

# IUSS Bulletin

Bulletin of the International Union of Soil Sciences (IUSS) | June 2017



**2015-2024**  
**International**  
**Decade of Soils**

**130**



## International Union of Soil Sciences (IUSS)

|                                |   |  |
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**International  
Decade of Soils  
2015-2024**

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# IUSS reports

## Report from the IUSS Secretariat

### IUSS Presidentship

With the turn of the year, Prof. Rainer Horn has become Past President. He was succeeded by Prof. Rattan Lal, who has taken over as IUSS President. Takashi Kosaki has taken up the position of President-Elect on 1<sup>st</sup> January, 2017.

### Election IUSS Division and Commission Officers 2018-2022

Every four years elections of the officers for Divisions and Commissions take place. We have started the election process for the 4 Division and 44 Commission chairs and vice chairs: a chance to become actively involved in the IUSS and shape its future in the years 2018 to 2022. Nominations were sought for all positions, and a description of the Divisions is given here: [http://www.iuss.org/index.php?article\\_id=40](http://www.iuss.org/index.php?article_id=40).

The deadline for applications was once prolonged from 31 March to 30 April, with IUSS Full Members (national soil science societies who paid the membership fees) being encouraged to look for suitable candidates and propose them to the Divisional Nominating Committees. Nominees could not be nominated for more than one position. Applications were to include the position, a 100 words biography and homepage URL, if available. A number of interesting applications were received, and the list of candidates approved by the Electoral Committee is available at the IUSS website in section About the IUSS: [http://www.iuss.org/index.php?article\\_id=649](http://www.iuss.org/index.php?article_id=649).

The ballots (list of nominated persons and the corresponding biographies) provided by the Divisional Nominating Committees and the Electoral Committee are the basis for the election. All officers except the appointed First Vice-Chairs of the Divisions can be re-elected for one further term.

*According to the IUSS statutes and bye-laws (both version Oct. 2014) voting by Members will be conducted electronically on a one vote per individual in each National Member Society basis, using a*

*procedure developed by the National Society or adhering organization to the Union. Results of the election will be reported by the National Society or adhering organization to the Electoral Committee via the President. The number of votes cast within each country shall be based on a true and fair ballot of their national membership.*

The Electoral Committee shall receive all the ballots from all the voting constituencies. There will be one vote for each member and not adjusted in any manner to reflect the number of members in a National Society. Elections will be decided by a simple majority of votes cast.

Those having the majority of votes cast will then be declared elected. The names of those elected shall be notified officially by the President and shall be published in the Bulletin and on the IUSS Website.

The Presidents of the National Member Society are kindly requested to send the results of their national elections to [iuss@umweltbundesamt.at](mailto:iuss@umweltbundesamt.at) (Cc to [rhorn@soils.uni-kiel.de](mailto:rhorn@soils.uni-kiel.de)).

Voting for all Divisional and Commission officers shall be completed 6 months before the Congress. Therefore the following dates have been stipulated:

- Opening of the voting system for your society members: 1 September 2017
- Closing of the voting system for your society members: 31 December 2017
- Provision of votes to Electoral Committee: 28 January 2018

### Summary of steps to be taken by national societies:

1. Build up an electronic voting system at national level
2. Distribute the ballots to the individual members
3. Collect the votes from each individual member
4. Provide the number of votes and the favourite candidate for each officer based on the votes received for each candidate (Excel list to be filled) to IUSS



*Photo of award ceremony: Rattan Lal (IUSS President), Stéphane Le Foll (Minister of Agriculture and Food of the Republic of France)*

### **Preparation of the World Congress of Soil Science 2018**

The last months have seen a lot of progress with the preparation of the scientific programme of the 21<sup>st</sup> World Congress of Soil Science 2018. The programme will be available in July 2017 on the website <http://www.21wcss.org/>. The next steps towards the Congress taking place from 12 to 17 August 2018 in Rio de Janeiro, Brazil, are the following:

- On-line registration and abstract submission open: July 2017
- Deadline for abstract submission: 30/11/2017
- Notification for abstract acceptance: 15/01/2018
- Deadline for early registration: 15/02/2018
- Deadline for regular registration: 12/05/2018

Please take note of these dates in order to submit your contribution and to register for the congress in time. We are looking forward to seeing as many of you as possible at the WCSS 2018.

### **IUSS Distinguished Service Award for French Minister Le Foll**

On 6 January 2017 the event “Soil and Climate Change: the 4p1000 initiative” was organized by IUSS and INRA in honour of HE Hon’ble Stéphane Le Foll, the Minister of Agriculture and Food of the Republic of France. The scientific seminar addressed a very pertinent theme of soil carbon sequestration which is in accord with the “4 per Thousand” Initiative conceptualized and promoted by the Minister.

The International Union of Soil Sciences (IUSS) has thus far presented the Distinguished Service Medal to two prominent world citizens and policy makers. The first medal was awarded to HRH the late King of Thailand Bhumibol Adulyadej in 2012 in order to recognize His outstanding achievements in soil care and sustainable soil and land management. The second medal was presented to HE Hon’ble Stéphane Le Foll for promoting soil science on the global agenda through COP21, and making soil and agriculture integral solutions to climate change and advancing food security. By so doing, HE Mr. Stéphane Le Foll effectively translated the scientific information of soil science into a global action programme. By implementing the “4 per Thousand” programme, Mr. Le Foll has enhanced the awareness of the importance of soil and its management for addressing the global issues of the 21<sup>st</sup> century. IUSS shall be pleased to work with him and the other members of the scientific team involved in implementing the “4 per Thousand” Initiative and support it globally.

### **IUSS Distinguished Service Award for Prof. Klaus Töpfer**

On 24 May 2017 the International Union of Soil Sciences awarded Prof. Dr. Dr. h.c. mult. Klaus Töpfer the Distinguished Service Medal in Berlin. The medal was presented during the Closing Plenary of the Global Soil Week 2017 addressing the theme ‘Catalyzing SDG Implementation through a Land and Soil Review.’ Attended by almost 300 participants, the meeting aimed to develop policy messages as input to the High-level Political Forum on Sustainable Development (HLPF). With this award



*Photo of award ceremony (from the left to the right): Dr. Stefan Schmitz (German Federal Ministry for Economic Cooperation and Development), Prof. Dr. Takashi Kosaki (IUSS President Elect), Prof. Dr. Klaus Töpfer (founding Director of the Institute for Advanced Sustainability Studies), Prof. Dr. Rainer Horn (IUSS Past President), Prof. Dr. Rattan Lal (IUSS President), Dr. Margaret Thälwitzer (Chair of the Board of Trustees, ICARDA), Jochen Flasbarth (State Secretary at Ministry for Environment, Nature Conservation, Building and Nuclear Safety, Germany), Prof. Dr. Joachim von Braun (Center for Development Research, University of Bonn, Germany).*

IUSS recognizes that Prof. Dr. Dr. h.c. mult. Klaus Töpfer translated knowledge of soil science into policy and governance as German Federal Minister for the Environment, Nature Conservation and Nuclear Safety; Federal Minister for Regional Planning, Civil Engineering and Urban Development; Under-Secretary-General of the United Nations; Executive Director of the United Nations Environment Programme; founding and Executive Director of the Institute for Advanced Sustainability Studies. IUSS has been and shall continue to be pleased to work with Prof. Klaus Töpfer and the Institute for Advanced Sustainability Studies towards the implementation of the UN Sustainable Development Goals, in particular by providing knowledge and expertise on soil functions and their impacts on sustainable life on planet earth.

### **IUSS website**

The main tasks of the webmaster during the last six months were adding new information to the website (e.g. new events, news), implementing alert news into the content management system, further creating new contents eg for the International Decade of Soils and programming it backend, and finally, keeping information of IUSS members updated.

### **IUSS Stimulus Fund**

The IUSS Stimulus Fund was created to support suitable activities within the Commissions and Working Groups. Where appropriate, the Fund will also support other activities to assist the development of Soil Science generally but particularly in regions of the world where lack of resources limit opportunities.

Some funds will be allocated to undertake specific projects identified by the Executive Committee, particularly projects which contribute to fulfilling the objectives of the International Decade of Soils. In these instances a project description will be provided and interested parties will be required to submit a proposal to carry out the project. The financial arrangements for these projects will be negotiated as part of the selection process.

IUSS has set aside a sum of \$15,000 annually to help fund a number of activities, but this funding may be increased, if the quality of applications is particularly high. The normal maximum award will be \$2,500, but larger awards may be considered. For more information about the stimulus fund, please go to: [http://www.iuss.org/index.php?article\\_id=594](http://www.iuss.org/index.php?article_id=594)

In 2017, there are again 2 submission dates for applications: 15 March and 15 September.

At the first submission date, eight requests for funding were received, of which 3 were considered eligible for funding:

Thus, a total of \$7.040,00 was disbursed during the first round, contributing toward the establishment of "Soil Corners" in secondary schools in Georgia, to the International Soil Classification WRB Field Workshop in Latvia and Estonia, which will take place July 22-27,2017, and, finally, to the Global Soil Mapping Workshop in Moscow, 2-4 July, 2017.

This means that a little less than half of the funds still remains. Applications are welcome and should be sent to [iuss@umweltbundesamt.at](mailto:iuss@umweltbundesamt.at) until 15 September 2017.

A short (500-1000 words) report of the activity for which the funds were received, must be presented for inclusion in the IUSS Bulletin within 2 months of completion.

## Report on the STIMULUS-funded project “Development of mobile application for WRB 2015 soil classification” (funded in 2016)

### The scope of work:

The aim of the project was the development of an updated application for mobile phones for classifying soils in World Reference Base for Soil Resources (IUSS WG WRB, 2015).

The application allows quick allocation of soils to WRB reference groups and finding of appropriate modifiers. The application leads the user through the key for allocating soils in the reference groups, and then through inserting primary and secondary modifiers. At all the stages the user can request help to consult the definitions of diagnostic horizons, materials and properties.

The first version of this application was released in 2014 at the World Congress of Soil Science in Jeju. It was produced with the financial support of the IUSS Division 1 “Soils in Space and Time”. The app worked under Android as the most widely used operation system for mobile phones.

During two years from the date of release the application was tested by multiple users of various levels and generally received positive comments on its utility for soil classification. However, we received a number of suggestions. The main deficiency was that though Android-based phones constitute more than 80% of the entire market of smartphones, many soil scientists have iPhones and Windows-based phones, and they could not use the application. Also testing showed that many improvements should be made: for example, some users complained that the results cannot be saved in the phone; others mentioned that there was no “return” option and that they had to start from very beginning each time if a minor mistake occurred etc. Also it should be mentioned that in 2015 important corrections were added in the text of WRB, and they had to be also addressed in the new release.

The updated version has the following updates:

1. The content was changed from WRB2014 to WRB2015.
2. The versions for iPhone and Windows Mobile were developed along with the Android version.
3. There is an option for returning one or several steps back if a mistake has been made.
4. The results of classification may be saved.

### Location of the downloadable products:

The three versions of the application can be downloaded at the web site of the IUSS Commission 1.4 “Soil Classification” (version in English): [https://sites.google.com/a/vt.edu/iuss1-4\\_soil\\_classification/home/mobile-phone-apps](https://sites.google.com/a/vt.edu/iuss1-4_soil_classification/home/mobile-phone-apps)

Also the access to the application is available at the FAO web site: <http://www.fao.org/soils-portal/soil-survey/soil-classification/world-reference-base/en/>

Simultaneously a Russian version of the application was released; this version is available at the Eurasian Soil Portal: <http://eurasian-soil-portal.info/index.php/ru/resources-ru/software-ru>

### Technical characteristics of the WRB tool

#### Android:

- Api levels: 17+
- Supported devices: smartphones, tablets
- Minimal version of the operating system: android 4.2 Jelly Bean
- Targeted version of the operating system: Android 7.0 Nougat

#### iOS:

- Supported devices:
  - iPhone 4s and later
  - iPad 2 and later
- Minimal version of the operating system: iOS 8.0

#### Windows:

- Supported devices: smartphones, tablets, notebook, desktop PC
- Minimal version of the operating system: Windows 10.0 build 10240
- Targeted version of the operating system: Windows 10.0 build 14393

### Financial report:

The total budget of the project was 2400 USD including


- 1900 USD STIMULUS grant and
- 500 USD Division 1 contribution.

The entire sum was used for the salary of the coder who was hired for 3 months (October-December 2016).

2088 USD – net salary for 3 months;

312 USD – income tax.

Real time required for the preparation of the application was almost twice as long than initially



planned, partly because of the time needed for duplicating the database for the Russian version, partly because the iOS version was more difficult to develop than expected.

#### **Contribution of Lomonosov Moscow State University**

Both the Faculty of Soil Science and Eurasian Center for Food Security of Lomonosov Moscow State University made efforts to provide additional funding for the Russian version, and managed to provide two grants:

- Equivalent of 1787 USD for the translation of selected chapters of WRB into Russian;
- Equivalent of 1787 USD for the development of databases for the mobile application WRB 2015 in Russian.

Also the specialists of the Faculty of Soil Science participated in testing of the English and Russian versions before their release.

*By*

*Pavel Krasilnikov*

*Professor, Faculty of Soil Science, Lomonosov Moscow State University*

*Moscow, Russia*

*Former Vice-Chair of the Commission 1.4. "Soil Classification" (2010-2014)*

The reports of two other STIMULUS-funded activities in 2016 - 3 fellowships to attend the 15<sup>th</sup> International Conference on Soil Micromorphology (Mexico City, Nov 27-Dec 5 2016) and 5<sup>th</sup> International Soil Classification Congress and Field Workshop (South Africa, 1-7 December 2016) can be found in the chapter Conference and Meeting Reports.

#### **Successful participation in ICSU call**

As already reported in the previous Bulletin, the Secretariat elaborated proposals for IUSS to participate as supporting partner in three ICSU grants. IUSS has declared its readiness to participate in the following proposed projects: iMAGE: Mapping Geoscience Unions to the 2030 Agenda and the Sustainable Development Goals (lead applicant 1: ISPRS); TROP-ICSU-: Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding (lead applicant: IUBS); Global Understanding for Sustainability (GUS), lead applicant: IGU.

In the beginning of 2017 the TROP-ICSU project proposal received an ICSU Grant and IUSS is looking forward to working on this exciting project.

#### **Rationale of the project**

Understanding the dynamics of Earth's ecosystem and identifying measures to sustain it for the future requires immediate action with multidisciplinary approaches. Research efforts to identify key factors that affect the biodiversity and ecosystem functions and services need to be scaled up substantially and rapidly, requiring a whole new generation of multidisciplinary scientists/policy makers/administrators, whose education should start now. Educating forthcoming generations about the causes and effects of global climate change is also imperative as implementing solutions depends on an informed public. In this context, we need to develop education and science communication modules in such a way that every future citizen would be better equipped to identify appropriate solutions for sustainable and equitable development.

#### **Output**

The main output will be a simulator tool for climate change which shall also use soil parameters and make people aware of the interactions between human activities, environmental impact and climate change. The simulator shall be customized and tested at UNESCO sites. Teachers shall be educated as to how the simulator can be used and be integrated into curricula. Dissemination of information about the simulator is also part of the project.

#### **Contribution proposed by IUSS**

For the development of the climate change simulator which serves as teaching tool for students (15+) IUSS will identify soil data relevant for climate change. The format of data required is dependent on the actual simulator tool and will be defined in due course of the project.

Once the simulator is available, IUSS may support TROP ICSU to select schools in UNESCO sites and to test its suitability as a teaching tool. This involves customizing the simulator for worldwide use and, thus, translation of relevant parts into different languages.

Through its media channels IUSS shall support the project by contacting schools and universities as well as the general public to raise awareness and support the use of the simulator. Amongst others,



IUSS will widely spread the word and present the project at national and international level.

### Benefits for IUSS

Due to its participation in the project the IUSS can bring soil knowledge not only to other scientific disciplines, but also to students, school children and citizens around the world, in particular in areas sensitive to climate change. IUSS can gather expertise from other sciences, work together with them, exchange views and learn from each other, in particular with regard to the provision of education material and in outreach communication. IUSS will benefit from enlarging our network and can use novel teaching tools and follow new approaches of communication. As partner IUSS is more visible to the other project partners, e.g. other Unions, ICSU and finally UNESCO. Finally IUSS will enlarge its outreach and make a lot more people aware of IUSS.

### IUSS booth at EGU 2017 General Assembly in Vienna

At EGU 2017, which took place in Vienna, 24 to 28 April 2017, IUSS shared a booth with the Brazilian, British and Italian Soil Science Society. IUSS presented its Divisions and their most recent activities. The IUSS Flyer was updated accordingly. In order to increase the extent of its contributions to solving soil-related issues such as climate change or food and water security through public

outreach campaigns, education, dissemination of information and the publication of a series of soil books, IUSS hosted the Short course 'International Decade of Soils: Ideas for outreach activities' on Tue, 25 Apr, 13:30–15:00 / Room -2.31. Ongoing activities carried out by soil science societies were presented, which shall give rise to further activities as well as creating new ideas for the future. Further activities: Commission 2.2 Soil chemistry convened session SS6.2/BG9.11 Soil organic matter turnover: from molecules to ecosystems and back again (co-organized) on Wed, 26 April; Division 4 co-convened session SSS1.4 Soil, Art, Culture, and History, on Tue, 25 April.

### Call for nominations for the Dan Yaalon Young Scientist Medal

This medal will be awarded by IUSS Division 1 Soils in Space and Time and Commission 4.5 History, philosophy and sociology of soil science. The nominees may be proposed by institutions, societies, commissions and working groups of the IUSS, and by individuals. The deadline for nominations ends on Dec. 1, 2017. The Dan Yaalon Young Scientist Medal is awarded once every four years at the World Soil Congress. The first presentation will take place at the XXI. World Congress in Rio de Janeiro, Brazil in August 2018.

Read more:

[http://www.iuss.org/index.php?article\\_id=26](http://www.iuss.org/index.php?article_id=26)



Picture from the EGU Booth (from the left to the right): Ian Brown (Executive Officer of BSSS), Sigbert Huber (IUSS Secretary), Flavio Camargo (IUSS Vice-President Congress, Representative of SBCS), Takashi Kosaki (IUSS President Elect), and Giuseppe Lo Papa (Representative of SISS).



### **Call for Kubiëna medal nominations**

The Kubiëna Medal was introduced by Subcommission B - Soil Micromorphology of the IUSS to commemorate the memory of Walter L Kubiëna for his distinguished contribution to soil micromorphology. It is given for outstanding and sustained performance in the discipline of soil micromorphology and to date there have been eight awards: E. Yarilova, R. Brewer, H.J. Altemüller, G. Stoops, E.A. FitzPatrick, L. Wilding, H. Mucher, N. Fedoroff and R. Miedema. The next medal will be presented at the 2018 IUSS Congress in Rio. The deadline for nominations was the end of April 2017. More information can be found at: [http://www.iuss.org/index.php?article\\_id=172](http://www.iuss.org/index.php?article_id=172)

### **Call for new IUSS Jeju Award**

The IUSS Jeju Award has been co-established by IUSS and the Korean Society of Soil Science and Fertilizer (KSSSF) in commemoration of the successful 20<sup>th</sup> World Congress of Soil Science (WCSS) in Jeju, Korea in 2014. The Award is a strategic award given to a young and mid-career soil scientist who has innovative and outstanding accomplishments in education, research, or extension in soil sciences and has made a substantial contribution to IUSS missions.

Starting in 2018, the IUSS Jeju Award will be given to one awardee every four years at each World Congress of Soil Science. The Award consists of a plaque or equivalent, a certificate, a US\$1,000 honorarium, and financial support for air fare and accommodation to attend the presentation at the WCSS. If there is no acceptable candidate, the award will not be given.

The deadline for nominations ends August 12, 2017.

More information can be found at:

[http://www.iuss.org/index.php?article\\_id=637](http://www.iuss.org/index.php?article_id=637)

### **Call for IUSS Dokuchaev Award and IUSS Von Liebig Award**

The IUSS Dokuchaev Award is provided every four years for basic research in soil sciences whereas the IUSS Von Liebig Award is provided every four years for applied research in soil sciences.

The deadline for nominations ends August 12, 2017.

More information can be found at:

[http://www.iuss.org/index.php?article\\_id=632](http://www.iuss.org/index.php?article_id=632)

## IUSS Inter-Congress Meeting – Minutes of the IUSS Council meetings

The 2016 Inter-Congress Meeting took place in Rio de Janeiro, Brazil, Sunday 20 – Friday 25 November 2016. This meeting comprised a Council meeting, Division meetings, a One-Day symposium related to the theme of the WCSS 2018 ‘Soil science: beyond food and fuel’ and a meeting of the Executive Committee. The Secretariat provided support to the general organization of this event and the development of the detailed programme as well as the detailed documents for the event.

Below, you will find the minutes (and a photo) of the most recent IUSS Council meeting (21 and 24 November 2016), which took place during the Inter-Congress meeting.



International Union of Soil Sciences

**IUSS Inter-Congress Meeting 2016**  
**Sunday 20<sup>th</sup> to Friday 25<sup>th</sup> November 2016**  
**Rio de Janeiro, Brazil**

IUSS Meeting location - **Windsor Excelsior**  
1800 Atlantic Avenue, Copacabana, Rio de Janeiro  
- RJ, 22021-001 Phone: (+5521) 2195-5800  
(<http://www.21wcss.org/ic2016/index.ph>)

**Monday 21<sup>st</sup> November**

**9 am - 5 pm – Council Meeting**

### 1. Introduction

Welcome of participants by IUSS President and President of SBCS

Honoring of King Bhumibol (explanation of name given by Rattan Lal)

### 2. Minutes Council Meeting Jeju congress 2014

Accepted with small changes to Soil Taxonomy; motion from Linda Mol was not voted on, but a motion shall be formulated to be dealt with during the IC meeting.

### 3. Minutes Executive Committee Meeting Jeju congress 2014

Accepted without changes

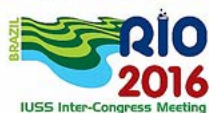
### 4. Report President

Rainer Horn thanked all members of the EC for their work

Improve the cooperation with international organisations

Monthly telephone conferences among EC  
Stimulus Fund to support activities of the Union  
(Committee consists of Mary Beth Kirkham, Roger Swift, Stephen Nortcliff)

International Decade of Soils as continuation of IYS  
Soil book series for the public and politicians



**Brazilian Soil Science Society**

**Windsor Excelsior Hotel - Copabana, Rio de Janeiro 20-25, November, 2016**

*Participants at the IUSS Inter-Congress Meeting*

Representation of IUSS at many meetings such as ISC 2015 (250,000 air miles covered by President)  
Several declarations were signed in countries and also on the international level (Vienna)  
Outlook: new scientific visions with input from NSSS, WGs, IDS, Centennial 2024  
We need to go out with our knowledge to politicians, general public  
Think of crazy ideas, otherwise others will do it!  
Thanks for acting as first elected President for IUSS  
German Research Foundation (DFG) was thanked for their great support to the President, so IUSS could do more than expected

### 5. Report Vice President Congress

Expectations related to the Congress: 5,000-7,000 participants  
Website to be up and running by March 2017  
Afterwards submission of abstracts  
Congress venue will be looked at on Wednesday  
Proposal (by Stephen) to provide a fund for younger scientists was formulated

Round Table presentation of participants

### 6. Report Secretariat and Treasurer

Report given by Sigbert Huber, in particular request to inform about changes of email addresses, opportunity to submit contributions to Bulletin 129 until 30 Nov., request for contributions to EGU session of IUSS

Report by Treasurer like in EC meeting

Stephen: Explanation on change of bank account from Scotland to Austria

IUSS invoices all in USD except European Societies (EUR)

Maybe change to EUR because of high bank charges from 2018 onwards

Australia: how are membership rates calculated, answer in Report of related Standing Committee

Italian SSS: supports the change to Euro as currency  
Currency: shall be handled in relation to the Secretariat

Support letters of Full members to continue the permanent Secretariat shall be provided, template to be sent to NSSS

Good experiences with Western Union and cheques  
It is acceptable to give cash to EC members

*Audit of accounts: motion for a change of auditor from 2017 onwards is proposed*

*Motion is accepted unanimously*

### 7. Report Division 1

Comm Micromorphology: Newsletter is really fancy, educational, very active

Soil Geography: not so active, represented at EGU..., WCSS 2018

Soil Genesis: no activity report, changes in the leadership

Soil Classification: active through their two WGs, giving an award, run a website

Comm Pedometrics: most active, 25 years, homepage, newsletter, three awards, special issues of the Geoderma

Paleopedology: very active, many activities, newly proposed medal to be discussed tomorrow, many proposals for the WCSS 2018, many young people

WG Cryosols: active

WG WRB: active, relation with FAO

WG Universal Soil Classification System (USCS): 8 years mandate, ends at WCSS 2018, promising results, database, concept was developed, proposal for the WCSS 2018

WG Soil Monitoring: contributed to other WGs and Comm Pedometrics

WG DSM: webpage, other champion, proposes another new WG

Div. activities: Soil Judging Contest after Jeju 2014, really successful, trophy, hope to organize one at WCSS 2018

Excursion to Oldupai Gorge, the cradle of mankind, presented

Overview table of Division's activities

Financial support for many activities

Division 1 meeting in Hungary in 2017 with thematic sessions and joint sessions, field trips are planned

#### *Discussion:*

IUSS is willing to have only active Comms and WGs, inactive ones may be closed down, new ideas are welcome

Better coordination of websites: different styles, but all linked by IUSS website

US Soil Taxonomy, is independent, big national support, WG Universal Soil Classification System (USCS) is led by previous director of US Soil Taxonomy, WG WRB is voluntary work, how national classifications are integrated such as the Australian Soil Classification, a lot of exchange between WGs due to overlapping membership

## 8. Report Division 2

Vice-chair is missing in Comm 2.2.

