Supplement of

Continuous meteorological surface and soil records (2004–2024) at the Met Office surface site of Cardington, UK.

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S1. Core meteorological and hydrological variables as stored in the **metofficeobr_fluxtower_cardington_YYYYMMDD_mm.nc** files at 1, 5, 10 and 30 minute time intervals. Note that not all variables are stored at all four times, e.g. the main difference being the variances and covariances of the turbulence data are only stored at 10 and 30 minutes. The start and end times of the logging for each variable are included below, which are naturally inconsistent on a research site of this nature where spin-up was required in the early months of the dataset and as sensors died and were replaced or retired, and as new technology became available and new installations occurred on the site.

start	end	variable name	description	manufacturer	mode	units	height [m]
04-08-2022	31-12-2024	wind_direction_40cm	Mean vector wind direction at 40cm	Gill	HS-50 Sonic Anemometer	°	0.4
04-08-2022	31-12-2024	wind_speed_scalar_40cm	Mean wind speed (scalar average) at 40cm	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	0.4
04-08-2022	31-12-2024	wind_speed_vector_40cm	Mean vector wind speed at 40cm	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	0.4
04-08-2022	31-12-2024	wind_speed_max_40cm	Maximum scalar wind speed over averaging period at 40cm	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	0.4
04-08-2022	31-12-2024	sonic_orientation_40cm	Orientation of sonic arm at 40cm	Gill	HS-50 Sonic Anemometer	°	0.4
04-08-2022	31-12-2024	tt_variance_40cm	Variance of sonic derived temperature at 40cm	Gill	HS-50 Sonic Anemometer	K^2	0.4
04-08-2022	31-12-2024	ut_covariance_40cm	Covariance of the horizontal wind in the direction of the mean wind vector with sonic derived temperature at 40cm	Gill	HS-50 Sonic Anemometer	$K\ m\ s^{-1}$	0.4
04-08-2022	31-12-2024	uu_variance_40cm	Variance of horizontal component of wind in the direction of the mean wind vector at 40cm	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	0.4
04-08-2022	31-12-2024	uv_covariance_40cm	Covariance of horizontal components of the wind in the direction of and perpendicular to the mean wind vector at 40cm	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	0.4
04-08-2022	31-12-2024	uw_covariance_40cm	Covariance of horizontal component of the wind in the direction of the mean wind vector and w-vertical component of wind at 40cm	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	0.4
04-08-2022	31-12-2024	vv_variance_40cm	Variance of horizontal component of wind perpendicular to the mean wind vector at 40cm	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	0.4
04-08-2022	31-12-2024	vw_covariance_40cm	Covariance of horizontal component of the wind perpendicular to the direction of the mean wind vector and w-vertical component of wind at 40cm	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	0.4
04-08-2022	31-12-2024	wt_covariance_40cm	Covariance of w-vertical component of wind with sonic derived temperature at 40cm	Gill	HS-50 Sonic Anemometer	$K\ m\ s^{-1}$	0.4
04-08-2022	31-12-2024	ww_variance_40cm	Variance of w-vertical upwards component of wind at 40cm	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	0.4

15-08-2019	31-12-2024	air_temperature_prt_1p2m	Mean temperature, platinum resistance thermometer, mounted in an aspirated screen at 1.2m	SDL	Automatic Systems Laboratories	°C	1.2
01-01-2020	31-12-2024	air_temperature_rtd_1p2m	Mean temperature, resistance temperature detector, mounted in an aspirated screen at 1.2m	Vaisala	HMP155	°C	1.2
01-01-2020	31-12-2024	dewpoint_temperature_1p2m	Mean dewpoint temperature (on scale), mounted in an aspirated screen at 1.2m	Vaisala	HMP155	°C	1.2
01-01-2020	31-12-2024	relative_humidity_hmp155_1p2m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 1.2m	Vaisala	HMP155	%	1.2
12-04-2011	31-12-2024	wind_direction_2m	Mean vector wind direction at 2m	Gill	HS-50 Sonic Anemometer	°	2
12-04-2011	31-12-2024	wind_speed_scalar_2m	Mean wind speed (scalar average) at 2m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	2
12-04-2011	31-12-2024	wind_speed_vector_2m	Mean vector wind speed at 2m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	2
12-04-2011	31-12-2024	wind_speed_max_2m	Maximum scalar wind speed over averaging period at 2m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	2
12-04-2011	31-12-2024	sonic_orientation_2m	Orientation of sonic arm at 2m	Gill	HS-50 Sonic Anemometer	°	2
12-04-2011	31-12-2024	tt_variance_2m	Variance of sonic derived temperature at 2m	Gill	HS-50 Sonic Anemometer	K^2	2
12-04-2011	31-12-2024	ut_covariance_2m	Covariance of the horizontal wind in the direction of the mean wind vector with sonic derived temperature at 2m	Gill	HS-50 Sonic Anemometer	$K\ m\ s^{-1}$	2
12-04-2011	31-12-2024	uu_variance_2m	Variance of horizontal component of wind in the direction of the mean wind vector at 2m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	2
12-04-2011	31-12-2024	uv_covariance_2m	Covariance of horizontal components of the wind in the direction of and perpendicular to the mean wind vector at 2m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	2
12-04-2011	31-12-2024	uw_covariance_2m	Covariance of horizontal component of the wind in the direction of the mean wind vector and w-vertical component of wind at 2m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	2
12-04-2011	31-12-2024	vv_variance_2m	Variance of horizontal component of wind perpendicular to the mean wind vector at 2m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	2

