2nd Global Soil Biodiversity Conference

GSBC2 2017

15-19 October

Nanjing, China

PROGRAM and INFORMATION BOOK

Contents

Welcome from the Conference Chairs

On behalf of the Organizing Committee and China Soil Microbiome Initiative (CSMI), Global Soil Biodiversity Initiative (GSBI), we are pleased to welcome you to the second Global Soil Biodiversity Conference (GSBC2) in Nanjing, China, from October 15 to 19, 2017.

Building on the success of GSBC1 in France, we anticipate GSBC2 a valuable event with a theme, Integrating Soil Biodiversity with Global Sustainability. With international cooperation from Global Soil Partnership (GSP), Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), TerraGenome, and global endeavors from other professional organizations, GSBC2 will cover a wide range of topics involving global issues on sustainability including biogeography, soil ecology, biogeochemistry, above- and below-ground interactions, ecosystem services, and ecosystem management. It is expected that GSBC2 will provide both high-quality interdisciplinary academic exchanges and a tangible output for policy maker though data synthesis of global soil biodiversity worldwide.

We are looking forward to meeting you in Nanjing!

Renfang, SHEN

Professor and Co-Chair
2nd GSBC Conference
Institute of Soil Science, CAS

Yongguan, ZHU

Professor and Co-Chair
2nd GSBC Conference
Inst of Urban Environment, CAS

Diana H. Wall

Professor and Science Chair
Global Soil Biodiversity Initiative
Colorado State University

Committees

Co-Chairs

Ren-Fang SHEN, Institute of Soil Science, CAS, China.
Yong-Guan ZHU, Institute of Urban Environment, CAS, China.

International Scientific Committee (ISC)

Brajesh Singh	Hawkesbury Institute for the Environment, University of Western Sydney, Australia
Christoph C. Tebbe	Thünen Institut für Biodiversität, Germany
Diana H. Wall	Colorado State University, USA.
Edmundo Barrios	Food and Agriculture Organization of the United Nations (FAO), Italy
Elizabeth Bach	Colorado State University, USA.
Ellen Kandeler	Institute for Soil Science, University of Hohenheim
Fatima Maria de Souza Moreira	Federal University of Lavras, Brazil
Franciska de Vries	The University of Manchester, UK
Fred Ayuke	University of Nairobi, Kenya
Gerlinde B. De Deyn	Wageningen University, Netherlands
Ji-Zheng HE	Research Center for Eco-Environmental Sciences, CAS, China
Johan Six	Institute of Agricultural Sciences - ETH Zurich, Switzerland
Luca Montanarella	European Commission - Joint Research Centre, Italy
Maria Briones	Facultad de Biologia, Universidad de Vigo, Spain
Mary Firestone	University of California Berkeley, USA
Nobuhiro Kaneko	Yokohama National University, Japan
Richard Bardgett	University of Manchester, UK
Wim van der Putten	Netherlands Institute of Ecology, and Centre for Soil Ecology Wageningen
Xing-Guo HAN	Institute of Botany, CAS, China
Yan-Fen WANG	University of Chinese Academy of Sciences, China
Zhong-Jun JIA	Institute of Soil Science, CAS, China

It is arranged in an alphabetical order with the first name.

Global Soil Biodiversity Initiative (GSBI)

Diana H. Wall, Scientific Chair, School of Global Environmental Sustainability, Colorado State University, USA.

Elizabeth Bach, Executive Director, School of Global Environmental Sustainability, Colorado State University, USA.

GSBI Scientific Advisory Committee

Ciro Gardi	European Food Safety Authority, Italy
Fred Ayuke	University of Nairobi, Kenya
Richard Bardgett	University of Manchester, UK
Nobuhiro Kaneko	Yokohama National University, Japan
Fatima Maria de Souza Moreira	Federal University of Lavras, Brazil
Luca Montanarella	European Commission - Joint Research Centre, Italy
Wim van der Putten	Netherlands Institute of Ecology, and Centre for Soil Ecology Wageningen, Netherlands
Johan Six	Institute of Agricultural Sciences - ETH Zurich, Switzerland

It is arranged in an alphabetical order with the first name.

Local Organization Committee (LOC)

Co-Chairs

Ren-Fang SHEN, Institute of Soil Science, CAS, China.
Yong-Guan ZHU, Institute of Urban Environment, CAS, China.

Executive directors

Xing-Guo HAN	Institute of Botany, CAS, China
Yan-Fen WANG	University of Chinese Academy of Sciences, China
Ji-Zheng HE	Research Center for Eco-Environmental Sciences, CAS, China
Zhong-Jun JIA	Institute of Soil Science, CAS, China

Secretaries-General

Zhong-Jun JIA	Institute of Soil Science, CAS, China
Ying TENG	Institute of Soil Science, CAS, China
Wei-Dong YAN	Institute of Soil Science, CAS, China

Management committee

General inquiry group, **Yan-Ling DU**
Finance group, **Bin LIU**
Foreign affairs, **Rui-Juan SUN**
Conference Materials Groups, **Yu-Ji JIANG**, **Nan JIA** and **Chun-Xia LUO**
Volunteer Group, **Fa-Yun HE**
Website Group, **Yan-Li XIAO**

General Information

Venue

The 2nd Global Soil Biodiversity Conference will be held at the Nanjing International Youth Cultural Centre. The Centre is located on the river in Hexi New Town; Nanjing's new central business district (CBD).

Address: No. 9 Jinshajiang Road, Nanjing, China

Telephone: +86-25-86538888

Registration

The registration desk of GSBC2 is located on the ground of the Nanjing International Youth Cultural Centre. It consists of several multi-functional sections including registration desk, accommodation, receipt, etc. Registration includes full access to all sessions of the symposium, tea breaks, all meals during the meeting, proceedings and other conference materials. The Registration Desk will be open as follows:

Sunday 15 October	12:00-22:00
Monday 16 October	08:00-17:30
Tuesday 17 October	08:00-17:30
Wednesday 18 October	08:00-17:30

Congress WeChat Group

All the participants should download the We-chat App and create Your Account.

Then please scan the following QR code and join the WeChat group for the latest information about the GSBC2 2017.

Language

English is the official language for the GSBC2 2017. Although Chinese is the official language in China, many people in Nanjing can speak English, and are happy to provide assistance in English.

Poster Area

The Poster Area is located at the Hall XX of the Nanjing Poly Theater.
The poster session will take place at the following times:

Session no.	**Time**
Session 01-05	16 October
Session 06-15	17 October

Presenters will stand next to their posters to explain the contents of the poster and to answer questions regarding their research.

Speakers

Speakers are allocated different amount of time for their talks depending on the type of presentation.

Presentation Type	**Total Time**
Keynote lecture	25mins
Oral lecture	20mins
Poster Presentation	60-100mins

Oral and Poster presentations

Oral presenters are kindly requested to visit the registration desk to upload their presentation(s) to a protected laptop.
Speakers are kindly requested to submit their presentation at least 5 hours prior to your scheduled presentation. The registration desk is open from 08:30 to 17:00 during the conference. Please note under no circumstance will personal laptops be permitted.
Microsoft-PowerPoint format is preferred. Encrypted presentation files cannot be processed. Volunteers at the registration desk will assist you if required.

Poster Area

The poster region is located at the floor 7 and floor 8 next to the rooms of concurrent oral sessions.
Traditional paper posters can be posted at appropriate time.
Posters from session-1 to session-5 can be posted at 19:00 pm on October 15 and shall be removed at 12:00 in the morning on October 17.
Posters from session-6 to session-15 can be posted at 12:00 in the morning on October 17 and shall be removed at 17:30 pm on October 18.

Speakers are kindly requested to submit their presentation at least 5 hours prior to your scheduled presentation. The registration desk is open from 08:30 to 17:00 during the conference. Please note under no circumstance will personal laptops be permitted.
Microsoft-PowerPoint format is preferred. Encrypted presentation files cannot be processed. Volunteers at the registration desk will assist you if required.

Recording and Duplications

Recordings and Duplications shall only be made with the permission from the presenting author.
Please consult the presenting author for the use of their presentations. Any type of unauthorized recording or duplication is prohibited at the conference.

Wi-Fi

To connect to Wi-Fi at the Nanjing International Youth Cultural Centre, delegates can switch on the Wi-Fi function on your terminal device and search for wireless networks for internet connection.

Catering

Breakfast area is located at second floor
Lunch and dinner is located at the 7th floor and/or 8th floor
If you have any special dietary requirements, please advise the registration desk upon your arrival.

Conference Venue introduction and Map

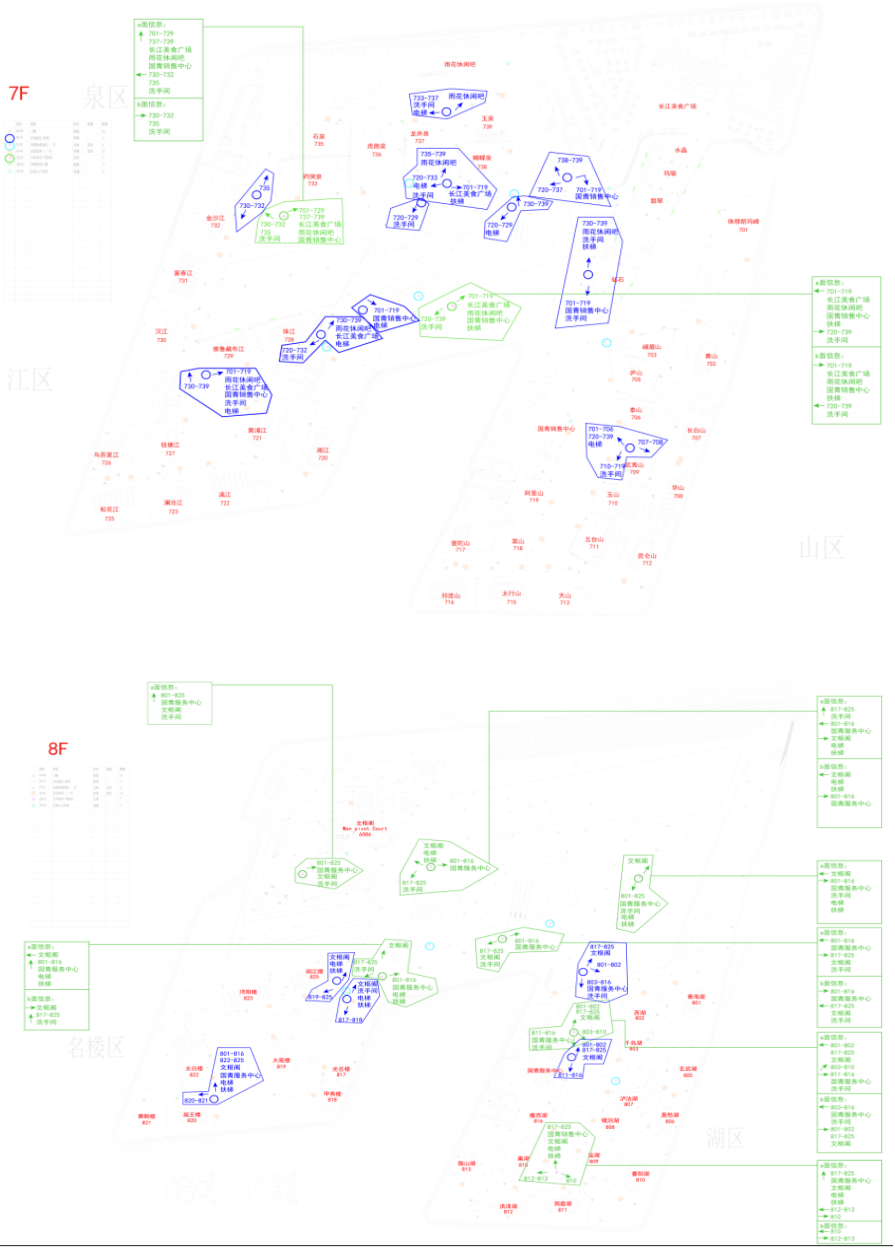
Venue Introduction

Nanjing International Youth Culture Center is located on the river of Hexi New Town, covering an area of 52,000sq.m, with a construction area of 38,000sq.m, and under construction area of 10,000sq.m, Its blue print is created and designed by Zaha Hadia Architects, and structure design is in the charge of Master Ren Qingying, who designed the Beijing Bird Nest. It is composed of a conference center and two towers. The conference center: the construction area is 19,400sq.m, about 11,400sq.m on the ground and about 80,000sq.m under the ground. Main functions include international conference service, major catering, temporary exhibition, news release, business activities, etc. There is a 2000-seat conference hall, 500-seat concert hall and three 1,000-1,400sq.m multifunctional rooms as well as supporting facilities like small and medium sized meeting rooms and VIP rooms.

Towers: No.1 tower is 255 meters high with a construction area of 92,000sq.m. It house convention hotel, serviced hotel and supporting facilities. No.2 tower is 316 meters high with a construction area of 120,000sq.m. It contains a five-star hotel and 5A office floors. The two towers share a five level, nixed-use podium.

Venue Map for keynote（主会场保利大剧院）

Meeting room Map for concurrent session （ 7楼、8楼分会场 ）



Go to the Hotel

Nanjing International Youth Cultural Centre , 南京国际青年文化中心

1. From Nanjing Lukou International Airport (南京禄口国际机场)

By taxi: The ride will cost about 120.00 RMB (about $18, 40 minutes)
By subway: Take Subway **Airport Line S1** (head to Nanjing South Railway Station) **to Nanjing South Railway Station**, transfer to Subway **Line 1** to to **Andemen Station**, transfer to Subway **Line 10** (head to Yushanlu direction) to **Yuantong station**, and walk for about 1.8 km (about 1.5 h)

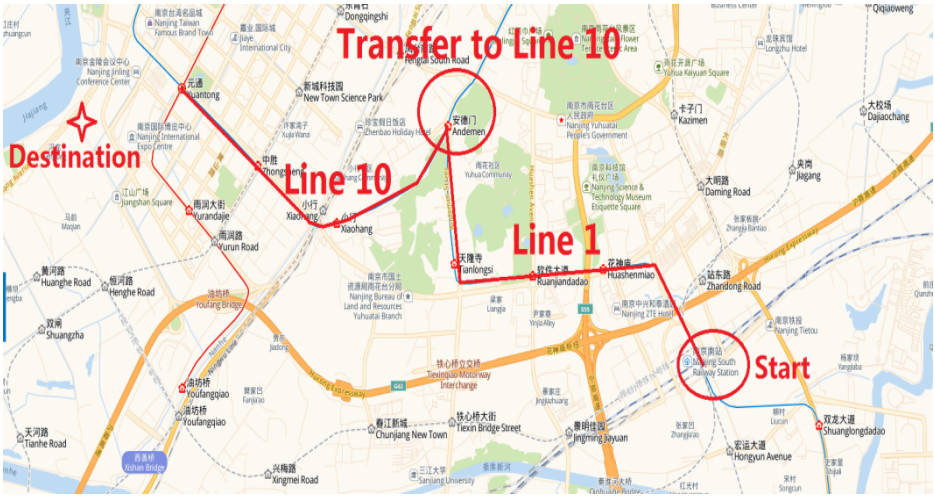
乘坐地铁**S1机场专线**（开往南京南站方向）到**南京南地铁站**，换乘地铁**1号线**（开往迈皋桥方向），在**安德门站**换乘地铁**10号线**（开往雨山路方向），在**元通站**下车，步行约1.8 km（全程耗时约1.5小时）。

2. From Nanjing South Railway Station (南京南站)

By taxi: The ride will cost about 35.00 RMB (about $5.3, 20 minutes)

By subway: Take Subway **Line 1** (head to Maigaoqiao direction) to **Andemen Station**, transfer to Subway **Line 10** (head to Yushanlu direction) to **Yuantong station**, and walk for about 1.8 km (50 min)

乘坐地铁**1号线**（开往迈皋桥方向），在**安德门站**换乘地铁**10号线**（开往雨山路方向），在**元通站**下车，步行约1.8 km（全程耗时约50分钟）



3. From Nanjing Railway Station (南京站)

By taxi: The ride will cost about 55.00 RMB (about $8.3, 40 minutes).

By subway: Take Subway **Line 1** (head to China Pharmaceutical University direction) to **Xinjiekou Station**, transfer to Subway **Line 2** (head to Youfangqiao direction) to **Yuantong Station**, and walk for about 1.8 km (about 1 hour).

从南京站乘坐地铁**1号线**（开往中国药科大学方向），在**新街口**地铁站下车，换乘地铁**2号线**（开往油坊桥方向），在**元通站**下车，步行约1.8 km（全程耗时约1小时）

Contact and Inquiry

Table 1. Working group of GSBC2

No.	Task Group	Responsible Person 负责人（成员）	Phone number （手机号码）
1	**Registration**	**Lu ZHENG (郑璐)**	**13912920325**
	Conference book	Yongliang MO (莫永亮)	18114014910
	Name Badge	Zhencui JIANG (姜振萃)	13815427271
	Conference Bag	Bei LIU (刘蓓)	18551833730
	Exhibition materials	Xusheng ZHAO (赵旭升)	18752006235
	Meal	Guiping YE (叶桂萍)	13809002733
	Conference Invoice	Wei GAO (高威)	18114473696
2	**Poster**	**Yuanfeng CAI (蔡元锋)**	**13913953640**
3	**Accommodation**	**Shixiang DAI (戴士祥)**	**15522436288**
	Hotel (Foreigner)	Shixiang DAI (戴士祥)	15522436288
	Hotel (Chinese)	Rui YAO (芮瑶)	17372798170
4	**Venue**	**Chao WANG (王超)**	**15005145078**
	Keynote venue	Chao WANG (王超)	15005145078
	Concurrent session room	Yuji JIANG (蒋瑀霁)	13951708934
	Workshop & roundtable room	Leilei XIANG (相雷雷)	15261877267
5	**Tea break**	**Hu CHENG/Xiaojun WANG** **（程虎/王晓君）**	**18351881925** **13813865136**
6	**Onsite payment**	**Yingzhi SHAN (单颖智)**	**13951618230**
7	**Tour**	**Xiangxin SUN (孙祥鑫)**	**18362934528**
8	**Volunteers**	**Xinlin ZHAO (赵信林)**	**15261401378**
9	**General inquiry**	**Yanling DU (杜彦玲)**	**15895899930**

Table 2. Detailed contact for venue and meeting rooms

Date	Time	Content	Venue	Responsible Person	Volunteers
Oct. 15	6:00-22:00	Pick-up	Airport/ Railway station	Wei CHEN陈未 13951910262	All Volunteers Available
	6:00-22:00	Registration	Nanjing International Youth Cultural Center	Lu ZHENG郑璐	
	19:00-21:00	Writing lecture	Room 736	Ning WANG王宁 18551416101	Ning WANG王宁
	19:30-21:00	GSBI Meeting	Room 733		
Oct. 16	08:30-12:00	Keynote	The Poly Grand Theater	Chao WANG王超 15005145078	Yang LI 李艳
	13:30-17:00	Topic-1	Room 736	Yuji JIANG蒋瑀雾 13951708934	Xinlin ZHAO 赵信林
		Topic-2	Room 731		Hongting XU 徐宏婷
		Topic-3	Room 725		Lan ZHANG张澜
		Topic-4	Room 801		Leilei XIANG相雷雷
		Topic-5	Room 733		Xusheng ZHAO赵旭升
	19:30-21:00	Wring workshop	Room 736		Leilei XIANG相雷雷
Oct. 17	08:30-12:00	Keynote	The Poly Grand Theater	Chao WANG王超 15005145078	Min XU许敏
	13:30-17:00	Topic-6	Room 801	Yuji JIANG蒋瑀雾 13951708934	Min XU许敏
		Topic-7	Room 736		Xiaona LI李晓娜
		Topic-8	Room 731		Zhencui JIANG姜振萃
		Topic-9	Room 725		Jinfeng HOU侯金凤
		Topic-10	Room 733		Xiaoying PAN潘晓莹
		Topic-11	Room 722		Jiawen ZHOU周嘉文
		Conrad symposium	Room 810		Wei CHEN陈未
	19:30-21:00	Roundtable	Room 801		Xusheng ZHAO赵旭升
		Roundtable	Room 725		Wei GAO高威
		Roundtable	Room 731		Yongliang MO莫永亮
		Conrad symposium	Room 810		ZHAO赵信林
		Meet the editors	Room 736		Jiawen ZHOU周嘉文
Oct. 18	08:30-12:00	Keynote	The Poly Grand Theater	Chao WANG王超 15005145078	Quanbo YU于全波
	13:30-17:00	Topic-12	Room 733	Yuji JIANG蒋瑀雾 13951708934	Xiaoying PAN潘晓莹
		Topic-14	Room 736		Xinlin ZHAO赵信林
		Topic-15	Room 725		Xia LIAO廖霞
	16:30-19:30	Roundtable	Room 730		Quanbo YU 于全波

Program at a Glance

Date	Time	Content	Place
Registration Day			
October 15	0900-2200	Registration	Ground floor
	1730-2000	Buffet Dinner	8th floor
	1930-2100	Writing Lecture by Wim Putten	Room 736
	1930-2100	GSBI Meeting	Room 730
Day-1			
October 16	0830	Opening Ceremony	1st floor Poly Grand theatre
	0900	Keynote Speech	1st floor Poly Grand theatre
	1000	Coffee Break	
	1030	Keynote Speech	1st floor Poly Grand theatre
	1200	Buffet Lunch	7th and 8th floor
	1330	Concurrent Session 01-05	Room 725, 731, 733, 736, 801
	1700	Day 1 Poster Session*	7th floor
	1800	Buffet Dinner	8th floor
	1930	Writing Workshop	Room 736
Day-2			
October 17	0830	Keynote Speech	1st floor Poly Grand theatre
	1000	Coffee Break	
	1030	Keynote Speech	1st floor Poly Grand theatre
	1200	Buffet Lunch	7th and 8th floor
	1330	Concurrent Session 06-11 Conrad Symposium	Room 722, 725, 731, 733, 736, 801, 810
	1700	Day 2 Poster Session*	7th floor
	1800	Buffet Dinner	8th floor
	1930	Roundtables	Room 801, 725, 731
	1900	Conrad Symposium	Room 810
	1930	Meet the Editors	Room 736
Day-3			
October 18	0830	Keynote Speech	1st floor Poly Grand theatre
	1000	Coffee Break	
	1030	Keynote Speech	1st floor Poly Grand theatre
	1200	Buffet Lunch	7th and 8th floor
	1330	Concurrent Session 12,13,15	Room 736,733,725
	1630-1930	Elsevier Editor Meeting	Room 730
	1700-1730	Closing Ceremony	Room 736
October 19		Tours	

*Note, the Day-1 poster could be hanged up in place from 17:00 October 15 to 12:00 October 17. The authors are expected to stand in front of poster from 17:10-18:00 on Oct 16. Day-1 poster should be removed before 12:00 pm on Oct 17, and Day-2 poster could be handed up then. The authors are expected to stand in front of Day-2 poster from 17:10-18:00 on Oct 17.

