

- **Obituary – Dr Bob Leonard**
- **CANQUA-CGRG Conference Report**
- **Report on First working session of Intergovernmental Technical Panel of Soils**

Volume 61 No 5

October 2013



New Zealand Soil News

Newsletter of the New Zealand Society of Soil Science

ISSN 0545-7904 (Print)
ISSN 1178-8968(Online)

Volume 61

Number 5

October 2013

Contents

Page

Editorial	Publish or perish? Or should that be review to survive?	<i>D Houlbrooke</i>	139
Obituary	Dr Bob Leonard		140
Report	CANQUA-CGRG Conference Report	<i>D.J. Lowe</i>	141
	Wai-BOP Soils 2013 – One day Conference	<i>D.J. Lowe</i>	145
Report	First working session of the Intergovernmental Technical Panel of Soils	<i>Marta Camps</i>	147
Report	6 th Annual ESP Conference 2013	<i>Estelle Dominati</i>	148
The Dirt	A collection of soil-related oddities		150
Norman Taylor Lecture			151
Soil as Art	Call for expressions of interest from the soil science community		151
Global Soil Week 2013			151
New Publications	News from Soil Crumbs - Soil Science Australia		152
News from the Regions			153
Global Land Project			168
Abstracts			169
RM Gentile <i>et al</i>	Integrated soil fertility management: aggregate carbon and nitrogen stabilization in differently textured tropical soils		
HMSK Herath <i>et al</i>	Effect of biochar on soil physical properties in two contrasting soils: an Alfisol and an Andisol.		
M Wang <i>et al</i>	Predicting C aromaticity of biochars based on their elemental composition		
Suarez-Abelenda <i>et al</i>	The impact of shrimp farm effluents on the soil carbon storage and the geochemistry of mangrove soils under semi-arid climate conditions in northern Brazil.		
Conferences			172

Your contributions are required - New Zealand Soil News is your newsletter

News, views, letters, articles (serious or otherwise)—send to:

Isabelle Vanderkolk

Climate Land and Environment Section

AgResearch Ltd

Private Bag 11008

Palmerston North

FAX: (06) 351 8032

email: isabelle.vanderkolk@agresearch.co.nz

Deadline..... for the December issue of Soil News is Monday 9th December 2013

Visit our website:

<http://nzsss.science.org.nz/>

New Zealand Soil News

Editor *D. Houlbrooke- dave.houlbrooke@agresearch.co.nz*
Typing *I Vanderkolk – isabelle.vanderkolk@agresearch.co.nz*
Printing *Massey University Printery*
Correspondents *I Lynn, Landcare Research, Lincoln; B. Robinson, Lincoln University; L. Currie, Massey University; C Hedley, Landcare Research (Massey University), Palmerston North; D J Lowe, Waikato University; R Doyle, Australia; M Taylor, Waikato Regional Council, Hamilton; S Laurenson, AgResearch Invermay, Mosgiel; M Dodd, AgResearch Grasslands, Palmerston North; R Stenger, Lincoln Agritech, Ruakura Research Centre, Hamilton; T Harrison-Kirk, Plant & Food Research; G. Lucci, AgResearch, Ruakura Research Centre, Hamilton; R Gentile, Plant & Food Research, Palmerston North, S. Lambie, Landcare Research, Hamilton.*

New Zealand Society of Soil Science Officers 2012–2014

President *P M Fraser, Plant & Food Research, Christchurch*
Vice President *R. Hill, Environment Waikato*
Past President *A. Hewitt, Landcare Research, Lincoln*
Secretary *T. Clough, Lincoln University*
Treasurer *T van der Weerden, AgResearch, Invermay*
Council *R D McLenaghan, Lincoln University; I Vogeler, AgResearch, Palmerston North; D. Houlbrooke, AgResearch, Ruakura; M Hedley, Massey University, H. Lowe, Lowe Environmental Impact, Palmerston North; T van der Weerden, AgResearch, Invermay; M Balks, University of Waikato*

NZSSS subscriptions

NZSSS subscriptions become due on **1 July** each year. Individual members who do not pay their subscription before 31 October in a given year will be asked to pay an additional \$NZ10.00 as a penalty for late payment.

	<i>If paid by 31st October:</i>	<i>After 31st October:</i>
Member (NZ)	\$60.00	\$70.00
Student Member	\$35.00	\$45.00
Member (Overseas)	\$60.00	\$70.00
Retired Member	\$35.00	\$45.00
Library	\$70.00	

Soil News is one of the great benefits of membership to the Society!

For any subscription queries, please contact nzsss@groundworkassociates.co.nz



Publish or perish? Or should that be review to survive?

The term “publish or perish” has long been quoted as a statement designed to entice scientists to develop and maintain a strong publication record as a means of promoting one’s area of research and underpinning a strong ‘quality science’ component to a research career. In recent time initiatives such as the CRI task force report suggesting an increased focus on ‘science outcomes’ as opposed to ‘science outputs’ has resulted in much greater importance being placed on creating ‘science impact’ with the stakeholders that utilise the science knowledge being developed. It briefly seemed that the importance of scientific journal publications may decrease a little as a result? Not so, instead it now appears that indeed we need to do both. Of course this adds to the workload for a researcher, essentially dictating that more is achieved with the same amount of time (or funding?). The problem is that if a strong publication record is to be maintained then to be equitable and fair, an even stronger peer review input also needs to be completed to accompany this workload. For example each journal manuscript that someone lead authors will require at least two independent reviews. Given that in order to reach this point most manuscripts will require two further internal and independent peer reviews prior to submission then it is reasonable to expect that for every paper submitted to a journal each author should be obliged to review four other papers. On top of this it is likely that industry-relevant conference papers and client reports will be an important delivery mechanism that can help create ‘science impact’, and for every publication it is likely that two independent internal peer reviews would be required prior to release. So if a given author was to write two journal manuscripts in a year (requiring 8 reviews), two conference proceedings papers (requiring 4 reviews) and 6 client reports (requiring 12 reviews) in a one year period then that should also necessitate an accompanying 24 reviews at an average of one per fortnight. This figure of course ignores all of the documents for which the given scientist is a co-author and has an obligation to contribute, which should not be considered part of the peer review process.

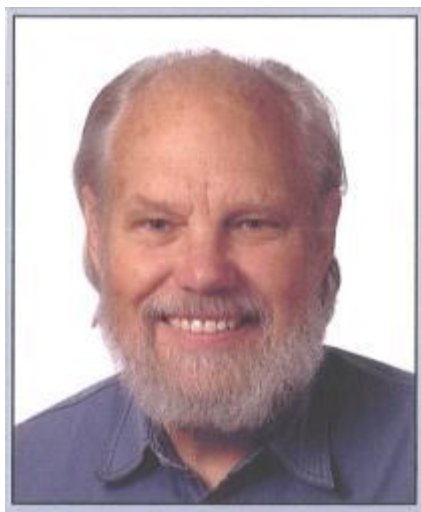
Perhaps some (many) scientists are actually pulling their weight on this issue. However I suspect this is not that case. An interesting article by the editors of Biogeochemistry by [Lajtha and Baveye (2010) 101:1-3] lamented the increasing difficulty of finding suitable and agreeable peer reviewers coupled with a large increase in the numbers of manuscripts being published. The reason most usually provided by potential reviewers declining the opportunity was that they had no time to help. Perhaps this is because scientists are too busy trying to extend their publication records and delivering outputs that may translate into stake holder impact? I suggest that with all the pressures being lumped into the mix, an unexpected email from a journal editor too easily becomes the lowest priority request. To counter this problem it is my opinion that we are either going to have to raise the importance of peer reviewing in priority setting or else risk a change in the ways that journals manage this process. Examples that could be adopted include creating review credits with a journal that will allow a manuscript submission, or even a full user pays system whereby the author pays for all costs to publish, including time for a fully paid review process. Food for thought anyway? All I am suggesting is that we need to remind ourselves of one of our long held duties as publishing researchers.

Finally I would like to take this opportunity to congratulate two esteemed members of our society for the awards that they were presented with at a recent NZSSS meeting in the Manawatu. Dr Kevin Tate received the inaugural presentation of the ‘Grange Award’. This award was designed to recognise an outstanding contribution to New Zealand soil science through the promotion of soil science and sustainable land management. The Grange medal is named after Dr Des Grange, an outstanding pedologist, science administrator or pioneering soil scientist of the mid-20th century. At the same meeting Dr Alec Mackay (Society President from 2006-2008 and long-time committee member) was awarded a life membership of the NZSSS. More details and photos from the presentation of these awards can be found in the Massey news of the news from correspondents section.

D Houlbrooke

Obituary – Dr Bob Leonard

(by Ian Collins)



Dr Bob Leonard ... quiet, but deeply passionate about causes. Tenacious in his beliefs. A complex character. I knew him well as a colleague here. He was someone whose time, conversation and wisdom one appreciated. The peace campaigner was only one side of him. He was passionate about stewardship of the environment. A Senior Tutor in the Soil and Physical Sciences Department here at Lincoln University. Started in 1984. He was a limnologist ... a freshwater scientist. Limnology is the science of lakes and inland waterways. He was a close colleague of the late Associate Professor Graeme Buchan, an environmental physicist. Together, in 1990, they founded the popular and highly successful Lincoln University EnviroSchool programme ... a campus-based biennial vacation school for

environmentally minded senior secondary school students. Largely on Bob's initiative, Sir Edmund Hillary was approached and accepted the job of Patron of the EnviroSchool programme. The EnviroSchools, which ran for more than a decade and won a Government award for their contributions to environmental care and education, were a real legacy that Bob could be proud of. Ironical that Bob and Graeme, whose offices were in the same corridor, only a few doors apart, and worked closely together on environmental science, the one on water the other on soil, should die within less than a year of each other. In 1992 a paper they co-authored on propagating environmental science and ethic was accepted for the first world environmental and communication congress following the Earth Summit in Rio De Janeiro.

Bob's role in the co-founding of Lincoln University's EnviroSchool programme deserves a mention in any obituary. Numerous participants who have grown up, gone on to university and are now in environment or conservation related careers, will remember him.