New proposal for WGs

Comm Soil Physics: SUSTAIN conference

Comm Soil Chemistry: few activities

Comm Soil Biology: very active, meeting together with ESAFS, support to young scientists, Soil Zoology (ICSZ), acid soil related symposium

Comm Interfacial Reactions: organises ISMOM conferences, 11<sup>th</sup> ISOB meeting, link to JSSSPN activities

Symposia in Bangor 2016, Peat Soil Conference, Sustainable Energy Conference

2017: EGU, GSBC2, 16<sup>th</sup> Internat. Clay Conference

Proposals for WGs:

WG Hydropedology: proposal to change to WG Critical Zone System, relation to proposed Comm Systems Soil Science: first WG Critical Zone System shall show activity before deciding about new Comm

WG Soil Modeling Consortium

WCSS 2018 3 Div. proposals plus 14 Comm proposals

### *Discussion:*

WGs do not have clear visions, how to evaluate them, how they shall report, clear link to Division(s), contributions to WCSS is a question of ideas, not of room, programme shall be ready by March 2017

Roger Swift recalls the Statutes and Bye-laws to be considered in relation to Comm and WG

Don Sparks: we should be careful in relation to setting up new Comm and WG

Erika Micheli: WG chairs shall be changed, if performance is weak before closing it down

## 9. Report Division 3

Description of the Division

Organisation of the Division

Major activities: Comm 3.1 and 3.6 with WGs Land Degradation, SUITMA, Paddy Soils

2015 Div worked with related societies

Major events of Div, Comm and WG were named

Many proposals from Div, Comm and WGs for the WCSS 2018

### *Discussion:*

Chronosequence of soil disasters

Soils and rice production as a topic

Soil and water conservation: a big problem, but not reflected as no report from Comm 2.2 received

## 10. Report Division 4

Organisation of Division was described

Each Comm worked very well, in particular during the IYS

Div 4 Newsletter is managed by Comm 4 (Damien Field)

Many articles were published during one quarter of the IYS

Set of exhibitions was carried out by Christine Muggler

SUITMA 8 took place in Mexico City

Proposal of 20 sessions for WCSS 2018 were provided

New WG on Cultural Patterns of Soil Understanding is proposed, explanation of soil perception by society

### *Discussion:*

Winfried: Strong plea to reach out to the world, define links to several SDGs

Discussion on scientific issues will follow in Div meetings tomorrow

IUSS shall be able to contribute to the SDGs

Food security: Profit for society and/or environment

## 11. Report Committee on Awards and Prizes (CAP)

Report presented by Mary Beth

Request to NSSS to submit nominations for Dokuchaev and/or Liebig award

Distinguished Service Award will be given to Mr. Le Foll

Lal suggests plaque to outgoing EC members

Nobel Prize idea to be followed up by IUSS

KSSSF Jeju award: explanation by Jae Yang, target fund was founded, award dedicated to young and middle-aged scientists, shall be given every four years at WCSS

Give scientists the chance to get an award and to find a job easier later on

### *Discussion:*

We like to see awards for younger people, which was tried already in the past but failed because of lack of money

Conditions: shall not be tied to a certain age, better by time after PhD, e.g. 15 years, PhD shall not be a must

Frequency: every four years, more often if at all possible, but CAP will find candidates

Nomination Committee: IUSS Standing Committee  
CAP

*Motion: IUSS propose the establishment of the "IUSS Jeju Award" to early career scientists between PhD and the 15 years following it  
36 votes pro, no votes against, Jeju award accepted unanimously*

IUSS as candidate for the Nobel Prize: Lal in favour  
not to wait any longer

*Motion: Ask the CAP to go further with the idea, stopped because of uncertainties*

*Discussion:*

President's Committee will find out about eligibility of IUSS

Nobel Prize is awarded for achievements already made, e.g. for the implementation of 4per mil initiative

Soil science is recognized as central to food security, carbon storage, ecosystem services, scarcity of resources in relation to land and water, land degradation neutrality

ITPS: President is a member from the German government, IUSS shall be also an observer of IPCC

UN-CCD: were against IYS, but we succeeded

We need a really convincing compilation of IUSS knowledge

Proposal of fund raising for the submission (10-20k)

Explore the history of the Nobel Prize, clarify for what IUSS shall get the Prize

*New motion: Exec Comm investigates the conditions for a nomination for the Nobel Prize*

*35 votes pro, no votes against*

## **12. Report Committee on Budget and Finances**

Paid membership 2016: membership of more than 50 members, exceptions have been made in order to be inclusive

Membership fees: see Bye-Laws 9.1

Numbers are depending on NSSS

Six years ago we started with 42 until now we have 64, successful in S-America, Africa is difficult, next focus

*Budget tables:*

Income:

Most important income is the membership fees, which slowly increase

Income from Alert and Bulletin is small

No further contract for Secretariat from 2019 onwards

Costs:

More support shall be given to Div chair, only 20% for their own expenses

ICSU fees are worthwhile, discussions, networking, one of the strands of the union, working together with scientists from other sciences

Soil book series to inform non-soil scientists, it costs money, but we have to invest in outreach, proposal to double the expenses

Loss of 16,000 USD due to bank charges, we will go back to the bank to investigate that

*Discussion:*

Interactions with ICSU: ISSS was not a member until 1993, after that the structure of the Union changed, moneys received were invested into Paleopedology

Geoscience unions are probably the most active groups in ICSU

Countries paid, only 18 countries are left over for 2016 fees, some cannot pay due to national reasons

Stephen asks for volunteers to be a member of the Standing Committee

## **13. Report Committee on Statutes and Byelaws**

Both documents are on the IUSS website

Changes to Statutes: time span for alerting Council members of proposed changes shall be reduced from 6 months to 60 days

Changes concerning Honorary member nominations plus corresponding changes in Bye-laws 5.1, only max. 10 Hon members instead of 15,

Working groups: biennial evaluation of WGs

Elections: Div. Vice-chairs shall be nominated just for 4 years before next WCSS

We need young members who want to work on Committees, please think about it

General agreement

*Motion: To change the Bye-laws as presented, 38 votes in favour, none against*

*Motion: Proposed changes of the Statutes shall go to electronic voting, 38 votes in favour, none against*

## **14. Report Committee on Presidential elections (PEC)**

President period for Rainer Horn and Jae Yang is 2.5 years in order to achieve the transition from the new structure (see statutes & bye-laws)

Presidential election 2016 process:

No video: unsure about the success rate and quality, facility availability, English language skills

Voting process is up to the National Soil Science Societies (NSSS)

No permission for personal information to be on the website

Future: standard paragraph with a max. word length plus photo on website and in Alert

No active canvassing for support by NSSS

We want to widen the base and number of candidates in the future

#### *Discussion:*

Visibility of the candidates: video, live presentation at IC meeting, problem of timing with rules, video competition, documentation shall be more condensed, more standardized procedure, technical limitations, video interviews to be made

PEC will think of improvements for the future elections

Request to bring forward really qualified candidates for Presidency

#### **15. Report Working groups**

Overview of WG reports: EC will investigate whether there is any activity in the two WGs Acid Sulphate Soils (related to Div 3) and Global Soil Change, if not, they will be discontinued

WG Proximal soil sensing will have elections of new chairs and vice-chairs

WG USCS provided their report too late, will be published in the next Bulletin

### **Thursday 24<sup>th</sup> November 8 am - 5 pm - Council Meeting**

#### **16. Election of Honorary members**

President explains the objective of the elections, national activities are a prerequisite, real significant contribution to IUSS, not only organization of an excursion, but be a member of the organizing committee

Max. 15 honorary members now, in the future up to 10 members

List of candidates: small ad-hoc committee of EC checked the eligibility, six are considered non-eligible, but not excluded from voting

Information about candidates has been distributed to the Council in advance

Candidates can be from all countries, not only from big ones

Suggestion that nominators have the opportunity to make a plea for the election of not recommended candidates

Sadao Shoji has made a substantial contribution to ESAFS, organized a lot of excursions, chairman of the excursion committee

Prof. Chen: Taiwanese society joined in 1988, he was the key person to link with IUSS, was present at all Inter-Congresses and WCSS

Flavio and Andreas counted the votes

Counts: 37 votes received, 19 votes are needed to be elected

13 new honorary members have been elected including Swift, Nortcliff, Yang, Kirkham (present and congratulated at the Council meeting):

I. P. Abrol (India), Jaume Bech (Spain), Maria Gerasimova (Russia), Martin H. Gerzabek (Austria), Mary Beth Kirkham (USA), Josef Kozak (Czech Republic), Stephen Nortcliff (United Kingdom), Marcello Pagliai (Italy), Piotr Sklodowski (Poland), Karl Stahr (Germany), Roger Swift (Australia), Tengiz F. Urushadze (Georgia) and Jae Yang (Korea).

Requests for the future: Short CVs of candidates requested, not green and white indication in the voting sheet, only different font

Erika Micheli: Voting results finished, but in future top three contributions to IUSS should be listed

IUSS officers carry out a lot of work, not necessarily acknowledged in the case of Alfred Hartemink, supported by Christian Feller, Don Sparks wants to acknowledge what Alfred did for the IUSS, supported by Mary Beth and Jae Yang.

Voting cannot be renewed according to the rules.

#### **17. Preparation of Elections of Division and Commission officers**

Recommendation to nominate candidates who fulfill all the criteria, candidates from S-America and Africa missing, we need people that are very active as Div chair and Comm chair, we need younger people, gender balancing, to help run the IUSS

#### *Dates:*

Divisional Nomination Committees to be defined until 31 Dec. 2016

Call for nominations until 31 March 2017

Fixed candidates list 1 May

Voting Sep. until Dec. 2017: national committees provide the number of votes cast for each candidate

Decision list 6 months before WCSS

Electoral Committee:

*Motion that the Chairperson of the EC is the IUSS President*

*33 votes in favour, none against*

*Motion: Membership fees shall stay the same for the next two years*

*33 votes in favour, none against*

*Motion: Stipulate that President can allow national membership below the number of 50 individual members*

*33 votes in favour, none against*

Members by country: try to report the real numbers to the extent possible, increase per year would be appreciated

### **18. Standing Committee chairs and members**

All chairs of Committees are appointed by the Council, can continue, younger people are desired

Chairs:

Stephen Nortcliff is willing to work together with a new volunteer in the next two years, workload of the chair is 60 days a year, most work is chasing Full members to pay their membership fees

Mary Beth Kirkham: has already proposed 3 new members

Roger Swift: first new chair of the PEC, three Past Presidents are currently on the Committee, five different continents; considers it right for himself to step down 2018, should change 2-3 members by 2018

Don Sparks: involved since the beginning of IUSS (1998), prepared to step down, we need new people that work

Proposal to limit the chair to act for two periods, but can still act as member of the Committee (to be included in the Bye-laws by 2018)

Experience of chairs is important to be kept.

### **19. Proposal for a new award of KSSSF**

Done on 22<sup>nd</sup> Nov. already

Awards were given to outgoing President and Past-President, will be continued in the future

Kosaki as new President-Elect, but would like to step down as Div. 3 chair

Thanks for work as Div. 3 chair

### **20. Proposals for new Commissions and WGs**

Division 1: no overlap with WG Digital Soil Mapping (DSM)

*Motion: support the establishment of new WG Global Soil Map*

*36 votes in favour, none against*

Division 2: two proposals

*Motion to establish the WGIInternational Soil Modeling( ISC) with chair Harry Vereecken*

*32 votes in favour, 1 against*

New Comm Systems Soil Science, chair Henry Lin, vice-chair Hans-Jörg Vogel

Recommendation of EC to run it as a WG until WCSS 2018

Questions as to whether the WG, later envisaged to become a Comm, will replace the Division later on as it is so broad

*Motion to close down WG Hydropedology and establish WG Critical Zone Science in Div. 2*

*33 votes in favour, none against*

Division 4:

*New WG Cultural Patterns of Soil Understanding, chair Nikola Patzelt*

*Motion to install the new WG in Div. 4*

*38 votes in favour, none against*

### **21. Proposed Comm and WG forum**

Explanation regarding the motion put forward by Lind Nol

Proposal made based on the recommendations of the EC

To be installed and report until next Inter-Congress meeting

Operations: help IUSS to run smoothly on scientific matters, not deal with organizational issues

Forum will provide platform for exchange between Comm and WGs, including individual members, students to ask questions, forum to answer

Further explanations on detailed processing

Hon member: Forum fosters the cooperation between Divisions

*Motion: Council shall install the Forum for Div, Comm and WG to discuss scientific issues under its chair Jae Yang*

*38 votes in favour, none against*

### **22. IUSS Stimulus Fund**

Report from Secretary about the status 2015 and 2016

We favour areas with low financial resources; increase the amount up to 15,000 USD for 2017



We have not been successful in getting educational applications, but we look for it, so we will ask for special work to be done

Divisions often supported the applications, shows commitment, help to increase the IUSS support

For each application max. 2,500 USD

Applications can be submitted at all times

### 23. International Decade of Soils Programme

IYS: we had about 600 meetings

IDS: we want to keep the momentum, bridge the time until Centenary 2024

Supporters: ICSU, Embrapa, ESSC, national societies, FAO will support concrete activities to be defined

What to do? -> define a programme

IUSS soil book series until 2024: books are on stock, request participants to buy it and sell it further, next book on urban soils will be launched on Dec. 5 at FAO in Rome, also in Paris 6 Dec., publisher is now Schweizerbart, wants to publish and sell the book, contract: we need a clear commercial relationship with the publisher, royalties shall be given  
Question on translation into other languages: can be done if someone works on it, Dominique proposes to translate them into French, he will ask AFES for support

*Motion:*

*Editorial Committee shall be installed to look for important topics for the decade, Division chairs plus Past President*

*38 votes in favour, none against*

Request to produce e-books, relevant to the younger people

Distinguished Service Awards to politicians will be given: King Bhumibol, Minister Le Foll because of 4permill initiative on 6 Jan., to be continued

To be successful the IDS has to be made known, spread it out to other groups

Include information on IDS activities in every third Alert

Prepare one-page editorial for soil related newsletters

Social media: shall be used for communication, e.g. Austrian and Australian soil science magazine published online

Quito Congress: children presented their group works on soil science

ENSA activities may be not known so widely, related to Div 4, go to work together, like Latin American initiative or SSSA activities

Suggestion: ask Div 4 to write textbooks for school children or commission writing of a book, relate with teachers at the EGU 2017

Develop a mechanism for payments to farmers for providing ecosystem services

Assessing the societal value of carbon storage and a mode for payments

Nominating IUSS for the Nobel Peace Prize: Not a restriction for us

*Please, put the approved IDS logo (motion with 38 votes in favour, none against) everywhere you can -> IUSS Secretariat shall put logo for download on the IUSS website*

Soil globes: 10 USD for each copy

Soil poster with the term "soil" in different languages

Payments: Credit cards with Paypal shall be cheap, cheques or Western Union are possible

Interviews/personal biographies: questions to outstanding soil scientists

Roger explains: Details see description, national societies are asked to nominate a responsible person, trial phase is focused on Presidents and Hon members, collection of articles for a Centennial book

Technical specifications: 20-30 min.

Specifications to be uploaded to IUSS website

*Motion to install an IDS Committee: Swift, Blum, Muggler, Sparks, Feller, Huber*

*38 votes in favour, none against*

JSSSNP: will interview three experts

Delegates Heck and Otten are willing to work on IUSS Committees

WSD: promoting IDS by reporting on the initiative in the Alert

Soil jig-saw of world soil map for EGU 2017

Soil film/movie competition, awards to be given during Soil Film Day related to WSD in Vienna

Digital 3D soil globe idea with soil map, soil profiles and soil biota at the microscale

Carmelo Dazzi: EU Soil Framework Directive was cancelled, Euroindustries alliance was against  
*Motion: IUSS letter to support Initiative People4Soils*  
*38 votes in favour, none against*

Produce IDS button for EGU 2017, Erika Micheli produced it in Hungary

#### **24. IUSS International Affairs**

See report from President, Secretary and Treasurer

Further contacts to international organisations: like AGU in US, bring IDS idea to AGU, ISTRO, Geounions

Gap between IUSS and UNESCO, department on science and technology, no link to water divisions, office in Montevideo (Gonzales has contact)

France: every two years French organisations present themselves to the National Academy of Science, get grants from ICSU (umbrella of national academies of sciences), not in all countries link for soils is given (like Austria).

USA: Every three years Ester Szein sends a proposal to US Science Foundation, hard work to get money, tries to raise soil awareness in the National Academy of Sciences

FAO/IAEA: good contacts are available, we will keep contact

#### **25. WCSS 2018**

Location was seen yesterday  
Conference fees: three groups of prices, financial support is needed for participants from less favoured countries  
EC will install a funding system of 25,000 USD for young students from developing countries  
ResearchGate conference advertisement system as an offer  
Technical tour on Thursday  
Pre- and Post-Congress tours, three different excursions will be organized by Lucia plus further tours

All information must be ready by 15 March 2017

Calculation must be reasonable

Plan for deadlines of abstracts

Information about accessibility of the country shall be provided (already available on IC meeting website)

Symposia:

Majority of symposia proposed came from inside the IUSS, voluntary symposia shall be under the control of Flavio Carmargo

Tentative programme of symposia on the website until end of Dec., announced in Dec. Alert with opportunity for new proposals until 31 January.

#### **26. WCSS 2022**

Glasgow, first week of Aug, Theme: Crossing Boundaries – Changing Society

Learned a lot from Brazilian colleagues and others  
Met this summer with venue team, with the team hosting soil activities in Glasgow, the soil culture in the South of England, bring other groups like food suppliers to the congress, truly inclusive congress, early involvement of very active researcher group, look for best young researcher around the world, opportunity to cooperate, regional groups to look into proposed excursions, effectiveness of organization team, Terms of reference have been endorsed by the BSSS Board of Trustees, Professional Congress Organizer will be contracted soon, keep the engagement of all in the future

*Discussion:*

No contract with the venue so far, but reservation of time period was made

Requested guidelines will be discussed in the EC meeting on Friday and prepared for WCSS organisers

Request to use the IUSS and IDS logo in the advertisement of the Congress

#### **27. WCSS 2026 bidding and beyond**

Presentation by Renfang Shen/China in 2026  
China works on DSM, 14 soil orders, 39 sub soil orders  
Theme 'Better Soil, better life'  
Venue: Nanjing, 3000 people, 80,000m<sup>2</sup> space  
Many tours and excursions to be offered  
Month/Date not fixed so far, depends on climate



Canada may also provide a bid, maybe in 2030

We have a pack what has to be provided for a bidding which we shall be sent to all Council members

#### **28. Preparation of the Centennial 2024**

Bid from Italy was not accepted in Jeju  
Centennial will be held in Rome, IUSS and some sister organisations may want to be involved  
ISSS: Same building is possible, max. 460 participants in the past, first week of Dec. ISSS will have a national congress, new Committee will be elected, one day celebration in Rome, 2-3 days conferences, history of soil science, of the Divisions, to have a clue of the past to learn for the future, excursions in Tuscany, present a draft at the WCSS in Rio and the Inter-Congress in 2020

Centennial book to be produced with photos

Date: Centennial should be the same day IUSS (then ISSS) was founded (19<sup>th</sup> May 1924), not to compete with EGU and Eurosoil in 2024

#### **29. Any other business**

Exec Comm meeting starting at 8:30

Awards: Dan Yaloon Award, other Division awards  
Urban soil book (297 pages) and Soil Matters book: list for orders was circulated

President hopes that we were successful in the implementation of the change of the structure, and in communicating IDS and IUSS

# International Decade of Soils (2015-2024)

Background information on the declaration of the International Decade of Soils (IDS), its intentions and aspirations, the role of the IUSS Executive Committee and the Council and the tasks IUSS envisages to execute during its lifetime can be found at [http://www.iuss.org/index.php?article\\_id=588](http://www.iuss.org/index.php?article_id=588).

The following paragraphs provide an overview of progress made and activities carried out during the last six months.

## Recent achievements



The IDS logo continued to be used in all IUSS correspondence. Partners and supporting organizations were invited to do the same. In order to do so, the logo has been made available on the IUSS website in different formats at:

[http://www.iuss.org/index.php?article\\_id=588](http://www.iuss.org/index.php?article_id=588)

### Translation of the Vienna Soil Declaration into German

As one of the IDS outreach activities during the last reporting period the IUSS Secretariat has translated the Vienna Soil Declaration into German. The declaration was adopted at the Celebration event of the International Year of Soils in December 2015. It can be downloaded from the IUSS website. The full text of the Vienna Soil Declaration in German is available at: [http://www.iuss.org/index.php?article\\_id=588](http://www.iuss.org/index.php?article_id=588)

### Soil book series

Following the very successful publication of *Soil Matters - solutions under foot*, the next book in this series is on urban soils and was published at the end of 2016 by Schweizerbart. Edited by M.J.

Levin et al., on behalf of the International Union of Soil Sciences, *Soils within Cities - Global Approaches to their sustainable Management*, is a joint effort of the IUSS Working Group Soils of Urban, Industrial, Traffic, Mining and Military Areas (SUITMA). 34 short contributions comprehensively highlight key aspects and characteristics of soils of the urban ecosystem and the problems and challenges associated with them. The authors lay out the fundamentals of soil science applied to anthropized environments (environments degraded by human activity), including composition, properties, and functions of soils of the urban environment, their pedogenic evolution, classification and mapping. *Soils within Cities* is aimed at expanding our view of soils of our planet, and having them taken into consideration for human well-being. It provides city planners and managers with a special reference that can serve to offer citizens a better life in the long run.

IUSS would like to thank all authors and especially SUITMA for their dedication and work on this book. For further details the reader is kindly referred to the section on New Publications.

### IUSS participates in ICSU Grant Project "TROP-ICSU"

Another way of reaching out to a broader audience and to support education on soil is IUSS's participation as supporting partner in an ICSU Grant Project led by IUBS called "TROP-ICSU: Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding". The project started in February 2017 and will last for three years. IUSS will contribute its expertise in developing teaching/learning tools on the impact of climate change on soils and vice versa as well as its impact on our environment. For more details see chapter Report of the IUSS Secretariat.

### Short course 'International Decade of Soils: Ideas for outreach activities'

The International Decade of Soils - a continuation of the efforts made during the International Year of

Soils - will be marked by a number of activities on the national and international levels. One of these was the organization of a Short Course 'International Decade of Soils: Ideas for outreach activities' during EGU 2017, in which ongoing activities carried out by soil science societies were presented which were to give rise to further activities as well as creating new ideas for the future. Participants from various scientific disciplines related to soil science were invited to share their perceptions and experiences in the discussion part of this Short Course.

As one example of related activities carried out by soil science societies, the experience of the SSSA (Soil Science Society of America) is given below:

### Education and Policy in Soil Science: The U.S. Experience

Andrew Sharpley<sup>1</sup>, Harold van Es<sup>2</sup>, Richard Dick<sup>3</sup>, Ellen Bergfeld<sup>4</sup>, Karl Anderson<sup>5</sup>, Bill Cook<sup>6</sup>, Susan Chapman<sup>7</sup>, Susan Fisk<sup>8</sup>, and Julie McClure<sup>9</sup>

- <sup>1</sup> President, Soil Science Society of America and University of Arkansas, Fayetteville, Arkansas, USA
- <sup>2</sup> Past-President, Soil Science Society of America and Cornell University, Ithaca, New York, USA
- <sup>3</sup> President-Elect, Soil Science Society of America and The Ohio State University, Columbus, Ohio, USA
- <sup>4</sup> Chief Executive Officer, Soil Science Society of America, Madison, Wisconsin, USA
- <sup>5</sup> Director of Government Relations, Soil Science Society of America, Washington, DC, USA
- <sup>6</sup> Director of Publications, Soil Science Society of America, Washington, DC, USA
- <sup>7</sup> Director of Member Services, Soil Science Society of America, Madison, Wisconsin, USA
- <sup>8</sup> Director of Public and Science Communications, Soil Science Society of America, Madison, Wisconsin, USA
- <sup>9</sup> Science Policy Manager, Soil Science Society of America, Washington, DC, USA

The Soil Science Society of America (SSSA), founded in 1936, fosters the transfer of knowledge and practices to sustain soils globally, and now serves 6,000 members worldwide with 20% outside the U.S., representing 84 countries. It is also home to over 1,000 certified professionals dedicated to advancing the field of soil science. The Society provides information about soils in relation to crop production, environmental quality, ecosystem sustainability, bioremediation, waste management,

recycling, and wise land use, along with high-impact research publications, educational programs, certifications, and science-policy initiatives.

The need for soil science education to a wider audience and development and promotion of soils-based policy initiatives by the White House and National Academies of Science, has increased in the last decade with recognition of the role soils play in sustaining life, population well-being at the nexus of food, energy, and water security. The worldwide March for Science in April 2017 and Congressional budget discussions in the U.S., highlight the importance of our ongoing effort to inform policy. Here we describe our education, outreach, and policy activities.

### Education

We are dedicated to increasing interest and awareness of soil science among K-12 teachers and their students, and working to integrate more information on soil science into the science curriculum of schools over multiple grade levels. For instance, we have a website dedicated to children (<http://www.soils4kids.org/>), which describes fun games to play with soil, suggestions for science-fair experiments, and opens their minds to careers in soil science. Another site (<http://www.soils4teachers.org/>) is dedicated to the needs of school teachers, providing ready resources for the classroom.

Key components include a section on soil basics, soils by subject, land and people, and lessons/activities. The lessons/activities section includes SSSA developed lessons and those from external sites that have been reviewed and vetted by soil scientists to ensure the science and methods are accurate. Teachers are also able to access fun materials for use in the classroom (rulers, stickers, and bookmarks) as well as connect with organizations SSSA partners with.

Society members have authored books ("Soil! Get the Inside Scoop" for one) to get children aged 9 to 12, excited about the living world of soil. In keeping with the times, a blog called "Soils Matter" is hosted by Society staff and now has over 24,000 views a month.

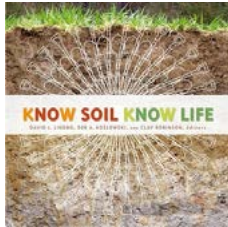
### Soil! Get the Inside Scoop



This book, for 9-12 year olds, explores how soil is part of our life – the food we eat, the air we breathe, the water we drink, the houses we live in, and more. More

than 6000 have been sold and this book was part of the kits distributed to 2500+ educators in celebration of the International Year of Soils.

### Know Soil, Know Life



This 200-page book is targeted at high-school students and entry-level soils classes at the university level. Chapters include physical properties of soil and soil formation, soil ecosystems/biology, chemical properties of soil and soil fertility, classification/mapping/interpretation, environmental science/conservation/land use management, soils and biomes, soil in history and modern life, and career opportunities.

### Website Statistics for SSSA education sites

| Website Visits, (5/1/2016-4/31/2017) |                           |                       |
|--------------------------------------|---------------------------|-----------------------|
|                                      | <i>soils4teachers.org</i> | <i>soils4kids.org</i> |
| Visits                               | 288,000                   | 180,000               |
| New Visitors                         | 229,000                   | 141,000               |
| Page Views                           | 454,000                   | 408,000               |

### Scientific Publications

*Soil Science Society of America Journal* publishes basic and applied soil research in agricultural, forest, wetlands, urban settings and more.

*Vadose Zone Journal* a unique publication outlet for interdisciplinary research and assessment of the Critical Zone, which comprises the Earth's critical living surface down to groundwater.



*Agricultural & Environmental Letters* an open-access, peer-reviewed journal that publishes communications-length, broad-reaching, transformative, and timely research on major scientific, policy, and economic issues that span the entire range of the agricultural and environmental sciences.

*Journal of Environmental Quality* published jointly by ASA, CSSA, and SSSA. Papers address anthropogenic impacts on water, soil, and the atmosphere.

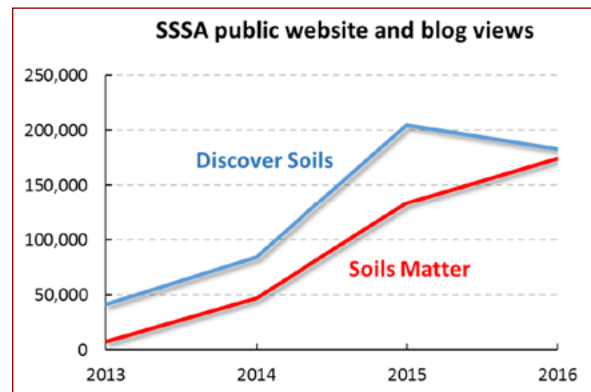
*Natural Sciences Education* a cross-disciplinary journal published by ASA, CSSA, and SSSA, where articles are written by and for educators in extension, universities, industry, administration, and grades K-12.

*CSA News* the official magazine for members of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America.

*SSSA book collections* cover the soil science discipline, management of soils, and research and analytical methods.

### Public Outreach

SSSA has two general public outreach sites online: [www.soils.org/discover-soils](http://www.soils.org/discover-soils) and <https://soilsmatter.wordpress.com/>, reaching over a half-million viewers per year, as well as social media platforms. All forms of online media have experienced excellent growth over the past three years.



SSSA has a strong desire for the public to understand soil science and the work of soil scientists. In 2011, we undertook a public campaign titled "I Heart Soil," creating a logo now in 15 languages (including Klingon). In late 2013, the UN declared 2015 the International Year of Soils, and SSSA developed an integrated marketing campaign that included monthly messages, which included blogs, news releases, social media and educational videos.



# Dig It! The Secrets of Soil



The creation of 12 videos that correlated with the monthly themes was particularly successful. The YouTube videos were watched 71,889 times through the end of 2016, with an additional 11,000 views in the first quarter of 2017. Working with video animator Jim Toomey, SSSA staff created scripts, with scientific approval from the member committee. Toomey's style of narration plus animation allowed for difficult subjects to be explained in three minutes or less.

"Dig It! Secrets of Soil" exhibit is a 375-square meter interactive display revealing the complex world of soil and how this underfoot ecosystem supports nearly every form of life on earth. Developed by the Smithsonian's National Museum of Natural History with support from SSSA, "Dig It!" includes interactive displays. It was on display at the Smithsonian in Washington, DC for nearly two years, and starting in 2010, moved to museums in the states of Nebraska, Washington, Minnesota, California and then North Carolina.

