



# Proceedings of the iLEAPS Early Career Scientist Workshop 2011

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15.-17.9. 2011 Mercure Hotel, Garmisch-Partenkirchen, Germany



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## Welcome to the iLEAPS Early Career Workshop 2011!

Dear Participant,

It is our pleasure to welcome you to the iLEAPS Early Career Scientist Workshop 2011. The programme this year combines trainings that aim to provide guidance in critical topics in the career of a young scientist with keynote lectures on the hot topics in LEAP science. Our invited speakers come from top research institutions all over the world, and include Prof. Guy Brasseur (Climate Service Center, Hamburg, Germany), Prof. Almut Arneth (Lund University, Sweden), Dr. Thomas Karl (NCAR, United States), Dr. Francesco Loreto (Institute for Plant Protection, National Research Council, Italy) and Prof. Laurens Ganzeveld (Wageningen University, the Netherlands). The trainings focus on establishing a successful scientific career (Training I by Prof. Mary Anne Carroll, University of Michigan, MI, United States), as well as dealing with the media and managing your time (Trainings II and III by Mr. William Uber, Germany). We gratefully acknowledge the iLEAPS, IGBP, and our sponsors (see the last page of these proceedings) for making it possible to invite such a wonderful set of speakers! The local organization committee is also gratefully acknowledged for their hard work for making the workshop possible in the first place.

We are glad to have you with us and hope that this workshop will offer you a chance to have great discussions with interesting people in the field of LEAP science – be it with other early career scientists or the invited established keynote speakers and trainers!

With best regards,

the iLEAPS ECSW program committee,

Benjamin Fersch, Germany

Joshua Fisher, USA

Andrea Ghirardo, Germany

Ilona Riipinen, Finland

Taina Ruuskanen, Finland

Nobuko Saigusa, Japan

Benjamin Wolf, Germany

Erika Zardin, Australia

## Programme

Time	Thursday, 15.9.	Friday, 16.9.	Saturday, 17.9.	Sunday, 18.9.
8:00-8:30		Registration (7:45-8:30)		
8:30-9:00		Opening (8:30-8:45)	Keynote V: Prof. Brasseur (8:30-9:15)	
9:00-9:30		Keynote I: Prof. Arneth (8:45-9:30)	Working groups organize (9:15-10:15)	Hiking trip (optional, 10:00-16:00) Meeting point: Mercure Hotel at 10:00
9:30-10:00		Keynote II: Dr. Loreto (9:30-10:15)		
10:00-10:30		Coffee and posters (10:15-10:45)		
10:30-11:00		Training I: Prof. Carroll "Working effectively at the interfaces" (10:45-12:15)	Training III: Mr. Uber "Managing your project – managing yourself" (10:45-12:15)	
11:00-11:30		Lunch (12:15-13:30)		
11:30-12:00				
12:00-12:30				
12:30-13:00		Keynote III: Dr. Karl (13:30-14:15) Keynote IV: Prof. Ganzeveld (14:15-15:00)		
13:00-13:30				
13:30-14:00		Group discussions and Q & A session with the speakers (13:30-15:00)		
14:00-14:30		Coffee and posters (15:00-15:30)		
14:30-15:00				
15:00-15:30		Registration (15:30-17:00)		
15:30-16:00				
16:00-16:30		Training II: Mr. Uber "Meet the media" (15:30- approx. 19:00)	Group work continues (15:30-17:30)	Free time
16:30-17:00			Free time	
17:00-17:30	Ice breaker (17:00-20:00)	Night out together: Drinks at Irish pub and later dancing (19:30 on)		
17:30-18:00				
18:00-18:30		Free time		
18:30-19:00		Free time		
19:00-19:30		Dinner together (20:00 on)		
19:30-20:00				
20:00 on				

The coffee breaks, lunches and dinner on Friday are served at Hotel Mercure and included in the workshop fee. At the ice breaker drinks will be available for purchase.

## Keynote abstracts

### Keynote I: Prof. Almut Arneth, Lund University, Sweden

#### “Current and future issues of terrestrial biogeochemical cycles in the climate system – some (subjective) examples”

The large number of interactions that link the composition of the atmosphere and climate, with vegetation, soils and terrestrial biogeochemical cycles are a major player in the Earth system. A number of feedbacks operate within this system. These can attenuate or accelerate changes in climate and thus need to be taken into consideration for future projections of climate change, and the related changes in atmospheric gaseous and particulate composition. In recent years, a number of studies has begun to study these interactions and feedbacks not only in a conceptual manner but also attempted to quantify the climate (in most cases: temperature) relevance of terrestrial biogeochemical cycles-related feedbacks.

