

TCO FLUXNET Synthesis Terms of Reference:

Terms of Reference for the Science Moderation Committee

The SMC provides leadership to the FLUXNET synthesis activities, including:

- promoting synthesis activities among the FLUXNET community
- guiding the preparation of the FLUXNET data base
- coordinating the synthesis activities:
 - soliciting proposals,
 - organizing the proposals into thematic groups
 - appointing theme leaders
 - responding to the concerns and recommendations of the theme leaders
 - identifying areas of overlap or duplication and working with the theme and network leaders to refocus the proposals so as to resolve conflicts
- developing data fair use guidelines and ensuring that the guidelines are followed
- ensuring that each contributing network is adequately engaged, so that their scientific involvement and paper authorship is commensurate with their data contribution
- working to resolve any conflicts that arise

The SMC consists of representatives of different regional networks and FLUXNET: D. Baldocchi, J. Chen, B. Law, H. Margolis, D. Papale, M. Reichstein, C. von Randow

Terms of Reference for the Theme Leaders

The theme leaders report to the SMC. They are responsible to

- coordinate activities among the theme PIs
- avoid duplication of effort within their theme by facilitating discussion among theme participants and refocusing proposals where necessary

- communicate data fair use and authorship guidelines to each theme participant
- make recommendations to the SMC on the resolution of conflicts if conflicts arise

Data Policy and Fair Use Guidelines

- The final FLUXNET synthesis database has been released in September 2007. A new version of the database will be released after one or two years
- Through September 2008, only contributors to the FLUXNET database are eligible to use data from the TCO Fluxnet data base, and only in the context of the pre-approved FLUXNET synthesis papers. PIs and regional networks can however make their data more easily available to others under a fair use policy by writing a short note to the SMC. These data will then be available for download subject to existing fair use policies. PIs will still be informed about downloads when they occur.
- All data users agree to abide by the fair use guidelines and accept the recommendation of the SMC when conflicts arise
- Under no circumstances can the data be circulated to other people, even to co-authors, that are not listed in the proposal, because of conditional agreements with different networks. Co-authors that need to access the data must first send a request to the SMC that they will forward this to the networks for approval.
- Data providers will be kept fully informed of the use of their data. Data-use plans are made public in the www.fluxdata.org website in the form of the proposals posted there. Site PIs may withdraw their data from

specific analyses carried out although they should give a reason for this to the proposer and SMC..

- All data providers will be invited to give intellectual input to the studies that use their data.
- Significant intellectual input should lead to co-authorship. Data contribution may lead to group co-authorship if possible with the journal. The final decision on co-authorship is with lead author; each lead author must inform the data providers of co-authorship plans early in the process. All the PIs can request that specific sentences be inserted into the acknowledgment section.

- Scientific communication will be between lead authors and co-authors. Until the final manuscripts are accepted, the data providers must be kept in the e-mail traffic that discusses the topic, circulates manuscript drafts, etc. The data providers must however maintain these information as confidential.
- Lead authors are responsible to appropriately acknowledge the contributions of each contributing network and their funding agencies in all presentations and publications that result from the TCO FLUXNET synthesis.

Appendix I: List of focus groups

Focus Group	Abbreviation	Coordinator
Disturbance	D	B. Amiro
Northern ecosystems	NE	H. Margolis
Interannual variability, climatic controls at different time-scales	IAV	B. Law
Global scale spatial analysis, data oriented spatial analysis and upscaling	GSS	D. Papale
Carbon-water relations and (eco-)hydrological aspects	CWR	M. Reichstein
Biophysical properties and feedbacks	BPF	P. Stoy
Radiation as controlling factor & phenology	RP	D. Baldocchi
Quality control	QC	E. Falge (tbc)
Inverse parameter evaluation	IPE	A. Richardson

