



IUSS Bulletin 133



International Union of Soil Sciences (IUSS) ■ IUSS Reports

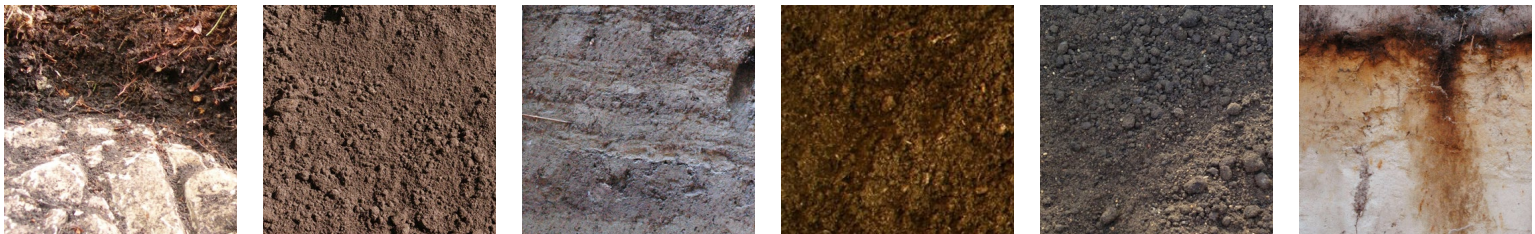
Bulletin 133 ■ International Decade of Soils (2015-2024)

December 2018 ■ Conference and Meeting Reports

■ IUSS Alerts

■ New Publications

■ In Memoriam



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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	4
21 st World Congress of Soil Science 2018 a resounding success.....	5
3 rd International Soil Judging Contest.....	7
On the Importance of Soil Judging Contests.....	17
Report from the IUSS Secretariat.....	19
Awards.....	20
Outcome of 2018 IUSS Presidential Election.....	21
Other IUSS News.....	22
International Decade of Soils (2015-2024)	24
Recent Achievements	25
Celebrating the World Soil Day.....	25
Soil Book Series.....	26
Project TROP-ICSU.....	27
Soil Icon.....	28
IUSS Fact Sheets and Viewpoints.....	31
Conference and Meeting Reports	32
Report on the 2018 SoWaSe – ESSC International Conference.....	33
NARO-MARCO International Symposium.....	37
A soil exhibition in France.....	38
IUSS Alerts	40
June - November 2018	40
World Soil Day, 5 December 2018.....	48
Upcoming Conferences and Meetings.....	50
New Publications	54
In Memoriam	62
José Luis Panigatti Crinigan.....	63
Tan Kim Hong.....	64
Hidenori Wada.....	66
György Várallyay.....	69
IUSS Honorary Members and Award Winners	70
IUSS Honorary Members.....	71
IUSS Award Winners.....	73



IUSS Reports

21st World Congress of Soil Science 2018 a resounding success

The IUSS thanks the Brazilian organisers of this Congress, in particular the Brazilian Soil Science Society, Flavio Camargo as Chairman of this congress and his team for setting up the wonderful frame for this big soil event, adjusting it to ad-hoc needs, as well as the 4,234 registered participants (60% male, 39% female, 1% not declared) from 103 countries with 2896 approved abstracts. 3229 participants contributed actively with their 644 oral and 1604 poster presentations and discussions to the success of this congress.

The **Soil Judging Contest** (for details, please see two special reports below) which took place on the three days before the congress saw a tough competition between 12 teams and 48 individuals respectively; the winners were awarded during the impressive **Opening ceremony of the congress on Sunday, August 12.**

During the 21st World Congress of Soil Science, eight conferences with highly renowned scientists and authorities were held, with subjects related to the event theme – **Soil Science: beyond food and fuel.** In addition, there were also 73 conferences in 16 Interdivisional Symposia, 75 divisional symposia and 15 IUSS working group symposia, plus 3 poster sessions and 5 Technical & Innovation Symposia. During the Gala Dinner on Thursday, August 16, the Award Ceremony was held in which the IUSS award winners 2018, the new IUSS Honorary members, the outgoing officers of the IUSS Executive Committee and the people supporting the congress organisation were acknowledged.

In the **Exhibition** of the congress the IUSS was represented at booth no 32. A lot of participants informed



Flavio Camargo – IUSS Vice President Congress 2014-2018

themselves about the organisation of IUSS, in particular young researchers, others looked into the books of the IUSS book series or discussed past and future activities. The **Closing ceremony** on Friday, August 17 provided a resume of the congress, an outlook to the next WCSS in 2022 in Glasgow, an explanation of the global soil icon and an outlook on global issues which require translating soil science and its major discoveries into action. The **Programme** of the congress can be downloaded as pdf document from the WCSS website. The **Proceedings** of the 21st WCSS with the abstracts of the 2,256 papers, presented orally or as poster will be available for download on the 21st WCSS homepage soon.

