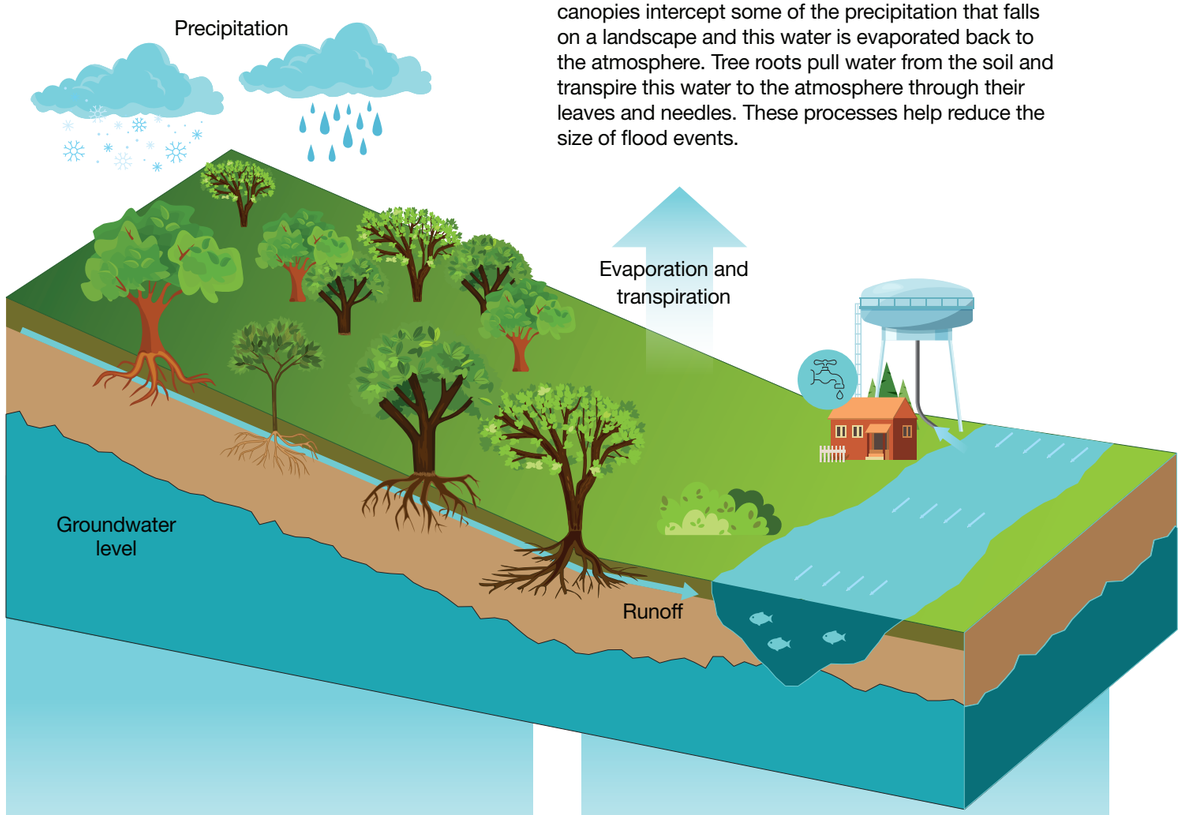
Forest contributions to Canada's drinking water

Forests are an important source of drinking water

Most of Canada's drinking water is sourced from forest ecosystems. This includes most rural and Indigenous communities. Healthy aquatic ecosystems and an adequate supply of clean water are some of the most important ecosystem services that forests provide. Here's why…

Forests play a key role in the water cycle. Forest canopies intercept some of the precipitation that falls on a landscape and this water is evaporated back to the atmosphere. Tree roots pull water from the soil and transpire this water to the atmosphere through their leaves and needles. These processes help reduce the size of flood events.



Forest soils naturally regulate downstream water supply by acting like sponges.

