

Integrating the ONEFlux Pipeline into AmeriFlux Data Processing Workflows

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Gap-filled, flux partitioned data have constantly seen the highest use within the flux community. Partitioned fluxes are invaluable for running models at sites, studying physiological and ecological processes, and interpreting remote sensing retrievals. Gap-filled data are essential for analyses at different temporal resolutions and understanding long-term trends. Recognizing the significance and value of these data products, AmeriFlux is transitioning from helping to build an infrequently available FLUXNET data product to building a more regularly produced AmeriFlux product. Generation of the AmeriFlux product is being coordinated with regional networks around the globe, with initial efforts already underway, to support the continued generation of a global product. The new product builds on improvements to the current AmeriFlux BASE product, including faster QA/QC processing, further standardization of flux and meteorological (flux-met) data, and expansion of the Biological, Ancillary, Disturbance, and Metadata (BADM) templates and collection—see Christianson et al.'s poster.

By using the ONEFlux pipeline, available as an open-source collection of codes to the community, we are generating gap-filled and flux-partitioned data products for AmeriFlux sites. A collection of 20 sites is available online as an evaluation version (<https://ameriflux.lbl.gov/data/download-data-oneflux-beta/>), with more sites to be included throughout 2020. ONEFlux executions rely on the AmeriFlux quality control protocols, making the execution more robust and also informing new QA/QC checks to be implemented. The products in the ONEFlux pipeline include the previously mentioned (1) gap-filling of micrometeorological, flux, and other environmental variables, and (2) partitioning of CO₂ fluxes into respiration and photosynthesis, and also includes (3) the estimation of uncertainty from both the measurements and data processing steps, among other features. This poster will describe integration of the ONEFlux pipeline into AmeriFlux data workflows, highlight initial results from the evaluation sites, and discuss future development plans.