

# IUSS Bulletin

Bulletin of the International Union of Soil Sciences (IUSS) | May 2014



**90 years IUSS**

**1924-2014**

**124**

## International Union of Soil Sciences (IUSS)

The IUSS Bulletin is the official Newsletter of the International Union of Soil Sciences.  
It is freely distributed through the IUSS website.  
All contributions are welcome and should be send to the editor.

Editor	Alfred Hartemink University of Wisconsin - Madison Department of Soil Science F.D. Hole Soils Lab 1525 Observatory Drive Madison, WI 53706-1299 USA	
Secretary General	Alfred Hartemink	<a href="mailto:Hartemink@wisc.edu">Hartemink@wisc.edu</a>
Deputy SG	Alex McBratney	<a href="mailto:Alex.McBratney@sydney.edu.au">Alex.McBratney@sydney.edu.au</a>
President	Jae Yang	<a href="mailto:yangjay@kangwon.ac.kr">yangjay@kangwon.ac.kr</a>
Vice President	Kye-Hoon John Kim	<a href="mailto:johnkim@uos.ac.kr">johnkim@uos.ac.kr</a>
Treasurer	Jim Gauld	<a href="mailto:j.gauld@macaulay.ac.uk">j.gauld@macaulay.ac.uk</a>
Division 1	Karl Stahr	<a href="mailto:kstahr@uni-hohenheim.de">kstahr@uni-hohenheim.de</a>
Division 2	Martin Gerzabek	<a href="mailto:martin.gerzabek@boku.ac.at">martin.gerzabek@boku.ac.at</a>
Division 3	Rainer Horn	<a href="mailto:rhorn@soils.uni-kiel.de">rhorn@soils.uni-kiel.de</a> (President elect)
Division 4	Charles Rice	<a href="mailto:cwrice@ksu.edu">cwrice@ksu.edu</a>
Budgets	Stephen Nortcliff	<a href="mailto:s.nortcliff@reading.ac.uk">s.nortcliff@reading.ac.uk</a>
Awards	Mary-Beth Kirkham	<a href="mailto:mbk@ksu.edu">mbk@ksu.edu</a>
Statutes	Don Sparks	<a href="mailto:dlsparks@udel.edu">dlsparks@udel.edu</a>
Presidential elections	Roger Swift	<a href="mailto:deannravs@uqg.uq.edu.au">deannravs@uqg.uq.edu.au</a>
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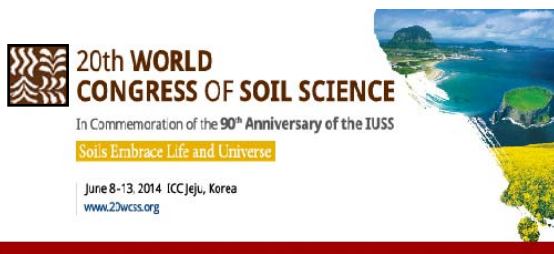
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# 20<sup>th</sup> World Congress of Soil Science



Time is flying and the conference is quickly approaching! The 20WCSS Organizing Committee is going all out to make sure it's a wonderful congress!

The 20<sup>th</sup> World Congress of Soil Science (20WCSS) will be held from June 8-13, 2014 in Jeju, Korea. We have prepared a variety of events to commemorate the 90<sup>th</sup> anniversary of IUSS which we hope will leave our participants with ever-lasting memories. If you have not registered yet, you still have a chance to join us. Come and enjoy the beautiful island of Jeju at the 20WCSS Conference.

For further details, please visit: [www.20wcss.org](http://www.20wcss.org)

## 1. Registration

Participants are advised to register in advance (by May 8, 2014) to receive the regular-registration rate. You still have a chance to save up to USD \$100! To check conference rates:

[http://www.20wcss.org/sub05\\_1.php](http://www.20wcss.org/sub05_1.php)

## 2. Special Events in Commemoration of the 90<sup>th</sup> Anniversary of the IUSS

### a. The 1<sup>st</sup> International Soil Judging Contest

► June 5-7, 08:00-17:00, Seogwipo-si (city), Jeju (Southernmost city of Jeju island)

The 1<sup>st</sup> International Soil Judging Contest will immediately precede the 20WCSS and is open to teams of soil science students from IUSS member nations. This exciting initiative will give students from

around the world an opportunity to both develop networks in the soil science community and to experience volcanic soils and landscapes in a beautiful part of Korea, and to test their soil description and interpretation skills on the world stage. Detailed information can be found at [http://www.20wcss.org/data/20wcss\\_Soil%20Judging%20Contest.pdf](http://www.20wcss.org/data/20wcss_Soil%20Judging%20Contest.pdf)

### b. Photo Exhibition

► June 9-13, 08:00-19:00, 3F Lobby, ICC Jeju

The ISSS (now IUSS) was established in 1924 and this year is the 90<sup>th</sup> anniversary of the IUSS. To celebrate the anniversary, there will be a photo exhibition to retrace the historic footprints of the IUSS and WCSS. What will be on display is a rare collection of photographs showing the history of the IUSS congresses dating back to the early 1900s. The photos are sure to bring back fond memories and will be the perfect chance to see old friends and reminisce. And if this is your first WCSS conference, the exhibition will fill you in on what you've missed. Now is your turn to be part of IUSS history.

### c. 90<sup>th</sup> Anniversary of the IUSS Ceremony

► June 9, 08:30-10:00, 5F Tamna A, ICC Jeju

All registered participants are cordially invited to join and celebrate the official opening and commemoration of the 90<sup>th</sup> Anniversary of the IUSS. As part of the celebrations, there will be a commemorative lecture and speech for the 90<sup>th</sup> Anniversary of the IUSS. Also, a congratulatory video featuring our participants will be shown.

### d. Soil Parade

► June 9, 16:30-20:00, Beautiful Nature Trail

After finishing the session on June 9 (Mon), there will be a declaration about the resolution on soil. All participants will also have a chance to take a stroll along the pristine coast of the island. We encourage you to take advantage of the fresh breeze and natural beauty of Jeju while networking with old and new colleagues.

### **e. Integrated Soil Art and Film Program**

► June 9-13, 5F Tamna A and 2F Room 203, ICC Jeju

Two artistic events are being prepared for the 20<sup>th</sup> World Congress of Soil Science: a soil film screening event and a soil art poster exhibition. The goal is to bring together different areas of expertise, to inspire new opportunities for interdisciplinary collaboration, and to expand the practical horizons of soil protection, communication, and education.

A range of soil topics in narrative, documentary, fiction, and experimental film genres will be shown during the coffee breaks and lunch hours during the congress. The main featured film is 'Symphony of the Soil' which focuses on the beauty and mystery of the ecosystems beneath our feet as well as environmental risks from over-development, climate change, and poor land management. This film will be shown on June 9, at 19:00. After the screening, there will be a panel discussion with Deborah Garcia, the filmmaker of Symphony of the Soil.

## **3. Highlight of the Congress, Gala Dinner**

► June 12, 18:30-, 5F Tamna B + C, ICC Jeju

Only participants who have paid for the Gala Dinner may attend this event. It will give you an opportunity to mingle with colleagues in pleasant surroundings. Enjoy the climax of 20WCSS with an excellent dinner and exciting Korean fusion performance. After dinner, get out your dancing shoes because we're going to party and boogie!

## **4. Blooming of the Conference, Welcome Reception**

► June 8, 17:00-19:00, 5F Tamna B + C, ICC Jeju

On the first day of 20WCSS, all participations and accompanying persons are cordially invited to attend the welcome reception. We believe it will be good time to relax and warm up for the conference. Drinks and a light dinner will be served. There is no additional cost for this event. A traditional Korean performance will be awaiting you as well as an award ceremony for the 1<sup>st</sup> International Soil Judging Contest. Please come and give them your applause.

## **5. Technical Tours**

The technical tours will be an opportunity to find out more about Jeju Island, which is one of the most beautiful places in Korea and of great interest to soil scientists from around the world. There are four technical tours. The first course is focused on the soil and rock formations around the southwest part of the island such as Yongmeori Beach, Suwolbong Peak, etc. The second course is focused on the natural environment, which consists of unique falls, oreum and beautiful coastline. The third course is socially focused and features visits to a green tea producer, citrus museum and folk village. The fourth course is Mt. Halla Eco Trekking. A young volcanic mountain of the fourth Cenozoic era, Hallasan was an active volcano until about 25,000 years ago, resulting in over 360 oreums (parasitic cone volcanoes) which form a spectacular landscape. Due to its diverse vegetation it has special scientific importance as a treasure trove of plants, and was therefore designated as a natural monument.

More about: [http://www.20wcsc.org/sub07\\_2.php](http://www.20wcsc.org/sub07_2.php)

## **6. Transportation**

### **a. Information Desk at Jeju International Airport**

The 20WCSS Organizing Committee will operate an information desk next to gate 1 in front of domestic arrivals. If you need any help, please visit our staff for assistance.

- Days of Operation: June 7 (Sat)-June 8 (Sun)
- JEJU International Airport:  
<http://www.airport.co.kr/mbs/jejueng/>

### **b. From Jeju International Airport to ICC Jeju and Hotels**

From Jeju International Airport, please take either limousine bus No. 600 or a taxi to get to the ICC Jeju and Joongmun hotels. For more information, please refer below.

### **c. From ICC Jeju to Hotels**

The organizing committee will operate a shuttle bus service from ICC Jeju to 20WCSS hotels. The schedule of shuttle service will be released at the end of May. You may check the schedules and routes at [http://www.20wcsc.org/sub09\\_5.php](http://www.20wcsc.org/sub09_5.php) Hotels marked with green circles indicate the shuttle will service the hotels and venue.



*Jeju Int'l Airport Ground Transportation Map*

[A] Bus

<b>Bus Number</b>	To Seoguiipo (600) * standard distance from Airport to Joongmun area
<b>Operation Hours</b>	06:20 - 22:00 (16-18 minute intervals)
<b>Fare</b>	4,500 Korean Won(KRW) (US\$ 4.5) * Korean Cash Only
<b>Bus Stops</b>	Airport→(Shinjeju)The Hotel→Yeomiji→Hana Hotel→Hyatt Hotel→Silla Hotel→Sweet Hotel→Lotte Hotel→Korea Condo→Korea National Tourism Organization→CSN Hotel Resort→Convention Center→World Cup Stadium→Gyeongnam Hotel→Seogui Pohang→Paradise Hotel→Seogui poKal Hotel

[B] Taxi

To get to the ICC JEJU/ Hotels, taking a taxi is also an option from the long-distance stop.

<b>Taxi Availability</b>	until 40-45 minutes after the arrival of the last flight
<b>Fare</b>	About KRW 30,000-35,000 (US\$ 30-35) * Korean Cash Only * Since fares are fixed, please confirm the distance before boarding the taxi

## 7. Webmail

Information about the congress is regularly updated in the webmail which is sent once a month. If you wish to receive or add your name to the list, please e-mail us at [wcss@20wcss.org](mailto:wcss@20wcss.org)  
Your participation will make 20WCSS a wonderful congress. We really look forward to seeing you this year in Jeju!

Contact Info: [wcss@20wcss.org](mailto:wcss@20wcss.org)

Homepage: [www.20wcss.org](http://www.20wcss.org)

# IUSS reports

## Report from IUSS Secretary General 2010-2014

**Alfred Hartemink**  
hartemink@wisc.edu


This is a brief report of the main activities of the IUSS with a focus on the IUSS secretariat, the finances, the IUSS topical conference and a few other things. The many scientific activities are presented in the Division reports. Besides regular email exchanges with the IUSS Executive Committee and Council, meetings were held in San Antonio (2011), Sydney and Jeju (2012), and Madison and Tampa (2013).

Overall, in this *state of the union* I can report that the IUSS is in good shape, it continues to initiate and embrace soil science activities across the world, is financially strong, and has a clear vision for the future. We have worked diligently to improve the service to our members and the governance of the union. I would like to take the opportunity to thank all committed IUSS officers and many contributors for the success of our scientific union and the soil science discipline. It has been a great pleasure to work with all of you.

In the past two years, we have worked on the foundations for a permanent secretariat for the IUSS. Such secretariat is part of the professionalization of our union and will provide improved service to our membership and advance the union's scientific activities. Under the leadership of Don Sparks a task force was formed that investigated the viability of the plan to host a Secretariat in Austria. A consortia of Austrian institutes is willing to host the IUSS Secretariat and Martin Gerzabek has been instrumental in bringing them together. The IUSS Executive Committee unanimously recommended to the IUSS Council that we partner with the Austrian Consortia to establish a IUSS Secretariat in Vienna, along with our IUSS Treasurer and other supporting personnel, to provide a continuity of administrative support. The council approved this plan by electronic vote in December 2013 and the new Secretariat will become operational on January 1, 2015. In addition to providing continuity, particularly in view of the IUSS President serving only a two year term, the establishment of a Secretariat will allow the IUSS Presidents' Group to



*Some members of the IUSS Executive Committee in Jeju in 2012, LtoR: Alex McBratney, Jae Yang, Alfred Hartemink, Chuck Rice, Stephen Nortcliff, Roger Swift, Don Sparks, Jim Gauld, Mary Beth Kirkham*



promote soil science globally, including increased interaction with IUSS members, partner unions, international scientific organizations and the wider community. With this secretariat the positions of Secretary General (SG) and Deputy Secretary General (DSG) will no longer exist – instead we have a President whom together with past and president elect will take over the SG and DSG duties. This means that the IUSS leadership remains relatively small and is in line with the Strategic Plan that was developed by Alex McBratney in 2012.

For the first time in the IUSS history we have held Presidential elections following the decoupling of the IUSS president and the location of the congress. Now any qualified soil scientist can stand for the IUSS presidency. Both the 2012 (Rainer Horn) and 2014 Presidential elections were organized by a Standing Committee under the leadership of Roger Swift. Voting was carried out electronically and every eligible IUSS member could vote. In 2013, we have also held the Division and Commission chair elections – again electronically which proved to be an improvement and resulted in higher participation of our members.

The IUSS is financially in good shape due to the hard and dedicated work of the treasurer (Jim Gauld) and chair of the Standing Committee of Budget and Finances (Stephen Nortcliff). We have transferred part of the savings to a US based investment that has provided a healthy return compared to the low-interest bank rates. Whereas both our annual income and expenses have increased, our net worth has almost doubled between 2010 and 2014. There are various plans to increase the support to the Commissions and Working Groups and other activities that foster soil science activities including the World Soil Day and the 2015 year of the Soil.

In 2009, we recognised the need for a conference that focused on a single topic that is of interest to all IUSS Divisions, Commissions and Working Groups. It was decided that the conference topic should be soil carbon and that the conference should have an inter-divisional and inter-commissional approach. The IUSS Global Soil C Conference was held in June 2013 in Madison, USA, and consisted of three days of presentations and discussions, followed by a one-day fieldtrip. There were 140 participants from over 30 countries. A book “Soil Carbon” was published by Springer that contains selected papers from the conference and the book is structured by IUSS Commissions and Work-

ing Group under each of the four Divisions. The aim is to organise such topical conferences every odd year.

I have continued to publish two Bulletins per year (22 since 2003) and the monthly IUSS alerts (107 since 2005). Both are important communication channels with our membership and the advertisements have given us some income. The website is skilfully and promptly maintained by Budiman Minasny and the number of visitors is high and increasing.

At last, the World Congress of Soil Science (WCSS) is one of the cornerstones of our global activities and always brings together a great crowd of soil scientists from all over the world. Since a few years many countries have expressed interest in organizing the WCSS which reflects the status of the soil science discipline. Soon I will see you in Jeju that promises to become a great soil science congress!





# IUSS reports

## Report of Division 1: 'Soils in Space and Time'

By Karl Stahr

Division I during this four years period turned out to be a well organised division with a good set of commissions and cooperating working groups. There have been many activities, sometimes stimulated by the division chair, otherwise stimulated by the commission heads and the working group responsibilities. However those activities have not been equally distributed. Especially the new commissions Pedometrics and Palaeopedology have been extremely active; but also the cooperation of Morphology and Micromorphology was a stimulating situation. However all the activities rely on the personal involvement of the scientists, doing this job for International Soil Science. Therefore I have to thank all the active people, which brought in their ideas and also their activity for the Division I and for the society as a whole. I want to apologize for all important inputs, which might be forgotten in this report, but the same time I want draw your attention to the attached Commission and Working Group reports.

One of the eminent responsibilities of a division chair is the participation in IUSS Executive Committee meetings. The chair took part in all three meetings happening during the period. This was first in San Antonio, Texas in 2011, then the mid-term Council and Executive Committee meeting at Jeju, Korea in 2012 and in 2013 the meeting in Michigan/Wisconsin, which was jointly organised with an 'All Union Carbon Conference'. During these Executive Committee meetings beside the presidency and the secretary general, the division chairs also the chairs of the standing committees take part and play an important role in decision finding. Because of so many uncertain points in the society, following the election process and other activities like change of the secretary general to a permanent office and the role of the new president and so on, a forth executive committee meeting was proposed by me. However due to some resistance, it does not happen and therefore some decisions have to be made without discussing it in a board. One of the problems in the Union seems

still to be the election of officers. The call for candidates was responded very late and very selective. It seems that some national societies don't have much interest and therefore there are not many votes from these countries. Furthermore it seems to be a problem, that a candidate can only stand for one single position. It would be nice, if a candidate, who did not get the majority of votes for a first place, could be a candidate well for the deputy. In order to facilitate this, the system must be changed allowing being candidate in two positions or having two successive rounds of voting.

The division chair was involved in many conferences of commissions and the division itself. It started with 'The Landscapes and Soils through Time' conference at Hohenheim University, Germany, which was coorganised by the commissions of Soil Geography and Palaeopedology in July and August 2011. Beside the hundred contributions, also a special issue of the Journal Catena was produced from this conference. In 2012 by the commission Soil Classification a workshop on soil classification was held in Lincoln, Nebraska. The commission of Soil Morphology and Micromorphology also had a '14<sup>th</sup> International Working Meeting on Soil Micromorphology', which took place in Barcelona and Lleida, Spain in July 2012. Before and after the same commission had several Soil Micro-morphology Workshops: one in Tübingen, Germany in 2011, where the division chair organised two excursions. Beside the commission meetings also national societies meetings have been visited. In 2011 in Baybay, Leyte was a national meeting of the Philippine society of soil science. Also the Belgian society of soil science was visited during their annual meeting in 2011. The German soil science society had two national conferences in 2011 at Berlin and in 2013 at Rostock, which have been attended. The 'Eurosoil' conference 2012 at Bari was the event, which was not only for the European soil scientists a highlight. In 2014 the 'Carbon Summit' took place in Istanbul, Turkey, where the division chair represented the International Union of Soil Sciences with a plenary.

In 2012 he could hand over in Brussels the 'Guy Smith Medal' to Rudy Dudal. Also the commission chair represented there the IUSS at the funeral of Rudy Dudal in 2014.

The highlight of the division activities has been the first divisional conference at Ulm, Danube, Germany in September and October 2013 (<https://info-division1@uni-hohenheim.de>). This was attended by about 300 soil scientists and beside their contributions in symposia and posters had six professional excursions, which showed soil genetic, soil geographical, soil morphological features and also trained people in soil classification. The conference was supplemented by two working group meetings; one of the WRB, which finalised the third edition, and another one by Mediterranean soil scientists AEOMED, which tried to cooperate and prepare new research proposals.

