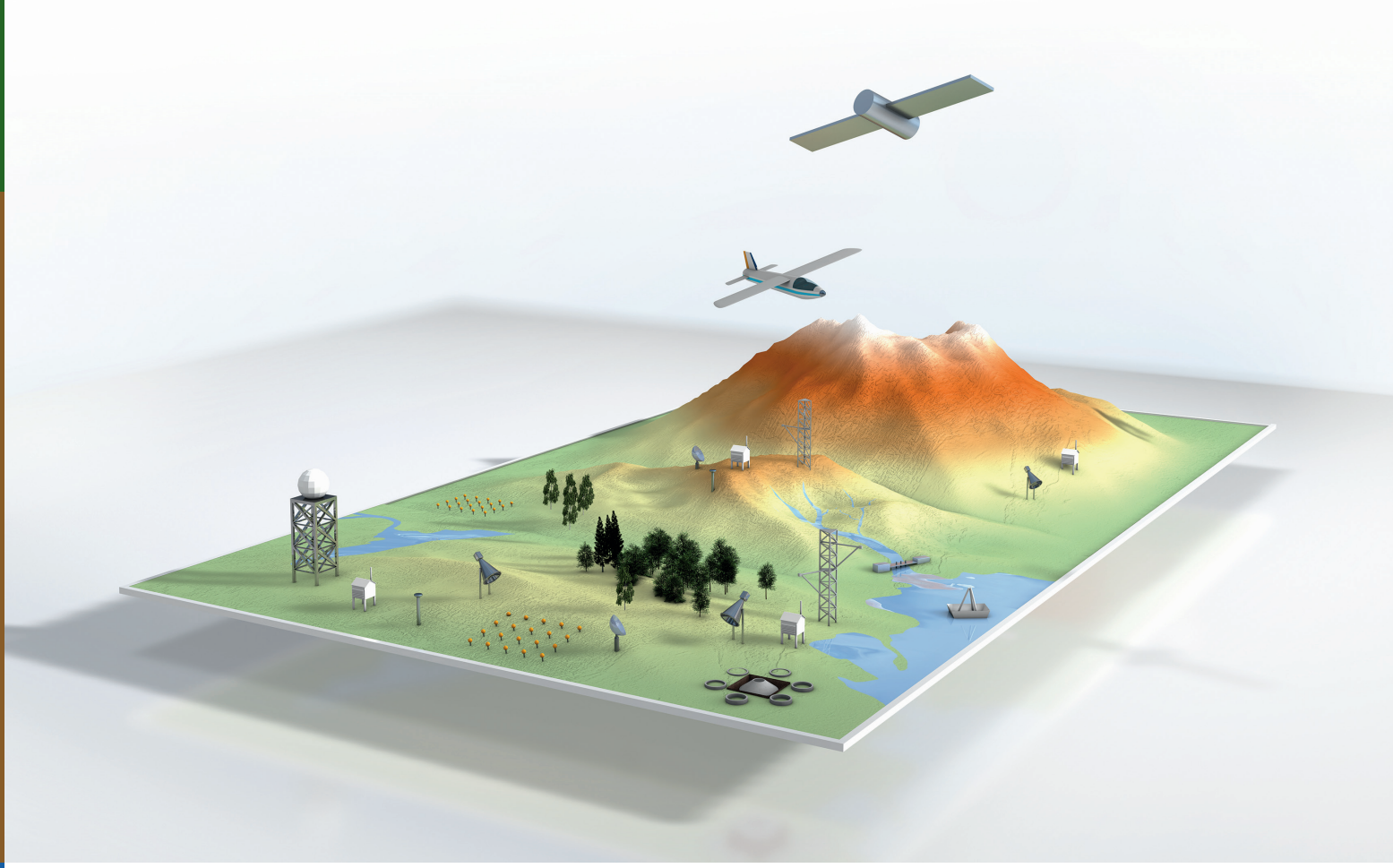
TERENO International Conference 2014

FROM OBSERVATION TO PREDICTION IN TERRESTRIAL SYSTEMS



Programme

29th September to 2nd October 2014

Rheinische Friedrich-Wilhelms-Universität Bonn, Germany

TERENO

TERRESTRIAL ENVIRONMENTAL OBSERVATORIES

1 Welcome

Welcome to the 1st TERENO International Conference in Bonn. We would like to thank all participants for their contributions and wish a successful week .

