



SOIL SCIENCE
AUSTRALIA



NATIONAL SOILS CONFERENCE
Canberra 18-23 November 2018

Soils, the key to the past, the present and the future

CONFERENCE PROGRAM

All conference sessions and workshops will be held at Hyatt Hotel Canberra, 120 Commonwealth Avenue, Canberra ACT

Sunday, November 18, 2018

9:00 AM - 3:00 PM	Soil Judging Competition
4:00 PM - 7:00 PM	Registration, Atrium Lounge, Hyatt Canberra
6:00 PM - 8:00 PM	Welcome Reception, Lavender Courtyard, Hyatt Canberra

Monday, November 19, 2018

7:30 AM - 5:00 PM	Registration desk open, Hyatt Atrium
	PLENARY SESSION 1, Federation Ball Room <i>Chair: Dr Luke Mosely</i>
8:30 AM - 9:05 AM	House keeping, Dr Luke Mosley Welcome to Country, Dr Matilda House Overview of conference, Dr Peter Bacon Conference opening Major General the Hon. Michael Jeffery, AC, AO (Mil), CVO, MC (Retd), Advocate for Soil Health Presidential address Associate Professor John Bennett
9:05 AM - 9:35 AM	OPENING ADDRESS: Dr Penelope Wensley AC Soil Science responsibilities in the 21st Century
9:35 AM - 10:05 AM	KEYNOTE ADDRESS: Dr Michele Barson Maintaining soil condition and ecosystem services in the Australian environment
10:05 AM - 10:15 AM	Announcement of Soil Judging Competition winners
10:15 AM - 10:45 AM	Morning tea, Atrium, Gallery and Canberra Room

10:45 AM - 12:15 PM	Sustaining the soil resource: policy to practice Theme Leader: Mr Ian Thompson	Soil nutrients: balancing N and other nutrients' availability and environmental risk Theme Leader: Professor Deli Chen	Soils education and training: From schools to Citizen Science to CPSS and CSAM Theme Leader: Assoc. Professor Damien Field
	Federation Ballroom North	Federation Ballroom South	Assembly Room
10:45 AM – 11:00 AM	Mr Ian Thompson Session introduction	Professor Deli Chen Research Director, The University of Melbourne Session introduction	Assoc. Prof Damien Field Head of School, The University of Sydney Session introduction
11:00 AM – 11:10 AM	Major General the Hon. Michael Jeffery, AC, AO (Mil), CVO, MC (Retd), Advocate for Soil Health Soil Policy to Landholder Practice	Dr Afia Zia Asst. Professor, University of Agriculture, Peshawar Pakistan Nitrogen induced heavy metals leaching: the effects of different forms of nitrogen	Ms Ivanah Oliver PhD Student, University of New England Bringing soil to life: The tale of 'Mottly' and his adventures as a soil mascot
11:10 AM – 11:20 AM	Mr Jonathan Burgess Principle Land Resource Scientist, Department of Environment and Natural Resources Reversing the trend - a reinvigorated soil survey program in the Northern Territory	Ms Thi Huong Xuan Le PhD Student, The University of Adelaide Available nitrogen and phosphorus removal from wastewater applied to sandy soil with wheat straw amendment	Dr Anthony Ringrose-Voase Principal Research Consultant, CSIRO Agriculture and Food Building capacity to map soil information in a developing country context
11:20 AM – 11:30 AM	Dr Michael Crawford Chief Executive Officer, Cooperative Research Centre for High Performance Soils The Cooperative Research Centre for High Performance Soils	Dr Lukas Van Zwieten Senior Principal Research Scientist, Department of Primary Industries Improving nitrogen use efficiency in subtropical sugarcane through better utilisation of soil N and EENFs	Sally McInnes-Clarke Senior Scientist - Citizen Science, Office of Environment and Heritage Citizen science or science citizens? Transferring soil knowledge in the NSW Soil Knowledge Network
11:30 AM – 11:40 AM	Dr Michael Webb Principal Research Scientist CSIRO Why do smallholder farmers not invest in management of soil fertility?	Dr Matthew Redding Principal Scientist, Department of Agriculture and Fisheries Inhibitors and sorbents to mitigate nitrogen runoff losses generated via rainfall simulation	Mark Imhof Research Manager - Spatial Information Sciences, Department of Economic Development, Jobs, Transport and Resources Web-based approaches for communication and knowledge management
11:40 AM – 11:50 AM	Dr Penny Dunstan Environmental Project Manager, Loop Organics Sixteen Earth Bowls: an installation	Dr Peter Quin Research Fellow, University of Tasmania Nitrogen Use in Commercial Cherry Orchards	Mrs Donna Lucas Senior Consultant, RMCG Farm demonstration sites - Can we get over the learning hump?
11:50 AM – 12:00 PM	Associate Professor Peter Dahlhaus Principal Research Fellow Federation University Australia Making soils data FAIR: Findable, Accessible, Interoperable and Reusable	Mr Arjun Pandey PhD Candidate, The University of Melbourne Dissimilatory nitrate reduction to ammonium outcompetes denitrification in long-term low-level nitrogen fertilized paddy soils	Mr Neil Enderlin Natural Resource Management Officer, Department of Natural Resources, Mines and Energy The M Horizon - a way of designating recent soil deposits

