The AmeriFlux Tech Team

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Chad - OSU
Dave - UNL
Housen – LBNL (not in the picture)

AmeriFlux Tech Team site visits

What to expect before, during, and after a site visit

US-TON

US-KBS

US-AUD

CA-Mer

US-ICs

US-EML

US-Prr

US-SO4

Purpose and objectives

Site visits help maintain the data quality reported to the network

- Tech Team works in a collaborative effort with site staff;
- Identify differences in systems whether due to instrumental bias, instrumental error, or data processing;
- Site visits are short term (~2 week), side-by-side comparisons using an independent reference system called the Portable Eddy Covariance System (PECS).

PECS

Sonic anemometer
- Gill, R3-50

Gas analyzers
- Closed path CO_2/H_2O LI-7200 IRGA
- Open- path CO_2/H_2O LI-7500A IRGA
- Open-path CH_4 LI-7700 gas analyzer

Met. Sensors
- Aspirated Platinum RTD (R.M. Young, 41342)
- T_{air} and RH (Vaisala, HMP155)
- 4-component radiometer (Kipp & Zonen, CNR4)
- Sunshine pyranometer (Delta-T, SPN1)
- Up- and down-welling PAR (Kipp & Zonen, PQS)
- Barometer (Vaisala PTB110)

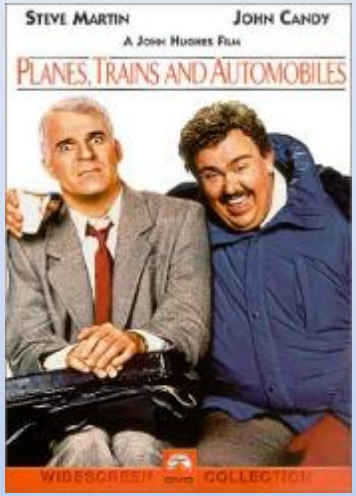
Data acquisition system
- CPU (EC high freq. data)
- CR1000 datalogger (Met data)
- Networking (Cellular modem)

Power supply
- Line power;
- Gas generator
- Solar panels / batteries

Scheduling and logistics

Sites envisaged are selected during winter (Dec-Feb)

- Contact Tech Team to request site visit
- Initial contact – gauge interest/availability, discuss possible date ranges;
- Follow-up – confirm dates;
- Send site visit questionnaire.



Logistics

- Tech Team arranges lodging and transport options;
- All costs of visit are covered by the AMP.

preparation | site visit (~2 weeks) | wrap up

Just prior to visit

For site staff:

- Ensure site access and normal site operations (data, power, communications, etc).

For Tech Team:

- Ship equipment (10-16 large cases, 500+ lbs)
- Contact staff and confirm arrival and site access dates/plans;
- Fall protection permit (if necessary);
- Check weather;
- Rent appropriate vehicle.

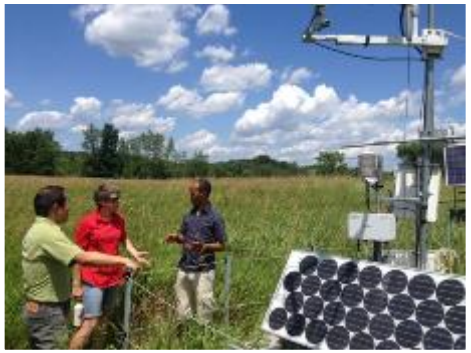
preparation | site visit (~2 weeks) | wrap up

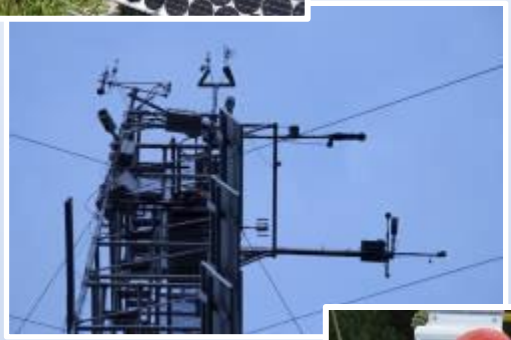
Upon arrival

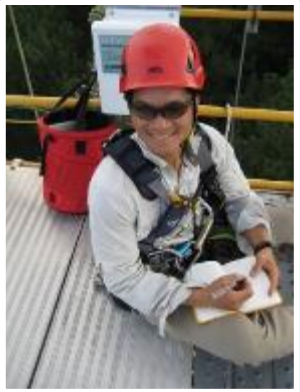
- Meet site staff;
- Pickup equipment, purchase supplies (dist. H_2O; oil, fuel, etc.);
- Calibrate gas analyzers:
  - Will usually occur the day prior to setup;
  - Prefer lab setting to conduct calibration, if available.
  - Bench top and power outlet.