Sincerely,

Your TERENO Partners

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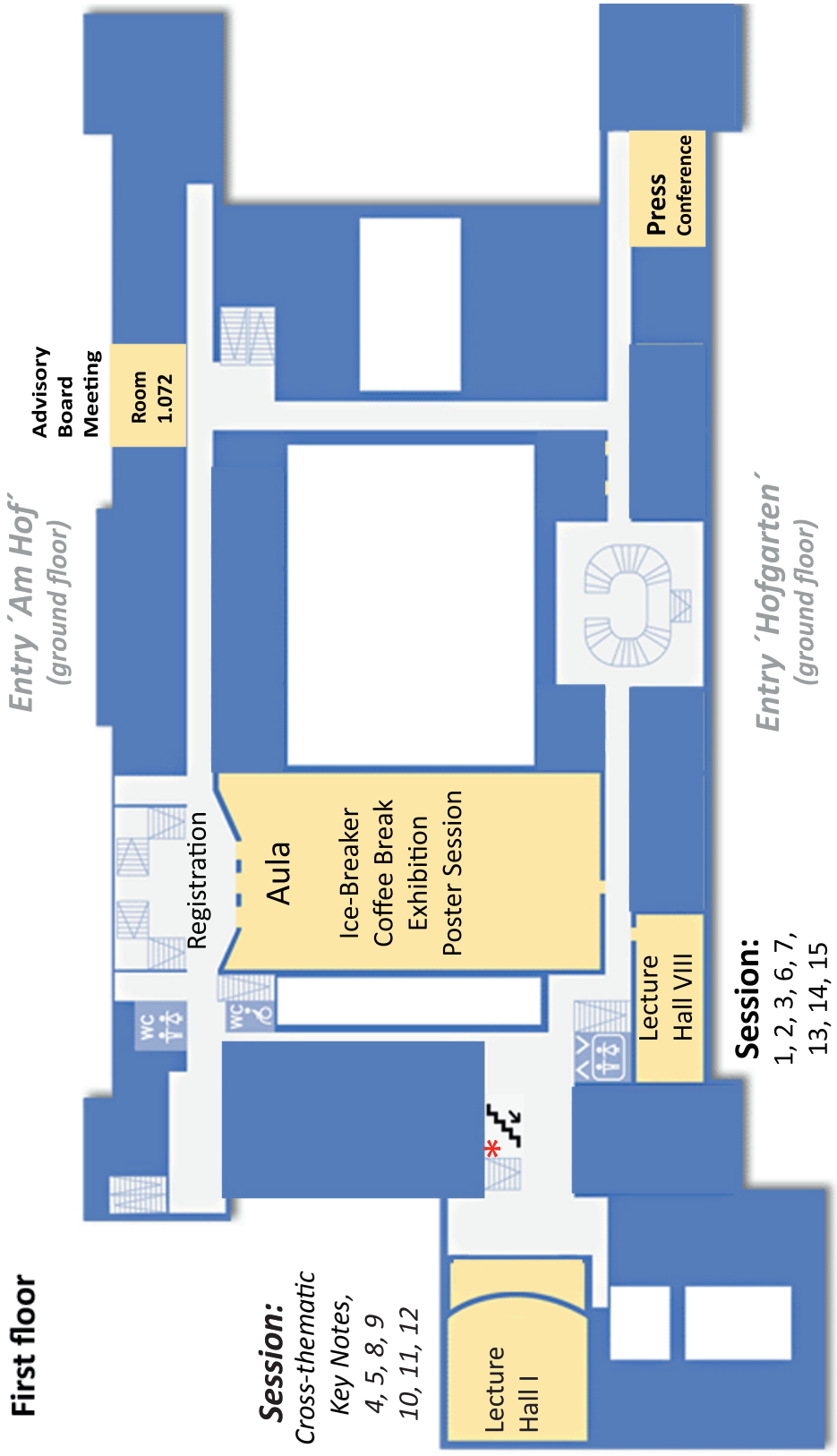
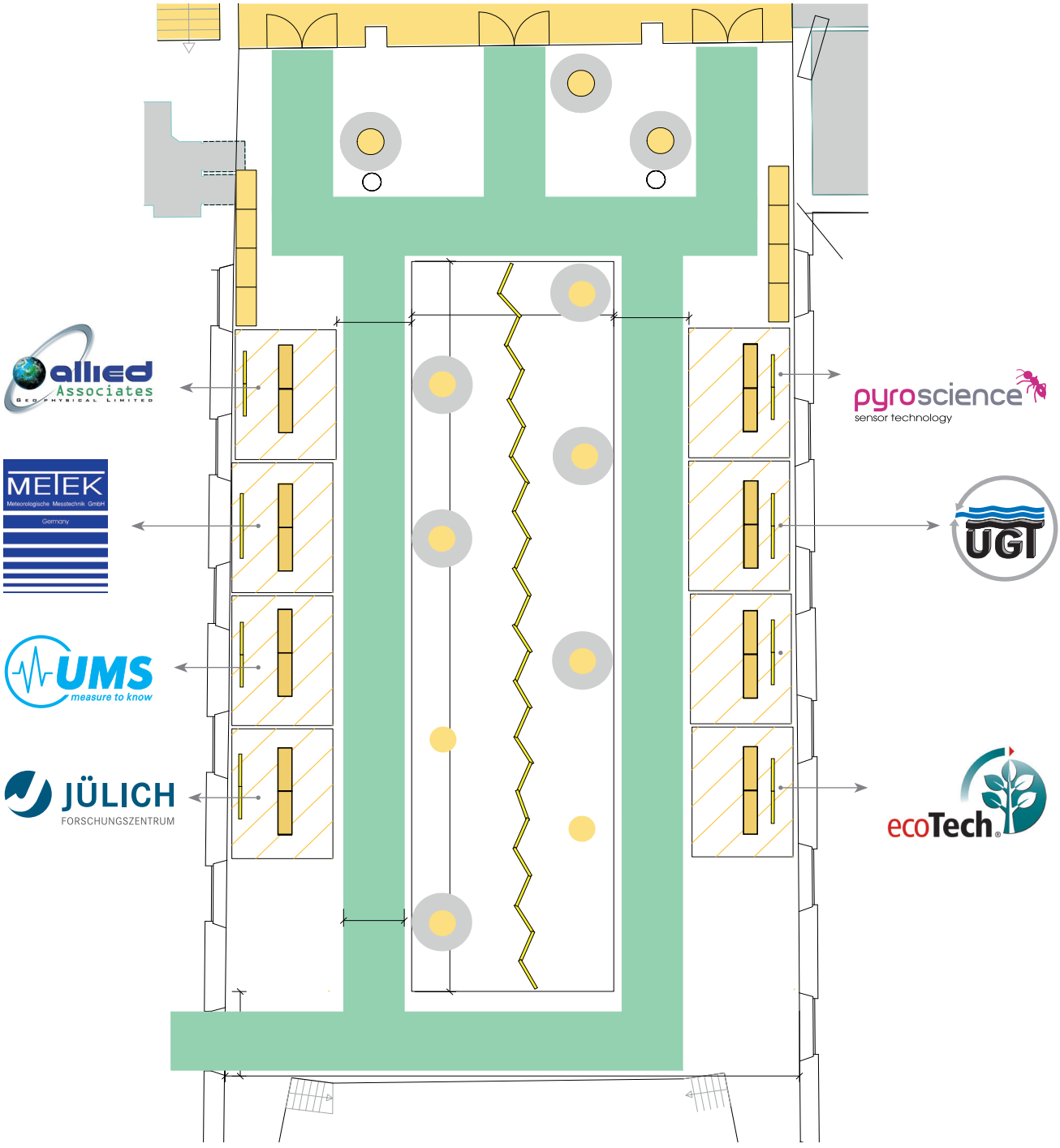
Topics

S 1 Quantifying water scarcity under data scarcity
S 2 Transferring local Understanding of Vadose Zone Processes to the Landscape Scale
S 3 Improving water quality management using new water quality modeling and observation strategies
S 4 Modeling the Hydrological System – Balancing of Complexity and Uncertainty
S 5 Environmental monitoring to quantify ecosystem services
S 6 Novel Approaches in Biodiversity and Ecosystem Monitoring
S 7 Remote Sensing of Land surface
S 8 Coupled processes in soil-plant-atmosphere systems
S 9 Monitoring and data assimilation: predicting states and fluxes
S10 Crossing Time Scales: From Paleo Records to Present Day Change
S11 Greenhouse gases exchange from sites to regions
S12 Networking of long-term infrastructures for terrestrial research
S13 Innovative Sensing Methods for the Critical Zone
S14 Ecotrons and lysimeters: Complementary tools for observation and experimentation on the critical zone
S15 Management and integration of environmental observation data

2 Floor Plan and Allocation of Sessions



3 Sponsors and Exhibitors



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4 Programme

Monday, 29th September 2014, 08:30–12:00

Lecture Hall H I	Lecture Hall H VIII

08:30–10:00	Registration	
10:00–10:30	Opening: MinDirig. Wilfried Kraus, Prof. Georg Teutsch, Prof. Harry Vereecken	
Cross-thematic Key Note Speaker Session Chair: Russ Monson		
10:30–10:50	**Sensing Global Surface Soil Moisture Using NASA's Soil Moisture Active Passive (SMAP) Mission and its Applications to Terrestrial Water, Energy and Carbon Cycles** Dara Entekhabi (Keynote 1, Session 7)	
10:50–11:10	**Scaling carbon dioxide exchange from sites to regions** Mat Williams (Keynote 1, Session 11)	
11:10–11:30	**Observing and monitoring biodiversity – new horizons and persistent challenges** Christoph L. Häuser (Keynote 1, Session 6)	
11:30–11:50	**New insights into hydrochemical processes in lowland river systems gained from *in situ*, sub daily monitoring** Andrew Wade (Keynote 1, Session 3)	
11:50–12:00	Discussion	
12:00–13:30	Lunch Break	

4 Programme

Monday, 29th September 2014, 13:30–15:30

Lecture Hall H I	Lecture Hall H VIII

S11 Greenhouse gases exchange from sites to regions

Chair: Hans Peter Schmid/Co-Chair: Russ Monson

13:30–14:00	**Soil-atmosphere trace gas exchange: the importance of lateral water fluxes and groundwater as controlling variables** Klaus Butterbach-Bahl (Keynote 2, Session 11)
14:00–14:15	**Mitigating Climate Change in Brazilian Agriculture Sector: Carbon in Soil Monitoring** Hilton Pinto
14:15–14:30	**LandscapeDNDC – A process based model for biogeochemical ecosystem simulations from site to the egional scale: Applications, uncertainty quantification on the regional scale, coupled hydraulic nutrient transport and ecosystem bio-geochemistry at catchment scale** Edwin Haas
14:30–14:45	**Differentiated Disturbance Effects on Carbon Exchange of Forest Ecosystems** Rüdiger Grote
14:45–15:00	**Spatial distribution of hydroxylamine and its role to aerobic N_2O formation in a Norway spruce forest soil** Shurong Liu