Conference outline

	16 October 2017	17 October 2017	18 October 2017
Keynote Lectures (0830-1210)			
	Soil Biodiversity: the overview	**Processes, Mechanisms, and Patterns**	**Future perspective**
	Chair: Renfang Shen & Yongguan Zhu	**Chair: Diana Wall**	**Chair: Wim van der Putten**
0830	Opening Ceremony	Wim van der Putten (NL)	Jim Tiedje (USA)
0900	Renfang Shen (CN)	Yongguan Zhu (CN)	Karl Ritz (UK)
0930	Diana Wall (USA)	Qirong Shen (CN)	Xingguo Han (CN)
1000	**Tea Break (30 mins)**		
	Chair: Jim Tiedje	**Chair: Fatima Moreira**	**Chair: Yanfen Wang**
1030	Luca Montanarella (IT)	Yanfen Wang (CN)	Jennifer Lau (USA)
1055	Christoph C. Tebbe (GER)	Aimee Classen (USA)	Kiwamu Minamisawa (JP)
1120	Jizheng He (CN)	Brajesh Singh (AU)	Jim Prosser (UK)
1145	Thomas Bell (UK)	Laurent Philippot (FR)	Fatima Maria Moreira (BR)
1210	**Lunch Time (80 mins)**		
Concurrent and poster sessions			
1330	Oral Presentation 01-05	Oral Presentation 06-11, Conrad Symposium	Oral Presentation 12-15
1720	Poster Presentation	Poster Presentation	Poster Presentation & Closing Ceremony
1800	**Dinner Time (60 mins)**		
1930	Workshop	Meet the Editors, Roundtables, Conrad symposium	

Keynote Lecture

Time	16 October 2017	17 October 2017	18 October 2017
0830	Opening Ceremony	Functional consequences of belowground ecological novelty under climate change **Wim van der Putten**	What is microbial biodiversity, what does it mean, what is its value? **Jim Tiedje**
0900	Soil science and biodiversity: a life-supporting system in China **Renfang Shen**	Microbial biogeochemical coupling: The Iron wheel **Yongguan Zhu**	Soil architecture and biodiversity: the past, present and future of life in the belowground labyrinth **Karl Ritz**
0930	Global Soil Biodiversity: a common ground for sustaining soils **Diana Wall**	How to introduce beneficial microbes into (rhizosphere) soils to sustain crop production **Qirong Shen**	Soil microbial ecology: three case studies from the temperate steppe **Xingguo Han**
1000	**Tea Break (30 mins)**		
1030	Towards a Global Assessment of Soil Biodiversity **Luca Montanarella**	Below mechanisms controlling grassland degradation, and its succession pattern of restoration in Tibet Plateau **Yanfen Wang**	Facilitating interactions with diverse soil microbes: A powerful mechanism for plant adaptation to global change **Jennifer Lau**
1055	Patterns structuring soil bacterial diversity **Christoph C. Tebbe**	Microbes, Mountains, Models and Mechanisms - exploring ecosystem function under global change **Aimee Classen**	Plant-associated bacteria mitigate greenhouse gas emission **Kiwamu Minamisawa**
1120	New insights into the microbial mechanisms of nitrification in acidic soils **Jizheng He**	Microbial Diversity and Ecosystem functions: Biotic interactions and feedback loops **Brajesh Singh**	Molecular analysis of ammonia oxidisers: enlightenment or entanglement **Jim Prosser**
1145	Spatial ecology of soil bacteria: from mm to km **Thomas Bell**	A tale of two stories from the underground: soil microbial diversity and N-cycling **Laurent Philippot**	Microbial diversity in Amazonian soils: genetic resources for sustainable agriculture, environmental quality and food safety **Fatima Maria Moreira**

Concurrent Session

Date	Session	Time	Room
15 Oct.	**Publishing about soil biodiversity** in high-impact journals	19:30-21:00	736
16 Oct.	**T01:** Biodiversity and sustainable agriculture	13:30-17:00	736
	T02: Global change biology	13:30-16:40	731
	T03: Soil pollution and bioremediation	13:30-17:10	725
	T04: Bioorganic fertilizers	13:30-17:00	801
	T05: Soil fauna	13:30-16:20	733
	Publishing Workshop – Perspectives from Soil Biology & Biochemistry	19:30-21:00	736
17 Oct.	**T06:** Soil microbiome	13:30-16:40	801
	T07: Biodiversity & ecosystem functioning	13:30-16:40	736
	T08: Extreme environments	13:30-17:00	731
	T09: Restoration ecology	13:30-17:00	725
	T10: Aboveground-belowground interactions	13:30-16:40	733
	T11: Biogeochemical interface in soil	13:30-16:40	722
	Conrad Symposium	13:30-21:00	810
	R01: How to expand knowledge onsoil biodiversity and functioning beyond bacteria and fungi: A methodological consensus	19:30-21:00	801
	R02: Applying ecologicalcommunity theory to soil biota	19:30-21:00	725
	R03: Linking soil biodiversity to ecosystem functioning and provisioning of ecosystem services	19:30-21:00	731
	R04: Meet the Editors	19:30-21:00	736
18 Oct.	**T12:** Soil biogeography	13:30-17:00	733
	T14: Cutting-edge methods	13:30-16:20	736
	T15: Biochar for soil biota and biodiversity	13:30-1640	725
	Elsevier Editor Meeting	16:30-19:30	730

Time	Session	Room736	Room733	Room725	Room801	Room731	Room722	Room 810
Monday 16 October 2017								
0830	Opening Ceremony	Chair: Renfang Shen, Institute of Soil Science, CAS, China				**Room: Poly Grand Theatre**		
0900	Keynote Session	**Soil Biodiversity: the overview**				**Room: Poly Grand Theatre**		
1210	Lunch							
1330	Oral Presentation	T01: Biodiversity and sustainable agriculture	T02: Global change biology	T03: Soil pollution and bioremediation	T04: Bioorganic fertilizers	T05: Soil fauna		
1710	Poster Presentation	Poster Presentation (T01-T05)						
1830		Dinner						
1930-2100	Publishing Workshop	Publishing Workshop – Perspectives from Soil Biology & Biochemistry				**Room736**		
Tuesday 17 October 2017								
0830	Keynote Session	**Processes, Mechanisms, and Patterns**				**Room: Poly Grand Theatre**		
1210	Lunch							
1330	Oral Presentation	T06: Soil microbiome	T07: Biodiversity & ecosystem functioning	T08: Extreme environments	T09: Restoration ecology	T10: Aboveground-belowground interactions	T11: Biogeochemical interface in soil	Conrad Symposium
1710	Poster Presentation	Poster Presentation (T06-T11)				**7th floor**		
1830		Dinner						
1930-2100	Roundtable	**(Room 736)** Meet the Editors	**(Room 731)** How to expand knowledge on soil biodiversity and functioning beyond bacteria and fungi	**(Room 725)** Applying ecological community theory to soil biota	**(Room 801)** Linking soil biodiversity to ecosystem functioning and provisioning of ecosystem services	**(Room 730)** Meet the Top experts		
Wednesday 18 October 2017								
0830	Keynote Session	**Future perspective**				**Room: Poly Grand Theatre**		
1210	Lunch Break							
1330	Oral Presentation	T12: Soil biogeography	T14: Cutting-edge methods	T15: Biochar for soil biota and biodiversity				
1710	Closing Ceremony	Chair: Renfang Shen, Institute of Soil Science, CAS, China				**Room: 736**		
1720	Poster Presentation	Poster Presentation (T12-T15)				**7th floor**		
1830	Dinner							

Monday 16 October 2017

Scientific Program

Day 1 Keynote Session

Poly Grand theatre

Soil Biodiversity: the overview

Chair: Renfang Shen, Institute of Soil Science, CAS, China		
0830	**Opening Ceremony**	
0830	**Ronald Vargas,** Food and Agriculture Organization of the United Nations **Xiaonan Duan,** Bureau of Frontier Science and Education, CAS **Yongguan Zhu,** Institute of Urban Environment, CAS, China	
Chair: Yongguan Zhu, Institute of Urban Environment, CAS, China		
0900	Renfang Shen Institute of Soil Science CAS	Soil science and biodiversity: a life-supporting system in China
0930	Diana Wall Colorado State University	Global Soil Biodiversity: a common ground for sustaining soils
1000	Tea Break (30mins)	
Chair: Jim Tiedje, Michigan State University, USA		
1030	Luca Montanarella European Commission - Joint Research Centre	Towards a global assessment of soil biodiversity
1055	Christoph C. Tebbe Thünen Institut für Biodiversität Germany	Patterns structuring soil bacterial diversity
1120	Jizheng He Research Center for Eco-environmental Sciences, CAS	New insights into the microbial mechanisms of nitrification in acidic soils
1145	Thomas Bell Imperial College London	Spatial ecology of soil bacteria: from mm to km
1210	Lunch Time (80mins)	

Oral Session 01-05

Session 01: Biodiversity and sustainable agriculture

Time: 1330-1700 **Room 736**

Chairs: Jinshui Wu, Institute of Subtropical Agriculture, CAS, China
Edmundo Barrios, Food and Agriculture Organization of the United Nations, Italy

1330	Jeanette Norton Utah State University	Agricultural nitrogen management affects microbial communities, enzyme activities and functional genes for nitrification and mineralization
1350	Binbin Liu Chinese Academy of Sciences	Long-term fertilization elevated the abundance of copiotrophic microbial populations in an upland agricultural soil
1410	Thomas Forge Agriculture and Agri-Food Canada	Effects of nitrogen inputs on development of nematode communities under cultivated highbush blueberry in coastal British Columbia
1430	Holly Deniston-Sheets California Polytechnic State University	Effects of sustainable soil management strategies on nematode foodweb structure, C and N cycling and in a Pinot Noir vineyard in California (USA)
1450	Xuefeng Zhu Institute of Applied Ecology	Exploring effects of corn stover mulch on soil microbial community and carbon storage in agricultural soils of the Northeastern China
1510	Tea Break (10mins)	
1520	Xiaozeng Han Chinese Academy of Sciences	Development of community structure and soil food web of microbes and nematodes under different agricultural practices during the parent material maturation process
1540	Johannes Helder Wageningen University	Effects of sustainable management practices on soil biota as reflected by shifts in nematode communities
1600	Yi Zhou The University of Adelaide	Divergent influence to pathogen invader by environmental isolates with different social interactions
1620	Hongsheng Wu Nanjing University of Information Science and Technology	Soil microbial community structure-function analysis and modeling for soil sickness of long-term monoculture of watermelon
1640	Marie Ludwig Thünen Institute of Biodiversity	Measuring soil sustainability via soil resilience

Monday 16 October 2017

Session 02: Global change biology

Time: 1330-1640 **Room 731**

Chairs: Yahai Lu, Peking University, China
Maria Briones, Universidad de Vigo, Spain

1330	Ralf Conrad Max Planck Institut für terrestrische Mikrobiologie	Terrestrial microbial methane production and desiccation stress
1350	Helen Phillips German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig	Global diversity of earthworms and potential changes under future climate and land use projections
1410	Biao Zhu Peking University	A meta-analysis of soil extracellular enzyme activities in response to global change
1430	Stefanie Goldberg Kunming Institute of Botany	Experimental long-term warming decreases net CO_2 and N_2O production and CH_4 consumption in grassland soil on the Tibetan Plateau
1450	Yanyu Song Northeast Institute of Geography and Agroecology Chinese Academy of Sciences	Responses of soil microbial biomass, abundance and enzyme activities to experimental warming in a peatland of Northeast China
1510	Tea Break (10mins)	
1520	Werner Liesack MPI for Terrestrial Microbiology	Summer heatwave triggers domain-level changes in rhizosphere biota under long-term elevated CO_2
1540	Tida Ge Institute of Subtropical Agriculture Chinese Academy of Sciences	Rice rhizodeposits affect organic matter decomposition in paddy soil: the role of N fertilization and rice growth for enzyme activities, CO_2 and CH_4 emissions
1600	Weishou Shen Nanjing University of Information Science and Technology	Nitrous oxide (N_2O) reducing denitrifiers inoculated into granular organic fertilizer mitigate N_2O emissions from soils
1620	Zhenhua Yu Northeast Institute of Geography and Agroecology Chinese Academy of Sciences	Elevated CO_2 alters the abundance and community structure of soil fungal communities in the rhizosphere of soybean grown in Mollisols

Session 03: Soil pollution and bioremediation

Time: 1330-1710 **Room 725**

Chairs: Jianming Xu, Zhejiang University, China
Elizabeth A. Edwards, University of Toronto, Canada

1330	Elizabeth Edwards University of Toronto	Potential for bioremediation and detoxification of persistent compounds - beyond TCE
1350	Fangjie Zhao Nanjing Agricultural University	Microbial processes mediating the biogeochemical cycle of arsenic in paddy soil
1410	Bin Ma Zhejiang University	Niche partition of phenanthrene degrading bacteria induce non-linear variation of phenanthrene degradation along Phragmites australis rhizosphere gradient
1430	Qihong Lu Sun Yat-Sen University	Dehalococcoides as a biomarker evidence for uncharacterized organohalides in environmental samples
1450	Frank Löffler University of Tennessee	Nitrous Oxide Inhibits Reductive Dechlorination Activity
1510	Tea Break (10mins)	
1520	Sehroon Khan Kunming Institute of Botany, Chinese Academy of Sciences	Isolation and identification of plastic-degrading fungus from the soil of dumping site
1540	Marcela Hernández García University of Southampton	Multi-drug resistant bacteria in British agricultural soil
1600	Shuping Qin Fujian Agriculture and Forestry University	Enhance subsoil denitrification using electrode as direct electron donor
1620	Luz Puentes Jácome University of Toronto	Enrichment of lindane-dehalogenating bacteria for enzyme discovery
1640	Yi Yang University of Georgia	Grape Pomace Compost Harbors Organohalide-Respiring Dehalogenimonas Species with Novel Reductive Dehalogenase Genes
1655	Fei Luo University of Toronto	Combining Treatability Studies and Molecular Tools to Provide Insights into Benzene Remediation in Groundwater Systems

Session 04: Bioorganic fertilizers

Time: 1330-1700 **Room 801**

Chairs: Fatima Maria Moreira, Federal University of Lavras, Brazil
Qirong Shen, Nanjing Agricultural University, China

1330	Paul Bodelier Netherlands Institute of Ecology	Bio-based residues as GHG mitigation strategy creating climate smart agricultural soils: "Putting microbes to work"
1350	Bo Sun Institute of Soil Science, Chinese Academy of Sciences	Nematode grazing promotes bacterial community dynamics in rhizosphere soil at the aggregate level
1410	Xueming Yang Harrow Research and Development Centre Agriculture and Agri-Food Canada	Effective use of cover crops in rotations involving corn, soybean, or winter wheat in southern Canada
1430	Emiel Elferink Van Hall Larenstein	Soil health assessment towards a practical farm tool
1450	Alexandre Jousset Utrecht University	Plant breed root microbiota for enhanced growth stimulation
1510	Tea Break (10mins)	
1520	Nan Gao Nanjing Tech University	Nitrous oxide (N_2O) reducing denitrifiers mitigate N_2O emission from soil and promote pasture growth
1540	Yang Ji Nanjing University of Information Science & Technology	Functional and structural responses of methanogenic microbial communities in paddy soils to progressing rice straw degradation
1600	Anupol Chareesri Wageningen University	Arbuscular mycorrhizal fungi and drought tolerance of rice
1620	Astra Ooms VU, The Netherlands	From stress to process: Species traits as predictor of hydrological effects on soil fauna communities and, subsequently, litter decomposition
1640	Xingying Tang Yunnan Agricultural University	Effects of organic fertilizers substitution on soil microbial metabolic diversity of flue-cured tobacco and its relation to soil aggregate stability

Monday 16 October 2017

Session 05: Soil fauna

Time: 1330-1620 **Room 733**

Chairs: Diana Wall, Colorado State University, USA
Shenglei Fu, Henan University, China

1330	Valerie Behan Pelletier Canadian National Collection of Insects , Arachnids and Nematodes , Agriculture and Agri-Food Canada	Integrating soil biodiversity with global sustainability – How fauna matter The interplay of scale, place and time
1350	Xiaodong Yang Institute of Geography and Agroecology Chinese Academy of Sciences	The effects of micro-environmental heterogeneity on spatial pattern of soil nematode communities in tropical seasonal rainforest of Xishuangbanna, SW China
1410	Michael Steinwandter Eurac Research, ITALY	Quality of Alpine litter: acceptance and effects on life-history of large decomposer (millipedes and earthworms)
1430	Rui Yin Helmholtz Centre for Environmental Research	Effects of soil fauna on litter decomposition and their response to climate change under different land use
1450	Juan Zuo Vrije Universiteit Amsterdam	How variation in bark traits of dead trees drive soil fauna communities
1510	Tea Break (10mins)	
1520	Borivoj Sarapatka Eurac Research, ITALY	The influence of erosion processes on selected groups of macrofauna in Chernozems: Czech Republic case study
1540	Xiaoyun Chen Nanjing Agricultural University	Temporal changes of red soil community after manipulating the arable soil habitat
1600	Tingwen Chen Georg August University Göttingen	Collembola species coexistence mechanisms as indicated by community phylogenetics

2nd Global Soil Biodiversity Conference

GSBC2 2017

15-19 October

Nanjing, China

PROGRAM and INFORMATION BOOK

Tuesday 17 October 2017

Day 2 Keynote Session

Poly Grand theatre

Processes, Mechanisms, and Patterns

Chair: Diana Wall, Indiana University, USA

0830	Wim van der Putten Netherlands Institute of Ecology	Functional consequences of belowground ecological novelty under climate change
0900	Yongguan Zhu Institute of Urban Environment, CAS	Microbial biogeochemical coupling: The Iron wheel
0930	Qirong Shen Nanjing Agricultural University	How to introduce beneficial microbes into (rhizosphere) soils to sustain crop production
1000	Tea Break (30mins)	

