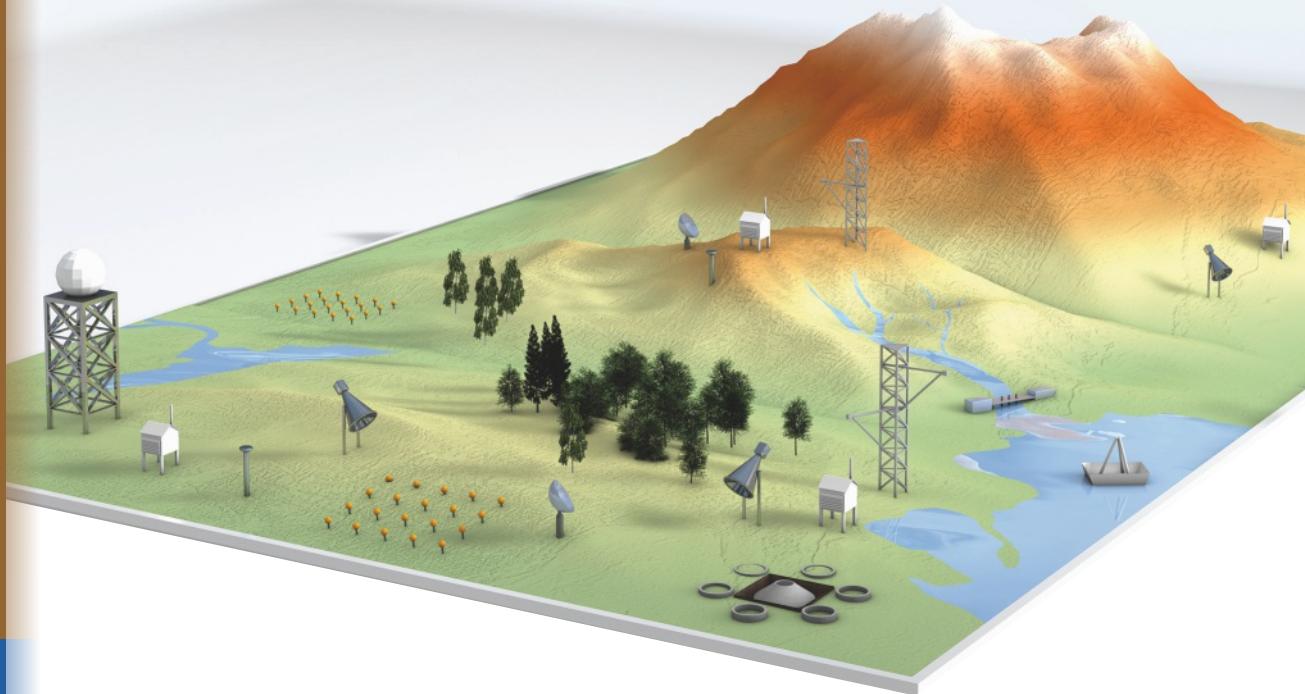
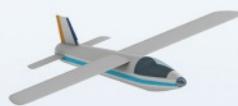




TERRESTRIAL ENVIRONMENTAL OBSERVATORIES

# International Conference 2018



## Programme

8<sup>th</sup> to 12<sup>th</sup> October 2018

Umweltforum and Neue Mälzerei, Berlin, Germany



[www.ufz.de/tereno2018](http://www.ufz.de/tereno2018)



#tereno

# General Information

## Conference Office

Dr. Hildegard Feldmann  
F&U confirm  
Permoserstraße 15  
04318 Leipzig  
fon 0341 235 2264  
fax 0341 235 2782  
tereno2018@fu-confirm.de

## Information desk

Umweltforum, Foyer

## Opening hours

Mon: 19:00 – 21:00  
Tue: 8:00 – 19:00  
Wed: 8:00 – 19:00  
Thu: 8:00 – 17:00

## Wifi

Besondere Orte Ufo  
Pswd: [not shown online]  
Besondere Orte Maelzerei  
Pswd: [not shown online]

## Venue

The conference takes place at two venues of „BESONDERE ORTE“, which are within five minutes walking distance: „Umweltforum“ and „Neue Mälzerei“. The Umweltforum is comprised of a church that is over a hundred years old with a modern, light-filled extension building. The centrepiece of this venue is its vast hall, ringed by galleries and featuring an Eule pipe organ. Right around the corner, the venue Neue Mälzerei is housed in a former brewery.

## Meeting Room

The general meeting room „Seminar 12“ is available to conference attendees for individual use. It is located in the Umweltforum, second floor. Please contact the conference information desk to book a slot in advance.

## Food & drinks

Snacks and drinks are served before 9 am, during the coffee breaks, lunch, and poster sessions. Lunch is served between 12 and 1 pm. Groceries, bakeries, and diners, are available in easy walking distance around the venue and Alexanderplatz (see the map provided).

## Thank you!

We would like to thank all participants for their contributions and wish a successful week!  
A big thank you for the TERENO-related Helmholtz Centres supporting this fantastic event!



Thanks also to our sponsors and exhibitors for their generous contributions and support of the TERENO 2018 conference. You have a great role in making this event a success!



Scientific Organizing Committee: Steffen Zacharias and Martin Schrön (UFZ).  
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Leipzig, September 2018

# Dear attendees of the second TERENO conference

This year, we experienced one of the severest drought periods ever recorded in the Northern and Eastern part of Germany in spite of lying in the temperate climate zone. This exceptionally long dry and hot phase affected all compartments of the terrestrial system and has led amongst other things to increased risk of forest fires, losses in the agricultural sector, restrictions on inland waterway traffic and on the operating times of nuclear power plants. In contrast to this drought situation, heavy rainfalls occurred in the Southern part of Germany leading flooded urban regions, mud avalanches and devastations of agricultural fields.

Ten years ago, six Helmholtz centers designed TERENO and established observatories exactly in these regions where these extreme events now took place. TERENO was conceived to observe in an integrated manner the different compartments of the terrestrial systems and we are now for the first time in a position to assess the impact of these extremes on our groundwater, soils, vegetation and atmosphere in a holistic approach. Over the last ten years, TERENO has provided unprecedented data that will allow to improve our understanding of the terrestrial system and to improve models that forecast the future evolution of the land surface and the critical zone. All data collected by TERENO are made available to the science community through its data portal TEODOOR. This portal increasingly receives attention as over the last years more than a billion quality-checked data have been downloaded by scientists and organizations all over the world. TERENO provides data that can be used to design adaptation measures for forest and agricultural systems and are key for the further model development and model validation. In the last years, TERENO has gained a huge visibility and the fact that so many people registered for this conference underpins this fact and demonstrates the importance of long-term observations.

TERENO hosts several sites of the Integrated Carbon Observation System, ICOS, and long-term ecological research sites, eLTER. The concept of TERENO served as a blueprint for the recently accepted European large scale research infrastructure eLTER on the EU road map. It is also the backbone of the recently deployed MOSES observational platform that aims at using modular mobile platforms to observe extreme events such as heat waves and floods. These event-based observations, however, rely on the longer time observations and measurements conducted in TERENO in order to put the measurements and novel findings into perspective. In our second conference, we offer a vibrant program of research and observational activities that are at the core of TERENO and research conducted in terrestrial systems. We offer 16 sessions covering a wide range of topics related to observing and sensing the various compartments of the land surface and the critical zone, model-data integration, fundamental hydrological and biogeochemical processes, biodiversity, geoarchives and water quality management. For each of these sessions we engaged outstanding scientists to give a keynote address on the subject and we received more than 170 abstracts. As the program of TERENO is going into print more than 185 people from 22 countries registered for the meeting.

On behalf of the organizing committee, I hope that this conference will stimulate further research in terrestrial systems and open up new collaborations amongst scientists and stakeholders interested in the future development and management of terrestrial systems.

Sincerely,  
**Harry Vereecken**  
TERENO Coordinator





## Welcome address of the scientific director of the UFZ

It is my great pleasure to welcome you to the 2018 TERENO International conference. The conference is designed to provide the best possible overview of research fields associated with modern long-term operated and integrated environmental observatories – from biodiversity research, soil research, to water research and the application of remote sensing technologies.

Starting in 2008, the infrastructure activity TERENO (Terrestrial Environmental Observatories) – a joint initiative of six Helmholtz Centres – established for long-term operated, integrated environmental observatories in Germany with the aim to investigate consequences of Global Change for terrestrial ecosystems and the socio-economic implications. Since its foundation, the TERENO network has developed into one of the most influential elements in the German landscape of environmental research infrastructures. This was also reflected in the recently published strategy paper “Long-Term Perspectives and Infrastructure in Terrestrial Research in Germany – A Systemic Approach”.

The report is the result of a working group of the Alliance of Science Organisations in Germany, devoted to terrestrial ecosystem research, and underlines the important role of TERENO in the context of, for example, the standardisation and harmonisation of investigations and securing the better availability of data.

Very recently, the Helmholtz Association started MOSES – Modular Observation Solutions for Earth Systems – a novel observing system of the Helmholtz Association, developed by the Helmholtz Centres in the research field “Earth and Environment”. It comprises highly flexible and mobile observation modules which are particularly designed to investigate the interactions of short-term events and long-term trends across Earth compartments. Heat waves, hydrologic extremes, ocean eddies and permafrost thaw will be in the focus of this new event-oriented observation and research initiative. TERENO is a key building block in the MOSES concept.



**Modular Observation Solutions  
for Earth Systems**



Integrated European long-term ecosystem, critical zone & socio-ecological system research infrastructure

To unravel the impacts of dynamic and mainly stochastic events on Earth and environmental systems, MOSES event-oriented data sets must be analyzed in combination with large-scale and long-term monitoring data. The observation of "events versus trends" depends on the availability of long-term and large-scale data, e.g., from Helmholtz observatories such as TERENO.

Over the years, the network has also developed a reputation beyond Germany and is now seen internationally as a role model for integrated environmental research. Numerous research visits by foreign scientists and the cooperation with other research networks testify the high esteem in which TERENO is held. At the European level TERENO is seen as a "Best Example" for an integrated, long-term environmental monitoring and exploration infrastructure. This is reflected by the concept for eLTER RI, the Integrated European Long-Term Ecosystem, Critical Zone & Socio-Ecological Research Infrastructure. On September 11th, the European Strategy Forum on Research Infrastructures (ESFRI) presented the 2018 ESFRI Roadmap on Large Scale Research Infrastructures and included eLTER RI on the Roadmap.

The international reputation of TERENO and the related research was also expressed by the strategic decision of all contributing countries to hand over the lead for the eLTER ESFRI process to Germany and the UFZ in close cooperation with the Environment Agency Austria (EEA).

Developing, enhancing, integrating and harmonizing observation systems to manage global and regional environmental change is one of the key challenges of Earth Science in the anthropocene. I am convinced that your participation in the TERENO conference will help to get new insights and to demonstrate the power of interdisciplinarity, integrated science and international collaboration. Enjoy the conference and thanks for attending.



**Georg Teutsch**

Scientific Director  
Helmholtz Centre  
for Environmental  
Research – UFZ

# Schedule

Keynote    Oral session    Poster session    Special event    Excursion

Monday

Tuesday

Wednesday

Thursday

Friday

8:45

**Welcome**  
G. Teutsch  
H. Vereecken

9:00

9:30

10:00

10:30

11:00

11:30

12:00

Hall  
Seminar I/II  
Plenarsaal

**A**    **B**    **C**  
**D**    **E**

**F**    **G**    **H**  
**I**    **J**    **K**

**L**    **M**    **N1**  
**O**    **P**    **N2**

Lunch

Lunch

Lunch

**H. Loescher**  
**M. Zreda**  
**T. Knight**

**D. Borchardt**  
**L. Pfister**  
**M. Futter**

**S. Garré**  
**H. Madsen**  
**F. Fenecia**

**S. Metzger**  
**S. Steele-Dunne**

**P. Ambus**  
**S. St. George**

**M. Weiler**  
**L. Merbold**

Coffee break

Coffee break

Coffee break

**19:00**

**Posters A–E**

**Posters F–P**

**21:00**

Icebreaker

Dinner

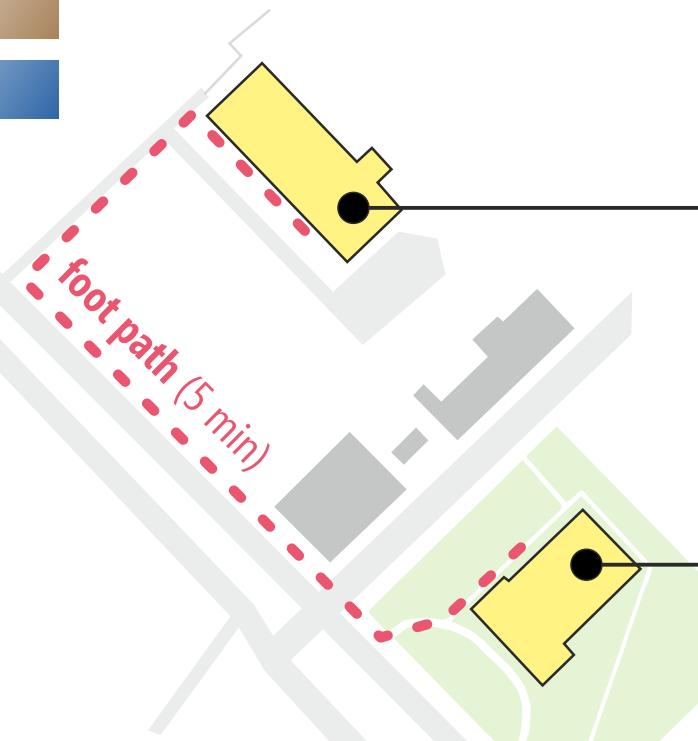
**Tour 1**

**Tour 2**

- A Innovative sensing methods for the critical zone**  
S. Huisman (FZJ), H. Bogena (FZJ), J. Bumberger (UFZ), M. Schrön (UFZ)
- B Long-term environmental observation – Advancing the understanding of Earth System in the Anthropocene**  
S. Zacharias (UFZ), M. Mirtl (UFZ, UBA)
- C Remote Sensing and Ecosystem Services**  
I. Hajnsek (DLR, ETH), E. Borg (DLR), H. Jörg (DLR)
- D Biodiversity Monitoring: Past, presence, future**  
S. Klotz (UFZ)
- E Integration of in-situ and remote sensing data for the earth surface-atmosphere system**  
T. Sachs (GFZ), S. Itzerott (GFZ), D. Spengler (GFZ)
- F Decadal and centennial variability from high-resolution bio- and geoarchives**  
I. Heinrich (GFZ), M. Wilmking (Uni Greifswald), A. Brauer (GFZ)
- G Improving water quality management using new observation and modeling strategies**  
M. Rode (UFZ), G. Lischeid (ZALF)
- H Management and integration of environmental observation data**  
R. Kunkel (FZJ)
- I Measuring and modeling water storage dynamics**  
A. Güntner (GFZ), T. Blume (GFZ)
- J Novel Approaches to monitor dynamic events**  
U. Weber (UFZ), M. Mauder (KIT)
- K Biogeochemical processes in soil-plant-atmosphere systems**  
N. Brüggemann (FZJ)
- L Relevance of soils in terrestrial matter fluxes – measurements and model concepts**  
H.-J. Vogel (UFZ), J. Vanderborght (FZJ)
- M Model-data fusion: Improving predictions and improving process understanding**  
H.-J. Hendricks-Franssen (FZJ)
- N Ecotrons and lysimeters: complementary tools for observation and experimentation on the critical zone**  
T. Pütz (FZJ), H. Gerke (ZALF)
- O Soil greenhouse gas exchange – Linking methods, bridging scales**  
R. Kiese (KIT), E. Priesack (HMGU), T. Sachs (GFZ)
- P Modeling the Hydrological System – Balancing of complexity and Uncertainty**  
S. Attinger (UFZ)

