



Associated ICOS Ecosystem Station Labelling Report

Station: FR-LGt (La Guette)

Viterbo (Italy), Antwerp (Belgium), Bordeaux (France), October 28th 2019

Description of the Labelling procedure

Associated stations have a simplified, one step labelling procedure. After a first general evaluation of the station to ensure the compatibility with the ICOS aims and standard, proposed stations must submit data and metadata. There is a list of mandatory variables and related metadata that must be measured and submitted by an Associated station in order to get and maintain their status and it is reported in Table 1. Calculated fluxes and processed data at the final time resolution must be submitted

Table 1. List of variables and metadata that Associated stations must submit

Variable	Specifications	Metadata
GHG flux	At least one GHG flux + concentration (30 minutes resolution) among CO ₂ , CH ₄ and N ₂ O measured with eddy covariance. In case of forest storage flux measured using a vertical profile.	Description of the system (sensors and setup), description of the processing applied to calculate the fluxes.
Incoming radiation	At least one between SW_IN and PPFD_IN, representative of the target area	Description of the system (sensors and setup)
Air Temperature	Representative of the target area	Description of the system (sensors and setup)
Relative Humidity	Representative of the target area	Description of the system (sensors and setup)
Precipitation	Representative of the target area	Description of the system (sensors and setup)
Horizontal wind speed/direction	Representative of the target area	Description of the system (sensors and setup)
Maximum LAI	LAI or GAI measured at its maximum in the year. Method not prescribed.	Description of the method used.
Above Ground Biomass	Above ground biomass, for annual vegetation the biomass at the maximum in the year	Description of method used.
Soil texture	Average soil texture at the site	Description of method used.
Management and disturbances	Info on the disturbances occurring at the site and management practices	-----

In addition to the mandatory variables, the Associated stations can and are invited to submit other micrometeorological and ancillary data collected at the site that can help to better interpret and analyze the flux variables.

The station must be active, submit at least one year of data and continue to submit the data at least yearly by end of February of the year after the acquisition.

Labelling report

The station started the labelling on March 21th 2019 and completed the data and metadata submission on October. Here below a summary of the submitted data and metadata is reported.

Station Description

The La Guette station (ICOS code FR-LGt) is a peatland located in Neuvy sur Barangeon (Sologne) at about 200 Km south of Paris and 80 Km south of the Université d'Orléans. It is a acid fen that is cut at the output by a road. Along the road, a draining ditch was dug to avoid flooding of the road. This ditch has a lower altitude than any point in the peatland, and thus increases the speed at which water flows out of the system. This disturbance has promoted the invasion of the site by *Molinia caerulea* (L.) Moench (gramineae), followed by *Pinus sylvestris* L., and *Betula* sp. invasion. In addition, to vegetation change, such a disturbance has modified the hydrology of the site. The ecological engineering works undertaken in 2014 aimed to reduce the effect of the ditch on at least the downstream part of the site. The addy covariance station is located in the middle part of the peatland, where the restoration works may not have any effects. The typical fen vegetation remaining consists in 11 species of *Sphagnum* sp., *Eriophorum angustifolium* Honck., *Rhynchospora alba* (L.) Vahl, *Gentiana pneumonanthe* L., *Eleocharis* sp., *Scirpus* sp., Ericaceous shrubs are also well represented with *Calluna vulgaris* (L.) Hull and *Erica tetralix* L..

The station coordinates are: Lat. 47.322917 °N, Long. 2.284102 °E. The elevation above sea level is 153 m and the UTC offset is equal to +01.

The site is marked by the following climate characteristics:

- Average annual temperature: 12.30 C°
- Average total annual precipitation: 699.75 mm
- Average annual incoming radiation: 121.60 W m⁻²



Fig. 1 - FR-LGt instrumentation

Team description

The staff of the site has defined and communicated in January 2019. It includes in addition to the PI, the Station Manager and two Data Manager.