12:00 PM – 12:15 PM	Wrap up and close	Dr Graeme Schwenke Senior Research Scientist, Soils Department of Primary Industries N fertiliser management can reduce N runoff from furrow-irrigated cotton (12:10 PM – 12:15 PM – Comments from Chairman)	Wrap up and close
12:15 PM - 1:15 PM	Lunch, Atrium, Gallery and Canberra Room		
1:15 PM - 3:05 PM	Erosion management: From buildings to cities, from puddles to the Great Barrier Reef Theme Leader: Dr Brendan Roddy	Soil nutrients: balancing N and other nutrients' availability and environmental risk (part 2) Theme Leader: Professor Deli Chen	What makes a good soil consultant? Theme Leader: Dr Rob Loch
	Federation Ballroom North	Federation Ballroom South	Assembly Room
1:15 PM – 1:30 PM	Dr Brendan Roddy Session introduction	1:15 PM – 1:20 PM Professor Deli Chen Research Director, The University of Melbourne Session introduction 1:20 PM – 1:30 PM Ben Macdonald CSIRO Agriculture and Food Soil nitrogen mineralisation and deficit irrigation in cotton production systems	Dr Rob Loch Principal Consultant, Landloch Pty Ltd Session introduction
1:30 PM – 1:40 PM	Dr Xihua Yang Principal Scientist, Office of Environment and Heritage State and trends of hillslope erosion across New South Wales	Dr Belinda Hackney Research Officer, Department of Primary Industries Supply chain of knowledge for improved nitrogen fixation	Mr Dennis Baker Director, Environmental Soil Solutions Australia P/L What makes a good soil science consultant
1:40 PM – 1:50 PM	Sally McInnes-Clarke Senior Scientist - Citizen Science Office of Environment and Heritage Soil erosion risk and impacts after the Northern Rivers flood and storm event, March 2017	Dr Helen Suter Senior Lecturer, The University of Melbourne Predicting nitrogen supply from mineralization in temperate dairy pastures	Dr David McKenzie Soil Management Designs 'Due diligence' soil assessment for Indian Sandalwood plantations across Northern Australia
1:50 PM – 2:00 PM	Mr Jonas Larsen Environmental Scientist Renew Solutions Utilising soil to protect our aquatic systems from erosion due to urban stormwater runoff	Dr Kirsten Verburg Principal Research Scientist and Project Leader, CSIRO Agriculture and Food Evaluating benefits of controlled release fertilisers – lessons from experimental characterisation and modelling in sugarcane	Dr Peter Bacon Principal Consultant, Woodlots and Wetlands Pty Ltd Will you be a good soil science consultant?
2:00 PM – 2:10 PM	Mr Mohammad Bahadori PhD Student, Griffith University Identifying the impact of land- use on nutrients discharged to the Great Barrier Reef	Mr James Latimer PhD Student, Australian National University Soil Nitrogen Loss Pathway in Skip- Furrow Flood Irrigated Cotton	Mr Bernard Powell Chair, Working Group on Soil Classification Can Soil Science Australia respond to the needs of consultants?

2:10 PM – 2:20 PM	Ms Amelie Jeanneau PhD Candidate, The University of Adelaide <i>Once the dust settles – Assessing wind erosion after bushfires</i>	Clare Edwards Senior Land Services Officer – Pastures, Central Tablelands Local Land Services <i>The importance of soil nutrition and acidity in the soils of the Central Tablelands, NSW</i>	Mrs Kristie Williams Land Resource Officer, Department of Natural Resources, Mines and Energy <i>Five tips to communicate soil science successfully</i>
2:20 PM – 2:30 PM	Doctor Mehran Rezaei Rashti Research Fellow, Griffith University <i>Effect of organic amendments in sugarcane fields on water quality in Great Barrier Reef catchments</i>	Dr Richard Bell Professor, Murdoch University <i>Crop nutrition and the response to clay amendment of sands</i>	Dr Megan Wong Research Officer, Federation University Australia <i>Australian soil vocabularies: Availability and lessons learnt when using them to describe diverse soil data</i>
2:30 PM – 2:40 PM	Mr Lachlan Bailey Honours Student, Australian National University <i>A framework of rangelands tactical decision making for wind erosion management</i>	Mr Robert De Hayr Science Leader, Department of Environment and Science <i>Indicators of Potentially Bioavailable Particulate Nutrients to Algae in Freshwater and Marine Conditions</i>	Dr Cameron Grant Visiting Research Fellow, The University of Adelaide <i>Soil Science in the Professional World</i>
2:40 PM – 2:50 PM	Dr Robin Thwaites Senior Research Fellow, Griffith University <i>A Typology for Erosion Gullies in Queensland</i>	Dr Ron Smernik Associate Professor, The University of Adelaide <i>In defence of humification as a key process in nutrient cycling</i>	Wrap up and close
2:50 PM – 3:05 PM	Wrap up and close	Wrap up and close	
3:05 PM - 3:30 PM	Afternoon tea, Atrium, Gallery and Canberra Room		
3:30 PM - 5:00 PM	Soil Science Society AGM, Federation Ball Room North		
5:00 PM - 6:00 PM	Branch AGM – NSW Branch, Federation Ballroom North		
5:00 PM - 6:30 PM	Early Career Professionals (ECP) Networking, Assembly Room		

Tuesday, November 20, 2018

6:45 AM - 8:30 AM	Soil Policy Breakfast, Black Mountain and Murrumbidgee Room
7:30 AM - 5:00 PM	Registration desk open (Tuesday), Hyatt Atrium
	PLENARY SESSION 2, Federation Ball Room <i>Chair: Dr Tapas Biswas</i>
8:30 AM - 9:50 AM	Housekeeping and general welcome: Session Chair
8:40 AM - 9:15 AM	KEYNOTE ADDRESS: Mr Phillip Glyde Balancing the Murray-Darling Basin's water resources
9:15 AM - 9:50 AM	KEYNOTE ADDRESS: Mr Philip Mulvey Biogeoengineering: An opportunity for soil scientists to participate in the debate on the future of the earth
9:50 AM - 10:20 AM	Morning tea (Tuesday), Atrium, Gallery and Canberra Room