Read more: <https://www.21wcsc.org/>



Rattan Lal – IUSS President 2017-2018



Fatima Moreira – President SBCS (Brazilian Soil Science Society)

Some impressions from the Congress (photo's taken by Valéria Vieira, www.valeriavieira.com.br):



Visit of school children at Windsor Convention & Expo Center, Rio de Janeiro, Brazil



Exhibition hall at Windsor Convention & Expo Center, Rio de Janeiro, Brazil



Exhibition of soil profiles at Windsor Convention & Expo Center, Rio de Janeiro, Brazil



Gala dinner at Windsor Convention & Expo Center, Rio de Janeiro, Brazil



Booth of IUSS – Sigbert Huber (IUSS Secretary), Takashi Kosaki (IUSS President Elect 2017-2018), Kazuyuki Inubushi (Chair of IUSS Division 2 2014-2018) and Rainer Horn (IUSS Past President 2017-2018)



Award ceremony of 21st WCSS – Rattan Lal (IUSS President 2017-2018) and Flavio Camargo (IUSS Vice President Congress 2014-2018)

A Special Viewpoint from the desk of Rattan Lal was published 12th August 2018 on the subject: Beyond Food and Fuel: The Power of Soil to Address Global Issues.

Read more:

https://iuss.boku.ac.at/files/iuss_08012018_special.pdf

This viewpoint is also available as mp4 on the IUSS YouTube channel: <https://youtu.be/IJWEmKAvESU>

In the course of the 21st World Congress of Soil Science, the 3rd International Soil Judging Contest took place. It was deemed very successful by organizers and participants alike.

3rd International Soil Judging Contest



3rd International Soil Judging Contest

August 8-11, 2018
Seropédica, RJ, Brazil

By Fabrício de Araújo Pedron, 3rd International Soil Judging Contest Coordinator

Introduction

As part of the celebrations of the International Decade of Soils and the 21st World Congress of Soil Science (WCSS), the 3rd International Soil Judging Contest (3rd ISJC) was organized to celebrate soil science and its importance to the life on this planet. The occasion is a great opportunity for students, researchers and others interested in soils from around the world to interact and experience some of the landscapes and tropical soils of Brazil.

The scope of the 3rd ISJC is for participants to use their knowledge and practical skills to describe, understand and interpret soil characteristics in the field. Participants will be challenged to describe a series of contest profiles and landscapes using their skills.

Based on those activities, the aims of this event are:

- to encourage the wider adoption of the discipline of soil judging around the world;
- to give motivated students an opportunity to assess soil in a different part of the world;
- to give students an opportunity to develop networks in the soil science community;
- and to demonstrate the career opportunities that soil science offers.

The 3rd ISJC is an event supported and promoted by the IUSS (International Union of Soil Science) and the SBCS (Brazilian Soil Science Society). It was held at the Federal Rural University of Rio de Janeiro and the surrounding area during the week before the 21st WCSS, from August 8 to 12, 2018. The contest had 12 teams registered (47 students/competitors and 12 coaches). The teams came from all around the world: Brazil, Korea, United Kingdom, Spain, South Africa, USA (2 teams), Mexico (2 teams), Russia, China (Taipei) and Australia. Besides that, 23 volunteers (8 international and 15 local volunteers) attended to help the organizing team (11 people – 8 local and 3 international). The total number of participants was 93 people.

All logistics were handled by the Federal Rural University of Rio de Janeiro (UFRRJ), Federal University of Santa Maria (UFSM) and Embrapa Soil. Financial support was provided by the IUSS, 21st WCSS/SBCS, UFRRJ, UFSM and Embrapa Soil.

The weather, the outdoor landscapes and the effort of the participants (volunteers, students and professors) contributed to the success of the event. The students had the opportunity to exchange experiences among themselves, creating new bonds of friendship. The overall evaluation of the event was positive. The details of the schedule and organization are presented below.

Event Program

General Schedule

Day	Period	Activities
August 7 th	Afternoon	Welcome and registration at the Tulip Inn hotel
Day 1 August 8 th	Morning	Opening and indoor training (UFRRJ)
	Afternoon	Outdoor training (UFRRJ)
	Evening	Happy hour
Day 2 August 9 th	Morning	Field trip (Seropédica/ Itaguaí)
	Afternoon	Field trip (Seropédica/ Itaguaí)
	Evening	Free
Day 3 August 10 th	Morning	Field practice (UFRRJ)
	Afternoon	Field practice (UFRRJ)
	Evening	Coach's meeting (to be announced)
Day 4 August 11 th	Morning	Contest (to be announced)
	Afternoon	Contest (to be announced)
	Evening	Compilation of final results and happy hour
August 12 th	Morning	Transfer from the hotel in Itaguaí to Rio de Janeiro (Windsor Convention Center)

