Norman Wells
Public Listening
Climate Change & Wildfire

The Effects of Climate Change and Wildfire on Caribou in the Sahtú

Western Science Perspective

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Climate Change

Tugboat stuck near Fort Providence due to low water levels

Emily Blake · September 11, 2023

Photo Credit Cabin Radio

Cabins lost in wildfire near Tulita, N.W.T., as smoke forces some residents to leave

There are 71 active fires in the territory

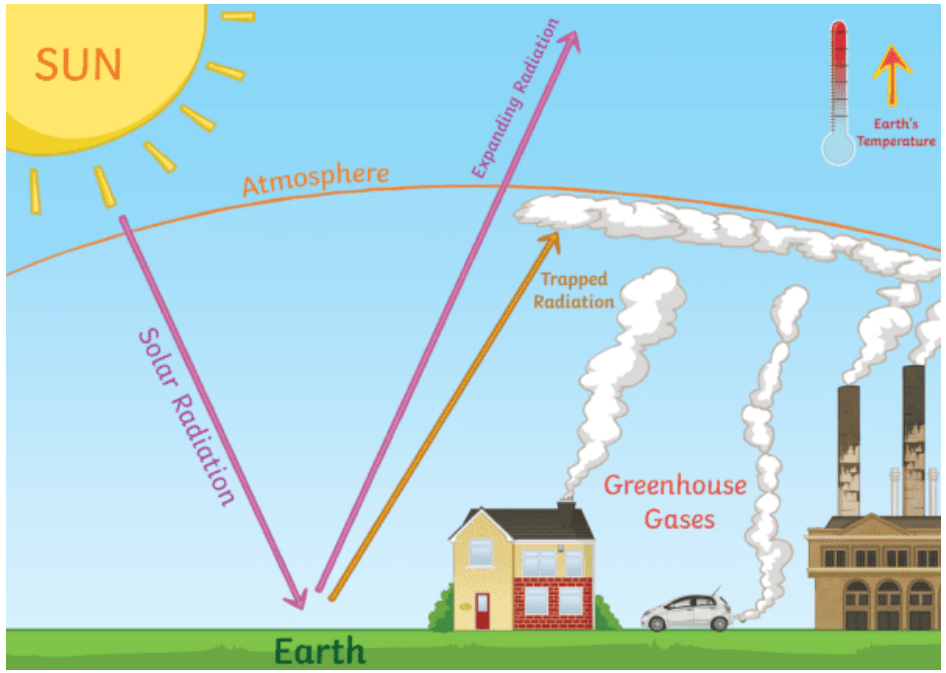
CBC News · Posted: Jul 10, 2023 11:14 AM MDT | Last Updated: July 10