12-04-2011	31-12-2024	vw_covariance_2m	Covariance of horizontal component of the wind perpendicular to the direction of the mean wind vector and w-vertical component of wind at 2m	Gill	HS-50 Sonic Anemometer	$m^2 s^{-2}$	2
12-04-2011	31-12-2024	wt_covariance_2m	Covariance of w-vertical component of wind with sonic derived temperature at 2m	Gill	HS-50 Sonic Anemometer	$K m s^{-1}$	2
12-04-2011	31-12-2024	ww_variance_2m	Variance of w-vertical upwards component of wind at 2m	Gill	HS-50 Sonic Anemometer	$m^2 s^{-2}$	2
20-06-2024	31-12-2024	specific_humidity_2m	Mean specific humidity at 2m	Licor	LI7500 open path gas analyser	$g kg^{-1}$	2
20-06-2024	31-12-2024	co2_concentration_2m	Mean CO2 concentration at 2m	Licor	LI7500 open path gas analyser	ppm	2
20-06-2024	31-12-2024	wq_covariance_2m	Covariance of w-vertical component of wind with absolute humidity at 2m	Gill-Licor	HS-50 Sonic Anemometer-LI7500	$kg m^{-2} s^{-1}$	2
20-06-2024	31-12-2024	wco2_covariance_2m	Covariance of w-vertical component of wind with carbon dioxide at 2m	Gill-Licor	HS-50 Sonic Anemometer-LI7500	$kg m^{-2} s^{-1}$	2
20-06-2024	31-12-2024	qq_variance_2m	Variance of absolute humidity at 2m	Licor	LI7500 open path gas analyser	$kg^2 m^{-6}$	2
22-11-2004	31-12-2024	air_temperature_prt_1p2m	Mean temperature, platinum resistance thermometer, mounted in an aspirated screen at 10m	Vector	Platinum Resistance Thermometer, T302	°C	10
01-01-2020	31-12-2024	air_temperature_rtd_10m	Mean temperature, resistance temperature detector, mounted in an aspirated screen at 10m	Vaisala	HMP155	°C	10
01-01-2020	31-12-2024	dewpoint_temperature_25m	Mean dewpoint temperature (on scale), mounted in an aspirated screen at 10m	Vaisala	HMP155	°C	10
04-11-2013	31 12 2019, then intermittently	relative_humidity_10m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 10m	Vaisala	HMP155	%	10
01-01-2020	31-12-2024	relative_humidity_10m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 10m	Vaisala	HMP155	%	10
22-11-2004	31-12-2024	wind_direction_10m	Mean vector wind direction at 10m	Gill	HS-50 Sonic Anemometer	°	10
17-02-2005	31-12-2024	wind_speed_scalar_10m	Mean wind speed (scalar average) at 10m	Gill	HS-50 Sonic Anemometer	$m s^{-1}$	10

22-11-2004	31-12-2024	wind_speed_vector_10m	Mean vector wind speed at 10m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	10
22-11-2004	31-12-2024	wind_speed_max_10m	Maximum scalar wind speed over averaging period at 10m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	10
22-11-2004	31-12-2024	sonic_orientation_10m	Orientation of sonic arm at 10m	Gill	HS-50 Sonic Anemometer	°	10
29-06-2005	19-10-2005	pressure_barometric_10m	Mean pressure at 10m, 40m above mean sea level	Setra	Model 270 transducer	hPa	10
22-11-2004	31-12-2024	tt_variance_10m	Variance of sonic derived temperature at 10m	Gill	HS-50 Sonic Anemometer	K^2	10
22-11-2004	31-12-2024	ut_covariance_10m	Covariance of the horizontal wind in the direction of the mean wind vector with sonic derived temperature at 10m	Gill	HS-50 Sonic Anemometer	$K\ m\ s^{-1}$	10
22-11-2004	31-12-2024	uu_variance_10m	Variance of horizontal component of wind in the direction of the mean wind vector at 10m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	10
22-11-2004	31-12-2024	uv_covariance_10m	Covariance of horizontal components of the wind in the direction of and perpendicular to the mean wind vector at 10m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	10
22-11-2004	31-12-2024	uw_covariance_10m	Covariance of horizontal component of the wind in the direction of the mean wind vector and w-vertical component of wind at 10m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	10
22-11-2004	31-12-2024	vv_variance_10m	Variance of horizontal component of wind perpendicular to the mean wind vector at 10m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	10
22-11-2004	31-12-2024	vw_covariance_10m	Covariance of horizontal component of the wind perpendicular to the direction of the mean wind vector and w-vertical component of wind at 10m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	10
22-11-2004	31-12-2024	wt_covariance_10m	Covariance of w-vertical component of wind with sonic derived temperature at 10m	Gill	HS-50 Sonic Anemometer	$K\ m\ s^{-1}$	10
22-11-2004	31-12-2024	ww_variance_10m	Variance of w-vertical upwards component of wind at 10m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	10
22-11-2004	31-12-2024	specific_humidity_10m	Mean specific humidity at 10m	Licor	LI7500 open path gas analyser	$g\ kg^{-1}$	10
22-11-2004	31-12-2024	co2_concentration_10m	Mean CO2 concentration at 10m	Licor	LI7500 open path gas analyser	ppm	10

22-11-2004	31-12-2024	wq_covariance_10m	Covariance of w-vertical component of wind with absolute humidity at 10m	Gill-Licor	HS-50 Sonic Anemometer-LI7500	kg m^{-2} s^{-1}	10
22-11-2004	28-02-2021	wco2_covariance_10m	Covariance of w-vertical component of wind with carbon dioxide at 10m	Gill-Licor	HS-50 Sonic Anemometer-LI7500	kg m^{-2} s^{-1}	10
22-11-2004	31-12-2024	qq_variance_10m	Variance of absolute humidity at 10m	Licor	LI7500 open path gas analyser	kg^2 m^{-6}	10
06-09-2004	31-12-2024	air_temperature_prt_25m	Mean temperature, platinum resistance thermometer, mounted in an aspirated screen at 25m	Vector	Platinum Resistance ThermometerT 302	°C	25
01-01-2020	31-12-2024	air_temperature_rtd_25m	Mean temperature, resistance temperature detector, mounted in an aspirated screen at 25m, sensor A	Vaisala	HMP155	°C	25
02-03-2021	31-12-2024	air_temperature_rtd_25m_B	Mean temperature, resistance temperature detector, mounted in an aspirated screen at 25m, sensor B	Vaisala	HMP155	°C	25
12-09-2013	31-12-2024	dewpoint_temperature_25m	Mean dewpoint temperature (on scale), mounted in an aspirated screen at 25m, sensor A	Vaisala	HMP155	°C	25
02-03-2021	31-12-2024	dewpoint_temperature_25m_B	Mean dewpoint temperature (on scale), mounted in an aspirated screen at 25m, sensor B	Vaisala	HMP155	°C	25
06-09-2004	11-09-2013	relative_humidity_25m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 25m		Humicap	%	25
12-09-2013	31-12-2019	relative_humidity_25m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 25m, sensor A	Vaisala	HMP155	%	25
01-01-2020	31-12-2024	relative_humidity_25m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 25m, sensor A	Vaisala	HMP155	%	25
02-03-2021	31-12-2024	relative_humidity_25m_B	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 25m, sensor B	Vaisala	HMP155	%	25
06-09-2004	31-12-2024	wind_direction_25m	Mean vector wind direction at 25m	Gill	HS-50 Sonic Anemometer	°	25
17-02-2005	31-12-2024	wind_speed_scalar_25m	Mean wind speed (scalar average) at 25m	Gill	HS-50 Sonic Anemometer	m s^{-1}	25
06-09-2004	31-12-2024	wind_speed_vector_25m	Mean vector wind speed at 25m	Gill	HS-50 Sonic Anemometer	m s^{-1}	25