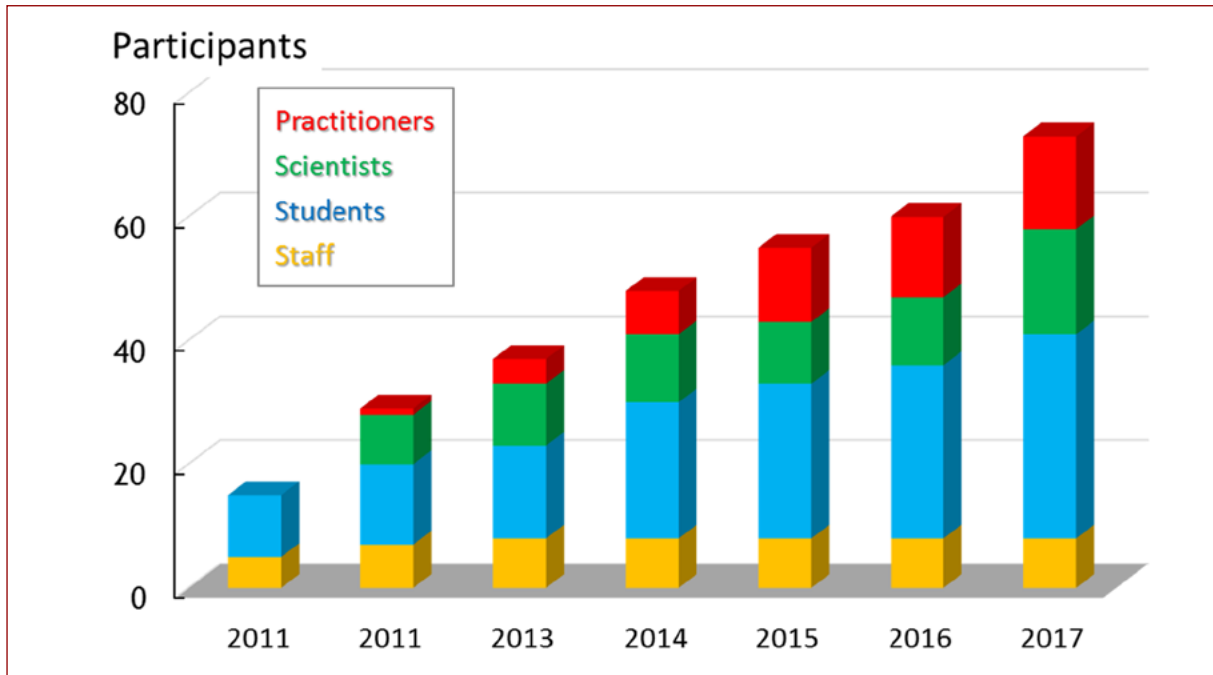
## Science Policy Engagement

SSSA is committed to being the voice for soil science and soil scientists to policy makers. For almost 20 years, the SSSA Science Policy Office in Washington D.C. has represented the Society's members and its interests at the federal level. Information on

their activities is located on our Society website at <https://www.soils.org/science-policy> and includes funding concerns, educational briefings, and position statements and reports. For example, our Frontiers in Soil Science activity identified critical needs to augment federal funding and to promote innovation through partnerships between public and private sectors. The Frontiers identified are:

- Food, energy and national security through soil education
- Climate change and soil processes
- Healthy soils, healthy people
- Soils and water quality

The Congressional Soils Caucus Alliance communicates with Congressional members and staff to enhance knowledge and understanding of the role that soil and soil science play in addressing the most pressing issues facing the USA and the world. These SSSA activities bore fruit recently, when on December 5, 2016, the White House Office of Science and Technology Policy announced new steps to advance soil health. At the same time, the National Science and Technology Council released a Framework for a Federal Strategic Plan for Soil Science, which aims to identify needs, gaps, and opportunities in soil science; develop opportunities for expanding soil conservation practices and en-



hancing soil carbon sequestration; and coordinate Federal research priorities for the future.

Our signature advocacy event is the annual Congressional Visits Day, held in Washington, D.C. bringing staff, graduate students, senior scientists, and professional or practicing soil scientists to Capitol Hill to raise awareness and support for research funding. Each year, the event continues to grow in size and in enthusiasm. Relationships established during Congressional Visits Day have also helped develop Congressional champions for agriculture and natural resources research.

Clearly, the recognition and visibility of the critical role of soils to human and environmental health to the diverse population of the U.S. has never been greater. This provides opportunities and challenges, with the SSSA at the forefront, leading the charge in the USA

## World Soil Day 2016

One of the roles IUSS plays is to report on activities across the world through our National Members. Each year one of the key events is the celebration of World Soils Day. Read more about World Soils Day on [http://www.iuss.org/index.php?article\\_id=28](http://www.iuss.org/index.php?article_id=28).

### World Soil Day 2016 around the world!

In the year 2016, more than 120 events celebrating soils have been registered on FAO's interactive map, while the WSD fun campaign material - in-

fographics, banners, videos, posters and printable logos for T-shirts - was downloaded and used by thousands of people participating in public events. The range of events organized includes concerts, picnics, sport events, debates, WSD cakes, high level workshops and seminars, farmers' gatherings, tree plantings in primary schools, lectures to students, science nights activities in high schools and many more.

Read more (FAO press release on WSD):

<http://www.fao.org/news/story/en/item/455693/icode/>

[From: Global Soil Partnership | Newsletter #10]

### Celebrating Soils

On 5 December 2016 was World Soil Day, a special day to spread awareness on how important healthy soils are for a healthy life. World Soil Day 2016 (WSD2016) combined the International Year of Soils 2015 and the International Year of Pulses 2016 with the theme "Soil & Pulses, symbiosis for life". WSD2016 celebrations officially kicked off at the UN Headquarters in New York on the 2<sup>nd</sup> December with an event entitled "Soils and pulses, a symbiosis for life and for halting soil degradation". This event, co-organized by the Permanent Missions of Lesotho, Thailand and Turkey, in collaboration with FAO and the United Nations Convention to Combat Desertification (UNCCD), was also a special occasion to pay tribute to His Majesty the late King Bhumibol Adulyadej of



Thailand in recognition of his lifelong work on soils and sustainable soil management. His Majesty's Birthday, 5 December, has been designated World Soil Day since 2014 by the UN General Assembly.

[From: Global Soil Partnership | Newsletter #10]

### Opening remarks of IUSS President on the occasion of World Soil Day 2016 at FAO

On behalf of the International Union of Soil Sciences, IUSS President Prof. Dr. Rainer Horn had the privilege and honour to convey opening remarks on the occasion of the World Soil Day celebration by FAO in Rome. This year the World Soil Day celebration is linked to the end of the International Year of Pulses and gives us a very positive feedback mechanism and a unique opportunity to define the symbiosis of life.

Read more: [http://iuss.boku.ac.at/files/rome\\_speech\\_horn\\_iuss.pdf](http://iuss.boku.ac.at/files/rome_speech_horn_iuss.pdf)

### 2016 World Soil Day Celebration in Italy

In Italy, the World Soil Day was celebrated by a group of numerous Italian soil scientists at the Polytechnic University of Marche (Ancona) on 5th December, 2016.


The Soil Science Division of the Polytechnic University organized a big exhibition devoted to secondary school students to introduce them to the discovery of the soil. More than 120 students and their professors attended nine different laboratories on soil forming factors (rocks, plants, and animals), the physical, chemical and biological characteristics of soil, the soil color, etc. The importance of the relief was also highlighted by showing a movie on badlands from central Italy. A video related to the event is accessible here:

<https://youtu.be/ogTdCUT6RPM>

In the afternoon there was a workshop titled "Why a Global Soil Partnership?" to introduce the Italian Branch and the representatives of the Pillars forming the FAO Global Soil Partnership.

The importance of the soil as a critical component of the natural system and as a key contributor to the human well-being through its contribution to food, water and energy security and as a mitigating factor of biodiversity loss and climate change was stressed during a workshop held in the afternoon under the auspices of several organizations: FAO, Italian Society of Soil Science (SISS), Italian Society of Pedology (SIPe), Italian Society of Agricultural Chemistry (SICA), Italian Society of Agronomy





(SIA), Italian Society for Horticulture (SOI), Italian Society for Sylviculture and Forest Ecology (SISEF), Italian Society of Entomology (SEI), and the Italian Association of the Agricultural Scientific Societies (AISSA).

*Dr Stefania Cocco*  
*Department of Agriculture, Food and Environmental Sciences*  
*Polytechnic University of Marche - Italy*

### **December 5, 2016: the 1<sup>st</sup> Glinka World Soil Prize awarded**

Capitalizing on the awareness raising momentum created by the IYS 2015, the first ever Glinka World Soil Prize was awarded to the Colombian Instituto Geografico Agustin Codazzi (IGAC) in recognition of its leadership and activities contributing to the promotion of sustainable soil management. As illustrated by a video (see link below), IGAC coordinates the Colombian Spatial Data Infrastructure, trains professionals from across the globe in various soil topics, and is rapidly modernizing geospatial technologies in Latin America. In few years IGAC unveiled a study that sheds light on Colombian soils, their morphology and complex economic and social context. Overall, the Institute is compiling information that will change the way that governments and businesses work in relation to soil management in the decades ahead. The current Sponsor of the Glinka World Soil Prize is the Russian Federation.

Video: <https://www.youtube.com/watch?v=s8qooTtLfBk&feature=youtu.be>

[From: Global Soil Partnership | Newsletter #10]

# Conference and Meeting Reports

## 15<sup>th</sup> International Conference on Soil Micromorphology – Report 1



By Danny Itkin, Ben-Gurion University of the Negev, Israel

The 15<sup>th</sup> International Conference on Soil Micromorphology (ICSM) was convened at the Universidad Nacional Autónoma de México (UNAM), Mexico City, from November 28 to December 4, 2016. Held every 4 years, this time the conference was dedicated to the memory of Prof. Nicolas Fédoroff (1934–2013), a Kubiëna Medal awardee who has made a landmark contribution in the field of soil micromorphology. The conference was organized by the IUSS Division 1–Soils in Space and Time; Commission 1.1–Soil morphology and micromorphology; Commission 1.3–Soil Genesis and Commission 1.6–Paleopedology, together with La Sociedad Mexicana de la Ciencia del Suelo, La Instituto de Geología, UNAM and La Colegio de Posgraduados, Campus Montecillo, Texcoco Estado de México. Led by Sergey Sedov of the Department of Soil Science at the UNAM, the national organizing committee included Héctor Cabadas, Elizabeth Solleiro, Jaime Díaz, Tamara Cruz, Georgina Ibarra, and Ma. del Carmen Gutiérrez.

The first two days of the conference were dedicated to scientific sessions, having thirty-two oral presentations and thirty-seven posters. Assembled from a worldwide variety of micromorphological studies, the scientific program encompassed a wide field, including: soil eco- and agro-systems, pedogenetic processes, indicators of incipient pedogenesis (both natural and anthropogenic), soil-biota interactions, geoarchaeology, novel techniques and methodological innovations. The first day of the conference included a special talk in memory of Nicolas Fedoroff, given by Marie-Agnès Courty,

Fedoroff's life and research partner. The highlight of the opening day was the "ice breaking" show of the 'Choral Ensemble Paleovoices' group; a local university group who amazed the audience with a collection of Mexican music and dancing.

In addition to the wide variety of scientific presentations, the conference was a good opportunity to present the new book of micromorphology: "Manual de micromorfología de suelos y técnicas complementarias", edited by Loaiza J.C., Stoops G., Poch R.M. and Casamitjana M. This is actually an expanded version of Georges Stoop's (2003) leading textbook on micromorphology: "Guidelines for Analysis and Description of Soil and Regolith Thin Sections". A first book in Spanish on micromorphology, it came mainly as a result of the growing interest in the field of soil micromorphology in Latin America. This publication is currently being translated into Polish. Regarding new literature, copies of Volume 86 of the Russian Byulleten Pochvennogo Instituta imeni V.V.Dokuchaeva, were kindly distributed among the attendees. Titled: "Soil morphology: from macro- to submicro-scale", this issue includes a compilation of essays which shows some of the latest achievements in this field in Russia. This issue can also be found on the Internet: <http://esoil.ru/publications/bulletin/862016ns.html>.

The first two days of the meeting were followed by a mid-conference excursion. The first stop of that day was the Cuicuilco archaeological site. Located in the quarter of Tlalpan, Mexico City, this is an important Mesoamerican site which is considered to be amongst the oldest urban centers in the Basin of Mexico. Built mainly with carved basalt stones, the well-designed architecture of this site illustrates how advanced the people who constructed it were. After receiving some comprehensive explanations regarding the history, archaeology, geology and pedology of the site, the participants had a chance to visit the site's museum (Museo de Sitio Cuicuilco). The key feature of this first stop was the 'Cuicuilco-ENAH' paleosol profile, just a short walk away from the museum. This profile, together with its overlaid basalt layer, discloses a complex geo- and pedo-archaeological history.

The next venue of the excursion was the archaeological site of Copilco, which is 4.5 km north of Cuicuilco. The two sites show similar paleosol-basalt settings, both affected by the eruption of the Xitle volcano during the first half of the first Millennium AD. Special attention was given in both sites to the well preserved indicators of paleoenvironmental conditions and ancient human activities. The mid-conference excursion ended with a visit to the Ecological Reserve of Pedregal de San Ángel (REPSA). Also related to the lava flow of the Xitle volcano, this is a uniquely protected area within the campus of the UNAM. Located in the midst of an urban area, this reserve is used for the restoration of different geological and biological features as well as for educational purposes.

The last day of the conference focused mainly on topics related to (micro)paleopedology and pedogenesis of anthropogenic soils. At the end of some seventeen short lectures and eighteen posters the day ended with a closing ceremony. That was not before an enjoyable “best poster competition” was exhibited, as was in the first two days. Considering the fact that most participants remained for the three-day post-conference excursion, the “real” farewell event actually took place only three days later.

The first day of the post-conference trip opened at the Teotihuacán archaeological zone. It started at the southwestern vicinity of San Sebastián Xolalpa, with an observation of a ‘Black San Pablo Paleosol’ profile. This paleosol is considered to be the oldest in the Teotihuacán Valley. As well as its very dark color, it shows a morphology of intensive erosion, calcification and redeposited pyroclastic materials. Associated potsherds along the profile are evident of the ancient human activity in the area. In fact, it was interesting to learn that this soil was very popular in the Teotihuacáns’ daily life. The day ended with a visit to the Teotihuacán archaeological site, with its gorgeous architecture, including the famous Pyramids.

On the second day of the excursion, the group visited the ‘Tlaxcala basin paleosol sequence’ (Figure 1). Located some 60 km ESE from the first stop, and just 1 km south of Santiago Tlalpan, stands the beautiful ‘Tlalpan profile’. Having seven documented paleosols, this is currently the best exposure of the ‘Tlaxcala paleosol-sedimentary sequence’. The presence of a Brunhes-Matuyama geomagnetic reversal in that profile proves that it is the oldest volcanic paleopedological record in Mexico. An abundance of pre-Hispanic artifacts throughout

the profile indicates that this is a Holocene geomorphic surface which bears evidence of the oldest human presence in the Tlaxcala basin. Visiting that location drew lively discussions and debates regarding different paleoclimatic and pedogenic interpretations. The beautiful countryside location of this sequence, its catenary relationships and the surrounding agricultural fields, makes it a highly recommended destination for anyone who cherishes soils.

The last day of the post-conference excursion ended with a visit to Texcoco ex lake (Lago Texcoco). Located very close to the east side of Mexico City International Airport, this is an artificially drained lake which has a long history related to the Tenochtitlan city (once the capital of the Aztec Empire) and to the human history of this area, ever since. The marked anthropogenic interference with this lacustrine environment has strongly influenced the local ecosystems. Comprising weathered volcanic ash, basalt, andesite and tuffs, and having poorly drained conditions, the regolith is composed of saline-sodic soils which goes through rapid pedogenic changes. Today it is a one of its kind nature reserve which serves as a center for varied biota, especially some important bird species. Much effort is being invested by nature reserve organizations in trying to keep this place from becoming urbanized, possibly as a future airfield.



*Figure 1: Post-conference excursion: Participants of the 15<sup>th</sup> ICSM listening intently to Sergey Sedov while he explains all about the ‘Tlaxcala paleosol-sedimentary sequence’.*

To conclude, together with a highly motivated group of students from the UNAM, the organizers of the 15<sup>th</sup> ICSM have inspired a very friendly and joyful atmosphere during the whole conference. Luckily, and not at all obvious for the end of the autumn, the event was accompanied by comfortable weather, which greatly contributed throughout. This Conference was also a good opportunity

to get to know Mexico with its friendly people, colorfulness, excellent food, rhythmical music and plentiful markets. The next ICSM is due to take place in Kraków, Poland, in 2020. This will surely be a good opportunity to meet participants from all related fields of pedology, agronomy, geography, geology and more.

Further details regarding the 15<sup>th</sup> ICSM can be found at:

<http://www.icsm.igeologia.unam.mx/index.html>

## 15<sup>th</sup> International Conference on Soil Micromorphology – Report 2

*By Elle Grono, School of Archaeology and Anthropology, The Australian National University, Canberra, Australia*

As a recipient of the IUSS Stimulus Fund, I sincerely thank the IUSS for subsidising my travel to the 15<sup>th</sup> International Conference on Soil Micromorphology (ICSM), held at the Institute of Geology, The National Autonomous University of Mexico (UNAM), Mexico City. My participation in the conference would not have been possible without the support of the IUSS.

In the week prior to the conference, the III Curso Latinoamericano de Micromorfología de Suelos (Latin American Course of Soil Micromorphology) took place at the Institute of Geology, UNAM. The course was attended by Mexican and Columbian students, a Spanish student and myself (from Australia). The course introduced Latin American themes of micromorphology research and included plenty of microscope time to view thin sections from a range of Latin American soil-scapes and archaeological sites. Students also spent an afternoon making thin sections in UNAM's thin section preparation laboratory (see photo right, below).

The conference was attended by European and Latin American researchers who presented on a wide range of topics from archaeological micromorphology and paleopedology to agricultural applications and exciting new research being conducted on technosols. As I have a background in archaeology rather than soil science, and being the only mono-lingual speaker and the only researcher from Australasia, the conference was an eye-open-



*The National Autonomous University of Mexico Campus, the location of the 15<sup>th</sup> ICSM.*



*Preparing thin sections at the UNAM Institute of Geology's thin section lab during the Latin American Course of Soil Micromorphology.*

ing experience and would have been daunting but for the open welcome I received from the micromorphology community. The conference has been one of the most definitive research periods within my PhD study and I thank the specialists who took the time and patience to answer my endless questions. I look forward to re-joining this community at the 2020 ICSM conference and I encourage other students like myself to attend. The perspectives gained here are invaluable to contextualise our individual research projects within the wider scope and legacy of the many disciplines which soil micromorphology intersects.

The post-conference field excursion visited paleosols and archaeological profiles formed on volcanic materials and was one of my first experiences with soils in volcanic landscapes. Sites visited included the Black San Pablo Paleosol at the San Gregorio site, Teotihuacan and the well-studied 'La Barranca

de Tlalpan' sequence which features the Brunhes-Matuyama boundary. Conference attendees also observed the rapid pedogenesis transforming lacustrine sediments in the artificially drained Texcoco Lake within the basin of Mexico City.



*Soil-scapes and paleosol profiles visited during the 15<sup>th</sup> ICSM post-conference field excursion. Above, left: the Black San Pablo Paleosol at the San Gregorio site, Tetihuacan. Above, right: The Barranca Tlalpan sequence situated near Tlaxcala along the Trans Mexican Volcanic Belt. Below: Texcoco Lake, Mexico City basin.*

The continuity of the past in modern Mexican culture has left a deep impression on me. Mexico's National Museum of Anthropology showcases the rich absorption of ancient lifeways and cultural practices within later Mesoamerican and



*'Windows' into the buried underground of Mexico City reveal cultural stratification of past urban landscapes.*

ethnographic cultures. Today, the past continues to run deep within the present as landscape, memory and culture are interwoven into the contemporary urban infrastructure of Mexico City. Aztec statues are silhouetted against modern city-scapes, the UMAM campus is built according to the undulating natural volcanic rock terrain, Metro station icons appropriate Aztec pictograms, and 'windows' into the buried underground reveal colonial and Mesoamerican urban landscapes beneath. Is not micromorphology the ideal technique to re-weave this narrative of cultural memory within the landscape for future generations to inherit?

## 15<sup>th</sup> International Conference on Soil Micromorphology – Report 3

*By Noemí Mateo-Marín, Centro de Investigación y Tecnología Agroalimentaria de Aragón, Gobierno de Aragón, Spain*

First, I would like to thank to the International Union of Soil Sciences Stimulus Fund Committee for the concession of the fellowship that supported my trip to Mexico to improve my knowledge on soil micromorphology.

Second, I would like to thank all organizers of the events (Course and Conference), volunteers and sponsors, that is to say, thanks to everybody who made possible the execution of the programs.

I believed appropriate to take advantage of the opportunity to flight to Mexico to assist to the III Latin-American Course of Soil Micromorphology in addition to the 15<sup>th</sup> International Conference on Soil Micromorphology, due to their connection. So, I consider necessary a little explanation for each of those events.

From 21<sup>st</sup> through 25<sup>th</sup> November, in the "Facultad de Geología" of the Universidad Nacional Autónoma de México (UNAM) took place the III Latin-American Course of Soil Micromorphology. It served to establish basic knowledge about soil micromorphology and to open my baggage to new concepts in archeology, unknown to me until that moment due to my academic and professional formation more related to agronomy and environment.



1. Explanation of Dr. Rosa M. Poch (Author Andrés Godoy)



2. Laboratory of micromorphology

There was a combination of theoretical classes in the mornings and practical classes in the afternoons.

Dr. Loaiza and Dr. Poch taught excellent classes covering topics from basic concepts in micromorphology to expert descriptions of thin sections step by step (Picture 1).

As complement, teachers of UNAM showed specific study cases of application of these techniques. Thanks to a combination of all classes, we could see local thin sections in the microscope and we could assess edafofeatures. We also had the opportunity to visit the laboratory of thin sections of UNAM and to make one thin section (Picture 2).

At the end of the course, there was an excursion to Cuicuilco, very well explained and documented (Picture 3 and 4). This excursion could be enjoyed by all assistants of the ICSM too, because there was a mid-conference one-day field trip.

From 28<sup>th</sup> November through 1<sup>st</sup> December developed the ICSM. In accordance with the established

program, all activities were carried out successfully. We could see micromorphologic studies of the whole world; researches of different countries (Mexico, Russia, Germany, Colombia, Italy, Vietnam, Togo...) and diverse environments (from Antarctic to Gobi desert). There were different soils (Chernozems, Andosols, Calcisols, Gypsisols, Technosols etc.), cultures (including the amazing Aztec culture), techniques (image analysis, micro-mapping, petrographic and micromorphological analysis, and on and on) and academic disciplines (archaeology, agriculture, mineralogy, ecology, among others).

The first day, presentations were intertwined with an emotional homage to the figure of Nicolas Fedoroff. Marie-Agnes Courty and Sergey Sedov transmitted to new generations the message of this memorable person: "Open your mind in all meanings".

Then, there was poster session with three minutes to explain each poster. Like in oral communications, there was a wide variability of themes. Each day, there was a poster session before the lunch.



3. Field trip to Cuicuilco



4. Ash volcanic (black layer) deposits in soil



5. Performance of "Paleovoices"

To finalize the first day, there was a fun ice breaking party with talent of the choral ensemble "Paleovoices" (Picture 5). Great concert!

On the second day, I took part in the presentation of two books for the community of micromorphologists: "Manual de micromorfología de suelos y técnicas complementarias" and "Soil morphology, from macro- to submicro-scale (VV Dokuchaev Soil Science Institute)".

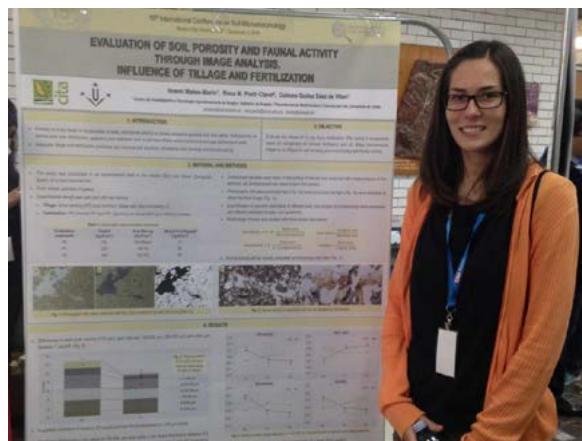
It's remarkable too the new headquarters for the 16<sup>th</sup> ICSM: Krakow. A well thought-out presentation of candidacy showed the possibilities of this place to take in the next conference (Picture 6).

1<sup>st</sup> December, after expositions, some words closed the event.

My contribution to the conference was an oral exposition ("How management and fertilization techniques affect the evolution of soil in a rainfed cereal crop") and a poster ("Evaluation of soil porosity and faunal activity through image analysis. Influence of tillage and fertilization") (Picture 7),



6. Presentation of the next headquarters



7. My poster

both in relation to agricultural practices and their influence in porosity. Parameter were determined by image analysis in thin sections.

## 5<sup>th</sup> International Soil Classification Congress 2016 – Report 1



By Prof. CW van Huyssteen

The 5<sup>th</sup> International Soil Classification Congress of the International Union of Soil Sciences (IUSS) Commission 1.4 (Soil Classification) was presented from 1-7 December 2016 in South Africa. The congress is presented every four years, between the International Union of Soil Sciences (IUSS) congresses.

The 5<sup>th</sup> International Soil Classification Congress and field workshop was supported by the University of the Free State, TerraSoil Science (Consulting firm), the NoordWes Koöperasie (Northwest Cooperation), University of the Northwest, Omnia (Fertilizer company), the Soil Science Society of South Africa, and the International Union of Soil Sciences.

The scientific committee comprised Arwyn Jones (Joint Research Centre of the European Commission), Augusto Zanella (University of Padua, Italy), Cezary Kabala (Wroclaw University of Environmental and Life Sciences, Poland), Cornie van



Huyssteen (University of the Free State, South Africa), Curtis Monger (Natural Resources Conservation Centre, United States), Erika Micheli (Szent Istvan University, Hungary), Ganlin Zhang (Chinese Academy of Sciences, China), John Galbraith (Virginia Tech, United States), Lucia Anjos (Universidade Federal Rural de Rio de Janeiro, Brazil), Maria Gerasimova (Russian Academy of Sciences, Russia), Peter Schad (Technical University of Munich, Germany), and Stephan Mantel (International Soil Reference and Information Centre, Netherlands).

A total of 54 delegates from 17 countries attended the congress and field workshop and presented a total of 30 oral and 11 poster presentations. The congress commenced with a preconference field workshop of four days, that started in Pretoria, progressed to Lichtenburg, Potchefstroom, Parys, and ended in Bloemfontein. The three-day congress proper followed the field workshop in Bloemfontein. The field workshop guide and conference proceedings are included for your perusal.

The first day of the conference was on 5 December 2016, coinciding with the international day of soil. This day was celebrated through a presentation made by Prof. Erika Micheli and through the award ceremony of the Guy Smith Medal to Dr. Juan Comerma (Venezuela). He is the fourth recipient of this award.

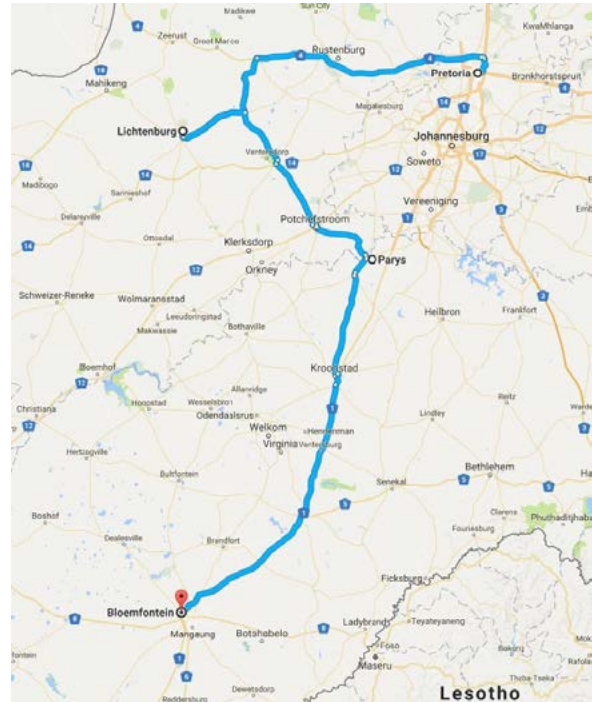
Through the funding received from the IUSS, three participants were able to attend the conference free of charge and I was able to subsidise the conference registration of an additional 2 South African students and three other South African participants. The three international delegates that received funding all prepared their own reports.

## 5<sup>th</sup> International Soil Classification Congress 2016 – Report 2

1 – 7 December 2016, South Africa  
By Biol. Silvia Chávez Castellanos

Last month, from 1<sup>st</sup> to the 7<sup>th</sup> of December 2016 the 5<sup>th</sup> International Soil Classification Congress took place. The first four days there was a pre-congress field workshop, followed by a three day conference hosted by the University of the Free State in Bloemfontein, South Africa.