However, the underlying model experiments are fraught with large uncertainties that are to a large degree associated with incomplete process understanding, with difficulties of parameterizing models and with evaluation of model output on the required spatiotemporal scales. In my presentation I will select a number of examples that highlight some of the current issues, aiming to provide an overview over the breadth of scientific approaches to address these uncertainties and to highlight some of the most critical topics for future research in that area.

### Keynote II: Dr. Francesco Loreto, Institute for Plant Protection, National Research Council, Italy

#### “The Past, Present and Future of Volatile Isoprenoids”

Plants have evolved an extraordinarily diverse suite of protective mechanisms against biotic and abiotic stresses. Non-volatile isoprenoids are known to be powerful antioxidants and volatile isoprenoids let plant communicate with other organisms. However, the role of volatile isoprenoids (isoprene, monoterpenes and sesquiterpenes) in abiotic stress responses remains controversial. Here I note that abiotic stressors, including novel stress factors such as atmospheric pollutants, generically involve production of reactive oxygen species in plant cells; that volatile isoprenoids are reactive molecules whose biosynthesis is elicited by a general stress condition; and that volatile compounds usually exert signaling functions. I will review evidence that isoprene, the main and most abundant volatile isoprenoid, a) primes plant response to stress by activating H<sub>2</sub>O<sub>2</sub> signaling; b) quenches reactive oxygen species in vitro and in vivo; c) reacts with NO, indirectly modulating the signaling of programmed cellular death upon stress occurrence; and d) intercalates into cell membranes and strengthens them when attacked by reactive oxygen species. Finally, I propose that volatile isoprenoids mitigate the effects of oxidative stress on plant primary metabolism by mediating, directly or indirectly, the oxidative status of the leaf.

Keynote III: Dr. Thomas Karl, National Center for Atmospheric Research, USA

#### “Atmospheric VOC Flux Measurements using PTR-MS”

The largest fraction of organic carbon in the atmosphere exists in form of volatile organic compounds (VOC). Highly time-resolved, quantitative measurements of VOC using Proton-transfer-reaction mass spectrometry (PTR-MS) have significantly helped to improve our understanding of the surface atmosphere exchange of VOC over the past decade. This presentation will focus on recent progress in constraining the exchange of VOC on the ecosystem and regional scale. The life cycle of organic carbon is ultimately controlled by emission and deposition processes at the surface. Uncertainties in budgets of VOC and potential ramifications for organic aerosol production in the atmosphere will be discussed based on a synthesis of direct VOC flux measurements performed in a range of different ecosystems. These direct flux measurements will be used to address some outstanding questions concerning (1) the amount of reactive biogenic organic aerosol precursors, (2) the magnitude of deposition processes and (3) the lifetime of reactive biogenic organic aerosol precursors in the atmosphere.

Keynote IV: Prof. Laurens Ganzeveld, Wageningen University, the Netherlands

#### “Why Atmospheric Chemists Should Know about Canopy Rainfall Interception, the Litter Layer and Nighttime In-canopy Free Convection Conditions”

The atmospheric chemistry community is getting more involved in Earth system analysis also because there are a number of apparent linkages between atmospheric chemistry and other Earth system processes. Increasing anthropogenic emissions induce changes in ozone and natural and anthropogenic aerosols contributing to climate change and deteriorating air quality. There is also the influence of chemistry on the lifetime of other greenhouse gases, e.g., methane, and removal of atmospheric pollutants with the latter actually affecting biogeochemistry through oxidant and nutrient deposition and ecosystem acidification and eutrophication. All these dependencies stress the need for more multi-disciplinary approaches finding an optimal balance in measurement strategies and model representation of these dependencies needed to assess potentially relevant feedbacks in the Earth system. Coming from the atmospheric chemistry community I observe that this is not (yet) a well-established practice with measurement campaigns and modeling activities being strongly biased towards understanding/quantification of the typical atmospheric chemistry metrics. There is generally not sufficient consideration of other key processes that partly regulate atmospheric chemistry, e.g., missing micro- and boundary layer measurements. This is also complicating our efforts to link the observations which generally reflect small spatial- and short time scales, to the scale of Earth system models. I will present the results of a number of case studies to illustrate the relevance of some of these processes in atmospheric chemistry- Earth system

interactions, processes that would generally be appreciated by the atmospheric chemistry community being rather “exotic”. I will also discuss modeling and measurement approaches that according to me will further benefit an improved understanding of the role of atmospheric chemistry in the Earth system.

