



Max-Planck-Institut
für Biogeochemie



Climate Extremes and Biogeochemical Cycles 2013

2 – 5 April 2013, Congress Center Seefeld / Austria

Programme: Talks and Workshops

2nd April, Tuesday

Welcome and Opening Talks

Chair: M. Reichstein

19:30 – 20:00	Markus Reichstein Michael Bahn	Welcome and Introduction
20:00 – 20:30	Sonia Seneviratne	Biosphere-climate interactions: Extreme events, modelling, and climate change projections
20:30 – 21:00	Melinda D. Smith	Ecological consequences of climate extremes versus extreme climatic events: a framework and future directions
21:00 – 21:30	Rosie A. Fisher	Ecosystem organization and climate resilience
21:30		Icebreaker

3rd April, Wednesday

Session 1: Ecosystem responses to climate variability and weather extremes

Chairs: M. Smith, L. Rustad, N. Buchmann, I. Janssens

08:30 – 09:00	Keynote speaker: Alan Knapp	Ecosystem responses to extreme changes in precipitation: What have we learned from experiments in grasslands?
09:00 – 09:15	Ivan Nijs et al.	Impact of extreme drought and heat events on grasslands communities: sensitivity during the growing season, recovery potential, and loss of resistance upon successive exposure

09:15 – 09:30	Andreas Ibrom et al.	Strong decadal trend in carbon uptake in a Beech forest: Response to extreme climatic events
09:30 – 09:45	Donatella Zona et al.	Extreme weather event impacts ecosystem functioning more than net Carbon uptake in the Arctic tundra
09:45 – 10:00	Yongjiang Zhang et al.	Strong resistance of an Asian subtropical forest to extreme droughts: leaf, tree and ecosystem level mechanisms contributing to homeostasis of water and carbon balances
10:00 – 11:15		<i>Coffee break and Poster session 1 A</i>
11:15 – 11:30	Anke Jentsch et al.	Ecosystem response to multiple extreme weather events and recovery after a subsequent terminal drought event
11:30 – 11:45	Henrik Hartmann et al.	Carbon dynamics during induced lethal drought and carbon starvation
11:45 – 12:00	Michael Schmitt et al.	Effects of recurring summer droughts on ecosystem photosynthesis and respiration in a mountain grassland
12:00 – 12:15	Zwicke Marine et al.	Grassland root system resistance and recovery to a summer extreme in actual and future climate
12:15 – 12:30	Jose Gruenzweig et al.	Alternative drivers of carbon cycling under an extreme climate

12:30 – 14:00

Lunch at Congress Center

14:00 – 14:30	Keynote speaker: Claus Beier	Perspectives for a new generation of ecosystem manipulation experiments
14:30 – 14:45	Roy Jacques et al.	Summer extreme climatic event in the future: impact on the net CO ₂ and water fluxes of an upland grassland and buffering impact of elevated atmospheric CO ₂
14:45 – 15:00	Sara Vicca et al.	Synthesizing effects of precipitation manipulation on plant production and soil respiration – results and challenges
15:00 – 15:15	Qiang Yu et al.	N deposition effects on ecosystem structure and function are regulated by climate extremes
15:15 – 15:30	Jeff Dukes	Warming alters the response of old-field ecosystem processes to precipitation variability
15:30 – 16:45		<i>Coffee break and Poster session 1 B</i>
16:45 – 17:00	José M. Moreno et al.	The role of changing temperature and rainfall in controlling post-fire Mediterranean shrublands
17:00 – 17:15	Walter Oechel et al.	Effects of antecedent precipitation, stand age, and fire on the response of ecosystem functioning to drought in arid and semi-arid ecosystems of North America
17:15 – 17:30	Rodrigo Vargas	How a hurricane disturbance influences extreme CO ₂ fluxes and variance in a tropical forest

17:30 – 17:45	Ji-Hyung Park	Extreme rainfall events as biogeochemical hot moments for the hydrologic soil carbon export in mountainous watersheds
17:45 – 18:00	Stefan Mayr et al.	Frost drought: how timberline conifers survive winter embolism
18:00 – 18:15	<i>Lindsey Rustad</i>	<i>Presentation of short video on climate extremes and biogeochemical cycles</i>

4th April, Thursday

Session 2: Large-scale observations and modeling

Chairs: W. Oechel, N.N.

