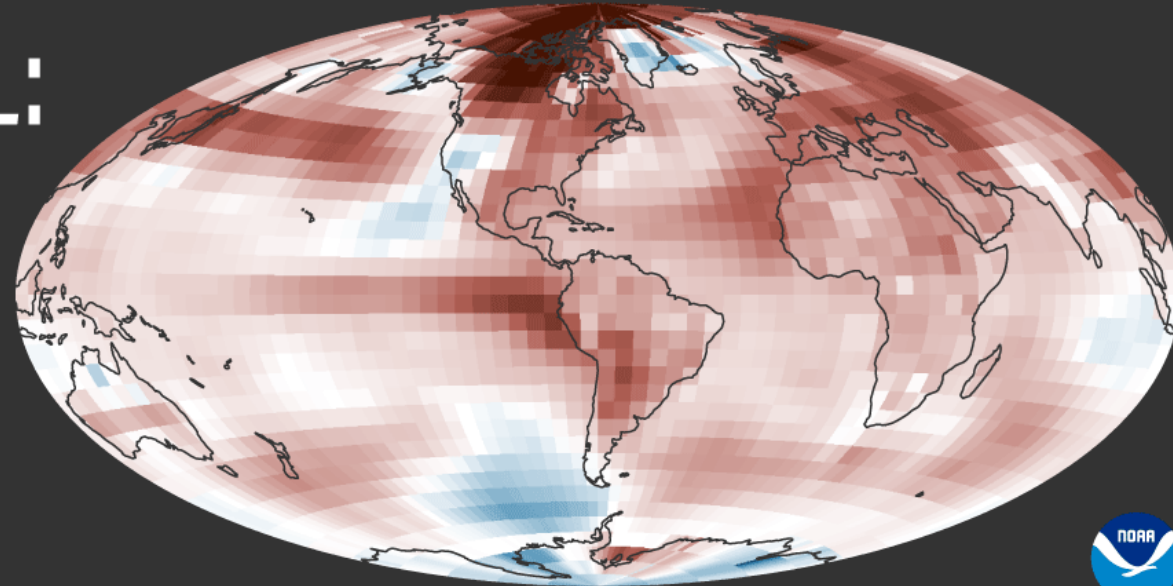
Up to +8°C by end of century under a high emissions scenario across southern Canada

**DAILY MAX.
TEMPERATURE
CHANGE UNDER A
HIGH EMISSIONS
SCENARIO**

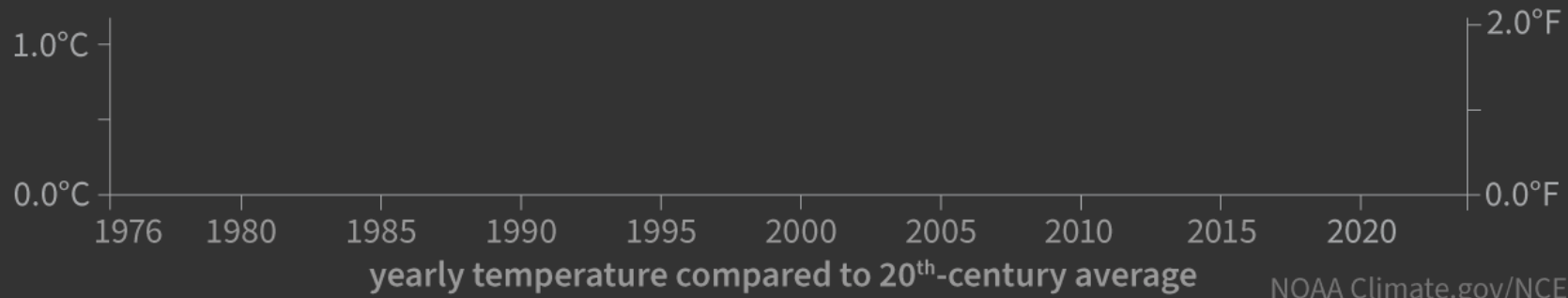
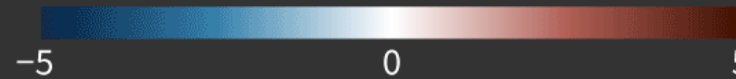


2023: Hottest year on record

IT'S OFFICIAL:



Difference from 1991–2020 average (°F)



NOAA Climate.gov/NCEI

Nova Scotia

CLIMATE CHANGE - WETTER AND WARMER



Total Annual Precipitation:

- Up 50 mm/year since 1976-2005 average
- Up to 340 mm/year more by 2070



Increase in mean annual temperature:

- Up by 1.8°C above the 1976-2005 mean
- Up to 5.4°C warmer by 2070



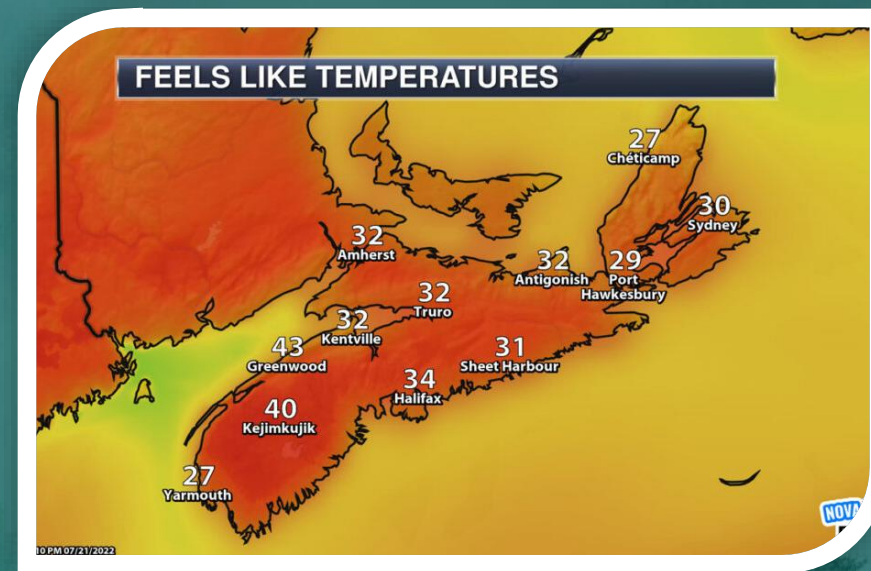
First Fall Frost:

- Two weeks later now than the 1976-2005 mean (Oct 15)
- Up to ~6 weeks later by 2070 (Nov 28)



Amount of Very Hot Days (above 30°C)

- Up by 4 days/year above the 1976-2005 mean
- Up to 31 days more per year by 2070



Impacts and risks

EXTREME HEAT

Increase in frequency and intensity of heat waves

Health impacts:

- Heatstroke and heat-related illnesses
- Cardiovascular problems
- Respiratory problems
- Mental health problems
- Even death