S7 Remote Sensing of Land surfaces

Chair: Irena Hajnsek, Sybille Itzerott, Christiane Schmullius

13:30–14:00	**From Earth Explorers to Sentinels: ESA's Earth Observation Programmes – achievements, current status and plans for the future** Michael Rast (Keynote 2, Session 7)
14:00–14:15	**TERENO observatories – valdiation sites for a sar-based soil moisture retrieval under vegetation cover** Thomas Jagdhuber
14:15–14:30	**Apparent Thermal Inertia for Soil Moisture Estimation in Agricultural Areas using Airborne Remote Sensing** Daniel Spengler
14:30–14:45	**The Usage of a Crane Platform for a Hyperspectral Mixture Analysis – First Experiences and Results** Michael Förster
14:45–15:00	**Multitemporal RapidEye-data analyses of semi arid natural vegetation in the Negev, Israel along an climate gradient to assess and monitor the land use changes** Stefanie Elste, Cornelia Glaesser[1] ([1]Presenting Author)

15:00–15:30 Coffee Break in the Aula

4 Programme

Monday, 29th September 2014, 15:30–19:00

Lecture Hall H I	Lecture Hall H VIII

S11 Greenhouse gases exchange from sites to regions

Chair: Nicolas Brüggemann/Co-Chair: Russ Monson

15:30–15:45	**Is the dry zone of the land shifting poleward?** Chuixiang (Tree) Yi
15:45–16:00	**Real-time measurement of site specific N_2O isotopic composition above intensively managed grassland reveals controls on N_2O source process dynamicss** Benjamin Wolf
16:00–16:15	**More than just CO_2:** **Multiple trace gas exchange measurements at a temperate mountain grassland** Georg Wohlfahrt
16:15–16:30	**Measurements of Surface Fluxes at City-Atmosphere Interfaces:** **Case Studies at High Residential Area and Urban Park in Seoul Metropolitan Area** Jinkyu Hong
16:30–16:45	**Importance of dissolved greenhouse gases leached from soil:** **insights from the lysimeter network TERENO-SoilCan** Daniel Weymann

S6 Novel Approaches in Biodiversity and Ecosystem Monitoring

Chair: Stefan Klotz

15:30–15:45	**The impact of ecological pressures and pulses on the forest ecosystems in the Tatra National Park, Slovakia** Peter Fleischer (Keynote 2, Session 6)
15:45–16:00	**The Agricultural Landscape Laboratories (AgroScapeLabs):** **a research platform to study relationships between biodiversity, ecosystem functions and land use at the landscape scale** Karin Pirhofer-Walzl
16:00–16:15	**Linking biodiversity conservation and livelihood strategies:** **A new approach for sustainable rangeland management** Hojatollah Khedrigharibvand
16:15–16:30	**Collecting Basal area information from field photography** Ben Sparrow, Nikki Thurgate[1] ([1]Presenting Author)
16:30–16:45	**Farmland bird abundance in Central Germany:** **trend analysis based on species traits and land use** Mark Frenzel
16:45–17:00	**Trait dependent responses and stability of bee communities as an indicator for the provision of pollination services** Jeroen Everaars

17:00–19:00	Poster Session S6, S7, S11 with Beer and Pretzels in the Aula

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Tuesday, 30th September 2014, 08:30–10:30

	Lecture Hall H I	Lecture Hall H VIII
Cross-thematic Key Note Speaker Session Chair: Jeffrey McDonnell		
08:30–08:50	**The European landscape of biodiversity and ecosystem research infrastructures: status, perspectives and TERENO´s role as "best practice" example for terrestrial RIs** Michael Mirtl (Keynote 1, Session 12)	
08:50–09:10	**Understanding hydrologic partitioning: Combining mechanistic modeling, global sensitivity analysis and signature exploration to understand controls on catchment-scale hydrologic behavior** Thorsten Wagener (Keynote 1, Session 4)	
09:10–09:30	~~**Environmental monitoring – Citizen science approaches to assess ecosystem services**~~ ~~Aletta Bonn (Keynote 1, Session 5)~~	
09:30–09:50	**State, challenges and options of pedogenetic modelling at pedon and landscape scales** Peter Finke (Keynote 1, Session 2)	
09:50–10:00	Discussion	
10:00–10:30	Coffee Break in the Aula	

4 Programme

Tuesday, 30th September 2014, 10:30–12:00

Lecture Hall H I		Lecture Hall H VIII	
S12 Networking of long-term infrastructures for terrestrial research Chair: Steffen Zacharias		**S3 Improving water quality management using new water quality modeling and observation strategies** Chair: Michael Rode	
10:30–11:00	**Global Experimental Design using Critical Zone Observatories – the Update from Beijing** Steve Banwart (Keynote 2, Session 12)	10:30–10:45	**Hot spots and hot moments of biogeochemical cycling at aquifer-river interfaces** Stefan Krause (Keynote 2, Session 3)
11:00–11:15	**Standardizing and maintaining micrometeorological long-term observations – First experiences from the ICOS approach** Mathias Herbst	10:45–11:00	**Groundwater heads control catchment hydrological and hydrochemical response** Andreas Musolff
11:15–11:30	**The Danish Hydrological Observatory HOBE** Karsten H. Jensen	11:00–11:15	**Nitrogen Load Estimates in Central Germany using Hydrological Water Quality Modelling and High Resolution Monitoring** Seifeddine Jomaa
11:30–11:45	**The CRITEX program: a multidisciplinary equipment program for investigating the Critical Zone** Jerome Gaillardet	11:15–11:30	**Kettle holes: Hot-spots of biodiversity, carbon dynamics and greenhouse gas emissions in an agricultural landscape** Gunnar Lischeid
11:45–12:00	**Introducing Australia's Terrestrial Ecosystem Research Network; linking disciplines for better environmental outcomes** Nikki Thurgate	11:30–11:45	**A multi-model uncertainty assessment of phosphorus transport using high-frequency data from the River Eden catchment, Cumbria** Michael Hollaway
		11:45–12:00	**Changes in water storage and water quality in the largest freshwater lake (Poyang Lake) in China and effects of the Three Gorges Dam** Qi Zhang
12:00–13:30	Lunch Break		

4 Programme

Tuesday, 30th September 2014, 13:30–15:30

Lecture Hall H I	Lecture Hall H VIII

S4 Modeling the Hydrological System – Balancing of Complexity and Uncertainty

Chair: Sabine Attinger, Harald Kunstmann

13:30–13:45	**Spatial patterns in hydrological modeling: Benchmarked by the human perception – Evaluating against real data – Diagnosing complex model defects** Julian Koch
13:45–14:00	**From site measurements to spatial modelling multicriteria model evaluation** Pia Gottschalk
14:00–14:15	**Regional water balance analysis with an atmosphere to groundwater coupled hydrometeorological model for the pre-alpine TERENO region** Benjamin Fersch
14:15–14:30	**A Physically-Based Modelling Approach to Assess the Impact of Climate Change on Surface and Groundwater Resources within the Grand River Watershed, Ontario, Canada** Edward Sudicky
14:30–14:45	**Modelling the hydrological signatures of a complex landscape: The Quillow Catchment (TERENO North-East)** Gunnar Lischeid
14:45–15:00	**Seasonal Soil Moisture Patterns Control Transit Time Distributions in a Forested Headwater Catchment** Michael Stockinger