Keynote V: Prof. Guy Brasseur, Climate Service Center, Germany

“From Environmental Research to Earth System Management”

Over the last decades, much progress has been made in our understanding of key processes and feedback mechanisms involved in the evolution of the Earth system. Specifically, a large number of observational data have been gathered and predictive models have been developed to address key scientific issues. Syntheses have been produced by international programs such as IGBP and WCRP.

This knowledge, however, is not yet sufficiently used by society to improve society's resilience. Climate change, for example, produces risks for people, but also offers opportunities for business and government. The challenge today is to use the knowledge provided by interdisciplinary environmental research to develop policy and business solutions that reduce society's vulnerability and offer new adaptation strategies in addition to mitigation options.

The paper will provide some views about the way by which environmental research can benefit decision makers in the private and public sectors.

## Trainings

Training I by Prof. Mary Anne Carroll, University of Michigan, USA:

“Working Effectively at the Interfaces: Challenges, Contributions, and Career Development”

Session foci:

- Conducting interdisciplinary research
  - Making the transition from a disciplinary to an interdisciplinary researcher
  - Educating and motivating other researchers and sponsors
  - Developing a community of interdisciplinary researchers
- Training others:
  - to become integrated thinkers,
  - to work effectively with researchers from “Other disciplines”,
  - to be experts who have sufficient understanding of “other disciplines” to know who to bring to the table to address “wicked problems”
- Career Development
  - Establishing yourself as an independent and productive researcher
  - Getting funding: understanding sponsor priorities and effectively motivating your research
  - Expanded role of scientists: consideration of society’s needs and getting research results into the hands of resource managers

Trainings II and III by Mr. William Uber, Germany:

Training II: “Meet the media” ... Communicating Science Effectively to the Media

Workshop goals:

- Develop audience profiles and learn how to tailor communication to appeal to the specific needs of different audiences
- Help participants develop a set of guidelines for how to prepare and deliver high quality presentations
- Provide the opportunity for participants to start thinking about and preparing for their next scientific presentation
- Provide participants with accurate feedback on both the content and delivery of their presentation

- Help participants discover the importance of being a good presenter and motivate them to want to improve their presenting skills
- Give participants a chance to work through their anxieties about presenting and start to enjoy public speaking

### Training III: “Managing your project – managing yourself” – tips for enhancing productivity in the lab and elsewhere

Workshop goals:

- Participants are introduced to and practice with basic self-management and time management tools
- Participants start to develop a broader view of their work, and what is necessary ( besides good researching skills) to have a long and successful scientific career

## Sponsors



University of Helsinki



Finnish Meteorological Institute



Karlsruhe Institute of Technology (KIT)