We can draw a positive balance, when we look back to the activities of division I during the last four years since I took over from my experienced predecessor Ahmet Mermut. We do hope and are confident, that division I will succeed to be progressive under the new leadership of Erika Micheli in the next period.

## Commission 1.1: Soil Morphology and Micromorphology

**By Rosa M Poch, Chair IUSS Commission 1.1  
Martine Gerard, Vice-Chair  
April 2014**

This report contains information about the newsletters, courses, meetings, congresses, awards and publications issued or having place in the frame of the Commission 1.1. of the IUSS, during the period 2010-2014.

### 1. Newsletters

Two newsletters per year have been published and uploaded at the website of the Commission maintained by Przemyslaw Mroczek:

[http://loess.umcs.lublin.pl/micro\\_pliki/Page421.htm](http://loess.umcs.lublin.pl/micro_pliki/Page421.htm)

### 2. Courses

**Intensive Training Course on Soil Micromorphology  
Tübingen (Germany)**

**28 March - 8 April 2011**

Organizers: Dr. Daniela Sauer (Institute of Soil Science, Hohenheim University) and Peter Kühn (Soil

Science and Geomorphology Group, University of Tübingen).

The Petrology Group of the Department of Geosciences, University of Tübingen, hosted the course in their well-equipped microscopy room. Thus, 22 PhD students and researchers from 11 different countries (Colombia, Croatia, Germany, Israel, Italy, Netherlands, Poland, Russia, Serbia, Switzerland, United Kingdom) could participate. Two 1-day field trips were guided by Prof. Dr. Karl Stahr and Christoph Prade (both Hohenheim) on Saturday, 2 April and Sunday 3 April, taking the group along a transect from the Black Forest (granite and Lower Triassic sandstone) through the SW German Cuesta Landscape (Middle and Upper Triassic, Lower and Middle Jurassic) to the Swabian Alb (Upper Jurassic limestone escarpment).

### **First Colombian International Training Course in Soil Micromorphology and Complementary Techniques. Medellín (Colombia)**

**8<sup>th</sup>-19<sup>th</sup> August 2011.**

The course was organized by PhD professors Juan Carlos Loaiza Usuga, Raúl Zapata, Walter Osorio (Sciences faculty, Universidad Nacional de Colombia, Sede Medellín) with the collaboration of PhD professors Rosa M. Poch, (Lleida, España), Héctor Morrás (INTA – Argentina) Marion Weber, Marco Márquez (UNALMED – Colombia), Hernán González Santamaría (Soil scientist) and Alberto Arias (MSc in Geomorphology – UNALMED, Colombia). The Soils and Geomorphology postgraduate program – Sciences Faculty and the Petrology Group of the Department of Geosciences and Environment – Mines Faculty, University National of Colombia – Campus Medellín, hosted the course in their microscopy room. The participants were 18 Postgraduate students and researchers from different sites of South America. A two-day field trip was guided by Prof. Dr. Juan Carlos Loaiza, Prof. Alberto Arias, Prof. Hernán González (Medellín) on Sunday 14 and Monday 15 August, along the high plateau of Santa Rosa de Osos. On this trip, across the Andes mountains, several topics were discussed related with soil genesis (Oxisols, Ultisols, Histosols, Inceptisols and Andisols), on mountainous zones.

**Course on Soil Mineralogy and Micromorphology.  
Post Graduate School 'Alberto Soriano', Faculty of Agronomy, University of Buenos Aires (Argentina)  
17<sup>th</sup>-28<sup>th</sup> September 2012**

The 14<sup>th</sup> edition of the course on Soil Mineralogy and Micromorphology, given every two years since

1985 by Prof. Dr. Héctor Morrás took place at the Postgraduate School of the Faculty of Agronomy of the University of Buenos Aires in cooperation with the National Institute of Agricultural Technology (INTA). Twelve students with different professional training participated on this occasion- nine of them were agronomists, two were geologists and one was a biologist.

**Further courses to have place in the near future:**

- II Latin-American course of Soil Micromorphology and Complementary techniques. Universidad Nacional de Colombia, Departamento de Geografía, Bogotá (Colombia). July 28 -August 02- 2014.
- Intensive Training Course on Soil Micromorphology, Tremp (Catalonia), 28 september - 4 october 2014. Departament de Medi Ambient i Ciències del Sòl – Universitat de Lleida and Institut Cartogràfic i Geològic de Catalunya – Centre de Tremp

### 3. Meetings and congresses

**European Geosciences Union General Assembly, Vienna, 3-6 April 2011**

Session 6. Digital soil mapping: novel approaches (including geophysical measurements, micromorphology) to the prediction of key soil properties for modelling physical processes. Convener: Gilles Grandjean. Co-Conveners: Ulrike Werban, Uta Sauer, Jay Jabro, Luca Trombino

**4<sup>th</sup> International Congress EUROSIL 2012 – Soil Science for the Benefit of Mankind and Environment. Bari, Italy, 2-6 July 2012**

- S9.1. Title: Soil genesis and soil micromorphology. Convener: Stahr Karl, Hohenheim University, Germany. Co-Conveners: Kapur Selim, University of Cukurova, Turkey.
- S9.2. Title: Advancement in soil micromorphology. Convener: Terribile Fabio - University of Napoli Federico II, Italy.
- S9.3. Title: Imaging structure and probing properties of soil interfaces and aggregates. Convener: Totsche Kai Uwe - Friedrich-Schiller-Universität Jena, Germany. Co-Conveners: Rennert Thilo - Friedrich-Schiller-Universität Jena, Germany, Vogel Hans-Jörg - Helmholtzzentrum für Umweltforschung, Germany.

**14<sup>th</sup> International Working Meeting on Soil Micromorphology. Lleida, 8-14 July 2012**

There were participants from the countries: Belgium, Brazil, Canada, Germany, France, Iran, Indonesia, Israel, Italy, Mexico, the Netherlands, New Zealand, Norway, Poland, Russia, Spain, Switzerland, Taiwan, UK and USA. There were published 103 abstracts. During the meeting there were presented 13 invited lectures, 41 oral presentations and 49 posters.

Two microscope workshops were also organized, during the conference, in Barcelona (Faculty of Geology in University of Barcelona):

- a Archaeological Soil Micromorphology Working Group Meeting (Organizer: Richard MacPhail)
- b Micromorphology of Glacigenic Sediments (Organizer: Jaap Van der Meer)

Meeting sessions were held in Lleida. The lectures and posters were presented on all aspects of soil micromorphology. The oral presentation was divided into five thematic sessions:

- a Soil genesis and mineral weathering (15 presentations),
- b Interpreting soil quality, interactions between organisms and minerals, and agro-environment sustainability (8),
- c Soils in extreme environments and under extreme events; micromorphological methods and analyses (6),
- d Textural features and microfacies expressing temporary and permanent soil water saturation (10),
- e Site-formation processes in archaeology and cultural landscapes, archaeometry and geoarchaeology (15).

The posters were available during whole conference and were presented during two separated sessions.

The mid-conference fieldtrip named as 'Soils on stone-bench terraces. The best olive oil of the world: the liquid gold of Les Garrigues' was connected with the soils developed on different rocks and sediments near the ancient archaeological site (town Arbeca, the Garrigues district) and different-age olive terraced fields (area of Les Garrigues).

The main institution-organizer of the conference was the Department of Department of Environment and Soil Sciences of Lleida University. Support for this meeting was obtained by the the 700<sup>th</sup> Anniversary Fundació Universitat de Lleida, Government of Catalonia, Spanish Ministry of Education, Lab. Ferrer SA, Faculty of Geology of University of Barcelona and Catalan Institute of Agrarian Studies (Institut d'Estudis Catalans).

**Developing International Geoarchaeology conference 2013 and International Workshop on Archaeological Soil Micromorphology Basel, Switzerland, 2<sup>nd</sup> to 6<sup>th</sup> September 2013**

**European Geosciences Union, General Assembly 2014, Vienna 27 April-2 May**

SSS3.1/GM1.13/SSP3.1.21 Soil and sediments micromorphology: reconstruction of palaeoenvironments, anthropogenic processes, or more recent human impact on ecosystems (co-organized). Convener: Luca Trombino | Co-Convener: Martine Gérard

**20<sup>th</sup> World Congress of Soil Science, June 8-13 2014, Jeju, Korea**

- Oral Session 9 [C1.1-2] Interactions between Soil Structure, Living Organism and Organic Matter. Convener: Farhad Khormali
- Oral Session 18 [C1.1-1] The Role of Environment on Soil formation: Morphological Indicators. Convener: Daniela Sauer
- Oral Session 64 [DS1] Micromorphological Answers to Palaeopedological and Polypedogenetic Questions. Convener: Rosa Maria Poch.

Besides, annual meetings and workshops of the Archaeological Micromorphology Working Group, lead by Richard MacPhail, have taken place during these years.

**4. Awards**

The **2014 Kubiëna Medal** has been awarded to Rienk Miedema by the selection committee of Commission 1.1., formed by Brenda Buck, Herman Mùcher, Rosa M Poch, Georges Stoops and Larry Wilding, for his outstanding and sustained performance in the discipline of soil micromorphology.

The Kubiëna Medal will be handled to the awardee during the Meeting of the International Union of Soil Sciences that will be held in Jeju, Korea, in 2014.

**Young Micromorphologist Publication Award 2012 YMPA, Ex-aequo**

- **Ximena Suárez Villagran**  
'Experimental micromorphology in Tierra del Fuego (Argentina): building a reference collection for the study of shell middens in cold climates.' *Journal of Archaeological Science*, 2011, 38:588-604.

and to:

- **Dominique Todisco**  
'Micromorphology of periglacial sediments from the Tayara site, Qikirtaq Island, Nunavik (Canada).' *Catena* 76, 2008. 1–21

**2014 YMPA**

- **Amanda Williams**, for her paper Williams, A.J., Buck, B. J., & Beyene, M. A. (2012) Biological soil crusts in the Mojave Desert, USA: micromorphology and pedogenesis. *Soil Science Society of America Journal*, 76(5), 1685-1695.

**5. Publications**

The proceedings of the 14<sup>th</sup> International Working Meeting on Soil Micromorphology, with selected papers were published in 2 Special issues of *Spanish Journal of Soil Science*, Guest Editors: Irina Kovda and Curtis Monger; and 1 Special Issue of *Quaternary International*, Guest Editor: Richard MacPhail.

**Contents:**

SJSS Vol 3, issue 2 [http://sjss.universia.net/pdfs\\_revistas/revista\\_35\\_1373878761852.pdf](http://sjss.universia.net/pdfs_revistas/revista_35_1373878761852.pdf), dedicated to Ulrich Babel

- 1 *Soil micromorphology and the Anthropocene— Cross-scale connections and technology trends* - Curtis Monger - Peter H. Cooke - [Special article]
- 2 *A micromorphological evaluation of pedogenesis on Isla Santa Cruz (Galápagos)* - Georges Stoops - [Research article]
- 3 *Micromorphological characteristics reflecting soil-forming processes during Albeluvisol development in S Norway* - Daniela Sauer - Isabelle Schüllli-Maurer - Ragnhild Sperstad - Rolf Sørensen - [Research article]
- 4 *Soil micromorphogenesis and Early Holocene paleoclimate at the desert margin of Southern Arabia* - Peter Kühn - Dana Pietsch - [Research article]
- 5 *Benchmark soils on alluvial, fluvial and fluvio-glacial formations of the upper-Segre valley* - Rosa María Poch Claret - Iolanda Simó - Jaume Boixadera - [Research article]
- 6 *Paleoclimatic implications of micromorphic features of a polygenetic soil in the Monegros Desert (NE-Spain)* - David Badía - Rosa María Poch - Clara Martí - María Teresa García-González - [Research article]
- 7 *Micromorphological analysis on the influence of the soil mineral composition on short-term aggregation in semi-arid Mediterranean soils* - Inigo Virto - Oihane Fernández-Ugalde - Pierre Barré - María José Imaz - Alberto Enrique - Paloma Bescansa - Rosa María Poch - [Research article]

SJSS Vol 3, Núm 3 [http://sjss.universia.net/pdfs\\_revistas/revista\\_36\\_1384517196608.pdf](http://sjss.universia.net/pdfs_revistas/revista_36_1384517196608.pdf), dedicated to Nicolas Fédoroff.

- 1 *Modern and relict features in clayey cryogenic coals: Morphological and micromorphological identification* - Irina Kovda - Marina Lebedeva - [Research article]
- 2 *Fabric of topsoil horizons in aridic soils of Central Asia* - Marina Lebedeva - Olga Kutovaya - [Research article]
- 3 *Zheltozems of Russia: Micromorphology, clay minerals, and pedogenetic analysis* - Maria Gerasimova - Natalia Chizhikova - Ilya Gurov - [Research article]
- 4 *Micromorphology of hydromorphic soils developed in fluvio-marine sediments during the Middle-Late Pleistocene transit in the Gulf of Cadiz (Atlantic South Spain)* - Elvira Roquero - Pablo G. Silva - Cari Zazo - Jose Luis Goy - Cristino J. Dabrio - Francisco Borja - [Research article]
- 5 *History of pedogenesis and geomorphic processes in the Valley of Teotihuacán, Mexico: Micromorphological evidences from a soil catena* - M. Lourdes González-Arqueros - Lorenzo Vázquez-Selem - Jorge E. Gama Castro - Emily McClung de Tapia - Sergey Sedov - [Research article]
- 6 *Dark humic alluvial paleosols in Central and Southern Mexico: Micromorphological indicators of Late Pleistocene megafauna habitats* - Rosa E. Tovar - Sergey Sedov - Berenice Solís - Elizabeth Solleiro - [Research article]

QI, Volume 315, Pages 1-200 (27 November 2013)  
Site formation processes in archaeology: Soil and sediment micromorphology. Proceedings of the 14<sup>th</sup> IWMSM Session 5, Lleida, Spain, July 2012. <http://www.sciencedirect.com/science/journal/10406182/315>; dedicated to Nicolas Fedoroff.

- *Human actions performed on simple combustion structures: An experimental approach to the study of Middle Palaeolithic fire*. Carolina Mallol, Cristo M. Hernández, Dan Cabanes, Jorge Machado, Ainara Sistiaga, Leopoldo Pérez, Bertila Galván
- *Phosphate location and reaction in an archaeoanthrosol on shell-mound in the Lakes Region, Rio de Janeiro State, Brazil*. Guilherme Resende Corrêa, Carlos Ernesto Schaefer, Robert J. Gilkes
- *Formation processes at a high resolution Middle Paleolithic site: Cueva Antón (Murcia, Spain)*. Diego E. Angelucci, Daniela Anesin, Davide Susini, Valentín Villaverde, Josefina Zapata, João Zilhão

- *Climate and environmental changes recognized by micromorphology in Paleolithic deposits at Arene Candide (Liguria, Italy)*. Ivano Rellini, Marco Firpo, Gabriele Martino, Julien Riel-Salvatore, Roberto Maggi
- *Microstratigraphy of the Magdalenian sequence at Cendres Cave (Teulada-Moraira, Alicante, Spain): Formation and diagenesis*. M. Mercè Bergadà, Valentín Villaverde, Dídac Román
- *Manufacturing technical differences employing raw earth at the protohistoric site of Sant Jaume (Alcanar, Tarragona, Spain): Construction and furniture elements*. Marta Mateu, M. Mercè Bergadà, David Garcia i Rubert
- *Weathering of carbonate materials in ancient Maya constructions (Río Bec and Dzibanché): Limestone and stucco deterioration patterns*. Luisa Straulino, Sergey Sedov, Dominique Michelet, Sandra Balanzario
- *River floodplain aggradation history and cultural activities: Geoarchaeological investigation at the Yuezhuang site, Lower Yellow River, China*. Yijie Zhuang, Wenbo Bao, Charles French
- *Soil micromorphological evidence from Iron Age land use at Tornby and Mörtlösa in Linköping, Sweden*. Barbara Maria Sageidet
- *Integrated microstratigraphic investigations of coastal archaeological soils and sediments in Norway: The Gokstad ship burial mound and its environs including the Viking harbour settlement of Heimdaljordet, Vestfold*. Richard Macphail, Jan Bill, Rebecca Cannell, Johan Linderholm, Christian Løchsen Rødsrud
- *Studying urban stratigraphy: Dark Earth and a microstratified sequence on the site of the Court of Hoogstraeten (Brussels, Belgium). Integrating archaeopedology and phytolith analysis*. Y. Devos, C. Nicosia, L. Vrydaghs, S. Modrie
- *A soil micromorphological study on the origins of the early medieval trading centre of Antwerp (Belgium)*. Yannick Devos, Barbora Wouters, Luc Vrydaghs, Dries Tys, Tim Bellens, Anne Schryvers
- *Living in the cold: Geoarchaeology of sealing sites from Byers Peninsula (Livingston Island, Antarctica)*. Ximena S. Villagran, Carlos E.G.R. Schaefer, Bertrand Ligouis

## Commission 1.2 Soil Geography

### 2010

- Participation 19<sup>th</sup> World Congress of Soil Science, Brisbane, Australia, organisation and execution of two Commission symposia: 1.2.1 Global soil spatial information systems and their role in forecasting impacts (Convener: L. Montanarella (Italy)/ M. Grundy (Australia)) and 1.2.2 Soil geography and ecology (Convener: R. Jahn (Germany)/ J. Gray (Australia)). R. Jahn Keynote for Symposia 1.6.1: Impact of aeolian sediments on pedogenesis - examples from the fringe area of the Saharan desert.

### 2011

- Joint (Commission 1.6 Paleopedology and 1.2 Soil Geography) Congress 'Landscapes & Soils through Time' at Hohenheim/Germany (July 28<sup>th</sup> - August 1<sup>st</sup>) and two full day field trips to Swabian Alb and Black Forest; Organisation and Execution: D. Sauer, R. Jahn, K. Stahr.
- Publication: CATENA Special Issue 'Landscapes and Soils through Time' (14 contributions). Edited by Daniela Sauer, Reinhold Jahn and Karl Stahr. Vol. 112, 2014

### 2012

- Participation Inter Congress Meeting in Jeju/S. Korea (4.-7. June); preparation of 20<sup>th</sup> World Congress of Soil Science, Jeju, S. Korea, 1 day field trip.
- Participation Eurosoil in Bari/Italy (2.-6. July) Symposia S2.3: Pedodiversity in space and time: concepts, measurements, applications. Organizer and Convener: C. Dazzi (Italy).

### 2013

- Participation First Divisional 1 Conference of IUSS, 'Soils in Space in Time' Ulm/Danube, Germany. September 30<sup>th</sup> - October 4<sup>th</sup>.
- Chair member of local organisation and scientific committee, organizing Symposia, preparation of field guide (six excursions, 189 pages)
- Symposia of Commission 1.2:
  - 7 Soil geography and soil ecology,
  - 8 Interdependency of soils and soil scapes,
  - 9 Soil scapes behaviour in time,
  - 24 New techniques of soil mapping,
  - 25 Changes of wetland soils with time (natural and anthropogenic) and several fieldtrips.