Photo Credit CBC News

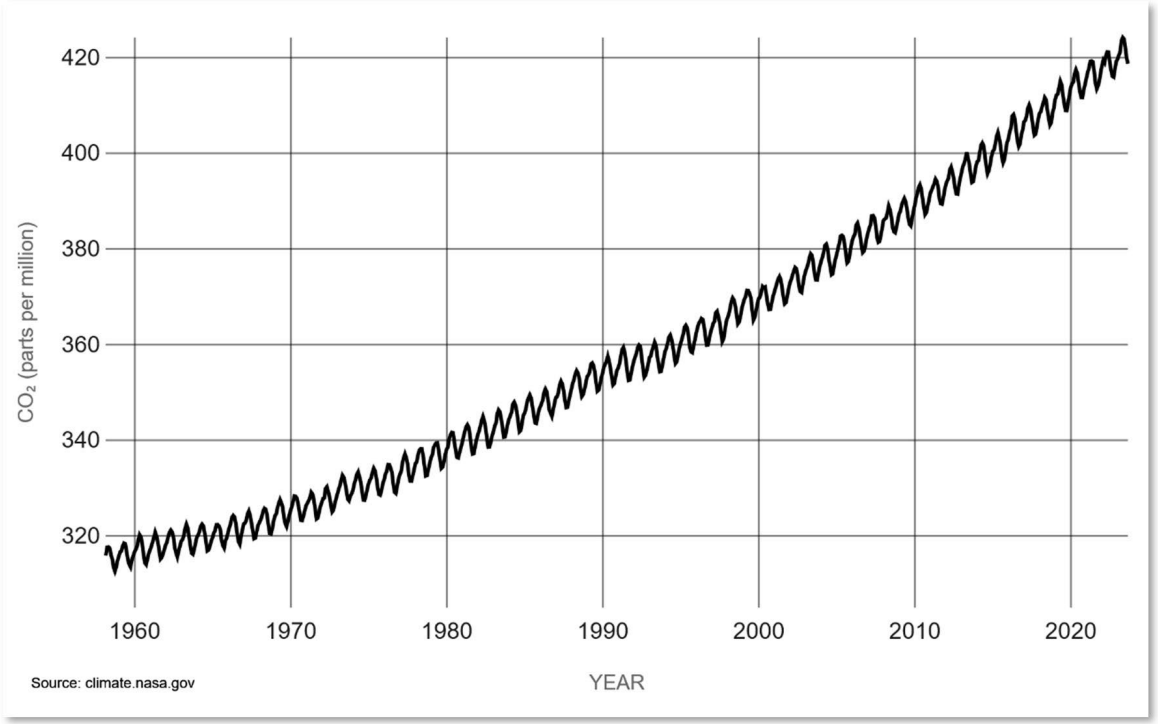
What We Already Know

Causes of Climate Change

- Burning fossil fuels
- Releases greenhouse gasses.
- Gasses accumulate in atmosphere (including carbon dioxide [CO_2]).
- These trap the heat which normally would escape into the atmosphere.

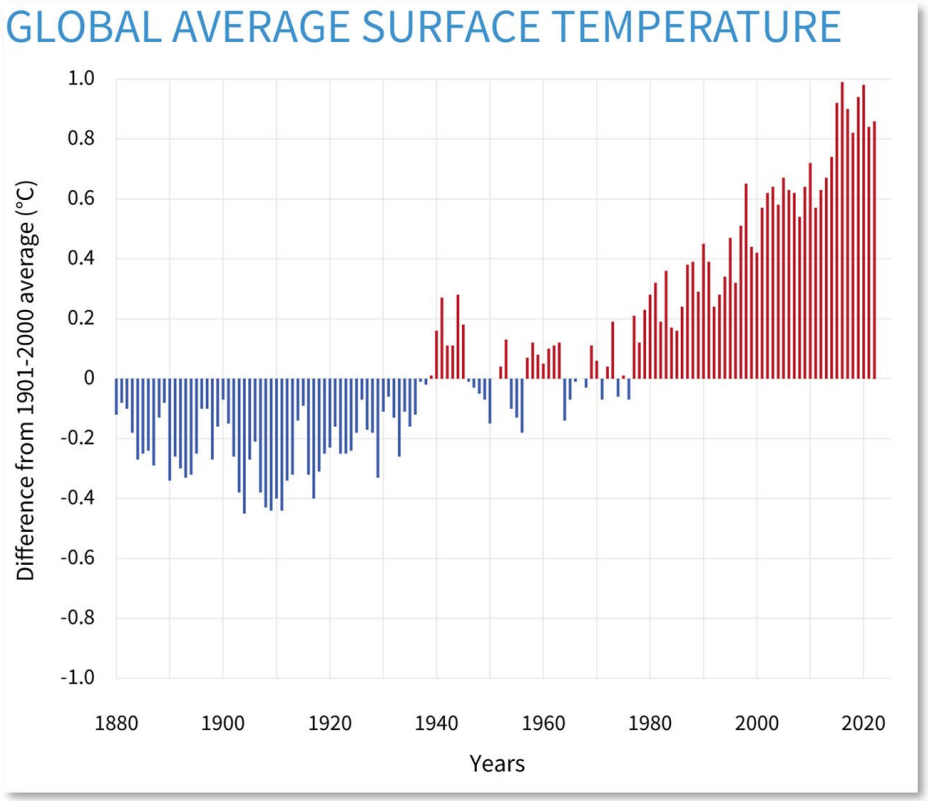


What Science Demonstrates



- In 1960, CO_2 was under 320 parts/million.
- In 2020, CO_2 was over 420 parts/million.
- As CO_2 increases, so too does temperature.