Impacts and risks

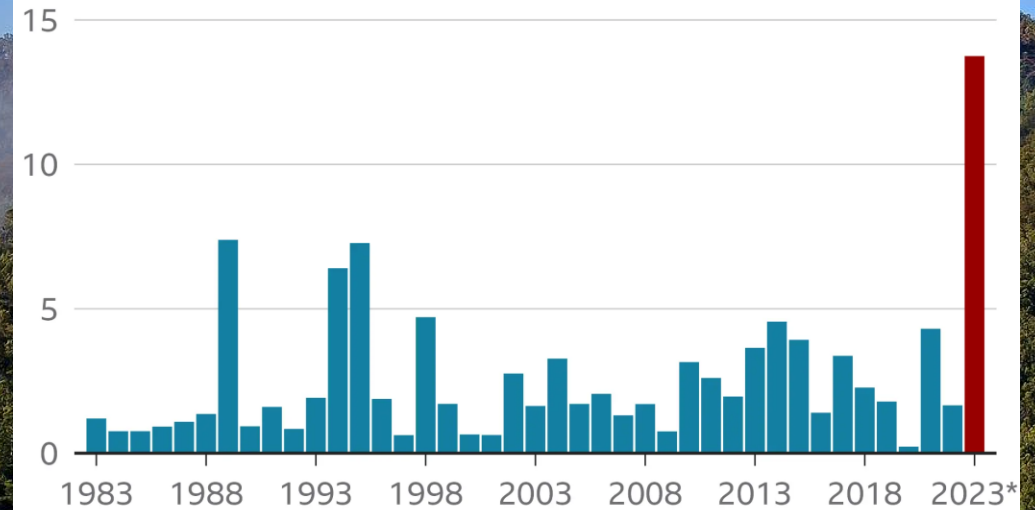
MORE WILDFIRES

2023 Canada set new record for fire season with the most area burned in recorded history (~18.4 million hectares)

Fires were “more likely and more intense by human-caused climate change” - CBC

Canada is having its worst year for wildfires

Area burned in million hectares each year since 1983



*Provisional data for 2023 up to 17 August

Source: Canadian Interagency Forest Fire Centre



Fire near Barrington Lake was the largest on record in Nova Scotia (23,525 hectares)

Impacts and risks

FLOODING

Flooding from:

- Rainfall/Hurricanes
- Storm Surge
- Rivers
- Snow melt/Ice jams
- High tides/Sea level rise

Insurance Bureau of Canada (IBC) stated that water damage is now the leading cause of property damage in Canada



July 21st thunderstorms brought over 250 mm of rain on 24 hours, resulting in 4 deaths



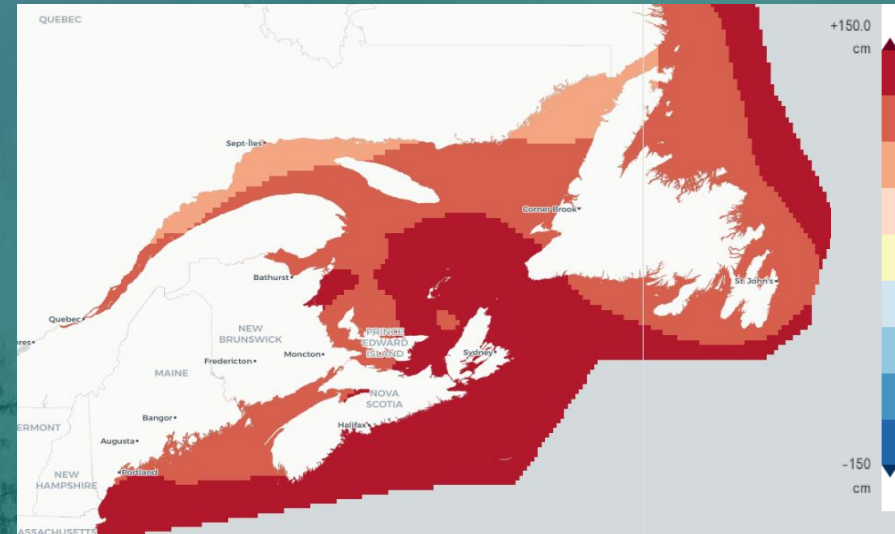
Impacts and risks

MARINE

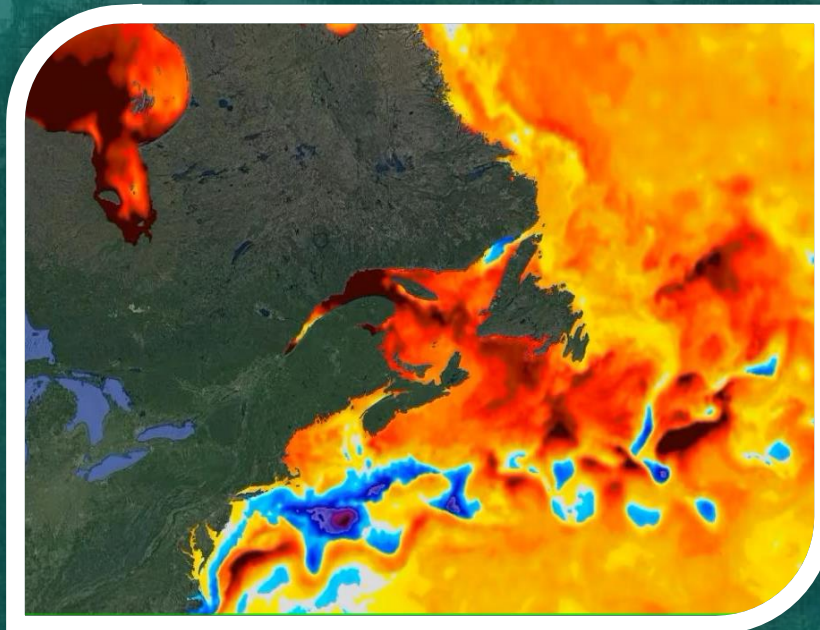
Sea level rise – higher storm surges and coastal flooding

Warmer ocean temperatures:

- Marine heat waves (impacts to ecosystems)
- Ocean acidification
- More fuel for hurricanes



Sea level rise projections in Atlantic Canada in a high emissions scenario by end of century



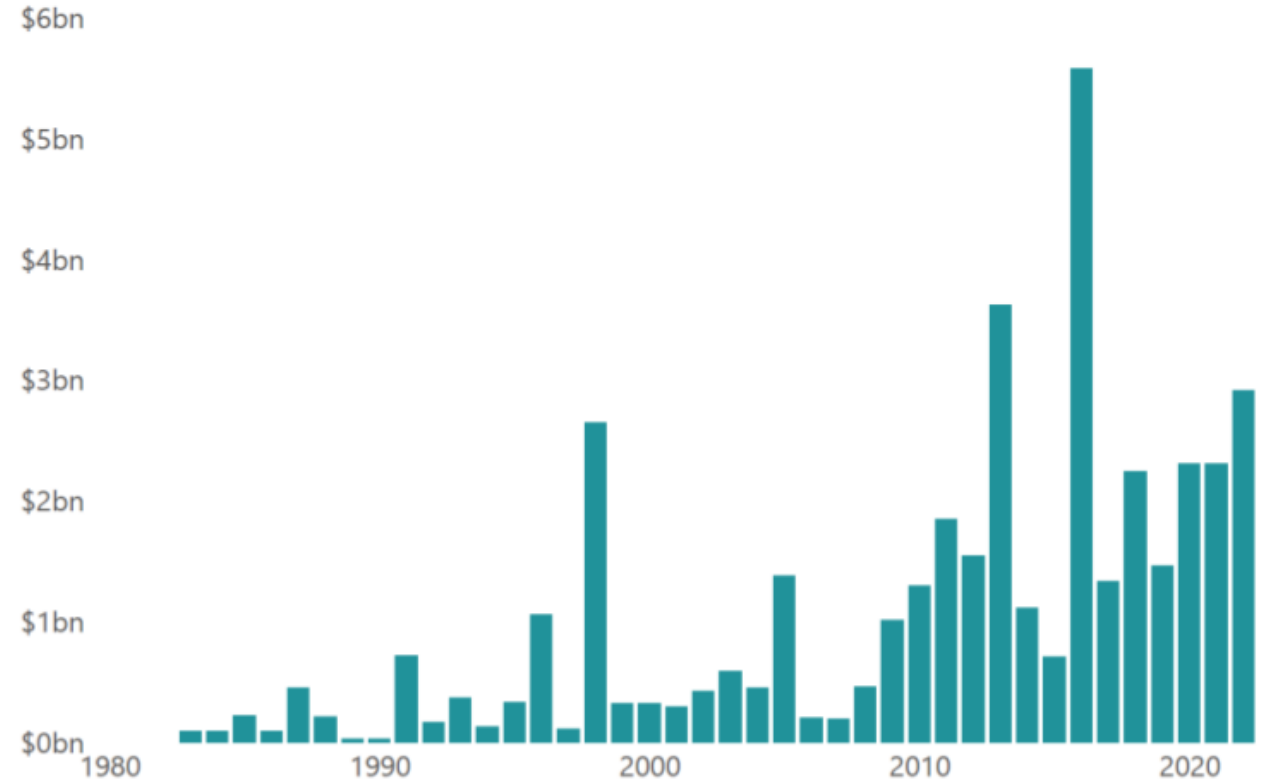
Map from NOAA showing sea surface temperature anomalies in the North Atlantic Oct. 3, 2023