S15 Management and integration of environmental observation data

Chair: Ralf Kunkel

13:30–13:48	**Using Spatial Data Infrastructure principles and services to improve management and availability of heterogeneous data for research and decision making on climate change and adapted land use in West-Africa – the case of WASCAL in West-Africa** Antonio Rogmann
~~13:48–14:06~~	~~**Bottom-up capacity building for observations and measurements providers in RITMARE**~~ ~~Allesandro Oggioni~~
14:06–14:24	**A generic data framework for processing and assessing heteregeneous observation data** Anusuriya Devaraju
14:24–14:42	**Data Management and Long Term Archiving of Remote Sensing and In-situ Data at DFD – Status and Trends** Klaus-Dieter Missling
14:41–15:00	**A Data Management Workflow for Verification, Integration and Visualisation of Heterogeneous Environmental Data** Karsten Rink

15:00–15:30	Coffee Break in the Aula

4 Programme

Tuesday, 30th September 2014, 15:30–19:00

Lecture Hall H I	Lecture Hall H VIII

S5 Environmental monitoring to quantify ecosystem services

Chair: Stefan Klotz

15:30–15:45	**Modelling and evaluating long-term impacts on ecosystem services: experiences from LTER-site research** Martin Forsius (Keynote 2, Session 5)
15:45–16:00	**Analyzing the Land Use/Cover Changes and Their Impacts on Ecosystem Services Using Vegetation Indices in Upper East Region of Ghana** Güledam Baysal
16:00–16:15	**A combined observational network and hydrological modelling to address water environmental services in watershed scale** Humberto da Rocha
16:15–16:30	**Integrated sensing, monitoring and modeling of low velocity flow fields in a constructed wetland for improving phosphorus removal** Ni-Bin Chang
16:30–16:45	**Five years of transition – atmospheric C-exchange dynamics of a coastal fen after rewetting** Gerald Jurasinski
16:45–17:00	**Theory and practice of observing and manipulating grassland ecosystem services from the plot to catchment scale** Christopher (Kit) Mcleod
17:00–17:15	**Tracking land-use changes from heterogeneous spatial data as tool for biodiversity and greenhouse gas monitoring in the nature park Drömling (Germany)** Johanna Untenecker

S2 Transferring local Understanding of Vadose Zone Processes to the Landscape Scale

Chair: Hans Jörg Vogel

15:30–16:00	**Dynamic Soil Landscapes: the impact of agricultural soil erosion on soil functioning** Kristof van Oost (Keynote 2, Session 2)
16:00–16:15	**Spatial and Temporal Patterns of Preferential Flow at the Catchment Scale** Inge Wiekenkamp
16:15–16:30	**Estimation of the spatial distribution of soil hydraulic characteristics using apparent soil electrical conductivity as proxy data** Meisam Rezaei
16:30–16:45	**Quantifying the uncertainties in the estimation of multilayered soil hydraulic properties at a catchment scale** Sreelash Krishnan Kutty
16:45–17:00	**Soil moisture and water potential vertical profiles information about the rootzone: from the plot to the catchment scale** Stefano Ferraris

17:00–19:00	Poster Session S2, S3, S4, S5, S12, S15 with Beer and Pretzels in the Aula

4 Programme

Wednesday, 01st October 2014, 08:30–10:30

Lecture Hall H I	Lecture Hall H VIII
Cross-thematic Key Note Speaker Session Chair: Karsten Høgh Jensen	
08:30–08:50 **Environmental monitoring based on palaeo-records** Bas van Geel (Keynote 1, Session 10)	
08:50–09:10 **Challenges in Scaling Up Flux Measurements of Carbon Dioxide, Methane and Nitrous Oxide Emissions from Terrestrial Ecosystems** Raymond Desjardins (Keynote 1, Session 8)	
09:10–09:30 **Drought and Flood Monitoring and Forecasting for Sub-Sahara African Water Resources and Food Security** Justin Sheffield (Keynote 1, Session 1)	
09:30–09:50 **Mesoscopes for Hydropedology in the Critical Zone** Henry Lin (Keynote 1, Session 13)	
09:50–10:00 Discussion	
10:00–10:30 Coffee Break in the Aula	

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Wednesday, 01st October 2014, 10:30–12:00

Lecture Hall H I	Lecture Hall H VIII

S10 Crossing Time Scales: From Paleo Records to Present Day Change

Chair: Achim Brauer, Andreas Lücke

10:30–10:45	**Lake monitoring and recently observed limnological changes** Mark Gessner (Keynote 2, Session 10)
10:45–11:00	**Reconstruction of former lake levels of groundwater-fed lakes in northeastern Germany using Rapid-Eye archive data** Iris Heine
11:00–11:15	**Multi-decadal lake-level dynamics in north-eastern Germany as derived by a combination of gauging, proxy-data and modelling** Knut Kaiser
11:15–11:30	**Linking diatom deposition in Lake Tiefer See (NE Germany) with the spring temperature gradient** Ulrike Kienel
11:30–11:45	**Process-based modeling of daily growth as a function of environmental forcing in mixed temperate forests** Sonia Simard
11:45–12:00	**Climate reconstructions from tree-ring widths for the last 850 years and the need for new tree-ring proxies in northern Poland** Ingo Heinrich

S1 Quantifying Water Scarcity under Data Scarcity

Chair: Jan Friesen, Luis Samaniego

10:30–11:00	**Hydrological ground measurements, remote sensing (and models)** Nick van de Giesen (Keynote 2, Session 1)
11:00–11:15	**Evaluating the water fluxes from vegetation ecosystems along precipitation gradient in the dry Mediterranean region** Eyal Rotenberg
11:15–11:30	**Evaporation measurements at the Dead Sea** Jutta Metzger
~~11:30–11:45~~	~~**Numerical modelling of coupled water and vapor transport in very dry soils**~~ ~~Raneem Madi~~
11:45–12:00	**Data collection and visualization of water services: Applications for nexus governance in Africa** Theresa Mannschatz

12:00–13:30	Lunch Break

4 Programme

Wednesday, 01st October 2014, 13:30–15:30

Lecture Hall H I	Lecture Hall H VIII

S8 Coupled processes in soil-plant-atmosphere systems across scales

Chair: Matthias Mauder, Torsten Sachs

13:30–13:45	**The Catchment Isoscape: A Meta-Model for Stable Isotope Tracers at the Shale Hills Critical Zone Observatory** Christopher Duffy (Keynote 2, Session 8)
13:45–14:00	**Controls for multi-scale temporal variation in ecosystem methane exchange during the growing season of a permanently inundated fen** Franziska Koebsch
14:00–14:15	**Meso-scale eddies contribute to near-surface turbulent exchange: evidence from field measurements** Fabian Eder
14:15–14:30	**Modelling of hourly evapotranspiration and soil water contents at the grass-covered boundary-layer field site Falkenberg, Germany** Martin Wegehenkel
14:30–14:45	**Integrated Climate and Hydrology Modeling – catchment scale coupling of a regional climate model and a hydrological model** Morten Andreas Dahl Larsen
14:45–15:00	**Investigation of connections between water budget components and soil water content distribution on a forested site** Clemens Drüe

S13 Innovative Sensing Methods for the Critical Zone

Chair: Sander Huismann, Karsten Høgh Jensen

13:30–13:45	**Overview of potential applications of cosmic-ray probe in hydrology** Marek Zreda (Keynote 2, Session 13)
13:45–14:00	**Intermediate Scale Soil Moisture Surveys in TERENO with the Cosmic Neutron Rover** Martin Schrön
14:00–14:15	**Cosmic-ray neutron intensities at a forest site – determination of soil moisture, biomass and canopy interception** Mie Andreasen
14:15–14:30	**Estimation of recharge using cross-borehole electrical resistivity tomography from long-term monitoring of saline tracer** Eline Haarder
14:30–14:45	**Combined satellite and proximal soil sensing approach for improved catchment characterization** Christian von Hebel
14:45–15:00	**Development and deployment of a field robot for autonomous N_2O flux measurements** Jan Reent Köster