What Science Demonstrates



- 0 is a reference point to measure how much average surface temperature has increased or decreased globally.
- 1880 – 1940, temperature consistently below the normal.
- 1940 to ~1970, temperature fluctuated between lower than average and higher than average.
- Since 1970s, average surface temperature has been steadily **increasing** at a higher rate.

What Science Reinforces

- Warming air temperatures
- Permafrost thawing
- Ice free Arctic Ocean and Beaufort Sea
- Less snow and ice
- Timing of environmental events
- Severe weather events
- Changes in plant species

What We Already Know

- Arctic warming up – over twice the rate of the rest of Canada.
- Thawing permafrost.
- Weather more variable with more extreme storms and droughts.
- Less snow and earlier melting.
- Changes in local environment.

What We Already Know

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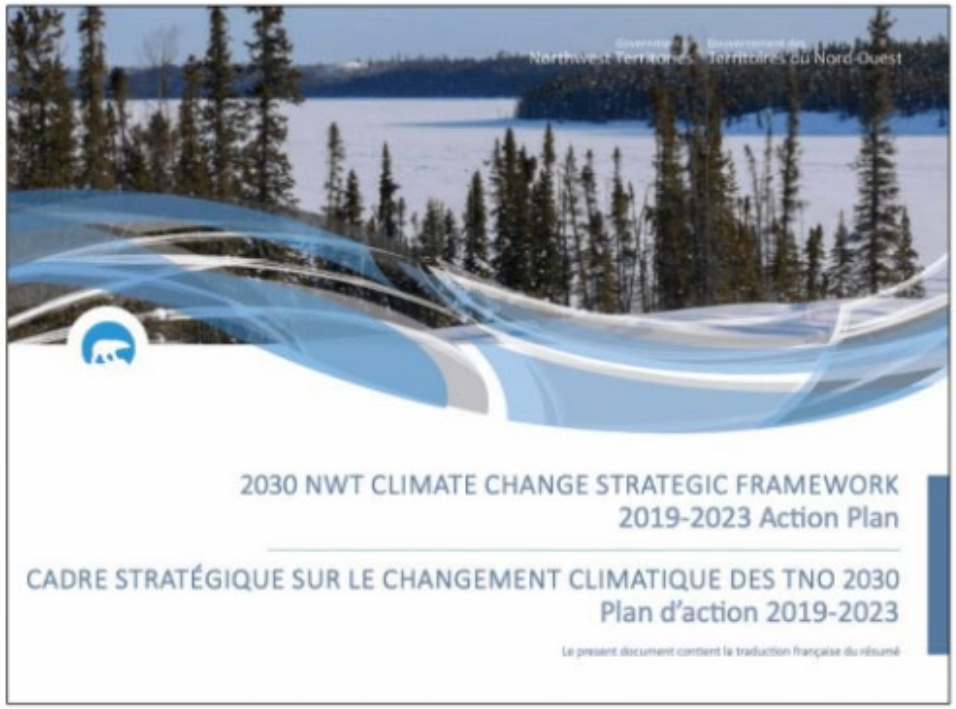
How Climate Change Impacts Caribou

- Timing of major caribou events (calving, rut) might change.
- Makes migration more difficult for caribou.
- Critical during calving and on youth calves.
- Less places for caribou to avoid insects.
- Caribou migration may be impacted by due to storms, later freeze-ups, melting permafrost, melting ice on lake earlier.

