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IUSS reports

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IUSS reports

21st World Congress of Soil Science 2018

The 21st World Congress of Soil Science (21WCSS) will take place in Rio de Janeiro, at the Windsor Conventions & Expo Center, August 12-17, 2018. Dedicated to the theme ‘Soil Science: Beyond food and fuel’, it will review the key role of soil science in answering some of the topical key questions regarding future food and water security, environmental protection and climate change mitigation.

The impressive scientific program will comprise 8 Major Conferences, 16 Interdivisional Symposia, 4 Innovation Technical Symposia, 71 Divisional Symposia and 53 Poster Sessions organised by the IUSS’ numerous Working Groups, plus Voluntary and Satellite Symposia.

There are more than 3,300 registered participants from 101 countries.

Conference website: https://www.21wcss.org/
Download the congress information: http://iuss.boku.ac.at/files/21wcss_-_meeting_information.pdf
Selection of Mascots

Two mascots stood to vote until 31 March, and the winner is Armadillo representing the Brazilian soil scientists responsible for the biggest transformation of tropical agriculture of the planet.

So far, 3,200 abstracts have been accepted. Participants will come from 101 countries, 49% from Brazil, 7% from China, 5% from the USA; 42% are students.

If you would like to know more about this charming character, go to: https://www.21wcss.org/?secao=conteudo&id=51

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 in general, 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.

One of these projects was the Global Soil Icon Contest launched in December 2017. For more details please see the special section dedicated to this inspiring topic.

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

Please note that research projects, travel costs of individual people, and applications from countries with outstanding membership fees as well as applications lacking detailed budgets cannot be taken into consideration for funding.

As in the preceding years, in 2018 there are again $15,000 available, with 2 submission dates for applications: 15 March and 15 September. Applications are always welcome and should be sent in due time to iuss@umweltbundesamt.at.

After evaluating the applications received for the first round of submissions, the Executive Committee decided to support the following two activities: the 3rd International Soil Judging Contest which will take place August 8-11, 2018, in Rio de Janeiro and the WETSCAPES Conference – Understanding the ecology of restored fen peatlands for protection and sustainable use, Rostock (Germany), 10-13 September 2019 – travel costs for 2 keynote speakers.

IUSS and the European General Data Protection Regulation (EU) 2016/679

Announcement of IUSS Special Alert on personal data protection

The following text was published in the IUSS April Alert No 154: According to the European General Data Protection Regulation (EU) 2016/679 coming into force on May 25, 2018, the IUSS Secretariat located in Vienna is obliged to ask all subscribers to the IUSS Alert for their explicit consent to further use their personal data (e.g. your name and
Dear readers of the IUSS Alert,

As announced, please find below the request for consent to the processing of your personal data when sending out the IUSS Alert:

The European General Data Protection Regulation (EU) 2016/679 comes into force on May 25, 2018. Therefore, the IUSS Secretariat, located in Vienna, is obliged to ask all subscribers to the IUSS Alert for their explicit consent to further use their personal data (e.g. your name and email address) for the purpose of sending out our monthly newsletter.

Please note that you may revoke your consent at any time by sending an email to iuss@umweltbundesamt.at or at any time you receive an IUSS Alert from us.

Should you choose to not provide your data, we will delete your name and details from our mailing list by 25 May 2018. However, if you would like to continue receiving our monthly Alerts, we invite you to subscribe!

Please use this link here to subscribe to the IUSS Alert:

https://iuss.boku.ac.at/index.php?article_id=182

Richard Webster Medal 2018 – Call for nominations

You are encouraged – individually or as a group – to nominate candidates for the Richard Webster Medal of the International Union of Soil Sciences (IUSS), to be awarded at the 21st World Congress of Soil Science (WCCS) in Rio de Janeiro (Brazil) in August 2018 (https://www.21wcss.org/, see above). This medal recognizes the person who has most advanced pedometrics in the period between the IUSS WCSS of 2014 and 2018, while also considering achievements prior to that period. According to the IUSS, ‘Pedometrics’ is defined as “the application of mathematical and statistical methods for the study of the distribution and genesis of soils”;

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 word 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.

Read more: http://iuss.boku.ac.at/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 (Cc to 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 individual votes for each candidate (Excel list to be filled) to IUSS

In line with the timetable above, the voting system for society members was closed 31 December 2017. The Presidents of the National Member Society were kindly requested to send the results of elections no later than 28 January 2018, which was later on extended to February 12 and finally to March 9. Voting results from 35 societies with 127,148 individual votes were received. Elections were decided by a simple majority of votes cast. The officers elected are published on the IUSS website. The term for these officers will start with the 21st WCSS in Rio.
### Results of the Election of IUSS Division and Commission Officers for 2018-2022:

<table>
<thead>
<tr>
<th>Division / Commission</th>
<th>Office</th>
<th>Name</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division 1: Soils in Space and Time</td>
<td>chair</td>
<td>Erika Micheli</td>
<td>Hungary</td>
</tr>
<tr>
<td></td>
<td>1st vice chair</td>
<td>Matt Atkpenhead</td>
<td>United Kingdom</td>
</tr>
<tr>
<td></td>
<td>2nd vice chair</td>
<td>Jacqueline Hannam</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>Commission 1.1 Soil morphology and micromorphology</td>
<td>chair</td>
<td>Fabio Terribile</td>
<td>Italy</td>
</tr>
<tr>
<td></td>
<td>vice chair</td>
<td>Richard Heck</td>
<td>Canada</td>
</tr>
<tr>
<td>Commission 1.2 Soil geography</td>
<td>chair</td>
<td>Thomas Scholten</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>vice chair</td>
<td>Sergey G. Goryachkin</td>
<td>Russia</td>
</tr>
<tr>
<td>Commission 1.3 Soil Genesis</td>
<td>chair</td>
<td>Endre Dobos</td>
<td>Hungary</td>
</tr>
<tr>
<td></td>
<td>vice chair</td>
<td>Megan Balks</td>
<td>New Zealand</td>
</tr>
<tr>
<td>Commission 1.4 Soil Classification</td>
<td>chair</td>
<td>Curtis Monger</td>
<td>United States of America</td>
</tr>
<tr>
<td></td>
<td>vice chair</td>
<td>Bipin B. Mishra</td>
<td>India</td>
</tr>
<tr>
<td>Commission 1.5 Pedometrics</td>
<td>chair</td>
<td>Vera Leatitia Mulder</td>
<td>Netherlands</td>
</tr>
<tr>
<td></td>
<td>vice chair</td>
<td>Nicolas Saby</td>
<td>France</td>
</tr>
<tr>
<td>Commission 1.6 Paleopedology</td>
<td>chair</td>
<td>Maria Bronnikova</td>
<td>Russia</td>
</tr>
<tr>
<td></td>
<td>vice chair</td>
<td>Elizabeth Solleiro-Rebolledo</td>
<td>Mexico</td>
</tr>
<tr>
<td>Division 2: Soil properties and processes</td>
<td>chair</td>
<td>Ryusuke Matano</td>
<td>Japan</td>
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<tr>
<td></td>
<td>1st vice chair</td>
<td>Paul Hallett</td>
<td>United Kingdom</td>
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<tr>
<td></td>
<td>2nd vice chair</td>
<td>Leo Condron</td>
<td>New Zealand</td>
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<tr>
<td>Commission 2.1 Soil physics</td>
<td>chair</td>
<td>Stephan Peth</td>
<td>Germany</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Brigitta Toth</td>
<td>Hungary</td>
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<tr>
<td>Commission 2.2 Soil chemistry</td>
<td>chair</td>
<td>Boris Jansen</td>
<td>Netherlands</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Karen Vancampenhout</td>
<td>Belgium</td>
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<tr>
<td>Commission 2.3 Soil biology</td>
<td>chair</td>
<td>Ellen Kandel</td>
<td>Germany</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Magdalena Frac</td>
<td>Poland</td>
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<tr>
<td>Commission 2.4 Soil mineralogy</td>
<td>chair</td>
<td>Stephan Hillier</td>
<td>United Kingdom</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Sofia N. Lessovaia</td>
<td>Russia</td>
</tr>
<tr>
<td>Commission 2.5 Soil chemical, physical and biological interfacial reactions</td>
<td>chair</td>
<td>Siobhan Staunton</td>
<td>France</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Qiaoyun Huang</td>
<td>China</td>
</tr>
<tr>
<td>Division 3: Soil Use and Management</td>
<td>chair</td>
<td>Bai Ram Singh</td>
<td>Norway</td>
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<tr>
<td></td>
<td>1st vice chair</td>
<td>Bob Rees</td>
<td>United Kingdom</td>
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<tr>
<td></td>
<td>2nd vice chair</td>
<td>Tom Aspray</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>Commission 3.1 Soil Evaluation and Land Use Planning</td>
<td>chair</td>
<td>Ivan I. Vasenev</td>
<td>Russia</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Jagdish Prasad</td>
<td>India</td>
</tr>
<tr>
<td>Commission 3.2 Soil and Water Conservation</td>
<td>chair</td>
<td>Lillian Bygarden</td>
<td>Norway</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Nobuo Toride</td>
<td>Japan</td>
</tr>
<tr>
<td>Commission 3.3 Soil Fertility and Plant Nutrition</td>
<td>chair</td>
<td>Bruno Glaser</td>
<td>Germany</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Toru Fujiwara</td>
<td>Japan</td>
</tr>
<tr>
<td>Commission 3.4 Soil Engineering and Technology</td>
<td>chair</td>
<td>Jiaobao Zhang</td>
<td>China</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Laura E. Paullite</td>
<td>Romania</td>
</tr>
<tr>
<td>Commission 3.5 Soil Degradation, Control, Remediation and Reclamation</td>
<td>chair</td>
<td>Stefan Norra</td>
<td>Germany</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Junta Yanai</td>
<td>Japan</td>
</tr>
<tr>
<td>Commission 3.6 Salt Affected Soils</td>
<td>chair</td>
<td>Tibor Toth</td>
<td>Hungary</td>
</tr>
<tr>
<td></td>
<td>vice chair</td>
<td>Ki-In Kim</td>
<td>South Korea</td>
</tr>
<tr>
<td>Division 4: The Role of Soils in Sustaining Society and the Environment</td>
<td>chair</td>
<td>Damien J. Field</td>
<td>Australia</td>
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<tr>
<td></td>
<td>1st vice chair</td>
<td>Christine Watson</td>
<td>United Kingdom</td>
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<tr>
<td></td>
<td>2nd vice chair</td>
<td>Chris Evans</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>Commission 4.1 Soils and the Environment</td>
<td>chair</td>
<td>Morihiro Maeda</td>
<td>Japan</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Claudio Zaccone</td>
<td>Italy</td>
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<tr>
<td>Commission 4.2 Soils, Food Security and Human Health</td>
<td>chair</td>
<td>Lorna Dawson</td>
<td>United Kingdom</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Heide Spiegel</td>
<td>Austria</td>
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<tr>
<td>Commission 4.3 Soils and Land Use Change</td>
<td>chair</td>
<td>Chengrong Chen</td>
<td>Australia</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Bellingrath-Kimura</td>
<td>Germany</td>
</tr>
<tr>
<td>Commission 4.4 Soil Education and Public Awareness</td>
<td>chair</td>
<td>Cristine C. Muggler</td>
<td>Brazil</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Hideaki Hirai</td>
<td>Japan</td>
</tr>
<tr>
<td>Commission 4.5 History, Philosophy, and Sociology of Soil Science</td>
<td>chair</td>
<td>Eric Brevik</td>
<td>United States of America</td>
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<tr>
<td></td>
<td>vice chair</td>
<td>Thomas Sauer</td>
<td>United States of America</td>
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</tbody>
</table>

The IUSS Secretariat wishes the newly elected officers all the best in their new terms of office.
IUSS Presidential Elections 2018 – call for nominations

The election of the next President of the IUSS is due this year (2018). The appointment of the President represents a total of six years commitment to the Union by serving two years each as President-Elect (2019/20), President (2021/22) and Past-President (2023/24).

The Standing Committee on Presidential Elections has defined the respective procedure and the guidelines. Nominations should be made by two accomplished, highly-respected senior soil scientists. Full nomination documentation was to be submitted electronically to Roger Swift (Email: r.swift@uq.edu.au) by June 30, 2018. A copy was to be sent to iuss@umweltbundesamt.at.


Other IUSS News

Pedometron 41

This latest newsletter from the Pedometrics Commission has an abundance of fabulous articles from world-class researchers, covering exciting conferences, the 25th Anniversary, a blast from the past, temperature data, concluding with new publications.

World of Soils on IUSS website amended

The World of Soils page on the IUSS website was amended by 18 profile pictures from Latvia and Estonia taken during the International WRB Soil Classification Field Workshop in July 2017 which was financially supported by the IUSS Stimulus Fund, IUSS Division 1 and University of Latvia. The guidebook of the workshop has also been amended accordingly and is available on the website.

WRB now available in Russian

The third edition of the international soil classification system World Reference Base for Soil Resources (WRB) is now available in Russian. After the Polish, Spanish and Georgian versions, this is the fourth translation of the current WRB. Many thanks to Inga Spiridonova for the translation and to Maria Gerasimova and Pavel Krasilnikov for the revision of the text. This edition was possible due to the financial support from FAO, and the Russian team and the IUSS Working Group WRB express their sincere gratitude. Translations into some other languages are currently in progress. It is hoped that spreading WRB in various countries will contribute to a better communication among scientists and to the development of the WRB system itself.

Read more: http://www.iuss.org/index.php?article_id=419

New Newsletter of Commission 1.1. Soil Morphology and Micromorphology

The April 2018 Newsletter No 22 of Commission 1.1. Soil Morphology and Micromorphology contains information about future courses and recent publications, as well as about the micromorphology sessions of the 21st World Congress of Soil Science in Rio de Janeiro in August. In the framework of this Congress, the Kubiëna Medal will be presented to Maria Gerasimova for her most continued and valuable contributions to soil micromorphology. The Young Micromorphology Publication Award 2018 has been awarded to a paper authored by Diogo Spinola. The newsletter also honours 2 great micromorphologists, Hermann Mücher and Ewart A. FitzPatrick (Kubiëna Medals 2006 and 2001).

Read more: http://www.iuss.org/index.php?article_id=419

WRB translations

The international soil classification system World Reference Base for Soil Resources (WRB) is available in English, Spanish, Russian, French, Polish and Georgian. The French translation is new. It was done by Jean Chapelle with the support of Xavier Legrain, Frank Berding and Stefaan Dondeyne. It is co-published by FAO and the Soil Science Society of Belgium. And in the Spanish translation, almost two years after its publication, some errors have been corrected. The documents are available at two webpages:


[By Peter Schad, Chair of IUSS Working Group WRB]
Report of Division 1: ‘Soils in space and time’

Division 1 focuses on soils as part of a changing environment. It coordinates and harmonizes research activities on observation, genesis, classification and mapping of the soils and landscapes, as well as communicating results to the soil science community, soil users and to the public.

IUSS Division 1 Soils in Space and Time consists of 6 Commissions and several working groups:

- Commission 1.1 – Soil Morphology and Micromorphology
- Commission 1.2 – Soil Geography
- Commission 1.3 – Soil Genesis
- Commission 1.4 – Soil Classification
- Commission 1.5 – Pedometrics
- Commission 1.6 – Paleopedology


Structure and officers:
- Chair: Erika Michéli, Hungary
- 1st Vice Chairperson: Lucio dos Anjos, Brazil
- 2nd Vice Chairperson: Ademir Fontana, Brazil

Since the last report Bulletin 129 (Dec. 2016), see https://iuss.boku.ac.at/files/iuss-bulletin129_72dpi.pdf, the Division, its Commissions and Working Groups continued organizing their events, published books and newsletters, prepared for the WCSS and for the election of new officers under the Division.

The Division leaders mostly assisted the organization of the World Congress, including the Division sessions and the 3rd International Soil Judging Contest that will take place in Brazil during the Congress. We happily report that 12 teams will participate in the contest. More details of the contest: https://www.21wcss.org/index.php?reco=contenido&id=109

The intensity of activities among the commissions and working groups was varied as reflected in the details of the reports below.

Commission 1.1: Soil Morphology and Micromorphology

Chair: Rosa Poch, Spain
Vice Chair: Richard J. Heck, Canada

The commission is circulating regular newsletters: http://foess.umcs.lublin.pl/micro_pliki/Page421.htm

The newsletters are maintained by Przemyslaw Morczeck.

Courses organized by the Commission:

- Micromorfología de suelos: herramientas teórico-prácticas y aplicaciones a problemas geoarqueológicos. 16-18 March 2016, Centro Universitario de la Región Este, Sede Rocha, Uruguay
- Course on soil mineralogy and micromorphology. 1st-12th August 2016. Post Graduate School “Alberto Soriano”, Faculty of Agronomy, University of Buenos Aires (Argentina).
- Micromorphology course with special attention to tropical, arid and volcanic soils and paleosols (lectures in Spanish-Illl Curso Latinoamericano de Micromorfología de Suelos), November 21-25, 2016
- 6th Intensive Training Course on Soil Micromorphology, Tempe, 25 September – 6 October 2017. Universitat de Lleida and Institut Cartogràfic i Geològic de Catalunya

Meetings and congresses organized by the Commission:

- 15th International Conference on Soil Micromorphology, Universidad Nacional Autónoma de México (UNAM). Colegio de Postgraduados. With mid-and post-conference field trips Mexico city, November 27 - December 5, 2016
- All-Russian International Conference: Soil Morphology: From Macro- to Microscale. December 19-21, 2016. V.V. Dokuchaev Soil Science Institute, Moscow, Russia

The Commission Awards:

- Kubišena Medal

2018 Kubišena Medal has been awarded to Maria Gerasimova by the selection committee of Commission 1.1, formed by Rickard Heck, Rienk Miedema, Herman Müchler, Rosa M Poch, Georges Stoops and Larry Wilding, as recognition for her outstanding and sustained performance in the discipline of soil micromorphology. The Kubišena Medal will be handed to the awardee during the Congress of the International Union of Soil Sciences that will be held in Rio de Janeiro (Brazil), in August 2018.

Young Micromorphologist Publication Awards 2016 YMPA, Ex-aequo

On behalf of IUSS Commission 1.1: Soil Morphology and Micromorphology, the Jury composed of Rienk Miedema, Herman Müchter, Georges Stoops and Larry Wilding [Kubišena Medal Awardees] and Richard Heck [Vice-Chair of IUSS Commission 1.1], is awarding ex-aequo the Young Micromorphologists Vincent Felde and Mareike Stahlschmidt for their publications:


Both awards were handed over during the 15th International Conference On Soil Micromorphology in Mexico.

2018 YMPA

On behalf of IUSS Commission 1.1: Soil Morphology and Micromorphology, the Jury composed of Carmen Gutiérrez-Castorena, Richard Heck (Vice-Chair of IUSS Commission 1.1), Irina Kovda, Rosa M Poch (Commission 1.1) and Fabio Scarpligia, is awarding the Young Micromorphologists Dario Pisoni and Cesar Bucetti for their publication:


The Commission has a home page: https://sites.google.com/a/vt.edu/iuss1-4-soil_classification/

Several activities are jointly organized by the WG WRB and the WG Universal Soil Classification and may overlap in the reports.

The Award of the Commission: Guy Smith Award (granted every 4 years). The 2018 awardee will be announced during the WCSS in Brazil.

The Humus Group (about 100 members) prepared an illustrated classification of the topsoil (O = organic and A = organic-mineral topsoil horizons).

The Commission proposed and is organizing events for the WCSS 2018.

Commission 1.3: Soil Genesis

Chair: Teruo Higashi, Japan
Vice Chair: Nikolay Khitrov, Russia

The Commission proposed and is organizing events for the WCSS 2018.

