IUSS Bulletin 135

International Union of Soil Sciences (IUSS)

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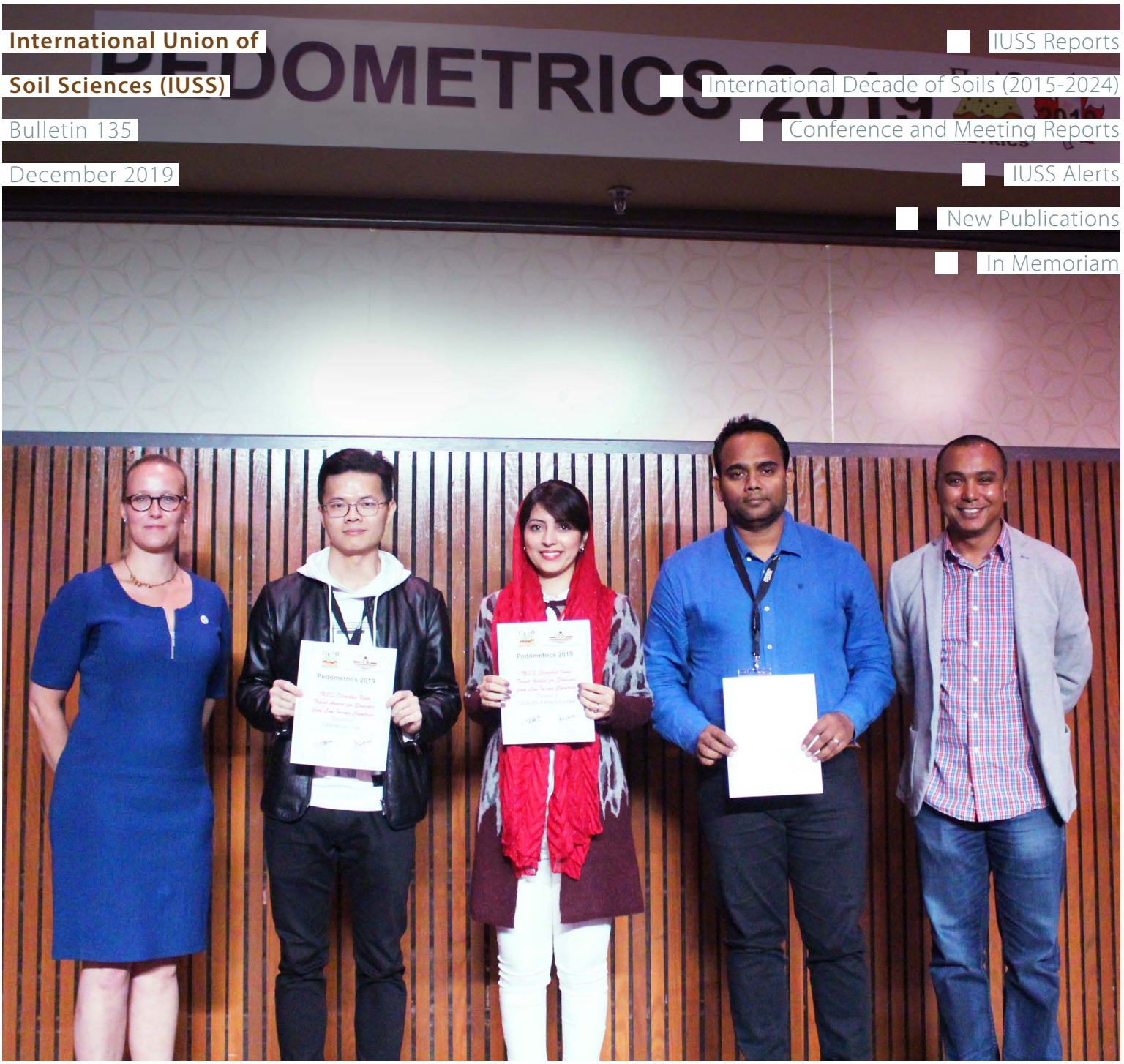






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International Decade of Soils 2015-2024

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The IUSS Bulletin is the official Newsletter of the International Union of Soil Sciences. It is freely distributed through the IUSS website.

Contents

IUSS Reports

WCSS22

1000 days until the World Congress of Soil Science in 2022 (WCSS22)

The logo of the 22nd World Congress of Soil Science was launched by the British Society of Soil Science on November 4, 2019.

What is it?
The WCSS is a leading international soil science conference, held every 4 years in different countries and attended by over 3000 soil scientists from around the globe. The next Congress is being organised by the British Society of Soil Science on behalf of the International Union of Soil Sciences. The Congress theme, ***'Soil Science – crossing boundaries, changing society'*** will focus on the link between soil and society, with sessions covering soil systems, soil processes, soil management and how we interact with and use soils around the world. There will be opportunities for specialist workshops and discussion sessions across a wide range of soil disciplines. The core programme is supported by tours and a cultural and arts programme for delegates and the wider public to explore our diverse environment and culture.

Where and when is it?
The Congress will take place at the award winning and world-class Scottish Event Campus, a riverside venue minutes from central Glasgow in Scotland, UK. The Congress is between 31st July - 5th August 2022.

Who should attend?
Research scientists, policy makers, regulators, NGOs and anyone who has an interest in the sustainable use of soils.

Why should I attend?
At a time of global concern for our planet and its growing population, managing our soils sustainably has never been as important. 90% of our food comes from soil, as does all of our timber and other fibre. Soil, and the ecosystems it supports, have a huge role in mitigating against climate change, is a vast reservoir of biodiversity, plays a significant role in flood management and contains key evidence of past civilisations. Our understanding of the importance of these functions is developing rapidly and the Congress provides the ideal setting to discover the international state of the art in these critical global issues and an opportunity to connect across all who work with and rely on soils.

Follow us on Twitter: *@Soil_Science* and *@WorldSoils2022*
Read more: *https://www.soils.org.uk/wcss2022*

Report from the IUSS Secretariat

IUSS Website

The main tasks of the webmaster during the last six months were adding new information to the website (e.g. new events, news), inputting Alert news into the content management system and sending the Alert out to our readers, creating new content, e.g. for the International Decade of Soils and programming it backend, and finally, keeping contact information of IUSS members updated. Patching up the content management system, implementing necessary updates and system back-ups rounded off the webmaster's tasks.

Twitter Alert

Now, the International Union of Soil Sciences has an Official Twitter Account. Follow us at the address *@IUSS_ORG*, to promote all our official activities and remain in touch with Soil Science Scientists community worldwide.

From our Twitter account, you can also directly access the IUSS Website by touching on the symbol

iuss.org

Offer to share YouTube videos related to soil science
(published in IUSS Alert 170, August 2019)
The International Union of Soils Sciences has invited its members to provide links of their YouTube videos on soil science, which IUSS offers to share on their YouTube channel in order to make them known more widely. Videos should preferably be in English, but all languages are welcome. YouTube videos should not be larger than 2 GB, nor longer than 10 minutes. Please bear in mind to check pertaining copyrights. IUSS will not consider videos with unsuitable content.
Read more: *https://www.youtube.com/playlist?list=PLi-8j0XEXF7nrixZwcMAXA6-8PB3MPvOk*
Check out the shared soil physics videos of the Oklahoma State University (USA) on our **YouTube** channel: *https://www.youtube.com/channel/UCX3cdAuO5QrPx0Et-DPahQcg/channels?disable_polymer=1*
Have a look at the recently shared video of Soil Science Australia on our **YouTube** channel: *https://www.youtube.com/playlist?list=PLi-8j0XEXF7nrixZwcMAXA6-8PB3MPvOk*

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 have been and will continue to 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.
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 *https://www.iuss.org/about-the-iuss/iuss-stimulus-fund/?search_highlighter=stimulus+fund*
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 2019 again $15,000 were available, with two submission dates for applications: 15 March and 15 September.
From the first round of submissions in 2019, the IUSS decided to support four activities: 1) the first run of the Massive Open Online Course (MOOC) on Tropical Soil Science 'As above, so below: an introduction to soils, ecosystems and livelihoods in the tropics' of KU Leuven, May to July 2019. The first MOOC ran for a total period of 7 weeks, with 1020 participants from 97 countries. 2) Pedometrics 2019, University of Guelph in Guelph, Ontario, Canada, 2-6 June 2019; 3) Soil Judging Contest in Mexico, 23-26 October 2019 and 4) Soilutions Poster Contest, submission deadline June 15, 2019.
More details on the above-mentioned events co-funded by Stimulus fund can be found in the section Conference and Meeting Reports. More information on the Soilutions Poster Contest is available in section International Decade of the Soils 2015-2024.
From the second round of submissions, IUSS decided to contribute to the 6th International Soil Classification Congress (ISCC 2020), Mexico, with five scholarships of 500 USD each. In addition, IUSS will make a contribution to the SOILS 2020 conference with a subsidy to the fee for 15 students, by paying the Soil Tour Bulletin with soil pedon details and by covering the post conference tour fee for 15 students. Both applications fit very well under the umbrella of the International Decade of Soils 2015-2024.
In total, 10,640.89 USD were disbursed from the IUSS Stimulus fund in 2019.
A short (500-1000 words) report of the activity for which the funds were received, must be presented for inclusion in the IUSS Bulletin within 2 months of completion.
In 2020, there will again be two submission dates for applications: 15 March and 15 September. Applications are always welcome and should be sent in due time to iuss@umweltbundesamt.at.

News from national Soil Science Societies

News from the Latin American Soil Science Society (SLCS)

Master of Science in Sustainable Soil and Water Management

In line with the main tasks defined by IUSS for the 'International Decade of the Soils' the Latin-American Soil Sciences Associations and Societies are working specifically on some educative and governance activities to achieve soil preservation. On June 18, 2019 the National Associations of Soil Science of Guatemala, Honduras and El Salvador launched a joint **'Master of Science in Sustainable Soil and Water Management'**.

The Agrarian University of Nicaragua and the ONG-CRS for Guatemala and México also contribute to this project. That constitutes a great Central-America effort, which is an example of work in unity for the mutual benefit of their countries and in favour of the preservation of natural resources soil and water of Latin America.

Rectors and representatives of the Guatemalan Association of Soil Science (© Dr. Hugo Tobías, President of the Guatemalan Soil Science Association)

General Law on Chilean Soils

On June 3, 2019, working together as a team, the NGO Sustainable Land, the Geological Society of Chile, the College of geologists of Chile, the Chilean Society of

Board of the Chilean Soil Science Society (© Chilean Soil Science Society)

Audience listening to the proposal for a General Law of Soils of Chile before the Senate of the Republic of Chile (© Chilean Soil Science Society)

Representatives of the Senate of the Republic of Chile (© Chilean Soil Science Society)

Soil Science and the Council of Rectors of Chilean Universities very successfully presented a proposal for a General Law of Soils of Chile before the Senate of the Republic of Chile.

The IUSS President Elect supported this action through an explanatory video addressed to the senators and through which she argued the need for a Law on the Protection of Chilean Soils.

The session ended with the introduction of a working plan into the Senate of the Republic of Chile to work on the proposed General Law on the Soils of Chile.

'Thus are the Soils of my Nation'

In late spring 2019, the Spanish Soil Science Society launched its call to select young people who would participate in our **VII Latin American Symposium on Educational Innovations on Teaching and Learning of Soil Sciences**, to be held on October 9 at the 'Radisson Montevideo Victoria Plaza Hotel' in Montevideo, Uruguay, during the XXII Latin-American Congress of Soil Sciences (XXII CLACS).

The winner is Lucía Iglesias Abarca from IES Bajo Cinca de Fraga (Huesca), Spain, with the work entitled 'EFFECT OF THE USE OF SOIL IN FUNGI BIODIVERSITY' who will be traveling to Uruguay accompanied by her tutor D. Fernando Teijeira Romón with funding from the Spanish Society of Soil Science.

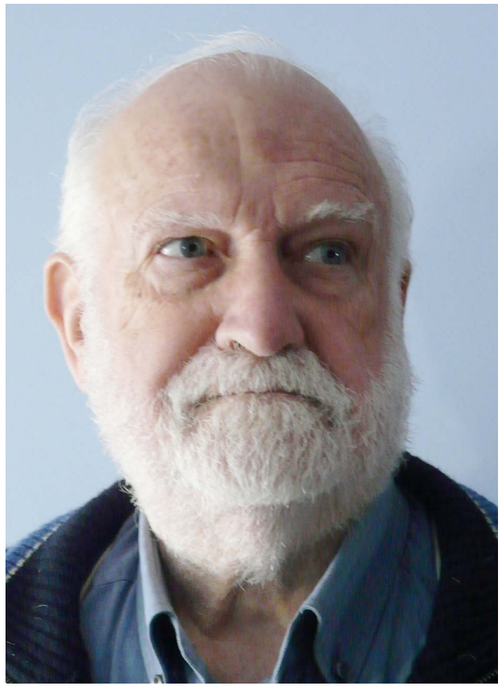
The Latin-American Soil Science Society congratulates Lucia and her tutor.

Lucía Iglesias Abarca and her tutor D. Fernando Teijeira Román (© Spanish Soil Science Society)

We are looking forward to welcoming you at our **VII Latin American Symposium on Educational Innovations on** Teaching **and Learning of Soil Sciences**.

Official recognition of Dr. Jaume Porta Casanellas life-long service

The University of Lleida Spain congratulates its Rector (1993-2003) and Professor Emeritus of Edaphology and Agricultural Chemistry: On October 3, the University of Lleida paid tribute to Dr. Jaume Porta Casanellas with the putting up of a plaque in the CCCT library that now bears the name 'Jaume Porta Library'. *http://www.macs.udl.cat/ca/noticies/Biblioteca-Jaume-Porta/*.
Dr. Porta is Former President of the Spanish Society of Soil Science, author of the 'Multilingual Dictionary of Soil Science' (Spanish, Catalan, Galician and Portuguese, with equivalences in French and English), founder of the Spanish Journal of Soil Science and author of the most popular Edaphology book in Latin America.
The Latin-American Soil Science Society honours Dr. Jaume Porta Casanellas for his contributions to the teaching of Edaphology in Mexico and throughout Latin America.



Dr. Jaume Porta Casanellas (© J.P. Casanellas)

XLIV Mexican Congress of Soil Science

During the XLIV Mexican Congress of Soil Science in Aguascalientes and in collaboration with the IUSS the OPENING SYMPOSIUM 'The sustainability of the soil resource within the framework of the Sustainable Development Objectives' will be held in Aguascalientes, Mexico on October 29th 2019. Special guests from IUSS are President Takashi Kosaki, the IUSS Former President Rainer Horn and the IUSS Former Secretary General Winfried Blum.
A WRB Course will be held during the XLIV Mexican Congress of Soil Science being taught by Dr. Peter Schad from October 30 to November 3 in Aguascalientes, México.

XXII Latin-American Congress of Soil Sciences (XXII CLACS)

With more than 700 people attending, the Latin-American Congress of Soil Science (CLACS) was a very successful event, and the city of Florianópolis, Brazil, was chosen as venue for the XXIII CLACS, which will be held in 2021.
For the first time in the 67 years of its existence, the Latin-American Soil Science Society has a woman as President, Dr. Elisângela Benedet da Silva. At the same time, Dr. Mary Selva Viera was elected as the new Latin-American Soil Science General Secretary.
During the Congress, Professor Dr. Rainer Horn was presented with the Latin-American Soil Science Award 2019.

'Thus are the Soils of my Nation'

In the framework of the XXII Latin-American Congress of Soil Sciences (XXII CLACS) in Montevideo, Uruguay, 150 children from Argentina, Colombia, Spain, Peru and Uruguay participated in the VII Latin American Symposium on Educational Innovations on Teaching and Learning of Soil Sciences for children and young people, presenting their 'scholar orchards' research and didactic presentations about the resource 'soil' (orally or on posters).
The children's conference was organized by Dr. Ronald Vargas, who is the Secretary General of FAO's Global Soil Partnership.
All 150 children received a commemorative WSD t-shirt as a gift from FAO, and SLCS offered some books as part of a raffle.

Latin-American Soil Science Society Collaboration Booth

A Collaboration Booth for Soil Science Societies, to be shared free of charge, was set up successfully during the XXII Latin-American Congress of Soil Sciences to promote IUSS books and materials, EUROSOIL 2020 and XXIII CLACS-2021.

Stop Soil Degradation and the IUSS's Educative Projects to Achieve It

The Soil Science Society of Poland, is inviting you to participate in the '4th Soil in the Environment Conference: SITE 2020'. This invitation goes especially to Young Researchers involved in soil science. The Conference will be held on 28th June - 1st July 2020 in Toruń, a beautiful medieval city in the north of Poland.
Read more: *https://sites.google.com/view/site-torun-2020*
The Spanish Soil Science Society organizes the school contest 'Challenge stop soil erosion'. IUSS invites you to send your drawing to *edafoeduca@upv.es*.

News from the Spanish Soil Science Society

We are inviting you to read and spread the Comic 'Living in the soil' *http://www.secs.com.es/wp-content/uploads/2015/07/Comic-ingl%C3%A9s-WEB.pdf*
Cómic 'Vivir en el suelo' 2015 (Spanish version): *http://www.secs.com.es/wp-content/uploads/2015/03/COMIC_castellano_WEB.pdf*
Cómic 'Vivere nel suolo' 2016 (Italian version): *http://www.secs.com.es/wp-content/uploads/2016/09/COMIC_italiano_WEB.pdf*

News from the Polish Soil Science Society

We are inviting you to look into the book 'Guidelines for Soil Description and Classification Central and Eastern European Students' Version' which is a contribution of the Soil Science Society of Poland to the deepening of knowledge and improvement of the teaching and learning of soil science in a didactic way.
Read more: *http://soils.umk.pl/didactical/*

Awards

AACS won King Bhumibol World Soil Day Award 2019

We are proud to inform you that the winner of the King Bhumibol World Soil Day Award 2019 is a member of the IUSS, the Costa Rican Soil Science Society (AACS, *https://www.sueloscr.com/*).
For more information about their activities please see: *http://www.fao.org/world-soil-day/wsd-award/second-wsda/en/*).
This Prize is an annual award that honours individuals, communities, organizations and countries that organized remarkable and engaging World Soil Day activities or campaigns in the previous year. For more information see here: *http://www.fao.org/world-soil-day/wsd-award/en/*
The IUSS congratulates the AACS and the Latin American Soil Science Society!

IUSS Distinguished Service Award for HE Mr. Aziz Akhannouch

The IUSS Distinguished Service Medal for 2018 was finally given to HE Mr. Aziz Akhannouch (Morocco) in the course of the second annual ministerial conference of the Initiative for the Adaptation of African Agriculture to climate change (AAA initiative) organized under the banner 'Food Security Facing Climate Change' and hosted by the Mohammed VI Polytechnic University (Morocco) on 4-5 November 2019. The African Ministers of Agriculture met there and took note of the prestigious award from IUSS. An article was published in French and Arabic language in a national newspaper. The AAA Initiative aims to contribute to food security in Africa, to improve the living conditions of vulnerable farmers and to promote the employment in rural areas by promoting adaptation practices to climate change, building the capacity of actors and channeling financial flows to the most vulnerable farmers. In recognition of the importance of the sustainable management of soils and increased sequestration of carbon to the soil, Morocco launched the AAA initiative. With this award IUSS recognizes that HE Mr. Aziz Akhannouch, one of the founders of the AAA initiative, translated knowledge of Soil Science into Policy and Governance as Minister for Agriculture, Maritime Fisheries, Rural Development and Water and Forests of the Kingdom of Morocco (2007-); Chief Executive Officer and Chairman at Akwa Group SA; Chairman National Rally for Independents (2016-); President of Souss-Massa-Draa Regional Council (2003-2007); Chairman Political Compass of RNI and Chairman of the Board of Directors of the AAA Foundation.

Photo of award ceremony: HE Mr. Aziz Akhannouch (Minister for Agriculture, Maritime Fisheries, Rural Development and Water and Forests of the Kingdom of Morocco) and Prof. Dr. Rattan Lal (IUSS Past President), © Prof. Mohamed Ait Kadi, AAA Initiative.

Thus far the International Union of Soil Sciences (IUSS) has presented the Distinguished Service Medal to three prominent world citizens and policy makers. In 2012 the first medal was awarded to HRH the late King of Thailand Bhumibol Adulyadej in order to recognize His outstanding achievements in soil care and sustainable soil and land management. The second medal for 2016 was presented to HE Hon'ble Stéphan Le Foll for promoting soil science on the global agenda through COP21, and for pointing out that soil and agriculture present integral solutions to climate change and advancing food security by implementing the '4 per Thousand' programme. The third medal for 2017 was awarded to Prof. Dr. Dr. h.c. mult. Klaus Töpfer who translated knowledge of soil science into policy and governance in his various functions at national and international level finally founding the Institute for Advanced Sustainability Studies which organised the Global Soil Week, a platform bringing together a diverse range of actors to initiate and strengthen policies and actions on sustainable soil management and responsible land governance since 2012.

Other IUSS News

Proceedings of the last two World Congresses available online

Proceedings with the abstracts of the presentations or posters of the 21st WCSS in Rio have been created and are available on the IUSS website:
Proceedings 21st WCSS – Volume I (Abstracts of oral presentations), ISBN 978-85-86504-29-7: *proceedings_of_the_21wcss_volume_i.pdf (5 MB)* and
Proceedings 21st WCSS – Volume II (Abstracts of poster presentations), ISBN 978-85-86504-27-3: *proceedings_of_the_21wcss_volume_i_i.pdf (8 MB)*.
Additionally the proceedings with all abstracts of the 20th WCSS in Jeju, Korea, were made available on the IUSS website: *20wcss_abstracts.pdf (32 MB)*
Read more: *https://www.iuss.org/meetings-events/world-soil-congress/*

Newsletter of Commission 1.1 available on the IUSS website

The June 2019 Newsletter of the IUSS Commission 1.1 Soil Morphology and Micromorphology produced with the support of Richard Heck is available online.
Read more: *https://www.iuss.org/newsroom/newsletters/soil-morphology-and-micromorphology-newsletters-commission-11/*

Newsletter of the Malaysian Society of Soil Science (MSSS)

The most recent newsletter of the Malaysian Soil Science Society is now available on the IUSS website. It contains information about recent events such as the Soil Science Conference of Malaysia (SOILS 2019), a Course on Soil Identification and Classification, about the initiative 'One Hand Saves the World' and an outlook towards World Soil Day on 5 December 2019.
Read more: *https://www.iuss.org/newsroom/newsletters/malaysian-society-of-soil-science-newsletter/*

Soil Sequences Atlas vol. 5 – request for contributions

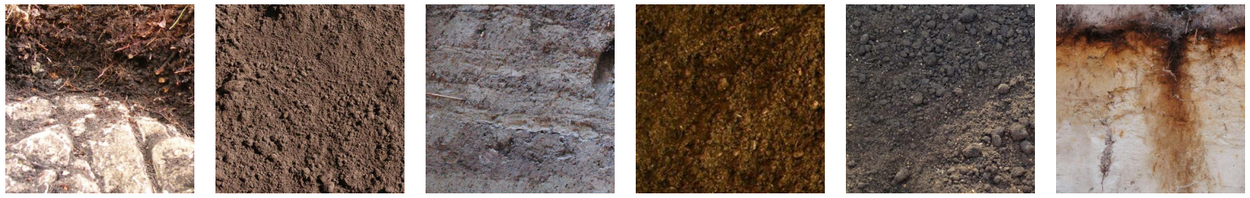
Edited by Marcin Świtoniak & Przemysław Charzyński

Dear Colleagues,
We would like to invite you to contribute a chapter to a 5th volume of series of Soil Sequences Atlases we are co-editing, and which we are planning to publish in 2021. Main pedogeographic features presented in the form of sequences give a comprehensive image of soils, their genesis and correlations with the environmental factors in typical landscapes. Depending on dominant differentiated factors affecting the soil pattern, different types of sequences can be distinguished – toposequences, lithosequences, chronosequences, anthroposequences, etc. Volumes 1-4 of the Atlas include more than 20 Reference Soil Groups represented by over 250 profiles.
The atlases are both printed in a paper form and also freely available in electronic (pdf) form: *www.soils.umk.pl*, ResearchGate and Academia.edu.
If you are interested in this venture, as we hope you are, please take note of the following:

- An *abstract* of 150-250 words should be submitted to the editors by email (*swit@umk.pl* and *pecha@umk.pl*) preferably by **end of January 2020**. Abstracts should feature the working title of the proposed chapter, the author or authors responsible for it and WRB classification of soil profiles to be included in soil sequence..
- Chapters need to be written in *English*, and language editing is the responsibility of the authors.
- The editors have the right to *select* chapters submitted;
- We will be aiming to have a broad representation of soils from different continents/regions,
- The *first draft* of the chapter is to reach the editors by **30th September 2020**.
- Chapters will need to follow the pattern of chapters from previous volumes. The style sheet for references and bibliography will be forwarded to all authors.

