Soil Interfaces for Sustainable Development
5th – 10th July, 2015
McGill University, Montreal

CONFERENCE PROGRAM

JOINT MEETING OF

International Union of Soil Sciences

Soil – Foundation of Life

AQSSS
Sponsorship

Venue

Soil interfaces for sustainable development is held at McGill University, one of Canada’s best-known institutions of higher learning and one of the leading research-intensive universities in the world. McGill was founded in 1821 thanks to a generous bequest by James McGill, and since then has grown from a small college in downtown Montreal to a bustling university with 11 faculties, some 300 programs of study, and more than 37,500 students. The University also partners with four affiliated teaching hospitals to graduate over 1,000 health care professionals each year. A second campus occupies 650 hectares in the town of Ste-Anne-de-Bellevue on the western tip of the Island of Montreal. The Macdonald Campus is home to the Faculty of Agricultural and Environmental Sciences and the School of Dietetics and Human Nutrition, offering numerous research centers, a working farm, greenhouses, an arboretum with walking and ski trails, undergraduate and graduate training in soil science, and much more.
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Introduction of Committees

Commission 2.5 (soil chemical, physical and biological interfacial reactions) of IUSS (International Union of Soil Sciences) hosts an international symposia once every 4 years called the International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms (ISMOM). The aim of the symposia is to create a forum for exchange and discussion between scientists from different fields of soil science: chemistry, biology, biochemistry, physics, ecology and environmental science. Previously held in Canada, France, Italy, China and Chile, this meeting - ISMOM 2015 - will follow the tradition of friendly, stimulating encounters between scientists from all facets of soil science. The difference between ISMOM 2015 and previous symposia is that it will be jointly with the annual meetings of two Canadian soil science societies, which is a fitting way to share knowledge, ideas and build collaborations among soil scientists in the International Year of Soils 2015.

CSSS: (Canadian Society of Soil Science) is a non-governmental, non-profit organization for scientists, engineers, technologists, administrators and students involved in professional soil science. Its goal is to nurture the discipline of soil science in Canada and ensure its relevance in the future.

AQSSS: (Association Québécoise de Spécialistes en Sciences du Sol) is a non-profit Québec-based organization of scientists, technologists and students involved in professional soil science. The objective of AQSSS is to share and disseminate scientific and technical information on any subject of interest concerning the use, management and conservation of the soil.
Introduction of Committees

Organizing Committee

Joann Whalen, Canada
Carlos Monreal, Canada
Jean-Philippe Bellenger, Canada
Asim Biswas, Canada
Siobhan Staunton, France
Isabelle Royer, Canada
Barbara Cade-Menun, Canada
Tom Bruulsema, Canada

International Scientific Committee (ISMOM)

Denis Angers, Canada
Nathan Basiliko, Canada
Jean-Philippe Bellenger, Canada
Robert Bradley, Canada
Martin Couillard, Canada
Peter Dunfield, Canada
Emmanuel Frossard, Switzerland
Ellen Kandeler, Germany
Petra Marschner, Australia
Francisco Matus, Chile
Paolo Nannipieri, Italy
Myrna Simpson, Canada
Rota Wagai, Japan
Kevin Wilkinson, Canada

CSSS Scientific Committee

Viacheslav Adamchuk
Brian Amiro
Angela Bedard-Haughn
Asim Biswas
Barbara Cade-Menun
Amanda Diochon
Sue Grayston
Bobbi Helgason
Maja Krzic
Jacynthe Masse
Steven Siciliano
Joann Whalen
Tom Yates
Noura Ziadi

AQSSS Scientific Committee

Suzanne Allaire
Nicolas Bélanger
Suzanne Brais
Athyana Cambouris
Pascale Cantin
Francois Courchesne
Janylène Savard
Nicolas Tremblay
# Event Location Key & Map of Campus

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<tr>
<th>Location</th>
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<td><strong>New Residence Hall</strong></td>
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<td><strong>Centre Mont-Royal</strong></td>
<td>1000 Sherbrooke</td>
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![Map of Campus with key locations marked](image-url)
Special Events

For more information about the events or registration please visit the registration desk
“The Chemistry of Clay-Polymer Reactions”
Pre-Symposium Short Course

Benny K.G. Theng
Landcare Research, Palmerston North, New Zealand

Saturday July 4th – Sunday July 5th
Salle des Pins

Lecture 1

In this opening lecture we describe the basic structures, compositions and surface chemical properties of clay minerals. In terms of the clay-polymer interaction, montmorillonite is the most important mineral species because of its propensity for adsorbing and intercalating organic polymers. Kaolinite, halloysite, illite, palygorskite, sepiolite, allophane and imogolite are less frequently used than smectite. The same comment applies to vermiculite, mica and chlorite. Since the clay-polymer interaction commonly takes place in an aqueous medium, we also give a brief description of clay colloid chemistry. Here again, montmorillonite holds the limelight because of its capability for interlayer swelling and dispersibility in water.

Lecture 2

This lecture discusses the theoretical and practical aspects of the clay-polymer interaction. Uncharged polymers adopt a ‘train-loop-tail’ surface conformation, giving high-affinity type isotherms and little desorption on dilution. The adsorption of non-ionic polymers is primarily driven by entropy effects. Positively charged polymers are strongly adsorbed through electrostatic interactions, causing chain collapse. Negatively charged polymers tend to be repelled by clay surfaces but can adsorb by bridging through polyvalent cations. The effect of adsorbed polymers on the structure of the electrical double layer, interparticle interaction, and flocculation is also described. Polymers can flocculate aqueous clay suspensions through charge neutralization and interparticle bridging.

Lecture 3

This lecture summarizes the interactions of clay minerals with proteins and enzymes, including prion proteins and the layer-by-layer formation of clay-protein complexes. Proteins adsorb to clay surfaces through both enthalpic (electrostatic and van der Waals forces) and entropic (hydrophobic and conformational) interactions. Adsorption and intercalation by clay minerals cause conformational changes but no extensive unfolding of the polypeptide chains. Adsorption commonly reaches a maximum close to the protein isoelectric point. The pH-activity profile for adsorbed enzymes is often shifted to higher pH values, and the Michaelis-Menten rate constant is enhanced as compared with the corresponding free enzymes. Clay-immobilized enzymes can detoxify some organic pollutants in soil.
Lecture 4

Here we outline the interactions of clay minerals with nucleic acids. Adsorption of nucleic acids to clay minerals proceeds through electrostatic interactions, cation-bridging and ligand exchange. The latter bonding mode is important with kaolinite and allophane. Adsorption declines as solution pH increases from acid to alkaline but is enhanced in the presence of neutral electrolytes and polyvalent cations. Nucleic acids can intercalate into montmorillonite at pH < 6. Adsorption also leads to a change in molecular conformation. Clay-associated DNA may be amplified through the polymerase chain reaction and is capable of transforming competent cells. Montmorillonite can catalyse the formation of RNA from its activated monomers.

Lecture 5

This lecture summarizes the interactions of clay minerals with viruses and bacteriophages. Below the isoelectric pH of the virus, adsorption to clay minerals is largely accomplished through electrostatic interactions. Above this pH, van der Waals interactions and entropy effects associated with conformational changes come into play. Cation-bridging and ligand exchange are also involved. The clay-virus interaction is enhanced in the presence of neutral electrolytes and polyvalent cations. Adsorption of viruses and bacteriophages is confined to external clay particle surfaces, even in the case of expanding layer silicates (montmorillonite) because the molecules are too large to penetrate the interlayer space.

Lecture 6

Here we discuss the formation and properties of clay-polsaccharide complexes. Cationic and non-ionic polysaccharides are strongly adsorbed by clay minerals and can penetrate the interlayer space of montmorillonite. Anionic polysaccharides are weakly adsorbed and do not intercalate into montmorillonite although appreciable uptake can occur at acid pH, high ionic strength, and in the presence of polyvalent cations. All things being equal, polysaccharide adsorption to clay minerals decreases in the order cationic > non-ionic > anionic. Next to humic substances, polysaccharides and glomalin (a glycoprotein) are the most important aggregate-stabilizing agents in soil but their effectiveness is relatively short-lived.

Lecture 7

This lecture outlines the structural concepts of humic substances (HS) and their interactions with clay minerals through a variety of bonding modes. Complex formation between HS and clay minerals is influenced by the nature of exchangeable cations at the clay surface, medium pH and ionic strength, molecular weight of HS and clay mineral species. Humic substances generally fail to intercalate into montmorillonite but can do so under highly acidic conditions when the molecules are essentially uncharged. In soil, HS may aid mineral decomposition and metal ion mobilization, while clay-humic complexes are good sorbents of metal ions and non-ionic organic compounds and pollutants.
“Compositional Data Analysis”
Workshop

Dalel Abdi¹, Serge-Étienne Parent², Léon-Étienne Parent²
¹Agriculture and Agri-Food Canada, Soils and Crops Research and Development Centre, Canada
²Université Laval, Department of Soils and Agri-Food Engineering, Canada

Sunday July 5th (1-5 pm)
Salle des Pins

Compositional data refer to proportions, or parts of some whole, bounded between 0 and the unit of measurement, i.e., 1, 100%, 1000 g kg⁻¹, or 106 mg kg⁻¹. Examples of compositions are data presented in ppm, ppb, molarities, or any other concentration units, such as soil, compost and crop analysis. The constrained nature of compositional data implies particular and important numerical properties that have major consequences for any statistical analysis. Standard techniques are designed to be used with data that are free to range from −∞ to +∞ (Pawlosky-Glahn and Egozcue, 2006). Any increase in one component must be associated with a decrease in one or more components in a closed system. This means that compositional data are intrinsically correlated to each other, and the results of standard statistical analysis such as regression, univariate and multivariate analysis are misleading (Aitchison, 1986). Hence, contradictories interpretations could be generated which raise a serious problem that needs to be treated with considerable circumspection. Compositional data analysis using additive log-ratio (alr), centred log-ratio (clr) or isometric log-ratio (ilr) coordinates avoids such difficulties and preserves sub-compositional coherence in the analysis (Aitchison, 1986; Egozcue et al, 2003). This workshop will provide examples of biased analysis obtained with agronomic data and present compositional approaches to deal with these problems using the “R” software.
Welcome Reception

Sunday, July 5th
6:00 – 9:00 pm
Ballroom A

Working Lunches

12:45 – 2:00 pm
Salle des Pins

Participants should pick up their lunch in the lobby outside Ballroom A and bring it to Salle des Pins, New Residence Hall, McGill University.

<table>
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Projectors and laptops provided
Please find Susan Robinson for assistance.
Guy Mehuys Memorial Luncheon

Monday July 6th
12:40 – 2:00pm
Ballroom A

In Memory of Professor Guy R. Mehuys

The science of soil organo-mineral interactions and how this provides a stable, healthy soil environment for food, fuel and fiber production is the basis of soil conservation, a topic to which Professor Guy Mehuys was devoted during his long and productive career at the Macdonald Campus of McGill University.

This conference has attracted the participation of students from more than 25 countries worldwide. These students—the next generation of soil scientists—are preparing talks and posters that clearly recognize of the importance of soil organo-mineral interactions to address our global sustainable development goals. Student participants will bring new ideas, dynamism and energy to our discussions at the conference.

Those who sponsored a student on behalf of Professor Mehuys will be recognized at the Professor Guy Mehuys Memorial Luncheon on Monday, July 6, 2015, and acknowledged with thanks in the conference program book if they submitted their payment by 26 June 2015.
SOIL MOVIE NIGHT

6 JULY 2015

#SoilCinema
#CinéSol

FILM SERIES CELEBRATING THE INTERNATIONAL YEAR OF SOILS

EXPERT PANEL DISCUSSION

PRIZES AND SNACKS

ALL ARE WELCOME

HOSTED BY THE CANADIAN SOCIETY OF SOIL SCIENCE

McGILL UNIVERSITY
ADAMS BUILDING AUDITORIUM
3450 UNIVERSITY ST
7:30 TO 9:30 PM
CSSS STUDENT EVENT

TRIVIA NIGHT

07. JULY. 7:30

FREE FOOD

MCKIBBIN'S PUB
3515 BOUL. ST-LAURENT

Great chance to meet fellow soils grad students!

Questions? Email: C.Wilson@dal.ca
Awards Gala Dinner

Price of dinner included in conference registration fee

Wednesday, July 8th
7:00 – 10:00 pm
Centre Mont-Royal (1000 Sherbrooke Entrance)
Salon Mont-Royal, 4th Floor

Pre-dinner Cocktails 7:00 – 7:25 pm
Cash Bar Available from 7:00 – 10:00 pm
Free Non-Alcoholic Beverages
Award Presentation at 9:15 pm

Spring field mix, roasted pear, dried cranberry and pistachio
Grilled supreme of chicken, fine herbs, sundried cherry sauce
OR
Roasted salmon fillet, vermouth & pink peppercorn sauce
Choco-Raspberry Mille-Feuille

Vegan Option Available

Coffee and Tea Included
“Back to Basics: Creating Paint from Soil”
Workshop

Symeon Lane and Ken Van Rees
Thursday, July 9th (9:00 am - 4:00 pm)
Strathcona Building, Room M/66

To celebrate the International Year of Soils we wanted to create a unique experience for attendees by organizing a workshop to create pigments from soils and then paint with them. Participants will explore and play with the various techniques for preparing pigments from soils local to the Montreal area as well as other natural materials. Time will also be given in the afternoon to paint with the pigments around the McGill campus. All materials will be supplied.
Field Trips and Excursions
Soil and Precision Agriculture Field Trip
Thursday, July 9th

This trip will take you (participants) to three research farms/statations:

1. Macdonald Farm, Ste-Anne-de-Bellevue
2. VegPro International Inc., Sherrington
3. Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu

The main focus of this field trip is to see some dominant soils on Montreal Island and area, familiarize various proximal sensors used for precision farming and some activities carried out in precision agriculture.