Tab. 2 - Team members of site

MEMBER_NAME	MEMBER_INSTITUTION	MEMBER_ROLE	MEMBER_MAIN_EXPERT
Sebastien Gogo	Université d'Orléans	PI	MICROMET
Adrien Jacotot	Centre National de la Recherche Scientifique	MANAGER	MICROMET
Jean-Baptiste Paroissien	Centre National de la Recherche Scientifique	DATA	LOGISTIC
Laurent Perdereau	Centre National de la Recherche Scientifique	DATA	LOGISTIC

Metadata about the sensors

The metadata were sent between May and September 2019 and for each of the measured variables the sensor has been described, communicating the model, the serial number, its position (height, eastward and northward distances). The Eddy station is characterized by one analyzer LI-COR and an anemometer Gill as reported in the underlying Table 3:

Tab. 3 - The Eddy Covariance system

MODEL	SN	HEIGHT (m)	EASTWARD_DIST (m)	NORTHWARD_DIST (m)
GA_CP-LI-COR LI-7200RS	72H-0828	2.38	0.09	-0.17
SA-Gill HS-50	H162408	2	0	0

Near the tower a set of instruments is located measuring the following variables: Radiations (Long and Short wave), PPFD, air pressure and temperature, relative humidity, precipitation, wind direction and speed, soil variables. Also the measurements of methane are available. All sensors and variables are reported in the following Table 4.

Tab. 4: The installed sensors and relative codes for the measured meteo variables

MODEL	SN	HEIGHT (m)	EASTWARD_DIST (m)	NORTHWARD_DIST (m)	VARIABLE_H_V_R
RHTEMP-Vaisala HMP155	K5010022	3	-62.70	-9.44	TA_1_1_1
					RH_1_1_1
PRES-Setra 278	LGT-3001	1.30	-62.70	-9.44	PA_1_1_1
PREC-EML ARG100	93719	1	-63.80	-10.40	P_1_1_1
RAD_4C-K&Z CNR4	160945	2	-16.33	5.70	SW_IN_1_1_1
					SW_OUT_1_1_1
					LW_IN_1_1_1
					LW_OUT_1_1_1
RAD_PAR-Skye SKP215	44971	3	-62.20	-9.44	PPFD_IN_1_1_1
WDWS-Gill WindsonicX	14390021	3.50	-62.70	-9.44	WD_1_1_1
					WS_1_1_1
TEMP-Campbell CS10X	LGT-1001	-0.02	-63.02	-13.10	TS_1_1_1
TEMP-Campbell CS10X	LGT-1002	-0.02	-64.19	-13.50	TS_1_1_2
TEMP-Campbell CS10X	LGT-1003	-0.05	-63.02	-13.10	TS_1_2_1

TEMP-Campbell CS10X	LGT-1004	-0.05	-63.02	-13.10	TS_1_2_2
TEMP-Campbell CS10X	LGT-1005	-0.1	-63.02	-13.10	TS_1_3_1
TEMP-Campbell CS10X	LGT-1006	-0.1	-63.02	-13.10	TS_1_3_2
TEMP-Campbell CS10X	LGT-1007	-0.2	-63.02	-13.10	TS_1_4_1
TEMP-Campbell CS10X	LGT-1008	-0.4	-63.02	-13.10	TS_1_5_1
TEMP-Campbell CS10X	LGT-2001	-0.02	-17.83	3.50	TS_2_1_1
TEMP-Campbell CS10X	LGT-2002	-0.02	-18.3	3.75	TS_2_1_2
TEMP-Campbell CS10X	LGT-2003	-0.05	-17.83	3.50	TS_2_2_1
TEMP-Campbell CS10X	LGT-2004	-0.05	-18.3	3.75	Ts_2_2_2
TEMP-Campbell CS10X	LGT-2005	-0.1	-17.83	3.50	TS_2_3_1
TEMP-Campbell CS10X	LGT-2006	-0.1	-17.83	3.50	TS_2_3_2
TEMP-Campbell CS10X	LGT-2007	-0.2	-17.83	3.50	TS_2_4_1
TEMP-Campbell CS10X	LGT-2008	-0.4	-17.83	3.50	TS_2_5_1
SWCTEMP-Campbell I CS65X	9542	-0.05	-67.75	-12.90	SWC_1_1_1
SWCTEMP-Campbell I CS65X	12450	-0.05	-68.50	-12.80	SWC_1_1_2
SWCTEMP-Campbell I CS65X	8235	-0.15	-67.75	-12.90	SWC_1_2_1
SWCTEMP-Campbell I CS65X	8239	-0.3	-67.75	-12.90	SWC_1_3_1
SWCTEMP-Campbell I CS65X	17842	-0.05	-16.53	3.57	SWC_2_1_1
SWCTEMP-Campbell I CS65X	17845	-0.05	-17.1	3.40	SWC_2_1_2
SWCTEMP-Campbell I CS65X	17846	-0.15	-16.53	3.57	SWC_2_2_1