06-09-2004	31-12-2024	wind_speed_max_25m	Maximum scalar wind speed over averaging period at 25m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	25
06-09-2004	31-12-2024	sonic_orientation_25m	Orientation of sonic arm at 25m	Gill	HS-50 Sonic Anemometer	°	25
06-09-2004	31-12-2024	tt_variance_25m	Variance of sonic derived temperature at 25m	Gill	HS-50 Sonic Anemometer	K^2	25
06-09-2004	31-12-2024	ut_covariance_25m	Covariance of the horizontal wind in the direction of the mean wind vector with sonic derived temperature at 25m	Gill	HS-50 Sonic Anemometer	$K\ m\ s^{-1}$	25
06-09-2004	31-12-2024	uu_variance_25m	Variance of horizontal component of wind in the direction of the mean wind vector at 25m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	25
06-09-2004	31-12-2024	uv_covariance_25m	Covariance of horizontal components of the wind in the direction of and perpendicular to the mean wind vector at 25m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	25
06-09-2004	31-12-2024	uw_covariance_25m	Covariance of horizontal component of the wind in the direction of the mean wind vector and w-vertical component of wind at 25m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	25
06-09-2004	31-12-2024	vv_variance_25m	Variance of horizontal component of wind perpendicular to the mean wind vector at 25m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	25
06-09-2004	31-12-2024	vw_covariance_25m	Covariance of horizontal component of the wind perpendicular to the direction of the mean wind vector and w-vertical component of wind at 25m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	25
06-09-2004	31-12-2024	wt_covariance_25m	Covariance of w-vertical component of wind with sonic derived temperature at 25m	Gill	HS-50 Sonic Anemometer	$K\ m\ s^{-1}$	25
06-09-2004	31-12-2024	ww_variance_25m	Variance of w-vertical upwards component of wind at 25m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	25
06-09-2004	11-09-2013	wqh_covariance_25m	Covariance of w-vertical component of wind with relative humidity at 25m	Gill	HS-50 Sonic Anemometer-humicap	$kg\ m^{-2}\ s^{-1}$	25
28-05-2004	31-12-2024	air_temperature_prt_50m	Mean temperature, platinum resistance thermometer, mounted in an aspirated screen at 50m	Vector	Platinum Resistance ThermometerT 302	°C	50
01-01-2020	31-12-2024	air_temperature_rtd_50m	Mean temperature, resistance temperature detector, mounted in an aspirated screen at 50m, sensor A	Vaisala	HMP155	°C	50

03-03-2021	31-12-2024	air_temperature_rtd_50m_B	Mean temperature, resistance temperature detector, mounted in an aspirated screen at 50m, sensor B	Vaisala	HMP155	°C	50
01-01-2020	31-12-2024	dewpoint_temperature_50m	Mean dewpoint temperature (on scale), mounted in an aspirated screen at 50m, sensor A	Vaisala	HMP155	°C	50
03-03-2021	31-12-2024	dewpoint_temperature_50m_B	Mean dewpoint temperature (on scale), mounted in an aspirated screen at 50m, sensor B	Vaisala	HMP155	°C	50
28-05-2004	16-07-2013	relative_humidity_50m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 50m, sensor A	Vaisala	Humicap	%	50
17-07-2013	31-12-2019	relative_humidity_50m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 50m, sensor A	Vaisala	HMP155	%	50
01-01-2020	31-12-2024	relative_humidity_50m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 50m, sensor A	Vaisala	HMP155	%	50
03-03-2021	31-12-2024	relative_humidity_50m_B	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 50m, sensor B	Vaisala	HMP155	%	50
28-05-2004	31-12-2024	wind_direction_50m	Mean vector wind direction at 50m	Gill	HS-50 Sonic Anemometer	°	50
17-02-2005	31-12-2024	wind_speed_scalar_50m	Mean wind speed (scalar average) at 50m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	50
28-05-2004	31-12-2024	wind_speed_vector_50m	Mean vector wind speed at 50m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	50
28-05-2004	31-12-2024	wind_speed_max_50m	Maximum scalar wind speed over averaging period at 50m	Gill	HS-50 Sonic Anemometer	$m\ s^{-1}$	50
28-05-2004	31-12-2024	sonic_orientation_50m	Orientation of sonic arm at 50m	Gill	HS-50 Sonic Anemometer	°	50
28-05-2004	31-12-2024	tt_variance_50m	Variance of sonic derived temperature at 50m	Gill	HS-50 Sonic Anemometer	K^2	50
28-05-2004	31-12-2024	ut_covariance_50m	Covariance of the horizontal wind in the direction of the mean wind vector with sonic derived temperature at 50m	Gill	HS-50 Sonic Anemometer	$K\ m\ s^{-1}$	50
28-05-2004	31-12-2024	uu_variance_50m	Variance of horizontal component of wind in the direction of the mean wind vector at 50m	Gill	HS-50 Sonic Anemometer	$m^2\ s^{-2}$	50

