



# NatureServe Canada

A Network Connecting Science With Conservation  
Un Réseau pour la Science et la Conservation

Douglas Hyde  
Executive Director

# Overview

- Ecological Overview of Canada
- Climate change in Canada
- Current policy directions in Canada
- NatureServe Canada initiatives

## Ecological Framework

- Arctic Cordillera
- Northern Arctic
- Southern Arctic
- Taiga Plains
- Taiga Shield
- Taiga Cordillera
- Hudson Plains
- Boreal Plains
- Boreal Shield
- Boreal Cordillera
- Pacific Maritime
- Montane Cordillera
- Prairies
- Atlantic Maritime
- Mixedwood Plains

## Boundaries

- International
- Provincial / Territorial
- Canada / Kalaallit Nunaat dividing line
- EEZ (200 mile)

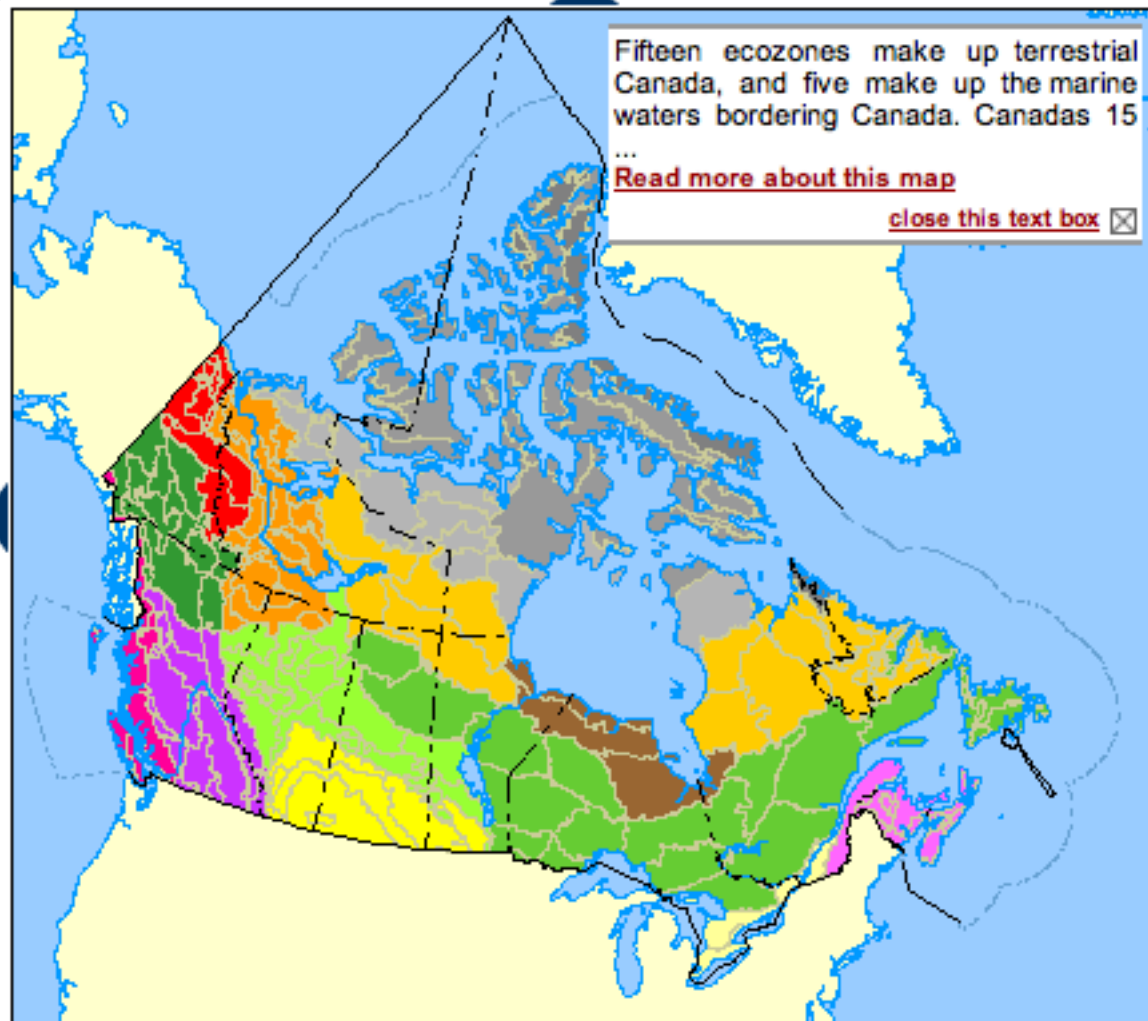
## Other Features

- Water area
- Regions outside Canada

Fifteen ecozones make up terrestrial Canada, and five make up the marine waters bordering Canada. Canadas 15 ...

[Read more about this map](#)

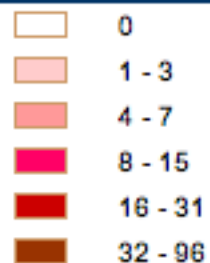
[close this text box](#) ☒



0 590 1180 1770 2360 km

[Map Sources](#)

