Companion File

[Provided_meteo_column_descriptions.pdf]

This file contains the original column names and descriptions for each provided meteorological data file. The original five meteorological data files are not provided.

The crosswalk from these original column names to the final harmonized data files is provided as a separate companion file.

The harmonized data dictionary is in the user guide documentation for:

Oechel, W. and A. Kalhori. 2018. ABoVE: CO2 and CH4 Fluxes and Meteorology at Five EC Tower Sites, Alaska, 2015-2017. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/1562

Table 1. Variables in the file Atqasuk_ATQ_meteo_2015-2017.csv

These data cover the period 2015-01-01 to 2017-03-09.

Column name	Units/format	Description
month	M	Month
day	D	Day
year	YYYY	Year of measurements (2015-2017)
time	hh:mm:ss	Time in hh:mm:ss
panel_t_avg	Degrees C	Temperature of the panel of the datalogger
par_avg	umol m-2 s-1	Incoming photosynthetically-active radiation PAR
rsolar_avg	W m-1	Solar radiation
rnet_raw_avg	W m-1	Net Radiation-raw data
rnet_nwc_avg	W m-1	Net Radiation-non wind corrected
rnet_wc_avg	W m-1	Net Radiation-wind corrected
soil_1_avg	Degrees C	Soil temperature from sensor 1 at 5 cm depth
soil_2_avg	Degrees C	Soil temperature from sensor 2 at 15 cm depth
soil2_1_avg	Degrees C	Soil temperature from sensor 3 at 0 cm depth
soil2_2_avg	Degrees C	Soil temperature from sensor 4 at 20 cm depth
air_t_avg	Degrees C	Air temperature

Column name	Units/format	Description
rh_avg	%	Relative humidity
g_1_avg	W m-1	Soil heat flux from sensor #1
g_2_avg	W m-1	Soil heat flux fromt sensor #2
g_3_avg	W m-1	Soil heat flux from sensor #3
ppt_tot	mm	Total rainfall
ws_ms_s_wvt	m/s	Wind speed
wd_d1_wvt	Degrees	Wind direction
wd_sd1_wvt	Degrees	St. Deviation in wind direction
par_down_avg	umol m-2 s-1	Reflected photosynthetically-active radiation PAR
press_mb_avg	millibar	Air pressure
ss_tl_r_avg	umol m-2 s-1	Solar radiation
ss_dif_r_avg	umol m-2 s-1	Diffuse radiation
swc_1_avg	%	Soil moisture at the indicated depth (volumetric water content)
swc_2_avg	%	Soil moisture at the indicated depth (volumetric water content)
swc_3_avg	%	Soil moisture at the indicated depth (volumetric water content)
swc_4_avg	%	Soil moisture at the indicated depth (volumetric water content)
p2_swc_5_avg	%	Soil moisture in profile 2 at the indicated depth (volumetric water content)
p2_swc_15_avg	%	Soil moisture in profile 2 at the indicated depth (volumetric water content)
p2_swc_30_avg	%	Soil moisture in profile 2 at the indicated depth (volumetric water content)
p2_swc_40_avg	%	Soil moisture in profile 2 at the indicated depth (volumetric water content)
p3_swc_5_avg	%	Soil moisture in profile 3 at the indicated depth (volumetric water content)
p3_swc_15_avg	%	Soil moisture in profile 3 at the indicated depth (volumetric water content)
p3_swc_30_avg	%	Soil moisture in profile 3 at the indicated depth (volumetric water content)
p3_swc_40_avg	%	Soil moisture in profile 3 at the indicated depth (volumetric water content)
p3_soilt5_avg	Degrees C	Soil temperature in profile 3 at the indicated depth (volumetric water content)
p3_soilt15_avg	Degrees C	Soil temperature in profile 3 at the indicated depth (volumetric water content)

Column name	Units/format	Description
p3_soilt30_avg	Degrees C	Soil temperature in profile 3 at the indicated depth (volumetric water content)
p4_soilt5_avg	Degrees C	Soil temperature in profile 4 at the indicated depth (volumetric water content)
p4_soilt15_avg	Degrees C	Soil temperature in profile 4 at the indicated depth (volumetric water content)
p4_soilt30_avg	Degrees C	Soil temperature in profile 4 at the indicated depth (volumetric water content)
snow_depth	m	Snow depth
t_temp_c_avg	Degrees C	Surface temperature from the infrared sensor

Table 2. Variables in the file Barrow_BEO_meteo_2015-2017.csv

These data cover the period 2015-01-01 to 2017-02-03.