28-05-2004	31-12-2024	uv_covariance_50m	Covariance of horizontal components of the wind in the direction of and perpendicular to the mean wind vector at 50m	Gill	HS-50 Sonic Anemometer	$m^2 s^{-2}$	50
28-05-2004	31-12-2024	uw_covariance_50m	Covariance of horizontal component of the wind in the direction of the mean wind vector and w-vertical component of wind at 50m	Gill	HS-50 Sonic Anemometer	$m^2 s^{-2}$	50
28-05-2004	31-12-2024	vv_variance_50m	Variance of horizontal component of wind perpendicular to the mean wind vector at 50m	Gill	HS-50 Sonic Anemometer	$m^2 s^{-2}$	50
28-05-2004	31-12-2024	vw_covariance_50m	Covariance of horizontal component of the wind perpendicular to the direction of the mean wind vector and w-vertical component of wind at 50m	Gill	HS-50 Sonic Anemometer	$m^2 s^{-2}$	50
28-05-2004	31-12-2024	wt_covariance_50m	Covariance of w-vertical component of wind with sonic derived temperature at 50m	Gill	HS-50 Sonic Anemometer	$K m s^{-1}$	50
28-05-2004	31-12-2024	ww_variance_50m	Variance of w-vertical upwards component of wind at 50m	Gill	HS-50 Sonic Anemometer	$m^2 s^{-2}$	50
28-05-2004	16-07-2013	wqh_covariance_50m	Covariance of w-vertical component of wind with relative humidity at 50m	Gill	HS-50 Sonic Anemometer-humicap	$kg m^{-2} s^{-1}$	50
19-01-2021	31-12-2024	precipitation_intensity	Precipitation intensity from present weather sensor at 2m	Campbell	CS125	$mm h^{-1}$	2
19-01-2021	31-12-2024	synop_code	SYNOP present weather code (FM-12)	Campbell	CS125		2
19-01-2021	31-12-2024	visibility_cs125_2m	Visibility at 2m	Campbell	CS125	km	2
04-07-2011 13-01-2017	30-08-2014 28-02-2021	precipitation_intensity	Precipitation from present weather sensor at 2m	Biral	HSS VPF-730	mm	2
01-01-2020	31-12-2024	rain_pws_mm	Rainfall from present weather sensor at 2m	Biral	HSS VPF-730	mm	2
04-07-2011 13-01-2017	30-08-2014 28-02-2021	visibility_vpf730_2m	Visibility at 2m	Biral	HSS VPF-730	m	2
04-07-2011 13-01-2017	01-09-2014 28-02-2021	present_weather_WMO_code	Present weather WMO code table 4680	Biral	HSS VPF-730		2

23-11-2004	31-12-2024	visibility_belfort_2m	Visibility at 2m	Belfort	6230A	m	2
07-04-2011	17-12-2022	nephelometer_scatter_4m	Nephelometer aerosol scattering coefficient at 4m	Optec	Nephelometer NGN-3A	km^{-1}	4
01-10-2004	06-04-2011	nephelometer_scatter_4m	Nephelometer aerosol scattering coefficient at 4m	MRI	integrating nephelometer 1550B	km^{-1}	4
01-10-2004	30-06-2005	infrared_temperature_concrete	Infra-red temperature of concrete surface. Pryometer placed at 2m distance from surface, facing DIRECTION, approx 30 degrees from vertical	Heitronics	KT15D Infrared Pyrometer	°C	2
01-10-2004	31-12-2024	infrared_temperature_grass	Infra-red temperature of grass surface. Pyrometer placed at 2m distance from surface, facing DIRECTION approx 30 degrees from vertical	Heitronics	KT15D Infrared Pyrometer	°C	2
01-10-2004	31-12-2024	lwrad_downwelling	Mean downwelling longwave radiative flux density, instrument at 2m	Kipp & Zonen	CG4 pyrgeometer	$W\ m^{-2}$	2
01-10-2004	31-12-2024	lwrad_upwelling	Mean upwelling longwave radiative flux density, instrument at 2m	Kipp & Zonen	CG4 pyrgeometer	$W\ m^{-2}$	2
01-10-2004	31-12-2024	diffuse_swrad_downwelling	Mean diffuse downwelling shortwave radiative flux density, instrument at 2m	Kipp & Zonen	CM21 pyranometer-2AP solar tracker	$W\ m^{-2}$	2
01-10-2004	31-12-2024	swrad_downwelling	Mean global downwelling shortwave radiative flux density, instrument at 2m	Kipp & Zonen	CM22 pyranometer	$W\ m^{-2}$	2
01-10-2004	31-12-2024	max_swrad_downwelling	Maximum global downwelling shortwave radiative flux density, instrument at 2m	Kipp & Zonen	CM22 pyranometer	$W\ m^{-2}$	2
01-10-2004	31-12-2024	swrad_upwelling	Mean upwelling shortwave radiative flux density, instrument at 2m	Kipp & Zonen	CM21 pyranometer	$W\ m^{-2}$	2
23-11-2004	31-12-2024	pressure_barometric	Barometric pressure 30m AMSL	Setra	Model 270 transducer	hPa	1.5
23-11-2004	31-12-2024	rain_tipping_bucket_mm	Rainfall from tipping bucket rain gauge	Met Office	MK5 tipping bucket rain gauge	mm	0
23-11-2004	28-02-2021	air_temperature_rtd_1p2m	Mean temperature, resistance temperature detector, mounted in an aspirated screen at 1.2m	Vaisala	HMP155	°C	1.2
03-08-2015	31-12-2024	air_temperature_rtd_1p2m	Mean temperature, resistance temperature detector, mounted in an aspirated screen at 1.2m	Vaisala	HMP155	°C	1.2