NASA



Karlsruhe House of Young Scientists

Last name	First name	Affiliation	Abstract title
Aalto	Juho	University of Helsinki	Continuous VOC emission measurements of Scots pine shoots
Aaltonen	Hermann	University of Helsinki	Continuous VOC flux measurements on boreal forest floor
Adachi	Minaco	National Institute for Environmental Studies, Japan	Effect of soil type on soil respiration in different types of tropical forest using a process-based model
Alves	Eliane	National Institute for Amazon Research	Effects of temperature on isoprene emission of the tropical tree species <i>Eschweilera coriacea</i> during leaf phenology in Central Amazon
Amore Cecchini	Micael	Instituto Nacional de Pesquisas Espaciais (INPE)	Physicochemical properties of Amazonian cloud condensation nuclei
Arneth	Almut	Lund University	Land-atmosphere interactions and feedbacks research: current knowledge and challenges for the future
Asam	Sarah	German aerospace center, DLR	Derivation of a spatial and temporal high resolution LAI product from multi-scale remote sensing data for hydrological modeling
Ashworth	Kirsti	University of Lancaster	Biofuel cultivation has a deleterious effect on human health and crop productivity
Bagley	Justin	University of Wisconsin	Rain Followed the Plow: What is the Potential impact of Land Cover Change on the Precipitative Sources of Earth's Breadbaskets?
Barbu	Alina	Meteo France	Assimilation of ASCAT soil moisture and LAI CYCLOPES products into the SURFEX platform
Barseghyan	Artak		Chemical kinetics software package and its illustration on ozon kinetics
Berezina	Elena	Obukhov Institute of Atmospheric Physics	Surface CO <sub>2</sub> , CH <sub>4</sub> AND 222RN concentrations and emissions over Russia from observations in Troica experiments
Bohrer	Gil	The Ohio State University	Detecting and modeling hydrodynamic stresses on stomatal conductance in the forest accelerated succession experiment (FASET)
Boisier	Juan Pablo	Laboratoire des Sciences du Climat et l'Environnement	Attributing the biogeophysical impacts of Land-Use induced Land Cover Changes to various sources. Results from the LUCID set of simulations.
Bose	Sahana	Jawaharlal Nehru University	Human influence on mangrove ecosystem in Indian Sunderbans: an earth-atmosphere interaction
Burba	George	LI-COR Biosciences	Eliminating a need for the density correction in CO <sub>2</sub> and H <sub>2</sub> O eddy fluxes when using fast mixing ratio from an enclosed low power gas analyzer
Chaun	Nittaya	Naresuan University	Variation of soil organic carbon stock in abandoned rice field managed by crop rotation
Chen	Jiquan	University of Toledo	What we have learned from recent fluxnet syntheses on use of carbon, water and energy?
Chen	Hao	Chinese Academy of Sciences	Impact of vegetation inter-annual variability on evapotranspiration
Chua Fang Lim	Amy	Massachusetts Institute of Technology	A comparison between surface-air exchanges in urban turf grassland and undisturbed lowland tropical rainforest in southeast Asia
Croteau	Phillip	Aerodyne Research, Inc.	An Aerosol Chemical Speciation Monitor (ACSM) for routine monitoring of atmospheric aerosol composition
Deng	Bin	Yale University	Estimating locally adjusted canopy-level atmospheric scalars from low-resolution free troposphere data through downscaling by Bayesian inversion
Deventer	Malte Julian	Universität Münster	Highly size resolved particle fluxes over an urban area
Fares	Silvano	Consiglio per la Ricerca e la Sperimentazione in Agricoltura	Fluxes of BVOC and tropospheric ozone from a Citrus orchard in the California Central Valley
Fasona	Mayowa	University of Lagos	Modeling the potential impact of climate change on the ecology in the wooded savannah of Nigeria
Foken	Thomas	University of Bayreuth	The influence of mesoscale phenomena on the atmosphere-biosphere exchange
Fox	Andrew	Neon Inc.	Parameter sensitivity and estimation in the community land model using the data assimilation research testbed
Franchin	Alessandro	University of Helsinki	Cosmic rays – atmosphere interactions: physical characterization of ions in the cloud chamber