Impacts and risks

CATASTROPHIC LOSS

- Floods, heatwaves, wildfires, severe storms are having an impact on economy, ecosystems, and built environment
- “The new normal for yearly insured catastrophic losses in Canada is \$2 billion”

Insured losses in Canada, 2021 dollars, 1983-2022



Source: Insurance Bureau of Canada

Introducing the CCCS

HOW WE CAN HELP

“

The Canadian Centre for Climate Services (CCCS) provides Canadians with information and support to consider climate change in their decisions.

MISSION OF THE CCCS

”

Introduction to the CCCS

OUR ROLE

Who we are:



We provide Canadians with information and support to consider climate change in their decisions



ccsc-cccs@eg.gc.ca
www.canada.ca/climate-services

What we do:



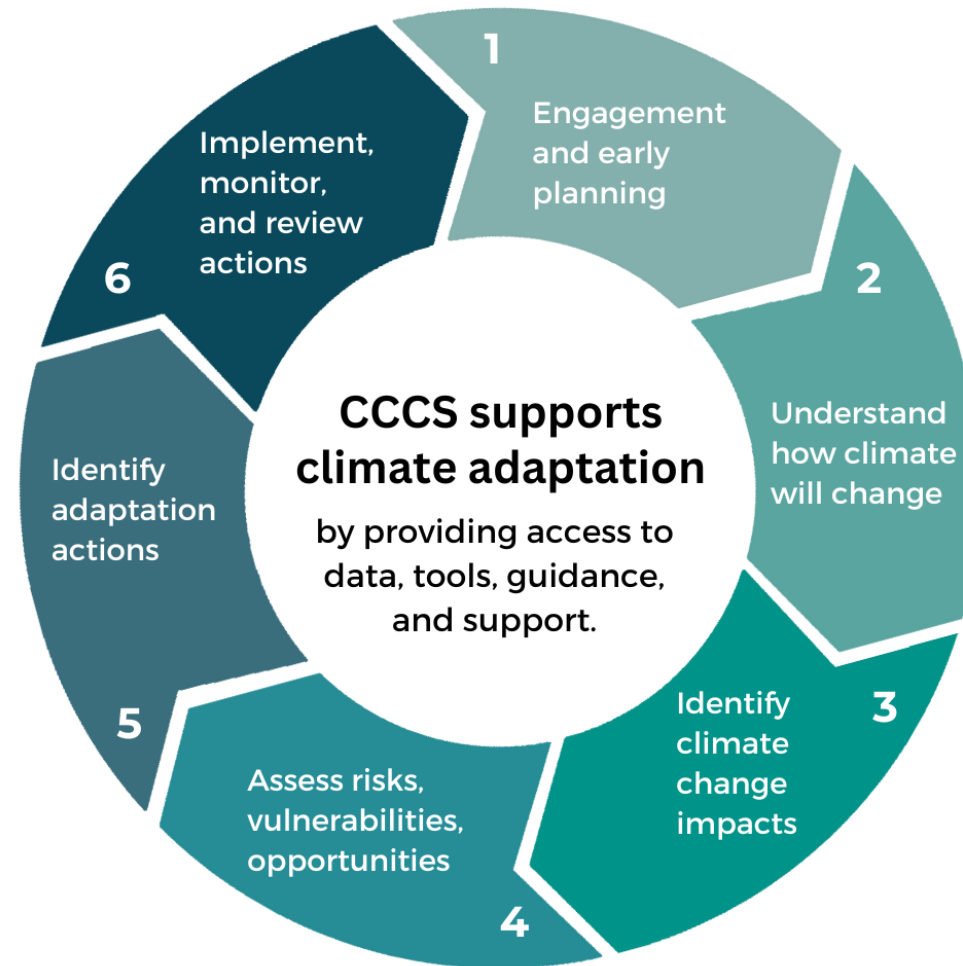
- Increasing **awareness** and access to climate data
- Providing training and **guidance**
- **Engaging** with users to understand needs
- Developing **new products** collaboratively



Climate data informs adaptation

KEY TAKE-AWAYS

- Climate change is here, and it is accelerating
- Risks far out-pacing our systems' natural ability to adjust
- Adaptation isn't just an issue for the future, but for practitioners today
- You're not alone in moving forward along the adaptation cycle – act now!



National network

CLIMATE SERVICES IN CANADA

- Provide national leadership toward the **development and delivery of country-wide downscaled, sector-specific data products**
- Coordinate with regional climate hubs