First Day Training Program

Date: August 08th, 2018

Location: UFRRJ campus

Time	Activities
Morning (indoor training)	
8:30	Opening ceremony (for all participants)
9:10	Lecture: Geology, landscapes and soils in Seropédica, RJ, Brazil Helena Saraiva Koenow Pinheiro (UFRRJ, Brazil)
9:50	Break (water and fruits available)
10:10	Lecture: Master Horizons (profile description) Maxine Levin (SSSA, USA)
10:40	Lecture: WRB for Soil Resources Erika Michéli (Szent István University, Hungary)
11:20	Lecture: Soil Taxonomy John Galbraith (Virginia Tech, USA)
12:00	Lunch
Afternoon (outdoor training)	
13:30	Soil texture class (practice) Fabricio de Araújo Pedron (UFSM, Brazil) Ademir Fontana (EMBRAPA, Brazil)
14:30	Lecture: Brazilian Soil Classification System (SiBCS) Ricardo Simão Diniz Dalmolin (UFSM, Brazil) Alessandro Samuel-Rosa (UTFPR, Brazil)
15:10	Break (water and fruits available)
15:40	Examining a soil profile: soil description practice (organizing committee and team coaches)
17:30	Return to the hotel
Evening	
19:30	Happy hour (location will be announced)



Fig. 1 – Authorities at the opening ceremony (©Organizing Committee)



Fig. 2 – Lectures during the first morning (©Organizing Committee)



Fig. 3 – Lectures and the audience during the first morning (©Organizing Committee)



Fig. 4 – Outdoor practice: texture exercise (©Organizing Committee)

The opening ceremony took place in the main auditorium of the Agronomy Institute of the Federal Rural University of Rio de Janeiro, in the presence of the following authorities:

1. Professor Ricardo Luiz Louro Berbara, president of the Federal Rural University of Rio de Janeiro.
2. Professor Alexis Rosa Nunner, Director of the Agronomy Institute of the Federal Rural University of Rio de Janeiro.

3. Professor Flavio Anastácio Camargo, chairman of the 21st WCSS and representing the Brazilian Soil Science Society.
4. Professor Erika Michéli, representing the International Union of Soil Sciences
5. Professor Fabricio Pedron, representing the Organizing Committee of the 3rd ISJC.



Fig. 5 – Outdoor practice: soil profile description (©Organizing Committee)

Second Day Training Program – FIELD TRIP

Date: August 9th, 2018

Location: Seropédica and Itaguaí countryside

Time	Activities
Morning	
8:30	Soils and agronomical experiments at the SIPA (Agroecological Integrated Production System), in Seropédica, RJ The SIPA, locally known as “fazendinha agroecológica km 47”, is a joint research area of EMBRAPA Agrobiologia, UFRRJ and Pesagro-Rio. It has been dedicated to studies and experiments with organic agriculture and agroecology since 1993. The visit will cover some results from recent theses and dissertations, as well as soil profiles, hydrological aspects and results from erosion plots. Lecture: Relationship between physical and pedological attributes of a catena of the Fluminense lowland Marcos Bacis Ceddia (UFRRJ, Brazil)
12:00	Lunch

Time	Activities
Afternoon	
13:30	Exam of soil profile 1 – Gleysol (Entisol) Brian Needelman (University of Maryland, USA) 13:30 – group 1 15:30 – group 2
	Exam of soil profile 2 – Planosol (Endoaquult or Fragiudult) Stephen Cattle (University of Sidney, Australia) 13:30 – group 2 15:30 – group 1
17:30	Return to the hotel
Evening	
-	Free



Fig. 6 – Organic agriculture experience at the Embrapa Agrobiologia (©Organizing Committee)



Fig. 8 – Field trip practice during the afternoon (©Organizing Committee)



Fig. 7 – Physical and pedological attributes of a catena of the Fluminense lowland (©Organizing Committee)

Third Day Training Program – FIELD PRACTICE

Date: August 10th, 2018

Location: UFRRJ campus



Fig. 9 – Teams at the field practice (©Organizing Committee)



Fig. 10 – Teams at the field practice (©Organizing Committee)



Fig. 11 – Pits preparation and final photo of the group (practice day) (©Organizing Committee)

Fourth Day Program – SOIL JUDGING CONTEST

Date: August 11th, 2018

Location: UFRRJ Campus

- Individual Contest (Morning)
- Team Contest (Afternoon)



Fig. 13 – Teams and competitors during the contest (©Organizing Committee)



Fig. 12 – Teams and competitors during the contest (©Organizing Committee)

Fig. 14 – Teams and competitors during the contest (©Organizing Committee)



Fig. 15 – University buses used during the soil judging contest event (©Organizing Committee)

Logistical organization

Transportation

During the event we benefitted from three buses provided by the UFRRJ. The buses were used to transport participants every day from the hotel to the training/contest sites and back to the hotel (see fig. 15).

Sanitary installation in the field activities

Two chemical bathrooms were available during the field practice activities (see fig. 15).

