

GENERAL INFORMATION

author(s)	Van der Heyden C
year	2012
English title	Seasonal relative changes in sap flux density and water content of beech (<i>Fagus sylvatica</i> L.) sapwood
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ecosystem service	regulating – water cycle
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taxa	<i>Fagus sylvatica</i>
project	PhD Maurits Vandegehuchte
supervisor	Steppe K
institution	Laboratory of Plant Ecology
document	pdf, hardcopy
data	

MATERIALS & METHODS

study area	5n (scientific zone)
time period	07 October 2011 – 16 February 2012
goal	Test the performance of the new Sapflow+ sensor in a field experiment and investigate the daily and seasonal changes in sap flux density, moisture content, and thermal diffusivity
set-up	calibration <ul style="list-style-type: none">- thermo couples: hot water tub, temperature 5 – 35°C- heaters: stabilized water (with agar) field experiment <ul style="list-style-type: none">- meteorological data of the faculty in Ghent (no measurements in Gontrode)- Sapflow+ sensor developed by Vandegehuchte and Steppe- 3 beech trees near the measuring tower, sensor installed at breast height- sapflow sensor installed at different places per tree
data collection	meteorological data: air temperature, relative humidity, solar energy, PAR field experiment: temperature of the thermo couples (pulses each 4 seconds)
remarks	

RESULTS

The thermo couple calibration between 5 and 35°C went well. The heater calibration was influenced by the placement of the sensor and by the pulse number. There was only a small difference between the results of logging the data each second or each 4 seconds. The sensitivity analysis showed that heat pulse velocity was sensitive to changes in the distances between heater and thermo couples; the volumetric heat capacity and the axial and tangential thermal conductivity were sensitive to changes in the heat pulse.

The heat pulse velocity became zero when the trees became dormant during winter. Moisture content and thermal conductivity increased, and thermal diffusivity decreased during the same period. The calculated variables differed between the different sensor installations at each tree.