Eco-system of portals

SERVING A RANGE OF USER TYPES

Each portal brings together different data sets and tools

Different portals cater to different kinds of users



PACIFIC CLIMATE IMPACTS CONSORTIUM



ClimEX

And more



DESIGN VALUE EXPLORER



ClimateData.ca



Prairie Climate Centre



Climate Atlas of Canada

And more



Environment and Climate Change Canada



Climate Viewer

And more



OURANOS



CLIMATE PORTRAITS

And more

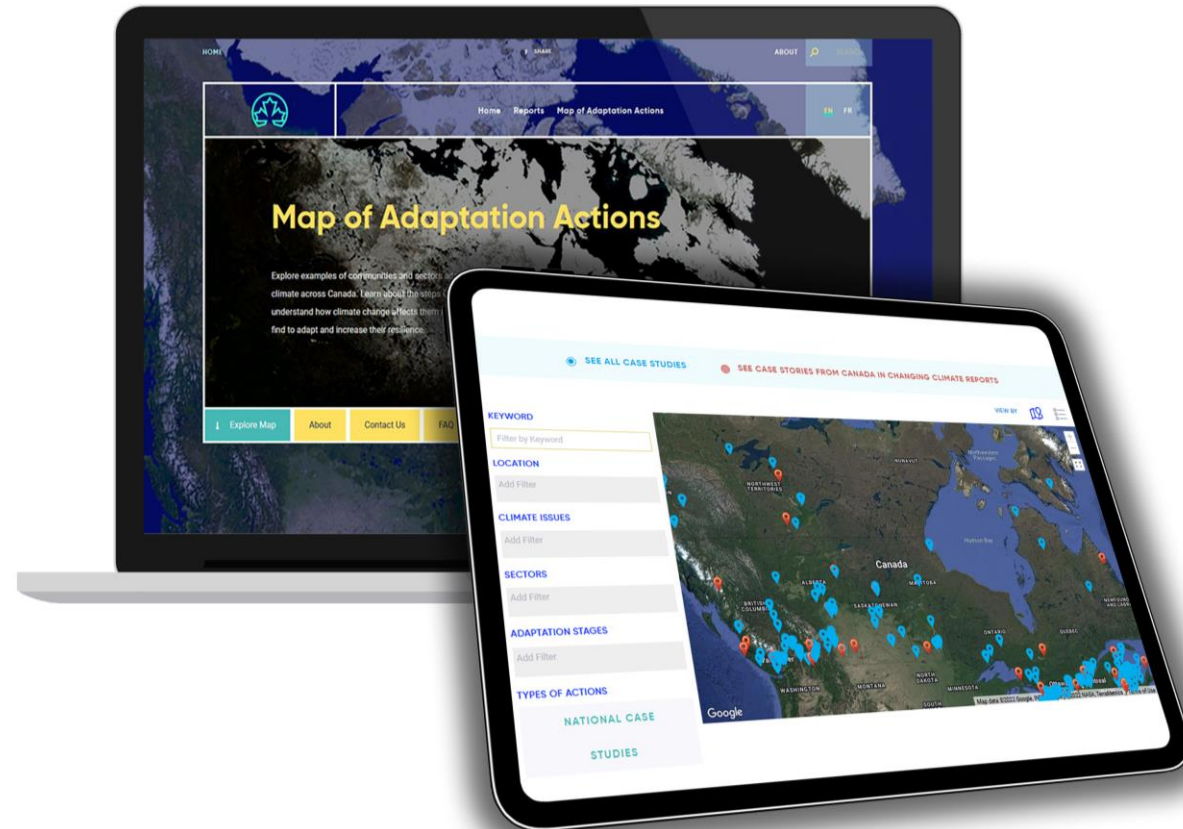


PAVICS

Map of Adaptation Actions

KEY FEATURES

- Find examples of climate change adaptation actions from across Canada relevant to your region and context.
- Search using filters and keyword searches.
- Submit your own adaptation examples for inclusion on the Map.
- Access to case stories included within the [Canada in a Changing Climate](#) reports.
- Links to other climate-related resources.



www.changingclimate.ca/map

Trusted Climate Data and Tools



ClimateData.ca

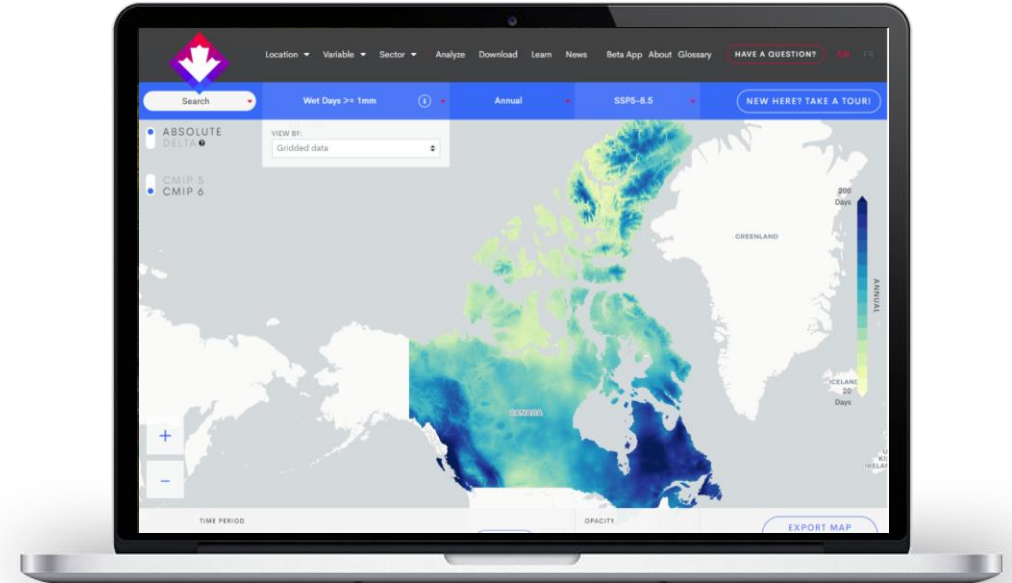
Delivered in partnership with regional climate organizations and a research institute specialized in information technology

- **Explore** Canada-wide historical and future climate data
- **Customize** raw data analysis quickly and efficiently
- **Learn** about how to understand and interpret future projections
- **Get inspired** by sectors who are already applying climate data to adaptation efforts