Chair: Fatima Moreira, Federal University of Lavras, Brazil

1030	Yanfen Wang University of Chinese Academy of Sciences	Below mechanisms controlling grassland degradation, and its succession pattern of restoration in Tibet Plateau
1055	Aimee Classen University of Vermont	Microbes, Mountains, Models and Mechanisms - exploring ecosystem function under global change
1120	Brajesh Singh Hawkesbury Institute for the Environment, University of Western Sydney	Microbial diversity and ecosystem functions: Biotic interactions and feedback loops
1145	Laurent Philippot French Institute for Agricultural Research	A tale of two stories from the underground: soil microbial diversity and N-cycling
1210	Lunch Time (80mins)	

Oral Session 06-11

Session 06: Soil Microbiome

Time: 1330-1640 **Room 801**

Chairs: Brajesh Singh, University of Western Sydney, Australia
Jizheng (Jim) He, Research Center for Eco-Environmental Sciences, CAS, China

1330	Manuel Delgado-Baquerizo University of Colorado	Paleoclimate explains a unique proportion of the global variation in soil bacterial communities across natural ecosystems
1350	Hangwei Hu The University of Melbourne	Microbial nitrous oxide emission in soil ecosystems: mechanisms, microbiome and mitigation
1410	Magdalena Steiner University of Fribourg	Microbial diversity and ecosystem functioning and services in vineyards
1430	Rahi Soren Jogamaya Devi College	Resilience of microbial community structure and function along a forest fire gradient
1450	Camila Ritter University of Gothenburg	Soil characteristics can explain diversity patterns across Brazilian Amazonia
1510	Tea Break (10mins)	
1520	Evgenia Blagodatskaya University of Goettingen	Microbial competition under environmental control: theoretical concept and experimental prove
1540	Xiaojie Sun Huazhong Agricultural University	Distinct profile of social bacterial interactions under long-term organic and conventional farming
1600	Rongjun Guo Institute of Plant Protection CAAS	Insight into the role of hyphae associated bacteria in control of Fusarium oxysporum f. sp. cucumerium
1620	Zhilei Gao Utrecht University	Soil protists induce soil disease suppressiveness

Tuesday 17 October 2017

Session 07: Biodiversity & ecosystem functioning

Time: 1330-1640 **Room 736**

Chairs: Yongguan Zhu, Institute of Urban Environment, CAS, China
Luca Montanarella, European Commission - Joint Research Centre, Italy

1330	Alberto Orgiazzi Joint Research Centre	LUCAS Soil, the largest European expandable dataset of soil physicochemical and biological properties
1350	Norbertas Noreika University of Tartu	Positive biodiversity-productivity relationships of plants and soil fungi in old-growth boreo-nemoral forests
1410	Anton Potapov University of Goettingen	Trade-offs between soil biodiversity and ecosystem services in lowland rainforest transformation systems, Sumatra, Indonesia
1430	Qi Li Institute of Applied Ecology Chinese Academy of Sciences	Nematode diversity and distribution along the grassland transect of Northern China
1450	Derrick Lai HongKong SAR	Does Asian earthworm (Amynthas) induce soil greenhouse gas fluxes in subtropical grassland soil? A microcosm study
1510	Tea Break (10mins)	
1520	Sina Adl University of Saskatchewan	Bacteria consumption by soil protists is central to nutrient cycling
1540	Keishi Senoo The University of Tokyo	Predominant but previously-overlooked prokaryotic drivers of reductive nitrogen transformation in paddy soils, revealed by metatranscriptomics
1600	Tianjie Yang Nanjing Agricultural University	Genome reconstructions predict the functionality of microbial communities
1620	Chen Chen Sun Yat-sen University	Heavy metal contaminated regions affect the paddy soil microbial communities

Tuesday 17 October 2017

Session 08: Extreme environments

Time: 1330-1700 **Room 731**

Chairs: Wenxue Wei, Institute of Subtropical Agriculture, CAS, China
Elizabeth Bach, Colorado State University, USA

1330	Junling Zhang China Agricultural University	Unexplored biodiversity and function of arbuscular mycorrhizal fungi on the Tibetan Plateau
1350	Xue Xia Brigham Young University	Comparative transcriptomics of Antarctic and temperate free living nematodes: Environmental and elemental stoichiometric constraints on life history evolution, ecological amplitude and trophic complexity
1410	Chuleui Jung Andong National University	Comparative faunal study of Predatory gamasid mites from Mt. Halla, UNESCO geopark in Korea: Between inside and outside of the caldera, Baekrokdam.
1430	Yosef Steinberger Bar Ilan University	Metagenomic analysis of desert invertebrate gut bacteria
1450	Yumei Dai Chengdu Institute of Biology Chinese Academy of Sciences	A novel psychrotolerant chitinolytic anaerobe isolated from Qinghai-Tibetan Plateau and its molecular mechanisms in degradation of chitin
1510	Tea Break (10mins)	
1520	Zhanfeng Liu South China Botanical Garden Chinese Academy of Sciences	Long-term drought strengthens the linkages between fungi and soil carbon sequestration in agricultural ecosystems, North China Plain
1540	Thomas Pommier INRA UMR1418 Microbial Ecology	Extreme climatic events impair the resilience of key soil microbial groups from alpine grassland ecosystems.
1600	Xiaoqi Zhou East China Normal University	Soil methane uptake and underlying microbial mechanisms under drought stress
1620	Liang Chang Northeast Institute of Geography and Agroecology Chinese Academy of Sciences	The response of soil microarthropods to different soil tillage treatment under Extreme Drought Conditions
1640	Ping Lan Institute of Soil Science Chinese Academy of Sciences	Ectopic expression of ACYL CARRIER PROTEIN 5 enhances salt stress tolerance in Arabidopsis

Tuesday 17 October 2017

Session 09: Restoration ecology

Time: 1330-1640 **Room 725**

Chairs: Yanfen Wang, University of Chinese Academy of Sciences, China
Gerlinde de Deyn, Lancaster University, UK

1330	James Bever University of Kansas	The plant microbiome and the restoration of native plant diversity
1350	E. R. Jasper Wubs NIOO-KNAW	Whole soil-community inoculation as a novel tool to rehabilitate terrestrial ecosystems
1410	Shiping Wang Institute of Tibetan Plateau Research Chinese Academy of Sciences	Species gain could shape the response of species richness to climate change using a reciprocal translocation
1430	Elizabeth Bach Colorado State University	Restoring soil biodiversity to sustain ecosystems: Applying science to practice through the Global Soil Biodiversity Initiative
1450	Andreas Schomburg Institute of biology University of Neuchatel	Interaction of soil engineering organisms improves restoration success in sandy floodplain soils
1510	Tea Break (10mins)	
1520	Deepak Kumaresan Queen's University Belfast	Ecological engineers: soil microbes as facilitators in restoration of post-mining substrates
1540	John Trofymow Natural Resources Canada, CFS	Analysis of fungal communities from DNA pyrosequencing of soils and tree roots in forestry and oil sand reclamation sites
1600	Parthasarathy RadhaPriya University of Madras	Restoration of degraded forests soil using “rhizosphere engineering”
1620	Zhisheng Yu Chinese Academy of Sciences	Microbial links between soil, vegetation, and animals from a grassland ecosystem
1640	Weidong Kong Chinese Academy of Sciences	The effects of long-term fencing on autotrophic microbial community and their CO_2-fixing potential in Tibetan plateau steppe soils

Tuesday 17 October 2017

Session 10: Aboveground-belowground interactions

Time: 1330-1640 **Room 733**

Chairs: Renfang Shen, Institute of Soil Science, CAS, China
Wim van der Putten, Netherlands Institute of Ecology, and Centre for Soil Ecology Wageningen, The Netherlands

1330	Joanna Salles University of Groningen	Transition in land colonization reflects a multi-trait switch in microbiomes
1350	Christoph Tebbe Thuenen Institute of Biodiversity	Implications of land use change and associated individual soil organic carbon fractions on soil bacterial diversity and association networks
1410	Gupta Vadakattu V.S.R CSIRO, Australia	Small worlds – big functions: soil fungal networks and plant health
1430	Manqiang Liu Nanjing Agricultural University	Earthworms affect plant growth and resistance against herbivores: a meta-analysis
1450	Alexei Tiunov IEE RAS	Animals in subsoil: abundance, vertical distribution, trophic links and ecological significance
1510	Tea Break (10mins)	
1520	Naili Zhang Institute of Botany Chinese Academy of Sciences	Tree richness effects on the fungal assemblages inhabiting freshly fallen litters and enzymatic degradation
1540	Nadejda Sooudzilovskaia Institute of Environmental Sciences Leiden University	How is intensity of plant root mycorrhizal colonization related to plant growth rate, dominance and decomposition rate?
1600	Jan Frouz Charles university	Effects of change in soil substrate quality, and microbial community composition on the plant community during primary succession
1620	Zhong Wei Nanjing Agricultural University	Pseudomonas communities enhances plant growth and nutrient assimilation via diversity-mediated ecosystem functioning

Tuesday 17 October 2017

Session 11: Biogeochemical Interface in Soil

Time: 1330-1640 **Room 722**

Chairs: Qiaoyun Huang, Huazhong Agricultural University, China
Laurent Philippot, French Institute for Agricultural Research, France

1330	Steven Allison University of California, Irvine	Testing biochemical theory on the temperature response of soil enzymes
1350	Peng Cai Huazhong Agricultural University	Bacterial biofilm development in the presence of soil clay minerals and iron oxides
1410	Jan Frouz Charles University	Soil fauna, neglected webmasters of soil biogeochemistry
1430	Na Peng Huazhong Agricultural University	Extracellular DNA in biofilm formation of soil bacteria: a characterization of extracellular DNA release in cultures and biofilms
1450	Jiayin Feng Zhejiang University	The key microbial functional genes and their diversity involved in soil typical reduction processes
1510	Tea Break (10mins)	
1520	Huijie Gan Cornell University	Going back to the roots: consequence of root herbivory for soil organic matter cycling
1540	Ciska Veen Netherlands Institute of Ecology	Home sweet home: specialist decomposers drive the breakdown of low-quality litter
1600	Aurélie Bacq Labreuil University of Nottingham	Exoenzymes to the rescue: consistent effects of soil structure upon phosphatase gene microdiversity in soil
1620	Xizhi Huang Institute of Subtropical Agriculture Chinese Academy of Sciences	Soil Chip-XPS Integrated Technique to Study Formation of Soil Biogeochemical Interface

Tuesday 17 October 2017

Conrad Symposium

Symposium on microbial metabolism of trace gas
--- A tribute to Ralf Conrad

1 Background

Prof. Dr. Ralf Conrad is a leading figure in biogeochemical cycling of atmospheric trace gases. Atmospheric trace gases (methane, carbon monoxide, hydrogen, nitrous oxide, nitric oxide, carbonylsulfide, etc.) play an important role for radiation control, chemistry and cloud formation in the atmosphere and thus significantly affect the climate on Earth. Microbial communities in soil and ocean contribute as a source, a sink, or both for the cycling of these trace gases. Prof. Conrad is well recognized for his extraordinary contributions to microbial ecology of trace gases metabolisms. This symposium is organized in honor of his research accomplishments and to highlight future research frontiers.

In 1970s Prof. Ralf Conrad has envisioned that soil and ocean can function as a source, a sink, or both for the cycling of trace gas, which is largely regulated by microorganisms. One of his major accomplishments was the analytical description of how such microbial communities control source and sink functions. It was found that generally three principles apply: (1) The flux of a trace gas between the biosphere and atmosphere is the net result of both production and consumption processes that operate simultaneously and are due to different microbial communities. (2) Microorganisms that consume a gas at low atmospheric concentrations (ppb to ppm levels) are always different from those that consume the gas at high concentrations (percentage level). (3) The species composition of microbial communities matters for the magnitude of the trace gas flux. (4) Microbial communities controlling the trace gas flux in upland soils are usually different from those in wetland soils.

A further accomplishment was the characterization of the microbial processes responsible for the consumption of atmospheric trace gases in upland soils, in particular consumption of atmospheric hydrogen and methane. Prof. Conrad has been leading the research areas of atmospheric H2 consumption by soil and methane emission in rice field. Flooded rice fields are a major source for the greenhouse gas methane. Prof. Conrad discovered that the methane emission from rice fields is controlled by two opposing microbial processes, i.e., methane production in the soil and microbial methane oxidation in the rhizosphere; He has revealed that how methane production after flooding is initiated by a systematic sequential change in the activity of different microbial guilds. Prof. Conrad established the thermodynamic theory of sequential reduction in rice field based on different microbial guilds. He discovered the microorganisms with different affinities to substrate in nature environments, which explained the microbial mechanisms of soil as source or sink for atmospheric CH_4.

Tuesday 17 October 2017

2 Schedule

Chair: Prof. Xiaolei Wu（吴晓磊教授） 17 Oct. 2017 Venue: Room 810	
13:30-14:30	**From the microbes to the atmosphere - investigating microbial ecology and enjoying life** **Prof. Ralf Conrad,** Max-Planck Institute for Terrestrial Microbiology, Germany
14:30-15:00	**A legendary methanogen from paddy field soil** **Prof. Yahai LU**（陆雅海教授）, Peking University, China
15:00-15:20	**Break**
Chair: Prof. Yahai Lu（陆雅海教授） 17 Oct. 2017 Venue: Room 810	
15:20-15:40	**Methanogens, the core microbes in oil reservoirs** **Dr. Xiaolei WU**（吴晓磊教授）, Peking University, China
15:40-16:00	**Iron plaque on rice roots and methane emission** **Dr. Jianguo DAN**（但建国教授）, Hainan University, China
16:00-16:20	**Elucidating microbial succession: a study of remote volcanic soils** **Dr. Marcela Hernández García,** University of Southampton, UK
16:20-16:40	**Mechanisms of Microbial Interspecies Electron Transfer(MIET) in coastal riverine wetlands** **Dr. Fanghua LIU (**刘芳华研究员), Yantai Institute of Coastal Zone Research, CAS, China
16:40-17:00	**Partitioning the sources of methane produced in rice field soil** **Dr. Quan Yuan (**袁权研究员), Institute of Geochemistry, CAS, China
17:00-17:20	**The known unknowns of archaeal nitrifiers for being small** **Dr. Zhongjun Jia** (贾仲君研究员), Institute of Soil Science, CAS
17:20-17:30	**Concluding Remark: Ralf Conrad**
17:30-19:00	**Dinner**
Chairs: Jianguo DAN(但建国教授) & Peng XING(邢鹏研究员) Venue: Room 810	
19:00-21:00	Symposium continued with invited speakers

2nd Global Soil Biodiversity Conference

GSBC2 2017

15-19 October

Nanjing, China

PROGRAM and INFORMATION BOOK

Wednesday 18 October 2017

Day 3 Keynote Session

Poly Grand theatre

Future perspective

Chair: Wim van der Putten, Netherlands Institute of Ecology, and Centre for Soil Ecology Wageningen, Netherlands

0830	Jim Tiedje Michigan State University	What is microbial biodiversity, what does it mean, what is its value?
0900	Karl Ritz University of Nottingham	Soil architecture and biodiversity: the past, present and future of life in the below-ground labyrinth
0930	Xingguo Han Institute of Botany, CAS	Soil microbial ecology: three case studies from the temperate steppe
1000	Tea Break (30mins)	

Chair: Yanfen Wang, University of Chinese Academy of Sciences, China

1030	Jennifer Lau Michigan State University	Facilitating interactions with diverse soil microbes: A powerful mechanism for plant adaptation to global change
1055	Kiwamu Minamisawa Tohoku University	Plant-associated bacteria mitigate greenhouse gas emission
1120	Jim Prosser University of Aberdeen	Molecular analysis of ammonia oxidisers: enlightenment or entanglement
1145	Fatima Maria Moreira Federal University of Lavras	Microbial diversity in Amazonian soils: genetic resources for sustainable agriculture, environmental quality and food safety
1210	Lunch Time (80mins)	

Oral Session 12-15

Session 12: Soil biogeography

Time: 1330-1700 **Room 733**

Chairs: Haiyan Chu, Institute of Soil Science, CAS, China
Nobuhiro Kaneko, Yokohama National University, Japan

1330	Nadia Soudzilovskaia Institute of Environmental Sciences, Leiden University	New maps of global distribution of mycorrhizas allow predictions of mycorrhizal impacts on soil carbon cycling
1350	Vanessa Pino University of Sydney	Soil microbial diversity across different agroecological zones in NSW, Australia
1410	Bin Ma Zhejiang University	Distinct biogeographic patterns for archaea, bacteria, and fungi along the vegetation gradient at the continental-scale in Eastern China
1430	Xiaolin Wang China Agricultural University	Microbial assembly and coexistence across Tibetan ecosystems are conditioned by botanic, geographic, and edaphic factors
1450	Baihui Ren Institute of Applied Ecology Chinese Academy of Sciences	Soil pH and plant diversity shapes the prevalent determinant of soil bacterial community structure across the permafrost degradation gradients in Northeastern China
1510	Tea Break (10mins)	
1515	Guanghua Wang Northeast Institute of Geography and Agroecology Chinese Academy of Sciences	Biogeographic distribution ammonia oxidizers in the black soil zone of northeast China
1530	Baodong Chen Research Center for Eco-Environmental Sciences Chinese Academy of Sciences	Geographical distribution pattern of AM fungi in typical natural ecosystems in northern China
1545	Qian Zhang Zhejiang University	Soil properties and elevation work together in shaping biogeographical distribution of bacterial communities in both paddy and natural soils
1600	Petr Heděnec Charles University	Biogeographical pattern of microbial community in local and transplanted soils along a latitudinal gradient
1615	Huiyang Xiong China Agricultural University	The epidemicity of facultative microsymbionts in faba bean rhizosphere soils
1630	Erin Cameron University of Helsinki	Using citizen science to investigate earthworm abundance and genetic diversity at northern range limits

1645	Meixiang Gao Harbin Normal University	Spatial processes override environmental processes for assembling a ground beetle metacommunity at a small scale

Session 14: Cutting-edge methods

Time: 1330-1620 **Room 736**

Chairs: Mary Firestone, University of California Berkeley, USA
Zhongjun Jia, Institute of Soil Science, CAS, China

1330	Mary Firestone University of California, Berkeley	Using stable isotope enabled metagenomics to find and quantify the flow and fate of root carbon through microbial pathways
1350	Cécile Gubry Rangin University of Aberdeen	Adaptation of acidophilic ammonia-oxidising archaea: Insights from comparative genomics, metatranscriptomics and proteomics
1410	Bruce Hungate Northern Arizona University	Microbial ecology and biogeochemistry in soil
1430	Brett J Baker Marine Science Institute University of Texas Austin	Using metagenomics to explore new branches on the tree of life
1450	Stefan Geisen Netherlands Institute of Ecology (NIOO-KNAW)	Soil nematode biodiversity uncovered with a revised methodology
1510	Tea Break (10mins)	
1520	Xudong Zhang Institute of Applied Ecology Chinese Academy of Sciences	Stable isotope probing of active carbon pool in soils
1540	Zhongjun Jia Institute of Soil Science Chinese Academy of Sciences	Comparison of soil microbiome by single cell technology, classical microscope methods and high-throughput MiSeq sequencing
1600	Kamlesh Jangid National Centre for Cell Science	Characterizing Structural and Compositional Diversity in Gene Libraries using K-shuff

Wednesday 18 October 2017

Session 15: Biochar for soil biota and biodiversity

Time: 1330-1640 **Room 725**

Chairs: Genxing Pan, Nanjing Agricultural University, China
Yakov Kuzyakov, RUDN University, Russia.

1330	Yakov Kuzyakov Agro-Technology Institute RUDN University	Biochar stability in soil: meta-analysis of decomposition and priming effects
1350	Genxing Pan Nanjing Agricultural University	Unravelling mechanisms for the long –term accumulation of carbon in a pasture soil following biochar amendment
1410	Saadatullah Malghani Yonsei University	Application of two contrasting rice residue based biochars triggered gaseous loss of nitrogen under denitrification favoring conditions: Short-term study using acetylene inhibition technique
1430	Luo Yu Zhejiang University	Biochar induced priming effects by triggering the activities of specific microbial decomposers
1450	Elebiyo Gbadebo Kwame Nkrumah University of Science and Technology	N-enriched biochar and rhizobial inoculant integration enhances soybean nodulation and yield
1510	Tea Break (10mins)	
1520	Genxing Pan Nanjing Agricultural University	Short term changes in soil fauna abundance and diversity following a single biochar amendment in agricultural soils
1540	Omer Frenkel ARO, Volcani Center	The influence of two preconditioned biochar types on soilborne diseases and soil microbial community structure
1600	Jing Ma China University of Mining and Technology	Influence of biochar and field management on soil bacterial community in reclaimed coal mine soil: A case study in Liuxin reclamation
1620	Fang Wang Institute of Soil Science Chinese Academy of Sciences	Effect of biochar on the mobility and bioavailability of antibiotics and trace metals and microbial diversity in co-contaminated soil under different rainfall pH

Monday 16 October 2017

Workshop and Roundtable

Day 1 Writing Workshop

Perspectives from Soil Biology & Biochemistry

16th Oct 19:30-21:00 Room 736

Karl Ritz, Josh Schimel

This event will provide perspectives on publishing in international peer-reviewed journals generally, and Soil Biology & Biochemistry specifically. It will commence with an introduction by Karl Ritz, Editor-in-Chief, followed by a presentation by Josh Schimel, a long-standing Chief Editor. There will then be an open forum for questions and discussion on any aspects of the publishing process.

