



REddyProc: Enabling researchers to process Eddy-Covariance data

Thomas Wutzler (1), Antje Moffat (1,2), Mirco Migliavacca (1), Jürgen Knauer (1), Olaf Menzer (1,3), Kerstin Sickel (1), and Markus Reichstein (1)

(1) MPI-BGC Jena, Biogeochemical integration, Jena, Germany (twutz@bgc-jena.mpg.de), (2) Thuenen Institute of Climate-Smart Agriculture, Bundesallee 50, 38116 Braunschweig, Germany, (3) Department of Geography, Ellison Hall 5803, University of California, Santa Barbara CA 93106

Analysing Eddy-Covariance measurements involves extensive processing, which puts technical labour to researchers. There is a need to overcome difficulties in data processing associated with deploying, adapting and using existing software and online tools.

We tackled that need by developing the REddyProc package in the open source cross-platform language R that provides standard processing routines for

- reading half-hourly files from different formats, including from the recently released FLUXNET 2015 dataset,
- uStar threshold estimation and associated uncertainty,
- gap-filling,
- flux partitioning (both night-time or daytime based), and
- visualization of results.

Although different in some features, the package mimics the online tool that has been extensively used by many users and site Principal Investigators (PIs) in the last years, and available on the website of the Max Planck Institute for Biogeochemistry. Generally, REddyProc results are statistically equal to results based on the state-of-the-art tools. The provided routines can be easily installed, configured, used, and integrated with further analysis. Hence the eddy covariance community will benefit from using the provided package allowing easier integration of standard processing with extended analysis. This complements activities by AmeriFlux, ICOS, NEON, and other regional networks for developing codes for standardized data processing of multiple sites in FLUXNET.