

Parameter	Location	[∞]	Logger and Sampling Details
T [C°] P [mm] WS [m/s] RH [%] GR _{net} [W/m ²]	IGB Weather Stations 350 m distance to study site	5 min	Pt100, Thies GmbH; cup anemometer, Thies GmbH; hair tension dial hygrometer, Thies GmbH; Albedometer CMP6, Kipp&Zonen
P [mm]	Study site; open grassland	15 min	tipping bucket raingauge, 0.2 mm/tip, precision ±3% of total rainfall; AeroCone® Rain Collector, Davis Instruments, Hayward, USA; CR800 Datalogger (Campbell Scientific, Inc. Logan, USA)
T [C°] δ _v	At δ _v tube inlets		CR300 Datalogger (Campbell Scientific, Inc. Logan, USA)
T [C°] δ _{xyl}	Inside borehole membranes		fine PFA-sealed resistance thermometers (Pt100, HSRTD, Omega Engineering, Norwalk, USA; tolerance: ±0.15 to 0.35 C (over 0 to 100 °C); CR800 Datalogger (Campbell Scientific, Inc. Logan, USA)
Stable water isotopes [‰]			cavity ring-down spectroscopy (CRDS; L2130-i, PICARRO, INC., Santa Clara, CA)
Precipitation	Study site	24 h – 72 h	sampled manually with HDPE deposition sampler (100 cm2 opening; Umwelt-Geräte-Technik GmbH, Müncheberg, Germany); analysed with CRDS
Precipitation	IGB grounds; 350 m distance to study site	24 h	autosampler (ISCO 3700, Teledyne Isco, Lincoln, USA); autosampler bottles were filled with a paraffin oil layer that was more than 0.5 cm thick (per IAEA/GNIP, 2014); analysed with CRDS
Groundwater	IGB grounds; 350 m distance to study site	7 d	submersible pump (COMET-Pumpen Systemtechnik GmbH & Co. KG, Pfaffschwende, Germany); analysed with CRDS
δ _v (ambient water vapour)	Study site; below <i>A. platanoides</i> canopy, above grassland	~ 3.5h	Measured <i>in-situ</i> real time sequentially; connected to CRDS with polytetrafluoroethylene (PTFE) tubing (1.6 mm x 3.2 mm); sample flow rate 0.04 L min ⁻¹ in 1 Hz resolution; calibration every 3 rd monitoring sequence
δ _{xyl} (tree stem xylem water)	Study site; <i>Acer platanoides Betula pendula</i>		
Soil water	Below <i>A. platanoides</i> canopy & grassland; five depths (0-5, 5-10, 10-20, 20-40 and 40-70 cm)	30 d	Destructive sampling; sampling ring up to 10 cm depth, below 10 cm soil auger (diameter 4 cm); 3 replicates; stored in stable bags (CB400-420siZ, WEBER Packaging GmbH, Güglingen, Germany); Los Gatos off-axis integrated cavity output spectroscopy (OA-ICOS) triple water-vapour isotope analyser (TWIA-45-EP, Los Gatos Research, Inc., San Jose, CA, USA)
Ecohydrology			
Sap flow [L/h]	Study site; “breast height” 1.3 m at stem of <i>Acer platanoides Betula pendula</i>	15 min	- SFM-4, Umwelt-Geräte-Technik GmbH, Müncheberg, Germany; ±0.1 cm/hr heat velocity precision: <i>A. platanoides</i> north & south - SFM1 instrument, ICT International, Australia: <i>A. platanoides</i> (northwest) <i>B. pendula</i> (north, northwest and south) - CR800 Datalogger (Campbell Scientific, Inc. Logan, USA)
Stem growth [µm]			DR Radius Dendrometer, Ecomatik, Dachau, Ger170; accuracy max. ± 4.5% of the measured value (stable offset); CR800 Datalogger (Campbell Scientific, Inc. Logan, USA)
Soil moisture; VWC [%]	Below <i>A. platanoides</i> canopy & grassland; 5 depths (5-70 cm)		SMT-100, Umwelt-Geräte-Technik GmbH, Müncheberg, Germany; CR800 Datalogger (Campbell Scientific, Inc. Logan, USA)
Twig water potential [MPa]	<i>Acer platanoides Betula pendula</i>	14 d	9 am and 12:30 pm; Scholander pressure chamber instrument (Model 1000, PMS Instrument Company, Albany, OR, USA; 0.5% accuracy)
LAI			Plant canopy analyser (LAI 2000, Li-cor, Inc., Lincoln, NE, USA); 3 replicates; constant point under canopy
Groundwater level [m]	IGB grounds	7 d	Water level meter