Ganzeveld	Laurens	Wageningen University	Feedbacks involved in biogeochemistry-atmospheric chemistry and boundary layer interactions
GARRIGUES	Sébastien	French National Institute for Agricultural Research	Multi-year assessment of soil vegetation atmosphere transfer (SVAT) modeling uncertainties over a mediterranean agricultural site
Gentile	Pierre	Columbia University	A stochastic bulk model of the coupled boundary layer and convection over land
Ghirardo	Andrea	German Research Center for Environmental Health	Biogenic volatile organic compound and respiratory CO <sub>2</sub> emissions after 13C-labeling: online tracing of C translocation dynamics in poplar plants
Gierens	Rosa	University of Helsinki	Modelled aerosol formation in Southern African savannah environment
Guanter	Luis	Atmospheric, Oceanic and Planetary Physics, University of Oxford	Assessing the potential of solar-induced chlorophyll fluorescence measurements from space to indicate vegetation functioning
Guidolotti	Gabriele	University of Tuscia	Impact of climate manipulation on carbon fluxes of a Mediterranean shrubland in Sardinia
Guillod	Benoît	ETH Zurich	The influence of prescribed soil type in regional climate simulations
Haapanala	Sami	University of Helsinki	Is forest management a significant source of monoterpenes into the boreal atmosphere?
Hanpattanakit	Phongthep	Mae Fah Luang University	Seasonal variations of soil and ecosystem respiration in dry dipterocarp forest, western Thailand
Hu	Yunfeng	Institute of Geographic Sciences and Natural Resources Research	A scaling-up methods for high-resolution land cover data in climate modeling
Ishii	Reichiro	Japan Agency of Marine Science and Technology	A new mechanistic model scheme for vegetation transition at the topographical scale: Spatio-temporal transition in Mongolian forest-steppe vegetation
Jokinen	Tuija	University of Helsinki	Gas phase sulfuric acid measurements with API-TOF-MS
Joo	Eva	University of Ghent	Effect of heat and biotic stress on the emission of pseudotsuga menziesii
Kajos	Maija	University of Helsinki	Mono- and sesquiterpene emissions from Dahurian larch
Karl	Thomas	University Corporation for Atmospheric Research	Measuring the dry depositional sink of oxidized organic vapors to vegetation using PTRMS
Katayanagi	Nobuko	Agriculture, Forestry and Fisheries Research Council	Validation of the DNDC-Rice model based on CH <sub>4</sub> and N <sub>2</sub> O fluxes from rice cultivated pots under alternate wetting and drying irrigation management
Kemper Pacheco	Claudia Justina	Istituto di Metodologie Chimiche-Research Area of CNR	A GIS based model to estimate the species-specific biogenic volatile organic compounds (BVOC) emissions from some Italian terrestrial ecosystems
Kessomkiat	Wittaya	Agrosphere (IBG-3), Forschungszentrum Jülich GmbH	Estimating random errors of eddy covariance data: a more robust two-tower approach
Kieloaho	Antti-Jussi	University of Helsinki	Concentration of low weight aliphatic amines in boreal forest and urban air
Kim	Saewung	University Corporation for Atmospheric Research	Biosphere-Atmosphere-Anthroposphere interactions and their impacts on oxidation capacity in the troposphere
Koehler	Birgit	Uppsala University	An in-depth look into a tropical lowland forest soil: How 9-11 years experimental nitrogen addition affected CH <sub>4</sub> and N <sub>2</sub> O dynamics down to 2-m depth
Kokkatil	Gopalkrishnan	University of Helsinki	Flexible atmospheric model (FLAMO) : a new 3D atmospheric model to study atmospheric processes in the planetary boundary layer
Kyro	Ella-Maria	University of Helsinki	Evidence of Antarctic aerosol formation due to continental biogenic precursors
Lasslop	Gitta	Max Planck Institute for Biogeochemistry	Influence of the driving temperature for eddy covariance carbon flux partitioning
Le	Quang Bao	ETH Zurich	Multi-pronged assessment of land degradation in West Africa reveals the importance of atmospheric fertilization in masking the processes involved
Lequy	Emeline	INRA	Particulate atmospheric deposition on forest ecosystems: impacts of the canopy on particulate inputs to nutrient cycles