08:30 – 09:00	Keynote speaker: Nate McDowell	Tree mortality, extreme events, and climate system feedbacks
09:00 – 09:15	Marcel Van Oijen et al.	Impact of climatic extremes on the C-cycle in European vegetation: Analysis of uncertainties and risks
09:15 – 09:30	Ankur Desai et al.	Moisture extremes and internal lags as controls on photosynthesis anomalies in temperate forests
09:30 – 09:45	Matthias Lindauer et al.	The transition of an upland spruce forest ecosystem through a catastrophic wind-fall event: measurements and simulation of the carbon balance
09:45 – 10:00	Kirsten Thonicke et al.	Influence of climate variability on future fire regimes and vegetation-fire interaction in Europe
10:00 – 11:15		<i>Coffee break and Poster session 2 + 3A</i>
11:15 – 11:30	Danilo Dragoni et al.	Is the link between warming, phenology and carbon uptake limited by climatic extremes?
11:30 – 11:45	Kerry Dinsmore et al.	A multisite analysis of the role of high flow extremes on aquatic DOC export
11:45 – 12:00	Jaime Madrigal et al.	Stand structure and tree age modulate last century tree growth decline in response to increasing drought frequency in a Mediterranean pine ecosystem
12:00 – 12:15	Anja Rammig et al.	Extremes in tree ring widths: Coincidences with climate and net primary productivity
12:15 – 12:30	Flurin Babst et al.	Large-scale forest productivity responses to climate variation and extremes: tree-ring quantification, patterns, and uncertainties.

12:30 – 14:00

Lunch at Congress Center

14:30 – 17:30

Workshops 1 – 8 (parallel)

<p>Workshop 1 Ski jump building room 1</p>	<p><i>Chair: M. Smith</i></p>	<p>Interactions between the press (chronic) and the pulse (extremes) of climate change</p>
	<p>David L. Hoover et al.</p>	<p>Resistance and resilience of a mesic grassland to extreme heat waves and drought</p>
	<p>Juergen Kreyling et al.</p>	<p>Snow alters feedbacks from the biosphere to the climate system</p>
<p>Workshop 2 Congress Center room "Olympia"</p>	<p><i>Chairs: L. Rustad, C. Fang</i></p>	<p>Climate extremes and soil processes</p>
	<p>Verena Hammerl et al.</p>	<p>Impact of extreme weather events on microorganisms in soils</p>
	<p>Jorge Curiel Yuste et al.</p>	<p>SECASOL project: direct and indirect effects of short-term climatic variability on soil microbial communities and soil C fluxes.</p>
	<p>Sébastien Fontaine et al.</p>	<p>Discovery of an unknown respiration pathway in soil: consequence for ecosystem response to extreme temperature</p>
<p>Workshop 3 Ski jump building room 2</p>	<p><i>Chair: F. Miglietta</i></p>	<p>Climate extremes in managed systems / Special opportunities in managed systems</p>
	<p>Marijn van der Velde et al.</p>	<p>Impact of past and future climate variability and extreme events on carbon loss in European arable agriculture</p>
	<p>Kuhnert, Matthias et al.</p>	<p>Impact of extreme weather events on the carbon budget of European croplands</p>
<p>Workshop 4 Hotel St. Peter "Tauberstube"</p>	<p><i>Chairs: J. Moreno, W. Oechel</i></p>	<p>Storms, floods and fires</p>
	<p>Peter Fiener et al.</p>	<p>Effects of temporal variability of annual rainfall erosivity and frequency of extreme rainfall events on the soil organic carbon balance in a small agricultural catchment</p>
	<p>Francesca Cotrufo et al.</p>	<p>Full accounting of Pyrogenic-C dynamics at the watershed scale: the case study of the High Park Fire</p>
<p>Workshop 5 Congress Center room "Seefeld"</p>	<p><i>Chair: J. Dukes</i></p>	<p>Advancing ecosystem manipulation experiments</p>
	<p>Hans De Boeck et al</p>	<p>Quantification of artifacts related to the most commonly used warming techniques</p>