15:00–15:30	Coffee Break in the Aula

4 Programme

Wednesday, 01st October 2014, 15:30–19:00

Lecture Hall H I		Lecture Hall H VIII
S8 Coupled processes in soil-plant-atmosphere systems across scales Chair: Matthias Mauder, Torsten Sachs		
15:30–15:45	**Land surface energy partitioning explained by maximum convective power: evaluating the effects of vegetation and weather conditions at three eddy covariance sites in Germany** Maik Renner	
15:45–16:00	**Leaf area and soil controls of boreal forest water, energy and carbon fluxes – a modeling study over a stand rotation** Samuli Launiainen	
16:00–16:15	**Modeling soil CO_2 production and transport to investigate the intra-day variability of surface efflux and soil CO_2 concentration measurements in a Scots Pine Forest (Pinus Sylvestris, L.)** Stéphanie Goffin	
~~16:15–16:30~~	~~**On the estimate of the transpiration and its relationship with soil moisture in a Mediterranean heterogeneous ecosystem under water-limited conditions**~~ ~~Nicola Montaldo~~	
16:30–16:45	**Quantifying the effect of model scales with the inclusion of groundwater on simulated surface-energy fluxes** Prabhakar Shrestha	
16:45–17:00	**Sensitivity of soil moisture initialization for decadal predictions under different regional climatic conditions in Europe** Samiro Khodayar	
17.00–19:00	Poster Session S1, S8, S9, S10, S13, S14 with Beer and Pretzels in the Aula	

4 Programme

Thursday, 02nd October 2014, 08:30–10:10

Lecture Hall H I		Lecture Hall H VIII
Cross-thematic Key Note Speaker Session Chair: Ulrike Tappeiner		
08:30–08:50	**From observation to prediction through model-data integration: the importance of multiple constraints** Markus Reichstein (Keynote 1, Session 9)	
08:50–09:10	**Global estimates of surface and root zone soil moisture from the assimilation of satellite microwave observations into a land surface model** Rolf Reichle (Keynote 2, Session 9)	
09:10–09:30	**Ecosystem research: towards an integrated research infrastructures paradigm** Abad Chabbi (Keynote 1, Session 14)	
09:30–09:40	Discussion	
09:40–10:10	Coffee Break in the Aula	

4 Programme

Thursday, 02nd October 2014, 10:10–11:40

Lecture Hall H I	Lecture Hall H VIII

S9 Monitoring and data assimilation: predicting states and fluxes

Chair: Harrie-Jan Hendricks-Franssen

10:10–10:25	**How best to optimize a global process-based carbon land surface model?** Natasha MacBean
10:25–10:40	**Assimilation of four-dimensional soil moisture response to assess the saturated hydraulic conductivity at the Landscape Evolution Observatory: a sensor failure analysis** Damiano Pasetto
10:40–10:55	**Estimating Vegetation Transpiration and Soil Evaporation Sequences with a Dual Source Variational Data Assimilation Scheme** Tongren Xu
10:55–11:10	**Future scenarios of soil water availability at managed grassland ecosystems in the Austrian Alps** Albin Hammerle
11:10–11:25	**MODIS Land Surface Temperature Assimilation and Verification at Rur Catchment** Xujun Han
11:25–11:40	**Advanced microwave forward operator for the Naoh-MP land surface model** Chang-Hwan Park

S14 Ecotrons and lysimeters: Complementary tools for observation and experimentation on the critical zone

Chair: Jean-Charles Munch

10:10–10:40	**On the use of lysimeters and ecotrons to study the fate of pollutants in soil plant ecosystems** Corinne Leyval (Keynote 2, Session 14)
10:40–10:55	**Evaluation of plants effect on the mobility of heavy metals in a phytoremediation action of the ancient zinc mine the Avinières (St Laurent le Minier, France)** Aline Navel, Jean M. F. Martins[1] ([1]Presenting Author)
10:55–11:10	**ClimAgro – understanding the anthropogenic and natural drivers of water balance in changing alpine grasslands using a network of small-scale lysimeters** Georg Frenck
11:10–11:25	**Impacts of climate change on carbon and nitrogen cycling of (pre-) alpine grassland ecosystems under intensive and extensive management – a climate sequence lysimeter study** Ralf Kiese
11:25–11:40	**Nitrate leaching and soil N_2O emissions and their responses to different nitrogen management options in a rainfed wheat-maize rotation system, Southwest China** Minghua Zhou

END OF CONFERENCE

5 Poster Programme

Poster Session 1: Monday, 29th September, 17:00–19:00

P1 – 01 The Hydrosphere section of the Helmholtz Alliance on Remote Sensing and Earth System Dynamics: Enhancing the understanding of hydrological processes by remote sensing
C. Montzka, J. Bendix, T. Blume, H. Bogena, V. Brancato, P. Dietrich, S. Eiermann, T. Grau, A. Güntner, I. Hajnsek, I. Heidbüchel, H.-J. Hendricks-Franssen, S. Itzerott, T. Jagdhuber, F. Jonard, H. Kunstmann, W. Kurtz, A. Lehmann, C. Lorenz, P. Marzahn, L. Samaniego, I. Schröter, D. Spengler, D. Spieler, S. Suchandt, B. Thies, H. Vereecken, S. Vey, J. Wickert, U. Wollschläger, S. Zwieback

P1 – 02 Radar altimetry backscattering signatures at Ka-band over West Africa
F. Frappart, E. Mougin, C. Fatras, M. Grippa, P. Borderies, I. Guiro, B. Sambou

P1 – 03 Evaluation of standard pre-processing techniques for X-Bandradar using hydrologic modeling
S. Thober, P. Kilian, L. Samaniego, D. Spieler, B. Pospichal

P1 – 04 Installation and operation of sensors for automated optical measurements at two eddy covariance sites
M. Lange, B. Dechant

P1 – 05 Spatio-temporal Dynamics of Land-use and Land-cover in the Mu Us Sandy Land, China, using the Change Vector Analysis Technique
A. Karnieli

P1 – 06 Multitemporal soil pattern analysis with multispectral remote sensing data at field Borrentin in testsite Demmin, TERENO Northeast Germany
G. Blasch, C. Hohmann, D. Spengler

P1 – 07 Remote Sensing of Forest 3D Structure by Means of Synthetic Aperture Radar Systems: Status, Potentials and Challenges
M. Pardini, F. Kugler, M. Tello-Alonso, A. Torano-Caicoya, K. Papathanassiou

P1 – 08 Spatio-temporal downscaling of passive microwave soil moisture product using active microwave
S. K. Tomer, A. Al Bitar, S. Muddu, S. Corgne, S. Bandyopadhyay, Y. Kerr

P1 – 09 Long term estimation of evapotranspiration over Kabini basin at 250 m spatial resolution using MODIS data
E. Rajasekaran, S. Muddu, B. Bhattacharya

P1 – 10 Ground surface response to groundwater level changes in Neustrelitz region, Germany: Insight from Terrasar-X interferometry analysis
M. Motagh, S. Itzerott, I. Heine

P1 – 11 Natural and Drained Temperate Bog-Forest Ecosystems: Carbon Sink or Carbon Source?
J. Hommeltenberg, M. Drösler, M. Mauder, H. P. Schmid

P1 – 12 Methane and nitrous oxide emissions from rice and maize production in diversified rice cropping systems
S. Weller, R. Kiese

P1 – 13 The influence of meteorological variability on the seasonal course of pre-Alpine managed grasslands
M. Zeeman, R. Steinbrecher, E. Eckart, K. Heidbach, M. Mauder

5 Poster Programme

P1 – 14 Up-scaling of greenhouse gas source strengths for spatial inhomogeneous soil emissions
K. Schäfer, D. Weymann, R. Grant, A. Raabe, S. Emeis, J. Böttcher