Liang	Rtia	Chinese Academy of Sciences	An individual-based model for simulating catchment dynamics in secondary forest in northeast China
Liao	Li	University of Helsinki	Simulation on the contribution of biogenic VOCs to the new particle formation from direct plant chamber measurement
Liberati	Dario	University of Tuscia	Gas exchange in a garigue shrub species in a warmer and drier climate
Lindauer	Matthias	Karlsruhe Institute of Technology	Net ecosystem exchange of CO <sub>2</sub> in a wind-throw-disturbed upland spruce forest ecosystem – first results
Lorenz	Ruth	ETH Zurich	Land-vegetation-climate interactions and drought feedbacks
Mahecha	Miguel	Max Planck Institute for Biogeochemistry	Scale dependent parametric diagnostics of ecosystem-atmosphere exchanges
Mak	John	Stony Brook University	Spatial and temporal variations of VOC in a ponderosa pine ecosystem
Mendiguren	Gorka	Spanish national research council	A comparison of evapotranspiration and evaporative fraction estimates using the triangle method with MSG-SEVIRI, MODIS and LANDSAT 5 TM
Mogensen	Ditte	University of Helsinki	Modelled atmospheric OH-, ozone- and NO <sub>3</sub> -reactivity over boreal forest
Nemitz	Eiko	Centre for Ecology and Hydrology (CEH)	Modelling the effect of NH <sub>4</sub> NO <sub>3</sub> evaporation in and near vegetation canopies on biosphere / atmosphere exchange fluxes with vegetation
Neves	Theomar	National Institute for Space Research	The diurnal cycle of the atmospheric boundary layer over pasture site in Amazonia
Nieminen	Tuomo	University of Helsinki	Physical and chemical characteristics of air ions during autumn 2010 in Hyttialä, Finland
Nishina	Kazuya	Agriculture, Forestry and Fisheries Research Council	Evaluations of environmental factors responses and emission factor of N <sub>2</sub> O and NO fluxes from agricultural soils by the hierarchical Bayesian model wit
Noelscher	Anke	Max Planck Institute of Chemistry	Seeking OH reactivity in boreal forest environment
Nordbo	Annika	University of Helsinki	Systematic and random errors in eddy covariance measurements at an urban site
Ohkubo	Shinjiro	Agriculture, Forestry and Fisheries Research Council	Mutual interactions among CO <sub>2</sub> , snow-cover, soil-frost and other meteorological elements over agricultural land
Orlowsky	Boris	ETH Zurich	Assessing the spatial representativeness of weather stations and FLUXNET sites
Otto	Juliane	Laboratoire des Sciences du Climat et l'Environnement	Conceptual study of the potential effects of forest management on surface albedo
Paramonov	Mikhail	University of Helsinki	The analysis of size-segregated cloud condensation nuclei counter (CCNC) data from SMEAR II and its implications for aerosol-cloud relations
Park	Sung-Bin	Korea Advanced Institute of Science and Technology	Influence of land cover change over East Asia
Pavlick	Ryan	Max Planck Institute for Biogeochemistry	Scaling from functional traits to ecosystem functioning
Pongratz	Julia	Stanford University	Global land cover change in the last millennium – effects on past and present climate
Poultter	Ben	Laboratoire des Sciences du Climat et de l'Environnement	Remote sensing of burned area as a tool to evaluate models of global biogeography and biogeochemistry
Prisle	Nonne	University of Helsinki	Importance of representations for surface active organic aerosol in global scale predictions of cloud droplet numbers
Queck	Ronald	TU Dresden	Using highly resolved vegetation scans to describe the turbulent wind field around an eddy covariance tower
Rashid	Irfan	University of Kashmir	Landscape modelling for identifying disturbance regimes and biodiversity rich areas in Kashmir Himalaya
Reyes	Julian	Washington State University	Modeling impacts of atmospheric nitrogen deposition on terrestrial ecosystems: linking ecology, hydrology and atmospheric processes
Riipinen	Ilona	Stockholm University	Growth of ultrafine aerosol by biogenic organics: on the properties of the condensing vapours
Ruscica	Romina Carla	Centro de Investigaciones del Mar y la Atmosfera	The influence of soil moisture horizontal contrasts on extreme precipitation over Southeastern South America
Ruuskanen	Taina M.	University of Helsinki	Biosphere – atmosphere exchange of VOCs
Rydsaa	Johanne H.	University of Oslo	Stomatal uptake of ozone in a coastal Mediterranean maquis ecosystem; a model study
Sahu	Lokesh	The Physical Research Laboratory	Importance of non-methane hydrocarbons in ozone formation at a semi-arid urban site of India
Sanwangsri	Montri	King Mongkut's University of Technology Thonburi	Responses of CO <sub>2</sub> exchange to drought in dry dipterocarp forest, western Thailand
Schallhart	Simon	University of Helsinki	PTR- TOF flux and concentration measurements above a boreal forest
Schnitzler	Joerg-Peter	Helmholtz Zentrum München	Experimental and modeling based evaluation of biomass yield of transgenic non-isoprene emitting poplars outdoors (in small scale cage-greenhouse culti
Schroettle	Josef	University of Munchen	Turbulence structure in a diabatically heated forest canopy composed of fractal Pythagoras trees
Schurgers	Guy	Lund University	Upscaling of light absorption and photosynthesis: representing within-canopy heterogeneity with probability density functions
Scott	Catherine	University of Leeds	Estimating the radiative impacts of biogenic secondary organic aerosol and their variation with location and climate
Sesartic	Ana	ETH Zurich	Modelling global emissions of bacteria and fungal spores acting as ice nuclei
Silva	Brenner	Marburg University	The southern bracken burning experiment: modelling and monitoring of vegetation growth from leaf to plot scale
Soergel	Matthias	Universität Bayreuth	Near surface profiles of HONO, NO <sub>x</sub> , O <sub>3</sub> and their relation to surface wetness
Sogacheva	Larisa	FMI	Relation between aerosol optical depth and the occurrence of fires over boreal forests using AATSR
Song	Qinghai	Chinese Academy of Sciences	Comparison of photosynthetic light-use efficiency in three subtropical montane cloud forests
Suarez	Luis	School of Environmental Engineering of the University Alas Peruanas	Transboundary air pollution in Southern Amazon of Peru
Sudakov	Ivan	St. Petersburg State University	Permafrost methane emission as detector of future regional arctic climate change
Sundstrom	Anu-Maija	University of Helsinki	Aerosol optical depth, trends and seasonal variation obtained from satellite remote sensing
Swann	Abigail	Harvard University	Mid latitude afforestation shifts general circulation and tropical precipitation
Tian	Li	Sun Yat-sen University	Coupling relationship of land surface temperature and land cover types in rapid urbanization process
Tomasic	Marin	University of Helsinki	Methane Emissions from Boreal Wetlands: A modelling study with JSBACH
Tramontana	Gianluca	University of Tuscia	GPP upcaling using empirical and semi-empirical models, remote sensing data and eddy covariance measurements
Tuinenburg	Obbe	Wageningen University	Acquiring Indicators of Land-Atmosphere Coupling from Reanalysis datasets
Turner	Debra	University of Melbourne	Soil NO <sub>x</sub> emission from pasture and pasture converted to cropping
Turton	Rachael	Edinburgh University	Representing the radiation balance of canopy gaps within sparse deciduous forests in a land surface model
valade	Aude	Laboratoire des Sciences du Climat et de l'Environnement	Including a new PTF in the agro-ecosystem model ORCHIDEE-STICS: calibration and validation
van der Ent	Ruud	Delft University of Technology	Feedbacks in the hydrological cycle: where the rain comes from, where evaporation goes to
Wang	Han	Macquarie University	Global change and net primary production of China's vegetation: contrasting responses of light and water use efficiency models