Column name	Units/format	Description
month	M	Month of measurements
day	D	Day of measurements
year	YYYY	Year of measurements (2015-2017)
time	hh:mm:ss	Time in hh:mm:ss
panel_t_avg	Degrees C	Temperature of the panel of the datalogger
par_up_avg	umol m-2 s-1	Incoming photosynthetically-active radiation PAR
par_down_avg	umol m-2 s-1	Reflected photosynthetically-active radiation PAR
hmp_airt_avg	Degrees C	Air temperature
hmp_rh_avg	mV	Relative humidity
g_1_avg	W m-1	Soil heat flux from sensor #1
g_2_avg	W m-1	Soil heat flux from sensor #2
g_3_avg	W m-1	Soil heat flux from sensor #3
g_4_avg	W m-1	Soil heat flux from sensor #4
g_all4_av_avg	W m-1	Average of all 4 soil heat flux sensors
st_1_avg	Degrees C	Soil temperature at 10 cm depth
st_2_avg	Degrees C	Soil temperature at 20 cm depth
st_3_avg	Degrees C	Soil temperature at 20 cm depth
st_4_avg	Degrees C	Soil temperature at 0 cm depth

Column name	Units/format	Description
st_5_avg	Degrees C	Soil temperature at 10 cm depth
st_6_avg	Degrees C	Soil temperature at 20 cm depth
rnet_raw_avg	W m-1	Net Radiation raw data
rnet_nwc_avg	W m-1	Net Radiation not wind corrected
rnet_wc_avg	W m-1	Net Radiation wind corrected
rain_tot	mm	Total rainfall
snow_depth_sensor	m	Snow depth
tsurf	Degrees C	Surface temperature from infrared sensor
scw_high-40cm	%	Soil water content (high center polygons at the indicated depth) (volumetric water content)
scw_high-30cm	%	Soil water content (high center polygons at the indicated depth) (volumetric water content)
scw_high-20cm	%	Soil water content (high center polygons at the indicated depth) (volumetric water content)
scw_high-10cm	%	Soil water content (high center polygons at the indicated depth) (volumetric water content)
scw_low-40cm	%	Soil water content (low center polygons at the indicated depth) (volumetric water content)
scw_low-30cm	%	Soil water content (low center polygons at the indicated depth) (volumetric water content)
scw_low-20cm	%	Soil water content (low center polygons at the indicated depth) (volumetric water content)
scw_low-10cm	%	Soil water content (low center polygons at the indicated depth) (volumetric water content)

Table 3. Variables in the file Barrow_BES_meteo_2015-2017.csv

These data cover the period 2015-01-01 to 2017-02-03.

Column name	Units/format	Description
month	M	Month
day	D	Day
year	YYYY	Year of measurements (2015-2017)
time	hh:mm:ss	Time in hh:mm:ss
panel_t_avg	Degrees C	Temperature of the panel of the datalogger

Column name	Units/format	Description
par_up_avg	umol m-2 s-1	Incoming photosynthetically-active radiation PAR
par_down_avg	umol m-2 s-1	Reflected photosynthetically-active radiation PAR
hmp_airt_avg	Degrees C	Air temperature
hmp_rh_avg	%	Relative humidity
g_1_avg	W m-1	Soil heat flux from sensor #1
g_2_avg	W m-1	Soil heat flux from sensor #2
g_3_avg	W m-1	Soil heat flux from sensor #3
g_4_avg	W m-1	Soil heat flux from sensor #4
g_all4_av_avg	W m-1	Average of all four soil heat flux
st_1_avg	Degrees C	Soil temperature from sensor 1 at 0 cm
st_2_avg	Degrees C	Soil temperature from sensor 2 at 20 cm depth
st_3_avg	Degrees C	Soil temperature from sensor 3 at 20 cm
st_4_avg	Degrees C	Soil temperature from sensor 4 at 10 cm
st_5_avg	Degrees C	Soil temperature from sensor 5 at 5 cm
st_6_avg	Degrees C	Soil temperature from sensor 6 at 0 cm
rnet_raw_avg	W m-1	Net Radiation raw data
rnet_nwc_avg	W m-1	Net Radiation not wind corrected
rnet_wc_avg	W m-1	Net Radiation wind corrected
rain_tot	mm	Total rainfall
snow_depth_sensor	m	Snow depth in meters
tsurf	Degrees C	Surface temperature from infrared sensor
scw_high-40cm	%	Soil water content (high center polygons at the indicated depth) (volumetric water content)
scw_high-30cm	%	Soil water content (high center polygons at the indicated depth) (volumetric water content)
scw_high-20cm	%	Soil water content (high center polygons at the indicated depth) (volumetric water content)
scw_high-10cm	%	Soil water content (high center polygons at the indicated depth) (volumetric water content)
scw_low-40cm	%	Soil water content (low center polygons at the indicated depth) (volumetric water content)
scw_low-30cm	%	Soil water content (low center polygons at the indicated depth) (volumetric water content)
scw_low-20cm	%	Soil water content (low center polygons at the indicated depth) (volumetric water content)

Column name	Units/format	Description
scw_low-10cm	%	Soil water content (low center polygons at the indicated depth) (volumetric water content)

Table 4. Variables in the file Barrow_CMDL_meteo_2015-2017.csv

These data cover the period 2015-01-01 to 2017-02-03.