研讨会：如何在Soil Biology & Biochemistry（SBB）期刊上发表论文

时间：2017年10月16日（周一）19：30 – 21：00

地点：南京青年国际会议酒店 7楼736

此研讨会将由Karl Ritz 教授和Josh Schimel教授主讲。两位专家不仅拥有丰富的编辑经验，担任了Soil Biology & Biochemistry的主编和编辑，也是各自领域的著名科学家。讲座将重点围绕以下方面开展：科研选题，技术创新应用，论文写作，特别是标题凝练，摘要、结果和讨论的客观描述，以及如何理解审稿意见并有效修改论文等。Schimel教授最近出版了科研论文写作专著，(Writing Science: how to write papers that get cited and proposals that get funded)，是将科研成果故事化写作的著作，特别在高端论文写作方面极具启发意义。届时，您还可以免费取阅中英文版的《学术论文发表指南》手册。

Tuesday 17 October 2017

Day 2 Meet the Editors

"Meet the Editors" - Elsevier Soil Science Journals

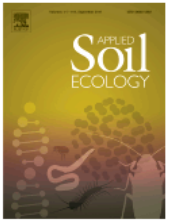
17th Oct 19:30 - 21:30 Room 736

Editors from Elsevier

Sina Adl	University of Saskatchewan	Editor-in-Chief: Rhizosphere
Evgenia Blagodatskaya	University of Göttingen	Associate Chief Editor: SBB
Tim Clough	Lincoln University	Chief Editor: SBB
Kamlesh Jangid	NCCS Pune	Associate Chief Editor: SBB
Rainer Joergensen	Universität Kassel	Chief Editor: SBB
Soren Petersen	Aarhus University	Associate Chief Editor: SBB
Karl Ritz	The University of Nottingham	Editor-in-Chief: SBB
Josh Schimel	University of California at Santa Barbara	Chief Editor: SBB
Christoph Tebbe	Thünen Institut für Biodiversität	Editor-in-Chief: EJSB
Carmen Trasar-Cepeda	IIAG	Chief Editor: SBB
Joann Whalen	McGill University	Chief Editor: SBB
Young Wu	Elsevier	Publisher: Soil Sciences Journals

An informal event to provide an opportunity to meet a range of editors from Elsevier soil science journals. It will commence with a brief introduction from some of the editors, who will talk about perspectives on what makes an exemplary manuscript, things authors should avoid doing, challenges for the future, and other matters.

Sponsoring Journals:



Tuesday 17 October 2017

“主编面对面”

时间：2017年10月17日（周二）19：30 – 21：00

地点：南京青年国际会议酒店 7楼736

该活动将会有11位来自不同土壤和生物学领域的国际期刊主编和副主编等嘉宾，以及Elsevier期刊出版人出席。数位主编将会现场分享科研理念和成果展示，讲解期刊的特点和偏好，针对性的发文技巧、如何提高文章接受率、如何获得主编青睐等。

我们在该活动上除了准备了最新的土壤期刊样本以及出版的资料供您阅读，还备有酒水和小食。如果您想问主编为什么拒您稿件、如何成为期刊编委甚至主编、如何创办有影响力的国际期刊等任何与期刊和发文相关的问题，我们在现场都会为您一一解答。

如何参加

点击“阅读原文”链接
或扫左侧二维码
←免费注册

Tuesday 17 October 2017

Roundtables

Roundtable 1: How to expand knowledge on soil biodiversity and functioning beyond bacteria and fungi: A methodological consensus

17th Oct 19:30 - 21:30 **Room 801**

Stefan Geisen [1,2]

[1] Netherlands Institute of Ecology (NIOO-KNAW), Droevendaalsesteeg 10, 6708 PB Wageningen – the Netherlands
[2] Laboratory of Nematology, Wageningen University, Droevendaalsesteeg 1, 6708 PB Wageningen - the Netherlands

Overall knowledge on soil biodiversity has exploded mainly thanks to novel molecular techniques, especially on microbial bacteria, archaea and fungi. However, knowledge on protists and soil animals is lagging behind. This is surprising considering that these larger soil organisms have (1) a much longer research history and (2) are key for soil functioning; they are essential for nutrient flows, and control plant performance by ranging from pathogens to mutualists.
Here we aim at bridging different fields- microbiologists that predominantly apply molecular techniques to study their organisms with scientists working on larger soil biota that often apply morphological techniques. Molecular techniques are becoming more readily available to study larger soil biota, promising to better study the real soil biodiversity and enable non-experts to include a wide range of soil life into their analyses. We also aim at discussing bridges where it is useful to combine different approaches. We propose that only a combination of applied methods and a close link between experts working in different parts of soil life will enable us to fully understand the diversity of soil organisms and eventually their functioning.

This workshop therefore aims at

1. Linking scientists working on different soil organisms
2. Providing an overview of available methods to study different soil biota and their functioning
3. Discussing how to optimize methodology to optimize our vision of soil biodiversity and their functioning

We aim at including scientists working all soil organisms to guide future work on the entity of soil biodiversity.

Tuesday 17 October 2017

Format of the roundtable
A very short 3 minute introduction will set the stage and provide an overview of the remaining six talks, each 6 minutes without specific questions. Most importantly, this will be the basis for a highly interactive general discussion for the remaining >30 minutes. The discussion will be a platform for the audience to get to know each other, and scientists applying different methods to study different soil biota. Furthermore, the discussion serves as a platform to ask specific details on methods and stimulate future global collaborations.

Invited speakers**:**
Dr. Laurent Philippot (laurent.philippot@inra.fr) will give an overview of methods to study soil microbial diversity, their abundance and their functioning with a focus on bacteria (Methods to study microbial diversity, abundances and functioning in soils).
Dr. Ville Friman (ville.friman@york.ac.uk) will introduce a rather neglected method overview to integrate viruses in soil biodiversity research (The world below microbes: Viruses)
Dr. Stefan Geisen (s.geisen@nioo.knaw.nl) will bridge Laurent's bacterial-focused introduction to the next trophic level in the soil food web by providing an overview on methods to examine classical 'microfauna' – protists and nematodes (The world above (and even within well-known) microbes: protists and nematodes)
Dr. Val Behan-Pelletier (behanpv@gmail.com) and Dr. Zoe Lindo (zlindo@uwo.ca) will in more detail present a diverse group of mesofauna, the mites (Functional diversity of soil mites and how to best study them)
Dr. Alexei Tiunov (a_tiunov@mail.ru) will expand on Val's and Zoe's talk by adding a functional aspect on how soil fauna interacts (What can we learn about functional diversity using Stable Isotope Analysis)
Dr. Maria Briones (mbriones@vigo.es) will then give a more cumulative overview of methods to study diverse soil animals focusing on microarthropods and earthworms (The big ones: Soil meso- and macrofauna analysed in the traditional way)
Dr. Arjen de Groot (g.a.degroot@wur.nl) will expand on Laurent's, Ville's and Stefan's presentation by providing a methodological overview to study soil biota with a focus on molecular techniques (The big ones: Soil meso- and macrofauna analysed by molecular approaches)
Prof. Diana Wall (Diana.Wall@colostate.edu) will integrate potential knowledge gains on soil biodiversity to show how this might influence policy makers and how these advances can be made applicable outside of science (Soil biodiversity: So what?)

Tuesday 17 October 2017

Roundtable 2: Applying ecological community theory to soil biota

17th Oct 19:30 - 21:30 Room 725

Ting-Wen Chen[1]*, Meixiang Gao[2], Stefan Scheu[1], Tancredi Caruso[3]

[1] Animal Ecology, J.F. Blumenbach Institute of Zoology and Anthropology, University of Göttingen, Untere Karspüle 2, Göttingen 37073, Germany
[2] College of Geographical Science, Harbin Normal University, 1 Shida Road, Limin Economic Development District, Harbin 150025, P. R. China
[3] School of Biological Sciences and Institute for Global Food Security, Queen's University of Belfast, 97 Lisburn Road, Belfast BT9 7BL, Northern Ireland, United Kingdom *Tel: +49 551 39 25415, Fax: +49 551 39 25448, e-mail: tchen2@gwdg.de (Ting-Wen Chen)

Description: Community ecologists seek to understand how the composition and diversity of species vary across space and time, and how changes in biodiversity affect ecosystem functioning. Understanding patterns and processes of soil biota is particularly complicated due to their tremendous diversity from micrometer to global scales. Various studies have investigated the factors regulating community structure in soil biota from microbes to macrofauna and across spatial and temporal scales; however, a general synthesis of the current understanding of soil community ecology has yet to be offered. In this roundtable, we start from the theory of ecological communities proposed by Mark Vellend (2010, 2016), who summarized the variety of processes driving community structure within four overarching high-level processes: selection, drift, dispersal and speciation. These processes explicitly consider the intersection between ecology and evolutionary biology, thereby offering a fascinating unification of the field of research. For example, biotic interactions and environmental conditions, usually considered major drivers of community structure, are interpreted as forms of selection. At the same time, drift (i.e., rare or unpredictable fluctuations of populations) and dispersal (i.e., movement of individuals between local communities) are analyzed in interaction with selection. Furthermore, speciation, usually ignored in traditional community ecology, is a process working at large spatial scales. In this roundtable we invite colleagues working on the full spectrum of soil organisms in different systems to critically discuss ideas and applications of the theory of ecological communities to soil biota, with the main goal of summarizing the current understanding of soil community ecology and possible future developments.

Invited speakers:
Thomas Bell (Imperial College London, United Kingdom); **Ting-Wen Chen** (University of Göttingen, Germany); **Meixiang Gao** (Harbin Normal University, P. R. China); **Alexandre Jousset** (Utrecht University, The Netherlands); **Zoë Lindo** (Western University, Canada); **Astra Ooms** (Vrije Universiteit Amsterdam, The Netherlands); **Juan Zuo** (Vrije Universiteit Amsterdam, The Netherlands)

Tuesday 17 October 2017

Roundtable 3: Linking soil biodiversity to ecosystem functioning and provisioning of ecosystem services

17th Oct 19:30 - 21:30 **Room 731**

Nadia Soudzilovskaia [1], Gerlinde de Deyn [2]

[1] Institute of Environmental Sciences, CML, Leiden University, The Netherlands
[2] Department of Soil Quality, Wageningen University, The Netherlands

In the recent years, novel molecular techniques allowed obtaining important insights in soil biodiversity patterns and their biotic and abiotic drivers. However how these patterns are linked to ecosystem functioning and processes both above and belowground is still poorly understood. This lack of knowledge, hinders obtaining further insights on the role of soil biodiversity in provisioning of ecosystem services and development of policy measures aimed to sustainable use of soils. We aim to promote a live discussion between soil scientists and representatives of research institutes aimed to develop an agenda for further practical steps in bridging our knowledge on the diversity of soil organisms and functioning of terrestrial ecosystems. As the outcome of the discussion, we aim to prepare a short communication paper to the Soil Biology and Biochemistry journal.
Format of the round table.
The round table will have the following format: we will start with a short introduction round to allow participants to get acquainted. After that the invited speakers will give a short opinion pitches 2-4 min each to share the ideas on the urgent steps to get insights into functioning of terrestrial ecosystems through the novel insights in soil biodiversity. The largest part of the round table will be devoted to a live and highly interactive discussion in the form of a brainstorm mediated by the workshop organizers.

Invited speakers
Cisca Veen - Netherlands Institute of Ecology
Yongguan Zhu - Chinese Academy of Sciences, China
Luka Monatanarella - Joint Research Centre of European Commission (confirmed)
Gerlinde de Deyn - Wageningen University, The Netherlands
Nadia Soudzilovskaia - Leiden University, The Netherlands
Hojka Kraigher - Department of Forest Physiology and Genetics, Slovenian Forestry Institute
Naili Zhang - Institute of Botany, Chinese Academy of Sciences, China
Fatima Moreira - Federal University of Lavras, Brazil
Wim van der Putten - Netherlands Institute of Ecology (tentative)
Alexei Tiunov - Laboratory for Soil Zoology and General Entomology at Severtsov Institute of Ecology and Evolution, Moscow, Russia

16-17 October 2017

Poster Sessions

Day 1 Poster Session 01-05

Session 01: Biodiversity and sustainable agriculture

Time: 1700-1800 **Room: 7th floor**

T01-P-01	Raphael Marichal	Adaptation of a general synthetic indicator to assess the impacts of practices on soil quality under oil palm
T01-P-02	Hirak Banerjee	Farm-specific fertilizer recommendation for hybrid maize with Nutrient Expert® tool in eastern India
T01-P-03	Ndhlovu Masauso	Effects of incorporating biochar into the soil using power tiller and ox-plough on performance of biochar
T01-P-04	Alexandre Pimenta	Effects of biochar addition on chemical properties of a sandy soil from northeast of brazil
T01-P-05	Eric Blanchart	Rice genotypes respond differently to earthworms: consequences for plant breeding in an ecological intensification perspective
T01-P-06	Eric Blanchart	Impacts of agronomic practices on bacterivorous nematode-induced benefits on rice growth and nutrition in Madagascar
T01-P-07	Eric Blanchart	Priming effect generation mechanisms in three different Malagasy cultivated Ferralsols: bacterial actors and drivers
T01-P-08	Andreas Hilpold	Invertebrate and plant diversity along an Alpine land-use transect
T01-P-09	Farida Begum	Influence of land use change on physiochemical and biological quality of soil in Kakrakoram Mountain Ranges of Pakistan
T01-P-10	Eric Blanchart	The effect of coupling earthworms and residues on the availability of soil phosphorus and plant growth in the highlands of Madagascar
T01-P-11	Joanne LI	Mitigating mono-crop rubber plantations with analogue agroforestry system in Hainan, China
T01-P-12	Yanling Jin	What lead sweetpotato to be a pioneer crop?
T01-P-13	Ruibo Sun	Tillage practices affects bacterial and fungal vertical distribution in fluvo-aquic soils of China North Plain
T01-P-14	Guixiang Zhou	Straw quality and temperature affect microbial communities involved in straw decomposition

T01-P-15	Alain Brauman	Do Tree plantations threaten soil biodiversity and soil health? The case of rubber plantations in Thailand
T01-P-16	Qian Zhang	Comparision of biochar and biochar compost on on vegetable yield and nitrogen utilization
T01-P-17	Alain Brauman	Lost of soil resilience and biodiversity after 80 years of rubber monocropping
T01-P-18	Simone Weidner	Effects of bacterial diversity on volatile-mediated plant growth promotion and plant pathogen suppression
T01-P-19	Andrey Zaytsev	How is life in the rice soil? Functioning of soil fauna in tropical and temperate rice paddies
T01-P-20	Chun-Hui Gao	Divergent influence to pathogen invader by environmental isolates with different social interactions
T01-P-21	Javier Vanegas	Entomopathogenic activity of Pseudomonas against the pest of the potato Tecia solanivora
T01-P-22	Javier Vanegas	Selection of entomopathogenic bacteria against Tecia solanivora by detection of acyl homoserine lactone signal molecules
T01-P-23	Aditya Petwal	Biodiversity Ignorant Landscape Management, is Detrimental for Ecosystem Services and Sustainable Agriculture – Case of Assessment Study Done in Munger (Bihar, India)
T01-P-24	Lea Carlesso	Can impacts of agricultural activities on soil compaction, soil biota and decomposition be balanced by headland management?
T01-P-25	Guo Zhang	Responses of soil carbon fractions and microbial community structure to a long-term manure amendment
T01-P-26	Yoko Masuda	Metatranscriptomic insights into microbial consortia driving methane metabolism in paddy soils
T01-P-27	Ling Luo	Effects of soil community composition and biodiversity on plant growth and nutrient uptake
T01-P-28	Kaikai Min	Impacts of microbial communities sourced from soil and organic fertilizer on soil nitrogen-transformation
T01-P-29	Yuting Zhang	Long-term and legacy effects of manure application on soil microbial communities
T01-P-30	Xinyu Zhu	Conservation tillage positively influences the community diversity and food web structure of the soil macrofauna in the black soil of Northeast China
T01-P-31	Maria Briones	Soil fauna diversity, environmental factors and agricultural management in fruit orchards from two biogeographic regions in the Iberian Peninsula

T01-P-32	Maria Briones	Seasonal changes in abundances and vertical migration of soil mesofauna communities in kiwifruit orchards
T01-P-33	Pengxia Xu	The characteristics of nitrogenase activity and diazotrophic community under different fertilizer regimes among different soil types
T01-P-34	Jianmin Li	Comparative effects of different organic materials on nematode community in continuous soybean monoculture soil
T01-P-35	Wenyi Dong	Response of denitrification genes *nirS*, *nirK*, and *nosZ* to distinct mulching practices in a rain-fed region of northeast China
T01-P-36	Ciro Gardi	Soil biodiversity and plant health: where do we stand?
T01-P-37	Xu qicheng	Probing the active oxalotrophic bacteria in soils subjected to long-term different fertilization regimes for exploring an alternative way to manage acidic soils
T01-P-38	Weiguo Zhang	Response of soil microbial community to the changes of farmland use types around Lake Taihu area
T01-P-39	Hao Liao	Various responses of bacterial and fungal community across soil particle-size fractions to long-term fertilizations
T01-P-40	Puentes Pilar	Construction of a targeted multi-trophic microbial consortium able to effectively control Ralstonia Solanacearum affecting Rose sp.
T01-P-41	Lori Phillips	Going beyond the surface: Microbial interactions in sub-surface horizons influence agroecosystem sustainability
T01-P-42	Xiaoyue Wang	Impact of botic and anbiotic factors on long term straw decomposition dynamics and microbial community structure
T01-P-43	Yongxing Cui	Soil microbial community structure and nutrient limitation in the desert-grassland ecological transition zone of northern Loess Plateau, China
T01-P-44	Hanling Qian	Ammonia oxidation microbial abundance response to nitrogen application rates in potato soils
T01-P-45	Hong Li	Effect of IAA producing rhizosphere bacteria on seedling vigor and growth of host and non-host plants
T01-P-46	P.W.I.M Chandrasekara	Improved soil biodiversity and macronutrient retention from Banana-Peanut Intercropping Contribute to Reduce Banana Fusarium Wilt Disease
T01-P-47	K.M.S.M. Gangathilaka	The effect of Indole Acetic acid producing rhizosphere bacteria on the nutrition level of seedlings of selected crops in different soils and their potential to be developed as a biofertilizer

Session 02: Global change biology

Time: 1640-1800 **Room: 7th floor**

T02-P-01	Michael Steinwandter	Seasonal dynamics, abundance and diversity of Alpine soil macrofauna in dry grassland along a linear altitudinal gradient
T02-P-02	Ji-Liang Liu	Responses of different spider, springtail and mite taxa to rain pulses in an arid ecosystem
T02-P-03	Hojka Kraigher	Response of ectomycorrhizal communities of beech (Fagus sylvatica L.) and oak (Quercus ilex L., Q. pubescens Wild. and Q. robur L.) seedlings to increased soil temperature, ozone and drought
T02-P-04	Hua Xie	Bayesian Evaluation of Dynamical Soil Carbon Models Using Soil Carbon Flux Data
T02-P-05	Nazia Perveen	Influence of land use and soil properties on soil priming effect: a worldwide analysis
T02-P-06	Ee Ling Ng	Resistance and resilience of grassland ecosystem to drying in the presence of organic input
T02-P-07	Minghua Zhou	Stimulation of N_2O emission by manure application to agricultural soils may largely offset carbon benefits
T02-P-08	Weiwei She	Effects of increased precipitation and nitrogen on bacterial communities of soil and biocrusts in a desert shrubland
T02-P-09	Vinicius Pompermaier	Carbon-source assimilation patterns of epigeal arthropods in natural and human-modified savanna landscapes of central Brazil
T02-P-10	Leilei Xiao	Nano-Fe_3O_4 particles accelerating electromethanogenesis on hour-long timescale in wetland soil
T02-P-11	Xinyu Zhu	Interactions between earthworms and mesofauna affect on CO_2 and N_2O emissions from a long-term conservation tillage soil
T02-P-12	Briones Maria J. I.	Assessing the effects of climate, edaphic properties and soil mesofauna on carbon dynamics in four peatland habitats
T02-P-13	Briones Maria J. I.	Seasonal changes in the abundance and diversity of soil mesofauna in Spanish peatlands
T02-P-14	Jing Ma	Impact of elevated carbon dioxide on the soil bacterial community from a naturally CO_2-EOR area
T02-P-15	Zanyang Wang	Effect of fertilizers on methane production and emission from paddy soil
T02-P-16	Yakov Kuzyakov	Effects of elevated atmospheric CO_2 on soil processes: No changes of pools, but increase of fluxes