The field workshop started on December 1<sup>st</sup> in Pretoria, then continued to the west to Lichtenburg, southeast to Parys, passing by the Vredefort meteor impact site, and ended in Bloemfontein on the evening of December 4<sup>th</sup>. During these days we were shown a great variety of soils and landforms, including undisturbed soils and also agricultural, man-made and aeolian affected soils.



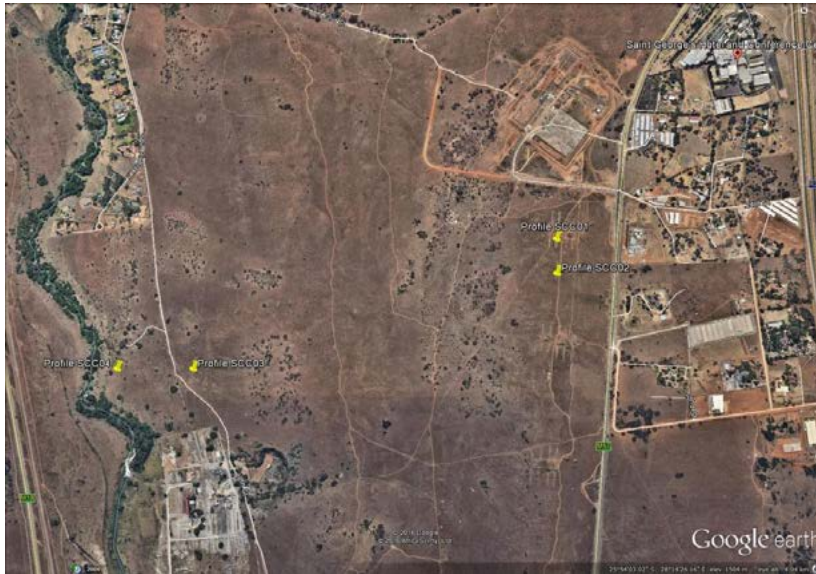
1. Field workshop general route.

The main objective during the field tour was the general description of the profile, and soil classification using the different systems that delegates use in their own countries, such as USDA Soil Taxonomy, WRB2014, as well as the Australian, Russian and Chinese national classifications. Although there was a lot of discussion at every site, in this report I only present the WRB2014 Update 2015 diagnostics and final classifications for the examined profiles.

It seems important to point out that we were provided a field guide with the general descriptions of the profiles in the programme, and lab results for the sampling at those sites, which was very helpful in the field classification process.

### Day 1: December 1<sup>st</sup>, 2016.

The tour started at 8:00 am from the Saint George's Hotel in Pretoria and we traveled a short distance to the four sites on the programme of the first day.



2. Location of the four profiles visited on the first day of the tour, near Pretoria, South Africa.

The geology of the area is very old, and these soils are highly weathered. The area has a high urban pressure and will probably become urban developments in the next few years. All four profiles were characteristic South African red soils with a dominance of iron and clear clay accumulation and increase.

There was an important discussion in the field about the origin, geography and pedogenesis of

these soils, as well as the features they present according to the position of the profiles in the general landforms.

**Profile SCC01 (Pretoria) 25°53'58"S, 28°14'44"E**

Diagnostics: ferralic horizon, lithic discontinuity, argic horizon.

WRB Classification: **Chromic Ferralic Abruptic Lixisol (Cutanic, Pantoloamic, Ochric, Profondic, Epiraptic**



3. Lixisol, profile SCC01. Pretoria, South Africa.



4. Surrounding landscape on profile SCC01. Pretoria, South Africa.



5. *Lixisol*, profile SCC02. Pretoria, South Africa



6. *Phaeozem*, profile SCC04. Pretoria, South Africa.

**Profile SCC02 (Pretoria) 25°54'02"S, 28°14'44"E**

Diagnostics: lithic discontinuity, argic horizon,  
WRB Classification: ***Endoskeletal Chromic Lixisol (Cutanic, Differentic, Humic, Loamic, Epiraptic)***

**Profile SCC03 (Pretoria) 25°54'13"S, 28°13'57"E**

Diagnostics: mollic horizon, cambic horizon, lithic discontinuity  
WRB Classification: ***Cambic Endoskeletal Phaeozem (Manganiferric, Pantoloamic, Epiraptic, Rhodic, Bathyluvic)***

**Profile SCC04 (Pretoria) 25°54'13"S, 28°13'47"E**

Diagnostics: mollic horizon, cambic horizon, sideralic properties  
WRB Classification: ***Cambic Phaeozem (Endoclayic, Colluvic, Anoloamic, Rhodic, Sideralic)***

**Day 2: December 2<sup>nd</sup>, 2016.**

On the second day the tour started in Lichtenburg throughout several crop production fields, visiting four different profiles with different geological features and therefore, different soil groups.

**Profile SCC05 (Lichtenburg) 26°10'40"S, 25°50'31"E**

- Diagnostics: argic horizon, calcic horizon, possible petrocalcic horizon.

For this profile we have two possible classifications, given that the group could not agree on the presence of a calcic horizon.

- WRB Classification 1: ***Endocalcic Chromic Manganiferric Stagnic Luvisol (Aric, Cutanic, Differentic, Pantoloamic, Ochric)***
- WRB Classification 2\*: ***Luvic Endopetric Calcisol (Aric, Chromic, Pantoloamic, Ochric, Stagnic, Manganiferric)***

\*if the bottom layer is established as a petrocalcic horizon.

**Profile SCC06 (Lichtenburg) 26°19'37.6"S, 25°48'00.4"E**

There was ample discussion on the genesis of this profile, and the possibility of having a buried soil under another.

- Diagnostics: argic horizon, slickensides, stagnic properties.
- WRB Classification: ***Chromic Luvisol (Aric, Cutanic, Loamic, Bathyferric, Bathystagnic, Bathythaptovetic)***

**Profile SCC07 (Lichtenburg) 26°24'59"S, 26°09'32"E**

- Diagnostics: argic horizon, pisoplinthic horizon
- WRB Classification: ***Pisoplinthic Luvisol (Aric, Cutanic, Differentic, Pantoloamic, Ochric, Endoraptic)***



7. Location of the four profiles visited on the second day of the tour, near Lichtenburg, South Africa.



8. Endocalcic Luvisol, profile SCC05. Lichtenburg, South Africa

**Profile SCC08 (Lichtenburg) 26°25'13"S, 26°09'60"E**

Diagnostics: argic horizon, pisoplinthic horizon  
 WRB Classification: **Chromic Pisoplinthic Luvisol (Aric, Cutanic, Pantoloamic, Ochric, Endoraptic)**

**Day 3: December 3<sup>rd</sup>, 2016.**

On the third day the tour started on Parys and we visited the four sites on the programme. The first two



9. Profile description and surrounding sunflower crop field, profile SCC05. Lichtenburg, South Africa.

were located south of the Vaal River (the second longest river in South Africa), with very different characteristics.

**Profile SCC09 (Parys) 26°53'01"S, 26°56'42"E**

This profile shows a classic Arenosol, given the very unmistakable sandy texture.

- Diagnostics: Sandy texture, lamellae, sideralic properties.
- WRB Classification: **Eutric Rubic Brunic Endosideralic Arenosol (Aeolic, Ochric, Bathylamellic)**



10. Luvisol, profile SCC06. Lichtenburg, South Africa



11. Chromic Luvisol, profile SCC08. Lichtenburg, South Africa.

**Profile SCC10 (Parys) 26°52'57"S, 26°56'59"E**

The site is on a floodplain, 20 m from the Vaal River, although given the description of the profile and the lab data analysis we had available at the moment, it did not meet the criteria for a Fluvisol or a Cambisol.

- Diagnostics: Possible fluvic material
- WRB Classification on the field: **Eutric Regosol (Flu-  
vic)**

After some more data analysis, three different classifications were proposed:

1. *Cambic Fluvic Phaeozem (Pantoloamic)*
2. *Eutric Fluvic Cambisol (Pantoloamic, Ochric)*

3. *Eutric Fluvisol (Pantoloamic, Ochric)*

The next profiles we visited relate to mine tailings in Eleazer gold mine. At these sites we were asked to review the new Classification of South African Anthrosols, in which the corresponding classification was: Transported anthrosols/Anthrosols materials/**Anthrosols covering undisturbed natural soil.**

**Profile SCC11 and Profile SCC12 (Eleazer Mine)**

**26°40'03"S, 26°52'18"E; 26°40'19"S, 26°52'30"E**

Tailings from gold mining activities, considered industrial waste (mine spoil). Both sites had a very similar



12. Location of the first two profiles visited on day 3 of the tour, south of the Vaal River, South Africa.



13. Location of the two profiles visited in Eleazer mine on day 3 of the tour, near Potchefstroom, South Africa.



14. Technosol, profile SCC12; mining tiles on Eleazer mine. Potchefstroom, South Africa.

classification because of the related features they exhibited.

- Diagnostics: artefacts, sulfidic material
- WRB Classification SCC11: *Spolic Technosol (Dystric, Hyperartifactual, Pantoloamic, Ochric, Thionic, Toxic, Bathysulfidic)*
- WRB Classification SCC12: *Spolic Technosol (Dystric, Hyperartifactual, Pantoloamic, Thionic, Toxic, Bathysulfidic)*

#### Day 4: December 4<sup>th</sup>, 2016.

On the fourth day of the tour we started on the Vredefort structure site, which is the largest visible impact crater on Earth (300 km in diameter) and also a world heritage site declared by UNESCO. During this tour we observed the impact site surrounded by geological for-

mations derived from it; at some sites there is evidence of the shock or impact on the bedrock caused by great pressures known as shatter cones.

Afterwards we visited three profiles near the Vredefort town, showing three very different crop soils over short distances, caused by the highly variable geology in the area.

The tour ended at the city of Bloemfontein, where the conference was held on the subsequent days.

#### Profile SCC13 (Parys) 27°01'44"S, 27°19'50"E

- Diagnostics: argic horizon, slickensides, calcic horizon, vertic horizon, mollic horizon, lithic discontinuity.



15. Location of the three profiles visited on day 4 of the tour, near Vredefort, South Africa.



16. Vertic Kastanozem, profile SCC06. Vredefort, South Africa

- WRB Classification: **Vertic Calcic Kastanozem (Aric, Katoclayic, Epiloamic, Epiraptic, Protosodic, Proto-stagnic)**

**Profile SCC14 (Parys) 27°01'49"S, 27°19'37"E**

In this profile we observed clear faunal activity (termite channels).

- Diagnostics: argic horizon, ferric horizon, possible mollic horizon.



17. Vertisol, profile SCC15. Vredefort, South Africa.

- WRB Classification: **Manganiferic Stagnic Luvisol (Aric, Cutanic, Differentic, Loamic, Ochric)**

**Profile SCC15 (Parys) 27°01'56"S, 27°19'24"E**

- Diagnostics: ferralic horizon, lithic discontinuity, no argic horizon.

- WRB Classification: **Pellic Sodic Vertisol (Aric Hyper-eutric, Gleyic, Grumic, Mollic, Protostagnic, Bathy-protocalcic)**

## Day 5 to 7: December 5<sup>th</sup> to 7<sup>th</sup>, 2016.

The University of the Free State in Bloemfontein hosted the three day conference event in their Education Building. We attended and listened to a great variety of oral presentations of papers from all over the world related to soil classification, as well as some other poster presentations. We were provided most of these presentation abstracts in a very useful booklet.

On the first day, I presented “WRB 2014 Spanish translation: experience and challenges in the process” in which I talked about how the team worked on the process of the new edition of the WRB translation, some of the challenges we faced, and examples of those challenges, and the main applications and many advantages that this Spanish document has for the soil specialists in our country and also in Latin American countries.

I also highlighted the importance of the use of the classification system when it comes to producing derived information that serves the public’s and user’s needs. I provided examples of the types of information we develop in Mexico starting from our use of WRB as a basis for classifying soils in the country.

We also attended a business meeting of IUSS Division 1 Soils in Space and Time and its Commission 1.4 Soil Classification, personally, not as a member, but we were invited to listen and give our opinion if we considered it timely or necessary. Several topics were treated, some of them of internal concern and some others for general knowledge.

It was mentioned that since the SCC16 was coming to an end, and it is a quadrennial event, proposals for the next meeting in 2020 were needed. This came as an opportunity for Mexico to be proposed as a host for the next Soil Classification Congress, as the official congress of Commission 1.4 of the IUSS. We (the Mexican delegates) believe our country, presiding our institution INEGI, has the needed infrastructure and logistic capabilities to make a very successful event in 2020.

The proposal was made, and the requirements for the organizing country were presented to us, in order to make an official offer and take it to the WSSC2018 in Brazil to make the decision then. We took it as a task to work on, and in case INEGI and possibly other institutions related to soil classification in Mexico agree to send this proposal, our

**WRB 2014 Spanish translation: experience and challenges in the process**

Biol. Silvia Chávez C  
Ing. Francisco Manríquez  
Ing. Carlos Omar Cruz

Bloemfontein, South Africa  
December 2016

INEGI  
INSTITUTO NACIONAL DE ESTADÍSTICA Y GEOGRAFÍA

**Advantages of using WRB2014 Update 2015 in our products (Serie III)**

Serie III started developing in 2014 and our soil scientists started using the first WRB 2014.

After the 2015 update, this one became the base document for classification.

WRB2014 (Update 2015) Spanish edition was officially published in July 2016.

Soil scientists meeting in October 2016: review of the Spanish translation and agreement to take it as a base document for classification.

Base referencial mundial del recurso suelo 2014  
Sistema Internacional de clasificación de suelos para la nomenclatura de suelos y la creación de leyendas de mapas de suelos  
Actualización 2015

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intention is to support this as a part of the organizing committee.

Finally, it was a very enriching and interesting trip to South Africa. I learned a lot, got to know very different places and environments and also had the opportunity to meet very interesting people, which I enjoyed a lot. I am committed to applying all the acquired knowledge in the development of my work and the knowledge of the soils and their characteristics in my country and with this, of the world. I am very grateful for the financial support provided by the IUSS to make my attendance of this conference possible.

## **'Earth is our Home' Second National Soil Olympics for school children in Georgia**

In March 2017 the Mikheil Sabashvili Institute of Soil Science, Agrochemistry and Melioration of the Agricultural University of Georgia, the Georgian Society of Soil Scientists and the Georgian Association of Professional Chemists organized the second

national Soil Olympics for school children with the topic: "Earth is our home" in Tbilisi. The goal of the Olympics was capacity building and raising interest in natural sciences, and soil science in particular.

The Olympics were held in two steps:

In the first step, 132 pupils from all over the country participated in the competition: Samegrelo, Imereti, Kakheti, Guria, Kartli, Adjara and several schools of the capital of Tbilisi. 47 pupils were selected for the second round.

The second step of the Olympics was held at the Agricultural University of Georgia on the 25<sup>th</sup> of March 2017, in which 42 pupils from 18 schools took part. The questions concerned soil types of Georgia, soil degradation processes and soils that were firstly described in Georgia.

After a written test of two hours, a jury evaluated the results. Thereafter, the school children were awarded by certificates in three categories of degrees, and their teachers received certificates of gratification for active educational cooperation by Rector Vakhtang V. Lejava, the Director of Mikheil Sabashvili Institute of Soil Science, Agrochemistry and Melioration, Prof. Tengiz F. Urushadze, and



*Pupils in action*



*Final round with some of the pupils, their teachers and the organizers of the olympics*

Prof. Winfried E.H. Blum (University of Natural Resources and Life Sciences, Vienna, Austria), see photos.

# IUSS Alerts December 2016 - May 2017

International Union of Soil Sciences



## Information for and from the global soil science community

IUSS Alerts are e-mailed to nearly 10,000 people in over 100 countries. Please forward the IUSS Alerts to your friends and colleagues. Send information for IUSS Alerts to [iuss@umweltbundesamt.at](mailto:iuss@umweltbundesamt.at). Below are still relevant contributions that appeared in the IUSS Alerts between December 2016 and May 2017.

### Land and Soil Management Award 2016/17

The prize provided by the European Landowners' Organization rewards land use and soil management practices mitigating soil threats i.e. soil erosion, reduction of organic matter content, diffuse contamination, and compaction as well as the reduction of soil biodiversity, salinization, sealing, flooding and landslides. In doing so, the award sheds light on outstanding achievements, encouraging new concepts of land and soil protection and their implementation in land management, as well as enhancing awareness about the importance of land and soil functions. Deadline: 31 December 2016

Read more: <http://esdac.jrc.ec.europa.eu/calls>

### Prof. Maria A. Glazovskaya (1912-2016)

The outstanding and oldest Russian soil scientist, Prof. Dr. Maria A. Glazovskaya passed away on the 20<sup>th</sup> of November, 2016. She was a great pedologist widely known for her two-volume monograph "SOILS of the WORLD" (1983, 1984) and very popular manual (co-author I.P.Gerasimov) "Fundamentals of Soil Science and Soil Geography" (1965). In the years 1959-1987 Maria Glazovskaya was the Head, and from 1987 until the present time she was a consulting Professor of the Department of Geochemistry of Landscapes and Soil Geography, Faculty of Geography, Lomonosov Moscow State University. She was a brilliant lecturer and a supervisor of many PhD theses and several habilitations. With her energy, bright talent and very kind attitude to people, she inspired many students for soil science and biogeochemistry. Soil scientists all over the world will remember Maria Glazovskaya as an outstanding scientist, a person open to people's problems and ready to support their scientific, educational and cultural initiatives.

### Endorsement of the Voluntary Guidelines for Sustainable Soil Management by the FAO Council

The 155<sup>th</sup> session of the FAO Council has endorsed the Voluntary Guidelines for Sustainable Soil Management by. These guidelines developed through a comprehensive and inclusive process within the framework of the Global Soil Partnership will further pave the way towards supporting governments and institutions in mainstreaming sustainable development and implementing the 2030 Agenda for Sustainable Development. Similarly, the FAO Council endorsed the establishment of the Global Soil Information System and the development of the Global Soil Organic Carbon map by 2017.

Download the Voluntary Guidelines for Sustainable Soil Management: <http://www.fao.org/documents/card/en/c/0549ec19-2d49-4cfb-9b96-bfbbc7cc40bc/> [From: Global Soil Partnership | Newsletter #10]

### First African Soil Seminar

After a long year of planning and preparations, the first African Soil Seminar took place in Nairobi, Kenya 28-30 November. The Seminar provided a platform for governments, civil society, private business and academia to discuss and share knowledge around soil and landscape rehabilitation in support of the 2030 and 2063 sustainability agendas. Joint coordination, responsible investments and links between science and policy-making are integral to the process of implementing, monitoring, and following-up of big goals such as Agenda 2063 "The Future we want for Africa" and the 2030 Agenda for Sustainable Development, among many other initiatives for land and agriculture across the continent.

<http://globalsoilweek.org/areas-of-work/sustainable-development-goals/afss2016-gearing-up>

### **BSSS Announces New Royal Patron**

The British Society of Soil Science (BSSS) is delighted to announce that His Royal Highness The Duke of Gloucester KG GCVO will be their new Patron. His Royal Highness takes over the role from Lord De Ramsey. The appointment comes at an important time for BSSS and soil science as the Society stands at the eve of its 70<sup>th</sup> anniversary, and His Royal Highness will play a key part in raising awareness of the importance of soils to mankind.

Read more: <http://www.soils.org.uk/news/5-dec-2016/royal-patron-announced-british-society-soil-science>

### **Obama administration announces new steps to maintain and create healthy soils**

The White House Office of Science and Technology Policy (OSTP), in collaboration with Federal agencies and private-sector stakeholders, is announcing new steps to promote the long-term health and sustainable use of one of America's most important natural resources: its soil. The new actions aim to advance scientific understanding of soils to better care for them and their ability to support food security, climate mitigation, ecosystem services, and public health. These efforts focus on three key areas: 1) promoting interdisciplinary research and education, 2) advancing computational tools and modelling, and 3) expanding sustainable agricultural practices.

Read more: <https://www.whitehouse.gov/blog/2016/12/05/obama-administration-announces-new-steps-maintain-and-create-healthy-soils>

Download (Healthy Soils Framework): [LINK zum Doc auf IUSS Webseite](#)

### **Healthy soils could deliver nearly \$50 billion in benefits annually**

The Nature Conservancy and General Mills unveiled the Soil Health Roadmap at the annual BSR (Business for Social Responsibility) Conference. Developed by an interdisciplinary team of Conservancy scientists, economists and agriculture experts and made possible through support from General Mills, the Roadmap makes the business case for investing in sustainable soil health practices to achieve unprecedented economic benefits for U.S. farmers and businesses, as well as significant conservation outcomes for generations to come. The Soil Health Roadmap outlines 10 key steps spanning science, economy and policy priorities to achieve widespread adoption of adaptive soil health systems on more than 50 percent of U.S. cropland by 2025.

Read more: <http://www.nature.org/newsfeatures/pressreleases/healthy-soils-could-deliver-nearly-50b-in-benefits-annually.xml>

### **Soil health measures reflect organic matter dynamics**

What do farmers want more—to build soil organic matter (SOM) for long-term soil quality or to mineralize organic matter to feed their crops? The answer is usually both. Nutrients are stabilized or sequestered into organic matter from crop residues and amendments and subsequently mineralized or released for plant uptake. Collectively, these processes determine SOM permanence and influence both soil quality and productivity. Total organic matter is commonly measured in standardized soil testing, but the majority of this pool cycles slowly over time. In the September–October 2016 issue of the Soil Science Society of America Journal, a team of 12 scientists from nine institutions across the United States explore the relationship between two soil health tests that measure the active pool of organic matter.

Read more: <https://dl.sciencesocieties.org/story/2016/nov/wed/soil-health-measures-reflect-organic-matter-dynamics>

### **Life in Earth's soils may be older than believed**

Way before trees or lichens evolved, soils on Earth were alive, as revealed by a close examination of microfossils in the desert of northwestern Australia, reports a team of University of Oregon researchers.

Read more: <https://www.sciencedaily.com/releases/2016/11/161117150229.htm>

### **How to protect the soil**

By Jeremy Williams. When land is planted with crops, those are harvested and the land is left bare. That's something that never happens in nature. Under natural conditions there's always something covering the ground. Soil is never dug over in nature either. Animals and birds might scratch around and occasionally bury things, but they never turn over a field. The job of aerating the soil is done from underneath, by insects and earthworms. So in looking at how to protect soil and steward it for future generations, we're looking at less intervention, not more.

Read more: <https://makewealthhistory.org/2016/12/08/how-to-protect-the-soil/>

### Shedding a light on contaminants

In the last decade, the EU has expressed the need for policy that adequately protects soil resources. Specifically, it is interested in starting a soil monitoring program in Europe. In theory, soil monitoring is a fairly simple process. First, a baseline survey of soils' chemical components is needed. After time has lapsed, soils can be re-measured. When compared to initial measurements, soils with increased levels of harmful compounds can then be identified and cleaned up.

Unfortunately, there is a major limitation. According to O'Rourke, standard soil tests are costly and time consuming. Though the amount of time required to analyze samples varies, traditional processing can take up to a week or more to complete. Spectroscopic technologies are a promising alternative to traditional analytical methods. First, they can reduce soil processing time from a week to mere minutes. Operational costs are relatively low, and the accessibility of these instruments is relatively good. And the equipment is available. O'Rourke reports, "Many soil science laboratories are now equipped with the technology platforms." Read more: <https://www.soils.org/discover-soils/story/shedding-light-contaminants>

### Could Urban Farms Be the Preschools of the Future?

The absence of direct experience has completely misled children's perception of the world and of its most basic processes. It's not rare to find children who ignore that the milk they drink comes from cows or that beans don't sprout in cans.

Under the distant gaze of a city skyline, cows and chickens wander through rows of sprouting vegetables; clear glass greenhouses dot the periphery. It sounds like an ordinary urban farm, but on this particular site, the wardens are toddlers. The farm, Nursery Fields Forever, is the vision of aut- -aut, a group of four architects hailing from Italy and the Netherlands. Their proposal for a preschool on an urban farm took first prize at this year's AWR International Ideas Competition; the challenge centered around designing a nursery school model for London. Read more: [http://www.citylab.com/navigator/2016/03/could-urban-farms-be-the-preschools-of-the-future/472548/?utm\\_source=SFFB](http://www.citylab.com/navigator/2016/03/could-urban-farms-be-the-preschools-of-the-future/472548/?utm_source=SFFB)

### How weeds heal bare soil

Bare, exposed soil isn't part of nature's master plan. How many examples can you think of where soil is naturally found bare and with no plants

at all growing in it? Good examples are beneath freshly uprooted trees, landslips, or where the ground has been charred following a heathland fire. In these situations bare soil isn't bare for long; within days seedlings begin to appear and cover the ground with a miniature green forest. In a few months' time the scar is barely noticeable. A year later you would never know it had been there at all.

[https://www.theguardian.com/lifeandstyle/gardening-blog/2016/nov/04/how-weeds-heal-bare-soil?CMP=share\\_btn\\_tw](https://www.theguardian.com/lifeandstyle/gardening-blog/2016/nov/04/how-weeds-heal-bare-soil?CMP=share_btn_tw)

### Soils: Our ally against climate change

Read more: [https://www.youtube.com/watch?v=8\\_69vy7ZBxE](https://www.youtube.com/watch?v=8_69vy7ZBxE)

### More on Soil Science Journal's Impact Factor

In this article, we look at the impact factor and citations in soil science journals. We take the top 15 soil science journals according to the 2015 impact factor published by Thomson Reuters. The impact factor for a journal in 2015 was calculated by dividing the number of articles the journal has published over the past 2 years (2013 and 2014) with the number of times those articles were cited in 2015. For each journal, we downloaded the number of papers they published in 2013 and 2014 and the number of citations the papers received in 2015. We used Scopus, another database, for this analysis to check for consistency.

Read more: [https://www.researchgate.net/publication/310650992\\_More\\_on\\_Soil\\_Science\\_Journal%27s\\_Impact\\_Factor](https://www.researchgate.net/publication/310650992_More_on_Soil_Science_Journal%27s_Impact_Factor)

### Soil carbon 4 per mille

The '4 per mille Soils for Food Security and Climate' was launched at the COP21 with an aspiration to increase global soil organic matter stocks by 4 per 1000 (or 0.4 %) per year as a compensation for the global emissions of greenhouse gases by anthropogenic sources. Reported soil C sequestration rates globally show that under best management practices, 4 per mille or even higher sequestration rates can be accomplished. High C sequestration rates (up to 10 per mille) can be achieved for soils with low initial SOC stock (topsoil less than 30 t C ha<sup>-1</sup>), and at the first twenty years after implementation of best management practices.

Read more: <http://www.sciencedirect.com/science/article/pii/S0016706117300095>

### **Soil carbon capture: Great loamy hope or bandaid?**

Recently Michael Barnard was challenged to assess the likely capacity of soil carbon sequestration approaches (sometimes referred to as biological carbon capture and sequestration or BCCS) by a researcher in the space. The premise was that two thirds of the carbon which had been sequestered in the soil had been lost into the atmosphere as grasslands were converted to large-scale agriculture, and that changing agricultural practices would be sufficient to act as a sink for the majority of excess CO<sub>2</sub> emitted. What exactly is the mechanism? How much potential does BCCS offer? How much effort would be required to implement a large scale fix? There have been some interesting findings in plant biology in the past two decades, specifically concerning something called glomalin.

Read more: <http://reneweconomy.com.au/soil-carbon-capture-great-loamy-hope-bandaid-47154/>

### **Global agriculture trends: are we actually using less land?**

Slash and burn agriculture. Palm oil plantations. Deforestation in the Amazon. The environmental news about the natural habitat being converted to agriculture has been pretty grim. When you consider that we will need 70% more food by 2050 (assuming that we don't make serious progress in reducing waste, slowing population growth, or halting the increase in consumption of animal products, FAO 2011) it's hard to feel hopeful about the future. Without improving yields, that 70% increase in food would require over 34,000,000 km<sup>2</sup> of new farmland and ranches to be created, an area larger than the entire continent of Africa. That's why I was surprised to find what appears to be good news lurking in global data.

Read more: <http://blog.nature.org/science/2014/06/18/global-agriculture-land-sustainability-deforestation-foodsecurity/#comment-1211560>

### **Soil Biomass Productivity maps of grasslands and pasture, of croplands and of forest areas in EU**

This dataset consists of 3 GIS maps that indicate the soil biomass productivity of grasslands and pasture, of croplands and of forest areas in the European Union (EU27). The degree to which the soil carries out its biomass production service was evaluated on the basis of soil properties under prevailing climatic and topographical conditions.