Food and snacks

During the four days of the event, the organizing committee provided all the snacks and lunches without any cost for the participants. For the snacks, the participants could have water, coffee or juice to drink and cook-

ies, cakes, snack foods, sandwich, candies and different kinds of fruits like banana, guava, apple and tangerine. For lunch, we served a large dish with rice, salad, beans and chicken, pork or beef (see fig. 16). On the first two days the organizers provided tables and chairs for the lunch time. On the last two days the lunch was like a picnic in the field.

Hotel accommodation

All participants were accommodated at the tulip inn hotel in the municipality of Itaguaí (20 km from Seropédica), since in Seropédica there is no hotel with capacity for more than 90 people. The hotel costs were paid by the participants themselves. Only the costs of the organizers were covered by the event funds.



Fig. 16 – Snacks and lunches served during the soil judging contest event (©Organizing Committee)



Fig. 17 – Images of the organizing team and all the participants at the end of the contest day (©Organizing Committee)

Security and first aid staff

The organizing team could count on two federal security men (from the University Security Staff) properly equipped to keep the participants safe. They stay with participants during the four event days. That was really necessary because we were working in Rio de Janeiro metropolitan area, which sometimes can be unsafe. We had no security problems during the event. We also had two first aid staff accredited by the Red Cross international, Dr. Fabrício Pedron (Brazil) and Dr. Danny Itkin (Israel). We had only three cases assisted, one knee injury prior to the event, which was referred to the outpatient clinic and two small and simple field wounds, which were treated in the field.

Volunteers

In addition to the international volunteers and local students, the event had the partnership of the junior rural consultancy company, which is run by the agronomy students of the UFRRJ.

Final results of the contest

Individual contest

Place	Competitor	Team
1º	Georgianna Scott	USA 2
2º	Ben Smith	USA 2
3º	Alberto Lázaro López	Spain
3º	David Genfry	USA 1
3º	Karin Azzam	Australia
3º	Braden Povah	USA 2

Team contest

Place	Team	Coaches
1º	USA 1	Andrew Sherfy
2º	USA 2	John Galbraith
3º	Spain	Rosa Maria Poch

Overall contest

Place	Team	Coaches
1º	USA 2	John Galbraith
2º	USA 1	Andrew Sherfy
3º	Spain	Rosa Maria Poch



Fig. 18 – Award ceremony (Official photos from 21 WCSS)

The award ceremony of the 3rd International Soil Judging Contest was held during the Opening Ceremony of the 21st WCSS, on August 12, 2018. That was a very important opportunity to show to all 21st WCSS participants what the Soil Judging Contest was like.

By Fabrício de Araújo Pedron, 3rd International Soil Judging Contest Coordinator
Santa Maria, Brazil, August 23, 2018.



Playlist with videos from Soil Judging Contest held in Brazil – 21st WCSS

With the collaboration of UFRRJ graduate students, videos from the Soil Judging Contest, held at the University campus as part of the 21st WCSS, were prepared and are available by following the link below.

Watch the videos: https://www.youtube.com/playlist?list=PLi-8j0XEXF7lgVpfhdRQJX_QjM8x7b272

On the Importance of Soil Judging Contests

By Danny Itkin, Ben-Gurion University of the Negev

A Soil Judging Contest (SJC) is an outdoor event whereby small groups of student competitors identify, describe and classify soil profiles under given rules. All it takes is some open soil pits and a few simple accessories: Munsell colour charts, spray bottles, field measuring tapes, soil picks (commonly knives), soil classification guidebooks and score sheets (occasionally, clinometers are also needed). However, there is much more to soil judging contests than “just” the act of evaluating soils under defined field conditions, that is: 1) **Unmediated exploration of soils in their *in situ* state** (as oppose to lab procedures), thus providing a favourable and simple way for a thorough understanding of soils, and 2) **Inherently intense and positive communication amongst people** who share a joint interest in the field, thus stimulating the experience and its long-term effects on the individual.

Recently I had the chance to accompany the 3rd International Soil Judging Contest (ISJC) held at Seropédica, Brazil, during August 8-11, 2018 as part of the 21st World Congress of Soil Science (WCSS). Out of an overall 90 participants (organizers, competitors and instructors), the competing teams were represented by Australia, Brazil, Korea, Mexico, Russia, South Africa, Spain, China (Taipei), the UK, and the USA. This event was hosted by the Federal Rural University of Rio de Janeiro (UFRRJ) and organized by the Brazilian Soil Science Society (SBCS in its Portuguese acronym) and the International Union of Soil Sciences (IUSS), with support from the Soil Science Society of America (SSSA).

The first day of the ISJC took place at the Agronomy Institute of the UFRRJ and included a warm welcome reception, a number of background lectures and a short outdoor training. The second and third days involved an introduction to the beautiful landscapes and soils of Itaguaí and Seropédica (western vicinity of Rio de Janeiro) as well as practising towards the contest. In the framework of which, the second day included an instructive visit to the Agroecological farm at the Integrated



Figure 1. 3rd International Soil Judging Contest, Seropédica: Last pre-contest practice; groups of participants are studying the profiles (photo courtesy: Matt Aitkenhead).