We do hope you will feel able to respond positively to this invitation, and we look forward to hearing from you.

M. Świtoniak & P. Charzyński



International Decade of Soils (2015-2024)

World Soil Day 2019

Be active: even small actions count – WORLD SOIL DAY, 5 Dec. 2019

Stop soil erosion, Save our future
Erosion is putting our soils in danger. Due to climate change and unsustainable management practices, we are witnessing an alarming decline in fertile soils, which is forecast to continue and make them progressively sterile and ever more prone to drought, desertification and floods.

On World Soil Day – 5 December 2019 – focus your attention on being part of the solution... Small actions can have a significant impact on the health of our soils for Zero Hunger!

Greening the future photo challenge
In the framework of the World Soil Day 2019, the FAO Global Soil Partnership would like to challenge children, teens, young people, and adults worldwide to cover the soil and take a step to #*StopSoilErosion*. Planting local species is a fun and easy way to help the soil, fight erosion and raise awareness for WSD. Read more: *http://www.fao.org/world-soil-day/challenge/en/*

Download the FAO communication kit
Are you planning to have an event on soils for World Soil Day or to spread the word on social media? Use and share our key messages, infographics, action cards, postcards and videos to raise awareness on soil erosion. Discover our posters, web banners and T-Shirts in different languages... Our material is yours! Download the kit: *http://www.fao.org/world-soil-day/campaign-materials/en/*

[From: GSP Special announcement #19 – WSD: Get involved!, 23 October 2019]

King Bhumibol World Soil Day Award

Last but not least, remember that the most exciting WSD 2019 celebration can candidate to win USD 15 000 for next King Bhumibol World Soil Day Award …!
Read more: *http://www.fao.org/world-soil-day/world-soil-day-award/en/*

Stop Soil Degradation and the IUSS educative project to achieve it

4th Soil in the Environment Conference: SITE 2020

The Soil Science Society of Poland invites you to participate in the '4th Soil in the Environment Conference: SITE 2020', this invitation going especially to Young Researchers involved in soil science. The Conference will be held on 28th June - 1st July 2020 in Toruń, a beautiful medieval city in the north of Poland. *https://sites.google.com/view/site-torun-2020*

Challenge stop soil erosion

The Spanish Soil Science Society organized a school contest 'Challenge stop soil erosion'. IUSS invites you to send your drawing to *edafoeduca@upv.es*

Soil Book Series

We are proud to present the latest edition in the IUSS Soil book series
Global Soil Proverbs. Cultural Language of the Soil
Ed.: Jae E. Yang; M. B. Kirkham; Rattan Lal; Sigbert Huber. Published in the CATENA series GeoEcology essays in December 2018; 275 pages, 165 figures, 10 tables, 17×24cm, 720 g, US-ISBN: 1-59326-271-X, ISBN 978-3-510-65431-4. The book can be ordered from the IUSS

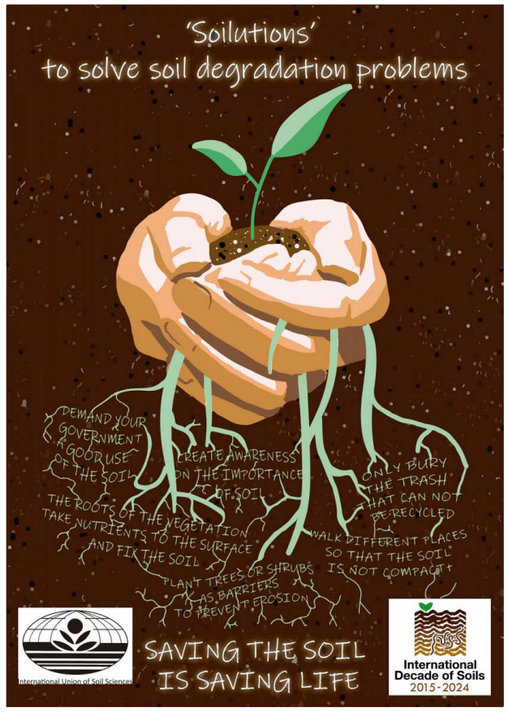
Secretariat (*iuss@umweltbundesamt.at*) at the price of EUR 34.90 (plus shipping costs); reduced price for IUSS members: EUR 30.00 (plus shipping costs).
Read more: *https://www.schweizerbart.de/publications/detail/isbn/9783510654314*

Soilutions

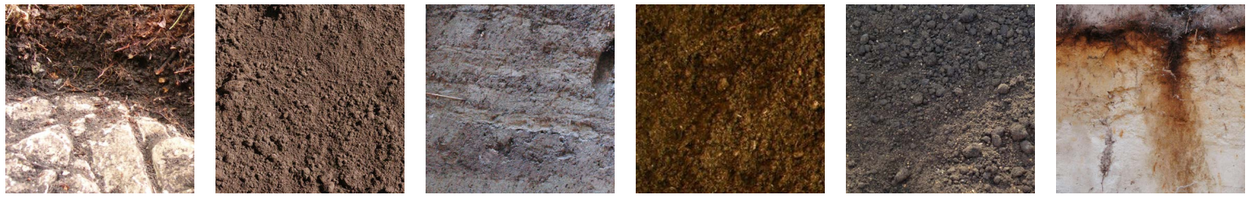
IUSS launched poster contest '**Soil**utions' to find new solutions for soil problems

Soil is a limited natural resource that is under increasing pressure and thus at great risk of being degraded. IUSS has identified the key roles played by soils in guaranteeing food security, reducing greenhouse gas emissions that contribute to climate change, generating drinkable and clean water necessary for human life and for the sustenance of the terrestrial and aquatic ecosystems, practicing sustainable agriculture, and in reaching the Sustainable Development Goals (SDGs).
Since many of these SDGs directly or indirectly involve the soil resource, reaching them will only be possible if we preserve this resource as a common good of humankind. This is why – under the umbrella of the International Decade of Soils (2015-2024) – IUSS decided to launch a poster contest inviting all soil lovers, be they school children, students, designers, soil scientists or experts of any other profession, to submit their ideas in a poster depicting their **'Soilutions'** to address soil problems in order to preserve this unique resource and life. IUSS considers stopping soil degradation as one of its most important tasks.
IUSS received 42 posters, which were evaluated by a Committee. After the evaluation results were approved by the Executive Committee, the IUSS awarded Hernández Huerta Aldo Alfredo (Mexico) with 1,000 USD for the best 'Soilutions' poster and Richard Gantlett (United Kingdom) and the group of M.A. Samarasekara, A.G.S.D. De Silva and R. Thusyanthini (all Sri Lanka) with 500 USD each for the second and third best posters. The best 12 posters plus a cover poster are used to produce a 'Soilutions' calendar, which will be available in 2020.

IUSS thanks all contestants and congratulates the winners!
Read more: *https://www.iuss.org/newsroom/*



The winning poster by Hernández Huerta Aldo Alfredo (Mexico)



Conference and Meeting Reports

First Massive Open Online Course (MOOC) on Tropical Soil Science 'As above, so below: an introduction to soils, ecosystems and livelihoods in the tropics'

With the support of the IUSS stimulus fund, the first Massive Open Online Course on Tropical Soil Science 'As above, so below: an introduction to soils, ecosystems and livelihoods in the tropics' was prepared and launched for a first run in spring 2019. It ran for a total period of 7 weeks, with 1020 participants from 97 countries. The course ran on EdX (edx.org), the leading platform in MOOCs issued by major universities. Currently, the MOOC is open for a second run. It will remain available until June 2020.

What is a MOOC?

MOOC's, or Massive Open Online Courses, are highly interactive online courses issued by major universities. They are open to students of that university, but also to any other interested learners from anywhere in the world. Hence, they are a great way of raising soil awareness and improving access to educational resources for developing countries. This particular MOOC deals with tropical soils as a critical resource for livelihoods, conservation and culture. Also, it is a fun and interactive way of learning World Reference Base for Soil Resources.
Regular participation is free of charge. Main partners were KU Leuven, who took most of the costs for developing the material, and ISRIC, the JRC and FAO who donated material in kind. As shown below, the budget mainly concerned professional video editing and cost for hiring a research assistant for editing video's, making digital maps and programming on EdX. All other staff and supervisors, including the KU Leuven Didactics support team and the KU Leuven ICT department, also donated their time in kind.
After a general introduction to soil science, the SDGs, soil functions and soil forming factors in the tropics, the MOOC is built around the major biomes in the tropics: forests, mountains, grasslands, deserts, rivers and wetlands. Every module starts with one or two 'virtual excursions', zooming in on a particular system to explain soil types, their main properties and their strengths and challenges for land use and conservation. The virtual excursions are followed by 2-3 cases, explaining a particular element of the discussed system in more detail. For these cases, we reached out to our partner institutions around the world, with 15 partners who helped build the content. The details of the contributors are mentioned in the relevant section in the MOOC on Edx.
Regarding participants, 1,020 learners took the course. The median learner age was 35, with about half of the learners between 26 and 40. 40% of the learners were female. 35% of learners had a college degree, 53% had an advanced degree. Participants in the course came from 97 countries. The best represented country was Mexico, with 15% of the learners. Every module finishes with interactive exercises on soil classification and soil-landscape interactions. The MOOC was presented at the EGU conference and to the JRC European Network on Soil Awareness during the Amsterdam meeting in fall this year. On November 22, there also was a launch event at KU Leuven for all four KU Leuven MOOCs supported by the Global Minds Fund. The launch event was attended by over 50 participants.
Read more: *https://nieuws.kuleuven.be/en/content/2019/ku-leuven-presents-new-moocs-on-sustainable-development* Link to the full content of the MOOC: *https://www.edx.org/course/as-above-so-below-an-introduction-to-soils-ecosyst*

SOIL 2019 – joint Conference of IUSS Working Groups 'Digital Soil Mapping' and 'Global Soil Map', Commission 1.5 Pedometrics

The IUSS Working Groups 'Digital Soil Mapping' and 'Global Soil Map' from Commission 1.5 Pedometrics held a joint Conference on 'SOIL 2019' from 12 to 16 March in Santiago (Chile). This meeting was hosted by the University of Chile in Santiago, under the chairmanship of Prof. Osvaldo Salazar.

This Conference gathered 65 participants from 19 countries. It included two keynote presentations, given by Laura Poggio and Axel Schmidt, 30 oral presentations and 12 poster presentations, and a final discussion about advances and the remaining challenges facing these two WGs. The first day (12 March) was devoted to training sessions, and the last day (16 March) to a field trip.

Opening Ceremony. From left to right : Osvaldo Salazar (University of Chile), Monica Antilén (President of Chilean Society of Soil Sciences), Carlos Muñoz (Vice-Dean Faculty of Agricultural Sciences, University of Chile), Dominique Arrouays (INRA) and Laura Poggio (ISRIC) (© Anne Richer-de-Forges, INRA, France)

Soil field trip to the 'Rinconada de Maipú' Experimental Station at the Faculty of Agricultural Sciences, University of Chile, with Prof. Manuel Casanova and Prof. Marco Pfeiffer from the University of Chile as tour guides (© Anne Richer-de-Forges, INRA, France).

A virtual special issue of the journal 'Geoderma Regional' is currently being edited and the deadline for submission is 15 January 2020.

By Laura Poggio, Chair of the Digital Soil Mapping IUSS WG, Dominique Arrouays, Chair of the GlobalSoilMap IUSS WG, Osvaldo Salazar, Chair of the Organizing Committee of the Conference

Soil Science Conference of Malaysia (SOILS 2019)

Soil Science Conference of Malaysia (SOILS 2019) was held on 16th -18th April 2019 at Hotel Equatorial, Melaka. The event was jointly organized by Malaysian Society of Soil Science and the Faculty of Plantation and Agrotechnology (FPA), UiTM. With the theme '**Sustainable Soil Management and Conservation**', this conference succeeded in having more than 100 participants from local and international institutions. The conference covered seven (7) topics including management of plantation soils, management of peat and other wetland soils, soil genesis and classification, soil physics and conservation, soil fertility and nutrient management, soil microbes and health and soil management for land improvement.

The conference was officiated by a representative of Chief Minister of Melaka, YB Damian Yeo Shen Li (ADUN Duyung). Honorable keynote speaker for the conference was Prof. Ir. Dr. Dato' Roslan Hashim from the University of Malaya (UM), presenting the topic 'Multidisciplinary approach towards coastline protection using ecological engineering'. Three distinguished plenary speakers were also invited, namely Dr. Wan Rasidah Wan Abdul Kadir (FRIM), Prof. Dr. Osumanu Haruna Ahmed (UPM) and Dr. Christopher The Boon Sung (UPM). Apart from the plenary presentations, the conference had 22 oral presentations and 58 poster presentations joined by various local and international institutions.

The conference also included a field tour to FRIM Research Station, Selandar for forest soil pedon observation and classification. The morning session was guided by Mr Mohamad Fakhri Ishak from FRIM and each participant was encouraged to hold and experience the observation process themselves in the soil pit provided.

After lunch break, the tour proceeded to a composting site and an integrated farm owned by Eng Yean Rubber Sdn Bhd. The tour was guided by its managing director, Mr Isaac Chu Wye Loon. The participants were exposed to the step-by-step process of composting at the com-

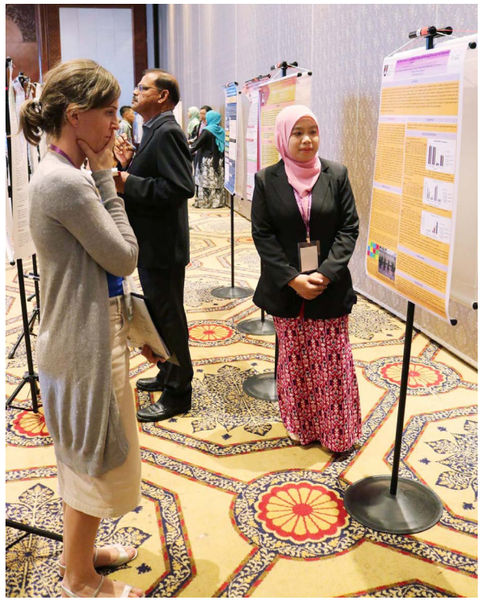
Picture 1. From left (front row): Assoc. Prof. Dr Shafinar Ismail, Assoc. Prof. Dr Asmah Awal (Dean of Faculty of Plantation and Agrotechnology), YB Damian Yeo (representative of Chief Minister of Malacca), Prof. Dr Che Fauziah Ishak (President of MSSS), Dr Nur Qursyna Boll Kassim (Chairman of SOILS2019) with the members of Malaysian Society of Soil Science (MSSS).

Picture 2. Opening ceremony of SOILS2019

Picture 3. Question and answer session

Picture 4. Participants of SOILS 2019

Picture 6. Field trip to Forest Research Institute Malaysia (FRIM), Selandar Research Station in Malacca.



Picture 5. Poster presentation and evaluation

Picture 7. Soil classification and familiarization

Picture 8. Field trip to Eng Yean Rubber Sdn Bhd composting site

Picture 9. Briefing on step-by-step process of composting

posting site and given explanations on the yield performance as affected by the compost application in the integrated farm.

The conference successfully achieved the objectives to share the knowledge and recent information on sustainable soil management and conservation in agriculture and the plantation sector as well as to build networking collaboration of various organizations. It is hoped that through this yearly organized conference, more insights and improvement can be achieved for the future.

By Dr. Nur Qursyna Boll Kassim (Faculty of Plantation and Agrotechnology, UiTM)

All pictures above are courtesy of Muhammad Nuruddin Mohd Nor, Faculty of Plantation and Agrotechnology

Picture 10. SOILS2019's participants field trip at integrated farm (papaya integrated with durian)

Course on Soil Identification and Classification 2019

The Institute of Plantation Studies, Universiti Putra Malaysia hosted a 2-day course on basic soil identification (20-21 August 2019), inviting a small group of 15 participants from research institute, plantation companies, and students. The course lecture was conducted by none other than Dr Wan Mohamed Noordin Wan Daud, a very well known soil scientist and expert in the field, who also is one of distinguished MSSS Fellow Members. Day-1 started with the opening ceremony by the Director of IKP, Prof Datin Dr Siti Nor Akmar Abdullah and proceeded with lecture sessions by Dr Noordin. Day-2 of the course was a full day visit to the field for soil identification, where several types of soils were identified by the participants. The practical soil identification session was the most important and very meaningful for participants to familiarize themselves with the necessary steps for identifying soil series. In time, it is hoped that new scientists and practitioners will eventually learn how

Image A. Dr Wan Noordin giving his lecture on the soil course (© Muhammad Zamir Abdul Rasid)

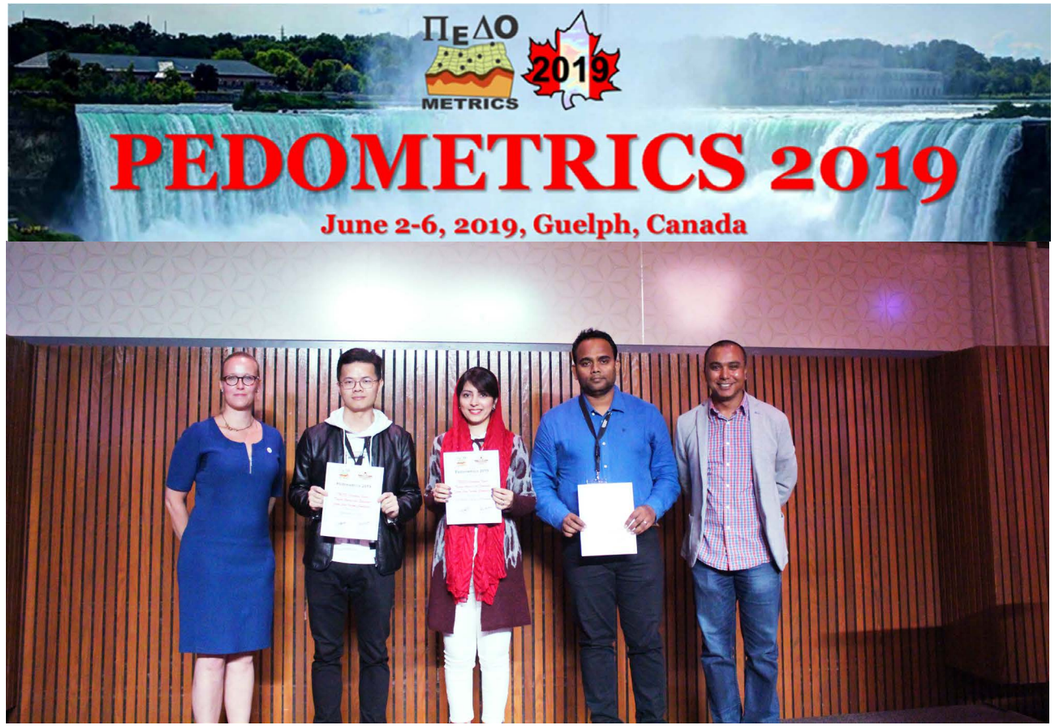
Image B. Practical training on soil identification in the soil pit (© Muhammad Zamir Abdul Rasid)

Image C. A participant trying to determine the soil texture at the pedon (© Muhammad Zamir Abdul Rasid)

to identify the soil series, and more importantly about how to manage such soils for agricultural purposes. Participants are also eagerly waiting for future and more advanced soil classification courses in the near future to increase knowledge and experience when dealing with Malaysian soils.

By Muhammad Zamir bin Abdul Rasid (MARDI)

Pedometrics 2019



Picture of the awardees, from left to right: Titia Mulder, Chair, Pedometrics; Shaomin Lin, Masters student, South China Agricultural University, China; Solmaz Fathololoumi, PhD Student, University of Zanjan, Iran; Vasava Hiteshkumar Bhogilal, PhD student, Indian Institute of Technology, Kharagpur, India; Asim Biswas, Chair, Pedometrics 2019 (© Pedometrics2019)

Thank you very much for providing us the IUSS Stimulus Fund for Pedometrics 2019. This has been a great support to sponsor three travel awards of CAD 500 each to three young pedometricians (student participants) from low income countries. The students were 1) Vasava Hiteshkumar Bhogilal, PhD student, Indian Institute of Technology, Kharagpur, India, presented an oral presentation, 2) Shaomin Lin, Masters student, South China Agricultural University, China, presented a poster and 3) Solmaz Fathololoumi, PhD Student, University of Zanjan, Iran presented a poster (also got the first poster award). The Stimulus Fund from IUSS made the travel award possible for these participants from Low Income Countries (LIC).

Overall, the conference was a great success. We had a total of 166 papers presented as oral (104) and posters (62) during the conference. We had a total of >110 international, >35 Canadian participants and about 25 participants from industry and sponsors. We had a great opening day on Sunday evening, Monday full day of presentations, a great field day at Niagara Falls region including the visit to Niagara Falls and a winery dinner and tour on Tuesday, full day presentations on Wednesday and a half day presentations on Thursday with business meeting. We are having two special issues published in Geoderma and Geoderma Regional compiling the papers presented during the conference.

Read more: *www.pedometrics2019.com*

By Asim Biswas, PhD, Chair, Organizing Committee Pedometrics 2019

Report on the 8th International Symposium on the interactions of Soil Minerals with Organic Components and Microorganisms (ISMOM 2019)

Soil can be seen as an important and delicate interface between biosphere, hydrosphere, atmosphere, and lithosphere. Biogeochemical processes occurring at this interface are crucial for maintaining soil ecosystem function, plant productivity and water quality. Aside from controlling the fate of pollutants, this interface plays a key role within the biogeochemical cycles and thus for soils to act as a source or sink of greenhouse gases. Bearing this in mind, we decided to organize the 8th International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms (ISMOM 2019) with the focus on '**Understanding Soil Interfacial Reactions for Sustainable Soil Management and Climatic Change Mitigation**'. With this meeting, we intended to provide a platform for fruitful discussions between scientists and students from soil sciences, chemistry, biology, biochemistry, physics, ecology or environmental sciences.

The ISMOM 2019 took place in Seville, Spain, during June 23-28, 2019 and was organized as a part of a series of international symposia of Commission 2.5 (Soil chemical, physical and biological interfacial reactions) of the International Union of Soil Sciences (IUSS). These meetings take place every 4 years and were formerly held in Canada, France, Italy, China and Chile.

During the meeting, we had the pleasure to present contributions of 170 participants from 33 countries. A total of 185 abstracts were submitted of which 155 were

8th International Symposium of Interactions of Soil Minerals with Organic Components and Microorganisms

Understanding Soil Interfacial Reactions for Sustainable Soil Management and Climatic Change Mitigation

First stop of the field trip at the beach of the Coto de Donaña (© Nicasio T. Jiménez-Morillo)

finally presented as part of the following thematic subjects:

- ***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 do mismanagement 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?

The number, diversity and quality of the submitted abstracts, as well as the excellent work of the scientific committee guaranteed an interesting and well-balanced scientific program. We greatly thank the members of this committee, who independently evaluated the scientific contributions to one of the above thematic topic assigned to them.
We were able to attract keynote speakers for 5 of the thematic topics and 2 more speakers for the plenary session. In total 54 orals were presented during morning and afternoon sessions. As a special highlight, the winner of Dr. P.M. Huang Prize Talk, Dr. Rota Wagai, demonstrated a convincing summary of his research.
The 96 posters were grouped according to the 6 thematic topics of the symposium and allowed to be shown for two days, one of which was assigned as key day at which the respective presenter was expected to be available for discussions at the poster during the poster session. In order to give the posters more attention, the presenters had also the possibility to come on stage and provide a quick introduction to their posters within 2 min during special sessions called PICO. Although practiced for the first time in the frame of an ISMOM symposium, this opportunity was well accepted and appreciated.
Besides the scientific presentations, a field trip was organized to the inner core of the Donaña National Park on Thursday Afternoon, June 25th 2019, which is one of the most important wetlands of Spain, a refuge for many birds and a mosaic of different landscapes.