SWCTEMP-Campbell I CS65X	17849	-0.3	-16.53	3.57	SWC_2_3_1
SOIL_H-Hukseflux HFP01SC	4227	-0.05	-63.50	-13.30	G_1_1_1
SOIL_H-Hukseflux HFP01SC	4228	-0.05	-68.10	-12.85	G_1_1_2
SOIL_H-Hukseflux HFP01SC	4864	-0.05	-17.1	3.54	G_2_1_1
SOIL_H-Hukseflux HFP01SC	4865	-0.05	-17.6	3.55	G_2_1_2
WTD-Campbell CS45X	14010631	-0.45	-69.02	-16.92	WTD_1_1_1
WTD-Campbell CS45X	20011093	-0.46	-15.45	3.60	WTD_2_1_1
GA_OP-LI-COR LI-7700	TG1-0100	2	-0.25	0.10	CH4_1_1_1
					FCH4_1_1_1

Ancillary data

To describe the site, the climatic annual averages of temperature, precipitation and radiation (shortwave) have been sent in August 2019 (the values are reported in the Station Description paragraph). No disturbance has occurred in the site since the installation of the station.

The soil data were sent on October, being a peatland the soil is entirely composed of an organic layer with depth varying between 30 and 100 centimeters. This entire horizon is organic and does not contain silts, clays, sands or rocks. Detailed information about the water content has been sent, as the soil water holding capacity, the wilting and saturation points, the field capacity.

Further and detailed ancillary data have been provided, and in particular:

- **GAI:** 0.41 only for *Molinia caerulea* (L.) Moench and 0.46 only for *Erica tetralix* L. (September 2019)
- **Biomass:** total above ground 0.46 KgDM m⁻² (September 2019)
- **Canopy height:** 0.45 m for *Molinia caerulea* (L.) Moench (September 2019)

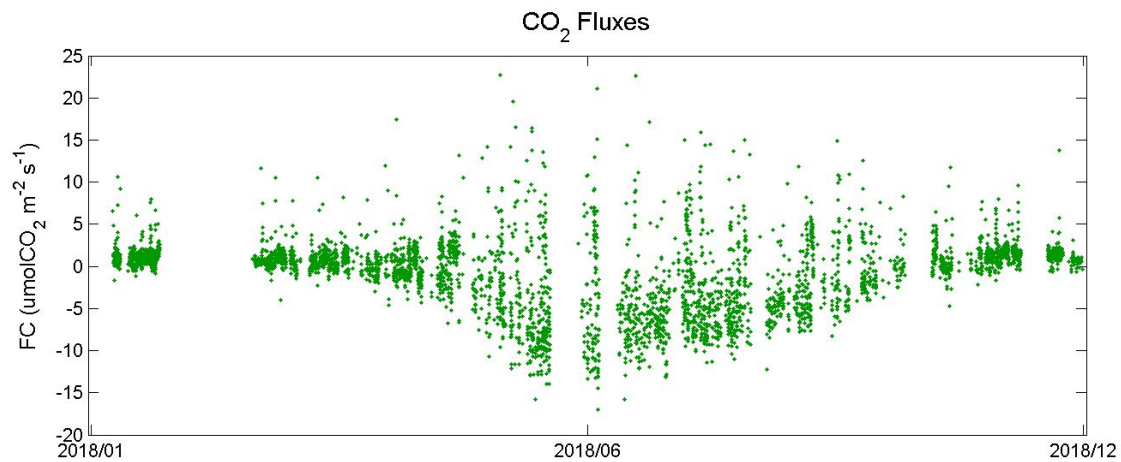
Submitted data

As requested in the labelling procedure, the site sends continuous data since January 2017. The last files have been uploaded in July 2019 and it includes eddy covariance fluxes and