What Government is Working Towards

GNWT Climate Change Action Plan



Government of the Northwest Territories recognizes that climate change is impacting "the natural environment, the health and safety of its residents, the culture and heritage, infrastructure and the economy" of the NWT

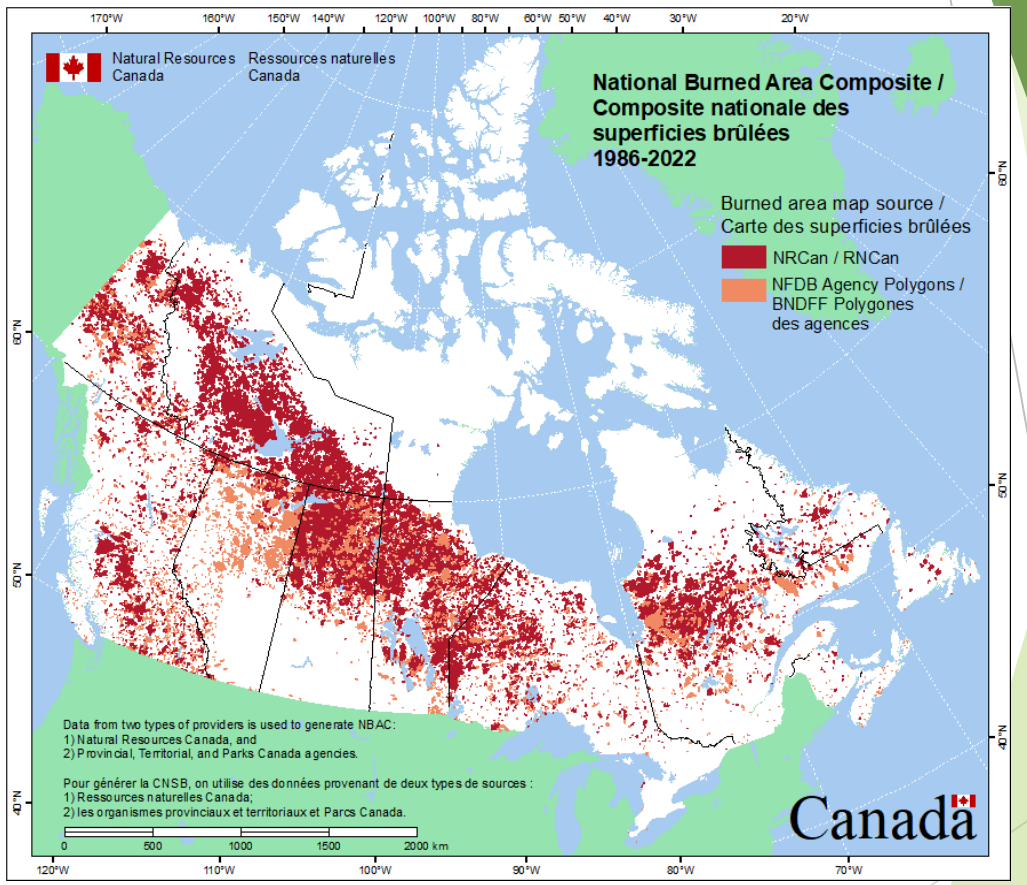
GNWT has developed an action plan with the intent of reducing greenhouse gas emissions that contribute to climate change and to conduct research into impacts and how to respond to those changes