10:20 AM - 12:00 PM	Waste management: Balancing benefits, protection and regulation Theme Leader: Dr Julie Cattle	Soil for food and fibre: In a changing climate Theme Leader: Dr Graeme Schwenke and Dr Gunasekhar Nachimuthu	Soil forensics and archaeology: what lies beneath? Theme Leader: Dr Craig Strong
	Federation Ballroom North	Federation Ballroom South	Assembly Room
10:20 AM – 10:35 AM	Dr Julie Cattle Principal Technical Adviser Resource Recovery Environment Protection Authority Session introduction	Dr Gunasekhar Nachimuthu Research Scientist Department of Primary Industries Dr Graeme Schwenke Senior Research Scientist, Soils Department of Primary Industries Session introduction	Dr Craig Strong The Australian National University Session introduction
10:35 AM – 10:45 AM	Mark Whatmuff Soil Chemist, Department of Primary Industries Land application of mixed waste organic outputs provide agronomic benefits but also presents environmental risk	Dr Jonathan Gray Senior Scientist (Soil Modelling) Office of Environment and Heritage Climate change impacts on key soil properties over south-eastern Australia	Roy Lawrie Soil and Landscape Studies The soils beneath Australia’s first successful wheat crop: evidence from archaeological sites in Parramatta
10:45 AM – 10:55 AM	Dr Stephen Cattle Associate Professor, The University of Sydney Using micromorphology to assess physical contamination of topsoil amended with a mixed waste organic output	Mr James O'Sullivan PhD Candidate, La Trobe University The effect of elevated CO2 on the uptake of phosphorus in various crop species	10:45 AM – 11:45 AM Dr Craig Strong The Australian National University Workshop on soil forensics
10:55 AM – 11:05 AM	Dr Helen Suter Senior Lecturer, The University of Melbourne Lignite amendment of feedlot manure: nitrogen retention capacity and mechanisms	Dr Susan Orgill Leader, Soils South, Department of Primary Industries Soil constraints in Australian agriculture: Research priorities and approaches	
11:05 AM – 11:15 AM	Ms Temma Carruthers-Taylor PhD Student, Monash University Preliminary assessment of select food waste-sourced anaerobic digestates on soil emissions and mineral nitrogen leaching	Dr Geoff Anderson Development Officer, Department of Primary Industries and Regional Development Surfactant seed coating improved cereal establishment and production on water repellent soils	
11:15 AM - 11:25 AM	Dr Sasha Jenkins Research Scientist, The University of Western Australia The application of poultry litter to cropping does not impact on stable fly emergence	Dr Khoi Chau Department Head, Can Tho University Increasing rice productivity with utilisation of pond sludge fertiliser in rice/shrimp farming systems in Vietnam	
11:25 AM - 11:35 AM	Mr Upul Gunawardena Technical Officer, Select Harvest Almond Industry Waste: A valuable source for Green	Mr Brett Masters Soil and Land Management Consultant, Department of Primary Industries and Regions	

	Energy, Potassium source and Soil Carbon	Monitoring soil and vegetation condition using remote sensing	
11:35 AM - 11:45 AM	Mr Joerg Werdin PhD Student, The University of Melbourne Biochar produced from low-density wood has greater plant available water than biochar from high-density wood	Tanya Lippmann PhD Candidate, Vrije University Vegetation and vegetation management play a role on the net greenhouse gas budget in peatlands	
11:45 AM - 12:00 PM	Wrap up and close	Wrap up and close	Wrap up and close
12:00 PM - 1:00 PM	Lunch (Tuesday), Atrium, Gallery and Canberra Room		
1:00 PM - 2:30 PM	Contamination: Assessment, monitoring, classification and rehabilitation Theme Leaders: Professor Nanthi Bolan and Professor Chengrong Chen	Utilising the soil food web to create healthy soil Theme Leader: Dr Uffe Nielsen	Regolith geoscience: Tracing the interaction through soil Theme Leader: Dr Leah Moore
	Federation Ballroom North	Federation Ballroom South	Assembly Room
1:00 PM - 1:15 PM	Professor Chengrong Chen Professor, Griffith University Professor Nanthi Bolan Professor Environmental Chemistry, Global Centre for Environmental Remediation Session introduction	Dr Uffe N. Nielsen Western Sydney University Session introduction	Dr Leah Moore Session introduction
1:15 PM - 1:25 PM	Christopher Higgins Civil and Environmental Engineering, Colorado School of Mines Review on managing PFAS contaminated soils	Dr Ta Nguyen Microbiology Laboratories Australia Soil Microbiology Benchmarks in Grazing and Sugar Cane Production Systems in the Queensland Dry Tropics	Mr Mark Crawford Land Resource Officer, Department of Natural Resources, Mines and Energy Salinity risk assessment of an irrigation development in the Condamine Balonne catchment
1:25 PM - 1:35 PM		Dr Kelvin Montagu Applied Horticultural Research How do cover crops reduce soilborne disease in vegetable production, via influence on specific pathogens or changes in general soil microbial communities?	Mrs Seija Tuomi Laboratory Manager, CSIRO Agriculture and Food Determining soil potassium distribution from the measurement of secondary minerals using diffuse reflectance infra-red
1:35 PM - 1:45 PM	Professor Nanthi Bolan Professor Environmental Chemistry, Global Centre for Environmental Remediation Particulate plastics in soil: friend or foe?	Dr Ashley Martin Co-Principal and Managing Director Microbiology Laboratories Australia Can Soil Function Measures Be Used To Improve Soil Health?: The Smeaton Group Experience	Dr Robin Thwaites Senior Research Fellow, Griffith University Mapping the soil materials in alluvial gully environments using regolith terrain mapping techniques
1:45 PM - 1:55 PM	Dr Sophie Wood Partner, Environmental Resources Management Site-Specific Investigation Levels for PFOS and PFOA in Soil	Dr Marcus Hardie Research Fellow, University of Tasmania Does biochar improve soil function and crop growth?	Mrs Kristie Williams Land Resource Officer, Department of Natural Resources, Mines and Energy Follow that leak - assessing landscape/river connectivity