Since productivity is a result of the interaction of soil, climatic, and topographical conditions, these factors need to be assessed in their complexity. In addition to geophysical conditions, soil productivity also depends on the type of land use. Results are presented in land use-specific maps (e.g. cropland productivity for areas of rain-fed arable lands, forest biomass productivity for forest lands and grassland productivity for pastures).

Read more: <http://esdac.jrc.ec.europa.eu/content/soil-biomass-productivity-maps-grasslands-and-pasture-croplands-and-forest-areas-european>

### **Deriving effective soil water retention characteristics from shallow water table fluctuations in peatlands**

Peatlands are important storage locations for soil carbon and sinks for carbon dioxide. Peat is a type of soil that is primarily composed of partially decomposed plant residuals that exists in an oxygen-deficient environment. It's the primary component of most wetlands of the world and thus holds an important place in water resources and hydrology. The soil moisture content of the peat soil determines the storage, transport, and release of carbon dioxide, and as a result, the soil hydraulic properties are very important in any climate change studies. Authors of an article recently published in *Vadose Zone Journal* use a statistical inversion to determine the soil water retention characteristics using the assumptions of hydrostatic equilibrium and the fact that the lateral fluxes during precipitation are minor compared with the vertical fluxes during precipitation events

Read more: <https://dl.sciencesocieties.org/publications/vzj/abstracts/15/10/vzj2016.04.0029>


### **Predicting power outages from soil moisture data**

Most electrical outages are caused by falling trees or limbs bringing down power lines. After a major storm, it may take weeks to fully restore power. Through combining analysis of wind and soil moisture data, scientists are getting better at predicting where and when such damages are likely to occur, which gives utility companies and emergency workers a head start on hurricane response.

Read more: <https://gcn.com/blogs/emerging-tech/2016/12/soil-moisture-power-outage.aspx>

### **Study tracks 'memory' of soil moisture**

First year of data from SMAP satellite provides new insights for weather, agriculture, and climate. The



top two inches of topsoil on all of Earth's landmasses contains an infinitesimal fraction of the planet's water -- less than one-thousandth of a percent. Yet because of its position at the interface between the land and the atmosphere, that tiny amount plays a crucial role in everything from agriculture to weather and climate, and even the spread of disease.

Read more: <https://www.sciencedaily.com/releases/2017/01/170116121807.htm>

### **New Tool Instantly Creates Soil Maps at Planting**

A cobalt exterior combines the traditional seed-packing role of a seed farmer with an optical sensor protected by a sapphire lens that scans what's going on 2" below the soil surface. An enhanced look below the soil will allow farmers to automate seeding rate and placement and manually adjust row cleaners to achieve the optimal seed environment. "Growers who use this will automatically know their percent of organic matter, residue content and percent moisture," says Cory Muhlbauer, Precision Planting agronomy lead.

Read more: <http://www.agweb.com/article/new-tool-instantly-creates-soil-maps-at-planting-naa-sonja-begemann/>

### **A space station experiment is researching how soils on asteroids or planets may interact with future spacecraft and spacesuit materials**

Strata-1 is designed to investigate fundamental properties of regolith on small airless bodies. The Strata-1 facility features multiple transparent tubes that are partially filled with regolith simulants which are exposed to extended microgravity and the ambient vibration environment on ISS. Simulant materials for Strata-1 include pulverized meteorite material of known size distribution, glass beads of known size distribution, regolith simulants composed of terrestrial materials, and other similar materials selected to either answer specific scientific questions and/or for their fidelity to regolith that astronauts and/or hardware encounter on upcoming NASA missions. All tubes include the capability to prevent movement of the regolith during launch and landing, using a device inside each tube that lightly compresses the regolith and prevents motion. Future Strata experiments may include tests of anchors in regolith under microgravity, tests to quantify adhesion of silicate and carbonaceous regolith to spacesuit

and spaceflight hardware, and cohesion properties of diffuse regolith.

Read more: [https://www.nasa.gov/mission\\_pages/station/research/experiments/2146.html](https://www.nasa.gov/mission_pages/station/research/experiments/2146.html)

### **JRC Collaborative Doctoral Partnership**

The Joint Research Centre (JRC) is offering a new Collaborative Doctoral Partnership (CDP) scheme to higher education institutions to benefit from a strategic, win-win collaboration with the JRC. The scheme will allow universities to gain a better understanding of research needs throughout the policy cycle while at the same time providing the JRC with innovative research input and exchange of information with leading academic institutions in the field. The call for expression of interest to participate in the CDP pilot is open and the application deadline is 15 March 2017. Soil and land use change is one of the six thematic fields proposed for this scheme.

Read more: <http://esdac.jrc.ec.europa.eu/content/collaborative-doctoral-partnerships>

### **One Million People 4 Soil**

Each passing minute, our soil is assaulted, suffocated, contaminated, exploited, poisoned, mistreated, and depleted. Check out this amazing video and sign the European petition on [www.people4soil.eu](http://www.people4soil.eu).

Watch the video: <https://www.youtube.com/watch?v=LCMknN-PBok>

### **Seeking Input on Fundamental Changes to Soil Taxonomy**

Soil Taxonomy is the dominant soil classification system in the United States and many other nations. Development of the system began in the early 1950's and by 1965 was adopted for USDA soil surveys. Over the next five decades a tremendous number of taxa were added to the classification system. For example, between 1983 and 2010 over 160 new subgroups were added just to the Inceptisols. While the number of taxa in Soil Taxonomy has grown rapidly, there have been relatively few conceptual changes to maintain the original goal of the document to be a basic system of soil classification. Thus, the system has become quite complex with each new added taxon and definition resulting in an increasingly cumbersome document that is even difficult for trained soil scientists to effectively apply. Thus, few other disciplines use the system to communicate soils information. Be-

cause of the growing number of issues with Soil Taxonomy the Soil Science Society of America established the Fundamental Changes to Soil Taxonomy Task Force. The objective of the task force is to facilitate an open and transparent process to develop a suite of fundamental changes to Soil Taxonomy leading to a soil classification system that can and will be used by more than just experienced pedologists in the United States. The changes will reflect concepts used in other soil taxonomic systems (specifically the WRB) and thus will require broad input from soil scientists in both the United States and international community. Changes will be developed to simplify format and taxa without losing the knowledge-base in the current system. The task force expects the proposed changes to have minimal negative effects on existing National Cooperative Soil Survey (NCSS) mapping products. Thus, the proposed changes would ensure that Soil Taxonomy serves the dual purposes of an applied system to assess the potential and limitations of the soil resource and as a classification system for the discipline of soil science. The final product would be vetted through the National Cooperative Soil Survey, potentially leading toward the publication of a 3rd edition of Soil Taxonomy.

At this time the Fundamental Changes to Soil Taxonomy Task Force is ready to solicit input from the larger community on drafts of several proposed fundamental changes to Soil Taxonomy. If you would be interested in commenting on these draft proposals please send an email to [fundamental-changes@etal.uri.edu](mailto:fundamental-changes@etal.uri.edu).

### **Soil air permeability facilitates its hydraulic permeability prediction**

Reliable prediction of soil hydraulic characteristics is often required to assess soil and ground water contamination risk or soil remediation activities. Soil permeability to water either in saturated or unsaturated zones is one of the most important hydraulic characteristics. Direct measurement of soil permeability to water or hydraulic conductivity is the most reliable approach to characterize it. However, its direct measurement, either in the laboratory or the field, is time consuming and requires significant human intervention. Therefore, soil scientists have attempted to develop several indirect approaches to predict soil permeability to water using its readily available properties. Soil air permeability is one of its most appropriate readily available properties in this regard. In the November–December 2016 issue of the Soil Science

Society of America Journal, researchers introduce a semi-theoretical equation to predict soil water permeability to water in unsaturated zone using its air permeability as a predictor.

Read more: <https://dl.sciencesocieties.org/story/2017/jan/thu/soil-air-permeability-facilitates-its-hydraulic-permeability-prediction>

### **Governing tenure rights to commons responsibly: 12 strategies and illustrative cases from practice**

Commons are natural resources such as land, fisheries and forests that people use collectively for things such as livestock grazing, fodder, firewood, fish and non-timber forest products. They are a source of food and income and an important safety net in times of hardship, especially for marginalized and vulnerable people. Commons are also essential to people's culture and identity. The problem is that legitimate tenure rights to commons are often not recognized and protected by national law. New Guide and Animation Film offers strategic guidance and inspiration on how to secure tenure rights to commons based on the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests

Read more: <http://globalsoilweek.org/news-and-opinion/governing-tenure-rights-to-commons-responsibly-12-strategies-and-illustrative-cases-from-practice>

### **2017's Vermont Regenerative Soils Program**


An Act relating to establishing a regenerative soils program has been enacted by the General Assembly of the State of Vermont. The Secretary shall establish a program called the Vermont Regenerative Soils Program within the Agency to certify land in the State as regenerative and to encourage the use of regenerative soil practices within the State. The certification shall include a seal indicating that the Secretary certified land or a farm as a whole as a member of the Vermont Regenerative Soils Program.

Read more: <http://studiohill.farm/2017s-vermont-regenerative-soils-program/>

### **Why is it good to have the ground covered by snow?**

By trapping heat energy, snow restricts the depth of the frost layer, or area of soil containing ice. In other words, soils with deep snow cover often have thinner frost layers than those without snow. The area below the frost layer serves as a refuge





for animal and plant life that call it home. In turn, thinner frost layers provide more room for organisms to live during the winter months. Bare soils are defenceless, as they have no protection from wind, rain, and runoff. Snow acts as an armour to protect soil from wind and water erosion.

Read more: <https://soilsmatter.wordpress.com/2017/02/15/why-is-it-good-to-have-the-ground-covered-by-snow/>

### **Seasonal fate of phosphorus in vineyard soils**

Growing premium wine grapes requires the right soil and climate. An ideal combination occurs in parts of California where the majority of the wine grapes in the United States are produced. As an agricultural system, wine grapes are a specialty crop, and there is limited research on the soils and nutrient dynamics that occur in vineyards. “There’s a huge need for a better understanding of nutrient cycling and soil fertility in vineyards,” says Stewart Wilson, lead author of a recent Soil Science Society of America Journal article titled, “Seasonal Phosphorus Dynamics in a Volcanic Soil of Northern California.” According to Wilson, a Ph.D. candidate at the University of California–Davis (UC–Davis), research presented in the article was initiated when growers in Lake County, CA, approached scientists at UC–Davis about fertilizer use in vineyards.

Read more: <https://dl.sciencesocieties.org/story/2017/jan/thu/seasonal-fate-of-phosphorus-in-vineyard-soils>

### **New mobile application for classifying soils using WRB 2015**

The first mobile application for soil classification using World Reference Base for Soil Resources (WRB) was released at the World Soil Congress in Jeju (Republic of Korea) in 2014. The app worked under Android as the most widely used operation system for mobile phones. The application was well received by the soil science community, but also received some criticism and suggestions for improvement. Thanks to the support of the IUSS Stimulus Fund and Division 1 recently a new version of the application: this time it is adapted for Android, iOS, and Windows Mobile platforms thus covering all the mobile devices such as smartphones, tablets etc. The application leads the user through the key for allocating soils in the reference groups, and then inserting primary and secondary modifiers. At all stages the user can request help to consult the definitions of diagnostic hori-

zons, materials and properties. Compared to the application released in 2014, the new version has several updates: it uses a significantly reworked text of WRB 2015; it allows returning, if a mistake occurred in the process of classification, and the results can be saved. The three versions of the application can be downloaded from the web site of the IUSS Commission 1.4 “Soil Classification” (version in English): [https://sites.google.com/a/vt.edu/iuss1-4\\_soil\\_classification/home/mobile-phone-apps](https://sites.google.com/a/vt.edu/iuss1-4_soil_classification/home/mobile-phone-apps)

Simultaneously, a Russian version of the application was released; this version is available at the Eurasian Soil Portal: <http://eurasian-soil-portal.info/index.php/ru/resources-ru/software-ru>

### **Soil Organic Carbon (SOC) Projections for Europe**

This dataset consists of a number of data layers that are associated to the peer-reviewed publication “Assessment of soil organic carbon stocks under future climate and land cover changes in Europe” in “Science of The Total Environment”. The layers cover the current SOC Stocks (2016) and the projected SOC Stocks by 2050, for various Climate Scenarios (CCSM4, HadGEM2-AO, IPSL-CM5A-LR, MRI-CGCM3) and Representative Concentration Pathways (RCPs). The model consists of two modules: The base module predicts current soil organic carbon stocks at European scale using regression-kriging and LUCAS topsoil data, and future module uses the regression coefficients (precipitation, bioclimatic datasets, Land Cover 2010, Soil physical attributes) and projects the estimated SOC stocks in 2050. Data based on various climate change scenarios are available in ESDAC.

Read more: <http://esdac.jrc.ec.europa.eu/content/soil-organic-carbon-soc-projections-europe>

### **Soils could release much more carbon than expected as climate warms**

Soils could release much more CO<sub>2</sub> than expected into the atmosphere as the climate warms, according to new research by scientists from the Department of Energy’s Lawrence Berkeley National Laboratory (Berkeley Lab). Their findings are based on a field experiment that, for the first time, explored what happens to organic carbon trapped in soil when all soil layers are warmed, which in this case extend to a depth of 100 centimeters. The scientists discovered that warming both the surface and deeper soil layers at three experimental plots increased the plots’ annual release of CO<sub>2</sub> by

34 to 37 percent over non-warmed soil. Much of the CO<sub>2</sub> originated from deeper layers, indicating that deeper stores of carbon are more sensitive to warming than previously thought. They report their work online March 9 in the journal *Science*.

Read more: <http://science.sciencemag.org/content/early/2017/03/08/science.aal1319>

### **New applications of near-infrared spectroscopy in crop and soil analysis**

Near-infrared spectroscopy (NIRS), an analytical technique used for plant, animal, and soil analysis, provides faster and cheaper results, reducing laboratory costs by as much as 80%. This method correlates light reflected from a sample with laboratory measurements of carbon, nitrogen, phosphorus, protein, fibre, or carbohydrate concentrations, among other tests. If the target parameter of a new sample falls within the set used for calibration, NIRS correlations can be applied to different spectrometers as well as samples collected from different regions, states, and countries.

Read more: <https://dl.sciencesocieties.org/publications/csa/articles/62/2/10>

### **Selenium deficiency promoted by climate change**

Selenium is an essential micronutrient obtained from dietary sources such as cereals. The selenium content of foodstuffs largely depends on concentrations in the soil: previous studies have shown that low selenium concentrations are associated with high pH and oxygen availability and low clay and soil organic carbon content. As a result of climate change, concentrations of the trace element selenium in soils are likely to decrease. Because the selenium content of crops may also be reduced, the risk of selenium deficiency could be increased in many regions of the world. This was shown by a recent study which used data-mining to model the global distribution of selenium.

Read more: <https://www.sciencedaily.com/releases/2017/02/170220190638.htm>

### **A crater formed in Siberia's permafrost is growing**

Near the Yana river basin, in a vast area of permafrost, there is the Batagaika crater. The crater is also known as a "megaslump" and it is the largest of its kind: almost 0.6 miles (1km) long and 282ft (86m) deep. But these figures will soon change, because it is growing quickly.

Looking at the layers exposed by the slump can give indications of how our world once looked – of past climates. At the same time, the acceleration of the growth gives an immediate insight into the impact of climate change on the increasingly fragile permafrost.

Read more: <http://www.bbc.com/earth/story/20170223-in-siberia-there-is-a-huge-crater-and-it-is-getting-bigger?ocid=fbert>

### **Soil mapping study shows great potential for Central Australian horticulture**

Soil in arid parts of Central Australia has shown potential for horticultural development, a study has found. The Northern Territory Department of Environment and Natural Resources yesterday released a report mapping the soil west of Tennant Creek and further south in Ali Curung.

Read more: <http://www.abc.net.au/news/2017-02-02/central-australian-soil-mapped-with-promising-results/8234716>

### **Understanding the role of biodiversity in our soils**

Soil Biodiversity encompasses a huge array of life on the planet. In some cases, 5 tonnes of animal life can live in one hectare of soil. The variety of soil biodiversity is also quite astounding ranging from bacteria, which are from 1-100 µm in size (i.e. completely invisible to the eye) through to the macrofauna which are on average 2 mm or larger in size and can be easily seen, such as earthworms, ants, woodlice, centipedes etc. The size of an organism is extremely important as this controls its life cycle and its impact on the soil functions. While an individual bacterium is tiny, it fits into minute spaces and there can be 3,000,000 to 500,000,000 bacteria present in 1 g of soil. The role of soil biota in the soil is essential for everyday functions and ecosystems services to take place such as water filtration, nutrient cycling, organic matter breakdown, development of soil structure, plant growth and pollination.

Read more: <http://blog.globalsoilbiodiversity.org/article/2017/02/24/understanding-role-biodiversity-our-soils>

### **Risk assessment of plant protection products for in-soil organisms**

Following a request from EFSA, the Panel on Plant Protection Products and their Residues developed an opinion on the science behind the risk assess-

ment of plant protection products for in-soil organisms. The current risk assessment scheme is reviewed, taking into account new regulatory frameworks and scientific developments. Proposals are made for specific protection goals for in-soil organisms being key drivers for relevant ecosystem services in agricultural landscapes such as nutrient cycling, soil structure, pest control and biodiversity. Read more: <http://www.efsa.europa.eu/en/efsa-journal/pub/4690>

### Why nature restoration takes time

Soil organisms have an important role in above-ground community dynamics and ecosystem functioning. However, most studies have considered soil biota as a black box or focussed on specific groups, whereas little is known about entire soil networks. With a consortium of colleagues from Europe, in the EU-funded EcoFinders project, we show that during the course of nature restoration on abandoned arable land a compositional shift in soil biota, preceded by tightening of the below-ground networks, corresponds with enhanced efficiency of carbon uptake.

Read more: <http://blog.globalsoilbiodiversity.org/article/2017/02/10/why-nature-restoration-takes-time>

### A Farmer and His Super Soil

Author Miriam Horn describes how a Kansas farmer works for his soil to keep it working for him.

Read more: <https://sciencefriday.com/articles/a-farmer-and-his-super-soil/>

### High soil carbon in Natura 2000 sites brings potential for climate-smart conservation

Natura 2000 sites have, on average, 10% more carbon in their topsoil than non-protected areas, according to new research. They also, generally, have lower economic value for agriculture. The results suggest that there is significant potential to develop win-win biodiversity conservation and climate change mitigation efforts within the EU. Biodiversity loss and the effects of climate change are major environmental challenges. Linking biodiversity conservation within protected areas and the mitigation of climate change — ‘climate-smart conservation’ — is therefore desirable in order to improve the cost-effectiveness of both strategies. In this study, researchers assessed to what extent areas of high soil carbon correspond with the Natura 2000 protected area network. Natura 2000 is an integral part of the EU’s biodiversity conserva-

tion strategy. It is the world’s largest network of protected areas, covering 18% of the land area within the EU. As well as biodiversity, the EU’s 2020 Biodiversity Strategy covers the protection of ecosystem services, such as carbon storage. The EU’s climate strategy proposes storage of carbon in soils and forests and the protection of carbon-rich ecosystems. The Soil Thematic Strategy also outlines the actions required to protect soil across the EU. The Natura 2000 network has been estimated to have a carbon storage potential of 9.6 billion tonnes of carbon. Areas of Europe with high biodiversity, high carbon content and lower land value are the most cost effective for conservation and mitigating climate change.

Read more on the Soil Thematic Strategy: [http://ec.europa.eu/environment/soil/three\\_en.htm](http://ec.europa.eu/environment/soil/three_en.htm)

(Source: Jantke, K., Müller, J., Trapp, N. & Blanz, B. (2016). Is climate-smart conservation feasible in Europe? Spatial relations of protected areas, soil carbon, and land values. *Environmental Science & Policy*, 57: 40–49. DOI:10.1016/j.envsci.2015.11.013.)

### Modelling change in soil organic carbon under future climate conditions

Climate change is expected to alter regional temperature and precipitation patterns and will subsequently impact soils and the distribution of plants and animals. Understanding how soils might vary with climate change will allow us to better prepare for and adapt to the altered soil conditions, according to Jonathan Gray, Senior Scientist with the New South Wales Government Office of Environment and Heritage. And this, he says should ultimately improve our management of agricultural lands and native ecosystems into the future. Gray describes a novel approach to modelling potential changes in soil organic carbon (SOC) as the lead author on a recent paper in the *Soil Science Society of America Journal*.

Read more: <https://dl.sciencesocieties.org/publications/csa/articles/62/3/4>

### Opinion | Soils ain’t soils

Channelling the brilliant Castrol GTX ads ‘soils ain’t soils, Sol’: pre-1788 Australian soils were carbon rich with levels some five to 10 times higher than current levels, as reported by the explorer Strzelecki in 1845. A return to such stored carbon levels across Australia would be equivalent to a massive capture of atmospheric carbon.

Read more: <http://www.theherald.com.au/story/4473422/legacy-of-land-degradation-australian-soils-aint-soils/>

### **The business case for soil**

Nobody likes dirty business, but the business world must get to grips with dirt. Soil provides food, fibres and fuels, and regulates water resources and climate. Yet most businesses are unaware that their bottom lines depend on soil; nor are they aware of the risks they face from its degradation. More must recognize that improving soil quality is a smart investment.

Read more: <http://www.nature.com/news/the-business-case-for-soil-1.21623>

### **Women in soil science**

Women are still a minority in soil science and related fields. However, their representation at conferences as keynote speakers, on editorial boards, as reviewers, and on grant funding panels, is even worse. A list of women in soil science has been set up (this includes any field related to or overlapping with soil science: soil ecology, soil physics, soil biogeochemistry, soil biology, plant-soil interactions, agronomy....). The list is intended to form a resource for conference organisers, funders, and journal editors – anyone who is looking for keynote speakers or wants to appoint soil scientists to boards or panels.

Read more: <https://franciskadevries.wordpress.com/women-in-soil-science/>

### **Healthy soil is the real key to feeding the world**

One of the biggest modern myths about agriculture is that organic farming is inherently sustainable. It can be, but it isn't necessarily. After all, soil erosion from chemical-free tilled fields undermined the Roman Empire and other ancient societies around the world. Other agricultural myths hinder recognizing the potential to restore degraded soils to feed the world using fewer agrochemicals.

Read more: <https://theconversation.com/healthy-soil-is-the-real-key-to-feeding-the-world-75364>

### **Scientists Successfully Grow Potatoes in Mars-Like Soils**

In March of last year, a group of Dutch scientists announced that they had grown 10 different plant species—including tomatoes, peas, rye, garden rocket, radish and garden cress—in dirt engineered to mimic the harsh, arid soil of Mars. A new study suggests that potatoes may be able to survive on the Red Planet, too. As Katherine Ellen Foley reports for Quartz, researchers at the International

Potato Center (known as CIP, its Spanish acronym) were able to sprout a crop of spuds in Mars-like soils.

Read more: <http://www.smithsonianmag.com/smart-news/scientists-successfully-grow-potatoes-mars-soils-180962528/>

### **SSSA and USDA-NRCS partner with two universities to produce documentary film on arctic soils/climate change...**


Alaska has been the source of myth and legend in the imagination of Americans for centuries, and what was once the last frontier of American expansion has become the first frontier in climate change. *Between Earth and Sky – Climate Change on the Last Frontier* is a feature length documentary film which examines climate change through the lens of impacts to native Alaskans, receding glaciers, and arctic soil. The island of Shishmaref has been home to the Inupiaq people for thousands of years. As sea ice retreats and coastal storms increase the people of Shishmaref are faced with a disappearing island and a 200 million dollar price tag to move their people with an untold cost on their culture and history. Permafrost (permanently frozen ground) in northern upland landscapes sequesters 40% of the earth's carbon, Alaska has experienced the largest regional warming of any state in the U.S. increasing 3.4 degrees F since 1949. This warming has created a feedback loop of carbon to the atmosphere and the thawing of permafrost impacting the daily life of Alaskans. Mixing interviews with some of the world's leading scientists in climate change and arctic soils, with the day to day struggle of native Alaskans living on the front lines of global warming, *Between Earth and Sky* shows the calamity of climate change that has started in Alaska but is already engulfing the globe. The film was directed by three time Emmy award winner Paul Allen Hunton and produced by Dr. David C. Weindorf, both from Texas Tech University.

The film is an official selection of both the Colorado Environmental Film Festival, and the Environmental Film Festival in the Nation's Capital. Screenings are occurring across the United States and in Italy, Austria, and the UK.

Read more: <http://betweenearthandskymovie.com/>

### **ISRIC – World Soil Information launches new website**

Today, ISRIC – World Soil Information has launched a new corporate website to better serve the needs of users of soil information around the globe. Rik



van den Bosch, director of ISRIC: “The new site is yet another step to show how seriously we take our mission to serve everyone who needs quality-assessed soil data. We are confident it will also act as a catalyst to engage with new clients interested in making a difference through the application of soil information”.

Highlights of the new site are: Soil Data Hub for easy search and download of the major ISRIC data products; Newly established section for professionals who want to use soil information but need assistance in doing so; Re-designed section on soils for the general public, including the ISRIC virtual Soil Museum.

Read more: <http://www.isric.org>

### **The marvel of soil biodiversity**

In this article, Leo M. Condrón explains why the multitude of organisms actively making up the soil biomass are crucial to the survival and growth of all plants and animals. Most people are familiar with the concept of biodiversity. Its health and functional benefits are derived from the presence of many different plant and animal species in an environment. Biodiversity ‘hotspots’ support a vast variety of plant and animal species; an example being a tropical rainforest with up to 80,000 plant, 50,000 insect, 1,500 bird, and 2,000 mammal/amphibian species. However, the corresponding level of biodiversity present in the underlying soil environment is much greater than above-ground, with over 100,000 known species of bacteria and fungi, 25,000 species of nematodes, 40,000 species of mites, and 7,000 species of earthworms.

Read more: <http://blog.globalsoilbiodiversity.org/sites/default/files/The%20Marvel%20of%20Soil%20Biodiversity%20L%20Condrón.pdf>

### **Cattle-associated antibiotics disturb soil ecosystems**

Manure from cattle administered antibiotics drastically changes the bacterial and fungal make-up of surrounding soil, leading to ecosystem dysfunction, according to a Virginia Tech research team. The team analysed soil samples from 11 dairy farms in the United States and found that the amount of antibiotic resistant genes was 200 times greater in soil near manure piles compared with soil that wasn’t. Furthermore, microbes with greater antibiotic resistance showed higher stress levels. Soil microbial communities are important for sustaining ecosystem services, such as climate regulation, soil fertility, and food production. Perturbations, such

as antibiotic exposure, can have marked effects on soil microbes and these services.

Read more: [https://vtnews.vt.edu/articles/2017/03/033017-fralin-manure.html?utm\\_content=&utm\\_medium=email&utm\\_name=&utm\\_source=govdelivery&utm\\_term](https://vtnews.vt.edu/articles/2017/03/033017-fralin-manure.html?utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term)

### **Is soil the great new integrator?**

Farmers, researchers and development agencies are all increasing their focus on soil. Globally, change in the way land is used and managed puts pressure on soils to do more. Farmers are growing more monoculture crops; rotating them less; and leaving behind pesticide residues, polluted waters from fertilizer run off, carbon loss, and depleted aquifers. For some farmers though, attention to soil has been a business decision, leading to increased production and yields, and has helped them withstand weather extremes. In a recent survey, insight from 2,020 farmers from across the United States reflected enthusiasm for cover crops to help improve soils—for the fourth year in a row—and found a yield boost in corn and soybeans following cover crops.

Read more: <http://www.environmentalhealthnews.org/ehs/news/2017/march/is-soil-the-great-new-integrator>

### **Monthly and seasonal rainfall erosivity in Europe**

The development of the Rainfall Erosivity Database at European Scale (REDES) and its 2015 update with the extension to monthly component allowed to develop monthly and seasonal R-factor maps and assess rainfall erosivity both spatially and temporally. During winter months, significant rainfall erosivity is present only in part of the Mediterranean countries. A sudden increase of erosivity occurs in a major part of the European Union in May and the highest values are registered during the summer months. Starting from September, the R-factor has a decreasing trend. The monthly erosivity maps allowed the development of indicators for studying the intra-annual variability of erosivity and the concentration of erosive events. Data are available in ESDAC: 12 monthly R-factor maps, 4 seasonal erosivity maps, Erosivity ratio, Coefficient of Variation, Weighted Density, Month with highest/lowest R-factor.