Schedule

08:00 am: Convening at the New Residence Hall, 3625 Parc Avenue, Montreal
08:15 am: Bus leaves for Macdonald campus (About 40 minute bus ride)
09:00 am: Engineering workshop area: presentation of proximal soil sensing technologies/equipment
10:00 am: Visiting soil profiles (2 soil profiles)
10:45 am: Bus to Emily Lod’s Seed farm (Farm is also within Campus)
11:00 am: Seed farm visit
11:45 am: Bus from seed farm to Macdonald campus
12:00 pm: Lunch at Tadja hall (Faculty house at Macdonald campus)
01:30 pm: Bus from Tadja hall to VegPro International Inc. (About 50 minute of bus ride)
02:30 pm: Visit of VegPro International Inc. site (Organic soils, Precision farming)
03:30 pm: Bus to AAFC
04:00 pm: Visit AAFC L’Acadie Experimental Farm, 1134 Québec 219, St-Jean-sur-Richelieu site (Precision farming)
04:45 pm: Bus from AAFC to Residence Hall
05:30 pm: Residence Hall
Touristic Excursion to the Montreal Botanical Gardens, Insectarium and Île Ste-Hélène

Thursday, July 9th

Join us for a fun-filled day of tours to Montreal’s finest tourist attractions! At the Montreal Botanical Gardens and Insectarium, you will have the opportunity for a “behind the scenes” look at how the gardens and exhibits are designed and meet researchers who are responsible for curation and scientific content of the exhibits. Established in 1931 and considered to be one of the most important botanical gardens in the world due to the extent of its collections and facilities, the Montreal Botanical Gardens was designated a national historic site of Canada in 2008.

After a buffet lunch at La Stanza, we will continue to Île Ste-Hélène, which was named in 1611 by Samuel de Champlain in honour of his wife, Hélène. Military installations were built on the island to protect the city, and some of the preserved artifacts are on exhibit at the Stewart Museum (Fort de l’Île Sainte-Hélène). Another attraction is the Biosphere, an interpretative museum about the Saint Lawrence River installed in the former American Pavilion from Expo 67. For those who prefer a quiet walk, there are more than 25 km of walkways, many in proximity to the Saint Lawrence River, decorated by well-manicured gardens and public art exhibits throughout the Jean-Drapeau Park.

Schedule

08:00 am: Departure from New Residence Hall
08:30 am: Arriving to Botanical Gardens and Insectarium (the visit will finish at 11:45 am)
12:00 pm: Departure from Botanical Gardens and Insectarium
12:00 pm: Buffet lunch at La Stanza
01:45 pm: Departure to Île Ste-Hélène. The bus will make three stops to drop off visitors at the Stewart Museum, the Biosphere and the Tour de Lévis (Jean-Drapeau Park).
04:15 pm: Pick-up of visitors from the Stewart Museum, the Biosphere and the Tour de Lévis (Jean-Drapeau Park).
04:45 pm: Return to the New Residence Hall
Organic, Mineral, and Forest Soils, and Soils in Organic Production / Sols organiques, minéraux et forestiers et sols en production biologique

Tournée AQSSS bilingue (anglais / français) / Bilingual (English / French) Field Trip

Schedule/ Programme (Thursday, July 9th)

08:00 am: Meet at New Residence Hall McGill, 3625 Avenue du Parc, Montréal (48 places)

08:15 am: 45 min. bus travel / 45 min. d’autobus

09:00 am: Veg Pro & Vert Nature, 147 Rang St-Paul, Sherrington.

“Mesclun” production on muck soils: Cropped muck soil profile, drainage, lettuce production. / Sols organiques en production de mesclun: Profil de sols organiques cultivés, drainage, production de laitues.

10:00 am: 30 min. bus travel; snack & beverage in the bus / 30 min. d’autobus; Collation & breuvage dans l’autobus

10:30 am: AAC, L’Acadie Experimental Farm / AAC, Station expérimentale de L’Acadie, 1134 route 219, St-Jean-sur-Richelieu

Mineral soils, crop management and nitrogen fertilization: Agricultural soil profile, presentation of research on sustainable nitrogen fertilization practices, instruments used to estimate crop vigor. / Sols minéraux, régie des cultures et fertilisation azotée : Profil de sols agricoles, présentation des travaux réalisés sur la régie raisonnée de la fertilisation azotée, instruments utilisés pour estimer l’état des cultures.

11:30 am: 45 min. bus travel / 45 min. d’autobus

12:15 pm: Native People House / Maison amérindienne, 510 Montée des Trente, Mont-Saint-Hilaire

Welcome, purification ceremony, drums & dance, lunch with Native People flavour, exhibits & shopping / Accueil, cérémonie de purification, tambours et danse, repas à saveur amérindienne, expositions et boutiques

14:05 pm: 5 min. bus travel / 5 min. d’autobus; Gault Nature Reserve of McGill University / Réserve naturelle Gault, Université McGill

Forest soils: Landscape and typical soil profile of the Montérégienne. / Sols forestiers: Paysages et profils de sols forestiers des Montérégien

15:00 pm: 30 min. bus travel; snack & beverage in the bus / 30 min. d’autobus; Collation & breuvage dans l’autobus

15:30 pm: IRDA, Plateforme d’Innovation en Agriculture Biologique (PIAB)

Soils in organic production: To develop crop management practices supporting their productivity. / Sols en production biologique: Développer des pratiques et des régies culturales favorisant leur productivité.

16:30 pm: 30 min. bus travel / 30 min. d’autobus

17:00 pm: New Residence Hall McGill
Basic Scientific Program
ISOMOM Sponsored Sessions

**MONDAY, July 6th**

**Breakfast** (Salle du Parc)

**Opening Ceremony** (Ballroom A)
- Plenary (Ballroom A)
- **Oral Session 2**: Dynamics of pollutants in soil (SADB M-1)
  - ~COFFEE BREAK~
- **Oral Session 2**: Dynamics of pollutants in soil (SADB M-1)
  - ~LUNCH BREAK~
- **Keynote Session 2**: Dynamics of pollutants in soil (SADB M-1)

**Oral Session 2**: Dynamics of pollutants in soil (SADB M-1)
- ~COFFEE BREAK~

**Poster Sessions S2, S4, S7, S12, S13** (Ballroom B)

**TUESDAY, July 7th**

**Keynote Session 4**: Organo-mineral interactions in soil (SADB 2/36)

**Oral Session 4**: Organo-mineral interactions in soil (SADB 2/36)
- ~COFFEE BREAK~

**Oral Session 3**: Soil microbiology (SADB M-1)
- ~LUNCH BREAK~

**Keynote Session 3**: Soil microbiology (SADB M-1)

**Oral Session 3**: Soil microbiology (SADB M-1)
- ~COFFEE BREAK~

**Poster Sessions S3, S6, S8, S11, S14** (Ballroom B)

**WEDNESDAY, July 8th**

- **Oral Session 1**: Macro and micronutrient dynamics in soil (SADB M-1)
  - ~COFFEE BREAK~
- **Oral Session 1**: Macro and micronutrient dynamics in soil (SADB M-1)
  - ~LUNCH BREAK~

**Keynote Session 1**: Macro and micronutrient dynamics in soil (SADB M-1)

**Oral Session 1**: Macro and micronutrient dynamics in soil (SADB M-1)
- ~COFFEE BREAK~

**Poster Sessions S1, S5, S9, S15, S17** (Ballroom B)

**FRIDAY, July 10th**

**Keynote Session 5**: Analytical and methodological advances in soil study (SADB M-1)

**Oral Session 5**: Analytical and methodological advances in soil study (SADB M-1)
- ~COFFEE BREAK~

**Oral Session 5**: Analytical and methodological advances in soil study (SADB M-1)
- ~LUNCH BREAK~

**Closing Ceremony**
MONDAY, July 6th

Breakfast (Salle du Parc)
Opening Ceremony (Ballroom A)
Plenary (Ballroom A)
Oral Session 7: Chemical and biological controls on organic P cycling in terrestrial and aquatic environments (SADB 2/36)
~COFFEE BREAK~
Oral Session 7: Chemical and biological controls on organic P cycling in terrestrial and aquatic environments (SADB 2/36)
~LUNCH BREAK~
Keynote Session 7: Chemical and biological controls on organic P cycling in terrestrial and aquatic environments (SADB 2/36)
Oral Session 6: Agricultural greenhouse gas emissions (SADB 2/36)
~COFFEE BREAK~
Poster Sessions S2, S4, S7, S12, S13 (Ballroom B)

TUESDAY, July 7th

Keynote Session 6: Agricultural greenhouse gas emissions (SADB M-1)
Oral Session 6: Agricultural greenhouse gas emissions (SADB M-1)
~COFFEE BREAK~
Oral Session 11: Wetland soils in a changing climate (SADB 2/36)
~LUNCH BREAK~
Keynote Session 11: Wetland soils in a changing climate (SADB 2/36)
Oral Session 12: Proximal soil sensing (SADB 2/36)
~COFFEE BREAK~
Poster Sessions S3, S6, S8, S11, S14 (Ballroom B)

CSSS – General assembly of members
(Ballroom A)

WEDNESDAY, July 8th

Keynote Session 12: Proximal soil sensing (SADB 2/36)
Oral Session 12: Proximal soil sensing (SADB 2/36)
Oral Session 13: Spatial and temporal dynamics of soil processes and their interactions at multiple scales to study complex soil systems (SADB 2/36)
~COFFEE BREAK~
Oral Session 13: Spatial and temporal dynamics of soil processes and their interactions at multiple scales to study complex soil systems (SADB 2/36)
~LUNCH BREAK~
Keynote Session 13: Spatial and temporal dynamics of soil processes and their interactions at multiple scales to study complex soil systems (SADB 2/36)
Oral Session 9: Soil science education and outreach (SADB 2/36)
~COFFEE BREAK~
Poster Sessions S1, S5, S9, S15, S17 (Ballroom B)

FRIDAY, July 10th

Keynote Session 9: Soil science education and outreach (SADB 2/36)
Oral Session 9: Soil science education and outreach (SADB 2/36)
Oral Session 8: Microbial provision of essential services across managed and natural ecosystems (SADB 2/36)
~COFFEE BREAK~
Oral Session 8: Microbial provision of essential services across managed and natural ecosystems (SADB 2/36)
~LUNCH BREAK~
Closing Ceremony
AQSSS Sponsored Sessions

**MONDAY, July 6th**

**Opening Ceremony** (Ballroom A)

**Plenary** (Ballroom A)

**Oral Session 16:** Management Zones in Precision Agriculture/ Zones d’aménagement en Agriculture de Précision (ENGTR 1100)

~COFFEE BREAK~

**Oral Session 16:** Management Zones in Precision Agriculture/ Zones d’aménagement en Agriculture de Précision (ENGTR 1100)

~LUNCH BREAK~

**Poster Sessions S2, S4, S7, S12, S13** (Ballroom B)

**AQSSS – General assembly of members**

(Ballroom A)

**WEDNESDAY, July 7th**

**Keynote Session 15:** Biochar in agriculture and environment/ Le biochar en agriculture et en environnement (ENGTR 1100)

**Oral Session 15:** Biochar in agriculture and environment/ Le biochar en agriculture et en environnement (ENGTR 1100)

~COFFEE BREAK~

**Oral Session 15:** Biochar in agriculture and environment/ Le biochar en agriculture et en environnement (ENGTR 1100)

~LUNCH BREAK~

**Poster Sessions S1, S5, S9, S15, S17** (Ballroom B)

**TUESDAY, July 7th**

**Oral Session 17:** Soils of natural, managed and intensive forest systems/ Les sols de systems forestiers naturels, aménagés et intensifs (ENGTR 1100)

~COFFEE BREAK~

**Oral Session 17:** Soils of natural, managed and intensive forest systems/ Les sols de systems forestiers naturels, aménagés et intensifs (ENGTR 1100)

~LUNCH BREAK~

**Keynote session 17:** Soils of natural, managed and intensive forest systems/ Les sols de systems forestiers naturels, aménagés et intensifs (ENGTR 1100)

**Oral Session 17:** Soils of natural, managed and intensive forest systems/ Les sols de systems forestiers naturels, aménagés et intensifs (ENGTR 1100)