Agroecological Production System (IAPS, locally known as *Sistema Integrado de Produção Agroecológica*; SIPA) while the third day was dedicated to a final rehearsal of all relevant components of the contest, from logistics to careful guidance that was given by their instructors to each and every competitor (Figure 1). The contest itself took place along a catena just outside the southern outskirts of Seropédica (Figure 2). The interaction of a large group of soil-loving people who originate from many different regions of the world produced a variegated mosaic of cultures, approaches, thoughts, and ideas.

So why are soil judging contests so important? Soils are complex and diverse natural resources that have a crucial influence on our everyday lives and which make up the largest terrestrial biogenic category in many regions of the world (as a definite quantity compared to plants and animals). In order to understand how soils influence the world, it is necessary to be acquainted with their fundamental properties (colour, texture, structure, water status, morphology, and environmental setting) – the foremost

building blocks of pedology. However, it seems that basic soil sciences (and particularly pedology) are not as popular as they used to be up until a decade ago. Against the background of this situation, soil judging contests serve as a highly efficient tool for soil education, soil awareness, understanding soil morphology and soilscape evolution, as well as establishing a common language and exchange of knowledge amongst people who are interested in soils (for whatever possible reason, from agriculture to civil and environmental engineering).

The next international soil judging contest is due to take place in 2022, in Glasgow, Scotland, as part of the 22nd WCSS, organized by the British Society of Soil Science. Students and teachers from all sub-disciplines of soil science are highly encouraged to form soil judging teams in their countries and prepare for the 2022 event. All participants are expected to gain a most enjoyable social experience which will inevitably contribute to both their personal and university pedological skills.



Figure 2. 3rd International Soil Judging Contest, Seropédica: Spanish team carefully inspect one of the profiles during the contest (photo courtesy: Cornie Van Huyssteen).

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, eg for the International Decade of Soils and programming its backend, and finally, keeping contact information of IUSS members updated. Patching up the content management system, implementing necessary updates and system back-ups round off the webmaster's tasks.

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: http://www.iuss.org/index.php?article_id=594

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

As in the preceding years, in 2018 again \$15,000 are available, with 2 submission dates for applications: 15 March and 15 September.

From the first round of submissions, the Executive Committee decided to support the 3rd International Soil Judging Contest which will take place August 8-11, 2018, in Rio de Janeiro and the WETSCAPES Conference – Understanding the ecology of restored fen peatlands for protection and sustainable use, Rostock (Germany) which will take place 10-13 September 2019 – travel costs for 2 keynote speakers. From the second round of submissions the following projects were selected by the Executive Committee: Further development of the App for the teaching of soil taxonomy; support for 6 student scholarships to attend the 8th ISMOM – Seville, Spain, 23-28 of June 2019; travel costs of five selected early career scientists participating in the 4th International Tea Bag Index Workshop in Umeå, Sweden – 20-21 February 2019. Thus, in 2018, a total of 12,500 USD was disbursed from the IUSS Stimulus Fund.

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 2019, there will equally 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.

Awards

By David G Rossiter, Chair Pedometrics Committee on Prizes and Awards for 2014-2017

Margaret Oliver Award for Early-Career Pedometricians Call for Nominations, 2019 award

The Pedometrics Commission of the International Union of Soil Sciences (IUSS) makes a biennial award, which is intended to recognize up-and-coming talent in pedometrics. The award is named for Margaret Oliver, in recognition of her outstanding commitment to the promotion and encouragement of pedometricians in the early stages of their careers as well as her overall service to pedometrics. The award will be given at each biennial meeting of the Pedometrics Commission; the next award will be at Pedometrics 2019, Guelph, Ontario, Canada, 2-6 June 2019.

Requirements and eligibility for the award of the Margaret Oliver award:

Nominees must have:

1. received a PhD degree or equivalent no more than six years before the nomination deadline of 1st-February-2019; that is, the degree must have been awarded after 01-February-2013
2. made high-quality contributions to pedometrics, as evidenced by published work, conference presentations, workshops, field guides, etc.
3. at the time of the award be active in pedometrics and with a prospect of so continuing "Pedometrics" is broadly defined as the application of mathematics or statistics in soil science.

Read more:

https://www.iuss.org/index.php?article_id=26

Best Paper in Pedometrics, 2018

Nominations are invited for the best paper in pedometrics, 2018. The Pedometrics Commission awards committee will assess all nominations, along with their own, and prepare a shortlist for a public vote in advance of the Pedometrics 2019 meeting next June.

Papers must be:

1. Concerned with pedometrics, the application of statistical and mathematical methods to the study of the soil.
2. Published in a peer-reviewed international journal.
3. Published in 2018. This is the date that appears on the issue of the journal in which the paper is published, not the date on which it might be made available online.