Read more: <http://esdac.jrc.ec.europa.eu/themes/monthly-erosivity>

## **N<sub>2</sub>O emissions from agricultural soils in Europe**

This dataset is derived from the integration of the LUCAS soil survey data with the bio-geochemistry process-based model DayCent. The model was run for more than 11,000 LUCAS sampling points under agricultural use, assessing also the model uncertainty. Meta-models based on model outcomes and the Random Forest algorithm were used to up-scale the N<sub>2</sub>O emissions at 1km resolution. ESDAC makes available a) Average nitrous oxides emissions: contains the average (2010-2014 time period) emissions of N<sub>2</sub>O-N (kg ha<sup>-1</sup> yr<sup>-1</sup>) simulated in soil LUCAS points; b) Nitrous oxides emissions in agricultural soils of the EU: contains the N<sub>2</sub>O-N emissions (kg ha<sup>-1</sup> yr<sup>-1</sup>) at 1 km<sup>2</sup> resolution in the EU, obtained by the meta-model MT1 and MT2. Read more: <http://esdac.jrc.ec.europa.eu/content/n2o-emissions-agricultural-soils>

## **Soil erosion in Tanzania – in pictures**

The Jali Ardhi, or ‘care for the land’ project, studies the impact of soil erosion on Maasai communities and their grazing lands. Photojournalist Carey Marks captures the changing landscape, its people – and the challenges they face. Read more: [https://www.theguardian.com/environment/gallery/2017/may/04/soil-erosion-in-tanzania-in-pictures?CMP=Share\\_iOSApp\\_Other](https://www.theguardian.com/environment/gallery/2017/may/04/soil-erosion-in-tanzania-in-pictures?CMP=Share_iOSApp_Other)

## **Why You Need More Dirt in Your Life**

Soil helps build up our defences against disease and imparts a sense of the sacred—and we are killing it. Read more: [http://news.nationalgeographic.com/2017/04/soil-dirt-ground-beneath-us-bogard/?utm\\_source=Facebook&utm\\_medium=Social&utm\\_content=link\\_fb20170501news-booktalk&utm\\_campaign=Content&sf74976627=1](http://news.nationalgeographic.com/2017/04/soil-dirt-ground-beneath-us-bogard/?utm_source=Facebook&utm_medium=Social&utm_content=link_fb20170501news-booktalk&utm_campaign=Content&sf74976627=1)

## **Bricks made of Martian soil may be stronger than steel-reinforced concrete**

Even The Martian’s Mark Watney didn’t have this trick up his spacesuit sleeve. Materials scientists have now created super sturdy bricks, made of material similar to Martian soil, Newsweek reports. The bricks, which the researchers say are stronger than steel-reinforced concrete, are the latest effort to make building blocks from materials readily available on the Red Planet. Prior attempts required treating martianlike dirt with heat or chemicals, but the new study, published today in Scientific Reports, shows that simple pressure can compact small red bricks held together by iron

oxide in the soil. The finding might be too late for Watney, but maybe not for future Mars-bound travellers.

Read more: <http://www.sciencemag.org/news/sifter/bricks-made-martian-soil-may-be-stronger-steel-reinforced-concrete>

## **Lithuanian scientists create innovative technologies for use of organic lakes sediments**

Lithuanian scientists have created and patented innovative technologies for the use of organic lake sediments – sapropel – in order to create fertile soil in the desert, and to support recreation of agronomic soil properties in degraded soil. Using these technologies in desert sand, the yield was comparable to that of the Nile delta. The effect of these technologies was tested in Egypt, UAE and Bahrain. Read more: <http://www.iculom.eu>

## **New Editor’s Choice papers in the European Journals of Soil Science – currently all free to read!**

See what Margaret Oliver, Editor-in-Chief of the European Journal of Soil Science, has selected as her current Editor’s Choice: “This is my latest selection of ‘Editor’s Choice’ papers; I selected them because the subject matter is unusual and of interest to more readers than simply those working in the particular field of research. They cover a range of topics in soil science. Two of the papers are open access, meaning they are easily accessible to readers.”

[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1365-2389/homepage/EditorsChoice.html](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1365-2389/homepage/EditorsChoice.html)

## **Upcoming Conferences and Meetings**

**2017**

### **GlobalSoilMap 2017 International Conference**

July 4-6, 2017, Moscow, Russia. The Conference theme is “Trends in Digital Soil Mapping development, and last achievements of DigitalSoilMap Project”. Deadline for Submission of Abstracts: December 31, 2016. Deadline for Early Bird Registration: April 15, 2017.

Read more: <http://globalsoilmap2017.ru/en/Home/>

### **ESSC International Workshop “Soil Classification: a powerful tool for planning Soil Conservation”**

Riga, Latvia, July 21, 2017, organised by the European Society for Soil Conservation (ESSC) and the Soil Science Society of Latvia (SSSL). Rationale: Soil classification has been largely used as a proxy for soil qualities which are functional in planning soil conservation measures. This activity has been traditionally carried out by National and Regional Soil Services, at the detailed and semi-detailed scales, but also by International bodies, especially at the broad scales. However, the use of soil classification for the specific implementation of soil conservation measures at the local scale is still a challenge. The development of the WRB soil classification system has progressively improved the characterization of the functioning of the soil system, giving better insights not only on soil processes, but also on soil functional qualities for agriculture and environment. The workshop is addressed to collect expertise and examples on the use of soil classification for the implementation of soil conservation/soil degradation measures and plans of intervention at different scales and for different purposes. Interactions between soil classification, soil conservation planning, and soil mapping are also welcome.

Read more: <http://www.azb.lu.lv/eng/>

### **International WRB Soil Classification Field Workshop in Latvia and Estonia**

It starts July 22 in the morning in Riga and ends July 27 in the evening in Tallinn.

This workshop will look at differently formed automorphous, semihydromorphous and hydromorphous soils (approximately 24 soil profiles) in intensively and extensively used agricultural lands and in deciduous and coniferous forest lands of the boreo-nemoral region. Soils are developed mainly on Late Weichselian glacial deposits (formed by loamy sand, sandy clay, loam, clay, gravel, sand) and altered to some extent by postglacial aeolian, marine, lacustrine, alluvial and mire sediments, as well as formed on pre-Quaternary sedimentary rocks. The soils show different organic surface layers: mull, moder, mor, amphi etc.

Organizers: Raimonds Kasparinskis and Endla Reintam and their teams, the Latvian and Estonian Soil Science Societies as well as the University of Latvia and the Estonian University of Life Sciences. Registration and payment closes 30<sup>th</sup> of June.

Read more: <http://www.azb.lu.lv/eng/>

### **Soil-ecological summer school in Siberia 2017: Land use opportunities across climatic zones on the edge of human influence**

Mid July until beginning of August, Siberia. Since 1995 annual excursions across climatic zones in Siberia were offered for students (Siewert et al. (2014): Teaching soil science and ecology in West Siberia: 17 years of field courses. Environmental Education Research. Volume 20, Issue 6, pp. 858-876). On demands of colleagues and former participants this excursion will be enhanced in 2017 in order to support collaboration with Russia for scientists from different fields of knowledge related to land use. The aim of the summer school is to show the resource wealth of natural ecosystems covering climatic zones from tundra to semi-deserts. With the content of the excursion we try to extend knowledge about natural soil formation and soil functions in order to facilitate the understanding of interrelations between land use, local culture, social structure, live style trends and economic needs as a prerequisite for sustainable society development.

Read more: <http://www.apollo-online.de/index.php?s=Sibirien2017>

Download folder: [http://iuss.boku.ac.at/files/siberia\\_2017.pdf](http://iuss.boku.ac.at/files/siberia_2017.pdf)

### **A key meeting point: 25<sup>th</sup> Aapresid Congress + 7WCCA**

Centro Metropolitano de Convenciones of Rosario, Argentina, August 1-4, 2017. This year, the 25<sup>th</sup> Annual Aapresid Congress will be held along with the 7<sup>th</sup> World Congress on Conservation Agriculture (7WCCA), in order to promote together the sustainable productive strategy that grows in the region and take it to the world. The 7WCCA will share time and place with the 25<sup>th</sup> Aapresid Congress, an event already consolidated as the most important technological reference meeting in the continent and recognized worldwide as a true network for update, exchange of knowledge and a showroom for advanced technologies. A meeting with two outstanding plenary rooms for the keynote speakers, 10 workshop rooms, a spectacular commercial hall and an open park with high tech machinery. This meeting provides the opportunity to learn from the associations and farmer networks of No Till in an international meeting point with experts from all sectors. Food security, climate change, small farmers and family agriculture, gender equality, biotechnology, innovations in machinery, bio-

energy, water, soils, crops, agribusiness, legislation and much more are among the themes that will be part of the proposal of this international event. Paper submissions from 20/03 to 17/05/2017 and will be carried out through an online system.

Read more: [www.aapresid.org.ar](http://www.aapresid.org.ar)

### **OrgaTrop 2017 - International Conference on Organic Agriculture in the Tropics: State-of-the-Art, Challenges and Opportunities**

Gajah Mada University, Yogyakarta, Indonesia, August 20-24, 2017. There is an urgent need for more research, both fundamental and applied, on organic farming practices in the tropics, and for a better dissemination of existing knowledge towards the practitioners in the field. Organic farming in the tropics presents a number of specific challenges that justify a dedicated conference. The aim of this conference is therefore to bring together scientists, policy makers and practitioners active in organic farming to present the latest research developments, and discuss how new and existing knowledge can be implemented in an efficient manner in order to foster further development of organic farming especially in the tropics.

Download Conference Flyer: [http://iuss.boku.ac.at/files/orgatrop2017\\_flier.pdf](http://iuss.boku.ac.at/files/orgatrop2017_flier.pdf)

Read more: <http://web.faperta.ugm.ac.id/orgatrop2017/>

### **International Symposium on Growing Media, Soilless Cultivation, and Compost Utilization in Horticulture**

Portland, Oregon, USA, 20-25 August 2017. Abstract submission extended to 1 May, 2017! This will be the final extension. All presenters (oral or poster) are required to register by 1 May for their abstract to be considered and accepted. Graduate students are highly encouraged to attend. There will be a graduate student oral/poster session with the top students receiving awards.

Read more: <http://www.ishs.org/symposium/490>

### **7<sup>th</sup> International Conference on Cryopedology "Cryosols in Perspective: A View from the Permafrost Heartland"**

Yakutsk, Russia, August 21–25, 2017. The conference is organized by the Cryosols Working Group of the IUSS and is hosted by the Institute of Biological Problems of the Cryolithozone of the Russian Academy of Sciences in the Sakha (Yakutia) Republic. Tentative session program includes a wide range of problems related to Cryosols and

soils of cold regions: genesis, geography, classification, and mapping of Cryosols; ecosystem functions of Cryosols; Cryosol dynamics and regimes under changing climate; pedobiology of the cryosphere; paleopedology and pedoarchaeology in permafrost areas; carbon cycle in permafrost areas; new methods in Cryosol research; and Cryosol management. A workshop for young researchers—Pedology–Geocryology Interaction—and field seminars devoted to morphogenetic analysis of soil profiles in the permafrost zone are planned. The program includes a one-day mid-conference field tour to acquaint participants with specific features of coarse- and fine-textured Cryosols in the ultracontinental climate of Central Yakutia and post-conference field tours to examine pedogenesis in thermokarst depressions (alases) and to enjoy spectacular Lena Pillars included in UNESCO World Heritage List. Deadline for registration and abstract submission: May 15, 2017.

Read more: [www.cryosols.org](http://www.cryosols.org)

### **Wageningen Soil Conference: Soil Science in a Changing World**

August 27-31, 2017. Wageningen, the Netherlands. Humankind is currently facing unprecedented challenges regarding food security, water resources, climate change and biodiversity. The participants of the 2015 edition of the Wageningen Soil Conference agreed that soils play a key role in confronting these challenges. In their resolution, they emphasized the important role of soil organic carbon for several soil functions, and that a professional communication strategy is needed to ensure that society benefits from soil-based solutions. In 2017, Wageningen University & Research would like to invite you to the third edition of the Wageningen Soil Conference, to continue work on identifying actions for soil-based solutions that help achieving the UN Sustainable Development Goals, to initiate programs that aim at a lasting increase in soil organic carbon, and to develop narratives on soil-based solutions that are convincing to policy makers and other stakeholders.

Read more: <http://www.wur.eu/wageningensoil-conference>

### **Degradation and Revitalisation of Soil and Landscape**

Olomouc, Czech Republic, 11-13 September 2017 (9 and 10 September pre-conference tours). Conference theme: Degradation causes and conse-



quences, degradation monitoring and assessment, revitalisation measures.

Read more: <http://ekologie.upol.cz/v4conference>

### **125 Years of IUFRO - Anniversary Congress 2017**

September 19 to 22, 2017, Freiburg, Baden-Württemberg, Germany. The 125<sup>th</sup> Anniversary Congress in Freiburg will not only celebrate the accomplishments of the past. It will also establish a dialogue on the future of forestry and forest research. These discussions will focus on globally pressing topics such as how to enhance the contribution forest research will need to make towards mitigating climate change, conserving biodiversity, providing water, creating income and employment, and improving the quality of life. Issues such as how changes and disruptions in society and technologies are likely to impact on forests and people in the future will also be discussed. This will be a meeting that brings together not only forest scientists from around the globe but also leading decision makers from the forestry, environment, development and other key sectors. In doing so, the IUFRO 125<sup>th</sup> Anniversary Congress aims to provide a platform for the exchange of scientific knowledge and a dialogue across the full range of forest-related topics and scientific disciplines.

Deadline for Call for Abstracts: September 1, 2016

Read more: <http://iufro2017.com/>

### **Second Global Soil Biodiversity Conference**

Nanjing, China, 15-20 October 2017. The China Soil Microbiome Initiative (CSMI) and Global Soil Biodiversity Initiative (GSBI) are pleased to announce the second Global Soil Biodiversity Conference (GSBC2). GSBC2 is centered on the theme "Integrating Soil Biodiversity with Global Sustainability", and offers an exciting program ranging from topics involving soil biodiversity and global issues on sustainability. Abstract submission is welcome for oral or poster presentation within one of the topics. The deadline is April 1, 2017

Read more: <http://gsbiconference.csp.escience.cn/dct/page/1>

### **VII International Conference on Environmental, Industrial and Applied Microbiology - BioMicroWorld2017**

Madrid (Spain), 18-20 October 2017. This three-day conference will offer an excellent opportunity for researchers from a broad range of academic disciplines to present, exchange and disseminate

information and experiences in the fields of industrial microbiology, biotechnology, environmental sciences, food and medical microbiology and other related fields. Deadlines: 27 June: abstract submission for oral presentation and 20 July: abstract submission for poster and virtual presentation.

Read more: <http://biomicroworld2017.org/>

### **Managing Global Resources for a Secure Future**

Tampa (Florida, USA), 20-22 October 2017. The 2017 Annual Meeting offers a unique opportunity as the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America connect more than 4,000 scientists, professionals, educators, and students. Deadlines: May 9 - Early Abstract Deadline, May 23 - Final Abstract Deadline

Read more: <https://www.acsmeetings.org/home>

### **7<sup>th</sup> International Conference on Silicon in Agriculture**

University of Agricultural Science, Bangalore, October 24-28, 2017. The conference is expected to attract over 250 participants from around the world. The conference will provide a forum for the exchange of knowledge, information and ideas among the scientists studying silicon in agriculture and other discipline. The major theme of the conference is 'silicon solution to sustainable agriculture'.

Read more: [www.silicon2017.com](http://www.silicon2017.com)

## **2018**

### **21<sup>st</sup> World Congress of Soil Science (WCSS)**

Rio de Janeiro, Brazil, August 12-17, 2018.

The theme will be "Soils to feed and fuel the world". The (WCSS) is the main event of the IUSS. It takes place every 4 years and is open to all Members of the IUSS and other participants. For further information go to [www.21wcsc.org](http://www.21wcsc.org) or contact Flavio Camargo, Vice President Congress, at [fcamargo@ufrgs.br](mailto:fcamargo@ufrgs.br)



# New Publications

## **Celebrating Soil. Discovering Soils and Landscapes**

By Balks, M.R. and Zabowski, D., 13 December 2016 by Springer, Heidelberg | New York, 1<sup>st</sup> ed. 2016, XI, 243 p. 338 illus., 232 illus. in color, ISBN 978-3-319-32682-5, price hardcover \$39.99, €39.99, £22.50. Also available as eBook ISBN 978-3-319-32684-9.

This richly illustrated book celebrates the diversity, importance, and intrinsic beauty of soils around the world and helps the reader to understand the ways that soils are related to the landscapes in which they form. The book unravels the complex bond between humans and soils and the importance of soils in our cultures and everyday lives.

Written in a reader-friendly way, *Celebrating Soil* is a wonderful resource for farmers, horticulturalists, naturalists, students and others who are concerned about how soils are formed, work and are used.

## **Biochar. A Regional Supply Chain Approach in View of Climate Change Mitigation**

By Viktor J. Bruckman, Esin Apaydın Varol, Başak B. Uzun and Jay Liu (editors), November 2016 by Cambridge University Press, 94 b/w illus. 22 colour illus. 37 tables, ISBN: 978-1-107-11709-9, price hardback £ 89.99.

Climate change poses a fundamental threat to humanity, and thus solutions for both mitigation and adaptation strategies are becoming increasingly necessary. Biochar can offer a range of environmental services, such as reclamation of degraded land, improvement of soil fertility and carbon sequestration. However, it also raises questions, regarding sustainable feedstock provision, biomass pyrolysis, and soil amendment. These questions, among various others, are addressed in this state-of-the-art compendium. Covering a broad geographical range, with regional assessments from North America, Europe, the Near East, and Southeast Asia, this interdisciplinary volume focuses on the entire biochar supply chain, from the availability and economics of biomass resources, to pyrolysis, and ultimately to the impacts on soil properties. The combination of theory with practical examples makes this a valuable book for researchers,

policy makers, and graduate students alike, in fields such as soil science, sustainable development, climate change mitigation, biomass and bioenergy, forestry, and environmental engineering.

Read more: <http://www.cambridge.org/at/academic/subjects/earth-and-environmental-science/soil-science/biochar-regional-supply-chain-approach-view-climate-change-mitigation?format=H&isbn=9781107117099>

## **Soil Magnetism, 1<sup>st</sup> Edition. Applications in Pedology, Environmental Science and Agriculture**

By Neli Jordanova, 6 December 2016 by Elsevier, 466 pages, ISBN: 9780128092392, price paperback: EUR 73.06.

*Soil Magnetism: Applications in Pedology, Environmental Science and Agriculture* provides a systematic, comparative, and detailed overview of the magnetic characterization of the major soil units and the observed general relationships, possibilities, and perspectives in application of rock magnetic methods in soil science, agriculture, and beyond. Part I covers detailed magnetic and geochemical characterization of major soil types according to the FAO classification system, with Part II covering the mapping of topsoil magnetic signatures on the basis of soil magnetic characteristics. The book concludes with practical examples on the application of magnetic methods in environmental science, agriculture, soil pollution, and paleoclimate.

Read more: <http://store.elsevier.com/product.jsp?isbn=9780128092392&pagename=search>

## **Soil and Environmental Chemistry, 2<sup>nd</sup> Edition**

By William F. Bleam, 6 December 2016 by Elsevier, 586 pages, ISBN: 9780128041789, price hardcover: EUR 57.76.

*Soil and Environmental Chemistry, Second Edition*, offers a holistic, practical approach to the application of environmental chemistry to soil science that includes over 100 spreadsheet files that supplement the text as a means of migrating problem-solving from calculator-based to spreadsheet-based. With an expanded set of problems and solutions and added coverage of key topics such

as sample collection, water chemistry simulation, and soil carbon cycle models, this updated edition is a must-have reference for soil scientists in environmental chemistry. Designed to equip the reader with the chemistry knowledge and problem-solving skills necessary to validate and interpret data, this book combines valuable soil chemistry concepts into the big picture.

Read more: <http://store.elsevier.com/product.jsp?isbn=9780128041789&pagename=search>

### **The Chemistry of Soils. Third Edition**

By Garrison Sposito, 8 December 2016 by Oxford University Press, 272 Pages, ISBN: 9780190630881, price hardback: £59.00.

The second edition of *The Chemistry of Soils*, published in 2008, has been used as a main text in soil-science courses across the world, and the book is widely cited as a reference for researchers in geoscience, agriculture, and ecology. The book introduces soil into its context within geoscience and chemistry, addresses the effects of global climate change on soil, and provides insight into the chemical behavior of pollutants in soils. Since 2008, the field of soil science has developed in three key ways that Sposito addresses in this third edition. For one, research related to the Critical Zone (the material extending downward from vegetation canopy to groundwater) has undergone widespread reorganization as it becomes better understood as a key resource to human life. Secondly, scientists have greatly increased their understanding of how organic matter in soil functions in chemical reactions. Finally, the study of microorganisms as they relate to soil science has significantly expanded.

Read more: <https://global.oup.com/academic/product/the-chemistry-of-soils-9780190630881?q=Soil&lang=en&cc=at>

### **LUCAS Soil Component: proposal for analysing new physical, chemical and biological soil parameters**

By Fernández-Ugalde O., Jones A., Tóth G., Orgiazzi A., Panagos P., Eiselt B.; JRC Technical Reports, 2016.

Currently, the European Commission is working on the organization of the upcoming LUCAS Soil Survey (2018). This technical report is a proposal for analysing new physical, chemical and biological soil parameters within the forthcoming LUCAS Soil Surveys. Soil biodiversity is a key parameter that needs to be added to the LUCAS Soil Surveys,

due to the contribution of the soil biological community to soil functions such as food and biomass production, genetic pool for developing novel pharmaceuticals, and climate regulation. Among physical properties, bulk density is necessary to assess soil compaction and to estimate soil organic carbon stock in the EU. Field measurements such as signs of soil erosion and thickness of organic layer in Histosols are also important to assess two critical soil degradation processes in the EU: soil erosion and organic carbon decline due to land use changes and land take of Histosols. Finally, it would be interesting to organize a survey of soil profiles to collect information that will help to understand soil-forming processes and to evaluate soil ability for carbon sequestration, nutrient cycling, water storage and contaminant filtering.

Read more: [http://esdac.jrc.ec.europa.eu/images/Doc\\_Pub/ESDB\\_Archive/eusoils\\_docs/other/EUR28038.pdf](http://esdac.jrc.ec.europa.eu/images/Doc_Pub/ESDB_Archive/eusoils_docs/other/EUR28038.pdf)

### **Soils and pulses: symbiosis for life**

In celebration of the synergy between IYS 2015 and IYP 2016, a new book titled *Soils & Pulses: symbiosis for life* was launched on World Soil Day 2016, at FAO Headquarter. This 114-page book aims to introduce the reader to the importance of preserving our soil resources by attending to the reciprocal relationship between soils and pulses. The ecosystem services provided by soil are presented together with the role of pulses in improving soil health, adapting to and mitigating climate change, and ultimately contributing to food security and nutrition. The book also discusses the role of pulses in restoring degraded soils and their contribution to pursuing the practice of sustainable soil management.

Download the book: <http://www.fao.org/documents/card/en/c/56244a4c-d35a-48f8-b465-89f46f343312/>

### **Conservation Agriculture for Africa. Building Resilient Farming Systems in a Changing Climate**

Edited by A Kassam, S Mkomwa and T Friedrich, December 2016 by CABI (Centre for Agriculture and Biosciences International), 318 Pages, ISBN: 9781780645681, price hardback: £95.00/€125.00/\$133.33. The publishers will grant IUSS members a 20% discount. If you are interested, please contact the Secretariat at [iuss@umweltbundesamt.at](mailto:iuss@umweltbundesamt.at).

Tillage agriculture has led to widespread soil and ecosystem degradation globally. This is especially so in Africa where traditional and modern tillage-

based agricultural practices have become unsustainable due to severe disturbance and exploitation of natural resources, with negative impacts on the environment and rural livelihoods. In addition, agriculture in Africa today faces major challenges including increased costs of production and energy, the effects of climate change, and the lack of an effective paradigm for sustainable intensification, especially for small- and medium-size holdings. Africa is facing a serious challenge to food security and as a continent has not advanced towards eradicating hunger. In addition, the population is still growing much faster than on most other continents. This pressure has led to the emergence of no-till conservation agriculture as a serious alternative sustainable agriculture paradigm.

Read more: <http://www.cabi.org/bookshop/book/9781780645681>

#### **Engineered Nanoparticles and the Environment: Biophysicochemical Processes and Toxicity**

By Baoshan Xing, Chad D. Vecitis and Nicola Senesi (editors). November 2016 by Wiley. 512 pages, ISBN: 978-1-119-27582-4, price hardcover €187.20. Also available as eBook.

This book deals with the source, release, exposure, adsorption, aggregation, bioavailability, transport, transformation, and modeling of engineered nanoparticles found in many common products and applications, covering synthesis, environmental application, detection, and characterization of engineered nanoparticles. It details the toxicity and risk assessment of engineered nanoparticles, including topics on the transport, transformation, and modelling of engineered nanoparticles; presents the latest developments and knowledge of engineered nanoparticles.

#### **The Soils of the USA**

By L.T. West, M.J. Singer, A.E. Hartemink (Eds.). Springer, 2017, XIV, 394 p., 285 illus., 203 in color. ISBN 978-3-319-41868-1, price Hardcover \$179.00 | £112.00 | € 149,99

The Soils of the USA is the first comprehensive coverage of the soils in the U.S. since 1936. Written by 46 soil scientists from across the country and richly illustrated, the book provides an overview of the distribution, properties and function of soils in the USA, including Alaska, Hawaii and its Caribbean territories. The Soils of the USA discusses the history of soil surveys and pedological research in the U.S., and offers general descriptions of the country's climate, geology and geomorphology. For each Land

Resource Region (LRR) – a geographic/ecological region of the country characterized by its own climate, geology, landscapes, soils, and agricultural practices – there is a chapter with details of the climate, geology, geomorphology, pre-settlement and current vegetation and land use, as well as the distribution and properties of major soils including their genesis, classification and management challenges. The final chapters address topics such as soils and humans, and the future challenges for soil science and soil surveys in the United States. Maps of soil distribution, pedon descriptions, profile images and tables of properties are included throughout the text.

#### **Using R for Digital Soil Mapping**

By Malone, Brendan P., Minasny, Budiman, McBratney, Alex B. Springer, Series: Progress in Soil Science, 2017, XVI, 262 p., 61 illus., 44 in colour. ISBN 978-3-319-44327-0, price hardcover 114,99 € | £86.00 | \$129.00 (net prices)

This book describes and provides many detailed examples of implementing Digital Soil Mapping (DSM) using R. The work adheres to Digital Soil Mapping theory, and presents a strong focus on how to apply it. DSM exercises are also included and cover procedures for handling and manipulating soil and spatial data in R. The book also introduces the basic concepts and practices for building spatial soil prediction functions, and then ultimately producing digital soil maps.

#### **Global Soil Security**

By Field, Damien, Morgan, Cristine L., McBratney, Alex B. (Eds.), Springer, Series: Progress in Soil Science, 2017, XVIII, 469 p., 102 illus., ISBN 978-3-319-43394-3, price hardcover 149,99 € | £112.00 | \$179.00 (net prices)

This book introduces the concept of soil security and its five dimensions: Capability, Capital, Condition, Connectivity and Codification. These five dimensions make it possible to understand soil's role in delivering ecosystem services and to quantify soil resource by measuring, mapping, modeling and managing it. Each dimension refers to a specific aspect: contribution to global challenges (Capability), value of the soil (Capital), current state of the soil (Condition), how people are connected to the soil (Connectivity) and development of good policy (Codification). This book considers soil security as an integral part of meeting the ongoing challenge to maintain human health and secure our planet's sustainability. The concept of soil se-

curity helps to achieve the need to maintain and improve the world's soil for the purpose of producing food, fiber and freshwater, and contributing to energy and climate sustainability. At the same time it helps to maintain biodiversity and protects ecosystem goods and services.