- Publication: CATENA Special Issue and Journal of Plant Nutrition and Soil Science Focus Issue in preparation

### 2014

- Currently preparation of 20<sup>th</sup> World Congress of Soil Science, Jeju, S. Korea. Chair member of the International Scientific Committee and organizing Symposia, Participation Pre-Congress Tour Japan and Andosols Workshop in Tsukuba.
- Symposia of Commission 1.2:
  - C1.2-1 Pedodiversity and Ecological Services, Bridging Soil Geography and Land Use;
  - C1.2-2 Soil Data, Spatial information Systems and Interpretation Procedures.Halle, March 31. 2014; Reinhold Jahn (Chair Commission 1.2 Soil Geography)

## Commission 1.3 Soil Genesis

By Ganlin Zhang, Chair Commission 1.3

### 2013

- Participation in the First Divisional 1 Conference of IUSS, 'Soils in Space in Time' Ulm/Danube, Germany. September 30<sup>th</sup> - October 4<sup>th</sup>. Member of scientific committee

Symposia organized by Commission 1.3:

- 10. Pedogenesis and carbon sequestration
- 25. Changes of wetland soils with time (natural and anthropogenic)

Also actively participation in other related Symposia:

### 2014

Currently preparation of the 20<sup>th</sup> World Congress of Soil Science, Jeju, S. Korea.

Chair member of the International Scientific Committee and organizing Symposia

Symposia of Commission 1.3:

C1.3-1\_Weathering and Soil formation in Response to Environmental Changes

## Pedometrics Commission (2010 through 2014)

**Chair: A-Xing Zhu**

**Vice Chair: Dick Brus**

The commission had a change of officers in April 2012. Dr. A-Xing Zhu, Professor of Geography, University of Wisconsin-Madison, became the chair and Dr. Dick Brus, Soil Centre, Alterra, Wageningen UR, The Netherlands, became the vice chair.

### 1. Conferences:

The commission held its regular inter-congress conferences (the Pedometrics Conference series, Pedometrics 2011 and Pedometrics 2013).

**Pedometrics 2011** was held in Trest, Czech Republic from August 30<sup>th</sup> through September 2<sup>nd</sup>, 2011 and was hosted by Dr. Luboš Borůvka, Professor of Department of Soil Science and Soil Protection, Czech University of Agriculture Prague. The conference attracted 81 participants from 27 countries with 49 oral presentations (including 3 keynote presentations) and 38 poster presentations. A dozen of participants also attended the pre-conference workshop (28 - 29 August) 'Bayesian Inverse Modelling in the Earth Sciences: Theory, Concepts and Applications' taught by Jasper Vrugt (the recipient of the 2<sup>nd</sup> Richard Webster Medal) and Sander Huismán. The best paper award in Pedometrics for 2009 was awarded to B. P. Marchant, S. Newman, R. Corstanje, K. R. Reddy, T. Z. Osborne & R. M. Lark, ('Spatial monitoring of a non-stationary soil property: phosphorus in a Florida water conservation area' *European Journal of Soil Science*, 60, 757–769). The best poster contest was conducted at the conference and the first place award went to J. Balkovič and the second was won by Akramkhanov and P. Roudier. A mid-conference field trip on local soils was provided. A special issue in *Geoderma* was published from this conference.

**Pedometrics 2013** was held in Nairobi, Kenya between August 29<sup>th</sup> and August 30<sup>th</sup>, 2013 and was hosted by Dr. Leigh Winowiecki, Soil Scientist and Dr. Keith Sheperd, Program Leader, International Center for Tropical Agriculture (CIAT), Nairobi, Kenya. The conference preceded by a workshop on analytical techniques for mapping soil properties. Gerard Heuvelink from ISRIC led a workshop highlighting geostatistical techniques, Tomislav Hengl from ISRIC showed products using the GSIF

package, and A-Xing Zhu from the University of Wisconsin (and his team of Jing Liu, Lin Yang and Fei Du) led a hands-on tutorial on using SOLIM. 56 participants attended this workshop and it was the largest data analysis workshop hosted by Pedometrics Commission! Over 65 participants, from 15 countries participated in Pedometrics 2013. The best paper awards for 2010, 2011, 2012 were given at the conference (2010: B.P. Marchant, N.P.A. Saby, R.M. Lark, P.H. Bellamy, C.C. Jolivet & D. Arrouays: 'Robust prediction of soil properties at the national scale: Cadmium content of French soils'. *European Journal of Soil Science*, 61,144–152; 2011: D.J. Brus and J.J. de Gruijter: 'Design-based Generalized Least Squares estimation of status and trend of soil properties from monitoring data'. *Geoderma*,164,172–180; 2012: R.M. Lark: 'Towards soil geostatistics'. *Spatial Statistics*, 1, 92–98). The best poster presentation contest was conducted and Alexey Sorokin won the contest. A post-conference overnight field trip was carried out for Kenya's semi-arid rangeland ecosystems.

The commission also **organized sessions** at the following conferences: **Global Soil Carbon in Madison** (June 3-6); **Soils in Spatial and Time** (Division 1) in Ulm, Germany (Sept 30-Oct. 3); Two symposia at **IUSS in Korea** in June (one on soil carbon monitoring and the other on uncertainty in pedometrics).

### 2. Finances:

#### Accounting:

The Commission had a balance of \$6,375USD to start with. An earning of \$1,827.73USD (Pedometrics'2013 contribution + Interests) was achieved during this term. The commission is yet to reimburse the amount of \$379.35USD paid by Jing LIU (current webmaster) for hosting [www.pedometrics.org](http://www.pedometrics.org). The final balance will be \$7,823.38USD.

#### Potential revenue:

Over this term, the only revenue for the Commission is from its Pedometrics Conference Series. Pedometrics 2013 contributed about \$1800 USD to the Commission.

#### Expenditures:

The current expenditures are the payments for hosting the Pedometrics.org website and for making the Webster Medals (which was not made during this term due to surplus Medals from the past term).

### 3. Commission Structure

In addition to the Chair and the vice Chair positions, the commission also has an advisory board which assists the Chair in decision making and an award committee in handling the Webster Medal Award and the Annual Best Paper Award. During this term the Chair also created a temporary Webmaster position (not elected but volunteered) to handle the technical aspects of managing [www.pedometrics.org](http://www.pedometrics.org), which normally would fall on the shoulders of the Chair and vice Chair who are elected positions but may not necessarily possess the technical skills to manage the website.

Two suggestions were made at the business meeting at Pedometrics 2013. These suggested are reported here. The first is to create a permanent treasurer position for the Commission and ask someone who is very stable in his/her working position to serve as the treasure. This treasurer is not an official position of IUSS which only elects the chair and vice-chair, but a position within the commission and for the convenience of the commission and under the direction of the Chair and vice Chair. This position would avoid the transfer of Commission funds between terms and avoid the loss of the precious Commission funds due to transaction fees charged by the Banks. The second suggestion is to create a permanent webmaster position with similar status in the Commission as the above mentioned treasure.

### 4. Commission Outlets

The commission currently has three channels for communicating with its members: 1) the biannually newsletter, Pedometron, for medium to long term issues (such as short articles) (the Chair wish to express the generous help from Dr. Murray Lark for his serving as the coordinator for this newsletter at beginning of this term); 2) the pedometrics website ([www.pedometrics.org](http://www.pedometrics.org)) for short term updates and job positings; 3) the pedometrics googlegroup for immediate communications. All three channels were effectively maintained and deployed during this term.

## Commission 1.6 Paleopedology

### 2010

- 1-6 August: Sessions at the 19<sup>th</sup> WCSS 2010 in Brisbane, Australia:
  - 1) Modelling soil formation in time and space (together with Commission Pedometrics)
  - 2) Impact of aeolian sediments on pedogenesis
  - 3) Soils in limestone environments
- 3-7 August: First International Field Summer School on Palaeopedology, West Siberia, Russia
- 5-10 September: Second International Geochronology Summer School, Bergün, Switzerland

### 2011

- 20-27 July: Two sessions at the INQUA Congress, Bern, Switzerland:
  - 1) Indicators of climatic changes in saprolite, paleosols, polygenetic soils, and soil sediments
  - 2) Reconstructing environmental impacts of climate changes from MIS 5 to present, based on terrestrial and lacustrine archives
- 28 July - 1 August: Conference 'Landscapes & Soils through Time', Hohenheim Castle, Stuttgart, Germany (together with Commission 1.2 Soil Geography)
- 6-10 August: 2<sup>nd</sup> International Summer School on Palaeopedology, West Siberia, Russia
- 4-9 September: 3<sup>rd</sup> Geochronology Summer School, Bergün, Switzerland
- 4-11 November: Round Table on Upper Paleolithic environmental research of Kostienki and Borshchevo (Russian Plain), Tübingen, Germany

### 2012

- 24-29 June: Session at Goldschmidt Congress Montreal, Canada, 'Records of climate change from terrestrial archives: paleosols and loess'
- 2-6 July: Session at Eurosoil Congress Bari, Italy: 'Soils and sediments as natural archives'
- 8-14 July: Session at International Micromorphology Meeting Lleida, Spain: 'Micromorphology for paleopedology, sediments and loess-paleosol sequences'
- 1-5 August: 3<sup>rd</sup> International Summer School on Palaeopedology, West Siberia, Russia
- 2-7 September: 4<sup>th</sup> International Geochronology Summer School, Bergün, Switzerland
- 15 September: 2<sup>nd</sup> Würzburger Loess Symposium: 'Palaeolandscapes of Middle and Late Pleistocene' Würzburg, Germany



- 10-12 October: Workshop 'Mediterranean palaeosols: evidence of the continuous interplay between climatic and event driven pedogenesis, with a special focus on the role played by dust inputs' Florence, Italy
- 5-6 November: Workshop 'Rates of soil forming processes – achievements, challenges, research gaps' Charlotte, North Carolina, USA

## 2013

- 3-6 June: IUSS Global Soil Carbon Conference in Madison, Wisconsin (USA); Curtis Monger (New Mexico, USA) represented Commission 1.6 with a talk on 'Soils as generators and sinks of inorganic carbon in geologic time'.
- 1-3 July: Field Workshop 'Reconsidering Loess in Northern Italy', Po Plain, Italy
- 30 July - 4 August: 4<sup>th</sup> International Summer School on Paleopedology, West Siberia, Russia
- 10-15 August: XII<sup>th</sup> International Symposium and Field Workshop on Paleopedology, Kursk, Russia
- 1-6 September: 5<sup>th</sup> International Geochronology Summer School, Bergün, Switzerland
- 24-28 September: Workshop and Field Trip 'Rates of Soil Forming Processes in Mediterranean Climate', University of Calabria, Italy
- 30 Sep - 5 Oct: Sessions at IUSS Division 1 Conference 'Soils in Space in Time', Ulm, Germany:
  - 1) Qualitative and quantitative indicators of environmental changes in paleosols and polygenetic soils
  - 2) Soil forming processes - rates, thresholds and changes in rates over time
  - 3) Soil morphological indicators of past environments (together with Commission 1.1)
- 3 and 5 October: Paleopedological field trip 'Landscape history, soil development and paleolithic caves along the rivers Blau and Danube', Germany
- 4 October: Workshop 'Soils and Dust in the Mediterranean', Ulm, Germany
- 16 November to 1 December: International Field Course 'Biodiversity, Ecosystems and Geoarchaeology of the Sonoran Desert', Sonora, Mexico

## 2014

- January: Special Issue of Catena 'Landscapes & Soils through Time' (together with Commission 1.2 Soil Geography and Division 1 Chair Karl Stahr)
- 7-12 April: Session at the General Assembly of EGU (European Geosciences Union) in Vienna/Austria, within the program group 'Soils as record

of the past': 'Use of soil records in geocology and landscape archaeology'

- 8-13 June: Sessions at 20<sup>th</sup> World Congress of Soil Science, Jeju Island, South Korea:
  - C1.6-1: Paleosols and Pedosedimentary Sequences for Understanding Impacts of Climatic Changes
  - C1.6-2: Quantitative palaeo-environmental proxies in paleosols
  - DS1: Micromorphological answers to palaeopedological and polypedogenetic questions (together with Commission 1.1)
- 19-22 June: International Course on Paleosols and Paleoenvironment, in Würzburg, Germany
- 30 July - 4 August: 5<sup>th</sup> International Summer School on Paleopedology, Volodarka, Siberia
- 30 August - 05 September: 6<sup>th</sup> International Geochronology Summer School, Bergün, Switzerland
- 1-6 September: XIII<sup>th</sup> International Symposium and Field Workshop on Paleopedology in Toruń, Poland
- 15-22 October: International Symposium and field trip on loess, soils and climate change in southern Eurasia, Gorgan, Iran
- 27-31 October: Workshop and Field Trip 'Soil-Forming Processes in Deserts', Mojave Desert, USA
- 25-28 November: Workshop and Field Trip 'Desert loess formation from source to sink and beyond', Negev Desert, Israel



# IUSS reports

## Report of Division 2

by **M.H. Gerzabek**

The main activity of Division 2 in 2013 was the organization of the world congress of soil science in Jeju. The division itself organizes one Inter-Divisional Symposium (Critical issues of radionuclide behavior in soils and remediation) and 2 Divisional Symposia (Soil development and soil properties and functions; Modelling of soil properties and processes – challenges and opportunities), which received a large number of abstract submissions. The division chair contributed to the organization of the IUSS Global Soil C Conference in Madison and the proceedings book and joined the executive council meeting there.

### IUSS Commission 2.1

#### Soil Physics

**Report by D. Or Comm. Chair.**

In preparation for the WCSS 2014, C2.1 proposed three symposia: (i) Quantifying evaporative fluxes from terrestrial surfaces; (ii) Biophysical aspects of soil function - exploring soil hidden frontiers (in retrospect should have been coordinated with Comm. 2.3); (iii) Hydroecological observatories and advances in soil measurements and sensors.

In addition, members of Comm. 2.1 organized two international conferences with complementary themes: (i) Soil Systems and Critical Zone Processes – Integrating Life Support Functions across Disciplines, March 2013, Monte Verita, Ascona, Switzerland <http://www.intersoil2013.ethz.ch/> (D. Or, Chair); and (ii) AGU Chapman Conference on Soil-mediated Drivers of Coupled Biogeochemical and Hydrological Processes Across Scales, October 2013, Biosphere, Tucson, Arizona <http://chapman.agu.org/soil-mediated/program/> (H. Vereecken, Chair). These conferences brought together students, junior and senior scientists from diverse backgrounds of climate, biogeochemistry, physics, ecology, agriculture, and hydrology with the central goal was to enhance

integration and more effectively articulate the role and value of soil. Comm. 2.1 members were active in the newly formed American Geophysical Union Technical Committee on Soil Systems and Critical Zone Processes (D. Or, co-Chair), and in launching a soil interest group within the Geological Society of America (M. Young, Chair). We hope that the formation and activities of these new platforms will raise visibility and appreciation of soil processes in these large scientific societies.

### IUSS Commission 2.2

#### Soil Chemistry

**Report by J. Chorover, Commission Chair**

A primary activity of Commission 2.2 (J. Chorover and T. Miano) was developing symposia and soliciting contributions as part of the WCSS 2014. The three Comm. 2.2 symposia at WCSS 2014 will address (i) biogeochemical reactivity of soils and sediments; (ii) soil organic carbon dynamics, stabilization and environmental implications; and (iii) behaviour and fate of pollutants entering the soil environment. In addition, Commission 2.2 co-sponsored a U.S. National Science Foundation (NSF) funded international workshop on 'Drilling, Imaging and Sampling the Depths of the Critical Zone', convened by Jon Chorover (University of Arizona, USA) and Cliff Riebe (University of Wyoming, USA), prior to the Geological Society of America meetings in Denver, CO (October 26-28, 2013). This workshop focused on how geophysical methods can be effectively deployed to inform on locations for subsurface drilling and sample collection in soil, saprolite and fractured rock for follow-on laboratory analytical purposes including chemical, physical and microbial characterizations.

## IUSS Commission 2.3

### Soil biology

**Report by K. Inubushi and E. Kandeler**

The main focus of the activity of comm. 2.3. soil biology of the past year was the planning of different sessions within the world conference of WCSS 2014. For example, Ellen Kandeler (Hohenheim, Germany) and Naiose Nunan (Thiverval-Grignon, France) proposed a session with the title 'Life in Soils – Distribution and Function of Soil Microorganisms in a Changing Environment'. The objective of this symposium is to improve the understanding of multi-scale distribution and function of soil microorganisms. Of particular interest is how the spatial distribution of microorganisms affects microbial functioning in soil and how this modulates the microbial response to different environmental changes (e.g. soil management, climate change). The keynote speaker of this session will be Claire Chenu (France).

For another example, Kiwamu Minamisawa (Tohoku University, Japan) and Masahito Hayatsu (NIAES, Japan) proposed a session entitled 'Modern Soil Biology for N and C Transformation: From Genes to Ecosystems'. The microbial transformation of N and C in soil ecosystems is a central issue in soil sciences. By recent significant advances of microbial ecology, we are able to access key microbes that transform N and C in soil ecosystems. The objectives of the session are to discuss (1) how to identify the key microbes in soils, and (2) how to obtain the general rules of microbial community shifts by environmental changes. Of particular interest are microbial N and C transformations relevant to greenhouse gas emission (N<sub>2</sub>O and CH<sub>4</sub>) in agricultural soil ecosystems. The keynote speaker of this session will be Keishi Senoo (Japan).

## IUSS Commission 2.4

### Soil Mineralogy

**Report by Dean Hesterberg, Commission Chair**

Members of Commission 2.4 (Soil Mineralogy) were involved in IUSS and non-IUSS sponsored meetings that advanced soil clay mineralogy. Dean Hesterberg (Chair) and Balwant Singh (Vice-Chair) helped to organize a session on 'Knowledge gaps and current understanding of the role of minerals in soil carbon sequestration' at the

IUSS Global Soil Carbon Conference held 3-6 June, 2013 in Madison, Wisconsin. An invited speaker was arranged (but inadvertently omitted from the program). Professor Singh attended the conference and co-authored a presentation on organo-mineral interactions in the mineralogy session, which included eight presentations. Dr. Singh also co-organized a symposium 'Soil Mineralogy' at the International Clay Conference that was held 7-11 July 2013 in Rio de Janeiro. He presented a keynote talk 'Surface charge properties of highly weathered soils-progress and constraints'. In addition, Commission 2.4 is developing three symposia for the 2014 WCSS meetings: (i) Mineralogy and Reactivity of Soil Microsites, (ii) Minerals as Regulators of Carbon Flow Through Soils, and (iii) Roles of Minerals as Suppliers and Regulators of Plant Nutrients.

## Commission 2.5

### Soil Chemical, Physical and Biological Interfacial Interactions


**Report by Siobhan Staunton, Commission Vice-Chair**

Antonio Violante retired in 2013 and the Commission thanks him for his commitment to the Commission and to ISMOM, including the highly successful conference in Naples and Capri in 2000. Siobhán Staunton and Qiaoyun Huang will ensure the ongoing activity of the Commission.

The sessions proposed by the Commission and accepted for the 2014 WCSS, convened by Thilo Rennert, Qiaoyun Huang and Siobhán Staunton received a large number of proposed presentations of excellent quality and we look forward to stimulating sessions in Korea. There will also be a session convened by Pil Joo Kim on the mechanisms controlling greenhouse gases, with a special issue planned in Geoderma.