# Site map and floor plan

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## Neue Mälzerei

	floor	room
- Sessions C, E, H, K, N	5	Plenarsaal
- Sessions B, D, G, J, M, P	5	Seminar I/II

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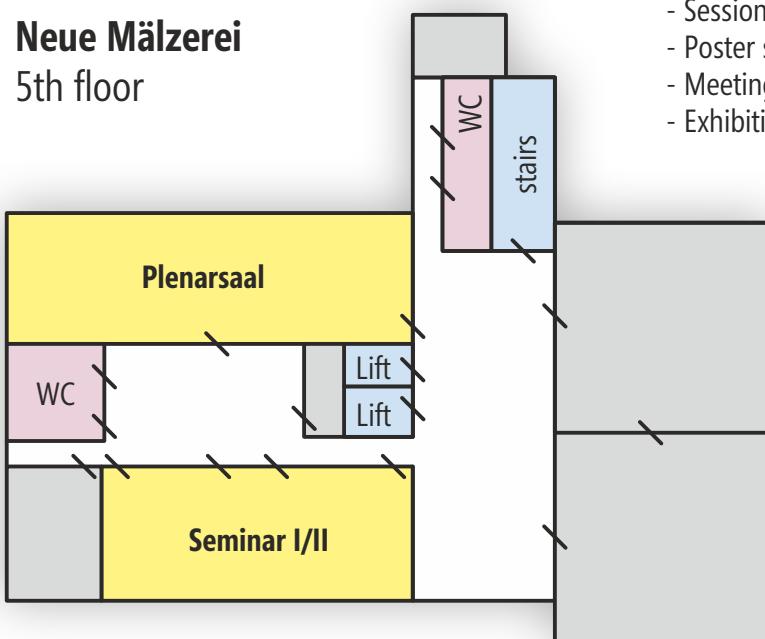


## Umweltforum

	floor	room
- Registration	0	Foyer
- Icebreaker	0	Foyer
- Keynotes	0	Hall
- Lunch	0,1	Foyer
- Sessions A, F, I, L, O	0	Hall
- Poster sessions	0,1	Hall, Gallery
- Meeting room	2	Seminar 12
- Exhibitions	0,1	Foyer, Gallery

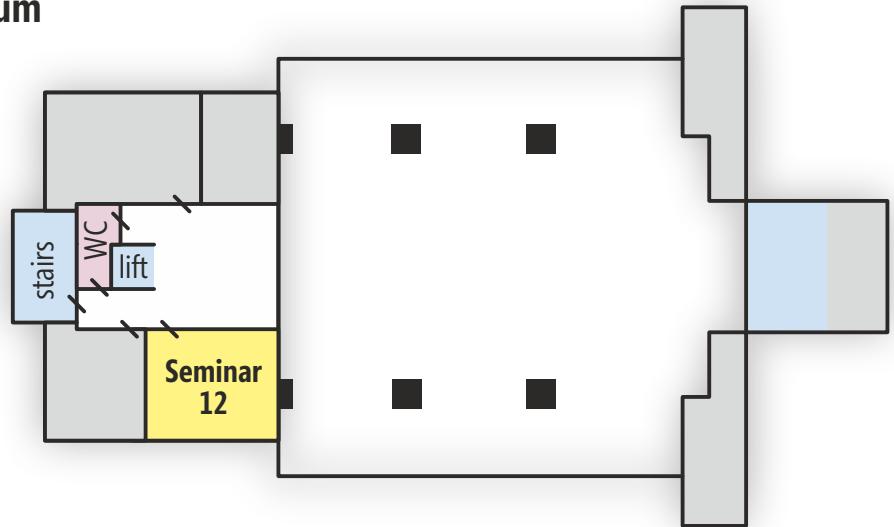
## Neue Mälzerei

5th floor



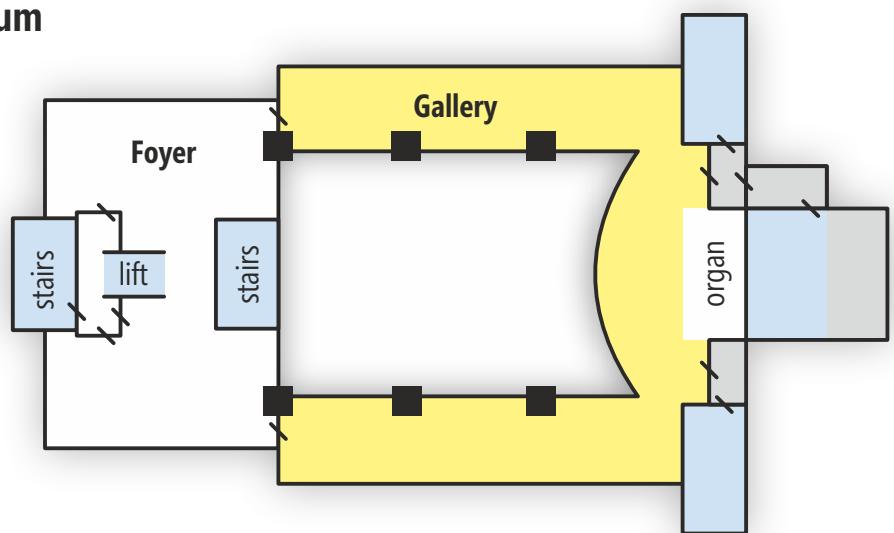
## Umweltforum

2nd floor



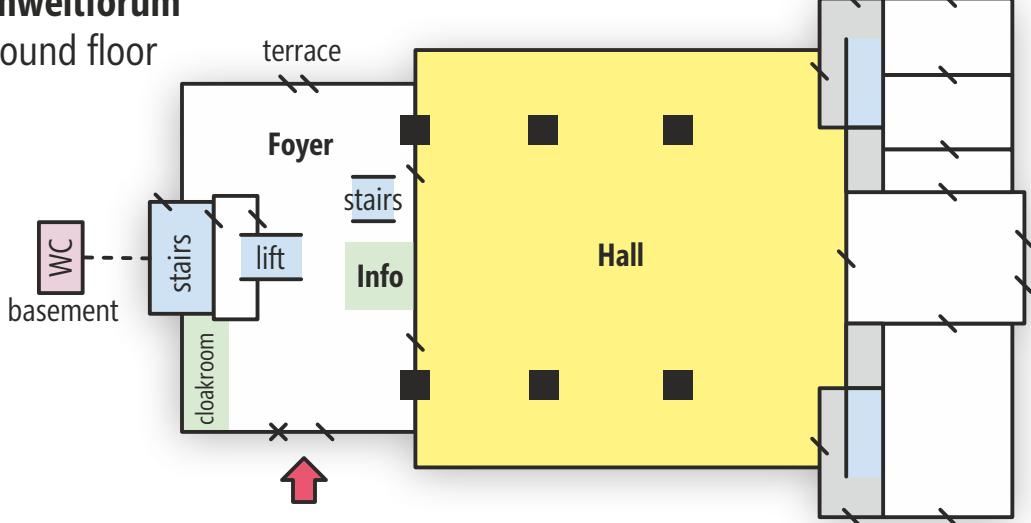
## Umweltforum

1st floor



## Umweltforum

Ground floor



# Tuesday

## Opening

8:45 **Welcome**

👤 Prof. Georg Teutsch

🏛️ Scientific Director, Helmholtz Centre for Environmental Research – UFZ

**Welcome**

👤 Prof. Harry Vereecken

🏛️ TERENO Coordinator, Forschungszentrum Jülich

## Keynotes

9:00 **Hard Knocks: Developing Environmental Observatories for long-term observations**

👤 Dr. Hank W. Loescher

🏛️ Director of Strategic Development, Environment and Infrastructure, Battelle-National Ecological Observatory Network (NSF-NEON), Boulder, US

9:30 **Cosmic-ray hydrology: principles and detectors**

👤 Prof. Marek Zreda

🏛️ Hydrology and Water Resources, University of Arizona

10:00 **Biodiversity change across space and time using historic data and distributed networks**

👤 Prof. Tiffany Knight

🏛️ German Center for Integrative Biodiversity Research (iDiv), Halle-Jena-Leipzig

10:30 Coffee break

11:00 **Mapping evapotranspiration from flux tower and aircraft measurements – how so?**

👤 Dr. Stefan Metzger

🏛️ National Ecological Observatory Network (NSF-NEON), Boulder, US

11:30 **Recent advances in the development of radar as a tool for monitoring vegetation water dynamics**

👤 Prof. Susan Steele-Dunne

🏛️ Civil Engineering and Geosciences, TU Delft

12:00 Lunch

# Innovative sensing methods for the critical zone

✉ S. Huisman<sup>1</sup>, H. Bogena<sup>1</sup>, J. Bumberger<sup>2</sup>, M. Schrön<sup>2</sup>

🏛️ <sup>1</sup>Forschungszentrum Jülich, <sup>2</sup>Helmholtz Centre for Environmental Research (UFZ)

## 9:30 Cosmic-ray hydrology: principles and detectors

👤 Prof. Marek Zreda 🏛️ Hydrology and Water Resources, University of Arizona

Keynote

13:30 **Towards understanding complex flow and transport patterns in a coastal peatland-Baltic Sea continuum.** ✉ M. Janssen<sup>1</sup>; M. Ibenthal<sup>1</sup>; M. Böttcher<sup>2</sup>, J. Westphal<sup>2</sup>; E. Erkul<sup>3</sup>; F. Koebsch<sup>1</sup>; G. Jurasiński<sup>1</sup>; M. Kreuzburg<sup>2</sup>; M. Voss<sup>2</sup>; J. Sütelenfuß<sup>4</sup>; B. Lennartz<sup>1</sup>. 🏛️ <sup>1</sup>University of Rostock; <sup>2</sup>Leibniz Institute for Baltic Sea Research Warnemünde; <sup>3</sup>University of Kiel; <sup>4</sup>University of Bremen

Orals

13:45 **An innovative combination of distributed temperature sensing and geophysics to study groundwater-surface water exchange.**

✉ J. Gaona Garcia<sup>12</sup>; J. Lewandowski<sup>13</sup>; A. Bellin<sup>2</sup>. 🏛️ <sup>1</sup>Leibniz Institute of Freshwater Ecology and Inland Fisheries; <sup>2</sup>University of Trento; <sup>3</sup>IGB-Berlin

14:00 **Resolving species-specific root water uptake patterns in different forest stands.**

✉ T. Blume<sup>1</sup>; I. Heidbüchel<sup>1</sup>; A. Günther<sup>1</sup>; M. Weiler; R. Stewart.  
🏛️ <sup>1</sup>GFZ German Research Centre for Geosciences

14:15 **Study of the distributed hydrologic response of the Claduègne catchment (Ardèche) using dense networks of rain and water level gauges.**

✉ N. Hachgenej<sup>1</sup>; G. Nord<sup>2</sup>; B. Isabelle<sup>3</sup>. 🏛️ <sup>1</sup>Université Grenoble Alpes, IGE, Grenoble, France; <sup>2</sup>Université Grenoble Alpes, CNRS, IRD, Grenoble-INP, IGE Grenoble, France; <sup>3</sup>IRSTEA, UR RiverLy, Centre de Lyon-Villeurbanne, France

14:30 **High-frequency dissolved gas cartography reveals groundwater discharge into a coastal freshwater pond.** ✉ E. Chatton<sup>1</sup>; T. Labasque<sup>1</sup>; A. Guillou<sup>2</sup>; Ch. Petton<sup>1</sup>; L. Longuevergne<sup>1</sup>. 🏛️ <sup>1</sup>CNRS; <sup>2</sup>Université de Rennes

14:45 **Concentration-discharge relationships from on high frequency measurement of river chemistry.** ✉ P. Flory<sup>1</sup>; J. Bouchez<sup>2</sup>; J. Gaillardet<sup>1</sup>; E. Gayer<sup>2</sup>; G. Tallec<sup>3</sup>; P. Ansart<sup>3</sup>; A. Blanchouin<sup>1</sup>. 🏛️ <sup>1</sup>IPG PARIS; <sup>2</sup>IPGP Paris; <sup>3</sup>IRSTEA Antony

# Long-term environmental observation – Advancing the understanding of Earth System in the Anthropocene

✉ S. Zacharias<sup>1</sup>, M. Mirtl<sup>12</sup>

🏛 1Helmholtz Centre for Environmental Research (UFZ), 2Umweltbundesamt

## Keynote

9:00 **Hard Knocks: Developing Environmental Observatories for long-term observations**

👤 Prof. Hank Loescher 🏛 Director of Strategic Development, Environment and Infrastructure, Battelle-National Ecological Observatory Network (NSF-NEON), US

## Orals

13:30 **Long-term environmental monitoring infrastructures in Europe - comparability and representativeness.** ✉ H. Mollenhauer<sup>1</sup>; M. Kasner<sup>2</sup>; P. Haase<sup>3</sup>; J. Peterseil<sup>4</sup>; C. Wohner<sup>4</sup>; M. Frenzel<sup>2</sup>; M. Mirtl<sup>4</sup>; R. Schima<sup>5</sup>; J. Bumberger<sup>2</sup>; S. Zacharias<sup>2</sup>.

