



Dendrometers accurately record changes in trunk diameter • Photo Bas Lerink

Trees shrink during heatwaves

Trees can handle a heatwave as long as it falls outside the growing season, a European study shows.

The study, which was set up by Ute Sass-Klaassen (Forest Ecology and Management), examined the way trees responded to the 2018 heatwave, making use of a large number of dendrometers: instruments that accurately record changes in trunk diameter.

In total, the growth and water reserves of 21 different species of trees at 53 locations in European

forests were measured.

'If the tree can't replenish the moisture at night, the trunk shrinks'

It is clear that drought stress does not necessarily suppress growth. In

many places, the heat only really kicked in after the trees had already had their main growth spurt. But that does not mean that these trees didn't suffer.

The heat caused trees to shrink considerably. You can't see this with the naked eye, but the dendrometers pick it up. 'If the tree cannot replenish the moisture at

night that it loses during the day, the trunk literally shrinks,' says Sass-Klaassen. 'Moisture deficiency and leaf damage caused by the tremendous heat lead to less photosynthesis. And that can have an effect on growth in subsequent years.'

Oaks

The study also shows that trees vary in their capacity to withstand water shortages. Oaks do better than many conifers, probably

because their roots go deeper, so they have more access to groundwater. After a period of drought,

the trees absorb their fill of water again and resume their growth.

According to Sass-Klaassen, the study demonstrates the value of looking for signals from the trees themselves. 'With dendrometers, you can measure and map the physiology of the tree: the things that happen invisibly.' In collaboration with European partners, WUR is trying to put tree monitoring on the map. The Wageningen dendrometer network already includes more than 100 trees. **HK**