16-17 October 2017

Session 03: Soil pollution and bioremediation

Time: 1700-1800 **Room: 7th floor**

T03-P-01	Min Zhu	Unexpected inhibiting effects of biochar on reductive dechlorination of pentachlorophenol in flooded soil
T03-P-02	Baoqin Li	Response of soil microbiota to elevated antimony and arsenic contamination: microbial communities highlight a strong relationship between the innate microbiota and contaminant fractions
T03-P-03	Cajthaml Tomas	Study of nanoiron-biological approach for remediation of co mingled plume contaminated with Cr(VI) and chlorinated ethylenes.
T03-P-04	Trasar-Cepeda Carmen	Modification of microbial activity in a soil spiked with (2-hydroxy-ethyl)trimethylammonium dihydrogen phosphate (Choline dihydrogen phosphate, Choline-DHP)
T03-P-05	Abdul Mohammed MANSUR	Effects of Some Heavy Metals on Urease Activity in Irrigated Soil of Shagari Quarters Along Salanta River Valley, Kano State, Nigeria
T03-P-06	Trasar-Cepeda Carmen	Effect of 1-butyl-3-methylimidazolium tetrafluoroborate [BMIM][BF4] on urease activity in acidic soils
T03-P-07	Yulnafatmawita	Impact of Polluted Irrigation on Soil Chemical Properties and Microbe Population of Rice Field in Dharmasraya, Indonesia
T03-P-08	Ostermann Anne	Veterinary antibiotics can alter symbiotic nitrogen fixation in plants – A greenhouse experiment with Medicago sativa
T03-P-09	Guangxia Liu	Effect of extracellular polymeric substances components on sorption kinetics and isotherms of 2,2',4,4'-tetrabromodiphenyl ether to soil
T03-P-10	Kuan Liu	Dynamic interplay between microbial denitrification and antibiotic resistance under enhanced anoxic denitrification condition in soil
T03-P-11	Qi Li	Aging Shapes the Distribution of Copper in Soil Aggregate Size Fractions
T03-P-12	Yuanchao Zhao	Sophorolipid mitigated the fluctuation of tetracycline resistance genes co-mediated by bacteria and phages in microplastic-contaminated greenhouse soil
T03-P-13	Gaozhong Pu	Accumulation of cadmium and its effects on physiological characteristics in Arundo donax L.
T03-P-14	Juan Chen	Effect of wastewater input on organohalide-respiring bacteria and their potential to remove polybrominated diphenyl ether in Taihu Lake sediment

T03-P-15	Steinberger Yosef	Oil-spill–contamination effects on a soil microbial community in a xeric desert ecosystem
T03-P-16	Shiying He	The impact of silver nanoparticles on soil microbial community and metabolic activity
T03-P-17	Wenjing Qiao	Dechlorination of of α-, β-, γ-, and δ-hexachlorocyclohexane isomers in enrichment cultures
T03-P-18	Na Zhang	Bloom and co-occurrence patterns of antibiotic resistance genes in paddy soils with manure fertilization under mediation of climate and soil attributes
T03-P-19	Zhihao Xu	Heavy metal pollution and potential ecological risk of soil in typical reclaimed industrial sites
T03-P-20	W.M.N.D.K. Wijekoon	Assessment of plant growth promoting rhizobacteria (PGPR) on potential biodegradation of glyphosate pollutant in contaminated soil
T03-P-21	Ugis Kagainis	Does climate warming affect soil mesofauna?
T03-P-22	W.M.N.D.K. Wiijekoon	Potential of Pseudomonas and Bacillus species on glyphosate biodegradation in contaminated soil
T03-P-23	D.N.M.Gunathilaka	Cadmium phytoremediation by arbuscular mycorrhizal fungi-colonized Eichhornia crassipes
T03-P-24	Shafaqat Ali	Citric acid assisted phytoextraction of chromium by Sunflower; morpho-physiological and biochemical alterations in plants

Session 04: Bioorganic fertilizers

Time: 1640-1800 **Room: 7th floor**

T04-P-01	Christoph Tebbe	Responses of the prokaryotic diversity in wheat rhizospheres to seawater irrigation and inoculation with *Azospirillum* brasiliense under field conditions
T04-P-02	Xiaofang Wang	Bacteria-phage local adaptation and resistance-virulence trade-offs shape plant health
T04-P-03	Hilario Padilla	Increasing diversity and sustaining high rice yield with integrated plastic mulch-no till technology in rice-rapeseed cropping system
T04-P-04	Zhi Qu	Long-term fertilization differently affected ammonia oxidation and denitrification linked to N_2O productions
T04-P-05	Lina Li	Dynamics of the metabolically active microbial community in response to the initial pH regulation in flooded paddy soils

Session 05: Soil fauna

Time: 1700-1800 **Room: 7th floor**

T05-P-01	Xin SUN	Changes in diversity and body size of Onychiurinae (Collembola) along an altitudinal gradient in Changbai Mountains, China
T05-P-02	Knyazev Stanislav	Macrofauna of South part of Western Siberia
T05-P-03	Shuai Wang	Consistent responses of N_2O and CO_2 emissions to nitrogen inputs modified by earthworms
T05-P-04	Junwei HU	Methodological studies on removing and reconstructing soil protists with soil microbial communities intact
T05-P-05	Matthew Magilton	Importance of competition for resources in structuring a diverse soil microarthropod community in a temperate Oak woodland. An analysis using stable isotopes $^{15}N/^{14}N$ and $^{13}C/^{12}C$
T05-P-06	Yongjing Dou	Effect of soybean cultivation on soil Collembola community in Sanjiang Plain Wetland, Northeast China
T05-P-07	Bing Zhang	Molecular phylogeny of European Lepidocyrtus (Collembola: Lepidocyrtidae) as indicated by nuclear and mitochondrial markers
T05-P-08	Edith Jucevica	Does climate warming affect soil mesofauna?
T05-P-09	Shaojun Wang	Ants can exert a diverse effect on soil carbon and nitrogen pools in a Xishuangbanna tropical forest
T05-P-10	Liqin Liao	Impact of moso bamboo expansion on diversity and distribution of soil fauna in winter in Lushan
T05-P-11	Daniil Korobushkin	Trait-specific response of soil macrofauna to forest burning along a macrogeographic gradient
T05-P-12	Benslama Mohammed	Fauna Biodiversity of forest soils in Northeastern Algeria
T05-P-13	Pengfei Wu	Differences in spatio-temporal dynamics between soil macrofauna and mesofauna communities: the significances for soil fauna diversity monitoring
T05-P-14	Tida Ge	Effect of P stoichiometry on the abundance of nitrogen-cycle genes in phosphorus-limited paddy soil
T05-P-15	Liang Chang	Effect of tillage on soil microarthropods in black soil region in Northeastern China

T05-P-16	Yuhui Qiao	Influence of historic cadmium-contaminated soil on earthworm communities in a subtropical area of China
T05-P-17	Esperanza HuertaLwanga	Soil macroinvertebrates abundance and functional traits under aminomethylphosphonic acid (AMPA, Glyphosate metabolite) at managed and natural systems in Southeast, Mexico
T05-P-18	Chunyan Zheng	Response of soil microarthropods community to nitrogen and water addition under a wheat-maize cropping system in the North China Plain
T05-P-19	Shaojun Wang	Contribution of Pheidole ant species to modifying soil microbial and physicochemical properties in Xishuangbanna tropical forest
T05-P-20	Shaojun Wang	Urban land use change impacts on community composition and spatiotemporal distribution of earthworm abundance and biomass
T05-P-21	Zhibo Zhao	Responses of protist community to fertilization in three typical agricultural soils in China
T05-P-22	Jing Wang	effects of environmental factors and biotic interactions on soil nematode community in a burned area from larch-betula platyphylla mixed forest in Daxing' anling mountains
T05-P-23	Jie Liu	Spatial relationships between the richness of soil mite communities and environmental factors in the farmland of Northeast China
T05-P-24	Haishan De	Ground-dwelling arthropod communities response to Grazing Intensity in a Desert Steppe in Inner Mongolia
T05-P-25	Stephanie Bird	The impact of aspects garden management on soil mesofauna biodiversity
T05-P-26	Bahar Razavi	Mapping the footprint of nematodes in the rhizosphere: Spatial distribution of enzyme activities

2nd Global Soil Biodiversity Conference

GSBC2 2017

15-19 October

Nanjing, China

PROGRAM and INFORMATION BOOK

Day 2 Poster Session 06-15

Session 06: Soil microbiome

Time: 1640-1800 **Room: 7th floor**

T06-P-01	Gaoyang Qiu	The mechanism of soil microbes response to trace carbon sources-trigger substance response
T06-P-02	Clayton Nevins	Influence of cover crop species on soil microbial diversity at corn growth stages
T06-P-03	Chaolei Yuan	Microbial diversity and composition of selected paddy soils in China
T06-P-04	Pengfei Liu	Syntrophobacteraceae-affiliated species are major propionate-degrading sulfate reducers in paddy soil
T06-P-05	Yufang Wang	Grazing intensity effects on soil microbial community in semiarid grassland on the Loess Plateau of China
T06-P-06	Jun Zhao	Comparative soil microbial communities and activities in adjacent Sanqi ginseng monoculture and maize-Sanqi ginseng rotation systems
T06-P-07	Xinqi Huang	Changes in the soil microbial community after reductive soil disinfestation and cucumber seedling cultivation
T06-P-08	Yian Gu	Early-life microbiome assembly induces trans-generational disease protection
T06-P-09	Liliang Wang	The molecular mechanisms of surface sensing and responding of Escherichia coli O157:H7 to quartz
T06-P-10	Javier Vanegas	Metagenomic characterization of bacterial diversity associated to the rhizosphere of the black mangrove (Avicennia germinans) into a semiarid mangrove of La Guajira, Colombia.
T06-P-11	Samantha Karunarathna	New edible fungi from Southeast Asia: discovery to production
T06-P-12	Han Yan	Analysis of microbial community in soils of coalmine dump with high-throughput sequencing technology
T06-P-13	Corinne Celestina	The soil microbiome plays a key role in the amelioration of subsoil constraints to crop production
T06-P-14	SULTANA NASRIN	Methane oxidation in paddy soils of North-east China using DNA stable isotope probing

T06-P-15	Rui Tao	Nitrous oxide emission and denitrifier communities in drip-irrigated calcareous soil as affected by chemical and organic fertilizers
T06-P-16	Chen Zhu	N-fertilizer-driven association between the arbuscular mycorrhizal fungal community and diazotrophic community impacts wheat yield
T06-P-17	Gaozhong Pu	Profiling elevational diversity patterns between microbes and plants in a typical karst Tiankeng of China
T06-P-18	Jia Tu	Soil bacterial community responses to long-term fertilizer treatments in Paulownia plantations in subtropical China
T06-P-19	Yuqian Tang	Impacts of nitrogen and phosphorus additions on the abundance of nitrogen-cycling functional genes in Chinese forest soils
T06-P-20	Junjie Guo	Distinct dominant forces driving variations in activity, abundance, diversity and composition of ammonia-oxidizer: evidence from a long-term field experiment
T06-P-21	Nana Liu	The biogeography of soil bacteria, fungi, and archaea and their predominant drivers of community assembly
T06-P-22	Chenxu Liu	Effect of phosphorus on soil fungal community compositions in greenhouse
T06-P-23	Gongwen Luo	Long-term fertilization regimes drive the abundance and composition of N-cycling-related prokaryotic groups via soil particle-size differentiation
T06-P-24	Gongwen Luo	Long-term fertilisation regimes affect the composition of the alkaline phosphomonoesterase encoding microbial community of a vertisol and its derivative soil fractions
T06-P-25	Lu Zheng	Maintenance of intracellular pH and change of secreted proteins by Rhodotorula taiwanensis RS1 in response to acid stress
T06-P-26	Yuan Zhao	Chemoautotrophic carbon fixation rates in reservoir sediments
T06-P-28	Shun Han	Shifts in Nitrobacter- and Nitrospira-like nitrite-oxidizing bacterial communities under long-term fertilization practices in the red soil of southern China
T06-P-29	Zhenhua Yu	Long-term application of nitrogen rather than phosphate and potassium fertilizer significantly altered the diazotrophic community structure in a black soil of northeast China
T06-P-30	Chao Wang	Influence of soil phosphorus level in acidic soil on the abundance and community of diazotrophs
T06-P-31	Joana Salles	Transition in land colonization reflects a multi-trait switch in microbiomes

T06-P-32	Bo Ma	Effects of Organic Manure Application on Soil Microbial Community Structure and Nitrogen Transformation Functional Genes
T06-P-33	Wenbo Liu	Bacteria are more associated with soil microbial activities and nutrient-use efficiencies than fungi after short-term organic amendments in a paddy soil
T06-P-34	Bingchen Wang	Changes in soil microbial population influenced by arbuscular mycorrhizae in response to water stress
T06-P-35	A.G.D. Pavithra	Diversity of Archaea in the sediments from different areas of Bohai Sea
T06-P-36	Yang Liu	Short-term warming does not change the bacterial community composition but increases microbial phosphorus limitation in an alpine timberline of the eastern Tibetan Plateau

Session 07: Biodiversity & ecosystem functioning

Time: 1700-1800 **Room: 7th floor**

T07-P-02	Jing Li	Copper pollution increases the resistance of soil archaeal community to changes in water regime
T07-P-03	Sirong Zhang	Effects of composition and functional traits of plant communities on litter decomposition in a subtropical forest
T07-P-04	Galiya Mukhametova	Impact of industrial pollution on the formation of Larix sukaczewii ectomycorrhiza fungus mantle
T07-P-05	Zhengkun Hu	Fertilization simplifies soil biodiversity and reduces the potential of soil functioning in a Tibetan alpine meadow
T07-P-06	Pan Xu	Phragmites australis meets Suaeda salsa on the "red beach": effects of an ecosystem engineer on salt-marsh litter decomposition
T07-P-07	Pingting Guan	Biological soil crust favors fungal channel and improves carbon flow input through micro-food webs in desertification restoration
T07-P-08	Casper Brink	The diversity of diazotrophic bacteria associated with Aspalathus linearis (rooibos) and *Cyclopia spp*. (honeybush) plants
T07-P-09	Qiqi Sun	Spatial distribution of soil microbial community on a steep slope of the Chinese Loess Plateau: bacteria vs. fungi
T07-P-10	YingBin Li	N deposition increased the home-field advantage and changed soil decomposer communities
T07-P-11	Julia Cooper	Measuring soil biodiversity and function in long-term organic and conventional minimum tillage plots
T07-P-12	Xiong Wu	Soil protist communities form a dynamic hub in the soil microbiome
T07-P-13	Weidong Kong	Autotrophic microbial community and their CO_2-fixing potential in Tibetan plateau grassland soils
T07-P-14	ZHUN MAO	A conceptual model describing plant roots - soil biota interaction
T07-P-15	Javier Vanegas	Effect of salinity on fungal diversity through a metagenomic approach in a semiarid mangrove in La Guajira, Colombia.
T07-P-16	Florentine Spaans	What lives under your hedgerow?
T07-P-17	Rasool Nazima	Soil microbial functions differ in range expanding vs native plants

T07-P-18	Astra Ooms	From stress to process: Species traits as predictor of hydrological effects on soil fauna communities and, subsequently, litter decomposition
T07-P-19	Saha Sarmistha	Waste to Wealth: Zooplankton community succession through sewage treatment
T07-P-20	Shengjie LIU	Functional redundancy dampens the trophic cascade effect of spiders
T07-P-21	INOUE KOSUKE	Soil food web structure and its ecological functioning in tow conservation managements in Sumatra, Indonesia
T07-P-22	Bai Ren	The differentiation of microbial community composition and their functional performance in N cycle among three soil types developed from distinct soil patent material
T07-P-23	Juntao Wang	Contrasting elevational distributions of soil prokaryotes in three latitudinal mountain sites
T07-P-24	Gongwen Luo	Deciphering the associations between soil microbial diversity and ecosystem multifunctionality driven by long-term fertilization management
T07-P-25	Yan Chen	Organic amendments shift phosphorus correlated microbial co-occurrence pattern in peanut rhizosphere network in long-term fertilization regimes
T07-P-26	Xian Xiao	Drivers underlying distinct spatial patterns of soil bacterial and fungal communities in moso bamboo plantations
T07-P-27	Beibei Zhou	Succession of methanogens in cattle manure amended paddy soil during rice cultivation and its relationships with CH4 emission
T07-P-28	Long Li	Effects of spring thawing process on soil urease activity in three forest soils of Changbai Mountain
T07-P-29	Long Li	Effects of freezing and thawing cycles on soil microbial biomass carbon, nitrogen and nitrogen mineralization in three temperate forests
T07-P-30	Long Li	Soil organic carbon and particulate fractions of different forest types in Changbai Mountain during spring thawing season
T07-P-31	Ying Li	How the long-term nitrogen, phosphate addition impact soil bacterial community and metabolic pathway, a study in Inner Mongolia typical grassland
T07-P-32	Bei Liu	Active methanotrophs identification by stable isotope probing of two different permafrost soils from Greenland
T07-P-33	Mesfin Gebremikael	Does bacterial grazing by amoeba compensate root damage by a cyst nematode
T07-P-34	Gunina Anna	Response of soil microbial community to afforestation with pure and mixed species
T07-P-35	Yan Chen	Effects of long-term fertilizations on nitrogen and phosphorus transformation in red acid soil

Session 08: Extreme environments

Time: 1640-1800 **Room: 7th floor**

T08-P-01	Petr Heděnec	Temporal response of soil prokaryotic communities to acidification and alkalization under laboratory conditions
T08-P-02	Akhtar Zeeshan	Health risk assessment due to brick kilns emissions at Ghari Atta Muhammad, Peshawar
T08-P-03	Rezaul Karim	Temporal responses of two wheat cultivars under phosphate starvation
T08-P-04	Caiwen Xue	Over-expression of RHR1 Enhances Root Hair Elongation under Phosphate Deficiency in Arabidopsis
T08-P-05	Lijiao Xu	Arbuscular mycorrhizal fungi improve plant drought tolerance through regulation of key functional genes
T08-P-06	Yunjiang Liang	Effects of freezing and thawing on soil phosphorus of apple-pear orchard in Longjing City

Session 09: Restoration Ecology

Time: 1700-1800 **Room: 7th floor**

T09-P-01	Jan Frouz	Effects of soil macrofauna plant interactions on soil formation and plant community development during primary succession in post mining sites
T09-P-02	Xiaofei Lv	Soil bacterial community structure and function shift along a vegetation succession in coastal ecosystem
T09-P-03	Jing ZHANG	Precipitation mediate trait complementarity between fine roots and arbuscular mycorrhizal fungi of Stipa purpurea in Tibetan alpine steppe
T09-P-04	Guitian Yi	development of soil microbial communities during subtropical forest ecosystem restoration
T09-P-05	Zhanbin Luo	The diversity changes of soil bacterial communities stimulated by environmental variables in six post-mining restoration areas
T09-P-06	Yongliang Mo	Effects of inland lake shrinkage on microbial composition and CH_4 oxidation activity
T09-P-07	Zhen Ni	Assessment of habitat preference and recolonization ability of Collembola to bare alkaline patches
T09-P-08	P.N. Yapa	Forest dieback at Horton Plains, upper montane forest of Sri Lanka: Do deterioration of arbuscular mycorrhizae affect forest health?