🏛 1Helmholtz Centre For Environmental Research - UFZ; 2Helmholtz Centre for Environmental Research - UFZ; 3Senckenberg Research Institute and Natural History Museum; 4Environment Agency Austria; 5University of Rostock

13:45 **Monitoring seasonal variation of observed soil moisture data at two experimental fields in the Auento hydrological observatory.** ✉ P. Nasta<sup>1</sup>; N. Romano<sup>1</sup>; H. Bogenau; H. Vereecken. 🏛 1University of Napoli Federico II

14:00 **Ecosystem integrity revised: how to increase its usability in assessing states of ecosystems?** ✉ M. Frenzel<sup>1</sup>; E. Groner<sup>2</sup>; F. Müller<sup>3</sup>. 🏛 1Helmholtz Centre for Environmental Research - UFZ; 2Dead Sea and Arava Science Center; 3Kiel University

14:15 **Short-term vs long-term signal of atmospheric deposition, spring and stream waters in a mountainous environment for the period 1986-2015 (Strengbach catchment, North eastern France).** ✉ M.-C. Pierret<sup>1</sup>; F. Delay<sup>2</sup>; L. Stromhenger<sup>3</sup>; S. Cotel<sup>4</sup>; D. Viville<sup>4</sup>; A. Probst<sup>5</sup>. 🏛 1University of Strasbourg; 2CNRS - Université de Strasbourg; 3INRA; 4CNRS; 5Ecolab UMR

14:30 **The impact of land use changes upon soil erosion and sediment yields. A 20-year monitoring project of the OZCAR research infrastructure.**

✉ C. Valentin<sup>1</sup>; O. Ribolzi<sup>1</sup>; G. Lacombe<sup>2</sup>; K. Oudone Latsachack<sup>1</sup>; E. Mouche<sup>3</sup>; J. Patin<sup>3</sup>; A. de Rouw<sup>1</sup>; N. Silvera<sup>1</sup>; B. Soulileuth<sup>1</sup>; O. Sengtaheuanghoun<sup>4</sup>.

🏛 1Institut de Recherche pour le Développement; 2IWMI; 3Cea; 4DALaM

14:45 **COSMOS-UK: challenges and achievements in establishing a soil moisture monitoring network in the UK.** ✉ D. Boorman. 🏛 Centre for Ecology & Hydrology

# Remote Sensing and Ecosystem Services

✉ I. Hajnsek<sup>1,2</sup>, E. Borg<sup>1</sup>, H. Jörg<sup>1</sup>

✉<sup>1</sup>German Aerospace Center (DLR), <sup>2</sup>ETH Zürich

11:30

## Recent advances in the development of radar as a tool for monitoring vegetation water dynamics

👤 Prof. Susan Steele-Dunne ✉ Civil Engineering and Geosciences, TU Delft

Keynote

13:30

## Mapping vegetation parameters in pre-Alpine and Alpine grasslands – a field experiment to analyse the potential of UAV-borne multispectral sensors.

✉ A. Schucknecht<sup>1</sup>; A. Krämer; S. Asam; R. Kiese. ✉<sup>1</sup>Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research – Atmospheric Environmental Research (IMK-IFU), Garmisch-Partenkirchen

Orals

13:45

## Assessment of water quality using remote sensing – interdisciplinary validation/calibration campaign at the regional scale.

✉ J. Bumberger;

K. Friese; A. Lausch; K. Rinke. ✉ Helmholtz Centre for Environmental Research (UFZ)

14:00

## Performance analysis of different microwave radiative transfer models for soil moisture estimation over the Munich-North-Isar test-site.

✉ T. Weiss; P. Marzahn. ✉ Ludwig-Maximilians-Universität München

14:15

## Using machine learning to extract profiles of crop root water uptake from remote sensing data.

✉ G. Lischeid<sup>1</sup>; P. Rauneker<sup>2</sup>; J. Hufnagel<sup>2</sup>. ✉<sup>1</sup>ZALF, Institute of Landscape Hydrology; <sup>2</sup>ZALF - Leibniz-Centre for Agricultural Landscape Research

14:30

## A new hyperspectral radiometer integrated in automated networks of water and land bidirectional reflectance measurements for validation of optical remote sensing data - The H2020/HYPERNETS Project.

✉ D. Spengler<sup>1</sup>; K. Ruddick<sup>2</sup>;

J. Kuusk<sup>3</sup>; V. Brando<sup>4</sup>; D. Doxaran<sup>5</sup>; A. Dogliotti<sup>6</sup>; R. Elliott<sup>7</sup>; N. Fox<sup>7</sup>; C. Giardino<sup>8</sup>;

C. Goyens<sup>2</sup>; F. Grings<sup>6</sup>; L. Guanter<sup>1</sup>; E. Leymarie<sup>5</sup>; T. Lillemäa<sup>3</sup>; C. Penkerc'h<sup>5</sup>;

A. Reinart<sup>3</sup>; R. Santoleri<sup>9</sup>; K. Segl<sup>1</sup>; D. Vanderzande<sup>2</sup>; Q. Vanhellemont<sup>2</sup>; R. Vendt<sup>3</sup>.

✉<sup>1</sup>GeoForschungsZentrum GFZ; <sup>2</sup>Royal Belgian Institute for Natural Sciences (RBINS);

<sup>3</sup>Tartu Observatory (TO); <sup>4</sup>Consiglio Nazionale delle Ricerche (CNR); <sup>5</sup>Laboratoire d'Océanographie de Villefranche-sur-Mer, CNRS Université Paris VI; <sup>6</sup>Instituto de Astronomía y Física del Espacio (IAFE), CONICET; <sup>7</sup>National Physical Laboratory (NPL);

<sup>8</sup>CNR-IREA; <sup>9</sup>CNR-ISAC

14:45

## Evaluating the use of Cosmic-ray Probes in Validation of Satellite Soil Moisture Products.

✉ M. Berk Duygu; Z. Akyürek. ✉ Middle East Technical University

# Biodiversity Monitoring: Past, presence, future

• S. Klotz  Helmholtz Centre for Environmental Research (UFZ)

- Keynote** 10:00 **Biodiversity change across space and time using historic data and distributed networks.** • Prof. Tiffany Knight  
 German Center for Integrative Biodiversity Research (iDiv), Halle-Jena-Leipzig
- Orals** 15:30 **From Habitat Mapping to Plant Trait Characterization – A Scale Specific Perspective on Future Challenges for Biodiversity Monitoring.**  
•• C. Neumann<sup>1</sup>; A. Schindhelm<sup>1</sup>; D. Spengler<sup>1</sup>; S. Itzerott<sup>1</sup>; G. Weiss<sup>2</sup>; J. Müller<sup>3</sup>; M. Wichmann<sup>3</sup>.  <sup>1</sup>Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences; <sup>2</sup>ecosrat GmbH Berlin; <sup>3</sup>Heinz Sielmann Foundation
- 15:45 **Bee community patterns in agricultural landscapes – do they change in the long run and does it matter?** •• M. Frenzel<sup>1</sup>; O. Schweiger<sup>1</sup>.  
 <sup>1</sup>Helmholtz Centre for Environmental Research - UFZ
- 16:00 **A comparison of sampling methods for Apidae bees and Syrphidae flies.**  
•• A. Thompson<sup>1</sup>; T. Knight<sup>2</sup>.  <sup>1</sup>Martin Luther University of Halle-Wittenberg; <sup>2</sup>German Center for Integrative Biodiversity Research (iDiv), Halle-Jena-Leipzig
- 16:15 **National biodiversity monitoring in Germany: The need for collaboration.**  
•• J. Geschke<sup>1</sup>; N. Sommerwerk<sup>1</sup>; K. Vohland<sup>1</sup>; C. Häuser<sup>1</sup>; M. Lutz<sup>1</sup>.  
 <sup>1</sup>Museum für Naturkunde - Leibniz Institut for Evolution and Biodiversity Science
- 16:30 **Robust method of soil mesofauna assessment in urban environment for long-term ecological research.** •• V. Melecis<sup>1</sup>; V. Grina<sup>1</sup>; U. Kagainis<sup>1</sup>; E. Jucevica<sup>1</sup>; I. Salmane<sup>1</sup>.  
 <sup>1</sup>Institute of Biology, University of Latvia

# Integration of in-situ and remote sensing data for the earth surface-atmosphere system

✉ T. Sachs, S. Itzerott, D. Spengler

🏢 German Research Centre for Geosciences (GFZ)

11:00 **Mapping evapotranspiration from flux tower and aircraft measurements**

– how so? ✉ Dr. Stefan Metzger

🏢 National Ecological Observatory Network (NSF-NEON), Boulder, US

Keynote

15:30 **Estimating Biophysical Crop Parameters Using Multitemporal Sentinel-1 and Sentinel-2 Data.** ✉ K. Heupel<sup>1</sup>; D. Spengler<sup>1</sup>; C. Weltzien<sup>2</sup>.

🏢 <sup>1</sup>German Research Centre for Geosciences (GFZ); <sup>2</sup>Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB)

Orals

15:45 **Data fusion for precision farming based on belief theory: Combination of satellite, soil and elevation data with evidential reasoning and expert knowledge.**

✉ C. Vallentin<sup>1</sup>; E. S. Dobers<sup>2</sup>; D. Spengler<sup>1</sup>; S. Itzerott<sup>1</sup>.

🏢 <sup>1</sup>German Research Centre for Geosciences (GFZ); <sup>2</sup>Hochschule Neubrandenburg

16:00 **Drone based estimation of latent heat flux over different forest types.**

✉ P. Marzahn<sup>1</sup>; R. Ludwig; A. Sanchez-Azofeifa.

🏢 <sup>1</sup>Ludwig-Maximilians-Universität München

16:15 **Analysis of below forest soil moisture times-series data and Sentinel-1 C-band radar backscatter.** ✉ C. Pathe<sup>1</sup>; N. Salepczi<sup>1</sup>; C. Thiel<sup>2</sup>; C. Schmullius<sup>1</sup>.

🏢 <sup>1</sup>Friedrich-Schiller-University of Jena; <sup>2</sup>German Aerospace Center (DLR)

16:30 **Synergies for Soil Moisture Retrieval Across Scales from Airborne Polarimetric SAR, Cosmic-Ray Neutron Roving, and an In Situ Sensor Network.**

✉ B. Fersch<sup>1</sup>; T. Jagdhuber<sup>2</sup>; M. Schrön<sup>3</sup>; I. Völksch<sup>1</sup>; M. Jäger<sup>2</sup>.

🏢 <sup>1</sup>Karlsruhe Institute for Technology (KIT); <sup>2</sup>German Aerospace Center (DLR);

<sup>3</sup>Helmholtz Centre for Environmental Research (UFZ)

16:45 **The Use of Multi-temporal MODIS Satellite Data to Map Veld Fire Hazards in Limpopo Province, South Africa.** ✉ F. Dondofema; T. Mudau; B. Odhiambo.

🏢 University of Venda

SESSION

**A**

# Innovative sensing methods for the critical zone

Posters

- A1 **River Platform for Monitoring Erosion (RIPLE) in mountainous rivers.** G. Nord<sup>1</sup>; M. Esteves; Y. Michelin; R. Biron; T. Geay; A. Hauet; Hervé Denis.  
 <sup>1</sup>Université Grenoble Alpes, CNRS, IRD, Grenoble-INP
- A2 **Estimating Infiltration-Induced Soil Water Content Changes using Combined Horizontal Borehole GPR and Dispersive Surface GPR data.** Y. Yu<sup>1</sup>; A. Klotzsche<sup>1</sup>; D. Schmidt; J. Vanderborght<sup>1</sup>; H. Vereecken<sup>1</sup>; J. van d. Kruk<sup>1</sup>.  
 <sup>1</sup>Forschungszentrum Jülich
- A3 **Improvement of GPR FWI images using CPT data obtained at the Krauthausen testsite.** Z. Zhou<sup>1</sup>; J. Schmäck; A. Klotzsche; N. Güting; P. Haruzi; H. Vereecken; J. van d. Kruk. <sup>1</sup>Forschungszentrum Jülich
- A4 **How can we characterize fault zones in the Critical Zone? Insights from three innovative hydromechanical standpoints.** J. Schuite<sup>1</sup>; L. Longuevergne<sup>2</sup>; O. Bour<sup>2</sup>; N. Lavenant<sup>3</sup>; Frédéric Boudin<sup>4</sup>. <sup>1</sup>Ecole des Mines de Paris - Mines ParisTech; <sup>2</sup>Univ Rennes, CNRS, Géosciences Rennes – UMR; <sup>3</sup>University Rennes; <sup>4</sup>Ecole Normale Supérieure de Paris
- A5 **Offering a new soil moisture profile probe operating with Time Domain Transmission Technique.** A. Zackiewicz<sup>1</sup>; S. Trinks<sup>2</sup>; G. Wessolek<sup>2</sup>; G. Kast<sup>3</sup>; T. Recke<sup>3</sup>; A. Szypłowska<sup>4</sup>; A. Wilczek<sup>4</sup>; M. Kafarski<sup>4</sup>; W. Skierucha<sup>4</sup>. <sup>1</sup>Technische Universität Berlin; <sup>2</sup>Technical University of Berlin; <sup>3</sup>UP Umweltanalytische Produkte GmbH; <sup>4</sup>Bohdan Dobrzański Institute of Agrophysics
- A6 **New Sensor of Soil Moisture, Salinity and Temperature.** X. Chavanne. IPGP
- A7 **Cosmic-ray neutron probes used for simultaneous soil moisture and biomass estimation.** J. Jakobi; H. R. Bogena; J. A. Huisman; H. Vereecken.  
 Forschungszentrum Jülich GmbH (IBG-3)
- A8 **Cosmic-Ray Neutron Rover Surveys of Field Soil Moisture and the Influence of Roads.** S. Zacharias<sup>1</sup>; R. Rosolem<sup>2</sup>; M. Köhl<sup>3</sup>; L. Piussi<sup>4</sup>; I. Schröter; J. Iwema<sup>2</sup>; S. Kögler<sup>1</sup>; S. Oswald<sup>5</sup>; U. Wollschläger<sup>1</sup>; L. Samaniego<sup>1</sup>; P. Dietrich<sup>1</sup>; M. Schrön<sup>1</sup>.  
 <sup>1</sup>UFZ-Helmholtz Centre for Environmental Research; <sup>2</sup>University of Bristol; <sup>3</sup>Heidelberg University; <sup>4</sup>Free University of Bolzano-Bozen; <sup>5</sup>University of Potsdam

- A9 **Detection of humus properties at forest stands using VIS-NIR spectroscopy.**  
**👤 F. Thomas<sup>1</sup>; U. Werban<sup>1</sup>; C. Becker<sup>2</sup>; R. Petzold<sup>2</sup>.** <sup>1</sup>UFZ Helmholtz Centre for Environmental Research (UFZ); <sup>2</sup>Public Enterprise Sachsenforst
- A10 **Mapping of soil organic carbon at the field scale based on geophysical surveys and VNIR-spectroscopy.** **👤 U. Werban<sup>1</sup>; C. Bödinger<sup>2</sup>; P. Marco<sup>1</sup>; M. Schneider<sup>3</sup>; K. Schmidt<sup>2</sup>; J. Bumberger<sup>1</sup>.** <sup>1</sup>Helmholtz Centre for Environmental Research (UFZ); <sup>2</sup>Eberhard Karls University Tübingen; <sup>3</sup>Agricon GmbH
- A11 **Mass spectra of dissolved volatiles compounds as a fingerprint of water pathways.**  
**👤 T. Labasque<sup>1</sup>; E. Chatton<sup>2</sup>; A. Guillou<sup>2</sup>; V. Vergnaud<sup>2</sup>; L. Aquilina<sup>2</sup>.**  
<sup>1</sup>CNRS - Geosciences Rennes; <sup>2</sup>OSUR- University of Rennes
- A12 **Comparing alternative tracing measurements and mixing models: sediment fingerprinting in a meso-scale mediterranean catchment.**  
**👤 M. Uber<sup>1</sup>; C. Legout; G. Nord; C. Crouzet; F. Demory; J. Poulenard.**  
<sup>1</sup>Institut des Géosciences de l'Environnement

