Scaling AmeriFlux Data Activities to Support Network Growth

Danielle S. Christianson,[1] You-Wei Cheah,[1] Housen Chu,[1] Gilberto Pastorello,[1] Fianna O'Brien,[1] Rachel Hollowgrass,[2] Yeongshnn Ong,[1] Dario Papale,[3] Marty Humphrey,[4] Deb Agarwal,[1] and Margaret S. Torn[1]

[1]Lawrence Berkeley National Laboratory, Berkeley, CA;
[2]University of California, Berkeley, CA;
[3]University of Tuscia, Viterbo, Italy; and
[4]University of Virginia, Charlottesville, VA

(dschristianson@lbl.gov)

BER Program: TES
Project: AmeriFlux Management Project
Project Website: http://ameriflux.lbl.gov/

The AmeriFlux Management Project (AMP) offers diverse data services to AmeriFlux flux-tower teams and data users including: high-frequency data storage, QA/QC processing, DOIs, and standardization of flux and meteorological (flux-met) data. The network has over 475 sites, with more than 200 actively contributing data. We highlight efforts to meet increasing demand for AmeriFlux data services, primarily QA/QC of flux-met data and supporting Biological, Ancillary, Disturbance, and Metadata (BADM).

Providing standardized, QA/QC'd flux-met data to the earth science community is a core data service. The AmeriFlux BASE data-processing pipeline accepts flux-met data in a standardized half-hourly format. Automated QA/QC checks are performed and results are communicated with flux-tower teams via online reports and a customized issue tracking system. Data are then made available on the AmeriFlux website as the AmeriFlux BASE data product, which follows the FP (Flux Processing) standard. We continually add automation to the pipeline, including same-day online feedback to flux-tower teams. Data users can search over 2000 site-years (from over 270 sites) of BASE data by variable names and data years on the updated AmeriFlux Site Search webpage. BASE data is processed further, including gap-filling, flux partitioning, and uncertainty analysis, by ONEFlux, the next generation of FLUXNET processing. Evaluation data products for ~20 sites are available for download (see Pastorello et al's poster).

BADM standards (variables, units, and definitions) for non-flux data collected at sites continue to evolve. The BADM Web interface allows flux-tower teams to easily update Site General Information BADM. We released an online interface for DOI Authorship BADM to order authors and designate years of involvement. The Variable Information online tool is used by over 100 sites to provide height and instrument-model information that is shared via the Measurement Height data product. We developed a new Variable Information BADM that provides these height and instrument-model information along with variable units in the standard BADM data product format. We released the first version of these BADM with the FLUXNET2015 paper (Pastorello et al, in review).

While upgrading the 15-year-old BADM infrastructure, we tested a new submission format to collect canopy height BADM for the FLUXNET2015 paper, which has resulted in updated and expanded canopy height data for 86 AmeriFlux sites. AMP continually works to improve the flux-tower team and user experience and to increase the breadth, quantity, and quality of AmeriFlux data available for synthesis and analysis to address today's science challenges.