

Proposal for FLUXNET synthesis

Title: Effects of nitrogen cycle dynamics on forest carbon exchange; evaluating a global dynamic vegetation model with FLUXNET data.

Coordinator

Katrin Fleischer, VU University Amsterdam, the Netherlands

Proposing group

Katrin Fleischer, David Wårlind, Michiel van der Molen, Karin Rebel, Almut Arneith, Jan Willem Erisman, Martin Wassen, Ben Smith, Han Dolman

Outline

Dynamic global vegetation models (DGVMs) simulate atmosphere-vegetation-soil interactions and biogeochemical fluxes essential for modelling the global climate system. The important role of the nitrogen (N) cycle on the carbon (C) balance and climate system is unequivocally evident. We propose to contribute to this development by evaluating predictions of the implemented N-cycle in LPJ-GUESS with direct observations of C-fluxes from the FLUXNET network. Modelled C-fluxes and vegetation characteristics in LPJ-GUESS will be compared to observations from FLUXNET forest sites across the globe, covering the major biome types. We evaluate the inclusion of the N-cycle in LPJ-GUESS by comparing predictions of the major C-fluxes from the C-only to the CN-version of the model. The benefit of including the N-cycle for model accuracy differs between forest types and climate zones, depending on the degree of N-limitation. The model evaluation will allow identifying recent improvements and remaining mismatches in LPJ-GUESS. The results contribute to the systematic assessment and development of ecosystem models with observations and will generate a better understanding of interactions between the C and N cycle in forest ecosystems.

Sites that initially would be involved

All forest sites.

Rules applied for use of site data and co-authorship

The rules as proposed in the disclaimer for the FLUXNET2007 synthesis will be applied.

Rules applied for co-authorship

Persons that have contributed data and/or have given intellectual input to the paper will be contacted to invite them for co-authorship