

AmeriFlux Meeting notes for 2021-10-12

Date

\$currentDateLozenge

Attendees

Yong Wook Kim

Bethany Blakely

Katie Bowman

Rob Kooper

Minu Mathew

Agenda

- Questions regarding "Formatting Meteorological Data for EddyPro" section in guide:
 1. If the columns mentioned in table 1 Met Tower Variables are not present in the data file, should we write the current processed data to the output path, throw an error message and then exit from the program without further processing?
 - a. EddyPro reads these variables from ghg file: (1) air temperature from ghg (2) air pressure from ghg. This ghg file is inputted to the EddyPro GUI via a setting. This is not the csv met data file that is processed in the "creating met data" and "formatting met data for eddypro" sections in guide.
 - b. EddyPro input file should contain these variables from met file: (3) relative humidity from met data (RH_Avg) (4) incoming shortwave radiation from met data (SWin) (5) incoming longwave radiation from met data (LWin) and (6) Photosynthetically active radiation (PPFD_r) from met data. These variables are mandatory and should be handled accordingly in the code for "formatting met data" section.
 - c. EddyPro reads additional variables from met file: (1) air temperature from met data (RTD_C_Avg, AirTC_Avg)
 - d. EddyPro reads all the other variables (all 80+ variables) from met data. These are also listed in the soils key.xlsx sheet.
 - e. Break if dataframe doesn't include 3,4,5,6 and throw a warning for all other variables (1, 2, plus the rest of variables in met data and soil met key) and proceed.
 2. We choose shf_Avg(1) or shf_Avg(2) based on which variable has min number of NaNs. What should we choose if both have equal number of NaNs?
 - a. Now that I know what's up with the location qualifiers, **you should use both**. Name one SHF_1_1_1 and one SHF_2_1_1. That's telling eddypro that you have one SHF probe at horizontal location 1 and one at horizontal location 2, which accurately describes our setup.

You should do the same for Air_TC_RTD and Air_TC, but in this case label them Ta_1_1_1 and Ta_1_1_2 to indicate that you have two replicate temperature probes at (roughly) the same horizontal and vertical location – mounted on the tower.
 - b. Air_TC_RTD and Air_TC - match pattern Air_TC* rename to Ta_1_1_1 (first) and Ta_1_1_2 (second). Ta_1_1_1 should always be present.
 3. Soil temp - we currently use TC_10cm_Avg or TC1_10cm_Avg or TC2_10cm_Avg - whichever has min number of NaNs. I also see variables named SoilTemp(x)_Avg measurements. Is TC\d*_10cm_Avg the correct variables to be used?
 - a. **Like SHF, you should use them all, using different location qualifiers for each**. There will be some 30 sensors each site, so I'd strongly recommend adapting my key into an input that lets you do this automatically. If you must choose one variable for short-term troubleshooting, use the TC variables as described in the beginning of this question. As with soil moisture, SoilTemp(x)_Avg refers to different depths at different sites.
 4. The variable name Moisture0_Avg (used for EddyPro label SWC) changes with filename / crop type. I think Bethany is working on a table to match these keys. Let me know if I am missing anything here.
 - a. I will send the key. You will see when you look at it that Moisture0_Avg refers to different measurement depths and replicates at different sites. These types of variables are highlighted in yellow. **Like Ta, SHF and TC, you should use all of these variables**.
 - b. Soils key: <https://uofi.box.com/s/24qq8lg4ahgpwyw6g63r79e8nie285t6>
 5. WindSpeed_Avg and WindDir_Avg is not present for 2000 data. What other variable should be used instead? If the timestamp is not 2000, shall we use these variables as such?
 - a. I'm guessing you mean 2021 here. The sensors for these variables were removed. We instead use wind speed and wind direction as measured by the eddy covariance instruments (sonic anemometer specifically), which is present in the .ghg files. **You should skip this variable**.
 - b. WindSpeed and WindDir from 2020 onwards will be matched with ghg file - check if column is existing. if not throw a warning and proceed.
 - c. WindSpeed and WindDir for other years are present in met data file
 - d. EddyPro will not use WindSpeed and WindDir from met file. It only uses ghg file values.
 6. Dynamic naming of met tower variables (SHF_1_1_2) - needs some clarity. I have one note which says these will be fixed by PyFluxPro automatically and another note mentions its manual.
 - shf(1)_Avg and shf(2)_Avg will be renamed to SHF_1_1_1 and SHF_1_1_2
 - soil moisture measurement (SWC in EddyPro) and soil temp measurements (Ts in EddyPro)
- In dynamic metadata creation:
 - Canopy height data can be taken wither from LAI measurements if completed, or from phenocam images. Phenocam images can be found on the Energy Farm server, directory "Z:\FTP\[Site Name]" As of fall 2018 new phenocams were installed, and images taken using the new cameras are deposited in "Z:\FTP\ueif[Site Name]2"

Action items

- 19 Oct 2021 Bethany Blakely How do we get the instrument height and instrument separation - create some kind of form to enter the height by technician ?