Please send nominations before 1st February 2019 to the committee chair, R.M. Lark murray.lark@nottingham.ac.uk

Richard Murray Lark to receive IUSS Richard Webster Medal

The Pedometrics Committee on Prizes and Awards is pleased to announce the award of the Richard Webster Medal 2014 of the International Union of Soil Sciences (IUSS), to be awarded at the 21st World Congress of Soil Science (WCSS) in Rio de Janeiro (Brazil) in August 2018. This medal recognizes the person who has most advanced pedometrics in the period between the IUSS WCSS of 2014 and 2018, while also considering achievements prior to that period.

The Medal is awarded to Professor Richard Murray Lark, chair in Geoinformatics at the University of Nottingham (UK). Professor Lark is internationally recognized as an outstanding pedometrician. He has devoted most of his professional career to elucidating the complexity of soil distribution in the landscape and to describing it quantitatively. He has applied advanced statistical techniques and developed new ones for the purpose and to map the soil's properties for land management.

Outcome of 2018 IUSS Presidential Election

The election of the next IUSS President has been concluded. Laura Bertha Reyes Sánchez from Mexico, current Secretary General of the Latin American Soil Science Society, received a clear majority of the votes and was the successful candidate in this election. She will take up the position of President-Elect on 1st January, 2019. She will be the first female President in the history of IUSS. IUSS was very pleased to have two strong candidates running for the position.

Introducing Laura Bertha Reyes Sánchez

Laura Bertha Reyes Sánchez is Mexican, and a member of the Mexican and Argentine Soil Science Societies. She is a Chemist with Soil Science studies at the National Autonomous University of Mexico, holds a Master of Science degree in Education, and a Ph. D. in Natural Sciences for Development from the National University of Costa Rica and the Technological Institute of Costa Rica. She works as a full-time professor at the National Autonomous University of Mexico, where she holds the Chair of General Chemistry, as well as the Chair of Soil Science within the Agricultural Engineering Department.

For 12 years she has been head of the General Secretariat of the Latin-American Soil Science Society (SLCS), advocating unity and promoting teamwork through discussion and consensus on the work developed within the 19 National Societies making up the SLCS. She intends to continue working in this style with all the IUSS National Societies in order to stimulate and achieve concerted actions at a global level. It is her belief that this synergy will allow to strengthen Soil Science and make it the activating force of knowledge and citizen awareness required today to promote the sustainability of the soil as an essential natural resource.

For more than 20 years as head of the educational project "Thus are the Soils of my Nation" together with the SLCS countries in her daily work she has focused on the training and raising awareness of children and young people from preschool to university level about Soil Resources and Soil Sustainability, as well as on the interdisciplinary training of teachers and researchers. At



the same time she has been part of the worldwide team of the GSP for Pillar 2 (Education and Awareness) as the leader for the Central America, Caribbean and Mexico Soil Partnership of FAO. Therefore, to expand educational activities and promote interdisciplinary training of teachers and specialists in soil science at professional and graduate levels will be a priority in the work which she intends to carry out with the support of all national and regional societies.

With her experience as the head of the General Secretariat of the SLCS and as head of its educational project she intends to work with all the IUSS National Societies to face the two tasks defined by IUSS as the most important to address during "The International Decade of the Soil": to stop the degradation of the soil, and to focus our activities on school children who are the adults of the future. These goals will be her guiding principles. Her objective is to form an effective workforce capable of organizing joint actions aimed at having the eyes of the world focused on the soil to build and achieve its sustainability, and at the same time allowing us to empower the IUSS by managing its resources effectively.

Other IUSS News

Professor Lal awarded the Honour Medal of the UIMP (Spain)

Last 24th of July professor Rattan Lal, Distinguish Professor of the Ohio State University and Director of the C-Management and Sequestration Center, received the honour medal of the Universidad Internacional Menéndez Pelayo (UIMP).

The award ceremony took place in the Santo Maura Hall of the Royal Palace of *La Magdalena* in Santander (Spain), the *laudatio* was held by Professor Miguel Ángel Casermeiro and was covered by national and international media. This event was scheduled during the III



Professor Lal with the Rector Emilio Lora-Tamayo of the UIMP (© Esteban Cobo UIMP 2018)



Professor Lal with the Rector Emilio Lora-Tamayo and Board of Directors of the UIMP (© Esteban Cobo UIMP 2018)

Summer Environmental School *Tatiana Pérez Guzmán el Bueno*, this year dedicated to a new model in agriculture climate and environment.

Prof Rattan Lal wins Glinka World Soil Prize

Professor Rattan Lal won the Glinka Prize for his work on Sustainable Soil Management. He has been listed among the world's most influential scientific minds (2012) and among the top 1 percent of all researchers in agriculture. Prof. Lal's focus has been on soil organic carbon restoration and improvement of soil structure. His efforts have led to the eco-intensification of agricultural systems, following a soil-centric approach, which ensures long-term sustainability. His work has played a major role in converting science into policy and decision making.