HIGH-RESOLUTION DATA

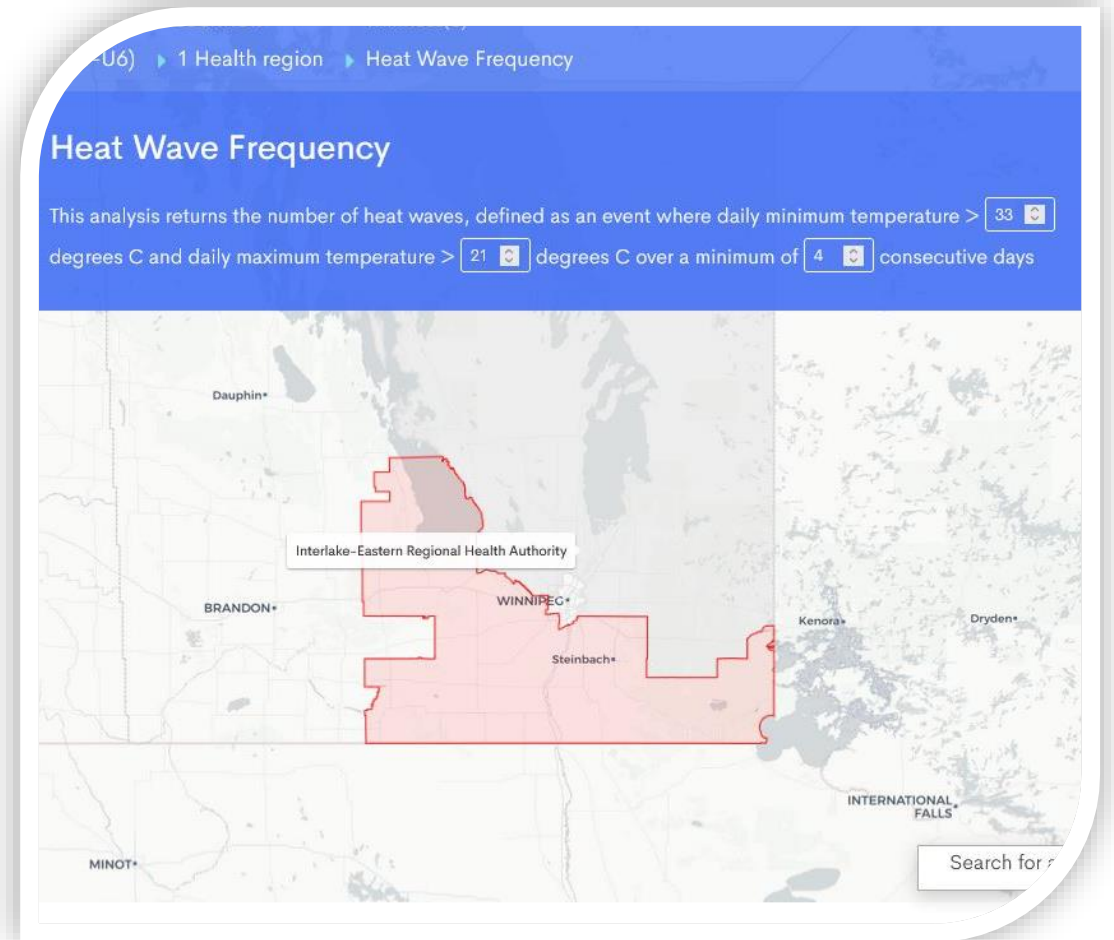
LEARNING ZONE

NEWS & UPDATES



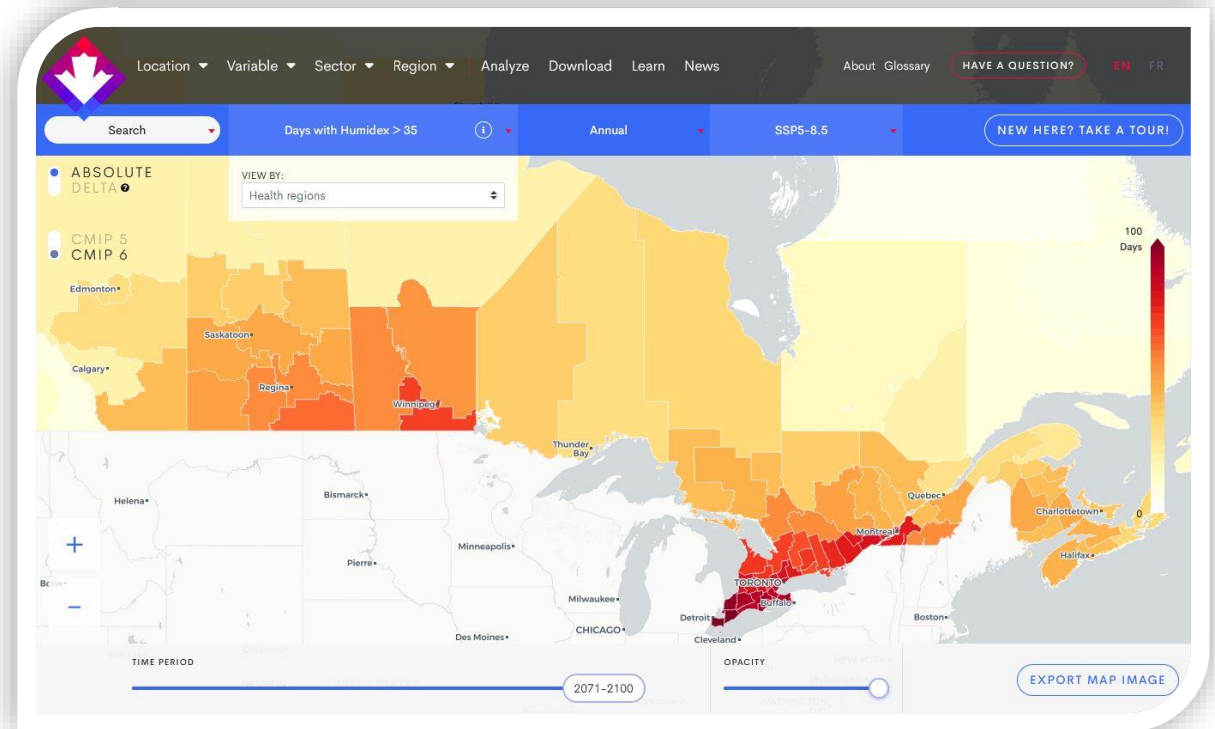
CLIMATEDATA.CA/ANALYZE/

- Choose data set
- Select locations (*including health regions*)
- Customize variables
- Choose a timeframe
- Select advanced options
- *More coming soon!*



HUMIDEX PROJECTIONS

- Humidex is used to understand how summer weather can impact human health
- New dataset shows how often people are likely to experience discomfort, caution, or extreme caution days due to hot and humid weather



SPATIAL ANALOGUES

- Envision and prepare for your city's future climate
- Explore cities that are already experiencing one or more climatic conditions of concern (e.g. number of days above 30 degrees)



Which North American locations currently have a similar number of...

Tropical nights

and

Days with Tmax > 30°C

as

ON: Toronto

is projected to

experience between

2041-2070

under a

High (SSP5-8.5)

emission scenario?

Spatial Analogues
on ClimateData.ca



ClimateData.ca

CASE STUDIES

- See how others have applied climate data to assess risk and make adaptation decisions across Canada

BUILDINGS

Extreme heat
Permafrost
Decision support tool

TRANSPORTATION

Winter roads
Asphalt
Performance grading
Extreme precipitation

HEALTH

Emergency measures
Health infrastructure
Public health
Data by health region

AGRICULTURE

Drought
Crop Pests
Risk management
SPEI

Example of municipal adaptation

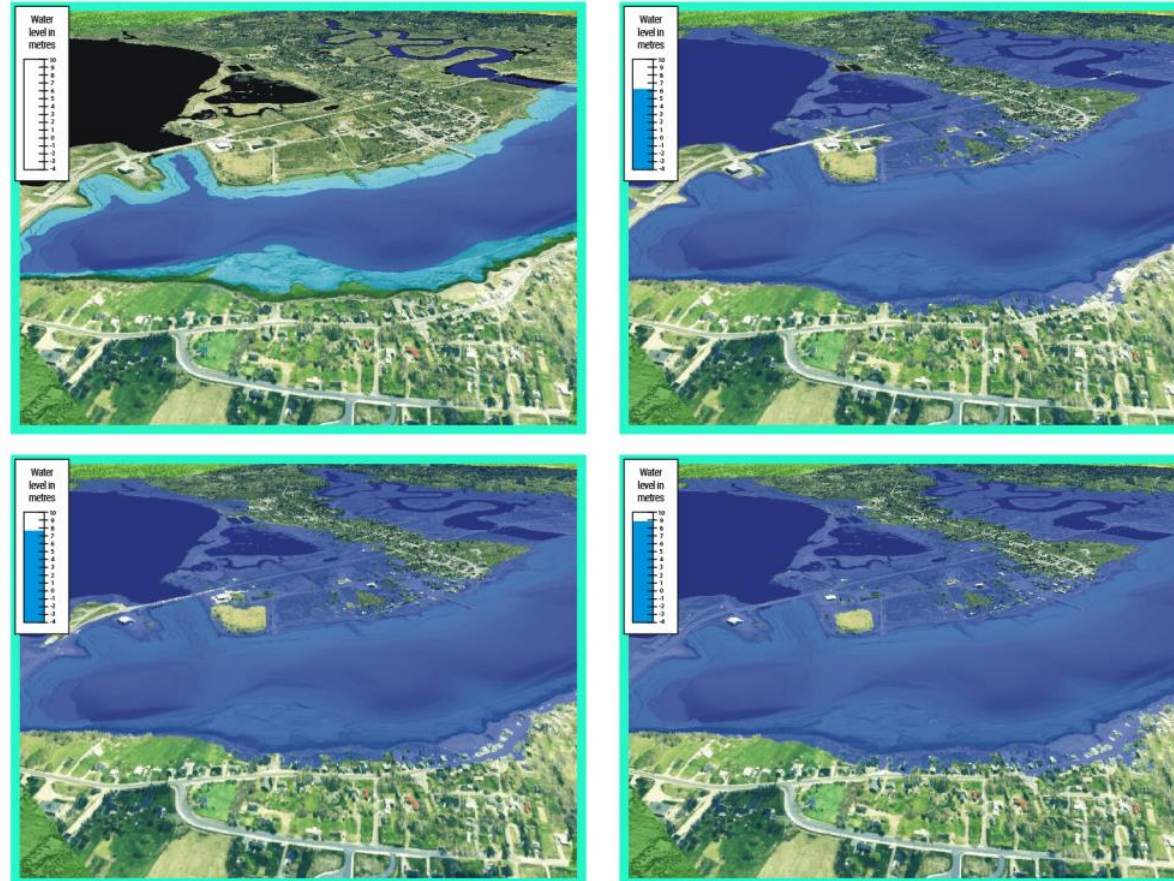
Annapolis Royal, Nova Scotia

County of Kings, Nova Scotia

Flood-risk mapping in Annapolis Royal, N.S.