Commission 1.4: Soil Classification

Chair: John Galbraith, USA
Vice Chair: Augusto Zanella, Italy

The Commission has a home page: https://sites.google.com/a/vt.edu/iuss1-4_soil_classification/
The group organized Video conferences, Skype, and phone e-mail contacts. The major product of the group is the illustrated keys of classification of diagnostic horizons, humus systems, and humus forms, in aerated and submerged situations, as well as the TerrHum: an iPhone app for classifying forest humipedons. (https://itunes.apple.com/fr/app/TerrHum/id1366575503?l=en&amp;mt=8).

The app is freely available in the App Store. The app is built on the indications about humus diagnostic horizons, forms and systems reported and illustrated in articles of a Special Issue of Applied Soil Ecology Journal.

Meetings and Conferences co-organized by the commission:


5th International Congress of Soil Classification (December 1-7, 2016, in Bloemfontein, South Africa).


Central Asian Soil Science Society (CASSS) was invited and was established in May 2017 in Kyrgyz Republic. Involved countries: Kazakhstan, Kyrgyzstan, Mongolia, North China, Tajikistan and Uzbekistan.

Publication


The Commission also published many journal papers that are listed and linked to the available sites in the newsletters of the Commission.

Commission 1.5: Pedometrics
Chair: Budiman Minasny, Australia
Vice Chair: Lin Yang, China
The Commission is circulating regular Newsletters http://pedometrics.org
The Newsletters are providing very valuable details of the short summary of the great activities of the Commission.

The Commission is organizing a biennial conference (Pedometrics Conference) which showcases innovative research on the mathematical spatial and temporal modelling of soil. Meetings are also organized in the form of symposia in larger conferences such as EGU, AGU, and Eurosoil.

Journal Special Issues:
• Pedometrics 2017 Special Issue (Geoderma & European Journal of Soil Science, to be published end of 2018)

Conferences
Pedometrics 2015: 14-18 September, Córdoba (Spain). Pedometrics 2015. 120 participants from 26 countries

Best Paper Award:


• 2017: Nomination has been called, and award will be decided in August 2018.

Awards:
The Pedometrics Commission introduced a new award, which is intended to recognize upcoming and coming talent in pedometrics. The award carries the name Margaret Oliver, in recognition of her outstanding commitment to the promotion and encouragement of pedometricians in the early stages of their careers as well as her overall service to pedometrics. The award will be given at each biennial meeting of the Pedometrics Commission; the first award was awarded at Pedometrics 2017, 26 June -1 July 2017 in Wageningen (NL). 2017 Margaret Oliver Award Recipient: Tom Orton


Commission 1.6: Palaeopedology
Chair: Daniela Sauer, Germany
Vice Chair: Sergey Sedov, Mexico
The Commission introduced a new award: Dan Yalon Young Scientist Medal. The awardee will be announced during the WCSS 2018 in Brazil.

Major events organized by the WG:
• Co-organizer of several sessions of the EGU, 2016 and 2017

Digital Soil Mapping
Chair: Laura Poggio, UK
Vice Chair: Lubos Boróvka, Czech Republic

Major events organized by the WG:
• Sessions at the general assembly of the European Geosciences Union EGU, Vienna, 2017
• Sessions proposed and being organized for the 2018 WCSS in Brazil.

Publication of book:
Contribution to book: Using R for Digital Soil Mapping, authored by Malone, Brendan P., Minasny, Budiman, McBratney, Alex B.
The Soil Classification and Education Conference

The International Union of Soil Sciences (IUSS)

Major events organized the working group:

- The Soil Classification and Education Conference
- The International Soil Classification Congress
- Field workshop from 5 to 7 December 2016 in South Africa
- The congress proper, hosted in Bloemfontein, spanned three days, and was pre- ceded by a four day pre-congress field workshop.
- The Soil Classification and Education Conference was presented from 18 to 20 May 2018 in Torun, Poland

Digital Soil Morphometrics

Chair: Alfred Hartemink, USA

Proposed sessions for the WCSS 2018, Brazil.

Co-organizing and assisting several events of the Pedometrics Commission.

Proximal Soil Sensing

Chair: Professor Zhou SHI, China

Vice-Chair: Dr Craig LOBSEY, Australia

Proposed sessions for the WCSS 2018, Brazil.

Division Meeting during the IUSS Inter-Congress Meeting in Rio de Janeiro, Brazil, November 22, 2016.

Co-organizing and assisting several events of the Pedometrics Commission.

Universal Soil Classification System

Chair: Jon Hempel†, USA, Australia

Vice Chair: Luca Montanarella, EU-JRC, Italy

Proposed sessions for the WCSS 2018, Brazil.

Chair: Dominique Arrouays, France

Vice Chair: Ben Marchant, UK

Proposed sessions for the WCSS 2018, Brazil.

The Working Group introduced a new web link of the document developed by the working group:

http://www.soil-science.com/?id=wrb

At the same time the archive legacy documents are still available on the FAO web site:


Major events organized the working group:

- The International Union of Soil Sciences (IUSS) Commission 1.4 (Soil Classification) presented the International Soil Classification Congress and field workshop from 5 to 7 December 2016 in South Africa. The congress proper, hosted in Bloemfontein, spanned three days, and was pre- ceded by a four day pre-congress field workshop.
- The Soil Classification and Education Conference was presented from 18 to 20 May 2018 in Torun, Poland

Report of Division 2: ‘Soil properties and processes’

By Kazuyuki Inubushi, Division Chair

Division 2 is concerned with the integration of physics, chemistry, biology, mineralogy and pedo- genesis to understand fundamental soil proper- ties and processes that control transport, cycling, speciation and bioavailability of elements or mol- ecules. These phenomena are studied at multiple scales ranging from global to atomic.

Division 2 is organized in five commissions:

- Commission 2.1 – Soil physics
- Commission 2.2 – Soil chemistry
- Commission 2.3 – Soil biology
- Commission 2.4 – Soil mineralogy
- Commission 2.5 – Soil chemical, physical and biological interfacial reactions

IUSS Division 2 2017-2018 report

The main activity of Division 2 in 2016-2018 was to organize one inter-congress divisional meeting held in Rio de Janeiro during the inter-congress IUSS meeting on November 22, 2016 to discuss about proposals for symposia during WCSS 2018 and new working group (Photo below). As for WCSS 2018, three divisional and 13 commissions’ and several inter-divisional symposia proposals were discussed.

Proposed new working groups were:

- Modelling of soil properties and processes – challenges and opportunities
- System Soil Science

Both working group proposals were discussed in the Council meeting on November 25, 2016 and a second WG, formerly known as Hydropedology WG under Division 1, was renamed ‘WG Critical Zone System’ and moved to Division 2.

The division chair also contributed to presenting a paper ‘Beyond food and fuel: nexus to soil proper- ties and processes’ in the IUSS one day symposium ‘Future of IUSS’ in Rio de Janeiro during the inter- congress IUSS meeting on November 23, 2016 with Division 2’s activity report.

Brazilian vice-chairs of Division 2, Fátima Maria de Souza Moreira and Quirijn de Jonc van Lier were changed to Dalvan José Reinert and Valdomiro Severino de Souza Junior during the inter-congress IUSS meeting.

The division chair participated and delivered the lectures/presented papers also in several interna- tional and national meetings and conferences such as the International Conference on Environment and Technology in Sylhet, Bangladesh in January.

Also several international conferences/symposia/colloquiums were coordinated in this period, as follows:

- 10th PSLph (International Symposium on Plant-Soil Interactions at Low pH), from 25th–29th June 2018 in Putrajaya, Malaysia; details are www.pslph2018.com
- 8th ISMOM (International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms) International Congress of the Division 2.5 of the International Union of Soil Sciences (IUSS); ‘Understanding Soil Interfacial Reactions for Sustainable Soil Management and Climatic Change Mitigation’ will take place in Seville, Spain, June 23–28, 2019 and are organized by Heike Knicker and Francisca Gonzalez Viña. Details will be available www.ISMOM2019.org

Report of Commission 2.1 Soil physics
By Stephan Peth, Commission Chair and Tsuyoshi Miyazaki, Commission Vice-Chair

In the reporting period several symposia and sessions were organized at international and national meetings.

Prof. Dr. Stephan Peth co-organized several symposia together with the Chair of the Soil Physics and Hydrology Commission of the German Soil Science Society (Prof. Dr. Wolfgang Durner) at the bi-annual society meeting held in Göttingen from 2nd–7th Sept. 2017. In five sessions we discussed (i) soils as deformable porous media, (ii) soil compaction, (iii) evaporation and gas exchange between pedosphere and atmosphere, (iv) water, matter and energy fluxes in the soil and towards the ground water and (v) root-soil interactions and physical functions in the rhizosphere. The conference was very well attended and in total there were >50 orals and 20 posters presented in the soil physics and hydrology sessions.

Prof. Dr. Shoichiro Hamamoto and his colleagues, Com 2.1 members, organized a session entitled ‘Subsurface mass transport and environmental assessment’ in JpGU-AGU Joint Meeting, held from May 20 to 25, 2017, at Matsue, Japan. The session contributed to the International Geosphere-Biosphere Programme (IGBP) project ‘The Global Biogeochemical Cycles’ (GICh). There were 30 oral and poster presentations from all over the world. JpGU, Japan Geophysical Union, was established in 2005.

Prof. Dr. Taku Nishimura and his colleagues, all IUSS members, organized a session entitled ‘Battles of soil scientists for recapturing Fukushima land from Nuclear Power Plant accident’ in the same Meeting mentioned above. There were 15 oral and poster presentations mainly from domestic universities and two presentations from abroad.

Tsuyoshi Miyazaki, Commission 2.1 Vice-Chair, is submitting a manuscript entitled ‘Soil resources standing on the edge’ as a chapter in a book, Human Geoscience, that will be published soon by Springer Jp.

For the upcoming World Congress of Soil Science to be held in August 2018 in Rio, Commission 2.1 is organizing two divisional symposia (C2.1.1 on soil structure, C2.1.5 on the role of soil physics in water conservation and food security) and one interdivisional symposium 2.2. on the interaction between physical, biological and chemical processes in soil with three keynote presentations given by Prof. Dr. Rainer Horn, Prof. Dr. Elen Kandel and Prof. Dr. Eko Kuramae. For the divisional symposia we received more than 120 contributions and we are looking forward to meeting you all in Rio for fruitful discussions.

Report of Commission 2.2 Soil Chemistry
By Boris Jansen, Commission Chair

In the time period January 2017 - May 2018, the IUSS Soil Chemistry Commission again actively contributed to the organization of several scientific conferences. Specifically, the contributions were as follows:

The Chair and Vice-Chair of the Soil Chemistry Commission organized two well attended sessions titled ‘Soil organic matter turnover: from molecules to ecosystems and back again’ at the European Geosciences Union General Assembly in Vienna, Austria 23-28 April 2017, and 8-13 April 2018. Both sessions were explicitly endorsed by the Soil Chemistry Commission. In addition, for the 2017 edition IUSS Division 2 made 1500 EUR available to finance three travel grants for young scientists participating in this session. For the 2018 edition, the Vice-Chair of the Soil Chemistry Commission contributed to the organization of a short course on land functions, where again soil chemistry was actively promoted, particularly among young scientists.

The Soil Chemistry Commission actively participated in the organization of the Wageningen Soil Conference in Wageningen, The Netherlands, 27-31 August 2017. The Chair of the Soil Chemistry Commission was part of both the Scientific and the Organizing Committees of this conference that aimed to emphasize the importance of soil science for combating and mitigating the challenges of our time: food security, water resources, climate change, land functions, ensuring biodiversity. Soil Chemistry played a key role in multiple sessions for instance in the Climate Change session where the Vice-Chair of the Soil Chemistry Commission gave a plenary keynote lecture on soil organic matter transformations.

Furthermore, through their links to the Dutch and Belgian Soil Science Societies their Chair and Vice-Chair of the Soil Chemistry Commission actively promoted soil chemistry within the programs and activities of both national societies. Including in the preparations for the WCSS in Brazil this summer, where multiple sessions have been organized by the Soil Chemistry Commission.

In addition to the actions undertaken by the Chair and Vice-Chair of the IUSS Soil Chemistry Commission, there were numerous individual contributions of fellow scientists working in the field of Soil Chemistry. The Soil Chemistry Commission would like to use this opportunity to thank everybody who through their endeavours is helping to support and strengthen the field of Soil Chemistry, in particular young scientists.

Report of Commission 2.3 Soil Biology
By Ellen Kandel, Commission Chair and Susumu Asakawa, Commission Vice-Chair

The main focus of Commission 2.3 during the last year was to plan the next IUSS world conference which will be held in Rio from the 12th to the 18th of August 2018. Many exciting topics were suggested. Nevertheless, it was not possible to include all topics into the final programme. The following themes will be discussed in detail: (1) Soil microbiological processes and nutrient cycling under crop rotation, (2) Molecular techniques as a useful tool to reveal soil biodiversity and biotechnological potential of microbial genomes and (3) Rhizosphere mineral dynamics: soil-plant-microorganisms.

Commission 2.3 also worked closely together with the Global Soil Biodiversity Initiative. An important outcome of the initiative is that the Global Soil Biodiversity Atlas is now available in the internet (http://atlas.globalsoilbiodiversity.org/). Each single chapter can be downloaded separately. In the meantime the Atlas has been downloaded >30,000 times and viewed 4 Million times! The high number of downloads of the Atlas shows that the topic of the diversity of soil organisms in different ecosystems and their potential threats is broadly discussed not only in science, but also in the society.

Members of our commission 2.3 contributed also to the new book ‘Field to Palette: Dialogues on Soil and Art in the Anthropocene’ which is edited...
An important aim for the future is to strengthen the interaction of IUSS with other international societies. The chair of commission 2.3 Soil Biology, Ellen Kandel, was recently suggested as a member of the subdivision committee ‘Soil Biology, Microbiology and Biodiversity’ of the EGU. Consequently, a close collaboration between IUSS and EGU will support the future development of our discipline and will stimulate further inter- and interdisciplinary discussions.

The vice-chair of commission 2.3 Soil Biology, Susumu Asakawa, organized a symposium ‘Research frontiers on paddy soils for sustainable rice production’ in the 13th International Conference of the East and Southeast Asia Federation of Soil Science Societies (ESAFS) held in Pattaya, Thailand, 12-15 December 2017. This symposium was co-organized with the Paddy Soil WG under Division 3, IUSS. In the session, eight oral presentations and nine poster presentations were delivered. Fruitful discussions were held in the session.

Susumu Asakawa is also working for symposia in WCSS Rio such as Symposium C2.3.1 and in addition to the above talks 9 have been selected for oral presentations of the symposium.

Report of Commission 2.4 Soil Mineralogy
By Balwant Singh, Commission Chair and Stephen Hillier, Commission Vice-Chair

The major activity of the division has been the development of symposia for the IUSS Conference in Rio De Janeiro. Soil Mineralogy Commission (2.4) will organize two symposia, i.e. C2.4.1 – Dynamic mineralizations: shifts in soil mineral composition as a result of soil use and management over the human time scale and C2.4.2 – New techniques for advanced mineral studies, at this conference. We have selected about 40 papers for oral and poster presentations in the two symposia. There are many exciting oral and poster presentations in the two symposia of the Soil Mineralogy Commission at the 21st World Congress of Soil Science in Brazil, and we look forward to a very successful conference.

Report of Commission 2.5 Soil chemical, physical and biological interfacial reactions
By Siobhan Staunton, Commission Chair and Qiao-yun Huang, Commission Vice-Chair

The Commission 2.5 has been working actively on the organisation of two symposia for the WCSS in August, and on the organisation of the ISMOM conference to be held in Spain in 2019.

WCSS 2018
The Commission 2.5 mailing list with nearly 4000 addresses was used to alert potential participants of the symposia supported by the Commission and the WCSS deadlines. Two symposia were decided upon after discussion with the chosen convenors, keynote speakers identified and invited to contribute and these proposals made to the organising committee and they were accepted. The titles of the symposia and the Keynote talks are

2.5.1 Soil interfacial reactions and their control of biogeochemical cycles
Convenor: Dr Jeferson Dieckow, jefersondieckow@ufpr.br
Keynote speaker: Dr Deborah Dick, debbydick@gmail.com, deborah.dick@ufrgs.br

2.5.2 Advances in techniques to investigate soil interfaces to understand interfacial reactions
Convenor: Dr Ladiislau Martin Neto, ladiislau.martin@embrapa.br
Keynote speaker: Dr Débora Milori, debora.milori@embrapa.br
LIBS (laser induced breakdown spectroscopy): novel methods for soil analysis
71 abstracts have been submitted for symposia 2.5.1 and 45 for symposium 2.5.2. The quality of the abstracts was excellent and the choice of oral presentations proved difficult. The convenors nevertheless chose to allot a double talk slot to both keynote speakers. A special issue of European Journal of Soil Science will be organised based on the oral and some of the poster presentations of both sessions. The Guest editors will be the three convenors and co-convenor of the sessions. Selected authors have been individually invited to submit papers based on their contribution and all manuscripts will undergo the usual rigorous review process for this journal. Manuscripts can be submitted at any time up to the end of 2018. Accepted papers will be published on-line as soon as they are accepted and the publication of the printed issue is planned for January 2020.

ISMOM 2019

The following sessions are planned:
- Soil as a C and N sink – Who is the major player, soil minerals, soil organic matter quality, microbial activity or their interplay?
- New physical, chemical and biological analytical approaches – How can they lead us to a better understanding of soil interfaces?
- Ecological disturbances – How does management of soils (overgrazing, erosion etc.) or natural disasters (fire, flooding etc.) affect the interplay between soil minerals, SOM and microorganisms? – Dynamics of pollutants at soil interfaces – What is new and how can environmental biotechnology be beneficial for soil restoration and bioremediation?
- Soil amendments (biochar, composts and digestates) – How do they affect interactions at soil interfaces?
- Nutrient availability in soils – Can our knowledge on soil interfaces improve biotechnological approaches or soil management to decrease the need for artificial fertilizers?

Important Dates:
- December 2018: Pre-registration and Call for Abstracts
- 1st Feb. 2019: Registration opens
- 1st March 2019: Deadline abstract submission
- April 2019: End of Early Bird registration
- May 2019: Call for posters

Soon more information will be available at: www.ISMOM2019.org

Working Group: Modelling of soil properties and processes – challenges and opportunities
Chair: Harry Vereecken
Vice Chair: Roland Baatz and Michael Young

In 2016, the International Soil Modeling Consortium (https://soil-modelling.org) was established with the goals of boosting soil modeling activity, making a positive contribution to developing and integrating different discipline soil models, and creating an international community to promote and reinforce soil modeling’s competitiveness and acceptance in the Earth system scientific sphere (Vereecken et al., 2016). Since then, ISMC has developed new partnerships and has established agreements with institutions and groups worldwide. These groups include the Global Energy and Water Exchange (GEWEX), FAO Global Soil Partnerships, International Soil Reference and Information Centre (ISRIC), Community Surface Dynamics Modeling System (CSDMS), Critical Zone Exploration Network (CZEN-CZO) office, the Long-Term Ecological Research Network (ILTER-LTER), Global Soil Biodiversity Initiative (GSBI), International Soil Carbon Network (ISCN), and the National Ecological Observatory Network (NEON). ISMC consists of the chair and co-chair, three science panels with a lead and a co-lead for each, an executive board, and an independent advisory board. The executive board consists of 12 members of the scientific community. The Board develops organization and strategy and guides the development of ISMC.
The current mailing list includes 490 individuals who broadly represent academic, industry, and govern-ernment scientists from 6 continents. Seven senior scientists make up the ISMC Advisory Board, sup-porting ISMC activities and helping us to achieve the goal of reaching global impact. The three sci-ence panels are the Data & Observation model link-ing panel (DO-Link), the Soil Model development and intercomparison panel (Soil-MIP), and the Con-necting and cross-cutting panel (CROSS-connect). These on-the-ground scientific panels were orga-nized around a broad workflow from data collection to model development and testing to engagement with different scientific communities.