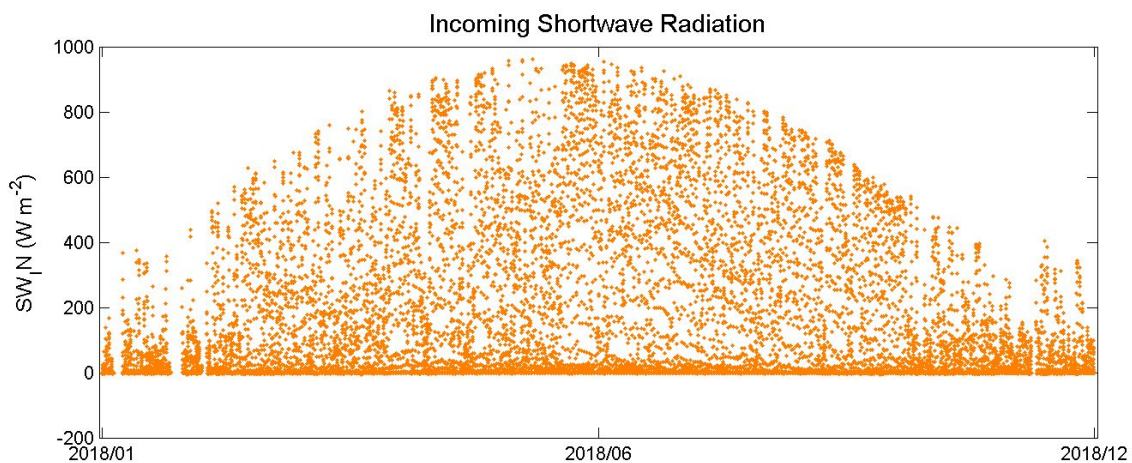
meteorological measurements. The flux variables (CO₂ flux, sensible heat and latent heat flux) do not report the Steady State and Integral Turbulence Characteristics tests.

In the following figures plots of some of the key variables are presented for 2018 as examples in order to evaluate the data continuity and coverage.

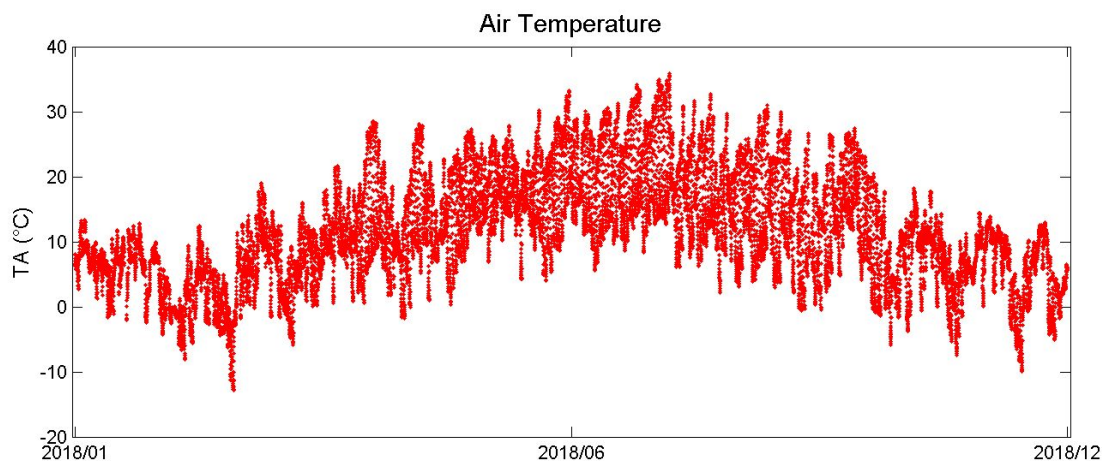
CO₂ fluxes measured with eddy covariance:



