Tower measures forest's breath

Trees absorb CO_2 from the atmosphere. But exactly how much, and what are the effects of things like drought and temperature? A new tower erected by the Meteorology and Air Quality chair group in the Loo Forest near Kootwijk answers that question in detail.

The tower replaces a smaller version erected in 1996. 'That was one of the first in the world at the time, and it was constructed to measure the exchange of CO_2 between the forest and the atmosphere,' Meteorology lecturer Michiel van der Molen explains. At the time, the tower stuck out five metres above the treetops. Not anymore.

The equipment in the tower measures wind velocity and levels of CO_2 in the air 20 times per second. 'With these measurements, you can calculate the net amount of CO_2 absorbed by the forest,' Van der Molen explains. 'That is the difference between absorption (photosynthesis) and emission (breakdown of dead matter) from the forest.'

Pine forest

That net absorption amounts to approximately half a kilo of carbon per square metre per annum. Van der Molen: 'That's quite a lot. Half a hectare of forest compensates for the carbon one average household emits.' But of course, these measurements only tell us something about this 110-year-old pine forest, planted to reduce the impact of drifting sands.

'But we are also looking at how the carbon absorption changes under different conditions,' says Van der Molen. 'What happens, for example, during long periods of heat or drought? This information helps us to understand how the CO_2 equilibrium works, and then you can apply it to other types of forest.' Van der Molen is still working on a website that will allow the general public to see the data. RK

'Half a hectare of forest compensates for the CO_2 emissions of one household'

The new measuring tower (36 metres in height) is in the foreground. The 1996 tower is on the left. Photo Guy Ackermans