Selected ISMC meetings and activities
- 17 Oct. 2016, Frankfurt, Executive board meet-ing
- Jan. 2017 – election chair, co-chair and panel leads were elected by all ISMC members
- Feb. 2017 – Mission statements by the science panels
- Feb. – May 2017 – Survey on models in CZO and LTER communities (Baatz et al., 2017)
- Apr. 2017 – advisory board established
- Apr. 2017 – new and polished online presence (website) with transparent structure, forum, job openings, model platform, and data platform
- Apr. 2017 – EGU Splitter Meeting with 35 par-ticipants
- Aug. 2017 – by-laws established
- Dec. 2018 – pre-AGU workshop on pedotransfer functions (Van Looy et al., 2017) and OLAM-SOIL, and related presentations
- Apr. 2018 – Workshop on land surface model OLAM-SOIL and Splitter Meeting at the EGU 2018

Outlook
- 12-17th Aug. 2018 – IUSS Work Group Inaugural Session at the WCSS in Rio de Janeiro

References

Working Group Critical Zone System
Chair: Henry Lin (USA)
Vice-chair: Hans-Jörg Vogel (Germany)
Members: Xiaoyan Li (China), Brent Clothier (New Zealand), Quirijn de Jong van Lier (Brazil)

The Critical Zone System Working Group (WG) (for-merly Hydropedology WG) of the IUSS has been ac-tive in 2017-2018. The main activities and accom-plishments are summarized in the following:

1. A special issue of Vadose Zone Journal, entitled ‘Frontiers in Hydropedology: Interdisciplinary Research from Soil Architecture to the Critical Zone’. The special issue focuses on the main challenges in hydropedology and highlights the need for a systems approach to understanding the complex interactions between soil and water.
2. A collaborative proposal, entitled ‘Go-CZO: Global-oriented Network of Critical Zone Research – from Observation to Prediction’, was submitted to the Helmholtz Association of Ger-many in 2017 to establish International Helmholtz-Penn State Research School. This global partnership was led by Forschungszentrum Jül-ich in Germany and Penn State University in the USA, with partnerships from 1) Germany: RWTH Aachen University, Bonn University, University of Cologne, TERENO Helmholtz partners, 2) USA partners: Critical Zone Observatories (CZOs) Na-tional Office, several CZOs across the USA, and 3) global partners: Critical Zone Exploration Net-work (CZEN), International Soil Modelling Con-sortium (ISMC). The planned research school aims at a structured doctoral program between the USA and Germany that is based on exten-sive and long-term research in CZOs within the framework of TERENO Germany and the CZO USA. The proposed international school offers a high quality and highly complementary project between institutes to further the objectives of enhancing Critical Zone science globally and for forming a future pool of young transdisciplinary scientists to advance CZ science through their careers.
4. A formal proposal to the IUSS Council to establish a new IUSS Commission 2.6 on Systems Soil Science has been submitted and discussed since the 20th World Congress Soil Science in Jeju, South Korea, and we are eagerly awaiting the IUSS Council’s final decision at its upcoming meeting in August, 2018 in Rio, Brazil. This new commission is built upon the former WG Hydropedology formed in 2005 and renamed WG Critical Zone System starting in 2016. A very detailed report of previous WG Hydropedology and its accomplishments in the past decade (2005-2016) was published in IUSS Bulletin 129 (Dec. 2016), see http://iuss.boku.ac.at/files/iuss-bulletin129_72dpi.pdf. This current report summarizes the renamed WG Critical Zone System’s activities since its inception. To promote the systems thinking of soils and soil complexity, we are planning a new book on Systems Soil Science: Toward Systems Soil Science: Science in Rio, Brazil.

5. Several special sessions related to Critical Zone science were organized at the 2017 American Geophysical Union (AGU) fall meeting in New Orleans, USA, and more special sessions related to Critical Zone science are planned for the upcoming 2018 AGU fall meeting to be held in Washington DC, USA.

7. A special session entitled ‘Systems Soil Science: Propelling the Science of Soils into its Golden Age’ is proposed for the 2019 Soil Science Society of America International Meeting (in collaboration with the Canadian Society of Soil Science and the Mexican Society of Soil Science), which will be held in January 6-9, 2019 in San Diego, CA.

8. A special session entitled ‘Aströpedology and Space Exploration: Synergies between Soil Science and Planetary Science’ is proposed for the 2019 Soil Science Society of America International Meeting to be held in January 6-9, 2019 in San Diego, CA.

9. A special session entitled ‘Green Water and FEW Nexus’ is proposed for the 2019 Soil Science Society of America International Meeting to be held in Beijing, China.

11. The 4th International Conference on Hydropedology has been planned to be held in 2020 in Brisbane, Australia.

**Report of Division 3: ‘Soil Use and Management’**

Division 3 ‘Soil Use and Management’ focuses on how we use the soil and how it links to the knowledge base of Divisions 1 and 2 in order to ensure that soils are used and managed in a sustainable manner. The Division is concerned with both soil use and management in terms of agricultural production, forestry, grazing lands, and the broader environmental context. Activities to remediate degraded soil, arising from the agricultural misuse of soil or contaminations resulting from non-agricultural activities are part of the scientific area of this Division. The aim of this Division is to ensure that through our knowledge and understanding of soil properties and processes and the distribution of soils within the landscape soils and soil quality are maintained and improved.

Division 3 consists of six commissions and six working groups (WG). They are briefly presented below along with chair and vice chair responsibilities.

**Commission Chairs and Vice chairs**

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<th>Commission Vice Chair</th>
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<td>Ivan Vaseney, Russia</td>
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<td>3.2: Soil and Water Conservation</td>
<td>Bernd Lennartz, Germany</td>
<td>Li Zhanbin, China</td>
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<td>3.3: Soil Fertility and Plant Nutrition</td>
<td>Scott Chang, Canada</td>
<td>Tora Fujiwara, Japan</td>
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<td>3.4: Soil Engineering and Technology</td>
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<td>3.5: Soil Degradation, Control, Remediation and Reclamation</td>
<td>Jaume Bech, Spain</td>
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<td>3.6: Salt Affected Soils</td>
<td>Donald Suarez, USA</td>
<td>Jingsong Yang, China</td>
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**Chair of Working Groups (WG)**

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<th>Working Group</th>
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<th>Affiliation</th>
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<td>Acid Sulphate Soils</td>
<td>Leigh Sullivan</td>
<td>Southern Cross University, Australia</td>
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<td>Forest Soils</td>
<td>Zhihong Xu</td>
<td>Griffith University, Australia</td>
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<tr>
<td>Land Degradation</td>
<td>Bal Ram Singh</td>
<td>Norwegian University of Life Sciences (NMBU)</td>
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<td>Modelling of Soil</td>
<td>Peter Finke</td>
<td>Univ. of Ghent, Belgium and Landscape Evolution</td>
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<td>Paddy Soils</td>
<td>Mizuho Nishida</td>
<td>NARD Tohoku Agricultural Research Center, Japan</td>
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<tr>
<td>Soils of Urban, Industrial, Traffic, Mining and Military Areas (SUITMA)</td>
<td>Aye-Hoon John Kim</td>
<td>University of Seoul, Korea</td>
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Activities of Division 3 and its Commissions

Division chair Prof. Bal Ram Singh was actively involved in the planning and execution of an International Conference on Ecosystem Resilience and Agricultural Productivity – Livelihood Pathways under Changing Climate held in Kampala, Uganda, in November 2017. The conference was partly premised on the ongoing research under several Norwegian Programs for Capacity Development in Higher Education and Research for Development (NORHED) funded projects at Makerere University and many other similar research initiatives at national and regional level. Major themes included climate change and risk management, ecosystem sustainability and natural resource management, agricultural production systems and resilient livelihoods. More than 120 scientists attended the conference from many countries in Africa, Europe and the USA. The outcome of this conference will be presented in a book entitled 'Agriculture and Ecosystem Resilience in Sub Saharan Africa' published by Springer publishers. Prof. Bal Ram Singh and Prof. Rattan Lal will edit the book among others. Many presentations made at the conference included topics related to the Division of soil use and management.

Chair Prof. Bal Ram Singh was also requested by the executive committee of IUSS to edit a book in the series of books for the International Decade of Soils, Plants, Animals and Human Health: advances and problems of potentially toxic elements', Vienna, Austria 2. EGU 2018. Session SS58.4/AS4.18 'Soil pollution and Reclamation as a Geochemical Problem' (Co-Organized).

Several active members of the Division have prepared symposium topics in cooperation with Division 2 and 4. In total 7 such symposia have been proposed for 21st WCSS congress in Rio, Brazil, as listed below under proposed symposia.

Report from Commissions

Not all Commissions and WGs have been equally active during the reporting period, but many have worked on their symposia for the forthcoming 21st WCSS congress in Rio, Brazil.

Commission 3.1: Soil evaluation and land use planning

The commission worked out a symposium on ‘Multi-scale and multi-domain approaches to develop smart farming’ to be held at the WCSS in Rio, Brazil.

Commission 3.2: Soil and Water Conservation

Chair Prof. Bernd Lennartz delivered a keynote lecture at the 1st World Conference on Soil and Water Conservation under Global Change (CONSOWA) in Spain in June 2017. The Commission is also planning to organise ‘WETSCAPES – Understanding the ecology of restored peatlands for protection and sustainable use’ in Rostock, Germany, in September 2017 as well as two symposia at WCSS in Rio, Brazil.

Commission 3.3: Soil Fertility and Plant Nutrition

This commission worked primarily on the preparation of two symposia to be held at the WCSS in Rio, Brazil, as listed below.

Commission 3.4: Soil engineering and Technology

There has not been much activity in this Commission during the reporting period.

Commission 3.5: ‘Soil Degradation, Control, Remediation and Reclamation’

The commission has several activities as listed below.

A. Congresses

1. EGU 2017 (13-18 April of 2017). Session SS58.4 ‘Progress in Remediation for soils polluted by
est Soils to be held in Quebec City, Canada, 10-16 June 2018. WG Chair will host a Forest Soils Working Group meeting during the WCSS congress in Rio.

WG Land degradation
In 2016-2017, a book entitled ‘Climate Change and Multidimensional Sustainability in African Agriculture’ was published by Springer; Chair Bal Ram Singh coedited the book. The book was based on the presentations made at the International conference held at Sokoine University of Agriculture (SUA), Morogoro, Tanzania, in 2015. The conference was a cooperation between SUA, IAGR-US-AID, Ohio State University and the Norwegian University of Life Science. One of the sections of the book deals with the sustainable management of natural resources covering aspects related to land degradation neutrality, salt affected soils, reclamation and soil and nutrient losses.

WG Modelling of Soil and Landscape Evolution

WG Paddy Soils
Paddy Soils Working Group (PSWG) organized a symposium ‘Research frontiers on paddy soils for sustainable rice production’ at the 13th International Conference of the East and Southeast Asia Federation of Soil Science Societies (ESAFS) held in Pattaya, Thailand, 12-15 December 2017. This symposium was co-organized with the Soil Biology Commission, Division 2, and IUSS. In the session, eight oral presentations and nine poster presentations were delivered. Fruitful discussions were held during the session. In 2018, PSWG will organize a symposium ‘Mitigating GHG emission and enhancing productivity in rice-based systems’ at the 21st WCSS.

WG Soils of urban, industrial, traffic, mining and military areas (SUITMA)
The 9th International Conference of the Working Group on SUITMA (Soil of Urban, Industrial, Traffic, Mining and Military Areas, SUITMA 9) was held in Moscow, Russia, on May 22-27, 2017. The Peoples’ Friendship University of Russia (RUDN University) hosted the conference. The theme for the conference was ‘Urbanization: a challenge and an opportunity for soil functions and ecosystem services’. Two-hundred and four (204) soil scientists from 21 countries enjoyed this great event. The number of oral and poster presentations for this conference was 100 and 143, respectively. The next conference (SUITMA 10) will be held in Seoul, Republic of Korea (South Korea), June 16-21, 2019.

Proposals approved from Division 3 of Symposia for 21st WCSS (Rio, 2018) A large number of symposium proposals were discussed and proposed for the 21st World Congress 2018. The Inter Congress meeting held in Rio in 2016 approved these.

WG Land Degradation
In 2016-2017, a book entitled ‘Climate Change and Multidimensional Sustainability in African Agriculture’ was published by Springer; Chair Bal Ram Singh coedited the book. The book was based on the presentations made at the International conference held at Sokoine University of Agriculture (SUA), Morogoro, Tanzania, in 2015. The conference was a cooperation between SUA, IAGR-US-AID, Ohio State University and the Norwegian University of Life Science. One of the sections of the book deals with the sustainable management of natural resources covering aspects related to land degradation neutrality, salt affected soils, reclamation and soil and nutrient losses.

WG Modelling of Soil and Landscape Evolution

1. Division 4 presentation
The Role of Soils in Sustaining Society and the Environment
Division 4 is generalized and entails the transfer and outreach of our knowledge base to segments of our society where soils and soil science are frequently misunderstood or sometimes underappreciated. It takes the soils information generated in the other three divisions along with developing new scientific information and addresses public literacy in soil science, education, international conventions, consequences of human activities on soil ecosystems, policy issues, food security,历史 of the discipline, etc. This division might be considered the ‘capstone’ division, because it must integrate our scientific body of knowledge into the other three divisions along with developing new scientific information and addresses public literacy in soil science, education, international conventions, consequences of human activities on soil ecosystems, policy issues, food security, health and social problems which humanity is currently facing.

The IUSS has identified the key roles played by soils in addressing the major resource, environmental, health and social problems which humanity is currently facing. IUSS Division 4.1 Soils & the Environment’s activities in the region were organized under the following specific objectives of the Vienna Soil Declaration of Dec. 7, 2015 to address our role in soils education, dissemination of information, issuing informative press statement on key issues, co-ordinating activities across the region.

The core goal was to raise public awareness of the importance of soils through a range of activities beyond the usual technical symposia. Activities in 2016-17 recorded by the federal executive, states and territories are as follows.

Division 4 is organized in five commissions and two working groups (WG):

- Commission 4.1 – Soils and the Environment
- Commission 4.2 – Soils, Food Security and Human Health
- Commission 4.3 – Soils and Land Use Change
- Commission 4.4 – Soil Education and Public Awareness
- Commission 4.5 – History, Philosophy, and Sociology of Soil Science

- WG: Cultural Patterns of Soil Understanding
- WG: Soil as World Heritage

The main Division 4 activities during the period 2017-2018 were related to:
- the publication of the Division 4 newsletter: ‘Soil Connects’,
- participation in different soil congress, workshops, etc.
- creation and establishment of a new WG ‘Cultural Patterns of Soil Understanding’.

The most important result from the 2017-2018 Div. 4 activities was the creation and activities of the WG ‘Cultural Patterns of Soil Understanding’ which will be proposed to be changed into a Div. 4 commission in the future. This WG, managed by Nikola Patzel (chair) and Eric Brevik (vice-chair), has been very active and proposed the publication of a book for the end of 2019.

C. Feller was also involved in:
1. the organization with Inra-France of an event to honor the French Minister of Agriculture, Stephane Le Foll, who will receive a ‘Distinguished Service Award’ from IUSS. With this award, IUSS will recognize “Stéphane Le Foll, French Minister of Agriculture for his significant contributions to soil science, particularly for putting soil carbon sequestration on the global agenda to mitigate climate change and advance food security’ (the 4 p. 1000 initiative).
2. the 2018 IUSS candidature to the Peace Nobel Prize with a support letter provided by Xavier Emannuelli, French Peace Nobel Prize 1999 (‘Doctors Without Borders’).
3. Division 4 newsletter ‘Soil Connects’
   This newsletter (ca. 20 pages) was created and is managed by Damien Field.
   Soil Connects is largely illustrated and provides short articles from Division 4 members, announces scientific events and new books published.
   - proposition of symposia for the 21st World Congress of Soil Science (WCSS) to be held in Rio de Janeiro (Brazil, August 2018).

4. Participation in local, national and international seminars, symposia, conferences and exhibitions
The information below was received from: Christian Feller and Cristine Muggler (chair and vice chair Division 4), Masamichi Takahashi and Ian Hollingsworth (chair and vice chair commission 4.1), Ganga Hettiarachchi, Ian Hollingsworth (chair and vice chair commission 4.2), Damien Field and Cristine Muggler (chair and vice chair Commission 4.3), Thomas Sauer and Alexendra Toland (Chair and member commission 4.5), Nikola Patzel and Eric Brevik (chair and vice chair WG1), David Dent (chair WG2).

Commission 4.1 – Soils and the Environment
By Ian Hollingsworth

The IUSS has identified the key roles played by soils in addressing the major resource, environmental, health and social problems which humanity is currently facing. IUSS Division 4.1 Soils & Environment’s activities in the region were organized under the following specific objectives of the Vienna Soil Declaration of Dec. 7, 2015 to address our role in soils education, dissemination of information, issuing informative press statement on key issues, co-ordinating activities across the region.

The core goal was to raise public awareness of the importance of soils through a range of activities beyond the usual technical symposia. Activities in 2016-17 recorded by the federal executive, states and territories are as follows.
ongoing efforts to bring soils into schools is starting. Senior (Year 12). It seems as though the Society’s communicating Science, Scientific Investigations and Queensland Science Contest took place at the University of Queensland. The 64th annual Science Teachers Association’s (STAQ) conference this year and the QLD Branch of SSA hosted a stall in the “StreetScience!” family section called Soil: The Foundation of Life. The World Science Festival is currently held at only two locations worldwide: Brisbane and New York. Everyone was encouraged to bring along their children and take part in this unique world-class event. Kids of all ages were able to investigate the chemical, physical and biological processes within our soils through fun, hands-on activities. Different coloured soils were provided so for the children to paint creatively. Visitors learnt about our valuable soils and discovered how we can use science to protect them to grow enough food to eat. They found out why plants love some soils but cannot grow in others, and which soils make the best mud pies and explored what makes soil such a wonderful and important resource for all life on earth.

WA Soil Science Australia branch committee members organised the Discover Dirt Pavilion for Soil Science Australia with members contributing a day (or more) volunteering to answer questions and help the general public, especially children, get an understanding of soil for everything in our lives at the Perth Royal Show, the premier agricultural show in the state.

Education
The Queensland Branch held the judging of the 64th annual Science Teachers Association’s (STAQ) Queensland Science Contest took place at the University of Queensland, St Lucia. In past years judges have struggled to find enough soil-related entries to award a bursary to, however this year there were 25 entries in 6 categories (including: Communicating Science, Scientific Investigations and Environmental Action Projects), with contestants ranging from Primary School (Year 4) to Senior (Year 12). It seems as though the Society’s ongoing efforts to bring soils into schools is starting to gain traction.

Dissemination of Information
The Victorian Branch Science meets Parliament activity provided the opportunity for Dr Samantha Grover, Lecturer in Environmental Science at RMIT and Vice President of the Victorian branch of SSA, to meet with The Honourable Joel Fitzgibbon, Shadow Minister for Agriculture. Joel was delighted to receive a copy of Exploring Soils: a hidden world underground and has also indicated a desire to work with Soil Science Australia to develop a National Soil Security policy. Federal and Victorian Presidents John Bennet and Vanessa Wong are also involved.

Lisa Lobry De Bruyn from the NSW Branch made an open Call for a Special Edition of Soil Use and Management Soil information sharing and knowledge building for sustainable soil use and management: problems and prospects for the 21st century. The focus is on all aspects of soil information sharing and knowledge building, focusing on the local scale, between soil scientists and practitioners, ranging from development and testing of extension techniques to training the next generation of soil scientists, as ‘complete’ soil scientists.

Northern Territory soils have a role in the water balance of cities that isn’t accounted for constructively in planning regulations that concentrate stormwater and run off as waste water. The need to maintain a minimum porous surface provided by soils in urban areas to manage stormwater, coastal contamination and keep the city livable with urban densification was the subject of a presentation on the shortcomings of planning regulations in the Northern Territory to a national stormwater conference in Brisbane. Feedback from the conference on policy and legislation change needed improve the planning act was submitted to a review of the waste management and pollution control act and the planning act.

