Drinking water in a changing climate

More extremes in weather are expected with climate change. When the weather gets hot and dry, water levels in lakes and rivers can get low. What does this mean for the drinking water that communities need?

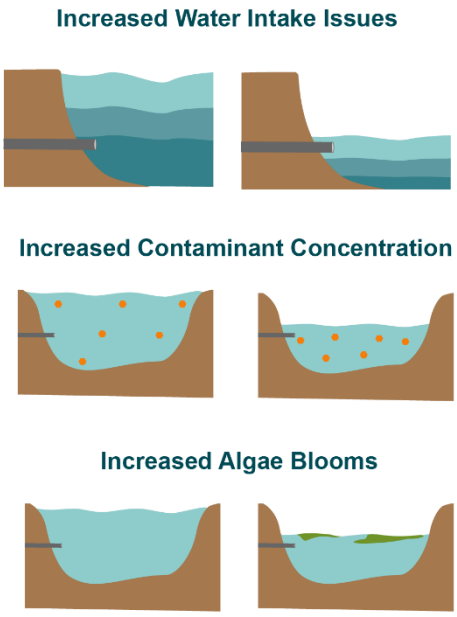
What does climate change mean for drought and dry periods in the north?

As temperatures continue to rise in the north, evaporation from the land and water will increase, leading to drier land and lower water levels in lakes and rivers, both of which can affect drinking water quality. While climate change is predicted to make northern Ontario wetter, the summer months will see only modest gains in rain, which may not be enough to offset the water lost to evaporation. Rain might also fall as heavy rain more often with long periods of little to no rain, leading to drought conditions.

How do drought and dry periods impact drinking water?

When the weather is abnormally dry for a period of time, water resources can be put under stress. In dry periods surface water can get warmer, water levels in lakes and rivers can lower, and water flow through streams and rivers can be reduced. Ground water can also be affected. These sorts of changes can impact the quality and quantity of drinking water. For example:

- Lower water levels may lead to problems with drinking water intakes
- Lower water levels can increase the concentration of contaminants
- When water gets lower, warmer, and has less flow, waterborne pathogens may be more likely to survive and grow
- When water gets lower, warmer, and has less flow, there may be an increase in algae blooms
- Lower ground water may lead wells to go dry
- Water treatment plants may experience loss of pressure, increasing the risk of contamination and requiring more intensive water treatment



Drought and dry weather can also impact the land, drying out soil and making it pack together more tightly. When heavy rain hits this dry, compacted soil, the water is less likely to absorb into the ground and instead runs over the land washing soils and contaminants into lakes and rivers that may be drinking water sources.

What have people noticed?

Low water levels in lakes, rivers, streams, and creeks are already being mentioned by people in First Nation communities throughout the north. Some people also say the water seems warmer than it used to be, and many have noticed more algae. Wells in some areas are said to have low water levels or even dry entirely in summer.

How can we prepare?

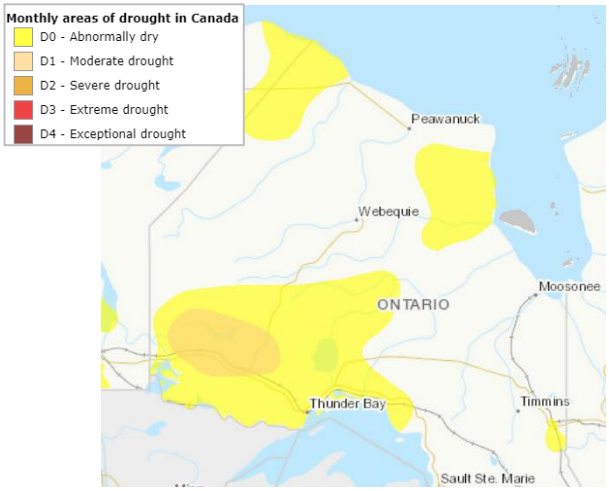
Vulnerability assessment

Clean, safe drinking water is already an issue for many First Nation communities. Drinking water infrastructure in all communities should be assessed to make sure it can function well now and under future climate conditions, including the potential for drought and low water levels. This type of assessment and upgrade planning may require the help of outside consultants. Communities should continue to push for safe drinking water.

Monitoring

Communities may wish to monitor for potential drought events by tracking weather, water levels, and moisture levels in the soil near a drinking water source. Since 2002, Agriculture and Agri-Food Canada has been sharing data online about drought conditions, soil moisture, and other parameters. The data is posted at the end of every month.

In communities that currently have drinkable tap water it is important to make sure the water continues to be safe to drink during drought events. An effective drinking water monitoring program needs to be in place. If the water is not safe to drink, communities should have an alerting system to notify members and have alternative water sources available (bottled water, boiled water, different water sources, etc.).



The Canadian Drought Monitor from Agriculture Canada tracks the extent and intensity of drought. Image for May 2020 https://www.agr.gc.ca/eng/agriculture-and-the-environment/drought-watch/canadian-drought-monitor/?id=1463575104513

Source water protection

Keep the lakes and rivers that supply drinking water healthy by preventing pollution. An effective community drainage plan can help limit the amount of surface runoff reaching source water lakes and rivers. Limiting development around source water and protecting the natural landscape can also help keep contaminants from entering these systems. Communities might also want to create an "intake protection zone" around their drinking water intake where boat traffic and other potential sources of contaminants are restricted.

Water conservation

Water conservation should be encouraged; provide water conservation tips to community members. Water conservation is always a good idea, but will be especially important in times of drought. Inform the community of drought conditions and of any water-use restrictions that may need to be put in place.

Save water in your home by:

- **Taking quick showers**
- **Fixing leaky taps or toilets**
- **Running washing appliances with full loads**
- **Collecting rainwater for watering gardens**

Want to know more?

What is an Intake Protection Zone?
http://trentsourceprotection.on.ca/protect-your-water/what-is-an-intake-protection-zone

Drought-Ready Communities – A guide to community drought preparedness
https://drought.unl.edu/archive/Documents/NDMC/Planning/DRC_Guide.pdf

UP NORTH ON CLIMATE
Climate Change Impact and Adaptation Study for the North of Ontario