23-11-2004	13-11-2013	relative_humidity_humicap_1p2m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 1.2m	Vaisala	Humicap	%	1.2
14-11-2013	28-02-2021	relative_humidity_hmp155_1p2m	Mean relative humidity, capacitive humidity detector, mounted in an aspirated screen at 1.2m	Vaisala	HMP155	%	1.2
03-08-2015	31-12-2024	dewpoint_temperature_hmp155_1p2m	Mean dewpoint temperature (on scale), mounted in an aspirated screen at 1.2m	Vaisala	HMP155	°C	1.2
23-11-2004	13-11-2013	specific_humidity_1p2m	Mean specific humidity at 1.2m	Michell	S3000 Dewpoint Hygrometer	$g\ kg^{-1}$	1.2
23-11-2004	13-11-2013	relative_humidity_michell_1p2m	Mean relative humidity, chilled mirror dewpoint hygrometer, mounted in an aspirated screen at 1.2m	Michell	S3000 Dewpoint Hygrometer	%	1.2
23-11-2004	13-11-2013	dewpoint_temperature_michell_1p2m	Mean dewpoint temperature (on scale), mounted in an aspirated screen at 1.2m	Michell	S3000 Dewpoint Hygrometer	°C	1.2
29-09-2021	31-12-2024	temperature_15cm	15 cm air temperature, housed in an aspirated screen	Rotronics	HS2 hygroclip	°C	0.15
29-09-2021	31-12-2024	temperature_40cm	40 cm air temperature, housed in an aspirated screen	Rotronics	HS2 hygroclip	°C	0.4
29-09-2021	31-12-2024	relative_humidity_15cm	15 cm air relative humidity, housed in an aspirated screen	Rotronics	HS2 hygroclip	%	0.15
29-09-2021	31-12-2024	relative_humidity_40cm	40 cm air relative humidity, housed in an aspirated screen	Rotronics	HS2 hygroclip	%	0.4
14-05-2014	31-12-2024	relative_humidity_grass_canopy	Grass top air relative humidity, housed in an aspirated screen	Rotronics	HS2 hygroclip	%	0.08
28-11-2016	31-12-2024	relative_humidity_grass_canopy_B	Grass top air relative humidity, housed in an aspirated screen	Rotronics	HS2 hygroclip	%	0.08
14-05-2014	31-12-2024	temperature_grass_canopy	Grass top air temperature, housed in an aspirated screen	Rotronics	HS2 hygroclip	°C	0.08
28-11-2016	31-12-2024	temperature_grass_canopy_B	Grass top air temperature, housed in an aspirated screen	Rotronics	HS2 hygroclip	°C	0.08
08-03-2012	31-12-2024	soil_heat_flux_1cm_west	Soil heat flux, west site, at 1cm depth	Hukseflux	HFP01SC	$W\ m^{-2}$	-0.01
08-03-2012	31-12-2024	soil_heat_flux_1cm_south	Soil heat flux, south site, at 1cm depth	Hukseflux	HFP01SC	$W\ m^{-2}$	-0.01
01-01-2014	26-10-2023	temperature_soil_1cm_west	Soil temperature, west site, at 1cm depth	Delta-T	ST1	°C	-0.01
01-01-2014	26-10-2023	temperature_soil_4cm_west	Soil temperature, west site, at 4cm depth	Delta-T	ST1	°C	-0.04

01-01-2014	26-10-2023	temperature_soil_17cm_west	Soil temperature, west site, at 7cm depth	Delta-T	ST1	°C	-0.07
01-01-2014	26-10-2023	temperature_soil_10cm_west	Soil temperature, west site, at 10cm depth	Delta-T	ST1	°C	-0.1
01-01-2014	26-10-2023	temperature_soil_17cm_west	Soil temperature, west site, at 17cm depth	Delta-T	ST1	°C	-0.17
01-01-2014	26-10-2023	temperature_soil_35cm_west	Soil temperature, west site, at 35cm depth	Delta-T	ST1	°C	-0.35
01-01-2014	26-10-2023	temperature_soil_65cm_west	Soil temperature, west site, at 65cm depth	Delta-T	ST1	°C	-0.65
01-01-2014	26-10-2023	temperature_soil_1m_west	Soil temperature, west site, at 1m depth	Delta-T	ST1	°C	-1
23-11-2004	31-12-2024	moisture_soil_10cm_west	Soil moisture, west site, at 10cm depth	Delta-T	ThetaProbe	%	-0.1
23-11-2004	31-12-2024	moisture_soil_22cm_west	Soil moisture, west site, at 22cm depth	Delta-T	ThetaProbe	%	-0.22
23-11-2004	31-12-2024	moisture_soil_1p6m_west	Soil moisture, west site, at 1.6m depth	Delta-T	ThetaProbe	%	-1.6
23-11-2004	31-12-2024	moisture_soil_57cm_west	Soil moisture, west site, at 57cm depth	Delta-T	ThetaProbe	%	-0.57
23-11-2004	31-12-2024	water_table_depth_west	Water table depth, west site	Druck	1830 pressure transducer	mm	-2
25-10-2004	31-12-2024	water_table_depth_south	Water table depth, south site	Druck	1830 pressure transducer	mm	-2
01-01-2020	31-12-2024	moisture_soil_5cm_south	Soil moisture, south site, at 5cm depth	Delta-T	PR2	%	-0.05
25-10-2004	31-12-2024	moisture_soil_10cm_south	Soil moisture, south site, at 10cm depth	Delta-T	ThetaProbe	%	-0.1
25-10-2004	31-12-2024	moisture_soil_22cm_south	Soil moisture, south site, at 22cm depth	Delta-T	ThetaProbe	%	-0.22
25-10-2004	31-12-2024	moisture_soil_1p6m_south	Soil moisture, south site, at 1.6m depth	Delta-T	ThetaProbe	%	-1.6
25-10-2004	31-12-2024	moisture_soil_57cm_south	Soil moisture, south site, at 57cm depth	Delta-T	ThetaProbe	%	-0.57
01-03-2018	31-12-2024	moisture_soil_10cm_south_B	Soil moisture, south site, at 10cm depth	Delta-T	PR2 Profile Probe	%	-0.1
01-03-2018	31-12-2024	moisture_soil_20cm_south_B	Soil moisture, south site, at 20cm depth	Delta-T	PR2 Profile Probe	%	-0.2