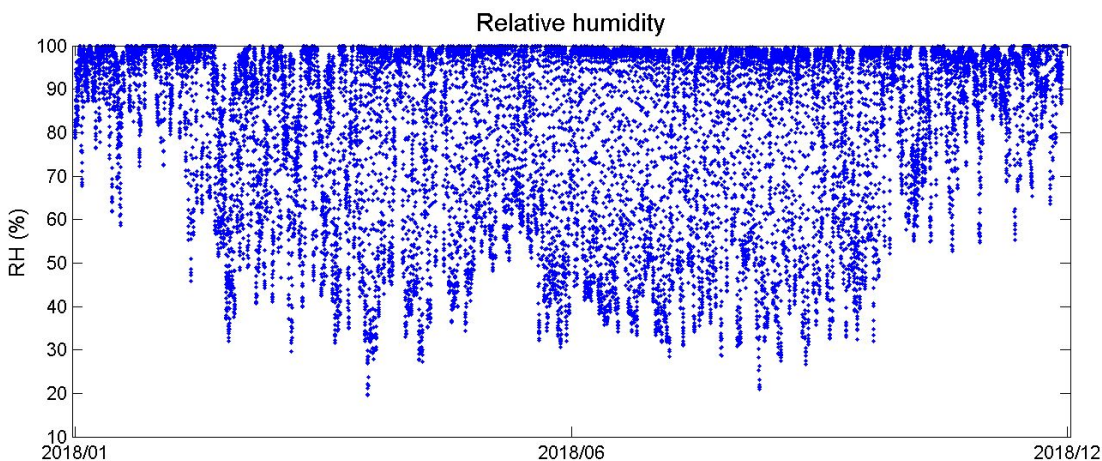
Incoming shortwave radiation:



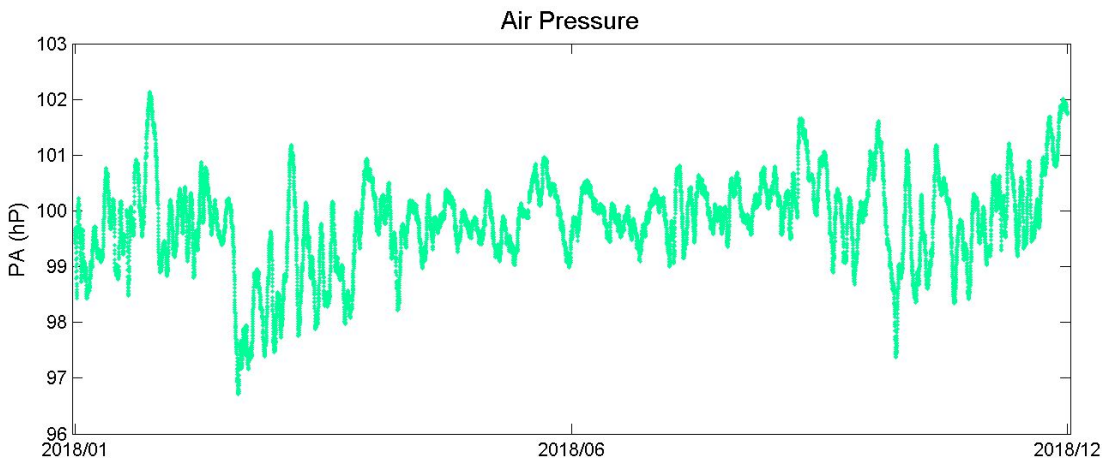
Air temperature:



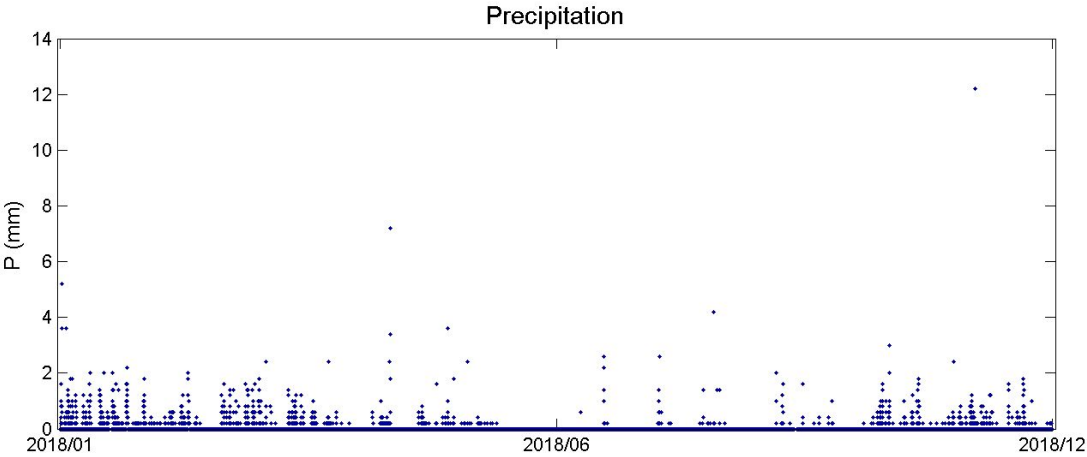
Relative humidity:



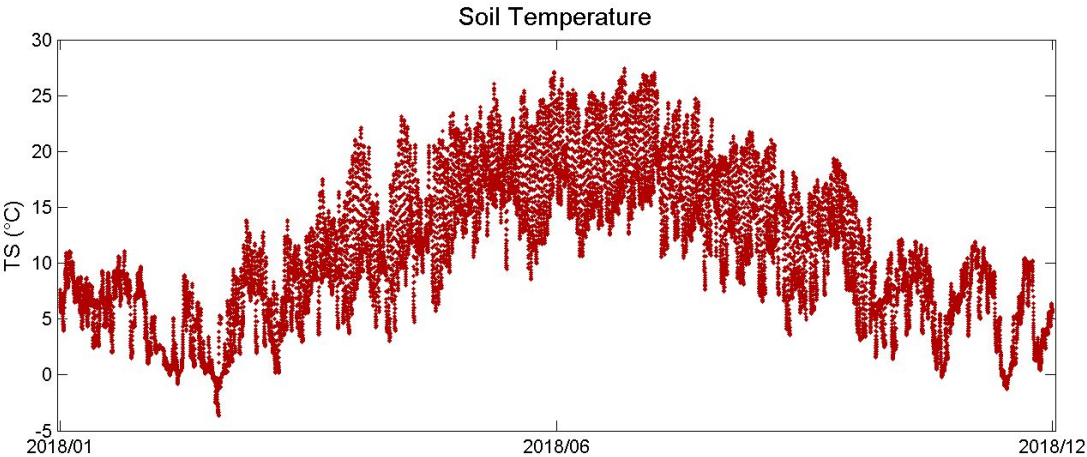
Air pressure:



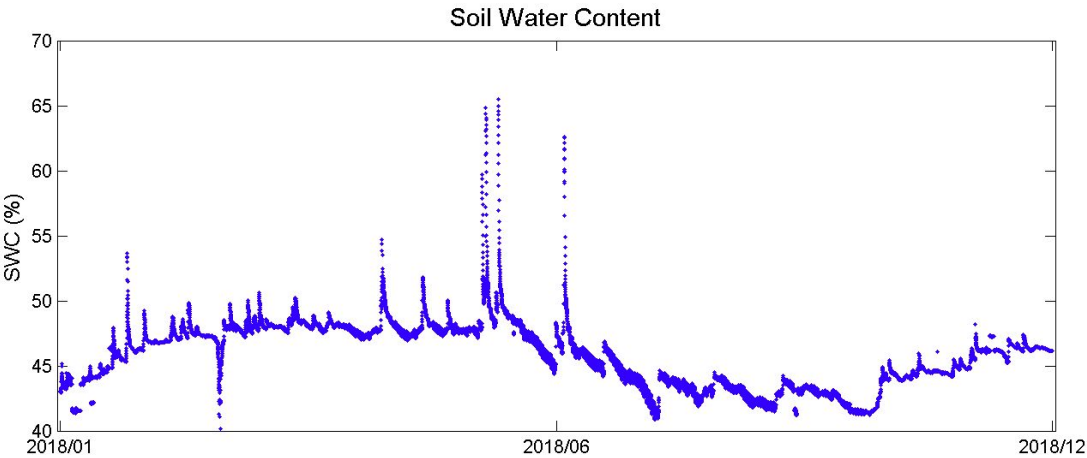
Precipitation:



Soil temperature:



Soil water content:



Labelling summary and proposal

On the basis of the activities performed and data submitted and after the evaluation of the team capacity to be compliant with the ICOS requirements for Associated Ecosystem Stations we recommend that the station La Gnette (FR-LGt) is labelled as ICOS Associated Ecosystem station.

October 28th 2019

Dario Papale, ETC Director

A handwritten signature in dark ink, appearing to read 'Dario Papale', with a stylized, flowing script.