Automation Procedures

Overall Process Pipeline

- [ ] download the raw meteorology data
    - [ ] automate the downloading process

- [x] creating master meteorological data file
    - [x] preprocessing raw meteorology data for eddypro
        - [x] timestamp checks
        - [x] adding missing timestamps
        - [x] value missing checks
        - [x] unit checks
        - [x] soil heat flux calculation
        - [x] absolute humidity calculation
        - [x] shortwave radiation calculation
        - [x] test for 1 week data
        - [x] test for full data (2020)
        - [x] test for new data (2021, 3 month timeframe)
        - [x] precipitation data calculation - change units and timestamp
            - [x] need some more testing for precip data
        - [x] precip data QA/QC check.

- [x] formatting the raw met data
    - [x] copy and rename master met data file
    - [x] get required columns and corresponding labels
        - [x] choose correct fields for soil temp, shf, air temp and moisture
            - [x] shf done
            - [x] air temp done
            - [x] soil temp field need confirmation on code changes done
            - [x] moisture field changes with crop type/filename - Bethany working on table to match keys
            - [x] wind speed and wind direction needs clarification - these fields change with year
        - [x] get precipitation data
            - [x] need to do precip data for creating met file section first
        - [x] check for duplicate naming of labels (Eg: _1 _1 _2)
    - [x] get correct metrics
    - [x] insert metrics as first row
    - [x] timestamp format check
    - [x] convert temp fields from Celsius to kelvin
    - [x] convert numeric fields to numerical values
    - [x] check for non-numeric values and change to -9999.0
    - [x] create function to check columns required for eddypro
    - [x] check if conversion from string to integer is needed in format.py.

- [x] create the dynamic metadata
    - [x] dynamic metadata shared

- [x] automate eddyPro launching in the pipeline
    - [x] check the output from eddypro

- [x] use the eddyPro output in pyFluxPro (L1)

- [x] use eddypro output in pyfluxpro L2 to generate graphs

- [ ] formatting the EddyPro output to AmeriFlux variables
  - [ ] L1
  - [ ] L2

- [ ] automation of running pypluxpro L1 and L2 process

Automation File Structure

- downloaded raw meteorology data
  - /raw_metdata/
- created raw meteorology data
- formatted row 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 ofTools 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)