1. Advances in techniques to investigate chemical, physical and biological interfaces in soil
2. How do interactions with organo-mineral surfaces alter the dynamics and properties of microbes and macromolecules in soil?
3. Mechanisms controlling greenhouse gas emissions from soils

Plans are now well underway for the organization of the next ISMOM (and 4<sup>th</sup> InterCongress of Commission 2.5), to be held at McGill University, Montreal, Canada, (July 5-10 2015) with theme Importance of soil interfaces for sustainable develop-



ment. The organizers are Jean-Philippe Bellenger, Carlos Monreal and Joann Whalen. The meeting will be associated with that of the Canadian Society of Soil Science, with some shared sessions and field trips. The following sessions will be held

1. Macro and micronutrients dynamics in soil
2. Dynamics of pollutants and contaminants in soil
3. Soil microbiology
4. Organo-mineral interaction in soil
5. Analytical and methodological advances in soil study

The scientific committee will soon invite keynote speakers for each of these sessions. More information is available on the web site which will be updated regularly.

<http://ismom2015.conference.mcgill.ca/indexOf50.html?p=home>



# IUSS reports

## Report of Division 3

**By Rainer Horn**

The commissions and working groups have organized several meetings in various countries and symposia in combination with the Eurosoil in Bari (July 2012), or the Triannual ISTRO Conference in Montevideo (September 2012) the East Southern Asian Federation for Soil Science in Bogor/Indonesia (November 2013) Kenya (Oktober 2013).

Based on the keynote lectures, voluntary papers and posters, a book about Soil Degradation was published 2013 in 'Advances in Geoecology, Catena Supplements, Vol 42, ISBN 978-3-923381-59-3' edited by Krümmelbein, Horn and Pagliai. A special Issue of the Japanese Soil Science and Plant Nutrition Journal on Soil degradation will be published in 2014 based on the commission meeting during the EUROSIL Meeting in Bari 2012.

The following short summary shall give an overview about further activities:

### 2011

#### **Commission 3.5:**

#### **International symposium 'Soil degradation and pedology' on August 8-10, in Tsukuba, Japan**

International symposium 'Soil degradation: control and remediation under globalization and global climate change', at Kandy, Sri Lanka, Comm 3.6: Global Forum on Salinization and Climate Change Oct 25-29, 2011 Valencia Spain. The conference was successfully celebrated with participation of experts from all over the world. There were in all 80 attendees from 33 Countries (4 from America, 9 from Africa, 10 from Asia, 10 from Europe) in attendance as well as representatives of five International Organizations and networks. The objectives of the Global Forum on Salinization and Climate Change were to:

1. Discuss, from a multi-disciplinary perspective, the problems associated with salinization and climate change
2. Exchange experiences of study cases of monitoring and measuring of soil and waters salinity, plants response and plants adaptation to adverse conditions

3. Discuss strategies for early prevention of the risk of salinization in sensitive areas
4. Strengthen the dialogue between policy makers, scientists and field experts
5. Formulate proposals of action intended to provide more information on the development of salinization under climate change threats, to determine vulnerable areas, to identify successful experiences to prevent or control salinization or increase productivity of already salinized areas and to identify reasons why some technologies are not taken up by farmers.

### 2012

#### **Com. 3.2: Symp.**

at the EGU Soil Science Section (in Vienna): Soil erosion and degradation on agriculture land EUROSIL Bari: Artificial Drainage and Water Quality - Processes and Management.

Soil Materials as Filter in Water Purification - Processes and Management


Com 3.6. Acid Sulfate Soils: 7<sup>th</sup> International Acid Sulfate Soil Conference, in Vaasa, Finland 2012

### 2013

IUSS Commission 3.6 held a workshop in Budapest Hungary, co-organized by Dr. Tibor Toth, vice chair Commission 3.6. The workshop 'Utilization and Protection of Halophytes and Salt-Affected Landscapes' included in the two days of program sessions and a field trip. Attendance was approximately 60-80 persons. The main focus of the workshop was related to halophytes, but the workshop also considered crop production and salinity control under irrigated conditions. The program included presentations on 18 most interesting topics, dealing with the full range of scientific questions dealt with in the commission.

6<sup>th</sup> Africa Soil Science Society (ASSS) and 27<sup>th</sup> Soil Science Society of East Africa (SSSEA) conference 25 October, 2013, Nakuru, Kenya

The conference was attended by over 200 participants from countries across Africa, Europe, America, Asia, and Australia. The focus of the conference was on the contribution of Land and Water Man-



agement (LWM) to food security in the context of climate change and in line with the strong of soil scientists across Africa to support: 1) the African Union's/NEPAD comprehensive African Agriculture Development Programme, in particular pillar no 1 'sustainable land and water management'; and 2) the Nairobi Declaration on the African Process for Combating Climate Change.

The 11<sup>th</sup> International Conference of the East and Southeast Asia Federation of Soil Science Societies was held in IPB International Conference Center (IPB-ICC), BOTANI SQUARE BOGOR - West Java, Indonesia on 21-24<sup>th</sup> October 2013.

Com 3.5 under the very active support of Prof. Dr.Kosaki organized the Symposium on Land Degradation and Remediation during the ESAFS meeting.(Hosted by IUSS). 18 lectures were given and 28 posters presented in a very well organized meeting. The presentations were intensely discussed.

#### **Plans about activities in 2014:**

The 3<sup>rd</sup> International Salinity Forum, Riverside CA USA, June 16-18 2014

The Soil Salinity Commission 3.6 is also co-sponsoring the 3<sup>rd</sup> International Salinity Forum in Riverside CA USA June 16-18, 2014. The Forum will be cosponsored by the University of California Division of Agriculture and Natural Resources, the Water Science and Policy Center University of California Riverside, USDA ARS Salinity Laboratory and the Giannini Foundation. The meeting is being co-organized by Dr. Suarez, chair of Commission 3.6 and Dr. Ariel Dinar, University of California Riverside. We are planning for 250-300 participants.

The Forum will focus on the challenge of managing saline waters and soils to sustain crop production and maintain environmental quality. Features that distinguish this 3 day Forum include: 1. Interdisciplinary focus; 2. Interactions between research, practice, and policy; 3. Wide international participation; 4. Increased representation from developing and developed countries.

# IUSS reports

## Report IUSS Working Group World Reference Base for Soil Resources

**Peter Schad, Chair**, [schad@wzw.tum.de](mailto:schad@wzw.tum.de)  
**Cornie van Huyssteen, Vice-Chair**,  
[vanHuyssteenCW@ufs.ac.za](mailto:vanHuyssteenCW@ufs.ac.za)  
**Erika Michéli, Secretary**,  
[Micheli.Erika@mkk.szie.hu](mailto:Micheli.Erika@mkk.szie.hu)

### 1. Scientific WRB Excursions

#### Norway, September 13 - 17, 2010:

Organized by the Norwegian Forest and Landscape Institute (Siri Svendgård-Stokke and colleagues), attended by 18 international and 11 Norwegian soil scientists. Route: Oslo to Trondheim, focus: hydromorphous soils. The presented soils belong to the following Reference Soil Groups: Planosol (2x), Albeluvisol (3x), Stagnosol, Cambisol (2x), Podzol, Histosol, Luvisol.

#### Poland, August 30 - September 3, 2011:

Organized by the Wrocław University of Environmental and Life Sciences (Cezary Kabala and colleagues), attended by 22 international and 8 Polish soil scientists. Area: Silesian Lowlands and Karkonosze Mountains, focus: soils with clay translocation and soils developed on stratified parent materials. The presented soils belong to the following Reference Soil Groups: Luvisol (2x), Alisol (3x), Cambisol (2x), Albeluvisol (4x), Regosol, Gleysol, Chernozem, Podzol (3x).

#### Australia, November 26 - 28, 2012:

Organized by Ben Harms, David Rees, Mark Imhof and colleagues, attended by 12 international and 9 Australian soil scientists (see photo below). Area: Victoria, focus: sodic texture-contrast soils. The



presented soils belong to the following Reference Soil Groups: Alisol (2x), Lixisol, Vertisol, Stagnosol, Planosol (2x), Solonetz (5x).

Many participants also attended the excursion through Tasmania, November 29 - December 2, 2012, pre-conference tour of the joint SSA (Soil Science Australia) and NZSSS (New Zealand Society of Soil Science) conference. Topic: 'Soils in the landscape – managing soils for agriculture and the environment in Tasmania'.

The results of these excursions allowed a better accommodation of Australian soils within the WRB system in the 3<sup>rd</sup> edition of WRB.

### **Russia, August 17 - 23, 2013:**

Organized by Roman Desyatkin, Sergey Goryachkin, Pavel Krasilnikov and colleagues from Yakutsk and Moscow, attended by 17 international and 16 Russian soil scientists. Area: Republic of Sakha (Yakutia), focus: ultra-continental permafrost soils. The presented soils belong to the following Reference Soil Groups: Cryosol (4x), Solonetz (5x), Solonchak, Fluvisol, Cambisol (2x), Histosol, Stagnosol (2x). The results of this excursion were directly used for the 3<sup>rd</sup> edition of WRB for a better classification of ultra-continental permafrost soils (see photo below).

## **2. Participation at International Meetings**

At many meetings, WRB was well represented by several oral and poster presentations. The following meetings are to be mentioned especially:

### **Stuttgart (Baden-Württemberg, Germany), July 29 - August 1, 2011:**

International Paleopedology and Soil Geography Conference, University of Hohenheim. By IUSS Commissions Paleopedology and Soil Geography. Post congress field trip in the Swabian Alb and the Black Forest. This excursion proved that WRB is well suitable to classify paleosoils although some suggestions for further improvement were under discussion.

### **Mar del Plata (Buenos Aires, Argentina), April 16 - 20, 2012:**

'Congreso Latinoamericano de la Ciencia del Suelo'. Symposium 'Atlas de Suelos de América Latina y el Caribe'.

### **Lincoln (Nebraska, USA), June 11 - 14, 2012:**

'Soil Classification 2012: Towards a Universal Soil Classification System', by IUSS Commission Soil Classification. 2 days field trip included.





#### **Bari (Puglia, Italy), July 2 - 6, 2012:**

'Eurosoil', by European Confederation of Soil Science Societies. Symposium 'Soil classification: Using WRB for providing soil information and making harmonized maps on a European level'.

#### **Kursk (Kursk and Voronezh Regions, Russia), August 10 - 15, 2013:**

International Symposium and Field Workshop on Paleopedology. By IUSS Commission Paleopedology. Discussion of classification of paleosols in the WRB, during the conference and in the field. 4 days field trip included.

#### **Toruń (Kujawsko-Pomorskie, Poland), September 16 - 20, 2013:**

'SUITMA 7', by IUSS Working Group on soils in urban, industrial, traffic, mining and military areas. Symposium on the classification of Technosols and Technic subgroups of other Reference Soil Groups. The conference included a 2 days mid-conference tour and a 3 days post-conference tour.

#### **Ulm (Baden-Württemberg, Germany): September 30 - October 4, 2013:**

'Soils in Space and Time', by IUSS Division 1. Workshop: 'Finalizing the 3<sup>rd</sup> edition of WRB'. 1 day field trip included.

### **3. Making Maps**

The qualifier sequences according to WRB (2006) are only suitable for soil classification and not for making map legends. The need to have different qualifier sequences for map legends was served with the 'Guidelines for constructing small-scale map legends using the WRB', published electronically in January 2010. By allowing some hierarchy, the qualifier sequences in these Guidelines are more suitable for map legends, and the publication of the Guidelines started a wave of map-making. The Joint Research Centre of the European Commission prepared two new atlases presenting soil maps using WRB according to the Guidelines: Soil Atlas of Africa (2013) and Atlas de Suelos de América Latina y el Caribe (2014). With the 3<sup>rd</sup> edition of the WRB (2014), the Guidelines are obsolete (see below).

### **4. Development of the 3<sup>rd</sup> edition of the WRB**

The result of all our activities during the last years is the 3<sup>rd</sup> edition of the WRB to be launched at the World Congress of Soil Science in Jeju, 2014. The citation is:

IUSS Working Group WRB. 2014. World Reference Base for Soil Resources 2014. International soil classification system for naming soils and creating legends for soil maps. World Soil Resources Reports No. 106. FAO, Rome.

The major changes comparing the 3<sup>rd</sup> edition with the 2<sup>nd</sup> edition are:

- The qualifier sequences and the rules for qualifier usage are now suitable for both classifying soils and creating map legends. They are now subdivided into principal qualifiers (ranked for every Reference Soil Group, RSG, in order of relevance) and supplementary qualifiers (not ranked).
- The only change at the Reference Soil Group (RSG) level is to replace Albeluvisols by Retisols. Retisols have a broader definition and include the former Albeluvisols.
- Fluvisols have moved down in the key to be the second last RSG. The Umbrisols are now placed directly after Phaeozems. The following RSGs switched their positions: Solonetz and Vertisols, Durisols and Gypsisols, Cambisols and Arenosols. The soils characterized by an argic horizon now have the following order: Acrisols – Lixisols – Alisols – Luvisols.
- The definition of Gleysols has been broadened.
- The definition of Acrisols, Alisols, Luvisols and Lixisols has been narrowed by setting the lower depth limit for the occurrence of the argic horizon uniformly to 100 cm. This implicitly widens the definition of Arenosols.
- Base saturation – used to separate Acrisols from Lixisols, Alisols from Luvisols and the Dystric qualifier from the Eutric qualifier – is now defined as the sum of exchangeable bases (by 1 M NH<sub>4</sub>OAc, pH 7) plus exchangeable Al (by 1 M KCl, unbuffered).
- Three new diagnostic horizons have been defined. The chernic horizon replaces the voronic horizon and is required for Chernozems. The pretic horizon allows a better accommodation of 'Terra preta de Indio' within the Anthrosols. The protovertic horizon (the former vertic properties) describes layers with weakly expressed shrink-swell features.

- The anthric, takyric and yermic horizons have been changed to diagnostic properties.
- 'Retic properties' are a newly introduced diagnostic property in order to characterize Retisols. 'Albeluvic glossae' replaces 'albeluvic tonguing'. 'Shrink-swell cracks' are a new diagnostic property that is useful for the definition of Vertisols and related soils.
- Some new names have been created: 'protocalcic properties' (instead of 'secondary carbonates'), 'sideralic properties' (instead of 'ferralic properties'). The 'gleyic colour pattern' and the 'stagnic colour pattern' are now 'gleyic properties' and 'stagnic properties' respectively. The 'abrupt textural change' has been renamed 'abrupt textural difference'; and 'lithological discontinuity' is now 'lithic discontinuity'.
- The albic horizon has been redefined as 'albic material'.
- 'Soil organic carbon' has been introduced to separate pedogenetic organic carbon from organic carbon that satisfies the diagnostic criteria of artefacts. 'Dolomitic material' is a new diagnostic material. 'Hypersulfidic material' and 'hyposulfidic material' are introduced as specific varieties of sulfidic material.
- 'Technic hard rock' has been renamed 'technic hard material'.
- Major improvements have been made in the definitions of the argic and natric horizons, in the depth criteria of the mollic and umbric horizons and in the separation between organic and mineral materials.
- Several new qualifiers have been added to give more information about some important soil properties. Precise rules have been introduced for the use of specifiers to define subqualifiers.
- The WRB should be able to express characteristics regarded as important in national systems. Some amendments have been made to allow for the better representation of soil units in the WRB, for example from the Australian and the Brazilian systems.
- Some parts of the world had not previously been well represented in the WRB system before, e.g. ultra-continental permafrost soils. The system has been enlarged to allow a better classification of these soils.
- Efforts have been made to improve the clarity of definitions and terminology.



# IUSS reports

## Report of the Standing Committee on Statutes and Byelaws

By **Donald L. Sparks, Chair**

During the past year, a number of changes have been approved by Council related to the management and leadership of IUSS. This necessitated a number of revisions in the Statutes and Bye-Laws. Council approved the establishment of a Secretariat, who will manage the activities of the IUSS and support the organizers of the World Congresses of Soil Science.

With the establishment of the Secretariat, a Vice President, whose responsibility is to provide leadership and organization for the World Congress of Soil Science, the IUSS President, who will be responsible for the scientific leadership of the IUSS, and the establishment of a President-Elect and Past President, there is no longer the need for an IUSS Secretary-General and Deputy Secretary-General. These changes are reflected in the revised Statutes and Bye-Laws. The duties of the Secretariat, President, President-Elect, and Past President are listed in the revised Bye-Laws and are given below.

### **Duties of Secretariat**

The Secretariat of IUSS will work closely with the President. In the revised Bye-Laws the specific tasks of the Secretariat are listed and include: administrative support of the President in leading the IUSS; administrative support for the divisions and commissions; contact point for the members of the IUSS and cooperating partners; coordination of the correspondence of the IUSS; maintenance of the IUSS website; production of the IUSS newsletter and IUSS Bulletin; administrative support associated with collaborations with other international unions and organizations; and acquisition of projects for capacity building. The Secretariat will be assisted by an Assistant Secretariat.

### **Duties of President:**

The **President** is the public face of the Union, represents IUSS in meetings (e.g., ICSU, UN bodies, national academies) and other fora; attends Na-

tional Soil Science meetings; articulates the value and importance of soils and the discipline of soil science; presents public statements (including press releases) which are agreed by the Union; and is responsible for the implementation of the IUSS Strategic Plan.

### **Duties of President-Elect**

The President-Elect is the first deputy of the President, is responsible for fund raising, plays a key role in outreach with the Unions, among Member Societies and to the wider community, and is a member of the Budget and Finance Committee.

### **Duties of Past- President**

The Past-President is the second deputy of the President, is the IUSS liaison with the organizing committee of the next World Congress of Soil Science (principally with the Vice President), and serves as a link within the President's Committee to the Centenary Project in 2024 and for future projects.

### **Duties of Vice President**

The role of the Vice President (Congress) is to lead the National Committee of the host country for the World Congress of Soil Science, providing leadership in the development of the scientific programme and the logistical aspects of the WCSS. The host country will nominate a person who will be confirmed by Council. In addition, the Vice President (Congress) will be a member of the President's Committee. The Vice President (Congress) serves from the end of the preceding Congress to the end of the Congress for which he/she is elected.

Other changes in the Statutes and Bye-Laws deal with annual subscription rates for full and sustaining members.



# IUSS reports

## Report of the Standing Committee for Presidential Elections

**By Roger Swift, Chair**

During the 19<sup>th</sup> WCSS which was held in Brisbane in 2010, the IUSS Council decided to change the nature and terms of the IUSS Presidency. The main change was that the position of President would no longer be linked to the country hosting the World Congress and that the period of office would no longer be four years. Instead, the positions of President-Elect, President and Past-President were established and would be filled from the Candidates through an election by Council. The person elected would serve successively in each of the three Presidential positions for a period of two years, giving a total of six years in office.

Following this decision a Standing Committee for Presidential Elections was established to implement and oversee the nomination and election processes. The initial task of this Committee was to prepare documentation setting out; the selection criteria, the nomination process, the timelines and the supporting documentation required.

The first election was held in 2012 with two candidates and the vote by Council was carried out electronically which provided all eligible Council members the opportunity to vote. The successful candidate was Prof Rainer Horn from Kiel, Germany, who currently holds the position of President-elect. The second election is currently in progress. At the Council Meetings in Jéju, it is proposed that further changes will be made to the Statutes and Byelaws so as to complete the break from date on which a Congress is held and to align the terms of office of the Presidential positions with Calendar years.