Academically Bob was highly qualified ... he had a master's degree from Yale (in Forestry), and a PhD from the University of California. He was world-class in his understanding of scientific matters, highly praised by students for his lectures and laboratory classes, particularly chemistry. I have a testimonial here from one of his mature students, who came late in life to university, who described Bob's Global Environmental Issues subject as "brilliant". But Bob never sought the limelight. He started humbly at Lincoln University as a casual staff member but was soon "snapped up" by the University for a permanent academic position.

As a limnologist his research took him to many places including Lake Baikal in Russia, in capacity the largest freshwater lake in the world, and he brought back water samples to Lincoln University for analysis as part of his research.

A Bob Leonard Memorial Gathering was held on September 4th; Knox Church Lounge and has been well attended by Bob's friends from the Department of Soil & Physical Sciences and Anti-Bases Campaign. Bob died on August 13th in Wellington Hospital. He was 74. He is survived by his wife Barbara, their son Graham, his three children in the US - Andra, Brendan, Mark - and eight grandkids.

Report from the prairies: CANQUA-CGRG biennial conference, 18-22 August, 2013, Edmonton, Alberta, Canada

David J. Lowe

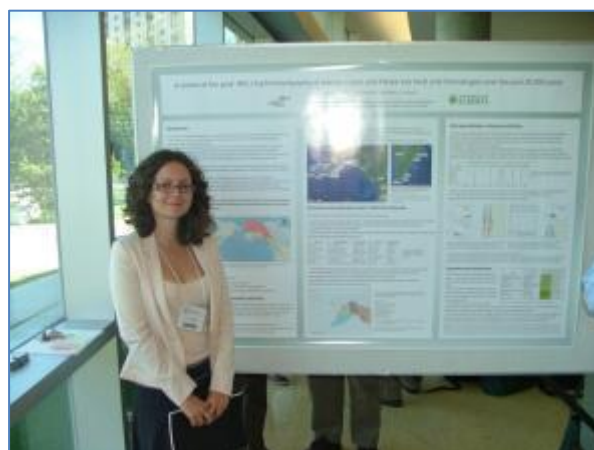
Department of Earth and Ocean Sciences
University of Waikato, Hamilton

I attended the joint Canadian Quaternary Association (CANQUA) and Canadian Geomorphology Research Group (CGRG) conference in Edmonton, Alberta, in August, and presented three papers (Lowe et al., 2013a, b; Rawlence et al., 2013). As president of the International focus group on tephrochronology and volcanism (INTAV – see <http://www.arch.ox.ac.uk/intav/INQUA-INTAV.html>), I also convened two meetings of around a dozen tephra specialists in attendance at the conference (Figs. 1-2). Topics discussed included preparations for the next inter-INQUA field conference on tephras to be held in Chile and Argentina in late 2014. **Brent Alloway** (Victoria University of Wellington) is leading those preparations. A second topic of discussion was that of progress towards a global tephra database. Currently, there are several regional tephra databases but **Steve Kuehn** (Concorde University, USA), who is leading this initiative, and others, have suggested that a global development would facilitate progress towards an integrated tephrostratigraphic framework for different regions, thereby increasing efficacy and confidence in tephra correlation, and also help volcanology and petrology. Steve is presenting a paper on this subject at a special session at the AGU meeting in San Francisco in December this year (Kuehn et al., 2013).



Fig. 1. Some tephrochronologists and supporters at the Canqua-CGRG conference dinner, Edmonton. From left Maria Lowe, Sean Pyne-O'Donnell, Anna Oh, Christine Lane, John Westgate, David Lowe, Cora Westgate, Nick Pearce, Emma Gatti, and Gill Plunkett. Other tephra specialists (other than graduate students) at the meeting included Britta Jensen, Alberto Reyes, Duane Froese, and Steve Kuehn.

Fig. 2. Lauren Davies, PhD student in tephrochronology at the University of Alberta, one of the many friendly and ever-helpful graduates/postgraduates who helped to organise and run the Canqua-CGRG conference.



Several very interesting papers (amongst many) were presented in the tephra sessions: **Christine Lane** (Oxford University) gave an excellent keynote paper on cryptotephra (glass-shard and/or crystal concentrations preserved in sediments or soils but not as a visible layer) as a dating and correlational tool in archaeology (Lane et al., 2013); **Sean Pyne-O'Donnell** (Queen's University Belfast) and others reported the discovery of nine western US-derived cryptotephra in lakes and mires in eastern USA in Newfoundland and Nova Scotia (see Pyne-O'Donnell et al., 2013); and **Britta Jensen** (University of Alberta) and others have identified the Alaskan White River Ash (eastern lobe), erupted around 860 AD, in Ireland (Jensen et al., 2013).



Fig. 3. Part of the Centennial Centre for Interdisciplinary Science (CCIS) at University of Alberta. The new building features a large artistic floor mosaic that brings together imagery representing the multiple fields of science being studied by research groups in CCIS

Fig. 4. Part of the “Geoscience Garden” at University of Alberta alongside Saskatchewan Drive. As well as informing the public, large rock samples from selected units of igneous, sedimentary, and metamorphic rock are placed in an arrangement that “tells a story”. They simulate the distribution of natural outcrops across North America where the Earth's crust has had a history of tectonic activity and sediment deposition. Students are required to make measurements and observations so as to reconstruct this history.



Other highlights of the conference, which was very well organised by **Duane Froese** (University of Alberta), his colleagues, and his friendly students in an impressive modern venue built reputedly for nearly a billion dollars (Figs. 3-4), included the opening plenary talk (a public lecture at the Royal Alberta Museum) by molecular biologist and ancient DNA specialist **Beth Shapiro** on “The bison invasion of North America: climate, sea level, ice sheets, and guns”, and four plenary talks presented each morning. All these plenary talks were excellent, brilliantly presented, and topical. **Robert Anderson** spoke about “Glacial modification of landscapes”; Nigel Atkinson discussed; **Nigel Atkinson** discussed “Applications of LiDAR and high-resolution Earth imaging for Quaternary mapping: opportunities and challenges”; **Ted Goebel** talked on “North America’s first humans: what we know and what we don’t know”; and **Alexander Wolfe** presented a paper “Does the

Anthropocene deserve formal recognition as a subdivision of the Quaternary?” (Fig. 5). Wolfe made a very powerful argument for ending the Holocene and starting the Anthropocene from around 1950, a time now referred to as “The Great Acceleration”. The key point made by Wolfe is that this represents a time where the magnitude of human impacts on Earth systems are able to be recognised in the context of changes through geological time, and which are global, ubiquitous, and synchronous (i.e. it is not the time of detection of the first impacts of humans – these being adequately covered by the Holocene) (Wolfe et al., 2013). Others have argued for this new era to be defined as starting from around the beginning of the Industrial Revolution (~1800 AD), or from the start of “Old World” farming from Neolithic times (see Steffen et al., 2011; Gage and Hoare, 2012; Ruddiman, 2013; Oldfield et al., 2014). Two journals, *Anthropocene* (published by Elsevier) and *The Anthropocene Review* (Sage), have already appeared on the scene. The first issue of the latter is to be published in 2014 (Oldfield et al., 2014). I must say Wolfe’s arguments were very compelling: the Holocene effectively ended and the Anthropocene began in the early 1950s (same time as me!).



Fig. 5. Professor Alexander Wolfe (in brown T-shirt labelled “Coprolite Happens”) opening his brilliant plenary lecture on the status of the Anthropocene.

Another high point was a one-day field trip into the prairies east of Alberta, led by **Alwynne Beaudoin** (Royal Alberta Museum – previously known as a tephropalynologist, e.g. Beaudoin and King, 1986) with Heinz Pyszczyk and Chris Jass (Pyszczyk et al., 2013). The first stop was to see a section adjacent to the North Saskatchewan River that runs through Edmonton (Fig. 6). The section showed a very clear example of upbuilding pedogenesis where episodes of alluvial deposition were separated by the development of A horizons on weak B horizons so that the entire sequence resembled a series of mini soil profiles stacked on top of one another. Age control at this section was provided in part by a layer of distal Mazama ash (dated at around 7600 cal yr BP) derived from an eruption in far-off Oregon.



Fig. 6. Dr Alwynne Beaudoin speaking at an alluvium-soil sequence on the lowermost terrace alongside the North Saskatchewan River in Edmonton at the start of the one-day field trip “East of Edmonton”. Note the multiple buried soils evident in the section. The pale ‘break’ in the sequence (opposite Alwynne’s shoulders) is the 1- to 2-cm-thick distal Mazama Ash (7600 cal yr BP), first identified by John Westgate (e.g. Westgate et al., 1969).