Wang	Aihui	Nansen-Zhu International Research Centre	Evaluation of the multi-reanalysis products with station observations over Tibetan Plateau
Wiedemann	Kenia	University of Sao Paulo	Background aerosol distribution in Amazon during wet season
Wohlfahrt	Georg	University of Innsbruck, Institute of Ecology	Carbonyl sulfide (COS) as a tracer for canopy photosynthesis and transpiration: potential and limitations
Wolf	Adam	Princeton University	Physiology and microclimate of individual tree crowns - a bridge between demographic processes and large-scale fluxes.
Wolff	Veronika	Agroscope Reckenholz Tänikon	Biosphere-atmosphere exchange of total reactive nitrogen: comparison of individual measurements and an integrative method
Wolpert	Benjamin	Karlsruhe Institut of Technology	Monoterpene fluxes above a wind-throw disturbed upland spruce forest ecosystem
Womack	Ann	University of Oregon	Metabolically active bacteria in the atmosphere revealed by RNA-based community composition
Vuollekoski	Henri	University of Helsinki	University of Helsinki Multicomponent Aerosol model: a revised and modularized version
Yanez Serrano	Ana Maria	Lund University	Within-canopy sesquiterpene ozonolysis in Amazonia
Yi	Chuixiang	City University of New York	How does the geometry of complex terrain affect land-atmosphere exchanges?
Zenone	Terenzio	Michigan State University	Carbon assimilation and loss in early bioenergy systems: effect of land conversion of permanent grassland and agricultural sites
zhang	xuezheng	Chinese Academy of Sciences	Climatic effects of human-induced land cover changes since early 1980s across the North China Plain
Zhou	Luxi	University of Helsinki	The first long-term model study of particle formation and growth with detailed chemistry and aerosol dynamics in and above boreal forest
Zhou	Minghua	Karlsruhe Institute of Technology	Nitrous oxide emission from purple soil under maize cultivation in southwestern China
Zscheischler	Jakob	MPI for Biogeochemistry	Towards Multidimensional Anomaly Detection: Novel Machine Learning Strategies