

# open campus

Beutenberg Campus Jena

March 1, 2013

The 11 institutions located at the Beutenberg campus have a wide range of complementary skills and needs within the fields of Life science and Physics. The Beutenberg Campus Jena e.V. encourages interdisciplinary scientific projects, development of patents and start up companies as well as career paths moving between campus institutions. For these purposes it is important that the scientists keep updated regarding the methods and concepts available in the other institutes. To facilitate such exchange of information, the Beutenberg Campus organization, together with the institutions, will offer a yearly, campus internal, open house event where two institutions at a time get the opportunity to introduce themselves to the rest of the campus.

The **1st open campus 01.03.2013** will focus on the **Max Planck Institute for Biogeochemistry** and the **Max Planck Institute for Chemical Ecology**

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Max-Planck-Institut  
für Biogeochemie



Max-Planck-Institut  
für chemische Ökologie



## Program:

**9:00-10:00 Session 1: Talks ABZ Lecture Hall (OPEN to all)**

**9:00 Prof. Dr. Hartmut Bartelt** (Chairman of Beutenberg Campus Jena e.V.)  
WELCOME ADDRESS

**9:10 Dr. habil. Christoph Gerbig** (Group leader MPI-BGC)  
Presentation of the MPI-BGC

**9:35 Prof. Dr. Bill S Hansson** (Managing Director MPI-CE)  
Presentation of the MPI-CE

**10:00-13:00 Session 2: Posters and Demonstrations MPI-BGC and MPI-CE** (Posters OPEN to all **Registration required for demonstrations Deadline Feb. 22.**)

Transfer to the location for your selected demonstration or poster session. **COFFEE** is served at both institutes. The posters are available during the whole session. Each demonstration takes 45 minutes and a maximum of 3 demonstrations can be attended per participant. There should be enough time between demonstrations to move between the institutes and to look at some posters. The demonstrations will start out from the poster area of respective institute. Note that the number of participants is limited for most activities. First come first served.

10:00-13:00 Posters & COFFEE MPI-BGC

10:00-13:00 Posters & COFFEE MPI-CE

## DEMONSTRATIONS

**A. 10:15-11:00 MPI-BGC Measuring Stable Isotopes** by Dr. Willi Brand  
(min 3 - max 8 part.)

The stable isotope laboratory serves as a central service unit to the institute and to external partners for determining stable isotopic compositions of a large number of different sample types. In addition, the IsoLab has an independent role in the scientific community with a focus on new instrumental aspects, calibration, and isotopic standardization. For the air-CO<sub>2</sub> community, IsoLab acts as a WMO Central Calibration Laboratory (CCL). Recently a complex analytical system for analyzing CH<sub>4</sub> isotopes has been developed. You will learn about the significance of stable isotope measurements as well as the instrumentation and procedure of measuring.

**B. 10:15-11:00 MPI-CE sem. Room 2. The organization and history of the Max Planck Society** by Dr. Jan-W. Kellmann (min 3 – max 30 part.)

Max Planck Institutes are built up around world's leading researchers. They define their research subjects and are given optimal working conditions as well as free reign in selecting their staff. This is the core of the so called Harnack principle, which dates back to Adolf von Harnack, the first president of the Kaiser Wilhelm Gesellschaft - predecessor of the Max Planck Society - which was established in Berlin 1911. The lecture includes a short historical back view from the very beginning of Germany's successful research organization, involving the years 1933-1945, and presents its current structure and status.

**C. 1) 11:15-11:45** and

**C. 2) 12:00-12:30 MPI.BGC Carbon & Nitrogen Determination in Environmental samples** by Ines Hilke RoMA-Lab (min 3 - max 8 part. in each)

RoMA (Routine Measurements & Analysis) is one of the service facilities of the MPI for Biogeochemistry. Our lab provides scientists with analytical primary data for further evaluation. Besides routine analyses, development and optimization of methods we assist in solving technical and chemical problems of our clients. Our lab routine comprises the determination of different parameters in liquids (e.g. groundwaters, seawaters, leachates and extracts) and solids (e.g. soils, sediments, rocks, plants and other biological materials), respectively with main focus on carbon and nitrogen determination. The analytical methods used are Elemental Analysis, Sum Parameter Analysis, Continuous Flow Analysis and Ion Chromatography. You will get to know the lab and learn about the preparation of samples and the different types of analyses.

**D. 11:15-12:00 MPI-CE Schneiderhaus - the new Bioassay Facility** by Alexander Haverkamp and Michael Thoma (min 3-max15 part.)

