



Cross-evaluation of eddy covariance and independent measurements at flux tower sites

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Scientific objectives in FLUXNET are inter-comparisons of carbon and energy fluxes across natural ecosystems and climatic gradients, comparison of processes controlling these fluxes, assessing inter- and intra-annual variability, but also regional scaling methods, and model testing. Data quality assurance and independent ancillary data are prerequisite to test for internal and external data consistency prior to synthesis activities. Robust methods to partition eddy covariance net ecosystem exchange (NEP) into ecosystem respiration (RE) and gross primary productivity (GPP), and independent estimates of net primary productivity (NPP) or autotrophic respiration (RA), allow the calculation of site specific production ratios between NPP and GPP, and between RA and RE. Based on the definitions and relational constraints between these carbon balance components we formulated a simple consistency test to identify physically or biologically implausible data (eddy or independent measurements). The test is seen as a tool for data or site managers and users of eddy covariance data, as guidance to improve data quality for model evaluation and synthesis efforts.