References

- Beaudoin, A.B., King, R.H. 1986. Using discriminant function analysis to identify Holocene tephra based on magnetite composition: a case study from the Sunwapta Pass area, Jasper National Park. *Canadian Journal of Earth Sciences* 2, 804-812.
- Gale, S.J., Hoare, P.G. 2012. The stratigraphic status of the Anthropocene. *The Holocene* 22, 1491-1494.
- Jensen, B.J.L., Pyne-O'Donnell, S., Plunkett, G., Froese, D.G., Hughes, P.D.M., Plicher, J.R., Hall, V.A. 2013. The Alaskan White River Ash in Europe. Program and abstracts, *CANQUA-CGRG Conference*, Edmonton, August 2013, p. 135.
- Kuehn, S.C., Bursik, M.I., Pouget, S., 2013. Improved integration and discoverability of tephra data for multidisciplinary applications. Abstract 1815416 in session V006 "Data-driven science in geochemistry, petrology, and volcanology". *American Geophysical Union 46th annual Fall Meeting*, San Francisco, 9-13 December, 2013.
- Lane, C.S., Cullen, V.L., Smith, V.C., Bramham-Law, C.W.F. 2013. Cryptotephra as a dating and correlational tool in archaeology. Program and abstracts, *CANQUA-CGRG Conference*, Edmonton, August 2013, p. 150.
- Lowe, D.J., Blaauw, M., Hogg, A.G., Newnham, R.M. 2013. Using Bayesian age modelling (Bacon, OxCal) to date key tephra younger than 30,000 cal. yr BP, and the lateglacial cool episode at Kaipo bog, as part of the New Zealand INTIMATE project. Program and abstracts, *CANQUA-CGRG Conference*, Edmonton, August 2013, p. 154.
- Lowe, D.J., Hogg, A.G., Newnham, R.M., Higham, T.F.G. 2013. Dating the Polynesian settlement of Aotearoa/New Zealand using tephrochronology: seeing the big picture via tiny glass shards. Program and abstracts, *CANQUA-CGRG Conference*, Edmonton, August 2013, p. 155.
- Oldfield, F., Barnosky, T., Dearing, J., Discher-Kowalski, M., McNeill, J., Steffen, W., Zalasiewicz, J., 2014. *The Anthropocene Review: its significance, implications and the rationale for a new transdisciplinary journal* [Editorial]. *The Anthropocene Review* (in press: available online at DOI: 10.1177/02020213500445).
- Pyne-O'Donnell, S.D.F., Hughes, P.D.M., Froese, D.G., Jensen, B.J.L., Kuehn, S.C., Mallon, G., Amesbury, M.J., Charman, D.J., Daley, T.J., Loader, N.J., Mauquoy, D., Street-Perrott, F.A., Woodman-Ralph, J. 2012. High-precision ultra-distal Holocene tephrochronology in North America. *Quaternary Science Reviews* 52, 6-11.
- Pyszczyk, H.W., Beaudoin, A.B., Jass, C.N. (compilers) 2013. East of Edmonton: Late Quaternary landscapes, palaeoenvironments, and human history. Field trip guidebook, *CANQUA-CGRG Conference*, Edmonton, August 2013, pp. 1-54.
- Rawlence, N.R., Lowe, D.J., Wood, J.R., Young, J., Churchman, G.J., Huang, Y.-T., Cooper, A. 2013. Using palaeoenvironmental DNA to reconstruct past environments: progress, problems, and prospects. Program and abstracts, *CANQUA-CGRG Conference*, Edmonton, August 2013, p. 206.
- Ruddiman, W.F. 2013. The Anthropocene. *Annual Review of Earth and Planetary Sciences* 4, 1-24.
- Steffen, W., Grineval, J., Crutzen, P., McNeill, J. 2011. The Anthropocene: conceptual and historical perspectives. *Philosophical Transactions of the Royal Society A* 369, 842-867.
- Westgate, J.A., Smith, D.G.W., Nichols, H. 1969. Late Quaternary pyroclastic layers in the Edmonton area, Alberta. In Pawluk, S. (editor), *Pedology and Quaternary Research*, University of Alberta, Edmonton, pp. 179-186.
- Wolfe, A.P., Hobbs, W.O., Birks, H.H., Briner, J.P., Holmgren, S.U., Ingólfsson, O., Kaushal, S.S., Miller, G.H., Pagani, M., Saros, J.E., Vinebrooke, R.D. 2013. Stratigraphic expressions of the Holocene-Anthropocene transition revealed in sediments from remote lakes. *Earth-science Reviews* 116, 17-34.

Wai-BoP Soils 2013

One-day conference: Thursday, 5th December, 2013

University of Waikato, Hamilton

Final notice and reminder: call for papers and notification of attendance

The second one-day regional conference of Waikato-Bay of Plenty-based soil scientists is to be held on **Thursday 5th December, 2013**, at the University of Waikato, Hamilton. Being convened by professors David Lowe and Louis Schipper of the Department of Earth and Ocean Sciences, University of Waikato, the conference provides a great opportunity for the many soil scientists and others in the region with interests in land and soil to assemble for a stimulating day of talks and networking away from the commitments and rush associated with bigger conferences.

Keynote to start

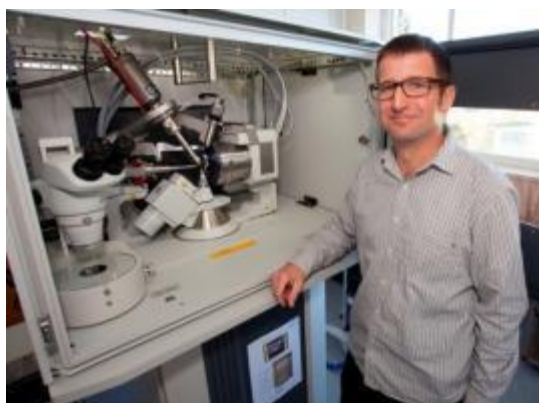


Figure 1- Prof Vic Arcus alongside a crystal X-ray diffractometer

The conference will be opened with a special invited key-note speaker, **Professor Vic Arcus** (University of Waikato), a molecular biologist with interests in structural biology and protein engineering, who will give a cross-disciplinary talk on his latest research findings relating to soil science that are set to revolutionise the discipline. His talk is not to be missed! Vic has previously been involved in ground breaking tuberculosis research, bringing a billion-year-old bacteria back to life, investigating enzymes from the rumen of cows, and much more.

N.H. Taylor Memorial Lecture to finish



Figure 2- Prof Mike Hedley (with green ID tag) explaining soils and land use in the Waikato during the World Soil Congress pre-conference North Island tour in late July, 2010

The conference is to be concluded with the N.H. Taylor Memorial Lecture for 2013 by **Professor Mike Hedley** (Massey University), who will talk on “**The next steps in nutrient management of grazed pasture systems**”. Mike is a fantastic speaker with huge depth and breadth of knowledge and his lecture will be a shining beacon amidst a day of shimmering highlights! Note that if you just want to attend the Taylor Lecture, but not the conference, then you are very welcome to come along to the S-block lecture theatres on the Waikato University campus from around 3.30 pm for afternoon tea before the lecture starts at 4.00 pm (provisional times) on Thursday 5th December.

Something for everyone

Although the meeting will target Waikato-BOP soil scientists (Fig. 3), we welcome attendance from those in other regions who have a professional interest in soils and land (e.g., from Northland, Auckland, Hawke's Bay, Taranaki), our only stipulation being that all participants must be paid-up members of the New Zealand Society of Soil Science (NZSSS). Society membership application forms are available on the website <http://nzsss.science.org.nz/join.html> (annual membership, if paid before 31 October, is only \$60 for full membership, \$35 for students). Registration for the conference is free, thanks to generous sponsorship for the event by the Waikato Regional Council, University of Waikato, and NZSSS.



Fig. 3. Some of the participants at the Wai-BoP Soils 2011 meeting.

Please email David Lowe by 5 November

If you want to present an oral paper, **please email David Lowe** (d.lowe@waikato.ac.nz) by **Tuesday 5 November 2013** at the latest with the **title** of your paper, **the authorship**, and the **name of the person who will present it**. The title must reflect the content. No abstracts are required. All papers will be oral presentations, probably 12 minutes in total, comprising 10 minutes for presentation followed by 2 minutes for questions or comments, strictly enforced. Presenters of papers will be notified of acceptance or otherwise a week or so after the deadline. Some titles have already been received – thanks!

For catering purposes, we also need to know likely attendance by those not giving papers. Consequently, **all those who are planning to attend must advise David via email by Tuesday 5 November, 2013**. Please feel free to pass this final notice on to people or organisations who may be interested in attending. We hope to see many of our society members and others interested in the wonderful world of soils at the Wai-BoP Soils 2013 conference on the 5th of December. Remember: “Wai-BoP Soils? Why not!”.

David J. Lowe
Louis A. Schipper
7 October 2013

First Working Session of the Intergovernmental Technical Panel of Soils – Marta Camps

The first Plenary Assembly of the Global Soil Partnership endorsed the list of 27 experts and approved the establishment of the first Intergovernmental Technical Panel on Soils. Members of the ITPS are experts appointed for a term of 2 years renewable for one additional term. The aim is to provide scientific and technical advice and guidance on global soil issues primarily to the GSP, and in relation to specific requests submitted by global or regional institutions.



The first working session of the ITPS was held at FAO HQ in Rome from the 22 to the 26 July 2013. 24 of the 27 members actively participated (with regrets by 3 absent members) and addressed the issues requested by the GSP Plenary Assembly.

Item 7.1. Soils and the Post Rio+20 SDGs. A brief on Soils has been prepared as an input for the Post 2015 process.

Item 7.2. Support to the GSP Pillars of Action. The Draft Plan of Action for Pillar 4 was endorsed by the ITPS. The remaining Plans of Actions will be developed following the agreed Rules of Procedures under the leadership of the Secretariat.

Item 7.3. Preparation of a work plan and a timetable for updating the World Soil Charter.

Item 7.4. Links between the ITPS and existing technical and scientific advisory bodies like IPCC, IPBES. The ITPS requested the Secretariat to send a letter to UN Conventions and relevant UN organisations presenting GSP and its ITPS as a mechanism that could contribute with scientific advice on soils to their different actions.

Item 7.5. Status of World Soil Resources Report. The ITPS agreed to prepare a first World Soil Resources Report by 2015 (International Year of Soils). ITPS members will contribute and will seek further contributions from other recognised top scientists.

Marta Camps (New Zealand Representative)

Report from 6th Annual ESP Conference 2013 – Estelle Dominati

Estelle Dominati from AgResearch organised a special session on “developing common methods for quantifying and valuing ecosystem services from soil in managed landscapes” at the 6th Annual International Ecosystem Services Partnership (ESP) Conference 2013: “Making ecosystem services count” (26-30 August 2013, Bali, Indonesia). This session on soils was related to the ESP Biome Expert Groups 7 - Rural & Cultivated Landscapes.

Including soils in ecosystem services frameworks remains a challenge since they are still often considered a “black box”. However, they are fragile natural capital, getting scarcer every day, and under great pressures. When considering the sustainability of agro-ecosystems, it is therefore crucial to consider how management impacts soil change and thereby the provision of ecosystem services from agro-ecosystems.

The session addressed a number of issues including soil services frameworks for quantification and valuation, soil services quantification and indicators for planning and management and the challenges associated with soil representation in tools for planning and management.



Rudolf de groot at the conference opening



Photos of Jatiluwih rice fields which are now on the world heritage list

The researchers who presented in the session included:

Name	Organisation	Title of talk
ABDULLAHI, Ahmed Chinade	Institute for Environment and Development, University Kebangsaan, Malaysia	Determination of Carbon Sequestration potential of Forest Soil in Berembun Forest Reserve, Negeri Sembilan, Malaysia.
AUSSEIL, Anne-Gaelle	Landcare Research, Palmerston North, New Zealand	Ecosystem services mapping at multi-scales: challenges.
BARRIOS, Edmundo	World Agroforestry Centre, Nairobi, Kenya	Linking trees, soil biota and soil-mediated ecosystem services in agricultural landscapes
DOMINATI, Estelle	AgResearch, Palmerston North, New Zealand	An Ecosystem Services Approach to the Evaluation of Soil Conservation Policy in New Zealand.
GHALEY, Bhim Bahadur	Department of Plant and Environmental sciences, Faculty of Science, University of Copenhagen, Denmark	Insights into carbon sequestration: An invaluable asset for provisioning ecosystem service.
KEITH, Aidan	Centre for Ecology and Hydrology, Bailrigg, Lancaster United Kingdom	Natural Capital and Ecosystem Services in soils: perspectives on framework development, quantification and trade-offs from Countryside Survey and SoilTrEC.