Wildfire

Photo Credit: Wek’èezhìı Renewable Resources Board

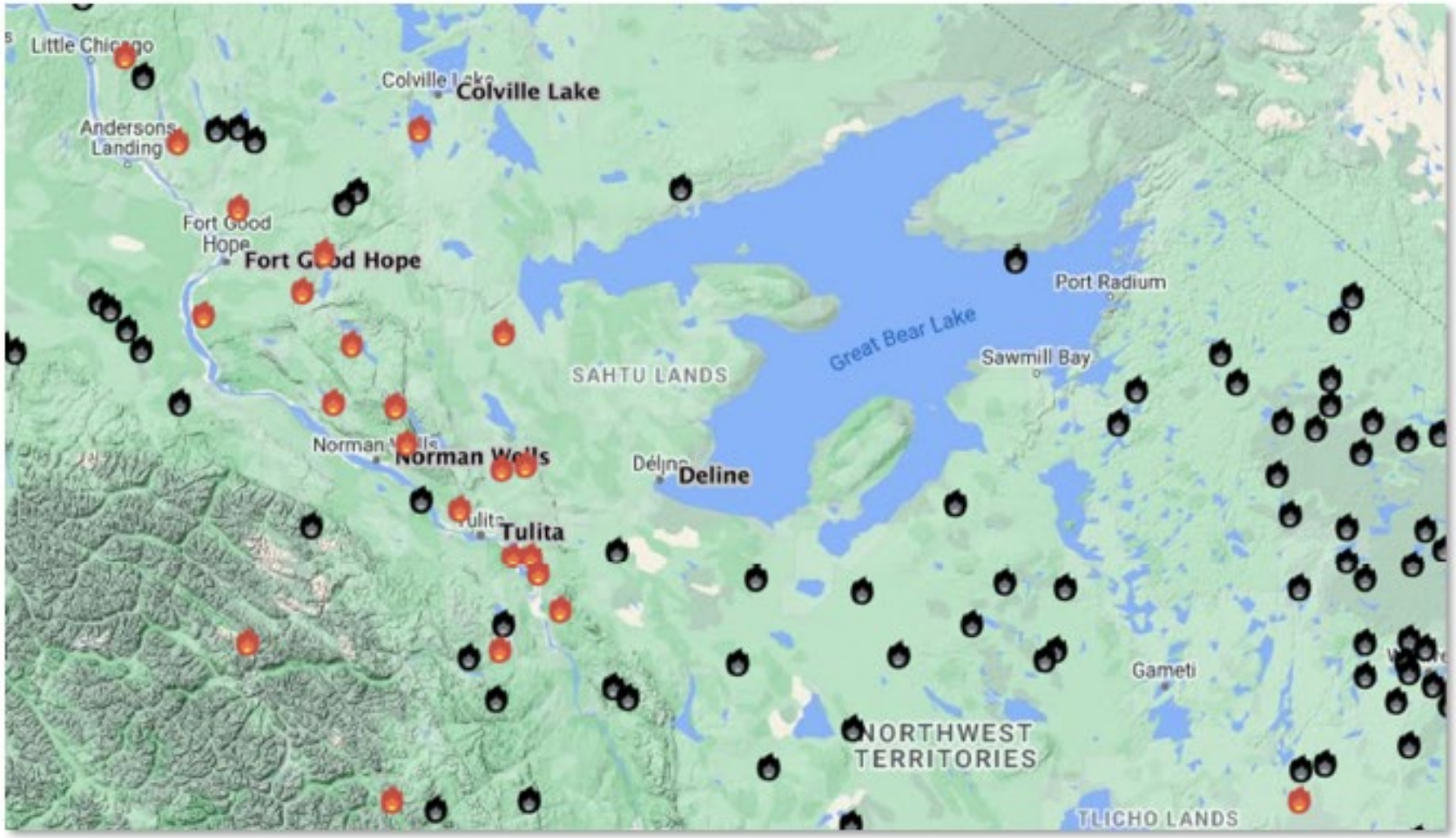
What We Already Know About Wildfires

- Wildfires are common in the boreal forest, are natural and can renew and replenish habitat.
- In 2023, 55 wildfires in the Sahtú.
- Number of wildfires vary each year as does the area burned.
- 1990 – 2023, the majority (roughly 87%) of wildfires started by lightning.
- Lightning becoming more common.



Natural Resources Canada
Canadian National Fire Database

What We Already Know About Sahtu Wildfires



Wildfires in Sahtú as of Oct. 1, 2023. Black dots considered active.

What We Already Know About Sahtu Wildfires

Placement of wildfires in the Sahtú as of October 1, 2023. Burned areas are shown as light brown patches. The GNWT reports a total of 55 fires in the Sahtú in 2023.

Source: https://cabinradio.ca/137696/news/yellowknife/fire-map/

What Science Demonstrates

Caribou:

- Generally avoid burned areas, seeking out better food sources particularly in the winter.
- May remain near burn scars or unburned areas within larger burn scar (as individuals).
- May use unburned patches in burn scars during calving due to food availability and predator detection (boreal).