Developing Northern Australia is a policy initiative of the federal government that is driving land resource assessment activity by CSIRO and state and territory departments using a digital soil mapping paradigm. The digital soil mapping outputs of disaggregated soil property layers modelled largely on a digital elevation model and ancillary environmental coverages obscures the important ecological services associated with soils sustaining important, extensive, intact eco-systems with strong cultural connections to indigenous people. A digital soil mapping model that incorporated an ecological ‘land unit’ model and emphasized profile classification in the output was presented to the soil science society conference in N2.

In northern Australia Ian Hollingsworth (IUSS 4.1 Commission Vice President) stood for Darwin city council. His campaign focused on the necessity of retaining porous surfaces in the environmental design of the city to manage stormwater effectively and improve livability. He made a case to retain a minimum of 20% unpaed porous surfaces on urban lots to the planning department, the EPA (environmental protection agency) and city council, gave a paper on the role of soil and vegetated areas in the hydraulic design of the stormwater system and made a submission to change the planning act accordingly.

Further information related to the activities of Commission 4.1 by Masamichi Takahashi (Japan) can be found in the chapter on Commission 4.3 – Soils and Land Use Change.

Commission 4.2 – Soils, Food Security and Human Health
By Adelheid Spiegel and Martin H. Gerzabek, Sigrid Schwarz, Barbara Birli, Sigibert Huber, all from Austria

Participation to scientific meetings and education to soil
• During the EGU Meeting 2017, Vienna, at the Div4 day (April 25th) a proposal for a Division 4 restoration was discussed.
• October 23rd 2017 the first Viennese soil teaching path ‘Roter Berg’ was opened in a recreational area in Vienna, and offers many insights into soils. Various information boards inform about exciting soil topics and raise awareness on the importance of soils and soil protection.
• Within the project ‘Soil-Information’ by Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW) a key to forest soils (‘Waldboden-Bestimmungsfächer’) in pocket size was developed, to identify soil types, their characteristics and optimal management. More than 1000 students (age 15 -19) from agricultural and forest schools were trained in soil workshops. A booklet describing soil functions in forest soils was published.

Conference
• ‘Soil as the center of cycles: science, administration and practice in dialogue’ 14-15 November 2017 University and Research Center Tulln (UFT) Cooperative event of the Soil Forum Austria, the Network Zukunftsraum Land and the Austrian Soil Science Society.

Publication and film
• A book describing various educational projects in Austria was published by BFW and Austrian Soil Science Society.
• The University of Natural Resources and Life Sciences Vienna started to produce a popular science film about the soil resources and landuse in the Galapagos Islands. The film will be finished in 2019.
USA specific activities from Div4 members
By Ganga Hettiarachchi (C4.2.)

Soil can both benefit and adversely affect human health. The following highlights some of the activities that took place in 2017 under the main theme of Soil and Human Health.

1. Organization of or participation in, special symposia
   - Symposium - Societal Challenges and Soil Chemistry. Organizers: Owne W. Duckworth, Matthew L. Polizzotto and Aaron Thompson

2. Activities and workshops
   - The Hettiarachchi laboratory group took part in the following activities:
     - EGU General Assembly in April, 2018.
     - The Nexus of Soils, Plants, Animals and Human Health. Ed.: Bal Ram Singh; Michael J. McLaughlin; Eric Brevik.
     - Invited Presentations to EGU 2018.

3. Publications
   - JUNE 2018
     - Soil and Human Health. The following highlights some of the activities that took place in 2017 under the main theme of Soil and Human Health.

4. Book Chapters

5. Journal Articles

6. Invited Presentations

7. Commission 4.3 – Soils and Land Use Change
   - By Masamichi Takekashi (C4.1.) and Ryouuke Hatano (C4.3.)

Specific activities from members of the Japanese Society of Soil Science and Plant Nutrition and other public events.

- The fact sheet on Soil and Land use change was elaborated by Ryouuke Hatano (Hokkaido University, Japan) and Sonoko D. Bellingrath-Kimura (Humboldt University of Berlin & Leibniz Institute of Agricultural Landscape Research).


http://jssjspn.jp/info/secretariat/10.html
• 2018. December 1-5. XXXVI Brazilian Soil Science Congress, 30/7-19/8. Rio de Janeiro, Brazil, 23-29 July 2017, as IUSS representative for the IUSS Young Scientists Assembly.

Commission 4.4 – Soil Education and Public Awareness

Australia and New Zealand Specific activities from Damien Field

Membership Scientific Committees

– contribution to scientific committee

EGU

• Division 4 The role of soils in sustaining our environment. (Poster) EGU Meeting, May 2017, Vienna, Austria. https://www.egu2017.eu/

Presentation to delegations


Presentations

• Field D. J. Modernising soil science education producing more capable decision makers. Soil, a balancing act down under, NZSSS & ASSSI Conference, Queenstown, NZ, 12-16 Dec. http://www.nzsssconference.co.nz/
• Field D. J. 2017. Framing a future for soil science education. European Geophysical Union 17-22 April, Vienna, Austria, SS1.2/EOS22 https://www.egu2017.eu/
• Field D. J. 2018. To know, know of, or be aware for soil. 8-13 April, Vienna, Austria, Orals SS1.3/EOS5 https://www.egu2018.eu/

Brazil

By Cristine C. Muggler (C.4.4)

Summaries of activities:

• Participation in the 21st WCSSS and other events organization
  – organization, propositions and meetings with IUSS Division 4 to organize the divisional and interdivisional symposia of the WCSSS.
  – Participation at the 25th International Congress of History of Science and Technology (ICHST), Rio de Janeiro, Brazil, 23-29 July 2017, as IUSS representative for the IUSS Young Scientists Assembly.

• Japan
  – 69th Annual Meeting of the Brazilian Society for the Advancement of Science, 16-22 July, 2017, Federal University of Minas Gerais, Belo Horizonte, Minas Gerais (Short course). ‘Funções dos solos e sua essencialidade à vida e ao meio ambiente’.

by Christian Feller

Besides the formal activities of the French Society of Soil Science, different events for the general public were organized and communications given by Christian Feller (Division 4 chair) on behalf of IUSS Div4.

Publications

Communications (Feller)
- Feller C., 2016-2017. ‘Le sol, une merveille sous nos pieds’. Conférences given at:
  - Médiathèque d’Uzès, the 9 décembre 2016
  - Association Les Amis de Rabelais, Bagnoles-sur-Cère, the 9 janvier 2017.

Commission 4.5 – History, Philosophy, and Sociology of Soil Science

By Alexandra Toland (C4.5) – Publication Announcement

Alexandra Toland, Jay Noller and Gerd Wessolek are pleased to announce the publication of Field to Palette: Dialogues on Soil and Art in the Anthropocene (CRC Press, 2018) after four years of work on the first comprehensive volume about soil and art. In the spirit of the ongoing efforts of IUSS Division 4, the book promotes innovative forms of interdisciplinary exchange as well as communication with the general public. The book is structured into six sections that artistically interpret the primary functions of the soil as described by Winfried Blum: FUNCTION 1. SUSTENANCE Soil as provider of food, biomass, and all forms of nourishment FUNCTION 2. REPOSITORY Soil as source of energy, raw materials, pigments, pictures, and poetry FUNCTION 3. INTERFACE Soil as site of environmental interaction, filtration, and transformation FUNCTION 4. HOME Soil as habitat, biological hotspot, and gene pool FUNCTION 5. HERITAGE Soil as embodiment of cultural memory, identity, and spirit FUNCTION 6. STABILIZER Soil as ground for structures, infrastructures, and socio-economic systems

Field to Palette: Dialogues on Soil and Art in the Anthropocene is an investigation of the cultural meanings, representations, and values of soil in a time of planetary change. In addition to full color images of artworks, the book weaves together different disciplinary perspectives in a collection of dialogue texts between artists and scientists, interviews by the editors and invited curators, essays by earth scientists and humanities scholars, soil recipes, maps, and DIY experiments. With contributions from over 100 internationally renowned researchers and practitioners, Field to Palette presents a set of visual methodologies and worldviews that expand our understanding of soil and encourage readers to develop their own creative interpretations of the ground beneath our feet.

The title of the book, Field to Palette, honors grassroots social organizing and locally controlled food production methods championed by ‘field to plate’ movements worldwide. It is also a call to action for increased interdisciplinary collaboration between the fields of agriculture and geosciences and the arts and humanities. Framed within the larger discourse of the Anthropocene, the book critically reflects upon some of the most challenging environmental problems of our time, including land take, groundwater pollution, desertification, and biodiversity loss. It is at the same time a celebration of earth resilience in the face of such challenges. By bringing together a chorus of seemingly disparate voices, new insight on the material properties, cultural histories, and ecological and social functions of the soil emerge.

WG ‘Cultural patterns of soil understanding’ By Nikola Patzel and Eric Brevik

The new Division 4 working group on Cultural Patterns of Soil Understanding was officially established at the IUSS inter-congress meeting in November 2016 due to the initiative of Christian Feller. The working group on Cultural Patterns of Soil Understanding began with 36 founding members and Nikola Patzel was elected as the WG chair. At its second meeting in Vienna in April 2017, Eric Brevik was elected to serve as vice-chair of the WG. After about 18 months as a WG there are now about 50 members. The WG has a number of accomplishments to highlight from the last 18 months:

1. In 2017, Nikola Patzel represented the Cultural Patterns WG with presentations at:
   - the European Geosciences Union (EGU) conference in Vienna,
   - the meeting of the European Soil Awareness Network in Bratislava,
   - the founding meeting of the Soil Care Network in Sheffield,
   - at the member’s conference of the German Soil Science Society in Göttingen.

2. In 2017, Eric Brevik represented the Cultural Patterns WG with a presentation at:
   - the Soil Science Society of America meeting in Tampa.

In addition, Eric Brevik and Christian Feller organized a Soil and Art session at the 2017 EGU conference that was co-sponsored by Division 4 and the Cultural Patterns WG.

A list of WG members has been assembled to facilitate communication. In addition, a survey was used to assemble a list of topics that are of interest to our members and classified into subcategories. These subcategories have served as an initial guide for WG activities, helped organize our members into subgroups of similar interest, and help our members network with others.

The working group has been very active in organizing and co-organizing divisional and interdivisional symposia for the upcoming 21WCCS. Three inter-divisional and six divisional symposia concerning cultural themes have been organized on the initiative of or with strong support by WG members. The WG also played an important interface and supporting role for the themes of some Division 4 commissions.

The WG has been actively working on a book that will be published in 2019 as part of the IUSS book series. The WG has had several video conference meetings where we produced an outline for the book that has been approved by the IUSS Executive Committee. Authors are being lined up for chapters and editors (Nikola Patzel, Eric Brevik, Sabine Grunwald, and Christian Feller) have been chosen. Authors were recently asked to submit abstracts as we move this project forward.

Damien Field organized the semestral Division 4 newsletter ‘Soil Connects’, and several WG members contributed short original papers as well as other reports for that.

field to palette, dialogues on soil and art in the anthropocene.CRC press, 2018.
Secondly, although the Government of Moldova is supportive of our proposed World Heritage Site for the Chernozem, on the Balti steppe, they have not been good communicators. We understand that they are preparing for a visit from a UNESCO fact-finding mission to the proposed World Heritage Site but beyond this, we have no information. We are reluctant to pull out the IUSS Working Group since we have come so far. We are prepared to continue quietly supporting the venture and supplying such information as and when it is asked for and may prove valuable. Should the World Heritage Site be awarded, we shall be in a position to swing into action with a supporting educational, scientific and cultural program.

Kind regards
David Dent*

The Division 4 chair proposes to close this Working Group.

5. Symposia proposed by Division 4 and accepted for 21st WCSS (Rio, August 2018)

See lists below (from https://www.21wcss.org/?secao=conteudo&id=75, 09 June 2018, 12:26).

**Division 4: The Role of Soils in Sustaining Society and the Environment**

1. Divisional symposia

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<tr>
<th>C4.1 – Soils and the Environment</th>
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<td>C4.1.1: Soil ecosystem services</td>
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<td>C4.1.2: Climate change and adaptation of soil functions</td>
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<td>C4.1.3: Soil in the Anthropocene</td>
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<td>C4.1.4: Soil as natural capital: Economic and legal dimensions of ecosystem services</td>
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<td>C4.1.5: Carbon sequestration potential of soils</td>
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<td>C4.2.1: Soil and Human Health</td>
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<td>C4.2.2: Soil quality and food security in the tropics</td>
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<td>C4.2.3: Soil quality to secure human and environmental health</td>
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<th>C4.3 – Soils and land use change</th>
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<tr>
<td>C4.3.1: Ecological soil management systems and soil quality</td>
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<td>C4.3.2: Assessment and inventory of land use change under the SDG’s perspective</td>
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<th>C4.4 – Soil education and public awareness</th>
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<tr>
<td>C4.4.1: Soil science education in the 21st century</td>
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<td>C4.4.2: Soil education and public perception of soils</td>
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<td>C4.4.3: Placement and accreditation of soil science in the workforce related to natural resources</td>
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<th>C4.5 – History, philosophy, and sociology of soil science</th>
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<td>C4.5.1: Integration of historical, philosophical and sociological worldviews to secure and sustain soils in the future</td>
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<td>C4.5.2: Foreseeable breakthroughs in soil science</td>
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<td>C4.5.3: Field to Palette: A Nexus Approach to Soil and Art</td>
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2. Interdivisional symposia

4.1 – Soils, Society and Culture: people’s connections to soil

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<thead>
<tr>
<th>Conveners: Nikola Patzel (IUSS/DE) and Cristine Muggler (UFV/BR)</th>
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<tr>
<td>Presenters:</td>
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<tr>
<td>a. The unrecognized face of the Earth.</td>
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<td>Christian Feller (IRD/FR,</td>
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<td>b. Soil Ethics – Soil Care, Beliefs and Values.</td>
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<td>Sabine Grunwald (University of Florida/US)</td>
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<tr>
<td>c. Sacred Ploughing and Soil: The Peasant Sovereign in Eastern India.</td>
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<td>Milinda Banerjee (LMU/DE and Presidency University/IN)</td>
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4.2 – Soil Education and public awareness

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<tr>
<th>Conveners: Eric Brevik (US) and Fabiane Vezzani</th>
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<tr>
<td>Presenters:</td>
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<tr>
<td>a. Some challenges and accomplishments in soil science</td>
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<td>education: Teaching practices, principles, and beyond.</td>
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<tr>
<td>Damien Field (University of Sydney/AU)</td>
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<tr>
<td>b. Soil education in Latin America.</td>
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<tr>
<td>Laura Berta Reyes Sanchez (UNAM/MX) and Cristine Muggler</td>
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<tr>
<td>c. Which Public? Audiences of soil communication</td>
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<td>from an arts and humanities perspective.</td>
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<td>Alexandra Toland (DE)</td>
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4.3 – Paradigm change in soil science: utopia or reality?

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<tr>
<th>Conveners: Guilherme Sobrinho (Lapsiafro/UFRRJ/BR) and Alexandra Toland (DE)</th>
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<tr>
<td>Presenters:</td>
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<tr>
<td>a. From soil properties to soil functions and beyond: paradigm change in soil science?</td>
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<tr>
<td>Thomas Sauer (NLAE/USDA/US)</td>
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<tr>
<td>b. A Soil Security concept to value ecosystem services.</td>
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<tr>
<td>Cristina Morgan (Texas AM University/US)</td>
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<tr>
<td>c. Cultural patterns of soil understanding.</td>
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<td>Nikola Patzel (IUSS/DE)</td>
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4.4 – Soil organic matter to secure food and water and the 4 per 1000 initiative

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<th>Conveners: Beata Madari (EMBRAPA/BR)</th>
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<td>Presenters:</td>
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<tr>
<td>a. The ‘4 per 1000 initiative’.</td>
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<tr>
<td>Claire Chenu (FR)</td>
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<td>b. ‘4 per mille’ a global perspective.</td>
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<tr>
<td>Budiman Minasny (University of Sydney/AU)</td>
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<td>c. Agroecological transitions to promote biodiversity conservation and provision of ecosystem services.</td>
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<td>Heitor Teixeira, UFV/WUR, BR)</td>
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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.

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

Recent achievements

During the reporting period a number of awareness raising events in the framework of IDS have taken place, of which some examples can be found below.

Growing Trees, Harvesting Benefit

Report by Dr. Wan Rashidah Abdul Kadir, MSSS President, FRIM

Balai Ikhtisas Malaysia (BIM) in collaboration with the Forest Research Institute Malaysia (FRIM) and Jabatan Landskap Negeri Melaka (JLN) had organised a Tree Planting Project; Growing Trees Harvesting Benefits with a theme, Germplasm Repository: Rare Fruits of Our Heritage. The launching ceremony was held on Sunday, 21st May 2017, 10.00 am at Selandar, Jasin, Melaka. Active BIM member organizations including MSSS (the Malaysian Soil Science Society) participated in this event.

Exco for Housing, Local Government and Environment, Datuk Ar. Ismail bin Othman officiated the launching ceremony were Dato’ LAr. Ismail bin Ngah, President of Balai Ikhtisas Malaysia, Dato’ Dr. Abd Latif Mohmod, Director General of FRIM, and Puan Sapiah Haron, Director of JLN.

The idea of the germplasm repository was to conserve rare Malaysian fruit trees, for public awareness and education and as the reference centre for future generations. The site was easily accessible and the trees planted will be taken care by FRIM.

A total of 188 rare fruit trees from 28 species were planted simultaneously by representatives of the various institutions and companies which contributed through the purchase of seedlings. MSSS representative was lead by the President and several other members. The society supported such program in an effort to conserve our resources and heritage.

Selected photos from this event:

Soil Fun Run 2017

By Nur Sa’adah Halim, UM

In conjunction of the International Decade of Soil 2015-2024, the Malaysian Society of Soil Science (MSSS) and Institute of Biological Science (ISB) University of Malaya, organized Soil Fun Run 2017. The 5 km run was held at University of Malaya on 11th November 2017. The objectives of this event were to encourage a healthy lifestyle, promote public awareness on importance of soil. The route for the run started in front of Faculty of Science, moving to the hilly area named as Bukit Cinta, crossing over tropical botanical garden; Rimba Ilmu, and continued towards Faculty of Science. The programme brought together about 500 participants consisting of students (universities, primary and secondary school) soil enthusiasts and public.

Various activities have been set up for participants in collaboration with the University of Malaya University of Malaya, the University of Malaya Entrepreneurship Center (UMEC) and the Plant Biotechnology Incubator Unit (PBIU).

The programme commenced at 7.00 am with the stretching and warm up session. Runners were released by Professor Zanariah Abdullah, Dean of Faculty of Science UM together with Dr Wan Rashidah Abdul Kadir, President of MSSS at 7.15 am.
During the 5km run, each runner had five tasks to be completed at five checkpoints including identifying soil types according to soil series, meddling with worms, identifying trees according to their suitable soil type, transplanting seeds into pots and carrying the sapling to the finishing line. A total of 10 prizes, 5 for each men and women consisting of cash prizes were given to the winner. In the prize giving ceremony, Associate Professor Dr. Nurhayati Zainal Abidin, ISB’s Head of Department presented the prizes to the women. In the men category, the winners were Abdul Aziz Mahamod, Mohd Harmini, Mitsuhiro Koike, G Sivaneshwaran and Soh Wai Ching and for the women category, the winners were Darshiny, Sara Joy, Aini Aida, Esther Joy and Danielle for 5th, 4th, 3rd, 2nd and 1st place respectively. Hopefully, from various activities and exposures, participants will better understand the importance of soil. We would like to express our gratitude to the committee involved in this program, especially MSSS members and ISB family and also sponsors who supported this event.