#### **Soil Science Working for a Living - Applications of soil science to present-day problems**

By D. Dent, Y. Dmytruk (Eds.), Springer 2017, XIII, 290 p. 89 illus., 50 illus. in colour, ISBN 978-3-319-45416-0, price hardcover 162,99 € | £121.50 | \$199.00 (net prices)

This book discusses gritty issues that society faces every day: food and water security, environmental services provided by farmers, almost accidentally, and taken for granted by everyone else, the capability of the land to provide our needs today and for the foreseeable future and pollution of soil, air and water. The chapters are grouped in four main themes: soil development - properties and qualities; assessment of resources and risks; soil fertility, degradation and improvement and soil contamination, monitoring and remediation. It is a selection of papers presented at the Pedodiversity in Space and Time Symposium held at Chernivtsi National University, Ukraine, 15-19 September 2015.

#### **A Treatise of Indian and Tropical Soils**

By D.K. Pal, Springer 2017, XIV, 180 p. 44 illus., 18 illus. in colour. ISBN 978-3-319-49439-5, price hardcover 149,99 € | £112.00 | \$179.00 (net prices)

This book discusses how to apply the basic principles of pedology to the tropical soils of the Indian subcontinent, with an emphasis on ways to enhance crop productivity. The book showcases the research contributions on pedology, geomorphology, mineralogy, micromorphology and climate change collected from the literature on three major soil types: shrink-swell soils, red ferruginous (RF) soils and the soils that occur in the tropical environments of the Indo-Gangetic Plains (IGP). It also provides insights into several aspects of five pedogenetically important soil orders like Alfisols, Mollisols, Ultisols, Vertisols and Inceptisols found in tropical Indian environments. Documenting the significance of minerals in soils and their overall influence in soil science in terms of pedology, paleopedology, polygenesis and edaphology, it provides a knowledge base that is critical when attempting to bridge the gap between food production and population growth.

#### **Soils within Cities: Global approaches to their sustainable management - composition, properties, and functions of soils of the urban environment**

Levin/Kim/Morel/Burghardt/Charzynski/Shaw (Eds.), February 2017 by Schweizerbart Science Publishers in the series *GeoEcology Essays*, 253 pages, 113 figures, 23 tables, ISBN 978-3-510-65411-6. The book can be ordered from the IUSS Secretariat ([iuss@umweltbundesamt.at](mailto:iuss@umweltbundesamt.at)) at the price of €29.90 plus shipping costs; a reduced rate of €25.00 (plus shipping) is available for IUSS members.

As the proportion of people living in urban areas has been and still is increasing, *Soils within Cities: Global approaches to their sustainable management* undertakes to shed light on the role and importance of soils in cities, and stresses the need to consider and manage this unique component of the urban ecosystem on our way to build sustainable cities. Edited on behalf of the International Union of Soil Sciences, this book is the result of a joint effort of the international SUITMA (Soils of the Urban, Traffic, Mining and Military Areas) working group of the International Union of Soil Sciences. Thirty-four short contributions comprehensively highlight key aspects and characteristics of soils of the urban ecosystem and the problems and challenges associated with them. The authors lay out the fundamentals of soil science applied to anthropized environments (environments degraded by human activity), including composition, properties, and functions of soils of the urban environment, their pedogenic evolution, classification and mapping. Furthermore, contributions present examples of actual urban soil surveys conducted in the US, Poland, Germany and Russia. Approaches to managing soils of the urban environment with focus on brownfields, soil sealing and urban agriculture, and the management of soil sealing are described.

A separate chapter is dedicated to the ecosystem services urban soils can provide, including sustaining and controlling water quality and quantity, providing C and P storage capacity, supporting biodiversity, pollution problems, and pointing out ecosystem services that even contaminated industrial and mine soils are able to provide. "Soils within Cities" is aimed at expanding our view of soils of our planet, and having them taken into consideration for human well-being. It provides city planners and managers with a special reference that can serve to offer citizens a better life in the long run.

Read more: <http://schweizerbart.com/9783510654116>

### **New Pesticides and Soil Sensors**

1<sup>st</sup> Edition. Edited by Alexandru Grumezescu. February 2017 by Academic Press. 792 pages, ISBN: 9780128042991; eBook ISBN: 9780128043707, price hardcover: €143.00.

*New Pesticides and Soil Sensors*, a volume in the *Nanotechnology in the Agri-Food Industry* series, is a practical resource that demonstrates how nanotechnology is a highly attractive tool that offers new options for the formulation of 'nanopesticides'. Recent advances in nanopesticide research is reviewed and divided into several themes, including improvement of the water solubility of poorly soluble pesticide active ingredients to improve bioavailability and the encapsulation of pesticide active ingredients within permeable nanoparticles with the aim of releasing pesticide active ingredients in a controlled or targeted manner, while also protecting active ingredients from premature photo-degradation.

Read more: <https://www.elsevier.com/books/new-pesticides-and-soil-sensors/grumezescu/978-0-12-804299-1>

### **International Yearbook of Soil Law and Policy 2016**

By Harald Ginzky, Irene L. Heuser, Tianbao Qin, Oliver C. Ruppel, Patrick Wegerdt (Editors). 2017 by Springer. ISBN: 978-3-319-42507-8 (Print) 978-3-319-42508-5 (Online), price \$159.00 / €145.59 / £104.50.

The first volume of the International Yearbook of Soil Law and Policy was prepared in 2016. The second volume (2017) is currently under preparation and a third volume is planned for 2018.

The intention of the first volume 2016 is to establish a platform for discussion among legislators, lawyers and policymakers regarding regulatory concepts and approaches on the international, regional and national level. The new International Yearbook of Soil Law and Policy aims to bring together the global legal fraternity, academics, judges and local legal practitioners to continue the discourse on soils in the attempt to improve the legal promotion and protection of soils by inter alia enhancing existing governance solutions. This first volume of the International Yearbook of Soil Law and Policy focuses on contents and implementation of the objective of a "land degradation neutral world", which is also prominently addressed in SDG Target 15.3.

Read more: <http://link.springer.com/book/10.1007/978-3-319-42508-5>

### **Soil Salinity Management in Agriculture. Technological Advances and Applications**

Edited by S. K. Gupta, Megh R. Goyal. March 2017 by Apple Academic Press, 412 pages | 21 Color Illus. | 46 B/W Illus.; ISBN 9781771884433, price hardback: £99.00

This important volume, *Soil Salinity Management in Agriculture*, addresses the crucial issue of soil salinity of potential farmland and provides a comprehensive picture of the saline environment and plant interactions, along with management and reclamation methods and policies. With contributions from researchers from the fields of agricultural chemistry, soil science, biotechnology, agronomy, environmental sciences, and plant breeding and genetics, the volume emphasizes a multidisciplinary approach.

Read more: <https://www.routledge.com/Soil-Salinity-Management-in-Agriculture-Technological-Advances-and-Applications/Gupta-Goyal/p/book/9781771884433>

### **Biochar - A Guide to Analytical Methods**

Edited by Balwant Singh, Marta Camps-Arbestain and Johannes Lehmann. March 2017 by CSIRO Publishing, 320 pages, 260 x 200 mm, ISBN: 9781486305094, price paperback \$ 99.95.


The first book to comprehensively describe analytical procedures and techniques for biochar analysis. Interest in biochar among soil and environment researchers has increased dramatically over the past decade. Biochar initially attracted attention for its potential to improve soil fertility and to uncouple the carbon cycle, by storing carbon from the atmosphere in a form that can remain stable for hundreds to thousands of years. Later it was found that biochar had applications in environmental and water science, mining, microbial ecology and other fields. Biochar is primarily intended for researchers, post-graduate students and practitioners who require knowledge of biochar properties.

Read more: <http://www.publish.csiro.au/book/7478>

### **Climate Change Impacts on Soil Processes and Ecosystem Properties, Volume 35**

1<sup>st</sup> Edition; Series Volume Editors: William Horwath Yakov Kuzyakov. Published by Elsevier on 1<sup>st</sup> March 2017, 625 pages, ISBN: 9780444638656, price paperback € 165.00.

*Climate Change Impacts on Soil Processes and Ecosystem Properties, Volume 35* presents current and emerging soil science research around the areas of soil processes and climate change, also evaluating



future research needs. The book combines the five areas of soil science (microbiology, physics, fertility, pedology, and chemistry) to give a comprehensive assessment. This integration of topics is rarely done in a single publication due to the disciplinary nature of the soil science areas, so users will find it to be a comprehensive resource on the topic.

Read more: <https://www.elsevier.com/books/climate-change-impacts-on-soil-processes-and-eco-system-properties/unknown/978-0-444-63865-6>

**Quantifying and Managing Soil Functions in Earth's Critical Zone, Volume 142, 1<sup>st</sup> Edition, Combining Experimentation and Mathematical Modelling**

Edited by Steven A. Banwart and Donald L. Sparks; February 2017 by Academic Press, 440 pages, ISBN: 9780128122228, price hardcover € 165.00.

*Quantifying and Managing Soil Functions in Earth's Critical Zone: Combining Experimentation and Mathematical Modelling, Volume 142*, the latest in the *Advances in Agronomy* series continues its reputation as a leading reference and first-rate source for the latest research in agronomy. Each volume contains an eclectic group of reviews by leading scientists throughout the world. Five volumes are published yearly, ensuring that the authors' contributions are disseminated to the readership in a timely manner. As always, the subjects covered are varied and exemplary of the myriad of subject matter dealt with by this long-running serial.

The topics covered by the book range from Soil Functions in Earth's Critical Zone: Key Results and Conclusions, Soil Water Characteristics of European SoilTrEC Critical Zone Observatories; Reduced Sub-surface Lateral Flow in Agroforestry System Is Balanced by Increased Water Retention Capacity: Rain-fall Simulation and Model Validation to Soil Mineralogy Changes With Different Agricultural Practices During 8-Year Soil Development From the Parent Material of a Mollisol; Modeling Soil Aggregation at the Early Pedogenesis Stage From the Parent Material of a Mollisol Under Different Agricultural Practices; Factors Controlling Soil Structure Dynamics and Carbon Sequestration Across Different Climatic and Lithological Conditions, to name but a few.

Read more: <https://www.elsevier.com/books/quantifying-and-managing-soil-functions-in-earths-critical-zone/banwart/978-0-12-812222-8>

**Nanoscience and Plant–Soil Systems**

M. Ghorbanpour, K. Manika, A. Varma (Eds.), Series: Soil Biology, Vol. 48; 1<sup>st</sup> ed. 2017 by Springer,

553 pages, ISBN 978-3-319-46835-8, price hardcover € 148.49 | £100.50 | \$159.00.

This book provides in-depth reviews of the effects of nanoparticles on the soil environment, their interactions with plants and also their potential applications as nanofertilizers and pesticides. It offers insights into the current trends and future prospects of nanotechnology, including the benefits and risks and the impact on agriculture and soil ecosystems. Individual chapters explore topics such as nanoparticle biosynthesis, engineered nanomaterials, the use of nanoclays for remediation of polluted sites, nanomaterials in water desalination, their effect on seed germination, plant growth, and nutrient transformations in soil, as well as the use of earthworms as bioremediating agents for nanoparticles. It is a valuable resource for researchers in academia and industry working in the field of agriculture, crop protection, plant sciences, applied microbiology, soil biology and environmental sciences.

Read more: <http://www.springer.com/de/book/9783319468334>

**The Soils of Wisconsin**

By Bockheim, James G. and Hartemink, Alfred E. Published 2017 by Springer, World Soils Book Series; 393 pages, 189 illus., 144 illus. in colour, ISBN 978-3-319-52144-2; price hardcover 86,99 € | £64.99 | \$99.00; This book provides an up-to-date and comprehensive report on the soils of Wisconsin, a state that offers a rich tapestry of soils. It discusses the relevant soil forming factors and soil processes in detail and subsequently reviews the main soil regions and dominant soil orders, including paleosols and endemic and endangered soils. The last chapters address soils in a changing climate and provide an evaluation of their monetary value and crop yield potential. Richly illustrated, the book offers both a valuable teaching resource and essential guide for policy-makers, land users, and all those interested in the soils of Wisconsin.

Read more: [http://www.springer.com/de/book/9783319521435?wt\\_mc=Alerts.NBA.SpringerAuthors-Mar-3](http://www.springer.com/de/book/9783319521435?wt_mc=Alerts.NBA.SpringerAuthors-Mar-3)

**Xenobiotics in the Soil Environment. Monitoring, Toxicity and Management**

Hashmi, M. Z., Kumar, V., Varma, A. (Eds.). 1<sup>st</sup> ed. published 2017 by Springer, Soil Biology Series, Vol. 49, 400 pages, 36 illus., 24 illus. in colour, ISBN 978-3-319-47744-2, price hardcover 169,99 € | £126.50 | \$199.00.

This book describes the vast variety of xenobiotics, such as pesticides, antibiotics, antibiotic resistance genes, agrochemicals and other pollutants, their interactions with the soil environment, and the currently available strategies and techniques for soil decontamination and bioremediation. Topics covered include: transport mechanisms of pollutants along the Himalayas; use of earthworms in biomonitoring; metagenomics strategies for assessing contaminated sites; xenobiotics in the food chain; phyto-chemical remediation; biodegradation by fungi; and the use of enzymes and potential microbes in biotransformation. Accordingly, the book offers a valuable guide for scientists in the fields of environmental ecology, soil and food sciences, agriculture, and applied microbiology.

Read more: [http://www.springer.com/de/book/9783319477435?wt\\_mc=Alerts.NBA.SpringerAuthors-Mar-3](http://www.springer.com/de/book/9783319477435?wt_mc=Alerts.NBA.SpringerAuthors-Mar-3)

#### **Les sols - Intégrer leur multifonctionnalité pour une gestion durable**

A. Bispo, C. Guellier, E. Martin, J. Sapijanskas, H. Soubelet, C. Chenu (editors). Novembre 2016 par Éditions Quae, 384 pages, ISBN : 978-2-7592-2392-3, prix livre broché €45.00

De la mise en place d'indicateurs pour la planification urbaine à la mesure des stocks de carbone, en passant par les instruments juridiques et économiques pour la protection des sols, cet ouvrage, issu du programme Gessol, synthétise les dernières connaissances biotechniques et sociétales sur le sujet. Il souligne l'importance d'une gestion durable des sols dans les enjeux globaux et identifie les leviers d'actions possibles.

En savoir plus: [http://www.quae.com/fr/r4747-les-sols.html?utm\\_content=243178&utm\\_source=Dolist&utm\\_medium=E-Mail&utm\\_campaign=REL+VDP+Les+sols+mars17-10285327](http://www.quae.com/fr/r4747-les-sols.html?utm_content=243178&utm_source=Dolist&utm_medium=E-Mail&utm_campaign=REL+VDP+Les+sols+mars17-10285327)

#### **Adaptive Soil Management: From Theory to Practices**

Rakshit, A., Abhilash, P.C., Singh, H.B., Ghosh, S. (Eds.), 1<sup>st</sup> ed. 2017 by Springer, 571 pages, 121 illus., 75 illus. in colour, ISBN 978-981-10-3638-5, price hardcover € 199.99 | £149.00 | \$229.00.

The book focuses on learning and adapting through partnerships between managers, scientists, and other stakeholders who learn together how to create and maintain sustainable resource systems. As natural areas shrink and fragment, our ability to sustain economic growth and safeguard biological

diversity and ecological integrity is increasingly being put to the test. In attempting to meet this unprecedented challenge, adaptive management is becoming a viable alternative for broader application. Adaptive management is an iterative decision-making process which is both operationally and conceptually simple and which incorporates users to acknowledge and account for uncertainty, and sustain an operating environment that promotes its reduction through careful planning, evaluation, and learning until the desired results are achieved.

Read more: [http://www.springer.com/de/book/9789811036378?wt\\_mc=Alerts.NBA.SpringerAuthors-Apr-2](http://www.springer.com/de/book/9789811036378?wt_mc=Alerts.NBA.SpringerAuthors-Apr-2)

#### **Phytoremediation: Management of Environmental Contaminants, Volume 5**

Edited by Ansari, A.A., Gill, S.S., Gill, R., Lanza, G. and Newman, L., 1<sup>st</sup> ed. 2017 by Springer, XIV, 514 pages, 91 illus., 83 illus. in colour, ISBN 978-3-319-52381-1, price hardcover € 214.00 | £159.50 | \$249.00.

This text details the plant-assisted remediation method, "phytoremediation", which involves the interaction of plant roots and associated rhizospheric microorganisms for the remediation of soil contaminated with high levels of metals, pesticides, solvents, radionuclides, explosives, crude oil, organic compounds and various other contaminants. Many chapters highlight and compare the efficiency and economic advantages of phytoremediation to currently practiced soil and water treatment practices. Volume 5 of *Phytoremediation: Management of Environmental Contaminants* provides the capstone of the series. Taken together, the five volumes provide a broad-based global synopsis of the current applications of phytoremediation using plants and the microbial communities associated with their roots to decontaminate terrestrial and aquatic ecosystems.

Read more: [http://www.springer.com/de/book/9783319523798?wt\\_mc=Alerts.NBA.SpringerAuthors-Apr-2](http://www.springer.com/de/book/9783319523798?wt_mc=Alerts.NBA.SpringerAuthors-Apr-2)

#### **Anthropogenic Soils**

By Howard, Jeffrey. 1<sup>st</sup> ed. 2017 by Springer, XIII, 231 pages, 66 illus., 38 illus. in colour, ISBN 978-3-319-54331-4, price hardcover €86.99 | £64.99 | \$99.00.

Published in the Series *Progress in Soil Science*, this book serves as a companion book to Springer's Anthropogenic Landforms text, and is a state-of-



the-art review of the physical, chemical and mineralogical properties of anthropogenic soils, their genesis morphology and classification, geocultural setting, and strategies for reclamation, revitalization, use and management.

Read more: [http://www.springer.com/de/book/9783319543307?wt\\_mc=Alerts.NBA.SpringerAuthors-Apr-2](http://www.springer.com/de/book/9783319543307?wt_mc=Alerts.NBA.SpringerAuthors-Apr-2)

### **Carbon Sequestration for Climate Change Mitigation and Adaptation**

By Ussiri, David A. N. and Lal, Rattan. 1<sup>st</sup> ed. 2017 by Springer, XIV, 549 pages, 57 illus., 53 illus. in colour, ISBN 978-3-319-53845-7, price hardcover € 239.00 | £178.00 | \$279.00.

This volume sets out the scientific basis for the current understanding of climate change. It synthesizes and collates extensive scientific knowledge to show why climate is changing, and the consequences of those changes. Starting with global carbon cycling over the geological history of the Earth, the behaviour of the carbon cycle is traced back millions of years prior to human influence and shows that the current atmospheric concentration of carbon dioxide is unprecedented, which cannot be found in geological records of at least the past two million years. This book sets the foundation for understanding the contemporary carbon cycling, and shows that the contemporary carbon cycling cannot be isolated from geologic history of carbon cycle. This volume also describes the role of carbon sequestration – both natural ecological, engineered and geoengineered options – for mitigating the increasing atmospheric CO<sub>2</sub> concentration.

Read more: [http://www.springer.com/de/book/9783319538433?wt\\_mc=Alerts.NBA.SpringerAuthors-Apr-2](http://www.springer.com/de/book/9783319538433?wt_mc=Alerts.NBA.SpringerAuthors-Apr-2)

### **Combating Desertification and Land Degradation. Spatial Strategies Using Vegetation**

By J. Hooke, P. Sandercock. 1<sup>st</sup> ed. 2017 by Springer, X, 135 pages, 42 illus., 34 illus. in colour, ISBN 978-3-319-44451-2, price hardcover €49.99 | £37.99 | \$54.99.

This book describes an approach developed to research and apply methods of assessing patterns of processes in the landscape, and the suitability of different types of vegetation to mitigate soil erosion and sediment flux. Practical guidelines on a spatially strategic approach to management of land degradation at a range of spatial scales were produced. Originally developed for the Mediter-

ranean environment, it has much wider potential global application. It provides researchers with methods to acquire the knowledge necessary for such an approach and provides practitioners with guidance on implementation and benefits of targeted methods of soil erosion control. It includes substantial information about processes and vegetation in the Mediterranean environment and the species effectiveness in soil erosion control.

Read more: [http://www.springer.com/de/book/9783319444499?wt\\_mc=Alerts.NBA.SpringerAuthors-Apr-2](http://www.springer.com/de/book/9783319444499?wt_mc=Alerts.NBA.SpringerAuthors-Apr-2)

### **The Soils of Greece**

By Yassoglou, N., Tsadilas, C., and Kosmas, C. 1<sup>st</sup> ed. 2017 by Springer, XXII, 113 pages, 38 illus., 37 illus. in colour, ISBN 978-3-319-53334-6, price hardcover € 114.99 | £86.00 | \$129.00.

Published in the *World Soils Book Series*, this book presents a comprehensive and up-to-date overview on soils of Greece. It includes sections on soil research history, climate, geology, geomorphology, major soil types, soil maps, soil properties, soil classification, soil fertility, land use and vegetation, soil management, soils and humans, soils and industry, future soil issues. The book summarizes what is known about the soils in Greece in a concise and highly reader-friendly way.

Read more: [http://www.springer.com/de/book/9783319533322?wt\\_mc=Alerts.NBA.SpringerAuthors-Apr-2](http://www.springer.com/de/book/9783319533322?wt_mc=Alerts.NBA.SpringerAuthors-Apr-2)

### **Urban Expansion, Land Cover and Soil Ecosystem Services**

Edited by Ciro Gardi. Published in April 2017 by Routledge, 302 pages, 80 Colour Illus., 128 B/W Illus., ISBN 978-1-13-888509-7, price hardcover €95.00.

More than half of the world population now lives in cities, and urban expansion continues as rural people move to cities. This results in the loss of land for other purposes, particularly soil for agriculture and drainage. This book presents a review of current knowledge of the extension and projected expansion of urban areas at a global scale. Focusing on the impact of the process of 'land take' on soil resources and the ecosystem services that they provide, it describes approaches and methodologies for detecting and measuring urban areas, based mainly on remote sensing, together with a review of models and projected data on urban expansion. The most innovative aspect includes an analysis of the drivers and especially the impacts

of soil sealing and land take on ecosystem services, including agriculture and food security, biodiversity, hydrology, climate and landscape.

Read more: <https://www.routledge.com/Urban-Expansion-Land-Cover-and-Soil-Ecosystem-Services/Gardi/p/book/9781138885097>

### **Soil Health and Intensification of Agroecosystems**

Edited by Birl Lowery and Mahdi Al-Kaisi. 1<sup>st</sup> Edition published March 2017 by Academic Press, 418 pages, ISBN 978-0-12-805317-1, price paperback €89.95.

*Soil Health and Intensification of Agroecosystems* examines the climate, environmental, and human effects on agroecosystems and how the existing paradigms must be revised in order to establish sustainable production. The increased demand for food and fuel exerts tremendous stress on all aspects of natural resources and the environment to satisfy an ever increasing world population, which includes the use of agriculture products for energy and other uses in addition to human and animal food. The book presents options for ecological systems that mimic the natural diversity of the ecosystem and can have significant effect as the world faces a rapidly changing and volatile climate. The book explores the introduction of sustainable agroecosystems that promote biodiversity, sustain soil health, and enhance food production as ways to help mitigate some of these adverse effects.

Read more: <https://www.elsevier.com/books/soil-health-and-intensification-of-agroecosystems/lowery/978-0-12-805317-1>

### **Soil Mapping and Process Modeling for Sustainable Land Use Management**

By Paulo Pereira, Eric Brevik, Miriam Muñoz-Rojas and Bradley Miller. 1<sup>st</sup> Edition published 20 March 2017 by Elsevier, 398 pages, Paperback ISBN 978-0-12-805200-6.

*Soil Mapping and Process Modeling for Sustainable Land Use Management* is the first reference to address the use of soil mapping and modeling for sustainability from both a theoretical and practical perspective. The use of more powerful statistical techniques are increasing the accuracy of maps and reducing error estimation, and this text provides the information necessary to utilize the latest techniques, as well as their importance for land use planning. Providing practical examples to help illustrate the application of soil process modeling and maps, this reference is an essential tool for professionals and students in soil science and land

management who want to bridge the gap between soil modeling and sustainable land use planning.

Read more: <https://www.elsevier.com/books/soil-mapping-and-process-modeling-for-sustainable-land-use-management/pereira/978-0-12-805200-6>

### **Microbial Biomass. A Paradigm Shift in Terrestrial Biogeochemistry**

Edited by: Kevin R Tate. First published in April 2017 by World Scientific Publishing, 348 pages, ISBN 978-1-78634-130-3, price hardcover £123.00.

*Microbial Biomass* informs readers of the ongoing global revolution in understanding soil and ecosystem microbial processes. In terms of contemporary issues, it also serves to support urgent efforts to sustainably manage land to feed a growing world population without compromising the environment. It presents new methods of investigation which are leading to more sustainable management of ecosystems, and improved understanding of ecosystem changes in an increasingly warmer world. The book approaches the topic by looking at the emergence of our understanding of soil biological processes, and begins by tracing the conception and first measurement of soil microbial biomass. Following this, changes in ecosystems and in natural ecosystem processes are discussed in relation to land management issues and global change. Microbial biomass and its diversity are recognized as key factors in finding solutions for more sustainable land and ecosystem management, aided by new molecular and other tools.

Read more: <http://www.worldscientific.com/worldscibooks/10.1142/q0038>

### **Soil and Soil Fertility Management Research in Sub-Saharan Africa. Fifty years of shifting visions and chequered achievements**

By Henk Mutsaers, Danny Coyne, Stefan Hauser, Jeroen Huising, Alpha Kamara, Generose Nziguheba, Pieter Pypers, Godfrey Taulya, Piet van Asten and Bernard Vanlauwe. Published in the series: Earthscan Studies in Natural Resource Management in March 2017, 362pages, 168 illustrations, ISBN Hardback: 978-1-138-69851-2, price: £88.00 UK/\$120.00 USD; ISBN eBook: 978-1-315-51885-5, price: £27.99 UK/\$43.96 USD. 20% Discount Available - enter the code FLR40 at checkout.

Soil fertility management is crucial for sustainable crop production and for food security in sub-Saharan Africa (SSA). This book describes the various paradigms underlying soil fertility research in SSA

over the last fifty years. It provides examples of important innovations generated and assesses the position of research within the research-for-development (RforD) community.

Read more: [www.routledge.com/9781138698512](http://www.routledge.com/9781138698512)

### **Mires and peatlands of Europe. Status, distribution and conservation**

Joosten/Tanneberger/Moen (eds.). Published in 2017 by Schweizerbart Science Publishers, 780 pages, 129 figures, 161 tables, ISBN 978-3-510-65383-6, price hardcover 94.00 €.

This book provides the first comprehensive and up-to-date overview of mires and peatlands in biogeographic Europe. Written by 134 mire specialists, the book describes mire and peatland types, terms, extent, distribution, use, conservation, and restoration, individually for each European country and in an integrated manner for the entire continent. Complemented by a multitude of maps and photographs, the book offers an impressive and colourful journey, full of surprising historical context and fascinating details, while appreciating the core principles and unifying concepts of mire science.

Read more: <http://schweizerbart.com/9783510653836>

### **Multifunctional Land-Use Systems for Managing the Nexus of Environmental Resources**

By Zhang, Lulu, Schwärzel, Kai (Eds.), 1<sup>st</sup> ed. 2017 by Springer, 148 pages, 34 illus., 31 illus. in colour. ISBN 978-3-319-54957-6, price hardcover 86,99 € | £64.99 | \$99.00.

This book comprehensively describes the major ecosystem services in dryland environments that are provided by typical land use, including forestland, grassland and farmland, using the Loess Plateau, Northwest China as an example. It offers extensive information on land policy, implementation and scientific evidence, and discusses the restoration of the degraded Loess Plateau environment, which that brings new challenges in the sustainable use of natural resources, in particular soil and water.

Read more: <http://www.springer.com/gp/book/9783319549569#otherversion=9783319549576http://www.springer.com/gp/book/9783319549569>

### **The Ground Beneath Us: From the Oldest Cities to the Last Wilderness, What Dirt Tells Us About Who We Are**

By Paul Bogard. Published March 21, 2017 by Little Brown and Company. 336 pages. ISBN 316342262 (ISBN-13: 978-0316342261), price USD 17.49.

When a teaspoon of soil contains millions of species, and when we pave over the Earth on a daily basis, what does that mean for our future? What is the risk to our food supply, the planet's wildlife, the soil on which every life-form depends? How much undeveloped, untrodden ground do we even have left? From New York (where more than 118,000,000 tons of human development rest on top of Manhattan Island) to Mexico City (which sinks inches each year into the Aztec ruins beneath it), Paul Bogard shows us the weight of our cities' footprints.