Work on soil ecosystem services has now been included as part of the Biome Expert Groups 7 on Rural & Cultivated Landscapes and workshops will be organised at the next ESP conference in 2014.



Tanah lot was the temple we could see from the conference venue.



Has anyone ever told you to just go eat dirt? Pica (an eating disorder in which people consume things that are not food), or specifically *geophagy* is a desire to eat soil, or soil-like substances, clay and chalk, and is something animals and people have been doing for millennia. The Mesopotamians and ancient Egyptians used clay to plaster wounds and ate dirt to treat various ailments, especially of the gut, and some indigenous peoples in the Americas used dirt as a spice.

There must be something inherently delectable in soil. It is not uncommon to find young children eagerly spooning soil (and possibly a worm) down their gobs. The Environmental Protection Agency of the United States estimates that more than 20% of normal children occasionally eat around a teaspoon of soil.

Apparently, these days people are eating clay for health benefits. The theory is that eating dirt, or clay to be specific, is a way to get rid of toxins and include more minerals in the diet. Negatively charged clay molecules bind to positively charged toxins in the stomach and gut, and prevent them from entering the bloodstream by carrying them through the intestines and out of the body in faeces. There must be something in it; pharmaceutical companies already harness the binding properties of kaolin clay to produce Kaopectate, a drug that treats diarrhea and other digestive issues.

However, Sera L. Young of Cornell University and her colleagues conclude that eating earth rarely adds significant amounts of minerals to one's diet and, in many cases, interferes with the absorption of digested food from the gut into the bloodstream, sometimes resulting in nutrient deficiency. There is also the risk that you might unintentionally ingest bacteria, viruses, parasitic worms, and dangerous amounts of lead or arsenic.

Therefore, I recommend keeping to soil-like confections rather than the real deal. For example this creation of chocolate pudding, digestive and Oreo crumbs, liquorice grass and jelly worms (right). Be sure to use your knowledge of soil to ensure that the



consistency of your soil does not resemble the example on the left. Intestines? Sure. Brain matter? Maybe. Dirt? DIRT?!? Heck no!



(Source: www.scientificamerican.com & www.cakewrecks.com)

Norman Taylor Lecture

The 2013 Norman Taylor Lecture will be presented by Professor Mike Hedley, from Massey University. The topic of the lecture is “**The next steps in nutrient management of grazed pasture systems**”.

Dates confirmed so far:

Waikato University – **Thursday 5th December** – S Block lecture theatre, 3.30pm for afternoon tea prior to the lecture at 4pm.

Lincoln & Massey dates yet to be confirmed.

Soils as Art: Call for expressions of interest from the soil science community

We are planning to hold an exhibition of soil-related art works in conjunction with the NZ Society of Soil Science conference in Hamilton in December 2014. We want to share our love of soils and show the wider world that scientists are multi-talented people who are about a lot more than white coats and “incomprehensible” conversations. To make this a success we need you to contribute.

We are interpreting art-works in the widest possible sense. The artwork may be any media and any size (within reason). Media may include photography, drawing, painting, printmaking, sculpture, textiles or artwork made from soil itself. The artwork should relate to, or feature, soil in some way. You may have a great photo or two, paintings that feature or have some connection with the soil/earth, sculptures made from clay or other soil materials..., soil peels – we are open to your suggestions.

The exhibition will be on display-panels and tables in the NZSSS conference venue for the duration of the Conference from 1st-5th December 2014.

If you are interested in further information or have some art/sculpture work that you would like to exhibit please can you email either Megan Balks (m.balks@waikato.ac.nz) or Peter Singleton (peter.singleton@waikatoregion.govt.nz) so we can plan in more detail. We will be looking for final confirmation of contributions in October next year. So get your thinking caps on and your pencils sharpened – the more contributions we have the better it will be!

Global Soil Week 2013

The Global Soil Week is organized by the Institute for Advanced Sustainability Studies with our partners, the European Commission, the Food and Agricultural Organization of the United Nations, the United Nations Convention to Combat Desertification, the United Nations Environment Programme, the German Federal Ministry for Economic Cooperation and Development, the German Society for International Cooperation and the German Federal Environment Agency. In accordance with this year's motto 'Losing Ground?' The changes that must be initiated to encourage responsible political actions in land management will be discussed. To that end, participants will be developing a common action plan. Venue: Berlin, 27-31 October 2013.

<http://www.globalsoilweek.org/>



Soil Science Australia

New publications:

Georges Aubert and the soils (1913-2006). By Christian Feller. 2013, IRD (diffusion@ird.fr). ISBN 978-2-7099-1751-3. Softcover, 72 pages. Price €10.00. Georges Aubert, one of the most famous pedologist of the XXth century, is widely recognized as one of the best specialists of soil diversity. The present biography describes some aspects of Georges Aubert's private life, his scientific career and his contributions to the French and the world science of pedology. Testimonies are provided by several of those who happened to best know him. [Published in French].

Soil Degradation. Series: Advances in GeoEcology, Vol. 42. Julia Krümmelbein, Rainer Horn & Marcello Pagliai (Editors). CATENA VERLAG GMBH, 35447 Reiskirchen, Germany, 2013. ISBN 3-923381-59-3, US ISBN 1-59326-263-9. Hardcover, 352 pages. Price € 149.00. Various aspects of mainly mechanical soil degradation will be described in the book elucidating the various scale effects as well as the consequences also for soil erosion and its quantification. Regional soil degradation studies from Spain, Chile, Brazil and Senegal document the necessary variations in regeneration approaches under various climatic and soil conditions.

Exercises in Soil Physics. GeoEcology textbook. Naftali Lazarovitch & Arthur W. Warrick (Editors). CATENA VERLAG GMBH, 35447 Reiskirchen, Germany, 2013. ISBN 978-3-923381-60-9 US ISBN 1-59326-264-7. Softcover, 352 pages, Appendix on CD. Price € 55.00. This book is designed to complement available soil physics and vadose zone hydrology texts by providing additional practice exercises.

Technogenic Soils of Poland. Edited by P. Charzynski, P. Hulisz and R. Bednarek. Polish Society of Soil Science, 2013. ISBN 978-83-934096-1-7 - Hardcover, 358 pages. This book presents the state of the art of knowledge about diverse technogenic soils in Poland.

Technogenic Soils Atlas. Edited by P. Charzynski, M. Markiewicz and M. Switoniak. Polish Society of Soil Science, 2013. ISBN 978-83-934096-2-4 - Hardcover, 168 pages. This book provides an extensive database on urban, traffic, mining and industrial soils from the following countries: Hungary, Poland, Romania and Slovakia.

Salinity and Drainage in San Joaquin Valley, California. Science, Technology, and Policy. Series: Global Issues in Water Policy, Vol. 5. Chang, Andrew C.; Brawer Silva, Deborah (Eds.). Springer, 2013. ISBN 978-94-007-6850-5. Hardcover, 394 pages. Price \$229.00. This book documents the history of irrigated agriculture and drainage in the San Joaquin Valley, and describes the hydrology and biogeochemical processes of salts and selenium, remediation technologies for salts and trace elements and policy and management options.

The Soils of Bangladesh. Series: World Soils Book Series. By Huq, S.M. Imamul, Shoaib, Jalal Uddin Md. 2013, Springer. ISBN 978-94-007-1127-3. Hardcover, 169 pages. Price \$129.00. This book presents a comprehensive overview of the soils of Bangladesh

Soil Security for Ecosystem Management: Mediterranean Soil Ecosystems 1. Series: Springer Briefs in Environment, Security, Development and Peace, Vol. 8. Subseries: Mediterranean Studies. Kapur, Selim; Erşahin, Sabit (Eds.). 2013, Springer. ISBN 978-3-319-00698-7. Softcover, 143 pages. Price \$49.99. The term "Soil Security" is used in the context of maintaining the quality and quantity of soil needed in order to ensure continuous supplies of food and fresh water for our society. Topics in this unique book on the management of soil sustainability in the Mediterranean region include: soil information, land degradation, land desertification, pedoenvironments, and the carbon cycle and sequestration.

Restoration and Development of the Degraded Loess Plateau, China. Series: Ecological Research Monographs. Tsunekawa, A.; Liu, G.; Yamanaka, N.; Du, S. (Eds.). 2013, Springer. XVI. ISBN 978-4-431-54480-7. Hardcover, 344 pages. Price \$129.00. This book presents state-of-the-art scientific evidence and technological innovations to restore lands on the Loess Plateau of China, known worldwide for its serious land degradation and desertification problems.

News from across the ditch

Dr Nanthi Bolan: Since joining the University of South Australia (UniSA) in 2007 Nanthi has supervised 10 PhD students including **Dr Seth Laurenson** and is currently supervising 8 PhD students (one student with **Dr Jock Churchman**). Nanthi's research focusses mainly on carbon and heavy metals dynamics in soil. Nanthi and **Dr Ravi Naidu** will be organising a symposium on 'Soil Health: Key to Food Security' as part of 20th World Congress in Soil Science to be held in Korea in June 2014. UniSA along with a number of other universities and research institutes including Landcare Research New Zealand submitted a CRC proposal on 'Increasing Agricultural Soil Productivity' which had been short listed for the second stage of assessment.