01-03-2018	31-12-2024	moisture_soil_30cm_south_B	Soil moisture, south site, at 30cm depth	Delta-T	PR2 Profile Probe	%	-0.3
01-03-2018	31-12-2024	moisture_soil_40cm_south_B	Soil moisture, south site, at 40cm depth	Delta-T	PR2 Profile Probe	%	-0.4
01-03-2018	31-12-2024	moisture_soil_60cm_south_B	Soil moisture, south site, at 60cm depth	Delta-T	PR2 Profile Probe	%	-0.6
01-03-2018	31-12-2024	moisture_soil_1m_south_B	Soil moisture, south site, at 1m depth	Delta-T	PR2 Profile Probe	%	-1
26-10-2004	31-12-2024	temperature_soil_1cm_south	Soil temperature, south site, at 1cm depth	Delta-T	ST2-396	°C	-0.01
26-10-2004	31-12-2024	temperature_soil_4cm_south	Soil temperature, south site, at 4cm depth	Delta-T	ST2-396	°C	-0.04
26-10-2004	31-12-2024	temperature_soil_17cm_south	Soil temperature, south site, at 7cm depth	Delta-T	ST2-396	°C	-0.07
26-10-2004	31-12-2024	temperature_soil_10cm_south	Soil temperature, south site, at 10cm depth	Delta-T	ST2-396	°C	-0.1
26-10-2004	31-12-2024	temperature_soil_17cm_south	Soil temperature, south site, at 17cm depth	Delta-T	ST2-396	°C	-0.17
26-10-2004	31-12-2024	temperature_soil_1m_south	Soil temperature, south site, at 1m depth	Delta-T	ST2-396	°C	-1
26-10-2004	31-12-2024	temperature_soil_35cm_south	Soil temperature, south site, at 35cm depth	Delta-T	ST2-396	°C	-0.35
26-10-2004	31-12-2024	temperature_soil_65cm_south	Soil temperature, south site, at 65cm depth	Delta-T	ST2-396	°C	-0.65

S2 Variables in the JULES land surface model forcing netCDF files

variable name	long_name	units
time	time of data point	hours since 1970-01-01 00:00:00Z calendar=standard
Temperature (Tair)	air_temperature	K
Pressure (PSurf)	air_pressure	Pa
Rainfall (Rainf)	rainfall_rate	Kg m^{-2} s^{-1}
mean horizontal wind (windspeed)	wind_speed	m^{-1}
specific humidity (Qair)	specific_humidity	Kg kg^{-1}
shortwave irradiance (SWdown)	downwelling_shortwave_flux_in_air	W m^{-2}
longwave irradiance (LWdown)	downwelling_longwave_flux_in_air	W m^{-2}

S3 Variables in the WVR-1100 radiometer NetCDF files

variable name	long_name	units
time	time of data point	hours since 1970-01-01 00:00:00Z calendar=standard
iwv	Integrated water vapour	kg m^{-2}
lwp	Liquid water path	kg m^{-2}
ts23	Brightness temperature at 23.8GHz	K
ts31	Brightness temperature at 31.4GHz	K
tkBB	Blackbody temperature	K
tau23	Optical thickness at 23.8GHz	
tau31	Optical thickness at 31.4GHz	
azim	Azimuth	°
elev	Elevation	°
rain_flag	Rain flag	0=no rain, 1=raining

S4 Variables in the Humpro radiometer NetCDF files

variable name	long_name	notes	units
Time	hours since 1970-01-01 00:00:00 UTC	time of measurement	calendar=standard
Elevation	viewing_elevation_angle	-90=blackbody view, 0=horizontal view, 90=zenith view, 180=horizontal view (2nd quadrant)	◦
rain_flag	Rain flag	0 = no rain, 1 = raining	
lwp	Liquid water path	retrieval=Neural network	g m^{-2}
iwv	Integrated water vapour	retrieval=Neural network	kg m^{-2}
irt	Infrared sky temperature		°C
brightness	Brightness temperature		K
channel_frequency	channel centre frequency		GHz
attenuation	Atmospheric attenuation		dB
pressure	Atmospheric pressure	source=Lufft WS600-UMB weather station,height=2.5	hPa
temperature	air temperature	source=Lufft WS600-UMB weather station ,height=2.5	K
humidity	Relative humidity	source=Lufft WS600-UMB weather station ,height=2.5	%
wind_speed	Wind speed	source=Lufft WS600-UMB weather station ,height=2.5	m s^{-1}
wind_dirn	Wind direction	source=Lufft WS600-UMB weather station,height=2.5	◦
rain_rate	Rainfall rate	source=Lufft WS600-UMB weather station, height=2.5	mm h^{-1}

S5 Variables in the TP/WVP-3000 radiometer NetCDF files

variable name	long_name	units
time	hours since 1970-01-01 00:00:00Z	time of data point , calendar=standard
iwv	Integrated water vapour	kg m^{-2}
lwp	Liquid water path	kg m^{-2}
air_temp	Air temperature	K
pressure	Air pressure	hPa
rhum	Relative humidity	%
rain	rain_flag	0=no rain, 1=rain
bbtemp	Black body temperature	K
azimuth	Azimuth angle	°
elevation	Elevation angle	°
channel_frequency	channel frequency	GHz
brightness	Brightness temperature	K
level	Height above ground	km
temperature	Temperature profile	K
vapour	Water vapour profile	g m^{-3}
rhprof	Relative humidity profile	%
liquid	Liquid water profile	g m^{-3}

S6 Variables in the Halo Doppler lidar NetCDF files.