~COFFEE BREAK~

**Poster Sessions S3, S6, S8, S11, S14** (Ballroom B)

**FRIDAY, July 7th**

**Closing Ceremony**
General Session

**WEDNESDAY, July 8**

**Oral Session 14:** General soil science  
(ENGTR 1100)

**FRIDAY, July 10**

**Oral Session 14:** General soil science  
(ENGTR 1080)

~COFFEE BREAK~

**Oral Session 14:** General soil science  
(ENGTR 1080)

~LUNCH BREAK~

Closing Ceremony
“Conference Program at a Glance”
<table>
<thead>
<tr>
<th>ISMOM</th>
<th>CSSS</th>
<th>AQSSS/ <em>General</em></th>
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<tbody>
<tr>
<td><strong>Monday, July 6th</strong></td>
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<tr>
<td>07:00 – 09:30</td>
<td>Complimentary Breakfast (Salle du Parc)</td>
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<tr>
<td>07:50 – 08:10</td>
<td>Opening Ceremony (Ballroom A)</td>
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<tr>
<td>08:10 – 09:00</td>
<td><strong>Plenary</strong> (Ballroom A) <strong>John Duxbury</strong>: Changing concepts of organo-mineral interactions in soils: Impacts on soil properties and sustainable development</td>
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<tr>
<td>09:10 – 10:30</td>
<td>Oral Session 2 (SADB M-1): Dynamics of Pollutants in Soil</td>
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<td></td>
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<td>Rim Benjannet, Lotfi Khiari, Barry Thompson: <em>Environmental model of P saturation for acidic soils of Prince Edward Island</em></td>
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<td>Weixi Shu, Gordon Price, Rob Jamieson: <em>Application of the Root Zone Water Quality Model (RZWQM) to stimulate fate and transport of emerging substances of concern in soils receiving long-term biosolids application</em></td>
</tr>
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<td>Johanne Cennerazzo, Alexis deJunet, Jean-Nicolas Audinot, Patrick Grysan, Corinne Leyval: <em>Dynamics of PAH and derived organic compounds in a soil-plant microcosm spiked with 13C-phenanthrene</em></td>
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<td></td>
<td></td>
<td>Daniel Gillis, Gordon Price, Shiv Prasher: <em>Assessment of triclosan toxicity to the earthworm Eisenia fetida under laboratory conditions using GC-MS metabolomics</em></td>
</tr>
<tr>
<td>10:10</td>
<td>Oral Session 7 (SADB 2/36): Chemical and Biological Controls on Organic P Cycling in Terrestrial and Aquatic Environments</td>
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<td></td>
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<td>Tandra Fraser, L.M. Condron, P.M. Haygarth: <em>On new opportunities and techniques for advancing the study of soil phosphorus</em></td>
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<td>Kim Schneider, Paul Voroney, Derek Lynch, Astrid Oberson, Emmanuel Frossard, Else Bünemann: <em>Gross P mineralization and microbial P uptake in forage field soils along a soil test P gradient</em></td>
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<td>Sirajum Munira, Annemieke Farenhorst, Don Flaten, Cynthia Grant: <em>Influence of soil pH and inorganic phosphate levels on glyphosate sorption</em></td>
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<td>Xiaqian Jiang, Roland Bol, Volker Nischwitz, Nina Siebers, Sabine Willbold, Harry Vereecken, Wulf Amelung, Erwin Klumpp: <em>Phosphorus containing water dispersible nanoparticles in arable soil</em></td>
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<tr>
<td>10:30 – 11:00</td>
<td>Coffee Break (outside of respective lecture rooms)</td>
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<tr>
<td>11:00 – 12:40</td>
<td>Oral Session 2 (SADB M-1): Dynamics of Pollutants in Soil</td>
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<td>Siobhan Staunton, Triung Phuc Hung, Yasmina El Khouli, Roger Frutos, Hervé Quinquempoix: <em>Conservation of insecticidal activity of CrylAc adsorbed on three contrasting soils and persistence with time</em></td>
</tr>
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<td>Philip Haygarth, Ying Wang, Ben Surridge: <em>Fate and transport of labile DNA- and phospholipid-phosphorus through a grassland catchment transfer continuum</em></td>
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<td></td>
<td>Xueming Yang, Craig Drury, Jingyi Yang, Dan Reynolds, Mary-Anne Reeb: <em>The spring nitrate-N soil test can improve the general N recommendation for corn production on a clay loam in southwestern Ontario</em></td>
</tr>
<tr>
<td>11:00</td>
<td>Oral Session 16 (ENGTR 1100): Management Zones in Precision Agriculture/ Zones d’Aménagement en Agriculture de Précision</td>
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<td></td>
<td></td>
<td>Doug Aspinall, Stewart Sweeney: <em>High-resolution elevation data (h-red) clouds generated on-farm facilitate detailed soil mapping and precision management of Ontario farm fields</em></td>
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<td>Nicolas Tremblay, Carl Bélec, Philippe Vigneault, Lucie Grenon, Edith Fallon, Yacine Bouroubi: <em>Response of corn to N rates as a function of soil properties in a precision farming context</em></td>
</tr>
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<td>Doug Aspinall, Stewart Sweeney: <em>Multi-temporal, multi-parameter geospatial data sets facilitate detailed soil mapping of Ontario farm fields</em></td>
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<td>Doug Aspinall, Stewart Sweeney: <em>Sustainable cropping system management zones: a central role for intrinsic soil properties, landscape feature delineation</em></td>
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</table>
### Soil Interfaces for Sustainable Development Program, 5th – 10th July, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speakers/Authors</th>
<th>Title/Abstract</th>
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<tbody>
<tr>
<td>11:20</td>
<td>Sorption and desorption kinetics on mixtures of non-steroidal anti-inflammatory drugs in different textured agricultural soils</td>
<td>Yu Zhang, Gordon Price, Rob Jamieson</td>
<td>Phosphorus of colloidal forest soil fractions as revealed by field flow fractionation and liquid-state 31P-NMR</td>
</tr>
<tr>
<td>11:40</td>
<td>The assessment of non-point-source of contamination on the kinetics of some potentially toxic elements desorbed from contaminated soils</td>
<td>Alaa Zaghloul, M. Sader, S. El-Ashry, S. Hobballa</td>
<td>Temporal characterization of phosphorus forms, bioavailability, and mobility in Lake Champlain sediments</td>
</tr>
<tr>
<td>12:00</td>
<td>Heavy metal concentration in soil in the tailing dam vicinity of an old gold mine in Johannesburg, South Africa</td>
<td>Rosaline Olobatoke, Manny Mathuthu</td>
<td>Phosphorus nanoparticles and colloids of forest stream waters – fractionation and potential role in ecosystems</td>
</tr>
<tr>
<td>12:20</td>
<td>Evaluation of soil microbial communities as influenced by crude oil pollution</td>
<td>Eucharia Nwaichi, Eugene Onyeke, Lasbrey Opara</td>
<td>A comparison of phosphorus forms and concentrations in midden samples and forest soils from Calvert Island, BC arable soil</td>
</tr>
<tr>
<td>12:40 – 14:00</td>
<td>Guy Mehuys Memorial Luncheon (Ballroom A and Salle du Parc)</td>
<td></td>
<td>Keynote Session 2 (SADB M-1): Dynamics of Pollutants in Soil</td>
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<tr>
<td>14:00 – 14:30</td>
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<td>Beverly Hale: The contributions of heritable variation, soil chemistry, and meteorological conditions in accumulation of Cd by Glycine max in Ontario</td>
<td>Luisella Celi: Role of iron oxides in controlling organic P cycling in soil</td>
</tr>
<tr>
<td>14:30</td>
<td>Dynamics of Pollutants in Soil</td>
<td>Kaya Muyumba Donato, Olivier Pourret, Amandine Lénard, Michel-Pierre Faucon, Gregory Mahy, Gilles Colinet</td>
<td>Experimental assessment of copper and cobalt phytoavailability in soils from metalliferous ecosystems in Katanga</td>
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<td>12:40 – 14:00</td>
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**CSSS Pedology Subcommittee Working Lunch (Salle des Pins)**

**Keynote Session 2 (SADB M-1): Dynamics of Pollutants in Soil**

**Keynote Session 7 (SADB 2/36): Chemical and Biological Controls on Organic P Cycling in Terrestrial and Aquatic Environments**
<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>14:50</td>
<td>Luba Vasiluk, Michael Dutton, Andrea Amendola, Lisa Van Loon, Beverley Hale: A correlation between nickel/metal mineralogy and its bioaccessibility in artificial (OECD) spiked soils</td>
</tr>
<tr>
<td>15:10</td>
<td>Heather McShane, Dina Schwertfeiger, Timothy D. Schwinghanner, William Hendershot: Adding silver nanoparticles to soils directly or in biosolids leads to differences in Ag speciation</td>
</tr>
<tr>
<td>15:30</td>
<td>Jim Miller, Tony Curtis, David Chanasyk, Sharon Reedyk: Influence of mowing and narrow grass buffer widths on reductions in sediment, nutrients, and bacteria in surface runoff</td>
</tr>
<tr>
<td>16:00</td>
<td>Coffee Break (Ballroom A)</td>
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<tr>
<td>16:30</td>
<td>Poster Sessions S2, S4, S7, S12 and S13 (Ballroom B)</td>
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<tr>
<td>18:00</td>
<td>AQSSS – General Assembly of Members (Ballroom A)</td>
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<tr>
<td>19:30</td>
<td>Soil Movie Night (Adams Building Auditorium)</td>
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<tr>
<td></td>
<td><strong>Tuesday, July 7th</strong></td>
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<tr>
<td>08:00</td>
<td><strong>Keynote Session 4</strong> (SADB 2/36): Organo-Mineral Interactions in Soil</td>
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<td>Rota Wagai: Organo-mineral associations at different levels of soil aggregate hierarchy: What do we get from physical fractionation?</td>
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<tr>
<td>08:30</td>
<td><strong>Oral Session 4</strong> (SADB 2/36): Organo-Mineral Interactions in Soil</td>
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<td>Sofia Oufqir, James Dynes, Brandy Toner, Paul Bloom: Spatial distribution of soil organic matter across density fractions of soil day nanoparticles: STXM chemical mapping</td>
</tr>
<tr>
<td>08:50</td>
<td>Qiaoyun Huang, Huayong Wu, Weni Chen, Jeremy Fein, Peng Cai: Atomic force microscopy measurements of bacterial adhesion and biofilm formation onto clay-sized particles</td>
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<tr>
<td>08:30</td>
<td><strong>Keynote Session 6</strong> (SADB M-1): Agricultural Greenhouse Gas Emissions</td>
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<td>Philippe Rochette: Nitrogen fertilization and soil N2O emissions</td>
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<tr>
<td>08:30</td>
<td><strong>Oral Session 6</strong> (SADB M-1): Agricultural Greenhouse Gas Emissions</td>
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<td>Megan Westphal, Mario Tenuta, Martin Entz: Contribution of soil N2O emissions from fall alfalfa plow-down in organic cropping systems</td>
</tr>
<tr>
<td>08:30</td>
<td><strong>Oral Session 17</strong> (ENGTR 1100): Soils of Natural, Managed and Intensive Forest Systems/ Les Sols de Systems Forestiers Naturels, Aménagés et Intensifs</td>
</tr>
<tr>
<td></td>
<td>Paul Hazlett, Nathan Basiliko, Emma Horgan, Honghi Tran, Trevor Jones: Nutrient and trace metal leaching in boreal and temperate forest soils following wood ash applications</td>
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<tr>
<td>09:00</td>
<td>Lili Perreault, Suzanne Brais, Nicolas Bélanger: Restoring a disturbed clayey forest soil using dehydrated sewage sludge</td>
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<tr>
<td>11:00</td>
<td>Ellen Kandeler, Franziska Dittenich, Aurelia Gebala, Susanne Kramer, Sven Marhan, Christian Poll: Microbial resource partitioning in microhabitats of soils</td>
</tr>
<tr>
<td>11:20</td>
<td>Sebastian Preussler, Sven Marhan, Christian Poll, Ellen Kandeler: Influence of substrate availability and environmental conditions on microbial communities and enzyme activities in topsoil and subsoil habitats</td>
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<td>Time</td>
<td>Presentation</td>
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<tr>
<td>12:00</td>
<td>Michael Carson, Nathan Basiliko: Methanogen community responses to a gradient of sulfur and metal contamination in Sudbury, ON peatlands</td>
</tr>
<tr>
<td>12:20</td>
<td>Kazuyuki Inubushi, Shunsuke Harazawa, Maasa Takahashi: Effect of zeolite and bacteria on straw decomposition and greenhouse gas emission from paddy field</td>
</tr>
<tr>
<td>12:40-14:00</td>
<td>Lunch Break (Ballroom A &amp; Salle du Parc)</td>
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<tr>
<td>14:00-14:30</td>
<td>Keynote Session 3 (SADB M-1): Soil Microbiology</td>
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<tr>
<td>14:30</td>
<td>Nicole Sukdeo, Ewing Teen, P. Michael Rutherford, Hugues B. Massicotte, Keith N. Egger: Short-term shifts in fungal community structure accompanying soil disturbance: observations from a six-month microcosm study</td>
</tr>
<tr>
<td>14:50</td>
<td>Melissa Arcand, Bobbi Helgason: Carbon limitation constrains soil microbial activity and influences microbial community composition in soils under organic management</td>
</tr>
<tr>
<td>15:10</td>
<td>Hermine Huot, Jessica Joyner, Theodore Muth, Richard Shaw, Roxanne Walker, Mike Wilson, Zonghqi Cheng: Bacterial diversity and profile characteristics of urban soils in New York City</td>
</tr>
<tr>
<td>12:00</td>
<td>Elizabeth Cowan: Differences in CH₄ production, storage and transport among plant community types during a wet summer at Mer Bleue bog, Ottawa</td>
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<tr>
<td>12:20</td>
<td>Andrew Pinsonneault, Tim Moore, Nigel Roulet: Patterns of microbial enzyme activity across three temperate Canadian peatlands</td>
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<tr>
<td>12:40-14:00</td>
<td>Lunch Break (Ballroom A &amp; Salle du Parc)</td>
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<tr>
<td>14:00-14:30</td>
<td>Keynote Session 11 (SADB 2/36): Wetland Soils in a Changing Climate</td>
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<tr>
<td>14:30</td>
<td>Elyn Humphreys: Ecosystem-scale methane fluxes in Canadian wetlands</td>
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<tr>
<td>14:50</td>
<td>Shane Furze: Enhancing digital elevation models for improved soils mapping</td>
</tr>
<tr>
<td>15:10</td>
<td>Brandon Heung, Derrick Ho, Jin Zhang, Anders Knudby, Chuck Bulmer, Margaret Schmidt: A comparison of machine learning techniques in digital soil mapping for the Lower Fraser Valley, British Columbia</td>
</tr>
<tr>
<td>12:00</td>
<td>William Barnes, Sylvie Quideau, Matthew Swallow: Sandy soils of the Athabasca oil sands region: what's driving productivity?</td>
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<tr>
<td>12:20</td>
<td>Kevin Keys, David Burton: Using historic soil survey data for spruce plantation sustainability assessments – a Nova Scotia case study</td>
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Lunch Break (Ballroom A & Salle du Parc)