# IUSS reports

## Report of the Standing Committee on Awards and Prizes

By **M.B. Kirkham**

The **International Union of Soil Science-Dokuchaev Award** is made for major research accomplishments resulting from basic research in soil science. It consists of an engraved medal, a certificate, an honorarium of US\$ 1000, and financial support to attend the presentation at the World Congress of Soil Science.

The **International Union of Soil Science-Liebig Award** recognizes outstanding contributions in applied soil science research that contribute to new discoveries, techniques, inventions, or materials that increase food security, improve environmental quality or improve conservation, land, and water development, or contribute to other areas covered by the divisional structure of International Union of Soil Science. The award consists of an engraved medal, a certificate, an honorarium of US\$ 1000, and financial support to attend the presentation at the World Congress of Soil Science.

The awards are given once every four years and are presented at the World Congress of Soil Science. Nominations are due one year before the beginning of the World Congress of Soil Science. Therefore, the most recent nominations were due June 8, 2013. The exact information needed for each nomination is given on the Web page of the International Union of Soil Science (<http://www.iuss.org>). On the Home Page, click on 'IUSS Awards and Prizes – Information,' and the format for nominations for the Dokuchaev and Liebig Awards is given.

Members of the current committee are (in alphabetical order): Winfried Blum (Austria); Sergei Goryachkin (Russia); Di Hong (New Zealand); M. B. Kirkham (USA) (Chair); David Rimmer (United Kingdom); Secretary General (Alfred Hartemink) (USA); and Fusuo Zhang (People's Republic of China).

Each committee member ranked the nominees from 1 to the maximum number of nominees received for each award. Number 1 was the first choice; Number 2 was the second choice; and so on. Therefore, the nominee for each award with the lowest number was the person chosen to receive the award.

The committee received outstanding nominations from Australia, Asia, Europe, North America, and South America. The two people selected, who will receive the awards at the World Congress of Soil Science in Jeju, South Korea, June 8-13, 2014, are the following:

Dokuchaev Award: Alex McBratney, Professor of Soil Science at the University of Sydney in Australia. His nominator was Stephen Nortcliff in the United Kingdom. Information about Dr. McBratney can be found at:

<http://sydney.edu.au/research/opportunities/supervisors/607>

Liebig Award: Magdi Selim, Professor of Soil Physics at Louisiana State University in the U.S.A. His nominator was Brent E. Clothier in New Zealand. Information about Dr. Selim can be found at:

<http://www.lsuagcenter.com/en/communications/authors/MSelim.htm>

The presentations in Jeju, South Korea, will be the third time that each award has been given. Previous recipients of the Dokuchaev Award were Victor O. Targulian in 2006 and Dan H. Yaalon in 2010. Previous recipients of the Liebig Award were Donald L. Sparks in 2006 and Rattan Lal in 2010.

# IUSS Alerts December 2013 - April 2014

International Union of Soil Sciences



## Information for and from the global soil science community

**IUSS Alerts** are e-mailed to more than 12,000 people in over 100 countries. If you have information to share please send it [Hartemink@wisc.edu](mailto:Hartemink@wisc.edu) Below are the still relevant contributions that appeared in the IUSS Alerts between December 2013 and April 2014.

### 2015 Year of the Soil

The United Nations has approved 2015 as the Year of the Soil. This will be an unique opportunity to raise the profile of soils and celebrate soil science. The IUSS has formed an ad-hoc committee that will coordinate and organize all activities for this special year.

Many activities are being planned and please submit these activities and all your ideas to the IUSS President elect Rainer Horn: [rhorn@soils.uni-kiel.de](mailto:rhorn@soils.uni-kiel.de)

### Future earth

Future Earth is a 10-year international research programme that will provide critical knowledge required for societies to face the challenges posed by global environmental change and to identify opportunities for transformations towards global sustainability. Future Earth was launched in 2012 by the Science & Technology Alliance for global sustainability comprising the International Council for Science (ICSU), the International Social Science Council (ISSC), UNESCO, UNEP, the United Nations University, the International Group of Funding Agencies (IGFA) and the Belmont Forum of principals, and the World Meteorological Organisation (WMO). Future Earth Engagement Committee has just been published: [www.icsu.org/news-centre/news/call-for-applications-for-future-earth-engagement-committee](http://www.icsu.org/news-centre/news/call-for-applications-for-future-earth-engagement-committee)

### ICSU GeoUnions website launched

IUSS has been an active member of ICSU for over 20 years. In the last decade we have worked successfully with other GeoUnions (Geologists, Geophysicists, Astronomers, Geographers.) to ensure that 'geo-related' topics are given a good level of

exposure within ICSU. To facilitate the appropriate focus on 'geo' areas of science the GeoUnions group has met at least annually. Whilst we regularly exchange newsletters and details of meetings it was agreed to establish a website hosted by ICSU. The website is: <http://icsu-geounions.org> The responsibility for maintenance of the website is to be taken by the International Union of Geodesy and Geophysics.

### IUSS Commission 1.4 Soil Classification Newsletter

The chair and vice-chair of Commission 1.4 Soil Classification have released Newsletter (see [www.iuss.org](http://www.iuss.org) IUSS Newsletters). The 46 page newsletter contains a call for soils data to assist the Universal Soil Classification working group to conduct a meaningful numerical analysis of existing great groups. There are critical needs for data on cold soils and tropical soils. There are reports and abstracts from past meetings and a summary of soil classification publications from 2013. The classical soil genesis paper by Roy Simonson is included for review.

### Paleopedology Newsletter 2014

The Newsletter gives an overview about paleopedological events in 2013 and informs about activities in 2014. In the beginning, it commemorates three great scientists who greatly contributed to our understanding of soils and paleosols and who passed in the past months, namely Donald L. Johnson, Vitaly A. Demkin and Dan H. Yaalon. The newsletter includes reports of ISFWP-XII (XII<sup>th</sup> International Symposium and Field Workshop on Paleopedology) in Kursk/Russia; AEOMED and RAISIN Work-

shops; other activities at international conferences; summer schools in 2013. It provides information and links to websites of upcoming events such as ISFWP-XIII in Toruń/Poland in September 2014, RAISIN and AEOMED Workshops in Oct/Nov 2014; other upcoming international conferences, summer schools and short courses. Finally, it presents the content of the recently published Catena Special Issue 'Landscapes & Soils through Time'.

## Upcoming Conferences and meetings

### XX Latinoamerican Soil Science Congress

*9-15 November 2014, Cuzco, Peru*

XX Latinoamerican Soil Science Congress will be organized by the Latinoamerican Soil Science Society (SLCS) [www.slcs.org.mx](http://www.slcs.org.mx) and the Peruvian Soil Science Society (SPCS) in Cuzco Peru from 9-15 November 2014. The website is [www.xxcongresolatinoamericanodesuelosperu.org](http://www.xxcongresolatinoamericanodesuelosperu.org) and the email for questions is [clacs2014@xxcongresolatinoamericanodesuelosperu.org](mailto:clacs2014@xxcongresolatinoamericanodesuelosperu.org). Invited speakers will be Dr. Pedro Sanchez (World food Prize 2002), Dr. Rattan Lal (Ohio University), Dr. Rainer Horn (elect president of IUSS), Dr. Ronald Vargas (FAO-Rome), Dra. Cheryl Palm (Columbia University), Dr. Eddie Schrevens (Leuven University Belgium), Dr. Patrick Lavelle (Paris University), Dra. Carmen Felipe-Morales (UNALM University, Peru). All are welcome to participate and to learn about our Inca culture.

### XII Congress of the Croatian Society of Soil Science

*September 22-26, 2014, Dubrovnik, Republic of Croatia*

The XII Congress of the Croatian Society of Soil Science will be held in Dubrovnik, in the independent Republic of Croatia, the 28<sup>th</sup> EU member, from September 22-26, 2014. In the same year we celebrate 83 years of active and organized activity of Croatian soil scientists at home and abroad. Under the theme of 'Sustainable soil management for food and environment safety', the aim of the XII Congress of Croatian Society of Soil Science is to bring together the leading researchers and specialists in order to share their experiences, research results and discuss the already adopted and devised new solutions on all aspects of sustainable soil management for food and environment safety. More information see: [www.congress-csss.org](http://www.congress-csss.org)

### II Curso latinoamericano – Micromorfología de suelos y técnicas complementarias (CLMSTC)

*4 to 10 August 2014, Bogota (Colombia)*

II Curso latinoamericano – Micromorfología de suelos y técnicas complementarias (CLMSTC) will be held in Bogota (Colombia) from 4 to 10 August 2014. The Objectives are to extend the knowledge of micromorphology to the Spanish-speaking audiences in Latin America (it is a course taught in Spanish). These course is addressed to persons belonging to the areas of agronomy, geography, geology, archeology, biology and many other fields of environmental sciences. This course is part of IUSS Commission 1.1 Soil Morphology & Micromorphology activities. Invited lecturers: C. Mallol, R. Poch, G. Stoops, K. Robertson S. Gáviria, J.C Loaiza.

Information: [jcloaiza@unal.edu.co](mailto:jcloaiza@unal.edu.co);

[willyposada@yahoo.es](mailto:willyposada@yahoo.es)

### ELS 2014 - the Earth Living Skin: Soil, Life and Climate Changes

*21 - 25 September 2014 in Nova Yardenia, Italy*

Under the auspices of the Soil System Sciences Division of the European Geosciences Union ([www.els2014.eu](http://www.els2014.eu)). The Conference Series set up the ambitious goal of studying soils as the main environmental interface where atmosphere, hydrosphere, biosphere and geosphere design incredible living systems with time. Scientists with a temporary or consolidated interest for these fields of science are warmly invited to participate to this Conference, to bring their knowledge or their doubts, thus contributing to create a permanent forum of stimulating scientific debates, a good platform for exchanging new ideas, and an occasion for young scientists to meet colleagues from different disciplines and develop collaboration.

### International Conference on Biogeochemical Processes at Air-Soil-Water Interfaces and Environmental Protection

*June 23-26, 2014, Imola, Italy*

The objective of the Conference is to promote exchange and discussion on the complex processes occurring at the Air-Soil-Water interfaces, from the molecular scale to the landscape, in a perspective of environmental protection. The Conference will consist of invited lectures, scientific sessions with oral and poster presentations and a field and cultural excursion. The ESSC will provide 2 grants of

500 Euro each for 2 young researchers (less than 35 years old) working in a European country, to support their participation to the International Conference.

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

### **XIII International Symposium and Field Workshop on Paleopedology**

*Poland, 1-6 September 2014.*

The meetings is organized by the 'Paleopedology Comission IUSS and Polish Society of Soil Science. The meeting will be held in Northern Poland, the historical town Torun (famous astronomer Nicolaus Copernicus birth place) and its vicinity. All aspects of paleosols studies are welcome to be presented during thematically focused scientific sessions. Evolution of typical postglacial landscapes (moraine, outwash, melt-ice, inland dune) and soils of that area during the Late Pleistocene and Holocene is the main subject presented during two two-days field sessions (1-2 and 5-6 September).

The conference website is:

[www.home.umk.pl/~paleopedology2014/](http://www.home.umk.pl/~paleopedology2014/)

### **6<sup>th</sup> World Congress on Conservation Agriculture (WCCA)**

6<sup>th</sup> World Congress on Conservation Agriculture (WCCA) in Winnipeg, Manitoba, will promote the practical application of conservation practices to improve agricultural sustainability. From June 22-25, conservation-minded individuals from around the world will meet for the first WCCA in North America. The program highlights the latest developments in research, farmers' success stories and the policy issues that confront governments and societies around the world. Register now for discounted prices.

For more information, visit [www.wcca6.org](http://www.wcca6.org)

### **6<sup>th</sup> Global Workshop on Digital Soil Mapping**

*11-14 November, 2014, Nanjing, China*

The four day conference includes three days of indoor sessions and one day of field excursion on Nov. 13<sup>th</sup>. The early-bird registration and submission of abstract ends on June 30, 2014, while the regular registration and full-length paper submission ends on Sep. 30, 2014. The full-length papers will be published in a monograph by Springer after peer review.

More details at <http://dsm2014.csp.escience.cn>

### **Biogeochemical Interfaces in Soil – Towards a Comprehensive and Mechanistic Understanding of Soil Functions**

*6-8 October 2014, Leipzig, Germany*

During pedogenesis, mineral, organic, and biological soil components are 'glued' together into a three dimensional, large, and heterogeneous biogeochemical interface (BGI), which properties affects fundamental soil processes and functions. Yet, visualizing and characterizing BGIs architecture, identifying factors controlling their formation and maturation, and examining processes occurring at these interfaces have been challenging so far. Integrating advanced instrumental analytical tools with theoretical models may help to unravel BGIs composition and properties, and ultimately link their processes to functions. Scientists from soil-related reserach intrigued in gaining a mechanistic understanding of the formation and functioning of soils are heartily invited to submit their contributions.

[www.spp1315.uni-jena.de](http://www.spp1315.uni-jena.de)

### **XI International Symposium on Enchytraeidae**

The XI International Symposium on Enchytraeidae will be held in Georgsmarienhütte near Osnabrück, Germany, July 25-27, 2014. Enchytraeids or 'potworms' are small relatives of earthworms and abundant in soils worldwide. They influence carbon dynamics and nitrogen mineralization and improve soil structure. Species-specific preferences towards factors such as pH and moisture create site-specific species assemblages and make enchytraeids good soil biological indicators. The symposium has a traditional focus on taxonomy and applied soil ecology, but actually it covers all aspects of the biology of enchytraeids, including developmental biology, physiology, phylogeny, and ecotoxicology.

More information see: [www.ect.de](http://www.ect.de)

### **16<sup>th</sup> World Fertilizer Congress**

*October 20-24, 2014. Rio de Janeiro, Brazil*

Embrapa, Esalq-USP and the International Scientific Center of Fertilizers (CIEC) will host the 16<sup>th</sup> World Fertilizer Congress. The theme is 'Technological Innovation for a Sustainable Tropical Agriculture' and the main topics of discussions include: controlled release fertilizers; micronutrients and secondary macronutrients in NPK fertilizers; fertilizers and environmental impacts; new routes for fertilizer production; organic based fertilizers and biofertilizers; direct use of agrominerals.

More info here: [www.16wfc.com/presentation](http://www.16wfc.com/presentation)





### **Global Soil Security Symposium**

*May 18-20, 2015. Texas A&M University, USA*

Soil security involves maintenance and improvement of the soil resource to produce food, fiber, and fresh water, to contribute to sustainable energy production, adapt to climate changes, and to maintain biodiversity and function in ecosystems. Those concerned with achieving soil security recognize that attainment will involve scientific, economic, and political engagement to effectively and credibly inform political and legal frameworks. Texas A&M University will be the first of three locales for the Soil Security Forum. The next two are planned for Europe and Oceania.

More information here: <https://globalsoilsecurity.tamu.edu>



# New IUSS-working group on modelling of soil and landscape evolution

Research on the development of soils in their landscape context is not new and attempts to model soilscape genesis can be traced back to Kirkby (1977). At that time, knowledge to quantify soil processes like clay translocation, bioturbation and organic matter complexation was still limited. As a consequence most research focused on modelling landscape development.

Until recently, in most landscape models soil evolution was limited to soil production by weathering processes and soil redistribution by geomorphic processes. Only recently other processes like clay translocation were added using empirically-based model formulations. Though surface soil redistribution processes in current models may be driven by water flow, subsurface migration/accumulation and weathering processes are usually not. This can be considered a drawback to their prospective use, e.g. in the context of global change studies. The (pedometric) soil science community has shown activity in the development of these landscape models, but major actors are geomorphologists, hydrologists and geologists.

Modelling of water-flow driven soil change has a long history, but was for a long time topical: many solute transport models were constructed to evaluate leaching hazards of biocides, acidification, eutrophication, etc. Since a few years, integrated mechanistic models are in development that describe several aspects of soil genesis (bioturbation, C-sequestration, clay migration, decalcification, etc.) at multimillennium temporal extents. Due to computational constraints, such models are currently limited to the pedon scale, although by distributed modelling some soilscape genesis studies have been done. Major actors are pedometricians, paleopedologists and geologists.

At this time there is a gap between the 2 approaches: the landscape modellers need more detailed and

mechanistic process descriptions while the pedon-scale modelers need the incorporation of matter fluxes (3-D) at the landscape scale in their models. Development issues for both groups are similar: improvement of model completeness, of computational efficiency and model testing. This was a good reason to propose a working group on modelling of soil and landscape evolution. The working group is envisaged to become a modelling community of (palaeo-, hydro-)pedologists, pedometricians, geomorphologists and (hydro-)geologists. The working group will organize sessions at conferences, organize hands-on workshops with model demonstrations and also topical workshops on model calibration and validation in soilscape genesis context. An annual newsletter is foreseen.

Interested? Find more information on <http://soil-landscape.org> and join the group!

*Peter Finke, Tom Vanwalleghem, Daniela Sauer, Arnaud Temme and Budiman Minasny*

# 10 Years Soil of the year

By H-P Blume

A board of curators of the *German Society of Soil Science* (DBG), the *Federal Association of Soil* (BVB) and the *Federal Office of Environment* (UBA) defined since ten years the *Soil of the Year*. The nomination followed suggestions of soil scientists of a *Federal Country*. In the *Office or Embassy* of this country in Berlin the *Soil of the Year* was presented at 5<sup>th</sup> of December, the *Day of the Year*, under the patronage of the president or a member of the government team by Monika Frielinghaus, speaker of the board, together with the recommendators. They describe the conditions, distribution, land use and protective worthiness of the soil. The layout of the stamps was produced by Gregor Baron, Berlin, Germany. The following soils were presented until now:

Year	German name	International name	Country	Stamp number
2005	Schwarzerde	Chernozem	Sachsen-Anhalt/Niedersachsen	8003298
2006	Fahlerde	Albeluvisol	Brandenburg	8007586
2007	Podsol	Podzol	Niedersachsen	8013148
2008	Braunerde	Cambisol	Austria	8018191
2009	Kalkmarsch	Calcaric Fluvisol	Schleswig-Holstein	8022073
2010	Pararendzina/Trümmerschutt	Urbic Technosol	Berlin	8022587
2011	Auenboden/Vega	Fluvisol Cambisol	Baden-Württemberg	8027956
2012	Niedermoor	Rheic Histosol	Brandenburg	8030771
2013	Plaggenesch	Plaggic Anthrosol	Niedersachsen	8103213
2014	Rigosol/Weinbergsboden	Hortic Anthrosol	Rheinland-Pfalz	8108102

## Soil of the Year 2014

### Vineyard soil (Aric/Regic Anthrosol)

**Proposal and material:** Ernst- Dieter Spies, Ulrich Dehner, Stephanus Sauer, alle LGB Rheinland-Pfalz, Mainz, Sören Thiele-Bruhn, Reimund Schneider, Christoph Emmerling, alle Uni Trier, FB Bodenkunde, zusammen mit dem Kuratorium Boden des Jahres.