In 2012 we could celebrate the opening of our new bioassay facility "Schneiderhaus". The building includes state-of-the-art climate chambers with newly developed LED illumination allowing for light conditions ranging from starlight to sunlight intensities. The main experiments conducted in the facility are wind-tunnel experiments with moths and a high-throughput behavioral paradigm with flies ("The Flywalk"). We will give an introduction to both experiments and projects currently running in the Schneiderhaus.

**E. 12:15-13:00 MPI-BGC 12:15-13:00 MPI-BGC The Jena Drought Stress Experiment** by Dr. Henrik Hartmann(min 3 - max 15 part.)

Forest ecosystems foster the bulk of terrestrial biodiversity and are a major driving force of the cycling of life-supporting elements (e.g., carbon, nitrogen). However increasingly frequency of heat and drought events have led to widespread forest mortality around the globe. Surprisingly, there are large gaps in the fundamental understanding of how drought kills trees. Current working hypotheses (carbon starvation, impeded carbon translocation, hydraulic failure) have little experimental support but a thorough understanding of these mechanisms is central to predicting impacts on forest ecosystems, future vegetation distribution and element cycling. Here we propose a series of experiments explicitly designed to partition the different mechanisms of drought-induced tree mortality. After a short theoretical introduction you will visit the greenhouse and learn about the experimental setup and the different measurements.

**F. 12:15-13:00 MPI-CE Mass Spectrometry: MS-Imaging/MS-Proteomics** by Dr. Aleš Svatoš and Dr. Natalie Wielsch (min 3 - max 10 part.)

ProtLab provides services in 1D and 2D-gel electrophoresis and mass-spectrometry based protein identifications. Typically samples are measured on a hybrid Q-TOF HDMS Synapt instrument with a high mass accuracy providing data usable for de novo sequencing of peptides / small polypeptides from non-sequenced organisms. The Synapt G1 HDMS connected to nanoAquity nanoLC system show high mass precision of MS and MS/MS data and reproducible retention times of eluted peptides. Due to this performance we are able to adopt several workflows for identification of proteins and their quantitation. We are also extensively involved in metabolomic studies. So far, chemicals were extracted from whole plants, insects, bacterial colonies and their abundance/structures were studied for the whole organism or for their larger sections. It is obvious to expect, that source of chemical signals will be co-localization with putative biosynthetic places or storing glands. In past several years we have initiated a program aimed at developing mass-spectrometry based methods for small molecule imaging (determining their topological-coded intensity maps). It was already applied to study plants, insects and bacteria. A spatial resolution available on campus is between 50 to 10 micrometers.

## MPI-BGC POSTERS:

no	Title	Authors
1	Exploring multiple constraints in model-data integration exercises at ecosystem scale	Thomas Wutzler, Nuno Carvalhais, Maarten Braakhekke, and Bernhard Ahrens
2	TRY – a global database of plant traits	J Kattge, S Díaz, S Lavorel, P Leadley, IC Prentice, G Bönisch, C Wirth
3	Greenhouse gas measurements with Fourier Transform Spectroscopy on Ascension Island	Dietrich G. Feist and Sabrina Niebling
4	The Jena <sup>14</sup> C AMS facility	14 C service facility
5	Research Service Facility Routine Measurements & Analysis (RoMA)- An Overview	RoMa service facility
6	Elemental analysis of solids- Improving the precision and accuracy of project-specific samples	RoMa service facility
7	Anions, Cations, Nutrients... -Overview of instrumentation and analytical methods for liquid samples	RoMa service facility
8	Estimating European CH <sub>4</sub> and N <sub>2</sub> O emissions using a regional-scale atmospheric inversion system	Ute Karstens, Christian Rödenbeck, Christoph Gerbig, Frank-Thomas Koch, and Martin Heimann
9	CO <sub>2</sub> , CH <sub>4</sub> and CO measurements by compact cavity ring-down aboard commercial airliners	A.Filges, C.Gerbig, H.Chen, H.Franke, C.Klaus
10	SpecLab - Spectroscopy, Speciation & More...	Michael Raessler und Wolfgang Unger
11	Chromatographische Bestimmung nicht-struktureller Kohlenhydrate in pflanzlichen Proben	Michael Raessler
12	Hydrogen isotopes of biomarkers as paleoclimate proxy.	Franziska Günther und Valerie Schwab-Lavric
13	Seasonal variations in the microbial community composition in avegetation change experiment	Perla Mellado
14	Fingerprinting DOM by ESI-FT-ICR-MS	Vanessa-Nina Roth
15	Chars produced from slow pyrolysis and hydrothermal carbonization vary in carbon sequestration potential	Saadat Malghani
16	Simultaneous analysis of d13C, d2H and d18O in CH <sub>4</sub> and CO <sub>2</sub> in air from flasks using an automated twin cryo-trap GC-IRMS system	IsoLab
17	Establishment of an atmospheric observatory for trace gases and atmospheric oxygen in Namibia	Eric J. Morgan, Jošt V. Lavrič and Martin Heimann
18	Update on the continuous CO <sub>2</sub> /CH <sub>4</sub> measurement at Zotino Tall Tower Observatory (ZOTTO) in Central Siberia	Jan Winderlich, Jošt V. Lavrič, Huilin Chen, Christoph Gerbig, Alexey V. Panov, and Martin Heimann
19	Measurement and Control System to Determine CO <sub>2</sub> Efflux from 80 Differently Treated Soil Columns	Karl Kübler, Olaf Kolle, Martin Hertel, Kerstin Hippler, Agnes Fastnacht, Mirijam Koch, Frank Voigt, Bernd Schlöffel, St. Thiessen
20	Messgeräte für Meteorologie und Ökosystemforschung (1)	Olaf Kolle
21	Messgeräte für Meteorologie und Ökosystemforschung (2)	Olaf kolle