Dr Jock Churchman: In his semi-retirement, Jock has joined CERAR (Centre for Environmental Risk Assessment and Remediation) in UniSA for two days a week and has become a colleague of Nanthi's and also others with associations or origins in New Zealand, including Ravi Naidu (Director of CERAR) and **Euan Smith**. His main role there is as a mentor for students and junior staff. He also remains an Adjunct staff member in the Soils Group in the School of Agriculture, Food and Wine at the University of Adelaide. Besides co-supervising a student at Uni SA with Nanthi, he also has this role with 4 students at the University of Adelaide and one (**Doreen Huang**) at Waikato University (with **David Lowe** and **Louis Schipper**). In the last 2-3 years, much of his remaining 'work' time has been taken up with co-editing a book *The Soil Underfoot: infinite possibilities for a finite resource* under the auspices of the Commission for the History, Philosophy and Social Sciences of the International Union of Soil Sciences (IUSS). This book, to be launched at the 20th World Congress in Soil Science in Korea in June 2014, brings together cultural, historical, philosophical and ethical approaches to the challenge of feeding up to 10 billion people while sustaining the soil support system. It contains 30 chapters from authors in 13 countries, including **Kevin Tate**, **Benny Theng**, **Garth Harmsworth**, **Nick Roskrige**, and **Brent Clothier** from New Zealand, and also **Richard Doyle** and **Richard Gibbs** who have origins or associations in New Zealand.

At UniSA, Jock guided Nanthi and their joint student to a site of a highly allophanic soil that was identified by David Lowe when he did study leave with me at CSIRO Division of Soils in 1991. It is in the South-East corner of South Australia and is among a set of soils in that area that is unique within South Australia as an Andisol. Nanthi was thrilled to see and feel a soil that reminded him of New Zealand. There was no problem finding the soil. When David first sampled it, he left a 'souvenir' of a broken telephone cable – see photo of Jock and Nanthi holding this cable. David has written his side of the story (see below).



" I tell the students the story of the cable when I'm in the field near Putaruru as a 'look before you leap' warning. The late Wayne Hudnall, Malcolm Sheard, and I were on the Mt Schank reconnaissance trip in ?Sept 1991. There were a lot of bracken roots. I was on top of the bank pushing down with the spade when one 'bracken root' was quite a bit firmer than the others which turned out to be the telephone cable. The telephone cable was black and about the same size as a large bracken root. I saw all the little wires inside. Oh dear. Malcolm said something like 'You've just cut off the phones for several dozen houses!'. At that point I looked around and noticed for the first time (a) a lack of power poles in the area (who would have thought all the wires in a rural area miles from anywhere would be underground?), and (b) a yellow or blue? 'Telstra' sign at the fence line, some distance back, saying "Warning - buried cables" or similar. A 'bugger' moment! We did the right thing and I made a phone call (in a phone box) to ?Telstra saying we might have cut off some houses in Lazlett Rd area so the repairmen could find the break.

Nothing happened. I wondered if a bill for hundreds? of dollars would arrive at CSIRO and what I'd tell the finance guy."

N Bolan & J Churchman

Waikato/Bay of Plenty

Lincoln Agritech



It's been an exciting project for everyone involved, but it has finally come to an end: Brian Moorhead, Ali Shokri and Juliet Clague have completed the decommissioning of our Spydia vadose zone research facility in the Lake Taupo catchment. Eight years after its installation, the 2.4m wide access caisson was removed in early October, ending our vadose zone research at this site.



Fig. 1: Top section of the Spydia lifted out of the ground.

While our research at the Spydia facility focused on gaining small-scale process understanding, Scott Wilson from our Lincoln office has recently worked with collaborators at Environment Southland to calculate vadose zone transit times for nitrate on a regional-scale. Applying pedotransfer functions in a GIS environment indicated that vadose zone transit times are generally very short throughout the region (predominantly < 2 years). Consequently, most of Southland's groundwater systems will respond rapidly to land use change and only older outwash gravel deposits have longer lag times (> 10 years).

Waikato University

Megan Balks recently returned from three months study leave in which she spent some time working with **Darlene Zabowski** at the University of Washington in Seattle. Megan also attended a joint Australia-New Zealand Antarctic meeting in Tasmania and the 6th International Conference on Cryopedology in Poland. At the cryopedology meeting Megan was elected as the co-chair (with **Dimitry Konyushkov** from Russia) of the IUSS Cryosol working group. Megan will be working with Dimitry to organise a session for the Cryosol working group at the World Soil Congress to be held in Korea (Jeju Island) next year. Megan is currently back on deck teaching second semester courses and will continue the rest of her leave working on writing projects at Landcare Research in Hamilton in November.

David Lowe attended the joint Canadian Quaternary Association (CANQUA) and Canadian Geomorphology Research Group conference in Edmonton, Alberta, in August. A report is given elsewhere in this issue.

Wai-BoP Soils 2013

We are looking forward to hosting this one-day conference at the University of Waikato on **Thursday 5th December**. The 2013 N.H. Taylor Memorial Lecture by **Prof Mike Hedley** will be presented on the same day. Please email David Lowe (d.lowe@waikato.ac.nz) with the title of your paper if you plan to present one, or if you just want to attend, by **Tues 5th November**. A final notice about the conference is provided elsewhere in his newsletter.

AgResearch Ruakura

Stewart Ledgard attended another FAO meeting in Rome (he leads a Technical Advisory Group on environmental benchmarking for small ruminants) after which he returned to NZ via a holiday in Turkey. This included a visit to Cappadocia which is an area with interesting structures in the soft volcanic rock (Picture below). People made houses and storage areas underground that were used as far back as the Hittites in 1800BC. His trip also included a trip to the white limestone terraces at Pamukkale (Pictured bottom right).



Stewart is not the only one visiting exotic locales. **Jiafa Luo** was one of the chairpersons for the international workshop on non-point pollution control, held during August 25-28 in Shijiazhuang, China (pictured below). This workshop included a field trip that was delayed by goats obstructing the road. Maybe that's where all that meat on the giant platter came from!



Returning to matters closer to home, **Diana Selbie** and **Sheree Balvert** briefed the academic staff from the University of Auckland's new Dairy Graduate School on some of AgResearch's current environmental research projects as a part of a full day tour with AgResearch staff, DairyNZ and LIC.

Gina Lucci and **Dave Houlbrooke** have been busy putting together a research proposal around the management of farm dairy effluent on Waikato peat soils, together with **Scott Fraser** and **Sharn Hainsworth** from Landcare Research. This project aims to help farmers understand the risks of effluent management on 'high risk' peat soils where there has been limited research. This project has already gained a lot of interest and support from local farmers, Dairy NZ, and the regional council, and will complement the work being done in Southland in the Waituna lagoon catchment.

Dave Houlbrooke, **Gina Lucci** and **Natalie Watkins** have been spending plenty of time during the last few months starting preparation for the society's next hosted conference in December 2014. They are joined on the local organising committee by **Megan Balks** and **Louis Schipper** (University of Waikato), **Reece Hill** and **Haydon Jones** (Waikato Regional Council) and **Sharn Hainsworth** (Landcare Research). The venue for the conference will be the University of Waikato and a theme of 'Soil science for future generations'. This theme is designed to pick up on the soil science issues that we will face in the future as well as encourage the involvement of the next generation of soil scientists by making the event highly accessible and relevant to our student population. There will be more information in the December edition of Soil news once we have determined session themes and field trip options. Abstract submissions are likely to be called for from February 2014 onwards, and everyone can start thinking about what they would like to contribute.

Landcare Research, Hamilton

Malcolm McLeod, Alexandra McGill, Neil Fitzgerald and Suzanne Lambie have been collecting large undisturbed cores to study nitrogen, carbon, phosphorus and E. coli leaching. In the lab, dairy shed effluent will be applied followed by artificial rainfall. The latest cores were collected from a newly converted dairy farm (from pine forestry) near Tokoroa in a Podzol Soil. Despite much of the rain falling more sideways than vertically, the core collection went well (Photos 1 and 2). Cores have already been collected from a developed peat soil and two further soils (Brown Soil and Recent Soil) will be collected. After generating breakthrough curves in the lab, the lysimeters will be installed in a lysimeter facility at Ruakura for leaching studies under natural rainfall.



Photo 1: Alexandra, Neil and Suzanne beginning collection of the cores. Photo: Malcolm McLeod.



Photo 2: A completed lysimeter on the way to the trailer, during a fine spell, for transport back to Hamilton. Photo: Malcolm McLeod.

Paul Mudge, Norman Mason, Kate Orwin, Suzanne Lambie and Bryan Stevenson are currently working with DairyNZ and the University of Waikato to investigate the effect of pasture diversity on soil organic matter, and links between plant traits and pasture production/persistence. The trial consists of 14 different plant compositions including standard grass/clover treatments and highly diverse plots containing 8 sown species (Photos 3 and 4). Work to date has included the collection of plant trait data such as plant height, leaf inclination and dry matter content of the sown species. Future work includes measurement of plant roots and soil carbon pools under the various treatments.



Photo 3: The small plot trial in late winter/early spring at DairyNZ, Hamilton. Photo: Paul Mudge.



Photo 4: One of the more diverse pasture plots showing several of the sown species including plantain and clover. Photo: Norman Mason



Audrey Ropp from the AgroSup Dijon in Burgundy will be working with Scott Fraser from October 2013 to January 2014. Scott has been working on the “Waikato Soil Windows Project”, currently focusing on the Waipa Region. Audrey will be assisting Scott in developing methods to aid in the transfer of soil knowledge to Waipa farmers from information contained in S-map and from soil-landscape relationships presented as soil windows.

Photo 5: Audrey enjoying a field trip with Scott.

On the 11th–13th October, Sharn Hainsworth, David Palmer, Audrey Ropp, and Scott Fraser attended a knowledge transfer workshop/fieldtrip in Gisborne organised by Landcare Research. Mike Mardon from our Gisborne office took a group from Landcare Research (Hamilton, Palmerston North and Lincoln), including Allan Palmer from Massey University and Peter Almond from Lincoln University, to look at soils and erosion landscapes in the Gisborne area. A series of sites were visited to look at soils on terraces and in eroding hill country using tephra chronology to understand ages and stability of the different land surfaces. The aim of the 3 days was to highlight and discuss the soil erosion work Mike Mardon and others have been doing in the Gisborne area over the past 30 years.



Photo 6: A loose but enthusiastic aggregation of pedologists trying to stay warm near the top of Tarndale Road, Gisborne

Following the workshop, Sharn, David, Audrey and Scott then travelled south with Allan Hewitt and Ian Lynn (from Landcare Research Lincoln) to spend 2 days looking at soils of the Hawkes Bay region as part of Sharn’s Hawkes Bay S-map project.