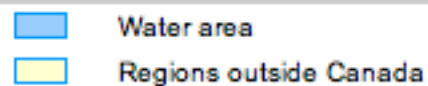
## Number of Species at Risk



## Boundaries



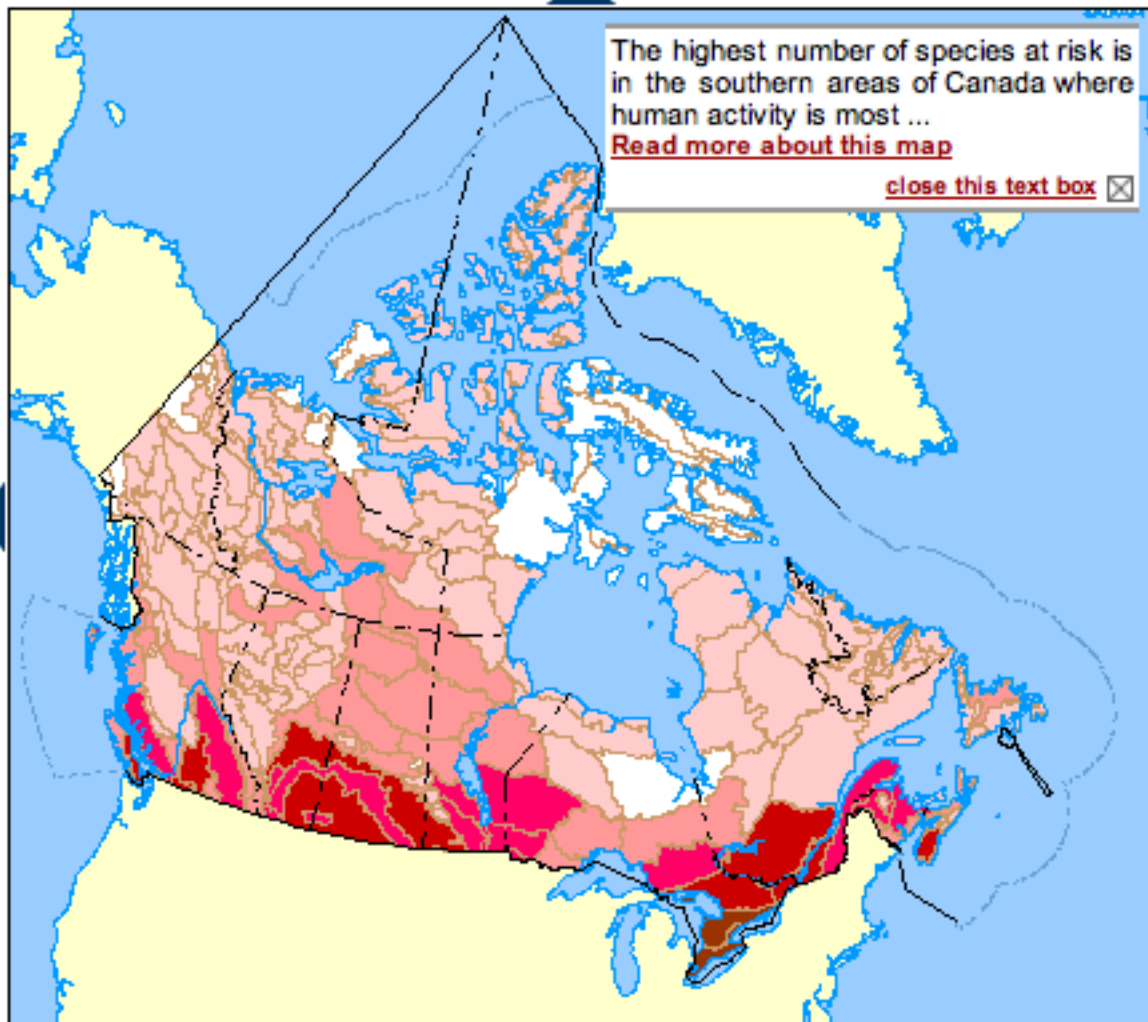
## Other Features



The highest number of species at risk is in the southern areas of Canada where human activity is most ...

[Read more about this map](#)

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0 590 1180 1770 2360 km

[Map Sources](#)

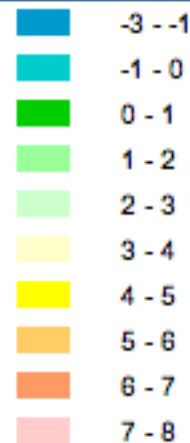
# Climate Change in Canada

- More sensitive as a northern hemisphere, high latitude country
- Sink to source impacts
  - Melting sea ice
  - Permafrost changes
  - Boreal forest changes (fires)
  - Hydrological changes
- Likely to be exacerbated by development
  - Hydro electric development in northern Canada
  - Gas and oil sands development
  - Roads and transportation infrastructure

A simulation of projected changes in annual mean temperatures from the period 1975 to 1995 to the period ...  
[Read more about this map](#)

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### Annual Temperature Change from 1975-95 to 2040-60 (°C)