Session 10: Aboveground-belowground interactions

Time: 1640-1800 **Room: 7th floor**

T10-P-1	Eric Blanchart	Attractancy of bacterivorous nematodes to various upland rice genotypes growing in a tropical soil in Madagascar
T10-P-2	Bing Wang	Grazing-induced changes in soil carbon and nitrogen mineralization are explained by soil food web on the Mongolian Plateau
T10-P-3	Jianping Wu	Long-term nitrogen addition promotes carbon sequestration mainly by reducing soil microbial diversity in a subtropical Chinese fir forest
T10-P-4	Marco Ilardi	Dynamic changes in community assemblages of soil mesofauna, driven by perturbations and defined by aboveground-belowground linkages
T10-P-5	Heng GUI	The arbuscular mycorrhizal fungus Funneliformis mosseae alters bacterial communities in subtropical forest soils during litter decomposition
T10-P-6	Peter Mortimer	Arbuscular mycorrhiza enhance the rate of litter decomposition while inhibiting soil microbial community development
T10-P-7	Yanfei Sun	Revegetated shrub species recruit different soil fungal assemblage in a desert ecosystem
T10-P-8	Ruilin Huang	Interactions between above- and belowground communities are weakened by More than 150-year fertilization
T10-P-9	Chao Xu	Contrasting responses of soil microbial community composition and enzyme activities to forest conversions can be explained by fine root biomass
T10-P-10	Hongmiao Wu	Rhizosphere chemical dialogue in the Radix pseudostellariae rhizosphere under continuous monoculture regimes
T10-P-11	Johanna Pausch	Carbon input by roots into the soil: Quantification of rhizodeposition from root to ecosystem scale
T10-P-12	Adelia González Arzac	Soil fauna community and litter decomposition after the introduction of pine plantations along a precipitation gradient in Patagonia, Argentina

Session 11: Biogeochemical interface in soil

Time: 1700-1800 **Room: 7th floor**

T11-P-01	Eric Blanchart	Combining dolomite and bacterivore nematodes to increase P flow from the soil to the plant: a ^{32}P labelling experiment
T11-P-02	Biao Zhu	Microbial responses to nitrogen and phosphorus addition in three contrasting grassland ecosystems
T11-P-03	Shuang Wang	The effect of mineral composition on microbial community structure in artificial soils
T11-P-04	Adrian Langarica-Fuentes	Effect of model root exudate on denitrifier community dynamics and activity at different WFPS levels
T11-P-05	Xinyu Zhang	Vegetation Recovery Influences Nitrogen functional genes along soil profiles at the Puding Karst Critical Zone Observatory
T11-P-06	Chengcheng Qu	Surface complexation modeling of Cu(II) sorption to montmorillonite, bacteria, and their composites
T11-P-07	Yuanqi Chen	Effects of understory removal and tree girdling on leaf litter decomposition and nutrient release in two subtropical Eucalyptus plantations
T11-P-08	Zhen Liu	Bacterial strains isolated from desert soil induce carbonate precipitation
T11-P-09	Xingmin Rong	The effects of interfaces of goethite and humic acid (HA)-goethite complex on microbial degradation of methyl parathion
T11-P-10	Qiufang Zhang	Do Rhizophora mangle-derived tannins affect microbial communities and biochemical cycles in soil?

Session 12: Soil biogeography

Time: 1640-1800 **Room: 7th floor**

T12-P-01	Meixiang Gao	Negative spatial and coexisting patterns and species associations are uncommon for carrion beetles (Coleoptera: Silphidae) at a small scale
T12-P-02	Ying Wu	Precipitation alter functional group interactions in soil food web on the Mongolia Steppe
T12-P-03	Hiroshi Ikeda	Evolution of a key life-history trait greatly affects community assembly over evolutionary time scales in megascolecid earthworms
T12-P-04	Shangwen Xia	Spatial heterogeneity of soil nitrogen in a subtropical forest in China
T12-P-05	Yuxi Guo	The local and region-scale structure of soil macrofauna metacommunity
T12-P-06	Jing Tian	Soil organic matter availability and climate drive latitudinal patterns in bacterial diversity from tropical to cold-temperate forests

Session 14: Cutting-edge methods

Time: 1700-1800 **Room: 7th floor**

T14-P-01	David Myrold	Taxon-specific utilization of different N sources by forest soil microorganisms
T14-P-02	Alain Brauman	Biofunctool: An in-field package to assess soil quality based on soil functioning
T14-P-03	Liew Kian Heng	Homemade biochar in urban singapore
T14-P-04	Yakov Kuzyakov	Position-specific labeling and tracing: New isotopic tool to trace the fate of carbon in soil
T14-P-05	Bahar Razavi	Hotsphere illumination: localization of enzyme activities in soil

17-18 October 2017

Session 15: Biochar for soil biota and biodiversity

Time: 1640-1800 **Room: 7th floor**

T15-P-01	Jaya Nepal	Effect of Biochar of various origins on Soil Physical & Chemical Properties at Paklihawa, Nepal
T15-P-02	Yanghui Sui	Biochar and nitrogen amendment helps enhance rice nitrogen use efficiency and reduce nitrous oxide emission in a moderate fertility rice paddy
T15-P-03	Xiao Wang	Biochar reclaimed the health of degraded saline-sodic coastal soil in the Yellow River Delta
T15-P-04	Haifei Lu	Straw biochar's persistent impacts on microbial diversity of paddy soils
T15-P-05	Raghunath Subedi	Low temperature manure-based biochar significantly altered crop yield, microbial community structures and activities of enzymes in soil
T15-P-06	Zhongmin Dai	Bacterial community composition associated with pyrogenic organic matter varies with its pyrolysis temperature and colonization environment
T15-P-07	Yingliang Yu	Biochar addition and bacterial inoculation can promote nitrogen use efficiency and maintain the soil bacterial diversity in intensive cultivated soil
T15-P-08	Lijun Chen	Biochar Improved soil ecosystem multifunctionality by induced changes in soil water storage capacity and pH
T15-P-09	Yan Ma	Application-Rate-Dependent Effects of Straw Biochar on Control of Phytophthora Blight of Chilli Pepper and Soil Properties

Keynote Speakers' Biographies

Ren-Fang SHEN

16 October, 09:00

Prof. Dr. Renfang Shen is the Director General of Institute of Soil Science, Chinese Academy of Sciences; Director of State Key Laboratory of Soil and Sustainable Agriculture. Winner of One Hundred Talents, Chinese Academy of Sciences in 2002. Prof. Shen's research has centered on adaptive mechanism of plant-soil system under acidic stresses and efficient nutrient-uptake and utilization in crops. His lab works intensively on the interactive mechanisms between Al (aluminum) and nutrient elements (NP) and physiological consequence on plant growth under acidic stress. He has been awarded with numerous prizes and honors including Distinguished Academic Leader (333 Advanced Talents) in 2007 and 2015; the Distinguished Young Scientist Fund of the National Natural Science Foundation in 2011. He serves as the President of Soil Science Society of China; Member of Standing Committee of Chinese Society of Plant Nutrition and Fertilizer; Member of National Technical Committee 404 on Soil Quality of Standardization Administration of China; Member of International Scientific Advisory Council of International Soil Reference and Information Centre (ISRIC – World Soil Information); Member of Internal Steering Committee of the 7th & 8th International Symposium on Plant-Soil Interactions at Low pH. Prof. Shen sits on the editorial boards of scientific journals in the fields of Plant and Soil Sciences, and he also serves as the Editor-in-chief of Pedosphere.

Diana Wall

16 October, 09:30

Dr. Diana Wall, University Distinguished Professor at Colorado State University was appointed as the Founding Director of the School of Global Environmental Sustainability in 2008. A professor in the Department of Biology and Senior Scientist at the Natural Resource Ecology Laboratory, Diana is responsible for helping faculty and students contribute to progress towards a sustainable future.A soil ecologist and environmental scientist, Diana is actively engaged in research exploring how life in soil (microbial and invertebrate diversity) contributes to healthy, fertile and productive soils and thus to society, and the consequences of human activities on soil globally. Her research on soil biota, particularly soil nematodes, extends from agroecosystems to arid ecosystems.Diana has spent more than 25 seasons in the Antarctic Dry Valleys examining how global changes impact soil biodiversity, ecosystem processes and ecosystem services. She currently serves as Science Chair for the Global Soil Biodiversity Initiative.Diana served as President of the Ecological Society of America, the American Institute of Biological Sciences, and the Society of Nematologists. She received the 2013 Tyler Prize for Environmental Achievement, and is a recipient of many awards recognizing her research including Honorary Membership in the British Ecological Society in 2016, the 2015 Ulysses Medal from the University College Dublin, the SCAR President's Medal for Excellence in Antarctic Research and the Soil Science Society of America Presidential Award. Wall Valley, Antarctica was named in 2004 to recognize her scientific contributions. She is a Fellow of the American Association for the Advancement of Science, the Ecological Society of America and the Society of Nematologists and holds an Honorary Doctorate from Utrecht University, The Netherlands. She received her Ph.D. at the University of Kentucky, Lexington.

Luca Montanarella — 16 October, 10:30

Dr. Luca Montanarella is scientific project manager in the European Commission since 1992. He leads the Soil Data and Information Systems activities of the Joint Research Centre in support to the EU Thematic Strategy for Soil Protection and numerous other soil related policies, like the Common Agricultural Policy (CAP), the UNCCD, UNFCCC, CBD, etc… He is also responsible of the European Soil Data Centre (ESDAC), the European Soil Information System (EUSIS) and the European Soil Bureau Network (ESBN). Recently, he is in charge of supporting the establishment of the Global Soil Partnership (GSP) at FAO, and currently chairing the Intergovernmental Technical Panel on Soils (ITPS) and the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES) Land Degradation and Restoration Assessment. He has received numerous awards and memberships and has more than 200 publications, books and reports available.

Christoph C. Tebbe — 16 October, 10:55

Dr. Christoph C. Tebbe is a Research Director in the Thünen Institute of Biodiversity at the Federal Research Center for Rural Areas, Forestry and Fisheries, located in Braunschweig, Germany. He is also Adjunct Professor for Microbiology at the Technical University of Braunschweig. He has been a former editor of FEMS Microbiology Ecology and he is the Editor-in-Chief of the European Jou rnal of Soil Biology. Dr. Tebbe has been a member of the Editorial Board of Environmental Microbiology. For 8 years, he has been a member of the Panel on Genetically modified Organisms at the European Food Safety Authority (EFSA) in Parma, Italy, where he is involved in the environmental risk assessment of genetically modified plants and microorganisms. His appointment at EFSA will continue for one more year. Dr. Tebbe studied Biology at the University of Münster in Germany and did his Ph.D. in the group of Klaus Domsch and Hans Reber at the Institute for Soil Biology, Federal Research Center for Agriculture in Braunschweig. As a Post-Doc Dr. Tebbe worked for two years in the group of Prof Betty Olson at the University of California, Irvine and subsequently started his own group at his old Institute in Braunschweig, which transformed to the Thünen Institute in 2008. He has been the initiator and Conference Chair of the Thünen Symposium of Soil Metagenomics, which took place in 2010, 2013, and 2016, the subsequent expected for 2019.

Dr. Tebbe's group has published more than 100 peer reviewed papers in international journals and book chapters. His main research is on soil microbial community analyses at different spatial scales where he considers structural and functional aspects mainly related to the transformation of carbonaceous compounds. Most methods applied are linked to soil nucleic acid analyses and independent of cultivation. His group is exploring and applying methods related to soil metagenomics and network analyses. Dr. Tebbe's team has also extensively studied soil bacteria in rhizospheres and in the gut of soil invertebrates, especially Collembola, but recently also in Amphibia in collaboration with Prof. Miguel Vences, Technical University of Braunschweig,. Other previous work relates to microbial community analyses in rumen, composts, and in biogas reactors, and studies on the degradation of chlorinated compounds in the absence of oxygen in aquifers. Dr. Tebbe has been involved as an evaluator and researcher in international projects and collaborations with colleagues from Europe, Brazil, Mexico, Cuba, Israel, and India.

Ji-Zheng (Jim) HE

16 October, 11:20

Dr. He is Professor and Head of Department of Environmental Soil Science in the Research Centre for Eco-Environmental Sciences, Chinese Academy of Sciences (CAS), and Professor of Molecular Soil Ecology at The University of Melbourne, Australia. His research interests focus on the soil microbial biogeography and biogeochemical cycles of elements in soil ecosystems. His research employs advanced bio-molecular and physicochemical approaches to understand the distribution and diversity of microbial communities in soils, and the processes and mechanisms of microbes-mediated element (e.g., N) cycles. Dr He received his MSc and PhD degrees in Soil Science from Huazhong Agricultural University in Wuhan in 1989 and 1992, respectively. He then studied Molecular Ecology from Griffith University in Australia and subsequently joined the Chinese Academy of Sciences at Beijing as a research professor supported by Hundred-Talent Program of Chinese Academy of Sciences in 2005. He was appointed as Professor of Molecular Soil Ecology at The University of Melbourne in 2014.

Dr. He has published 150 peer reviewed papers in international journals (http://www.researcherid.com/rid/A-4488-2009) which have been cited over 4400 times with an H index of 35. His research demonstrated the predominant role of ammonia-oxidizing bacteria (AOB) rather than ammonia-oxidizing archaea (AOA) in nitrification of nitrogen-rich soils (Nature Geoscience, 2009) and the predominant role of AOA in acidic soils (EM, 2007; PNAS USA, 2010; ISME J, 2012). The paper on soil ammonia oxidisers in acidic soils which published in Environmental Microbiology in 2007 has been cited over 430 times. He serves international journals as Subject editor/ associate editor for Journal of Soils & Sediments and Soil Research, as editorial board member for FEMS Microbiology Ecology, Applied and Environmental Microbiology, Environmental Science and Pollution Research, Scientific Reports, and Frontiers in Microbiology.

Thomas Bell

16 October, 11:45

Dr Thomas Bell (bellmicrobelab.wordpress.com) is a Reader in Microbial Ecology and a Royal Society University Research Fellow at Imperial College London. His doctoral research at the University of Oxford (2001-2006) remains one of the strongest pieces of evidence linking bacterial biodiversity and ecosystem functioning. His doctoral research also revealed among the first bacterial biogeographic patterns using molecular methods.

His subsequent research at the University of Oxford (2006-2011) and at Imperial College has followed these themes, focusing particularly on the interplay between ecological and evolutionary processes in microbial communities using laboratory microcosms and field experiments. Having focused on aquatic systems in his earlier research, he is a newcomer to soil. He is part of current efforts to link land usage, soil biodiversity, and ecosystem functioning across the United Kingdom (www.soilsecurity.org/u-grass) and to understand how bacteria disperse around soil environments.

Wim van der Putten

17 October, 08:30

Wim van der Putten graduated at Wageningen University in 1984 with a degree in ecology and then moved to the Institute for Ecological Research at Oostvoorne, The Netherlands. In 1989 he gained his PhD and Wageningen University and currently, he is head of the Terrestrial Ecology at the Netherlands Institute of Ecology (NIOO) and extraordinary professor in Functional Biodiversity at Wageningen University. Wim's main interest is in aboveground-belowground multitrophic interactions, plant-soil feedback, succession, (soil) biodiversity, invasions, and climate change-induced range shifts. In 2004, he was awarded a VICI grant in order to study consequences of rapid range shifts due to current climate warming and in 2012 an ERC Advanced grant on community re-assembly under climate warming. In 2015 he was elected member of the Royal Netherlands Academy of Arts and Sciences. Wim has co-authored an overview report on soil biodiversity for the EC DGXI, a book on soil ecology, and is co-editor of both the European and Global Atlases of Soil Biodiversity. He co-founded the Wageningen Centre for Soil Ecology and the Global Soil Biodiversity Initiative (https://globalsoilbiodiversity.org/). Since 2016, he is member of the Board of Reviewing Editors of Science. Wim van der Putten has been coordinator of a number of European research projects (EUREED, CLUE, INVASS, EcoTrain), as well as PI in others (TLinks, Biorhiz, Consider, Soilservice, EcoFinders, and Liberation). He has been co-editor of a book on Soil Ecology, as well as on the European Atlas of Soil Biodiversity. Full list of publications on: https://nioo.knaw.nl/nl/employees/wim-van-der-putten#quicktabs-qt_personal_page_nl=4 Research ID: http://www.researcherid.com/rid/C-3707-2011 Orchid: http://orcid.org/0000-0002-9341-4442

Yong-guan Zhu

17 October, 09:00

Dr. Yong-guan Zhu is a Professor of Environmental Biology, the Director General of the Institute of Urban Environment, Chinese Academy of Sciences (CAS). He has been working on the biogeochemistry of nutrients, metals and emerging pollutants (such as antibiotics and antibiotic resistance genes). Professor Zhu is a leader in taking multi-scale and multi-disciplinary approaches to tackle soil and environmental problems. Before returning to China in 2002, he was working as a research fellow (Supported by the Royal Society London), the Queen's University of Belfast, UK (1994-1995); and a postdoctoral fellow in The University of Adelaide (1998-2002), Australia. He obtained his BSc from Zhejiang Agricultural University in 1989, and MSc from CAS in 1992, and then a PhD in environmental biology from Imperial College, London in 1998. Dr Zhu is currently the co-editor-in-chief of Environmental Technology & Innovation (Elsevier), associate editor of Environment International (Elsevier), and editorial members for a few other international journals. He is a scientific committee member for the ICSU program on Human Health and Wellbeing in Changing Urban Environment, and served for nine years as a member of Standing Advisory Group for Nuclear Application, International Atomic Energy Agency (2004-2012). Professor Zhu is the recipient of many international and Chinese merit awards, among them including TWAS Science Award 2013, National Natural Science Award 2009; Professor Zhu has published over 255 papers in international journals, and these publications have attracted over 10,000 citations (Web of Science) with an H-index of 56.

Qi-Rong Shen

17 October, 09:30

Dr. Qi-Rong SHEN is Head of the Academic Committee of Nanjing Agricultural University. His main research interests have focused on soil microbial communities, cultivation of plant growth promoting bacteria and application of bio-organic fertilizer. Prof. Shen has developed novel microbial techniques for improving soil quality, and these techniques were adopted by more than 500 companies nationwide. The combination of soil fumigation and bio-organic fertilizers is widely used in order to prevent and control soil borne diseases. These accomplishments were well recognized by numerous honors and prizes including National Innovation Prize, Distinguished Professor for higher education and National Outstanding Scientist Award. Prof. Shen has trained 101 graduate students and 81 doctorial students. He has led many important research projects and serves as PI for National 973 Program, Steering committee of National 863 Program and of the 6th and the 7th National Natural Science Foundation of China. Prof. Shen also plays important roles in professional organizations as Convener of the Academic Committee of the State Council Academic Committee in the field of Agricultural Resources and Environment, Chairman of Chinese Organic Fertilizer Industry Technology Innovation Alliance, Vice president of China Soil Society, the Professional Committee Director of China Plant Nutrition Society of Biological and Organic Fertilizer, Leader of the expert group in Ministry of Agriculture Arable Land Quality Construction and Management, Member of the Committee of Ministry of Education and Science and Technology and Ministry of Agriculture, Member of the Academic Committee of the Chinese Academy of Agricultural Sciences, Group Leader of Jiangsu Provincial Natural Science Foundation of Agriculture Discipline Team. Prof. Shen is a leading figure in organic fertilizer industry in China, and has published more than 350 peer-reviewed publications including 151 SCI articles as the first author or corresponding author. Prof. Shen ranked as highly-cited Chinese scholars by ELSEVIER in 2014, 2015 and 2016. He also has 54 Chinese patents and 6 international PCT patents, and more than 40 of them were applied into practical use by biofertilizer companies.

Yan-Fen Wang

17 October, 10:30

Dr. Yan-Fen Wang is a soil ecologist and vice president of University of Chinese Academy of Sciences. She obtained her bachelor degree of soil science in China Agricultural University and completed Ph.D research at the Instiute of Botany, Chinese Academy of Sciences. The central research theme of Dr. Wang is the ecological and evolutionary mechanisms that have shaped and being shaping productivity of terrestrial ecosystems with primary concerns on grassland. Dr. Wang is particularly interested in microbially-mediately processes for sustainable cycling of soil nutrients in the context of global climiate changes. She and her colleagues have exploited various techniques and conceptual models across a wide range of disciplines to tackle the carbon and nitrogen turnovers across hierarchical scales. Dr. Wang leads a national-wide budget assessment of greenhouse gas methane oxidation by forest and grassland, and she and her colleagues discovered a novel methane producer that plays important role in methane emission in Tibetan plateau. Dr. Wang's contribution is recognized by scientific communities, and serves as vice president of China Society of Natural Resources, an independent board member of the International Center for Integrated Mountain Development (ICIMOD) and a standing council member of the Ecological Society of China. Dr. Wang has been primarily involved in the implementation of top-down strategic programme in the Bureau of Life Science and Biotechnology of CAS prior to her present post as vice president. Dr. Wang has published more than 100 papers in the major scientific journals such as PNAS, Ecology and Global Change Biology, and serves as Editor and editorial board for a number of scientfice journals. Dr. Wang considers training of young scientists as one of her most important roles in research, and has had numerous graduate students and postdoctoral fellows. Many of her students and postdocs have gone on to forge successful careers in ecology and relevant research field for example in China, Australia and New Zealand

Aimee Classen

17 October, 10:55

Dr. Aimee Classen is an Associate Professor in the Rubenstein School of Environment & Natural Resources at the University of Vermont. She received her PhD in 2004 from Northern Arizona University, her BA from Smith College, and has held positions at Oak Ridge National Laboratory, The University of Tennessee, and the University of Copenhagen. Broadly, her work explores how ecosystems function and how interactions, both biotic and abiotic, influence patterns and processes within and among ecosystems. Her research happens across scales from the micro (soil food webs) to the macro (regional carbon fluxes) as well as across diverse terrestrial ecosystems (forests, meadows, bogs, tropics, boreal, temperate). Classen uses a combination of observations, experiments, and models to answer ecological questions. Classen is the Editor in Chief of Ecological Monographs and has served on the editorial bars of a number of other journals. She is the co-PI of the WaRM (Warming and Removal in Mountains) projects that explores how warming and changes in species interactions will alter ecosystem function in mountains around the world.