Visit of Alcala de Guadaira: in the yard of the fortress (© Nicasio T. Jiménez-Morillo)

However, the culture was not neglected either. After a special guided tour through the Real Alcazar, the welcome reception was celebrated in the Patio of the Old Royal Tobacco Factory (nowadays used as the main Building of the Rectorate of the University of Seville), which, not only inspired Prosper Merimée (1847) to his famous novel 'Carmen' but also Georges Bizet to his world-known opera 'Carmen' (1875).
On Tuesday evening, for those who were interested, a short trip was offered to a nearby town called 'Alcalá de Guadáira to visit one of its famous mills. After learning a bit of the history of its fortress, the group enjoyed typical local food in a nearby tapas bar.

The conference dinner, which was included in the conference fee, took place on Wednesday, June 24th 2019. During this event, poster prices, travel awards and the Dr. P.M. Huang Prize were awarded. The **IUSS Stimulus Fund** supported 6 young scientists by allowing us to waive their conference fees. For three further students the poster production and presentation fee was covered. The sponsorship was announced on the conference webpage and applications were sent to the conference chairs, who evaluated the applications according to the quality of the submitted abstracts and the CVs of the applicant. Preference was given to young students from low-income countries. Two of the students supported by the IUSS Stimulus Fund (Tymur Bedernick and Marina Paneque) received a poster award, confirming the quality of their contributions. However, two of the accepted applicants (from Egypt) could not come, due to the fact that they could not achieve further funding for their travel, although the conference organization offered to pay their accommodation. In order to support them at least a bit, we included their presentations as part of the conference contributions. We printed and presented the posters and included their abstracts in the final abstract book, which will have an ISSN number. In addition, they were encouraged to submit a full paper of their work for the special issue of the conference, which will be published with the Journal of European Soil Sciences.

Supported Students:

Name	Country
Celia Frayssinet	Argentina
Tymur Bedernick	Ukraine
Gaoussou Cisse	Ivory Cost
Marina Paneque	Spain
Veronica Santorio	Italy
Marco Antonio Jimenez-Gonzalez	Spain

Support by facilitating contribution as poster presentation:

Name	Country
Victoria Arcenegui	Portugal
Mohamed Emran	Egypt
Hesham Mansour	Egypt

We would like to thank IUSS Stimulus Fund for supporting the ISMOM 2019. The logo of the IUSS was and still is posted on the conference webpage as well as in the conference guide, the program and the abstract book. During the conference, the logo was also shown at the entrance to the lecture hall and on stage during the breaks.

By Heike Knicker and Francisco J. González-Vila, Conference Chairs

Communiqué of the 43rd Annual Conference of the Soil Science Society of Nigeria

held at the University of Agriculture, Makurdi Benue State from 15th to 19th July 2019

Preamble

The 43rd Annual Conference of the Soil Science Society of Nigeria was held at the University of Agriculture, Makurdi, Benue State, from 15th to 19th July 2019.
The theme of the Conference was ***'Understanding Nigerian Soils for Sustainable Food and Nutrition Security and a Healthy Environment'***.

The opening ceremony was chaired by the Vice Chancellor of the University of Agriculture, Makurdi, Professor Anande Richard Kimbir. The keynote address at the opening ceremony was given by the Permanent Secretary of the Federal Ministry of Environment, Mrs. Ibukun Odusote, who was ably represented by the Director of Special Duties, Mr. Muhammed Isiaka Yakubu.
The Executive Governor, His Excellency Dr. Samuel Ortom, was ably represented by the Deputy Governor, Engr. Benson Abounu, who made some remarks on behalf of the Governor and subsequently declared the Conference open.
Other dignitaries who attended the Conference included the President of the Nigeria Institute of Soil Science, Prof. Ayo Ogunkunle; the Vice-Chancellor of the Federal University, Wukari, Prof. Abubakar Kundiri; the Registrar of the Nigeria Institute of Soil Science, Prof. V. O. Chude; the Provost of the College of Education, Minna, Prof. Muhammed Yakubu and the President. Goodwill messages were received from Mr. Cyril Bikom, who represented the Permanent Secretary of the Federal Ministry of Agriculture and Rural Development, Dr. Abubakar Umar; the president of NISS, Prof. Ayo Ogunkunle; the Vice-Chancellor of the Federal University of Technology, Minna, Prof. Abdullahi Bala, who was ably represented by Prof. A. O. Osunde; the Vice-Chancellor of the Federal University, Wukari, Prof. Abubakar Kundiri; Fmr. Vice-Chancellor of ATBU, Prof. Saminu Ibrahim; Dr. Donald Madukwe of OCP Africa Fertilisers Nigeria Limited and a representative of Indorama Eleme Fertilizer Limited.
The opening ceremony featured a welcome message from the Chairman of the Local Organising Committee, Dr. Bemgba Anjembe, a welcome address by the Vice Chancellor of the University of Agriculture, Makurdi, Professor Anande Richard Kimbir, an address by the President of SSSN, Prof. B. A. Raji, the conferment of an Honorary Fellow Award to the Executive Governor of Benue State, Dr. Samuel Ortom, as well as the launching of the book "Soil Science Society of Nigeria @ 50" and the proceedings of the 2018 Conference. The lead paper of the Conference was presented by Prof. C. L. A. Asadu.

Deputy Governor of Benue State delivering his opening remarks (© Soil Science Society of Nigeria)

The Deputy Governor, NISS President & Registrar, Permanent Secretary FMARD and other dignitaries at the opening ceremony of the conference (© Soil Science Society of Nigeria)

Cross section of Soil Scientists at the 43rd Annual SSSN Conference in Makurdi (© Soil Science Society of Nigeria)

NISS Registrar Prof. Chude discussing with the LOC of 43rd SSSN Conference at Makurdi, Benue State 2019 at the Conference Registration (© Soil Science Society of Nigeria)

Over three hundred and fifty soil scientists, farmers, policy makers, environmentalists and students attended the Conference. Participants brainstormed the current challenges to Sustainable Food and Nutrition Security vis–á–vis the promotion of a healthy environment. Over 230 papers were presented in the areas pedology, land evaluation and land use planning; soil fertility, chemistry and microbiology; soil physics, land degradation, soil and water resources management. There was also a demonstration of a mobile soil laboratory set up by OCP Africa Fertiliser Nigeria Limited.

Observations

Based on the deliberations at the plenary and technical sessions of the Conference, the following observations were made:

1. Sustainable Food and Nutrition Security is facing a serious threat in Nigeria because of rising insecurity, kidnapping and clashes between herdsmen and farmers.
2. The frequent and increasing clashes between crop farmers and herdsmen are partly linked to poor land management, climate change phenomena and desert encroachment.
3. Soil and environmental health are central to nutrition security. The Soil Science Society of Nigeria is worried about the misuse and abuse of agrochemicals in food production and storage in Nigeria as these agrochemicals are capable of undermining the health of Nigerian citizens.
4. The Soil Science Society of Nigeria notes with great concern the large-scale devastation on agricultural land due to oil spillage in the oil producing areas of the Niger Delta region and the slow pace of the remediation process.
5. The soil resources of Nigeria are currently under severe stress being continuously cultivated without adequate conservation and nutrient replacement measures, resulting in physical, chemical and biological soil degradation.

Resolutions

The Soil Science Society of Nigeria, at its 43rd Annual Conference, adopts the following resolutions:

1. Urgent action is needed to arrest Nigeria's rising insecurity and the increase in clashes between herdsmen and crop farmers. There are soil and land management technologies available that are capable of enhancing the productivity of crops even on badly degraded lands and in a hostile physical environment. The Soil Science Society of Nigeria is willing to partner with States and Federal Governments to revitalise the soil resources of the nation, to improve Nigeria's capacity to sustainably produce food and forage crops and thus stem the rising conflict between crop farmers and herdsmen in Nigeria.
2. Government should take advantage of existing expert soil scientists and the on-shelf availability of technologies to facilitate the green-world government initiative with a view to combating desertification and restoring the vegetation in the northern fringes.
3. Government should discourage the use of un-graded and un-branded agrochemicals (insecticides, herbicides and fertilisers) and give their assent to the fertiliser bill which has already been passed by the National Assembly to protect farmers from exploitation and abuse and also to protect our soils, crops and citizens from health risks and hazards.
4. The Federal Government should accelerate the cleanup of polluted sites and the Soil Science Society of Nigeria is willing to provide expertise and proven technologies.
5. Government should as a matter of urgency develop a soil policy that includes soil testing, best management practices and site-specific fertiliser recommendations.

The Annual General Meeting (AGM) of the 43rd SSSN Conference in progress (© Soil Science Society of Nigeria)

Appreciation

The Society immensely appreciates the support of the Government of Benue State, the University of Agriculture, Makurdi, and of other institutions and private organizations, and thanks them for their contributions towards the successful hosting of the 43rd Annual Conference of Soil Science Society of Nigeria.

Dated this 17th day of July 2019.

Professor B. A. Raji, FSSSN (President)

Professor P. I. Ogban (Secretary)

Report on the 9th ESSC International Congress
Soil's Contribution to People: from Food to Life supporting Services

Tirana (Albania), 26-28 September 2019

The 9th International Congress of the ESSC was held in Tirana (Albania) from 26th to 28th September 2019. It was hosted by the Agricultural University of Tirana (AUT) and attended by about 100 scientists from 25 different EU and non-EU countries. The objective of the congress, which was inspired by the major theme ***'Soil's Contribution to People: from Food to Life supporting Services',*** was to present up-to-date research results, practical examples, and policies, to support the role of soil resources for human existence and as a source of food and life supporting services.

The Congress included 28 oral presentations and four poster sections and was endorsed by the International Union of Soil Sciences (IUSS), World Association of Soil and Water Conservation (WASWAC), International Soil Conservation Organization (ISCO), Global Soil Partnership (GSP), *World Agricultural Heritage Foundation* (WAHF), European Commission (EC), Global Environment Facility (GEF), UN Environment Program (UNEP), EUROSOIL and the Kingdom of the Netherlands. Furthermore, Ente Parco dei Nebrodi and CIHEAM Bari sponsored the event financially.

The Minister of Agriculture and Rural Development of Albania, H.E. Mr. Bledi Cuci (Fig 1), delivered the opening speech of the Congress, followed by the Vice Minister of the Environment and Tourism of Albania, Mrs. Ornela Cuci (Fig 2). Prof. Carmelo Dazzi (Fig 3), President of the European Society for Soil Conservation (ESSC) and Prof. Pandi Zdruli (Fig 4) spoke in the name of the Honorary President of the Organizing Committee of the Congress. Prof. Fatbardh Sallaku (Fig 5), President of the Scientific Committee of the Congress and Dean of the Faculty of Agriculture and Ecology of the AUT, who welcomed all the participants to the host institution, concluded the opening ceremony.

Fig 1. The Minister of Agriculture and Rural Development of Albania, H.E. Mr. Bledi Cuci, delivered the opening speech of the Congress (© ESSC).

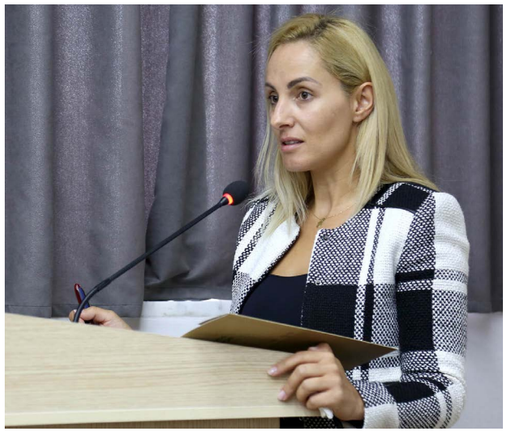


Fig 2. Mrs. Ornela Cuci, Vice Minister of the Environment and Tourism of Albania, greeting the participants at the Congress (© ESSC)

Fig 3. Prof. Carmelo Dazzi, President of the European Society for Soil Conservation (ESSC), during his welcome speech (© ESSC)

Fig 4. Prof. Pandi Zdruli, Honorary President of the Organizing Committee of the Congress (© ESSC)

Fig 5. Prof. Fatbardh Sallaku, President of the Scientific Committee of the Congress (© ESSC)

Fig 6. Prof. Sybe Schaap, Technical University of Delft (© ESSC)

Scientific Programme

The International Congress was organised in four scientific sessions. The first session started with a lecture delivered by Prof. Sybe Schaap (Fig 6) from the Technical University of Delft and a former member of the Dutch Senate, who stressed that water shortage caused by the excessive exploitation of groundwater has consequences for harvests, food supply and the social stability of stricken areas. Climate change is an addition to this man-made threat, which will not be solved by CO2 reduction. The lecture gave particular attention to problem analysis and policy perspectives.

Prof. Ildefons Pla Sentis presented the second session from the University of Lleida, Spain (Fig 7). He underlined that in the last few decades, as a consequence of increasing demand and high market prices for food and the energetic products of some crops, mainly soybeans and palm oil, there have been drastic and mostly non-controlled changes in the use and management of large areas of land, which have led to new or increasing problems of soil and water degradation many times. Moreover, he stressed that these changes frequently happen in savannas and forested lands, in developing countries of the tropical and subtropical regions of Asia, Africa and Latin America, as a result of the initiative of large individual producers and corporations, who usually look for short-term economic benefits rather than considering any other negative environmental or social consequences. The adoption of no-tillage, in particular without proper integration of crop rotation and diversification or permanent maintenance of soil cover or an adequate set of soil and water conservation measures (furrows, drainage, etc.), was shown as a typical example of mismanagement leading to severe land degradation.

Prof. Edoardo Costantini from the Academy of Georgofili, Florence, Italy, (Fig 8), introduced the third session, presenting a methodological framework for the proper planning of the techniques that farmers use before and immediately after tree crop plantation. The manipulation of soil and underlying sediments and rocks should be tailored to the local conditions and based on the target soil characteristics and qualities, not only suited to the crop yield but also to all soil ecosystem services. Calculation of the rooting capacity was introduced as a technical tool to quantify soil ecosystem services and design how the earth works.

In the last session, in a lecture given by Prof. José Rubio from Centro de Investigaciones sobre Desertificación-CIDE, Valencia, Spain (Fig 9), the current trend of global

Fig 7. Prof. Ildefons Pla Sentis, University of Lleida (© ESSC)

Fig 8. Prof. Edoardo Costantini, Academy of Georgofili, Florence (© ESSC)

warming was highlighted, along with its special impact on soil functioning conditions in the driest areas of the planet (including the Mediterranean), namely the increase in aridification processes and, consequently, desertification. Conversely, soil degradation affects important parameters of climate regulation and the atmospheric chemical composition. Among others, Prof. Rubio mentioned changes in albedo, radiative forcing, soil moisture, surface roughness, evapotranspiration, emission and retention of greenhouse gases (carbon dioxide, methane, nitrous oxide), changes in the condensation surfaces and the emission of aerosols and dust particles.

Fig 9. Prof. José Rubio, CIDE, Valencia (© ESSC)

Fig 10. Prof. Takashi Kosaki, IUSS President (© ESSC)

The Congress ended with a lecture given by Prof. Takashi Kosaki, IUSS President, (Fig 10) who described soil degradation, as it has been observed under different environmental conditions, particularly in the developing countries, in terms of its different types, causes, its impact on human welfare and in regard to possible counter measures. Another keynote speaker, Prof. Rattan Lal, IUSS Past President, participated in the Congress with a video on 'Soil Conservation for Mitigation of Gaseous Emissions from Erosion-Prone Landscapes', where he thoroughly explained the linkages between soil erosion and carbon dynamics at different scales, from the soil aggregate to the agricultural field and the landscape. He concluded that soil erosion has an overall negative impact on the carbon budget and soil stewardship for erosion control cannot ignore the fact that when people are poverty stricken, desperate and starving, they pass on their sufferings to the land. In light of this, Prof. Lal's presentation, stressing the linkages between poverty and soil erosion, complemented those of the other keynote speakers, stigmatizing the possible drawbacks of excessive agricultural industrialization. All presentations concluded that people are the mirror image of the land which supports them, and vice versa.

Social Programme

On Saturday 28th, the evening ended with a cheerful social dinner at the Markata Fish restaurant, where participants were eating traditional food while listening to traditional Albanian music offered by the Organizing Committee. During the dinner, Edoardo A.C Costantini (Fig 11), was awarded the Gerold Richter award 2019 for his career, and for making significant and internationally recognised contributions to the investigation and promotion of soil conservation in Europe. The dinner also was a good chance to award two young researchers a grant of 500 € each for their commitment. The winners were Valeria Cardelli (Fig 12) (Università Politecnica delle Marche, Ancona, Italy), who received the grant for her study on *Effects of Climate Change on Beech Forest Soil Resilience – Focus on Chemical and Biochemical Properties*, written in collaboration with Mauro De Feudis, Dominique Serrani, Marziyeh Hoseini, Flavio Fornasier, Luisa Massaccesi, Stefania Cocco, Alberto Agnelli, David C. Weindorf, Giuseppe Corti; and Viktoriia Hetmanenko (Fig 13) (Institute for Soil Science and Agrochemistry Research named after O.N. Sokolovsky', Kharkiv, Ukraine)

Fig 11. Edoardo A.C. Costantini was awarded the Gerold Richter award (© ESSC)

Fig 12. Valeria Cardelli receives the ESSC grant (© ESSC).

Fig 13. Viktoriia Hetmanenko was awarded the ESSC grant (© ESSC).

Fig 14. Prof. Pandi Zdruli explains the features of a benchmark soil profile during the field excursion (© ESSC). In the second part of the excursion, the Congress participants visited the town of Kruja, its old Bazaar of wooden shops, one of the best preserved places in the entire region. Kruja also hosts the museum of Albania's national hero George Kastriot Scanderbeg, a famous tourist destination in the country.

who was awarded the grant for her study on *Practices of Organic Fertilizers Application for Organic Carbon Management in Ukrainian Chernozems*, written in collaboration with Ievgen Skrylnyk and Angela Kutova. The best poster presented at the Congress was also given an award. The winner was the poster: *Technosols for Remediation of Degraded Range and Agricultural Soils. Properties and Hydrological Behavior*, presented by: Lourdes Luna, Roberto Lázaro and Albert Solé-Benet (Spain). Finally, Prof. Adam Kertész, of the Hungarian Academy of Sciences was honoured for his long-lasting and dedicated commitment to the Society.

Field and Cultural Excursion

On Saturday 28th, a field excursion was organised to the Agriculture Technology Transfer Centre (QTTB) located in Fushe Kruje, about 10 km north of Tirana. The first part of the field trip visit was devoted to the observation and discussion of a benchmark soil profile in Fushe Kruje.

Problems linked to soil management and conservation in one of the most important crop production areas of Albania were illustrated and discussed by Prof. Pandi Zdruli (Fig 14), who also pointed out the differences between the 'old' and the 'new' agricultural systems in Albania.

Edoardo Costantini (Academy of Georgofili, Italy)
Carmelo Dazzi (University of Palermo, Italy)
Pandi Zdruli (CIHEAM, Italy)
Fatbardh Sallaku (AUT, Albania)

30th Congress of the Soil Science Society of Poland 'Soil – source of life'

1-5 September, 2019, at the Maria Curie-Skłodowska University in Lublin, Poland

The event was attended by nearly 200 participants, mostly from Polish research centres, but also from Lithuania, Russia, Belgium and Hungary. The special guests of the Congress were the president-elect of the International Union of Soil Science (IUSS), Prof. Laura Bertha Reyes Sanchez from Mexico, and honorary members of the Soil Science Society of Poland (SSSP) – Sergey Goryachkin, Stanisław Kalembasa, Jerzy Marcinek, Stefan Skiba and the Honorary President of SSSP, Piotr Skłodowski. During 3 plenary sessions, 9 oral sessions and 2 poster sessions, a total of 57 oral presentations and nearly 100 posters were presented. The Congress opened with lectures delivered by Prof. Magdalena Frąc – 'Importance of biodiversity in soil environment' and Prof. Jean Pousen – 'Soil Erosion in the Anthropocene: do we still need more research?' to introduce the subject of the Congress, 'Soil – source of life'. The oral presentations were grouped in thematic sessions: Soil as the source of life; The role of soil in sustainable development; Genesis, systematics and cartography of soils; Impact of land use on soil properties and processes; Contemporary threats to soil functions in the environment and human life. The presenters reported many interesting research results, scientific concepts and methodological issues.

Prof. Cezary Kabała, who presented the assumptions of the new Polish Soil Classification, and Prof. Przemysław Charzyński, who characterized the current state and the prospects of soil science education, were invited to deliver their presentations in the closing session of the Congress during the second plenary session. Prof. Laura Bertha Reyes Sanchez gave a presentation outlining the challenges facing IUSS in the coming years in the third plenary session.

An indispensable element of the Congress programme was the field trip, which took the participants to the Nałęczowski Plateau and around Puławy town. The participants were given the opportunity to learn about the forms of ravine erosion in the Rogalów area, analyze the erosion processes in the catenary, deepen their knowl-

Impression of the congress (© Soil Science Society of Poland)

Impression of the congress (© Soil Science Society of Poland)

edge of the geology of the Lublin Upland, observe the unique soil profiles made of glauconite clays and try to determine the relationship between soil properties and the taste and aroma of local wines. A valuable discussion on the taxonomic position of soils in Polish and international classifications took place in relation to each of the soil profiles.

A significant number of participants took part in a two-day post-conference trip. The first day covered issues related to the functioning of organic soils in the Poleski National Park. On the second day, soils under different land uses in the Roztoczański National Park were presented, and then, at the Rogów Farm, there was an opportunity to learn about the no-tillage technique and its significance for soil processes today.

Very special was the visit to the Institute of Soil Science and Plant Cultivation in Puławy, the first soil research institute in the world founded by Dokuchaev: *http://www.iung.pulawy.pl/eng/*

A valuable addition to the scientific part of the Congress were the more or less official social meetings, as well as visits to the Old Town in Lublin and Zamość.

All papers and documents prepared for and during the Congress, as well as links to photographs, can be found at the Congress website: *www.soilcongress2019.umcs.pl*

Thanks to Piotr Bartmiński and Lukasz Uzarowicz

Report about the WETSCAPES Conference

WETSCAPES – Understanding the ecology of restored fen peatlands for protection and sustainable use
September 10-13, 2019 in Rostock, Germany

Peatlands must be made wet – immediately. This is the summary of the results of the international conference that took place from 10 to 13 September 2019 at the University of Rostock. At the WETSCAPES Conference, 160 scientists from 20 countries discussed the results of their research in drained, rewetted and near-natural peatlands. At the WETSCAPES Conference, 68 orals and 45 posters were presented. Representatives from various disciplines talked about plant growth, greenhouse gas emissions, nutrient losses and microbial processes in the soil. Most of these scientists deal with individual phenomena in peatlands, and together they were able to establish clear correlations and connections between the results. This is particularly important for rewetted peatlands, as these systems represent completely new ecosystems and the details of their functioning are still poorly understood.

Conference topics:

- Greenhouse gas exchange in space and time
- Element cycling and export
- Peatland bio-hydrology
- Plant growth and decomposition
- Microbial pathways
- Paleoecological methods in restored peatlands
- Legacy of degradation in biotic communities
- Mapping with GIS and remote sensing
- Peatland management

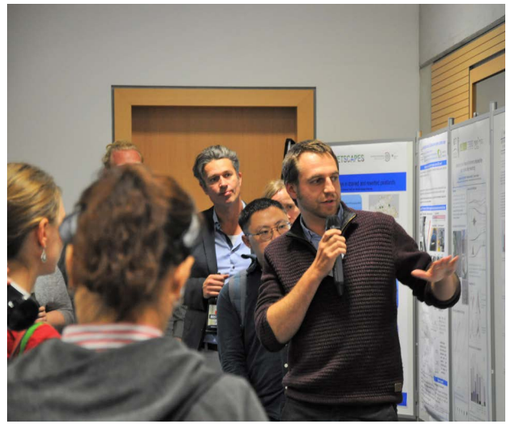
Thirteen excellent researchers were invited as keynote speakers that gave amazing talks and covered the width of the field. At four excursions that took the participants to the investigation sites of the project WETSCAPES, the scientists learned more about the current research in North East Germany and the characteristics of the regional peatlands. The project WETSCAPES provided the frame of this conference. In this project, researchers

160 participants from 20 countries at the WETSCAPES Conference in Rostock, Germany (© Thomas Rahr/University of Rostock)

Gerald Jurasinski, one of the organizers of the WETSCAPES Conference, summarized the results of the conference (© Franziska Schmacka/University of Rostock).

from the Universities of Rostock and Greifswald develop scientific principles for sustainable and gentle cultivation of degraded and later rewetted peatlands.
In the follow-up of the WETSCAPES Conference, there will be a special issue 'Understanding the Ecology of Restored Fen Peatlands for Protection and Sustainable Use' within the journal 'Soil Systems' that will publish papers presented at the conference.
Summarizing the results of the conference, all researchers agreed that the drainage of peatlands must be stopped in favour of the climate. "Every avoided ton of CO_2 that accumulates in the atmosphere in the long term is important. Temporary methane emissions from wet peatlands are the much smaller problem", emphasized Anke Günther (University of Rostock). What this change in water levels will look like in practice can only be clarified together with politicians and society. Promising examples were presented in which rewetting was combined with continued agricultural use to reduce the release of harmful greenhouse gases. Some

Anke Günther, a young scientist of the WETSCAPES consortium, presented her results that show that carbon dioxide emissions pose the greatest threat for reaching the Paris goals (© Franziska Schmacka/University of Rostock).