1:55 PM - 2:05 PM	Dr Mahdiyeh Salmanzadeh Lecturer Tracing sources of cadmium in agricultural soils: a stable isotope approach	Dr Nicole Seymour Principal Soil Microbiologist Department of Agriculture and Fisheries Fusarium endophytes reduced multiplication of root-lesion nematode (<i>Pratylenchus thornei</i>) in wheat (<i>Triticum aestivum</i>)	Mr Sunny Jacobs Senior Engineer, Department of Natural Resources, Mines and Energy Using geophysics to improve hydrogeological conceptualisation and to monitor change at springs within the Great Artesian Basin
2:05 PM - 2:15 PM	Wrap up and close	Mr Ryan Orr Research Officer, James Cook University Soil characteristics associated with Panama disease severity	Ms Esther Qinggaozi Zhu PhD Candidate, Office of Environment and Heritage Climate Change Impact on Rainfall Erosivity across Australia Alpine Region
2:15 PM - 2:30 PM		Wrap up and close	Wrap up and close
2:30 PM - 3:00 PM	Afternoon tea (Tuesday), Atrium, Gallery and Canberra Room		
3:00 PM - 4:30 PM	Managing soil degradation due to urbanisation, industry, mines, transport and military activities Theme Leader: Dr Jane Aiken	Soil nutrients: balancing P and other nutrients' availability and environmental risk Theme Leader: Dr Ashlea Doolette	Clay and soil minerals: Progress, prospects and future challenges Includes the Keith Norrish Lecture Theme Leader: Robert Fitzpatrick
	Federation Ballroom North	Federation Ballroom South	Assembly Room
3:00 PM - 3:15 PM	Dr Jane Aiken Director Consultant Consulting and Environmental Services Session introduction	Dr Ashlea Doolette The University of Adelaide Session introduction	Dr Tony Eggleton Australian National University Professor Robert Fitzpatrick Director Centre for Australian Forensic Soil Science/ Acid Sulfate Soils Centre, CSIRO / University of Adelaide Session introduction
3:15 PM - 3:25 PM	Ms Danni Oliver Experimental Scientist CSIRO Land and Water The role of surface charge and pH on sorption behaviour of per- and polyfluoroalkyl substances.	Prof. Sabaruddin Zakaria Head of Magister, Agroecotechnology Study Program Syiah Kuala University Effect organic amendment on soil chemical properties, growth and yield of soybean-sweet corn in Podzolic	Professor Robert Fitzpatrick Director Centre for Australian Forensic Soil Science/ Acid Sulfate Soils Centre, CSIRO / University of Adelaide Dr Keith Norrish (1924 – 2017): Distinguished soil scientist and pioneer of X-ray Fluorescence spectroscopy
3:25 PM - 3:35 PM	Greg Hancock Associate Professor, The University of Newcastle Land destruction and redevelopment – using landscape evolution models for soil and post-mining landscape reconstruction	Dr Miaomiao Cheng Post Doctoral Fellow/associate Lecturer, Murdoch University Determining phosphorus maintenance rates for cropping on P-adequate soils in WA high rainfall environment	Dr Jock Churchman Adjunct Senior Lecturer The University of Adelaide The Origin of Interlayer Water in Halloysite
3:35 PM - 3:45 PM	Ms Chantal Milner Soil Scientist, SESL Australia Pedogenesis in a Spolic Anthroposol forming on volcanic breccia	Dr Philip Moody Science Leader, Department of Environment and Science	Miss Dongxue Zhao PhD Student, The University of New South Wales

		Phosphorus buffer index re-visited: productivity and environmental applications	Establishing a vis-NIR spectral library for predicting clay using machine learning and various sample sizes
3:45 PM - 3:55 PM	Dr. Andrew Butler Principal Environmental Scientist, NRA Environmental Consultants Developing objectives and completion criteria for post-mine landforms following silica sand mining	Mr Graeme Sandral Research Scientist, Department of Primary Industries Critical external phosphorus requirements of crop species grown under controlled environmental conditions	Simon Clarendon Department of Primary Industries Sediment particle size, mineralogy and phosphorus
3:55 PM - 4:05 PM	Mrs Yingcan Zhu PhD Candidate, University of Southern Queensland The effect of Mg on the saturated hydraulic conductivity of soils with different clay mineralogy	Dr Karl Andersson Post-doctoral Research Fellow University of New England The transformation of calcium phosphates in alkaline Vertisols following acidic incubation	Professor Robert Fitzpatrick Director Centre for Australian Forensic Soil Science/ Acid Sulfate Soils Centre, CSIRO / University of Adelaide Making minerals talk: the value of earth materials in solving criminal investigations
4:05 PM - 4:15 PM	Mr Aram Ali PhD Student, University of Southern Queensland Impact of irrigation wastewater pH on saturated hydraulic conductivity of acidic, neutral, and alkaline Kaolinitic soils	Wrap up and close	Dr John Triantafilis Senior Lecturer University of New South Wales Field level digital mapping of soil mineralogy using proximal and remote-sensed data
4:15 PM - 4:30 PM	Wrap up and close		Dr Balwant Singh Professor of Soil Science, The University of Sydney Clay mineral - Organic carbon interactions: a key process for the soil carbon preservation 4:25 PM – 4:30 PM Wrap up and close
4:30 PM - 6:00 PM	Poster Session, Gallery, Atrium and Canberra Room (Includes light refreshments)		
4:40 PM - 6:00 PM	Australian Clay Minerals Society (ACMS) meeting, Assembly Room		
6:00 PM - 7:00 PM	CPSS Board meeting, Mount Ainslie Room		