Read more: <http://www.goodreads.com/book/show/29977072-the-ground-beneath-us>

### **Special issue on digital soil mapping across the world**

Geoderma Regional has just published a special issue on digital soil mapping across the world (Vol. 9). The issue edited by Dominique Arrouays and Philippe Lagacherie contains papers from Scotland, Chile, Madagascar, France, Brazil, India, and Belgium. These papers illustrate the advances in digital soil mapping, highlight the complexity of sparse data sets, but produce results using the best available data. They can be used for a wide range of purposes including a call for re-investment in soil mapping as well as the need for new soil data collection.

Read more: <http://www.sciencedirect.com/science/journal/23520094/9>

### **Springer Nature groundbreaking collection 'Change the World'**

The paper "Molecular microbiology methods for environmental diagnosis" by soil microbiologists has been nominated by Springer Nature among 180 scientific findings of the year 2016 that could help change the world.

This paper highlights how several molecular techniques can now be used to detect, quantify or characterize a microbial community, population, species, function or functional group in a precise and robust manner. New methods have for the first time made it possible to map the bacterial diversity of soils at a national scale.

Read more: [https://link.springer.com/article/10.1007/s10311-016-0581-3?wt\\_mc=Other.Other.2.CON417ctw\\_2017\\_a32](https://link.springer.com/article/10.1007/s10311-016-0581-3?wt_mc=Other.Other.2.CON417ctw_2017_a32)

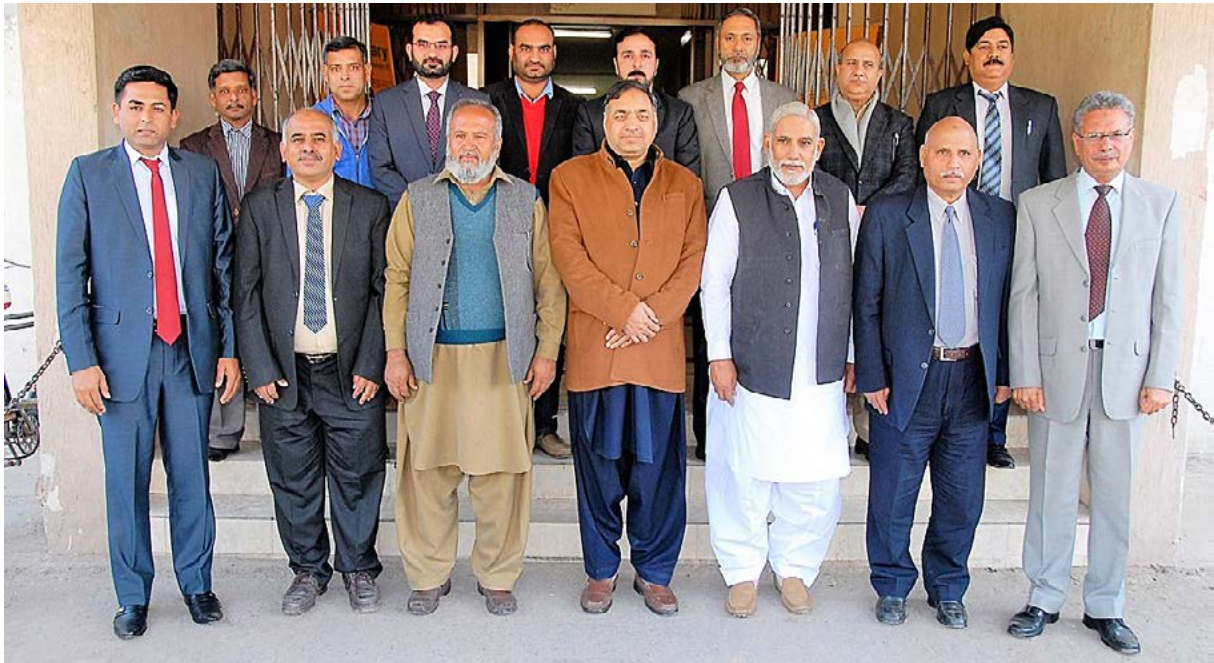
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# Miscellaneous

## News from the The Soil Science Society of Pakistan

The Soil Science Society of Pakistan is a non-government, non-profit organization devoted to promote the discipline of soil and Environmental sciences. The Society, established in 1958, was revived in 1984. Active members of the Society are over 600.

Affairs of the Society are managed by an Executive Council (EC) and the EC is elected after every two years. The elected Executive Council for 2017-18 comprises of Dr. S. M. Mehdi as president, Dr. M. Mahmood-ul-Hassan as General Secretary, and Dr. M. Tariq Siddique as Treasurer along with four Vice Presidents (one from each province of Pakistan), Joint Secretary and five Councillors (one from Pakistan basis and one from each province).



*Left to right: 1<sup>st</sup> row - M. Zafar, S.G. Khatak, A. Mahmood, S.M. Mehdi, S. Javid, M. Mahmood-ul-Hassan, 2<sup>nd</sup> row - N. Ahmad, D. Muhammad, M. Iqbal, M.M. Tahir, S. Sarwar, M.T. Siddique, Z.A. Zahir, J.A. Shah*

# In memoriam

## Carlos C. Cerri (1946-2017)

The IUSS Secretariat was sad to learn that our distinguished colleague - and our friend - Carlos Clemente Cerri passed away on 22 April 2017 at the age of 71. Latin America has lost one of its most famous soil scientists. Carlos Cerri was born on 12 November 1946. He graduated as agronomist in 1971. He took his master degree in 1974 and his PhD in 1979 in soil science.

For many years, he was a full professor at the “Centro de Energia Nuclear na Agricultura” (CENA) of the São Paulo University (USP, Brazil), where he taught graduate students and performed research on soil carbon sequestration and greenhouse gas emissions and mitigation in tropical conditions. He published or co-published about 260 scientific articles and more than 100 in prestigious international journals, 41 book chapters and 6 books. He supervised more than 40 master and PhD students from Brazil and abroad.

Dr. Cerri’s initial scientific career focused on soil organic matter dynamics, in particular he worked on humus characterization, under different natural ecosystems and agricultural land uses in Brazil. In 1985, in cooperation with Christian Feller’s ORSTOM lab in Martinique, he published the method to identify the origin of soil carbon remaining from natural vegetation and introduced by crop residues, using the  $^{13}\text{C}/^{12}\text{C}$  isotopic technique. This method is still being used in soil science research in a variety of land uses throughout the world.


After a sabbatical time (around 1980) at the Jenkinson’s lab in Rothamstead, he was one of the pioneers to estimate soil microbial biomass activities under native and cultivated soils in Latin America.

The methods he developed with regard to humus characterization, the use of isotopes as well as the measurement of soil microbial biomass were transferred by Dr. Cerri not only to other institutes in Brazil but also to other countries in South America.

Dr. Cerri and his family took a sabbatical leave at the Carbon Management and Sequestration Center at the Ohio State University in 1998-99 and de-



*Dr. Cerri in a central region in Brazil.*



veloped a strong cooperation with Prof. Rattan Lal. Together, Dr. Cerri and Prof. Lal organized a conference at Piracicaba in 2005, and published a book entitled “Carbon sequestration in soils of Latin America”.

Dr. Cerri’s last research areas of interest were related to the impacts of agricultural expansion on soil degradation and greenhouse gas emissions. He was the coordinator of a large project on the mentioned subject, which was carried out in the Brazilian Amazon. This project integrated environmental techniques, such as the characterization of soil properties, Geographic Information Systems, remote sensing, geostatistics, and modeling approaches, with the human dimension.

He took part in various national and international committees and boards, including the Intergovernmental Panel on Climate Change (IPCC), Tropical Soil Biology and Fertility Program (TSBF), member of French Academy of Agriculture, “Chevalier dans l’Ordre de Palmes Académiques” of France and Commend of the Ordem Nacional de Mérito Científico-Brazilian President Decree. He received numerous Brazilian and international awards. In 2007, Carlos was associated to the Nobel Peace Prize given to IPCC and Al Gore.

He was director of CENA between 1991-1997 and coordinator of 51 national and international scientific projects in agriculture and environmental sciences, including grants from the European Union (EU), National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), Global Environment Facility (GEF), International Atomic Energy Agency (IAEA), Inter American Institute for Global Change Research (IAI) and national funding agencies such as Fundação de Amparo a Pesquisa do Estado de São Paulo (FAPESP), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

Since 1988 he has been coordinating bilateral cooperation with ORSTOM, presently known as Institut de Recherche pour le Développement (IRD), from which he hosted more than 20 French researchers. Other official collaborations with the Ecosystem Center of the Marine Biological Laboratory (MBL, USA), Ohio State University (OSU, USA), Colorado State University (CSU, USA) and Consejo Superior de Investigaciones Científicas (CSIC, Spain) were also coordinated by Dr. Cerri. In addition, collaborations with researchers from India,

Kenya, Jordan, the Netherlands, USA and England were made possible through a project called “Assessment of soil organic carbon stocks and change at national scale”.

In addition to being a remarkable scientist, Carlos Cerri was a fantastic friend with great human qualities and a deep sense of empathy for people. Christian Feller met him the first time in 1980 at the French Centre for Atomic Energy (CEA, Cadarache, France) and Martial Bernoux in 1992 during his civil service, which he did at Cerri’s lab. Both scientists immediately struck up a friendship with Carlos. Both worked at Cerri’s lab and lived in Piracicaba for many years (and great years they were) and continued to visit him often, after going back to France. And he, in turn, visited them many times in France. Christian Feller paid a last visit to Carlos and his family on 29 November 2016, when the latter was already seriously ill.

Carlos is survived by his beloved wife, Ana, his two sons Ado and Gui, also agronomists, and his four grandchildren.

He will be very much missed for a long time to come by his family and by all who knew him or were touched by his work and friendship.

*By Christian FELLER (IRD, Institut de Recherche pour le Développement, France) and Martial BERNOUX (IRD and FAO, Italy)*

## Jan Frans De Coninck (1926-2017)

Dr. ir. Jan Frans De Coninck, Honorary Professor of Soil Science at the Faculty of Sciences of the Ghent University in Belgium died on June 10, 2017 at the age of 91. “Frans”, as he was known to friends and associates, was a distinguished and inspirational soil scientist, well respected by his peers and especially by the many generations of *MSc* and *PhD* students, coming from all over the world, he taught and supervised in the 1970s and 1980s at the International Training Centre for Post-graduate Soil Scientists at Ghent University in Belgium. His professional experience included: soil survey, soil chemistry, soil mineralogy, soil micromorphology and soil genesis. He established an international reputation for his research on the genesis and properties of Spodosols/Podzols.

Frans De Coninck was born on April 24, 1926 in Diegem, Belgium and grew up on a farm in the neighborhood of Brussels as the youngest of a family with 7 children. He always had the idea to become a “scientific” farmer. But at the Catholic University of Leuven he was so attracted by chemistry and soil science that the scientific activities became more important than the real farmer activities. He prepared a thesis in soil science and was awarded the degree of Agricultural Chemistry Engineer in 1948.


After his military service and a short time as a Chemistry Engineer in the private sector, he joined the Belgian Centre for Soil Survey in 1951, and this was the beginning of a brilliant career in soil science. He was chief cartographer and soil correlator in the Antwerp Campine.

In 1959, when soil survey became too much of a routine for him, he started to study soils, mostly sandy and glauconiferous soils of his survey area, under the microscope in collaboration with Dr. Jacques Laruelle from Ghent University. Because the microscopic research left many questions on the composition and mineralogy of these soils unanswered, Prof. Dr. René Tavernier, Director of the Soil Survey Centre, proposed to him in 1963 to carry out a thorough fundamental study on the mineralogy of the soils of the Antwerp Campine, as a part-time researcher at the Laboratory of Mineral Chemistry at the Catholic University of Leuven. In



this laboratory he joined a world-famous research team under the coordination of Prof. Dr. José Fripiat and he got acquainted with a series of new analytical techniques in soil chemistry and mineralogy. He gained his PhD in Agronomy in 1967 from the Catholic University of Leuven for a thesis entitled *Physico-chemical Aspects of Pedogenesis in the Antwerp Campine* and was appointed Head of the Laboratory at the Department of Regional Pedology of the same university.

In 1968, Frans De Coninck joined Ghent University and became Head of the Laboratory for Soil Analyses at the Department of Physical Geography and Regional Pedology (Head: Prof. Dr. René Tavernier) - a position he held until his retirement. His research interests included the investigation of soil forming processes and mineralogy of soils from all over the world, but preferentially Podzols. His investigations on spodic materials showed the usefulness of soil micromorphological information in studies of Spodosol genesis. He did groundbreaking research, especially in micromorphology of Podzols in close collaboration with French soil scientists, i.a. Dominique Righi, and thus contributed to the improvement of the classification of Spodosols in Soil Taxonomy. His research findings on podsolization were compiled in a book “Genesis of Podzols”, with which he obtained the Aggregate



for Higher Education in 1981; he then became the Laureate of the Royal Academies for Science and the Arts of Belgium in 1982.

Dr. De Coninck was active in several professional societies. He was Vice-President of Commission VII (Soil Mineralogy) of the International Society of Soil Science and European Coordinator of the ICOMOD-Commission (Spodosols) of the Soil Conservation Service of the United States Department of Agriculture (USDA).

In 1989, Dr. De Coninck was appointed Associate Professor at the Laboratory for Regional Pedology and Land Evaluation, Ghent University. After his retirement in 1991, Prof. Dr. De Coninck was still active (until 1996) as chairman of the Soil Experts Group of an International co-operative programme on assessment and monitoring of air pollution effects on forests in the ECE region, sponsored by UNEP-UNECE.

*Em. Prof. Dr. Eric Van Ranst  
Ghent University, Belgium*



## Miroslav Kutílek

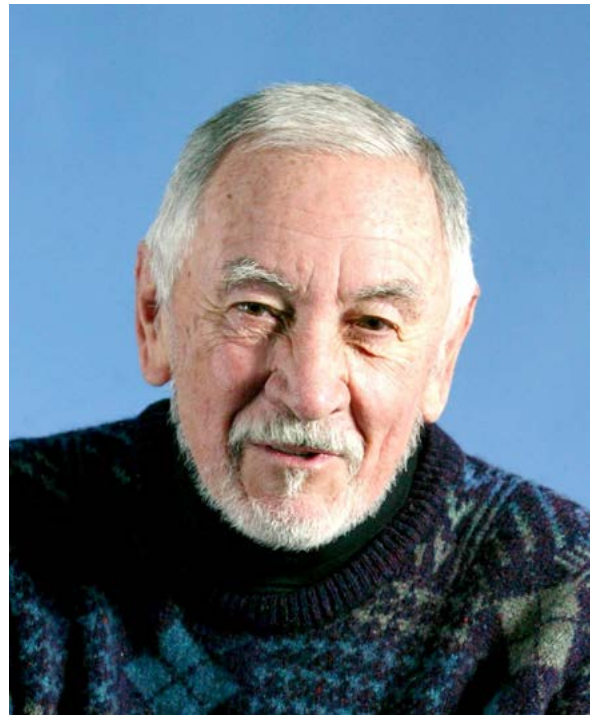
(1927-2016)

It is my sad duty to report that very well-known and famous professor, scientist, teacher, colleague and friend Professor Dr. Miroslav (Mirek) Kutílek passed away on 4 October 2016 at the age of almost eighty-nine.

Miroslav Kutílek, or Mirek, as we called him, was born on 8 October 1927. He spent most of his student and working life at the Faculty of Civil Engineering, Czech Technical University in Prague (CTU), Czech Republic. He obtained all his degrees from CTU. First came MSc. (Ing.) in 1951, followed by the PhD diploma in 1956. Then, ten years later (1966) he defended his dissertation and was awarded the highest academic title of DrSc.

Mirek commenced his very dynamic professional career in the Department of Drainage and Irrigation in the same faculty at the CTU. In 1952 he became a young teacher and within ten years had progressed to the position of Associate Professor (1962). Finally, in 1973, he was appointed full Professor of soil physics and soil hydrology. At this point I should highlight the fact that apart from his busy involvement in the CTU work Mirek was also active at many different institutions all over the world. They included Baghdad University, Iraq, University of Khartoum, Sudan, L'Institut de Mécanique, Grenoble, France, University of California, Davis, USA, Uppsala University, Sweden, Technical University Braunschweig, Germany, College of Soil Physics at the International Centre on Theoretical Physics, Trieste, Italy and University of Bayreuth, Germany. Moreover, he held a prestigious position as an expert for FAO and IAEA.

Mirek's professional career at CTU ended in 1993 with his retirement. This, of course, did not mean at all that he stopped all his scientific activities. As could have been expected from this extraordinary man, he continued writing scientific books as well as articles, and he also wrote fiction under the pen-name of Marek Hofman. Additionally, he worked as an editor-in-chief of international scientific journals such as *Soil Technology* (1990-1991) and *Soil and Tillage Research* (1992-2013).




During Mirek's life his work was honoured several times. In 1975 he was awarded the Silver Felber Medal of the CTU in Prague and in 2010 the President of the Czech Republic decorated him with the Medal of Merit, an award of the Czech Republic for service in science.

Mirek was very much involved in international scientific societies. He was president of the soil physics section of the International Soil Science Society (1986-1990) and, later, an honorary member of this society. Similarly, he had worked in the Czech Soil Science Society, of which he also became an honorary member.

His research was focused on the following topics:

- Adsorption of water vapour in soils
- Non-linear transport of water in soil
- Distribution of soil pores according to retention curves and adsorption
- Bi-modal and n-modal distribution of soil pores, and their consequences for unsaturated flow
- Principles of the climate change

It is a pity that this list of Mirek's activities cannot express his enthusiasm, his outstanding sense of humour, which he spread around him, his energy which he applied in day-to-day activities as well as in professional and personal conflict situations. He was one of the scientists who fostered relationships between scientists from different countries in the world outside any political and ideological divisions. He brought up his students in this re-



spect. Regardless of any governmental and political regulations, he organised many international symposia, meetings and workshops in Prague, Bratislava and elsewhere, which always turned out as a great success.

At this point I remember an interesting example of Mirek's unique sense of humour, his personality and also his way of dealing with daily life. It is a story involving his great-granddaughter, which Mirek once told me. This anecdotic dialogue was even published in an editorial honouring Mirek's achievements in Soil & Tillage Research (Wendroth, 2014). It went like this:

Mirek's great-granddaughter: "Grand pappy, where are you going on your bicycle?"

Mirek: "To the cemetery".

Mirek's great-granddaughter: "Who will bring the bicycle back?"

This short story is documenting Mirek's manner of self-irony, humour and a deeply human way of thinking, his ability to keep things in perspective, to understand the children's straight and uncomplicated way of thinking. Actually the bike is not important here, what is important is that Mirek's great-granddaughter cannot miss her Grand pappy and he is supposed to come back to her every time. Unfortunately, in October of 2016 this special wish cannot be granted anymore. Mirek Kutílek has left not only his great-granddaughter on her own but also all the people who loved him, all his former students, his colleagues, and friends around the world.

This end of story has left over a message for all of us that, sadly, this time Mirek will never come back from his journey on the bike to the cemetery.....  
He will be missed by all of us.

*By Svat MATUL, Professor of Soil and Water Science at the Department of Water Resources, Faculty of Agrobiological Sciences, Czech University of Life Sciences in Prague*

## Kanwar Lal Sahrawat

(1941-2016)

### *Human face of science lived out in*

#### *Dr KL Sahrawat*

The untimely demise of Dr Kanwar Lal Sahrawat on 3 February 2016 has shocked and deeply saddened colleagues and partners of ICRISAT. His contributions towards science and his positive attitude towards life, has lifted the spirits of many young scientists and staff of ICRISAT and national research programs in both India and Africa.

Dr Sahrawat, born on 7 November 1941, served ICRISAT as a Soil Chemist from February 1978 to December 1991 in the Resource Management Program. He then moved to Côte d'Ivoire as Principal Soil Scientist at West Africa Rice Development Association (WARDA) from April 1991 to June 2001 in the Rainfed Program. Dr Sahrawat returned to ICRISAT-India as a Consultant/Visiting Scientist from May 2002 to February 2016. As a soil chemist, he played an important role in standardizing and comparing different methods of analysis by using conventional and state of the art technologies. As a scientist, his role was to conduct research in the areas of soil chemistry and fertility of the semi-arid tropic soils with emphasis on the role of sulfur and micronutrients on crop production under dryland agriculture. He also played a pivotal role in preparing the soil fertility atlas to help showcase various types of soils and their deficiencies. Also, his role as mentor and guide for several short term interns, PhD students and MSc students makes him a role model for many in the field of research.

Dr Sahrawat's scientific achievements were also reflected in the many awards and honorary positions he received. In 1974 he was awarded the Seth Lachi Ram Chudiwala medal by the Indian Agricultural Research Institute, New Delhi. He has held the position of an Adviser for the International Foundation of Science, Stockholm, Sweden from the year 1998-till present. He also played a pivotal role as a Member of the Watershed team, which was honored with the Doreen Mashler Award in the year 2006 by ICRISAT, Patancheru, and the Resource Mobilizer Award in the year 2006 for outstanding efforts in mobilizing resources in Asia. In 2008 he received the Millennium Science Award as a coauthor for the Scientific Article entitled "Carbon sequestration in



*Dr Sahrawat at ICRISAT soil lab, @Vidyasagar*

the semi-arid tropics for improving livelihoods' published in the International Journal of Environmental Studies, 2007. Being an avid writer, Dr Sahrawat has contributed to 186 refereed journal articles and authored more than 100 publications, book chapters, research bulletins and workshop proceedings.

Dr Sahrawat was a warm, gentle, honest, and hard-working human being who was considered a friend to many and a mentor to all who had the good fortune of knowing him. The ICRISAT family conveys our sincere condolences to his family members who are in our thoughts and prayers at this time of grief, loss and mourning.

May his soul rest in peace.

*"Dr Sahrawat was such a gentleman, a scholar and a mentor to many, including me. His passion was helping people through science. Mary and I spent time with him last Friday afternoon in the soils lab and he explained the importance of analytical sciences such as modern soils analysis techniques. He retells the establishment of Africa Rice's (then WARDA) soil analysis lab from scratch with such passion. He will be sadly missed by many from around the globe."*

*Dr David Bergvinson  
Director General*

# IUSS Honorary members

| Year               | Member              | Country             | Year                  | Member                | Country            |         |
|--------------------|---------------------|---------------------|-----------------------|-----------------------|--------------------|---------|
| 1924               | L. Cayeux †         | France              | 1986                  | E.W. Russell †        | UK                 |         |
|                    | K. Glinka †         | USSR                |                       | H. Jenny †            | USA                |         |
|                    | Jos. Kopecky †      | Czechoslovakia      |                       | D. Kirkham †          | USA                |         |
|                    | G. Murgoci †        | Romania             |                       | S.K. Mukherjee †      | India              |         |
|                    | E. Ramann †         | Germany             |                       | R. Tavernier †        | Belgium            |         |
|                    | Sir John Russell †  | UK                  |                       | 1990                  | G. Aubert †        | France  |
|                    | S. Winogradski †    | USSR                |                       | E.G. Hallsworth †     | Australia          |         |
| 1927               | P. Treitz †         | Hungary             | J.S. Kanwar           | India                 |                    |         |
| 1935               | E.A. Mitscherlich † | Germany             | P. Schachtschabel †   | Germany               |                    |         |
|                    | A. d'Sigmond †      | Hungary             | R.W. Simonson †       | USA                   |                    |         |
|                    | J. Stoklasa †       | Czechoslovakia      | I. Szabolcs †         | Hungary               |                    |         |
|                    | G. Wiegner †        | Switzerland         | 1998                  | G.H. Bolt †           | Netherlands        |         |
| 1950               | A. Demolon †        | France              | R. Dudal †            | Belgium               |                    |         |
|                    | D.J. Hissink †      | Netherlands         | K.H. Hartge †         | Germany               |                    |         |
|                    | W.P. Kelley †       | USA                 | M. Kutilek †          | Czech Rep.            |                    |         |
| 1954               | S. Mattson †        | Sweden              | J. Quirk              | Australia             |                    |         |
|                    | E. Truog †          | USA                 | W.G. Sombroek †       | Netherlands           |                    |         |
| 1956               | G. Bertrand †       | France              | K. Wada               | Japan                 |                    |         |
|                    | E.C.J. Mohr †       | Netherlands         | D.H. Yaalon †         | Israel                |                    |         |
| 1960               | F.A. Bear †         | USA                 | S.V. Zonn †           | Russia                |                    |         |
| 1964               | J.A. Prescott †     | Australia           | 2002                  | Richard W. Arnold     | USA                |         |
| 1968               | F. Hardy †          | UK                  | Gleb V. Dobrovolsky † | Russia                |                    |         |
|                    | W.L. Kubiena †      | Germany             | Wilford Gardner †     | USA                   |                    |         |
|                    | L.A. Richards †     | USA                 | Hassan M. Hamdi †     | Egypt                 |                    |         |
|                    | A.A. Rode †         | USSR                | Luis A.L. Sarmiento   | Colombia              |                    |         |
|                    | R. Bradfield †      | USA                 | Fiorenzo Mancini †    | Italy                 |                    |         |
| 1974               | G.V. Jacks †        | UK                  | Boris S. Nosko        | Ukraine               |                    |         |
|                    | Ch.E. Kellogg †     | USA                 | Ramon Rosell †        | Argentina             |                    |         |
|                    | M.K. Kononova †     | USSR                | Alain Ruellan †       | France                |                    |         |
|                    | A. Oudin †          | France              | Akira Tanaka †        | Japan                 |                    |         |
|                    | F. Scheffer †       | Germany             | Bernard H. Tinker     | UK                    |                    |         |
|                    | 1978                | G. Barbier †        | France                | 2004                  | Winfried E.H. Blum | Austria |
|                    | V. Ignatieff †      | Canada              | Hans-Peter Blume      | Germany               |                    |         |
| Y. Ishizuka †      | Japan               | Johan Bouma         | Netherlands           |                       |                    |         |
| 1978               | L. Krolkowski †     | Poland              | Seong-Jin Cho †       | S Korea               |                    |         |
|                    | L. Vettori †        | Brazil              | Jan Glinski           | Poland                |                    |         |
|                    | 1982                | Ph. Duchaufour †    | France                | Marcel G.H. Jamagne † | France             |         |
| W. Flaig †         | Germany             | Donald R. Nielsen   | USA                   |                       |                    |         |
| V. Kovda †         | USSR                | Hans V. van Baren † | Netherlands           |                       |                    |         |
| E. Mueckenhausen † | Germany             | Larry P. Wilding    | USA                   |                       |                    |         |

# IUSS Honorary members (Continued)

| Year              | Member                | Country       | Year | Member              | Country          |
|-------------------|-----------------------|---------------|------|---------------------|------------------|
| 2008              | Christian Feller      | France        | 2016 | I. P. Abrol         | India            |
|                   | Kikuo Kumazawa        | Japan         |      | Jaume Bech          | Spain            |
|                   | Kazutake Kyuma        | Japan         |      | Maria Gerasimova    | Russia           |
|                   | John Ryan             | Syria         |      | Martin H. Gerzabek  | Austria          |
|                   | Bob A. Stewart        | USA           |      | Mary Beth Kirkham   | USA              |
|                   | Victor Targulian      | Russia        |      | Josef Kozak         | Czech Republic   |
|                   | György Varallyay      | Hungary       |      | Stephen Nortcliff   | United Kingdom   |
|                   | Jai Singh Pal Yadav † | India         |      | Marcello Pagliai    | Italy            |
|                   | 2012                  | Jai-Joung Kim |      | Korea               | Piotr Sklodowski |
| John M. Kimble    |                       | USA           |      | Karl Stahr          | Germany          |
| Ahmet Ruhi Mermut |                       | Canada        |      | Roger Swift         | Australia        |
| Nicola Senesi     |                       | Italy         |      | Tengiz F. Urushadze | Georgia          |
| Donald L. Sparks  |                       | USA           |      | Jae Yang            | Korea            |
| Robert E. White   | Australia             |               |      |                     |                  |

# IUSS Award Winners

| Year | Dokuchaev Award  | Country   | Year | Von Liebig Award | Country |
|------|------------------|-----------|------|------------------|---------|
| 2006 | Victor Targulian | Russia    | 2006 | Rattan Lal       | USA     |
| 2010 | Dan Yaalon       | Israel    | 2010 | Don Sparks       | USA     |
| 2014 | Alex McBratney   | Australia | 2014 | Magdi Selim      | USA     |