Manawatu/Hawke's Bay

Massey University Soil and Earth Sciences, Palmerston North

On the 6th of September the New Zealand Soil Science Society (NZSSS), hosted **the Soil Rumbustification in Middle Earth**, a Mini-Conference, at Massey University. It was attended by 44 people, who listened to 21 seven minute presentations on a wide variety of topics, loosely grouped into a theme. Each theme chair facilitated lively discussion at the end of each session. All participants agreed the regional mini-conferences provide a very valuable networking opportunity with other members of the society that share common research interests. A great vote of thanks goes to Liza Haarhoff for all the organisation for the event and the help Liza received from Glenys Wallace and Anja Moebis.

Two notable NZSSS awards were made after the lunch session. Firstly Alec Mackay was awarded a Life Membership of the NZSSS for his long-term dedicated service to the society and soil science in general.



Secondly Kevin Tate was awarded the Prestigious Grange Medal for being an excellent researcher and an outstanding advocate of soil science in promoting soil science to the wider community and encouragement of the study of soil science by young and old alike.

In addition, the local Massey University Branch took time to celebrate Dave Scotter's huge contribution to soil physics at Massey University and to New Zealand Soil Science. Mike Hedley marked Dave's "official retirement" from Soil and Earth Sciences staff with a short presentation illustrating some of the PhD students Dave has successfully supervised, and then presented Dave with a gift from the Soil and Earth Science staff. Dave will continue his association and follow his interests in Soil Sciences informally as a 'Distinguished Friend of Massey'.



For the record, the Mini-conference themes, chairs and speakers were:

Sustainable Soils (Chaired by Mike Hedley)

- Quantifying nutrient loss and denitrification following pugging damage in grazed hill country in the Manawatu catchment - Lucy Burkitt
- Soil challenges in Natural Resource Management – a Hawke's Bay perspective - Nathan Heath
- The re-rise of pedology: the importance of farm scale soil mapping - Alan Palmer
- Zinc and facial eczema. A new approach for soil and animal protection - Chris Anderson
- Wearing Black and Brown Together: When Viewing C and N Together Strengthens Understanding - Troy Baisden

Water and Soils (Chaired by Dave Horne)

- Removing phosphorus from wastewaters using soil filters - James Hanly
- Characterization of denitrification and denitrifier gene abundance in New Zealand dairy grazed pasture soils - Neha Jha
- Repellency-induced runoff in North Island East Coast hill country - Mike Bretherton
- Digital Soil Mapping on Mars - Pierre Roudier

Gassy Soils (Chaired by Kevin Tate)

- Methane-the answer lies in the soil? - Kevin Tate
- How does land use influence deep-soil production and consumption of N₂O? - Beckie Phillips
- Rising atmospheric carbon dioxide alters below ground bacterial composition in grazed pasture - Saman Bowatte
- A fit for purpose Denitrification assay - Peter Bishop

Carbon Dynamics (Chaired by Alec Mackay)

- Changes in soil carbon stocks under apple trees : a 12 year chronosequence - Édouard Périé
- Labile Soil Carbon Dynamics: Is Physical Protection Mechanism Important? - Anna Zakharova
- Vis-NIR spectroscopy for field soil analysis - Carolyn Hedley
- Can pastoral farming sequester soil C? - Graeme Shepherd

Consulting Soils (Chaired by Hamish Lowe)

- Sources of phosphorus in two sub catchments of the Manawatu River- Roger Parfitt
- Future challenges for FDE management - Dave Horne
- Field testing of soil unsaturated hydraulic conductivity – issues and advantages - Katie Beecroft
- What's new on soils in mine site rehabilitation? - Craig Ross with input from Robyn Simcock.

Gabriela Gomez is a new PhD student in the Soil and Earth Sciences group at Massey University. She comes from Mexico, where she completed her Master's degree in Geosciences and Territory Planning at Michoacan State University in Morelia. Gaby's PhD is focused on the Tongariro Volcanic Complex, where she will study the influence of the tectonic structure on volcanic vents and look at eruption mechanisms. Gaby will also do a hazard analysis of the region, focusing on volcanic risks linked with seismic activity. Her supervisors are **Shane Cronin, Alan Palmer, Jon Procter, Bob Stewart** (all Massey University) and Pilar Villamor (GNS Science).

Magret Damaschke has just started her PhD in the Soil and Earth Sciences group at Massey University. Magret is originally from Germany, where she received her Master's degree in Geology/Palaeontology at the University of Cologne. Her research at Massey will involve the development of a detailed tephrochronological record of Mt. Taranaki. By focusing on a long-period, high-resolution eruption record, Magret will be able to interpret the time-varying dynamics of the volcano and its magmatic systems, including any systematic and/or one-off changes in frequency, magnitude or geochemical composition. Magret will also try to reconstruct any dispersal patterns and hence paleo-wind directions, which in turn contribute to

further paleo-climatic studies and hazard evaluations. Magret's research is supported through a Massey University Vice-Chancellor's Doctoral Scholarship and supervised by Shane Cronin, Kat Holt, Mark Bebbington, Bob Stewart and Georg Zellmer.

Plant & Food Research – Palmerston North

We welcome to the team three European guests. **Evangelos Xylogiannis** is a PhD student from the University of Basilicata in Potenza, Italy. His dissertation is on the water use efficiency and water footprint of orchards. He will be working with us for one year on the fluxes of water and carbon in orchard systems. **Lucie Thibaudeau** and **Elma Pinta** are two French interns who will be with us for six months, working on the pressure-head control in the drainage fluxmeters used for measuring leaching in the field. Our visitors are settling into life in Palmerston North and have already been busy in the field installing drainage fluxmeters for Lucie and Elma's experiment.



Evangelos and Lucie removing soil cores from an apple orchard.



Assembled drainage fluxmeters ready for installation.



Carlo van den Dijssel, Lucie, Elma and Evangelos installing the drainage fluxmeters at PFR.

Landcare Research, Palmerston North

Landcare Research (**Surinder Saggar & Donna Giltrap**) in collaboration with Changsheng Li (USA), Jianjun Qiu and Maofang Gao (China) organised the 2013 Conference of Global DNDC Network in Beijing, China during September 14-16 and a DNDC Training Workshop on 17 September. The conference was sponsored by the Chinese Academy of Agricultural Sciences and National Natural Science Foundation of China and attended by more than 100 delegates involving 23 international participants. The conference focussed on the current developments and applications of DNDC model which has been used in about 400 publications both in English and non-English journals with more than 60% of these in International Journals.



Surinder Saggar gave an invited keynote address entitled “Development and comprehensive evaluation of DNDC - New Zealand as case study” and Donna Giltrap gave a presentation “Three alternative approaches to regional/national upscaling DNDC: a New Zealand case study” at the 2013 Conference of Global DNDC Network and the Training Workshop, Beijing, China 14-17 September 2013. Donna Giltrap & Surinder Saggar also chaired the sessions at this conference.

New Zealand had expressed a strong preference for a single activity under the Alliance banner, but one that makes use of and incorporates the experience and expertise that we have developed under the Global DNDC Network. Thus during the conference a meeting of the Global DNDC Network was held. This workshop discussed the intricacies and the relativities of international efforts on modeling GHG emissions and soil carbon storage such as "Global Research Alliance Modeling Platform" (GRAMP) DEFRA UK initiative, modifications to the DNDC by other researchers. It was agreed that the Global DNDC Network (Led by Landcare Research New Zealand; Surinder Saggar Facilitator & Donna Giltrap Modeler and University of North Hampshire, US; Changsheng Li Developer) maintains its current role of communication among its 100+ members to facilitate the exchange of information and ideas between the widely dispersed users of DNDC model to avoid duplication of effort, stimulate

additional improvements to the model and enhance coordination of research activities and facilitate collaborative research programmes in GHGs measurements and modelling. Keep the researchers and model users up to-date with the developments.

The meeting minutes and conference presentations will be available on the Global DNDC Network website (<http://www.globaldndc.net>)



Rashad Syed was awarded the inaugural Des Ross Memorial PhD Scholarship at a ceremony at Palmerston North. The scholarship is awarded in honour of the memory of Des Ross and his major research contribution and interest in encouraging young researchers. The ceremony was attended by Des Ross' son Mark Ross and his wife Vanessa. Rashad's research project is to develop a biofilter to mitigate methane emissions from anaerobic waste water dairy ponds.

Why is a biofilter needed?

New Zealand dairy farms have waste ponds for storing the manure coming from milking sheds, feed pads, stand-off pads and feed residues. As these ponds have high organic content and very low dissolved oxygen, anaerobic conditions in these ponds favour methane production by methanogens (methane-producing bacteria). Methane is a potent greenhouse gas that, if left untreated, escapes to the atmosphere where it contributes to global warming. Rashad's project aims to develop a better understanding of the consumption of methane by a robust and cost effective biofilter that contains an active population of methane-eating bacteria (methanotrophs), which can operate efficiently all year round with little or no maintenance.

This PhD project will be looking at the 'engine' of the biofilter technology. Main objectives are to:

1. study the ecology of methanotrophs under different environmental conditions
2. immobilise pure or mixed cultures of methanotrophs on a suitable biofilter material
3. devise a method for rapid development of an efficient, robust and economic biofilter with the potential to operate efficiently all year round with minimum or no maintenance.



Dr Pranoy Pal has joined Landcare Research as a Nitrous oxide Mitigation Researcher in the Ecosystems and Global Change team at Palmerston North. He will be working with Drs Saggar, Giltrap and McMillan. Pranoy comes from India after completing his BSc (Ag Sci) and MSc (Soil Sci) specialising in pesticide residues in processed food commodities. He then pursued a PhD at Lincoln University investigating plant-derived nitrous oxide emissions from pasture ecosystems, followed by a one year postdoc focussing on biochar-urea derived emissions.

Finally, **Craig Ross & Sharn Hainsworth** gave evidence on soils, land capability and rehabilitation plans at the recent Resource Consents Hearing for a proposed new Glencoal (Fonterra) Coal Mine in northern Waikato. **Craig** also continues to work with Buller Coal's Environmental staff on Consent Conditions for land rehabilitation on the controversial Escarpment Mine project on the Denniston Plateau.

