Poster# 65

Updates from the AmeriFlux Tech Team

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The goal of AmeriFlux is to develop a network of long-term CO_2 flux sites for quantifying and understanding the role of the terrestrial biosphere in global climate and environmental change. The AmeriFlux Management Program (AMP) Tech Team at LBNL strengthens the AmeriFlux Network by (1) standardizing operational practices, (2) developing calibration and maintenance routines, and (3) setting clear data quality goals. In this poster we will present results and recent progress in three areas:

- **IRGA inter-comparison experiment**: We simultaneously deployed five gas analyzers commonly used for the Eddy covariance technique from LI-COR, Campbell Scientific, and Picarro, Inc. in an alfalfa field in Davis, CA for a year in order to directly compare the performance of each instrument. Specifically, we compared CO_2 and H_2O mixing ratios, spectral attenuation, and measured fluxes; and analyzed the effect of two spectral corrections commonly applied to fluxes.
- **Gill sonic anemometers**: In late 2015 and early 2016, we uncovered a firmware problem in the Gill WindMaster Pro sonic anemometers used by many researchers for eddy covariance flux measurements. Gill has addressed this issue and has since sent out a notice that the vertical wind speed component (a critical piece of all eddy covariance fluxes) was being erroneously computed and reported. The problem (known as the w-boost bug) resulted in positive (upward) wind speeds being under-reported by 16.6% and negative (downward) wind speeds being under-reported by 28.9%. We are also currently conducting an experiment at US-GLE (Glacier Lakes Ecosystem Experiments Site) to better characterize Gill sonic anemometer transducers shadowing, and define and empirical correction for this shadowing.
- **Unmanned aerial systems (UAS) at AmeriFlux sites:** We will systematically deploy UAS during Tech Team site visits, starting in 2017, and collect visible and pseudo-NDVI imagery using a DJI Inspire-1 drone equipped with (1) a Zenmuse X3 camera with a 20mm focal length for visible imagery, and (2) a Zenmuse X3 camera, modified to filter solely Red + NIR to estimate “pseudo-NDVI” imagery.