Appendix II: List of proposals

Proposer last name	Proposer first name	Title	Collaborators	TopicClass	Focus group
Alstad	Karrin	Ecosystem Water Use Efficiency of Major World Biomes	Alstad; Chen	C-H2O	CWR
Amiro	Brian	Carbon Dynamics Following Fire and Harvest in North American Boreal and North Temperate Forests	Amiro; Barr; Black	Disturbance	D, NE
Baldocchi	Dennis	Measuring Terrestrial Biosphere Metabolism with a Global Flux Network	Baldocchi; Reichstein; Papale; Law	GlobalSummary	GSS
Barr	Alan	Synthesis of Inter-Annual Variability in Net Ecosystem Exchange at Long-Term North American Mature Boreal and North-Temperate Forest Flux-Tower Sites	Barr; Black; Wofsy; Hollinger;	IAV, Boreal	IAV, NE

Beer	Christian	Which environmental factors determine temporal and spatial variability of water-use efficiency on ecosystem level?	Beer; Baldocchi; Bernhofer; Buchmann; Ciais; Knohl; Kostner; Kutsch; Reichstein; Soussana; Williams	C-H2O	CWR
Beer	Christian	Global synthesis of Gross Primary Production	Philippe Ciais, John Grace, Martin Jung, Sebastiaan Luyssaert, Giorgio Matteucci, Dario Papale, Philippe Peylin, Markus Reichstein, Pete Smith, Enrico Tomerelli	Up-scaling, global, data-oriented	GSS
Bernhofer	Christian	Analyzing long-term FLUXNET measurements for reliable ET values across ecosystem types and across climatic regions	Bernhofer; Kostner; Knohl; Lindroth	H2O	CWR
Buchmann	Nina	Inter- & intrannual variability of CO2 fluxes of temperate ecosystems at a global scale	Buchmann; Ciais; Hollinger; Soussana; Stoy	IAV, Temperate	IAV
Cescatti	Alessandro	Validation of MODIS albedo product at the FLUXNET sites	Cescatti; Schaaf; Cook; Marcolla; Richardson; Law	Biophys., Albedo	BPF
Cescatti	Alessandro	Effect of land use change and global warming on winter albedo	Cescatti; Marcolla	Biophys., Albedo, Landuse	BPF
Cescatti	Alessandro	Sensitivity of GPP and NEE to direct vs diffuse radiation across Fluxnet sites	Cescatti; Schaaf; Cook; Marcolla; Richardson; Law	Radiation effects	RP
Ciais	Phillippe	Determinants of spatial and temporal gradients in ecosystem fluxes and their dependency upon climate drivers: a comparison between North America and Europe	Davis, Ciais, Piao, Maire	Spatio-temporal variability US-Europe	IAV
Drolet	Guillaume	Understanding the Environmental Controls on Net and Gross Light-Use Efficiency and Their Temporal Patterns: A Circumboreal Study	Drolet; Margolis; Middleton;	Radiation effects, Boreal	RP, NE
Ellsworth	David	Linking species-level physiology with vegetation fluxes	Ellsworth; Wright; Knohl; McMurtrie; Reich	Ecophys	
Falge	Eva	Cross-Validation of Eddy Covariance and NPP Data at Flux Tower Sites	Falge	Quality control	QC
Gilmanov	Tagir	Agricultural ecosystems as strong sinks for atmospheric CO2: evidence from flux tower measurements	Gilmanov	Croplands	
Gilmanov	Tagir	Gross productivity, respiration, and carbon sequestration potential of grassland ecosystems of the world: synthesis of flux tower measurements	Gilmanov	Grasslands	

