

Automation Procedures

Overall Process Pipeline

- download the raw meteorology data
 - automate the downloading process
- creating master meteorological data file
 - preprocessing raw meteorology data for eddypro
 - timestamp checks
 - adding missing timestamps
 - value missing checks
 - unit checks
 - soil heat flux calculation
 - absolute humidity calculation
 - shortwave radiation calculation
 - test for 1 week data
 - test for full data (2020)
 - test for new data (2021, 3 month timeframe)
 - precipitation data calculation - change units and timestamp
 - need some more testing for precip data
 - precip data QA/QC check.
- formatting the raw met data
 - copy and rename master met data file
 - get required columns and corresponding labels
 - choose correct fields for soil temp, shf, air temp and moisture
 - shf done
 - air temp done
 - soil temp field need confirmation on code changes done
 - moisture field changes with crop type/filename - Bethany working on table to match keys
 - wind speed and wind direction needs clarification - these fields change with year
 - get precipitation data
 - need to do precip data for creating met file section first
 - check for duplicate naming of labels (Eg: _1 _1 _2)
 - get correct metrics
 - insert metrics as first row
 - timestamp format check
 - convert temp fields from Celsius to kelvin
 - convert numeric fields to numerical values
 - check for non-numeric values and change to -9999.0
 - create function to check columns required for eddypro
 - check if conversion from string to integer is needed in format.py.
- create the dynamic metadata
 - dynamic metadata shared
- automate eddyPro launching in the pipeline
 - check the output from eddypro
- use the eddyPro output in pyFluxPro (L1)
- use eddypro output in pyfluxpro L2 to generate graphs

- formatting the EddyPro output to AmeriFlux variables
 - L1
 - L2
- automation of running pyfluxpro L1 and L2 process

Automation File Structure

- downloaded raw meteorology data
 - /raw_metadata/
- created raw meteorology data
- formatted raw meteorology data (input for eddypro)
- output from eddypro

Creating a Master Meteorological Data File

- need to obtain the data file (check permission for accessing the data, 2021-08-10 meeting)
- connecting to , file-server.igb.illinois.edu
- acquiring of Tools excel tool

Processing Raw Flux Data in EddyPro

- had a demo in 2021-08-10 meeting

Formatting Meteorological Data for Eddypro

- this could be automated by using python
- NCSA will work on coding and will ask verification of the output to Carl's group

Assembling Dynamic Metadata

Running Eddy Pro

Common Errors and Issues

- can eddy pro run without gui? (headless)
- if not, does it have project file or something so it can be modified automatically?

PyFluxPro: QA/QC, Gap Filling, and Partitioning

Installing

Creating the Database

first demo at Sep 15 2021

Formatting the PyFluxPro Control Files

Primary

Secondary

Other

Running a Flux Database through PyFluxPro

L1-L3: Processing Single Years

L4-L6: Processing a Full, or Muti-Year, Dataset (Incomplete)