Read more: <http://www.fao.org/global-soil-partnership/pillars-action/2-awareness-raising/glinka-world-soil-prize/en/>

[From FAO World Soil Day 2018 GSP Special Announcement #11 – Today is World Soil Day, 5 December 2018]

Maps of soil research institutions and universities offering soil science in Africa – request for input

Dr. Andrei Rozanov, Stellenbosch University, South Africa, provided maps of soil research institutions and universities offering soil science in Africa to IUSS. We are glad to share them with the soil science community.

There are two options to view the map files:

1. Install Google Earth Pro desktop on your PC form <https://www.google.com/earth/>
2. Use <https://www.google.com/earth/> directly in Google Chrome browser. To read the KML file from Chrome: <https://support.google.com/earth/answer/7365595?co=GENIE.Platform%3DDesktop&hl=en>

You can download the map files from the IUSS website here: https://www.iuss.org/index.php?article_id=26

This map was compiled from the information available on-line. If you find that some of the information is incorrect (e.g. the exact location of the soil science depart-

ment is incorrect, the department does not exist, the department exists, but does not appear on the map, the department is a research unit and does not offer a soil science degree programme, the link to the department website requires an update) please contact Dr. Andrei Rozanov, Stellenbosch University, South Africa by email: dar@sun.ac.za to make the necessary corrections.

Commission 1.1 Soil Morphology and Micromorphology – Newsletter published

The most recent newsletter of Commission 1.1 (volume 23) was published in October. It contains a number of interesting articles including an introduction of the two new commission officers Fabio Terribile (chair) and Richard J. Heck (vice-chair), and a new section called "PILLS OF WISDOM for soils and soil scientists" featuring a contribution of Johan Bouma "Every soil has a story to tell: the soil morphologist acting as interpreter". This is followed by an overview of the Commission's activities during 21WCSS, forthcoming meetings and courses. Read more: https://www.iuss.org/index.php?article_id=419

IUMRS Survey on the Evolution of Scientific Publishing

The International Union of Materials Research Societies (IUMRS), a member of the International Science Council as IUSS is, has launched a Survey on the Evolution of Scientific Publishing. IUMRS is composed of individual professional societies that span the globe. The Survey is seeking responses from a broad spectrum of researchers in many fields of science as well as from professionals associated with the many aspects of scientific publishing such as editors, publishers, educators, librarians, archivists, sponsors of research, experts in intellectual property, and managers of research at corporate and government laboratories. IUSS asks you to support the IUMRS by participating in this survey and forward this survey participation request to colleagues who work in those fields within your organization and beyond. The Survey is anonymous and should take no more than 5 to 15 minutes to complete, depending on the respondent's relationship to scientific publishing.

Read more: https://www.surveymonkey.com/r/IUMRS_Survey



International Decade of Soils (2015-2024)

Recent Achievements

Celebrating the World Soil Day

5 December 2018 – Battipaglia (Salerno), Italy
Seminar:

The Soil is Alive

Organized by MSBIOTECHSPA and the Professional School for Agriculture PROFAGRI

To raise awareness of the importance of the soil, our most important terrestrial resource, we decided to organize, in collaboration with the professional school for agriculture "PROFAGRI" of Battipaglia, a meeting on "The soil is Alive". During this meeting, addressed exclusively to the students of the school, Dr. Vincenzo Michele Sellitto, Marketing Director of MSBIOTECHSPA, a company specializing in Biotechnology for Agriculture, talked about recent discoveries in soil microbiology, linked to the use of microorganisms and their ability to protect and fortify against the attacks of fungi or bacteria harmful to crops for the purpose of preserving them for future generations. The concept of soil will be reinterpreted in a better, renewed and adequate way that establishes its role as a living organism like the plant it hosts. To protect the soil you need to know it...

The following photos are courtesy of Dr Vincenzo Michele Sellitto.



Dr Vincenzo Michele Sellitto giving his talk



Class taught by Dr Vincenzo Michele Sellitto



Group photo from the seminar The Soil is Alive

Soil Book Series

The Nexus of Soils, Plants, Animals and Human Health

Edited by Bal Ram Singh, Michael J. McLaughlin and Eric Brevik on behalf of the IUSS; Published as GeoEcology essay by Schweizerbart in November 2017. VII, 163 pages, 17 figures, 12 tables, 17x24cm, ISBN 978-3-510-65417-8.

We would like to point your attention to a highly readable review published in the Canadian Journal of Soil Science. Read more: <http://www.nrcresearchpress.com/doi/full/10.1139/cjss-2018-0052#.XA-lxmeouUk>

Soil and Sustainable Development Goals

Edited by Rattan Lal, Rainer Horn and Takashi Kosaki. Published in the series GeoEcology Essays in July 2018 by Schweizerbart. 196 pages, 49 figures, 21 tables, ISBN 978-3-510-65425-3, US-ISBN 1-59326-269-8, price paperback EUR 29.90; reduced price for IUSS members: EUR 25.00 (plus shipping costs).

