

FORESTS & CLIMATE

Support Sheet 2: Trees can Change the Weather

Trees put water vapour into the air:

As much as 70% of the atmospheric moisture generated over land areas comes from plants (as opposed to evaporation from lakes or rivers). Air that has passed over extensive vegetation in the preceding few days produces at least twice as much rain as air that has passed over little vegetation. This shows the immediate effect of that deforestation has on rainfall patterns. When areas of forest are cleared, such as The Amazon or Borneo Forests, this has a huge impact on weather patterns.

Trees help to make clouds:

Tiny particles like fungal spores, pollen, microorganisms and tiny bits of dust rise from the forest with the transpired water vapour. These are swept up into the atmosphere in currents. These tiny particles make that easier by providing surfaces for the water to condense onto. Rain can only fall when water vapour condensates into water droplets. These water droplets then gather together as clouds. They release the water as rain when their weight becomes too heavy for the cloud to hold.

Trees can increase the amount of water in the soil and reduce flooding:

When rain falls in non-forested areas, it can flow straight into rivers. If water goes straight into rivers, it can cause erosion of soils and flooding downstream.

Trees allow more water to drain into the soil, due to their root systems and the spongy nature of the leaf compost around their bases. Some of this water is held in the soil and some gets into underground aquifers (naturally occurring water systems). In areas that are forested, water soaks into the ground easier. This is because tree roots and the animals they attract, like ants, woodlouse, worms, etc, help to create holes in the soil for the water to flow through at a slower rate.

If water is stored in soils or underground, it can be slowly released into rivers or be used later by trees and by people who have wells.

Forests cool locally and globally:

Forests cool the earth's surface. Not only do they provide shade, the water they transpire also cools the air nearby. If you go to your garden, park or forest on a hot day and go under a tree, you'll feel the cooling effect immediately.

One single tree is equivalent to two air conditioners and can reduce the temperature by up to 2 degrees

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Forests draw moisture into the heart of continents:

When large forests transpire, they create winds, bringing rain into the heart of continents. This explains why you can get really high rainfall in the interior of continents when the original source of water, the ocean, is so far from where the rain is falling. Examples of this are: The Amazon Basin in South America and the Congo Basin in Africa. Central Europe still has large areas of forest, but much of it has been lost.

Discussion – Questions and Research Topics:

How can trees effect weather patterns?

How has the mass cutting of forests effected our local and global weather patterns?

How could tree planting help with flooding?

Could large scale deforestation in one country influence the weather in another country?

How could forests effect desertification?

What is the difference between **Climate Mitigation** and **Climate Adaptation**?

Climate Mitigation: Aside from their role in removing CO₂ from the atmosphere, can trees be used to mitigate the effects of climate change?

Climate Adaptation: Aside from their role in removing CO₂ from the atmosphere, can trees be used to adapt to the effects of climate change?

What role will trees play in the Irish Governement's Climate Action Plan?

Have trees a role to play in parts of the world with water shortages?

See current weather systems from a global persrepctive – it is quite beautiful!

<https://earth.nullschool.net>

Forests and Hurricanes: <https://mylandplan.org/content/how-hurricanes-affect-your-forest>

<https://forestsnews.cifor.org/51566/forests-versus-hurricanes?fnl=en>