Session 6 Agricultural Greenhouse Gases Working Lunch (Salle des Pins)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>15:30</td>
<td>Navid Bazghaleh, Chantal Hamel, Yantai Gan, Diane Knight, Bunyamin Tar'an: Genotype-specific variations shape the structure of root fungal communities and determine the response of chickpea to symbiotic fungi</td>
<td>Jin Zhang, Brandon Heung, Derrick Ho, Anders Knudby, Chuck Bulmer, Margaret Schmidt: Does increasing complexity of tree-based classifiers improve prediction results in digital soil mapping?</td>
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<td>18:00</td>
<td>CSSS – General Assembly of Members (Ballroom A)</td>
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<tr>
<td>19:30</td>
<td>CSSS Trivia Night (McKibbin’s Pub)</td>
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<tr>
<td>Wednesday, July 8th</td>
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<tr>
<td>08:00 – 08:30</td>
<td>Keynote Session 12 (SADB 2/36): Proximal Soil Sensing</td>
<td>Rafael Viscarra Rossel: Proximal multi sensor system for measuring soil condition</td>
</tr>
<tr>
<td>08:30 – 09:50</td>
<td>Oral Session 1 (SADB M-1): Macro and Micronutrient Dynamics in Soil</td>
<td>Emmanuel Frossard: Nitrogen, phosphorus relationships in cropped soils</td>
</tr>
<tr>
<td>08:30</td>
<td>Oral Session 12 (SADB 2/36): Proximal Soil Sensing</td>
<td>Fabio Rodrigo Leiva-Baron: Proximal sensors for site-specific fertilization: A case study in maize crops in Colombia</td>
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<tr>
<td>08:50</td>
<td>Oral Session 15 (ENGTR 1100): Biochar in Agriculture and Environment/ Le Biochar en Agriculture et en Environment</td>
<td>Patrick Brassard: Historical barriers to biochar utilization: Is there a way to avoid these same hurdles?</td>
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**Additional Information:**
- Keynote Session 12: Proximal Soil Sensing
- Oral Session 1: Macro and Micronutrient Dynamics in Soil
- Oral Session 12: Proximal Soil Sensing
- Oral Session 15: Biochar in Agriculture and Environment/ Le Biochar en Agriculture et en Environment
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<td><strong>Oral Session 13 (SADB 2/36):</strong> Spatial and Temporal Dynamics of Soil Processes and their Interactions at Multiple Scales to Study Complex Soil Systems</td>
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<tr>
<td>09:50</td>
<td>Gabriel Maltais-Landry, Eric Brennan, Emmanuel Frossard, Kate Scow, Peter Vitousek: The effects of cover crops on phosphorus cycling in agricultural soils of California</td>
<td>David Burton, Kyra Stiles, Bernie Zebarth: Spatial and temporal variation in soil nitrogen supply in potato cropping systems in Prince Edward Island</td>
<td>Kayla Stewart, Jonal Abedin, Peter Beckett, Graeme Spiers, Keith Chaulk: Use of biochar as a soil amendment for fertility improvement in the sandy soils of Labrador</td>
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<td>Coffee Break (outside of respective lecture rooms)</td>
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<tr>
<td>11:00</td>
<td>Blake Weiseth, Jeff Schoenau, Derek Peak: Impact of phosphorus fertilizer placement on crop, soil, and run-off water in a brown chernozen in south-central Saskatchewan</td>
<td>Bernie Zebarth, Claudia Goyer, Sheng Li, Sean Whitney, Sara Neupane: Spatial variation in soil bacterial communities in a commercial potato field</td>
<td>Benjamin Pace, Sarasadat Taherymoosavi, Paul Munroe, Stephen Joseph: Mineral based nutrient dynamics of dual feedstock biochars under increasing pyrolysis temperatures</td>
</tr>
<tr>
<td>11:20</td>
<td>Andrea Jilling, A. Stuart Grandy: Organic matter distribution across particulate and mineral-associated fractions varies directly and interactively with cover cropping and tillage management</td>
<td>Marie-France Jones: Mapping temporal and spatial soil hydrothermal and mechanical properties by way of the soil trafficability prediction model (STRAP)</td>
<td>Frédéric Rees: Mechanisms of soil pH regulation by biochar amendments and consequences for biochar long-term effects</td>
</tr>
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<td>11:40</td>
<td>Martin Chantigny, Denis Angers, Philippe Rochette, Claudia Goyer: Nitrification occurs in frozen agricultural soils – consequences on fate and management of fall-applied and soil residual N under cold climate</td>
<td>Ebrahim Mahmoudabadi, Asim Biswas, Alireza Karimi Karouyeh: The impacts of changing rangeland into forest park on availability of heavy metals</td>
<td>Sébastien Lange, Suzanne Allaire: Biochar as a component of potting soils: case studies</td>
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<tr>
<td>Time</td>
<td>Session</td>
<td>Title</td>
<td>Speaker(s)</td>
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<tr>
<td>12:00</td>
<td>Oral</td>
<td>Impact of cover crops and organic and mineral fertilization on canola yields and nitrogen uptake</td>
<td>Mathieu Vaillancourt, Anne Vanasse, Martin Chantigny, Denis Pageau, Denis Angers</td>
</tr>
<tr>
<td>12:20</td>
<td>Oral</td>
<td>Scaling mineral nitrogen dynamics by soil aggregate size</td>
<td>Gordon Price, A. Georgallas, A. Burton, W. Shu</td>
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<tr>
<td>12:40 – 13:00</td>
<td>Lunch</td>
<td>Lunch Break (Ballroom A &amp; Salle du Parc)</td>
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<tr>
<td>13:00 – 15:50</td>
<td>Oral</td>
<td>Keynote Session 9 Soil Science Education Working Lunch (Salle des Pins)</td>
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<tr>
<td>13:30</td>
<td>Oral</td>
<td>Macro and Micronutrient Dynamics in Soil</td>
<td>Stephan Kraemer: Thermodynamics and kinetics of plant iron acquisition</td>
</tr>
<tr>
<td>13:30</td>
<td>Oral</td>
<td>Macro and Micronutrient Dynamics in Soil</td>
<td>Ken Van Rees: Innovation and creativity: Practical application in soil science field courses</td>
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<td>14:00 – 15:50</td>
<td>Oral</td>
<td>Oral Session 1 (SADB M-1): Macro and Micronutrient Dynamics in Soil</td>
<td>Amal Roy, Claudia Wagner-Riddle, Bill Deen, John Lauzon, Tom Bruulsema: Nitrogen application rate, timing and history effects on corn nitrogen use efficiency</td>
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<tr>
<td>14:30</td>
<td>Oral</td>
<td>Oral Session 1 (SADB M-1): Macro and Micronutrient Dynamics in Soil</td>
<td>Paul Hazlett: Envirothon: Hands-on soils education for secondary schools students – a soils professional perspective</td>
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<td>15:00</td>
<td>Oral</td>
<td>Oral Session 3 (SADB M-2): Organic matter and nitrogenase activity</td>
<td>Keith Reid, Tiequan Zhang, Keith Fuller: Tile drains as modifiers of source and transport factors for nutrient exports from agricultural fields</td>
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<tr>
<td>16:00 – 16:30</td>
<td>Coffee</td>
<td>Coffee Break (Ballroom A)</td>
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Thursday, July 9th

Touristic Excursion to the Montreal Botanical Gardens, Insectarium and Île Ste-Hélène
08:00
Departure from New Residence Hall
Arrive back at New Residence Hall

Soil and Precision Agriculture Field Trip
08:00
Departure from New Residence Hall
Arrive back at New Residence Hall

Organic, Mineral, and Forest Soils, and Soils in Organic Production/ Sols organiques, minéraux et forestiers et sols en production biologique
08:00
Departure from New Residence Hall
Arrive back at New Residence Hall

“Back to Basics: Creating Paint from Soil”
09:00 – 16:00
Strathcona Building, Room M/66

Canadian 4R Research Network Meeting
09:00 – 16:00
Strathcona Building, Room M/48

Friday, July 10th

Keynote Session 5
(SADB M-1): Analytical and Methodological Advances in Soil Study
Peter Leinweber: Advances in the characterization of soil organic matter and speciation of major nutrient elements by the application of complementary mass spectrometric and synchrotron-based x-ray spectroscopic methods

Keynote Session 9
(SADB 2/36): Soil Science Education and Outreach
Doug Hayhoe: Soil science education with K-12 students in Canada
<table>
<thead>
<tr>
<th>Time</th>
<th>Session 5</th>
<th>Session 9</th>
<th>Session 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:50</td>
<td>Dalel Abdi, Barbara Cade-Menun, Noura Ziadi, Léon-Étienne Parent: <em>Unbiased statistical analysis of soil 31P-NMR forms using compositional concept</em></td>
<td>Claire Vasseur, Jocelyn Gagnon: <em>&quot;La forêt m'invite&quot;: A wild leek conservation project for high school students</em></td>
<td>Baishali Dutta, Brian Grant, Katelyn Congreves, Ward Smith, Claudia Wagner-Riddle, Andrew VanderZaag, Raymond Desjardins.: <em>Model development and testing of soil temperature in DNDC for the effects of snow, biomass and residue cover and soil texture</em></td>
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<td>09:10</td>
<td>Adam Gillespie, David Chevrier, Teak Boyko, James Dynes, Tom Regier, Derek Peak: <em>Integrated light element x-ray excitation emission spectroscopy: speciation, diffraction, quantitation in one soil analysis</em></td>
<td>Jacynthe Masse: <em>Planting seeds of knowledge in soil: How to get children’s hand (scientifically) dirty</em></td>
<td>Yi Cheng: <em>Soil pH is a good predictor of dominating N2O production pathways under aerobic conditions</em></td>
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<tr>
<td>09:30</td>
<td>Kambiz Khosravi, Gordon Price: <em>Determination of phthalates in soils and biosolids using accelerated solvent extraction coupled with SPE and GC-MS</em></td>
<td>Laurent Fontaine, David Paré, Nelson Thiffault, André Fortin, Yves Piché: <em>Apatite and orthoclase forest fertilization: insoluble phosphorus and potassium made available by ectomycorrhizal fungi and associated bacteria</em></td>
<td>Mekonnen Giweta, Miles Dyck, S.S. Mahi, Sylvie Quideau, Dick Puurveen: <em>Comparison of nitrous oxide emissions from a gray soil subject to different long-term fertilizer and manure applications at the University of Alberta Breton Plots</em></td>
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<tr>
<td>09:50</td>
<td>Ankapura Gowda: <em>Propercianzine as a selective and sensitive reagent for the spectrophotometric determination of microgram amounts platinum in minerals</em></td>
<td>Chen Chen, Shan Huang, Xiaochun Peng: <em>Interactions of ammonium oxidation pathways in soil environments from Southern China</em></td>
<td>Amal Roy, Aaron Glen, Alan Moulin, Henry Wilson: <em>Soil nitrous oxide emissions from cropland in southern Manitoba</em></td>
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<tr>
<td>10:10</td>
<td>Francesco Scandellari, Elisabetta Tome, Massimo Tagliavini: <em>The role of arbuscular mycorrhizal fungi in carbon cycle of agroecosystems</em></td>
<td></td>
<td>Tanja Voegel, Mesfin Fentabil, Craig Nichol, Louise Nelson: <em>Nitrifier and denitrifier abundances in vineyard soil in response to agricultural management practices</em></td>
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* Coffee Break (outside of respective lecture rooms)
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<tr>
<td>11:00</td>
<td>Anna Bosch, Corina Doerfer, Jin-Sheng He, Karsten Schmidt, Thomas Scholten: Approximating soil respiration and belowground biomass on the Qinghai-Tibet plateau with different empirical models</td>
<td>Claudia Goyer, Sophie Wertz, Bernino Zebarth, David Burton, Enrico Tatti, Martin Chantigny, Martin Filion: The amplitude of soil freeze-thaw cycles influence temporal dynamics of N₂O emissions and denitrifier transcriptional activity and community structure</td>
<td>Katharina Keiblinger, Thomas Schneider, Inés Wilhartitz, Stephan Fuchs, Kathrin Riedel, Sophie Zechmeister-Bollenstern: Metaproteomics of soil and leaf litter – Potentials and challenges</td>
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<tr>
<td>11:40</td>
<td>Catherine Hepp, T.B. Bruun, A. de Neergaard: Permanganate-oxidizable carbon as a soil quality indicator in agricultural upland systems of Southeast Asia</td>
<td>Bobbi Helgason, Sarah Kuzmicz, Henry Janzen, Adam Gillespie, Sean Hemmingsen, Etienne Yergeau, Charles Greer, Jim Germida, Peter Leinweber: Historical Rotation ABC: changes in microbial community dynamics over 100 years of wheat production</td>
<td>Caroline Halde, Julia Cooper, Marcin Baranski, Majimcha Nobel de Lange, Paolo Bärberi, Andreas Filebach, Joséphine Peigné, Christophe David, Martin Entz: Soil carbon stocks and tillage intensity in organic farming systems: a meta-analysis</td>
</tr>
<tr>
<td>12:00</td>
<td>Hakima Chelabi, Lofti Khiai, Jacob Gualichand: Impact of changes in sample preparation parameters (drying, grinding and sieving) on soil characterization of coarse-textured results in Quebec</td>
<td>Thomas Jeanne, Richard Hogue, Nicolas Sanson, Léon-Étienne Parent: Study of soil bacterial, fungal and microfauna diversity in potato agroecosystems using high throughput sequencing</td>
<td>Newton Lupwayi, Yoong Soon: Nitrogen release from decomposing legume crop residues over three subsequent crops</td>
</tr>
</tbody>
</table>

**12:40 – 14:00** | BBQ Lunch (Trottier Lobby) |

**14:00 – 14:30** | Closing Ceremony (ENGTR 1080) |
Full Scientific Program
ISMOM Sponsored Sessions

**Monday, July 6th**

07:00 – 09:30 **Complimentary Breakfast**  
(Room: Salle du Parc)

07:50 – 08:10 **Opening Ceremony**  
(Room: Ballroom A)

08:10 – 09:00 **Plenary:**  
(Room: Ballroom A)

  John Duxbury  
  Changing concepts of organo-mineral interactions in soils: Impacts on soil properties and sustainable development

09:10 – 10:30 **Oral Session 2: Dynamics of Pollutants in Soil**  
(Room: SADB M-1) *Session Chair: Jean-Philippe Bellenger*

  09:10 Rim Benjannet, Judith Nyiraneza, Lotfi Khiari, Barry Thompson  
  *Environmental model of P saturation for acidic soils of Prince Edward Island*

  09:30 Weixi Shu, Gordon Price, Rob Jamieson  
  *Application of the Root Zone Water Quality Model (RZWQM) to stimulate fate and transport of emerging substances of concern in soils receiving long-term biosolids application*

  09:50 Johanne Cennerazzo, Alexis deJunet, Jean-Nicolas Audinot, Patrick Grysan, Corinne Leyval  
  *Dynamics of PAH and derived organic compounds in a soil-plant microcosm spiked with ^{13}C-phenanthrene*

  10:10 Daniel Gillis, Gordon Price, Shiv Prasher  
  *Assessment of triclosan toxicity to the earthworm Eisenia fetida under laboratory conditions using GC-MS metabolomics*

10:30 – 11:00 **Coffee Break**  
(Outside SADB M-1)