preparation | site visit (~2 weeks) | wrap up

Setup day







- Meet site staff at site;
- Discuss site safety and rules;
- Site orientation;
- Discuss AmeriFlux setup plans:
  - Minimize interfering with site operations/instrumentation;
  - Find optimal location for PECS instruments;
- Tech Team can usually complete installation in a single day;
- After setup complete, Tech Team will document and photograph.

preparation | site visit (~2 weeks) | wrap up

During visit

- Tech Team remain local for duration of visit:
  - Monitor PECS and ensure data continuity;
  - May collect additional observations
  - Help with BADM and link with Data team;
  - Available for consulting with site team.
- Mid-visit comparison
  - Preliminary data comparison between systems will be conducted and shared with site staff;
  - Valuable opportunity to identify issues and resolve prior to end of comparison.

preparation | site visit (~2 weeks) | wrap up

Take down day

- Tech Team may request site staff assistance;
- Post-visit calibration of gas analyzers may be performed;
- Tech Team will arrange transportation and shipment of equipment (but assistance appreciated!).

preparation | site visit (~2 weeks) | wrap up

Post visit – data sharing

- Files should include headers, units, metadata;
- Description of processing steps, algorithms, and corrections applied. Don't assume we know.
- Do not gap fill data.
- High frequency data:
  - Tech Team will conduct independent data processing;
  - Shared folder can be provided (i.e. Dropbox).
- 30 minute processed data:
  - Fluxes, covariances, correction terms;
  - Statistics (mean, variance) for high frequency variables;
  - Meteorological, radiation, ancillary data.

preparation | site visit (~2 weeks) | wrap up

Tech Team reports

- Site visit reports shared with site staff, providing key recommendations; Extensive comparisons, analysis;
- Site benchmarked against cumulative record of site visits;
- Tech Team data available upon request;
- Feedback from site staff requested.

preparation | site visit (~2 weeks) | wrap up

Portable Profile System

The AmeriFlux portable profile system (PPS) is a new support capability to emphasize the importance of canopy storage.

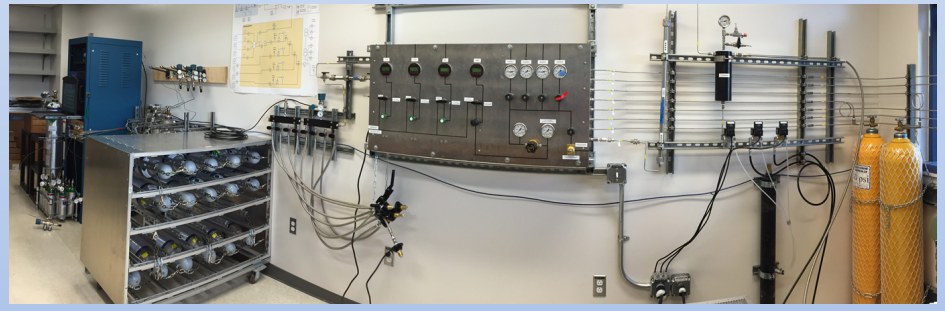
- PPS provides a high quality reference of vertical gradients and storage for the Network. The Tech Team is currently developing evaluation metrics and comparison methodologies.
- PPS can be deployed independently of a site visit to aid sites in evaluating canopy storage or profile system design (inlet heights, sampling frequency, etc).

Additional information including full parts list available on the AmeriFlux webpage.

CO_2 (storage) profile system
- LI-840A CO2/H2O IRGA
- CR6 datalogger
- Reference gases

Support Services

- These services are provided to AmeriFlux site teams to facilitate site operations and maximize data quality. For most cases, these are provided at no cost to AmeriFlux sites (return shipping excepted).
  - Calibration gases
  - Photosynthetically active radiation (PAR) sensors
  - Loaner instruments
  - Portable profile system
  - Rapid Response system



Contacts

AmeriFlux: https://ameriflux.lbl.gov/

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