

Forests emit carbon dioxide during heatwaves

September 12 2019, by K. Hovestad - Bekmann



Credit: Wikipedia.

Forests absorb a lot of CO_2 from the air in the summer, but during the heat wave at the end of July, forests in the Netherlands emitted CO_2 . This is shown by measurements taken by the University of Twente.

The University of Twente (UT) has been measuring how Douglas firs react to weather and climate in a [forest](#) near Garderen since 2006.

Between 24 and 26 July it was exceptionally hot. As a result, growth was so limited that during the day less CO₂ was captured by the forest than was emitted at night.

Emissions comparable to flight Amsterdam—London

The net CO₂ emissions from the forests during the hot days were 60 kilograms per football pitch. This is as much as that of a person flying from Amsterdam to London in Economy Class.

During the day the trees use sunlight, water and CO₂ to grow, while at night they breathe out CO₂. A football pitch in this forest captures 4.8 tonnes of CO₂ per year in wood, about the same amount as the annual emissions of two petrol cars.

Striking results

UT [researcher](#) Dr. Christiaan van der Tol: "It was known that growth slows down at high temperatures, but it is rarely so hot that CO₂ uptake turns into emissions. We now know how these trees react to high temperatures." The researchers are also very curious whether other conifers and [deciduous trees](#) also emit CO₂ during hot days. The measurements can help forest managers to respond better to a changing climate, for example when choosing tree species for planting.

This is not harmful to people. "If you walk in a forest that emits CO₂ during a [heat wave](#), you still breathe less CO₂ than when you are inside. The trees do have enough reserve to survive a few days with less growth. After the heat wave, growth resumed. And by 29 July, the forest had already compensated for its emissions.

Van der Tol is a researcher at the Water Resources department of the

Faculty of Geo-information Sciences and Earth Observation (ITC) of the University of Twente. Researchers from this department take measurements at various locations in the forest, city and countryside, and use [satellite images](#) to better understand the cycles of water, energy and CO₂ on earth.

Provided by University of Twente

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