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New AmeriFlux data products using the ONEFlux pipeline

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The data products for AmeriFlux are being continuously improved and expanded. The AmeriFlux BASE product – the flux and meteorological data product – now benefits from extended quality control protocols that identify and address potential data issues sooner. We are also now collecting more detailed instrument and variable information, allowing more precise interpretation of the data. These products rely on increased automation, allowing faster publication of AmeriFlux data. For more information on these and other products, see the Christianson et al. AmeriFlux poster.

Another important development for AmeriFlux data products is the ONEFlux pipeline and collection of codes. This pipeline can generate data products that are fully compatible with the FLUXNET2015 dataset. Its first version was made available publicly in September 2018, and has been updated with improvements and fixes since then. ONEFlux is now being integrated into the AmeriFlux data pipeline. This addition is made possible by the improvements to the products mentioned before. In particular, ONEFlux executions take full advantage of the new AmeriFlux quality control protocols, allowing more robust execution of the codes in ONEFlux. The products in this pipeline include gap-filling of micrometeorological, flux, and other environmental variables, partitioning of CO_2 fluxes into respiration and photosynthesis, estimation of uncertainty from both the measurements and data processing steps, among others. Besides the integration into the AmeriFlux pipeline and creation of a new AmeriFlux data product, we are now working on the next steps for the ONEFlux pipeline. Examples of ongoing work include adapting modules for using more recent reanalysis datasets to create downscaled products for micrometeorological data and fill long gaps in these types of variables; updating key steps in the pipeline with recent developments in the community, e.g., to use different light response functions for CO_2 flux partitioning and handling long time-series more consistently across steps. This poster will show the current state of the ONEFlux pipeline, its integration into the overall AmeriFlux pipeline and new data products for AmeriFlux sites, and future development plans.