Workshop 6 Hotel St. Peter "wintergarten"	<i>Chair: P. Ciais</i>	Modeling diagnostics of inter-annual climate variability on ecosystem states
	Nuno Carvalhais et al.	Addressing present and future variability in ecosystem carbon fluxes through modeling ensembles and model-data fusion approaches
	Trevor F. Keenan et al.	Assessing the response of land-atmosphere CO ₂ exchange to anomalous variability in climate through merging models with data
Workshop 7 Hotel St. Peter "Boardroom"	<i>Chair: R. Fisher</i>	Species responses to weather extremes
	Carl Beierkuhnlein et al.	Intra-specific diversity - a hidden tool to adapt to climatic extremes
Workshop 8 Congress Center room "Tirol"	<i>Chair: A. Jentsch</i>	Role of ecological memory and pre-exposure in response to weather extremes

Evening

19:00 **Social Dinner – "Gasthof Sportalm"**

5th April, Friday

Session 2: Large-scale observations and modeling

Chair: P. Ciais

08:30 – 09:00	Keynote speaker: Christopher Williams	Biospheric Feedbacks from Climate Extremes and Disturbances
09:00 – 09:15	Anna Harper et al	Sensitivity of the global land carbon sink to climate variability, disturbance, and recovery
09:15 – 09:30	Jakob Zscheischler et al.	Significant global reduction of carbon uptake by water-cycle driven extreme vegetation anomalies
09:30 – 09:45	Christian Beer et al.	Effects of climate variability and extreme events on components of the carbon balance in Europe during 1961-2100
09:45 – 10:00	Denis Loustau et al.	Role of extreme climate events in the temporal variability of atmospheric exchanges of CO ₂ , H ₂ O and energy from forest areas.
10:00 – 11:15		<i>Coffee break and Poster session 2 + 3B</i>

Session 3: Feedback mechanisms from the biosphere to the climate system

Chair: P. Ciais

11:15 – 11:30	Guillermo Nicolas Murray-Tortarolo et al.	Desertification and Extreme events decrease the Land C Sink over the last two decades.
11:30 – 11:45	Anne Verhoef et al.	Assessment of proposed heatwave amplifying mechanisms over Europe using ECA indices of extremes and high-resolution AGCM model data
11:45 – 12:00	Edouard L. Davin et al	Heat wave mitigation through crop albedo management
12:00 – 12:15	Gretchen Keppel-Aleks et al.	Interannual variability in atmospheric CO ₂ from generalized surface fluxes
12:15 – 13:00		Workshop summaries
13:00 – 13:30		Concluding Discussions and adjourn

13:30 – 14:30

Lunch - Congress Center

Climate Extremes and Biogeochemical Cycles 2013

2 – 5 April 2013, Congress Center Seefeld / Austria

Programme: Posters

Session 1: Ecosystem responses to climate variability and weather extremes

Poster Sessions 1 A: 3rd April, Wednesday, 10:00-11:15

Poster Sessions 1 B: 3rd April, Wednesday, 15:30-16:45

Display time: All posters will be on display from 10:00 – 18:00 and will be accessible also during the lunch break.

Attendance time: Authors will attend their posters during poster session 1A in case their poster number is uneven and during poster session 1B in case their poster number is even. (e.g. poster P1-1 will be attended from 10:00 – 11:15, P1-2 will be attended from 15:30-16:45).