#### Grid



Grid

#### Boundaries



International



Unresolved or Unclear

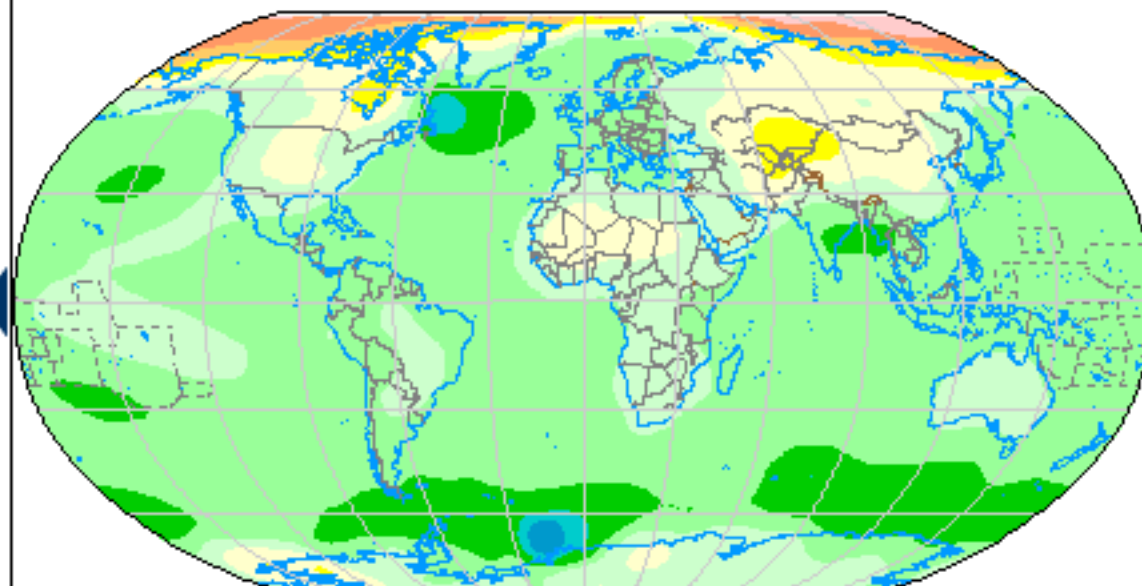


Offshore line of separation

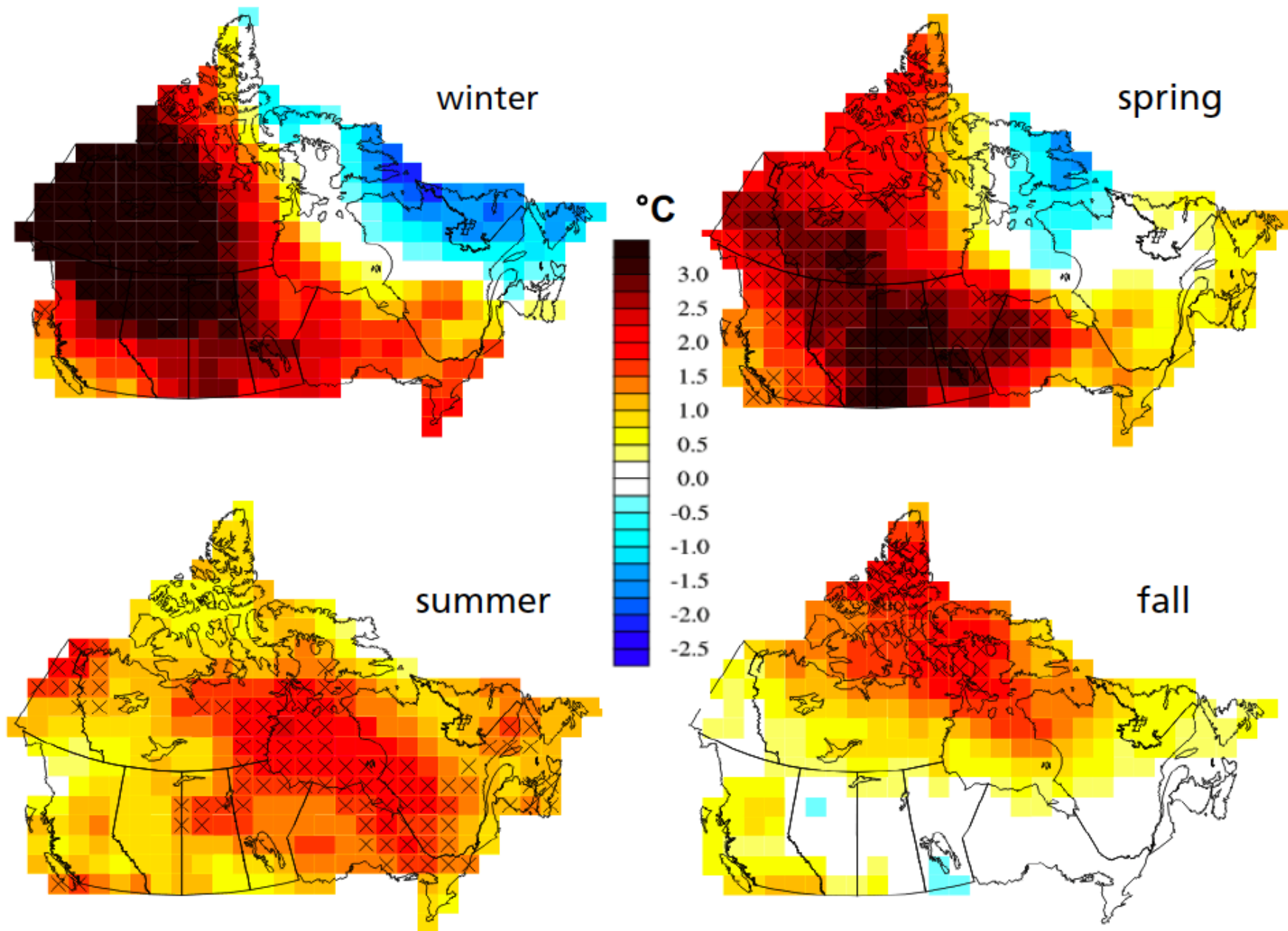
#### Coast



Coastline



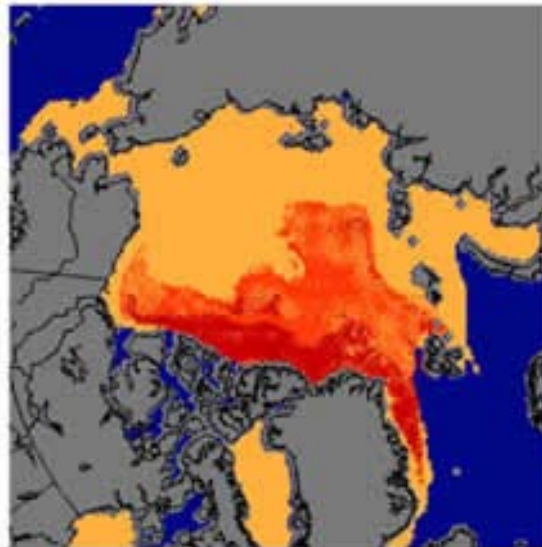
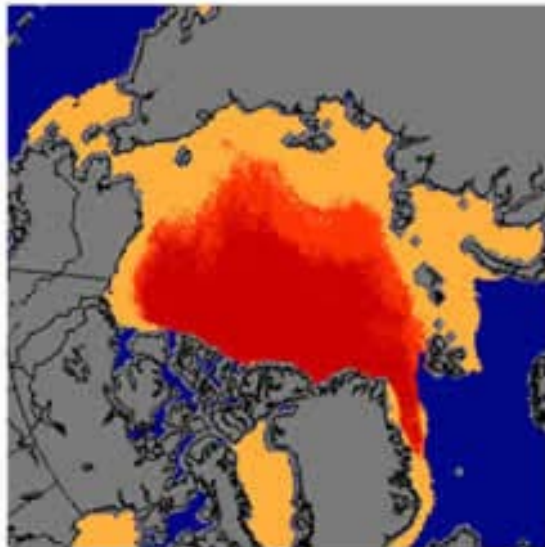
**Figure 1 - Temperature Changes in Canada (1950 - 2004): "x" indicates where the trends are statistically significant.**



# End of February Arctic Sea Ice Age

1981-2000 Median

2009

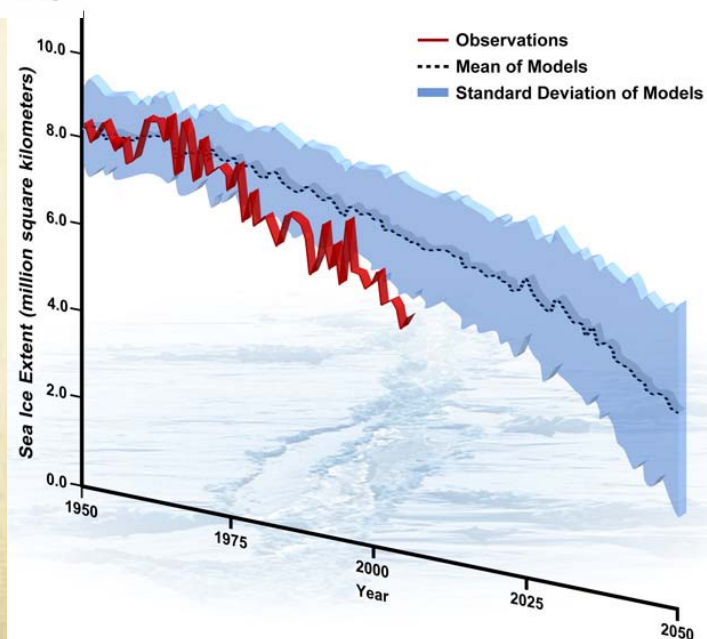


First year ice  
(< 1 Year Old)

Second year ice  
(1-2 Years Old)

Older ice  
(>2 Years Old)

## Arctic September Sea Ice Extent: Observations and Model Runs



## Permafrost

- No Permafrost
- Subsea Permafrost
- Isolated Patches (0-10%)
- Sporadic Discontinuous (10-50%)
- Extensive Discontinuous (50-90%)
- Continuous (90-100%)
- Water Area
- Regions outside Canada