11:00 – 12:40 **Oral Session 2: Dynamics of Pollutants in Soil**  
(Room: SADB M-1) *Session Chair: Jean-Philippe Bellenger*

  11:00 Siobhan Staunton, Truong Phuc Hung, Yasmina El Khoulali, Roger Frutos, Hervé Quinquampoix  
  *Conservation of insecticidal activity of CrylAc adsorbed on three contrasting soils and persistence with time*

  11:20 Yu Zhang, Gordon Price, Rob Jamieson  
  *Sorption and desorption kinetics on mixtures of non-steroidal anti-inflammatory drugs in different textured agricultural soils*
11:40 Alaa Zaghloul, M. Sader, S. El-Ashry, E. Hobballa
*The assessment of non-point-source of contamination on the kinetics of some potentially toxic elements desorbed from contaminated soils*

12:00 Rosaline Olobatoke, Manny Mathuthu
*Heavy metal concentration in soil in the tailing dam vicinity of an old gold mine in Johannesburg, South Africa*

12:20 Eucharia Nwaichi, Eugene Onyeike, Lasbrey Opara
*Evaluation of soil microbial communities as influenced by cruel oil pollution*

12:40 – 14:00 Guy Mehuys Memorial Lunch
(Room: Ballroom A)

14:00 – 14:30 Keynote Session 2: Dynamics of Pollutants in Soil
(Room: SADB M-1) *Session Chair: Jean-Philippe Bellenger*

Beverley Hale
*The contributions of heritable variation, soil chemistry, and meteorological conditions in accumulation of cd by Glycine max in Ontario*

14:30 – 15:50 Oral Session 2: Dynamics of Pollutants in Soil
(Room: SADB M-1) *Session Chair: Jean-Philippe Bellenger*

14:30 Kaya Muyumba Donato, Olivier Pourret, Amandine Liénard, Michel-Pierre Faucon, Gregory Mahy, Gilles Colinet
*Experimental assessment of copper and cobalt phytoavailability in soils from metalliferous ecosystems in Katanga*

14:50 Luba Vasiluk, Michael Dutton, Andrea Amendola, Lisa Van Loon, Beverley Hale
*A correlation between nickel/metal mineralogy and its bioaccessibility in artificial (OECD) spiked soils*

15:10 Heather McShane, Dina Schwertfeger, Timothy D. Schwinghamer, William Hendershot
*Adding silver nanoparticles to soils directly or in biosolids leads to differences in Ag speciation*

15:30 Jim Miller, Tony Curtis, David Chanasyk, Sharon Reedyk
*Influence of mowing and narrow grass buffer widths on reductions in sediment, nutrients, and bacteria in surface runoff*

16:00 – 16:30 Coffee Break
(Room: Ballroom A)

16:30 – 17:50 Poster Session (S2, S4, S7, S12 and S13)
(Room: Ballroom B)

19:30 – 21:30 Soil Movie Night
(Adams Building Auditorium)
Tuesday, July 7th

08:00 – 08:30 Keynote Session 4: Organo-Mineral Interactions in Soil
(Room: SADB 2/36) *Session Chairs: Denis Angers and Francisco Matus

Rota Wagai
Organo-mineral associations at different levels of soil aggregate hierarchy: What do we get from physical fractionation?

08:30 – 10:30 Oral Session 4: Organo-Mineral Interactions in Soil
(Room: SADB 2/36) *Session Chairs: Denis Angers and Francisco Matus

08:30 Sofia Oufqir, James Dynes, Brandy Toner, Paul Bloom
*Spatial distribution of soil organic matter across density fractions of soil day nanoparticles: STXM chemical mapping*

08:50 Qiaoyun Huang, Huayong Wu, Wenli Chen, Jeremy Fein, Peng Cai
*Atomic force microscopy measurements of bacterial adhesion and biofilm formation onto clay-sized particles*

09:10 Carmen Enid Martinez, Michael Schmidt, Aubrey Fine, Joseph Dvorak
*Character of organic matter in deep soils of temperate forest ecosystems*

09:30 Siobhan Staunton, Maguelone Nogaret, Laurie Amenc, Hervé Quiquampoix
*Choice of extraction cocktail to remove contrasting proteins from reference soil minerals with a view to soil metaproteomic analysis*

09:50 Amanda Diochon, E.G. Gregorich, B.H. Ellert, H.H. Janzen, B.B. Helgason
*The role of temperature and soil texture in decomposition: findings from a physical fractionation study*

10:10 Michael Schmidt, Carmen Martinez
*Kinetic, thermodynamic and conformational insights of BSA adsorption onto montmorillonite revealed using in-situ ATR-FTIR/2D-COS*

10:30 – 11:00 Coffee Break
(Outside SADB 2/36)

11:00 – 12:40 Oral Session 3: Soil Microbiology
(Room: SADB M-1) *Session Chair: Nathan Basiliko

11:00 Ellen Kandeler, Franziska Ditterich, Aurelia Gebala, Susanne Kramer, Sven Marhan, Christian Poll
*Microbial resource partitioning in microhabitats of soils*

11:20 Sebastian Preusser, Sven Marhan, Christian Poll, Ellen Kandeler
*Influence of substrate availability and environmental conditions on microbial communities and enzyme activities in topsoil and subsoil habitats*

11:40 Bert VandenBygaart, Bobbi Helgason, Hannah Konschuh, Angela Beard-Haughn, Adam Gillespie, Ed Gregorich
*Stability of buried soil organic matter in cropland: What are the mechanisms?*
12:00  Michael Carson, Nathan Basiliko
*Methanogen community responses to a gradient of sulfur and metal contamination in Sudbury, ON peatlands*

12:20  Kazuyuki Inubushi, Shunsuke Hanazawa, Maasa Takahashi
*Effect of zeolite and bacteria on straw decomposition and greenhouse gas emission from paddy field*

12:40 – 14:00 **Lunch Break**
(Rooms: Ballroom A & Salle du Parc)

14:00 – 14:30 **Keynote Session 3: Soil Microbiology**
(Room: SADB M-1) *Session Chair: Ellen Kandeler*

  **Kornelia Smalla**
  Soil microorganisms – architects and actors of biogeochemical interfaces

14:30 – 15:50 **Oral Session 3: Soil Microbiology**
(Room: SADB M-1) *Session Chair: Ellen Kandeler*

  14:30  Nicole Sukdeo, Ewing Teen, P. Michael Rutherford, Hugues B. Massicotte, Keith N. Egger
  *Short-term shifts in fungal community structure accompanying soil disturbance: observations from a six-month microcosm study*

  14:50  Melissa Arcand, Bobbi Helgason
  *Carbon limitation constrains soil microbial activity and influences microbial community composition in soils under organic management*

  15:10  Hermine Huot, Jessica Joyner, Theodore Muth, Richard Shaw, Roxanne Walker, Mike Wilson, Zonghqi Cheng
  *Bacterial diversity and profile characteristics of urban soils in New York City*

  15:30  Navid Bazghaleh, Chantal Hamel, Yantai Gan, Diane Knight, Bunyamin Tar’an
  *Genotype-specific variations shape the structure of root fungal communities and determine the response of chickpea to symbiotic fungi*

16:00 – 16:30 **Coffee Break**
(Room: Ballroom A)

16:30 – 17:50 **Poster Session (S3, S6, S8, S11 and S14)**
(Room: Ballroom B)

19:30  **CSSS Trivia Night @ McKibbin’s Pub**
**Wednesday, July 8th**

08:30 – 10:30 **Oral Session 1: Macro and Micronutrient Dynamics in Soil**  
*(Room: SADB M-1) *Session Chair: Jean-Philippe Bellenger

*Soil properties and not inputs control the carbon, nitrogen, phosphorus relationships in cropped soils*

08:50  **Jeff Schoenau, Tom King, Gourango Kar, Hasan Ahmed, Derek Peak**  
*Following the fate of different sulfur fertilizers in prairie soils*

09:10  **Kumudu Jayaratne, Darshani Kumaragamage, Don Flaten, Srimathie Indraratne, Doug Goltz**  
*A field microcosm study to investigate phosphorus release from Manitoba soils under prolonged flooding*

09:30  **Carlos Monreal, Marcela González**  
*Soil phosphatase and phytase activities in canola and wheat rhizospheres during the growing season*

09:50  **Gabriel Maltais-Landry, Eric Brennan, Emmanuel Frossard, Kate Scow, Peter Vitousek**  
*The effects of cover crops on phosphorus cycling in agricultural soils of California*

10:10  **Haixiao Li, Noura Ziadi, Léon-Étienne Parent, Christian Morel, Alain Mollier**  
*Tillage practice and phosphorus fertilization effects on the distribution and morphology of corn root*

10:30 – 11:00 **Coffee Break**  
*(Outside SADB M-1)*

11:00 – 12:40 **Oral Session 1: Macro and Micronutrient Dynamics in Soil**  
*(Room: SADB M-1) *Session Chair: Jean-Philippe Bellenger

11:00  **Blake Weiseth, Jeff Schoenau, Derek Peak**  
*Impact of phosphorus fertilizer placement on crop, soil, and run-off water in a brown chernozen in south-central Saskatchewan*

11:20  **Andrea Jilling, A. Stuart Grandy**  
*Organic matter distribution across particulate and mineral-associated fractions varies directly and interactively with cover cropping and tillage management*

11:40  **Martin Chantigny, Denis Angers, Philippe Rochette, Claudia Goyer**  
*Nitrification occurs in frozen agricultural soils – consequences on fate and management of fall-applied and soil residual N under cold climate*

12:00  **Mathieu Vaillancourt, Anne Vanasse, Martin Chantigny, Denis Pageau, Denis Angers**  
*Impact of cover crops and organic and mineral fertilization on canola yields and nitrogen uptake*
12:40 – 14:00 Lunch Break  
(Rooms: Ballroom A & Salle du Parc)

14:00 – 14:30 Keynote Session 1: Macro and Micronutrient Dynamics in Soil  
(Room: SADB M-1) *Session Chair: Emmanuel Frossard

Stephan Kraemer  
Thermodynamics and kinetics of plant iron acquisition

14:30 – 15:50 Oral Session 1: Macro and Micronutrient Dynamics in Soil  
(Room: SADB M-1) *Session Chair: Emmanuel Frossard

14:30 Amal Roy, Claudia Wagner-Riddle, Bill Deen, John Lauzon, Tom Bruulsema  
*Nitrogen application rate, timing and history effects on corn nitrogen use efficiency

14:50 Christelle Jouogo Noumsi, Nina Pourhassan, Romain Darnajoux, Thomas Wichard, Vincent Burrus, Jean-Philippe Bellenger  
*Effect of organic matter on nitrogenase metal cofactors homeostasis in the soil bacterium Azotobacter vinelandii under diazotrophic conditions

15:10 Maria de la Luz Mora, Gabriela Velasquez, Cornelia Rumpel, Leo Condron, Benjamin Turner, Marcela Calabi  
*Origin of inositol phosphates in residual fractions derived from Hedley fractionation in Chilean Andisols

15:30 John Knight  
*The unknown 1922 work of Lewis Fry Richardson on soil heat, moisture and vapor movement

16:00 – 16:30 Coffee Break  
(Room: Ballroom A)

16:30 – 17:50 Poster Session (S1, S5, S9, S15 and S17)  
(Room: Ballroom B)

19:00 – 22:00 Awards Gala Dinner  
(Centre Mont-Royal, Salon Mont-Royal)
Friday, July 10th

08:00 – 08:30 **Keynote Session 5:** Analytical and Methodological Advances in Soil Study
*(Room: SADB M-1)*  
*Session Chair: Myrna Simpson*

*Peter Leinweber*
Advances in the characterization of soil organic matter and speciation of major nutrient elements by the application of complementary mass spectrometric and synchrotron-based x-ray spectroscopic methods

08:30 – 10:30 **Oral Session 5:** Analytical and Methodological Advances in Soil Study
*(Room: SADB M-1)*  
*Session Chair: Myrna Simpson*

08:30 **Andre Simpson, Myrna Simpson, Hussain Masoom**
*The structure, associations and interactions of soil organic matter in-situ using comprehensive multiphase NMR spectroscopy*

08:50 **Dalel Abdi, Barbara Cade-Menun, Noura Ziadi, Léon-Étienne Parent**
*Unbiased statistical analysis of soil $^{31}$P-NMR forms using compositional concept*

09:10 **Adam Gillespie, David Chevrier, Teak Boyko, James Dynes, Tom Regier, Derek Peak**
*Integrated light element x-ray excitation emission spectroscopy: speciation, diffraction, quantitation in one soil analysis*

09:30 **Kambiz Khosravi, Gordon Price**
*Determination of phthalates in soils and biosolids using accelerated solvent extraction coupled with SPE and GC-MS*

09:50 **Ankapura Gowda**
*Propericiazine as a selective and sensitive reagent for the spectrophotometric determination of microgram amounts platinum in minerals*

10:30 – 11:00 **Coffee Break**
*(Outside SADB M-1)*

11:00 – 12:40 **Oral Session 5:** Analytical and Methodological Advances in Soil Study
*(Room: SADB M-1)*  
*Session Chair: Alain Plante*

11:00 **Anna Bosch, Corina Doerfer, Jin-Sheng He, Karsten Schmidt, Thomas Scholten**
*Approximating soil respiration and belowground biomass on the Qinghai-Tibet plateau with different empirical models*

11:20 **Rejane Pimentel, Richard Heck, Gabriela Almeida**
*Studying natural root systems in soil of the semi-arid region of Brazil*

11:40 **Catherine Hepp, T.B. Bruun, A. de Neergaard**
*Permanganate-oxidizable carbon as a soil quality indicator in agricultural upland systems of Southeast Asia*
12:00  Hakima Chelabi, Lotfi Khiari, Jacque Guallichand  
*Impact of changes in sample preparation parameters (drying, grinding and sieving) on soil characterization of coarse-textured results in Quebec*

12:20  Melanie Aubin, Maxime Paré, Réjean Girard  
*Determination of the fixation sites of metal trace elements in lake sediments from taiga and toundra forest with a scanning electron microscope*

12:40 – 14:00  **BBQ Lunch**  
(Room: Trottier Lobby)