- Provincial-level officials working with emergency response planners to develop strategies to reroute transportation lanes and update design standards to make sure climate change is considered in new projects.
- Municipal authorities are utilizing flood maps to warn future developers of projected risks from storm surges and associated flooding.

Municipal Adaptation

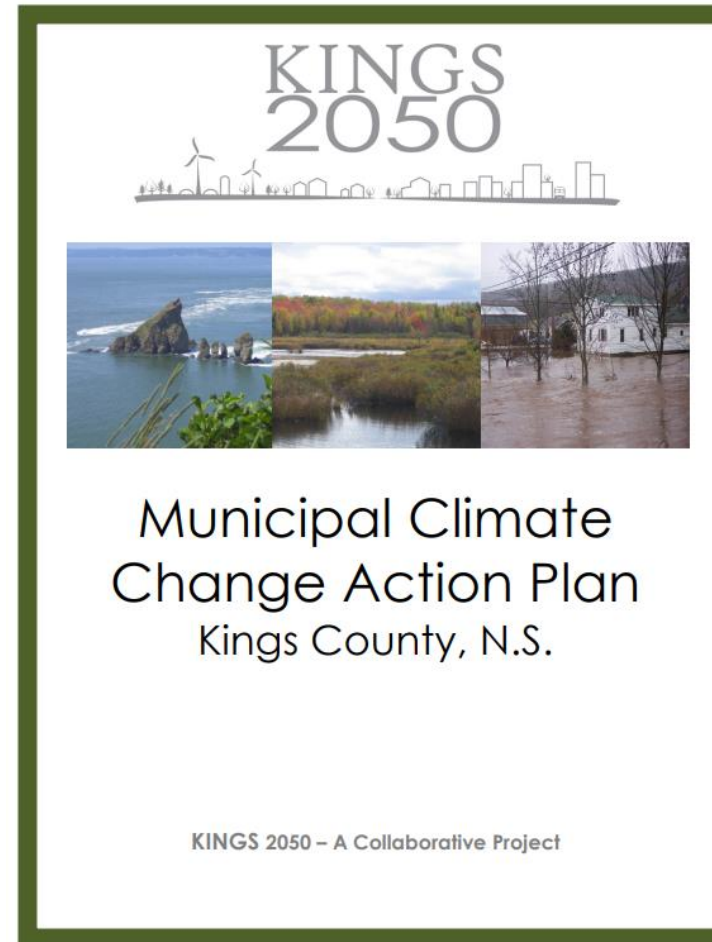


[Adapting to transportation and service disruption in Nova Scotia's ageing communities — Canada in a Changing Climate](#)

County of Kings Climate Adaptation

- Municipality developed a Climate Change Adaptation Plan in 2011 through the Kings 2050 project.
- Key economy: agriculture, forestry and fishing
- Many residents live near water
- Increase in frost free growing days, severe weather, erosion, prolonged periods of drought, the potential for flooding are the issues the Municipality developed the plan for

Municipal Adaptation



[Municipal Climate Change Action Plan. Kings County, N.S. 2013.](#)
[Municipality of the County of Kings Climate Adaptation — Canada in a Changing Climate](#)

Support Desk

WE'RE HERE TO HELP

The CCCS Support Desk helps to answer questions about climate services and available tools

ccsc-cccs@ec.gc.ca

I need a custom data extraction for my Health Region.

I'd like to better understand the methods used to generate data on ClimateData.ca



Join the conversation

FOLLOW CLIMATEDATA.CA



/climate-data-Canada



@ClimateData.ca

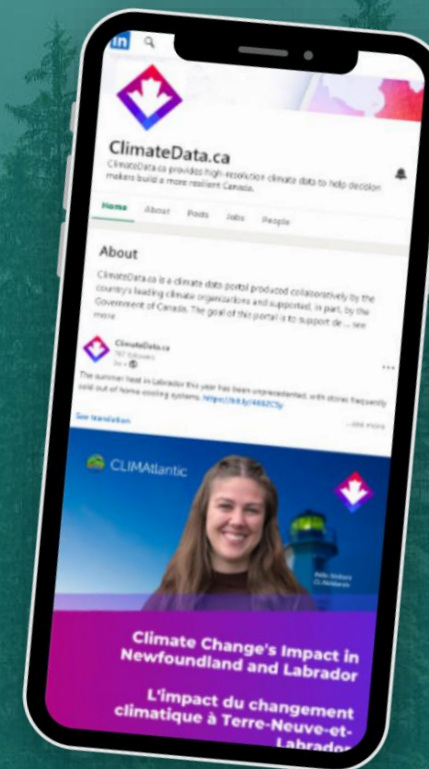


/ClimateData.ca.Donneesclimatiques.ca



@ClimateData_ca // @Donneesclimatiques.ca

SUBSCRIBE TO OUR NEWSLETTER



Thank you



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Canada.ca/climate-services

Canada.ca/services-climatiques



Environment and
Climate Change Canada

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Canada



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April 24, 2024



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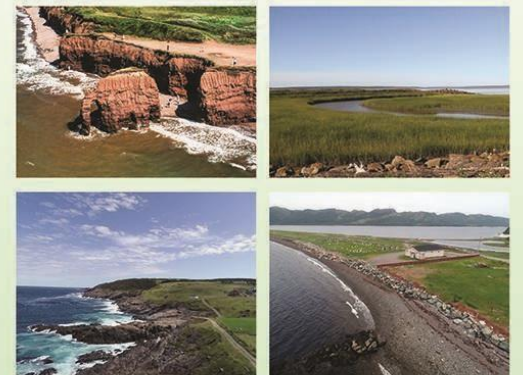
- Climate services hub for Atlantic Canada.
- Non-profit organization supported by all four provincial governments in Atlantic Canada and the federal government.
- Provide free support for all types of organizations to consider climate change impacts in their decisions.
- Goal is to make climate adaptation accessible.



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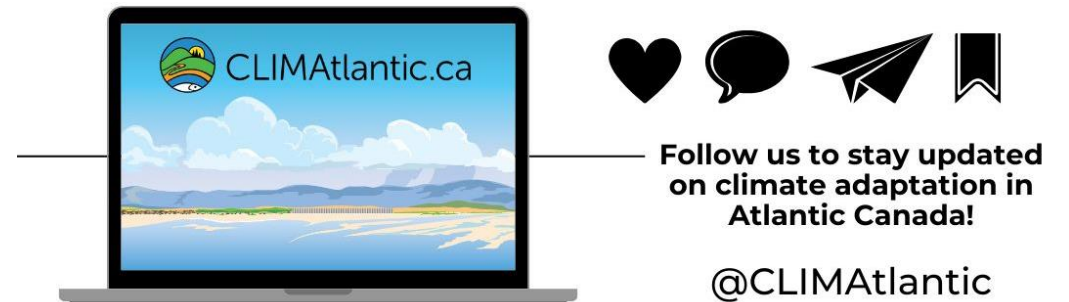
Enhancing Atlantic Climate Resilience

CLIMAtlantic facilitates access to data and information that supports adaptation to climate change in Atlantic Canada through collaboration, networking, and partnerships.