## Long-term environmental observation – Advancing the understanding of Earth System in the Anthropocene

SESSION

**B**

Posters

- B1 **The Huehnerwasser landscape observatory - monitoring dynamic ecosystem behavior.** **👤 W. Gerwin; W. Schaaf; A. Badorreck.**  
 Brandenburg University of Technology Cottbus-Senftenberg
- B2 **Validation measurements for remote sensing based agricultural monitoring: Status update for the German JECAM site DEMMIN/TERENO-NE.**  
**👤 D. Spengler<sup>1</sup>; N. Ahmadian<sup>2</sup>; E. Borg<sup>3</sup>; C. Hüttich<sup>2</sup>; S. Itzerott<sup>1</sup>; H. Maass<sup>3</sup>; K.-D. Missling<sup>3</sup>; C. Schmullius<sup>4</sup>; S. Truckenbrodt<sup>34</sup>; C. Conrad<sup>25</sup>.**  
<sup>1</sup>GeoForschungsZentrum GFZ; <sup>2</sup>Universität Würzburg; <sup>3</sup>Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR); <sup>4</sup>Universität Jena; <sup>5</sup>Universität Halle-Wittenberg
- B3 **OZCAR: the French network of Critical Zone Observatories.**  
**👤 J. Gaillardet<sup>1</sup>; I. Braud<sup>2</sup>; F. Hankard<sup>1</sup>.** <sup>1</sup>IPG PARIS; <sup>2</sup>IRSTEA Lyon
- B4 **Long-term measurements of land surface exchange by six eddy-covariance stations in two regions in Southwest Germany.**  
**👤 T. Streck.** University of Hohenheim

SESSION

C

# Remote Sensing and Ecosystem Services

Posters

- C1 **Estimating groundwater contribution to transpiration using satellite-derived evapotranspiration estimates coupled with stable isotope analysis.** S. Gokool<sup>1</sup>; E. Riddell<sup>2</sup>; A. Swemmer<sup>3</sup>; J. Nippert<sup>4</sup>; R. Raubenheimer; K. Chetty<sup>1</sup>.  
 <sup>1</sup>University of KwaZulu-Natal; <sup>2</sup>South African National Parks; <sup>3</sup>South African Environmental Observation Network; <sup>4</sup>Kansas State University
- C2 **Intercomparison of albedo: MODIS, Landsat and in situ data on Livingston Island, Antarctica.** A. Corbea-Pérez; J. F. Calleja; S. Fernández; C. Recondo; J. Peón.  
 <sup>1</sup>University of Oviedo
- C3 **Spatiotemporal cover factor analysis of large geographic region: coupling remotely sensed data with the integrated administration and control system data (INVEKOS).** D. Ayalew<sup>1</sup>; D. Deumlich<sup>2</sup>; B. Šarapatka<sup>3</sup>.  
 <sup>1</sup>Palacky University Olomouc; <sup>2</sup>Leibniz Centre for Agricultural Landscape Research (ZALF); <sup>3</sup>Palacký University Olomouc
- C4 **Characterizing Changes in Agricultural Soil and Vegetation using Polarimetric and Interferometric SAR – Status and Perspectives.** H. Joerg<sup>1</sup>; A. Alonso-González; I. Hajnsek. <sup>1</sup>German Aerospace Center (DLR)
- C5 **Airborne Detection of Cosmic-Ray Albedo Neutrons for Regional-Scale Surveys of Root-Zone Soil Water.** M. Schrön<sup>1</sup>; L. Bannehr<sup>2</sup>; M. Köhli<sup>13</sup>; M. Zreda<sup>4</sup>; J. Weimar<sup>3</sup>; S. E. Oswald<sup>5</sup>; J. Bumberger<sup>1</sup>; P. Zieger<sup>7</sup>; P. Dietrich<sup>1</sup>; S. Zacharias<sup>1</sup>.  
 <sup>1</sup>UFZ Leipzig; <sup>2</sup>Hochschule Anhalt; <sup>3</sup>Heidelberg University; <sup>4</sup>University of Arizona; <sup>5</sup>University of Potsdam; <sup>7</sup>Fraunhofer-Institut für Kommunikation, Information und Ergonomie FKIE
- C6 **Urban land use intensity assessment: The potential of spatio-temporal spectral traits with remote sensing.** T. Wellmann<sup>1</sup>; D. Haase; S. Knapp; A. Lausch.  
 <sup>1</sup>Humboldt-Universität zu Berlin
- C7 **Field-scale grassland biomass estimation using 3D point cloud derived from UAV-borne images.** J. Wijesingha; T. Moeckel; M. Wachendorf. Universität Kassel
- C8 **UAV-based photogrammetry: opportunities for maintenance and design of vineyard terrace landscapes.** P. Tarolli<sup>1</sup>; A. Pijl<sup>1</sup>; T. Vogel<sup>2</sup>.  
 <sup>1</sup>University of Padova; <sup>2</sup>Cambisol BV

- C9 **Coupling Deep Learning and GIS for forest damage assessment based on high-resolution remote sensing data.** [Z. Hamdi](#); M. Brandmeier<sup>1</sup>; D. Straub<sup>2</sup>; M. Berk. <sup>1</sup>Esri Germany; <sup>2</sup>Technische Universität München
- C10 **Continent-wide analysis of mass changes from glaciers and ice caps using bi-static SAR data.** [M. Braun](#); P. Malz; T. Seehaus; C. Sommer; D. Farias. Universität Erlangen-Nürnberg

## Integration of in-situ and remote sensing data for the earth surface-atmosphere system

SESSION

E

- E1 An Automated Progressive Crop-Type Classification Using Multitemporal Remote Sensing Data and Phenological Information.** [K. Heupel](#); D. Spengler; S. Itzerott. GFZ German Research Centre for Geosciences
- E2 Hydrological applications and validation of EUMETSAT-H SAF soil moisture records using in-situ measurements for selected sites in Germany.** [P. Krahe](#); A. Kunkel. Bundesanstalt für Gewässerkunde (BfG)
- E3 Modelling evapotranspiration over heterogeneous landscapes using remote sensing and in situ data.** [C. Hohmann](#); D. Spengler; S. Itzerott; K. Heupel. GFZ German Research Centre for Geosciences
- E4 Regional estimates of surface heat and methane fluxes based on airborne eddy-covariance measurements.** [A. Serafimovich<sup>1</sup>](#); J. Hartmann<sup>2</sup>; K. Kohnert<sup>1</sup>; T. Sachs<sup>1</sup>. <sup>1</sup>GFZ German Research Centre for Geosciences; <sup>2</sup>Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research
- E5 Compact automatic Rotational Raman lidar system for continuous day- and nighttime temperature and humidity profiling.** [D. Lange Vega](#); A. Behrendt; S. Muppa; V. Wulfmeyer. University of Hohenheim

Posters

# Wednesday

## Keynotes

- 9:00 **Trends and events in hydrosystems: a new multi-scale and cross-compartment observation approach deciphering controls and impacts of hydrological extremes**  
👤 Prof. Dietrich Borchardt  
🏛 UFZ Leipzig, Technical University of Dresden
- 9:30 **Catchment storage estimation, dynamics and controls – Insights gained from a long-term monitoring programme in the nested catchment set-up of the Alzette River basin (Luxembourg)**  
👤 Dr. habil. Laurent Pfister  
🏛 Luxembourg Institute of Science and Technology
- 10:00 **Beyond the mesoscale – new thinking about the role of time in water quality modelling**  
👤 Prof. Martyn Futter  
🏛 Swedish University of Agricultural Sciences
- 10:30 Coffee break
- 11:00 **Greenhouse gas fluxes from Arctic tundra in a changing climate**  
👤 Prof. Per Ambus  
🏛 Geosciences and Natural Resource Management, Copenhagen University
- 11:30 **Disentangling the decadal ‘knot’ in high-resolution paleoclimatology**  
👤 Prof. Scott St. George  
🏛 Department of Geography, Environment and Society, University of Minnesota, USA
- 12:00 Lunch

# Decadal and centennial variability from high-resolution bio- and geoarchives

I. Heinrich<sup>1</sup>, M. Wilmking<sup>2</sup>, A. Brauer<sup>1</sup>

<sup>1</sup>German Research Centre for Geosciences (GFZ), <sup>2</sup>University of Greifswald

11:30 **Disentangling the decadal ‘knot’ in high-resolution paleoclimatology**

Prof. Scott St. George University of Minnesota, USA

Keynote

13:30 **Reconstructing past water table dynamics from small-scale buried depressions in NE Belgium: pedological, lithological and botanical evidence.**

K. Beerten<sup>1</sup>; W. van d. Meer<sup>2</sup>; A. Grade<sup>3</sup>; K. Hebinck<sup>4</sup>; M. Schurmans<sup>4</sup>. <sup>1</sup>Belgian Nucl. Research Centre (SCK-CEN); <sup>2</sup>BIAx consult; <sup>3</sup>ONDRAF/NIRAS; <sup>4</sup>VUhbs archeologie

Orals

13:45 **Synchronizing <sup>10</sup>Be in two varved lake sediment records to IntCal13 <sup>14</sup>C during three grand solar minima.** M. Czymzik<sup>1</sup>; R. Muscheler<sup>2</sup>; F. Adolphi<sup>2,3</sup>; F. Mekhaldi<sup>2</sup>; N. Dräger<sup>4</sup>; F. Ott<sup>4,5</sup>; M. Slowinski<sup>6</sup>; M. Blaszkiewicz<sup>6,7</sup>; A. Aldahan<sup>8</sup>; G. Possnert<sup>9</sup>; A. Brauer<sup>4</sup>. <sup>1</sup>Leibniz-Institute for Baltic Sea Research Warnemünde (IOW); <sup>2</sup>Lund University; <sup>3</sup>University of Bern; <sup>4</sup>GFZ-German Research Centre for Geosciences; <sup>5</sup>Max Planck Institute for the Science of Human History, Jena; <sup>6</sup> Polish Academy of Sciences, Warszawa; <sup>7</sup>Polish Academy of Sciences, Torun; <sup>8</sup>United Arab Emirates University - UAR; <sup>9</sup>Tandem Laboratory, Uppsala University

14:00 **The influence of site, atmospheric depositions and disturbance history on trends and amplitudes of tree-ring based climate reconstructions – hints for a better calibration.** T. Scharnweber; J. E. Harvey; M. Trouillier; M. Wilmking.  
 University of Greifswald

14:15 **Variability of arsenic concentration in Titisee sediments (Southern Black Forest, SW Germany) in response to Holocene forest development and human land-use impact.** L. Kämpf<sup>1</sup>; R. Tjallingii<sup>2</sup>; E. Fischer<sup>3</sup>; T. Kasper<sup>4</sup>; T. Haberzettl<sup>5</sup>; K.-H. Feger<sup>1</sup>; M. Rösch<sup>3</sup>. <sup>1</sup>TU Dresden; <sup>2</sup>GeoForschungsZentrum GFZ Potsdam; <sup>3</sup>Landesamt für Denkmalpflege Baden-Württemberg; <sup>4</sup>Universität Jena; <sup>5</sup>Universität Greifswald

14:30 **Linking varve-formation processes to climate and limnological conditions at Lake Tiefer See (NE Germany).** N. Dräger<sup>1</sup>; U. Kienel<sup>1</sup>; B. Plessen<sup>1</sup>; F. Ott<sup>1,2</sup>; B. Brademann<sup>1</sup>; S. PinkerNeil<sup>1</sup>; A. Brauer<sup>1,3</sup>. <sup>1</sup>GeoForschungsZentrum GFZ; <sup>2</sup>Max Planck Institute for the Sciences of Human History, Jena; <sup>3</sup>University of Potsdam

14:45 **Improving land cover reconstructions with pollen data from annually laminated lake sediments.** M. Theuerkauf<sup>1</sup>; J. Couwenberg<sup>1</sup>; N. Dräger<sup>2</sup>. <sup>1</sup>University of Greifswald; <sup>2</sup>Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences

SESSION

G

# Improving water quality management using new observation and modeling strategies

✉ M. Rode<sup>1</sup>, G. Lischeid<sup>2</sup>

🏛 1Helmholtz Centre for Environmental Research (UFZ),

2Leibniz Centre for Agricultural Landscape Research (ZALF)

Keynote 10:00

## Beyond the mesoscale – new thinking about the role of time in water quality modelling

✉ Prof. Martyn Futter 🏛 Swedish University of Agricultural Sciences

Orals

13:30

## What and where do we need to measure to predict future nitrate concentrations?

✉ C. Vautier<sup>1</sup>; R. Abherve<sup>12</sup>; T. Kolbe<sup>3</sup>; T. Babey; J. Marçais<sup>12</sup>; C. Petton<sup>12</sup>;

T. Labasque<sup>12</sup>; A. Guillou<sup>12</sup>; E. Chatton<sup>2</sup>; A. Gauvain<sup>12</sup>; B. Abbott; A. Laverman<sup>14</sup>;

L. Aquilina<sup>12</sup>; G. Pinay<sup>5</sup>; J.-R. de Dreuzy<sup>2</sup>. 🏛 1Université de Rennes; <sup>2</sup>CNRS, Géosciences

Rennes – UMR; <sup>3</sup>Swedish University of Agricultural Sciences, Uppsala; <sup>4</sup>CNRS, Ecobio;

<sup>5</sup>IRSTEA Lyon

13:45

## Innovative field continuous characterisation of groundwater biogeochemical reactivity using an integrated approach.

✉ E. Chatton; L. Bethencourt<sup>1</sup>;

L. Aquilina<sup>1</sup>; A. Dufresne<sup>2</sup>; E. Petelet-Giraud<sup>3</sup>; T. Labasque<sup>2</sup>; A. Guillou<sup>1</sup>; F. Koch<sup>3</sup>.

🏛 1Université de Rennes; <sup>2</sup>CNRS; <sup>3</sup>BRGM

14:00

## Does LiDAR-derived information on drainage ditches improve the modelling of water runoff and nitrate loading in agricultural catchments?