Canterbury

Lincoln University

Prof **Leo Condrón** has visited Sweden for 2 weeks in September 2013 to further develop collaborative research programme on phosphorus biogeochemistry with the Department of Soil Science and Environment at the Swedish University of Agricultural Sciences (SLU) in Uppsala. Prof Condrón was invited by Professor Lars Bergström and Professor Holger Kirchmann to act as external supervisor for two new PhD student projects at SLU on the nature, dynamics and mobility of phosphorus in organic soils in Southern Sweden. The students were appointed in August 2013 and Prof Condrón was invited to travel to Sweden to discuss the projects, assess soils and field sites, and also present a formal 4-day course on 'Phosphorus Biogeochemistry in Soil-Plant Systems' to postgraduate students from SLU and Uppsala University. One of the new PhD students (Matthew Riddle) is a Lincoln University alumnus with a BAgSci degree who worked at Crop and Food Research at Lincoln for 4 years before moving to Sweden. Prof Condrón was also invited to present a seminar on 'Land Management and Environmental Protection in New Zealand' at the Swedish Ministry for Rural Affairs in Stockholm, which was also attended by staff from the Ministry for the Environment. An extended version of this seminar was also presented at SLU on 20 September. The visit to Sweden also coincided with the 7th International Phosphorus workshop which was held in Uppsala. Prof Condrón presented an oral paper and also chaired a discussion forum. The workshop attracted 140 delegates from 25 countries, and Prof Condrón has been invited to contribute and co-edit a collection of peer-reviewed articles from the workshop which will be published in *AMBIO*, a journal hosted by the Swedish Academy of Sciences.

Rosalind Dodd successfully defended her PhD thesis on the 2nd of October. The title of her thesis was "Use less, Lose less: Obtaining and maintaining an environmentally and agronomically sustainable farming systems with phosphorus". She was supervised by Professors Leo Condrón and Richard McDowell (AgResearch-Invermay).

Soil science had a strong showing at the recent Lincoln University Post –Grad Conference (27-28 August 2013), with all four winners associated with the Department of Soil and Physical Sciences. 1st equal were Fiona Shanahan and Hannah Franklin and 3rd equal Dharini Paramschivam and Jen Owens

Lincoln University PhD student Laura Buckthought has been awarded \$10,000 as the first recipient of the new Alexanders Agribusiness Scholarship.

The generous scholarship is exclusive to Lincoln University and awarded on behalf of Alexanders Chartered Accountants who created the scholarship with the aim of helping committed, high calibre postgraduate students undertaking research in the primary sector.

Laura is researching the interactive effects of nitrogen fertiliser and animal urine on nitrogen losses from dairy farming systems in New Zealand. Her research aims to quantify the effect of concurrently applied fertiliser and urine on nitrate leaching, pasture uptake and nitrous oxide emissions.

“This research is important because nitrogen losses from dairy farming systems enter the wider environment, where nitrate leaching can affect the quality of ground and surface water bodies, and nitrous oxide emissions contribute to climate change and stratospheric ozone depletion. This research aims to increase nitrogen use efficiency in dairy farming systems from both an environmental and productivity perspective,” says Ms Buckthought.

The Alexanders Agribusiness Scholarship will help immensely with finishing her PhD and allowing her to attend conferences to present my research findings.

Muliadi Si, M.Si , from the Department of Chemistry, Khairun University, Indonesia, has arrived in NZ to work with **Brett Robinson** and **Niklas Lehto** for a three months on cadmium bioavailability in soil.

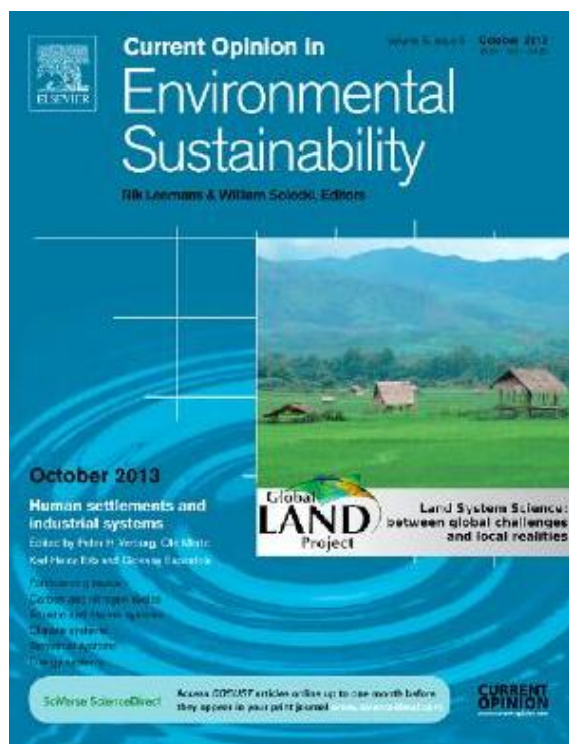
Otago/Southland

AgResearch Invermay

Spring is a foot in Invermay as we prepare for the good weather. **Seth Laurenson** recently attended the International Grasslands Congress in Sydney. Around 1000 people attended the conference with over 170 papers being presented. The theme of the conference was ‘revitalising grasslands to sustain our communities’ and the meeting was successful in providing a road map for achieving this task.

Scientists from the Invermay team continue measurements and modelling of P21 dairy farmlets hosted by Telford Dairy Farm in South Otago. A particular focus of this initiative is the search to identify cow wintering strategies that have reduced environmental impacts. Monitoring of the paired catchments used for winter forage crop grazing in 2013 again showed how strategic grazing of these paddocks to protect critical source areas could substantially reduce losses of P and sediment in surface runoff.

With regard to AgResearch’s future footprint plans, final announcements have been made for the Invermay Campus which will reduce in size. However, capabilities in the land and Environment area will remain in their current location and will continue to provide strong support to regional issues.



GLP Special Issue on 'Current Opinion in Environmental Sustainability'

Land system science: between global challenges and local realities

Edited by **Peter Verburg, Ole Mertz, Karl-Heinz Erb** and **Giovana Espindola**, this special issue brings together papers that review the current knowledge on the role of the land system at the interface between the social and physical earth system. Papers in this special issue explicitly refer to the role of land change as a process within the integrated earth system, and explicitly relate to regional diversity, including differences between developing and developed countries. Apart from providing review of current knowledge and a synthesis of the role of land change from different perspectives, papers also indicate in which way land science can help to identify directions for future sustainable management, with a strong focus on governance and policy related to land resources.

<http://www.sciencedirect.com/science/article/pii/S1877343513000936>

<http://www.sciencedirect.com/science/journal/18773435/5>

Call for GLP SSC Nominations

GLP announces a call for nominations for members of the GLP Scientific Steering Committee (SSC). In seeking nominations, GLP is looking for scientific excellence and a high level of commitment to GLP goals and activities.

Candidates can nominate themselves by sending the filled-in GLP SSC Nomination Form including a short CV by email to the GLP IPO (glp@inpe.br). Four SSC positions are available, two starting by January 1st 2014 and two more starting by March 1st 2014.

- **Nomination Call**
- **Nomination Form**

See more information about the project, its activities, the current SSC and IPO on: www.globallandproject.org.

The closing date for these nominations is **November, 20th 2013**.

Integrated Soil Fertility Management: Aggregate carbon and nitrogen stabilization in differently textured tropical soils

R.M. Gentile^{a,*}, B. Vanlauwe^{b,c}, J. Six^{a,d}

^a Department of Plant Sciences, University of California, One Shields Ave., Davis, CA 95616, USA

^b Tropical Soil Biology and Fertility Institute-CIAT, P.O. Box 30677, Nairobi, Kenya

^c International Institute of Tropical Agriculture, c/o ICIPE, Off Kasarani Road, Nairobi, Kenya

^d Department of Environmental Systems Science, Swiss Federal Institute of Technology, ETH-Zurich, CH-8092 Zurich, Switzerland

* Present address: The New Zealand Institute for Plant & Food Research Limited, Private Bag 11600, Palmerston North 4442, New Zealand.

Abstract

Soil organic matter is important to improve and sustain soil fertility in tropical agroecosystems. The combined use of organic residue and fertilizer inputs is advocated for its positive effects on short-term nutrient supply, but the effect of the integrated use on long-term stabilization of soil organic C and N is still unclear. We conducted a 1.5-y soil incubation experiment with maize (*Zea mays*) residue and urea fertilizer to examine the stabilization of C and N in four Sub-Saharan African soils differing in texture (sand, sandy loam, clay loam, and clay). The inputs were enriched with ¹³C and ¹⁵N in a mirror-labelling design to trace the fate of residue-C and N, and fertilizer-N in combination. We hypothesized that combining inputs would enhance the stabilization of C and N relative to either input alone across a range of soil textures. The treatments were destructively sampled after 0.25, 0.5, and 1.5 y to assess input-derived C and N stabilization in soil macro- and microaggregate fractions. The combination treatment had a significant but small (2% of residue-applied C) increase in residue-C stabilized in the total soil after 0.25 y, but this increase did not persist after 0.5 and 1.5 y. While combining residue and fertilizer decreased the amount of residue-N stabilized within 53- to 2000-mm sized soil aggregates (e.g., 7% less at 1.5 y), it increased the stabilization of fertilizer-N at all sampling times (e.g., 20% more at 1.5 y). The increased amount of fertilizer-N stabilized was significantly greater than the amount of residue-N lost in the combined input treatments in the three finer textured soils at 1.5 y, indicating an interactive increase in the stabilization of new N. Our results indicate that combining residue with fertilizer inputs can increase the short-term stabilization of N, which has the potential to improve soil fertility. However, benefits to N stabilization from combining organic residues and fertilizer seem to be less in coarser-textured soils.

Soil Biology & Biochemistry, 67: 124-132 (2013)

Effect of biochar on soil physical properties in two contrasting soils: an Alfisol and an Andisol.

Herath, H.M.S.K., M. Camps-Arbestain, M. Hedley. 2013.