Poster ID	name	title
P1-1	Chelsea L. Arnold et al.	Extreme winter weather events influence summer soil respiration in the high elevation meadows of Yosemite National Park, California
P1-2	Angela Augusti et al.	Effects of summer extreme events on grassland soil CO ₂ efflux in a contest of future climate change
P1-3	Barbara Beikircher et al.	Delayed leaf-flushing and dieback in apple trees caused by frost drought
P1-4	Mariah Carbone	Clouds influence the metabolism of a coastal pine ecosystem
P1-5	Yakiv Didukh et al.	Grassland Responses to Altered Precipitation in Southern Ukraine: First Results from a New Experimental Site
P1-6	Lawrence B. Flanagan et al.	Response of Plant Biomass and Soil Respiration to Experimental Warming and Precipitation Manipulation in a Northern Great Plains Grassland
P1-7	Lucia Fuchslueger et al.	Low land-use intensity mitigates drought-induced changes on microbial community functioning in mountain grassland
P1-8	Marta Galvagno et al.	Phenology and carbon dioxide source/sink strength of a subalpine grassland in response to an exceptionally short snow season
P1-9	Konstantin Gavazov et al.	How snowpack controls soil microbial communities and associated CO ₂ respiration during extreme winter events
P1-10	Olga Gavrichkova et al.	¹³ C and ¹⁵ N labelling for studying the effects of long-term warming on C and N allocation in a Mediterranean shrub community

P1-11	Arthur Gessler et al.	Drought Effects on Forest Understory: Interactions between drought and land-use intensity
P1-12	Douglas Godbold et al.	Effect of summer drought on monocultures and mixtures of temperate deciduous trees
P1-13	Eva Gorsel et al.	Primary and secondary effects of climate variability on carbon and water exchange in a managed subalpine Eucalyptus forest.
P1-14	Célia Marina Gouveia et al.	Drought impact on vegetation in pre and post fire events in Iberian Peninsula
P1-15	Gabriele Guidolotti et al.	Warming effect on CO ₂ fluxes in a Mediterranean shrubland
P1-16	Roland Hasibeder et al.	Summer drought alters carbon allocation to roots and root respiration in mountain grassland
P1-17	Belén Hinojosa et al.	Changes in microbial functionality and community structure due to drought in burned soils of a Mediterranean scrubland
P1-18	Jakub Hruška et al.	Anticipated climate change will significantly affect biogeochemical patterns of an acidified forested catchment
P1-19	Dennis Immer et al.	Effects of rain pulses on CH ₄ and N ₂ O fluxes of a managed grassland
P1-20	Eva-Maria Kastl et al.	Influence of summer drought on the structure and function of microbial community in alpine grassland ecosystems
P1-21	Ralf Kiese et al.	Impact of climate change on greenhouse gas fluxes of (pre-) alpine grassland soils
P1-22	Karel Klem et al.	Interactive effects of UV radiation and drought on physiology, morphology and elemental stoichiometry in selected species of the mountain grassland
P1-23	Thomas Ladreiter-Knauss et al.	Resistance and resilience of soil respiration to recurring summer drought in temperate mountain grassland
P1-24	Hanna Lee et al.	The effects of UV radiation, litter chemistry, and drought on desert litter decomposition
P1-25	Morine Lempereur et al.	Does C-use change with drought in an evergreen Mediterranean oak coppice?
P1-26	Xin Lin et al.	Ecosystem responses to the recent drought in Southwest China
P1-27	Remy Manderscheid et al.	Field studies on the interaction of drought or heat stress and elevated atmospheric CO ₂ concentrations on growth and yield of C ₄ and C ₃ crops
P1-28	Mathias Mayer et al.	The contribution of soil respiration to net ecosystem exchange after forest disturbance – a case study from the Austrian Alps
P1-29	Lutz Merbold et al.	Winter CO ₂ fluxes in a sub-alpine grassland in relation to environmental variables
P1-30	Robert Mikutta et al.	Impact of organic matter quality on permafrost carbon vulnerability