S6.1 *stare, dbs-scans, vad-scans, rhi-scans* and *cross-stare* type files all have similar variables

variable name	**long_name**	**note**	**units**
time	hours since 1970-01-01 00:00:00 UTC	calendar=standard, time at start of wind profile scan cycle	
range	distance to center of range gate	radial distance	m
intensity	SNR + 1	signal-to-noise + 1	
doppler_velocity	radial velocity	positive velocity is away from the lidar	m s^{-1}
backscatter	attenuated backscatter		m^{-1} sr^{-1}
elevation	elevation of measurement path		°
azimuth	azimuth of measurement path		°

S6.2 wind scan variables (derived from all DBS, VAD and RHI scans) within the *windprofiles* type files

variable name	**long_name**	**note**	**units**
time	hours since 1970-01-01 00:00:00 UTC	calendar=standard, time at start of wind profile scan cycle	
height	Height above ground		m
inten_mask	Intensity filter applied to data during processing		
scan_type	Lidar scan type used to derive wind profile		1=DBS, 2=VAD scan (6 point), 3=VAD scan (12 point)
wind_u	Zonal wind component (towards the East)	standard_name=eastward_wind	m s^{-1}
wind_v	Meridional wind component (towards the North)	standard_name=northward_wind	m s^{-1}
wind_w	Vertical wind component (positive upwards)	standard_name=upward_air_velocity,	m s^{-1}
wind_speed	Horizontal wind speed	standard_name=wind_speed	m s^{-1}
wind_direction	Wind direction	standard_name=wind_from_direction	°

S7 Variables in the disdrometer NetCDF files

variable name	**long_name**	**units**
time (calendar=gregorian)	Time at end of measurement period	hours since 1970-01-01 00:00:00Z
synop_4677_5min	5 minute mean SYNOP code (Table 4677)	code_table="-1=Sensor error, -2=Unknown precipitation, slight, -3=Unknown precipitation, moderate, -4=Unknown precipitation, heavy, 0=No precipitation, 51=Drizzle, slight, 53=Drizzle, moderate, 55=Drizzle, heavy, 58=Drizzle and rain, slight, 59=Drizzle and rain, moderate/heavy, 61=Rain, slight, 63=Rain, moderate, 65=Rain, heavy, 68=Rain/drizzle and snow, slight, 69=Rain/drizzle and snow, moderate/heavy, 71=Snow, slight, 73=Snow, moderate, 75=Snow, heavy, 77=Snow grains, 87=Ice pellets, slight, 88=Ice pellets, moderate/heavy, 89=Hail, slight, 90=Hail, moderate/heavy
synop_4680_5min	5 minute mean SYNOP code (Table 4680)	code_table="-1=Sensor error, 0=No precipitation, 40=Unknown precipitation, 41=Unknown precipitation, slight/moderate, 42=Unknown precipitation, heavy, 51=Drizzle, slight, 52=Drizzle, moderate, 53=Drizzle, heavy, 57=Drizzle and rain, slight, 58=Drizzle and rain, moderate/heavy, 61=Rain, slight, 62=Rain, moderate, 63=Rain, heavy, 67=Rain/drizzle and snow, slight, 68=Rain/drizzle and snow, moderate/heavy, 71=Snow, slight, 72=Snow, moderate, 73=Snow, heavy, 74=Ice pellets, slight, 75=Ice pellets, moderate, 76=Ice pellets, heavy, 77=Snow grains, 89=Hail, slight
metar_5min	5 minute mean METAR code (Table 4678)	code_table="?????=Sensor error, -UP=Unknown precipitation, slight, UP=Unknown precipitation, moderate, +UP=Unknown precipitation, heavy, NP=No precipitation, -DZ=Drizzle, slight, DZ=Drizzle, moderate, +DZ=Drizzle, heavy, -RADZ=Drizzle and rain, slight, RADZ=Drizzle and rain, moderate, +RADZ=Drizzle and rain, heavy, -RA=Rain, slight, RA=Rain, moderate, +RA=Rain, heavy, -RASN=Rain/drizzle and snow, slight, RASN=Rain/drizzle and snow,

		moderate, +RASN=Rain/drizzle and snow, heavy, -SN=Snow, slight, SN=Snow, moderate, +SN=Snow, heavy, -SG=Snow grains, slight, SG=Snow grains, moderate, +SG=Snow grains, heavy, -GS=Small hail, slight, GS=Small hail, moderate, +GS=Small hail, heavy, GR=Hail
synop_4677_1min	1 minute SYNOP code (Table 4677)	code_table="-1=Sensor error, -2=Unknown precipitation, slight, -3=Unknown precipitation, moderate, -4=Unknown precipitation, heavy, 0=No precipitation, 51=Drizzle, slight, 53=Drizzle, moderate, 55=Drizzle, heavy, 58=Drizzle and rain, slight, 59=Drizzle and rain, moderate/heavy, 61=Rain, slight, 63=Rain, moderate, 65=Rain, heavy, 68=Rain/drizzle and snow, slight, 69=Rain/drizzle and snow, moderate/heavy, 71=Snow, slight, 73=Snow, moderate, 75=Snow, heavy, 77=Snow grains, 87=Ice pellets, slight, 88=Ice pellets, moderate/heavy, 89=Hail, slight, 90=Hail, moderate/heavy
synop_4680_1min	1 minute SYNOP code (Table 4680)	code_table="-1=Sensor error, 0=No precipitation, 40=Unknown precipitation, 41=Unknown precipitation, slight/moderate, 42=Unknown precipitation, heavy, 51=Drizzle, slight, 52=Drizzle, moderate, 53=Drizzle, heavy, 57=Drizzle and rain, slight, 58=Drizzle and rain, moderate/heavy, 61=Rain, slight, 62=Rain, moderate, 63=Rain, heavy, 67=Rain/drizzle and snow, slight, 68=Rain/drizzle and snow, moderate/heavy, 71=Snow, slight, 72=Snow, moderate, 73=Snow, heavy, 74=Ice pellets, slight, 75=Ice pellets, moderate, 76=Ice pellets, heavy, 77=Snow grains, 89=Hail, slight
intensity_5min	5 minute mean intensity	mm h^{-1}
intensity_1min	1 minute precipitation intensity	mm h^{-1}
intensity_1min_liquid	1 minute intensity liquid precipitation	mm h^{-1}
intensity_1min_solid	1 minute intensity solid precipitation	mm h^{-1}
accumulation_total	Total precipitation accumulation since last reset	mm

