

9th International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms

ISMOM 2024: From soil organic-mineral interactions to soil carbon policy

PROGRAM

October 14 (Monday)

- 16:00 - 19:00 **Reception** (please get name card and registration info at this time if possible)
- 17:00 - 20:00 **Ice Break Party** (light meals & drinks)
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October 15 (Tuesday)

- 7:15 - 8:00 **Reception** (please get name card and registration info)
- 8:00 - 8:20 **Opening Ceremony**

Session 1. Fundamental aspect of ISMOM: challenges & opportunities

Chairs: Angela Possinger (USA) & Carsten Muller (Germany)

- <Invited-Keynote>*
- 8:20 - 9:00 **Microbe-Mineral-Organic Matter Interactions at Pore to Hillslope Scales**
Jon Chorover, University of Arizona, USA
- 9:00 - 9:25 **Promotion of carbon storage by weathering of pristine phyllosilicate at the decadal timescale** Delphine Derrien, INRAE, France
- 9:25 - 9:50 **Influence of plant litter quality on soil carbon accumulation patterns in the converted upland from lowland paddy in Japan using ¹³C-labeled residues**
Le Van Dang, Tokyo University of Agriculture and Technology, Japan
- 9:50 - 10:15 **Mineral type and land use shape formation, microbial colonization, and stability of mineral associated organic matter** Marion Schrumpf, Max-Planck-Institute for Biogeochemistry, Germany
- 10:15 - 10:35 *coffee break (20 min)*
- 10:35 - 11:00 *<Invited>* **Microscale self-organization of mineral-associated organic carbon for macroscale global predictions** Francisco Matus, Universidad de La Frontera, Chile
- 11:00 - 11:25 **What are the organo-mineral associations called 'nanoCLICs'?**
Isabelle Basile-Doelsch, INRAE, France
- 11:25 - 11:50 **Chemical properties of soil organic matter responsible for available nitrogen**
Syuntaro Hiradate, Kyushu University, Japan
- 11:50 - 13:30 *lunch break (walk to two restaurants. Check your restaurant at Reception)*
- 13:30 - 13:55 **A view from inside: Organic matter's influence on iron mineral structures through the lens of Mössbauer Spectroscopy** Aaron Thompson, University of Georgia, USA
- 13:55 - 14:20 **Scaling organic carbon stocks – from microbes to landscapes**
Sam McNally, Manaaki Whenua Landcare Research, New Zealand
- 14:20 - 14:45 **Integrating grassland species with beneficial root traits to promote soil C stabilization** Chupei Shi, University of Amsterdam, Netherland

- 14:45 - 15:10 **Mineral-organic associations influence the capacity and vulnerability of soil carbon storage** Katerina Georgiou, Lawrence Livermore National Laboratory, USA
- 15:10 - 16:00 **Open Discussion (tentative topic: soil C saturation)**
<moderators> Caitlin Hicks Pries, Aaron Thompson (USA), and Klaus Kaiser (Germany)
- 16:00 - 17:30 **Poster Session (Session 1 & Session 2) + coffee break**
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October 16 (Wednesday)

Session 2. Soil structure as physical constraints of the interfacial reactions among minerals, organic matter, and microbes

Chairs: Cheng-Hsien Lin (Taiwan) & Valerie Pot (France)

- 8:00 - 8:40 **<Invited-Keynote> Microbial geography within the constraints of soil structure - are we there yet?** Alexandra Kravchenko, Michigan State University, USA
- 8:40 - 9:05 **Mineral and substrate control on MOM formation efficiency, and feedbacks to microbial composition and function** Ye Yuan, Max Planck Institute for Biogeochemistry, Germany
- 9:05 - 9:30 **Does structure really matter? Exploring implications of microbe-structure interactions to carbon dynamics at the field scale** Sara König, UFZ - Helmholtz Centre for Environmental Research, Germany
- 9:30 - 10:00 **The effects of spontaneous cover crops on soil aggregation in Mediterranean orchards** Raul Zornoza, Universidad Politecnica de Cartagena, Spain
- 10:00 - 10:20 **coffee break (20 min)**
- 10:20 - 10:45 **<Invited> Spatial heterogeneity in soils - Assessing microbial metabolism** Anke Hermann, Swedish University of Agricultural Sciences, Sweden
- 11:05 - 11:30 **Arbuscular mycorrhizal fungi augment carbon and nitrogen storage in soil microaggregates even under low water availability** Julien Guige, Chair of Soil Science, Technical University of Munich, Germany
- 11:30 - 11:45 **Distribution of microbial metabolic power in the soil pore network** Naoise Nunan, CNRS, France
- 11:45 - 12:15 **Open Discussion** <moderators> Sara König (Germany) & Naoise Nunan (France)
- 12:15 - 13:30 **Group photo & lunch break (lunch box at Hotel Grand Shinonome)**
- 13:30 - 14:30 **Poster Session (Session 3) + coffee break**
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Session 3. New concepts and approaches: Methodological and conceptual advances

Chairs: Clementine Chirol (France) & Atsushi Nakao (Japan)

- 14:30 - 15:10 **<Invited-Keynote> The fine-scale spatial organisation of the soil microbiome** Christina Kaiser, University of Vienna, Austria
- 15:10 - 15:35 **Stability of mineral-associated organic matter in soils depends on mineral type and land use** De Shorn Bramble, Max Planck Institute for Biogeochemistry, Jena, Germany