✉ J. Roelens<sup>1</sup>; S. Dondeyne<sup>1</sup>; J. Van Orshoven<sup>1</sup>; J. Diels<sup>1</sup>. 🏛 1KU Leuven

14:15

## In-stream nitrate uptake at river network scale: Integrating high frequency sensor monitoring and catchment modeling.

✉ X. Yang; S. Jomaa; M. Rode.

🏛 Helmholtz Centre for Environmental Research (UFZ)

14:30

## Hindcasting land use change impacts on the hydrologic and geochemical processes of Koiliaris CZO.

✉ D. Efstathiou; N. Nikolaidis. 🏛 Technical University of Crete

14:45

## Decadal trajectories of nitrate input and output in three nested catchments along a land use gradient.

✉ S. Ehrhardt<sup>1</sup>; A. Musolff; R. Kumar; S. Attinger; J. Fleckenstein.

🏛 1Helmholtz-Centre for Environmental Research (UFZ)

# Management and integration of environmental observation data

👤 R. Kunkel

🏛️ Forschungszentrum Jülich

- 13:30 **Implementing WADI – A Spatial Data Infrastructure for data on climate change and adapted land use in West Africa.**

Orals

👤 A. Rogmann<sup>2</sup>; R. Kunkel<sup>1</sup>; J. Sorg<sup>1</sup>. 🏛️ <sup>1</sup>Institute for Bio and Geosciences - Agrosphere, Research Centre Jülich GmbH; <sup>2</sup>Center of Development Research, University of Bonn

- 13:45 **Building the Information system of the French OZCAR Critical Zone observatory network.** 👤 S. Galle<sup>1</sup>; C. Coussot<sup>2</sup>; V. Chaffard<sup>1</sup>; P. Juen<sup>1</sup>; I. Braud<sup>3</sup>. 🏛️ <sup>1</sup>Université Grenoble Alpes, CNRS, IRD, Grenoble-INP; <sup>2</sup>Université Grenoble Alpes, CNRS, IRD, Météo-France, Irstea; <sup>3</sup>IRSTEA

- 14:00 **MOSES Data Management Platform – Concept and first steps towards implementation.** 👤 D. Kerschke; H. Fuchs; M. Hammitzsch. 🏛️ GFZ German Research Centre for Geosciences, eScience Centre

- 14:15 **ICOS Carbon Portal: a one-stop shop for European greenhouse gas data.** 👤 M. Hellstrom. 🏛️ Lund University

- 14:30 **Biodiversity data integration: Current practices and challenges in Germany.** 👤 J. Geschke<sup>1</sup>; A. Mascarenhas; K. Vohland; C. Häuser. 🏛️ <sup>1</sup>Museum für Naturkunde - Leibniz Institut for Evolution and Biodiversity Science

- 14:45 **Discovery and access of time series data from long term monitoring – a mission impossible?** 👤 J. Peterseil<sup>1</sup>; C. Wohner<sup>1</sup>; A. Oggioni<sup>2</sup>; V. Minic<sup>3</sup>; R. Kunkel<sup>4</sup>; J. Watkins<sup>5</sup>. 🏛️ <sup>1</sup>Environment Agency Austria; <sup>2</sup>Consiglio Nazionale delle Ricerche; <sup>3</sup>BioSense Institute (BSI); <sup>4</sup>Research Centre Jülich GmbH; <sup>5</sup>Centre of Ecology and Hydrology (CEH)

# Measuring and modeling water storage dynamics

•• A. Güntner, T. Blume

🏛️ German Research Centre for Geosciences (GFZ)

- Keynote** 9:30 **Catchment storage estimation, dynamics and controls – Insights gained from a long-term monitoring programme in the nested catchment set-up of the Alzette River basin (Luxembourg)**  
👤 Dr. habil. Laurent Pfister 🏛️ Luxembourg Institute of Science and Technology
- Orals** 15:30 **Hydro-gravimetry as a tool to constrain water mass transfer in catchments. Example from the Strengbach Catchment in the Vosges mountains, France.**  
•• Q. Chaffaut<sup>1</sup>; J. Hinderer<sup>2</sup>; F. Masson<sup>2</sup>; M.-C. Pierret<sup>3</sup>; D. Viville<sup>3</sup>.  
🏛️ <sup>1</sup>University of Strasbourg; <sup>2</sup>EOST, University of Strasbourg, France; <sup>3</sup>UMR; <sup>7</sup>Laboratoire d'Hydrologie et de GEochimie de Strasbourg
- 15:45 **Spatially explicit mapping of the effect size of soil hydrological processes in a forested headwater catchment.** •• G. Lischeid<sup>1</sup>; H. Bogena<sup>2</sup>.  
🏛️ <sup>1</sup>ZALF, Institute of Landscape Hydrology; <sup>2</sup>Forschungszentrum Jülich GmbH
- 16:00 **Dynamic response patterns of profile soil moisture under different land covers in the Mountainous area of the Heihe River Watershed, Northwest China.**  
•• J. Tian<sup>1</sup>; B. Zhang; C. He; Z. Han; H. Bogena; J. Huisman.  
🏛️ <sup>1</sup>Forschungszentrum Jülich
- 16:15 **Quantifying the regional groundwater/surface water interaction based on <sup>18</sup>O and Deuterium.** •• C. Merz<sup>1</sup>; G. Lischeid<sup>1</sup>; S. Vyse; C. Acame<sup>1</sup>.  
🏛️ <sup>1</sup>Leibniz Centre for Agricultural Landscape Research (ZALF)
- 16:30 **High resolution isotope data and ensemble modelling to investigate water storage and flux dynamics.** •• D. Tetzlaff; A. Smith; S. Kuppel; A. Douinot; C. Soulsby.  
🏛️ University of Aberdeen
- 16:45 **Water storage dynamics during 12 years of ecological development in the Chicken Creek catchment.** •• W. Schaaf<sup>1</sup>; I. Pohle<sup>2</sup>; T. Maurer<sup>1</sup>; W. Gewin<sup>1</sup>; C. Hinz<sup>1</sup>; A. Badorreck<sup>1,3</sup>.  
🏛️ <sup>1</sup>BTU Cottbus - Senftenberg; <sup>2</sup>The James Hutton Institute; <sup>3</sup>Forschungszentrum Landschaftsentwicklung und Bergbaulandschaften (FZLB)

# Novel approaches to monitor dynamic events

✉ U. Weber<sup>1</sup>, M. Mauder<sup>2</sup>

🏛 1Helmholtz Centre for Environmental Research (UFZ)

<sup>2</sup>Karlsruhe Institute of Technology (KIT)

- 9:00 **Trends and events in hydrosystems: a new multi-scale and cross-compartment observation approach deciphering controls and impacts of hydrological extremes**  
👤 Prof. Dietrich Borchardt <🏛 UFZ; Technical University of Dresden

Keynote

- 15:30 **MOSES: a novel observing system for dynamic events.**  
✉ U. Weber; Moses Team. <🏛 Helmholtz Centre f. Environm. Research (UFZ)

Orals

- 15:45 **TERENO-Data and Results as a basis for Helmholtz-MOSES Initiative from a hydrologic view.** **✉ R. Krieg; M. Huber; T. Rödiger; C. Müller; K. Knöller; R. Merz; S. Geyer.** <🏛 Helmholtz Centre for Environmental Research (UFZ)

- 16:00 **Highly resolved radar measurements of precipitation events in an urban environment.** **✉ J. Handwerker; Y. Zheng; N. Kalthoff.**  
🏛 Karlsruhe Institute of Technology (KIT)

- 16:15 **Evaluation of energy balance closure adjustment methods by independent evapotranspiration estimates from lysimeters and hydrological simulations.**  
✉ M. Mauder<sup>1</sup>; S. Genzel; J. Fu; R. Kiese; M. Soltani; R. Steinbrecher; M. Zeeman; T. Banerjee; F. De Roo; H. Kunstmann. <sup>1</sup>Karlsruhe Institute of Technology (KIT)

- 16:30 **Conceptual framework of building linkages between tree-ring records, remote sensing images, and eddy-flux measurements: for understanding forest resilience to warming climate and predicting forest fate in next 100 years.**  
✉ C. Yi; P. Xu; W. Fang; T. Zhou; G. Hendrey.

SESSION

K

# Biogeochemical processes in soil-plant-atmosphere systems

👤 N. Brüggemann

🏛️ Forschungszentrum Jülich

Keynote 11:00

## Greenhouse gas fluxes from Arctic tundra in a changing climate

👤 Prof. Per Ambus

🏛️ Geosciences and Natural Resource Management, Copenhagen University

Orals 15:30

## Soil organic carbon in savannas decreases with anthropogenic climate change.

👤👤 K. Dintwe<sup>1</sup>; G. S. Okin<sup>2</sup>. 🏛️<sup>1</sup>Botswana Institute for Technology Research and Innovation; <sup>2</sup>University of California Los Angeles

15:45

## Drought response of soil CO<sub>2</sub> - emissions and -profile dynamics in current and future climate.

👤👤 D. Reinthal<sup>1</sup>; E. Pötsch<sup>2</sup>; M. Herndl<sup>2</sup>; M. Bahn<sup>1</sup>.

🏛️<sup>1</sup>University of Innsbruck, Institute of Ecology; <sup>2</sup>HBLFA Raumberg-Gumpenstein

16:00

## Alternative mechanisms of decomposition – an array of emerging mechanisms that degrade organic matter when the climate gets warmer and drier.

👤👤 J. Grünzweig<sup>1</sup>; D. Glikman. 🏛️<sup>1</sup>Hebrew University of Jerusalem

16:15

## On the connectivity between management, species composition and productivity of temperate upland grasslands.

👤👤 M. Zeeman<sup>1</sup>; H. Shupe<sup>2</sup>; C. Baessler<sup>3</sup>; N. Ruehr<sup>1</sup>.  
🏛️<sup>1</sup>Karlsruhe Institute of Technology; <sup>2</sup>University of Hamburg; <sup>3</sup>Helmholtz Centre for Environmental Research (UFZ)

16:30

## The Land-Atmosphere Feedback Experiment (LAFE): First results and future research activities.

👤👤 V. Wulfmeyer<sup>1</sup>; D. D. Turner<sup>2</sup>. 🏛️<sup>1</sup>University of Hohenheim;  
<sup>2</sup>National Oceanic and Atmospheric Administration (NOAA)

16:45

## Measurement and modeling nitrous oxide fluxes in complex cropland ecosystems.

👤👤 C. Thieme<sup>1</sup>; F. Heinlein; E. Priesack. 🏛️<sup>1</sup>Helmholtz Zentrum München

# Decadal and centennial variability from high-resolution bio- and geoarchives

Posters

- F1 **Temperature variation across lowland Europe during the last millennium reconstructed from wood anatomy of *Quercus robur*.** D. Balanzategui<sup>1</sup>; K.-U. Heußner<sup>2</sup>; T. Wazny<sup>3</sup>; G. Helle<sup>1</sup>; R. L. Peters<sup>4</sup>; I. Heinrich<sup>1</sup>. <sup>1</sup>German Centre for Geoscience GFZ; <sup>2</sup>German Archaeology Institute, Berlin; <sup>3</sup>University of Arizona, Tree-Ring Laboratory; <sup>4</sup>Swiss Federal Inst. for Forest, Snow and Landscape Research (WSL)
- F2 **RAPTOR: Row and position tracheid organizer in R.** R. L. Peters; D. Balanzategui<sup>1</sup>; A. G. Hurley; G. von Arx; A. L. Prendin; C. Henri E.; J. Björklund; D. C. Frank; P. Fonti. <sup>1</sup>German Research Centre for Geosciences (GFZ)
- F3 **Climate-Growth Relations of Trees affected by the Urban Heat Island in Berlin.** S. Schneider<sup>1</sup>; S. Elsholz<sup>1</sup>; B. Neuwirth<sup>2</sup>; I. Heinrich<sup>3</sup>; D. Balanzategui<sup>3</sup>; C. Schneider<sup>1</sup>. <sup>1</sup>Humboldt-Universität zu Berlin; <sup>2</sup>DeLaWi-TreeRing Analyses; <sup>3</sup>German Research Centre for Geosciences (GFZ)
- F4 **Hydroclimate signals derived from historical construction timber of Boitzenburg palace in north-eastern Germany.** G. Helle<sup>1</sup>; D. Balanzategui<sup>1</sup>; K.-U. Heußner<sup>3</sup>; I. Heinrich<sup>14</sup>. <sup>1</sup>German Research Centre for Geosciences (GFZ); <sup>3</sup>German Archaeological Institute DAI, Berlin; <sup>4</sup>Humboldt University, Berlin
- F5 **Analyzing stable isotope composition of lake water ( $\delta^{18}\text{O}$ ,  $\delta\text{D}$ ) at Lake Tiefer See Klocksin (NE-Germany) to better understand calcium carbonate precipitation processes.** S. Pinkerneil<sup>1</sup>; B. Plessen. <sup>1</sup>German Research Centre for Geosciences (GFZ)
- F6 **Geogenic vs anthropogenic heavy metal enrichment in Lake Tiefer See, Germany.** P. Hoelzmann. Freie Universität Berlin
- F7 **Detecting dynamical landscape responses to hydrological extreme events in lacustrine sediments.** A. Ramisch; R. Tjallingii; L. Schley; A. Brauer. German Research Centre for Geosciences (GFZ)
- F8 **Impact of abiotic stress factors on cell wall thickness and lumen area of earlywood and latewood of spruce (*picea abies* (L.) karst) in ore mountains.** M. Lexa<sup>1</sup>; A. Zeidller<sup>2</sup>; M. Vejpustková<sup>3</sup>. <sup>1</sup>Czech University of Life Sciences; <sup>2</sup>Czech University of Life Sciences Prague; <sup>3</sup>Forestry and Game Management Research Institute, v.v.i

SESSION

G

# Improving water quality management using new observation and modeling strategies

## Posters

- G1 **Impact of a partial forest harvesting on fluxes of suspended sediment and bedload in the small granitic Strengbach catchment (Vosges massif, France).** S. Cotel<sup>1</sup>; D. Viville<sup>1</sup>; M. C. Pierret<sup>1</sup>; S. Benarioumlil. <sup>1</sup>Lhyges
- G2 **Tomography of anthropogenic nitrate contribution along the Holtemme River within the TERENO Bode catchment, Germany.** C. Müller; A. Musolff; U. Strachauer; M. Brauns; L. Tarasova; R. Merz; K. Knöller. Helmholtz Centre for Environmental Research (UFZ)
- G3 **Spatial evaluation of the water quality catchment model HYPE in the Selke catchment, central Germany.** S. Ghaffar; S. Jomaa; M. Rode. Helmholtz Centre for Environmental Research (UFZ)
- G4 **Occurrence of microplastic particles in a watercourse surveyed by a novel fast detection method.** L. K. Schmidt<sup>1</sup>; S. E. Oswald<sup>1</sup>; M. Bochow<sup>2</sup>. <sup>1</sup>University of Potsdam; <sup>2</sup>German Research Centre for Geosciences (GFZ)
- G5 **Study of hydrological and hydrochemical interactions to evaluate the hydrograph separation.** J. Tunqui<sup>1</sup>; J.-M. Mouchel; G. Tallec; V. Andréassian. <sup>1</sup>IRSTEA - UMR TETIS
- G6 **The influence of stream geomorphology on nutrient retention at river network scale.** X. Zhou; S. Jomaa; M. Rode. Helmholtz Centre for Environmental Research (UFZ)