Poster presentations at the WETSCAPES Conference (© Franziska Schmacka/University of Rostock).

examples also showed that rewetting can succeed quite easily, only by stopping the sometimes costly drainage and filling in drainage ditches. Restoring the original wet conditions in many more peatland areas will bring about a profound change in landscapes. Fons Smolders of B-Ware/University of Nijmegen presented examples of paludiculture in the Netherlands and summarized: "Is peatland rewetting really a good idea? In the long term, yes. But we will miss our cows."
With the funding of IUSS, the attendance of eight excellent master and PhD students at the WETSCAPES Conference could be supported. All of them actively presented their research within a talk or poster.
Elisabeth Bijkerk (PhD student at Trinity College Dublin, Ireland): 'Understanding calcareous fen ecohydrology for protection and sustainable use' (talk in the plenary session 'Peatland rewetting, proxies and modelling').
Daniel Köhn (PhD student at University of Rostock, Germany): 'Carbon dioxide and methane exchange of soils, trees and ditches in drained and rewetted fens' (talk in the session 'Greenhouse gas emission & its drivers').
Thomas Newman (PhD student at University of Leicester, UK): 'The impacts of long-term drainage and agriculture on the carbon dynamics of fen peatlands in East Anglia, UK' (talk in the session 'Peatland management').
Anna Helena Purre (PhD student at Tallin University, Estonia) 'Spatial and interannual variations of CO_2 exchange on rewetted milled peatlands' (talk in the session 'Greenhouse gas emission & its drivers').
Heike Schimmel (master student at University of Bonn, Germany): 'Legacy effects of historical land use on car-

One of the excursions took the participants to a rewetted alder carr (© Franziska Schmacka/University of Rostock).

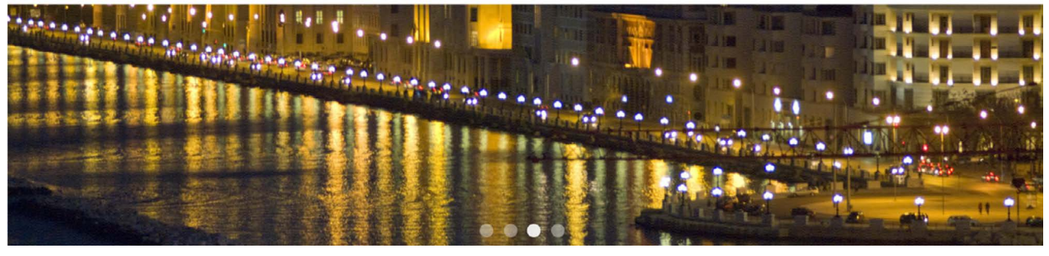
At the excursions to a rewetted coastal peatland the participants learned how greenhouse gases were investigated within the project WETSCAPES (© Marcel Silvius/GGGI).

bon stability in Flanders Moss' peatlands' (talk in the session 'Peatland management').
Melanie Heck (PhD student at University of Freiburg, Germany): 'In-vitro biomass production of different peat moss species' (talk in the session 'Plant growth & decomposition').
Tracy Rankin (PhD student at McGill University, Canada): 'Controls on autotrophic and heterotrophic respiration in an ombrotrophic bog' (talk in the plenary session 'Peatland rewetting and greenhouse gas emissions').
Kamila Harenda (PhD student at Poznan University, Poland): 'Heat wave 2018 – Impact on Rzecin peatland carbon balance in the context of the optical parameters of the atmosphere' .

First Joint Meeting on
Soil and Plant System Sciences (SPSS 2019)

Natural and Human-induced Impacts on the Critical Zone and Food Production

Bari, Italy • 23-26 September 2019



Report of the First Joint Meeting on Soil and Plant System Sciences (SPSS 2019)

By Claudio Zaccone

The First Joint Meeting on **Soil and Plant System Sciences (SPSS 2019)**, organized by the Italian Society of Agricultural Chemistry (SICA), the Italian Society of Pedology (SIPe) and the Italian Society of Soil Science (SISS), in collaboration with the Mediterranean Agronomic Institute (CIHEAM) and the Italian Chapter of the International Humic Substances Society (IHSS), was held on **23-26 September 2019** at the CIHEAM Campus in Valenzano (Bari, Italy).

The title of this meeting ***'Natural and Human-induced Impacts on the Critical Zone and Food Production'*** set an ambitious goal of integrating scientific backgrounds and topics, all focusing on the 'critical zone' (where soil and living organisms interact) but coming from differing theoretical perspectives and applied approaches.

The scientific programme consisted of 5 sessions (**Natural and agricultural soil systems, Soil pollution and food safety, Organic amendments and soil quality, Plant responses to natural and human-induced drivers, Frontiers in plant and soil sciences)**, distributed over 4 days which also included a scientific and cultural excursion and a social event.

Each session was opened by an invited speaker: I. **Takashi Kosaki**, President of the International Union of Soil Sciences (IUSS); II. **Fabio Terribile**, University of Naples Federico II, Italy, President of the Soil Morphology and Micromorphology Commission, IUSS; III. **José María García-Mina Freire**, University of Navarra, Spain, Vice President of the International Humic Substances Society (IHSS); IV. **Philip J. White**, Programme Leader, The James Hutton Institute, Scotland; and V. **Yiannis Deligiannakis**, University of Ioannina, Greece, President of the IHSS.

The field trip on Tuesday 24th September consisted of a pedological excursion with a morphological description of four soil profiles organised by Fabio Terribile and Pandi Zdruli, and a cultural visit to Matera, UNESCO World Heritage site and European Capital of Culture for 2019.

SPSS 2019 gathered thoughts and findings of scientists coming from several scientific societies and institutions involved in research approaches to the *critical zone*. **More than 160** scientists, professionals and individuals from different countries (including Italy, Spain, Greece, Russia, UK, Germany, Nigeria and Trinidad & Tobago) attended the meeting where **35 oral presentations and 90 posters** contributed to creating a permanent forum for stimulating scientific debates, especially for young scientists and students (almost **50% of the total number of attendees**).

SPSS Opening ceremony (© Teodoro Miano)

For best oral presentations and posters on both plant- and soil-related topics, four young scientists were awarded a voucher granting them free-of-charge publication on Plants (ISSN 2223-7747; www.mdpi.com/journal/plants) and Soil Systems (ISSN 2571-8789; www.mdpi.com/journal/soilsystems), respectively.

The Book of Abstracts (a PDF document), along with more information, can be found at *https://spss2019.azuleon.org/*.

Last but not least, a very special social dinner was organized on Wednesday 25th at the Masseria Mangiato in Martina Franca (Taranto), where participants were received and accompanied all night by Salento's pizzica and tarantella music performed by the Terraross group, featuring Dominique Antonacci at the drums.

At the end of the meeting, all participants were given a *terracotta* 'pedon' made by the artist Antonio Vestita and conceived in collaboration with Teodoro Miano, Chair of the SPSS 2019 meeting.

Pedological excursion (© Teodoro Miano)

Two impressions from the field trip featuring Takashi Kosaki, IUSS President (© Teodoro Miano)

Soils as records of Past and Present: the geoarchaeological approach. Focus on: is there time for fieldwork today?

The international meeting 'Soils as records of Past and Present' was held on 6th and 7th November 2019 in Bruges (Belgium). The purpose of the meeting was to bring together scientists working in Pedology or other fields of Earth Sciences and Archaeology in order to share knowledge and research strategies concerning the topic of 'Soils as records of Past and Present'. During this meeting, several relevant questions concerning the current state of research, valorisation of soil data gathered in the past, archaeological issues, potentials of interdisciplinary work, the significance of fieldwork, and future challenges were addressed by speakers and participants. In an effort to find answers to these questions, participants had the opportunity to attend a field excursion on 6th November and a scientific meeting on 7th November.

The excursion, with 50 participants, was organised in the region of Bruges. The UNESCO world heritage site Bruges, situated close to the Belgian coast, developed on the verge of cover sands with the tidal landscapes to the north. This landscape position was an advantage in many aspects, but a challenge for trade, as the famous medieval town of Bruges was accessible only through a highly dynamic system of tidal gullies. Export and import occurred through a system of trade hubs along the tidal gullies. During the excursion, the importance and wealth of this extended harbour system was highlighted and the locations of several of these trade hubs were visited. The four observation and discussion points (city of Damme, Zeevaartstraat in Zeebrugge, Heistlaan in Ramskapelle, and Sincfala, the Museum of the Zwin area) allowed for an overall view of the complex sedimentary history, geomorphology, and soilscape of the region. Moreover, the various aspects of interaction between populations and the natural resources available since Roman times were unravelled through interesting presentations and soil profiles. All these aspects are thoroughly documented in a well-illustrated excursion guidebook.

The scientific meeting was held at the beautiful Groeningemuseum at the heart of the historic UNESCO heritage city of Bruges. 11 scientific talks and 17 posters made certain that more than 100 participants were able

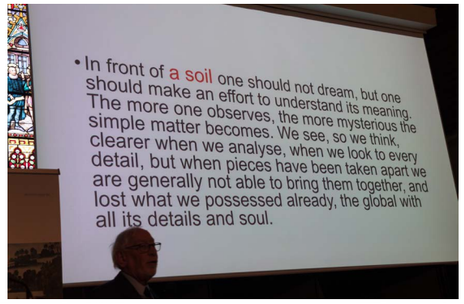








All photos in this article are courtesy GAMB19.

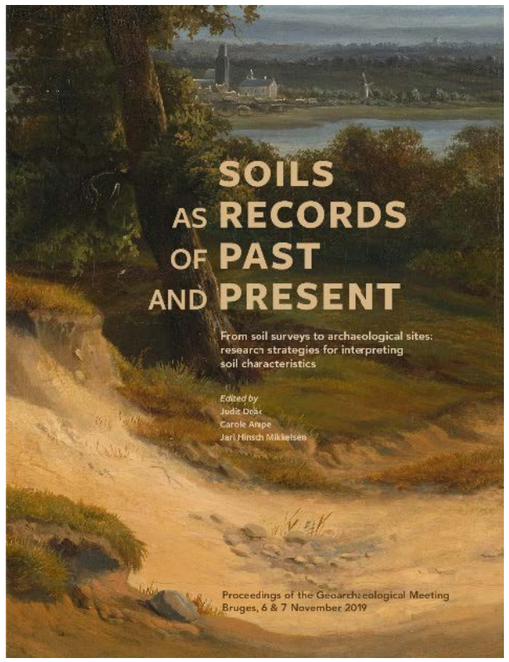



to learn and talk about original research strategies and interdisciplinary collaboration results concerning the topic of 'Soils as records of Past and Present'.

A book **Soils as records of Past and Present. From soil surveys to archaeological sites: research strategies for interpreting soils characteristics,** composed of 21 peer-reviewed scientific articles was published for this meeting. For details please see below.
The abstract book of the meeting is available online through open access: *http://doi.org/10.5281/zenodo.3527265*. It contains the programme of the meeting, the summaries of talks and posters presented during the meeting, some of the posters themselves, and the summaries of the papers published in the book 'Soils as Records of Past and Present'.
Through this meeting and the book published on this occasion, the organisers of this meeting wish to pay homage to the scientific work of Prof. Em. Dr. Roger Langohr, who manages to fascinate, motivate and promote scientists who are active in a variety of research fields and come from all parts of the world. Today, when environmental questions are more important than ever, the original research strategies presented and discussed over the days of the symposium and in the scientific papers written for this occasion aim to contribute to a free and open access and to the strengthening of intergenerational transmission of scientific knowledge.
The excursion, the scientific meeting, the book, and the abstract book published on the occasion of the meeting are the results of a participative project that started in December 2018. The achievement of all the above mentioned objectives in less than one year was only possible thanks to the strong motivation and dedication not only of the organisers, but also of all the contributors and reviewers. We are most grateful to all those who contributed and we will cherish the wonderful experience and beautiful memories of this successful adventure.
The website (*https://www.4terres.ch/gamb19*) of the meeting documents and illustrates some of the many nice moments of this meeting. The organisers of the meeting sincerely acknowledge the support of the Raakvlak Team, the City of Bruges, 4terres, OPAN Neuchâtel, section archéologie, CH-Quat, the Flemish Land Agency, the Flemish Community and the University of Gent.

Judit Deák, Carole Ampe, Jari Hinsch Mikkelsen, Mariebelle Deceuninck (the Organising Committee), © GAMB19

Soils as records of Past and Present. From soil surveys to archaeological sites: research strategies for interpreting soil characteristics



By Judit Deák, Carole Ampe, Jari Hinsch Mikkelsen
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Each individual paper is accessible as an open access online document and the authors keep the copyright of their work (see table of content here below).

Short summary:
This book was edited on the occasion of the meeting '**Soils as records of Past and Present: the geoarchaeological approach. Focus on: is there time for fieldwork today?'** that was held on the 6th and 7th of November 2019 in Bruges (Belgium). With this book, we would like to pay honour to all the scientific contributions of Roger Langohr, who manages to fascinate, motivate and promote scientists that are active in various research fields and come from all parts of the world.
In the past few decades, soil science has contributed greatly to the discussions on past and present environmental changes, as well as to the understanding of various topics of human impact on landscapes and the environment. This book aims to address these complex issues and demonstrates how they are approached and unravelled through past and current interdisciplinary research. The twenty-one papers that compose this book focus on a broad range of subjects and cover a wide geographical scope with soils and related questions presented from Belgium, France, Hungary, Luxembourg, Spain, and Switzerland. The peer-reviewed papers are grouped in five main chapters: Present and past soilscapes and land use (1), Natural and anthropogenic soil forming factors and processes (2), Archaeology and soil science, unravelling the complexity (3), Past climates and environments (4), and Present and future use of soil data (5). These contributions testify that an interdisciplinary approach, which has long been advocated by Roger Langohr, works well and proves it to be a successful tactic.

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By Judit Deák, Carole Ampe, Jari Hinsch Mikkelsen, Mariebelle Deceuninck, November 2019

2nd National Soil Judging Contest - CNESuelos

Final Report

2do Concurso Nacional de Evaluación de Suelos

International Union of Soil Sciences

International Decade of Soils 2015-2024

INEGI

CONABIO

ESCUELA NACIONAL DE ESTUDIOS SUPERIORES UNIDAD MORELIA

44° CONGRESO MEXICANO DE LA CIENCIA DEL SUELO

Introduction

What is a CNESuelos?

A National Soil Judging Contest (CNESuelos, *Concurso Nacional de Evaluación de Suelos*) is a training activity in which students are invited to show their skills in the description, classification and integration of landscape indicators, to reach an assessment of the usability of ecosystem functions and the vulnerability of the resource soil.
The main objective of the 2nd National Soil Judging Contest was to allow participants to employ their practical knowledge and skills to describe, interpret and understand the characteristics of the resource soil in the field. The participants were requested to describe a couple of soil profiles and associated landscapes. In addition, the event included specific objectives:

1. Create a cooperative atmosphere for students, researchers and people interested in soil science in which they can interact and share experiences, particularly in the genesis, classification and evaluation of soil resources.
2. Serve as a tool in the pedology teaching-learning process for young Mexican scientists.

Field of action

The Soil Judging Contests promote the interest of new generations in the genesis of soil classification and assessment. The CNESuelos is aimed at undergraduate and graduate students in the field of soil sciences. Participants use their practical knowledge and skills to describe, understand, and interpret soil resource characteristics in the field. These activities involve the description of soil profiles using basic tools, as well as international standards and guidelines.

Importance of the CNESuelos in the teaching of pedology

According to the data derived from the congresses in the last 10 years, the influx of young people was limited; 4 years ago, students began to resurface and new researchers worked explicitly on soil resources. Thus there was a gap which was not trivial, and which was in large part was due to the 'uselessness' attributed to integral soil studies in the face of the paradigm of fertility formulas applied to soils in response to food problems in Mexico's agriculture and the world. This reductionist vision which prevailed in knowledge generation and extension was one of the tragic consequences of the Green Revolution, in which Mexico was one of the main promoter countries.
However, although a new generation of pedologists is emerging, few people are interested in dedicating themselves to the integral study of soils. Moreover,

Students at work during CNESuelos (© Dr. Alma Barajas of the Mexican Soil Science Society)

it appears that any connections among the new generation are only just beginning and that there is poor participation in the organisational spaces for the study of the resource soil.

International relevance

Aware of the current, and worrying, situation regarding the knowledge of Soil Sciences at the global level, countries participating in the XVI Latin American Congress of Soil Science in 2004 were called upon to form the Latin American Network of Teaching and Education of Soil Science as a key tool for linking educational projects focused on children and young people. This proposal was approved during the assembly of the Congress.

In a similar effort, FAO members declared 2015 as the International Year of Soils, with the dissemination and recognition of the importance of teaching science as one of the main objectives. In 2015, the In-

Participants at CNESuelos (© Dr. Alma Barajas of the Mexican Soil Science Society)

ternational Union of Soil Sciences issued the Vienna Soil Declaration, in which it recognises the importance of soil as ecosystem basis and as a determining factor in food security. It also makes a number of recommendations, including increasing soil awareness globally and proclaiming the International Decade of Soils (2015-2024).

As for the activities raised, public knowledge, education and dissemination of information are given priority; these commitments were adopted by the Latin American Society of Soil Science, of which Mexico is a member. With the aim of participating in the International Decade of Soils, over the course of which activities that aim to increase public knowledge, education and awareness of the importance of soils are prioritised, the Mexican Society of Soil Science, A.C. (SMCS, *Sociedad Mexicana de la Ciencia del Suelo*) has decided to organise the CNESuelos aimed mainly at students of higher education who are interested in soil science and its importance for environmental issues.

The new generations give continuity to the process of holistic soil investigation. Unfortunately, the crisis

Award-winning ceremony for the first-place team grade, and Dr. Peter Schad, Professor at the Technological University of Munich, Germany, and Chairman of the WRB Working Group of the International Union of Soil Sciences (© Dr. Alma Barajas of the Mexican Soil Science Society).

that has kept pedology marginalised in Mexico has led to a generational vacuum between researchers and new students. This situation can be reversed, with the support and promotion of events such as CNESuelos.

Timeline of the 2nd CNESuelos

Friday, October 25, 2019	
8:30-8:55	Registration. Auditorium of the **Center for Agricultural Sciences (La Posta), Autonomous University of Aguascalientes**.
9:00-9:15	Inauguration and welcome to the 2nd National Soil Judging Contest. Alma Barajas (CONABIO; UNAM).
9:15-10:00	Geographical-physical characteristics of the Aguascalientes state associated with the regional pedo-landscapes. Orlando Colín Olivares (INEGI)
10:00-10:45	Formation processes and soil properties. Genetic horizons of Palo Alto and Productora Agrícola de Aguascalientes. Adrián Rodríguez Ramírez (INEGI)
10:45-11:15	B R E A K (includes snacks for participants)
11:15-12:00	WRB: horizons, properties and diagnostic materials. Luis Daniel Olivares Martínez (INIRENA, UMSNH)
12:00-12:45	Functions and potential land use. Judith Amador Sierra (Technological University of Rodeo) and Víctor Montoya Jasso (COLPOS)
12:45-13:15	How to fill out the evaluation format correctly. Axel Cerón González (Faculty of Sciences, UNAM)
13:15-13:45	Walking from the auditorium to the floor profile of the pole
13:45-15:00	FOOD (includes food for participants)
15:00-18:00	Practice pre-contest in La Posta profile

Saturday, October 26, 2019	
8:00	Appointment at the front door of the **Autonomous University of Aguascalientes**
8:15	Move to Productora Agrícola de Aguascalientes
9:00	Arrival at Productora Agrícola de Aguascalientes
9:30	Start competition (teams)
10:30	End competition (teams)
10:30-11:30	B R E A K (includes snacks for participants)
11:30	Move to Palo Alto
12:30	Arrival at Palo Alto site
13:00	Start competition (individual). Trainers and judges meet to evaluate Team Contest Formats.
14:00	End competition (individual).
14:00-15:30	FOOD (includes food for participants)
15:30	Icebreaker
16:00-18:00	Coaches and judges meet to Individual Contests Formats

Team part	Team Contest (Productora Agrícola de Aguascalientes)			
	A		B	
	In	Out	In	Out
9:30-10:30	Team 1	Team 2	Team 3	Team 4
11:30-12:30	Move			
Individual part	Individual (Palo Alto)			
	A		B	
	In	Out	In	Out
13:00-14:00	1st 2b 3c 4d	2nd 3b 4c 1d	3rd 4b 1c 2d	4th 1b 2c 3d

The 2nd National Soil Judging Contest – participants

Organizing Committee

Name	Institution
Alma Barajas Alcalá	National Commission for the Knowledge and Use of the Biodiversity
Axel Cerón González	National Autonomous University of Mexico
Luis Rojas Perez	Chapingo Autonomous University
Judith Amador Sierra	Technological University of Rodeo
Luis Olivares Martinez	Michoacana University of San Nicolás de Hidalgo

Local Alliances Committee

Name	Institution
Alejandro Ibelles	National Institute of Statistics, Geography and Informatics
White Prado	National Institute of Statistics, Geography and Informatics
Orlando Colín Olivares	National Institute of Statistics, Geography and Informatics
Adrián Rodríguez Ramirez	National Institute of Statistics, Geography and Informatics
Liliana Barba	Autonomous University of Aguascalientes
Amalio Ponce	Autonomous University of Aguascalientes

Judges and evaluators

Name	Institution
Luis Rojas	Chapingo Autonomous University
Gilberto Xix	National Institute of Statistics, Geography and Informatics
Jesús Noel Herrera	National Institute of Statistics, Geography and Informatics
Adrián Rodríguez Ramirez	National Institute of Statistics, Geography and Informatics
Luis Daniel Olivares Martinez	Michoacana University of San Nicolás de Hidalgo
Ramiro Ríos Gómez	UNAM FES-Zaragoza

Competitors

Team 1

Function	Name	Institution
Coach	Jesús Noel Herrera	INEGI
Contestant	Oscar Nazul Cabrera Lopez	UNAM ENES-Morelia
Contestant	Sarah Margarita Leon Azuara	UNAM ENES-Morelia
Contestant	Sebastian López Mendoza Mendoza	UNAM ENES-Morelia

Team 2

Function	Name	Institution
Coach	Adrián Rodríguez Ramirez	INEGI
Contestant	Miguelina Maldonado Cervantes	Technological University of Rodeo
Contestant	Marcos Eduardo Núñez Núñez	Technological University of Rodeo
Contestant	Yuli Alondra González Arreola	Technological University of Rodeo
Contestant	Rubén González Rodriguez	Technological University of Rodeo

Team 3

Function	Name	Institution
Coach	Luis Rojas	Chapingo Autonomous University
Contestant	David Perez Bifano	Chapingo Autonomous University
Contestant	Abraham Franco Valor	Chapingo Autonomous University
Contestant	Niria Yunuhen Guerrero Romo	Chapingo Autonomous University
Contestant	Erick Mauricio López Vázquez	Chapingo Autonomous University

Team 4

Function	Name	Institution
Coach	Ramiro Ríos Gómez	UNAM FES-Zaragoza
Contestant	Carmina Gámez Barajas	COLPOS
Contestant	Nadia Paula Irineo Gonzalez	UNAM FES-Zaragoza
Contestant	Airy Diaz Rincón	UNAM FES-Zaragoza
Contestant	José Ottoniel Hernández Soto	UNAM FEZ-Zaragoza

Results

Team contest

Position	Team Key	Institution
1st	3	Chapingo Autonomous University
2nd	1	UNAM ENES-Morelia
3rd	4	UNAM FES-Zaragoza

Individual contest

Position	Name	Institution
1st	Yuli Alondra González Arreola	Rodeo University of Technology
2nd	Miguelina Maldonado Cervantes	Rodeo University of Technology
3rd	Erick Mauricio López Vázquez	Chapingo Autonomous University

Summary of all assessments

Full name	Institution of origin	Team key	Place	Points
Yuli Alondra González Arreola	Rodeo University of Technology	2	**1**	**162**
	Chapingo Autonomous University	3		**117**
Miguelina Maldonado Cervantes	Rodeo University of Technology	2	**2**	**116**
Gadiel Pedraza Monroy	Chapingo Autonomous University	3	**3**	**111**
Abraham Franco Valor	Chapingo Autonomous University	3	**4**	**110**
José Ottoniel Hernández Soto	UNAM FES Zaragoza	4	**5**	**109**
	UNAM ENES-Morelia	1		**106**
Nadia Paula Irineo Gonzales	UNAM FES Zaragoza	4	**6**	**103**
	UNAM FES Zaragoza	4		**101**
Ruben Gonzalez Rodriguez	Rodeo University of Technology	2	**7**	**100**
Carmina Gámez Barajas	Graduate College	4	**8**	**99**
Niria Yunuhen Guerrero Romo	Chapingo Autonomous University	3	**9**	**98**
Oscar Nazul Cabrera Lopez	UNAM ENES-Morelia	1	**10**	**98**
Sarah Margarita Leon Azuara	UNAM ENES-Morelia	1	**11**	**96**
David Perez Bifano	Chapingo Autonomous University	3	**12**	**82**
Sebastian López Mendoza Mendoza	UNAM ENES-Morelia	1	**13**	**69**
	Rodeo University of Technology	2		**67**
Airy Diaz Rincón	UNAM FES Zaragoza	4	**14**	**66**
Marcos Eduardo Núñez Núñez	Rodeo University of Technology	2	**15**	**55**
Laura Cervantes Chavez	UNAM ENES-Morelia	1	**16**	**Na**

XXII Mexican Congress of Soil Sciences

With more than 700 attendants and 222 children accompanied by their teachers and the strong support and presence of the IUSS, the 44th Mexican Congress of Soil Science was carried out successfully.

