CROSS-VALIDATION OF EDDY COVARIANCE AND NPP DATA AT FLUX TOWER SITES

Outline

Scientific objectives in FLUXNET and Carboeurope-IP 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 efficiency (the ratio between NPP and GPP), and the ratio 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 sets. The test is seen as a tool for data providers and users of eddy covariance data, as guidance to improve data quality for model simulation and synthesis efforts.

Initial Coordinator:

E. M. Falge (Max Planck Institute for Chemistry, J.-J.-Becher-Weg 27, 55128 Mainz, Germany)

Proposing Group:

NA

Sites/Data involved:

- Eddy covariance data sets: all site/years with annual NEP, RE, GPP, temperature, precipitation, preferably annual NEP separated in daytime and nighttime sum
- Luyssaert data base
- MOD17A2/3 NPP for the above

Co-authorship:

S. Luyssaert (Department of Biology, University of Antwerp, Universiteitsplein 1, B-2610 Wilrijk, Belgium)

M. Reichstein (Max Planck Institute for Biogeochemistry, PO Box 100164, 07701 Jena, Germany)

D. Papale (Laboratory of Forest Ecology, Department of Forest Environment Science and Resource, University of Tuscia, DISAFRI, Via Camillo de Lellis, 01100 Viterbo, Italy)

E.-D. Schulze (Max Planck Institute for Biogeochemistry, PO Box 100164, 07701 Jena, Germany)

In addition, we agree to follow the rules for co-authorship defined by the Scientific Moderation Committee in the document “disclaimer_and_info_final.pdf”.