

Climate Change Implications

The implications of climate change are becoming better known as a result of the work of the International Panel on Climate Change (IPCC) which in March released a Synthesis Report written by over 800 scientists from 80 countries, and assessing over 30,000 scientific papers. This Report tells policymakers what the scientific community knows about the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.

The key findings of the Synthesis Report are:

- Human influence on the climate system is clear;
- The more we disrupt our climate, the more we risk severe, pervasive and irreversible impacts; and
- We have the means to limit climate change and build a more prosperous, sustainable future.

Climate change is having (and will continue to have) effects on local weather and general climate conditions that vary from place to place. While implications have been studied and modelled globally by the IPCC, specific implications for many communities have also been modelled.

The Government of Canada, through Natural Resources Canada, has also produced a report entitled *Impacts to Adaptation: Canada in a Changing Climate* which highlights the following observed changes to Canada's climate so far:

- Warming of 1.3 degrees Celsius, on average, since 1948. This is twice the global average.
- Assuming Canada employs a moderately aggressive strategy to reduce greenhouse gas emissions, temperatures will continue to rise by 2 degrees Celsius by 2050 and 4 degrees by 2080. Most of this warming is expected in the winter season.
- Average precipitation has increased 12% across the country. The prairies and southern Canada have seen the least change so far.
- Increased rate of evaporation from freshwater bodies of water.
- Sea-level rise with the rate along the Atlantic coastline having doubled.
- Increased frequency and magnitude of extreme events.

Toronto

According to the City of Toronto report, "Ahead of the Storm: Preparing Toronto for Climate Change", the projected climate change implications identified for Toronto include:

- Rising summer temperatures leading to a rise in the number of extreme heat alerts, smog alerts, and heat and smog-related premature deaths.
- Shorter, warmer winters leading to the spread of invasive insect species like the mosquitos that carry West Nile Virus and ticks that carry Lyme disease. The City

of Toronto also predicts insects carrying other infectious diseases affecting humans and tree species are likely to migrate from the south.

- Precipitation patterns are changing. An increasing proportion of moisture is from rainfall as opposed to snowfall. Periods of drought are also more common and more severe.
- Extreme weather is increasing. Environment Canada monitors the number of natural disasters in Canada and has reported increases in tornados, storms, blizzards, ice-storms, hail/thunderstorms, floods, and wildfires.
- Surface water availability and water quality is diminishing. Changes in river flows, lake levels, and increasing concentrations of contaminants accumulating in surface water bodies used for drinking water purposes have been observed.

Saskatoon

Research more specific to the Saskatoon context is available from the Prairie Adaptation Research Centre at the University of Regina suggesting the following:

- The Saskatoon region (as part of the South Saskatchewan River Basin) will experience an increase in both temperature and precipitation.
- More precipitation is expected in winter, in the form of rainfall due to rising temperatures, and less in summer.
- Warmer temperatures imply there will be a longer growing season, but there will also be less precipitation in summer, and therefore less available soil moisture.
- The projected changes in temperature will influence snow accumulation in the mountains, which feeds the South Saskatchewan River (Saskatoon's source of drinking water) resulting in changes to the dominant flow season for the river. Future decreases in average river flows are expected.
- Droughts are expected to become more frequent and prolonged.