## MPI-CE POSTERS:

no	Title	Authors
1	The use of genome sequencing to reveal the secrets of <i>Nicotiana attenuata</i> 's sophisticated ecological interactions	Aura Navarro, Klaus Gase
2	Identifying the genetic basis of ecologically important traits in <i>Nicotiana attenuata</i>	Klaus Gase, Aura Navarro
3	Regulation of the MEP pathway in <i>Arabidopsis thaliana</i>	Louwrance Wright
4	Fungal and bacterial degradation of polyphenols produced by woody plants as defense compounds	Almuth Hammerbacher
5	Metal ions control chain-length specificity of isoprenyl diphosphate synthases in insects	Sindy Frick, Raimund Nagel, Rene Bodemann, Axel Schmidt, Wolfgang Brandt, Jonathan Gershenzon, Wilhelm Boland, Antje Burse
6	Transcriptome based protein-identification and functional elucidation via RNA interference	René Bodemann, Magdalena Stock, Ding Wang, Natalie Wielsch, Sindy Frick, Anja Strauß, Wilhelm Boland, Antje Burse
7	A conserved non-pheromone olfactory receptor in <i>Manduca sexta</i>	Christian Klinner, Shannon Olsson, Marcus C. Stensmyr, Bill S. Hansson, Ewald Grosse-Wilde
8	Genes and the environment - Profiling <i>Manduca sexta</i>	Christopher König
9	Structure-function relationship of a chimeric P450 enzyme conferring insecticide resistance to <i>Helicoverpa armigera</i> and its parent enzymes	Nicole Joußen, David G. Heckel
10	Importance of prezygotic isolation barriers between the two host strains of <i>Spodoptera frugiperda</i>	Sabine Hänniger, Melanie Unbehend, Maria Laura Juarez, Gerhard Schöfl, Astrid T. Groot, David G. Heckel
11	Evolutionary stable combination prophylaxis protects the development of <i>Philanthini</i> digger wasps	Tobias Engl, Johannes Kroiss, Marco Kai, Ales Svatos, Martin Kaltenpoth
12	Roots mediate resource-based trade-offs between shoot regrowth and herbivore defense via jasmonate and auxin signaling	Ricardo A.R. Machado, Abigail P. Ferrieri, Christelle A.M. Robert, Gaétan Glauser, Mario Kallenbach, Ian T. Baldwin, Matthias Erb
13	Less is more: Adaptive gene loss results in division of labor by synergistic cross-feeding.	Samay Pande, Glen D'souza, Daniel Preussger, Christian Kost
14	A mobile low-cost setup for isotopic carbon labeling experiment	Christian Paetz, Felix Feistel
15	Whole bodies mass spectrometry imaging of cuticular lipids on <i>Drosophila melanogaster</i> flies	Filip Kaftana, Vladimír Vrkoslav, Josef Cvačka, Philipp Kynast, Markus Knaden, Aleš Svatoš
16	Olfactory neural circuits in higher brain centers	Amelie Baschwitz, Antonia Strutz, Veit Grabe, Bill S. Hansson, Silke Sachse