**According to the German soil systematics the most vineyard soils are classified as Rigosols. Following the World Reference Base for Soil Resources (WRB) they are termed as Aric Anthrosols (also Regic or Terric Anthrosols).**

### What are the features of Vineyard soils?

The repeated deep tillage is characteristic of many vineyard soils – the German term for this is ‘Rigo-

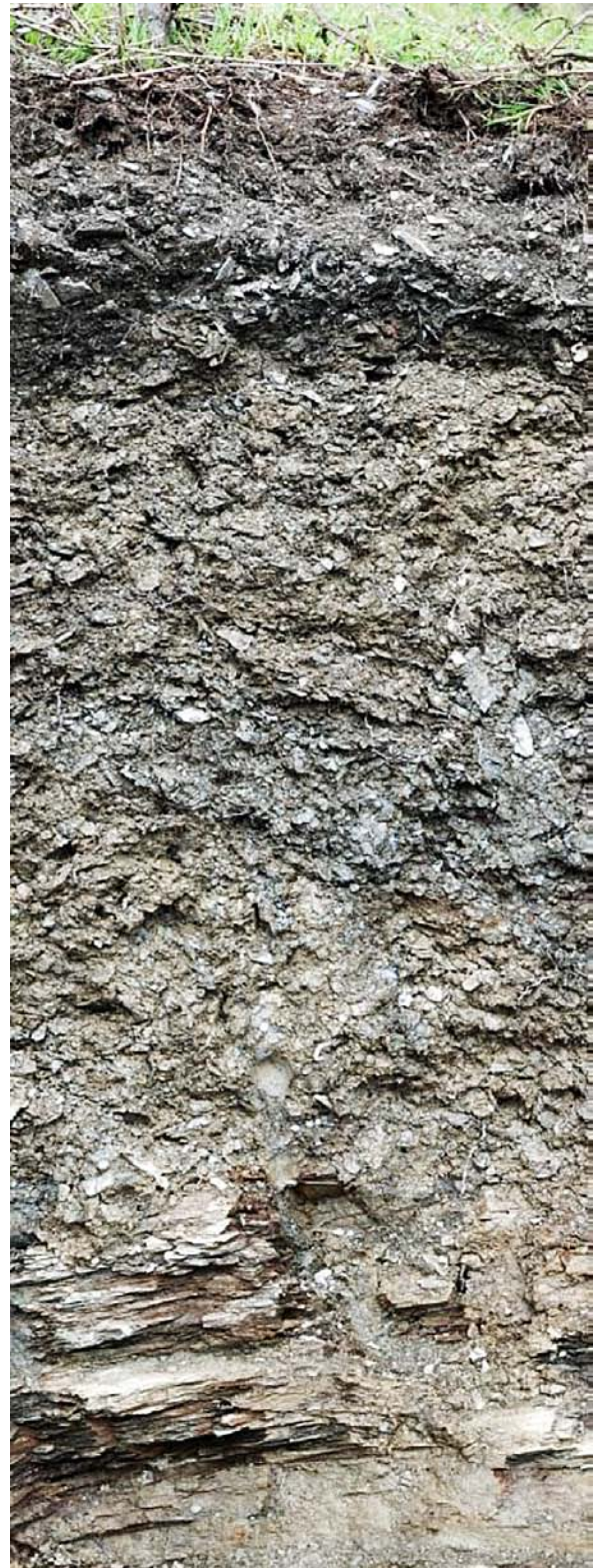
len’. Often abundant organic fertilizer and soil material, in earlier times also household wastes were added to the soils. Hence, a mixed soil zone developed the typical R horizon. The aim of the repeated deep tillage is the improvement of the water and nutrient supply of the grapevine. In some cases repeated deep tillage was also performed at sites with different land use such as tree nursery and horticulture.

### How do Rigosols develop in vineyards?

In many cultivation regions the formation of Rigosols dates back to Roman times. Intensive deep tillage prior to replanting of vines soils were dug over and loosened down to a depth of 1 m. From the 17<sup>th</sup> century deep tillage down to a depth of 3 m has been reported. In former times this was done excavating ditches by hand every 30 to 80 years



*Rigosol formed on marl decomposing (Tertiär)  
St. Martiner Baron, Edenkoben,  
Rheinland-Pfalz*



*Rigosol, formed on argillite (Devon), Zeltingen-Rachtiger  
Sonnenuhr, Bernkastel-Kues, Rheinland-Pfalz  
(Fotos: LGB Rheinland-Pfalz).*



*Typical viniculture landscape Bernkastel-Kues, Mosel, Rheinland-Pfalz (Foto: Moselwein e.V.).*

(Grabenrigolen), today every 20 to 40 years using machines working at depth of about 0.4 m. The soil is amended with fertilizer, coarse stones are picked out and soil compactions are loosened. Dry stone walls have been constructed in steep slopes on the parent rock, giving firm hold to the soil that has been filled up behind the walls. The so developed terraces were the only option to cultivate the steep rocky slopes with gradients of more than 35° (70 %). The steepest vineyards are the 'Engelsfelsen' in the badische Bühlertal and 'Calmont' at the Mosel river with 75° and up to 68° decline.

#### **Where are vineyard soils occurring?**

Vineyard soils cover an area of 102,000 ha in Germany, corresponding to about 0.5 % of the total agricultural cultivable land. They are distributed among 13 growing areas and nine German federal states; regionally they are mostly limited to areas with favorable climatic conditions. Not all vineyard soils are Rigosols as defined by the German soil classification system. The majority of the areas planted with vines have been repeatedly deep tilled; however, also undisturbed soils are present in vineyards. The combination of geology, soil, climate and cultural landscape makes up the so-called wine terroir that determines the character of the wines grown in a specific region.

#### **How are vineyard soils used?**

Wine as a special and permanent crop has specific demands on cultivation concerning soil tillage, fertilization and plant protection. Furthermore, the natural scenery of the wine cultural landscape is impressively influenced especially by the terraces with their dry stone walls. The vineyard soils of the steep slopes combine a multifaceted natural environment with an enormous cultural achievement for the construction and maintenance of the vine-growing areas. Hence, they are a substantial part of the cultural landscape. With the soil of the year it is focused on the special soil use and formation

through the cultivation of wine. Viticulture shows in an explicit way the linkage between soil cultivation, agriculture and social culture of humans.

#### **Which functions for humans and the environment are achieved by vineyard soils?**

Due to their typical position at slopes, in valleys and floodplains, vineyard soils play a key role for the decentralized water retention as well as of nutrients and harmful elements. Thus, they make a major contribution to flood protection and water protection. The soils of historical vineyards are archives of the cultural history and deserve specific protection. The same holds true for the natural scenery of terraced vineyards and the touristic recreational character through the combination of wine cultural landscape and winemaking.

#### **What endangers vineyard soils?**

The wine growing area very much declined in the last decades in Germany. Especially the steep slopes have been abandoned and are overgrown with bushes; terraces and walls deteriorate. Land consolidation and site amelioration often go along with massive earthworks. Thereby, the old soil cover and historical terraces are often completely destroyed. Furthermore, especially steep slopes are



*Vineyard dry wall (Foto: DLR Mosel).*



*Deep soil tillage (rigolen) in former time (l) and today (r) (Foto: Stadtmuseum Oberwesel und Weinland Nahe e.V.).*

at risk by soil erosion. Traditionally, plant protection and fertilization are very intensive in viticulture. This leads in part to substantial contamination of soils.

### **Who provides information?**

**Landesamt für Geologie und Bergbau (LGB)**  
Rheinland-Pfalz, Dept. Boden/Grundwasser,  
[ernst-dieter.spies@lgb-rlp.de](mailto:ernst-dieter.spies@lgb-rlp.de), [www.lgb-rlp.de](http://www.lgb-rlp.de)

**Universität Trier**  
FB VI Raum- & Umweltwissenschaften,  
Dept. Bodenkunde, [thiele@uni-trier.de](mailto:thiele@uni-trier.de),  
[www.bodenkunde.uni-trier.de](http://www.bodenkunde.uni-trier.de)

**Hochschule Geisenheim** [Info@hs-gm.de](mailto:Info@hs-gm.de),  
[www.hs-geisenheim.de](http://www.hs-geisenheim.de)

**Deutsche Bodenkundliche Gesellschaft**  
AG Bodensystematik, [www.dbges.de](http://www.dbges.de)

**Bundesverband Boden**  
[www.bvboden.de](http://www.bvboden.de), [www.bodenwelten.de](http://www.bodenwelten.de)

Soil scientific institutes at Universities and  
Universities of Applied Sciences

**Curatorship**  
Dr. Gerhard Milbert, Geologischer Dienst NRW,  
Tel: 02151-897-586  
[gerhard.milbert@gd.nrw.de](mailto:gerhard.milbert@gd.nrw.de)

### **Where do I get information materials?**

**Umweltbundesamt Dessau-Roßlau:**  
[www.uba.de/Publikationen](http://www.uba.de/Publikationen)

**CD's on all Soils of the Years 2005 until 2014:**  
[frielinghaus@zalf.de](mailto:frielinghaus@zalf.de)

# 2015 as Year of Soil

**Hans-Peter Blume**

IUSS and UNO declared in December 2013 the year **2015 as Year of Soil**.

How can we inform interested people about the importance of soils?

One possibility could be, that Postal Institutions of different countries will issue postal stamps with pictures of representative soil profiles. This could be done under the motto **Bread for the World by (Examination of) Soils**.

An example, how to do this, could be the *miniature sheet* with 8 stamps of the USA Post Office (see Fig. 1).

It would be great, if the Post Officials of different countries would publish a similar sheet with 6 to 8 stamps with representative soils of your country, together with the motto **Bread for the World by (Examination of) Soils**. Examples of soil profiles on stamps are shown in the following.

A board of curators of the *German Society of Soil Science (DBG)*, the *Federal Association of Soil (BVB)* and the *Federal Office of Environment (UBA)* defined since ten years the *Soil of the Year*. The nomination followed suggestions of soil scientists



Fig. 1: Miniature sheet of the US Post Office for the Canadian International Philatelic Exhibition at 10.06.1978.

of a *Federal Country*. In the *Office or Embassy* of this country in Berlin the *Soil of the Year* was presented at 5<sup>th</sup> of December, the international *Day of Soil*, under the patronage of the president or a member of the government team by Monika Frielinghaus, speaker of the board, together with the recommendators. They describe the conditions, distribution, land use and protective worthiness of the soil. The layout of the stamps was produced by Hans-Peter Blume, Kiel, together with Gregor Baron, Berlin, both Germany. The Post Office of Austria published the soil profiles on stamps. The following soils were presented until now:



# A proposal for a Soil Directive for Italy

([www.proteggiamoilsuolo.it](http://www.proteggiamoilsuolo.it))

The 3<sup>th</sup> December the 19 Italian Scientific Societies covering agriculture disciplines and coordinated by the Italian Society of Pedology (SIPE) have presented at the Senate of Italian Republic a proposal of a Soil Directive for Italy.

This law implements further the Soil Thematic Strategy (COM 231) in terms of (i) adaptation to the Italian legislation framework, (ii) updating methodology and definitions, (iii) development a stronger link between soil protection and sustainable management and planning.

This proposal has already been signed by 35 senators representing almost all political areas and it is expected to become national law.



In the picture: Fabio Terribile (SIPE President) confiding symbolically a lump of black soils to senators Ruta (left) and Caleo (right) the first two signers of the proposed directive, belonging to the Agriculture and the Environment Senatorial Commissions.



# 5 Questions to a Soil Scientist

## 5 questions to Christian Feller



**Name:** Christian Feller  
**Position:** Emeritus 'Director of Research' of IRD (since 2008)  
**Age:** 70  
**Address:** 28 rue Docteur Blanchard  
30700 Uzès, FRANCE  
**E-mail:** christian.feller@ird.fr

### 1. When did you decide to study soil science?

I heard of 'pedology' and 'soil science' for the first time when I was already 27 years old. I was finishing a thesis of pure organic chemistry (on amino-5 quinolein synthesis) and was looking for a job in a developing country. The reason I visited ORSTOM (a French research institute for tropical areas) hoping they needed a chemist. They decided that as organic chemist I could develop research on soil organic matter (SOM). But I had to be trained in pedology and the natural sciences.

I studied during 2 years. My first activity as pedologist has been a soil survey in Eastern Senegal (1:200,000). I had turned into a true pedologist.

### 2. Who has been your most influential teacher?

I appreciated many of my teachers in soil science during these 2 years, but no one was more influential than another. It is more or less at 30 years that I began to work as a researcher on SOM. Some 5 years after I began to build up a team with young soil scientist recruited by ORSTOM to study SOM.

My most influential teachers were my young colleagues. They largely re-oriented and widened my vision of SOM study and functionality.

### 3. What do you find most exciting about soil science?

When I discovered and learned pedology, another world opened. I was able to understand a bit of our Planet Earth. I could explain landscapes to my family and friends. I could show them in the field what is a soil, how it is beautiful and how it is organized, all things I (and they) had not imagined 3 years before. From a research and professional perspective, it is a fantastic chance to have to work in the same time in the field, in the laboratory and in the office to obtain and publish results.

### 4. How would you stimulate teenagers and young graduates to study soil science?

Firstly, I would explain how I got so much satisfaction along my life with such a choice (see above). Secondly, when they will be involved in soil studies or research, I will say to them LOOK AT SOIL:

- in the landscape. Look about their geography and diversity and look if the soil you study is represented
- at the plot level in your agricultural experiment. Look if your soil was originally the same in the treatments you compare?
- in the literature (when writing a paper). Question yourself if the soil you quote is really identical to the one you study?

### 5. How do you see the future of soil science?

Some years ago, I was a bit pessimistic. Now, with the emergence of the concepts of ecosystem services, I feel very optimistic. Soil was non perceived by the main part of the world population. Now it is one of the compartments of our Earth's ecosystem. Even the artists begin to appropriate soil as a central object/subject of artistic creation!

The general interest in soil is nowadays increasing exponentially and in probably one decade the soil compartment will appear as so important as water and atmosphere.

## 5 questions to Jay D. Jabro



**Name:** Jalal (Jay) D. Jabro  
**Position:** Research Soil Scientist since 2005  
**Age:** 62  
**Address:** NPARL-ARS-USDA  
1500 N Central Avenue, Sidney  
MT 59270, USA  
**E-mail:** [jay.jabro@ars.usda.gov](mailto:jay.jabro@ars.usda.gov)

### *1 When did you decide to study soil science?*

I believe it was during the second year of my undergraduate studies in 1972 when I decided to specialize in soil science at the University of Baghdad in Iraq. In fact, my passion for soils and other earthy materials began in my preteen years. I started collecting rocks, stones, and minerals when I was about 12 years old. My grandfather owned a farm in Telkaif, a suburb of Nineveh, and he taught me a lot about soil and different farming practices (i.e., plowing, planting, use of manure as fertilizer for plants, and harvesting crops using a sickle). Essentially, my grandfather was my first soils teacher and was my advocate and mentor in my early years.

### *2 Who has been your most influential teacher?*

Actually, I was inspired by several dedicated and committed professors and mentors during my studies. Each of them had significant influence in guiding me to my career in soils. Among them are: Dr. Abdulla Al-Ani, who taught me soil physics, irrigation, and drainage engineering courses at the University of Baghdad, Iraq; Dr. Don Kirkham, who co-supervised my master thesis and taught me three advanced graduate courses in soil physics at Iowa State University; and finally Dr. Charles A. Black, who taught me advanced graduate course in soil-plant relationships at Iowa State University. I admired them all for their scientific knowledge and passion for the soil sciences, as well as their different, but equally effective, teaching styles.

### *3 What do you find most exciting about soil science?*

It is the complexity of the soil system and how the five forming factors (parent material, climate, living organisms (vegetation), topography and time) create this complex interdisciplinary field. The soil processes, their interactions, and the interdependence of the soil ecosystem all immensely impact our lives and our living environment on a daily basis. For example: digging a soil pit, jumping in the pit, and describing a soil profile with beautiful colored horizons was fun and one of the most exciting and fascinating experiences I have ever had during my tenure at the Pennsylvania Department of Environmental Protection (PADEP).

### *4 How would you stimulate teenagers and young graduates to study soil science?*

Stimulating teenagers and young graduates to study soil science is a challenging task! Therefore, soil professors and scientists need to work harder to motivate teenagers and young graduates to study soil science. As a soil scientist, I would offer field demonstrations and experiments to high school seniors. I would highlight the importance of studying soil science and how the soil science major provides students with many good and exciting career options. I would also encourage them to attend field days, Ag shows, and to interact with farmers. Finally, I would provide them with simple soil ideas for their school science projects, thereby integrating social science into their curriculum.

### *5 How do you see the future of soil science?*

Today, soil science is facing major challenges for its survival. There has been a decline in student interest, student enrollment, an increase in departmental mergers, and a change in the identity of the academic discipline. To overcome these challenges, we need to work harder than ever to revive soil science as a discipline and maintain its identity in the future. In particular, we need to do the following: Link soil science with other soil related disciplines such as environmental science, geology, hydrology, and engineering; Promote the use of modern technologies and computer software in classrooms and in conducting lab and field research; Reach out and interact with policy/decision makers at the local, state and federal levels; and practice good public relations, communication, and outreach skills.



# Favourite Soil Books of Daniel deB. Richter

Duke University

What an honor to be asked to write about your favorite soils books. There are so many, how to choose a few favorites? I straight away chose three 19<sup>th</sup> century classics by Hilgard, Darwin, and Dokuchaev. With Prof. Hartemink's IUSS podium I would argue far and wide that Hilgard's book about the soils of Mississippi remains too underappreciated, that Darwin's book on earthworms too infrequently read as pedology, and Dokuchaev's book on Chernozems too little read as literature. But after just a moment, I realized these classics are already loudly trumpeted as the pillars of our field, and so I decided to be a bit more creative with contemporary selections, and settled on a collection of short essays about soils, a short classroom textbook, and a new translation of a classic poem about human beings and the land. The selections ring true to our discipline and to the recruitment of future students of the Earth's soil.

My first selection is a book I routinely use to get students hooked on soil, *Dirt, The Ecstatic Skin of the Earth* by William Bryant Logan. Well researched, the book contains nearly 50 short chapters that can accompany any introductory class about soils. The book not only reinforces introductory course content, but it is a collection of captivating soil stories. Literally picking one at random, Logan tells about Hans Jenny, who when attending a cocktail party in California, let it be known that he was a soil scientist. His new acquaintance perked up and began asking Jenny about their garden's tomato plants. Logan does not tell us how Jenny replied but Logan remarks, "This was like asking Toscanini to tune your guitar."

My second selection is a short textbook, *The Chemistry of Soils* by Garrison Sposito, which has been my desk companion since its 1988 publication (a 2<sup>nd</sup> edition was published in 2008). I still recall being smitten by redox chemistry while reading Chapter 6, and in particular when contemplating the

pE-pH diagram Sposito took from Baas Becking et al. (1960) that illustrates "the limits of the natural environment in terms of pH and oxidation-reduction potential." Redox reactions need much wider appreciation, and not just by wetland scientists!

Saving my absolutely favorite book for last is one that has been translated many times since written 2000 years ago, *The Georgics* by Virgil. But the translation that is far and away my favorite was published only 10 years ago by David Ferry in 2004. To help readers get started I recommend a 30-min conversation between David Ferry and the renowned Virgil scholar, Richard Thomas at <thoughtcast.org>. Among the poem's many incredible passages about Earth's soil, the poem is really about how human beings are creatures of the Earth, that humans are *destined* to interact with the environment, and that if we are to be human we *must* work with the Earth. The poem is sometimes misread as a kind of farm manual, but however it is read, the poem exhibits a sophisticated understanding of the soil. What better way to conclude this short essay of favorite books than with David Ferry's translation of Virgil's description of infiltration as a soil and hydrologic process:

*And then the father god descends  
In showers from the sky and enters into  
The joyful bridal body of the earth,  
His greatness and her greatness in their union  
Bringing to life the life waiting to live.*

Daniel deB. Richter  
Duke University

In memoriam

# Last honours to Raoul (Rudi) Dudal

Brugge, May 1, 1926 - Borchtlombeek, January 23, 2014

On 23<sup>rd</sup> January 2014 Rudi Dudal passed away at Borchtlombeek, surrounded by his family. Rudi Dudal was born on May 1, 1926 in Brugge, Belgium.

