



Dry and Dusty Land in a changing climate

As climate change makes summer temperatures warmer, the land in the north will get drier impacting plants, animals, and people.

How will climate change impact drought?

Hotter summer temperatures that are expected with climate change draw more moisture out of plants and soils (an effect called evapotranspiration). Even though climate change will likely also bring more rain to Ontario, the land is expected to become drier in future conditions. Predicting where droughts will occur and how long they will last is difficult but it is thought that North America is likely to experience longer and more intense dry periods as climate changes.



Evapotranspiration: Drawing moisture out of plants and soils.

How does drought impact the land?

Erosion and sedimentation

Have you ever tried watering a house plant when the soil is very dry? If you give it too much water at once, it goes straight through the soil and into the plant saucer or the water sits on top for a while before absorbing. The same thing happens when the land goes through an abnormally dry period called a drought. Dry soils take longer to absorb water and so rainwater runs down slopes into lakes and rivers. The soil that gets carried with the rain runoff, called sediments, can impact water quality. Wind can send dry soil particles into the air and into waterways.



Dry soil absorbs water slowly

Soil quality & shifting ecosystems

Soils that lack moisture can become compacted making it difficult for plants to grow. Low soil quality can result in loss of wildlife habitat as plants and trees are unable to survive in these conditions. Trees may start to die off and be replaced by grasslands that are able to withstand dry conditions. Community members may need to travel further in order to harvest and hunt and community gardens may be impacted.



Drought-induced damage to trees.

Wildfires

Although forest fires are a natural part of the boreal forest, drought can increase the number and intensity of wildfires. Dry land can ignite and spread fire more easily and put people and communities at risk. Forest fire smoke can travel great distances and impact community members, especially elders, youth, those who work outside, and those who have respiratory issues.

Dust and respiratory issues

Dry conditions can lead to an increase in dust, pollen and allergens in the air, especially on a windy day. Dusty conditions can lower air quality and can impact breathing. Community members that have respiratory conditions like asthma, are at greater risk during these times. Dust can also cover plants and make it difficult for them to absorb sunlight to survive.



Drought can create dusty conditions that impact your health.



How can we prepare?

Monitor

Communities should monitor for potential drought events. It may be valuable to measure soil moisture and water levels and to keep record of any areas with large tree die-offs. Seeing changes in these measurements could give an early warning of coming drought. Knowing how drought conditions have been observed in the past can give direction on what areas to monitor.

Incorporating traditional knowledge of landscape and weather can help. Agriculture and Agri-Food Canada shares data on drought conditions, soil moisture, and other parameters, on a monthly basis.

Protect natural habitats

Plants and trees help hold the soil together and prevent sediments from entering waterways that are important to fish and as drinking water sources. Protecting the land and wetlands will reduce impacts from climate change especially during periods of drought.

Prevent human-caused fires

Fire safety is always important, but as the land gets drier fires will more easily ignite and spread and so preventing human-caused fires will become even more critical.

- Monitor the fire hazard risk in your area. When fire risk is high, communities may want to restrict or ban outdoor burning.
- Promote safe fire practices in your community (campfire safety, guidelines for burning outdoors)
- Promote safe fire practices when on the land (caution with potential causes of accidental fires (sparks, cigarette))

Health, education and outreach

Drought can mean more breathing problems from dust, smoke, and pollen so it is important that people with asthma have the necessary medication and avoid being outdoors when air quality is poor. To reduce dust in the community, adding water to dirt and gravel roads and enforcing lower driving speeds could help. Provide information to community members about the potential of drought occurring and the impact it can have. This might include drought awareness education, water conservation strategies, or involving the community in drought-action planning.

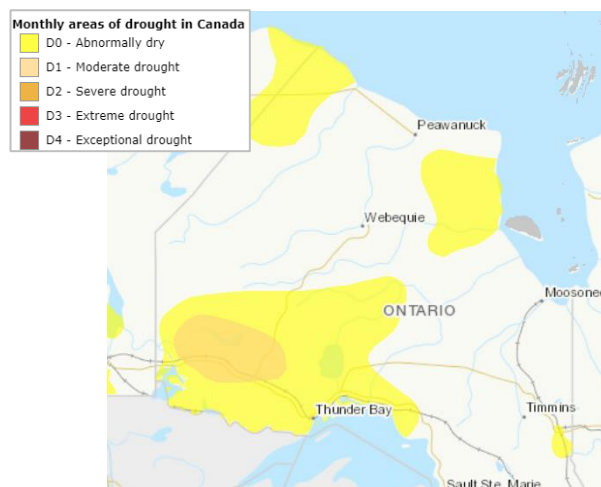
Resources

Handbook of Drought Indicators and Indices:

www.droughtmanagement.info/literature/GWP_Handbook_of_Drought_Indicators_and_Indices_2016.pdf

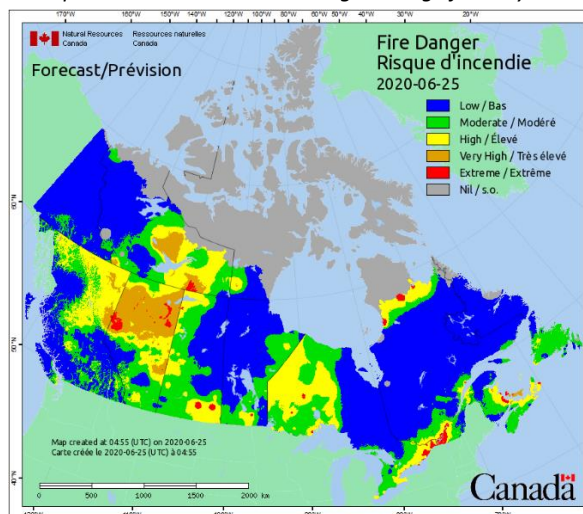
Drought Ready Communities: A Guide to Community Drought Preparedness

https://drought.unl.edu/archive/Documents/NDMC/Planning/DRC_Guide.pdf



The Canadian Drought Monitor from Agriculture Canada <https://www.aqr.gc.ca/eng/agriculture-and-the-environment/drought-watch/canadian-drought-monitor/?id=1463575104513>

can help communities monitor drought. Image for May 2020.



The Canadian Wildland Fire Information System (<https://cwfis.cfs.nrcan.gc.ca/home>) can help communities monitor their fire hazard risk.