Monitoring Tower Deployment Notes

Vineyard Pilot Study (2015)

The Laboratory for Atmospheric Research at WSU is conducting a pilot-scale eddy-covariance (EC) flux monitoring tower experiment at a vineyard in southeast Washington. The data acquisition program is a fork of the program used at GHG monitoring towers which are part of the 2011-2016 Regional Approaches to Climate Change (REACCH) project.

# Sensor Suite

Only a subset of the instruments deployed at REACCH towers will be used:

* Eddy-covariance package:
  + Anemometer, ultrasonic, 3D (CSAT3A, Campbell Scientific)
  + CO2/H2O analyzer, open-path, (EC150, Campbell Scientific)
  + Thermistor (Model 107, Campbell Scientific)
* ~~Wind set, cup & vane anemometer (034B, MetOne)~~
* Temperature & relative humidity probe (HMP-155A, Vaisala)
* ~~Rain gage (TE525, Texas Electronics)~~
* Net radiometer (NR-Lite2, Kipp&Zonen)
* Photosynthetically active radiation (PAR) sensor (LI-190SB, LI-COR Biosciences)
* ~~Soil moisture/temperature probes (5TM, Decagon Devices)~~
* GPS receiver (GPS16x-HVS, Garmin)
* ~~NDVI/PRI sensors (?, Decagon Devices)~~
* ~~N2O/CO/H2O analyzer, closed-path (Los Gatos Research)~~
* ~~CO2/CH4/H2O analyzer, closed-path (Picarro)~~
* ~~Soil heat flux plates, self-calibrating (HFP01SC, Huskeflux)~~

# Setup

Physical deployment will generally mirror REACCH monitoring sites, with some specific changes:

* The bottom section (3m) of a collapsing tower will be used instead of a 3m tower with mast
* Only 3 deep-cycle batteries will be deployed, instead of the conventional 6
* 45mm square Bosch tube + 1” nom. pipe will be used as a boom for light sensors (net rad, PAR) instead of a crossarm + CM206 mount
* Solar panels will be mounted to a large tripod instead of to permanent fixed posts

# Operational Changes

A variety of improvements have been made relative to the REACCH datalogger programs.

* Email alerts | The logger sends an alert whenever
  + the program recompiles
  + manually triggered via Debug menu
* Ability to disable the most common faulty data sources (wind set, rain gage, soil probes)