Dr. Takashi Kosaki, IUSS President; Dr. Rainer Horn, IUSS former President; and Dr. Winfried Blum IUSS, former Secretary-General, receiving recognition as keynote speakers during the 'OPENING SYMPOSIUM' (© Dr. Javier Castellanos)

The event started with an **'OPENING SYMPOSIUM: The sustainability of the land resource within the framework of the Development Objectives'**, during which three keynote lectures were presented: Dr. Takashi Kosaki, currently President of the International Union of Soil Science (IUSS); Dr. Rainer Horn, former President of the IUSS; and Dr. Winfried Blum, former Secretary-General of the IUSS.

With the financial support of the IUSS through its 'Stimulus Fund', the second national soil assessment contest was held, in which 21 Mexican students participated. On the other hand, the WRB international course was attended by technicians from various countries and Mexican students.

Finally, the city of Tulancingo Hidalgo was chosen as the venue of our next – the 45th – Mexican Congress.

'Thus are the Soils of my Nation'

In the framework of the 44th Mexican Congress of Soil Science, on Tuesday, October 29, the 'XIV Mexican Symposium on Educational Innovations in the Teaching of Soil Science' was held, which was organized with the assistance of 222 children from different Aguascalientes schools and the determined collaboration of 22 national edaphologists and 34 students of the University of Aguascalientes.

Participants in the WRB course (© INEGI)

Dr. Rainer Horn working with children (© Laura Bertha Reyes)

Dr. Winfried Blum working with children (© Laura Bertha Reyes)

Dr. Rainer Horn, Dr. Laura Bertha Reyes, Dr. Winfried Blum and Dr. Takasi Kosaki, wearing the T-shirts designed for the project 'Thus are the Soil of my Nation', as active participants of the 'XIV Mexican Symposium on Educational Innovations in the Teaching of Soil Science' (© Dr. Bruni Blum)

Of special relevance for the Symposium was the presence of Dr. Takashi Kosaki, President of IUSS, as well as Dr. Rainer Horn, former President of IUSS, and Dr. Winfried Blum, former Secretary-General of IUSS, who carried out fieldwork for the Aguascalientes children, working hand in hand with all the Mexican scientists.

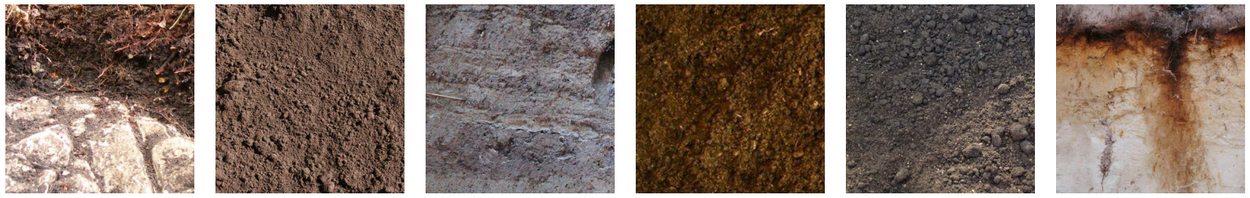
With the contribution and presence of the members of the IUSS at our Symposium, a new stage began for the project 'Thus are the soils of my nation', which will now be incorporated into the Educational Project that the IUSS will develop in the coming years.

All photographs show the fieldwork carried out with the 222 children, organized in teams of 10, during the 'XIV Mexican Symposium on Educational Innovations in the Teaching of Soil Science'.

Mexican Soil Science Society Collaboration Booth

A Collaboration Booth, to be shared by Scientific Societies of Soil Science free of charge, was set up during the **XXII Mexican Congress of Soil Sciences** to promote the IUSS's books and materials, **EUROSOIL 2020** and **XXIII CLACS-2021**.

IUSS Collaboration Booth (all photos property of Laura Bertha Reyes)



IUSS Alerts

June - November 2019

Information for and from the global soil science community

IUSS Alerts were e-mailed to more than 2,100 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 June and November 2019.

How are microplastics changing agricultural crops?

Invisible but pervasive, microplastics are washed into oceans and blown through the air. Now, scientists have uncovered that microplastics change agricultural crop growth. Agricultural soils could actually hold more microplastic than ocean basins. A *new study* explores the impact of microplastics on terrestrial systems, specifically agriculture. The researchers were interested in changes in the soil, microbes and plants exposed to microplastics. Pervasive microplastic contamination in soil may have consequences for plant performance, and thus for agroecosystems and terrestrial biodiversity.
Read more: *https://www.forbes.com/sites/linhanhcat/2019/05/01/microplastics-changing-agricultural-crops/#7618312946d2*
[From: ASA-CSSA-SSSA Science Policy Report, 29 May 2019]

Pesticide sorption properties plays a role in leaching even in frozen soils

Studies indicate that solute sorption properties are less important when preferential flow is the dominating transport pathway. There is evidence that pesticides leach through partially frozen soil during winter and early spring and that preferential flow through macropores may be the cause of this. The effect of freezing on the transport of pesticides with different sorption properties has not been investigated before. In the current issue of the Vadose Zone Journal, researchers report on a study where the effect of freezing on the transport of pesticides with a range of soil sorption coefficients was investigated.
Read more: *https://dl.sciencesocieties.org/publications/csa/articles/0/0/csa2019.64.S015*
[From: ASA-CSSA-SSSA Science Policy Report, 29 May 2019]

Stop soil erosion now or face starvation soon, scientists warn

The world's food production is in jeopardy because the fertile layer of soil that people depend on to plant crops is being eroded by human activities, scientists said recently. Climate change is likely to make it worse even as demand from a grown population is soaring, they said. Soil erosion happens naturally, but intensive agriculture, deforestation, mining and urban sprawl accelerate it and can reduce crop yields by up to 50%, according to the United Nations' Food and Agriculture Organization (FAO).
Read more: *https://www.reuters.com/article/us-global-food-soils/stop-soil-erosion-now-or-face-starvation-soon-scientists-warn-idUSKCN1SL2Q5*
[From: ASA-CSSA-SSSA Science Policy Report, 29 May 2019]

FAO Film: Stop soil erosion, keep soil where it belongs!

Soil erosion poses a major threat to global food security and to the achievement of the Sustainable Development Goals (SDGs). Find out more about the effects of soil erosion and the ways we can prevent it.
Read more: *https://www.youtube.com/watch?v=MSbbl5lpmik&feature=youtu.be&fbclid=IwAR0zRJZKddB_UTx1ar8kj-6ua1P1tLLRhHZAnturJ1Lx-NArsPz5zV1zFm5k*

FAO Film: Stop Soil Erosion, Save our Future: True or False

On the spot interviews to participants of the Global Symposium on Soil Erosion (GSER 19), 5 May 2019, FAO headquarters, Rome, Italy
Read more: *https://www.youtube.com/watch?v=4ad5ABAWsYo&feature=youtu.be&fbclid=IwAR1klY4qN6DjDqNEPwHXxS5-IFBxTaaon8U_bdqAg0slCD99zPeiETmZtiM*

No laughing matter

The warming Arctic permafrost may be releasing more nitrous oxide, a potent greenhouse gas, than previously thought
Read more: *https://news.harvard.edu/gazette/story/2019/06/harvard-chemist-permafrost-n2o-levels-12-times-higher-than-expected/?fbclid=IwAR0JTIcS8rqrDqoCSHT7iVE_d8Pxq3O8MzVUkR04XyEcOxyg5sacEKfxqzU*

Artist Asad Raza cultivates soil and community in Kaldor Public Art Project Absorption

Raza worked with scientists, including soil expert Alex McBratney from University of Sydney, to "find a way to use the compounds from society and industrial activity, and recombine [them] for the product to actually be used again as soil for people to take away at the end of the project".
Read more: *https://mobile.abc.net.au/news/2019-05-10/kaldor-public-art-project-asad-raza-absorption-soil-dirt/11096070?pfmredir=sm&fbclid=IwAR1wwJtV4hJ6KNiPZVzCZzKzTtSQHyYQOUQzflVKDjzVxiBnioFDydvMXp0*

Eurosoil2020 – Show your soil

Do you want to show your soils in a creative, unforgettable way? Among events we are preparing for Eurosoil, we are pleased to introduce a participatory project with an artist, Cédric Bregnard. He produces artistic performance in conferences, in the streets, or during events, with delegates and the public in general. He mostly focused on trees – see some examples of recent performances in the attached file. Our common project is to focus on soils.
Eurosoil participants will be able to paint soil profiles in large sizes.
Moreover, Geneva Region organizes an 'Off Eurosoil': in the whole region and during one month, soil events will be organized for the public, a way to 'Connect people and soil'.
Hence, the event will take place both inside and outside of the conference center, allowing the public of the region (Geneva and neighboring France) to work together with the delegates on Cédric Bregnard's performance.
We would like the main soils of Europe, your soils, to be drawn by the delegates and the public, and therefore, we need your support:

- Selecting at least one soil profile – with plants or trees and showing the roots
- Inviting Cédric Bregnard so that he takes the pictures based on which the performance will be held.

Please let us know if you are willing to participate.
We hope to show to Europe a magnificent gallery of our soils.
Contact: *president@soilscience.eu*
Read more: *https://www.cedricbregnard.ch* or *https://www.facebook.com/cedricbregnard.photo/*

News from the Nigeria Institute of Soil Science (NISS)

The Nigeria Institute of Soil Science (NISS) was enacted into law by the NISS establishment Act of 2017. NISS is an agency under the Federal Ministry of Agriculture and Rural Development of the Federal Republic of Nigeria. The Nigerian Government recognizes the increasing pressure on soil and the alarming rate of soil degradation and has therefore charged the Institute with the responsibility of promoting rapid sustainability of high quality soil through scientific methods and to regulate all issues pertaining to soil management and its practices in Nigeria.
Feel free to contact us by email: *info@niss.gov.ng*; follow us on facebook @nissng or on *http://twitter.com/nissng*
Read more: *www.niss.gov.ng*

Soil Profile Analytical Database 14 (SPADE14)

The existing Soil Profile Analytical Database (SPADE), a component of the Eurasian Soil Database (ESDB), has been updated to include estimated analytical data for the dominant soil units (STUs) of the 1:1.000.000 Soil Geographical database of Europe. Among other attributes, the SPADE14 includes
Depth, Horizon names, Bulk density, Carbon-to-Nitrogen ratio, Total carbonate, Gypsum, Cation exchange capacity, Electric conductivity, calcium, potassium, magnesium and sodium, Texture, Organic matter content, pH, Porosity, Structure, Water retention capacity. SPADE14 includes 1078 estimated soil profiles for 28 countries.
Data are available in ESDAC:
Read more: *https://esdac.jrc.ec.europa.eu/content/spade-14*
[From: European Soil Data Centre Newsletter No.118 (Jun- Jul 2019)]

LUCAS 2015 Topsoil data of Switzerland

The dataset contains the data of physical and chemical properties analysed in samples taken in Switzerland within the context of LUCAS 2015 survey. These data have been used in the study 'Comparison of sampling with a spade and gouge auger for topsoil monitoring at the continental scale'. The LUCAS 2015 campaign in Switzerland had 150 sampling locations distributed in arable, grassland, and woodland land cover classes in mineral soils in Switzerland. At each sampling location, topsoil samples (0–20 cm) were taken with the LUCAS spade and the gouge auger sampling methods. Altogether, 300 samples were taken at the 150 locations: 150 samples with spade and 150 with gouge auger. The samples were analysed for texture properties, organic carbon, nitrogen, potassium, phosphorus, calcium carbonate, pH and electrical conductivity.
Read more: *https://esdac.jrc.ec.europa.eu/content/lucas-2015-topsoil-data-switzerland*
[From: European Soil Data Centre Newsletter No.118 (Jun- Jul 2019)]

Soil Health Institute released progress report on adoption of soil health practices

The Soil Health Institute (SHI) has released PROGRESS REPORT: Adoption of Soil Health Systems Based on Data from the 2017 U.S. Census of Agriculture. The analysis includes a state-by-state breakdown of both cover crops and no-till production. In relation to soil health-promoting practices, the main data that the Census provides is on use of cover crops and tillage. Overall, the 2017 Census of Agriculture showed considerable progress with soil health practices from 2012 to 2017, with 5 million additional acres of cover crops and 8 million additional acres of no-till in the U.S.
Read more: *https://soilhealthinstitute.org/soil-health-institute-releases-progress-report-on-adoption-of-soil-health-practices/*
[From: ASA-CSSA-SSSA Science Policy Report, 24 July 2019]

Scientists hit pay dirt with new microbial research technique

Long ago, during the European Renaissance, Leonardo da Vinci wrote that we humans "know more about the movement of celestial bodies than about the soil underfoot". Five hundred years and innumerable technological and scientific advances later, his sentiment still holds true.
Read more: *https://www.soils.org.uk/news/25-jun-2019/scientists-hit-pay-dirt-new-microbial-research-technique?fbclid=IwAR1SJN9ti7ns_7KYnjTo-2K2jo-Cq4K_yDlWFpWgID-b60jUVrg7BAWt5tSA*

These bizarre wormlike creatures eat Rock, poop sand, and may even redesign rivers

Most clams are happy to make their burrow in a nice, soft bed of sand or mud. Not this mollusc. A recently uncovered relative of the shipworm puts the hard into hardcore, chewing holes into rocks and excreting the debris as sand.
Lithoredo abatanica joins a short list of freshwater animals capable of literally weathering the landscape and creating real estate for other species to hide in, while potentially affecting the course of their river ecosystem.
Read more: *https://www.sciencealert.com/a-newly-discovered-genus-of-shipworm-eats-holes-into-rocks-and-poops-out-sand?fbclid=IwAR0bwAe8BMNUPJpzq1P9rFBS3yT52TVtcXlJWqOCptczejYti8ZxWQweHqg*

Women in Marial Ajith are realizing their community's potential

Adut Akuei used to go every evening to the hospital to visit little Akol Akot, her three-year old granddaughter, who was seriously malnourished. Adut and her daughter Angong could often only feed her with asida, a dish made out of ground sorghum. She wasn't getting all the nutrients she needed from her food, and the way the food was washed also left her susceptible to food-borne illnesses that stopped absorption of nutrients and further weakened her body.
With FAO's help, Adut and the other women are doing their part to realize the community's potential. In late 2018, FAO, with funding of the Governments of the Netherlands and Norway, started helping mothers enhance and diversify the diets of their children to fight malnutrition. The women now grow their own vegetables, making the most of their soil.
Read more: *http://www.fao.org/fao-stories/article/en/c/1193556/?utm_source=twitter&utm_medium=social+media&utm_campaign=fao*

Why we need to stop treating soil like dirt

Guardian journalist Josh Toussaint-Strauss finds out how we are destroying the earth's soil, but also discovers some of the progress we've made in the race to protect it.
Watch the movie: *https://www.youtube.com/watch?v=BSHR4sUZpcw&fbclid=IwAR3pelOqw7UAzS-6-1UNHsPxgiwmfKlfC63S4xkJ-EA27YCNzwyX2wnGti8*

Degeneration to regeneration: repairing soil health for the future of land and sea life

Chemical fertilizers are used because of a lack of nutrients naturally present in degraded soil. Land degradation is a process that begins when forests are initially cleared for agriculture and ultimately overfarmed or overgrazed until the carrying capacity of the land has dwindled. Instead of clearing fields, intensifying monocrop production, and ultimately degrading the land,

agriculture focused on the power of trees (agroforestry) strives to protect the soil, diversify crops, and optimize the land sustainably. Trees for the Future has 30 years of experience working with farmers to find innovative ways to revive degraded lands
Read more: *https://www.agrilinks.org/post/degeneration-regeneration-repairing-soil-health-future-land-sea-life?utm_source=USAID+Bureau+for+Food+Security+%2F+Agrilinks&utm_campaign=f25d3f632b-EMAIL_CAMPAIGN_2019_07_24_08_42&utm_medium=email&utm_term=0_8f8d227958-f25d3f632b-57098753*
[From: ASA-CSSA-SSSA Science Policy Report, 7 August 2019]

To slow global warming, U.N. warns agriculture must change

Humans must drastically alter food production to prevent the most catastrophic effects of global warming, according to a new report from the United Nations panel on climate change. The panel of scientists looked at the climate change effects of agriculture, deforestation and other land use, such as harvesting peat and managing grasslands and wetlands. Together, those activities generate about a third of human greenhouse gas emissions, including more than 40% of methane. That's important because methane is particularly good at trapping heat in the atmosphere. And the problem is getting more severe.
Read more: *https://choice.npr.org/index.html?origin=https://www.npr.org/sections/the-salt/2019/08/08/748416223/to-slow-global-warming-u-n-warns-agriculture-must-change*
[From: ASA-CSSA-SSSA Science Policy Report, 4 September 2019]

How we use land contributes to climate change

From cutting back on fossil fuels to planting a million trees, people and policymakers around the world are looking for more ways to curb climate change. Another solution to add to the list is changing how we use land. The United Nations' Intergovernmental Panel on Climate Change, or IPCC, released a special report this month that emphasized the importance of proper land management, such as protecting forests from being converted to farmland, has on mitigating climate change. ASA and SSSA member Cynthia Rosenzweig talks to NPR's Science Friday about the ways we can use land to reduce the amount of greenhouse gas in the atmosphere.
Read more (and listen to the interview): *https://www.sciencefriday.com/segments/ipcc-2019-land-use-climate-change/*
[From: ASA-CSSA-SSSA Science Policy Report, 4 September 2019]

Interview with Prof. Rattan Lal about soil and climate change

Read more: *https://www.columbusunderground.com/low-hanging-fruit-dr-rattan-lal-on-how-soil-farming-can-help-save-the-climate-jb1*

Stop abusing land, scientists warn

Scientists are to deliver a stark condemnation of the damage being done to the land surface of the planet. Human activities have led to the degrading of soils, expanded deserts, felled forests, driven out wildlife, and drained peatlands, they will say. In the process, land has been turned from an asset that combats climate change into a major source of carbon.
The scientists will say this land abuse must be stopped to avoid catastrophic climate heating.
Read more: *https://www.bbc.com/news/science-environment-49149761?fbclid=IwAR0jgPkJM1_IE_rUbHf7XjSeb8N-VCIe5rwE9jasGcmdRVCZARcOHOEcyKMM*

Climate Change and Land

An IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.
Download the report: *https://www.ipcc.ch/report/srcc-l/?fbclid=IwAR1uLGUkjQ9A4eUYm0AVBPQmgxu99dPplHOttAOkEng2tWGTBbHS3SvUVPQ*

A Review of Libyan Soil Databases for Use within an Ecosystem Services Framework

Ecosystem services (ESs) are increasingly being used by many countries around the world as a framework for addressing the United Nations (UN) Sustainable Development Goals (SDGs). This review article of the usability of Libyan soil databases for ESs and SDGs is the first of its kind for North Africa. The objectives of the article are to: describe the available soil resources of Libya in relation to an ES framework; provide examples of the usability of Libyan soil databases for ES applications (e.g., provisioning, Healthy Eating Plate), and describe some of the typical disservices in the country.
Read more: *https://www.mdpi.com/2073-445X/8/5/82?fbclid=IwAR3FMJPE4hlkMnJavEu9zGpqoH8f2-B8l2n21o91r-6w1K07BqTU73Xn_pxg*

Soils: what lies beneath your feet?

Soils: Have you ever thought about what lies beneath your feet? Discover why soils are important and how soil scientists are working to protect the world's most precious natural resource.
Watch the movie: *https://www.youtube.com/watch?reload=9&feature=youtu.be&v=S7I-yEUZ1j4&fbclid=IwAR3u9SaD5KhM1BuLyoQguquROm8lBMFPISu2YjM1qLEiaERLcOYHo2WKwt0&app=desktop*
[From Soil Science Australia]

Chemical properties at European scale based on LUCAS topsoil data

A new set of maps of baseline topsoil chemical properties at high resolution (500m) is available for the European Union. This group of datasets contains 8 chemical properties: pH (H_20), pH ($CaCl_2$), Cation Exchange Capacity (CEC), Calcium carbonates (CaCO3), C:N ratio, Nitrogen (N), Phosphorus (P) and Potassium (K) using soil point data from the LUCAS 2009/2012 soil surveys (around 22,000 points) for EU-26 (not included Cyprus and Croatia). The derived maps can be baselines to monitor soil quality and provide guidance to agro-environmental research and policy developments in the European Union. The chemical properties maps for the European Union were produced using Gaussian process regression (GPR) models. The methodology and more details can be found in the relevant *publication* in Geoderma.
Data are available in ESDAC:
https://esdac.jrc.ec.europa.eu/content/chemical-properties-european-scale-based-lucas-topsoil-data
[From ESDAC Newsletter No 119 (August-September 2019)]

Long-term no-till supports greater asymbiotic nitrogen fixation

Nitrogen is a major crop production input, and N fertilization can lead to surface and groundwater quality degradation. In North Dakota, N rate experiments have indicated that long-term (six years or more) no-till fields require less N for maximum yield and profitability compared with crops grown under a conventional tillage system. A recently published article in the Soil Science Society of America Journal explains that part of the reason behind the lower N requirement in no-till fields is due to the greater activity of asymbiotic N fixers in long-term no-till soils compared with neighboring conventionally tilled soils.
Read more: *https://dl.sciencesocieties.org/publications/csa/articles/64/9/8a*
[From: ASA-CSSA-SSSA Science Policy Report, 18 September 2019]

Signals 2019 – Land and soil in Europe

We cannot live without healthy land and soil. It is on land that we produce most of our food and we build our homes. For all species – animals and plants living on land or water – land is vital. Soil – one of the essential components of land – is a very complex and often undervalued element, teeming with life. Unfortunately, the way we currently use land and soil in Europe and in the world is not sustainable. This has significant impacts on life on land.
Read more: *https://www.eea.europa.eu/signals/signals-2019*

Uncovering how microbes in the soil influence our health and our food

Until recently, most agricultural experts thought of soil as nothing more than a matrix to hold plants and minerals. But the same technologies that have allowed us to better understand the bacteria and fungi that make up our microbiome have led to breakthroughs in soil science. And what they are showing is that those microbes play key roles in preventing soil erosion, conserving water and breaking down environmental pollutants. They also capture and store atmospheric carbon – which might help fight climate change. If this were all soil microbes did, they would clearly be central to our well-being and survival on this planet. But emerging research suggests that the soil microbiome might have an even more direct effect on our health by communicating directly with our own cells and by boosting the nutrient content of our food.
Read more: *https://www.washingtonpost.com/science/uncovering-how-microbes-in-the-soil-influence-our-health-and-our-food/2019/09/27/81634f54-a4ba-11e9-bd56-eac6bb02d01d_story.html*
[From: ASA-CSSA-SSSA Science Policy Report, 2 October 2019]

New sensor measures biological activity in soil at field scale in real time

Measuring carbon dioxide emissions from soils at both the soil surface and deeper down at the plants' roots is key to understanding biological activity in soils, which offers a measure of a soil's health, including its ability to cycle nutrients and support plant growth. Scientists have been working on techniques to quantify carbon dioxide concentrations in soils for the last century. Now, for the first time, researchers have developed an autonomous sensor that allows for constant measurements of soil and root respiration in heterogenous soil. The primary goal of measuring both soil and root respiration is to characterize the soil in terms of plant–soil–microbe interaction. But respiration concentrations also provide information on greenhouse gas production from soils, which has implications for global climate change as well as soil–gas dynamics that affect soil fertility and plant growth.