Goerner	Ann	Towards a better representation of drought effects in diagnostic biogeochemical models	Goerner; Reichstein	Drought effects	CWR
Gorsel	Eva van	Nocturnal Carbon Efflux: Can we take advection terms into account with measuring them?	Gorsel; Leuning	Quality control	QC
Groenendijk	Margriet	Generalities in worldwide ecosystem water and carbon exchange	Groenendijk; Dolman	C-H2O	CWR
Hanan	Niall	The canopy structure information content of flux measurements: inferring physiologically-relevant canopy phenology at global scales using Fluxnet data	Hanan; Reichstein; Cook; Ibrom	Radiation, Phenology	RP
Hilton	Timothy	What is the spatial and temporal coherence of flux tower signals?	Davis, Ciais	Up-scaling, regional, process-oriented	GSS
Jarvis	Andrew	A data-based cross-site evaluation of (optimal) carbon gain and water use strategies as expressed in FLUXNET eddy covariance data	Jarvis; Stauch	C-H2O	CWR
Jenerette	Darrel	Variation of ecosystem metabolic rain response along a 2000 mm rainfall gradient	Jenerette; Scott; Huxman	Drought effects; C	CWR
Knohl	Alexander	Assessing soil moisture-atmosphere feedbacks via Bowen ratio changes during droughts from FLUXNET data	Knohl; Bernhofer; Ciais; Kostner; Viovy	Drought effects; energy	BPF, CWR
Kostner	Barbara	Water vapour flux partitioning related to climate, global ecosystem types and vegetation structure	Kostner; Bernhofer; Knohl; Lindroth	H2O	CWR
Kutsch	Werner	A quick-test of all sites involved in the Fluxnet study concerning advective losses during night-time	Kutsch	Quality control	QC
Lasslop	Gitta	Towards a better understanding of temporal variability of inverse model parameter estimates in process-based models	Lasslop; Reichstein; Mahecha; Kattge	Inverse parameter retrieval	IPE
Law	Bev	Temporal dynamics in gross ecosystem production, ecosystem respiration, net carbon uptake and environmental conditions among plant functional types	Law; Baldocchi; Reichstein; Papale; Valentini	GlobalSummary	GSS

Leuning	Ray	Using FLUXNET data to constrain SVAT model parameterization	Leuning; Stockli; Hoffman; Hollinger; Stoy; Munger; Dellwik; Richardson; Kattge; Reichstein; Williams	Inverse parameter retrieval	IPE
Lindroth	Anders	Factors controlling total ecosystem respiration in boreal forests	Lindroth; Margolis; Hollinger; Vesala; Luysaert	Ecosystem respiration; boreal	NE
Lund	Magnus	Net Ecosystem CO ₂ Exchange in Mires and its Sensitivity to Temperature and Water Table Fluctuations	Lund; Nilsson; Aurela; Rinne	Wetlands	
Luyssaert	Sebastiaan	Short term extremes in NEE: drivers and responses in natural ecosystems	Luyssaert; Hollinger; Munger; Stoy; Archibald; Buchmann; Williams; Janssens	Temporal variability; extremes	IAV
Mahecha	Miguel	Extraction and quantification of hysteretic behavior and phase synchronizations at different time scales in ecosystem-atmosphere fluxes inferred from a global network of eddy covariance flux sites	Mahecha; Reichstein; Carvalhais; Lange	Temporal variability; multi-scale	IAV
Mahli	Yadvinder	Proposal for carbon status of old-growth forest	Zhang	Disturbance; Old-growth forest	D
Mahli	Yadvinder	Quantifying the constraints imposed by sun-angle, light, water and temperature on ecosystem gross productivity		GPP; spatial constraints	GSS
Manca	Giovanni	Paradigmatic networks: a new tool for gap-filling and spatialization of eddy covariance CO ₂ fluxes	Federici, Marci, Seufert	Up-scaling, global, data-oriented	GSS
Margolis	Hank	Contrasting the Seasonal Patterns of Fluxes and Environmental Responses Functions for the Circumboreal Forest	Margolis; Drolet;	Boreal forest	NE
Migliavacca	Mirco	Semi-empirical modelling of ecosystem respiration: review, improved algorithm and integration with Earth observation data	Migliavacca; Reichstein; Richardson; Lasslop	Ecosystem respiration; spatio-temporal	GSS
Migliavacca	Mirco	Interannual variability of growing season length and its influences on annual carbon budget as derived from carbon flux measurement	Migliavacca; Tomelleri; Churkina; Jung; Seufert	Phenology; growing season	RP
Misson	Laurent	Influence of climate, soil and vegetation on rain pulses responses in seasonal drought ecosystems (or across different ecosystems): a synthesis based on Fluxnet data	Misson; Carrara; Litvak	C-H ₂ O	CWR