**Professional assignments:** After his M.Sc. as agricultural engineer at KU Leuven University (Belgium) in 1949, Rudi stepped in a PhD programme at the Faculty of Agricultural Sciences where he was the first student to graduate in 1955. He was active as head of a mapping team of the Belgian Soil Survey Centre in Leuven. In 1955 he started his international career in FAO as Technical Assistant on Soil Resources Appraisal in Indonesia, where he also served as Professor in Soil Science in the faculty of Agricultural Sciences at the University of Indonesia from 1958-1959. From 1960-1969 he was the General Correlator of the FAO/Unesco Soil Map of the World. These were times of cold war and as our Russian colleagues from the Dokuchaev Soil Science Society remarked, this was Glasnost 'avant la-

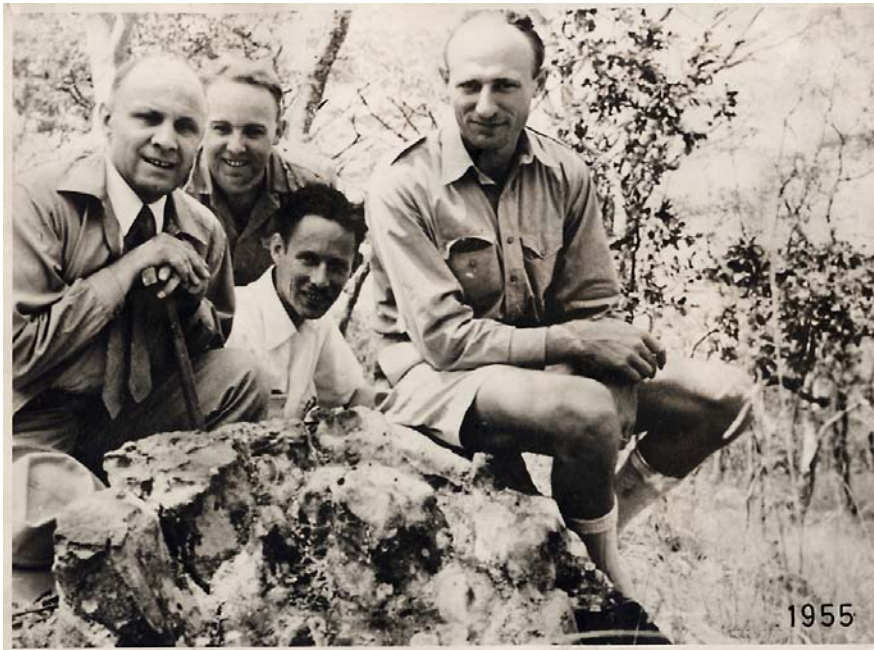
lettre!'. From 1970-1975 Rudi was Chief of the Soil Resources Development and Conservation Service of FAO. From 1976 till 1984 he was Director of the Land and Water Development Division in FAO. In 1984 he joined KU Leuven as full professor in Soil Geography, Soils of the Tropics and Land Evaluation at the Faculty of Agricultural and Applied Biological Sciences.

Internationally Rudi Dudal has taken on board **numerous scientific assignments**, the most important are: Chairman of the Commission on Soil Classification and Survey of the International Soil Science Society (ISSS; 1968-1974); Secretary-General of the International Soil Science Society (ISSS; 1974-1978); Chairman, FAO Inter-Departmental Working Group on Environment and Energy (1980-1983); Secretary of the Working Group on the International Reference Base for Soil Classification (ISSS;



*Rudi Dudal in Indonesia in the 1950's.*

*Photo: courtesy F. Dudal.*



*Rudy Dudal (second from the left) in Katanga, Congo on a soil corelation tour with R. Tavernier (first left), J. Croegaert (third from the left) and C. Sys (fourth from the left). Photo: courtesy E. Van Ranst.*

1986-1992) and Secretary of the Working Group on Soils and Geomedicine (ISSS; 1986-1994). Rudi has also been very active in transdisciplinary scientific committees such as the Consultative Group on International Agricultural Research (CGIAR) where he served as a member of the Technical Advisory Committee (TAC) from 1988-1993 and as a member of the Board of Trustees of the International Center for Agricultural Research in Dry Areas (ICARDA) from 1995-2001. He launched the concept of Mega-Environments, kind of an agro-ecological zoning, to encourage scientists to target their research so small local farmers would reap more benefits.

Rudi was awarded numerous **honorary degrees**: the degree of Doctor h.c. of Agricultural Sciences at the Rijksuniversiteit Gent, Belgium in 1976; Doctor of Science h.c. at the Cranfield University, U.K. in 1979 and Doctor of Laws h.c. at the University of Aberdeen, U.K in 1981.

Rudi's high scientific profile was marked by **Honorary Awards and memberships**: Honorary Member of the IUSS, Member of the Royal Academy of Overseas Science (Belgium, 1979); Corresponding Member of the Deutsche Bodenkundliche Gesellschaft (Germany, 1980); Honorary Award of the Soil Conservation Society of America (U.S.A., 1981); Membre d'honneur, Association française pour l'Étude du Sol, (France, 1982); Honorary Member, American Soil Science Society (U.S.A., 1985) and Member of the Norwegian Academy of Sciences and Letters (Norway, 1989). Last but not least, Rudi

was the first soil scientist to receive the Guy Smith Medal Award 2010, which was handed over to him by Prof. Karl Star, Chair of IUSS Division of Soils in Space and Time at the Royal Academy for Science and Arts at Brussels on 22/02/2011.

Rudy was member of the soil science societies of Belgium, Germany, USA, France, Norway, Romania, Bulgaria, Italy, ISRIC and the IUSS.

### **Rudi's contributions to soil classification**

By developing the Legend of the FAO/Unesco Soil Map of the World, Rudi made a major contribution towards harmonizing existing national soil classification systems. Thanks to his good personal relations at the time with Guy Smith from USDA, Rudi took the fortunate decision to adopt the concept of diagnostic horizons, properties and materials and implemented it at World scale in the FAO Legend of the Soil Map of the World. This was so successful that afterwards many countries used the Legend of the Soil Map of the World not only for soil mapping but also as a system for soil classification. When in 1980 FAO and UNEP took the initiative of the International Reference base for Soil Classification (IRB), Rudi was there to steer the initiative and became secretary as of 1986 through to 1992. During the famous meeting of IRB at Montpellier in 1992, Rudi has played a key role in aligning the IRB with the revised legend of the FAO Soil map of the World. As such the World Reference Base for Soil Resources (WRB) was born and could count on the full support from FAO and other organizations



*Gerald Dudal (right) congratulating his father Rudi Dudal (left) for his Guy Smith Medal award, Brussels, Royal Academy for Science and Arts of Belgium, 22/02/2011, photo: S. Deckers.*

of the United Nations. In 1998, during the World Congress of Soil Science at Montpellier, the IUSS adopted WRB as its system for soil correlation and classification. Rudi continued to play an important role by supporting harmonization in soil classification, particularly in the translation of the soil map of Belgium to WRB. With his phenomenal background rooting back to his time as a Belgian soil surveyor and all what followed during his career as prominent soil scientist, we have been very happy and proud to have had Rudi on this team.

Till very recent, Rudi was still keeping in close touch with the scholars in soil science **at the Geo-Institute of the KU Leuven**, stirring up the scientific debate on major world issues such as carbon cycles and soil evolution under the global change scenario. He loved socializing and discussing the most different themes. While tearing off the label of a water bottle, he would read out its mineral composition and then the latest nitrate regulations for Flanders groundwater would pass the review. Another of your favorite topics was climate change, long before Al Gore's Inconvenient Truth was shown in the cinemas. And to our big surprise he not only told us the history of the carillon of Leuven town but even the music played on it every hour!

Through his kindness and enthusiasm he managed to endear so many people all over the world with whom he remained connected long before internet and social media were in place. This vast social capital in combination with his wisdom and vision made him a real leader.

When the sad news of Rudi Dudal's passing away circulated a tsunami of emotional reactions came flooding in. "Rudi was a giant; we shall remember him fondly as a friend, colleague and polymath, stalwart to the end (David Dent), the scientist with the greatest sense of humour (Freddy Nachtergaele). We shall miss his counsel greatly (David Dent).

Indeed, we are very sad with Rudi's departure, but we are also very grateful that our paths have crossed Rudi's and we could travel together his life journey for so long. Dick Arnold from the United States put it like this: 'Rudi will be missed but more importantly he will be remembered for his ideas and his determination to get soil scientists around the world to work more closely together'.

*Jozef (Seppe) Deckers*

*Geo-Institute*

*Department of Earth and Environmental Sciences*

*Celestijnenlaan 200 E*

*3001 Heverlee*

*[Seppe.deckers@ees.kuleuven.be](mailto:Seppe.deckers@ees.kuleuven.be)*



# In memoriam Dan Hardy Yaalon

1924-2014

Dan H. Yaalon was one of the most influential soil scientists in many decades, a long-standing faculty member of the Earth Science Institute of the Hebrew University of Jerusalem, a much decorated scientist with colleagues from many disciplines, and a devoted family man. Dan passed away on Wednesday 29 January 2014. He was 89.

Dan touched the ideas, the research, and students of many scientists. He traveled widely as a way to encourage soil science, to accelerate his own soils education, and to represent soil science to the world. I never met Dan, but I corresponded with him electronically over many years, as did many. Recently, we co-wrote two papers, and throughout the writing, he worried that he was not up on the literature and thus not a strong co-author. His contributions as co-author were classic Yaalon, intense, critical, and creative.

Dan's soil scholarship is remarkable for both its fundamental nature and its breadth. He is one of only three winners of the V.V. Dokuchaev Prize given by the International Union of Soil Sciences. By the end of his career, he had made signature contributions to:

- **deserts and desert soils** – for demonstrating how soils in xeric environments are formed by dynamic pedogenetic processes, and especially from wind deposited loess
- **paleo-pedology** – for conceptualizing how past records of climates, biota, and geomorphologies are contained within paleosols, i.e., fossilized and buried soils
- **anthro-pedology** – for articulating how naturally formed soils are becoming the parent material for human-formed soils
- **pedology** – for how Earth's soils are often poly-genetic, i.e., palimpsests with paleosolic features
- **soil science history, philosophy and sociology** – for establishing a whole, new sub-discipline of soil science


While all five are important, two of these, poly-genesis and anthropedology, are some of the most significant developments in the history of soil science itself.

In writing the remainder of this *In Memoriam*, I will not detail specifics of Yaalon's research, they are widely accessible in the literature, but rather will I write about the making of Dan Yaalon the scientist. I use this opportunity to describe how his life offers much to young scientists as they consider a life's work with the Earth's soil.

Born in Czechoslovakia in 1924, Yaalon lost his mother in Auschwitz-Birkenau, a mother who had put him on a train at age 15 bound for Denmark, to save him from the Nazis. At the time his name was Hardy Berger and his dream was to travel through Denmark and Scandinavia on his way to Mandate Palestine.

After arriving in Denmark, Hardy was assigned manual farm labor, but he took up his interrupted studies at an agricultural high school and later formally enrolled at the Agricultural University in Copenhagen. When the Nazis occupied Denmark, the Danish underground moved him and many other Jews to Sweden, where he found a job at the Agricultural University in Uppsala. Quite by accident, he was assigned to the research laboratory of Sante Mattson, a great soil chemist.

Yaalon later recalled, "Working with Mattson ... at research tasks far beyond my acquired learning, I delved into advanced publications and books, working my way backwards from difficult expressions, formulas or citations, to the basics which explained what I was doing... This was a kind of backtracking detective work that branded my later activities in basic soil science." The experience with Mattson was life altering as it firmly turned Yaalon to the science of Earth's soil.



Late in the war and shortly thereafter, he travelled to Britain with the Czech Army and to Czechoslovakia where viewing post-war desolation he wrote with grave understatement, “visits to my hometown ... were not very uplifting.” By July 1948, he had completed his undergraduate B.Sc. degree, worked as an assistant in a Danish research laboratory, and finally traveled by ship for Haifa to enter the new nation of Israel then two months old.

During a year in the Israel army, he visited agricultural settlements, mixed with scientists, joined geological expeditions into the Negev, and was accepted at the Hebrew University of Jerusalem for PhD studies. During these years he hebraized his name to ‘Dan Yaalon’, something that signaled an established life in Israel, and married Rita Singer. Together Rita and Dan shared nearly six decades and established a family that includes two sons and daughters-in-law, and seven grandchildren.

As a PhD student in the early 1950s, the soil chemist Avraham Adolf Reifenberg became Yaalon’s advisor, and Yaalon was impressed by the small Department of Soil Science’s focus on arid zone soils, common worldwide but vastly understudied at that time with significant questions and needs that ranged from the local to global. In day-to-day terms however, Yaalon commented, “Doing research in those early days, with meager resources, involved overcoming many difficulties. Essentially self-taught we did our best to establish the research and teaching laboratories.”

These comments reveal perspectives strongly held by Yaalon about life and work. To Yaalon, “ingrained curiosity” was the basis for successful engagement with science. Yaalon’s university education, in Denmark, Sweden, and Israel, challenged him in ways that fed his native curiosity and gave him confidence that Earth’s soil was well worth a life’s work. The making of a scientist according to Yaalon, included much that is fortuitous, unplanned, and even unfair, but what makes a successful scientist is “grabbing an opportunity when it arises.” Whether in science or in life, he said, “much is due to accidental events but what you make of it is very much subject to your choice and efforts.” Given the gravity of the “accidental events” in Yaalon’s life, these words underscore an incredibly positive message about science, life, and living.

*Daniel deB. Richter, Duke University*



# Reports of meetings

## Report of the Conference 'Utilization and protection of halophytes and salt-affected landscapes'

4-6 September, 2013, Kecskemét, Hungary

The IUSS Commission 3.6 Salt-affected Soils conference and EU FA 0901 COST Workshop 'Utilization and protection of halophytes and salt-affected landscapes' was held in the House of Nature, Kecskemét (Hungary) between 4-6<sup>th</sup> September 2013. From all over the world 45 participants arrived, with dominance of European specialists.

During the field trip characteristic saline/alkali sites, such as an alkali lake, a sodic grassland (with a Solonetz profile) and a salt-affected farmland were visited.

During two days of talks and poster presentations there were three sessions, such as 'Physiology and Ecology of Halophytes', 'Agronomic and other utilization of halophytes and salt-affected areas' and 'Soils in salt-affected areas'. The plenary talk was



*Inside the Solonetz Profile Pit.*

given by Esteban Jobbágy (CONICET, Universidad Nacional de San Luis, Argentina) with the title of 'Linking salts, groundwater, and vegetation in the (hyper)plains of South America'. The oral sessions were complemented with Poster Theatre sessions.

The abstract book of the event is available at: <http://members.iif.hu/tot3700/abstr/TTZA2013.pdf>

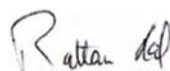


*Group photo of participants in front of the venue.*

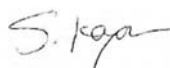
## The Istanbul Carbon Summit

The three-day Istanbul Carbon Summit seeking to bridge carbon trade and technology to Forestry and Soils was held in the Technical University of Istanbul, Turkey from the 3<sup>rd</sup> to 5th April 2014. About 500 participants attended the meeting from private companies, state institutions-Ministries (Energy and Natural Resources, Science-Industry and Technology, Economy, Food-Agriculture and Animal Breeding, Forestry and Water Affairs, Environment and Urban Affairs), NGOs as well as scientists and experts. The Soil Science community was represented by members of the IUSS, EC-IES-JRC, CIHEAM-AMB, NRD-Sassari, Italy and numerous International/National Universities. Presentations of the first and second day of the meeting covered the topics related to Policies and Implementations, Carbon Trade and Finance, Clean Energy Production and Consumption Technologies, Sectoral Carbon Management and Implementations. Thematic focus on the final day of the conference was on the terrestrial and soil organic carbon (SOC) stock capacities of soils and the probable Forest and Soil Management-wise contributions seeking integration to the trade of carbon. The renowned invited keynote speakers for the 5th of April were Profs. Rattan Lal (The Ohio State University, Columbus, OH), Winfried E. H. Blum (University of Natural Resources and Life Sciences, Vienna), Karl Stahr (University of Hohenheim, Stuttgart) and Bruce McCarl (Texas A&M University, College Station, TX). Their elite and numerous other presentations were of utmost significance and up to the point in putting forward the indispensable value of SOC and its consideration in the carbon emission trade. Participants expressed their high appreciation towards these and other highly informative presentations and the invaluable studies conducted by the Keynote and session speakers on the theme of global significance. However, scientists studying the probabilities of establishing mutual criteria and functionality of the international carbon market were sceptic on the lacking opportunities of the consideration of the SOC within the mechanism of the Clean Development Mechanism (CDM) and provisions of payments to farmers for provisioning of numerous ecosystem services generated through restoration of the SOC stock and the attendant improvements in the quality of soil and environment. Ultimately, as part of the soil science community present in this meeting, we strongly believe that a coordinated initiative must be un-

dertaken in the near future to start the discussions on this theme and develop the means and tools to integrate sequestered SOC into the CDM for a more realistic carbon emission trade for rewarding farmers through payments of just price based on the societal value of soil carbon.



*Prof. Dr. Rattan Lal*  
*The Ohio State University*  
*Columbus, OH, USA*



*Prof. Selim Kapur*  
*The University of Çukurova*  
*Adana, Turkey*



*Prof. Dr. Özden Görücü*  
*Kahramanmaraş, Sütcü İmam University*  
*Kahramanmaraş, Turkey*

## 5<sup>th</sup> December, World Soil Day

The World Soil Day, initiated by the International Union of Soil Sciences (IUSS) in 2002, was celebrated for the first time in Romania on 5 December 2013, organized by the Romanian National Society of Soil Science (RNSSS). At this meeting of celebration attend soil scientists from universities and research institutes.

Prof. PhD Mihail Dumitru, president of the RNSSS, opens the debates, underlining the signification of this celebration in order to make more visible the pedology and agro-chemistry for the life and he expounded the meeting agenda.

Assoc. Prof. PhD Valentina Coteț, secretary of the RNSSS, showed in her speech that World Soil Day celebration has the purpose to underline the importance of soil as an essential component of the natural system, as a vital participator to the human community through its contribution to food, water, energy security and reduction in biodiversity loss

and climate change attenuation.

Soil performs multiple roles for the creatures living and life development.

“European soil is an immensely valuable World resource, which requires protection to ensure future global food security and environmental quality. Soil forms over very long periods of time and once destroyed it is effectively lost to present and future generations.” (Soil Atlas of Europe, European Commission, 2005).

An awareness of the importance of soil among different soil land users will lead to a better land-use planning, adapting more correct the way of use or exploit with the properties and soil functions. This will be reflected in rural spatial plans and urban plans.