CLIMAtlantic Services

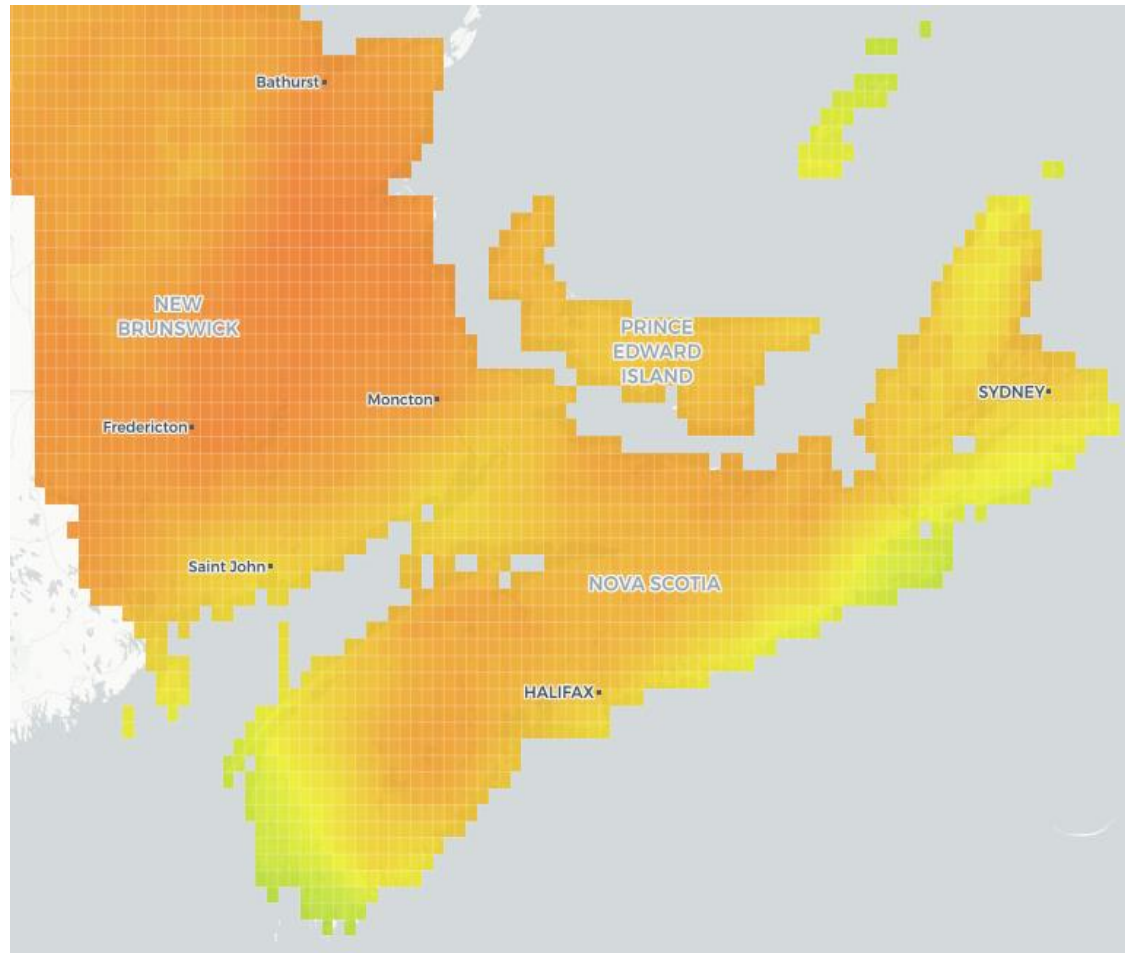
- Support for accessing and understanding information
- Connecting people with resources and expertise
- Developing and sharing tools
- Addressing knowledge and research gaps
- Delivering training
- List of funding opportunities
- Communication and engagement



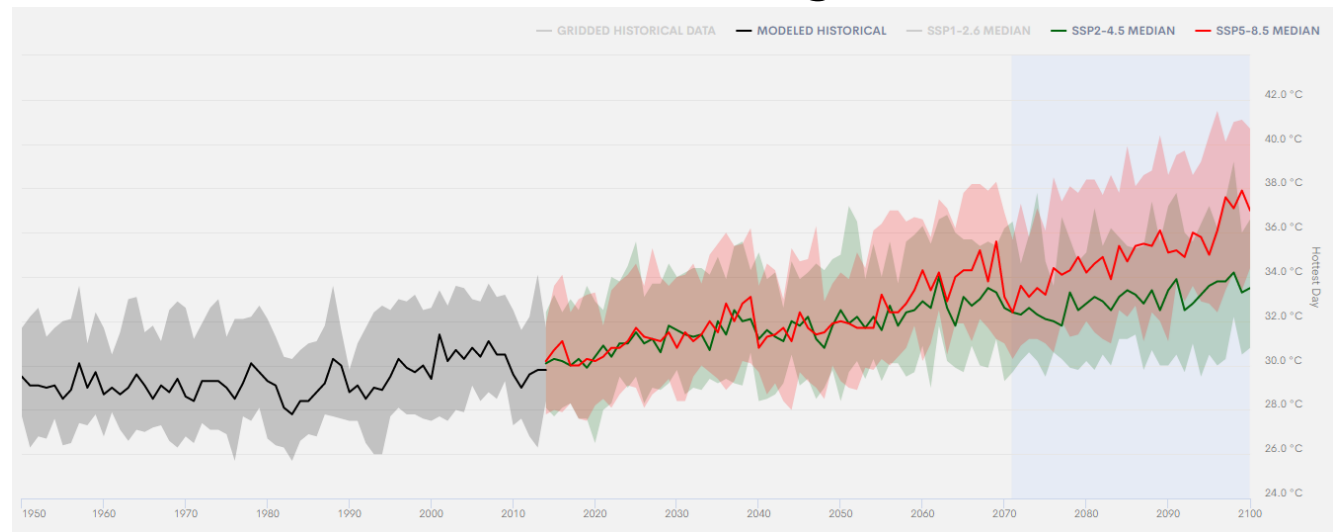
We have a free help desk to guide you through accessing and applying climate data and information in your work.

Reach out over email at info@climatlantic.ca or give us a call at [1-506-710-2226](tel:1-506-710-2226)

Climate data



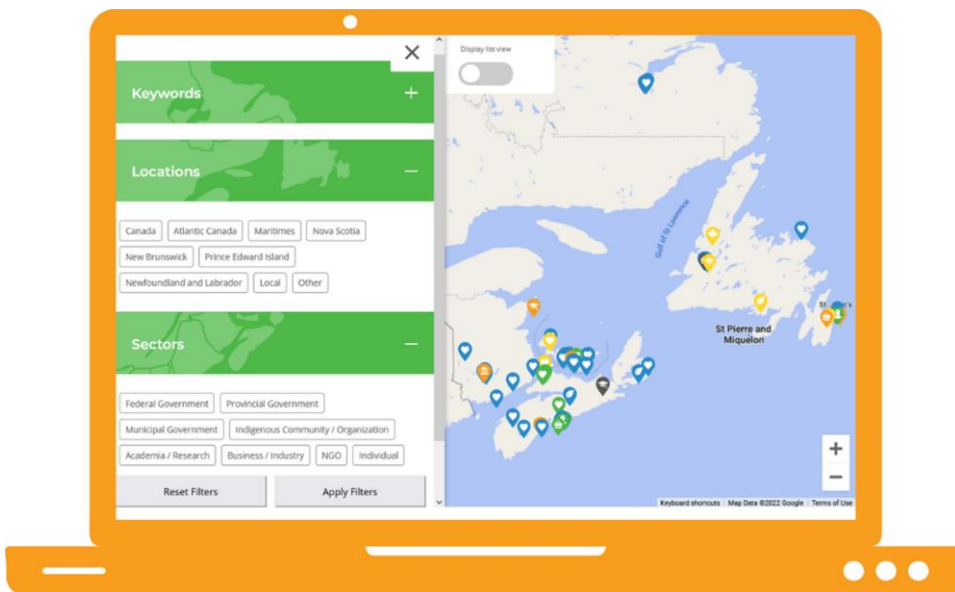
- Support with accessing and understanding historical and projected climate change data.
- Training on using data portals.
- Guidance on what types of information to consider in decision-making.