Column name	Units/format	Description
month	M	Month of measurements
day	D	Day of measurements
year	YYYY	Year of measurements (2015-2017)
time	hh:mm:ss	Time in hh:mm:ss
panel_t_avg	Degrees C	Temperature of the panel of the datalogger
par_avg	umol m-2 s-1	Incoming photosynthetically-active radiation PAR
par_down_avg	umol m-2 s-1	Reflected photosynthetically-active radiation PAR
rnet_raw_avg	W m-1	Net Radiation raw data
rnet_nwc_avg	W m-1	Net Radiation not wind corrected
rnet_wc_avg	W m-1	Net Radiation wind corrected
r_solar_avg	W m-1	Solar radiation
air_t_avg	Degrees C	Air temperature
rh_avg	%	Relative humidity
g_1_avg	W m-1	Soil heat flux from sensor # 1
g_2_avg	W m-1	Soil heat flux from sensor # 2
g_3_avg	W m-1	Soil heat flux from sensor # 3
ws_ms_s_wvt	m/s	Wind speed
wd_d1_wvt	Degrees	Wind direction
wd_sd1_wvt	Degrees	St. Deviation in wind direction
ppt	mm	Total rainfall
ss_difuse_avg	umol m-2 s-1	Diffuse radiation
t_temp_c_avg	Degrees C	Surface temperature from infrared sensor
swc1_0_30_avg	%	Soil moisture at the indicated depth (volumetric water content)
swc1_0_20_avg	%	Soil moisture at the indicated depth (volumetric water content)

Column name	Units/format	Description
swc1_0_10_avg	%	Soil moisture at the indicated depth (volumetric water content)
swc2_0_30_avg	%	Soil moisture at the indicated depth (volumetric water content)
swc2_0_20_avg	%	Soil moisture at the indicated depth (volumetric water content)
swc2_0_10_avg	%	Soil moisture at the indicated depth (volumetric water content)
soilt1_40_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt1_30_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt1_15_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt1_5_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt1_0_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt2_40_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt2_30_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt2_15_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt2_5_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt2_0_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soil_1_avg	Degrees C	Soil temperature from sensor 11 at 0 cm
soil_2_avg	Degrees C	Soil temperature from sensor 12 at 5 cm
soil_3_avg	Degrees C	Soil temperature from sensor 13 at 10 cm

Table 5. Variables in the file Ivotuk_IVO_meteo_2015-2017.csv

These data cover the period 2015-01-01 to 2017-03-09.

Column name	Units/format	Description
month	M	Month
day	D	Day
year	YYYY	Year of measurements (2015-2017)
time	hh:mm:ss	Hh:mm:ss
cr3000_panel_t_avg	Degrees C	Temperature of the panel of the datalogger
reftempam16_32_avg	Degrees C	Reference T of the multiplexer
par_in_avg	μmol s m2	Incoming photosynthetically-active radiation PAR
par_out_avg	μmo s m2	Reflected photosynthetically-active radiation PAR

Column name	Units/format	Description
rn_meas_avg	Wm2	Net Radiation
pyra_cmp3_avg	Wm2	Solar radiation
g_1_avg	Wm2	Soil heat flux sensor #1
g_2_avg	Wm2	Soil heat flux sensor #2
g_3_avg	Wm2	Soil heat flux sensor #3
g_4_avg	Wm2	Soil heat flux sensor #4
tair_hmp_avg	Degrees C	Air temperature
rh_hmp_avg	%	Relative humidity
rain_tot	mm	Total rainfall
airpress_avg	Kpa	Air pressure
wind_speed_avg	m/s	Wind speed
wind_dir_avg	deg	Wind direction
soilt1_surf_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt1_5_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt1_15_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt1_30_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt1_40_avg	Degrees C	Soil temperature at the indicated depth from profile 1
soilt2_surf_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt2_5_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt2_15_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt2_30_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt2_40_avg	Degrees C	Soil temperature at the indicated depth from profile 2
soilt3_surf_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt3_5_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt3_15_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt3_30_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt3_40_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt4_surf_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt4_5_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt4_15_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt4_30_avg	Degrees C	Soil temperature at the indicated depth from profile 3
soilt4_40_avg	Degrees C	Soil temperature at the indicated depth from profile 3
p1_5 cm	%	Soil moisture at the indicated depth for profile 1 (volumetric water content)

Column name	Units/format	Description
p1_15cm	%	Soil moisture at the indicated depth for profile 1 (volumetric water content)
p2_5cm	%	Soil moisture at the indicated depth for profile 2 (volumetric water content)
p1_30cm	%	Soil moisture at the indicated depth for profile 1 (volumetric water content)
p2_15cm	%	Soil moisture at the indicated depth for profile 2 (volumetric water content)
p2_30cm	%	Soil moisture at the indicated depth for profile 2 (volumetric water content)
p3_15cm	%	Soil moisture at the indicated depth for profile 3 (volumetric water content)
p3_30cm	%	Soil moisture at the indicated depth for profile 3 (volumetric water content)
p3_5cm	%	Soil moisture at the indicated depth for profile 3 (volumetric water content)
p1_40cm	%	Soil moisture at the indicated depth for profile 1 (volumetric water content)
p2_40cm	%	Soil moisture at the indicated depth for profile 2 (volumetric water content)
p3_40cm	%	Soil moisture at the indicated depth for profile 3 (volumetric water content)
snow_depth_avg	m	Snow depth in meters
targtempc_avg	Degrees C	Surface temperature from infrared sensor