P1-31	Antonio Parra et al.	Drought effects on post-fire recovery of species with different regeneration strategies in a Mediterranean shrubland
P1-32	Changhui Peng	Ecological Consequences of Climate Extremes: Impacts of Drought-Induced Tree Mortality on Carbon Sinks
P1-33	Ulrich E. Prechsl et al.	The water sourcing strategy of drought affected temperate grasslands
P1-34	Julian J. Reyes et al.	Incremental impacts of precipitation, temperature, and cutting frequency on biogeochemical processes in grassland ecosystems
P1-35	Nadine Katrin Ruehr et al.	Effects of extreme weather events on plant-soil dynamics: Coupling the carbon and water cycle
P1-36	Lindsey Rustad et al.	An Ice Storm Manipulation Experiment in a Northern Hardwood Forest.
P1-37	Julia Seeber et al.	Drought-induced reduction in uptake of recently photosynthesized carbon by springtails and mites in alpine grassland
P1-38	João M. N. Silva et al.	Assessment of photosynthetic activity with field spectroradiometry in a Mediterranean oak woodland: seasonal and interannual dynamics
P1-39	Monika Strömngren et al.	Carbon dynamics in a boreal forest under 15 years of soil warming
P1-40	Javier Tejedor et al.	Gross nitrogen fluxes in intact beech-soil-microbe systems under simulated climate change
P1-41	Yasmijn van der Knaap et al.	The sequence of short-term extreme drought and inundation events determines riparian plant performance
P1-42	Maya Verlinden et al.	Effects of warming and soil drought on competition between invasive and native plant species
P1-43	Gerhard Wieser et al.	Evaluating the effect of soil drought on inner-alpine coniferous trees based on sap flow measurements
P1-44	Sebastian Wolf et al.	Response of ecosystem carbon and water dynamics to spring drought in Switzerland
P1-45	Sebastian Zielis et al.	Climatic drivers of temporal variability in forest ecosystem NEE
P1-46	Susanne Burri et al.	Short-term carbon flow on temperate grassland: the impact of simulated summer drought

4th April, Thursday

Session 2: Large-scale observations and modeling

Session 3: Feedback mechanisms from the biosphere to the climate system

Poster Sessions 2 A: 4th April, Thursday, 10:00-11:15

Poster Sessions 2 B: 5th April, Friday, 10:00-11:15

Display time: All posters will be on display on 4th and 5th April between from 10:00 – 14:00 and will be accessible also during the lunch break of 4th April.

Attendance time: Authors will attend their posters during poster session 2A in case their poster number is uneven and during poster session 2B in case their poster number is even. (e.g. poster P2-1 will be attended on 4th April from 10:00 – 11:15, poster P2-2 will be attended on 5th April from 10:00 – 11:15).

P2-1	Tomomichi Kato et al.	Vulnerability of ecosystem productivity over Europe under past and future climate extremes
P2-2	Ana Bastos et al.	Global and regional changes in NPP in 2011: the role of La Niña
P2-3	Marchesini Belelli et al.	Impact of climatic extremes on the variability of net ecosystem exchange of European forests
P2-4	Tiexi Chen et al.	The use of satellite observations to determine the impact of soil moisture on vegetation growth
P2-5	Dorothea Frank et al.	Extreme events and the terrestrial carbon cycle - mechanisms, processes and impacts on different ecosystem types
P2-6	Sébastien Garrigues et al.	Multi-year (12 years) assessment of in situ measurement and land surface model estimate of evapotranspiration over a Mediterranean agricultural site : response to climate variability and uncertainties analysis
P2-7	Margriet Groenendijk et al.	Atmospheric constraints on Plant Water Use Efficiency drivers and patterns of changes since 1900
P2-8	Stijn Hantson et al.	Pine forest productivity under increasing drought stress during the last century and the ability of Orchidee to reproduce the observed trends.
P2-9	Kaicheng Huang et al.	Extreme Drought-induced Trend Changes in MODIS EVI Time Series
P2-10	Weimin Ju et al.	Decrease of carbon sequestration in China's terrestrial ecosystems caused by severe droughts in 2009
P2-11	Ravi Kumar Kunchala et al.	Variability of atmospheric CO ₂ over Indian region using satellite observations and model simulations: Implications for the sources and sinks