NETWORKING MAP



Strengthening Atlantic Canada's ability to respond and adapt to a changing climate.
Use this map to find and connect with individuals and organizations working on climate adaptation.



- Resource to help Atlantic Canadians find the climate adaptation services they require.
- Filter by specialty, location, and sector to easily search for and connect with individuals and organizations working on climate adaptation.

COASTAL ADAPTATION TOOLKIT

Adapting to Climate Change in Coastal Communities of Atlantic Canada

Explore this toolkit for advice on how to best prepare for coastal climate impacts

- Online decision support tool to inform adaptation to coastal flooding and erosion.
- Evaluates what coastal interventions and land use planning tools may be appropriate for specific sites.
- Community and property-scale versions.

3.1. What types of natural features or engineered structures are currently protecting this site?

(Select all that apply. Click on an image once to select it. Click again to deselect.)



Dunes, barriers islands, spits, natural armouring.

These naturally accumulated mounds of sediment (e.g., sand, cobble) have a buffering effect that can protect the upland from flooding and inland bays from erosion.

Addressing knowledge gaps

- Climate Risk, Responsibility, and Liability for Municipalities: Exploring Municipalities' Responsibilities to Consider, Manage, and Disclose Climate Change Flood Risks
- [Managed] Retreat: The Elephant in the Adaptation Framework
- Adaptation infographic series
- Extreme weather adaptation options
- ENRICH: Climate change preparedness in African Nova Scotian communities

CLIMATE CHANGE ADAPTATION RESOURCES

Buildings

CLIMATE IMPACTS

- Rising Temperatures**
 - More demand for cooling, less demand for heating
 - More wildfires may cause damage and reduce air quality
- More Intense Storms**
 - Overland flooding from heavy rain
 - Extended power outages and damage from high winds
- Sea Level Rise and Storm Surge**
 - Coastal flooding and erosion can damage structures
 - Salt water intrusion may corrode building foundations
- Indirect Impacts**
 - Disruptions to supply chains for materials and labour
 - Changes to insurance costs and availability

ADAPTATION APPROACHES

- Planning & Design**
 - Limit development of new buildings in risk-prone areas
 - Ensure building exteriors are designed for the future climate
 - Incorporate shading or ventilation to cope with extreme heat
- Operations**
 - Install backwater valves, sump pumps, or rain gardens to reduce flooding
 - Use water efficient appliances or rainwater capture to manage drought
- Maintenance**
 - Prepare for high winds by maintaining roofs and nearby trees
 - Reduce wildfire risk by appropriately maintaining outdoor spaces
 - Retrofits should consider both energy use and climate resilience

CALL TO ACTION Account for climate change during building design, operation, and maintenance to reduce risks, save costs, and maintain safety and accessibility.

SOURCES
Canadian Centre for Climate Services (2023). Buildings Module on ClimateData.ca.
Global Alliance for Buildings and Construction & OGD (2021). Buildings and Climate Change Adaptation: A Call for Action.
International Institute for Sustainable Development (2021). Advancing the Climate Resilience of Canadian Infrastructure: A review of literature to inform the way forward.
Pacific Institute for Climate Solutions (2017). Making Buildings Resilient to Climate Change.

CLIMAtlantic.ca

ADAPTATION LIBRARY

A collection of publicly accessible and searchable climate adaptation documents, tools, and products.

Connect with information related to climate change adaptation relevant to Atlantic Canada.

Filter By:

Region

Select

NS

Climate Issue / Hazard

Select

Extreme Events

Flooding

Remove all

Primary Focus Areas

Select

Climate Projections

- Collection of hundreds of reports, videos, infographics, and more on climate adaptation in Atlantic Canada.
- All resources have been reviewed by our team to ensure accuracy and categorized appropriately.
- Filter by region, climate issue, focus area, type of product, publication date, and language.

FUNDING OPPORTUNITIES

NATIONAL PROGRAMS

Natural Infrastructure Fund

Annual: Closed

[MORE INFO](#)

Nature Smart Climate Solutions Fund

Annual: Closed

[MORE INFO](#)

EcoAction Community Funding Program

Annual: Open

[MORE INFO](#)

Canada-Community-Building Fund (CCFB)

[MORE INFO](#)

Climate-Resilient Coastal Communities Program

Fixed Term: Closed

[MORE INFO](#)


Climate Change Adaptation Program

Fixed Term: Closed

[MORE INFO](#)

Communications & Engagement

- Nova Scotia Climate Adaptation Community of Practice
- Conference on Advancing Adaptation Action in Atlantic Canada (May 2023)
- Training and learning program
- Monthly newsletter
- Social media



CLIMAtlantic

Nova Scotia Climate Adaptation Community of Practice

Register for our first event!

Thursday May 2, 9:30am - 4pm

DAL AC, Jenkins Dining Hall, Truro, NS

Learn more & register via our link in bio!

The poster features a background image of a serene lake with trees reflected in the water. The text is overlaid in a clean, modern font.



CLIMAtlantic

April Newsletter

This month's newsletter contains:

- Upcoming events
- Calls for expressions of interest
- Noteworthy tools & resources
- What we've been up to
- And much more!

→

The graphic has a light blue background with a white rounded rectangle containing the text. A small CLIMAtlantic logo is in the top right corner.



CLIMAtlantic

New Mi'kmaw Moons blog post!

Penatmuiku's The birds laying eggs moon

Alex Cadel, our Climate Services Specialist-NS explores the connection between rising temperatures and the date of the last frost event.

The graphic has a green background with a white rounded rectangle containing the text. A small CLIMAtlantic logo is in the top right corner.



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@CLIMAtlantic

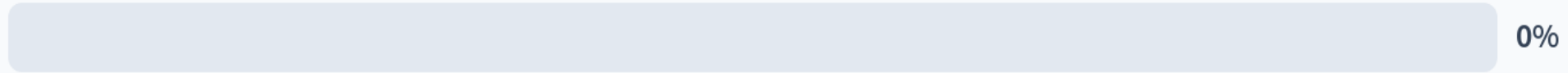
A hiker wearing a white shirt, a hat, and a green backpack is walking through a rocky stream in a lush forest. The stream flows over several large, moss-covered rocks, creating a small waterfall. The surrounding vegetation is dense and green, with many ferns in the foreground. The scene is captured from a low angle, looking down the stream.

Questions?

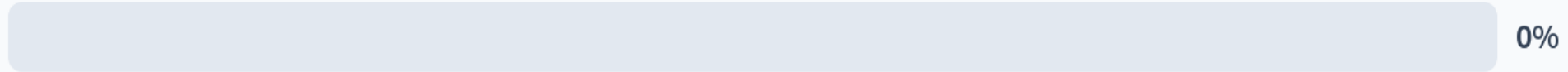
Poll Questions

Have you used future climate data in your work before?

Yes



No



If you have used future climate data in the past, where did you get it from?

The Climate Atlas

0%

ClimateData.ca

0%

Power Analytics and Visualization for Climate Science (PAVICS) | Ouranos

0%

Pacific Climate Impacts Consortium (PCIC)

0%

Climate Change Hazards Information Portal (CCHIP)

0%

Other

0%

N/A – I've never used future climate data

0%

What is the most pressing climate change issue in your municipality?

Nobody has responded yet.

Hang tight! Responses are coming in.

In your role, do you make adaptation decisions? If so, what kind of adaptation decisions?

Nobody has responded yet.

Hang tight! Responses are coming in.

What data do you think would be most useful for you in your work?

Nobody has responded yet.

Hang tight! Responses are coming in.

Thank you



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Canada.ca/climate-services

Canada.ca/services-climatiques



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