**Workflow for footprints**

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**Initial Steps**

* Clone the “Footprint-Weighted-Flux-Maps” folder from Github and add a folder called “Footprint\_Output” and within this folder create a folder structure as found in Box (https://berkeley.box.com/s/o1wl7f7ig0bicettkynllu885r68kc85). This would help with some relative paths in the code. Importantly the CalculateFootprint, Footprint\_Output, and L4\_Processing folders need to be at the same level (same folder).
* “Site” will always refer to the 2-letter code for each site (e.g. BC= Bouldin Corn, TZ=Tonzi…)

**L4\_Processing**

* Open the file **L4\_Process\_from\_AFcsv.m** in the L4\_processing folder to create an L4 file. For footprint processing there are multiple variables that are calculated in what I called “L4 files” These L4 files are Matlab structures with the Ameriflux csv data plus additional variables needed to run footprint including Aerodynamic canopy height and PBL height (PBL is optional).
  + Modify the Save Directory
  + Select the site acronym for the site (3 letter code from Ameriflux recommended)
  + Update the filename and filepath for the csv file
  + Adjust parameters in BADM. Canopy height is an initial estimate. Canopy height will be calculated using the aerodynamic canopy height approach of Pennypacker and Baldocchi later on
  + Adjust the variable names in data if needed. Some variable may have slightly different names (for example AF\_RH\_1\_1\_1 vs AF\_RH\_1\_1\_2)
  + If you have water level above the surface and have data available update this in the water level section, otherwise disregard this step
  + Run Aerodynamic canopy height. You can adjust the days to average if your dataset is shorter. 30 days is recommended for datasets longer than 1 year.
  + Add PBL data if available. If not an estimate of 750 m will be used for all the footprints. Non-published tests inidicate the sensitivity of gootprint models to PBL height is very low

**Calculating Footprints**

* Go to the CalculateFootprint folder, Open FP\_opts\_continuous.m, select the site, and update the source of the L4 file from the previous step.
* Section How: If you only need one model, you can select only the best model (the K&M model) by adjusting opt.models=[0 0 1];
* In section “When?” select daytime or nighttime footprints. Select the start and the end times of the run in opt.start and opt.end2
* Select footprint contours to plot, you can choose more than 2, for example [50,60,70,80]
* Adjust the fluxes for footprint-weighted flux by choosing those fluxes of interests that are available in your dataset for which you wish to create footprint-weighted flux maps.
* Once all the options are ready run the code Footprint\_Run\_Continuous.m (click “run” or press F5)
* To plot the resulting footprint contours in kml files that can be then seen in Google Earth, the GoogleEarth toolbox is added at the end of the Footprint\_Run\_Continuous.m

**To create Footprint-Weighted Flux Maps**

* Fds
* gds