# Measuring and modeling water storage dynamics

- I1 **Estimation of groundwater recharge to a carbonate aquifer for semi-arid climates by integrated surface-subsurface, multi-continuum hydrogeological modelling.** L. Bresinsky<sup>1</sup>; J. Kordilla<sup>1</sup>; M. Sauter<sup>1</sup>.  
 <sup>1</sup>Georg-August Universität Göttingen
- I2 **Vadose Zone Modeling in a Small Forested Catchment: Impact of Water Pressure Head Sampling Frequency on 1D-Model Calibration.** B. Belfort<sup>1</sup>; I. Toloni; P. Ackerer; S. Cotel; D. Viville; F. Lehmann. <sup>1</sup>University of Strasbourg
- I3 **Seismic monitoring of an alluvial aquifer during a pumping test.**  
 S. Pasquet<sup>1</sup>; L. Bodet<sup>2</sup>; F. Robustelli<sup>3</sup>; M. Dangeard<sup>2</sup>; L. Longuevergne<sup>3</sup>; O. Bour<sup>3</sup>.  
 <sup>1</sup>Institut de Physique du Globe de Paris; <sup>2</sup>Sorbonne Université, UMR METIS; <sup>3</sup>Université de Rennes <sup>1</sup>, CNRS, UMR Géosciences Rennes
- I4 **Soil water characteristics of a mineral landfill capping system determined by in situ measurement techniques.** S. Beck-Broichsitter<sup>1</sup>; H. H. Gerke<sup>1</sup>; R. Horn<sup>2</sup>.  
 <sup>1</sup>Leibniz Centre for Agricultural Landscape Research (ZALF); <sup>2</sup>Institut für Pflanzenernährung und Bodenkunde, Christian-Albrechts-Universität zu Kiel
- I5 **Integrative monitoring of water storage variations with terrestrial gravimetry.**  
 A. Güntner<sup>1</sup>; M. Reich; M. Mikolaj; T. Blume; S. Schröder.  
 <sup>1</sup>German Research Centre for Geosciences (GFZ)
- I6 **Water retention dynamics of erosion-affected Luvisols in weighing lysimeters from a hummocky soil landscape.** H. H. Gerke<sup>1</sup>; M. Herbrich.  
 <sup>1</sup>Leibniz Centre for Agricultural Landscape Research (ZALF)
- I7 **Response patterns in throughfall and stemflow: a high-resolution data set covering different forest stands.** L. Schneider; J. Drebrodt; A. Güntner; T. Blume. German Research Centre for Geosciences (GFZ)

Posters

SESSION

**J**

# Novel approaches to monitor dynamic events

Posters

- J1 **Gap Probability Approximation in Broadleafed Forests using a Photosynthetically Active Photon Flux Density Sensor Network.** H. Mollenhauer<sup>1</sup>; A. Piayda<sup>2</sup>; C. Rebmann<sup>1</sup>; S. Zacharias<sup>1</sup>; P. Dietrich<sup>1</sup>; J. Bumberger<sup>1</sup>. <sup>1</sup>Helmholtz Centre For Environmental Research - UFZ; <sup>2</sup>Johann Heinrich von Thünen Institute

SESSION

**K**

# Biogeochemical processes in soil-plant-atmosphere systems

Posters

- K1 **Nutrient (Ca, Mg, K) behavior in soils located in decline forest (Strengbach catchment, Vosges Mountain, NE France). Development of a new experimental approach.** M. Oursin<sup>1</sup>; M.-C. Pierret<sup>1</sup>; A. Legout<sup>2</sup>; B. Zeller<sup>2</sup>. <sup>1</sup>Laboratoire d'Hydrologie et de Géochimie (LHyGeS), Université de Strasbourg; <sup>2</sup>INRA de Nancy
- K2 **Chemical and isotopic variability in tree sap in temperate forests during the leaf-out period: a case study in the experimental Weierbach catchment, Luxembourg.** C. Hissler; L. Gourdon; L. Pfister. Luxembourg Inst. of Science and Technology
- K3 **On the potential of redox potential measurements for the characterization of greenhouse gas emissions.** J. Wang; H. Bogaena; H. Vereecken; N. Brüggemann. Forschungszentrum Jülich/IBG-3
- K4 **Modelling climate change impact on N2O emissions from agricultural soils.** E. Priesack. Helmholtz-Zentrum München
- K5 **Vertical distribution of oxygen in aquifers: a hint of reactive zones?** C. Bouchez<sup>1</sup>; T. Labasque<sup>1</sup>; J. Farasin<sup>2</sup>; O. Bochet<sup>2</sup>; L. Aquilina<sup>2</sup>; J. R. de Dreuzy<sup>1</sup>; T. Le Borgne<sup>2</sup>. <sup>1</sup>CNRS; <sup>2</sup>University Rennes

# Relevance of soils in terrestrial matter fluxes – measurements and model concepts

SESSION

L

- L1 Are we able to monitor temporal changes in forest soil properties in Flanders?  N. Cools; B. De Vos.

 Research Institute for Nature and Forest (INBO)

Posters

- L2 Are the material concentrations measured in the leachate tank and in the bypass collection flask of TERENO SoilCan Lysimeters comparable?

 H. Rupp<sup>1</sup>; R. Gründling; H.-J. Vogel.

 <sup>1</sup>Helmholtz Centre for Environmental Research (UFZ)

- L3 Quantifying the effects of modelled soil hydraulic properties on simulated crop growth over the entire moisture range.

 S. Gayler<sup>1</sup>; T. K. D. Weber; F. Mequanint<sup>1</sup>; T. Streck<sup>1</sup>.

 <sup>1</sup>University of Hohenheim

# Model-data fusion: Improving predictions and improving process understanding

SESSION

M

- M1 Comparison of observed soil moisture with simulations of the operational German Drought Monitor.  A. Marx; M. Schrön; S. Attinger; S. Zacharias; R. Leucht;  C. Rebmann; L. Samaniego.

 Helmholtz Centre for Environmental Research (UFZ)

Posters

SESSION

0

# Soil greenhouse gas exchange – Linking methods, bridging scales

Posters

- 01 **Evolution of the atmospheric carbon fluxes of a formerly drained fen up to the 13th year after rewetting.** T. Sachs<sup>1</sup>; C. Wille<sup>1</sup>; F. Koebisch<sup>2</sup>; P. Gottschalk<sup>1</sup>.  
 <sup>1</sup>GFZ German Research Centre for Geosciences, Telegrafenberg; <sup>2</sup>Landscape Ecology, University of Rostock
- 02 **N trace gas emissions and nitrate leaching from montane grasslands differing in climate and management.** R. Kiese<sup>1</sup>; K. Petersen<sup>1</sup>; R. Gasche<sup>1</sup>; M. Zistl-Schlingmann<sup>1</sup>; H. Lu<sup>1</sup>; J. Fu<sup>1</sup>; K. Butterbach-Bahl<sup>1</sup>; M. Dannenmann<sup>1</sup>; B. Wolf<sup>1</sup>.  
 <sup>1</sup>Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, Garmisch-Partenkirchen
- 03 **EC-PeT – a modern eddy-covariance software based on EC-PACK.**  
 C. Drue. University of Trier

SESSION

P

# Modeling the Hydrological System – Balancing of complexity and Uncertainty

Posters

- P1 **One-way coupling between MODFLOW models to simulate long-term groundwater-induced flooding at the catchment-scale with high spatial resolution.** E. Laloy; B. Rogiers; M. Gedeon; K. Beerten. Belgian Nuclear Research Centre (SCK-CEN)
- P2 **Reducing uncertainties in physically based modelling at regional scales from CZO local observations.** B. Hector<sup>1</sup>; A. Depeyre<sup>2</sup>; S. Galle<sup>1</sup>; C. Peugeot<sup>3</sup>; J.-M. Cohard<sup>2</sup>; L. Séguis<sup>3</sup>. <sup>1</sup>IRD IGE; <sup>2</sup>University Grenoble Alpes; <sup>3</sup>IRD
- P3 **Estimation of the uncertainty of the hydrologic predictions due to climate change at the Koiliaris Critical Zone Observatory.**  
 S. Nerantzaki; N. P. Nikolaidis. Technical University of Crete
- P4 **Combined hydrological and geochemical modeling approach to understand the spatio-temporal variability of surface water chemistry.** J. Ackerer; B. Jeannot; François Chabaux; F. Delay; D. Viville; Y. Lucas. Laboratoire D'Hydrologie et de Géochimie de Strasbourg (LHyGeS), CNRSUniversité de Strasbourg, France

(c) Umspannwerk-Ost

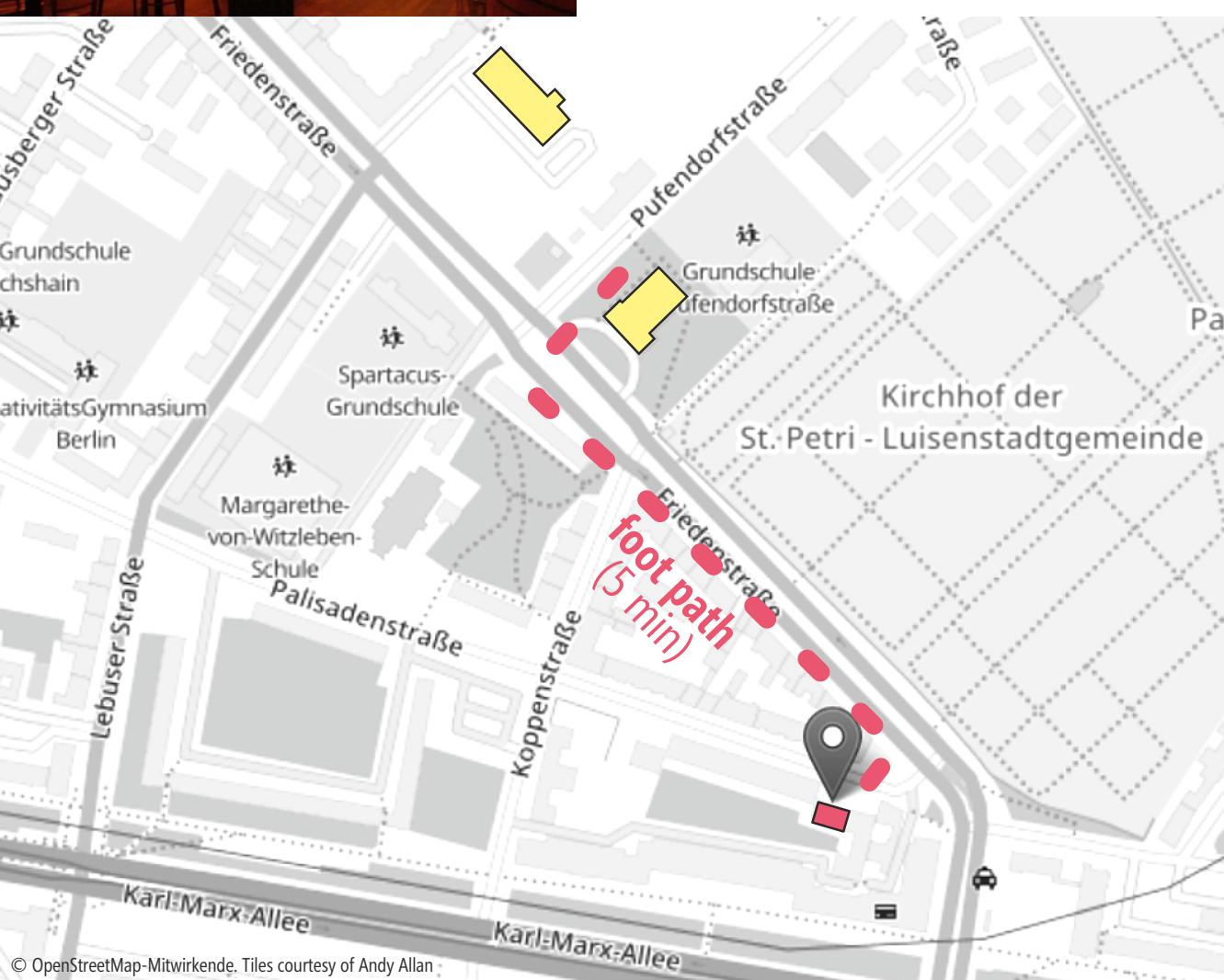


# Conference Dinner

The dinner takes place in the restaurant "Umspannwerk-Ost", a 5 minutes walk from the conference venue.

**Umspannwerk-Ost**  
**Palisadenstr. 48**  
10243 Berlin

The dinner registration fee is 60 € and includes meals/buffet and free drinks for 3 hours.



# Thursday

## Keynotes

- 9:00 **The ecotron as controlled surrogate for reality. Too good to be true?**  
👤 Prof. Sarah Garré  
🏛️ Gembloux Agro-Bio Tech, Université de Liège, France
- 9:30 **Experiences with multivariate data assimilation in integrated groundwater – surface water hydrological modelling**  
👤 Dr. Henrik Madsen  
🏛️ Head of Innovation, Danish Hydraulic Institute, Denmark
- 10:00 **Modelling the meso-scale: informing model structure from data analysis**  
👤 Dr. Fabrizio Fenicia  
🏛️ Eawag - Swiss Federal Institute of Aquatic Science and Technology
- 10:30 Coffee break
- 11:00 **Combining experiments, monitoring and modelling to understand and predict nutrient fluxes in temperate ecosystems**  
👤 Prof. Markus Weiler  
🏛️ Institute of Hydrology, Freiburg University
- 11:30 **The need to combine different methods to understand ecosystem greenhouse gas exchange: a grassland case study**  
👤 Dr. Lutz Merbold  
🏛️ Mazingira Centre, International Livestock Research Institute (ILRI), Nairobi, Kenya
- 12:00 Lunch

# Relevance of soils in terrestrial matter fluxes – measurements and model concepts

SESSION

L

✉ H.-J. Vogel<sup>1</sup>, J. Vanderborght<sup>2</sup>

✉<sup>1</sup>Helmholtz Centre for Environmental Research (UFZ), <sup>2</sup>Forschungszentrum Jülich

- 11:00 **Combining experiments, monitoring and modelling to understand and predict nutrient fluxes in temperate ecosystems**

👤 Prof. Markus Weiler ✉ Institute of Hydrology, Freiburg University

Keynote

- 13:30 **Geochemical characterization of karstic, groundwater and surface runoff at koiliaris critical zone observatory.** ✉ M. Lilli; N. Nikolaidis.