Wednesday, November 21, 2018 *Field trips depart from the rear entry of Hyatt Hotel Canberra*

8:00 AM - 6:30 PM	Field Trip: Horticultural - Working with soils to improve horticultural productivity
8:30 AM - 3:30 PM	Field Trip: Urban soils - Converting rural and contaminated soils into urban landuses (Canberra)
9:00 AM - 5:00 PM	Field Trip: Winery soils - Soils as a controlling factor in wine quality and quantity (Yass Valley)
10:00 AM - 5:00 PM	Workshop: PFAS in Soils – Behaviour, Fate, Risks and Remediation Convened by Soil Science Australia’s Certified Practising Soil Scientist (CPSS) scheme
1:30 PM - 3:30 PM	Workshop: ASPAC Soil and Plant Analysis Workshop – new thinking, extra value

Thursday, November 22, 2018

7:30 AM - 5:00 PM	Registration desk open (Thursday), Hyatt Atrium		
	PLENARY SESSION 3, Federation Ball Room <i>Chair: Dr Richard Greene</i>		
8:30 AM - 8:40 AM	Housekeeping and general welcome: Session Chair		
8:40 AM - 9:15 AM	KEYNOTE ADDRESS: Dr Annette Cowie Soil science in a changing world: Meeting the challenges of climate change and land degradation. Presented as the Harald Jensen Lecture for 2018.		
9:15 AM - 9:50 AM	KEYNOTE ADDRESS: Dr Gupta Vadakattu Soil microbiology and biology both from management perspective and 'biological fingerprinting'		
9:50 AM - 10:20 AM	Morning tea (Thursday), Atrium , Gallery and Canberra Room		
10:20 AM - 12:00 PM	Soil Organic Carbon sequestration in a challenging environment Theme Leaders: Dr Susan Orgill, Dr Brian Murphy and Dr Mehran Rezaei Rashti	Extreme soils: Management of acid sulfate conditions, terrestrial soil acidification, salinity and sodicity Theme Leader: Dr Vanessa Wong and Dr Luke Mosley	New soil chemical testing technologies and recommendations for agricultural and environmental benefit Theme Leader: Dr Andrew Biggs
	Federation Ballroom North	Federation Ballroom South	Assembly Room
10:20 AM - 10:35 AM	Dr Susan Orgill Leader, Soils South, Department of Primary Industries Dr Brian Murphy Honorary Scientific Fellow Office of Environment and Heritage Doctor Mehran Rezaei Rashti Research Fellow, Griffith University Session introduction	Dr Vanessa Wong Monash University Dr Luke Mosley Senior Research Fellow, The University of Adelaide Session introduction	Dr Andrew Biggs Senior Soil Scientist, Department of Natural Resources, Mines and Energy Session introduction
10:35 AM - 10:45 AM	Dr Jonathan Gray Senior Scientist (Soil Modelling) Office of Environment and Heritage Modelling and mapping of soil organic carbon fractions over New South Wales, Australia	Mrs Catherine Botta Consultant, PCB Consulting Pty Ltd Assessment of soil properties in the Barmah-Millewa Forest and implications for environmental water planning	Dr Han Weng Postdoctoral Fellow, La Trobe University Assessing plant-available glyphosate in contrasting soils by Diffusive Gradient in Thin-films technique (DGT)
10:45 AM - 10:55 AM	Dr Gunasekhar Nachimuthu Research Scientist, Department of Primary Industries Carbon gains and losses with irrigation, runoff and drainage in cotton farming systems	Dr Guangdi Li Principal Research Scientist Department of Primary Industries Amelioration of subsurface soil acidity using inorganic amendments	Dr Andrew Biggs Senior Soil Scientist, Department of Natural Resources, Mines and Energy Stable isotope variation in gilgaied Vertosols
10:55 AM - 11:05 AM	Dr Malem Mcleod Research Officer, Department of Primary Industries The longevity of soil carbon and nitrogen improvement when	Ms Helen Burns Development Officer, Department of Primary Industries Subsurface acidity threatens central and southern cropping areas	Ms Emily Leyden PhD Candidate, The University of Adelaide A methodological approach to investigate geochemical changes