Agro Fun Run 2017
By Dr. Wan Zaliha Wan Sembok, MSSS Auditor, UMT

Agro Fun Run 2017 is a 4 km run with the concept of sustainable green earth and will became an annual event for the School of Food Science and Technology, University Malaysia Terengganu (PPSTM, UMT). This event was a collaborative effort between Agrotech Income Committee from PPSTM, Hevotech Club UMT and Malaysian Society of Soil Sciences that was held on 28th October 2017 in UMT. This program gives an opportunity for UMT’s students to understand the importance of sustainable agriculture for next generation and show their care for earth. The objective of this event is to provide an exposure of informal education especially in agriculture and to enhance the cooperation among professionals, supporting members as well as UMT students. The program commenced at 7.30 am with stretching and briefing session. The flag off session was completed by YBhg. Dr. Hayati Yusof, Deputy Dean of Research and Talent PPSTM. Along the 4km run, some activities and tasks must be completed by the participants which was collecting the polybag provided at the first check point, continued by filling up the polybag with soil and ended with planting one sapling (roselle, mulberry, hibiscus or bougainvillea) in the polybag. This program gathered 266 people, which was double the amount expected. Participants include 12 lectures, 15 committee members and students. The program ended at 11.00 am with lucky draw session and the collection of finisher medal for participants. From the feedback obtained, most of the participants were excited and looking forward for this program in future. Besides from gaining an informal knowledge on farming, participant also explored new things while taking part in this sport.

Guide to Healthy Soils Workshop
By Christopher Teh Boon Song, CBS Teh

A workshop entitled, ‘Guide to Healthy Soils’ was held on 3 and 4 Feb 2018 at the Dept. of Land Management, Faculty of Agriculture, Uni. Putra Malaysia, Serdang. This workshop was developed specifically for urban gardeners, farming hobbyists, farmers, or land owners with little or no background in soil science. The only criterion is they must have a keen interest in urban gardening or farming! This workshop was organized by the Faculty of Agriculture, the Malaysian Soil Science Society, and Eats, Shoots and Roots Sdn, Bhd. A total of 28 participants had registered for this workshop. During this two-day workshop, participants were taught on a wide range of topics, so that at the end of the workshop, they were able to answer questions such as:

- What makes a healthy soil?
- Are all soils the same? The soil chemical and physical properties that make up a soil.
- What are the plant nutrients, and how do I know their availability in my soil?
- How important is soil organic matter?
- What is the difference between compost and mulch, and should I use them?

Fertilizing my plants
- What are the differences between the various fertilizer types (organics vs synthetics)?
• I have a land, so what soil elements should I have tested, and how do I interpret the soil tests results?
• How much fertilizer should I apply?
• Is watering my plants with rice water any good?
• How much should I water my plants?
• How much should I water my plants?
• Signs of plant problems: fruit or flower abortion, leaf drops, and nutrient deficiencies

Watering my plants

1) preparing soil media, 2) making compost, 3) interpreting soil test results, 4) fertilizer calculations, and 5) preparing a wick irrigation system.

Lecturers involved in the workshop instruction were Dr. Christopher Teh Boon Sung, Dr. Tan Ngaing, and Dr. Ali Tan. These three lecturers are from UPM. We are happy to report that at the end of the workshop, participants provided written as well as verbal feedback that they enjoyed the workshop and found the workshop very helpful, and some even asking for a sequel workshop!

Participants trying their hand on aerobic compost making

Dr. Christopher Teh Boon Sung explaining about the differences in physical and chemical properties of three soil types commonly found in the campus area

Participants preparing their potting mix media

Group photo of workshop participants in the lab

Soils in Landscapes of the World – 2018 Calendar

This 2018 Calendar showing Soils in Landscapes of the World was designed in the Department of Soil Science and Landscape Management, Faculty of Earth Sciences, Nicolaus Copernicus University in Toruń, Poland, to celebrate 2018 as the next year of the FAO UNESCO International Decade of Soils (2015-2024) and also the 100 anniversary of the Polish Geographical Society (1918-2018). Authors of the photos: Marcin Switoniak (tundra and mountain landscapes) and Michal Jankowski (others).

Read more: http://iuss.boku.ac.at/files/calendar_2018_-soils_300dpi.jpg

Field research: discovering the structure of soil

By Barbara Birić, Jane Mills, Francesco Morari

Get your hands dirty with these classroom experiments exploring the composition of soil – and find out why this matters. Soil is essential for life on this planet. Without it, we could not grow the food we need to live. What’s perhaps less well known is that soil has other important functions, too, such as filtering our water, storing it to help prevent flooding and droughts, and providing a habitat for a third of the world’s biodiversity – most of which we still know very little about. Soils also have a large impact on climate change, as they can store large amounts of organic carbon and are the most important terrestrial sink for carbon dioxide (Janzen, 2004).

For most students, particularly those who live in cities, the world below their feet remains unknown. To remedy this, we developed a two-part activity to help students to gain insights into the role that soil structure and its organic matter content has for all of us.

Read more: http://www.sienceinschool.org/content/field-research-discovering-structure-soil

IUSS at EGU 2018

The EGU General Assembly 2018 (EGU2018) took place 08-13 Apr 2018 in Vienna, Austria.

Following the 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, IUSS was involved in the organisation of session SSS1.3/EOS5 Soil Science education, outreach and your favourite soil maps (co-organized). This session welcomed all perspectives on teaching soil science from school level to continuing professional development in non-academic settings. Contributions were sought that move away from concepts and methods for teaching soil science within traditional disciplines (chemistry, biology, physics) to those that use soil systems approaches. Innovative methods from the field, classroom and laboratory were invited from anyone working with soil science education across varied settings. The conveners also welcomed demonstrations of novel approaches for soil science outreach and public engagement that involve scientists and non-scientists. Examples that also measure the effectiveness of educational and outreach activities were especially welcome. This session was one of the IUSS activities under the umbrella of the International Decade of Soils 2015-2024.

Deadline for abstract submission was 10 January 2018. Finally 27 abstracts were received including those from two other proposed sessions and IUSS would like to thank all authors for their contributions.

Read more: https://egu2018.eu/

3rd Olympiad in Soil Science for School Students in Tbilisi/Georgia

Another activity worth mentioning is the 3rd Olympiad in Soil Science for School Students held in Tbilisi/Georgia on the 27th of April, 2018. 15 schools and about 70 school students participated in this competition.

The three-fold goal of the Olympiad, namely making Natural Sciences (especially Soil Science) popular among school students, creating an understanding of agrarian disciplines and encouraging students to care about ecology and a safe environment, was more than achieved. May this Olympiad stimulate other Soil Science Societies to follow this excellent example!

For details the reader is referred to the following section ‘Conference and Meeting Reports’.

The IDS logo can be downloaded from the IUSS website in different formats at http://iuss.org/index.php/article_id=588.
Soil book series
IUSs book The Nexus of Soils, Plants, Animals and Human Health
This book is the third one in the series of IUSs books produced as part of the activities during the International Decade of Soils 2015-2024. It was edited by Bal Ram Singh, Michael J. McLaughlin and Eric Brevik on behalf of the IUSs; Published as Geo-Ecology essay by Schweizerbart in November 2017. VII, 163 pages, 17 figures, 12 tables, 17x24cm, 480 g. ISBN 978-3-510-65417-8.

The 21 contributions in this book describe the role soils play for plant, animal and human health. They show that soil- and human health are intricately connected, because healthy soils produce healthy crops, which in turn nourish humans and animals, allowing for their health and productivity.

The book summarizes the current state of research of these important issues and provides a comprehensive treatise of the global importance of soils for humankind.

Copies can be ordered directly from the publisher or from the IUSs Secretariat for EUR 24.90 (paperback). IUSs members may order the book from the Secretariat at a reduced price of EUR 20.00 (minimum 10 copies) – please note that shipping costs will be added to the sales price.


Book on Global Soil Proverbs
Following the very successful publication of Soil Matters – solutions under foot and Soils within Cities – Global Approaches to their sustainable Management, and The Nexus of Soils, Plants, Animals and Human Health published at the end of 2017 by Schweizerbart, IUSs intends to publish a book on Global Soil Proverbs in 2018. The correspond request for contributions was launched in the February Alert no 152 of the IUSs:

Request for contributions to IUSs book on Global Soil Proverbs
Every year on World Soil Day (5th Dec.) the IUSs publishes a book under the umbrella of the International Decade of Soils 2015-2024. So far three books have been published: http://iuss.org/index.php/article_id=667. IUSs members may order the books at a reduced rate.

In 2018 IUSs intends to publish a book on Global Soil Proverbs. Therefore, the editors would like to invite you to contribute to this book. This would be a great opportunity to work together under the umbrella of the International Decade of Soils 2015-2024 and to reflect the variety of soil-related proverbs on the globe. It shall show that the term soil is very commonly used in everyday language and shall help to give this precious resource more visibility and attention.

The guideline for writing a contribution to this book can be found on the IUSs website: https://iuss.boku.ac.at/files/global_soil_proverbs_book_chapter_writing_guideline_final.pdf

If you wish to contribute a chapter, please let us know by sending a Letter of Intent until March 31, 2018 to yangjiao@kangwon.ac.kr and in Cc to iuss@umweltbundesamt.at.

At the time of compiling this Bulletin, 35 letters of intent to submit a chapter on proverbs have been received. We very much appreciate this engagement and are looking forward to receiving the chapters until June 30.

World of Soils
The diversity of soils all over the world is amazing! Imagine all the different soil types in different countries and landscapes showing their particular functions and forms of appearance. All the soil experts cooperating within the world wide framework of the IUSs have collected a huge number of great pictures of soils all over the world.

The IUSs website aims to give insight into the diversity and beauty of the world of soils on our planet. As part of the celebration of the International Year of Soils, IUSs has initiated a collection of beautiful soil pictures of different soil types from all over the world. IUSs Commissions and Working Groups are asked to contribute but pictures from individuals who may wish to share profile pictures and related landscapes are equally welcome!

The width of the pictures should be at least 1000px (landscape) and the lengths of text should be about 250 characters, and include the location, the soil type, given in the World Reference base or Soil Taxonomy, the major properties and functions of the soil.

If you wish to donate to the collection, please send it to the IUSs Secretariat with subject ‘World of Soils’.


Read more: http://www.schweizerbart.de/9783443010904
Have a look at: https://www.iuss.org/index.php?article_id=73

Soil Icon
The Global Soil Icon Contest was launched in December 2017, with the following announcement in the IUSs Alert No. 150:

IUSs Stimulus Fund – Global Soil Icon Contest
Soil is the essence of all terrestrial life, and critical to the delivery of major ecosystem services for human wellbeing and nature conservation. Yet, the term ‘soil’ does not arouse the much deserved excitement or the ‘wow’ moment among general public, civil societies, policy makers, and others. Thus, there is a strong need for a global icon that symbolizes the importance of soil as the elixir of terrestrial life, provider of food, moderator of climate, filter and reservoir of renewable water, habitat for germplasm, inspiration for aesthetic and spiritual activities, source of pharmaceuticals and other materials, archive of planetary and human history, among others. As an example of an icon, the WWF has been extremely successful in using the panda as an iconic symbol for species conservation. What iconic symbol can represent major ecosystem services of soil, while being simple and easy to be comprehended by the general public? Thus, identifying and promoting such a symbol would be a great leap forward.

Thus, IUSs will award 2,500 USD from the Stimulus Fund to the winning soil icon created by Monique Lima de Oliveira and Alessandro Samuel-Rosa (Brazil):

Below please find the description of the Icon, as it was submitted for the contest:

“Aware of the profound importance of soil for human life and nature conservancy, like children who love the soil, we present our idea for a Soil Icon for the International Decade of Soils.

The winning icon will be used during the International Decade of Soils (2015-2024), an initiative launched by the International Union of Soil Sciences to raise awareness of the key roles played by soils in addressing the major resource, environmental, health and social problems humanity is currently facing. Submissions should comprise a vector-based file with the icon and a short explanation of the idea and the author(s) behind (max. 2 pages). Please send your submissions to iuss@umweltbundesamt.at.

Deadline for submissions: 15 March 2018

The IUSs Stimulus Fund Committee will evaluate all soil icon submissions and make recommendations to the Executive Committee. Final decision will be announced by the IUSs President or delegate within one month after the submission date given above.

The results will be announced on the IUSs website. The winner will be informed in writing. The best 12 icons will be displayed on the IUSs website (one per month).

The Soil Icon Contest was simultaneously announced on the IUSs website at: https://www.iuss.org/index.php?article_id=26

A total of 22 interesting soil icons were received. Here, the IUSs Secretariat would like to thank all contestants for their stimulating submissions. The selection committee, comprised of members of the IUSs Executive Committee, decided to award 2,500 USD of the IUSs Stimulus fund to the winning soil icon created by Monique Lima de Oliveira and Alessandro Samuel-Rosa (Brazil):
The main inspiration for our icon is the trajectory of human formation and development, where the child is both the origin and the destination. We envisioned an image that is simple – like a drawing of a child –, yet conceptually complex enough to symbolize the multiple functions and services provided by the soil. A child's drawing can be seen as a universal language that has a strong emotional appeal. As such, the Soil icon that we created likely has the potential to captivate all peoples and thus facilitate the comprehension of the message that it embeds. This is especially important for school-age children, who should be the main focus of soil education activities during the International Decade of Soils.

The complexity of the theme – the soil and the crucial role it plays in most aspects of our lives – is symbolized by exploring different shapes and colors. These were chosen in an attempt to establish a link with aesthetic and spiritual elements of people's cultures. The circular outer shape of the Soil icon symbolizes the Earth. The circle, symbol of divinity and perfection for many peoples, also symbolizes the human alliance and commitment to care for the soil. Through aesthetic and spiritual harmony, the circle should convey the idea of a renewed relationship between mankind and the soil and the Earth as its habitat.

The brown color, being a neutral color, was chosen to symbolize the solid terrain on which humanity treads its particular path, walks continuously and leaves its marks, its historical records. The barefoot marks on solid ground are the footprints of a mother or a father who reenacts with a child its first steps – the origin –, the next steps of mankind – the destination. Together, the footprints on the solid ground symbolize unity, friendship, and mutual respect, all too necessary to make all peoples aware of the importance of the soil and the urgent need for its preservation.

The brown color also symbolizes the soil, a fertile soil, key for food production in a sustainable manner. The necessary fertile soil to guarantee food security and to promote poverty alleviation. Also, the brown color of the soil as a major carbon pool, rich in organic matter, crucial for climate change mitigation by acting as a sink of atmospheric carbon. All other four colors – green, blue, red, and yellow, so common in children's drawings – symbolize the multiple functions and services provided by the soil. The green footprint symbolizes the flora and the atmosphere, the connections of the soil with the vegetable life and the quality of the air that we breathe. The red footprint, red as the color of blood and love, the vital flame, symbolizes the fauna. Together, the green and the red footprints symbolize the connection between the soil and the biosphere, the soil as a source of food, reservoir of biodiversity, the basis for all forms of terrestrial life. The yellow footprint symbolizes the many riches provided by soil, the minerals and nutrients, the antibiotics for human health, the medium for production of materials (wood and fiber) and energy. The blue footprint symbolizes the water, the soil and its connection with the hydrosphere, the soil as a filter and supplier of water for plants, animals and mankind.

The assignment of colors to the footprints is based on the feeling they convey. The adult footprints, in the green and blue colors, both cool colors, convey the sense of calmness, clarity, confidence, credibility, characteristics of the experienced human, of ancestry.

Meanwhile, the child's footprints are colored with warm colors, as a symbol of raw wisdom, vital drive, energy, strength, courage, curiosity. Past and present generations using their wisdom to support the first steps of future generations, helping them to decide what footprints, what historical records they want to leave behind them. Finally, the elements of the Soil icon were only partially filled with colors to symbolize the fluidity and dynamics of the soil, the complex fabric of the environmental processes in which the soil participates, and their consequent fragility in case of misuse and poor management.

After all, who teaches and who learns? Who drives the walk, adults or children? From balance and firmness, to curious and amusing spontaneity, we believe that we all learn together different knowledges, hopeful that the rhythmic communion of the steps, the united hands rehearsed in this Soil icon, will lead us to healthy paths of harmonious coexistence, and to the rescue of the understanding that the soil is also part of us”.

The authors
This Soil icon is the fruit of the joyful partnership between Monique Lima de Oliveira and Alessandro Samuel-Rosa. Monique was born and raised on the outskirts of Rio de Janeiro. An assiduous visitor to the Atlantic Forest, Monique soon learned about the importance of soil for the nature conservation. Monique studied Journalism and Social Sciences, and today is a Ph.D. student in Sociology at Unicamp in Brazil. Alessandro was born and raised in a family farm in South Brazil, where he soon learned about the importance of soil to produce food and biomass. Alessandro studied Agronomy and Soil Science, and today teaches Soil Science at the Federal University of Technology in Brazil.

The winning icon will be used during the International Decade of Soils (2022-2024), an initiative launched by the International Union of Soil Sciences to raise awareness of the key roles played by soils. Read more: https://iuss.org/index.php?article_id=588

In line with one of the activities planned, namely to display the best 12 icons on the IUSS website (one per month), the IUSS Secretariat herewith presents the Global Soil Icon of the month of May 2018:

The Icon was created by Marine Pacé, Quebec/Canada. This main S illustrates one of the major soil processes, i.e. organic matter decomposition: it starts at the top from a living leaf to finish with an arrow pointing out decomposed leaf fragments in the soil. The 5 shape of the arrow reminds the cycles of nutrients and carbon (both above and belowground), with an emphasis on belowground processes (the main part of the arrow is belowground).

The authors
This Soil icon is the fruit of the joyful partnership between Monique Lima de Oliveira and Alessandro Samuel-Rosa. Monique was born and raised on the outskirts of Rio de Janeiro. An assiduous visitor to the Atlantic Forest, Monique soon learned about the importance of soil for the nature conservation. Monique studied Journalism and Social Sciences, and today is a Ph.D. student in Sociology at Unicamp in Brazil. Alessandro was born and raised in a family farm in South Brazil, where he soon learned about the importance of soil to produce food and biomass. Alessandro studied Agronomy and Soil Science, and today teaches Soil Science at the Federal University of Technology in Brazil.

This icon was created by the siblings Odiney and Diego Alvarez-Campos, USA/Costa Rica. It highlights the importance of soil as a filter of water pollutants, a medium for plant growth, food supply, and nutrient cycling.

Read more: https://iuss.boku.ac.at/files/algarez-campos_iuss_global_soil_icon_description.pdf

IUSS participates in ICUS Grant Project ‘TROP-ICSU’
TROP-ICSU stands for Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding. The project aims to improve awareness of climate change and the science behind it among students and the general public by developing teaching aids for teachers and science communication modules for the general public. These educational resources are locally rooted but globally relevant for their science, and are designed to promote interdisciplinary thinking. According to the recommendations of the first meeting in 2017 the implementation team has curated a suite of teaching tools and created a set of teaching toolkits (collection of various tools for teaching a specific topic in one or two regular lecture hours) with detailed step-by-step descriptions on how to use these tools and strategies while teaching topics in various disciplines of Science and Mathematics. These teaching tools and teaching strategies are designed in such a way that in addition to bringing climate-related examples and case studies to the core curriculum, they also enhance conceptual understanding of the topics in basic science and mathematics.
IUSS Fact Sheets and Viewpoints

In late spring 2017 the International Union of Soil Sciences started to provide fact sheets on soil in relation to issues of high importance for society. The fact sheets can be downloaded for free from the IUSS website at http://iuss.boku.ac.at/index.php?article_id=647. Topics covered include soil and climate change, soil degradation and desertification, soil perception of society, soil and water quality, soil and biodiversity, soil governance, soil and health, soil and history as well as soil and food security. The fact sheets are written by well-known experts and are addressed not only to scientists, but also to decision makers and opinion leaders. Comments are always welcome and should be addressed to iuss@umweltbundesamt.at.

The latest Factsheet, published in February 2018 was on Soil and Biodiversity:

Soil and Biodiversity
Prof Rachel Creamer, Soil Biology and biological soil quality, Wageningen University, The Netherlands, and Dr Alberto Orgiazzi, Land Resources Unit, Joint Research Centre, Ispra, Italy

Soil biodiversity reflects the mix of living organisms in the soil. Soil provides the habitat to a wide range of organisms, infact a single gramme of soil may contain millions of individuals and hundred thousand species of bacteria. In addition to the microorganisms (which are not visible by the human eye), the soil also hosts a wide variety of microfauna (less than 0.1 mm): nematodes, tardigrades, rotifers; mesofauna (0.1-2 mm): mites, springtails, enchytraeids, pseudoscorpions and diplura; macrofauna (2-20 mm): earthworms, ants, termites, centipedes, millipedes and woodlice; megafauna (more than 20 mm): burrowing mammals like moles, naked mole-rats and gophers. Soil also supports a wide diversity of plants, fungi and lichens. So how does the soil provide a habitat for such a range of organisms?