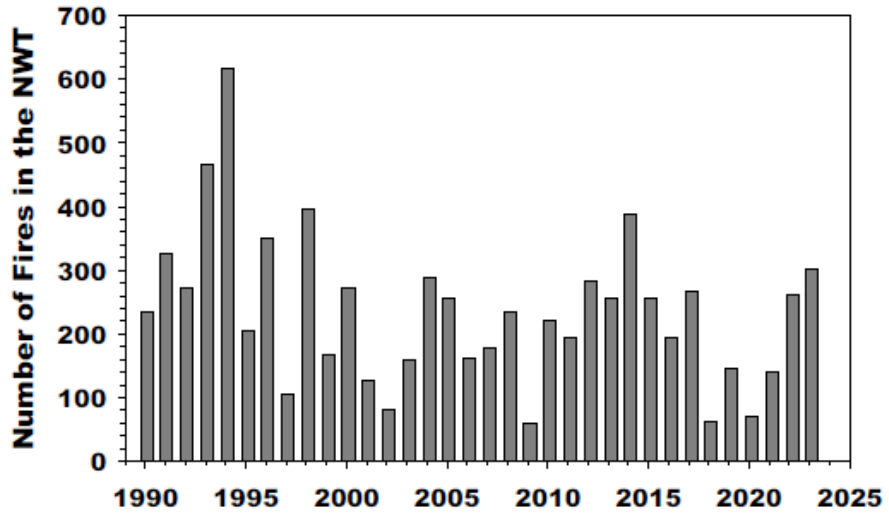
What Scientists Demonstrate

Lichen:

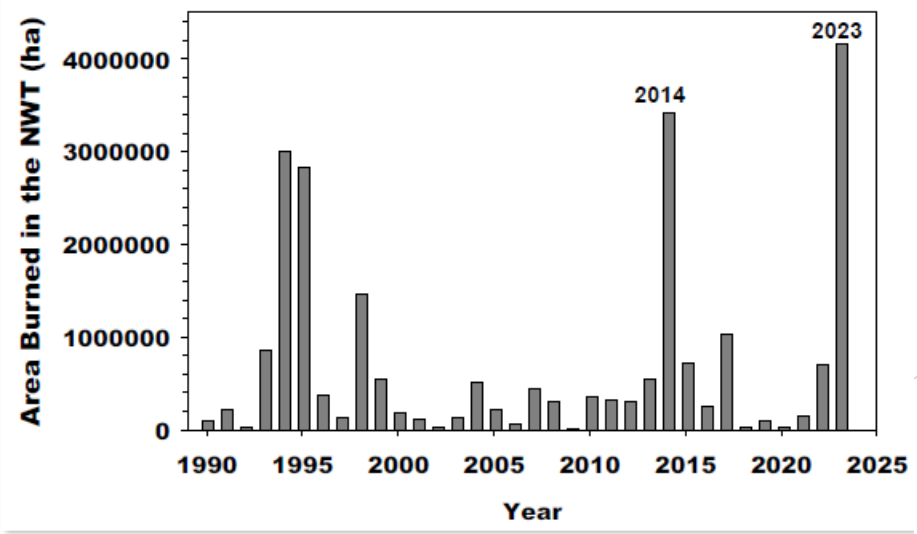
- Requires decades to recover to the point of supporting caribou populations.
- Reindeer lichen takes up to 150 years to reach maximum biomass.
- Don’t grow as quickly as other plant species that can take over burned areas.
- This however, provides browse for moose.

What Science Demonstrates

- Since 1990, general trend may see decreasing number of fires in the NWT.



- However, there is a general trend towards more area burned.



What Science Predicts

- The number of fires and area burned will increase in the NWT with a warming climate as lightning strikes and drier conditions promote new fires.
- The number of fires is expected to increase in the NWT over time with warmer temperatures and drier air and an increase in thunderstorms.
- Precipitation as rain is expected to increase with the changing climate, but evaporation of moisture off the land will also cause drier conditions and a greater chance of fires.