	amended with organic materials and biochar		in coastal soils following sea level rise	
11:05 AM - 11:15 AM	Dr Promil Mehra Technical Officer, Department of Primary Industries Quantification of root phenotypes under different tillage system using Micro X-ray Tomography	Mrs Sima Bargrizan PhD student, The University of Adelaide Spectrophotometric determination of pH and its influence in soils	Mr Gavin Styles PhD Candidate, Monash University Development of a Predictive Tool for Glyphosate Sorption in Australian Soils	
11:15 AM - 11:25 AM	Dr Manoharan Veeragathipillai Senior Chemist, Office of Environment and Heritage Estimating Soil Organic Carbon Fractions: Thermal oxidation - Chemometric Approach – A Preliminary Study	Mr Henry Smolinski Research Officer, Department of Primary Industries and Regional Development Ground EM38 survey and AEM data used to identify potential horticulture land	Maryem Arshad Student, University of New South Wales Mapping soil clay using Bayesian modelling and proximal sensors at the field level	
11:25 AM - 11:35 AM	Dr Warwick Badgery Research Scientist, Department of Primary Industries Soil carbon market-based instrument pilot demonstrates higher than expected soil carbon sequestration	Mr Brian Hughes Soils Consultant, Department of Primary Industries and Regions Modern cropping techniques and implications for erosion, acidity and salinity on sandy mallee landscapes in South Australia	Mr Fred Oudyn Senior Chemist, Department of Environment and Science Using cotton wicks as an alternative to soil extracts to monitor the movement of urea and chemical inhibitors in fertiliser band application experiments	
11:35 AM - 11:45 AM	Dr Vanessa Wong Monash University Soil carbon pools in temperate saltmarsh and mangrove environments	Dr Yunying Fang Research Officer, Department of Primary Industries The decomposition process of organic amendments and its role in aggregation of poorly structured sodic-subsoil	Wrap up and close	
11:45 AM – 12:00 PM	Wrap up and close	11:45 AM – 11:55 AM Dr Belinda Hackney Research Officer, Department of Primary Industries More effective use of P and S in variable landscapes 11:55 AM – 12:00 PM Wrap up and close		
12:00 PM - 1:00 PM	Lunch (Thursday), Atrium, Gallery and Canberra Room			
1:00 PM - 2:30 PM	Soil microbial ecology: Its adaptive roles in soil restoration and responses to stresses Theme Leaders: Associate Professor Tim Cavagnaro and Dr Lynne Macdonald	Extreme soils: Management of acid sulfate conditions, terrestrial soil acidification, salinity and sodicity (part 2) Theme Leaders: Dr Vanessa Wong and Dr Luke Mosley	Laboratory QA and assessment; the key to a successful soil consultancy Theme Leader: Mr Paul Kennelly	Soil Classification Workshop Facilitator: Mr Bernard Powell
	Federation Ballroom North	Federation Ballroom South	Assembly Room	Mount Ainslie Room

1:00 PM - 1:05 PM	A/Prof. Tim Cavagnaro The University of Adelaide Dr Lynne Macdonald Research Scientist, CSIRO Session introduction	Dr Vanessa Wong Monash University Dr Luke Mosley Senior Research Fellow, The University of Adelaide Session introduction	Mr Paul Kennelly Nutrient Advantage Session introduction	This half-day workshop aims to update the soil science community on a major proposal to introduce a new soil order into the Australian Soil Classification. An Arenosols order is proposed to cover the deep sands that are widely distributed throughout inland arid Australia as well as along our extensive coastline. The proposal will better align with international soil classification but will have significant implications for the Tenosols and Rudosols soil orders.
1:05 PM - 1:15 PM	Dr Mark Farrell Principal Research Scientist CSIRO Drivers of microbial community structure and organic matter chemistry across a 900 km aridity gradient	Dr Clayton Butterly Lecturer The University of Melbourne Can novel amendments facilitate lime dissolution and alkalinity movement down a soil profile?		
1:15 PM - 1:25 PM	Dr Yunying Fang Research Officer, Department of Primary Industries Unravelling microbial mechanisms of native soil carbon priming via nutrient-enriched wheat residue at different inputs	Dr John Angus Honorary Fellow CSIRO Agriculture and Food Much more lime is needed on southern Australian acid soils	Dr Paul Milham Adjunct Research Associate Western Sydney University Trace metal contamination during grinding of plant samples	
1:25 PM - 1:35 PM	Erinne Stirling PhD Candidate, The University of Adelaide Fire influences on decomposition: microbial diversity in soils incubated with thermally altered Pinus radiata needles	Dr. Vien Duong Lecturer, Can Tho University Risk of sulfide formation from acid sulfate soil in rice/shrimp farming systems in Vietnam	Mr Jeffrey Kraak Program Manager, Fertilizer Australia Quality assured soil and plant test interpretation and recommendations for farmers	
1:35 PM - 1:45 PM	Mr Xiangyu Liu Student, Griffith University Effect of subsoil compost amendment on soil chemical and biochemical processes in an acidic soil	Professor Leigh Sullivan Federation University Australia National Guidance for the Identification, Sampling and Analysis of Acid Sulfate Soil Materials	Mr Dave Lyons The keys to a successful soil testing consultancy	
1:45 PM - 1:55 PM	Mrs Katherine Polain PhD Candidate, University of New England Digging deeper: microbial potential in sub-soil nutrient cycling	Dr Frank Valzano Student Effects of gypsum and tillage on an irrigated Sodic Kandosol at Carnarvon, Western Australia	Mr John Saad Managing Director, CHT Australia Pty Ltd A New Mechanism to mitigate Slaking and Dispersion	
1:55 PM - 2:05 PM	Dr Mario Fajardo Post Doctoral Fellow, The University of Sydney Surface soil biodiversity baseline for NSW	Dr Luke Mosley Senior Research Fellow, The University of Adelaide Remediation of degraded coastal wetland soils; learnings from the Dry Creek tidal restoration trial	Dr Guangdi Li Principal Research Scientist Department of Primary Industries A multi-core sampler improves accuracy of soil test results	
2:05 PM - 2:15 PM	Dr Michael Rose Senior Research Scientist	Ms Sue-Ellen Dear	Wrap up and close	