Read more: *https://dl.sciencesocieties.org/publications/csa/articles/64/10/8*

[From: ASA-CSSA-SSSA Science Policy Report, 16 October 2019]

Soil on moon and Mars likely to support crops

Researchers at Wageningen University & Research in the Netherlands have produced crops in Mars and Moon soil simulant developed by NASA. The research supports the idea that it would not only be possible to grow food on Mars and the Moon to feed future settlers, but also to obtain viable seed from crops grown there. Wieger Wamelink and his colleagues at Wageningen University & Research, cultivated ten different crops: garden cress, rocket, tomato, radish, rye, quinoa, spinach, chives, peas and leek. The researchers simulated the properties of Lunar and Martian regolith and 'normal' soil (potting soil from Earth) as a control. Nine of the ten crops sown grew well and edible parts were harvested from them.

Read more: *https://www.sciencedaily.com/releases/2019/10/191015115359.htm*

[From: ASA-CSSA-SSSA Science Policy Report, 16 October 2019]

Linking Coffee to Soil – Can Soil Health Increase Coffee Cup Quality in Colombia?

Understanding the effects of soil health (SH) on the quality of high-value crops such as coffee may enable farmers to receive financial benefits prompted by product differentiation and price premiums. This study assessed the existence and nature of the relationship between coffee cup quality and SH. Soil and coffee seed samples were collected from 68 member-farms of a cooperative participating in a high-quality coffee value chain and 67 non–member-farms located across six municipalities in Cauca, Colombia, and 117 farms across two municipalities in Antioquia, Colombia. Elevation was recorded on each farm. Soil samples were tested for 13 SH indicators including wet aggregate stability, available water capacity, active carbon, organic matter (OM), protein, respiration, pH, P, K, Mg, Mn, Fe, and Zn. Coffee samples were tested by professional cuppers for physical, granulometric, and sensorial traits including fragrance/aroma, flavor, aftertaste, acidity, body, uniformity, sweetness, clean cup, and balance. Pearson correlation tests, principal component analysis, and canonical correlation analysis were conducted on all measured variables for Cauca and Antioquia separately and combined. Results show that coffee quality and sensorial traits tended toward a negative relationship with physical and biological SH, primarily with the indicators available water capacity and OM and the labile OM-related soil properties active carbon and respiration, whereas chemical indicators variably correlated with coffee quality. This suggests that coffee may be similar to wine grapes in that high-quality products not necessarily derived from soils with high values of SH indicators. The results of this study can guide further work to identify suitable management strategies that maximize coffee quality without significantly jeopardizing production or the environment.

Read more: *https://journals.lww.com/soilsci/Abstract/2019/02000/Linking_Coffee_to_Soil__Can_Soil_Health_Increase.4.aspx*

Retention and release of nutrients from polyhalite to soil

Recent discoveries of polyhalite (K_2SO_4.$MgSO_4$.$2CaSO_4$.$2H_2O$) in the UK provide an alternative to conventional fertilizer sources. This work investigated the interaction of polyhalite, commercially known as POLY4, with soil using leaching columns. Different physical forms of polyhalite (powder, crushed rock and granules) were compared to potassium chloride (KCl) for the movement of potassium, calcium, magnesium and sulphur (as sulphate) through the soil profile using 19.7 L of water, equivalent to 4500 mm rainfall.

Read more: *https://onlinelibrary.wiley.com/doi/abs/10.1111/sum.12548#.XaMBl58gLgc.twitter*

Call for Abstracts: 'Atmosphere – plant – soil: organic and inorganic carbon in the critical zone'

We invite abstract submissions to a European Geosciences Union (EGU) session exploring organic and inorganic soil carbon across multiple soil interfaces at different spatial and temporal scales in the critical zone.

The EGU General Assembly will bring together soil scientists from around the world and will take place in Vienna between the 3rd and 8th May 2020. Submissions are invited from researchers in all sub-disciplines and all career stages of soil science. The deadline for abstract submissions is the 15th January, 12:00 GMT. In addition, the deadline for financial support applications is the 1st.

Read more: *https://tinyurl.com/egucarbon*

If you have any questions about the session, contact Dan Evans on *d.evans3@lancaster.ac.uk*

Listen to the Field, Lab, Earth latest podcast on Soil Health with Dr. Ryan Stewart

Field, Lab, Earth is the podcast all about past and present advances in the fields of agronomic, crop, soil, and environmental sciences. A joint production of the Tri-Societies, the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, it features interviews with authors published in our journals, books, and magazines.

Listen to the podcast: *https://podcasts.apple.com/us/podcast/field-lab-earth/id1398459753*

[From: ASA-CSSA-SSSA Science Policy Report: 30 October 2019]

DIG IT! The Secrets of Soil. SSSA's Dig It! Exhibit panels are online and available for free download!

The Smithsonian National Museum of Natural History developed the DIG IT! The Secrets of Soil display in 2006, and the Soil Science Society of America was its founding sponsor. Now Dig It! has a new life, in the form of 'Dig It! DIY', an online, downloadable set of infographic panels and an online guide. And, it's free – in thanks partly to another grant from SSSA via the Agronomic Science Foundation (ASF). You can even make a public display at a library, or other public space!

Read more: *https://www.soils.org/discover-soils/dig-it*

[From: ASA-CSSA-SSSA Science Policy Report: 27 November 2019]

The Forensic Science Toolbox: Examining Changes in Soil Biodiversity

Dead animals, or carrion, are an undeniable part of every ecosystem. Carcasses are a source of high-quality food for scavengers and insects, and as they decompose, they create local patches of nutrient–rich 'hotspots' within the soil that are areas of increased microbial activity. … Vertebrate decomposition research, or taphonomy, also has an important place in the medico-legal field of forensic science. In forensic taphonomy, the focus is on documenting the manner and progression of human decomposition, usually with the specific intent of estimating time since death, or the post-mortem interval (PMI).

Read more: *https://www.globalsoilbiodiversity.org/blog-beneath-our-feet/2019/10/29/the-forensic-science-toolbox-examining-changes-in-soil-biodiversity*

[From: GSBI Newsletter – November 2019]

Soil Organic Matter (SOM) fractions for 186 LUCAS-2009 soil samples (grassland, forest)

Land management for C sequestration is most often informed by bulk soil C inventories, without considering the form in which C is stored, its capacity, persistency and N demand. Recent frameworks suggest that soil C accrual, its persistence and response to N availability can be better described if SOM is broadly divided into a Particulate Organic Matter (POM) and a Mineral Associated Organic Matter (MAOM) pool. In the published study, LUCAS was used to determine topsoil C and N storage in European forests and grasslands on 9415 georeferenced points and separate by size POM (2000-53 µm) and MAOM (<53 µm) in more than 180 subsamples. The methodology and more details can be found in the relevant *publication* in Nature Geoscience. Data and R scripts are available in ESDAC:

Read more: *https://esdac.jrc.ec.europa.eu/content/soil-organic-matter-som-fractions*

[From: ESDAC Newsletter No 120, October-November 2019]

ENSA – JRC Workshop (Amsterdam, 19-20 September 2019)

This JRC-European Network on Soil Awareness (ENSA) meeting took place as part of the 'Summer of Soil' in Fruittuin Van West Organic Farm, Amsterdam, during September 19-20, 2019. The conference was open to everyone with in interest in raising awareness of soils

as well as other interest groups (planners, teachers, and local authorities). Presentations are available:
Read more: *https://esdac.jrc.ec.europa.eu/networkcooperations/european-network-soil-awareness*
[From: ESDAC Newsletter No 120, October-November 2019]

Land and Soil Management Award – by the European Landowners' Organization

The prize rewards land use and soil management practices mitigating soil threats i.e. soil degradation, erosion, reduction of organic matter content, diffuse contamination, and compaction as well as the reduction of soil biodiversity, salinization, sealing, flooding and landslides. In doing so, the award sheds light on outstanding achievements, encouraging new concepts of land and soil protection and their implementation in land management, as well as enhancing awareness about the importance of land and soil functions.
Read more: *https://www.europeanlandowners.org/awards/soil-land-award*

Uncovering how microbes in the soil influence our health and our food

When Bill Robertson, a soil scientist at the University of Arkansas, wants to check whether a field is healthy, he doesn't reach for some high-tech gadget. He grabs a pair of men's 100 percent cotton underwear.
"I call it the 'Soil Your Undies' test," he said, describing how he buries the underwear two to four inches deep, leaving the waistband showing so he can find them and dig them up five weeks later.
"Soil creatures – bacteria, fungi and nematodes – eat cellulose, and those briefs are basically cellulose," Robertson explained. "If that soil is alive then, after five weeks, [the underwear] should fall apart like a wet newspaper." If, on the other hand, the soil isn't thriving, then what is left is a dirty, but intact, set of briefs.
Read more: *https://www.washingtonpost.com/science/uncovering-how-microbes-in-the-soil-influence-our-health-and-our-food/2019/09/27/81634f54-a4ba-11e9-bd56-eac6bb02d01d_story.html?fbclid=IwAR03EuWWqONfhjYbT1pDGbq8mETs7tRTBGYymx6osprWqqUbsmtq_rSbXWs*

Soil Organic Carbon – Centered Sustainable Soil Management – An Affordable Solution

As part of a natural process, a healthy soil stores more carbon than the sum of the carbon contained in the atmosphere and vegetation. Based on soil organic matter's stabilization mechanisms (i.e., physical, chemical, biochemical, microbial and ecological), soil carbon can remain stored in the soil for thousands of years.
Read more: *http://www.fao.org/3/i7235en/I7235EN.pdf?fbclid=IwAR1H_qleQzyhzkE3DfiCmyu8b2Kap363Cl0d-Jky5cwknSuRO6aVE0fqcvMU*

Upcoming Conferences and Meetings

2020

Intersoil 2020 – International Conference on Soil, Sediments and Water
'Soil as a solution in facing the big challenges and reaching the goals for the planet'

2 & 3 March 2020, Brussels, Belgium.
Major themes: Soil as a solution for health; Soil as a solution for agriculture and food; Soil as a solution for biodiversity; Soil as a sustainable resource; Soil as a solution for energy and climate; with three subthemes: Legislation, methodology and governance; Technical responses (good interactive and harmonious practices); Economic, social and communication responses.
Call for papers until October 31, 2019
Read more: *https://www.webs-event.com/webs/en/event/intersoil/*

Global Symposium on Soil Biodiversity: Keep soil alive, protect soil biodiversity

#SoilBiodiversity
10-12 March 2020 | FAO HQ, Rome, Italy;
Soils host a tremendous diversity of organisms that are fundamental to terrestrial ecosystems. Soil biodiversity drives many ecological processes, including soil formation, nutrient and water cycling, climate regulation, production of food, medicine and fibre, disease and pest control. In the presence of a changing climate, land degradation and biodiversity loss, soils have become one of the most vulnerable resources in the world.
Read more: *http://www.fao.org/about/meetings/soil-biodiversity-symposium/en/*

Soil Science Society of Nigeria (SSSN) – 44th Annual Conference, Coal City, 2020
'Climate-smart soil management, soil health/quality and land management: synergies for sustainable ecosystem services'

16-20 March 2020, Enugu State University of Science and Technology, Main Campus Ebeano City, Agbani Enugu State, Nigeria
The Soil Science Society of Nigeria is delighted to invite you to join us at the 44th edition of the its annual conference. As in previous editions, the aim is to discuss the importance of soils. In the 2020 edition, the focus will be on 'Climate-smart soil management, soil health/quality and land management: synergies for sustainable ecosystem services'. To do this we will adopt a new style of conference, with traditional conference talks in the mornings, followed by a range of scientific and interactive topic masterclasses in the afternoons (at no extra fee, fee is included in conference fee).
Call for posters: *https://www.iuss.org/media/call_posters_-_soil_science_society_of_nigeria_44th_annual_conference.pdf*
Website: *http://www.soilsnigeriaconference.com*

IUSS Commission 1.4 Soil Classification Conference in Mexico

We would like to remind you on the following deadlines:
November 30: Final deadline for registration and payment for the Field Workshop.
December 15: Deadline for abstract submission for the Conference.
January 15: Notification of abstract acceptance.
January 31: Deadline for early-bird registration for the Conference.

For the participants the following dates are important:
April 16: Arrival at the airport of Monterrey. At 3 p.m., you will be collected for transport to Cuatro Ciénagas, where the Field Workshop starts.
April 21: The Field Workshop ends in Querétaro in the evening. People, who participate only at the Conference and not at the Field Workshop, should also arrive at this day in Querétaro, i.e. fly into Mexico City and take the bus to Querétaro.
April 22-24: Conference in Querétaro.
Read more: *https://iscc2020.org/*

International Soil Classification Congress 2020

16-24 April 2020, Coahuila, Nuevo León, San Luis Potosí, Querétaro, México
This congress is part of the events organized by IUSS Commission 1.4 Soil Classification and is composed of a five-day field workshop beginning in Cuatro Ciénegas and ending with a three-day conference in Querétaro. Our main objective is to provide a forum to continue the works and discussions from previous meetings about soil classification systems as a medium to communicate soil functions and management. The particular aim is to present options for conserving and improving soils in areas with subhumid, semiarid, and arid climates. For this reasons we invite leading soil scientists, students and professionals interested in analyzing in depth the indicators, indexes, and models that will improve soil classification as a tool for soil conservation, global change mitigation, and communication to stakeholders at multiple cartography scales.
Please bear in mind that the deadline for early-bird registration and payment of the field workshop is the 31st of this month of July 2019.
Key dates are:
April 16, 2020: arrival
April 17-21, 2020: field workshop
April 22-24, 2020: conference
The deadlines for the field workshop are:
Final registration: November 30, 2019
The deadlines for the conference are:
Abstract submission: December 15, 2019
Notification of acceptance: January 15, 2020
Early-bird registration: January 31, 2020
Regular registration: February 29, 2020
On-site registration possible
Read more: *https://iscc2020.org/*

EGU General Assembly 2020

3–8 May 2020, Vienna, Austria
The EGU General Assembly 2020 will bring together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience. The EGU is looking forward to cordially welcoming you in Vienna.
Deadline for abstract submission: 15 January 2020

Particular call for papers for SSS5.7 session co-sponsored by IHSS called Mutual interaction of humic substances with heavy metals, pesticides and PAHs
Conveners: Jerzy Weber, Teodoro Miano, Aleksandra Ukalska-Jaruga
Fate and activity of heavy metals, pesticides, PAHs and other xenobiotics depend on their interaction with humic substances present in soil, coal, freshwater and marine systems. They may be deactivated due to various interactions with humic substances, and from the other hand, xenobiotics may affect the properties of humic substances. These processes play a crucial role in many various processes affecting quality of the terrestrial and aquatic systems, and they are dependent on the properties of specific fractions, including humic acids, fulvic acids and humin. Papers covering various aspects of mutual interaction between humic substances and heavy metals, pesticides and PAHs are welcome. This will provide deeper insights and understanding of the mechanisms of xenobiotics sorption on humic substances, as well as their influence on properties of humic substances occurring in terrestrial and aquatic systems. The EGU journal SOIL is considered (provisional acceptance) to publish selected papers presented at the session. It also will be open for all volunteered submissions within its scope.
The deadline for abstract submission (100 to 500 words) is 15 January 2020 at 13 CET. Online submission: *https://meetingorganizer.copernicus.org/EGU2020/session/34793*
Information concerning the submission process: *https://egu2020.eu/abstracts_and_programme/how_to_submit_an_abstract.html*
Website: *https://egu2020.eu/*

Global Conference on Sandy Soils

31 May-4 June 2020. University of Wisconsin-Madison, USA.
Sandy soils – as a group of soils – have received limited research attention. With increasing global pressure on land resources, marginal soils such as sandy soils are taken into production or cultivated more intensely. There is a need to quantify and understand the properties of sandy soils across the globe. The workshop format will be symposia with several keynotes followed by 5-10 minutes presentations and ample time for discussions. Conference topics include: Sandy soils – distribution and formation; Soil water repellency, crust, and compaction; Runoff, erosion, and groundwater management; Monitoring, mapping, and management of salinization; Nutrient management; Carbon sequestration and soil health; Management and remediation of contaminants; Soil water conservation and biodiversity; Soil security on sandy soils.
Read more: *https://sandysoils.org/*

ISCRAES 2020 - International Symposium on Climate-Resilient Agri-Environmental Systems

19-22 May 2020, Dublin, Ireland.
The theme of this symposium is 'Contributing to the United Nations Sustainable Development Goals (UN-SDGs) through the Development of Climate-Resilient Agri-Environmental Systems'. Addressing the central goals of the UN-SDGs requires a multi-disciplinary approach involving academic, industrial and policy-related collaborations for scientific knowledge advancement and exploration of ways for their practical implementation.
Abstract submission deadline: November 30, 2019
Early bird registration deadline: January 06, 2020
Read more: *http://www.iscraes2020.org/_*
Download flyer: *https://www.iuss.org/media/iscraes_flyer_f.pdf*

8th International Crop Science Congress (ICSC)

June 21-25, 2020, Saskatoon, Canada. The scientific programme will cover the following topics: Genetics, Genomics and Breeding; Biotechnology and Agriculture; Germplasm and Evolution; Agronomy and Translational Physiology; Climate Change and Food Security; Addressing Biotic Challenges; Role of Omics Technologies in Food Sustainability and Predictive & Digital Agriculture
Early Bird registration until March 2, 2020
Submissions to be considered for oral presentations close: February 28, 2020
Submissions for poster presentations close: May 15, 2020
Read more: *https://www.icsc2020.com/*

WRB Workshop Summer 2020

21-26 June 2020, Toruń, Poland.
Globalization itself and solving the global environmental issues, as well as the unification of research and teaching on the global level require harmonization of technical languages, such as the terminology and classifications used in soil science. Important part of professional language are rules of soil characterization and classification. As so many 'languages' – national systems are used in the world, the common *Lingua Franca* is needed to understand each other. The World Reference Base for Soil Resources (WRB) is probably the best proposal to facilitate international exchange of information in soil science.
The second edition of 'WRB summer' follows the successful first meeting in July 2019. Under the auspices of IUSS Working Group WRB, the Workshop will be held by experts who have been organizing the soil classification trainings for nearly 10 years. The aim of event is to help beginners using WRB or enhance skills in soil classification during one day indoor and 3 days intensive field activities. Field days will be organized in various environmental conditions to show widest variety of soils possible.
The venue is in a beautiful UNESCO World Heritage city of Toruń. One of fieldwork days will be in vineyard (wine tasting included).
Students, PhD students and young researches are particularly invited (but senior researchers are also welcome)
Registration opening: 21 November 2019
Early-bird fee payment deadline: 1 February 2020
Website: *https://sites.google.com/site/summerwrb/home*

4th Soil in the Environment Conference: SITE 2020

28 June-1 July 2020, Toruń, Poland
On behalf of the organizing committee, it is our pleasure to invite you to attend 4th International Conference of Young Scientists Soil in the Environment and to the city of Toruń. We invite to beautiful UNESCO World Heritage city of Toruń all students and young researches (but senior ones are also welcome). We invite to participate not only European students and researches but also from all other regions of the world.
Early bird registration until 29 February 2020
Deadline for registration: 15 May 2020
Website: *https://sites.google.com/view/site-torun-2020*

International Workshop on Archaeological Soil Microscopy and Phytoliths Analysis (WASM)

8-10 July 2020, Paris, France.
The workshop will follow the traditional conduct with informal microscopy sessions in order to share ideas and experience.
Contact: *quentinborderie@yahoo.fr*
Read more: *https://www.iuss.org/media/wasm-paris2020_-_first_announcement.pdf*

Eurosoil 2020, Connecting people and soil

24-28 August 2020, Geneva, Switzerland
The objective of Eurosoil 2020 is to bring together leading research scientists working on soil related topics and stakeholders dealing with issues of public concern, such as soil degradation and consequences of climatic changes. The important bridging role of soil practitioners to translate scientific knowledge into practice will be emphasized during Eurosoil 2020.
Call for Contributions opens 2 December 2019
Call for Contributions deadline: 20 February 2020
Early Bird Registrations deadline: 28 May 2020
Read more: *www.eurosoil2020.com*

16th International Conference on Soil Micromorphology (ICoSM)

August 30 - September 3, 2020, Kraków, Poland. Venue: Jagiellonian University, 3rd Campus, Gronostajowa Str.
Download the second circular: *http://www.icosm2020.sggw.pl/wp-content/uploads/2019/10/2nd_Circular_ICoSM_2020_Krakow.pdf*
The optional micromorphological course will take place on August 25–30, 2020. All necessary information is available at *http://www.icosm2020.sggw.pl/course/*
The optional post-conference trip will take place on September 4–6, 2020. Detailed information about the trip will be announced later.
Read more: *http://www.icosm2020.sggw.pl/*

2020 SSSA Kirkham Conference

14-17 September 2020, Kruger National Park, South Africa. Held every four years, the conference is generally attended by 100 people or less to provide in-depth discussions on new and emerging research.
Questions? Please contact Kirkham Conference Chair Brent Clothier at *brent.clothier@plantandfood.co.nz*.
Website: *www.soils.org/membership/divisions/soil-physics-and-hydrology/kirkham-conferences*

First IUSS Conference on Sodic Soil Reclamation

17-19 September, 2020, Changchun, China.
The conference will focus on the key issues of sodic soil reclamation, covering theory and also management.
The activity will be organized in oral and poster presentations, seminars and a field trip for the participating researchers, enterpreneurs and decision-makers. The overall objective of the meeting is to contribute to the

improvement and utilization of sodic lands in different regions of the world.
Deadline for abstract submission: July 1, 2020
Deadline for full text of paper: Aug. 1, 2020
Contact: *wangzhichun@iga.ac.cn*
Website: *http://ssr.csp.escience.cn/dct/page/65578*

2020 ASA, CSSA, SSSA Annual Meeting

Nov. 8-11, Phoenix, AZ, USA
Share your Science at next year's ASA, CSSA, SSSA Annual Meeting in Phoenix, AZ, November 8-11. The meeting will feature over 3,500 technical presentations, along with a host of networking events and award ceremonies. It's the premiere opportunity for professionals working in agronomic, crop, soil, and related sciences to present, meet and learn from their peers, expand their knowledge base, and take advantage of an abundance of networking opportunities to enhance their career.
Please, save the date!