accumulation_daily	Precipitation accumulation since start of day	mm
vis_precip	Visibility in precipitation	m
radar_reflectivity	Radar reflectivity	dBZ
quality	Measuring quality	%
max_hail_diameter	Maximum hail diameter	mm
n_particles	Total number of particles during measurement period	
n_particles_minvel	Number of particles < minimal speed (0.15 m s^{-1})	
n_particles_maxvel	Number of particles > maximal speed (20 m s^{-1})	
n_particles_mindia	Number of particles < minimal diameter (0.15 mm)	
n_particles_no_hydro	Number of particles no hydrometeor	
particle_diameter_bins	Upper and lower limits of particle diameter bins	mm
particle_speed_bins	Upper and lower limits of particle speed bins	m s^{-1}
precipitation_spectrum	Number of particles in each size and speed bin	

S8 Variables in the LD25 and LD40 ceilometer netCDF files

variable name	long_name	units
time	time	hours since 1970-01-01 00:00:00Z
backscatter	backscatter	m^{-1} sr^{-1}
cloud_level1	Altitude of first cloud layer detected	m
cloud_level2	Altitude of second cloud layer detected	m
cloud_level3	Altitude of third cloud layer detected	m

cloud_penetration_depth1	Penetration depth of laser beam into first cloud layer	m
cloud_penetration_depth2	Penetration depth of laser beam into second cloud layer	m
cloud_penetration_depth3	Penetration depth of laser beam into third cloud layer	m
max_range_detection	maximum range of detection	m
vert_vis	Vertical visibility	m
height	Height above ceilometer	m
rain	Rain indicator	0 = no rain, 1 = light rain, 2 = moderate rain, 3 = heavy rain

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S9 Variables in the Radiosonde NetCDF files

variable name	long_name	units
time	time	hours since 1970-01-01 00:00:00Z
time:calendar=standard		
elapsed_time	Elapsed time	s
height	Geopotential height above mean sea level	m
height	altitude	m
air_pressure	Air pressure	hPa
air_temperature	Air temperature	K
relative_humidity	Relative humidity	%
dewpoint	dewpoint	K
mixr	mixing ratio	g kg^{-1}
potential_temperature	Potential temperature	K
wind_speed	wind speed	m s^{-1}
wind_direction	Wind direction	°

wind_north	Northerly wind component	m s^{-1}
wind_east	Easterly wind component	m s^{-1}
latitude	sonde latitude	° north
latitude	latitude	° north
longitude	sonde longitude	° east
longitude	longitude	° east
north	Radiosonde distance north from launch site	m
east	Radiosonde distance east from launch site	m
range	range of balloon from launch site	m
azimuth	bearing of balloon from launch site	°
ptu_status	PTU status flag	
ptu_status	info=0=OK	1=Pressure interpolated, 2=Height interpolated, 4=Temperature interpolated, 8=Humidity interpolated, 16=Telemetry break, 32=Adiabatic check failed, 64=Pressure from height interpolated
wind_interpolation	Wind interpolation flag	0 = not interpolated, 1 = interpolated
ascent_rate	Sonde ascent rate	m s^{-1}
mean_ascent_rate	Mean sonde ascent rate	m s^{-1}
mean_ascent_rate_to_400	Mean sonde ascent rate from surface to 400hPa level	m s^{-1}
mean_ascent_rate_400_to_termination	Mean sonde ascent rate from 400hPa level to termination	m s^{-1}
LCL_T	Temperature at Lifting Condensation Level	K
LCL_P	Pressure at Lifting Condensation Level	hPa
LCL_Z	Height of Lifting Condensation Level	m
LFC_P	Pressure at Level of Free Convection	hPa
LFC_T	Temperature at Level of Free Convection	K
LFC_Z	Height of Level of Free Convection	m

CINH	Convective Inhibition	J kg^{-1}
FreezingLevel	Height of Freezing Level	m
LI	Lifted Index	K
SI	Showalter Stability Index	K
K_index	K Index	K
TT_index	Total totals Index	K
S_index	S Index	K
Ko_index	KO Index	K
CCL_P	Pressure at Convective Condensation Level	hPa
CCL_T	Temperature at Convective Condensation Level	K
CCL_Z	Height of Convective Condensation Level	m
EL_P	Pressure at Equilibrium Level	hPa
EL_T	Temperature at Equilibrium Level	K
EL_Z	Height of Equilibrium Level	m
CAPE	Convective Available Potential Energy	J kg^{-1}

S10 Variables in the NCAS radar wind profiler netCDF files

variable name	**long_name**	**units**
time	time (seconds since 1970-01-01 00:00:00)	s
time_in_minutes_since_start_of_day	time_in_minutes_since_start_of_day	minutes
altitude	geometric height above geoid	m
eastward_wind	eastward wind component	m s^{-1}
northward_wind	northward wind component	m s^{-1}
upward_air_velocity	upward air velocity component	m s^{-1}
wind_speed	wind speed	m s^{-1}
wind_from_direction	wind from direction	°
signal_to_noise_ratio_beam_1	signal to noise ratio of beam 1 (back panel)	dB

signal_to_noise_ratio_beam_2	signal to noise ratio of beam 2 (side panel)	dB
signal_to_noise_ratio_beam_3	signal to noise ratio of beam 3 (vertical beam from the central panel)	dB
Signal_to_noise_ratio_minimum	minimum signal to noise ratio of the three beams	dB
spectral_width_of_beam_1	spectral width of beam 1 (back panel)	m s^{-1}
spectral_width_ of_ beam_2	spectral width of beam 2 (side panel)	m s^{-1}
spectral_width_ of_ beam_3	spectral width of beam 3 (vertical beam from centre panel)	m s^{-1}
skew_of_beam_1	skew of beam 1 (back panel)	m s^{-1}
skew_of_beam_2	skew of beam 2 (side panel)	m s^{-1}
Skew_of_beam_3	skew of beam 3 (vertical beam from centre panel)	m s^{-1}

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