Molen	Michiel van der	Feedbacks in Boreal and Arctic Climate Systems in Siberia	Molen; Dolman; Ciais; Ohta; Maximov; Heimann; Schulze; Belelli	Boreal & Tundra; feedbacks	NE, BPF
Monson	Russell	A Comparative Study of Optimized Process Parameters and their Response to Current and Future Climate in Evergreen Needleleaf Ecosystems	Monson; Moore; Schimel	Inverse parameter retrieval	IPE
Noormets	Asko	The effects of harvesting, thinning and fire on forest carbon exchange	Noormets; Law; Margolis; Schulze; Chen; Grace; Barr	Disturbance	D
Oliphant	Andrew	The Role of Canopy Architecture on Gross Ecosystem Production Responses to Diffuse Light	Oliphant;	Radiation; diffuse-direct	RP
Papale	Dario	A new global spatialized estimate of NEP, GPP, and TER and analysis of uncertainty and limiting factors using data driven models and eddy covariance measurements	Papale; Reichstein; Tomalleri	Up-scaling, global, data-oriented	GSS
Piao	Shilong	Effect of snow change on the C balance in various northern ecosystems: a synthesis based on Fluxnet data	Piao; Ciais; Reichstein; Luyssaert	Snow effects; Boreal-Tundra	NE
Reichstein	Markus	Inter-annual variation (IAV) in global terrestrial carbon-water balance derived from network of eddy covariance flux sites: magnitude, controlling processes and climate factors	Reichstein; Papale; Baldocchi; Barr; Ciais; Heimann; Luyssaert; Richardson; Rodenbeck	IAV, global	IAV, GSS
Richardson	Andrew	Effect of spring onset and autumn senescence date on forest-atmosphere CO ₂ exchange: A multi site FLUXNET synthesis	Richardson; Piao; Ciais; Breon	Phenology; growing season	RP, NE
Ryu	Youngryel	Trend of land surface radiation balance and evapotranspiration across diverse ecosystems under climate change	Baldocchi, Vargas	Biophysical feedbacks, H ₂ O	BP
Ryu	Youngryel	Classification of functional vegetation group using water deficit and actual evapotranspiration across diverse ecosystems and climatic zones using FLUXNET database	Baldocchi, Vargas	H ₂ O	CWR

Seneviratne	Sonia	Multi-scale land-atmosphere interactions	Nina Buchmann, Philippe Ciais, Markus Reichstein, Reto Stöckli	Biophysical feedbacks, Drought effects	BP, CWR
Soussana	Jean-Francois	Disturbance synthesis	Grace	Disturbance	D
Stoy	Paul	The relationship between net and long-wave radiation: global application of the heating coefficient concept of Monteith and Szeicz (1961)	Stoy; Knohl; Jarvis; Clement; Moncreiff; Monteith	Biophys., feedback	BPF
Stoy	Paul	The effects of vegetation on surface temperature: a bottom-up approach from a global network of eddy covariance flux towers	Stoy; Katul; Juang; Siqueira; Novick; Williams; Clement; Moncreiff; Lloyd	Biophys., Feedback	BPF
Stoy	Paul	Comparing semi-parametric models for partitioning incident photosynthetically active radiation into its direct and diffuse component	Stoy; Richardson; Cescatti; Grace; Baldocchi; Malhi; Butt; Juang	Biophys., Radiation	BPF
Stoy	Paul	On the spectral properties of eddy covariance time series	Stoy; Richardson; Katul; Mahecha; Baldocchi; Reichstein; Papale	Temporal variability; multi-scale	IAV
Sun	Ge	A Unified Approach to Estimate Potential Evapotranspiration of Forest Ecosystems	Sun	H2O	CWR
Tomelleri	Enrico	Calibration of a light use efficiency model using FLUXNET data	Tomelleri; Reichstein; Papale; Gorer;	Up-scaling, global, data-oriented	GSS
Vargas	Rodrigo	Linking photosynthesis with soil respiration: diurnal patterns across large geographical distances	Baldocchi	Temporal variability	IAV
Williams	Chris	Ecohydrologic Hypotheses Revisited: Synthesis with a Global Observation Network, Fluxnet	Williams; Buchmann; Baldocchi; Reichstein; Papale	H2O	CWR
Williams	Chris	Carbon Dioxide and Water Flux Responses to Extreme Weather and Climate Anomalies: A Fluxnet Synthesis	Williams; Munger; Hollinger; Stoy; Richardson; Schaefer; Stockli	Temporal variability; extremes	IAV
Zhang	Junhui	Sink or Source? Carbon metabolism and regulating factors of old-growth forest ecosystems	Zhang	Old-growth;	D