The soil is made up of a variety of materials, from the physical structures (peds) which are made up of sand, silt and clay particles, which are bound together and supported by organic matter. Soil pedds come in a variety of sizes and shapes, which allows for air and water pockets to be created between the ped units, these are known as pores. The pore network provides habitat niches of different sizes and resources of food and shelter within the soil. The pore network and soil structure strongly determine the habitat available within a soil and therefore it is essential to ensure that soil is managed in a way that supports this network of pores and pedds. Soil Fauna are also capable of engineering the soil habitat, particularly the macrofauna. Earthworms provide a good example, where they create either vertical or horizontal burrow networks within the soil to access food and these burrows provide new habitats for microorganisms and or microfauna, which often colonise the surfaces of these newly created burrows. The earthworms are also able to support the development of soil structure, by eating the soil and through digestion, they break the particles down and create new structural units in the caste material they excrete.

Soil biodiversity also plays a strong role in supporting many of the processes or functions which take place in the soil. A few examples are:

Primary productivity
Mycorrhizal fungi create symbiotic relationships with plant roots and aid the host plants in acquiring nutrients to support plant growth and development, in response the plant provides the fungi with simple sugars as a food source.

Nutrient cycling
The food web within the soil (who eats who) often contributes to the mineralisation nutrients, for example bacterial-feeding nematodes increases the rate of decomposition and release of nitrogen compounds for plant uptake.

Decomposition of carbon compounds
While soil microbes are responsible for the vast majority of respiration and decomposition in soils, they also need the bulkier organic material to be broken down. Orabatid mites are well known for this process, breaking down the physical leaf into more decomposable material, through fragmentation.


IUSS Viewpoints

In addition to the Factsheets, in the beginnin of each month a Viewpoint on soil issues from the desk of Rattan Lal, IUSS president, was published on the IUSS website:

• Medical Pedology: An Emerging Discipline in Soil Science
• Ex Nihilo Nihil Fit
• Soil: The Hidden Treasure of Nature
• We Are A Soil
• The Glamour of Soil Science
• Soil Degradation: The Case of Human Parasitism

The viewpoints on soil issues can also be watched at the IUSS YouTube channel here: https://www.youtube.com/channel/UCX3cdAuOSzrPxDhEyOdhAqg
Conference and Meeting Reports

3rd Olympiad in Soil Science for School Students in Tbilisi/Georgia

By the initiative of the Agricultural University of Georgia, the Michail Sabashvili Institute of Soil Science, Agro Chemistry and Melioration, the Georgian Society of Soil Science (GSSS) and the Association of Professional Chemists of Georgia, the 3rd Olympiad in Soil Science for school students took place on the 27th of April, 2018. The participants came from all regions of the country. In total, 15 schools and about 70 school students (class level VII-XII) participated in the competition. It took place at the Kakha Bendukidze University Campus, Tbilisi, Georgia.

The main focus group concerned school students who had already learnt about soils in their programs. They had a basic knowledge and were able to take part in the event.

The participants received ten topics from the organizational committee, out of the ten questions they had to write about three.

The winners received their awards in a ceremony by:
1. The Vice Rector of the Agricultural University of Georgia, Prof. Marina Karchava,
2. Professor of the University of Natural Resources and Life Sciences (Vienna, Austria,) Prof. Winfried Blum,
3. Director of the Michail Sabashvili Institute of Soil Science, Agro Chemistry and Melioration of the Agricultural University of Georgia, Academician Tengiz Urushadze.

The aim of the Olympiad:
• Popularization of Natural Sciences (especially Soil Science) among school students;
• Understanding of agrarian disciplines and their role;
• Encouragement to care about ecology and a safe environment.

The winners received awards in a ceremony by:

School students writing their test

A proud winner of the Olympiad

IUSS Alerts December 2016 - May 2017

Information for and from the global soil science community

IUSS Alerts were e-mailed to nearly 9,000 people in over 100 countries. Please forward the IUSS Alerts to your friends and colleagues. Send information for IUSS Alerts to iuss@umweltbundesamt.at. Below are still relevant contributions that appeared in the IUSS Alerts between December 2017 and May 2018.

Soil penetration by earthworms and plant roots

Soil compaction is becoming a prominent problem in agriculture. The mechanics of soil bioturbation by earthworms and plant roots are studied to better understand how soil structure is generated naturally. Models have been developed to understand the similarities and differences in soil penetration by burrowing earthworms and growing plant roots. These models were tested with highly resolved rate controlled penetrometers. In a paper recently published in Vadose Zone Journal, researchers developed a mechanical model for soil bioturbation that can consider similarities and differences between earthworms and plant roots based on different soil penetration rates.

Perennially-based practices improve soil hydrology

Agricultural producers around the world are increasingly dealing with periods of too little or too much rainfall, contributing to droughts and floods, as well as crop yield declines and soil degradation. It is often suggested that practices that keep soil covered year-round can increase soil water storage that potentially negate such outcomes, but the degree to which different approaches can deliver water benefits has not been well quantified. In the September-October issue of Soil Science Society of America Journal, researchers conducted a global meta-analysis comparing agricultural management impacts on two soil water properties associated with increasing the water stored in soils: total porosity and water retained at field capacity.

Read more:

The Global Soil Organic Carbon Map (GSOCmap)

The GSOCmap provides users with very useful information to monitor the soil condition, identify degraded areas, set restoration targets, explore SOC sequestration potentials, support the greenhouse gas emission reporting under the UNFCCC and make evidence-based decisions to mitigate and adapt to a changing climate.

Read more:
Global Soil Security
Global Soil Security is concerned with maintaining and improving the world’s soil resource to produce food, fibre and freshwater, maintain the biodiversity and ecosystem services and contribute to human health. On World Soil Day 2017 a soil webinar has been launched.
Read more: https://globalsoilsecurity.com/

Soil Power! The Dirty Way to a Green Planet
Regenerative agriculture as a solution for climate change. Now scientists are documenting how sequestering carbon in soil can produce a double dividend: It reduces climate change by extracting carbon from the atmosphere, and it restores the health of degraded soil and increases agricultural yields. Many scientists and farmers believe the emerging understanding of soil’s role in climate stability and agricultural productivity will prompt a paradigm shift in agriculture, triggering the abandonment of conventional practices like tillage, crop residue removal, mono-cropping, excessive grazing and blanket use of chemical fertilizer and pesticide.
Read more: https://www.nytimes.com/2017/12/02/opinion/sunday/soil-power-the-dirty-way-to-a-green-planet.html

The zoo beneath our feet: We’re only begin ning to understand soil’s hidden world
The gardener has a long, touchy-feely relationship with the soil. As every good cultivator knows, you assess the soil by feeling it: Is it dark and crum bly, is there an earthworm or beetle in there, is it moist, and when you smell it, are you getting that pleasant earthy aroma? All these signs are reassuring, and have been through the ages, but they are mere indicators of something much greater and infinitely mysterious: a hidden universe beneath our feet.

Soil experiments for children
The Soil Lab Activity Book is an educational tool for teachers, children and anyone who wishes to learn more about this year’s theme. This series presents six simple science experiments to do at home or at school with children. They provide a fun way to introduce children of all ages to basic scientific soil concepts and reveal many of the reasons why caring for our soils means caring for our future. Available in English and Spanish.
Read more: http://www.fao.org/3/o-i7957e.pdf
[From: Global Soil Partnership Newsletter #14 | Are you ready to celebrate World Soil Day?]
Ewart A. FitzPatrick (1926 - 2018)
By Prof. Rosa M. Poch
Dr. Ewart A. FitzPatrick has been internationally recognised for his great contributions to soil science, especially soil genesis, classification and micromorphology. Throughout over 50 years of his scientific activity he published a large number of original papers and widely known textbooks on soil science, from which several were re-edited in English and translated in Spanish. His creative textbooks have greatly contributed to the possibilities that soil micromorphology can offer. Also his case studies, dealing with rock weathering, glacial and periglacial features in soils, soil morphology, as well as soil classification and genesis, brought important original contributions. Very recently he prepared brilliant tutorial CD-ROMs: ‘Interactive Soils’ (1999), ‘Horizon Identification’ (2003), ‘Soil Microscopy and Micromorphology’ (2005).
Dr. FitzPatrick made great effort to disseminated the editorial ‘Blurring disciplinary boundaries’ by Gordon Mc-Bean, and Alberto Martellini on the new international Science Council website. Following the decision to merge in October 2017 at the Joint Meetings of IUSS and ISCS, members of IUSS and ISCS will be asked to vote in an electronic General Assembly to finalize the legal implementation of the ICSU-ISSC Merger Agreement. This electronic General Assembly will be held 11-16 May 2018.
Read more: http://science.sciencemag.org/content/358/6366/975.full
[Source: IUGG Electronic Journal Volume 18 Number 1 (1 January 2018)]

LUCAS Soil, the largest expandable soil data set for Europe
LUCAS Soil represents the largest harmonized open-access dataset of topsoil properties available for the European Union. It was developed as an expandable resource, with the possibility to add new properties and sampling locations during successive sampling campaigns. Approximately 45,000 soil samples have been collected from two time-periods, 2009-2012 and 2015. Data are available to the scientific community and decision makers, thus contributing to the study, monitoring and sustainable use of soil resources and soil biodiversity, as well as helping to inform policies regarding ecosystem services. Science magazine published the editorial “Towards a Global Earthworm Census” by Dr. FitzPatrick, who among others, have important contributions to soil micromorphology. He was author of more than 60 papers mainly in international journals and books, and participated in many international congresses, often as invited speaker. For his important contributions to soil micromorphology he was awarded in 2006 the Kubiena Award of the IUSS. Herman Mühler was not only an excellent scientist, but moreover in the first place a warm and social person.

International Science Council
The new merged organization – the International Science Council – will be launched at a founding General Assembly in Paris, France from 3 to 5 July 2018. The ISC will build on the legacy of the earlier organisations. By Prof. Rosa M. Poch
Dr. FitzPatrick made great effort to disseminated the editorial ‘Blurring disciplinary boundaries’ by Gordon Mc-Bean, and Alberto Martellini on the new international Science Council website. Following the decision to merge in October 2017 at the Joint Meetings of IUSS and ISCS, members of IUSS and ISCS will be asked to vote in an electronic General Assembly to finalize the legal implementation of the ICSU-ISSC Merger Agreement. This electronic General Assembly will be held 11-16 May 2018.
Read more: http://science.sciencemag.org/content/358/6366/975.full
[Source: IUGG Electronic Journal Volume 18 Number 1 (1 January 2018)]

Aapresid is distinguished as Soil Conservation Champion by FAO
This award is to acknowledge institutions’ trajectory and achievements in its role as ‘soil guardians’. The GLINNA World Soil Prize is granted by the Food and Agriculture Organization of the United Na tions (FAO) whose slogan is ‘the care of the planet begins with the ground’. The President of the Argentine No till Farmers Association (Aapresid), Mr. Pedro Vignaе, participated in the World Soil Day ceremony held on December 5th in Rome. “This recognition is to the Argentine farmers whose agriculture is 91% based on No Till”, said the President of Aapresid in his speech. “This positions the No Till system agriculture as a referent in soil conservation, so this sustainability dialogue turns us into natural resisible protectors who provide more opportunities for interaction, dialogue and joint work”, said Santiago Nocelli Pac, Manager of Aapresid Prospective Program, and added: “They do not reward us only for producing more, but for producing and conserving”.

The Global Soil Organic Carbon Map (GSOc-map)
The Global Soil Partnership (GSP) and the Intergovernmental Technical Panel on Soils (ITPS) launched a global endeavor to develop the Global Soil Organic Carbon map (GSOc-map) using a country-driven approach as part of the Global Soil Information System (GLOISIS). GSP provided technical support and on-the-job training to most countries to produce national SOC maps according to standardized specifications. The Global Soil Organic Carbon map V1.0 is an important stepping stone to better know the current Soil Organic Carbon stock stored beneath our feet and soils’ potential for further sequestration. The data are also available as Geotiff. Read more: http://www.fao.org/world-soil-day/global-soil-organic-carbon-map/en/
The Surprising Life Inside Frozen Soil

In many places across the U.S., winter soil is blanketed with frost and snow—a seemingly lifeless environment. Although the warmth of spring is stirring, beneath the surface is a different story. Matthew Wallenstein, associate professor of ecosystems science and sustainability at Colorado State University, says there is a wealth of activity as microbes exchange nutrients with soils and plants in frozen soils. He’s joined by Colleen Iversen, ecosystem ecologist and professor of ecosystems science and sustainability at the University of Adelaide. As a researcher some of Odeh’s best known work began with his PhD, which he undertook while based at the University of Adelaide. He was one of the first to apply the fuzzy sets theory to mapping the soil continuum as a continuous land surface body which has been widely used and cited by many researchers in the field. During his time at the university, he produced the baseline soil data sets and maps for cotton growing regions and also laid out a suite of spatial prediction methods which now are regularly used for Digital Soil Mapping. Odeh was one of the early pioneers of Pedometrics and GIS teaching at the University of Sydney. He was an enthusiastic member of Soil Science Australia, including being President of the NSW branch in 2010. He was also an Associate Editor to some of the top-ranking soil science journals including European Journal of Soil Science and Geoderma. He is survived by his devoted wife and four daughters. (By Damien Field et al.)

First global atlas of the bacteria living in your dirt

What lives in your dirt? University of Colorado Boulder researchers are one step closer to finding out after compiling the first global atlas of soil bacterial communities and identifying a group of around 500 key species that are both common and abundant worldwide. The new study, which appears today in the journal Science, narrows down the immense diversity of soil-dwelling bacteria to a ‘most wanted’ list that will guide future research into the study and manipulation of microorganisms that affect nutrient cycling, soil fertility and other important ecological functions. Read more: https://www.sciencedaily.com/releases/2018/01/180118142728.htm

Pedotransfer functions bring new life to Earth system modeling

A recent paper in Reviews of Geophysics describes how currently available soil information furthers our understanding of soil processes and their integration in Earth system modeling. Read more: https://eos.org/editors-vox/pedotransfer-functions-bring-new-life-to-earth-system-modeling

Scientists peek inside the ‘Black Box’ of soil microbes to learn their secrets

Microbes create fertile soils, help plants grow, consume and release carbon dioxide, oxygen and other vital elements. But they do it all anonymously. Scientists haven’t identified most of these species and don’t know much else about them, either, such as “what they’re doing in soil, how they’re surviving, what they look like”. Read more: https://www.npr.org/sections/science/2018/01/18/578924748/scientists-peek-inside-the-black-box-of-soil-microbes-to-learn-their-secrets

Plants increase flower production within a day of soil nutrient application

The molecular mechanisms enabling plants to quickly adapt their rate of flower production in response to changing nutrient levels in soil have been revealed by researchers at the Sainsbury Laboratory. A team of plant scientists examined the processes through which plants are able to pass on information about the external environment from the roots to the new shoots. The results showed that increased soil nutrients lead to a response in stem cells in the shoots in less than 24 hours. Read more: https://phys.org/news/2018-01-production-day-soil-nutrient-application.html

Root discovery may lead to crops that need less fertilizer

Bean plants that suppress secondary root growth in favor of boosting primary root growth forge greater soil volume to acquire phosphorus, according to researchers, who say their recent findings have implications for plant breeders and improving crop productivity in nutrient-poor soils. Read more: https://www.sciencedaily.com/releases/2018/01/180118142650.htm

Career recognition for Soil Science Australian

Inakwu Odeh (1956-2018)

Associate Professor Inakwu Odeh passed away on the 4th of February 2018. Odeh, as he was known to many, was the Sesquiennial Associate Professor in Rural Spatial Information Systems (2004-2018) in the School of Life & Environmental Sciences at the University of Sydney. As a researcher some of Odeh’s best known work began with his PhD, which he undertook while based at the University of Adelaide. He was one of the first to apply the fuzzy sets theory to mapping the soil continuum as a continuous land surface body which has been widely used and cited by many researchers in the field. During his time at the university, he produced the baseline soil data sets and maps for cotton growing regions and also laid out a suite of spatial prediction methods which now are regularly used for Digital Soil Mapping. Odeh was one of the early pioneers of Pedometrics and GIS teaching at the University of Sydney. He was an enthusiastic member of Soil Science Australia, including being President of the NSW branch in 2010. He was also an Associate Editor to some of the top-ranking soil science journals including European Journal of Soil Science and Geoderma. He is survived by his devoted wife and four daughters. (By Damien Field et al.)

Inakwu Odeh was born thirty years ago due to the interest of a group of farmers who worried about the soil erosion. They decided to build collaborative solutions by adopting the technology of conserva
tion agriculture (No till or Zero Tillage) adapting their local machinery for that purpose, sharing their experiences and researching with a strong spirit of disruption and innovation to carry out its mission of sustainability.

The Glinka World Soil Prize aims to maintain the momentum generated by the International Year of Soils in 2015. The name of the award is derived from Konstantin Glinka (1867-1927) who was a Russian soil scientist. He was credited for contributing to understanding the principles of the geographic distribution of the soil resources and for his extensive exploration activities, mapping and evaluation of vast areas of Siberia, the Far East and Central Asia, as well as for his important studies in mineralogy, chemistry and paleopedology.

[Source: Note from Aapresid by January 10, 2018]

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Human activity and related land use change are the primary causes of accelerated soil erosion, which has substantial implications for nutrient and carbon cycling, land productivity and in turn, worldwide socio-economic conditions. In a recent published article in Nature Communications, we present an unprecedentedly high resolution (250 × 250 m) global potential soil erosion model, using a combination of soil sensing, GIS modeling and census data. We challenge the previous annual soil erosion reference values (published in the literature), as our estimate of 35.9 Pg yr⁻¹ of soil eroded in 2012, is at least two times lower. Moreover, we model the spatial and temporal effects of land use change between 2001 and 2012 and the potential offset of the global application of conservation practices. Our findings indicate a potential overall increase in global soil erosion driven by cropland expansion.

Read more: http://fao.msfcus.com/s/1mbRtf52NhGwWrs6IYai/wv

#SoilPollution #Photo contest

The UN FAO’s Global Soil Partnership on the occasion of the Global Symposium on Soil Pollution (GSSOP18) is organizing an online photo contest as a pre-event. The theme of the contest is ‘Soil Pollution’ and will serve to increase awareness and encourage people to take action against the hidden reality of soil pollution, which aggressively impacts human health, food safety and security, and the environment. Take a picture and uncover the reality of soil pollution, which aggressively impacts human health, food safety and security, and the environment.

Read more: http://fao.msfcus.com/s/1mbRtf52NhGwWrs6IYai/wv

#SoilPollution #global-soil-erosion

Net erosion and sediment transport using WaTEM/SEDEM

The JRC in collaboration with the University of Basel and the Université Catholique de Louvain have quantified the potential spatial displacement and transport of soil sediments due to water erosion at European scale. Long-term averages of annual soil loss and deposition rates were computed by means of the extensively tested spatially distributed WaTEM/SEDEM model. According to a recent research study in Europe, the estimated sediment yield totals about 164 ± 13 Tg yr⁻¹. The Sediment Delivery Ratio (SDR) i.e., the ratio between sediment yield (SY) and gross erosion, indicates that the sediment routed down the hillslopes to the riverine system accounts for 15.3% of the total eroded soil. Further improvement of the calibration scheme in the model transport parameter is foreseen to better reconcile the good agreement between predicted and measured sediment yield. The net erosion and sediment transport data are available (100m resolution) in ESDAC.