14:00 – 14:30  **Closing Ceremony**  
(Room: ENGTR 1080)
CSSS Sponsored Sessions

**Monday, July 6th**

07:00 – 09:30 **Complimentary Breakfast**  
(Room: Salle du Parc)

07:50 – 08:10 **Opening Ceremony**  
(Room: Ballroom A)

08:10 – 09:00 **Plenary:**  
(Room: Ballroom A)

John Duxbury  
Changing concepts of organo-mineral interactions in soils: Impacts on soil properties and sustainable development

09:10 – 10:30 **Oral Session 7:** Chemical and Biological Controls on Organic P Cycling in Terrestrial and Aquatic Environments  
(SADB 2/36) *Session Chairs: Noura Ziadi and Barbara Cade-Menun

09:10 **Tandra Fraser, L.M. Condron, P.M. Haygarth**  
*On new opportunities and techniques for advancing the study of soil phosphorus*

09:30 **Kim Schneider, Paul Voroney, Derek Lynch, Astrid Oberson, Emmanuel Frossard, Else Bünemann**  
*Gross P mineralization and microbial P uptake in forage field soils along a soil test P gradient*

09:50 **Sirajum Munira, Annemieke Farenhorst, Don Flaten, Cynthia Grant**  
*Influence of soil pH and inorganic phosphate levels on glyphosate sorption*

10:10 **Xiaoqian Jiang, Roland Bol, Volker Nischwitz, Nina Siebers, Sabine Willbold, Harry Vereecken, Wulf Amelung, Erwin Klumpp**  
*Phosphorus containing water dispersible nanoparticles in arable soil*

10:30 – 11:00 **Coffee Break**  
(Outside SADB 2/36)

11:00 – 12:40 **Oral Session 7:** Chemical and Biological Controls on Organic P Cycling in Terrestrial and Aquatic Environments  
(Room: SADB 2/36) *Session Chairs: Noura Ziadi and Barbara Cade-Menun

11:00 **Philip Haygarth, Ying Wang, Ben Surridge**  
*Fate and transport of labile DNA- and phospholipid-phosphorus through a grassland catchment transfer continuum*

11:20 **Anna Missong, Roland Bol, Volker Nischwitz, Sabine Willbod, Jan Siemens, Erwin Klumpp**  
*Phosphorus of colloidal forest soil fractions as revealed by field flow fractionation and liquid-state $^{31}$P-NMR*
Temporal characterization of phosphorus forms, bioavailability, and mobility in Lake Champlain sediments

Phosphorus nanoparticles and colloids of forest stream waters – fractionation and potential role in ecosystems

A comparison of phosphorus forms and concentrations in midden samples and forest soils from Calvert Island, BC arable soil

11:40 – 14:00 Guy Mehuys Memorial Lunch
(Room: Ballroom A)

14:00 – 14:30 Keynote Session 7: Chemical and Biological Controls on Organic P Cycling in Terrestrial and Aquatic Environments
(Room: SADB 2/36) *Session Chairs: Noura Ziadi and Barbara Cade-Menun

Luisella Celi
Role of iron oxides in controlling organic P cycling in soil

(Room: SADB M-1) *Session Chair: Joann Whalen

14:30 Claudia Wagner-Riddle, Kari Dunfield, Craig Drury, Robert Gordon, John Lauzon, Bill Van Heyst, Andrew VanderZaag
Farm-scale assessment of greenhouse gas mitigation strategies in dairy livestock-cropping-systems

14:50 Muhammed Sulaimain, Claudia Wagner-Riddle, Shannon Brown
Net ecosystem exchange of dairy cropping systems

15:10 Karen Thompson, Elizabeth Bent, Shannon Brown, Diego Abalos, Claudia Wagner-Riddle, Kari Dunfield
Effects of dairy manure management in annual and perennial cropping systems on N-cycling microbial community structure and associated in-situ N₂O fluxes

15:30 Chukwudi Amadi, Richard Farrell, Beyhan Amichev, Ken Van Rees
Farm-scale estimation of C sequestration and greenhouse gas mitigation by white spruce shelterbelts: HOLOS, ³PG and CBM-CFS simulations

16:00 – 16:30 Coffee Break
(Room: Ballroom A)

16:30 – 17:50 Poster Session (S2, S4, S7, S12 and S13)
(Room: Ballroom B)

19:30 – 21:30 Soil Movie Night (Adams Building Auditorium)
Tuesday, July 7th

08:00 – 08:30 Keynote Session 6: Agricultural Greenhouse Gas Emissions
(Room: SADB M-1) *Session Chair: Brian Amiro

  Philippe Rochette
  Nitrogen fertilization and soil N₂O emissions

(Room: SADB M-1) *Session Chair: Brian Amiro

  08:30 Megan Westphal, Mario Tenuta, Martin Entz
  Contribution of soil N₂O emissions from fall alfalfa plow-down in organic cropping systems

  08:50 Mayowa Adelekun, Wole Akinremi, Mario Tenuta
  Nitrous oxide gas flux, emission factor and emission intensity following termination of perennial grass

  09:10 Mark Baah-Acheamfour, Scott Chang, Edward Bork, Cameron Carlyle
  Silvopastures and trees increase the size and stability of carbon pools in agroforestry systems of western Canada

  09:30 Gurbir Singh Dhillon, Derek Peak, Ken Van Rees
  Storage and stability of soil organic carbon under shelterbelt agroforestry systems

  09:50 Craig Nichol, Mesfin Fentabil, Gerry Neilsen, Kirsten Hannam, Denise Neilsen, Tom Forge, Melanie Jones
  Effect of microirrigation type, N-source and mulching on nitrous oxide emissions in semi-arid climate: An assessment across two years in merlot grape vineyard

  10:10 Craig Drury, Xueming Yang, W. Dan Reynolds, Wayne Calder
  Managing fertilizer nitrogen application methods and N sources to improve crop performance and reduce ammonia volatilization and nitrous oxide emissions

10:30 – 11:00 Coffee Break
(Outside SADB M-1)

11:00 – 12:40 Oral Session 11: Wetland Soils in a Changing Climate
(Room: SADB 2/36) *Session Chair: Angela Bedard-Haughn

  11:00 Valérie Viaud, Emmanuel Tete, Pauline Buysse, Christophe Flechard
  Impacts of soil drainage conditions on soil heterotrophic respiration along a temperate agricultural hillslope transect

  11:20 Robin Brown, Angela Bedard-Haughn
  Agricultural surface drainage and changes in soil properties in eastern Saskatchewan
11:40 Xiaoyue Wang, Cherie Westbrooke, Bobbi Helgason, Angela Bedard-Haughn
Assessing pedogenic controls on carbon mineralization, organic matter composition and microbial community dynamics in a mountain peatland

12:00 Elizabeth Cowan
Differences in CH₄ production, storage and transport among plant community types during a wet summer at Mer Bleue bog, Ottawa

12:20 Andrew Pinsonneault, Tim Moore, Nigel Roulet
Patterns of microbial enzyme activity across three temperate Canadian peatlands

12:40 – 14:00 Lunch Break
(Rooms: Ballroom A & Salle du Parc)

14:00 – 14:30 Keynote Session 11: Wetland Soils in a Changing Climate
(Room: SADB 2/36) *Session Chair: Viacheslav Adamchuk

Elyn Humphreys
Ecosystem-scale methane fluxes in Canadian wetlands

14:30 – 15:50 Oral Session 12: Proximal Soil Sensing
(Room: SADB 2/36) *Session Chair: Viacheslav Adamchuk

14:30 Shane Furze
Enhancing digital elevation models for improved soils mapping

14:40 Asim Biswas, Wenjun Ji, Yakun Zhang, Viacheslav Adamchuk
Three-dimensional soil mapping using proximal soil sensors

15:00 Brandon Heung, Derrick Ho, Jin Zhang, Anders Knudby, Chuck Bulmer, Margaret Schmidt
A comparison of machine learning techniques in digital soil mapping for the Lower Fraser Valley, British Columbia

15:20 Jin Zhang, Brandon Heung, Derrick Ho, Anders Knudby, Chuck Bulmer, Margaret Schmidt
Does increasing complexity of tree-based classifiers improve prediction results in digital soil mapping?

16:00 – 16:30 Coffee Break
(Room: Ballroom A)

16:30 – 17:50 Poster Session (S3, S6, S8, S11 and S14)
(Room: Ballroom B)

18:00 CSSS – General Assembly of Members
(Room: Ballroom A)

19:30 CSSS Trivia Night @ McKibbin’s Pub
**Wednesday, July 8th**

08:00 – 08:30 **Keynote Session 12: Proximal Soil Sensing**  
*(Room: SADB 2/36) *Session Chair: Asim Biswas  

Raphael Viscarra Rossel  
Proximal multi sensor system for measuring soil condition

08:30 – 09:50 **Oral Session 12: Proximal Soil Sensing**  
*(Room: SADB 2/36) *Session Chair: Asim Biswas  

08:30 Fabio Rodrigo Leiva-Baron, Ricardo Alvaro Rodriguez  
*Proximal sensors for site-specific fertilization: A case study in maize crops in Colombia*

08:50 Awa Mbodji, Diane Bulot, Jonathan Lafond, Christian Dupuis, Silvio Gumiere  
*Diagnosis of a drainage system based on GPR imagery in cranberry production*

09:10 Viacheslav Adamchuk, Nadiia Adamchuk-Chala, Jasmeen Kaur, Joann Whalen, Asim Biswas  
*Defining the spatial heterogeneity of soil biological activity*

09:30 Alan Moulin, Henry Wilson, Xiaoyuan Geng  
*Statistical variability of soil test NO3-N and the management zone concept*

09:50 – 10:30 **Oral Session 13: Spatial and Temporal Dynamics of Soil Processes and their Interactions at Multiple Scales to Study Complex Soil Systems**  
*(Room: SADB 2/36) *Session Chair: Asim Biswas  

09:50 David Burton, Kyra Stiles, Bernie Zebarth, Ryan Barrett  
*Spatial and temporal variation in soil nitrogen supply in potato cropping systems in Prince Edward Island*

10:10 Nsalambi Nkongolo, Jean-Jacques Mbuyi Kakuni, Michel Lokonda, Floribert Budjo, Jean-Remy Makana, Corneille Ewango  
*Spatial variability of soil physical and thermal properties in Ituri Forest, Democratic Republic of Congo*

10:30 – 11:00 **Coffee Break**  
*(Outside SADB 2/36)*

11:00 – 12:40 **Oral Session 13: Spatial and Temporal Dynamics of Soil Processes and their Interactions at Multiple Scales to Study Complex Soil Systems**  
*(Room: SADB 2/36) *Session Chair: Asim Biswas  

11:00 Bernie Zebarth, Claudia Goyer, Sheng Li, Sean Whitney, Sara Neupane  
*Spatial variation in soil bacterial communities in a commercial potato field*
11:20  Marie-France Jones
Mapping temporal and spatial soil hydrothermal and mechanical properties by way of the soil trafficability prediction model (STRAP)

11:40  Ebrahim Mahmoudabadi, Asim Biswas, Alireza Karimi Karouyeh
The impacts of changing rangeland into forest park on availability of heavy metals

12:00  Edison Aparecido Mome Filho, Richard Heck, Daniel Giménez, Miguel Cooper
Scale-variability of surface microtopography on a highly-stable soil under simulated rainfall

12:20  Gordon Price, A. Georgallas, D. Burton, W. Shu
Scaling mineral nitrogen dynamics by soil aggregate size

12:40 – 14:00 Lunch Break
(Room: Ballroom A & Salle du Parc)

14:00 – 14:30 Keynote Session 13: Spatial and Temporal Dynamics of Soil Processes and their Interactions at Multiple Scales to Study Complex Soil Systems
(Room: SADB 2/36) *Session Chair: Asim Biswas
Yakov Pachepsky
Scales and scaling in soils: Soilscope for soilscape

14:30 – 15:50 Oral Session 9: Soil Science Education and Outreach
(Room: SADB 2/36) *Session Chairs: Tom Yates, Amanda Diochon and Maja Krzic

14:30  Ken Van Rees
Innovation and creativity: Practical application in soil science field courses

14:50  Paul Hazlett
Envirotthon: Hands-on soils education for secondary schools students – a soils professional perspective

15:10  Lindsay Andronak
Envirotthon: Hands-on soils education for secondary school students – a student perspective

15:30  David Kroetsch, Richard Heck, Harold Lee
Soil science education for non-soil science professionals

16:00 – 16:30 Coffee Break
(Room: Ballroom A)

16:30 – 17:50 Poster Session (S1, S5, S9, S15 and S17)
(Room: Ballroom B)

19:00 – 22:00 Awards Gala Dinner
(Centre Mont-Royal, Salon Mont-Royal)
Friday, July 10th

08:00 – 08:30 **Keynote Session 9: Soil Science Education and Outreach**
*Room: SADB 2/36*  *Session Chairs: Maja Krzic, Amanda Diochon and Tom Yates*

Doug Hayhoe
Soil science education with K-12 students in Canada

08:30 – 09:30 **Oral Session 9: Soil Science Education and Outreach**
*Room: SADB 2/36*  *Session Chairs: Maja Krzic, Amanda Diochon and Tom Yates*

08:30  
Jane MacIntyre  
*Real life soil stories: an untapped resource*

08:50  
Claire Vasseur, Jocelyn Gagnon  
*“La forêt m’invite”: A wild leek conservation project for high school students*

09:10  
Jacynthe Masse  
*Planting seeds of knowledge in soil: How to get children’s hand (scientifically) dirty*

09:30 – 10:30 **Oral Session 8: Microbial Provision of Essential Services across Managed and Natural Ecosystems**
*Room: SADB 2/36*  *Session Chairs: Bobbi Helgason and Jacynthe Masse*

09:30  
Laurent Fontaine, David Paré, Nelson Thiffault, André Fortin, Yves Piché  
*Apatite and orthoclase forest fertilization: insoluble phosphorus and potassium made available by ectomycorrhizal fungi and associated bacteria*

09:50  
Chen Chen, Shan Huang, Xiaochun Peng  
*Interactions of ammonium oxidation pathways in soil environments from Southern China*

