Supplement to:

Continuous low-maintenance CO_2/CH_4/H_2O measurements at the Zotino Tall Tower Observatory (ZOTTO) in Central Siberia

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Meteorological measurements

Various meteorological instruments have been installed at the ZOTTO site in the year 2007 (Table S1). They record meteorological variables in a vertical profile on the tower as well as a number of soil parameters in vertical and horizontal profiles at two locations about 100 m southeast from the tower. One soil parameter measurement site is located within a densely wooded area (forest site), the other within a sparsely vegetated area (bare land site). At both places, the sandy soil is covered by lichens.

A scheme of the meteorological measurement setup, as well as the data handling and data distribution is shown in Fig. S1. The meteorological data acquisition can be divided in two independent systems.

One system consists of five CR10X dataloggers (Campbell Scientific Ltd., UK), controlled by the PakBus operating system (version 10). Four of the loggers collect the data remotely from the sensors at different sites (forest, bare land, tower at 5 m and 302 m a.g.l.). The two dataloggers on the ground record vertical profiles of soil temperature, soil moisture, and three soil heat flux plates each. One logger collects data from a rain gauge and measures total and diffuse photosynthetically active radiation (PAR). The dataloggers on the tower measure air temperature, humidity, and pressure, and also radiative fluxes in different spectral bands (short wave solar, long wave terrestrial and PAR) at 302 m. The fifth datalogger operates as master, regularly collecting all data from the remotes and acting as their time server. Finally, the meteorology laptop collects and stores the data from the master logger using LoggerNet software (Campbell Scientific Ltd., UK) and updates its clock.

The second system consists of six 3D sonic anemometers mounted in a vertical profile along the tower. Temperature humidity sensors and pressure transducers are connected to the analogue input channels of the anemometers. Each anemometer is connected to the meteorology laptop, which collects all the data with customized software, stores it, and transfers it to the central measurement PC.

To survey the stability of the tower basement, a laser beam distance meter monitors the distance between the tower and the first guy wire foundation in northeast direction.

Table S1 Meteorological instrument types and locations at ZOTTO

| Instrument	Company	Type	Tower	Bare land	Forest
Wind: 3D ultrasonic-anemometer	Gill Instruments, UK	1210R3-50	4, 52, 92, 158, 227, 301 m a.g.l.	-	-
Air temperature and rel. humidity sensor	MELA Sensortechnik GmbH, GER	KPK1_6- ME-H38	4, 52, 92, 158, 227, 301 m a.g.l.	-	-
Air pressure transmitter	R.M.Young, USA	61204V	4, 92, 301 m a.g.l.	-	-
Radiation fluxes net radiometer	Kipp & Zonen B.V., NED	CNR1	301 m a.g.l.	-	-
2x Photosynthetically active radiation sensors	Kipp & Zonen B.V., NED	PAR Lite	301 m a.g.l.	-	-
3x Soil heat flux plates	McVan Instruments, Rimco, AUS	HP3/CN3	-	Both sites at −0.03 m	
Soil temperature sensor	Jumo GmbH, GER	902830	-	Both sites at: −0.02, −0.04, −0.08, −0.16, −0.32, −0.64, −1.28 m	
Soil moisture probe	Delta-T Devices, UK	ML-2x	-	Both sites at: −0.08, −0.16, −0.32, −0.64, −1.28 m	
Photosynthetically active radiation sunshine sensor	Delta-T Devices, UK	BF3H	-	2 m	-
Precipitation: tipping bucket rain gauge (heated)	Adolf Thies GmbH, GER	5.4032. 35.009	-	2 m	-
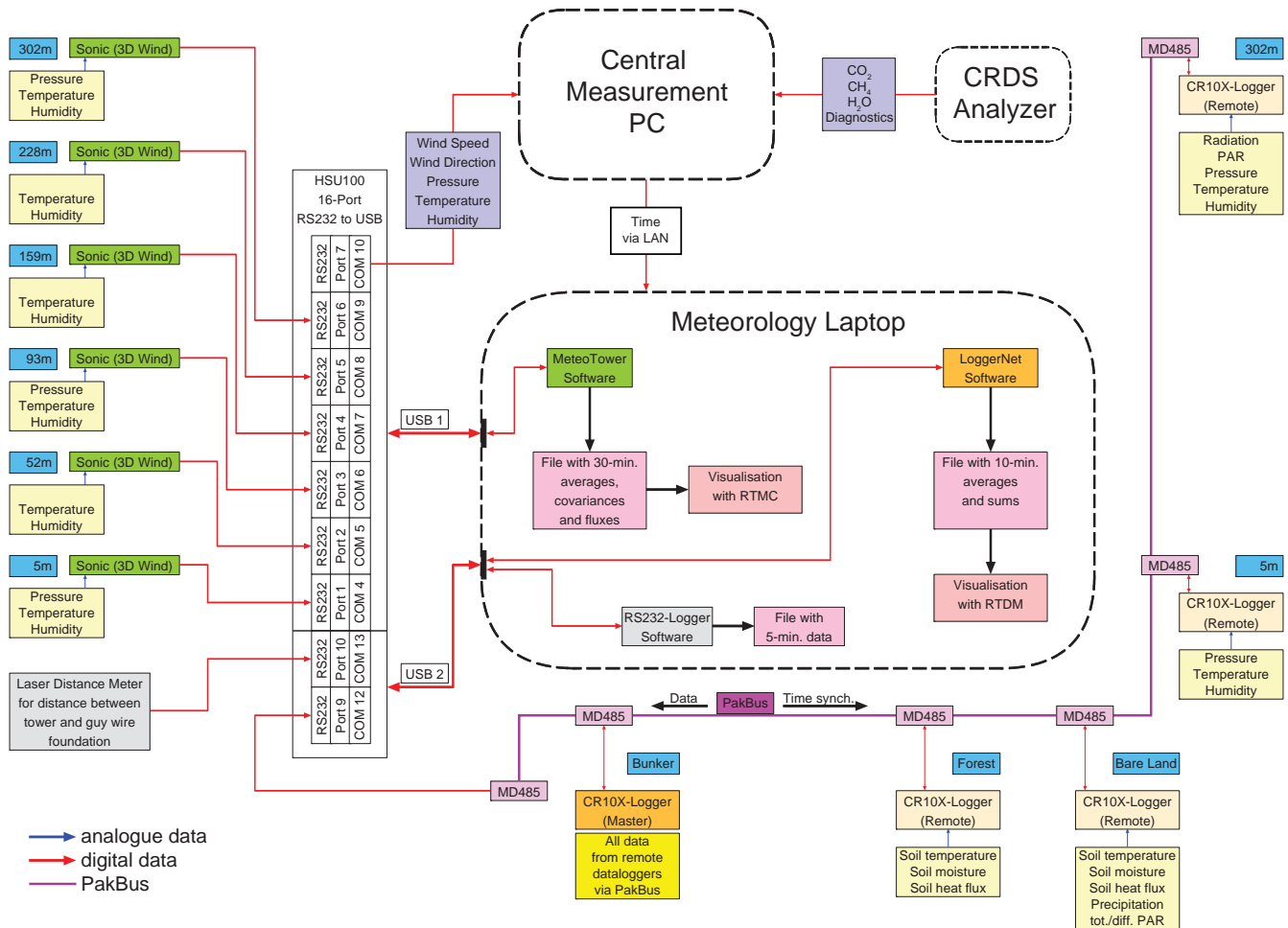
Fig. S1 Scheme of the meteorological measurement setup, the data handling and data distribution