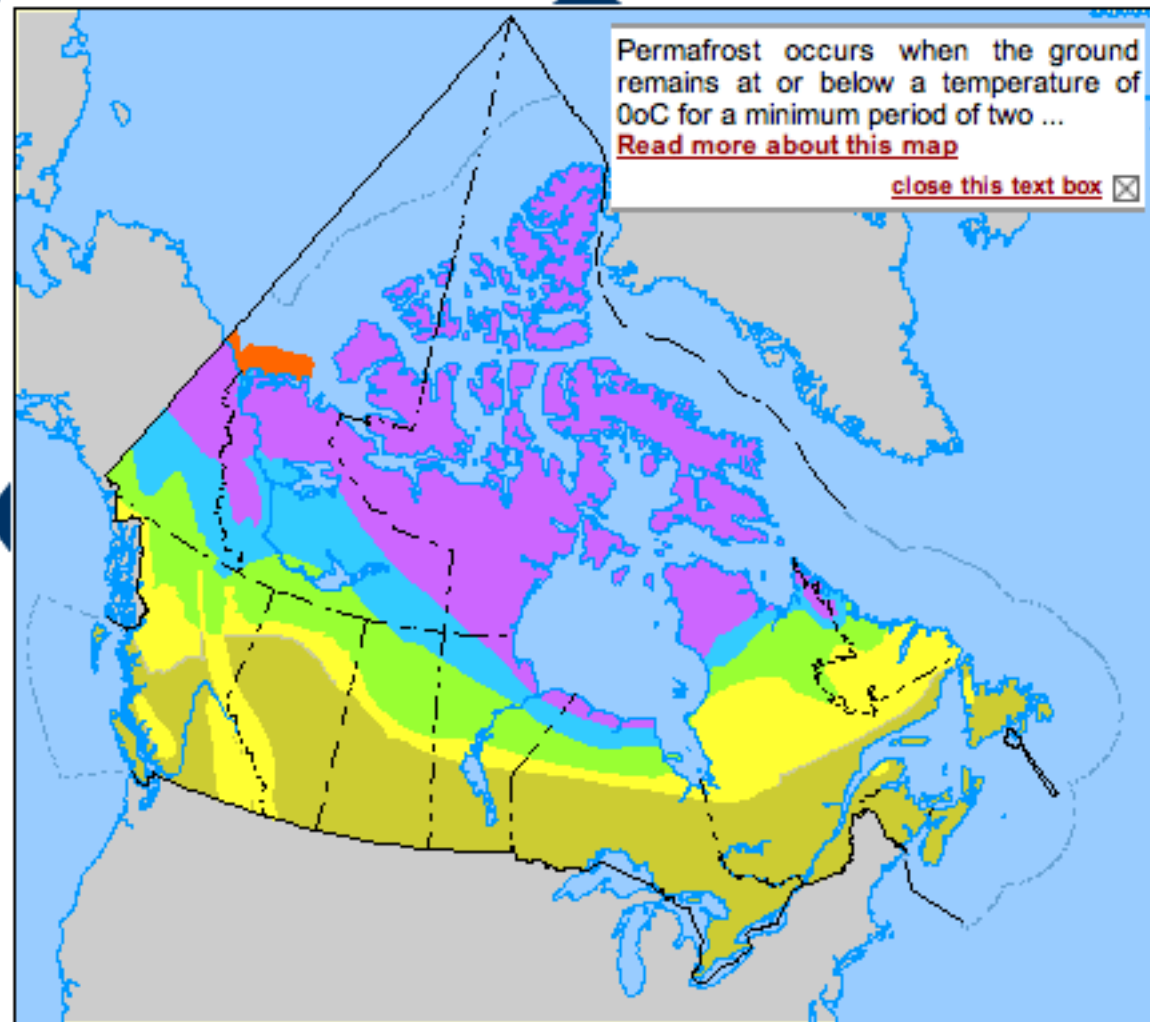
## Boundaries

- International
- Provincial / Territorial
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- EEZ (200 mile)

Permafrost occurs when the ground remains at or below a temperature of 0°C for a minimum period of two ...

[Read more about this map](#)

[close this text box](#)



0 590 1180 1770 2360 km

[Map Sources](#)

## Peatland Sensitivity Ratings to Climate Change

- No change
- Very slight
- Slight
- Moderate
- Severe
- Extremely severe

### International Boundaries

- EEZ (200 mile)
- Canada / Kalaallit Nunaat dividing line
- International

### Provincial and Territorial Boundaries

- Provincial / Territorial

### Drainage

- Coast / Lake shoreline

### Glaciers (Canada)

- Glacier Area

### Water areas

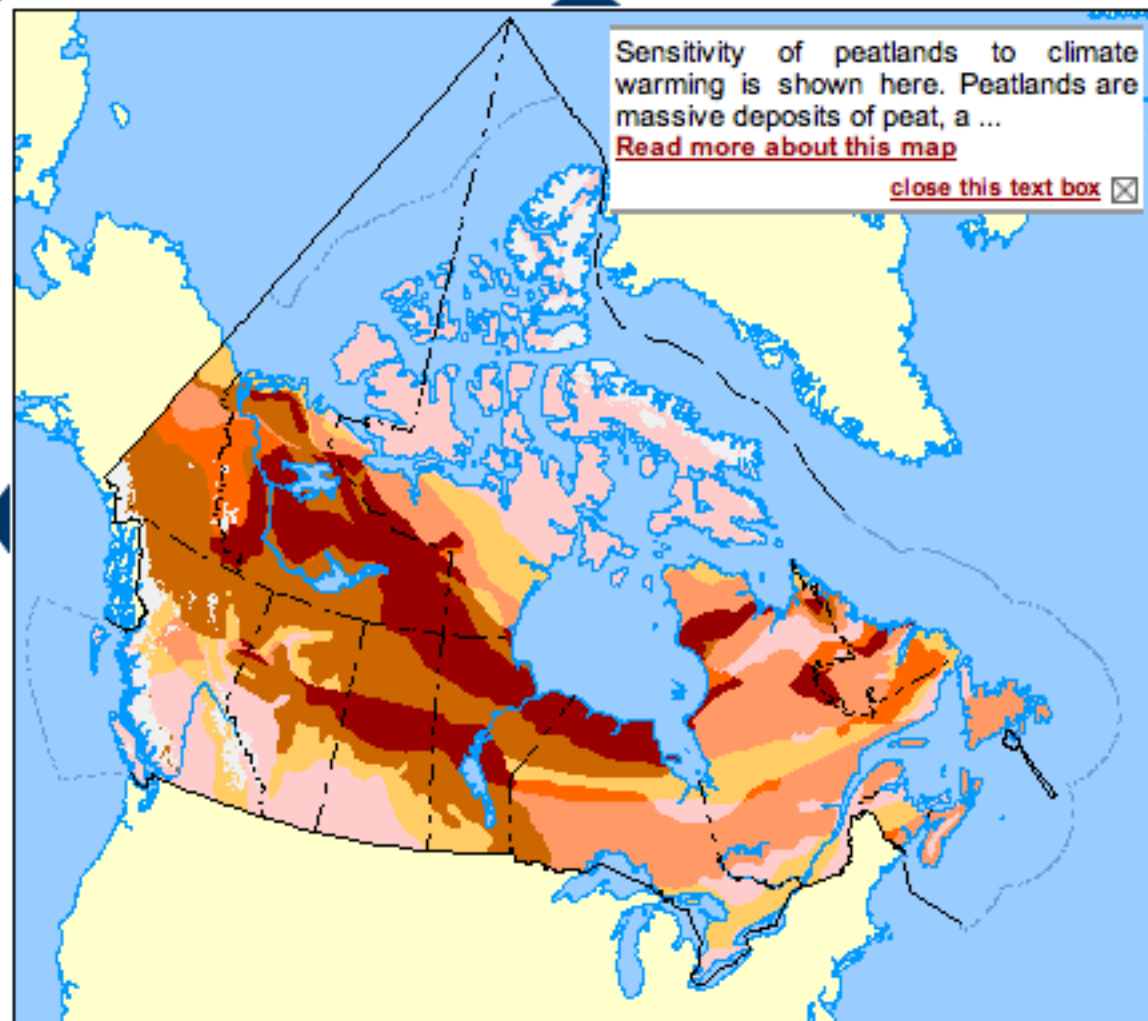
- Water Area

### Regions outside Canada

- Land Area

Sensitivity of peatlands to climate warming is shown here. Peatlands are massive deposits of peat, a ...  
[Read more about this map](#)