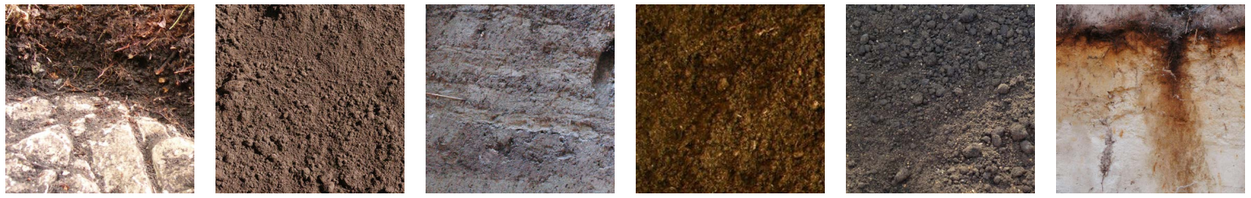
Soils Conference 2020

29 November 2020 - 4 December 2020, Cairns, Queensland, Australia
The joint conference will be hosted by Soil Science Australia and the New Zealand Society of Soil Science.
Temporary website: *https://www.soilscienceaustralia.org.au/soils-conference-2020/*

2021

WRB field workshop 2021 in Iceland

Olafur Arnalds and his colleagues are organizing the tour. The dates are:
Arrival: June 9
Tour: June 10-17
Departure: June 18
You will be informed about the application for participation and other details by September 30, 2020. Please, save the date.



New Publications

Anthropogenic Soils in Japan

Edited by Makiko Watanabe and Masayuki Kawahigashi. Published in the Part of the *International Perspectives in Geography* book series (IPG) by Springer in June 2019, Print ISBN 978-981-13-1752-1, Online ISBN 978-981-13-1753-8, price e-book: EUR 101.14.

This book enhances the discussion of anthropized soils with photographs of soil profiles and provides general information about soils in Japan, using data on their physical and chemical properties. Soils targeted in this book have wide spectra in anthropized influences from lesser effects such as agricultural improvements to drastic changes caused by infrastructure construction. These include soils sealed by technic hard materials, on ski slopes, on river embankments and coastal berms, in historical urban parks, on man-made islands in Tokyo Bay, in reclaimed lands, in greenhouse fields, and those filling in swamplands.

The book includes information with new data produced by active researchers from many institutes and universities as it refers to soils altered by human activities and thus is informative to specialists in various disciplines related to soils. It is also valuable to students for viewing soils in cities, infrastructure construction areas, and other affected locations. Evaluation and understanding of soils now has become essential for researchers in a range of fields and for policy makers in agriculture as well as urban planning, civil engineering, and disaster sciences. This work serves as an impetus for launching further study of soils and environments.

Read more: *https://www.springer.com/de/book/9789811317521*

Simple Methods to Study Pedology and Edaphology of Indian Tropical Soils

By D. K. Pal. Published by Springer in June 2019. Print ISBN 978-3-319-89598-7, Online ISBN 978-3-319-89599-4; price e-book: EUR 91.62.

This book discusses how research efforts have established an organic link between pedology and edaphology of five pedogenetically important soil orders as Alfisols, Mollisols, Ultisols, Vertisols and Inceptisols of tropical Indian environments. The book highlights how this new knowledge was gained when research efforts were complemented by high resolution mineralogical, micro morphological and age-control tools. This advancement in basic and fundamental knowledge on Indian tropical soils makes it possible to develop several index soil properties as simple methods to study their pedology and edaphology.

More than one-third of the world's soils are tropical soils. Thus, the recent advances in developing simple and ingenuous methods to study pedology and edaphology of Indian tropical soils may also be adopted by both graduate students and young soil researchers to aid in the development of a national soil information system to enhance crop productivity and maintain soil health in the 21st century.

Read more: *https://www.springer.com/de/book/9783319895987*

Soil Fertility Management for Sustainable Development

Edited by Deepak G. Panpatte and Yogeshvari K. Jhala. Published by Springer in June 2019, Print ISBN 978-981-13-5903-3, Online ISBN 978-981-13-5904-0, price e-book: EUR 107.09

Soil fertility is the backbone of agricultural systems and plays a key role in determining food quantity and quality. In recent decades, soil fertility has decreased due to indiscriminate use of agrochemicals, and nations around the globe are now facing the challenge of increasing food production while sustainably maintaining soil fertility. Written by leading international scientists in the field, this book explores soil fertility management strategies, including agronomic, microbiological and soil-science based strategies. Highlighting the practices that can be incorporated into organic farming and discussing recent advances, it is a valuable resource for researchers wanting to broaden their vision and the scope of their investigations.

Read more: *https://www.springer.com/de/book/9789811359033*

Soil Clays – Linking Geology, Biology, Agriculture, and the Environment, 1st Edition

By G. Jock Churchman, Bruce Velde, CRC Press, June 28, 2019, 258 pages, 27 Color Illus., 70 B/W Illus., Hardback: ISBN 9781498770057, Price GBP 130,00.

This book aims to help improve predictions of important properties of soils through a modern understanding of their highly reactive clay minerals as they are formed and occur in soils worldwide. It examines how clays occur in soils and the role of soil clays in disparate applications including plant nutrition, soil structure, and water-holding capacity, soil quality, soil shrinkage and swelling, carbon sequestration, pollution control and

remediation, medicine, forensic investigation, and deciphering human and environmental histories.
To know soil clays is to enable their use toward achieving improvements in the management of soils for enhancing their performance in one or more of their three main functions of enabling plant growth, regulating water flow to plants, and buffering environmental changes.
This book provides an easily-read and extensively-illustrated description of the nature, formation, identification, occurrence and associations, measurement, reactivities, and applications of clays in soils.
Read more: *https://www.routledge.com/Soil-Clays-Linking-Geology-Biology-Agriculture-and-the-Environment/Churchman-Velde/p/book/9781498770057*

Intelligent Soil Management for Sustainable Agriculture. The Nutrient Buffer Power Concept

By Kodoth Prabhakaran Nair. 1st edition published by Springer International Publishing in 2019, 389 pages, hardcover ISBN 978-3-030-15530-8, eBook ISBN 978-3-030-15530-8, price hardcover 176,79 €, price eBook 101,14 €.
This book conceptualizes a revolutionary idea based on a mechanistic-mathematical model in which the 'Buffer Power' of the principal and problematic nutrients like phosphorus, potassium and zinc is quantified. This is achieved by using either a very sophisticated technique, electro-ultra-filtration, or a simple adsorption-desorption equilibrium technique, and by integrating the 'Buffer Power' of the nutrient in question into the computations, accurate fertilizer recommendations are made.
This technique was field tested across Europe, (Germany and Belgium), Africa (The Republic of Cameroon), and Asia (both Central Asia- Turkey and South Asia-India), during a period of three decades in test crops, such as, summer rye (Secale cereale), maize (Zea mays), wheat (Triticum aestivum), white clover (Trifolium repens), a highly nutritious and palatable fodder crop for Africa, black pepper (Piper nigrum) and cardamom (Elettaria cardamomum). Remarkable precision in predictability of plant uptake of phosphorus, potassium and zinc was obtained employing the technique.
Read more: *https://www.springer.com/gp/book/9783030155292?wt_mc=ThirdParty.SpringerLink.3.EPR653.About_eBook#otherversion=9783030155308*

Soil Resources and Its Mapping Through Geostatistics Using R and QGIS

Edited by Priyabrata Santra, Mahesh Kumar, N.R. Panwar and C.B. Pandey. 1st Edition published by CRC Press on 15 July 2019. 362 pages, hardback ISBN: 9780367340520, price hardback: £92.00.
This book will provide an exposure to recent developments in the field of geostatistical modeling, spatial variability of soil resources, and preparation of digital soil maps using R and GIS and potential application of it in agricultural resource management.
Please note: This title is co-published with New India Publishing Agency, Delhi. Taylor & Francis does not sell or distribute the Hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka
Read more: *https://www.routledge.com/Soil-Resources-and-Its-Mapping-Through-Geostatistics-Using-R-and-QGIS/Santra-Kumar-Panwar-Pandey/p/book/9780367340520*

Soil Degradation and Restoration in Africa

Edited by *Rattan Lal*, *B. A. Stewart*. 1st Edition published in July 2019 by CRC Press; 330 pages, 20 Color Illustrations, 101 B/W Illus.; eBook ISBN 9781315102849, hardcover ISBN 9781138103313, price hardcover GBP 140.00.
Soil degradation is a widespread problem in Africa resulting in decreased agricultural productivity while demand for food continues to increase. Degradation is caused by accelerated erosion, acidification, contamination, depletion of soil organic matter and plant nutrients, and salinization. The major cause of soil degradation in Africa is uncontrolled and excessive grazing in the savanna regions followed by deforestation and the use of inappropriate and extractive farming practices. Perpetual neglect of the health of soils in Africa can exacerbate the already serious problems of food and nutritional insecurity and environmental degradation. Food and nutritional security of the growing population of Africa can only be achieved if degraded soils are restored and soils of agroecosystems are managed prudently and sustainably. Ignoring soils and taking the fragile, finite and precious soil resources for granted is the principal cause of poverty, hunger, and environmental degradation. The downward spiral must be reversed through soil restoration measures based on translating science into action.
Part of the *Advances in Soil Sciences series,* this volume is specifically devoted to the processes and factors that cause soil degradation and the challenges and potential for remediation and restoration of soil health in Africa.
Read more: *https://www.routledge.com/Soil-Degradation-and-Restoration-in-Africa/Lal-Stewart/p/book/9781138103313*

Determination of Toxic Organic Chemicals In Natural Waters, Sediments and Soils: Determination and Analysis

By T. R. Crompton. 1st Edition published by Academic Press on 8 June 2019; 422 pages, Paperback ISBN: 9780128158562, eBook ISBN: 9780128165300, price paperback: EUR 119.14, price eBook: €132.51.
This tome reviews the latest techniques for the determination and assessment of both current and emerging organic compounds in a range of important environmental contexts. A wide range of organic compounds in non-saline waters are discussed in the opening chapters, including hydrocarbons, surface active agents and volatile organic compounds. This is followed by multiorganics, pesticides and organometallic compounds in non-saline waters. Organic compounds in aqueous precipitation are then explored before the book goes on to discuss compounds in soils, including extraction techniques, insecticides, herbicides and fungicides, and organometallic compounds.
Finally, the concluding chapters focus on compounds in sediments, providing readers with the latest information in the field and supporting them as they address the important issue surrounding organic material throughout ecosystems.
Read more: *https://www.elsevier.com/books/determination-of-toxic-organic-chemicals-in-natural-waters-sediments-and-soils/crompton/978-0-12-815856-2*

Soil Fertility Management for Sustainable Development

Edited by Deepak G. Panpatte and Yogeshvari K. Jhala. Published by Springer, 2019. Print ISBN 978-981-13-5903-3; Online ISBN 978-981-13-5904-0; price eBook: EUR 107.09.
Soil fertility is the backbone of agricultural systems and plays a key role in determining food quantity and quality. In recent decades, soil fertility has decreased due to indiscriminate use of agrochemicals, and nations around the globe are now facing the challenge of increasing food production while sustainably maintaining soil fertility. Written by leading international scientists in the field, this book explores soil fertility management strategies, including agronomic, microbiological and soil-science based strategies. Highlighting the practices that can be incorporated into organic farming and discussing recent advances, it is a valuable resource for researchers wanting to broaden their vision and the scope of their investigations.
Read more: *https://link.springer.com/book/10.1007/978-981-13-5904-0#about*

Saline Soil-based Agriculture by Halotolerant Microorganisms

Edited by Manoj Kumar, Hassan Etesami, Vivek Kumar. Published by Springer, 2019. Print ISBN 978-981-13-8334-2, Online ISBN 978-981-13-8335-9. Price eBook: EUR 91.62.
This book discusses the role of salt in current agricultural approaches, including the low salt tolerance of agricultural crops and trees, impact of saline soils, and salt-resistant plants.
Halophytes are extremely salt tolerant plants, which are able to grow and survive under salt at concentrations as high as 5 g/l by maintaining negative water potential. The salt-tolerant microbes inhabiting the rhizospheres of halophytes may contribute to their salt tolerance, and the rhizospheres of halophytic plants provide an ideal opportunity for isolating various groups of salt-tolerant microbes that could enhance the growth of different crops under salinity stress.
The book offers an overview of salt-tolerant microbes' ability to increase plant tolerance to salt to facilitate plant growth, the potential of the halophytes' rhizospheres as a reservoir of beneficial salt-tolerant microbes, their future application as bio-inoculants in agriculture and a valuable resource for an alternative way of improving crop tolerance to salinity and promoting saline soil-based agriculture. This special collection of reviews highlights some of the recent advances in applied aspects of plant (halophytes)-microbe interactions and their contribution towards eco-friendly approaches saline soil-based agriculture.
Read more: *https://link.springer.com/book/10.1007/978-981-13-8335-9#about*

Nema and the Xenos: A Story of Soil Cycles

By Ailsa Wild, Aviva Reed, Briony Barr, Gregory Crocetti, S. Patricia Stock. Published in the *Small Friends Books* series by CSIRO Publishing in August 2019. ISBN: 9781486312160, 48 pages, Colour illustrations. Price hardback AU $24.99.
The tale of a tiny worm, the bacteria that live inside her, and a tree being munched on by a grub.

This is a story about tiny creatures that live in the darkness of the soil. + Full description
When a tree cries out in pain, some unexpected heroes come to the rescue. Nema and her gang of young nematodes (tiny worms) embark on a dangerous journey underground. The Xenos, a group of wise but deadly bacteria, hitch a ride. The story of how they help the tree is full of action, life-or-death challenges and microscopic warfare. It is a story of co-operation and ancient partnership, about events happening all over the Earth, in the hidden worlds beneath our feet.
Read more: *https://www.publish.csiro.au/books/series/81*

Healthy Soils for Healthy Vines – Soil Management for Productive Vineyards

By Robert White and Mark Krstic. Published in September 2019 by CSIRO Publishing, 224 pages, colour photographs, illustrations, ISBN: 9781486307388, price hardback: 140.00 AUD. Sales in Australia and New Zealand only. This title is available elsewhere through *CABI* (*https://www.cabi.org/bookshop*).
Healthy Soils for Healthy Vines provides a clear understanding of vineyard soils and how to manage and improve soil health for best vineyard performance. It covers the inherent and dynamic properties of soil health, how to choose which soil properties to monitor, how to monitor soil and vine performance, and how vineyard management practices affect soil health, fruit composition and wine sensory characters. It also covers the basic tenets of sustainable winegrowing and their significance for business resilience in the face of a changing climate. + Full description
This book will be of practical value to anyone growing grapevines, managing a vineyard or making wine, from the small individual grower to the large wine company employee. It will be of special interest to winegrowers employing organic, natural or biodynamic methods of production, where the primary focus is on the biological health of the soil.
Read more: *https://www.publish.csiro.au/book/7706*

Launch of the recently endorsed International Code of Conduct for the Sustainable Use and Management of Fertilizers

The Fertilizer Code provides a locally-adaptable framework and voluntary set of practices to serve the different stakeholders that are directly or indirectly involved with fertilizers. It sets out roles, responsibilities, and actions of government; the fertilizer and nutrient recycling industries; agricultural extension and advisory services; research and academia; farmers and other end users in relation to the production, trade, policy, regulation and use of chemical and mineral fertilizers, organic fertilizers, and reused and recycled nutrients.
Read more: *http://www.fao.org/global-soil-partnership/resources/highlights/detail/en/c/1200213/*
Download the publication: *http://www.fao.org/3/ca5253en/ca5253en.pdf*

RECSOIL: Recarbonization of global soils to offset global emissions

RECSOIL is an initiative to unlock the potential of soil organic carbon for climate change mitigation and adaptation. It is presented as a tool to implement the soil component of the Koronivia Joint Work on Agriculture. RECSOIL aims to mobilize action on the ground through farmers, who are the drivers for sequestering organic carbon in agricultural soils. The multiple benefits of soils will be prized via the provision of incentives to farmers who implement this set of innovative practices.
The booklet *'recarbonization of global soils: a dynamic response to offset global emissions'* presents soil carbon sequestration as a feasible option for offsetting greenhouse gas emissions from international aviation as part of a market-based mechanism. The questions raised include: What is the current state of research on soils as a record of past and present? How has soil research contributed to important archaeological insights ? How do formerly collected soil data help us today? Can we still learn from nature through field observation? What are some of the future challenges ?
Read more: *http://www.fao.org/global-soil-partnership/resources/highlights/detail/en/c/1201385/*
Download the publication: *http://www.fao.org/3/i7235en/I7235EN.pdf*

Assessing the environmental impact of agriculture

Edited by Bo P. Weidema. Published on 27 August 2019 by Burleigh Dodds Science Publishing Limited; 386 pages, hardback ISBN-13: 9781786762283, price hardcover GBP 160.00.
It has been estimated that agriculture and land use are responsible globally for around 24% of the greenhouse gas emissions fueling climate change. *Assessing the environmental impact of agriculture* provides a review of current research on the use of life cycle assessment (LCA) and other modelling techniques to measure and model the environmental impact and improve the sustainability of agriculture. The book is divided into three sections. Chapters that feature in Part 1 review key issues in using LCA and modelling applied to farming systems. Chapters in Part 2 provide more details on the modelling of three particular impacts, namely freshwater, pesticides and social impacts. Part 3 is dedicated to detailing the options available for reducing the environmental impact and improving the performance of both crop and livestock farming.
Read more: *https://shop.bdspublishing.com/store/bds/detail/workgroup/3-190-72759*

Soil Carbon – Science, Management and Policy for Multiple Benefits

Edited by: Steven A Banwart, Elke Noellemeyer and Eleanor Milne. Published in paperback by CABI in October 2019, 420 pages, ISBN: 9781786395504.
This book brings together the essential evidence and policy opportunities regarding the global importance of soil carbon for sustaining Earth's life support system for humanity. Covering the science and policy background for this important natural resource, it describes land management options that improve soil carbon status and therefore increase the benefits that humans derive from the environment. Written by renowned global experts, it is the principal output from a SCOPE rapid assessment process project.
Read more: *https://www.cabi.org/bookshop/book/9781786395504/*

The Soils of Georgia

Edited by Matchavariani, Lia. 1st Edition published in the World Soils Book Series in October 2019 by Springer, 179 pages, 153 illustrations, 145 illustrations in colour. Hardcover ISBN 978-3-030-18508-4, prices hardcover: 129.99 € | £109.99 | $159.99; eBook ISBN 978-3-030-18509-1, prices eBook: 107.09 € | £87.50 | $119.00.
This book provides an extensive overview of the diversity of soils in Georgia. It highlights the soil-forming environment (climate, geology, geomorphology), the characterization of the physical, chemical and morphological (macro-, micro-) properties of soils, the history of soil research in Georgia, and the geographic distribution of different soil types. In addition to describing the soil cover, the book also zones and classifies the soils. Past and current land use issues, ecological properties and implications of soils, and many other aspects are elaborated on; special attention is paid to anthropogenic soil degradation due to the contamination and erosion of soils in Georgia. This comprehensive and richly illustrated book, which includes a wealth of pictures and soil maps, offers an essential field guide for soil scientists, geographers and researchers in related areas.
Read more: *https://www.springer.com/de/book/9783030185084*

The Soils of Argentina

Edited by Rubio, Gerardo, Lavado, Raul S., Pereyra and Fernando X. 1st Edition published in the World Soils Book Series in October 2019 by Springer, 268 pages. Hardcover ISBN 978-3-319-76851-9, prices hardcover 139.99 € | £119.99 | $169.99; Softcover ISBN 978-3-030-08309-0, prices softcover: 139.99 € | £119.99 | $169.99; eBook ISBN 978-3-319-76853-3, prices eBook: 118.99 € | £95.50 | $129.00.
This is the first comprehensive book on Argentinian pedology. It discusses the main soil types of Argentina, their geographical distribution, classification, functions, agricultural use, ecological aspects, and the threats to which they have been subjected during centuries of intensive and extensive management. The description of the soils is accompanied by a complete set of data, pictures and maps, including benchmark profiles and an overview of the country's agricultural production. It also deals with future scenarios of the relationships between soil science and other disciplines and the main challenges that soil science will face in the future. Further, the book explores aspects of the main soil forming factors, such as climate, vegetation, geology and geomorphology, making use of new, unpublished data and elaborations, and presents a history of pedological research in Argentina.
Read more: *https://www.springer.com/de/book/9783319768519*

Soils as records of Past and Present. From soil surveys to archaeological sites: research strategies for interpreting soil characteristics

Edited by Judit Deák, Carole Ampe and Jari Hinsch Mikkelsen. Published by Raakvlak, Archaeology, Monuments and Landscapes of Bruges and Hinterland, Belgium, *www.raakvlak.be*, 320 pages, ISBN 978 90 76297 811.
This book is available as printed book for the price of 55 euros + shipping (5 Euros in BeNeLux, 10 Euros in Europe and 15 Euros outside of Europe). If you are interested in purchasing a copy please contact *info@raakvlak.be*. In addition, it will be available as an open access

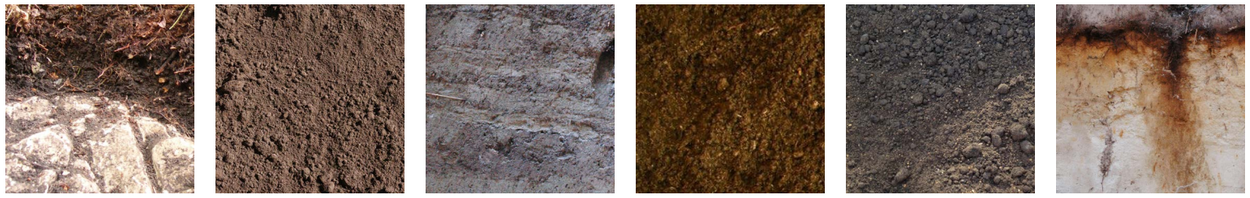
online document (*http://doi.org/10.5281/zenodo.3417724* starting from 01.03.2020.
The table of contents can be consulted on the website of the meeting: *http://www.4terres.ch/gamb19/index.html*. Each individual paper is already accessible as an open access online document and the authors keep the copyright of their work.
This book was edited on the occasion of the meeting *'Soils as records of Past and Present: the geoarchaeological approach. Focus on: is there time for fieldwork today?'* that was held on the 6th and 7th of November 2019 in Bruges (Belgium). With this book, we would like to honour all the scientific contributions of Roger Langohr, who manages to fascinate, motivate and promote scientists that are active in various research fields and come from all parts of the world.
In the past few decades, soil science has contributed greatly to the discussions on past and present environmental changes, as well as to the understanding of various topics of human impact on landscapes and the environment. This book aims to address these complex issues and demonstrates how they are approached and unravelled through past and current interdisciplinary research. The twenty-one papers that compose this book focus on a broad range of subjects and cover a wide geographical scope with soils and related questions presented from Belgium, France, Hungary, Luxembourg, Spain, and Switzerland. The peer-reviewed papers are grouped in five main chapters: Present and past soilscapes and land use (1), Natural and anthropogenic soil forming factors and processes (2), Archaeology and soil science, unravelling the complexity (3), Past climates and environments (4), and Present and future use of soil data (5). These contributions testify that an interdisciplinary approach, which has long been advocated by Roger Langohr, works well and proves it to be a successful tactic.
By Judit Deák, Carole Ampe, Jari Hinsch Mikkelsen, Mariebelle Deceuninck

Soil Degradation, Restoration and Management in a Global Change Context, Volume 4

Serial Volume Editor: Paulo Pereira. 1st Edition of Volume 4 published in the series Advances in Chemical Pollution, Environmental Management and Protection by Academic Press on 28th October 2019. 536 pages, Paperback ISBN: 9780128164150, eBook ISBN: 9780128164167. Price paperback: USD 175.20, price eBook: USD 175.20.
This tome explores a wide breadth of emerging and state-of-the-art technologies and provides the best practices to manage soils affected by degradation. Soils are the base of life, thus a sustainable soil management is crucial in a context of global environmental change. Chapters in this new release include Soil degradation, processes, future treats and possible solutions, Agriculture and grazing environments, Abandoned and afforested lands, Environments affected by fire, Mining environments, Urban areas, and Lands affected by war.
Read more: *https://www.elsevier.com/books/soil-degradation-restoration-and-management-in-a-global-change-context/pereira/978-0-12-816415-0*

Global Change and Forest Soils: Cultivating Stewardship of a Finite Natural Resource, Volume 36

Series Volume Editors: Matt Busse Christian Giardina Dave Morris Deborah Page-Dumroese; 1st Edition of Volume 36 in the series Developments in Soil Science published by Elsevier on 22nd November 2019, 538 pages, Paperback ISBN: 9780444639981, price paperback: USD 140.00.
Global Change and Forest Soils: Cultivating Stewardship of a Finite Natural Resource, Volume 36, provides a state-of-the-science summary and synthesis of global forest soils that identifies concerns, issues and opportunities for soil adaptation and mitigation as external pressures from global changes arise. Where, how and why some soils are resilient to global change while others are at risk is explored, as are upcoming train wrecks and success stories across boreal, temperate, and tropical forests. Each chapter offers multiple sections written by leading soil scientists who comment on wildfires, climate change and forest harvesting effects, while also introducing examples of current global issues.
Read more: *https://www.elsevier.com/books/global-change-and-forest-soils/busse/978-0-444-63998-1*



Miscellaneous

New classification of soils in Poland

Cover of the Polish Soil Classification (SCG6)

The 6th edition of the Polish Soil Classification (SGP6) was published in 2019. It aims to maintain soil classification in Poland as a modern scientific system that reflects current scientific knowledge, international trends and practical needs. SGP6 takes up the leading idea of the previous editions – i.e. joining the traditional genetic approach and modern quantitative classification based on the recognition of diagnostic horizons, properties and materials. SGP6 distinguishes between three hierarchical categories (9 soil orders, 30 soil types, and 183 soil subtypes) and three non-hierarchical categories (soil variety, soil genus, soil species). SGP6 simplifies the classification at the higher levels (lower number of soil orders and soil types) and makes classification more flexible at the lower level. Hierarchically listed soil subtypes may be combined (like principal qualifiers in WRB 2015) and soil varieties may be added from a general list, if applicable and necessary (like supplementary qualifiers in WRB 2015). With many definitions, SGP6 remains close to those of an international system (WRB 2015); however, essential modifications have been introduced, which may be adopted by international systems to advance the classification and mapping of soils, including (a) larger thickness required for the mollic/umbric horizon, (b) more evident presence of clay cutans in the argic horizon, (c) definition of colluvic/deluvial material that excludes mass movement results, (d) unified P requirement for all anthropogenic horizons (based on Mehlich-3 procedure), (e) new definitions of deeply mixed and locally accumulated anthropogenic materials poor in artefacts, etc. SGP6 introduces unique names for new soil subtypes, e.g. edifisols for soils that develop on buildings/ruins, aggerosols for soil developed from intentionally heaped material that is poor in artefacts, etc.