Improving soil physical properties by means of biochar application has been hypothesised in recent publications. The objective of this study was to investigate to what extent the addition of corn stover (CS) and biochars produced from the pyrolysis of corn stover feedstock (CS) at 350 and 550 °C temperatures (CS-350, CS-550) affected aggregate stability, volumetric water content (θ_V), bulk density, saturated hydraulic conductivity (K_s) and soil water repellency of specific soils. Organic amendments (CS, CS-350, CS-550) were incorporated into a Typic Fragiaqualf (TK) and a Typic Hapludand (EG) soils at the rate of 7.18 t C ha⁻¹, which corresponded to 17.3, 11.3 and 10.0 t biochar ha⁻¹ for the CS, CS-350 and CS-550 treatments, respectively. After 295 d of incubation (T295), soils were sampled as (i) undisturbed samples for bulk density and K_s ; and (ii) mildly disturbed samples for θ_V (at -15, -1, -0.3, -0.1, -0.08, -0.06, -0.04, and -0.02 bar), aggregate stability and soil water repellency. The θ_V at time 0 (T0) was also determined at -15, -1 and -0.3 matric potentials for the different treatments. Biochar application significantly increased ($P < 0.05$) aggregate stability of both soils, the effect of CS-550 biochar being more prominent in the TK soil than that in the EG soil, and the reverse pattern being observed for the CS-350 biochar. Biochar application increased the θ_V at each matric potential although the effect was not always significant ($P < 0.05$) and was generally more evident in the TK soil than that in the EG soil, at both T0 and T295. Biochar addition significantly ($P < 0.05$) increased the macroporosity (e.g., increase in θ_V at -0.08 to 0 bar) in the TK soil and also the mesoporosity in the EG soil (e.g., increase in θ_V from -1 to -0.1 bar). Biochar significantly increased ($P < 0.05$) the K_s of the TK soil, but not that of the EG soil. Biochar was not found to increase the water repellency of these soils. Overall results suggest that these biochars may facilitate drainage in the poorly drained TK soil, which has potential to reduce N₂O emissions from grazed pastures. However, the present results are biochar-, dose- and soil-specific. More research is needed to determine changes produced in other biochar, dose and soil combination, especially under field conditions.

Geoderma 209-210:188-197.

Predicting C aromaticity of biochars based on their elemental composition.

Wang, T., M. Camps-Arbestain, M. Hedley. 2013.

Three models were examined to predict C aromaticity (fa) of biochars based on either their elemental composition (C, H, N and O) or fixed C (FC) content. Values of fa from solid state ¹³C nuclear magnetic resonance (NMR) analysis with Bloch-decay (BD) or direct polarisation (DP) techniques, concentrations of total C, H, N, and organic O, and contents of FC of 60 biochars were either compiled from the literature (dataset 1, n = 52) or generated in this study (dataset 2, n = 8). Models were first calibrated with dataset 1 and then validated with dataset 2. All models were able to fit dataset 1 when atomic H to C ratio (H/C) < 1 (except two ash rich biochars) and to estimate fa of HF treated biochars (H/C < 1). Model 1, which was based on values of H/C only and calibrated with a root mean square of error (RMSE) of 0.04 fa-unit (n = 41), could predict the experimental data with a RMSE = 0.02 fa-unit (n = 6). Model 2, which was based on biochar elemental composition data, showed the most accurate

prediction, with a RMSE of 0.03 fa-unit ($n = 41$) for the calibration data, and of 0.02 fa-unit ($n = 6$, $H/C < 1$) for the validation data. Model 3, which was based on contents of FC and C, and modified with a correction factor of 0.96, displayed the highest RMSE (0.06 fa-unit, $n = 19$) among the three models. Models 1 and 2 did not work properly for samples having either an H/C ratio >1 , high concentrations of carbonate or high inorganic H. These models need to be further tested with a wider range of biochars before they can be recommended for classification of biochar stability.

Organic Geochemistry. 62:1-6.

The impact of shrimp farm effluents on the soil carbon storage and the geochemistry of mangrove soils under semi-arid climate conditions in northern Brazil.

Suárez-Abelenda, M., T.O. Ferreira, M. Camps-Arbestain, V.H. Rivera-Monroy, F. Macías, G.N. Nóbrega, X.L., Otero.

A semi-arid mangrove-dominated – mainly by *Rhizophora* and *Avicennia* spp. – estuary system in the Northeast Brazilian coast (Ceará State) was selected for this study. The area has a marked seasonality with 8-mo y⁻¹ of intense drought. The main objective of the study was to determine the impact of shrimp farm wastewater effluents (which occupy 26.5% of the study area) on the geochemistry and the organic carbon (OC) storage of this soils and estimate the total amount of OC stored in soils of semi-arid mangrove estuary systems. Wastewater-affected mangrove was referred to as WAM and undisturbed areas as non-WAM. Redox conditions and OC content were found to be statistically related ($P < 0.05$) with seasonality and type of land use (WAM vs. non-WAM). Iron partitioning was significantly dependent ($P < 0.05$) on type of land use, with a smaller degree of pyritization (mean values of 7 % vs. 44 %) and Fe-pyrite amounts (mean values of 10 $\mu\text{mol g}^{-1}$ vs. 61 $\mu\text{mol g}^{-1}$) in WAM soils compared to non-WAM soils. Basal respiration of soil sediments was significantly influenced ($P < 0.01$) by type of land use with highest CO₂ evolution rates detected in the WAM soils (mean values of 0.20 mg CO₂ h⁻¹–C g⁻¹ vs. 0.04 mg CO₂ h⁻¹–C g⁻¹). We hypothesized that the decrease in OC storage in WAM soils is due to (i) an increase in microbial activity caused by the loading of rich-nutrient effluents, and (ii) a decrease in pyrite – and thus in that of soil OC burial – triggered by oxidation in presence of NO₃⁻. Stocks of OC in the first 40 cm depth of the semi-arid mangroves from Ceará State (area of 22,936 ha) are estimated to be ~1.0 million t.

Geoderma (in press).

Conferences

Soil Change Matters 2014, 24-27 March 2014, Bendigo, Australia.

www.soilmatters.org

Soils change in response to land use, land management and climate. Understanding the mechanisms and rates of change in fundamental soil properties, and their extent across the landscape, is critical for management of soil and land to ensure enduring productivity and provision of ecosystem services. Soil Change Matters will bring together scientists who can explain the critical changes in soils, particularly during the past century of increasingly intense land use. Soil Change Matters will include dialogue between policy makers and scientists to clarify policy needs, as well as the current capability of soil knowledge systems and soil monitoring approaches. We invite you to be part of this international workshop organised by the Victorian Government's Department of Environment and Primary Industries, and supported by Soil Science Australia and the International Union of Soil Sciences. Please visit www.soilmatters.org

20th World Congress of Soil Science – Korea

June 8 – 13 2014

www.20wcscs.org



The 20th World Congress of Soil Science will be held at the International Convention Center Jeju (ICC Jeju) on Jeju Island, Korea, from June 8th to 13th, 2014. The theme of the conference is Soils Embrace Life and Universe, and the congress is also a celebration of 90 years IUSS. Jeju is an oval-shaped volcanic island with 1,950 meter Halla Mountain in the middle. Jeju is known for its unique volcanic features making the entire island a volcanic museum. For further information see www.20wcscs.org or e-mail wcscs@20wcscs.org

Key dates: **Deadline for Abstract Submission: October 31, 2013**
Notification of Abstract Acceptance: January 15, 2014
Deadline for Early Registration; March 20, 2014
Deadline for Regular Registration: May 8, 2014

9th International Symposium AgroEnviron, 3-7 August 2014 in Goiânia, Brazil.

www.agroenviron2014.com

With the theme “Impacts of Agrosystems on the Environment: challenges and opportunities”, the scientific program will focus on problems and solutions related to the environmental sustainability of agrosystems. The conference will address broad topics on soil and water conservation and management, agriculture and environmental policies, environmental sustainability, technology innovation, and education. A guided one-day field trip to the savannah with examples of tropical agriculture is included in the registration fees. Abstracts submission is open at www.agroenviron2014.com

Early Warning: Soil Science for Future Generations:

NEW ZEALAND SOCIETY OF SOIL SCIENCE
NZSSS 2014 Soils Conference

Soil Science for Future Generations

December 1-4, 2014 · Hamilton, NZ



Conference themes/Features:

Soil contamination and remediation
Soil fertility, nutrient management and plant nutrition
Soil carbon and greenhouse gasses
Soil quality and function
Valuing natural capital (ecosystem services)
Soils in the landscape (pedology) – past, present and future
Soil water management
Soil ecosystems/biology
Education, outreach, extension
Catchment-scale soil water management
Sustainable management – paddock to catchment scales
International influences – global food, water scarcity, regulatory requirements
Career development for soil scientists: students, early career, senior scientists (including a student-employer networking lunch).

1 day Fieldtrips:

Hot volcanic soils – Rotorua – Taupo area
Wild west coast – Whatawhata hill country and Raglan area
Peat on the Plains – Hauraki – Matamata area

Other features:

Conference dinner at Hamilton Gardens with stroll through stunning gardens
Exhibition of soil-related scientist's artworks – contributions welcome
Norm Taylor Memorial Lecture
Thought-provoking and forward-looking keynote and plenary speakers

Important dates:

Abstracts/registration open 1 March
Closing date for abstracts 1 Sept
Closing date for early bird registration 24 Oct
Notification of abstract acceptance for oral or poster presentation 3 Oct
Conference: 1-4 December 2014.

Conferences mentioned in Soil Crumbs:

23rd Australian Clay Minerals Society Conference 3rd-5th February 2014

at the University of Western Australia.

Further information at <http://www.smectech.com.au/ACMS/index.html>

or from Prof. Robert (Bob) Gilkes, Phone: 08 6488 2509,

Email: bob.gilkes@uwa.edu.au

Resources and the Environment: The Next Ten Years.

Science, Regulation and Social License.

Freemantle Western Australia 31 March – 1 April 2014. [Link](#)

Soil-Waste-Water workshop

3-5 April 2014 Landau Germany

www.soil-waste-water.de

Carbon Management, Technology and Trade Conference

4-6 April Istanbul Turkey

<http://www.carbonmeetings.com/>

European General Assembly

April 27 – May 2 2014 (EGU2014) Austria Centre Vienna

<http://meetingorganizer.copernicus.org/EGU2014/provisionalprogramme>

20th World Congress of Soil Science Soils Embrace Life and Universe

June 8-13 2014 Jeju, Korea

<http://www.20wcscs.org/>

International Conference of the European Society for Soil Conservation. Imola, Italy

June, 23-26, 2014.

“Biogeochemical Processes at Air- Soil-Water Interfaces and Environmental Protection”.

Expression of Interest in Participation can be mailed to secretariat.aswep@unibo.it

<http://aswep-essc.unibo.it>