✉ Technical University of Crete

Orals

- 13:45 **Using sap flow data to parameterize the Feddes water stress model for Norway spruce.** ✉ I. Rabbel<sup>1</sup>; H. Bogena<sup>2</sup>; B. Neuwirth<sup>3</sup>; B. Diekkrüger<sup>1</sup>.

✉<sup>1</sup>University of Bonn; <sup>2</sup>Research Centre Jülich; <sup>3</sup>DeLaWi-TreeRing Analyses

- 14:00 **Impact of water-table dynamics on the destabilization of soil organic matter in a temperate agricultural catchment.** ✉ L. Jeanneau<sup>1</sup>; P. Buysse<sup>2</sup>; M. Denis<sup>1</sup>; P. Petitjean<sup>1</sup>; G. Gruau<sup>1</sup>; C. Flechard<sup>2</sup>; V. Viaud<sup>2</sup>. ✉<sup>1</sup>Univ Rennes, CNRS, Géosciences Rennes – UMR; <sup>2</sup>INRA, Agrocampus Ouest, UMR SAS

- 14:15 **Constraining a complex biogeochemical model for CO<sub>2</sub> and N<sub>2</sub>O emission simulations from various land uses by model-data fusion.**

✉ T. Houska<sup>1</sup>; D. Kraus<sup>2</sup>; R. Kiese<sup>2</sup>; L. Breuer<sup>13</sup>. ✉<sup>1</sup>ILR, iFZ, Justus Liebig University Giessen; <sup>2</sup>Institute of Meteorology and Climate Research - Atmospheric Environmental Research (IMK-IFU), Garmisch-Partenkirchen; <sup>3</sup>Centre for International Development and Environmental Research (ZEU), Justus Liebig University Giessen, Giessen

- 14:30 **Landscape-scale soil modelling: Domain knowledge and powerful algorithms.**

✉ M. Ließ. ✉ Helmholtz Centre for Environmental Research - UFZ

# Model-data fusion: Improving predictions and improving process understanding

👤 H.-J. Hendricks-Franssen

🏛️ Forschungszentrum Jülich

## Keynote

- 9:30 **Experiences with multivariate data assimilation in integrated groundwater – surface water hydrological modelling**

👤 Dr. Henrik Madsen 🏛️ Head of Innovation, Danish Hydraulic Institute, Denmark

## Orals

- 13:30 **Estimating and understanding model bias in simulating the diurnal cycle of evapotranspiration.** 👤 M. Renner<sup>1</sup>; C. Brenner<sup>2</sup>; K. Mallick<sup>3</sup>; H.-D. Wizemann<sup>4</sup>; L. Conte<sup>5</sup>; I. Trebs<sup>3</sup>; J. Wei<sup>4</sup>; V. Wulfmeyer<sup>4</sup>; K. Schulz<sup>6</sup>; A. Kleidon<sup>5</sup>.  
🏛️ <sup>1</sup>Max-Planck-Institute for Biogeochemistry Jena; <sup>2</sup>Universität für Bodenkultur Wien; <sup>3</sup>Luxembourg Institute of Science and Technology (LIST); <sup>4</sup>University of Hohenheim; <sup>5</sup>Max-Planck-Institute for Biogeochemistry; <sup>6</sup> BOKU, University of Natural Resources and Life Sciences Vienna

- 13:45 **Knowledge Fusion in Soil Hydrology.** 👤 H. H. Bauser<sup>1,2</sup>; D. Berg<sup>1,2</sup>; K. Roth<sup>1,3</sup>.  
🏛️ <sup>1</sup>Institute of Environmental Physics (IUP), Heidelberg University; <sup>2</sup>HGS MathComp, Heidelberg University; <sup>3</sup>Interdisciplinary Center for Scientific Computing (IWR), Heidelberg University

- 14:00 **Forecasting water levels for the German waterways of the Rhine River using artificial neural networks and physically based models.** 👤 Y. Ma<sup>1</sup>; E. Matta<sup>1</sup>; D. Meißner<sup>2</sup>; J. Richter<sup>2</sup>; H. Schellenberg<sup>3</sup>; R. Hinkelmann<sup>1</sup>.  
🏛️ <sup>1</sup>Technische Universität Berlin; <sup>2</sup>Bundesanstalt für Gewässerkunde; <sup>3</sup>BearingPoint GmbH

- 14:15 **Lithological Classification Based on Convolutional Neural Networks using multi-sensor data.** 👤 Y. Chen; M. Brandmeier<sup>1</sup>.  
🏛️ <sup>1</sup>Esri Germany

- 14:30 **Linking in-situ observational networks and models to improve our understanding of the critical zone dynamics. The IR-OZCAR French contribution.**  
👤 F. Habets<sup>1</sup>; S. Anquetin<sup>2</sup>; I. Braud<sup>3</sup>; OZCAR modelling community.  
🏛️ <sup>1</sup>CNRS, Sorbonne University; <sup>2</sup>Université Grenoble Alpes and CNRS; <sup>3</sup>IRSTEA Lyon

- 14:45 **Data assimilation studies for the tereno rur catchment.**  
👤 H.-J. Hendricks-Franssen<sup>1</sup>; R. Baatz; H. Post; W. Kurtz; S. Gebler; H. Zhang; S. Kollet; H. Vereecken.  
🏛️ <sup>1</sup>Forschungszentrum Jülich

# Ecotrons and lysimeters: complementary tools for observation and experimentation on the critical zone

✉ T. Pütz<sup>1</sup>, H. Gerke<sup>2</sup>

✉ <sup>1</sup>Forschungszentrum Jülich, <sup>2</sup>Leibniz Centre for Agricultural Landscape Research (ZALF)

- 9:00 **The ecotron as controlled surrogate for reality. Too good to be true?**  
✉ Prof. Sarah Garré ✉ Gembloux Agro-Bio Tech, Université de Liège, France

Keynote

- 13:30 **Water productivity of permanent grassland under changing climatic conditions – first results.** ✉ M. Herndl<sup>1</sup>; V. Slawitsch<sup>2</sup>; E. Pötsch<sup>1</sup>; A. Schaumberger<sup>1</sup>. ✉ <sup>1</sup>AREC Raumberg-Gumpenstein; <sup>2</sup>University of Graz

Orals

- 13:45 **Impacts of different groundwater management regimes on water balance components of shallow groundwater table sites investigated with groundwater lysimeters.** ✉ O. Dietrich<sup>1</sup>; M. Fahle<sup>2</sup>; T. Kaiser<sup>1</sup>; J. Steidl<sup>1</sup>. ✉ <sup>1</sup>Leibniz-Centre of Agricultural Landscape Research (ZALF) e.V.; <sup>2</sup>Federal Institute for Geosciences and Natural Resources (BGR)

- 14:00 **Responses of soil water storage and crop water use efficiency to climate change.** ✉ J. Groh<sup>1</sup>; T. Pütz<sup>2</sup>; J. Vanderborght<sup>2</sup>; H.-J. Vogel<sup>3</sup>; R. Gründling<sup>3</sup>; H. Rupp<sup>3</sup>; M. Sommer<sup>1</sup>; H. Vereecken<sup>2</sup>; H. H. Gerke<sup>1</sup>. ✉ <sup>1</sup>Leibniz Centre for Agricultural Landscape Research (ZALF); <sup>2</sup>Forschungszentrum Jülich GmbH; <sup>3</sup>Helmholtz Centre for Environmental Research (UFZ)

- 14:15 **Comparative study of a long-established large weighing lysimeter and a state-of-the-art mini-lysimeter.** ✉ C. Ruth; D. Michel; M. Hirschi; S. I. Seneviratne.  
✉ Swiss Federal Institute of Technology Zurich (ETH Zurich)

- 14:30 **Lysimeters – an indispensable tool for aquifer scaled numerical modeling.**  
✉ J. Fank; G. Klammler; H. Kupfersberger. ✉ JR-AquaConSol Ltd.

- 14:45 **From climate change to weather conditions: linking ecotrons to an ecosystem measurement tower to better simulate the effect of climate change on ecosystem functioning.** ✉ N. Beenaerts<sup>1</sup>; I. Janssens<sup>2</sup>; J. Clerinx<sup>1</sup>; P. Steegen<sup>1</sup>; M. Roland<sup>2</sup>; N. Arriga<sup>2</sup>; I. Vanderkelen<sup>3</sup>; R. Ceulemans<sup>2</sup>; W. Thiery<sup>3</sup>; J. Vangronsveld<sup>1</sup>; F. Rineau<sup>1</sup>. ✉ <sup>1</sup>Universiteit Hasselt; <sup>2</sup>Universiteit Antwerp; <sup>3</sup>Vrije Universiteit Brussel

SESSION

**N2**

# Ecotrons and lysimeters: complementary tools for observation and experimentation on the critical zone

**✉ T. Pütz<sup>1</sup>, H. Gerke<sup>2</sup>****🏛 1Forschungszentrum Jülich, 2Leibniz Centre for Agricultural Landscape Research (ZALF)****Orals** 15:30

**Mobilization and transfert of pac (polycyclic aromatic compounds): laboratory and lysimeter column experiments.** **✉ P. Faure<sup>1</sup>; M. Boulangé<sup>1</sup>; L. Maurcie<sup>1</sup>; C. Lorgeoux<sup>2</sup>; C. Biache<sup>1</sup>; N. Enjelvin<sup>3</sup>; J. Michel<sup>4</sup>; R. Michels<sup>2</sup>.** **🏛 1LIEC UMR CNRS UL GISFI; 2GeoRessources UMR CNRS UL CREGU - GISFI; 3GISFI; 4INERIS**

15:45 **Long term fate of multi-contamination within the context of natural attenuation and climatic conditions: a collaborative study in TERENO and GISFI lysimeters.**

**✉ C. Leyval<sup>1</sup>; T. Beguiristain<sup>1</sup>; N. Enjelvin<sup>2</sup>; P. Faure<sup>1</sup>; C. Lorgeoux<sup>1</sup>; T. Pütz<sup>3</sup>.**  
**🏛 1CNRS; 2GISFI; 3Forschungszentrum Jülich GmbH**

16:00 **Water and coupled N fluxes at grassland lysimeters as subject to management and climate regime.** **✉ K. Schneider<sup>1</sup>; J. Fu; R. Gasche<sup>1</sup>; R. Kiese<sup>1</sup>; K. Butterbach-Bahl<sup>1</sup>.** **🏛 1Karlsruhe Institute of Technology KIT**

16:15 **Lysimeter meets good agricultural practice – set up for monitoring pesticide movement through soils.** **✉ M. Lesch<sup>1</sup>; H. Pagel<sup>2</sup>; P. Grathwohl<sup>1</sup>; T. Streck<sup>2</sup>.**  
**🏛 1Universität Tübingen; 2University of Hohenheim;**

16:30 **Spatiotemporal variability of water and solute fluxes of a grassland site effected by climate change.** **✉ N. Knauer<sup>1</sup>; J. Groh<sup>2</sup>; H. Vereecken<sup>1</sup>; E. Matzner<sup>3</sup>; T. Pütz<sup>1</sup>.**  
**🏛 1Forschungszentrum Jülich GmbH (IBG-3); 2Leibniz Centre for Agricultural Landscape Research (ZALF); 3University of Bayreuth Germany**

# Soil greenhouse gas exchange – Linking methods, bridging scales

✉ R. Kiese<sup>1</sup>, E. Priesack<sup>2</sup>, T. Sachs<sup>3</sup>

✉ <sup>1</sup>Karlsruher Institut für Technologie (KIT), <sup>2</sup>Helmholtz Zentrum München (HMGU)

<sup>3</sup>German Research Centre for Geosciences (GFZ)

- 11:30 **The need to combine different methods to understand ecosystem greenhouse gas exchange: a grassland case study**

👤 Dr. Lutz Merbold ✉ Mazingira Centre, International Livestock Research Institute (ILRI), Nairobi, Kenya

Keynote

- 15:30 **Using isotopes to trace the effects of drought and rewetting on nitrous oxide emission pathways in a managed grassland.**

✉ E. Harris; M. Bahn. ✉ University of Innsbruck

Orals

- 15:45 **The long-term development of atmospheric CO<sub>2</sub> and CH<sub>4</sub> exchange in a rewetted peatland – synthesis from an interdisciplinary multi-year approach.**

✉ F. Koebisch<sup>1</sup>; V. Unger<sup>1</sup>; X. Wen<sup>2</sup>; S. Liebner<sup>2</sup>; T. Sachs<sup>2</sup>; M. Koch<sup>3</sup>; J. Hahn<sup>1</sup>; G. Jurasinski<sup>1</sup>. ✉ <sup>1</sup>University of Rostock; <sup>2</sup>GFZ German Research Centre for Geosciences; <sup>3</sup>University of Göttingen

- 16:00 **GHG emission inventories from rice production systems in Asia.**

✉ D. Kraus<sup>1</sup>; C. Werner<sup>2</sup>; B. Janz<sup>1</sup>; T. Van Mai<sup>3</sup>; K. Butterbach-Bahl<sup>1</sup>.

✉ <sup>1</sup>Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, Garmisch-Partenkirchen; <sup>2</sup>Senckenberg Biodiv. and Climate Research Centre (BiK-F); <sup>3</sup>Vietnam Academy for Agricultural Sciences

- 16:15 **The isotopic composition of N cycle species as a constraint for biogeochemical models.** ✉ B. Wolf<sup>1</sup>; T. Denk<sup>1</sup>; E. Ibraim<sup>2</sup>; J. Mohn<sup>2</sup>; D. Kraus<sup>1</sup>; R. Kiese<sup>1</sup>; K. Butterbach-Bahl<sup>1</sup>. ✉ <sup>1</sup>Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, Garmisch-Partenkirchen; <sup>2</sup>Senckenberg Biodiversity and Climate Research Centre (BiK-F); <sup>3</sup>Vietnam Academy for Agricultural Sciences; <sup>2</sup>Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Air Pollution / Environmental Technology, Dübendorf, Switzerland

- 16:30 **Soil N<sub>2</sub>O and CH<sub>4</sub> emissions from a subtropical montane agricultural landscape of Southwest China.** ✉ M. Zhou<sup>1</sup>; B. Zhang<sup>1</sup>; X. Wang<sup>1</sup>; Y. Wang<sup>1</sup>; B. Zhu<sup>1</sup>.