10:10  
Francesca Scandellari, Elisabetta Tome, Massimo Tagliavini  
*The role of arbuscular mycorrhizal fungi in carbon cycle of agroecosystems*

10:30 – 11:00 **Coffee Break**
*Outside SADB 2/36*

11:00 – 12:40 **Oral Session 8: Microbial Provision of Essential Services across Managed and Natural Ecosystems**
*Room: SADB 2/36*  *Session Chairs: Bobbi Helgason and Jacynthe Masse*

11:00  
Claudia Goyer, Sophie Wertz, Bernie Zebarth, David Burton, Enrico Tatti, Martin Chantigny, Martin Filion  
*The amplitude of soil freeze-thaw cycles influence temporal dynamics of N₂O emissions and denitrifier transcriptional activity and community structure*
11:20 Adriana Navarro Borrell, Chantal Hamel, Yantai Gan, Jim Germida
*Influence of 4-year crop rotations on the structure and function of the root endosphere community and performance of wheat*

11:40 Bobbi Helgason, Sarah Kuzmicz, Henry Janzen, Adam Gillespie, Sean Hemmingsen, Etienne Yergeau, Charles Greer, Jim Germida, Peter Leinweber
*Historical rotation ABC: changes in microbial community dynamics over 100 years of wheat production*

12:00 Thomas Jeanne, Richard Hogue, Nicolas Sanson, Léon-Étienne Parent
*Study of soil bacterial, fungal and microfauna diversity in potato agroecosystems using high throughput sequencing*

12:20 Richard Hogue, Thomas Jeanne, Samuel Morissette
*Effect of four previous crops on potato yield and tuber quality and their impact on soil and rhizosphere bacterial communities*

12:40 – 14:00 **BBQ Lunch**
(Room: Trottier Lobby)

14:00 – 14:30 **Closing Ceremony**
(Room: ENGTR 1080)
AQSSS Sponsored Sessions

Monday, July 6th

07:00 – 09:30 Complimentary Breakfast
(Room: Salle du Parc)

07:50 – 08:10 Opening Ceremony
(Room: Ballroom A)

08:10 – 09:00 Plenary:
(Room: Ballroom A)

John Duxbury
Changing concepts of organo-mineral interactions in soils: Impacts on soil properties and sustainable development

09:10 – 10:30 Oral Session 16: Management Zones in Precision Agriculture / Zones d’Aménagement en Agriculture de Précision
(Room: ENGTR 1100) *Session Chair: Athyna Cambouris

09:10 Doug Aspinall, Stewart Sweeney
High-resolution elevation data (h-red) clouds generated on-farm facilitate detailed soil mapping and precision management of Ontario farm fields

09:30 Nicolas Tremblay, Carl Bélec, Philippe Vigneault, Lucie Grenon, Edith Fallon, Yacine Bouroubi
Response of corn to N rates as a function of soil properties in a precision farming context

09:50 Doug Aspinall, Stewart Sweeney
Multi-temporal, multi-parameter geospatial data sets facilitate detailed soil mapping of Ontario farm fields

10:10 Doug Aspinall, Stewart Sweeney
Sustainable cropping system management zones: a central role for intrinsic soil properties, landscape feature delineation

10:30 – 11:00 Coffee Break
(Outside ENGTR 1100)
11:00 – 12:40 **Oral Session 16:** Management Zones in Precision Agriculture / Zones d’Aménagement en Agriculture de Précision

(Room: ENGTR 1100) *Session Chair: Athyna Cambouris*

11:00  **Xueming Yang, Craig Drury, Jingyi Yang, Dan Reynolds, Mary-Anne Reeb**

*The spring nitrate-N soil test can improve the general N recommendation for corn production on a clay loam in Southwestern Ontario*

11:20  **Tom Bruulsema, Kevin King, Merrin Macrae**

*Managing soil interfaces with 4R crop nutrition*

11:40  **Jean Caron, Guillaume Létourneau, Lélia Anderson, Valérie Bernier-English, Carole Boily, Julien Cormier, Nicolas Watters, Oleg Daugovesh, Laurence Gendron**

*Irrigation strategies for strawberry in California and Quebec: yield, water savings and return on investment*

12:00  **Vincent Pelletier, Jacques Gallichand, Jean Caron, Steeve Pepin**

*Controlling water table depth for a sustainable cranberry production*

12:20  **Katelyn Congreves, Dave Hooker, Laura Van Eerd**

*Long-term nitrogen fertilizer application influences soil carbon and nitrogen dynamics*

12:40 – 14:00 **Guy Mehuys Memorial Lunch**

(Rooms: Ballroom A & Salle du Parc)

16:30 – 17:50 **Poster Session (S2, S4, S7, S12 and S13)**

(Room: Ballroom B)

18:00  **AQSSS – General Assembly of Members**

(Room: Ballroom A)

19:30 – 21:30 **Soil Movie Night**

(Adams Building Auditorium)
Tuesday, July 7th

08:30 – 10:30 Oral Session 17: Soils of Natural, Managed and Intensive Forest Systems / Les Sols de Systems Forestiers Naturels, Aménagés et Intensifs

(Room: ENGTR 1100) *Session Chair: Ken Van Rees

08:30 Paul Hazlett, Nathan Basiliko, Emma Horrigan, Honghi Tran, Trevor Jones
* Nutrient and trace metal leaching in boreal and temperate forest soils following wood ash applications

08:50 Lili Perreault, Suzanne Brais, Nicolas Bélanger
* Restoring a disturbed clayey forest soil using dehydrated sewage sludge

09:10 Adam Gorgolewski, Nathan Basiliko, John Caspersen, Trevor Jones, Paul Hazlett, Honghi Tran
* Wood ash as a forest soil amendment: Seedling growth responses, and responses of red-backed salamander populations

09:30 Manuella Strukelj, Suzanne Brais, David Paré
* Leaf litter and deadwood decomposition in boreal stands as a function of species, litter type and harvesting prescription: A 12-13 year litterbug experiment

09:50 Julien Fortier, Benoit Truax, Daniel Gagnon, France Lambert
* Environment and genotype control on foliar, fine root and litter traits in mature hybrid poplar plantations

10:10 Suzanne Brais, Sara Foudyl-Bey, Pascal Drouin
* Forest floor heterogeneity modulates fungal activity and C mineralization in boreal forests

10:30 – 11:00 Coffee Break
(Outside ENGTR 1100)

11:00 – 12:40 Oral Session 17: Soils of Natural, Managed and Intensive Forest Systems / Les Sols de Systems Forestiers Naturels, Aménagés et Intensifs

(Room: ENGTR 1100) *Session Chair: Nicolas Bélanger

11:00 Alexandre Collin, Christian Messier, Nicolas Bélanger
* Changes in soil conditions and foliar nutrition of sugar maple seedlings with increasing presence of conifers in a mixedwood of Southern Quebec

11:20 Vincent Poirier, Marie Coyea, Denis Angers, Alison Munson
* Overstory and understory functional types drive mineral soil pH, C and N cycles, in mixedwood temperate plantation

11:40 Dan Pennock, Kendra Purton, Kent Watson
* Does bioturbation control the chernozemic-luvisolic boundary in central Saskatchewan?
12:00 William Barnes, Sylvie Quideau, Matthew Swallow
*Sandy soils of the Athabasca oil sands region: What’s driving productivity?*

12:20 Kevin Keys, David Burton
*Using historic soil survey data for spruce plantation sustainability assessments – a Nova Scotia case study*

12:40 – 14:00 Lunch Break
(Rooms: Ballroom A & Salle du Parc)

14:00 – 14:30 Keynote Session 17: Soils of Natural, Managed and Intensive Forest Systems / Les Sols de Systems Forestiers Naturels, Aménagés et Intensifs
*(Room: ENGTR 1100) *Session Chair: Suzanne Brais

- Sylvie Quideau
  *Restoring organic matter processes in reconstructed soils*

14:30 – 15:50 Oral Session 17: Soils of Natural, Managed and Intensive Forest Systems / Les Sols de Systems Forestiers Naturels, Aménagés et Intensifs
*(Room: ENGTR 1100) *Session Chair: Dan Pennock

- 14:30 Martine Fugère, Robert Bradley, Mark Vellend
  *Recreational fishing may increase greenhouse gas emissions: The earthworm connection*

- 14:50 Anya Reid, Bill Chapman, Marty Kranabetter, Cindy Prescott
  *Tree response to organic-matter removal depends on soil properties at six long-term soil productivity (LTSP) sites in British Columbia, Canada*

- 15:10 Emily Smenderovac, Nathan Basiliko, Kara Webster, John Caspersen, Dave Morris, Paul Hazlett, Rob Fleming
  *Microbial communities and functioning in boreal forest soil under intensified biomass harvests*

- 15:30 Jason Shabaga, Nathan Basiliko, Trevor Jones
  *Using principal component analysis to link post-harvest soil nutrient decline to latent biogeochemical processes in an Ontario hardwood forest*

16:00 – 16:30 Coffee Break
(Room: Ballroom A)

16:30 – 17:50 Poster Session (S3, S6, S8, S11 and S14)
(Room: Ballroom B)

19:30 CSSS Trivia Night @ McKibbin’s Pub
Wednesday, July 8th

08:00 – 08:30 **Keynote Session 15**: Biochar in Agriculture and Environment / Le Biochar en Agriculture et en Environnement

*(Room: ENGTR 1100)* *Session Chair: Suzanne Allaire*

**Kurt Spokas**

Historic barriers to biochar utilization: Is there a way to avoid these same hurdles?

08:30 – 10:30 **Oral Session 15**: Biochar in Agriculture and Environment / Le Biochar en Agriculture et en Environnement

*(Room: ENGTR 1100)* *Session Chair: Suzanne Allaire*

08:30 Patrick Brassard, Stéphanie Godbout, Vijaya Raghavan, Joahnn Palacios, Jean-Pierre Larouche, Dan Zegan

*Biochar production: A tool to mitigate climate change*

08:50 Perry Mitchell, André Simpson, Ronald Soong, Myrna Simpson

*Biochar amendment alters the molecular-level composition of soil organic matter in a temperate forest soil*

09:10 Christophe Naisse, Thi Phong Ngo, Bernard Davasse, Abad Chabbi, Cornelia Rumpel

*Charcoal amendment changes soil carbon dynamics through its impact on (micro-) biological functioning after several centuries*

09:30 Erin Karppinen, Katherine Stewart, Steven Siciliano

*Does a meat and bone meal biochar enhance petroleum hydrocarbon degradation in frozen soil?*

09:50 Kayla Stewart, Joinal Abedin, Peter Beckett, Graeme Spiers, Keith Chaulk

*Use of biochar as a soil amendment for fertility improvement in the sandy soils of Labrador*

10:10 Vicky Levesque, Philippe Rochette, Noura Ziadi, Martin Chantigny, Martine Dorais, Hani Antoun

*Soil CO₂ and N₂O emissions: Is the mitigation efficiency of biochars impacted by periodic applications of mineral nitrogen fertilizer?*

10:30 – 11:00 **Coffee Break**

*(Outside ENGTR 1100)*

11:00 – 12:20 **Oral Session 15**: Biochar in Agriculture and Environment / Le Biochar en Agriculture et en Environnement

*(Room: ENGTR 1100)* *Session Chair: Suzanne Allaire*

11:00 Benjamin Pace, Sarasadat Taherymoosavi, Paul Munroe, Stephen Joseph

*Mineral based nutrient dynamics of dual feedstock biochars under increasing pyrolysis temperatures*
11:20  Frédéric Rees  
*Mechanisms of soil pH regulation by biochar amendments and consequences for biochar long-term effects*

11:40  Sébastien Lange, Suzanne Allaire  
*Biochar as a component of potting soils: case studies*

12:00  Duminda Vidana Gamage, Ranjith Mapa, Saman Dharmakeerthi, Asim Biswas  
*Impact of rice husk biochar on selected soil properties of two Alfisols of Sri Lanka*

12:20  Kangyi Lou, Anushka Upamali Rajapaksha, Yong Sik Ok, Scott Chang  
*Efficacy of biochar on remediation of metal contamination in oil sands process-affected water*

12:40 – 14:00 **Lunch Break**  
(Room: Ballroom A)

16:30 – 17:50 **Poster Session (S1, S5, S9, S15 and S17)**  
(Room: Ballroom B)

19:00 – 22:00 **Awards Gala Dinner**  
(Centre Mont-Royal, Salon Mont-Royal)

**Friday, July 10th**

14:00 – 14:30 **Closing Ceremony**  
(Room: ENGTR 1080)
General Session

Wednesday, July 8th

14:30 – 15:50 Oral Session 14: General Soil Science
(Room: ENGTR 1100) *Session Chair: Barbara Cade-Menun

14:30 Francis Larney, Henry Janzen, Andrew Olson, Barry Olson
25th anniversary (1990-2015) findings from the Lethbridge simulated erosion study

14:50 Xueming Yang, W.D. Reynolds, C.F. Drury, J.Y. Yang
Seeding various types of cover crops to winter wheat stubble in southwestern Ontario

15:10 Keith Reid, Tiequan Zhang, Keith Fuller
Tile drains as modifiers of source and transport factors for nutrient exports from agricultural fields

15:30 Yves-Dady Botula, Attila Nemes, Jan De Pue, Paul Mafuka, Eric Van Ranst, Wim Cornelis
Prediction of hydrophysical properties of soils for sustainable land management in DR Congo

Friday, July 10th

08:30 – 10:30 Oral Session 14: General Soil Science
(Room: ENGTR 1080) *Session Chair: Noura Ziadi

08:30 Myra Martel, Lilong Chai, Roland Kröbel, Douglas MacDonald, Shabtai Bittman, Henry Janzen, Karen Beauchemin, Sean McGinn, Shannan Little
Ammonia and nitrous oxide emission factors of land applied cattle manure in Alberta and Ontario

08:50 Baishali Dutta, Brian Grant, Katelyn Congreves, Ward Smith, Claudia Wagner-Riddle, Andrew VanderZaag, Raymond Desjardins,
Model development and testing of soil temperature in DNDC for the effects of snow, biomass and residue cover and soil texture

09:10 Yi Cheng
Soil pH is a good predictor of dominating N2O production pathways under aerobic conditions