[close this text box](#) ✕



0 590 1180 1770 2360 km

[Map Sources](#)

### Coastal Sensitivity to Sea-level Rise

- Low (0 - 4.9)
- Moderate (5.0 - 14.9)
- High (15 and up)

### Present-day Submerging of Coasts

- Present day submerging areas

### International Boundaries

- EEZ (200 mile)
- Canada / Kalaallit Nunaat dividing line
- International

### Provincial and Territorial Boundaries

- Provincial / Territorial

### Drainage

- Coast / Lake shoreline

### Water areas

- Water Area

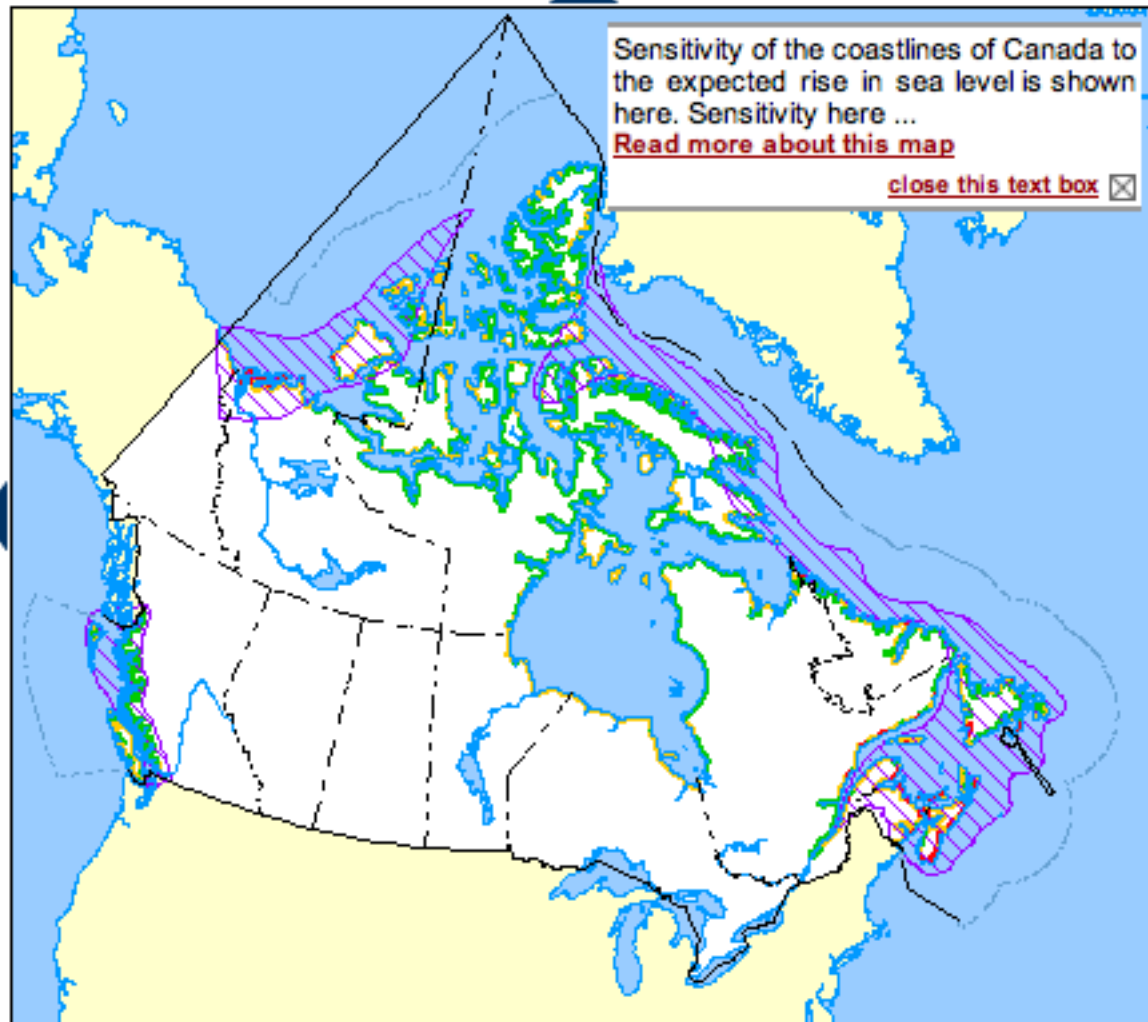
### Regions outside Canada

- Land Area

Sensitivity of the coastlines of Canada to the expected rise in sea level is shown here. Sensitivity here ...

[Read more about this map](#)

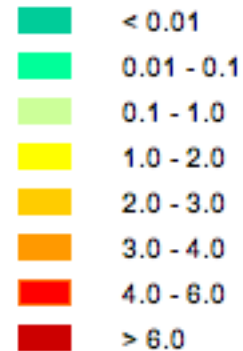
[close this text box](#)



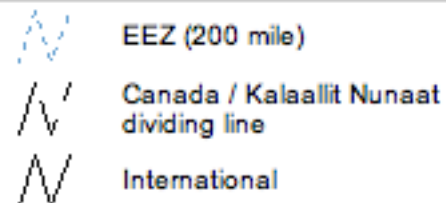
0 590 1180 1770 2360 km

[Map Sources](#)

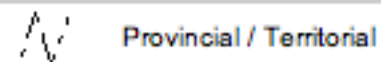
## Seasonal Severity Ratings for Forest Fires, 1980-1989



### International Boundaries



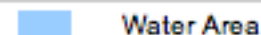
### Provincial and Territorial Boundaries



