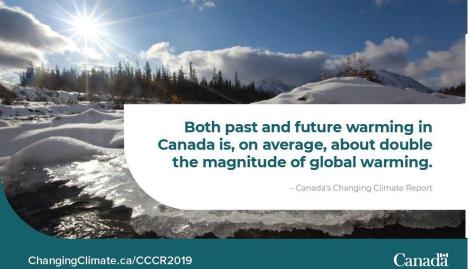
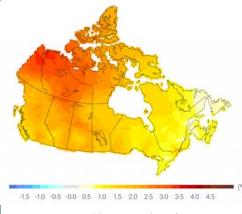
## Canada's Changing Climate Report

ADVANCING OUR KNOWLEDGE FOR ACTION





Mean annual temperature increase 1948-2016

- Canada has warmed by 1.7°C between 1948 and 2016, about two times global warming.
- Northern Canada has warmed by 2.3 °C, about three times global warming.
- We understand fully why warming is enhanced over Canada.
- The observed warming is primarily due to human activities and is effectively irreversible.







Across Canada, we are experiencing:

-more extreme heat/less extreme cold precipitation

-less snow and ice cover

- -earlier spring peak streamflow
  - -thinning glaciers
  - -thawing permafrost

-warmer and more acidic oceans

level

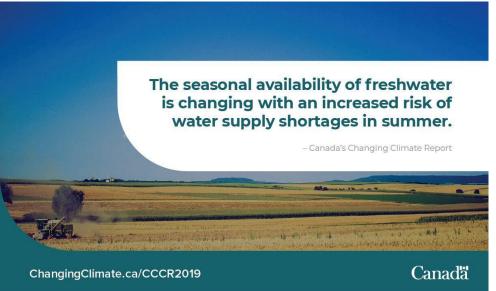
-increased

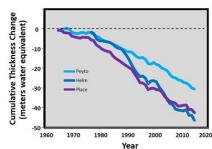
-rising sea

Because some further warming is unavoidable, these observed trends will



- Precipitation has increased in many parts of Canada, with a shift toward less snowfall and more rainfall.
- Annual and winter precipitation is projected to increase everywhere in Canada over the 21st century.
- Reductions in summer rainfall are projected for parts of southern Canada under a high emission scenario.

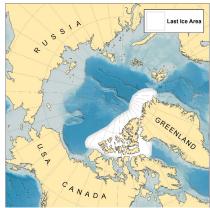




- Precipitation is projected to increase for most of Canada, on average, although summer rainfall may decrease in some areas.
- Smaller snowpacks and loss of glacier ice this century will combine to produce lower summer streamflows.
- Warmer summers will increase evaporation of surface water.



## Schematic of the last ice area of the Arctic Ocean



- Canadian Arctic marine areas are projected to have extensive ice-free periods during summer by mid-century.
- The last area with summer sea ice is projected to be within and north of the Canadian Arctic Archipelago.



- Ocean warming and loss of oxygen will intensify with further emissions of all greenhouse gases.
- Ocean acidification will increase in response to additional carbon dioxide emissions.
- These changes threaten the health of marine ecosystems.



Local sea level changes are from global sea level rise and land uplift and sinking – a response to the retreat of the last great ice sheet



ChangingClimate.ca/CCCR2019

**Canadä** 

- Local sea level is projected to rise and increase flooding, along most of the Atlantic and Pacific coasts of Canada and the Beaufort coast in the Arctic.
- The loss of sea ice in Arctic and Atlantic Canada further increases the risk of damage to coastal infrastructure and ecosystem due to larger storm surges and waves.





**HEAT WAVES** 



- Extreme hot temperatures will become more frequent and more intense. This will increase the severity of heatwaves, and contribute to increased drought and wildfire risks.
- While inland flooding results from multiple factors, more intense rainfalls will increase urban flood risks.





 Global emissions of carbon dioxide from human activity will largely determine how much warming Canada and the world will experience in the future.



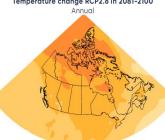
## Our future: choices matter



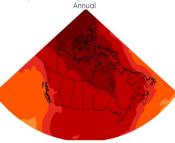
ANNUALLY

Temperature change RCP2.6 in 2081-2100

limited warming



large warming Temperature change RCP8.5 in 2081-2100



High global emission scenario1

Low global emission scenario<sup>1</sup>

Median values. Changes are for 2081-2100 relative to the 1986-2005 reference period.