

METEO file data description

The meteorological data are distributed in two different files:

- METESENS file where values are provided per sensor (ICOSETC_CC-###_METESENS_VP.csv, where CC-### is the official site code and VP is a two digits value that identifies the version of the processing), aggregated at 30 minutes resolution.
- METEO file where values are aggregated among sensors measuring the same variable at the same height or depth and for this reason representative of the ecosystem (ICOSETC_CC-###_METEO_VP.csv, where CC-### is the official site code and VP is a two digits value that identifies the version of the processing), aggregated at 30 minutes resolution.

For both the files data are provided without any gapfilling (see the FLUXNET file for these data). The data are a continuous timeseries with resolution of 30 minutes.

METESENS file

The variable codes are composed by a variable name (see table 1) and three numeric indexes or positional qualifiers, used to indicate relative positions of observations at the site (e.g. different points in space, along a vertical profile) or measured at the same position using two or more sensors (replicates). Since each variable is the aggregation of an higher time resolution file (1 to 60 seconds) it is also reported for each halfhour the standard deviation (identified by the suffix _SD) and the number of single measurements used in the calculate the halfhourly value (identified by the suffix _N).

It is possible to see the actual sensor position, the model, the serial number and the management/disturbances of the sensor using the SETUPINFO file that reports all the metadata including the variable code of the measurements generated by the sensor.

METEO file

The variable codes are composed by a variable name (see table 1) and in case of vertical profiles a numeric index used to indicate the relative height/depth. Since each variable is the aggregation of one or more sensors (average or sum) it is also reported for each halfhour the standard deviation (identified by the suffix _SD) and the number of sensors used in the calculate the spatially aggregated value (identified by the suffix _N).

It is possible to see the sensors used to calculate the aggregated variable (and then their position, the model etc. using the SETUPINFO file as for the METESENS file) using the METEOAGG file.

METEOAGG file: the file is a csv with four columns and follows a structure similar to the BIF (see SETUPINFO description). The first is the SITE_ID (official station code), the second is GROUP_ID that is a numeric index linking information related to the same variable, the third is the code of the variable aggregated (VARIABLE_AGGR) and the forth is the code of the variable produced by the

single sensor (VARIABLE_SENSOR). For example if for the station EU-Tst the spatially aggregated variable is TA and it is the average of two sensors producing TA_1_1_1 and TA_2_1_1, the table will report:

SITE_ID, GROUP_ID, VARIABLE_AGGR, VARIABLE_SENSOR

EU-Tst,1,TA, TA_1_1_1

EU-Tst,1,TA,TA_2_1_1

where the GROUP_ID could be any number but it is the same for the two lines because both are related to the variable TA.

Table 1: variables included in the meteo file and their units.

VARIABLE NAME	VARIABLE DESCRIPTION	UNIT
TIMESTAMP_START	ISO timestamp start of averaging period (up to a 12-digit integer as specified by the data's temporal resolution)	yyyymmddHHMM
TIMESTAMP_END	ISO timestamp end of averaging period (up to a 12-digit integer as specified by the data's temporal resolution)	yyyymmddHHMM
TS	Soil temperature	°C
SWC	Soil water content	%
G	Soil heat flux	W m-2
G_SF	calibration/sensitivity factor of G	μV (W m-2)-1
G_ISCAL	calibration flag for G (without digits)	dimensionless
WCP	Water column pressure (for WTD calculation)	Pa
WTD	Water table depth	m
TA	Air temperature	°C
PA	Air pressure	kPa
RH	Relative humidity	%
LW_T_BODY	Body temperature of LW sensor	°C
SW_T_BODY	Body temperature of SW sensor (when measured)	°C
SW_IN	ShortWave incoming radiation	W m-2
SW_OUT	ShortWave outgoing radiation	W m-2
SW_DIF	ShortWave diffuse radiation	W m-2
LW_IN	LongWave incoming radiation (corrected for T_BODY)	W m-2
LW_OUT	LongWave outgoing radiation (corrected for T_BODY)	W m-2
PPFD_IN	Photosynthetic photon flux density incoming	μmol m-2 s-1
PPFD_OUT	Photosynthetic photon flux density outgoing	μmol m-2 s-1
PPFD_DIF	Photosynthetic photon flux density diffuse	μmol m-2 s-1
PPFD_BC_IN	PPFD below canopy incoming	μmol m-2 s-1
PPFD_BC_OUT	PPFD below canopy outgoing	μmol m-2 s-1
P	Precipitation	mm
P_SNOW	Snow Fall	mm
THROUGHFALL	Throughfall	mm
STEMFLOW	Stem flow	mm
WS	Wind speed	m s-1

WD	Wind direction respect to geographic north	degrees N
D_SNOW	Snow depth	cm