09:30 Mekonnen Giweta, Miles Dyck, S.S. Malhi, Sylvie Quideau, Dick Puurveen
Comparison of nitrous oxide emissions from a gray soil subject to different long-term fertilizer and manure applications at the University of Alberta Breton Plots

09:50 Amal Roy, Aaron Glen, Alan Moulin, Henry Wilson
Soil nitrous oxide emissions from cropland in southern Manitoba
10:10 Tanja Voegel, Mesfin Fentabil, Craig Nichol, Louise Nelson
*Nitrifier and denitrifier abundances in vineyard soil in response to agricultural management practices*

10:30 – 11:00 Coffee Break
(Outside ENGTR 1080)

11:00 – 12:40 Oral Session 14: General Soil Science
(Room: ENGTR 1080) *Session Chair: Noura Ziadi

11:00 Katharina Keiblinger, Thomas Schneider, Inés Wilhartitz, Stephan Fuchs, Kathrin Riedel, Sophie Zechmeister-Boltenstern
*Metaproteomics of soil and leaf litter – potentials and challenges*

11:20 Caroline Halde, Julia Cooper, Marcin Baranski, Majimcha Nobel de Lange, Paolo Bärberi, Andreas Fliebach, Joséphine Peigné, Christophe David, Martin Entz
*Soil carbon stocks and tillage intensity in organic farming systems: a meta-analysis*

11:40 Newton Lupwayi, Yoong Soon
*Nitrogen release from decomposing legume crop residues over three subsequent crops*

12:00 Athyna Cambouris, Thomas Morier, Karem Chokmani
*Hyperspectral vegetation indices for detecting in-season nitrogen stress in a potato crop*

12:20 Jean Lafond
*Nitrogen and phosphorus fertilization in wild lowbush blueberry in Quebec*

12:40 – 14:00 BBQ Lunch
(Room: Trottier Lobby)

14:00 – 14:30 Closing Ceremony
(Room: ENGTR 1080)
Poster Presentations

Presentations are displayed by session and by alphabetical order
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**Session 2: Dynamics of Pollutants in Soil**

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<td>Dai, Nancy</td>
<td>Bioaccessible nickel in various particle sizes of house dust from communities close to nickel mining and smelting operations</td>
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<td>Toxicity of silver nanoparticles in biosolid-amended soil to the earthworm <em>Eisenia fetida</em></td>
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<td>Grobelak, Anna</td>
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<td>Kacprzak, Malgorzata</td>
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| 02 | Abdellatif, Lobna | Effect of plant growth promoting rhizobacteria on hyphal growth of arbuscular mycorrhizal fungi in axenic culture |
| 03 | Alotaibi, Fahad | Shifts in soil bacterial functional gene composition in response to willow planting and contamination level |
| 04 | Aulakh, Gurpreet | Methane oxidation dynamics and methanotroph community structures in peatlands across a sulphur and metal deposition gradient in Sudbury, Ontario |
| 05 | Bandekar, Basanti | Value enhancement of municipal organics through the addition of effective micro-organisms |
| 06 | Carneiro, Marco Aurelio Carbone | Occurrence and species richness of mycorrhizal fungi in soil under different management and use |
| 07 | Constant, Philippe | Soil hydrogenovorous bacteria – The rare biosphere in action mitigates the global emissions of atmospheric H₂ |
| 08 | Duran, Paola | Endophytic bacteria from wheat plants could be useful for Se biofortification and *Gaeumannomyces graminis* biocontrol |
| 09 | Fraser, Tandra | The global soil biodiversity initiative |
| 10 | Garcia Berumen, José Abraham | The role of microorganisms in a heavy metal polluted site in Mexico |
| 11 | Gebala, Aurelia | Does land use-intensity change microbial abundance and function on organo-mineral surfaces in grassland soils? |
| 12 | Gillis, Daniel | FLOGging a dead horse: linking decomposed organic matter carbon to nitrogen cycling in agroecosystems |
| 13 | Grishkan, Isabella | Influence of environmental disturbance on microfungal communities in Israeli soils |
| 14 | Guo, Galen | Chronic N and nutrient loading in a bog: A peek into the microbial black box |
| 15 | Huangfu, Yanchong | Microbial community study in the sediment of Oostanaula Creek watershed |
| 16 | Huot, Hermine | Bacterial diversity and profile characteristics of urban soils in New York City |
| 17 | Jazestani, Jamshid | PAH bioremediation for ecological sustainability |
| 18 | Kotze, Elmarie | The effect of rotational and continuous grazing on soil microbiological properties: Comparing the savanna and grassland biome |
| 19 | Liu, Ting | Body size is a sensitive trait-based indicator of soil nematode community response to fertilization in rice and wheat agroecosystems |
| 20 | Mafa-Attoye, Tolulope | Indications of shifting microbial communities associated with growing biomass crops on marginal lands in southern Ontario |
| 21 | Merino, Carolina | Soil microorganisms and enzyme activity at different levels of SOM complexity |
| 22 | Monokrousos, Nikolaos | Soil microbial community structure in the sacred groves of Epirus, Greece |
| 23 | Najat, Nassr | Improvement of wine terroir management according to biogeochemical cycle of nitrogen in soil |
| 24 | Noyce, Genevieve | Soil microbial responses to wood ash addition and forest fire in managed Ontario forests |
| 25 | Ouertani, Selmene | Microbial community structures in different horizontal sub-surface flow constructed wetlands enriched with biochar as revealed by 454-pyrosequencing analysis |
| 26 | Pichette, Jennifer | Microbial road kill: How roads impact bacterial activity and diversity |
| 27 | Silamikele, Baiba | Isolation and characterization of filamentous fungi from forest soil and their use for biotechnological production of immunomodulatory glycoproteins |
| 28 | Smenderovac, Emily | Phyto-stabilization of Sudbury mine tailings: important microorganisms in naturally colonizing plant rhizospheres |
| 29 | Williams-Johnson, Shanay | Peatland microbial community structure and function along a sulphur and metal contamination gradient in Sudbury, Ontario |

**Session 4: Organo-Mineral Interactions in Soil**

<p>| 01 | Abail, Zhor | Litter quality controls earthworm population dynamics in sustainable agroecosystems |
| 02 | Aoyama, Masakazu | Characterization of organic matter in density-size fractions of organically managed soils by diffuse reflectance infrared Fourier transform spectroscopy combined with NaClO oxidation |
| 03 | Calabi-Floody, Marcela | Nanoclays from Andisols and Cambisols soils: their implication on carbon stabilization potential |
| 04 | Chalavi, Vida | Effect of organic and chemical fertilizers on yield and quality characteristics of basil (<em>Ocimum basilicum</em> L.) |
| 05 | Contreras, Francisco | Organic matter content in different size aggregates from an Andisol |
| 06 | Coward, Elizabeth | Fe-C associations and soil organic matter stability in two tropical soils of contrasting parent materials |
| 07 | Fujii, Kazumichi | Mechanisms of organic matter accumulation and plant nutrient acquisition in permafrost soils of Northwest Territory, Canada |</p>
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| 01 | Adamchuk, Viacheslav | Using proximal soil sensing to optimize assessment of agricultural greenhouse gas emission |
| 02 | Ahmed, Naeem | $\text{N}_2\text{O}$ emissions as affected by fertilization and water table management in south-western Ontario |
| 03 | Alotaibi, Khaled | Glycerol from the biodiesel industry: Can it reduce ammonia volatilization and nitrate leaching in soil treated with liquid manure? |
| 04 | Amadi, Chukwudi | Soil-atmosphere exchange of carbon dioxide, methane and nitrous oxide in shelterbelts compared with adjacent crop fields |
| 05 | Amiro, Brian | Beneficial management practices for greenhouse gas mitigation from agroecosystems |
| 06 | Amiro, Brian | Factors determining low and high emissions of greenhouse gases from Canadian beef cow-calf farms |
| 07 | Brin, Lindsay | Changes in snow cover alter nitrogen cycling and gaseous emissions in agricultural soils |
| 08 | Cambareri, Sebastian | Method and timing effect of field applied anaerobically digested and raw dairy manure on soil nitrous oxide emissions from corn production |
| 09 | Charles, Anaïs | Associating the potential of organic amendments for soil $\text{N}_2\text{O}$ emissions to their chemical characteristics |
| 10 | Congreves, Katelyn | Measuring and modelling the long-term impact of crop management on soil C sequestration in semi-arid Canadian prairies |
| 11 | Hans, Geetkamal | Abundance of ammonia-oxidizing archaea and bacteria in woody perennial cropping systems |
| 12 | Jennewein, Stephen | The role of water-table, soil depth, and nitrogen fertilizer on the interaction of soil microbial biomass and gas emission |
| 13 | Leite Luiz F.C. | Green management of sugarcane and its effects on nitrous oxide emissions in Northeastern Brazil |
| 14 | Menasseri-Aubry, Safya | Overall evaluation of solid waste composting and agricultural recycling: a methodological framework proposal |
| 15 | Palacios, Joahnn | Development of a simplified and economical technology to measure N\textsubscript{2}O and CH\textsubscript{4} emissions from livestock buildings |
| 16 | Panday, Dinesh | Comparison of methods for predicting pore space indices in corn-soybean field |
| 17 | Raeini-Sarjaz, Mahmoud | Evaluation of the effect of depth and distance of subsurface drainage systems on methane gas emissions |
| 18 | Singh, Jessica | The effect of nitrogen fixation on direct and indirect nitrous oxide (N\textsubscript{2}O) emissions in dairy crop rotations |
| 19 | VandenBygaart, Bert | Grazing influences C and N storage in the Northern Great Plains |

**Session 7: Chemical and Biological Controls on Organic P Cycling in Terrestrial and Aquatic Environments**

| 01 | Abdi, Dalel | The influence of phosphorus fertilization on grassland soil phosphorus forms: A \textsuperscript{31}P-NMR study |
| 02 | Cade-Menun, Barbara | An investigation of the origins of inositol hexakisphosphate stereoisomers in crested wheatgrass pasture soils |
| 03 | Damar, Hada | Impact of long-term application of composted organic residue on soil organic and inorganic phosphorus dynamics |
| 04 | Giles, Courtney | Short-term transport and transformation of phosphorus species from a poultry manure amended soil during leaching |
| 05 | Giles, Courtney | Phosphorus transformations and mobility in the rhizosphere of phytase-exuding plants following a single cultivation cycle |
| 06 | Moore, Tim | C:P stoichiometry in Canadian peatlands and forest litter |
| 07 | Wang, Yu | P pools and microorganisms response to a 5-year P fertilization pot trial for wheat only in a rice-wheat rotation in paddy soils in the Taihu Lake region of southern China |
| 08 | Ziadi, Noura | Long-term phosphorus fertilization and tillage impact soil phosphorus transformation and distribution |

**Session 8: Microbial Provision of Essential Services Across Managed and Natural Ecosystems**

| 01 | Acuna, Jacqueline | Diversity and abundance of rhizobacteria encoding phosphatase gen from Chilean extreme environments |
| 02 | Arcand, Melissa | Thermodynamic profiles and carbon use efficiency of soil microbial communities in contrasting agroecosystems |
| 03 | Arteaga, Jessica | The use of a conceptual model to determine biological soil crusts as the first terrestrial ecosystem: Their role in embryophyte land colonization |
| 05 | Helgason, Bobbi | \textsuperscript{13}C cellulose assimilation in different transplanted Chernozems after 21 years of common management and climatic conditions |
| 06 | Masse, Jacynthe | Microbial communities and nitrogen cycle in reclaimed oil-sand soils |
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07 Dunfield, Kari  Abundance and gene expression of bacterial and archael ammonia monoxygenase (amoA) in a monoculture versus a diverse crop rotation, under conventional and no-till management

08 Navarro Borrell, Adriana  Fungal diversity associated with pulses and its influence on the subsequent wheat crop in a 2-year study

09 Neufeld, Katarina  Microbial community structure and activity after long-term use of dairy manure and fertilizer reflects soil properties and impacts soil N transformations

10 Spence, Jennifer  Evaluating the efficacy of the nitrification inhibition assay method using 3,5-dimethylpyrazole in soils that differ in texture and water content

11 Yichao, Shi  Growth of timothy root and associated arbuscular mycorrhizae as affected by phosphorus fertilization in North Québec

Session 9: Soil Science Education and Outreach

01 Burton, David  Developing an on-line nutrient management planner-training program in Atlantic Canada

02 Krzic, Maja  Web-based educational tool for forest floor description and humus form classification

03 Yang, Jingyi  EasyGrapher v4.6: Software for data visualization and statistical evaluation of DSSAT v4.x model and the CANB v4.0 Model

04 Yates, Thomas  Investigating student perceptions of academic and professional learning experiences in a field-based course

Session 11: Wetland Soils in a Changing Climate

01 Hobson, Claire  Examining the fate of carbon among wetlands reclamation trials in Fort McMurray, Alberta

02 Lafond, Jonathan  Detecting soil drainage and compaction issues by ground penetrating radar in Histosols

03 Saint-Laurent, Diane  Soil organic carbon in riparian ecosystems and the potential of C reservoirs in a context of environmental sustainability

04 Shahariar, Md Shayeb  Impact of short rotation willow on prairie wetland soil hydrology and salinity

05 Silamikele, Inese  Variability of peat soil characteristics in boreo-nemoral environment (Latvia)

06 Zhang, Zhidan  Nutrient dynamics along drainage ditches under recent, medium and long-term drainage in the black soil zone of southeastern Saskatchewan

Session 12: Proximal Soil Sensing

01 Samson, Marie Elise  Impacts of subirrigation and low water potential on soil salinity and its effects on cranberry development

02 Zhang, Jin  Comparing logistic model trees and multinomial logistic regression for the prediction of soil development in BC

03 Zhang, Yakun  A new model to predict soil pH at depths in agricultural fields
### Session 13: Spatial and Temporal Dynamics of Soil Processes and their Interactions at Multiple Scales to Study Complex Soil Systems

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<td>Scenario analysis of Canadian farming system to residual soil N using a CANB v4.0 model</td>
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### Session 14: General Soil Science

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<td>Bulot, Diane</td>
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**Session 6**

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