P1 – 15 Modeling the influence of atmospheric parameters on N_2O-Emissions
C. Thieme, C. Klein, C. Biernath, F. Heinlein, E. Priesack

P1 – 16 Impact study on spatial and temporal variability of greenhouse gas emissions of an agricultural landscape conducted with different farming systems since 22 years
P. Koal, R. Schilling, G. Gerl, K. Pritsch, J. C. Munch

P1 – 17 Estimation of N_2O emissions using LandscapeDNDC in Poland, during the period 1960–2009
J. Nyckowiak, J. Lesny, R. Juszczak, J. Olejnik, E. Haas, R. Kiese, K. Butterbach-Bahl

P1 – 18 Soil greenhouse gas fluxes under conditions of climate-induced drought and heavy rain from agricultural soils in the Pannonian area
H. Berthold, B. Kitzler, K. Michel, J. Hösch, A. Baumgarten

5 Poster Programme

Poster Session 2: Tuesday, 30th September, 17:00–19:00

P2 – 01 Data Publication in TERENO-Northeast (NE)
M. Schroeder, V. Stender, J. Klump

P2 – 02 The climate and soil moisture network TERENO Northeastern Lowlands Observatory – DEMMIN®
D. Spengler, G. Blasch, E. Borg, M. Brell, C. Georgi, K. Heupel, C. Hohmann, D. Jahncke, R. Klinke, F. Renke, S. Itzerott

P2 – 03 The Observatory for Climate and Environment in Luxembourg
I. Trebs, O. Faber, L. Giustarini, J. F. Iffly, C. Tailliez, L. Pfister

P2 – 04 OPE-Andra ecosystem monitoring stations in forest, crops and grasslands in the eastern part of France
S. Conil, P. Gross, L. Heid, K. Klumpp, B. Longdoz, M. Simon

P2 – 05 The TERENO Northeastern German Lowland Observatory: studying Earth surface processes and structures in a glacially formed landscape
K. Kaiser, O. Bens, E. Borg, A. Brauer, M. Gessner, A. Güntner, S. Itzerott, G. Jurasinski, R. Lampe, S. Liebner, G. Lischeid, T. Raab, T. Sachs, M. Sommer, V. Stender

P2 – 06 Long-term, multi-scale documentation of the hydrologic cycle and vegetation dynamics in West Africa: the AMMA-CATCH observation system
S. Galle, C. Peugeot, M. Grippa, B. Cappelaere, J. Demarty, E. Mougin, T. Lebel, and the AMMA-CATCH working group

P2 – 07 The North Wyke Farm Platform, a national capability for research into sustainability of temperate agricultural grassland management: data & modelling opportunities
P. Harris, E. al

P2 – 08 The North Wyke Farm Platform, a national capability for research into sustainability of temperate agricultural grassland management: Infrastructure and instrumentation
B. Griffith, E. al

P2 – 09 Modelling of historical hydrological conditions in the Mol area, Campine region, NE-Belgium: possibilities and limitations
B. Leterme, K. Beerten, M. Gedeon

P2 – 10 A new eco-hydrological distributed model for the climate change impact on water resources of a Mediterranean basin: the Flumendosa case study in Sardinia
N. Montaldo, A. Sarigu

P2 – 11 Adaptive Wireless Ad-hoc Sensor Networks for Long-term Ecosystem Research
J. Bumberger, P. Remmler, M. Schaedler, H. Mollenhauer, R. Schima, T. Hutschenreuther, H. Toepfer, P. Dietrich

P2 – 12 Monitoring of Ecosystem Development at the Constructed Catchment Chicken Creek
W. Gerwin, W. Schaaf, C. Hinz, R. F. Hüttl

P2 – 13 Consequences of climate change on ecosystem functions, water balance, productivity and biodiversity of agricultural soils in the Pannonian area – project LYSTRAT
H. Berthold, A. Baumgarten, A. Bruckner, J. Hösch, B. Kitzler, K. Michel, E. Murer, J. Wissuwa, J. Zaller

5 Poster Programme

P2 – 14 Rainfall-runoff mechanisms on a hill island
R. R. Frederiksen, K. Rømer Rasmussen, S. Christensen

P2 – 15 Highly resolved long-term 3D hydrological simulation of a forested catchment with litter layer and fractured bedrock
Z. Fang, H. Bogena, S. Kollet, H. Vereecken

P2 – 16 Periglacial Slope Deposits and the CZ – on their genesis and influence on soil water content by a case study from the Bavarian Forest, Germany (TUM-CZO)
J. Völkel, J. Huber

P2 – 17 Effects of Climate Change on Groundwater Budget, Water Quality and the Local Water Supply in crystalline headwater areas in south-eastern Germany
B. Kopp, S. Wendel, J. Neumann

P2 – 18 Quantification of denitrification via N_2 balances provides unique insights to the in-stream nitrate cycle
V. Kunz

P2 – 19 Modeling Carbon Dynamics for Small Ponds in the North-East of Germany
M. Omari, G. Lischeid, G. Arhonditsis

P2 – 20 High Resolution Monitoring of Hydrogeochemical Gradients Across the Dynamic Soil-Groundwater Interface in a Riparian Landscape
N. Gassen, A. Musolff, C. Griebler, C. Stumpp

P2 – 21 Spatial and temporal links between DOC and NO_3^- in a forested mountainous headwater catchment in the Eifel, Germany
S. Weigand, R. Bol, B. Reichert, F. Bydalek, A. Graf, A. Lücke, W. Tappe, W. Amelung, H. Vereecken

P2 – 22 Assessing the imbalance between sediment rating curve options and spatial scales – reducing uncertainties in water quality modeling
Y. A. Bossa, B. Diekkrüger

P2 – 23 Effects of temporal and spatial resolution of calibration data on integrated hydrologic water quality model identification
S. Jiang, S. Jomaa, O. Büttner , M. Rode

P2 – 24 Characterization of stream-aquifer interactions in carbonate rocks
P. Briers, C. Sohier, F. Schmit, V. Hallet, J.-P. Descy, P. Orban, A. Degré, S. Brouyère

P2 – 25 Application of isotopic tracers and hydrochemical data for the investigation of groundwater flow in a young moraine area
H. Wilke, C. Tecklenburg, A. Güntner, T. Blume

P2 – 26 Evaluation of trends in nutrient concentrations
F. van der Bolt

P2 – 27 Physically-based modeling in an experimental alpine catchment
G. Bertoldi, S. Della Chiesa , M. Engel , G. Niedrist , C. Notarnicola , U. Tappener

5 Poster Programme

Poster Session 3: Wednesday, 01st October, 17:00–19:00

P3 – 01 High resolution analyses of partially varved sediments from Lake Tiefer See (NE Germany) for the last ca. 10,000 years – a multi proxy study
N. Dräger, S. Wulf, M. Theuerkauf, B. Plessen, U. Kienel, M. Słowiński, T. Hübener, P. Dulski, F. Ott, S. Lorenz, A. Brauer

P3 – 02 Hydrological and sedimentological processes of flood layer formation in Lake Mondsee
L. Kämpf, A. Brauer, P. Mueller, A. Güntner, B. Merz

P3 – 03 Colluvial Sediments and Bogs in the Ammer Mts. as GeoArchives: Predicting Soil Stability under Land Use and Climate Change (TUM-CZO)
J. Völkel, D. Schwindt, J. Winkelbauer

P3 – 04 A spatial reconstruction of European droughts from an isotope-climatenetwork approach
G. Helle, M. Freund, I. Heinrich, U. Cubasch, I. Members

P3 – 05 Climate and tree growth in TERENO West & Northeast
K. Fregien, I. Heinrich, G. Helle, B. Neuwirth