### Drainage



### Water areas



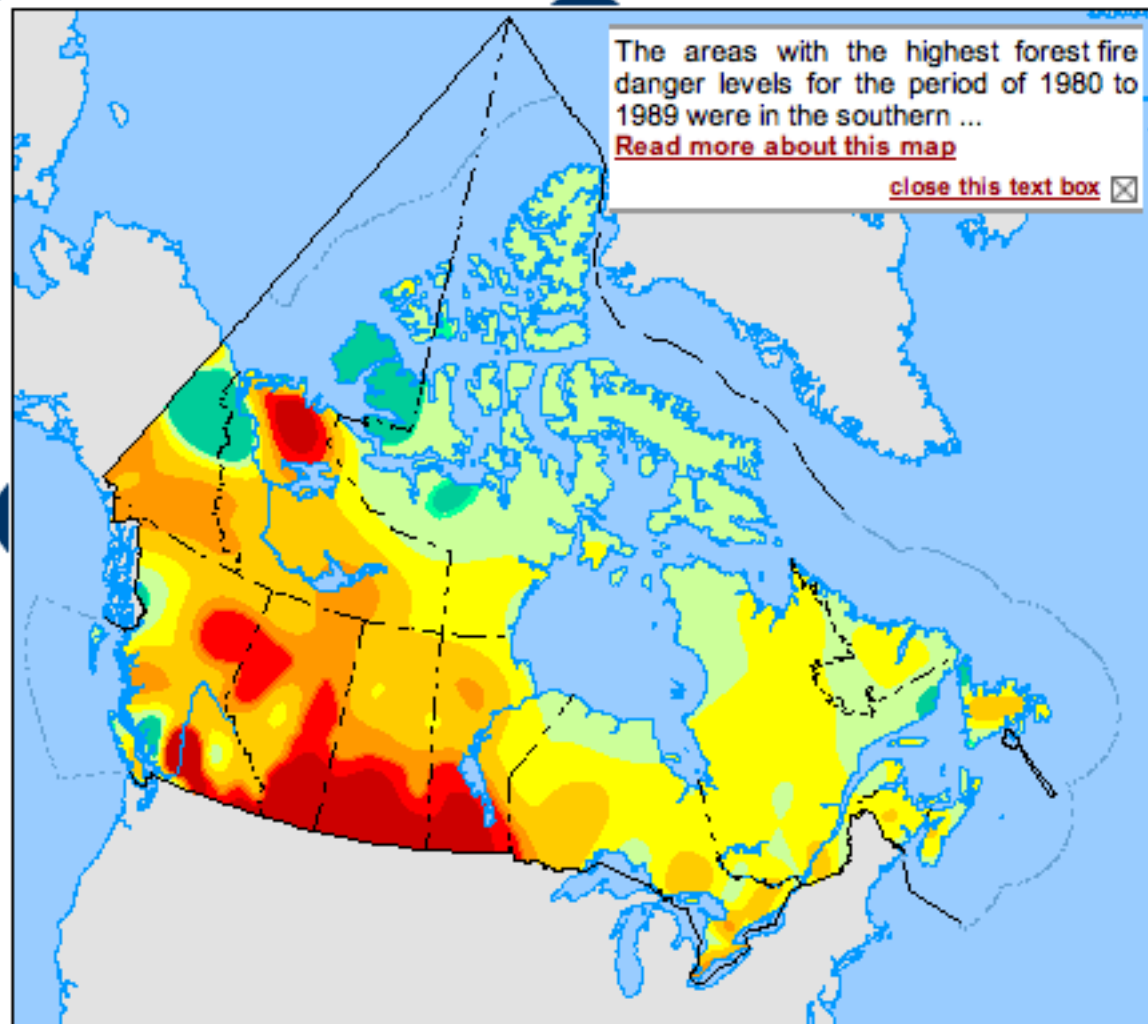
### Regions outside Canada



The areas with the highest forest fire danger levels for the period of 1980 to 1989 were in the southern ...

[Read more about this map](#)

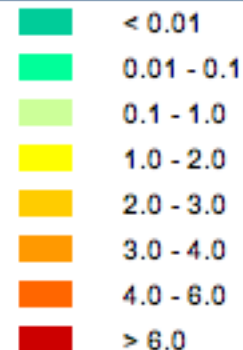
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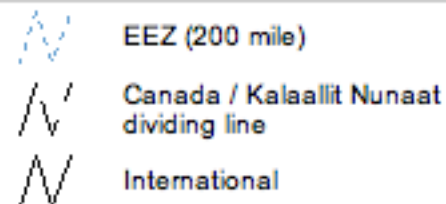
0 590 1180 1770 2360 km

[Map Sources](#)

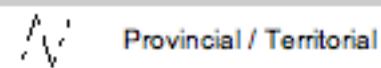
## Seasonal Severity Ratings for Forest Fires, 2050-2059



### International Boundaries



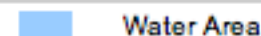
### Provincial and Territorial Boundaries



### Drainage



### Water areas



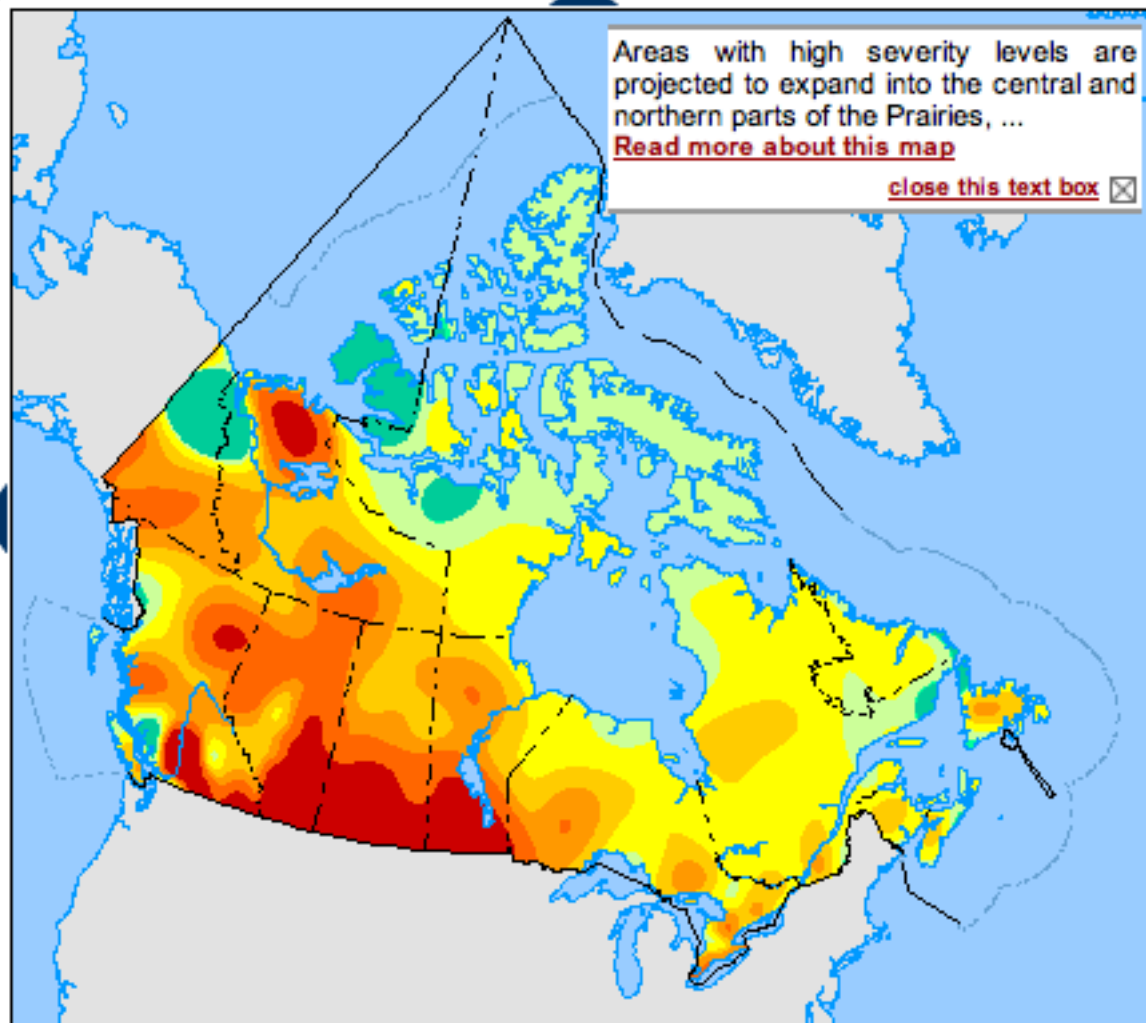
### Regions outside Canada



Areas with high severity levels are projected to expand into the central and northern parts of the Prairies, ...

