

LEVEL 2 ECOSYSTEM PRODUCTS DESCRIPTION

The Level2 production

The ETC produces Level2 products using different type of raw:

- 10 or 20 Hz EC files from the eddy covariance system
- 1 second ST file with storage measurements
- 10 to 60 seconds measurements from meteorological sensors
- Metadata about sensors, station, team and other information
- Digital Hemispherical Photos and Ceptometer measurements for the GAI calculation
- Field Map files for the trees inventory
- Other ancillary data such species, biomass, litter-fall and others
- Soil and Vegetation samples for the chemical analysis of the content

All these files, data and information are processed in different ways in order to obtain the Level2 products that are of three different type:

- Timeseries, where values are reported continuously at a resolution typically of 30 minutes. These are ASCII files comma separated with dot as decimal indicator and one line of header with the variable names. The first two columns are the timestamp of start and end of the averaging period, in local winter time.
- Sporadic values are reported using the BIF (BADM Interchangeable Format, a standard in the international community) where information are provided together with a timestamp and a number of parameters. The BIF format consists of a csv file with 5 columns: site ID, group ID, variable group name, variable name, and data value. A variable group is a set of variables that are reported together (e.g. a variable value, the date it was collected, and the method used to collect it). Sites may report multiple instances of the same variable group associated with different measurements collected over time method, location, etc. The group ID uniquely identifies the data belonging to the same instance of a reported variable group. The variable names and data value provide the details of the reported data within a variable group.
- Meteorological variables management, with a format similar to the BIF (BIF_Meteo) but with four columns: site ID, group ID and two columns reporting output and input variable names.

Both the timeseries and BIF format are Level2 products to be distributed.

Specific Level2 files produced

In order to simplify the use of the large number of variable produced, the Level2 data are distributed using different files that includes variables/information that are coherent and designed for specific type of users. The files have one of the three formats described above (Timeseries, BIF, or Meteo management). Here below the description of each single file produced.

FLUXES: it contains the output of the eddy covariance measurements, including the quality check and filtering and the storage component. It has also the footprint information.

- File name structure: ICOSETC_CC-###_FLUXES_VP.csv (where CC-### is the official site code and VP is a two digits value that identifies the version of the processing)
- Variables description: ICOSETC_FLUXES_description.pdf
- Format: Timeseries
- Time resolution: 30 minutes
- Date coverage: from 01/01/2018 to 31/12/2018. Future versions will always start from 01/01/2018 and end 31/12 of the year before release

METEOSENS: it contains the meteorological variables of each single sensors aggregated at 30 minutes time resolution.

- File name structure: ICOSETC_CC-###_METEOSENS_VP.csv (where CC-### is the official site code and VP is a two digits value that identifies the version of the processing)
- Variables description: ICOSETC_METEO_description.pdf
- Format: Timeseries
- Time resolution: 30 minutes
- Date coverage: from 01/01/2018 to 31/12/2018. Future versions will always start from 01/01/2018 and end 31/12 of the year before release

METEO: it contains the meteorological variables aggregated spatially (one value per variable and vertical layer) at 30 minutes time resolution.

- File name structure: 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)
- Variables description: ICOSETC_METEO_description.pdf
- Format: Timeseries
- Time resolution: 30 minutes
- Date coverage: from 01/01/2018 to 31/12/2018. Future versions will always start from 01/01/2018 and end 31/12 of the year before release

METEOAGG: it contains the information about how the single sensor measurements are combined to obtain the spatially aggregated meteorological variables.

- File name structure: ICOSSETC_CC-###_METEOAGG.csv (where CC-### is the official site code)
- Variables description: ICOSSETC_METEO_description.pdf
- Format: BIF_Meteo
- Time resolution: none
- Date coverage: from 01/01/2018 to 31/12/2018. Future versions will always start from 01/01/2018 and end 31/12 of the year before release

FLUXNET: it is a set of 7 files that contain fluxes and meteorological variables processed using the FLUXNET methodology (OneFlux code, like the one used for FLUXNET2015, including gapfilling and partitioning) at different time resolution (halfhourly, daily, weekly, monthly and yearly) and two additional files with auxiliary information about the processing.

- Files name structure: the five measurement files have names ICOSSETC_CC-###_FLUXNET_TT_VP.csv where CC-### is the official site code, TT is the time resolution (HH, DD, WW, MM, YY) and VP is a two digits value that identifies the version of the processing. The two auxiliary files have name structures ICOSSETC_CC-###_FLUXNET_AUXMETEO_VP.csv and ICOSSETC_CC-###_FLUXNET_AUXNEE_VP.csv where CC-### is the official site code and VP is a two digits value that identifies the version of the processing.
- Variables description: ICOSSETC_FLUXNET_description.pdf
- Format: Timeseries
- Time resolution: 30 minutes, daily, weekly, monthly, yearly
- Date coverage: from 01/01/2018 to 31/12/2018. Future versions will always start from 01/01/2018 and end 31/12 of the year before release

SETUPINFO: it contains information about the model, location, maintenance and disturbances, variable measured and installation/modification date for all the sensors used in the station.

- File name structure: ICOSSETC_CC-###_SETUPINFO.csv (where CC-### is the official site code)
- Variables description: ICOSSETC_BIF_description.pdf
- Format: BIF
- Time resolution: sporadic
- Date coverage: from 01/01/2018 to 31/12/2018. Future versions will always start from 01/01/2018 and end 31/12 of the year before release

INSTCALIB: it contains information about the calibration date for all the sensors used in the station.

- File name structure: ICOSSETC_CC-###_INSTCALIB.csv (where CC-### is the official site code)
- Variables description: ICOSSETC_BIF_description.pdf
- Format: BIF
- Time resolution: sporadic
- Date coverage: from 01/01/2018 to 31/12/2018. Future versions will always start from 01/01/2018 and end 31/12 of the year before release

ANCILLARY: it contains all the general information and ancillary measurements collected at the station, such location, team members, species, biomass, LAI etc.

- File name structure: ICOSSETC_CC-###_ANCILLARY_VP.csv (where CC-### is the official site code and VP is a two digits value that identifies the version of the processing for the variables calculated by the ETC)
- Variables description: ICOSSETC_BIF_description.pdf
- Format: BIF
- Time resolution: sporadic
- Date coverage: from 01/01/2018 to 31/12/2018. Future versions will always start from 01/01/2018 and end 31/12 of the year before release