Brajesh Singh

17 October, 11:20

Dr. Brajesh is the Director of the Global Centre for Land-Based Innovation, and a Professor at the Hawkesbury Institute for the Environment, Western Sydney University, Australia. He has a strong research focus in the area of global (including land-use) change, biodiversity, ecosystem functions and sustainable development and is currently working on multiple projects to develop solutions for global change induced impacts on agricultural productivity and environmental sustainability.

Through his fundamental research, he aims to identify the quantitative relationships between microbial diversity and ecosystem functions and how natural/anthropogenic pressures such as land-use change and pollution affect these. His applied research harnesses the knowledge gained in fundamental research to contribute towards sustainable development, environmental protection and food security. As a trained microbiologist, he works at the microscopic/molecular/genomic level and scales up this information to landscape and global levels for practical applications.

Braj serves on multiple international panels including the EU's International Bioeconomy Forum as an expert advisor. He has published well over 100 peer reviewed papers including in Nature, Nature Reviews Microbiology and PNAS. He has also co-edited books including the Global Atlas of Soil Biodiversity.

He obtained his PhD in 2003 from Imperial College, London and then worked at the Macaulay Institute, Aberdeen, UK, from 2002 to 2010. He moved to Western Sydney University in 2010 where he held a number of positions including the Theme Leader at the Hawkesbury Institute for the Environment before taking the Director's role at the Global Centre for Land-based Innovation.

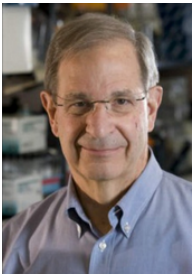
Laurent Philippot

17 October, 11:45

Dr. Laurent Philippot is Director of Research at the French Institute for Agricultural Research (INRA) and is leading a research group at the department of Agroecology in Dijon. He did a sabbatical at Georgia Tech in Atlanta and at the Swedish University of Agricultural Science (SLU) in Uppsala in 2000 and 2009, respectively. His research focuses on bridging microbial community ecology, microbial processes and ecosystem functioning using microbial guilds involved in nitrogen cycling and greenhouse gas. He is serving as Senior Editor of The ISME Journal and as editorial board member for FEMS Microbiology Ecology, Applied and Environmental Microbiology and Frontiers in Microbiology. He has over 120 peer-reviewed articles in ISI indexed international journals, including Nature Climate Change, Nature Reviews Microbiology, The ISME J, Trends in Plant Science, Global Change Biology, etc. with ISI citations of >6000 and H-index of 43. (Research ID: http://www.researcherid.com/rid/G-5598-2011). He participated in several European research projects such as EcoFinders, NORA and Metaexplore and his currently involved in the ERA-NET Biodiversa project “Digging Deeper”.

Jim Tiedje

18 October, 08:30



Dr. Jim Tiedje is University Distinguished Professor of Microbiology and Molecular Genetics and of Plant, Soil and Microbial Sciences, and is Director of the Center for Microbial Ecology, at Michigan State University. His research focuses on microbial ecology, physiology and diversity, especially regarding the nitrogen cycle, biodegradation of environmental pollutants and more recently on the use of genomics and metagenomics to understand speciation, community structure and functions. He has served as Editor-in-Chief of Applied and Environmental Microbiology and Editor of *Microbial and Molecular Biology Reviews*. He has over 500 refereed publications with google scholar citations of >70,000 and h-index 134. He served on the Board on Life Sciences of the National Research Council and Co-Chaired the Committee on the New Science of Metagenomics report. He served on EPA’s Science Advisory Panel and on DOE’s Biological and Environmental Research Advisory Committee. He was President of the American Society for Microbiology (ASM) and the International Society of Microbial Ecology (ISME). He shared the 1992 Finley Prize from UNESCO for research contributions in microbiology of international significance and was awarded an Einstein Professorship in 2010 by the Chinese Academy of Sciences. He is Fellow of the AAAS, the American Academy of Microbiology, the Soil Science Society of America, the Ecological Society of America, and a member of the U.S. National Academy of Sciences.

Karl Ritz

18 October, 09:00

Dr. Karl Ritz is a soil ecologist, convinced that soil is the most remarkable, complex and fascinating material on the planet, as well as absolutely fundamental to past and future civilisations. He is a passionate fundamental researcher, who focuses on understanding of the origins and functional consequences of the compositional and spatial organisation of soil communities. This work underpins the development of frameworks for understanding factors that regulate the activity of life belowground, systems to manage the biota appropriately, and incisive procedures for assessing and monitoring soil health. One of his key concepts is that of soil 'architecture', and his work on visualising how soil systems are organised in space and time - both literally and conceptually - has revealed many new insights into how life belowground is organised, and the functional consequences of this for the earth system.A graduate of the University of Reading and University of Bristol, he spent 18 years based in Government research institutes in Scotland, studying many aspects of soils in production systems, then in 2002 took a Chair in Soil Biology at Cranfield University at the National Soil Resources Institute. He joined University of Nottingham in October 2014 as Professor of Soil Biology. His research portfolio is funded by wide range of sources including: UK Biotechnology and Biological Sciences Research Council, Natural Environment Research Council, Engineering and Physical Sciences Research Council, Environment Agency, Department of Environment Food and Rural Affairs, Syngenta and others. Recent grants include BBSRC-funded projects studying the fundamental basis of soil biological resilience, microbial controls upon structural dynamics and hydraulic behaviour at the soil surface, and the potential of using maincrop cereals to remediate and condition soil structure via manipulation of the soil microbiota.He has published extensively and widely across the discipline, with over 120 peer-reviewed papers, dozens of book chapters and hundreds of conference presentations. He is currently Editor-in-Chief of the high-ranking journal, Soil Biology Biochemistry and has held long-standing editorial roles with FEMS Microbiology Ecology, Mycological Research and the Journal of Soil Science and Plant Nutrition, as well as some books.

Xing-Guo Han

18 October, 09:30

Dr. Xingguo Han is a professor in the Institute of Botany, the Chinese Academy of Sciences. He was graduated from the University of Georgia with a doctoral degree in ecology, and had experience on studies of biogeochemical processes in agricultural and forest ecosystems in the USA. He joined the Chinese Academy of Sciences in 1992, and has ever since been working on the structure and function of grassland ecosystems in the vast Inner Mongolia steppe. His research interests include, but not limited to, biodiversity and ecosystems functions as affected by overgrazing and global climate change using long-term field inventory data, large-scale transect survey and manipulative experiments. He has supervised over 100 graduate students and postdocs, and authored or co-authored over 200 papers in peer-reviewed international journals. Supported by several national and international funding agencies, he has been very actively involved in cooperative research projects with scientists from North America and Europe. He has served on panels of several national programs. Dr. Han has been the President of Botanical Society of Botany and the Vice-President of Ecological Society of China. He was also a Regional Councilor of the International Union for the Conservancy of Nature.

Jennifer Lau

18 October, 10:30

Dr. Jennifer Lau is an Associate Professor of PlantBiology at Michigan State University's Kellogg Biological Station &Department of Plant Biology. Dr. Lau studies the evolutionary ecology ofplant-microbe interactions, including work investigating how plants andassociated belowground microbial communities respond both ecologically andevolutionary to drought stress, studies testing basic theoretical predictionsthat nitrogen deposition will cause the evolution of less cooperative rhizobiummutualists, and field experiments testing how various global changes alternatural selection on plant traits.Dr. Lau received her undergraduate degree from DukeUniversity, her PhD from the University of California at Davis, and completed apostdoc at the University of Minnesota. She was awarded the American Society ofNaturalists Young Investigators Award, has served as an associate editor forthe Journal of Ecology, Oecologia, and American Journal of Botany, isa member of the American Society of Naturalists executive board, and hasreceived multiple teaching awards for her efforts to bring authentic researchexperiences to undergraduate classrooms.

Kiwamu Minamisawa

18 October, 10:55

Dr. Kiwamu Minamisawa is Professor of Environmental Plant Microbiology, Graduate School of Life Sciences, Tohoku University, and President of Japanese Society of Microbial Ecology (JSME; 2012-2016). His research focuses on the diversity and functions of plant-associated bacteria including soybean bradyrhizobia and microbial communities associated with rice and soybean plants in agricultural settings. In particular, he has been bridging microbial genomics/metagenomics and microbial processes in the environments with respect to nitrogen cycling and greenhouse gas emission on the earth. He is serving as Senior Editor of The ISME Journal (2011-2016) and Editor-in-Chief of Microbes & Environments (M&E; 2007-2010), and as editorial board member for Applied and Environmental Microbiology, Molecular Plant-Microbe Interactions and Plant Cell Physiology. He has approximately 200 peer-reviewed articles in ISI indexed international journals, including Nature Climate Change and PNAS.

Jim Prosser

18 October, 11:20

Jim Prosser is Professor in Environmental Microbiology in the School of Biological Sciences at the University of Aberdeen. His research focuses on the diversity and ecosystem function of microbial communities and on the use of molecular techniques to characterise natural communities of microorganisms in soil and in aquatic environments. This research has uncovered novel microbial groups involved in biogeochemical cycling processes, in particular nitrification, which plays a central in the global nitrogen cycle. It has demonstrated the role of pH and ammonia supply on ammonia oxidiser communities and how community composition influences ecosystem functions, including nitrous oxide emissions. He is a Fellow of the Royal Society, the Royal Society of Edinburgh and the American Academy of Microbiology, Francis Clark Distinguished Lecturer in Soil Biology 2007, Publications Manager for FEMS Microbiology Ecology, Special Reviews & Commentaries Editor for ISME Journal and on the Editorial Boards of several other microbial ecology journals. He is also a Director of NCIMB Ltd., a microbiological services spin-out company from the University of Aberdeen.

Fatima Moreira

18 October, 11:45

Prof. Fatima Maria Moreira is a Full Professor at Federal University of Lavras, Minas Gerais, Brazil. She was a researcher at National Institute of Amazonia Research (Manaus, Amazonas, Brazil) from 1978 to 1993. Since 1993 she is Full Professor at the Soil Science Department in the Federal University of Lavras (Minas Gerais, Brazil). From 2002 to 2010 she was the Brazilian Coordinator of the multi-disciplinary, multi-institutional and multinational project with the Tropical Soil Biology and Fertility Programme of the International Center for Tropical Agriculture (TSBF / CIAT) (Kenya) with funding from the United Nations (UN) and the implementation of United Nations Environmental Programme: Conservation and sustainable Management of Below-Ground Biodiversity (GF2715/02). Since 1978 she coordinated and participated in projects funded by CNPq, Fapemig and FINEP. She has published 180 articles in specialized journals, 12 national and international papers in conference proceedings, 48 chapters in books and 5 books. She has also 14 books edited. Among the publications there are descriptions of three new species of N2-fixing bacteria (Azospirillum amazonense Mesorhizobium plurifarium and Azorhizobium doebereinerae) and reporting for the first time this feature in Cupriavidus necator, Burkholderia fungorum, B.lata and B.contaminans. Two strains of Bradyrhizobiumsp. (INPA3-11B and UFLA3-84) were approved as inoculant for cowpea by the Ministry of Agriculture and Livestock. 110 graduates and 178 undergraduate students were supervised. Since March 2011 she is coordinator of the Graduate Programme in Soil Science/ UFLA and since 2015 President of the Brazilian Society of Soil Science.

Keynote Speakers' Abstract

Global Soil Biodiversity: a common ground for sustaining soils

Diana H. Wall and Elizabeth M. Bach

Global Soil Biodiversity Initiative, School of Global Environmental Sustainability, Colorado State University, Fort Collins, CO 80523-1036, USA
Email: diana.wall@colostate.edu
elizabeth.bach@colostate.edu

There is growing scientific consensus soil biodiversity is highly relevant for achieving the United Nations Sustainable Development Goals (SDGs). Soil and its inhabitants are a finite resource that must be conserved and yet, are increasingly threatened due to changes including climate change, land use change (including habitat fragmentation, erosion, mining, pollution), invasive species and human caused atmospheric inputs (atmospheric N_2O, acidification). Due to recent technological advances evidence shows that loss of soil biodiversity can negatively affect the provision and maintenance of food quality, clean water and air, biocontrol of pathogens and pests and the amounts and rates of soil organic matter decomposition and biogeochemical cycling: all are critical to plant, animal and human health. Additionally, soil organisms, such as mushrooms, termites and earthworms, are tightly linked to aboveground biodiversity as food for wildlife and humans.
To advance and share this knowledge on soil biodiversity and use it towards achieving the SDGs requires a convergence of shared knowledge beyond disciplinary boundaries and a transformation in science that embraces research on soils and their biodiversity. Ongoing research has produced many reports, data and syntheses that urgently needs evaluating to determine gaps for addressing the SDGs through management of soil biodiversity. For example, studies focused on ecological complexity of soil biodiversity through improved management practices may also suppress crop and animal pathogens and contribute to long term maintenance of soils. The Global Soil Biodiversity Initiative will be discussed as an example of a scientific agenda that brings together scientists of many disciplines and career stages, to connect distributed global research and education for achieving the SDGs.

Towards a Global Assessment of Soil Biodiversity

Luca Montanarella

European Commission, Joint Research Centre, Land Resources Unit
+39-3406942126, luca.montanarella@ec.europa.eu

Soil biodiversity has been moving to the attention of the broader scientific community during the past years thanks to the establishment of the Global Soil Biodiversity Initiative (GSBI) and the first Global Soil Biodiversity Atlas[1]. Still the awareness of the relevance of soil biodiversity for global sustainability has not reached the main policy making communities dealing with global sustainability issues. There is the need to channel the available scientific evidence into the policy making processes of the three main multilateral environmental agreements: The United Nations Framework Convention for Climate Change (UNFCCC), the Convention for Biodiversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD). All three conventions have relevant interest in the incorporation of soil biodiversity into their implementation process. Soil biodiversity plays a major role in regulating greenhouse gas emissions from soils as well as in increasing the potential of soils to act as a carbon sink, hence the relevance to UNFCCC. The Conference of Parties (COP) to the Convention on Biological Diversity (CBD), at its 6th meeting (Nairobi April 2002), decided "to establish an International Initiative for the Conservation and Sustainable Use of Soil Biodiversity as a cross-cutting initiative within the programme of work on agricultural biodiversity, and invited the Food and Agriculture Organization of the United Nations, and other relevant organizations, to facilitate and coordinate this initiative" (COP decision VI/5, paragraph 13). This decision came about following discussions at the 7th meeting of the CBD's intergovernmental Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA). There is now the need to follow up on this decision by feeding into the CBD policy making process the most recent scientific evidence on global soil biodiversity and the relevant ecosystem services it delivers to all of us. Scientific evidence is usually translated into policy by feeding the policy making process with high level scientific assessments performed by specific science-policy interfaces and panels, like the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES). The is currently an on-going assessment on land degradation and restoration by IPBES that will be finalized by 2018. As a follow-up there could be the opportunity of proposing a new assessment on soil biodiversity to the upcoming IPBES plenary assembly in 2018. Such specific assessment would deliver the necessary scientific evidence and the various policy options to the CBD as well as to other relevant multilateral environmental agreements in order to achieve the soil related sustainable development goals (SDG), like SDG 15, advocating for the protection of the terrestrial environment and the achievement by 2030 of a land degradation neutral world.

Soil bacterial diversity – From habitat selection to interactions

Christoph C. Tebbe

Thünen Institute of Biodiversity, Federal Research Institute for Rural Areas, Forestry and Fisheries, Braunschweig, Germany
christoph.tebbe@thuenen.de

Many studies analyzing soil DNA by 16S rRNA gene amplicon sequencing have demonstrated that the diversity of bacteria in soils is high and the same or similar phylogenetic groups occur across soils from different climatic regions and land use types. Typically, such studies seek to explain patterns in the bacterial community structure with physicochemical soil properties, e.g. pH or soil organic carbon. While these factors reflect the results of habitat selection, they are limited in revealing other ecologically relevant interactions. Our own studies indicated that the importance of soil organic carbon (SOC) as a selective factor is underestimated in comparison to pH if it is only used as a quantitative measure without considering its qualitatively and functionally different fractions. Network analyses revealed that particulate organic matter (POM) was associated with more bacterial taxa (OTU-level) than any other fraction. In previous studies where we analyzed bacterial diversity associated with different soil particle size fractions (PSF), we found that SOC associated with sand plus POM and coarse silt was more active in structuring bacterial community composition than SOC associated with fine silt or clay. In fact, a majority of the dominant bacterial taxa in soil exhibited a preference to a specific PSF suggesting evolutionary adaptation of taxa to specific soil particle surface characteristics. While the surfaces provide the attachment site and may thus explain the presence of certain taxa, the living conditions of soil bacterial are defined by the soil aggregates. Aggregates are distinct units of soil structure and the availability of nutrients and electron acceptors differ between them. We propose that this results in the microbial community within an aggregate to be a functional unit in the soil microbiota and the spatial unit of interactions between its members. Can such units be characterized with soil DNA analyses? With our recent and ongoing efforts to downsize the amount of soil for DNA extraction we can already demonstrate that aggregate-sized partitions in soil harbor different bacterial communities. Improving the spatial resolution of soil sampling will allow us to detect ecologically meaningful interactions in the microbiota, thereby revealing principles of how the complexity of bacterial communities is regulated under different microhabitat conditions.

New insights into the microbial mechanisms of nitrification in acidic soils

Jizheng (Jim) He

State Key Laboratory of Urban and Regional Ecology, Research Centre for Eco-environmental Sciences, Chinese Academy of Sciences, Beijing 100085, China
Faculty of Veterinary and Agriculture, University of Melbourne, Parkville VIC 3010, Australia
Telephone: +86 10 6284 9788, Email: jzhe@rcees.ac.cn or jizheng.he@unimelb.edu.au

Progress in the last decade in ammonia-oxidizing archaea (AOA) studies suggested their significant contributions to the global nitrogen cycling by possessing the capacity to oxidize ammonia to nitrite, and phylogenetic analysis categorized AOA into a novel archaeal phylum, the Thaumarchaeota lineage. AOA have widespread occurrence in terrestrial ecosystems, unique mechanisms for nitrification, better adaptation to low-pH pressures, and strikingly lower ammonia requirement compared with ammonia-oxidizing bacteria (AOB). Previous perceptions that, microbial ammonia oxidation in acidic soils was minimal, and entirely meditated by autotrophic bacteria and occasionally by heterotrophic nitrifiers, have been dramatically challenged. Relative contributions of autotrophic AOA and AOB to ammonia oxidation were reported to controversially vary in different soils, but ammonia substrate availability, which was largely restricted under acidic conditions, seemed to be the key driver. Acidic soils are particularly characterized by high amount of hydrogen ions in soil solutions which could shift the equilibrium from ammonia to ammonium, by this way producing a relatively ammonia-limited environment. The functional dominance of thaumarchaea over its bacterial counterpart and autotrophic thaumarchaeal ammonia oxidation activity in acidic soils has been compellingly confirmed by DNA-stable isotope probing (SIP) experiments and the cultivation of an obligate acidophilic thaumarchaeaon, *Nitrosotalea devanaterra*. In this presentation, I will review the currently available knowledge concerning the history and progress of the ammonia-oxidizing microorganisms (AOB and AOA) and the mechanisms in nutrient-depleted acidic soils, comprehensively present the possible mechanisms shaping the niche differentiation of AOA and AOB, and thus strengthen the assumption that AOA dominate over AOB in the ammonia oxidation of acidic soils. The unveiling of this key process in widely-distributed acid soils would help to identify effective biological strategies for better management of terrestrial nitrogen turnover and balance in acidic soils. While the most recently discovered complete nitrification by *Nitrospira* may shed new light on the mechanisms of ammonia oxidation in the acidic soils.