Although the classification has been performed in Polish, an extensive explanation of the principles, classification scheme and keys to SGP6, as well as the relationships between diagnostic horizons, materials and properties described in SGP6 and in WRB, and a correlation of classification units between SGP6, WRB and Soil Taxonomy can be found in English in a paper by Kabala et al., 2019. Polish Soil Classification, 6th edition – principles, classification scheme and correlations. Soil Science Annual 70(2): 71-97, freely available at *https://content.sciendo.com/view/journals/ssa/70/2/article-p71.xml*

By Cezary Kabała, Wrocław University of Environmental and Life Sciences
Przemysław Charzyński, Nikolaus Copernicus University, Toruń, Poland

The consortium GLobAl Digital SOIL MAP (GLADSOILMAP)

GLobAl Digital SOIL MAP (GLADSOILMAP)

By Dominique Arrouays, Zamir Libohova, Budiman Minasny, Vera Leatitia Mulder, Laura Poggio, Pierre Roudier

Soils are fundamental to life on Earth (Admunson et al. 2015; ITPS-FAO, 2015). They are central to sustainable development and have critical relevance to global issues such as food and water security (Koch et al., 2013) and climate regulation (Lal, 2004; Minasny et al. 2017). Soils are major contributors to a wide range of ecosystem services (Dominati et al., 2010). Soils are also strongly connected with international initiatives (e.g. Sustainable Development Goals (SDG, especially Goal 15: Life on Earth; UNCCD Land Degradation Neutrality; Accounting duties of countries on the European (CAP) and global level (IPCC); INSPIRE EU Directive and UN-FAO Global Soil Partnership (GSP). All these examples require accurate national soil property information and we will provide scientific support to develop reliable baseline soil information and pathways for monitoring soils. As soils are highly variable in space, effective soil management requires high-resolution data on their properties. However, until now, no global high-resolution map (i.e. on a grid size less than 250x250m) of the world's soils has been released (Arrouays et al. 2017a).

Digital Soil Mapping (DSM) is one of the major approaches for generating soil property maps over large areas at fine spatial resolution (e.g., McBratney et al. 2003; Arrouays et al. 2014a&b; Minasny and McBratney, 2015). DSM uses legacy soil data and spatially exhaustive environmental co-variates (digital elevation models, remote sensing data, land use and geological maps, etc.) to predict the soil properties of interest. (Lagacherie and McBratney, 2007). Developments in spatial tools and technologies, such as geographic information systems (GIS), Global Positioning Systems, remote sensing (RS) data, digital elevation models (DEM), modeling (e.g. Machine Learning, Artificial Intelligence, etc.), offer an opportunity to improve the delivery format of spatial soil information (McBratney et al., 2003) and provide information on map predictions uncertainty. By combining DSM approaches with existing legacy data and knowledge, the quality of predicted soil property maps can be improved substantially and assessed.

Two projects, GlobalSoilMap (Arrouays et al., 2014a) and SoilGrids (Hengl et al., 2017), aim at delivering the first global high-resolution soil property maps, the first one by a bottom-up approach (from country to globe), the latter by a top-down approach (global). The GLobAl Digital SOIL MAP ***(GLADSOILMAP)***, consortium brings together ***world scientific leaders involved in both projects*** by ***converging between top-down and bottom-up approaches.*** It aims at ***developing and transferring information and methods from the scientific community to (i) producers,*** i.e. people in charge of soil mapping so that they can improve the prediction accuracy of soil properties and decrease the associated uncertainty and, ***(ii) end-users***, i.e. ***farmers, natural resource planners, modelers, policy makers, etc.***, so they can support their assessments and/or decisions at the relevant scales.

Both bottom-up and top-down products co-exist (Arrouays et al. 2017a,b,c). Indeed, each approach and data used to create maps has its own strengths and weaknesses. On the one hand, it is difficult for the end user to choose the most suitable map among those available, on the other hand, the information provided by different sources may be complementary and merging them may be a way forward to capitalize on all existing information for creating the most accurate map possible (e.g. Caubet et al. 2019). The way forward and the main knowledge gaps of DSM and of national, continental and global initiatives have been summarized in some recent papers (Minasny and McBratney, 2015; Arrouays et al. 2017b&c). Among the main research priorities identified by these recent papers are (i) the assessment of uncertainty; (ii) the assessment of the potential of new co-variates; (iii) time-space sampling issues, (iv) harmonizing and merging issues. ***All these issues are included in the list of work-packages and tasks that the consortium propose to accomplish.***

The overall goal of the consortium is to allow a small group of high-level scientists and organizations (Fig. 1) to develop methods for improving the accuracy of soil property predictions by utilizing current legacy soil data and information and combining them with DSM methodologies. We aim to create a consortium of internationally competitive researchers sharing the research objective to develop and enhance methods for global soil mapping.

Consortium outputs will be transferred and shared with (i) the **scientific community** through peer reviewed publications, links with the International Union of Soil Sciences (IUSS), participation in international conferences (home-funded) and organization of a final conference at the end of the project, and (ii) **stakeholders and policy makers**, through communication at local, regional, state, European and global levels, and by providing essential inputs for further global gridded products delivered under the framework of the UN-FAO GSP.
The major objectives of the consortium are i) to develop methodologies for improving the accuracy of soil property predictions and reducing their uncertainties and ii) to transfer them to effective production at local, national, continental and global levels.

The consortium is led by Dominique Arrouays (INRA Orléans, France) and its members are Budiman Minasny (univ. of Sydney), Vera Leatitia (Titia) Mulder (Wageningen University, The Netherlands, Laura Poggio (ISRIC-World Soil Information, The Netherlands), Puerre Roudier (Maanaki Vevua – landcare Research, New Zealand, and Zamir Libohova (USDA-NRCS, USA). It also includes some collaborators: Guillaume Martelet and Pierre Nehlig

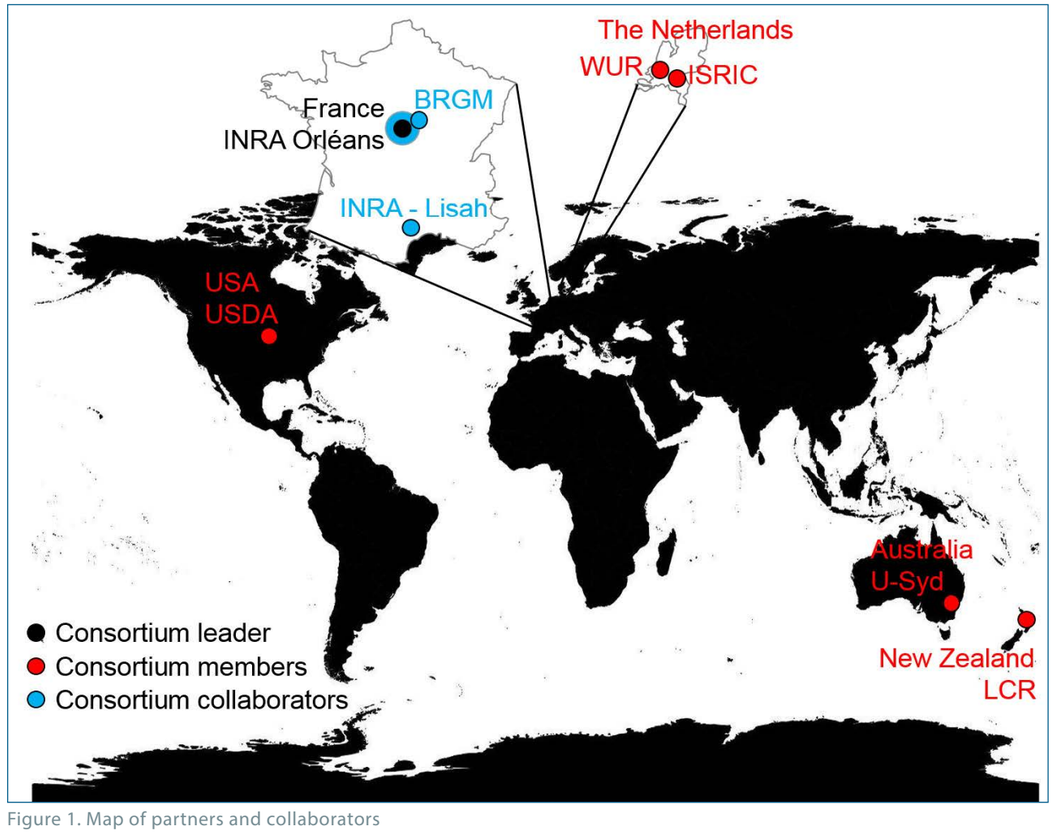


Figure 1. Map of partners and collaborators

(BRGM, France), Hocine Bourennane and Anne Richer de Forges (INRA Orléans France) and Philippe Lagacherie (INRA Montpellier, France).

The consortium will be a major contributor to the guidelines for delivering global databases of soil properties. Major outcomes include providing methods and writing guidelines for i) using soil information and expert knowledge accumulated over several decades of soil survey; ii) using advanced technologies (e.g. data science, machine learning) and high resolution spatial data in conjunction with soil legacy data; iii) quantifying the uncertainty of prediction maps; (iv) producing high resolution maps in many parts of the world, that could be replicated in other regions at national and international levels and, (v) taking advantage of multi-scale prediction by merging maps in an efficient way.

The consortium GLADSOILMAP is supported by LE STUDIUM Loire Valley Institute for Advanced Studies through its LE STUDIUM research consortium programme.

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(in bold, members and collaborators of GLADSOILMAP)

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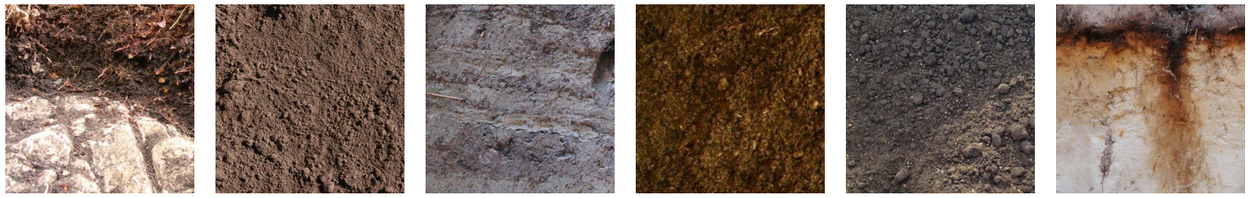


In Memoriam

Louis Dekker

(1939-2019)

Louis Dekker (© Bonny Decker)

Louis Dekker – a figurehead in soil science is no longer among us

Dr Louis Dekker, former ESG staff member, died after a short illness on 20 November 2019, at the age of 80. Louis worked in Wageningen with Stiboka, the DLO Winand Staring Centrum and then Alterra for a total of 47.5 years. Following his retirement in 2004, Louis remained with Alterra as a guest staff member and then, in 2012, transferred to the Soil Physics and Land Management chair group at Wageningen University and Research. Louis was active in the scientific field right through to the end of his life – a total of 63 years, undoubtedly a record for Wageningen. Working with Louis was nothing less than a privilege, as he possessed a number of unique personal qualities that were ideally suited to research and were a source of inspiration to others to join in.

His many years' experience in soil mapping activities during the period between 1956 and the mid-70s made Louis a walking encyclopaedia of Dutch soil science and a source of knowledge for many of his colleagues who

had specific questions. Louis was extremely enthusiastic about soil mapping and had an eye for strange patterns in the landscape and in the soil: he was fascinated by them and wanted to understand how they were formed. When soil mapping went on the back-burner after the completion of a map series in the 70s, Louis gained more and more time to focus on in-depth research.

Louis demonstrated that he was also an enthusiastic scientist and a born problem-solver who based his research on a wealth of field observations, measurements and analyses. During this period, Louis worked for many years with colleagues including Johan Bouma, Jan Hendrickx, Klaas Oostindie, Jan Wesseling, Tammo Steenhuis, John Nieber, Coen Ritsema and many others. Many colleagues remember Louis for his cartloads of soil samples that arrived at our building at the end of long days in the field, totally unknown in those days and something no one understood. However, these tremendous quantities of samples – often collected from a single field or small plot – yielded many new insights into soil science, such as water currents in shrinking and swelling clay soils and the behaviour of water repellent soils, an area in soil science in which Louis acquired world fame.

The results from his research drew attention from abroad, which in turn resulted in his increasing number of international trips to a wide range of congresses, project meetings and locations for field research in countries including the USA, Mexico, Australia, New Zealand, Thailand, Russia and many European countries. Louis often combined business with leisure during his travels, which he always found a source of inspiration for new research that he planned and carried out on his return. While he was enjoying a couple of beers on a terrace in New Zealand, Louis also came up with the idea of graduating with his PhD on the same day as Coen Ritsema, under supervision of Prof. Johan Bouma and Prof. Reinder Feddes. Louis actually graduated some time afterwards, in 1998 – an unforgettable event for Louis, his family and his friends.

Louis was also an extremely gifted writer: he wrote more than 250 articles and reports, no fewer than 75 of which after his retirement! Louis wanted to make his knowledge accessible to as broad a public as possible, which he did by writing articles that were published in almost 45 scientific journals. His articles also had effect: many colleagues cited some 10000 references to his work, evidence of the great influence his research has had on other scientists. His influence is actually so great that scientists all over the world still refer to his work almost every day and are expected to continue to do so during the coming decades. This is also exactly in line with what Louis often said – '*Writers are immortal*' (in Dutch: *Wie schrijft, die blijft*).

Louis also held hundreds of presentations for farmers, horticulturists, nature organisations, golf course managers, students, scientists and policymakers. His clear texts, illustrated with terrific photos from his field research, were appreciated by everyone who attended one of his presentations.

All-in-all, Louis was a unique man, an enthusiastic and successful scientist, an inspiring and humorous colleague – and a leading figurehead in soil science. We will miss his knowledge, readiness to help and humour, not only as a colleague but also as a friend.

Messages to Louis's family can be sent by post to Vera Dekker (Nieuwe Veenendaalseweg 220 C, 3911 MS Rhenen, the Netherlands), or by email to *stelladekker@hotmail.com*.

By Coen Ritsema, on behalf of the Soil Physics and Land Management group, Wageningen University, the Netherlands

Hangsheng 'Henry' Lin

(1965-2019)

Hangsheng 'Henry' Lin (© Penn State)

Hangsheng 'Henry' Lin, a highly respected soil scientist who was widely regarded as the founding father of hydropedology and a much-loved friend and Penn State colleague, died Sept. 26 at the age of 54 in his State College home after a battle with lung cancer.

Born June 17, 1965, in Shanghang, Fujian, China, he is survived by his wife, Juan 'Jan' Qiu; by his two children, Alice Janet Lin and Jimmie Albert Lin, both of State College, Pennsylvania; by his mother Xiujin Qiu; and by his siblings Niansheng Lin, Rongsheng Lin, Yuping Lin, Yufeng Lin and Yuying Lin in China.

A professor of water quality and environmental science in the Department of Ecosystem Science and Management, Lin joined Penn State's College of Agricultural Sciences in 2001. Previously, he served on the faculty at the University of Massachusetts, Lowell and at the University of Wisconsin, Stevens Point.

A Fellow of the Soil Science Society of America and of the Agronomy Society of America, Lin mentored more than 40 graduate students and postdocs and published more than 240 scientific articles. He received his bachelor's and master's degrees in China and his doctoral degree at Texas A&M University. His most recent research focused on the soil critical zone.

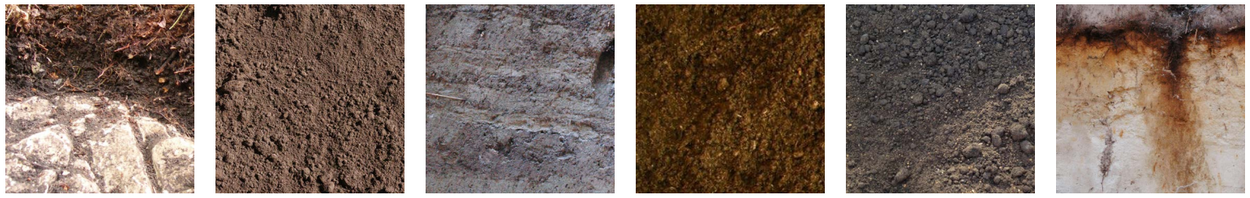
Colleague Patrick Drohan, professor of pedology, called Lin one of the world's top soil scientists who had a tremendous influence on the field of hydropedology. He recalled that Lin often brought smiles to his audiences with his highly animated presentations.
"Henry was extremely enthusiastic about promoting soil science and traveled extensively for his job," Drohan said.

"He loved soil science, nature and life. However, he often expressed to me that he did not like that this took him away so much from his family."

Another colleague, Jack Watson, professor of soil science, soil physics and biogeochemistry, pointed out that Lin's research program was recognized internationally for its excellence, and his teaching at Penn State was innovative and admired.
"Henry taught hydropedology and geospatial and environmental modeling, and since the subject matter for these courses is relatively new and continues to change rapidly, he developed most of the course teaching materials," Watson said.

David Eissenstat, professor and interim head of the Department of Ecosystem Science and Management, noted that Lin brought in more than $5.5 million in grant money to Penn State as a researcher and had tremendous stature in his profession.
"Henry had enormous energy – even while fighting cancer over the last two years, he published 23 papers", Eissenstatt recalled. "But he will be missed much more by the Penn State community and his family for being a great friend, a trusted colleague, a devoted husband and a loving father."
When Lin wasn't on campus he loved spending time with his kids, walking with his wife, and singing with his friends. He attended Calvary Baptist Church.

From: *https://news.psu.edu/story/591083/2019/10/02/penn-state-community-grieves-loss-soil-scientist-henry-lin*



IUSS Honorary Members and Award Winners

IUSS Honorary Members

Year	Member	Country
1924	L. Cayeux †	France
	K. Glinka †	USSR
	Jos. Kopecky †	Czechoslovakia
	G. Murgoci †	Romania
	E. Ramann †	Germany
	Sir John Russell †	UK
	S. Winogradski †	USSR
1927	P. Treitz †	Hungary
1935	E.A. Mitscherlich †	Germany
	A. d'Sigmond †	Hungary
	J. Stoklasa †	Czechoslovakia
	G. Wiegner †	Switzerland
1950	A. Demolon †	France
	D.J. Hissink †	Netherlands
	W.P. Kelley †	USA
1954	S. Mattson †	Sweden
	E. Truog †	USA
1956	G. Bertrand †	France
	E.C.J. Mohr †	Netherlands
1960	F.A. Bear †	USA
1964	J.A. Prescott †	Australia
1968	F. Hardy †	UK
	W.L. Kubiena †	Germany
	L.A. Richards †	USA
	A.A. Rode †	USSR
1974	R. Bradfield †	USA
	G.V. Jacks †	UK
	Ch.E. Kellogg †	USA
	M.K. Kononova †	USSR
	A. Oudin †	France
	F. Scheffer †	Germany

Year	Member	Country
1978	G. Barbier †	France
	V. Ignatieff †	Canada
	Y. Ishizuka †	Japan
	L. Krolikowski †	Poland
	L. Vettori †	Brazil
1982	Ph. Duchaufour †	France
	W. Flaig †	Germany
	V. Kovda †	USSR
	E. Mueckenhausen †	Germany
	E.W. Russell †	UK
1986	H. Jenny †	USA
	D. Kirkham †	USA
	S.K. Mukherjee †	India
	R. Tavernier †	Belgium
1990	G. Aubert †	France
	E.G. Hallsworth †	Australia
	J.S. Kanwar	India
	P. Schachtschabel †	Germany
	R.W. Simonson †	USA
	I. Szabolcs †	Hungary
1998	G.H. Bolt †	Netherlands
	R. Dudal †	Belgium
	K.H. Hartge †	Germany
	M. Kutilek †	Czech Rep.
	J. Quirk	Australia
	W.G. Sombroek †	Netherlands
	K. Wada	Japan
	D.H. Yaalon †	Israel
	S.V. Zonn †	Russia

Year	Member	Country
2002	Richard W. Arnold	USA
	Gleb V. Dobrovolsky †	Russia
	Wilford Gardner †	USA
	Hassan M. Hamdi †	Egypt
	Luis A.L. Sarmiento	Colombia
	Fiorenzo Mancini †	Italy
	Boris S. Nosko	Ukraine
	Ramon Rosell †	Argentina
	Alain Ruellan †	France
	Akira Tanaka †	Japan
	Bernard H. Tinker	UK
2004	Winfried E.H. Blum	Austria
	Hans-Peter Blume	Germany
	Johan Bouma	Netherlands
	Seong-Jin Cho †	S Korea
	Jan Glinski	Poland
	Marcel G.H. Jamagne †	France
	Donald R. Nielsen	USA
	Hans V. van Baren †	Netherlands
	Larry P. Wilding †	USA
2008	Christian Feller	France
	Kikuo Kumazawa	Japan
	Kazutake Kyuma	Japan
	John Ryan	Ireland
	Bob A. Stewart	USA
	Victor Targulian	Russia
	György Varallyay †	Hungary
	Jai Singh Pal Yadav †	India
2012	Jai-Joung Kim	Korea
	John M. Kimble	USA
	Ahmet Ruhi Mermut	Canada
	Nicola Senesi	Italy
	Donald L. Sparks	USA
	Robert E. White	Australia

Year	Member	Country
2016	I. P. Abrol	India
	Jaume Bech	Spain
	Maria Gerasimova	Russia
	Martin H. Gerzabek	Austria
	Mary Beth Kirkham	USA
	Josef Kozak	Czech Republic
	Stephen Nortcliff	United Kingdom
	Marcello Pagliai	Italy
	Piotr Sklodowski	Poland
	Karl Stahr	Germany
	Roger Swift	Australia
	Tengiz F. Urushadze	Georgia
	Jae Yang	Korea

IUSS Award Winners

Dokuchaev Award		
Year	Member	Country
2006	Victor Targulian	Russia
2010	Dan Yaalon	Israel
2014	Alex McBratney	Australia
2018	Johan Bouma	Netherlands

Von Liebig Award		
Year	Member	Country
2006	Rattan Lal	USA
2010	Don Sparks	USA
2014	Magdi Selim	USA
2018	John Ryan	Ireland

Jeju Award		
Year	Member	Country
2018	John Bennett	Australia