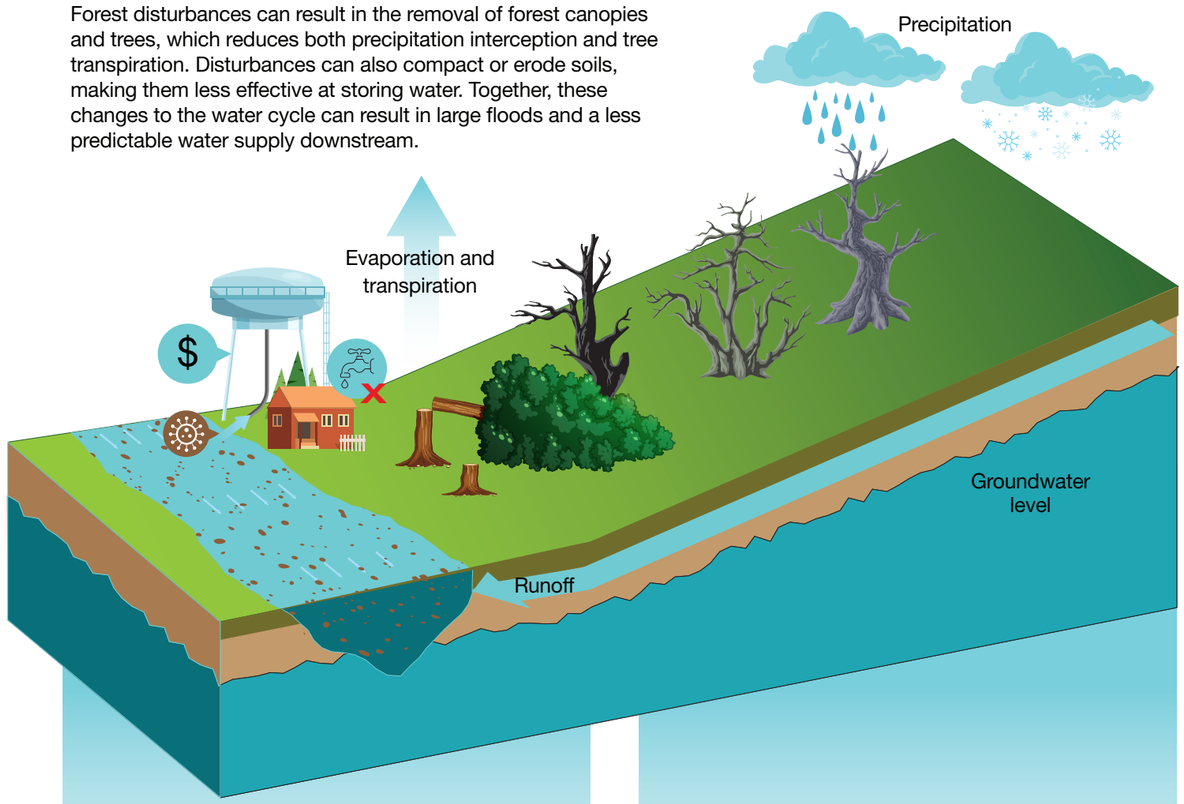
Forest soils store water during rainfall and snowmelt, and slowly release this water to streams and lakes during dry periods, thus ensuring a steady and predictable supply of water downstream.

The quality of water changes as it travels through the different layers of a forest, such as the forest canopy, forest floor and soil. Forest soils help filter water before it enters streams and lakes, providing clean water to communities and reducing water treatment costs.

Forest disturbance and climate change affect our drinking water supply and quality

Fire, insect outbreaks, harvesting and climate change impact water primarily through the death or removal of trees, disturbances to the forest floor, and the addition of dead biomass (and ash with fires) onto the soil surface. These disturbances can affect both the quantity and quality of the water that downstream communities use for drinking.

Forest disturbances can result in the removal of forest canopies and trees, which reduces both precipitation interception and tree transpiration. Disturbances can also compact or erode soils, making them less effective at storing water. Together, these changes to the water cycle can result in large floods and a less predictable water supply downstream.



Changes to the water cycle caused by forest disturbance also impact water quality by altering the amount and pathway of water as it moves through forest ecosystems. In addition, decomposing dead trees and branches, ash from wildfires, as well as soil erosion, compaction and rutting from logging machinery can change the water chemistry. These changes in water quality can make water treatment more difficult and costly.

Following a forest disturbance, such as a wildfire, an insect outbreak or harvesting, new trees may start to grow. As these trees mature, they restore water ecosystem services. CFS researchers are actively working to better understand the impacts of forest disturbance and recovery on water quality and quantity. This science helps to improve sustainable forest management practices to ensure healthy forested watersheds for the communities that depend on them, now and in the future.

Natural Resources Canada | Ressources naturelles Canada

Canada