	Department of Primary Industries Putting the effects of glyphosate on soil biological function into perspective	Senior Land Resource Officer, Department of Natural Resources, Mines and Energy Coastal acid sulfate soil delineation in South East Queensland		
2:15 PM - 2:30 PM	Wrap up and close	Wrap up and close		
2:30 PM - 3:00 PM	Afternoon tea (Thursday), Atrium, Gallery and Canberra Room			
3:00 PM - 4:30 PM	Soil microbial ecology: Its adaptive roles in soil restoration and responses to stresses (part 2) Theme Leaders: Associate Professor Tim Cavagnaro and Dr Lynne Macdonald	Soil in the digital age: Advances in proximal soil sensing and digital soil morphometrics Theme Leader: Professor Budiman Minasny	Workshop on the new National Acid Sulfate Soil Guidance Theme Leader: Dr Luke Mosley and Professor Leigh Sullivan	Soil Classification Workshop (cont)
	Federation Ballroom North	Federation South	Assembly Room	Mount Ainslie Room
3:00 PM - 3:10 PM	Dr Zhongming Wen Associate Professor, Northwest A&F University Effects of Exotic Black Locust on Soil Microbial Diversity and Community Structure along Environmental Gradient	3:00 PM - 3:15 PM Professor Budiman Minasny The University of Sydney Session introduction	3:00 PM - 4:30 PM Workshop on the new National Acid Sulfate Soil Guidance The workshop will provide an introduction and overview to the new National Acid Sulfate Soil Guidance documents. The Australian Government, state and territory governments and the National Committee for Acid Sulfate Soils (NATCASS) has released a suite of new resources (http://www.waterquality.gov.au/issues/acid-sulfate-soils).	
3:10 PM - 3:20 PM	Reham Mohammed University of Tasmania Diversity and Abundance of Arbuscular Mycorrhizal Fungi (AMF) in different Tasmanian soils types	3:15 PM - 3:25 PM Dr Iman Tahmasbian Griffith University Analysis of Soil Carbon and Nitrogen Isotopic Compositions Using Laboratory-Based Hyperspectral Imaging Technology		
3:20 PM - 3:30 PM	Dr Brad Keen Technical Officer Department of Primary Industries Rhizobia efficacy and cohabitation in ACT sub-clover nodules	3:25 PM - 3:35 PM Nan Li University of New South Wales Multiresolution analysis for improving prediction performance of electromagnetic induction		
3:30 PM - 3:45 PM	Wrap up and close	Dr David Freebairn Assoc Prof University of Southern Queensland Challenges in estimating soil water		
3:45 PM - 4:00 PM		Wrap up and close		
6:30 PM - 10:30 PM	Conference Dinner Awards Presentation - Federal President of Soil Science Australia			

Friday, November 23, 2018

7:30 AM - 5:00 PM	Registration desk open (Friday), Hyatt Atrium		
	PLENARY SESSION 4, Federation Ball Room <i>Chair: Dr Nilantha Hulugalle</i>		
8:30 AM - 8:40 AM	Housekeeping and general welcome: Session Chair		
8:40 AM - 9:15 AM	KEYNOTE ADDRESS: Dr Lisa Lobry de Bruyn Connecting soils' knowledge to the community: the reasons and means		
9:15 AM - 9:50 AM	KEYNOTE ADDRESS: Professor A. McBratney Soil Science in the future: Adding value and security in the 21st Century		
9:50 AM - 10:20 AM	Morning tea (Friday), Atrium, Gallery and Canberra Room		
10:20 AM - 12:05 PM	Managing soil physical constraints to productivity Theme Leader: Dr David McKenzie and Associate Professor John Bennett	Soil Information Systems: Predicting soil genesis, classification and its spatial distribution, digital mapping Theme Leader: Dr Neil McKenzie	Urban soils Theme Leader: Mr Simon Leake
	Federation Ballroom North	Federation Ballroom South	Assembly Room
10:20 AM - 10:35 AM	Dr David McKenzie Soil Management Designs Session introduction	Dr Neil McKenzie CSIRO Session introduction	Mr Simon Leake SESL Australia Session introduction
10:35 AM - 10:45 AM	Mr John Friend Leader, Soils North Department of Primary Industries Can we reinvigorate soil physical advice to farmers?	Dr Senani Karunaratne Research Fellow, The University of Sydney Data cube and machine learning algorithms - is this the next generation soil carbon model?	Mr Tim O'Hare Principal Consultant SESL Australia Urban Soils in Practice - The London Olympic Park Soil Strategy
10:45 AM - 10:55 AM	Dr Stephen Davies Research Officer, Department of Primary Industries and Regional Development Comparing strategic deep tillage options for amelioration of sandplain soil constraints in cropping systems	Niranjan Acharige PhD Student, The University of Sydney Soil moisture forecasting for improved agricultural management	
10:55 AM - 11:05 AM	Mr Wayne Parker Research Officer, Department of Primary Industries and Regional Development Deeper ripping with topsoil slotting maintains medium term yield response in sandy soils	Dr Patrick Filippi Postdoctoral Research Fellow, The University of Sydney Next generation digital soil mapping for the cotton regions of Australia	
11:05 AM - 11:15 AM	Dr Lynne Macdonald Research Scientist, CSIRO Let's get physical: improving crop water use in sandy soils	Dr Senani Karunaratne Research Fellow, The University of Sydney Next generation soil carbon and moisture modelling for agricultural landscapes	Mr Simon Leake SESL Australia A classification system for sports field performance and construction