G2 model and regional erosion data

G2 is a quantitative model, mapping soil loss (G2los module) and sediment yield (G2sed module) on month-time intervals, designed to run in a GIS environment. A functional combination of G2 with Hakanson risk index has led to the introduction of a three module serving as a joint tool to assess multiple hazard, including soil erosion risk. According to a recent review, G2 is designed to produce regional/local erosion assessments on monthly time-step. The data (monthly erosion rates plus other layers) are available for all 5 European application areas: Cyprus, Korce region (AL), Crete island (GR), Tirana (AL) and Strymonas/Struma catchment (GR/BG).


European Landslide Susceptibility Map version 2 (ELSUS v2)

This new update of the European Landslide Susceptibility Map shows levels of spatial probabil- ity of landslide occurrence covering 37 European countries at 200 m cell size. The map has been generated through spatial multi-criteria evaluation modelling using pan-European datasets on slope angle, shallow subsurface lithology and land cover, along with more than 149,000 landslide locations for model calibration, and map validation and classification. ELSUS v2 has been produced jointly by BGR (Hanover, Germany), CRN-IRPI (Perugia, Italy), CNRS-EDST (Strasbourg, France) and JRC (Ispra, Italy), and is freely available for download from the European Soil Data Centre (ESDAC).

Read more: https://esdac.jrc.ec.europa.eu/content/european-landslide-susceptibility-map-elsus-v2

Soil GHG fluxes using LUCAS soil-DayCent

We ran the state-of-the-art biogeochemistry model DayCent on approximately 8,000 soil sampling locations, classified as arable, from the most extensive harmonized land use and soil inventory network for the EU (LUCAS survey). The model was calibrated using measured soil characteristics and complemented with updated datasets, including a RCP4.5 climate change scenario. Our main idea was to quantify the net soil GHG fluxes, simulating two representative mitigating practice options starting in 2016, in comparison with a baseline of current agricultural practices. The first scenario was an integrated crop residue retention and lower soil disturbance management (IRM), while, the second saw the introduction of N fixing cover crops incorporated before the successive main crop (CC), generally referred to as ‘green manure’. JRC has published a study in Nature Climate Change showing that soils can be a net sink of greenhouse gases through increased storage of organic carbon. The data are available in ESDAC.

Read more: https://esdac.jrc.ec.europa.eu/content/soil-ggh-fluxes-using-lucas-soil-daycent

Soil health practices for mitigating natural disasters

FEMA reports that more than 25 million Americans – almost 8 percent of the population – were affected by major disasters in 2017. From severe flooding in Puerto Rico and Texas to mudslides and wildfires in California, major natural disasters in 2017 cost over $36 billion nationally. There is no one-size-fits-all solution to preparing for natu- ral disasters. Steps for planning ahead will engage our nation’s infrastructure, emergency respond- ers, private citizens and members of every level of government. By building healthier soils, soils will protect critical infrastructure for all Americans when disaster events occur. Natural disasters impact us all. Improving the health of our nation’s soils is one step we can take to prepare for and ultimately mitigate those impacts.

Read more: https://www.usda.gov/media/blogs/2018/02/28/soil-health-practices-mitigating-natural-disasters?org=1364&lvl=100&ite=1135&lea=1401666&ct=0&par=1&trk=0&ural-disasters?org=1364&lvl=100&ite=1209&lea=140666&ctr=0&par=1&trk=0

UK farmers to be given first ever targets on soil health

A new bill will be brought before parliament this year mandating, for the first time, measures and targets to preserve and improve the health of the UK’s soils, amid growing concern that we are sleepwalking into a crisis of soil fertility that could destroy our ability to feed ourselves. The UN has warned that the world is on course for “sleepwalking into a crisis of soil fertility that could destroy our ability to feed ourselves. The UN has warned that the world is on course for a potential overall increase in global soil erosion driven by cropland expansion. We ran the state-of-the-art biogeochemistry model DayCent on approximately 8,000 soil sampling locations, classified as arable, from the most extensive harmonized land use and soil inventory network for the EU (LUCAS survey). The model was calibrated using measured soil characteristics and complemented with updated datasets, including a RCP4.5 climate change scenario. Our main idea was to quantify the net soil GHG fluxes, simulating two representative mitigating practice options starting in 2016, in comparison with a baseline of current agricultural practices. The first scenario was an integrated crop residue retention and lower soil disturbance management (IRM), while, the second saw the introduction of N fixing cover crops incorporated before the successive main crop (CC), generally referred to as ‘green manure’. JRC has published a study in Nature Climate Change showing that soils can be a net sink of greenhouse gases through increased storage of organic carbon. The data are available in ESDAC.

Read more: https://esdac.jrc.ec.europa.eu/content/soil-ggh-fluxes-using-lucas-soil-daycent

Hidden ‘rock moisture’ possible key to forest response to drought

A little-studied, underground layer of rock may provide a vital reservoir for trees, especially in times of drought, report scientists. The study, published in the journal Proceedings of the Na- tional Academy of Sciences (PNAS), looked at the water stored inside the layer of weathered bedrock that lies under soils in mountain forest eco- systems. This transitional zone beneath soils and above groundwater is often overlooked when it

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comes to studying hydrologic processes, but researchers found that the water contained in the fractures and pores of the rock could play an important role in the water cycle at local and global levels. Researchers found that water in bedrock can sustain trees through droughts even after the soil has become parched.


How Dirt Can Clean the Air
Soil management offers huge potential for keeping carbon emissions in the ground. A paper published this week in the journal Scientific Reports estimates that improved land-use practices could increase the amount of carbon stored in the top layer of soils worldwide by between 0.9 and 1.85 billion metric tons each year.

Read more: https://www.scientificamerican.com/article/how-dirt-can-clean-the-air/

Cost of agricultural productivity loss due to soil erosion in the European Union: From direct cost evaluation approaches to the use of macroeconomic models
Much research has been carried out on modelling soil erosion rates under different climatic and land-use conditions. Although some studies have addressed the issue of reduced crop productivity due to soil erosion, few have focused on the economic loss in terms of agricultural production and gross domestic product (GDP). In this study, soil erosion modellers and economists come together to carry out an economic evaluation of soil erosion in the European Union (EU).

The data are available in ESDAC.

Special issue on ‘Soil Hydrology in Agriculture’—request for contributions
Since IUSS supports the exchange of soil scientists with other disciplines we like to announce that a special issue on ‘Soil Hydrology in Agriculture’ will be published by Water (ISSN 2073-4441), an open access journal of MDPI (http://www.mdpi.com/journal/water). This special issue is now open to receive contributions from comprehensive review articles and complete peer review documents. The special issue aims to link soil scientists, especially those working on issues related to soil hydrology and agriculture, with the community of Water working on water science and technology, and water resources management.

Read more: http://www.mdpi.com/journal/water/special_issues/soil_hydrology_agriculture

The World Bank is working on an assessment of Human Capital in Africa in the field of soil expertise
We ask all the soil scientists living and working in Africa to participate in the survey to create a roster of experts in order to assess the extent and level of the Human Capital available, as well as encourage the local sourcing of expert services by the development agencies and agribusinesses. We particularly encourage the soil scientists currently not working as soil experts to participate in the survey in order to assess the level of employment within this field of expertise. Kindly take a few minutes to complete this short questionnaire and invite your colleagues to do so.

Please click here to complete the questionnaire in English. Click ici s’il vous plaît a remplir le questionnaire en Français

For more information, please click aqui para completar o questionário em Português.

Call for Entries – Best Film on the Topic of Soil 2018
During the Innsbruck Nature Film Festival (INFF), an international film competition on nature and environment held from October 9-12 in Innsbruck (Austria), a special prize worth 2,000 € will be awarded for the best film on the topic of soil. All films submitted to the INFF with contributions to the following topics will be assessed: soil quality, soil function, land use, landscape, soil threats, protection of soil, soil ecology, soil biodiversity and food security.

The deadline for applications is July 15, 2018.

Read more: http://www.inff.eu/en/

Report sounds alarm on soil pollution
Soil pollution poses a worrisome threat to agricultural productivity, food safety, and human health, but far too little is known about the scale and severity of that threat, warns a new FAO report released at the start of a global symposium. Industrialization, war, mining and the intensification of agriculture have all left a legacy of soil contamination across the planet, while the growth of cities has seen soil used as a sink for ever greater amounts of municipal waste, says a Soil Pollution: A Hidden Reality. But even though agricultural intensification, industrial output, and urbanization continue at a rapid pace, no systematic assessment of the status of soil pollution at global level has ever been undertaken, FAO’s new report notes.


Land degradation threatens millions, according to first-ever land health report
Most climate science focuses on the atmosphere and the ocean, but a new report puts the health of Earth’s land front and center – and the diagnosis isn’t good. According to the first-ever land health report, produced by scientists with the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, or IPBES, some 75 percent of the planet’s land areas are significantly degraded. The land’s ill health threatens billions of people and the ecosystem services those people rely on.

Read more: https://www.upi.com/Land-degradati

Update on European Landslide Susceptibility Map version 2 (ELSSUS v2)
In addition to the landslide susceptibility map and the related confidence level map previously available, ancillary datasets prepared for the spatial multi-criteria evaluation model used to produce ELSSUS v2, including climate-physiographic regions,
Can Dirt Save the Earth?
Agriculture could pull carbon out of the air and into the soil — but it would mean a whole new way of thinking about how to tend the land.

We have no idea how much microplastic is in Australia’s soil (but it could be a lot)
Microplastics in the ocean, pieces of plastic less than 5mm in size, have shot to infamy in the last few years. Governments and businesses targeted microbeads in cosmetics, some were banned, and the world felt a little better. Dealing with microbeads in cosmetics is a positive first step, but the reality is Microplastics in soil may be a far greater problem. Norwegian research estimates that in Europe and North America, between 110,000 and 730,000 tonnes of microplastic are transferred to agricultural soils each year.
Read more: http://theconversation.com/we-have-no-idea-how-much-microplastic-is-in-australias-soil-but-it-could-be-a-lot-96858

6000 farmers can’t be wrong on how to end climate war politics
And Australia’s National Soils Advocate Major General Michael Jeffery says more than 6000 farmers have so far agreed with his theory on how to call a truce on the so called decade-long ‘climate wars’. His battle-plan to broker political peace involves starting with the grass roots impacts that schemes like carbon tax can have on Australia’s farmers; rather than making them an afterthought of public policy, and then to wear the brunt of increased costs. A strategic map to political victory has been detailed in Major General Jeffery’s latest report, ‘Restore the Soil: Prosper the Nation’. https://www.farmonline.com.au/story/5378121/6000-farmers-cant-be-wrong-on-how-to-end-climate-war-politics/5373

Why This Dust Storm in India Turned Deadly
Dust storms are an annual weather pattern seen in northern part of India. The scale and intensity of this most recent storm, however, surprised officials on the ground. It stretched from the western state of Rajasthan to the eastern state of Uttar Pradesh and hit Delhi, which lies between them.

Upcoming Conferences and Meetings

2018

LandCare For The Future – The meeting point for educators and students
16-18 July, 2018, Santiago de Compostela, Spain. The overall objective of this conference is to improve educational and training capacities in relation to Ecological Restoration. This is necessary to preserve our environment and also to fulfill the demands of an emerging labour market and create novel job opportunities.
Read more: http://www.landcareforfuture.com/

WASM 2018 – International Workshop on Archaeological Soil Micromorphology
1-3 August 2018, Brussels, Belgium. The workshop will follow the tradition of the previous workshops: an informal meeting where participants are invited to bring their thin sections and where microscopy time and the exchange of ideas and experience prevail.
Read more: http://uuss.boku.ac.at/files/wasm_2018_circular1.pdf

21st 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.21wcss.org or contact Flavio Camargo, Vice President Congress, at fcamargo@ufrrgs.br

Second International Young Scientists Forum on Soil and Water Conservation
27-31 August 2018, Moscow, Russia. This forum will address challenges/actions of soil and water management in the changing world, Climate change and human impacts as drivers of erosion, sediment dynamics, and river morphology transformation.
Read more: http://www.eng.geogr.msu.ru/WSSCW/home.php

British Society of Soil Science 2018 Annual Conference ‘Soils and Sustainable Development Goals’
4-5 September 2018, Lancaster, United Kingdom. Soils are crucial for sustainable development, and healthy soils are central to achieving many of the United Nations Sustainable Development Goals. Featuring keynote speakers addressing issues including Soils and Food Security, Climate Change and Health and Water Quality the conference will provide an opportunity to focus on soils and sustainable development.
Read more: https://www.soils.org.uk/node/1175

Conference ‘Soils genesis and evolution in landscape’
6-7 September 2018, Warsaw, Poland. Read more: https://sites.google.com/site/spsesgw/home

SER Europe Conference 2018
Restoration in the Era of Climate Change
9-13 September 2018, Reykjavik, Iceland. The overall objective of this workshop is to discuss educational and training capacities on land restoration in order to a) contribute to a more resilient environment through sustainable management and meet international commitments on land restoration and b) to fulfill the demands of an emerging labour market with important implications for rural development (multiplicative effect on green economy).
Read more: https://ser2018.org/

‘Utilizing potential of soil and land resources: Key roles of science and effective policy’
September 10-14, 2018, Vukovar, Croatia. This Congress intensively aims to provide an advanced scientific knowledge in soil and land management, covering all the main areas of soil science, from soil genesis and classification to soil quality and capacity for food production. This event will provide a variety of opportunities to present and exchange ideas and expertise in soil science and land management that the soil science community may offer to educational institutions and academia, businesses and policy makers, gathered so far in interdisciplinary research. We’ll try to gain a well developed perspective in application of innovative and advanced technologies related to soil functions in different fields of human activities: agriculture, forestry, environment, waste management, civil engineering and other.
Read more: http://www.tloznanstvo.eu/kongres/

International field workshop WRB soil classification 2018
September 16 –23, 2018, Cluj-Napoca, Romania. A field trip into a pedological mosaic of Transylvania is proposed for the 2018 workshop. The soil pattern is imposed by a varied relief starting from lowlands, with extensive alluvial terraces, to tablelands and mountains. During the workshop, we will experience a diversity of soils (approximately 20 soil profiles) that include Chernozems, Phaeozems, Luvisols, Cambisols, Technosols and soils with archeological interest formed in Roman Empire period heritage sites. Registration and payment closes 31 July 2018.
Read more: https://sites.google.com/view/wrb-romania2018

21st ISTRO Conference 2018
September 24-27, 2018, Paris, France. The International Soil Tillage Research Organization (ISTRO) is an international association whose objective is to stimulate research on tillage and no till, cooperation and, more broadly, to contribute to soil protection and to improve soil quality. The scientific topics during the conference will focus on advances in soil structure characterization, soil compaction, biogeochemical processes and carbon sequestration, with a special interest on soil ecology and ecosystem services. Equipment strategies will also be discussed with soil tillage strategies, smart farming, tires and tillage equipment design.
Read more: http://istro2018.webistem.com

October 24-26, 2018, Sofia, Bulgaria. The objective of the event is to link traditions and innovations in international and local experience with forest ecosystems, their resources, services, functioning and management for social wellbeing.
Read more: http://fri.bas.bg/en/international-scientific-conference-90-years-forest-research-institute-for-the-society-and-nature/
New Publications

IUSS book The Nexus of Soils, Plants, Animals and Human Health
Edited by Bal Ram Singh, Michael J. McLaughlin and Eric Brevik on behalf of the IUSS; Published as GeoEcology essay by Schweizerbart in December 2017. VII, 171 pages, 101 figures, 22 tables, 17x24cm, 480 g. ISBN 978-3-510-65417-8, price paperback: 24.90 €.

The 21 contributions in this book describe the role soils play for plant, animal and human health. They show that soil- and human health are intricately connected, because healthy soils produce healthy crops, which in turn nourish humans and animals, allowing for their health and productivity.

Soil quality directly influences the quality and quantity of food that can be produced, as soils provide essential macro- and micronutrients and attenuate environmental pollutants. On the other hand, these same pollutants, thus concentrated in soils, may cause soils to become toxic and degraded. Soils (and their crops) may also be responsible for exposure to pests and pathogens, while, at the same time, providing drug substances and may even suppress diseases. Soil quality is vital on a global scale, as more than 800 million people around the world are undernourished, implying that their intake of food is insufficient to meet their daily energy needs, and the deficiency of essential micronutrients is even more widespread. Nearly one third of the world’s population is affected by zinc deficiency, while iron deficiency affects nearly 3 billion people. Climate change has been shown to affect animal and human health, and soils are intricately linked to the atmosphere by being both a source and sink of greenhouse gases. Soils are the largest active terrestrial reservoir of organic carbon and its sequestration in soils can be enhanced by improved management practices.

The book summarizes the current state of research of these important issues and provides a comprehensive treatise of the global importance of soils for humankind.

Copies can be ordered directly from the publisher or from the IUSS Secretariat for EUR 24.90 (paperback). IUSS members can order it from the Secretariat for a reduced price of EUR 20.00 (minimum 10 copies) – please note that shipping costs will be added to the sales price.

Read more: www.schweizerbart.de/publications/detail/isbn/9783510654178

Essentials of Soil Science. Soil formation, functions, uses, and classification (World Reference Base, WRB)
By Winfried Blum; Schad, Peter; Nortcliff, Stephen; will be published 1 January 2018 by Schweizerbart. 171 pages, 101 figures, 22 tables, ISBN 978-3-443-01090-4, price paperback 27.90 €.

This book is an introduction to soil science and describes the development of soils, their characteristics and their material composition as well as their functions in terrestrial and aquatic environments. Soil functions include the delivery of goods and services for the human society, such as food, clean water, and the maintenance of biodiversity.

The book is profusely illustrated with many coloured figures and tables to accompany the text and ease its understanding. Particularly, the chapter on soil classification, based on the World Reference Base for Soil Resources (WRB), includes numerous coloured pictures to facilitate understanding the characteristics of particular soil types. Chapters on soil protection and remediation as well as on soil monitoring and the history of soil sciences conclude the book together with a very comprehensive alphabetical index, allowing for a quick and easy orientation about the most important terms in soil sciences.

The book addresses all those, who want to orient themselves about soils, their functions, their importance in terrestrial and aquatic environments and their contribution to the actual and future development of the human society, such as teachers, practitioners and students in the fields of agriculture, forestry, gardening, terrestrial and aquatic ecology and environmental engineering, and of course, beginning students of soil science.

Read more: http://schweizerbart.com/9783443010904
Phytoremediation of Environmental Pollutants
Phytoremediation aids to augment bioremediation as it uses broad range plants to remediate soil, sediment, air, water and land, which have been contaminated with toxic metals, organic, pesticides and radionuclides. This book serves in disseminate detailed up to date knowledge regarding to the various aspects of phytoremediation and plant-microbe interaction. The book highlights process and the various aspects of phytoremediation and plant-microbe interaction. The book highlights process and the various aspects of phytoremediation?