P3 – 06 Finding proxies for historical groundwater table depth in a flat and sandy landscape: examples from the Campine area, NE Belgium
K. Beerten, B. Leterme

P3 – 07 Challenging a process-based agro-ecosystem model with the impact of erosion on short-term carbon dynamics within an undulating landscape
C. Nendel, X. Specka, U. Hagemann, M. Pohl, J. Augustin, M. Sommer, K. van Oost

P3 – 08 Limitations of two energy balance closure parametrizations
F. Eder, F. De Roo, K. Kohnert, R. L. Desjardins, H. P. Schmid, M. Mauder

P3 – 09 Eddy covariance CO_2 and CH_4 fluxes in a rewetted fen in NE Germany
D. Franz, E. Larmanou, K. Kohnert, A. Serafimovich, F. Koebsch, T. Sachs

P3 – 10 Foehn is snow-eater: numerical analysis of snowmelt and CO_2 exchange processes at pre-alpine grassland sites
G. Katata, M. Mauder

P3 – 11 On the benefit of driving Large-Eddy Simulation with spatially resolved surface fluxes derived from environmental response functions
F. De Roo, S. Huq, S. Metzger, K. Xu, A. Desai, M. Mauder

P3 – 12 Coupling of Carbon and Water Cycles over Multiple Time and Spatial Scales in Australian Savannas
M. Harahap

P3 – 13 Interactions between climate, soil, vegetation, animals in a sahelian rangeland. Impact on organic matter mineralisation and natural NO emissions to the atmosphere
C. Delon, E. Mougin, M. Diawara, P. Hiernaux, M. Grippa, L. Kergoat, D. Serça, C. Galy-Lacaux

P3 – 14 Water as dominant driver of heat impacts in black locust and Douglas-fir trees
N. Ruehr, A. Gast, C. Weber, B. Daub, A. Arneth

5 Poster Programme

P3 – 15 Isolating the effect of groundwater dynamics on subsurface-land surface interactions
M. Rahman, S. Kollet, M. Sulis

P3 – 16 The influence of dynamic vegetation models including harvest on the energy fluxes and the feedback effects between weather and land surface models
C. Klein, C. Biernath, C. Thieme, F. Heinlein, E. Priesack

P3 – 17 Improvement of forecasts of pollen emissions by birches on regional scale
C. Biernath, C. Klein, J. Hauck, F. Heinlein, C. Thieme, J. C. Munch, I. Beck, S. Breitner, J. Cyrys, S. Gilles-Stein, A. Peters, K. Wolf, A. Schneider, C. Traidl-Hoffmann, E. Priesack

P3 – 18 Implementation of Spaceborne Canopy Height Data in the High Resolution WRF Model
J. Hong, J. Lee, S.-Y. Hong

P3 – 19 Modelling climate change impacts on crop growth and yield quality based on explicit simulation of plant internal transport processes
F. Heinlein

P3 – 20 A new method for continuously measuring the $\delta^{13}c$ of soil CO_2 concentrations at different depths by laser spectrometry
B. Longdoz, F. Parent, C. Plain, M. Maier, D. Epron

P3 – 21 Horizon Partitioning of Soil CO_2 Sources and their Isotopic Composition (13C) in a Pinus Sylvestris Stand
S. Goffin, F. Parent, C. Plain, M. Maier, H. Schack-Kirchner, M. Aubinet, B. Longdoz

P3 – 22 Modelling water flow in beech trees based on 3D plant architecture derived from laser scans
E. Priesack

P3 – 23 Interception and resulting below canopy patterns in a mixed beech forest in central Germany
A. Hildebrandt, J. Friesen

P3 – 24 Implementation and validation of high-resolution and plant-specific physiological parameterizations in a terrestrial systems modeling platform
M. Sulis, M. Langensiepen, P. Shrestha, S. Kollet, C. Simmer

P3 – 25 Is an accurate description of local carbon fluxes in soil-vegetation-atmosphere system from large scale climate data possible?
S. Venevsky

P3 – 26 Separating evaporation from transpiration in winter wheat using high-frequency eddy covariance data
P. Stoy, E. Harris

P3 – 27 A Concept for the Development of Spatially Resolved Measurements for Soil Moisture with TEM Waveguides
Y. Lapteva, F. Schmidt, H. Toepfer, J. Bumberger

P3 – 28 Assessment of a Multi Model Ensemble to Forecast the European 2003 Drought
R. Kumar, S. Thober, L. Samaniego

5 Poster Programme

P3 – 29 Investigating wintertime hillslope hydrological and snow cover dynamics using a wireless soil moisture and temperature monitoring network and time-lapse digital photography
U. Wollschläger, C. Vogt, S. Kögler, E. Martini

P3 – 30 Species specific temporal patterns of throughfall and stemflow in the north-eastern German Lowland Observatory (TERENO)
J. Dreibrodt, S. Germer, M. Morgner, A. Güntner, T. Blume

P3 – 31 Development of Inexpensive Radiation Sensors for Ecosystem Research
H. Mollenhauer, R. Schima, M. Assing, O. Mollenhauer, P. Dietrich, J. Bumberger

P3 – 32 Potentials, Challenges and Applications of Mobile Wireless Ad-hoc Sensor Networks for Environmental Monitoring
J. Bumberger, H. Mollenhauer, P. Remmler, M. Assing, O. Mollenhauer, T. Hutschenreuther, H. Toepfer, P. Dietrich

P3 – 33 A non-invasive microwave method using microstrip antennas to measure soil moisture in the profile of a rhizobox
P. S. de Paula Herrmann Jr, V. Sydoruk, C. Windt, S. Jahnke, F. Fiorani, U. Schurr, D. van Dusschoten

P3 – 34 Calibrating cosmic ray neutron sensors for soil moisture measurements in deciduous forests
I. Heidbüchel, T. Blume, A. Güntner

P3 – 35 A new approach to investigate soil moisture dynamics by radio waves
O. Kiseleva, C. Hübner, A. Brandelik, N. Kalthoff, M. Kohler, F. Königer, C. Kottmeier

P3 – 36 Observation of soil moisture variability in agricultural and grassland field soils using a wireless sensor network
E. Priesack, M. Schuh

P3 – 37 Soil moisture and shallow groundwater monitoring at the pre-Alpine TERENO site Peißenberg-Fendt
B. Fersch, T. Rödiger, R. Krieg, H. Kunstmann, R. Merz

P3 – 38 Surface ground penetrating radar full-waveform inversion to characterize soil texture and soil water content at the Selhausen test site
A. Klotzsche, S. Busch, J. van der Kruk, H. Vereecken

P3 – 39 Predicting the variability of soil water content using unsaturated flow stochastic analysis and pedotransfer function
W. Qu, H. R. Bogena, J. A. Huismann, M. Schuh, E. Priesack, H. Vereecken

P3 – 40 Field-scale prediction of soil moisture patterns by means of a fuzzy c-means clustering algorithm, digital elevation data, and sparse TDR measurements
I. Schröter, H. Paasche, P. Dietrich, U. Wollschläger

P3 – 41 Integrating data assimilation techniques and Passive Distributed Temperature Sensing for high resolution soil moisture measurements
J. Dong, S. Steele-Dunne, N. van de Giesen

5 Poster Programme

P3 – 42 Parameter and state estimation for catchment scale carbon flux simulations with the Community Land Model (CLM)
H. Post, T. Hoar, J. A. Vrugt, X. Han, A. Fox, R. Baatz, P. Kumbhar, H. Vereecken, H.-J. Hendricks Franssen

P3 – 43 Testing of four data assimilation algorithms including parameter estimation at the TERENO-site Rollesbroich
H. Zhang, H.-J. Hendricks-Franssen, H. Vereecken