11:15 AM - 11:25 AM	Mr David Hall Snr Research Officer, Department of Primary Industries and Regional Development Sodicity and gypsum responsiveness in south-western WA	Mr Jonathan Walton Land Resources Officer, Department of Environment and Science Predicting soil erodibility in the Upper Brisbane Valley using digital soil mapping	Namfon Tongtavee Lecturer, Kasetsart University Assessment of lead availability from solid waste disposal on soil sample
11:25 AM - 11:35 AM	Dr Ehsan Tavakkoli Research Scientist, Department of Primary Industries Understanding the amelioration processes of the subsoil application of amendments in the Southern Region	Mr James Moloney PhD Candidate, The University of Sydney Monitoring soil moisture using observations from multiple spatial supports	Ms Kathryn McGilp Honours Candidate Australian National University Utilising mixed-waste organic outputs (MWOO) for mine rehabilitation: Effects on soil physiochemical properties and plant growth
11:35 AM - 11:45 AM	Mr Luke Peel Research Coordinator The Mulloon Institute Comparison of different land management with LFA and soil physical properties Mulloon catchment NSW	Mr. Ehsan Zare PhD Candidate University of New South Wales Soil water imaging using electromagnetic induction instrument and quasi-2d algorithm for improving water use efficiency	Mr Peter Somerville Phd Candidate The University of Melbourne Water use strategies determine the response of trees to organic matter amendments.
11:45 AM - 11:55 AM	Mr Brian Hughes Soils Consultant, Department of Primary Industries and Regions Changed farming systems on sandy mallee soils are causing major landscape water imbalances	Dr Uta Stockmann Agricultural Soil Scientist CSIRO Agriculture and Food Methods to predict PAWC – a case study situated in the Liverpool Plains, NSW	Dr Pam Hazelton Associate, University of Technology Sydney Soil Constraints for the Urban Development of former Agricultural Land
11:55 AM - 12:05 PM	Dr Michael Braunack Senior Research Scientist CSIRO Soil compaction: cotton industry experience	Dr. Haijing Shi Northwest A&F University Digital close range photogrammetry for the study of rill development at flume scale	Wrap up and close
12:05 PM - 1:05 PM	Lunch (Friday), Atrium, Gallery and Canberra Room		
1:05 PM - 2:30 PM	Managing soil physical constraints to productivity (part 2) Theme Leader: Dr David McKenzie and Associate Professor John Bennett		Soil Information Systems: Predicting soil genesis, classification and its spatial distribution, digital mapping (part 2) Theme Leader: Dr Neil McKenzie
	Federation Ballroom North		Federation Ballroom South
1:05 PM - 1:15 PM	Associate Professor John Bennett Federal President, Associate Professor of Soil Science, Soil Science Australia, University of Southern Queensland Session introduction	Mr Daniel Brough Science Leader, Department of Environment and Science Modern Soil Information Systems: where to from here	
1:15 PM - 1:25 PM	Mr David West	Dr Nathan Robinson Snr Soil Research Scientist	

	<p>Research Officer, University of Southern Queensland</p> <p>Tyre deflation on heavy machinery does not sufficiently minimise soil compaction</p>	<p>Federation University Australia</p> <p>Soil Grids of Victoria</p>
1:25 PM - 1:35 PM	<p>Mr Sam North Research Hydrologist Department of Primary Industries</p> <p>Identifying a "hard" soil problem in the Riverina</p>	<p>Mr Muddassar Muzzamal M.Phil Student, University of New South Wales</p> <p>Mapping soil particle-size fractions using multiple-linear regression (MLR) with additive log-ratio (ALR) transformation and proximally sensed data</p>
1:35 PM - 1:45 PM	<p>Dr Chris Saunders Research Fellow / Engineer University of South Australia</p> <p>The use of computer simulation to understand machinery operation when used to address soil constraints</p>	<p>Dr Karen Holmes Research Scientist, Department of Primary Industries and Regional Development</p> <p>When are coarse resolution gamma radiometrics 'good enough' covariates for farm-scale digital soil mapping?</p>
1:45 PM - 1:55 PM	<p>Dr Peter Fisher Soil Physics Group Leader, Department of Economic Development, Jobs, Transport and Resources</p> <p>Impact of trafficking in the low rainfall zone of south-eastern Australia</p>	<p>Ms Lauren O'Brien Land Resource Officer, Department of Environment and Science</p> <p>Mapping soil attributes and agricultural constraints using digital soils mapping outputs to inform on-farm decisions</p>
1:55 PM - 2:05 PM	<p>Miss Rebecca Mitchell Land Management Extension Officer, Department of Economic Development, Jobs, Transport and Resources</p> <p>Controlled Traffic Farming in the Low Rainfall Zone: Assessing the merits through development and extension</p>	<p>Dr David Morand Senior Scientist - Land And Soil Assessment Office of Environment and Heritage</p> <p>The hunt for Arenosols in NSW</p>
2:05 PM - 2:15 PM	<p>Dr David McKenzie Soil Management Designs</p> <p>Wrap up and close</p>	<p>Wrap up and close</p>
2:15 PM - 3:00 PM	<p>Afternoon Tea (Friday), Atrium, Gallery and Canberra Room</p>	
3:00 PM - 3:30 PM	<p>PLENARY SESSION 5, Federation Ballroom</p> <p>CLOSING ADDRESSES</p>	

Acknowledgements: the organizing committee gratefully recognize the work put into the conference by a range of individuals and organizations, without which this conference would not have happened. In particular the staff from Kaigi, the professional conference organizer. We thank the staff at the Hyatt Hotel, for their input into making possible the smooth running of the conference. We are especially grateful to the sponsors. Without them the conference would not have been viable.

We trust all delegates have a productive, safe and enjoyable 2018 National Soils Conference in Canberra.

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