Spatial ecology of soil bacteria: from mm to km

Thomas Bell

Imperial College London, Silwood Park Campus, Buckhurst Road, Ascot, Berkshire, SL5 7PY, UK
+44 (0)20 7594 2268, tbell@ic.ac.uk

Soil bacterial communities are so diverse that most community dynamics are expected to be driven by local processes. However, the dispersal dynamics of most environmental bacteria are not known, and neither is the fate of potential colonists. I will outline a series of experiments where we have experimentally manipulated dispersal potential and invasions in laboratory microcosms and in field sites to explore the role of spatial processes in shaping soil bacterial communities from mm to km.

Functional consequences of belowground ecological novelty under climate change

Wim van der Putten

Netherlands Institute of Ecology, Droevendaalsesteeg 10, 6708 PB Wageningen, The Netherlands
Tel +31317473599; E-mail, w.vanderputten@nioo.knaw.nl

Current climate warming has a variety of functional consequences in ecosystems. Species may adapt to novel conditions, go extinct when they cannot keep up with their abiotic climate envelop, or shift range to a more favorable climate zone. All these different responses will result in ecological novelty, either in the original range or in the novel range, because of different response types and rates among species. The question is how these different responses and the resulting ecological novelty will influence biodiversity, ecosystem functioning, and other properties such as resilience, resistance, and stability. Ultimately, the question is how these changes will influence the sustainability of human society.
From a soil biodiversity perspective, addressing this ultimate question requires insight into the (global) spatial distribution of species, and the degree of specialization of belowground interactions. Traditionally, it was assumed that belowground interactions are rather unspecialized and that there is considerable functional redundancy. However, recent work has shown that there is considerable specialization. Indeed, the degree of specialization may differ among various subsystems in soil, such as decomposer, symbiont, and enemy-type of interactions,

but these variations will influence the way how climate change may impact on ecosystem composition and functioning.
Climate change will also influence other factors, such as extreme weather events, which may either counteract or magnify changes in ecosystems that are due to altered species composition. The question is how all these changes and responses together work out in ecosystems. In order to explore this question, I will present ongoing work on climate warming-induced range expansion and explain from a variety of viewpoints how we try to decipher consequences of belowground compositional changes in ecosystems, and understand how these may alter functional consequences. Our ultimate goal is to understand how current global changes may result in novel ecosystems, how we may counteract unwanted changes, and how we may become pre-adapted to unavoidable novel conditions in order to ensure a sustainable society for both current and future generations.

Below mechanisms controlling grassland degradation, and its succession pattern of restoration in Tibet Plateau

Prof. Dr. Yanfen Wang

University of Chinese Academy of Sciences, Beijing, China
E-mail yfwang@ucas.ac.cn

Tibet Plateau is the Third Pole of the earth, sensitive to climate change and has the capacity to influence global biochemistry cycling. In recent years, grassland in Tibet Plateau has been degraded severely as results of over-grazing, climate change, etc. Despite the importance of grassland in Tibet Plateau and even global ecosystem, so far, little is known about below mechanisms controlling grassland degradation in Tibet Plateau, and more important, the succession pattern of its restoration. Here, we present a large scale and muti-disciplinary study conducted in selected regions critical to Tibet Plateau ecosystem (e.g. Sanjiangyuan National NReserve, Northern Tibet, Zoige, etc.) to compare ecosystem changes along degradation gradient in plants, soil properties, microorganisms and fauna under various permutations or stresses (e.g. grazing, precipitation change, warming etc.) in order to figure out key factors determining the progress and extent of degradation. Moreover, restoration experiments are manipulated in highly degraded grassland in Naqu, Northern Tibet by using strategies of precluding animal grazing, increasing soil organic matter and improving soil structure, altering soil nutrient cycling by inhibiting nitrification, and increasing plant diversity. During the restoration process, ecosystem succession pattern is determined through monitoring shifts in plants, soil, microorganisms and fauna. This ongoing study is expected to enhance our understanding of grassland degradation and restoration in Tibet Plateau, and help to figure out strategies for optimal grassland management under grazing and climate change.

Microbes, Mountains, Models and Mechanisms - exploring ecosystem function under global change

Aimée Classen

Rubenstein School of Environment & Natural Resources
University of Vermont
Burlington, VT 05405
Aimee.classen@uvm.edu

The terrestrial biosphere fluxes a lot of carbon, even more than fossil fuel combustion. Thus, small changes in the amount of carbon stored in the terrestrial biosphere could have a large impact on future atmospheric carbon concentrations. To date, ecosystem models predicting carbon feedbacks have a lot of uncertainty in part because of our limited understanding of, and therefore representation of, microbial biogeochemistry and soil ecosystem heterogeneity in models. Traditionally, researchers taking a global, heterogeneity inclusive, view to climate change have focused on species distributions. However, what these studies leave out is an understanding of function, which maintains biodiversity, and interactions that are important for the maintenance of biodiversity. On the other hand, experimental ecologists have approached this question from mechanistic approach, but their work is often site and context dependent. Using examples from a number of different studies conducted across scales around the world, my talk will argue that the way to better understand how soil biodiversity will influence ecosystem carbon dynamic is by combining a macro-ecological and experimental approach.

Microbial Diversity and Ecosystem functions: Biotic interactions and feedback loops.

Brajesh K Singh

Hawkesbury Institute of the Environment, Western Sydney University, Penrith, 2751, Australia
Email: b.singh@westernsydney.edu.au

Ecological theories and empirical evidence indicate that loss of plant (aboveground) diversity will negatively impact rates, resilience and stability of ecosystem functions. Recent studies provide similar evidence for functional consequences of soil microbial (belowground) communities. Because most BEF studies used plant communities, there is a critical lack of knowledge regarding the relative contribution of below- vs. aboveground communities in driving multiple ecosystem multifunctionality.

Below- and aboveground diversity are tightly linked. In simple terms, plants provide energy via photosynthesis, 'fuelling' the ecosystem (e.g. via plant litter and root exudates) however, plant growth is largely dependent on soil community activities and that support soil fertility and litter decomposition and facilitate the transfer of nutrient and energy between above- and belowground communities. Despite strong theoretical support for the role of biotic interaction in shaping BEF, empirical evidence is lacking. Such knowledge is critical to predict ecosystem functioning under changing environments and to formulate appropriate management and conservation policies.

This presentation will provide overview of microbial BEF and will provide new evidence in support of the role of other communities (plant and soil fauna) in modulating microbial BEF.

A tale of two stories from the underground: soil microbial diversity and N-cycling

Laurent Philippot

INRA UMR 1347 Agroecology, 17 rue Sully, 21000 Dijon, France
Tel: +33 3 80 69 33 46, Fax: + 33 3 80 69 32 24, email: laurent.philippot@inra.fr

Soil microorganisms form one of the largest biodiversity reservoirs on earth. They also play essential roles in ecosystem functions such as biogeochemical cycling. However, the importance of microbial diversity for ecosystem functioning is still debated. In this talk, I will give examples of how we addressed this knowledge gap using N-cycling microorganisms as model functional guilds. I will shows that microbial diversity loss can alter terrestrial ecosystem processes, which suggests that the importance of functional redundancy in soil microbial communities has been overstated[1]. We also examined the effectiveness of introducing microbial communities in altered communities, to recover soil biodiversity and functioning. We found consistent patterns within restoration treatments with minor idiosyncratic effects, which suggests the predominance of deterministic processes and the predictability of restoration trajectories. While the diversity of some alternative compositional states could be successfully increased, no significant restoration of soil N-cycle functioning was observed[2]. Finally I will discuss studies showing the importance of microbial community composition for emissions and consumption of N_2O, a potent greenhouse gas [3-7].

References

1. Philippot L., Spor A., Henault C., Bru D., Bizouard F., Jones C.M. Sarr A. Maron P-A. 2013.. Loss in microbial diversity affects nitrogen-cycling in soil. ISME J 7: 1609–1619
2. Calderon K., Spor A., Breuil M.C. , Bru D., Bizouard F., Violle C., Barnard R., Philippot L. 2017. Effectiveness of ecological rescue for altered soil microbial communities and functions. 11, 272–283
3. Hallin S, Philippot L, Löffler F, Sanford RA, Jones CM. Genomics and ecology of novel N2O reducing microorganisms. Trends in Microbiology. Online first.
4. Domeignoz-Horta L.A., Philippot L., Peyrard C., Bru D., Breuil M.C., Bizouard F., Justes E. , Mary B., Léonard J., Spor A. 2017. Peaks of in situ N2O emissions are influenced by N2O producing and reducing microbial communities across arable soils. Global Change Biology. Online first.
5. Domeignoz Horta L., Putz M., Breuil M-C. Bru D., Bizouard F., Hallin S; Philippot L. 2016. Non-denitrifying nitrous oxide-reducing bacteria - An effective N2O sink in soil. Soil Biology Biochemistry 103: 376-379
6. Jones C.M., Spor A., Brennan F.P, Breuil M.C., Bru D., Lemanceau P ., Griffiths B., Hallin S., Philippot L. 2014. Recently identified microbial guild mediates soil N2O sink capacity. Nature Climate Change. 4: 801-805

7. Jones C.M., Graf D, Bru D., Philippot L., Hallin S. 2013. The unaccounted yet abundant nitrous oxide reducing microbial community - a potential nitrous oxide sink. The ISME J. J 7: 417-426

Soil architecture and biodiversity: the past, present and future of life in the belowground labyrinth

Karl Ritz

Division of Agricultural & Environmental Sciences, University of Nottingham, Sutton Bonington Campus, Loughborough, Leicestershire LE12 5RD, UK

Tel: +44 (0) 115 9516288 ; karl.ritz@nottingham.ac.uk

All terrestrial ecosystems are fundamentally underpinned by the soils on which they are founded, and the myriad of functions delivered by these relatively shallow surface layers of the belowground compartment. Such functions are principally governed by the inherent nature of the abiotic and biotic constituents of the soil, and their spatial organisation across many orders-of-magnitude. Soil structure, manifest as geometrically highly complex pore networks, provides the basic physical framework in and through which all soil processes occur. The multi-scale nature of the pore system has profound consequences for the way soils function, since it regulates the dynamics and interactions between gases, liquids, solutes, colloids, particulates and organisms that result in effective function. And whilst the pore network provides the physical framework, it is the soil biota residing within, essentially manifest as a vast biological and biochemical engine, which actively drives the majority of soil functions. As such, an appropriate concept is that of soil architecture, which emphasises the interplay between the spatial arrangement of an environment and its indigenous organisms. The soil biota are intimately involved in the creation and dynamics of the architecture of their habitats, with inevitable consequences for their ability to function, as individuals, populations and communities. This leads to complex feedback loops that suggest an inherent form of self-organisation and resilience in soil systems.

In this talk, I explore the origins and consequences of soil architecture from three temporal perspectives: that of the **past** and the profound evolutionary consequences of the genesis of soil architecture; the **present**, in terms of what we currently know; and the **future** in relation to what we need to know – and how we might find this out. For the first time in history, soils on Earth are being subjected to the anthropocene. Human civilisations are reliant on healthy soils. Understanding the basis of soil sustainability and resilience, and how to use this knowledge to manage this most fundamental resource, may underpin the eventual duration of this new epoch. The key may lie in inner space.

Facilitating interactions with diverse soil microbes: A powerful mechanism for plant adaptation to global change

Jennifer Lau

Kellogg Biological Station & Dept. of Plant Biology, Michigan State University, 3700 E Gull Lake Dr., Hickory Corners, MI, USA
Tel/Fax, +1-269-671-2107; E-mail, jenlau@msu.edu

Plants interact with the thousands of bacterial and fungal taxa found in each gram of soil, many of which are beneficial. Cultivating interactions with beneficial microbes may provide a novel mechanism of plant adaptation to changing environmental conditions. Because microbes show exceptionally rapid responses to global change as a result of their large population sizes, short generation times, and unique evolutionary mechanisms such as horizontal gene transfer, the cultivation of relationships with microbes that provide plant-benefitting functions may help buffer the effects of global change on plants. Here, we present data illustrating how global changes influence microbial communities in ways that affect plant fitness, how plant evolutionary responses structure belowground microbial communities, and how shifts in microbial communities feedback to influence plant evolution. This work illustrates that plant-microbe feedbacks go beyond immediate ecological effects to influence evolution, and illustrate another mechanisms through which plants may adapt to global change.

Plant-associated bacteria mitigate greenhouse gas emission

Kiwamu Minamisawa

Graduate School of Life Sciences, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai 980-8577, Japan Tel/Fax, +81-22-217-5684; E-mail, kiwamu@ige.tohoku.ac.jp

Biogeochemical processes and microbial functions in rice paddies have been the focus of a large number of studies. Methane-nitrogen cycle interaction is a key unresolved issue in research on rice paddies. A rice symbiotic gene, relevant to rhizobial nodulation and mycorrhization in plants, likely accommodates diazotrophic methanotrophs or the associated bacterial community in root tissues under low-N fertilizer management, which may permit rice plants to acquire N via N_2 fixation. CH_4 oxidation by methanotrophs is a driving force in shaping bacterial communities in rice roots grown in CH_4-rich environments. A hypothesis was proposed for the

interplay between rice plants, root microbiomes, and their biogeochemical functions (1). Our group has revealed active N_2O metabolism in soybean rhizosphere. ^{15}N tracer experiment indicated that the N_2O was derived from N fixed in the nodules. As for nitrification, the addition of nitrification inhibitors significantly reduced N_2O flux. Both AOA and AOB were detected by PCR analysis with increase of N_2O flux in soybean rhizosphere. ^{15}N experiment and fungal isolation indicated that nitrite-utilizing fungi including *Fusarium* species substantially mediate N_2O emission in soybean rhizosphere. Inoculation experiments with soybean bradyrhizobia showed that they contribute to both production and consumption of N_2O via bacterial denitrification. From these results, the organic-N inside of the nodules was mineralized to ammonia, and N_2O-producing processes simultaneously occur in soybean rhizopsphere via bacterial nitrification, fungal denitrification and rhizobial denitrification. To mitigate N_2O emission, *B. diazoefficiens* mutants with higher N_2O reductase activity were selected under N_2Orespiration by a mutator strategy, which were designated as *nosZ*++ strain. Pure culture and vermiculite pot experiments showed that N_2O emissions from *nosZ*+ and *nosZ*++ strains were less than those from *nosZ*− strains (2). N_2O emission from soybean ecosystem is able to be mitigated by the inoculation of *nosZ*+ and *nosZ*++ strains at field scale (2, 3). We investigated the mechanism underlying the Nos++ phenotype of *B. diazoefficiens* as well (4, 5).

References

1. Minamisawa, K. *et al.* 2016. Are symbiotic methanotrophs key microbes for N acquisition in paddy rice root? Microbes Environ. 31: 4-10.
2. Itakura *et al.* 2013. Mitigation of nitrous oxide emissions from soils by *Bradyrhizobium japonicum* inoculation. Nature Climate Change 3: 208-212.
3. Akiyama *et al.* 2016. Mitigation of soil N_2O emission by inoculation with a mixed culture of indigenous *Bradyrhizobium diazoefficiens*. Sci. Rep. 6: 32869.
4. Sanchez *et al.* 2014. The nitrate-sensing NasST system regulates nitrous oxide reductase and periplasmic nitrate reductase in *Bradyrhizobium japonicum*. Environ.Microbiol. 16: 3263-3274.
5. Sánchez *et al.* 2017. Regulation of nitrous oxide reductase genes by NasT-mediated transcription antitermination in *Bradyrhizobium diazoefficiens*. Environ Microbiol Rep. 2017 9: 389-396.

Molecular analysis of ammonia oxidisers: enlightenment or entanglement

James I Prosser

School of Biological Sciences, University of Aberdeen, Cruickshank Building, St Machar Drive, Aberdeen, AB24 3UU, United Kingdom
Tel: 0044 1224 273254, FAX: 0044 1224 272703, email: j.prosser@abdn.ac.uk

Soil nitrification, the oxidation of ammonia to nitrite and nitrate, reduces nitrogen fertiliser utilisation efficiency considerably and increases nitrous oxide emissions.

Ammonia oxidisers, which usually control soil nitrification rate, were one of the first targets for molecular techniques and soil ammonia oxidisers are now routinely characterised using primers for 16S rRNA genes and/or the functional gene *amoA*. These techniques, and subsequently developed techniques for assessment of ammonia oxidiser activity, enabled studies of ammonia oxidiser community ecology. As in other areas of soil microbiology, these studies have involved three broad approaches. The most common approach is to look for correlations between community composition and soil characteristics and to compare 'patterns' with those observed by others. The second is to attempt to explain ecology by charactering soil isolates and/or genomes, and to use this information to explain their occurrence in the source environment. The third approach is to perform experimental studies designed to test explanations, hypotheses or concepts that explain specific phenomena. The benefits and limitations of these approaches will be considered in assessing their abilities to increase our understanding of the influence of pH and ammonia on soil nitrification and the implications for broader ecological studies.

Microbial diversity in Amazonian soils: genetic resources for sustainable agriculture, environmental quality and food safety

Fatima Maria de Souza Moreira

Departamento de Ciência do Solo, Universidade Federal de Lavras, Caixa Postal 3037, Lavras, Minas Gerais, Brazil
55 35 38291254/ 35 98868 3758, fmoreira@dcs.ufla.br

Amazonia is well known for its megadiversity of plants and animals. However, Amazonia also harbors a great diversity of microbial species. Improvement of biological processes is the basis of sustainable agriculture, which has in soil biodiversity a valuable pool of genetic resources. Culture-independent techniques in combination with multivariate analysis have shown similar effects of land use in different regions on the community structures of prokaryotes as well as their relationship with soil attributes and plant diversity. For instance, soil pH has been found as the main variable influencing both alpha and beta diversity of soil prokaryotes. In Amazonian landscapes, disturbed systems, such as pasture and intensive agriculture, have been found to harbor higher microbial diversity than forest. On the other hand, culture-dependent techniques allowed us to isolate and select nitrogen-fixing bacterial strains, adapted to acidity and high Al concentrations, with high efficiency in the symbiosis with grain crops (cowpea, commom beans and lima beans), green manure, forage and forest species. Some of these strains are already approved by the Brazilian Ministry of Agriculture and are being used throughout diverse Brazilian regions to improve cowpea yields. Most of these strains belong to known and new species within *Bradyrhizobium* genus, which exhibited a high genetic and functional diversity in Amazonian land use systems. In these systems, mycorrhizal fungi species diversity is also high and exhibits high functional

variability with regards to plant growth promotion.

Sponsors

Institute of Soil Sciences, CAS

Institute of Urban Environment, CAS

Institute of Applied Ecology, CAS

Research Centre for Eco-Environmental Sciences, CAS

University of Chinese Academy of Sciences

Food and Agriculture Organization of the United Nations

Global Soil Partnership

PEDOSPHERE---An International Journal

Tours

Post-Conference Tour

Optional 1 (3-day tour in Beijing, 19-21 October)

Cost: Approx. 550 USD/person for 3-day tour in Beijing. Cost including hotel, attraction admision tickets, meals, travel insurance, tour guide service (English), local transportation, and high-speed train ticket from Beijing to Nanjing.

Itinerary:

October 19, 2017: Take the high-speed train to Beijing (about 4 hours). Check in hotel after dinner;
October 20, 2017: Visit the Palace Museum and the Summer Palace;
October 21, 2017: Visit the Great Wall and Temple of Heaven;

***Notice:** Your trip will be end in Beijing, it will not be back to Nanjing. You can directly back to your country from Beijing on October 22.

Optional 2 (1-day tour in Nanjing, 19 October)

Cost: Approx. 150 USD/person for 1-day tour in Nanjing. Cost including attraction admision tickets, meals, travel insurance, tour guide service (English) and local transportation.

Conference Notes

Conference Notes

Conference Notes

Conference Notes

Conference Notes

Conference Notes

Conference Notes

ISSN: 1002-0160

Published by Elsevier B.V. and Science Press

Impact Factor: 1.734*
*2016 Journal Citation Reports®, Thomson Reuters

PEDOSPHERE—a peer-reviewed international journal published bimonthly in English—welcomes submissions from scientists around the world under a broad scope of topics relevant to timely, high quality original research findings, especially up-to-date achievements and advances in the entire field of soil science studies dealing with environmental science, ecology, agriculture, bioscience, geoscience, forestry, etc. It publishes mainly original research articles as well as some reviews, mini reviews, short communications and special issues. The editorial board of Pedosphere consists of internationally renowned scientists from 27 countries. More than 80% of board members are from outside China, and 13 members have served or are serving as the president of their respective countries and/or international soil science union. The novel findings and high-quality research is always welcomed with priority publication.

http://gsbc2.csp.escience.cn