PhD Cătălin Simota, director of the National Research and Development Institute for Soil Science, Agro-chemistry and Environment – ICPA Bucharest, presented the main directions for research in soil sciences for the time-Horizon 2020, based on the documents and guidelines of the international bodies (U.E. – Research Horizon 2020, International Union of Soil Sciences) and national (microvisions for research 2020, sectorial programmes).

PhD Anca-Rovena Lăcătușu, chief of the Laboratory of Environment Quality Monitoring, exposed the paper ‘The scientific bases of the agrobiodiversity in relation with soil microbiology and integrated health of the environment’. This paper presents the concept of agrobiodiversity comprising besides the variety and variability of animals and plants used directly or indirectly for food and agriculture, also the soil micro-organisms that support the biodiversity of agroecosystems in the context given by the diversity of genetic resources by species used for food, feed, fiber, fuel and pharmaceuticals.



With this opportunity, the publish of the book ‘Soil, our partner of existence’ (2013) was announced Prof. PhD Nicolae Florea, its author, shows that soil has major implications in all environment domains, life branches (biosphere) and activity sectors of the human society. Nevertheless the soil is too little known and appreciated by comparison with water and air, although it is as much important as these ones for the creatures life and health.

The cosmic, telluric and biotic origin of the soil explains its great complexity and the difficulties of research and knowledge of the soil, but also the planetary importance of the soil cover (pedosphere) for our existence. The solar energy, the soil, the water, the air and the green plant are the support pillars of the environment, life and society.

The verses of the Romanian poet, George Coșbuc, never-to-be-forgotten:

*Our soil is valuable and holy  
Because our cradle it is  
and our grave it'll be.*



# New Publications

## **Genomics of Soil- and Plant-Associated Fungi**

Series: Soil Biology, Vol. 36. By Horwitz, B.A.; Mukherjee, P.K.; Mukherjee, M.; Kubicek, C.P. (Eds.). 2013, XII. Springer. ISBN 978-3-642-39339-6. Hardcover 322 pages. Price \$189.00. eBook price \$149.00. This volume addresses the similarities and also the differences in the genomes of soil saprophytes, symbionts, and plant pathogens by using examples of fungal species to illustrate particular principles. It analyzes how the specific interactions with the hosts and the influence of the environment may have shaped genome evolution. The relevance of fungal genetic research and biotechnological applications is shown for areas such as plant pathogenesis, biomass degradation, litter decomposition, nitrogen assimilation, antibiotic production, mycoparasitism, energy, ecology, and also for soil fungi turning to human pathogens.

## **Introduction to Soil Chemistry: Analysis and Instrumentation, 2<sup>nd</sup> Edition**

Series: Chemical Analysis- A Series of Monographs on Analytical Chemistry and its Applications. By: Alfred R. Conklin Jr. December, 2013. Wiley. ISBN: 978-1-118-13514-3. Hardcover 344 pages. Price \$120.00. This text provides the tools needed to explore the incredible complexities of the earth's soils. Now in its Second Edition, this highly acclaimed text fully equips readers with the skills and knowledge needed to analyze soil and correctly interpret the results. Due to the highly complex nature of soil, the author carefully explains why unusual results are routinely obtained during soil analyses, including the occurrence of methane in soil under oxidative conditions. The text also assists readers in developing their own analytical techniques in order to analyze particular samples or test for particular compounds or properties. The Second Edition of Introduction to Soil Chemistry features four new chapters. Moreover, the entire text has been thoroughly updated and revised. It begins with a review of the history of soil chemistry, introducing fundamental concepts that apply to all soils. Next, the text explores: Basic soil characteristics, horizonation, texture, clay, air, wa-

ter, solids, organic matter, organisms, and fundamental chemical concepts essential to soil chemistry, tested and proven sampling techniques for soil analysis that provide reliable analytical results, basic soil measurement techniques and extraction procedures, and Instrumentation to isolate and identify soil chemicals, including plant nutrients and contaminants. Detailed examples and figures throughout the text help readers successfully perform soil sampling and analytical methods as well as better understand soils chemical characteristics.

## **Agroecosystems: Soils, Climate, Crops, Nutrient Dynamics and Productivity**

By Krishna, K.R.. January 2<sup>nd</sup>, 2014. Apple Academic Press, and CRC Press. ISBN: 978-1-926895-48-2. Hardcover 552 pages. Price \$129.95. Comprised of three sections, this covers the nutrient dynamics and productivity of global agroecosystems. It focuses on the major aspects that make up agroecosystems, such as soils, climate, crops, nutrient dynamics, and productivity. It introduces agroecosystems and describes global soil types that support vast crop belts, then deals with the principles that drive crop growth, nutrient dynamics and ecosystematic functions within any agroecosystem. It also details the influence of agronomic practices and factors such as soil microbes, organic matter, crop genetic nature, irrigation, weeds, and cropping systems that affect productivity of agroecosystems.

## **Soil and Water Contamination, 2<sup>nd</sup> Edition**

By Marcel van der Perk. November 15th, 2013. CRC Press. ISBN: 978-0-415-89343-5. Paperback 428 pages. Price \$89.95. Soil and Water Contamination, Second Edition gives a structured overview of transport and fate processes of environmental contaminants. Dealing with all topics essential for understanding and predicting contaminant patterns in soil, groundwater and surface water, it contributes to the formation of a solid basis for adequate soil and water pollution control and integrated catchment management. A unique feature

of this work is that it does not treat water and soil pollution as independent processes, but as components of an integrated whole. This comprehensive, successful textbook, now in its second edition, has been conscientiously updated and extended and includes many case studies, examples and exercises sections, providing undergraduate and graduate students in the Earth and Environmental Sciences with all the material necessary for the study of soil and water contamination. In addition, it can serve as a useful source of information for professionals.

### **Geopedology. Elements of geomorphology for soil and geohazard studies**

J.A. Zinck. 2013. ITC, Enschede, The Netherlands. ISBN 978-90-6164-352-4. Ebook, 127 pages. Geopedology attempts to integrate elements of geomorphology and pedology for soil survey. Following a short review of the various ways soil geomorphology is considered by practitioners, the geopedologic approach is described in conceptual, methodological and operational terms. The bases for building a hierarchical taxonomy of geoforms able to support soil surveys of different orders are laid down. The most common geoforms are distributed over the six categories of the classification system. The attributes used for identifying and describing the geoforms are analyzed. English and Spanish versions can be downloaded for free from: [http://www.itc.nl/Pub/Home/library/Academic\\_output/ITC-Special-Lecture-Notes-Series.html](http://www.itc.nl/Pub/Home/library/Academic_output/ITC-Special-Lecture-Notes-Series.html)

### **Soil and Water Contamination, 2<sup>nd</sup> Edition**

By Marcel van der Perk. 2013. CRC Press. ISBN: 978-0-415-89343-5. Hardcover, 450 pages. Price \$89.95. This textbook provides an overview of transport and fate processes of environmental contamination, in such a way that the reader can both understand and predict contaminant patterns in soil, groundwater, and surface water. In contrast to most existing texts, soil and water pollution are treated as integrated environmental matter from a geographical/spatial perspective at point, local, regional, and catchment scales. The spatial approach links up with recent developments and trends in environmental legislation and other integrated catchment management initiatives. The new edition contains several re-written parts, new material on pesticides and pharmaceutical contaminants and a greater number of exercises, case studies and examples. A lecturer package with worked solutions and exams, will be made avail-

able upon adoption. It consists of four coherent parts: 1. Introduction to soil and water contamination; 2. Source, role, and behavior of substances in soil and water; 3. Transport and fate processes of substances in soil and water; and 4. Patterns of substances in soil and water.

### **Soil Colloids: Properties and Ion Binding**

Series: Surfactant Science. By Fernando V. Molina. 2013. CRC Press. ISBN: 978-1-43-985114-2. Hardcover, 544 pages. Price \$179.95. The fundamental problem of ion binding to natural colloids is a multidisciplinary research field which raises special challenges. These come mainly from the heterogeneous and sometimes ill-defined nature of natural colloids, especially humic substances. Soil scientists and colloid chemists tend to have different views of the problem. This book presents the latest advances in this active research field. The first part reviews the fundamentals of colloid science, the second covers soil composition and the characteristics and properties of main soil components, and the third provides in-depth coverage of ion binding to soil colloids, including recent advances.

### **Biofuel Crop Sustainability**

Bharat Singh (Ed.). 2013. Wiley-Blackwell. ISBN: 978-0-470-96304-3. Hardcover, 480 pages. Price \$199.95. Biofuel Crop Sustainability brings together the basic principles of agricultural sustainability and special stipulations for biofuels, from the economic and ecological opportunities and challenges of sustainable biofuel crop production to the unique characteristics of particular crops which make them ideal for biofuel applications. This book will be a valuable resource for researchers and professionals involved in biofuels development and production as well as agriculture industry personnel. Chapters focus the broad principles of resource management for ecological, environmental and societal welfare, the sustainability issues pertaining to several broad categories of biofuel crops as well as the economics and profitability of biofuels on both a local and international scale. Coverage includes topics such as utilizing waste water for field crop irrigation and algae production, reliability of feedstock supply, marginal lands, and identifying crops with traits of significance for survival and growth on low fertility soils. The development of production practices with low external inputs of fertilizer, irrigation, and pesticides is also covered.

### **Use of Microbes for the Alleviation of Soil Stress. Volume 2: alleviation of Soil Stress by PGPR and Mycorrhizal Fungi**

By M. Miransari. April 30, 2014. IX Springer. ISBN: 978-14-939-0720-5. Hardcover, 304 pages. Price \$189.00. Use of Microbes for the Alleviation of Soil Stresses, Volume 2: Alleviation of Soil Stress by PGPR and Mycorrhizal Fungi describes the most important details and advances related to the alleviation of soil stresses by PGPR and mycorrhizal fungi. Comprised of eleven chapters, the book reviews the role of arbuscular mycorrhizal fungi in alleviation of salt stress, the role of AM fungi in alleviating drought stress in plants, the impact of biotic and abiotic stressors and the use of mycorrhizal fungi to alleviate compaction stress on plant growth. Written by experts in their respective fields, Use of Microbes for the Alleviation of Soil Stresses, Volume 2: Alleviation of Soil Stress by PGPR and Mycorrhizal Fungi is a comprehensive and valuable resource for researchers and students interested in the field of microbiology and soil stresses.

### **The Soil Underfoot. Infinite Possibilities for a Finite Resource**

By G.J. Churchman, E.R. Landa. 2014. CRC Press. ISBN: 978-14-665-7156-3. Hardcover, 454 pages. Price \$99.95. The largest part of the world's food comes from its soils, either directly from plants, or via animals fed on pastures and crops. Thus, it is necessary to maintain, and if possible, improve the quality—and hence good health—of soils, while enabling them to support the growing world population. The Soil Underfoot: Infinite Possibilities for a Finite Resource arms readers with historical wisdom from various populations around the globe, along with current ideas and approaches for the wise management of soils. It covers the value of soils and their myriad uses viewed within human and societal contexts in the past, present, and supposed futures. In addition to addressing the technical means of maintaining soils, this book presents a culturally and geographically diverse collection of historical attitudes to soils, including philosophical and ethical frameworks, which have either sustained them or led to their degradation. Section I describes major challenges associated with climate change, feeding the increasing world population, chemical pollution and soil degradation, and technology. Section II discusses various ways in which soils are, or have been, valued—including in film and contemporary art as well as in religious

and spiritual philosophies, such as Abrahamic religions, Maori traditions, and in Confucianism. Section III provides stories about soil in ancient and historic cultures including the Roman Empire, Greece, India, Japan, Korea, South America, New Zealand, the United States, and France. Section IV describes soil modification technologies, such as polymer membrane barriers, and soil uses outside commercial agriculture including the importance of soils for recreation and sports grounds. The final section addresses future strategies for more effective sustainable use of soils, emphasizing the biological nature of soils and enhancing the use of 'green water' retained from rainfall.

### **Acid Mine Drainage, Rock Drainage, and Acid Sulfate Soils: Causes, Assessment, Prediction, Prevention, and Remediation**

By J.A. Jacobs, J.H. Lehr, and S.M. Testa. May 2014. Wiley. ISBN: 978-04-704-8786-0. Hardcover, 520 pages. Price \$149.95. Written to help readers understand the formation of AMD, Acid Mine Drainage addresses the generation of acidic waters usually from both used and abandoned coal or metal mines. Offering the most up-to-date ideas on metals remediation, which makes finding control methods relatively easy, the text provides a section on legal and policy issues and details the causes, control, prediction, prevention, and remediation of AMD formation. Case studies from North America, Europe, Asia, and developing countries highlight various approaches to AMD problems.

### **Einführung in die Bodenphysik**

By Jörg Bachmann; Rainer Horn; Stephan Peth 2014. 4. completely revised and extended edition, 372 p. 978-3-510-65280-8, hardcover, €49.80/US\$ 70 <http://schweizerbart.com/9783510652808>. This fourth, completely revised (in German) edition is a comprehensive, state-of-the-art introduction to basic physical and chemical soil properties (structure, texture, particle interfaces) and explains how important parameters such as soil productivity are controlled by physical factors (e.g. loading, bulk density, hydraulic conductivity) and time. Fundamentals of water-, gas-, and heat transport in soils and general principles of soil mechanics are introduced and discussed at different scales, pointing out how they affect soil fertility and crop yield. Methods of soil amelioration and soil protection, consequential to these relationships, are discussed. The volume targets students of and re-

searchers in soil science, physical geography, hydrology, civil engineering, agriculture, forestry and all practitioners interested in how soil processes, parameters and plant yield relate.

### **Sustainable agroecosystems in climate change mitigation**

Edited by: Maren Oelbermann. 2014, ± 328 pages. ISBN: 978-90-8686-235-1. Price €76. This book bridges our current knowledge gaps and recognizes the contribution of sustainable agricultural practices as a way forward in reducing the global carbon and nitrogen footprint. It suggests that policies and practices integrating microbial technology, modern crop cultivars, conservation practices, increased manure application, organic farming and agroforestry have a greater capacity to sequester carbon and reduce carbon-based greenhouse gases, leading to more robust agroecosystems compared to conventional agriculture. It is argued that empirical models can represent powerful tools for assessing how mitigation and adaptation strategies can be used to optimize crop yield and minimize greenhouse gas emissions under future climate change scenarios.

### **Soil testing for balanced fertilisation: technology-application-problems-solutions**

Edited by Dr HLS Tandon. 2014. ISBN: 81-85116-69-5. Pp. 170+xiv Fertiliser Development and Consultation Organisation, 204-204A Bhanot Corner, Pamposh Enclave, New Delhi 110048 (India). Price US\$60 (Inclusive of airmail despatch). Contact [tdandonhls@gmail.com](mailto:tdandonhls@gmail.com). This book is devoted to soil testing as a research-based tool for making fertilizer recommendations and its various aspects ranging from various technologies, their application, problems and possible solutions. Its nine chapters deal with (i) various methodologies for developing soil-test based fertilizer recommendations from conventional approaches to GIS based tools (ii) the agro-economical evaluation of soil test based fertilizer recommendations, (iii) special features of soil testing in coordination with plant analysis for horticultural tree crop (iv) initiatives required for rejuvenating soil testing services (v) government initiatives and programmes for expanding and strengthening soil testing services, (vi) Field level experiences, problems and solutions for making soil testing a more widely usable facility as outlined by a state government and a fertilizer company involved in soil testing for many years and finally (vi) an introduction to the various

analytical instruments being used or for potential use in modern well equipped, appropriately staff soil testing laboratories.

### **Remote Sensing of Energy Fluxes and Soil Moisture Content**

By George P. Petropoulos. 2013. CRC Press. ISBN: 978-1-46-650578-0. Hardcover 562 pages. Price \$139.95. Discussing the state of the art in the remote sensing of surface turbulent heat fluxes and soil surface moisture content, this book offers the most up-to-date understanding of the natural processes of Earth systems and their interactions with man-made activities. Identifying effective, accurate, and practical methods, it allows researchers to obtain much-needed data on the soilscape at decreased cost: both reducing the amount of field data collection and increasing coverage area. An all-inclusive overview of methods and modeling techniques, it provides case studies and considers future trends, prospects, and scientific challenges.

### **Soils in Natural Landscapes**

By Earl B. Alexander. 2013. CRC Press. ISBN: 978-1-46-659435-7. Hardcover 319 pages. Price \$99.95. In any complete investigation of terrestrial ecosystems, rocks and soils must be considered. Soils are essential resources, providing water and nutrients for vascular plants, and mitigating the flow of water from the land. In addition, soil diversity is critical for biotic diversity. While there are many references on the agricultural perspective of soils, there is a need for a basic soils book for those concerned with natural landscapes and ecosystems. The text fills this niche, providing a thorough introduction to the physics, chemistry, and biology of soils and their roles in local to global systems. The book begins by describing the field of soils and the major roles of soils in natural landscapes. The chapters that follow cover a range of topics: Soil parent material, Architecture of soils, Temperature and soils, Water, air, and climate, Classification of soils, Soil landscapes, Plant nutrition, Soil organisms, Organic matter in soils. The author also discusses global issues such as water and carbon cycles, global warming, and acid rain. He addresses land management for different uses, soil quality, and soil degradation. Using an interdisciplinary approach, this book provides practical insights for the evaluation of soils in natural environments and their non-intensive management.

### **United Arab Emirates Keys to Soil Taxonomy**

By Shahid S.A., Abdelfattah M.A., Wilson M.A., Kelley J.A., Chiaretti J.V. ISBN 978-94-007-7420-9. Price (eBook 55,53 €; Hardcover 66,66 €). 108 p. 81 illus. in color. The United Arab Emirates Keys to Soil Taxonomy is an essential tool for further soil classification studies in the United Arab Emirates as well as in the arid and semi-arid regions. The challenge of protecting and managing the environment is significant and must be based on robust scientific and technical knowledge. Knowledge and understanding of soil is critical, particularly in an arid environment, as the resources in soil are scarce and must answer competing demands from agriculture to urban development, mineral exploration, and infrastructure development. The book provides a basic soil classification system that is very beneficial to anyone wishing to classify and correlate soils within similar conditions. It not only provides the taxonomic key necessary for the classification of soils that can be easily used in the field, but establishes a scientific standard to be used (and updated as needed) for future generations. It concentrates on three main areas: Provides a unique key for classifying soils of the United Arab Emirates, goes beyond USDA soil classification keys to include specialized criteria for UAE soils, and includes a mechanism for updating current surveys and correlating information from new surveys.

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### **Soil Biota and Ecosystem Development in Post Mining Sites**

By Jan Frouz. 2013. CRC Press. ISBN: 978-1-46-659931-4. Hardcover 316 pages. Price \$99.95. This book focuses on soil development in restoration of post-mining sites. In particular, the authors address the role of biota, including plants, microorganisms, invertebrates, and their various interactions during the process of soil formation. The book largely deals with sites created by open-cast mining, as this method represents a very destructive and, at the same time, intensively studied example of a mining operation. This book is a useful summary of recent knowledge for scholars dealing with ecosystem development after large disturbances as well as for practitioners dealing with reclamation and restoration of post-mining land.



# IUSS Honorary members

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	S. Winogradski †	USSR		I. Szabolcs †	Hungary
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	W.P. Kelley †	USA	D.H. Yaalon †	Israel	
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	E.W. Russell †	UK		B.A. Stewart	USA
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