P2-12	Sebastien Lafont et al.	2011 severe spring drought in France : vegetation and land surface model response
P2-13	Georg Leitinger et al.	Evaluation of ecosystem services in a future environment - a landscape scale study in an Alpine region
P2-14	Bradley Matthews et al.	Surface-atmosphere exchange at a disturbed forest site in the Austria Alps
P2-15	Mirco Migliavacca et al.	Relationship between North Atlantic Oscillation and burned area in Europe
P2-16	Saul Molina et al.	Assessment of carbon and nitrogen cycling in arable systems under climate extremes: An Analysis of a regional greenhousegas emission inventory from arable soils for Saxony from 1998 to 2100
P2-17	Stefanos Mystakidis et al.	European-scale intercomparison of water and carbon fluxes as simulated by a set of LSMs and DGVMs
P2-18	Huijuan Nan et al.	Impact of extreme events on the global land carbon cycle during the 20th century
P2-19	Christoforos Pappas et al.	Dynamic Global Vegetation Models: parameterization challenges in a changing world
P2-20	Thomas Alan Miller Pugh et al.	Managed land and the carbon cycle: Might oversimplification lead to large underestimations of impact?
P2-21	Markus Reichstein et al.	A climate data set of reduced variability and conserved long-term mean
P2-22	Eddy Robertson	Terrestrial Carbon Variability in the CMIP5 Models
P2-23	Brendan M. Rogers et al.	Varying drought intensity in a C4 grassland: modeling the effects on carbon fluxes at annual and decadal scales
P2-24	Susanne Rolinski et al.	European ecosystem vulnerability to extreme events: The ecosystem perspective
P2-25	Paloma Ruiz-Benito et al.	Recent changes in forest structure across Boreal, cool Temperate and Mediterranean forests: climatic trends may constrain the carbon sink potential of European forests
P2-26	Guy Schurgers	Small-scale feedbacks and large-scale impacts
P2-27	Annemiek Irene Stegehuis et al.	Extreme European summer heatwaves: can we catch them with our models?
P2-28	Tea Thum et al.	Model-Data-Fusion with a generic biosphere model using ecosystem manipulation data from a Danish heathland
P2-29	Pier Luigi Vidale et al.	On the treatment of soil water stress in LSM simulations of vegetation function

P2-30	Ariane Walz et al.	Expert options on potential adaptations in ecosystem management to meet changing magnitude and frequency of climate extremes
P2-31	Shaoqiang Wang et al.	Effects of drought on forest ecosystems carbon cycle in China during 2001-2010
P2-32	You-Ren Wang et al.	CASA modeling of carbon budgets across Europe and Russia with 1km resolution
P2-33	Richard F. Wright et al.	Climate change increases the frequency and severity of episodes of streamwater acidification: an analysis of the 40-year data record from Birkenes, Norway
P2-34	Jian Wu et al.	Modelling the decadal trend of ecosystem carbon fluxes in a temperate deciduous forest demonstrates the important role of functional changes
P2-35	Minchao Wu et al.	Response of vegetation structure to extreme climate events in Europe: Analysis from fire regime perspective
P2-36	Yongguang Zhang et al.	Response of vegetation production to more extreme precipitation regimes across biomes from remote sensing measurements
P2-37	Lei Zhou et al.	Evaluating the extreme drought impact on vegetation condition and productivity in the Southwestern China using MODIS data