- 15:35 - 16:00 **Correlative imaging of the rhizosphere – A multi-method workflow for targeted mapping of chemical gradients** Eva Lippold, Helmholtz Centre for Environmental Research UFZ, Halle (Saale), Germany
- 16:00 - 16:25 **Micro-scale approach to quantitative analysis of enzymatic activity in soils** Andrey Guber, Michigan State University, USA
- 16:25 - 16:40 *coffee break (15 min)*
- 16:40 - 17:05 **<Invited> Fantastic voyage to the Asteroid Ryugu: a world of clays and organics** Motoo Ito, JAMSTEC, Japan
- 17:05 - 17:30 **Soil warming and rain exclusion promote stable soil mineral-organic associations in dryland soils** Luis Carlos Coloco Hurtate, Diamond Light Source, UK
- 17:30 - 17:55 **Rechargeable biogenic mineral induced by a sulfate reducing bacterium enhances microbial community activities** Hiroyuki Futamata, Shizuoka Univ., Japan
- 17:55 - 18:20 **Resolving microbe-mineral-organic matter interactions in soils and sediments using photothermal infrared microscopy** Floriane Jamoteau, University of Lausanne, Switzerland
- 19:00 - 21:30 *Gala Dinner (at Grant Hotel Shinonome, 2F)*

October 17 (Thursday)

Session 4. ISMOM and biogeochemical cycling across scales

Chairs: Juan Jia (China) & Kazumichi Fujii (Japan)

- 8:00 - 8:40 **<Invited-Keynote> Nature, time and humans: Why we need a landscape perspective to get soil organic matter cycling right at larger scales** Sebastian Doetterl, ETZ Zurich, Switzerland
- 8:40 - 9:05 **Earthworms enhance plant-derived OM stabilization through mineral interactions: effects of species and soil types** Chao Song, (1) IRD, iEES-Paris; (2) Institute of Hydrogeology & Environmental Geology, CAGS
- 9:05 - 9:30 **The ultimate stabilisation: making the organic mineral. The case for irrigated gypsum-rich soils** Inigo Virto, Universidad Publica de Navarra, Spain
- 9:30 - 9:55 **The role of basalt particle size on organic and inorganic carbon sequestration: leaching/incubation experiments using rock-plant residue mixtures** Puu-Tai Yang, NARO, Japan
- 9:55 - 10:15 *coffee break (20 min)*
- 10:15 - 10:40 **<Invited> Behavior of organic carbon governed by soil components interplay** Qiaoyun Huan, Huazhong Agricultural University, China
- 10:40 - 11:05 **Unraveling the effect of soil aeration on soil organic carbon mineralization in soils with different tillage intensity** Orly Mendoza, University of Lausanne; Swiss Federal Institute of Technology in Lausanne (EPFL)
- 11:05 - 11:30 **Moisture-driven relationships between soil organic carbon and short-range ordered minerals at the global scale** Sophie von Fromm, Dartmouth College, USA
- 11:30 - 11:25 **Metal-organic carbon interactions in wetlands: Implications for wetland carbon preservation** Xiaojuan Feng, Institute of Botany, Chinese Academy of Sciences

11:55 - 13:30 **lunch break** (*we all walk to a restaurant*)

Session 5. ISMOM as a basis for soil carbon management

Chairs: Jaruwan Jindawong (Thailand) & Mark Farrell (Australia)

- 13:30 - 13:55 **<Invited> How does fire affect the nature and stability of soil organic C and N? implications for biochar management**
Heike Knicker, Spanish National Research Council, Spain
- 13:55 - 14:20 **Carbon Dynamics and Sequestration in Semen Euryales Pond Ecosystems: Insights from the Lower Xijiang River Basin** Guodong Yuan, Zhaoqing University, China
- 14:20 - 14:45 **Climate change induces rapid losses of occluded particulate organic carbon in Alpine grassland soils** Noelia Garcia Franco, Technical University of Munich, Germany
- 14:45 - 15:00 **Coffee break (15 min)**
- 15:00 - 15:25 **Soil aggregate formation, stability, and associated carbon accumulation as influenced by diversified organic amendment-derived dissolved organic matter**
Kiattisak Sonsri, Kasetsart University, Thailand
- 15:25 - 16:05 **<Invited-Keynote> Management practices and soil organic C: lessons learned, controversies, and knowledge gaps** Denis Anger, Agriculture & Agri-Food Canada
- 16:05 - 16:35 **Open Discussion: <moderators>** Marion Schrumpf (Germany), Alain Plante (USA)
- 16:35 - 18:00 **Poster session (Session 4 and Session 5)**
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October 18 (Friday)

Session 6. The role of organo-mineral-microbial interactions in soil management and policy making: Implications for climate change and C credit markets

Chairs: Sabina Devkota (Nepal) & Rota Wagai (Japan)

- 8:00 - 8:40 **<Invited-Keynote> From organo-mineral interactions to soil and carbon policies**
Claire Chenu, INRAE, France
- 8:40 - 9:05 **<Invited> Soil and Climate Change: Evolving Policy Landscapes and Intersections**
Asmeret Asefaw Berhe, UC Merced, USA
- 9:05 - 9:30 **<Invited> From economics of land to economics of soils: implications for public policies and private markets** Alisher Mirzabaev, IRRI, Phillipines
- 9:30 - 9:50 **coffee break (20 min)**
- 9:50 - 10:30 **Pannel Discussion (wrap-up session)**
<moderators> Katarina Georgiou (USA) & Rota Wagai (Japan)
- 10:30 - 10:45 OECD-CRP Event Questionaries
- <PM Huang Prize talk>**
- 10:45 - 11:15 **Resolving the Molecular Complexity and Dynamic Nature of Mineral-Organic Interactions in Soils** Macro Keilweit, University of Lausanne, Switzerland
- 11:20 - 11:45 **Closing Ceremony**
- Noon **Field trip 1 participants: departure** (*be ready to depart immediately*)