[Read more about this map](#)

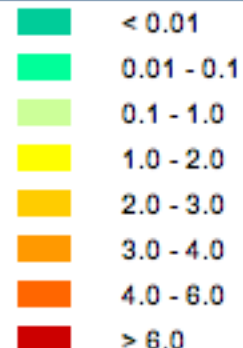
[close this text box](#)



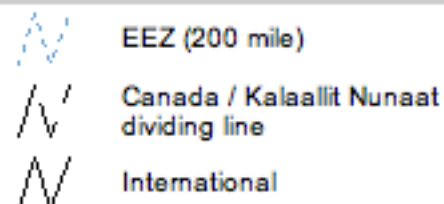
0 590 1180 1770 2360 km

[Map Sources](#)

## Seasonal Severity Ratings for Forest Fires, 2090-2099



### International Boundaries



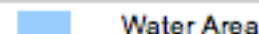
### Provincial and Territorial Boundaries



### Drainage



### Water areas



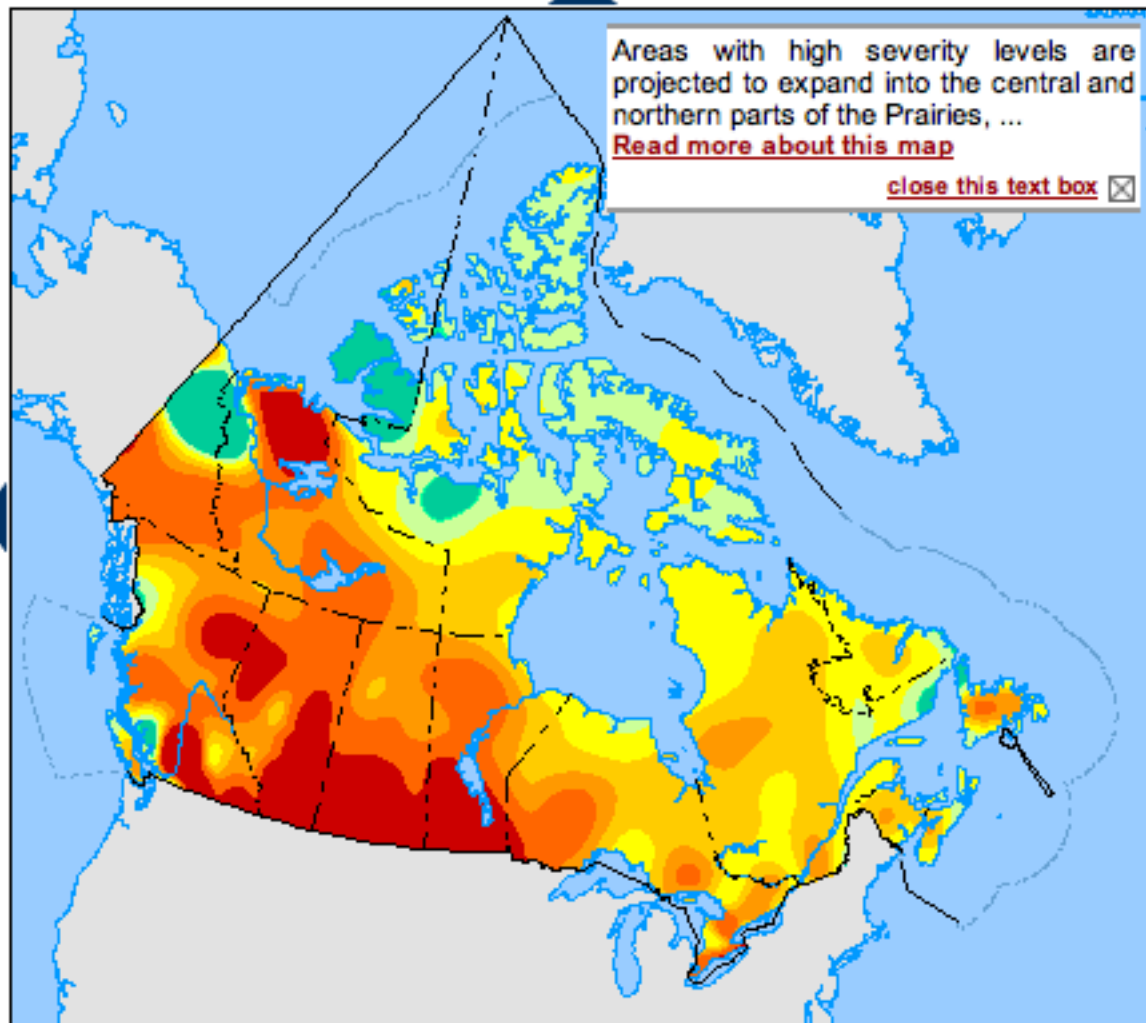
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[Read more about this map](#)

[close this text box](#)



0 590 1180 1770 2360 km

[Map Sources](#)