Landscapes transformations in the context of soil development, land use, and climate
A comparison of marginal areas in Jordan, Mexico, and Germany
By BernhardLucke. Published in December 2017 by Bornträger Science Publishers, Volume 26 in the series Relief Baden Palaekonima, 199 pages, 70 figures, 14 tables, 17x24cm, ISBN 978-3-443-09026-5, price paperback 49.90 €.
The author compares soil development and sediments (soilscapes) in marginally productive areas of Jordan, Syria, Mexico, and Germany with the aim to conduct systematic comparisons of patterns at different scales. The idea of comparing research areas on three continents partly followed earlier investigations considering long-range teleconnections of past environmental changes in Jordan and Mexico. Soils in these countries were often considered degraded, but land use histories in the Americas differ significantly from the Fertile Crescent. In this context, climate variations can have identical detrimental impacts as intense land use. Volcanic eruptions, earthquakes, or cosmic impacts could play a role in climatic extremes and thus the deposition or erosion of sediments, and might represent a link of environmental changes on a global scale. The publication addresses researchers in geoarchaeology, soil science, soil geography, geomorphology, and environmental history. As it discuses the potential impact of climate change, it is also relevant to geologists, farmers and their re-search institutes, students and scholarly libraries.
Read more: http://www.schweizerbart.de/9783443000265

Improving Crop Estimates by Integrating Multiple Data Sources

Improving Crop Estimates by Integrating Multiple Data Sources assesses county-level crop and cash rents estimates, and offers recommendations on methods for integrating data sources to provide more precise county-level estimates of acreage and yield for major crops and of cash rents by land use. This report considers technical issues involved in using the available data sources, such as methods for integrating the data, the assumptions underpinning the use of each source, the robustness of the resulting estimates, and the properties of desirable estimates of uncertainty. Read more: https://www.nap.edu/catalog/24892/improving-crop-estimates-by-integrating-multi-
data-sources

The Soils of Turkey
This book compiles all available and relevant in-
formation concerning the soils of Turkey, including the soil survey studies conducted by universities and governmental institutes from the early 1950s until today. Recent findings and advances include the description and analyses of new profiles from some parts of the country by the chapter authors; reflecting the latest version of the World Reference Base (WRB) soil system, they produce a refined soil map. The book offers valuable guidance on soil manage-
ment for planners of agricultural strategies, land management experts concerned with terrestrial carbon management (soil-sequestered and bio-
mass carbon) and climate change mitigation, and educators concerned with raising awareness for the long-neglected significance of Turkey’s soils.

Pictorial Atlas of Soilborne Fungal Plant Pathogens and Diseases
By Tsuneo Watanabe. Published February 8, 2018 by CRC Press, 276 pages, 100 color & 26 B/W illus-
trations, ISBN 9781138294592, price hardback GBP 115.00.
This tome describes the soilborne fungal diseases caused by Oomycetes, Zygomycetes, Ascomycetes, Basidiomycetes, and Deuteromycetous (An-
amorphic) fungi. Soilborne fungal diseases are sig-
ificant as both environmental and agricultural problems, yet it is difficult to understand the ecol-
ogy of pathogenic fungi and their effective control.
This book provides detailed information on many of the commonly and not so commonly en-
countered groups of soilborne fungal diseases. It will be a useful reference for those teaching and conducting research in mycology, plant pathology, soilborne plant diseases, and the ecology of fungal communities.
Read more: https://www.crcpress.com/Pictorial-
Atlas-of-Soilborne-Fungal-Plant-Pathogens-and-
Diseases/Watanabe/p/book/9781138294592

Applied Soils and Micromorphology in Archaeology
By Richard I. Macphail and Paul Goldberg. Published in January 2018 as Part of Cambridge Manu-
als in Archaeology, 630 pages, 139 b/w illustra-
This book provides the most up-to-date information on soil science and its applications in archaeology. Based on more than three decades of investigations and experiments, the volume demonstrates how description protocols and complimentary methods (SEM/EDS, microprobe, micro-FTIR, bulk soil chem-
istry, micro- and macrofossils) are used in interpre-
tations. It also focuses on key topics, such as pal-
aeo-soils, cultivation, and occupation surfaces, and introduces a range of current issues, such as site in-
undation, climate change, settlement morphology, herding, trackways, industrial processes, funerary features, and site transformation.
Read more: http://www.cambridge.org/at/sec-
demic/subjects/archaeology/archaeological-sci-
ence/applied-soils-and-micromorphology-archaeo-
logy?b83m18c3bTe2XKfxf.9

The Soils of Iran
By Rozoitabal, Mohammad Hassan, Siadat, Ha-
mid, Farshad, Abbas (Eds.). 1st edition published in March 2018 by Springer, 255 pages, 184 illus-
trations, 156 illustrations in colour, ISBN 978-3-
319-60046-9, price hardcover 114,99 € | £92.00 | €129.00; price ebook: 95,19 € | £73.50 | £99.00.
This unique book addresses Iran’s extremely rich soil diversity and resources, which have developed under various climatic conditions ranging from dry to humid conditions. Featuring contributions by a group of respected experts on Iranian soils and agriculture, it provides comprehensive informa-
tion on the management approaches needed for sustainable soil utilization and conservation under such conditions, and the attendant challenges. As
Soil Carbon Storage: Modulators, Mechanisms and Models
This book takes a novel approach to the issue of soil carbon storage by considering soil C sequestration as a function of the interaction between biotic (e.g. microbes and plants) and abiotic (climate, soil types, management practices) modulators as a key driver of soil C. These modulators are central to the C balance through their processing of C from both plant inputs and native soil organic matter. This book considers this concept in the light of state-of-the-art methodologies that elucidate these interactions and increase our understanding of a vitally important, but poorly characterized component of the global C cycle. The book provides soil scientists with a comprehensive, mechanistic, quantitative and predictive understanding of soil carbon storage. It presents a new framework that can be included in predictive models and management practices for better prediction and enhanced C storage in soils.
Read more: https://www.elsevier.com/books/soil-carbon-storage/singh/978-0-12-811687-6

The Future of Soil Carbon
The Future of Soil Carbon: Its Conservation and Formation provides readers with an integrative approach to understanding the important role of organic carbon in soil functioning and fertility. Terrestrial interactions between SOC and complex human-natural systems require new fundamental and applied research into regional and global SOC budgets. This book provides new and synthesized information on the dynamics of SOC in the terrestrial environment. In addition to rigorous state-of-the-art on soil science, the book also provides strategies to avoid risks of soil carbon losses. Soil organic carbon (SOC) is a vital component of soils, with important and far-reaching effects on the functioning of terrestrial ecosystems. Human activities over the last several decades have significantly changed the regional and global balance of SOC, greatly exacerbating global warming and climate change.
Read more: https://www.elsevier.com/books/the-future-of-soil-carbon/garcia/978-0-12-811687-6

Guidelines for Soil Description and Classification: Central and Eastern European Students’ Version
By Switoniak M., Kabała C., Karklins A., Charyszyn P., Huluś P., Mędyk Ł., Michalski A., Novák T. J., Penižek V., Reintam E., Repe B., Saksa M., Vaivarsalúčius R., Warozański J., 2018. Polish Society of Soil Science, Toruń: 1–286. This book is divided into three parts. The first one – Site and soil description – follows the layout and content of professional edition of Guidelines for Soil Description, 4th ed., published by FAO (2006), simplified for educational purposes. The order of description has been modified to correspond to the layout of an original Soil description sheet. The second part – Soil classification – is a simplified WRB classification (based on a 2014/2015 edition) limited to reference soil groups known from Central Europe. The third part is an illustrated explanatory guide that includes: i) examples of typical soil profiles for all Central European Reference Soil Groups; ii) morphological features important for soil description and identification in the field; iii) soil-landscape relationships. The photos have been enriched with graphical tips helpful at the recognizing of important soil features. PDF can be freely downloaded on Research Gate and Nicolaus Copernicus University repository.
Read more: https://repozytorium.umk.pl/bitstream/handle/item/5216/Switoniak_Guidelines.pdf?sequence=8

Soil Sequences Atlas II
This is the second book in the series of Soil Sequence Atlases. The first volume was published in 2014. Main pedogeographic features are presented in the form of sequences to give a comprehensive picture of soils – their genesis and correlations with the environment in typical landscapes of Central Europe from Estonia furthest north, through Latvia, Lithuania, Ukraine, Poland, Germany, the Czech Republic, Hungary to the southernmost Slovenia. Soils of natural landscapes – are presented, as well as those of plains of various origin, karst lands, low moun- tains, and anthropically modified soils. Each chapter presents soil profiles supplemented by land-
scape information and basic analytical data. Then, genetic interpretations of soil properties related to soil forming agents are given as schematic catenas. The main objective of this book is to present the diversity of relations between soil and landscape, climate, hydrology and human relations, and to present interpretations reflecting the World Reference Base for Soil Resources (2015) classification with comments on the choice of qualifiers. PDF can be freely downloaded on Research Gate and in Nicolaus Copernicus University repository. Read more: https://repozytorium.umk.pl/bitstream/handle/item/5216/Switoniak_Guidelines.pdf?sequence=4

In memoriam

Herman Mücher (1935-2017)

Dr. Herman Mücher passed away in Valkenburg (The Netherlands) on December 30, 2017. Herman Mücher was born on March 13, 1935 in Heerlen (Province of Limburg, the Netherlands). After secondary school he followed a practical training at the Geological Bureau of the Mine Region, prior to his military service. From 1957 till 1967 he studied Physical Geography and Soil Science at the University of Amsterdam, where he also got his PhD in 1986. From 1964 till his retirement in 1997, he was respectively research assistant and senior lecturer at the same university, where he was in charge of lectures and practical exercises in soil micromorphology and the soils of the Netherlands, and also dealt with field training of students, in the Netherlands and in Galicia (Spain). In 1967 he was in charge of the organisation of a laboratory of micromorphology at the university, having trained with A. Jongerius (Wageningen), H.J. Altemüller (Braunschweig) and in the laboratory of W.L. Kubiëna in Reinbek.

Herman Mücher was also active in overseas regions. In 1976 he set up a micromorphological laboratory at the Gadjah Mada University in Yogjakarta (Indonesia), and in 1982 at the National Bureau of Soil Survey and Land Use Planning in Nagpur (India). Apart from these activities he was involved in several international projects. In 1986 he did six months of research on the production of organic matter and crust formation in rangeland soils at the CSIRO in Australia, and in 1990 on the pedogenesis of a catena in semi-arid tropical Australia. Herman Mücher was an expert in the field of the micromorphological study of slope deposits and slope stability, including field and laboratory experiments. Especially his experimental approach in collaboration with the late Prof. J. De Ploey (University of Leuven, Belgium) is considered as very innovative. He was also involved in the study of Quaternary palaeosols, often in the frame of archaeological research. He was involved as lecturer in four ‘International Intensive Training Courses on Soil Micromorphology’ organised in the frame of ERASMUS in Wageningen (2x), Gent and Granada.

He was author of more than 60 papers published mainly in international journals and books, and participated in many international congresses, often as invited speaker. He was one of the pioneers of micromorphology, and assisted in almost all International Working Meetings on Soil Micromorphology (except the Chengdu meeting in 2008). By his clear lectures and conferences, he inspired many students to use micromorphology as an important tool in their research. For his important contributions to micromorphology he was awarded the Kubiëna Medal of the IUSS during the IUSS meeting in Philadelphia in 2006. After his retirement he cooperated for instance with the team of W. Roebroek of the Faculty of Archaeology of the University of Leiden, resulting in a paper in Nature.

Herman Mücher was not only an excellent scientist, but moreover in the first place a warm and social person, supported by his wife Thea, who often accompanied him during his many travels and stays. He had a wide field of interest, including nature preservation and local history. He enjoyed life, a good meal and a good drink.

By G. Stoops
Ewart Adsil FitzPatrick (1926-2018)

We have lost Fitz. Ewart Adsil FitzPatrick – one of the world’s top pedologists – passed away on January 18, 2018. We have lost a great scientist, a great personality and a good friend. Fitz (as everybody knew him) was born in Barbados on 17th October 1926. As young fellow he was strongly interested in boat building, sailing and cricket! Formal education started at Harrison College; then in 1948, under the supervision of Prof. Frederick Hardy, he received a Diploma at the Imperial College of Tropical Agriculture (DICOTA) in Trinidad (West Indies). His final year project focused on Soil Classification and soil characterisation at the institute farm. He left the West Indies to join the newly formed Department of Soil Science at the University of Aberdeen (Scotland), as the first PhD student! In 1951, he received the PhD under the supervision of Dr Williamson (Head of Department) with a thesis on the formation of soils around the upper Deeside. Then Fitz was assistant (1951-54), lecturer (1954-69) and senior lecturer (1969 until retirement) in soil science at the University of Aberdeen.

Fitz was one of the leading international experts in soil science. He was active for over 55 years both in teaching and research mainly in pedology, micromorphology and soil classification. He produced over 90 publications including seven books (some translated into Spanish and Chinese). His books – written very carefully in terms of content and beautifully illustrated – have forged many generations of soil scientists. In soil microscopy, he really produced two landmark books. ‘Micromorphology of Soils’ (1984) and ‘Soil Microscopy and Soil Micromorphology’ (1993) became standard textbooks for scientists and PhD students in the field. He also produced three interactive CDs: ‘Interactive Soils’ (1999), ‘Horizon Identification’ (2003) and ‘Soil Microscopy and Micromorphology’ (2005). The studies conducted by Fitz and his many collaborators were decisive in the development of soil micromorphology, soil classification, and glacial and periglacial soil features. These achievements were partly due to Fitz’s huge experience of soil geography. He sampled and studied soils from more than 25 countries (including all of Europe, Russia, Australia, Argentina, and the United States). Thanks to this activity he built up a comprehensive collection of soil thin sections, now held by CRISP (University of Napoli). He was also leader of the very successful Aberdeen-Spitsbergen expedition in 1954 to investigate the relationship between permafrost and indurated layers in the soils of Scotland. After this experience, he published in the Journal of Soil Science (1956) the correlation between the indurated horizon and fossil permafrost, a property with important practical implications. In 1965, he published his single author Nature paper about relationships between soils and glacio-fluvial outwash; this also made some changes in fundamental thinking of the last ice Age in the UK. He made important additional contributions on deep rock weathering, soil structural changes, enchytraeid worms in soils and calcrite development.

In micromorphology, he developed new methodologies such as sample preparation (e.g. acetone replacement), the production of thin sections (combining very large size with very high quality), applications of submicroscopic techniques, visualisation of soil permeability (methylene blue), and application of remote sensing image processing techniques to quantify micromorphological soil features. He brought about major changes in soil micromorphology, especially in descriptive systems, and nurtured his own vision of the way ahead for future challenges. In this respect, he deeply questioned the micromorphological ‘scientific jargon’ being used only by very specialised scientists. Instead, his approach was simple but powerful, favouring terminology that could be used by any soil scientist. Basically he was hoping to disseminate micromorphology in the rest of soil science; somehow this is happening now.

Indeed, he tried to change soil classification as well, but here – despite his great efforts – Fitz possibly just managed to sow some good seeds. Hopefully these seeds will germinate in due course.

Fitz also worked to create bridges with all disciplines close to soil science including botany, geomorphology, glaciology and archaeology. When he retired he did not think for a minute to stop, and immediately learned to use software to create educational multimedia CDs for students and scientists alike. He taught soil science for over 50 years; his lectures were inspirational to many undergraduates and postgraduate students. In the same period he supervised – with much dedication and attention to detail – many students (about 28 MScs and 24 PhDs) from many different countries, and participated and co-organized numerous international courses on soil micromorphology (Argentina, the United Kingdom and Italy) and disseminated his knowledge through numerous seminars and conferences organized in over 19 countries. Fitz’s impact on soil research and teaching was based on the magic combination between his scientific culture and his warm and enthusiastic personality.


Fitz will be sadly missed by his family, his wife Morag, his children, Clare and Brian and his four grandchildren. We have lost a great scientist, a great personality and a good friend.

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For his achievements, he received several awards including the silver medal of the British Society of Soil Science (1989) with his student, the Kubiena medal of IUSS (1996), fellow of the Royal Geographical Society (1999) and the Philippe Duchau medal of the EGU (2006). I feel that perhaps one of his major recognitions was also the sincere admiration of colleagues and students listening to his explanations in front of the complex beauty of a soil profile. He never really stopped working. At the age of over ninety – in the care home where he lived his last years – he was still producing an update of his .xls file with the very last version of his soil classification system.

Fitz will be sadly missed by his family, his wife Morag, his children, Clare and Brian and his four grandchildren. We have lost a great scientist, a great personality and a good friend.
It is with great sadness I write to inform you that Associate Professor Inakwu Odeh (1956-2018) passed away on the 4th of February 2018.

Odeh, as he was known to many, was the Sesquicentennial Associate Professor in Rural Spatial Information Systems (2004-2018) in the School of Life & Environmental Sciences at the University of Sydney. He first joined the University in the early 1990’s as a Senior Research Fellow for the CRC for Sustainable Cotton Production (1993-1999). Owing to his strong leadership he was appointed Program Leader in the Australian Cotton CRC (1999-2005).

As a researcher some of Odeh’s best known work began with his PhD, which he undertook while based at the University of Adelaide and supervised by a hydro-pedologist by the name of David Chittleborough, and in collaboration with Alex McBratney, who had just started his tenure as Associate Professor at the University of Sydney. Odeh, along with his supervisors, set about developing innovative techniques and applying these ideas on soil sampling schemes and landscapes of the rolling hills of the Mount Lofty Ranges. He was also one of the first to apply the fuzzy sets theory to mapping the soil continuum as a continuous land surface body which has been widely used and cited by many researchers in the field. The paper, which presents this seminal work is entitled ‘Further results on prediction of soil properties from terrain attributes: heterotopic cokriging and regression-kriging’ and was published in Geoderma in 1995. Today, it is his most highly cited paper with a grand total of 361 citations.

During his time at the University, he produced the baseline soil data sets and maps for cotton growing regions and also laid out a suite of spatial prediction methods which now are regularly used for Digital Soil Mapping. He showed how landform attributes derived from a digital elevation model can be used for prediction of soil properties. He further developed regression kriging techniques to combine geostatistical and deterministic landscape models. He took advantage of rich and novel data sources, including remote sensing data such as LIDAR, Landsat TM7 and gamma radiometric data but also proximal sensing data acquired from instruments such as the Veris3100 and an electromagnetic induction instrument known as the EM38. All significant contributions to advances in soil science, landscape information systems, and land management. Internationally, he had strong research ties with Africa and China and in recent years, he developed GlobalSoilMap maps for Nigeria.

Odeh was one of the early pioneers of Pedometrics and GIS teaching at the University of Sydney. Odeh was a lecturer of some reputation, leading and presenting courses at both undergraduate and postgraduate level. He taught aspects of Pedometrics, Digital Soil Mapping and Proximal Soil Sensing into courses including but not limited to Environmental GIS, Biometry, Remote Sensing and Land Management and Rural Spatial Information Systems. He trained and mentored many local and international PhD students. He was also a consistent driver in the establishment and work program of the Global Soil Partnership. He was an inaugural member of the International Technical Panel on Soils (ITPS) as well.

After his retirement Jon rediscovered soils in the field in extremely remote parts of Australia. He did this with an openness and delight in his discoveries. He also added wisdom, experience and history, and good humour to Australia’s tightly knit soil survey community.

There is much sadness now in the soil science community. Jon will be greatly missed by his colleagues and friends all over the world!

By Damien Field et al.

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Jon Hempel (1928)

Jon Hempel retired as the Director of the National Soil Survey Center for the US Department of Agriculture-Natural Resources Conservation Service (NRCS) in Lincoln, NE with 32 years of Federal Service. Prior to assuming this position, he served in multiple leadership positions, with NRCS, as the Director of the National Geospatial Development Center in West Virginia, and State Soil Scientist and Soil Survey Digitizing Unit Leader in Wisconsin. During his 32 year career with NRCS, he has also held a variety of technical positions, including Soil Data Quality Specialist, MLRA Project Leader and Area Resource Soil Scientist within the NRCS soil survey program, which included work in Alaska, Illinois, Indiana, Iowa, Minnesota, Missouri, Nebraska, North Dakota, Ohio and Wisconsin. His background included work as a Research Associate with Iowa State University with work in the soil survey program and in the private sector in foundation engineering. His educational background is in Soil Science and Biology from the University of Wisconsin-Stevens Point. Jon’s work in digital soil mapping has laid the framework within the Soil Science Division to bring these techniques forward and aid in the continued improvement of soil surveys.

Jon’s great contribution to soil science was as an internationalist – bringing soil scientists from all over the world together with common and challenging goals.

In addition to his chairing the IUSS Working Group on a Universal Soil Classification System, he was instrumental in setting up GlobalSoilMap and all the global initiatives that have happened as a consequence of that, including contributing to the establishment and work program of the Global Soil Partnership. He was an inaugural member of the International Technical Panel on Soils (ITPS) as well.

By Erika Michéli, chair of Division 1
## IUSS Honorary members

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<th>Year</th>
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<tr>
<td>1924</td>
<td>L. Cayeux †</td>
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## IUSS Award Winners

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