✉ Key Laboratory of Mountain Surface Processes and Ecological Regulation, Institute of Mountain Hazards and Environment, Chinese Academy of Sciences; Chengdu, China

# Modeling the Hydrological System – Balancing of complexity and Uncertainty

• S. Attinger

✉ Helmholz Centre for Environmental Research (UFZ)

Keynote 10:00

**Modelling the meso-scale: informing model structure from data analysis**

• Dr. Fabrizio Fenicia

✉ Eawag - Swiss Federal Institute of Aquatic Science and Technology

Orals 15:30

**Global sensitivity analysis for field-scale pathogen transport in natural aquifers to reduce model complexity.** • D. Knabe<sup>1</sup>; A. Guadagnini<sup>2</sup>; M. Riva<sup>2</sup>; H.-P. Rohns<sup>3</sup>; I. Engelhardt<sup>1</sup>. <sup>1</sup>TU Berlin; <sup>2</sup>Politecnico di Milano; <sup>3</sup>Stadtwerke Düsseldorf

15:45

**When does model complexity pay off? A case study for groundwater modelling.**  
• T. Houben<sup>1</sup>; G. de Rooij<sup>1</sup>; S. Attinger<sup>1</sup>. <sup>1</sup>Helmholz Centre for Environmental Research (UFZ)

16:00

**Application of a low-dimensional integrated model at the catchment scale – case study of the Strengbach catchment.** • S. Weill<sup>1</sup>; B. Jeannot; F. Delay.  
✉ <sup>1</sup>Laboratory of Hydrology and Geochemistry of Strasbourg

16:15

**A terrestrial climatology over Europe applying the Terrestrial Systems Modeling Platform, TerrSysMP.** • S. Kollet<sup>1</sup>; C. Furusho<sup>1</sup>; K. Goergen<sup>1</sup>; J. Keune<sup>2</sup>; K. Kulkarni<sup>1</sup>; B. Naz<sup>1</sup>; W. Sharples<sup>1</sup>. <sup>1</sup>Research Centre Jülich; <sup>2</sup>Gent University

16:30

**Comparing hydrological drought representation in three hydrological models.**  
• L. Melsen<sup>1</sup>; B. Guse<sup>2</sup>. <sup>1</sup>Wageningen University; <sup>2</sup>German Research Center for GeoSciences - GFZ

16:45

**Frequency-domain analysis of hydrological variables: a novel approach to better constrain factors controlling climatic signal transformation by hydrosystems.**  
• J. Schuite<sup>1</sup>; N. Flipo<sup>1</sup>; A. Rivière<sup>1</sup>; N. Massei<sup>2</sup>. <sup>1</sup>Ecole des Mines de Paris - Mines ParisTech; <sup>2</sup>Université de Rouen-Normandie



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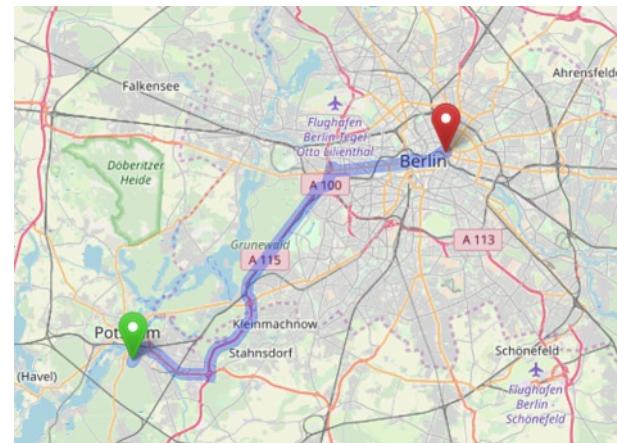
# Excursions

Tour 1

## Historical tour on the Telegrafenberg in Potsdam - science since the 19th century

**Venue:** German Research Centre for Geosciences (GFZ), Potsdam

- 09:00 Get on the bus at the Umweltform
- 10:00 Welcome at GFZ, Säulenforum
- 11:00 Visit LRI Satellite Laser Station
- 12:00 Guided tour I: Süringhaus, measurement site, Paleomagnetic Laboratory, the Great Refractor
- 13:00 Lunch in the cantine (free)
- 14:00 Guided tour II: optical telegraph, Michelsen cellar, Einstein tower, pendulum hall
- 15:00 Get on the bus back to Berlin
- 16:00 Arrival at Umweltforum

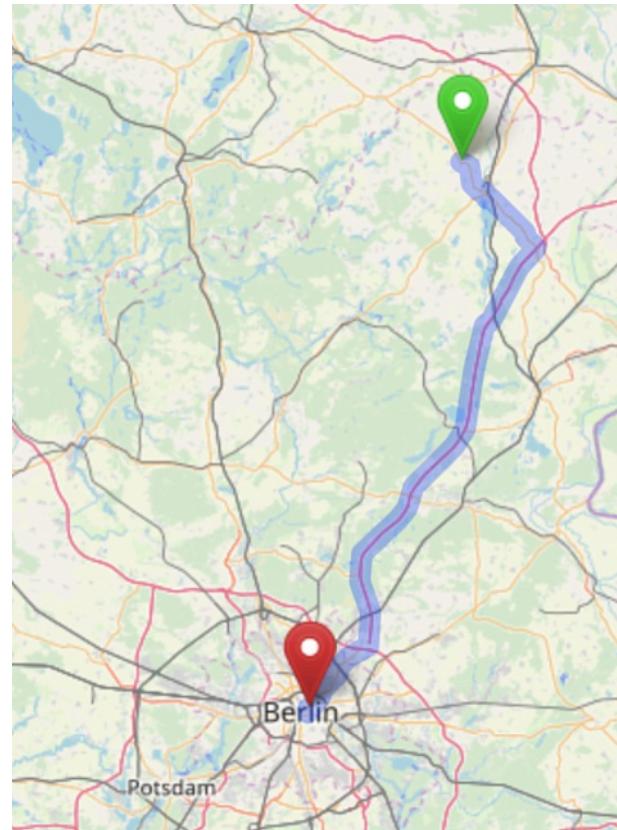


Tour 2

## Water and carbon dynamics in erosion-affected soil landscapes of hummocky ground moraines

**Venue:** Leibniz Centre for Agricultural Landscape Research (ZALF), research station Dedelow

- 09:00 Get on the bus at the Umweltform
- 11:00 Visit SoilCan lysimeters
- 12:00 Packed Lunch (free)
- 13:00 Visit Carbo-ZALF test sites
- 15:00 Get on the bus back to Berlin
- 17:00 Arrival at Umweltforum





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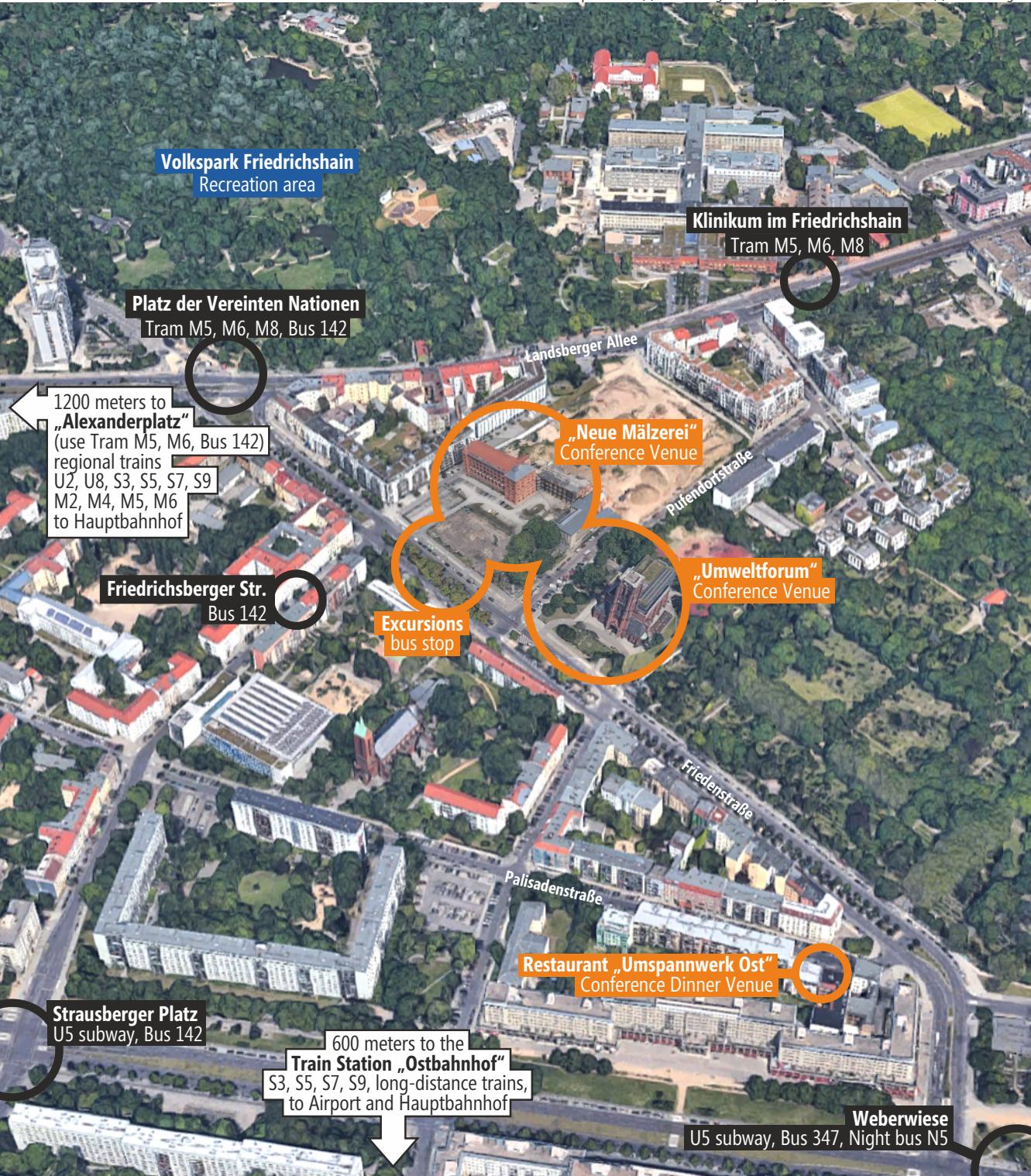
# Getting there

**From Berlin Hauptbahnhof** (Central Station) take tram M5 (direction "Hohenschönhausen") or tram M8 (direction "Ahrensfelde") and stop at "Platz der Vereinten Nationen" or stop at "Klinikum im Friedrichshain" and take a 5 minutes walk.

**From airport Berlin-Schönefeld** take the S-Bahn S9 (direction "Pankow") and stop at "Landsberger Allee", change to tram M6 (direction "Hackescher Markt") and stop at "Klinikum im Friedrichshain", then take a 5 minutes walk.

**From airport Berlin-Tegel** take the shuttle bus "TXL" to stop "Alexanderplatz", change to tram M5 (direction Zingster Straße) and stop at "Klinikum im Friedrichshain" or "Platz der Vereinten Nationen", then take a 5 minutes walk.

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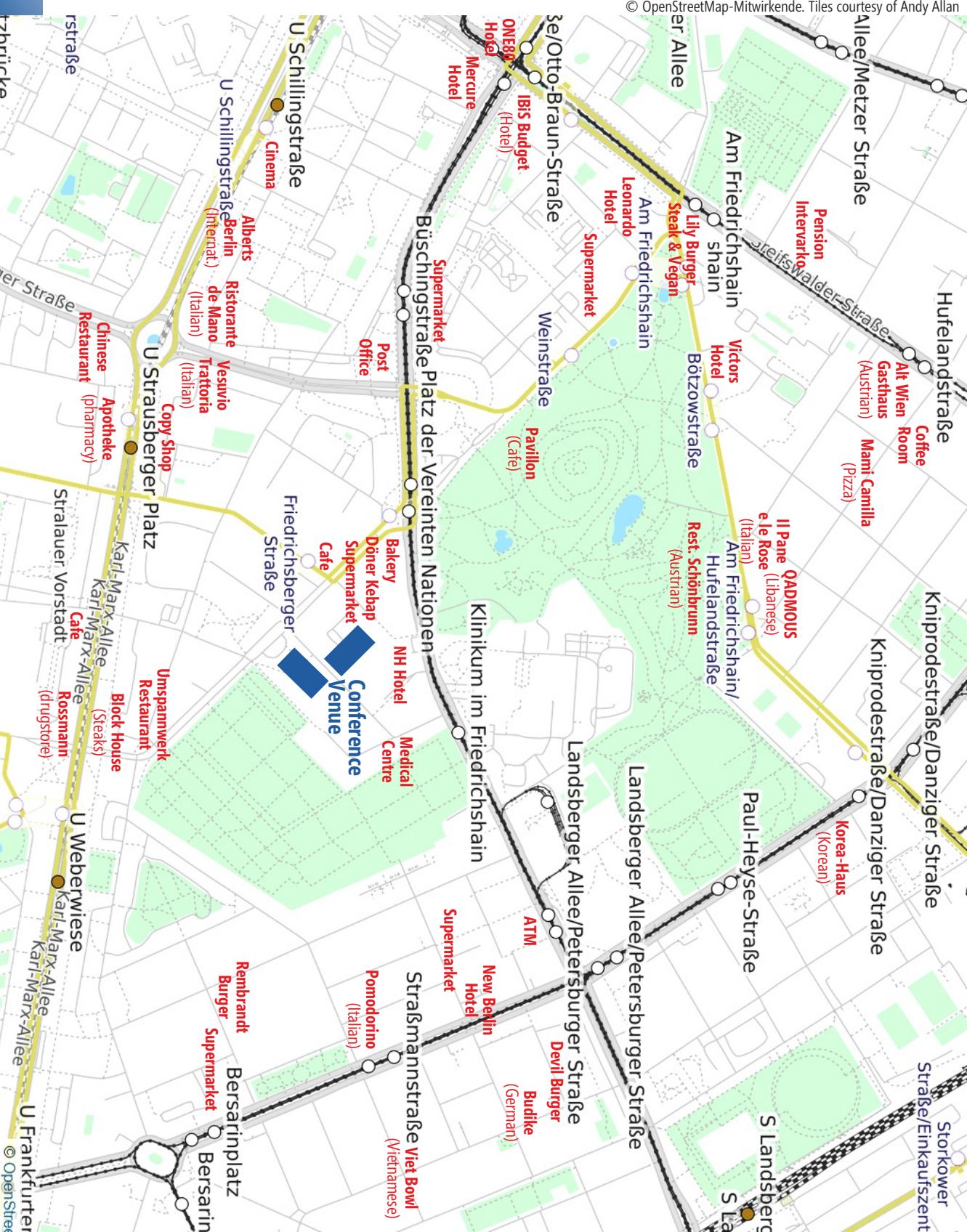


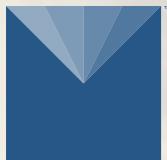
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# Getting around

Points of interest, food, and public transport

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