## Watersheds

### Ocean Watersheds

- Arctic Ocean
- Atlantic Ocean
- Gulf of Mexico
- Hudson Bay
- Pacific Ocean

### Watershed Boundary

- Ocean Watershed Boundary

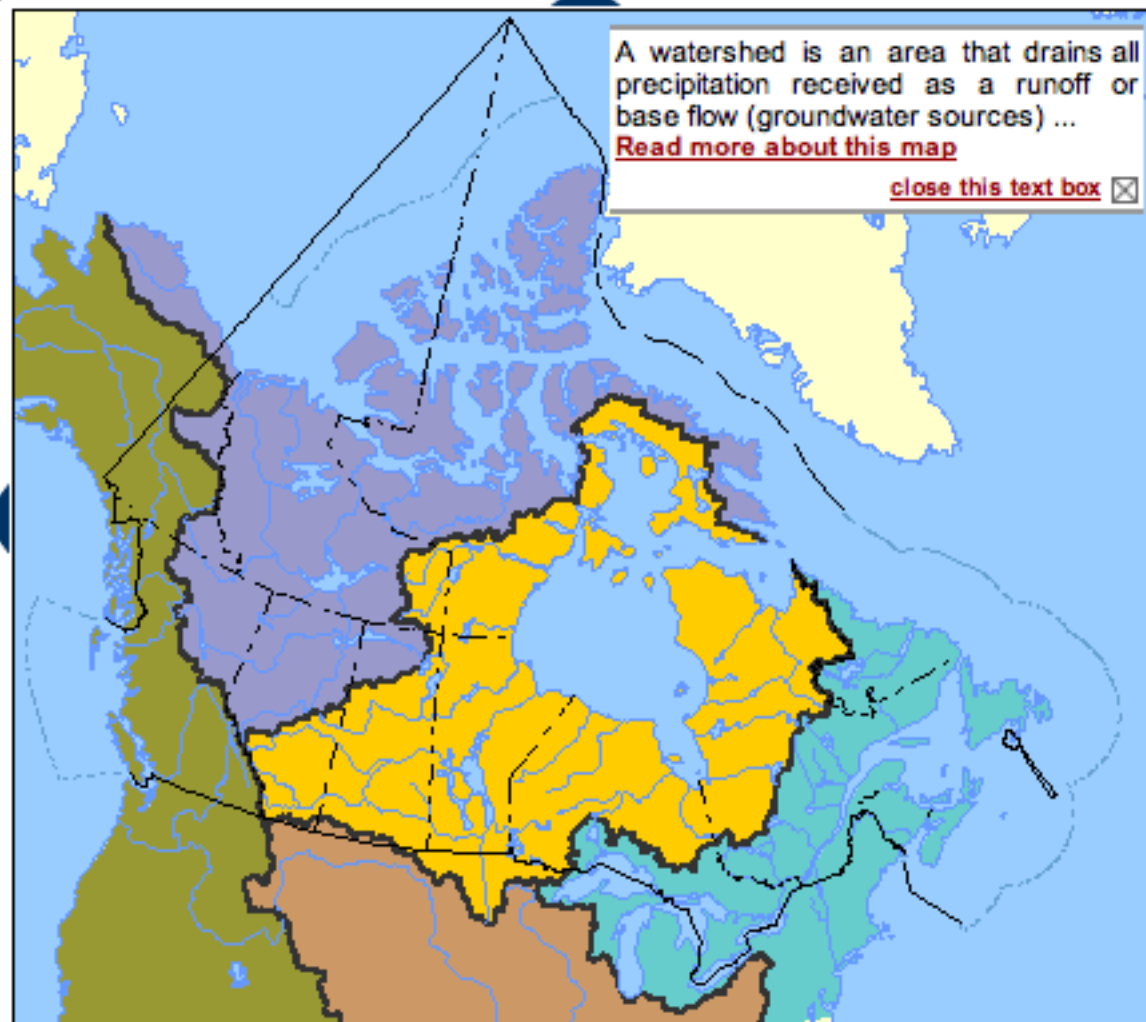
### Boundaries

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A watershed is an area that drains all precipitation received as a runoff or base flow (groundwater sources) ...

[Read more about this map](#)

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0 590 1180 1770 2360 km

[Map Sources](#)

# Current Policy

- Federal government's environmental agenda is climate change – reduce emissions
  - Focus is on mitigation (energy efficiency, economic stimulus) not adaptation
  - No focus currently on planning for and adapting to impacts
    - Human activities (changes in agriculture, transportation, energy)
    - Natural systems
  - Federal budget does not contain a single word related to biodiversity
- Politically, lack of understanding of impacts
  - Federal environmental Minister and Polar Bear
  - Prime Minister's priorities do not include the environment



Office of the  
Prime Minister

Cabinet du  
Premier ministre

Canada

English | Français



# STEPHEN HARPER

PRIME MINISTER OF CANADA



OUR SOVEREIGNTY

OUR ECONOMY

OUR FEDERATION

OUR SECURITY

OUR ENVIRONMENT

## MAIN MENU

- Home
- The Prime Minister
- The Team
- Mission
- Record
- Priorities
- Media Centre
- Multimedia
- Family Centre
- Contact



## Priorities

## VIDEO CENTRE



00:00 00:00

9 APRIL 2009  
PM highlights new grant program to help Canadians pursue well paying jobs in the skilled trades

8 APRIL 2009



# ecoACTION

Using Less • Living Better

[Home](#) > By Subject

- ecoACTION**
- Turning the Corner
- Chemical Substances
- ecoAGRICULTURE
- ecoENERGY
- ecoTRANSPORT
- Trust Fund

### By Subject

- Agriculture
- Air Quality
- Buildings
- Chemical Substances
- Climate Change
- Energy
- Housing
- Industrial Facilities
- Pollution
- Renewable energy
- Technology
- Transportation

## Initiatives by Subject

- [Agriculture](#)
- [Air quality](#)
- [Buildings](#)
- [Chemical Substances](#)
- [Climate Change](#)
- [Energy](#)
- [Housing](#)
- [Industrial Facilities](#)
- [Pollution](#)
- [Renewable energy](#)
- [Technology](#)
- [Transportation](#)

### Agriculture

- [ecoAGRICULTURE Biofuels Capital Initiative \(ecoABC\)](#)
- [Biofuels Opportunities for Producers Initiative](#)
- [ecoENERGY for Biofuels](#)

### Air quality

- [Air Quality Health Index](#) – Environment Canada
- [ecoENERGY for Aboriginal and Northern Communities](#)
- [ecoTRANSPORT Strategy](#)
- [Trust fund for clean air and climate change](#)
- [Turning the corner: An action plan to reduce greenhouse gas emissions](#)

### Feature Video



The Honourable Lisa Raitt, Minister of Natural Resources, announces limited-time offer for Canadian homeowners.

#### Launch of expanded ecoENERGY Retrofit - Homes Program

- [Play video »](#)
- [Read the transcript »](#)

### Highlight

ecoENERGY Retrofit for Homes grants increased by 25%.

[More »](#)



# NatureServe Canada

- Three initiatives beginning this year
  - SARA Certification
  - Smart Growth
  - Climate Change and Nature

# Climate Change and Nature

- Understand and communicate impacts on biodiversity
  - Direct
  - Indirect (shifts in land use opportunities; shifts in underlying threats)
- Act as information infrastructure to support biodiversity conservation
  - Reduce adverse effects on biodiversity from human responses to climate change
  - Facilitate adaptation by targeting efforts to maintain resiliency of natural systems
  - Priority areas that sequester carbon and promote biodiversity

# Climate Change and Nature

- Need an approach to developing comprehensive monitoring of impacts
  - Species
  - Ecosystems (watersheds as hosts of biodiversity)
- Need to model and visualize impacts
  - Climate change sensitivity index
  - Partner on climate change models on the Canadian landscape
- Focus on key factors where modeling will be important
  - Species at risk
  - Protected areas
  - Areas of high biodiversity
  - Migration corridors
  - Focus in areas where we have data and partnerships
- National coverage of our data is poor
  - No CDC's in NWT or Nunavut (northern Canada)
  - Enhance work on ecosystem mapping and vegetation classification
  - Expand and enhance species at risk data
  - Connect more strongly on data around all wild species

# Current Proposals/Efforts

- Strategic:
  - Biodiversity Information Partners Strategic Advisory Committee
  - Helping to clarify and support the need for basic biological information as infrastructure for a green economy
- Tactical:
  - Will approach key federal agencies for funding support related to inventories, modelling
  - Will approach potential NGO partners (BFI, NCC) related to partnerships in key ecosystems - boreal forest
  - Build relationships with key private sector organizations to build support for our work (resource, technology, financial)
    - Google grant proposal on modeling climate change impacts for select species at risk in southern BC and southwestern Alberta

# Questions?

○ [dhyde@naturereserve.ca](mailto:dhyde@naturereserve.ca)