P3 – 44 Monitor Water and Energy Fluxes by Jointly Assimilation of Land Surface Temperature and Soil Moisture
T. Xu, S. Liu, Z. Xu

P3 – 45 An improved characterization of riverbed heterogeneities and river-aquifer exchange fluxes with the normal score ensemble Kalman filter
Q. Tang, W. Kurtz, H. Vereecken, H.-J. Hendricks Franssen

P3 – 46 Assimilation of cosmic-ray soil moisture observations into an integrated land surface-subsurface model
W. Kurtz, H.-J. Hendricks Franssen, G. He, P. Shrestha, M. Sulis, S. Kollet, H. Vereecken

P3 – 47 The development of water balance components under different groundwater regimes on sites with shallow water tables
O. Dietrich, M. Fahle, T. Kaiser, M. Wegehenkel

P3 – 48 A lysimeter study to assess the evolution and the environmental impact of excavated clay materials
P.-O. Redon, A. Bossy, G. Echevarria, C. Leyval, M. Buès, N. Raoult, M.-O. Simonnot

P3 – 49 Soil water dynamics inside and outside of small-scale lysimeters in extreme conditions
N. Obojes, G. Leitinger, G. Niedrist, G. Frenck, E. Tasser, U. Tappeiner

P3 – 50 ClimGrass - An experiment to quantify and understand effects of warming, elevated CO_2 and summer drought on productivity and biogeochemical processes in permanent grassland
M. Herndl, E. M. Pötsch, J. W. White, B. Kimball, H. P. Piepho, M. Bahn, A. Schaumberger

P3 – 51 Towards an approach to validate filter methods to separate precipitation signal from noise in high frequency weighing lysimeter data
J. Groh, T. Pütz, J. Vanderborght, H. Vereecken

6 Supporting Programme

Conference Reception

An Ice Breaker Party is being arranged for all conference participants on **Sunday, September 28th, 19:30** in the Aula of the University of Bonn.

Conference Dinner

The Conference Dinner will be held on **Wednesday, 1st October, 20:00** at the Hilton Hotel Restaurant "The Grill". Please note that the Conference Dinner is not included in the conference and needed to be booked in advance.

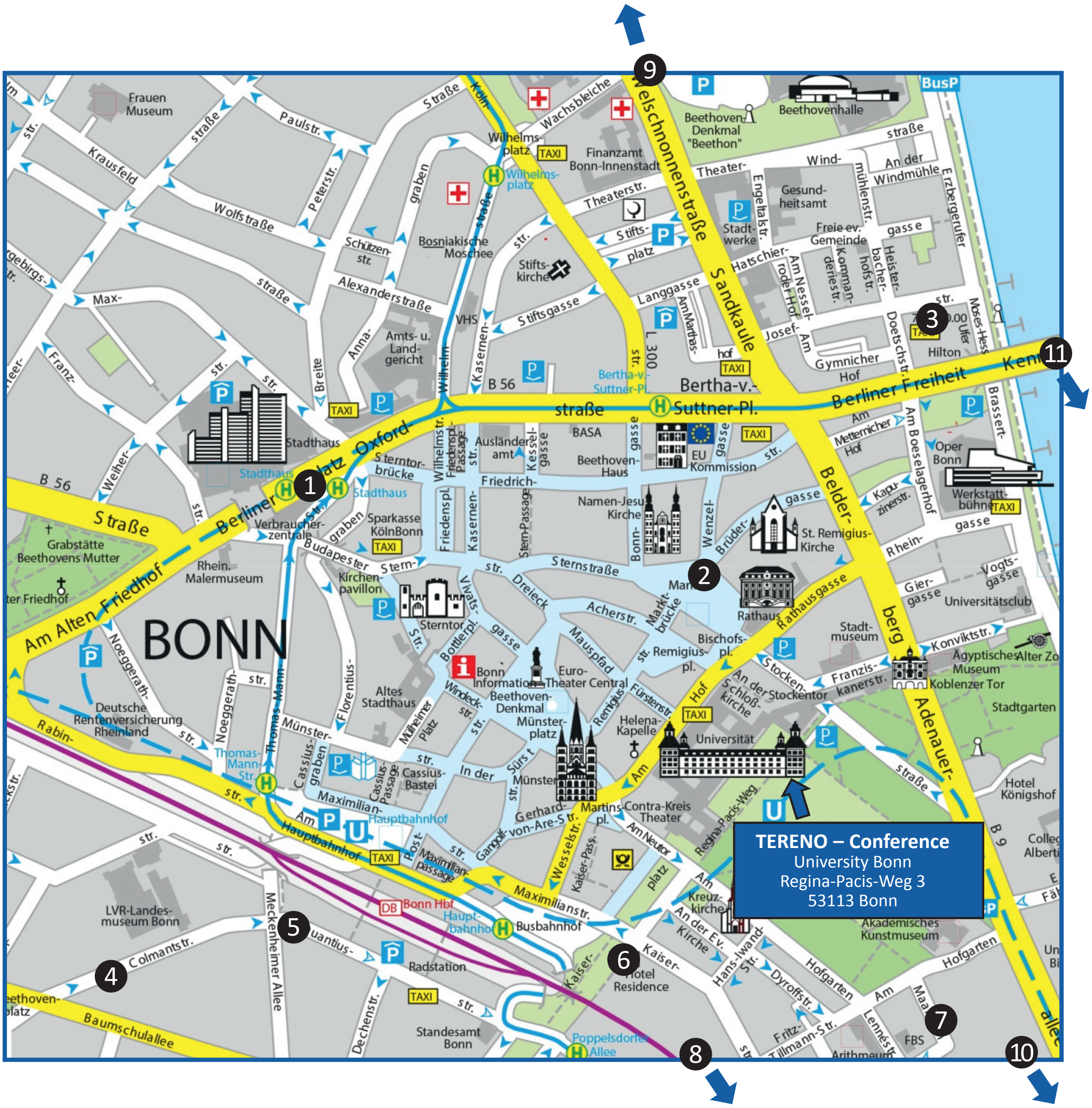
Address:
HILTON Bonn
Berliner Freiheit 2
53111 Bonn, Germany

Conference Excursion

On **Friday, 3rd October, 19:30** the conference participants have a unique opportunity to join a half day excursion. The field excursion will visit the TERENO test site Wüstebach, which is a key experimental research site of the Lower Rhine Valley-Eifel terrestrial observatory of TERENO. Please note that the Excursion can only be joined if booked in advance.

Departure in front of the University (Entry "Am Hof")**:** 09:00 (**Return at about** 16:00)

7 Hotels and Locations Bonn



1 **Hotel Europa**
Thomas-Mann-Straße 7
53111 Bonn *(800m to University)*

2 **Sternhotel Bonn**
Markt 8
53111 Bonn *(230m to University)*

3 **Hilton Bonn**
Berliner Freiheit 2
53111 Bonn *(700m to University)*

4 **Hotel Villa Esplanade**
Colmantstraße 47
53115 Bonn *(1,1km to University)*

5 **InterCityHotel Bonn**
Quantinusstraße 22
53115 Bonn *(800m to University)*

6 **Günnewig Hotel Residence**
Kaiserplatz 11
53113 Bonn *(350m to University)*

7 **Hotel Mercedes City**
Maarflach 17 a
53113 Bonn *(500m to University)*

8 **Hotel Astoria Bonn**
Hausdorffstrasse 105–113
53129 Bonn *(2,4km to University)*

9 **CJD Bonn**
Graurheindorfer Str. 149
53117 Bonn *(2,2km to University)*

10 **Insel Hotel**
Theaterplatz 5–7
53177 Bonn *(7km to University)*

11 **Hotel Zur Post**
Königswinterer Str. 309
53227 Bonn *(4km to University)*

8 Notes

8 Notes

Publication Details

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