

Meteorological Measurements

Meteorological measurements made at the Chilbolton Observatory include air temperature, relative humidity, atmospheric pressure, wind speed, wind direction, rainfall and solar radiation. Most sensors are commercially available. As far as possible all sensors are installed following UK Met Office guidelines for ideal location. Rainfall is also measured at Sparsholt College, approximately 8km to the SE of Chilbolton Observatory. Three main types of raingauge are used at both sites: drop counting, tipping bucket and disdrometer. The maintenance of the instruments is of paramount importance. Calibrations are performed routinely, and checking of all sensors is carried out daily.

Data from all sensors are sampled and recorded every 10 seconds. Acquisition sampling is completed using a National Instruments PXI-1050 PXI/SCXI chassis. The data are recorded to daily data files on a linux computer. An accurate network time protocol is used to regularly synchronise the computer clock time to a network time standard.

Real time data from these meteorological instruments can be viewed on the Chilbolton Weather Web at <http://www.chilbolton.stfc.ac.uk/Chilbolton/weather/24987.aspx>.

Following quality control checking, the data are archived and are available for download from the Chilbolton dataset at the British Atmospheric Data Centre (BADC): <http://badc.nerc.ac.uk>.



The specifications for the meteorological sensors are as follows:

	Manufacturer	Model Number	Range	Uncertainty	BADC datafile
Temperature	Vaisala	HMP155A	-80°C to +60°C	±0.3°C	met-sensors_chilbolton
Relative humidity	Vaisala	HMP155A	0-100% RH	±2% RH	met-sensors_chilbolton
Pressure	KDG solartron mobrey	4210	900 -1050 millibar	±0.3 millibar	met-sensors_chilbolton
Wind speed	Vector instruments	A100H	0.2m/s to 75m/s	1% of reading	met-sensors_chilbolton
Wind direction	Vector instruments	W200	360° full rotation	±4° in winds >2m/s	met-sensors_chilbolton

	Manufacturer	Model Number	Range	Uncertainty	BADC datafile
Tipping bucket gauge	RW Munro	R100	0.2mm/tip	not specified	multiple-raingauges_chilbolton
Drop counting gauge*	Chilbolton Group	Mk IV	0.004mm/drop	±10% rainrate	raingauge_chilbolton, multiple-raingauges_chilbolton
Low rate drop counting gauge*	Chilbolton Group	Mk IV	0.0018mm/drop	±10% rainrate	multiple-raingauges_chilbolton
Disdrometer	Distromet	RD-69 ADA-90	0.3 to 5.0mm drop diameter	±5% drop diameter	disdrometer_chilbolton

	Manufacturer	Model Number	Type	Resolution	BADC datafile
Digital cloud camera	JVC	KY-55BE	3-CCD RGB	768 x 576 60° x 44° FOV	cloud-camera_chilbolton
Axis cloud camera	Axis Communications	2100 Network Camera	¼"progressive scan RGB CCD	640x480	camera- axis2100_chilbolton

* please refer to the Drop Counting Gauge technical datasheet

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