In 2015, the UN formulated seventeen global Sustainable Development Goals (SDGs), among them ending poverty, eliminating hunger, protecting the planet and ensuring peace and prosperity. Although judicious management of soils is critical to advancing most of these goals, the word soil is not once mentioned in any of these laudable goals. SDG#15, for example, mentions land degradation but does not specifically focus on soils. In line with previous UN programs, SDGs thus reflect an utter lack of awareness of the importance of the most basic of all natural resources on which depends all terrestrial life – soils.

Consequently, this book aims to document the importance of soil and soil protection to reaching these Sustainable Development Goals. This fifteen-chapter book, authored by experienced and knowledgeable researchers from around the world, is a synthesis of the knowledge and state-of-the-science, linking soil properties and processes to specific SDGs. The volume highlights individual soil related aspects of these SDGs, such as the contribution of soil science, soil management and use, measures to minimize erosion, climatic effects, carbon sequestration by soils, soil restoration, the role hydrology plays in sustainable soil management, ways to preserve soil structure of fertile volcanic soils.

Read more: www.schweizerbart.com/9783510654253

Book on Global Soil Proverbs

When drawing up these pages, the IUSS Book on Global Soil Proverbs was about to go to press. It will be published in the CATENA series GeoEcology Essays. An impressive number of soil proverbs compiled in 32 chapters has been put together, which reflects the importance soil always has and will continue to play in our lives.

Editors: Jae E. Yang, M.B. Kirkham, Rattan Lal, Sigbert Huber

ISBN 978-3-510-65431-4, US-ISBN 1-59326-271-X

More information will soon be available at:

www.schweizerbart.com

Proverbs are truths that link one generation to another. They have been passed down through millennia to provide advice about how to live life. Every country has a vast archive of proverbs that have been transferred orally from generation to generation. The very name “proverb” indicates that they originated “before” (Latin, pro) the written “word” (Latin, verbum). Ever since our ancestors settled down and started to farm the soil, proverbs have been used to communicate knowledge. Many proverbs about soils are available globally, but no effort has been made within the soil science community to compile and integrate them into a comprehensive book. Therefore, the International Union of Soil Sciences has published this book on soil proverbs. The objective of the book is to collect soil proverbs and, through them, share insights about philosophy, culture, and life in each country, as they relate to soils.

The book has 32 chapters from 29 different countries in Africa, Asia, Europe, North America, and Oceania. In each chapter, authors provide soil proverbs in both English and their native language. Chapters are illustrated with pictures related to the proverbs. Some themes are common, such as the need to sustain the soil to sustain humanity, while other themes are particular to a country due to its geography and climate, such as “The peas can be sown when the first swallows come” (Russia) or “If you want to store wheat, plow lowland areas” (Tunisia). The book is written both for soil scientists and the general public. Readers will see the diversity of proverbs from the different countries, but each one is written in its own beautiful language. The proverbs will provide soil wisdom from many countries and show how we all are connected through the soil.

Project TROP-ICSU

TROP-ICSU stands for Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding. As already reported in previous Alerts, the project aims to improve awareness of climate change and the science behind it among students and the general public by developing teaching aids for teachers and science communication modules for the general public.

During the reporting period a request for input was published in IUSS Alert no 156 asking respondents to fill in a survey on teaching approaches regarding climate change. This preliminary survey among educators focused on Teaching Toolkits for school and undergraduate teachers (educators) to understand how topics related to climate change are currently discussed in the classroom in different parts of the world.

This survey, which is available in English, Catalan, Chinese, French, German, Hindi, Italian, Japanese Portuguese, and Spanish should take approximately 8-10 minutes to complete. Responses will be treated as confidential and will be used for our research purposes in the project only. IUSS should be very grateful for your input. Complete the online survey: <https://tropicsu.org/educators-survey/>

Teachers and educators can now visit the TROP ICSU website to access and use more than 20 detailed lesson plans that integrate the teaching of a topic in a specific discipline with a topic in climate science or climate change: <https://tropicsu.org/resources/lesson-plans/all-lesson-plans/>

It is planned to provide more information to educators about the project and the materials it provides and to do a teachers training (for details see below). Furthermore, climate change tools considering soil information will be explored and can still be included in the tool collection. If you know such tools, please let us know by email to iuss@umweltbundesamt.at.

Read more: <https://tropicsu.org/>

During the reporting period, a teachers’ training took place in Austria within the framework of this project:

Report on TROP ICSU Teachers Training in Austria 2018

Reunion of Austrian Geography Teachers
BIFEB – <https://www.bifeb.at>, Bürglstein 1-7,
5360 St. Wolfgang

The Austrian teachers training took place on September 28, 2018 at the reunion of the Austrian Geography teachers in Strobl. The 9 geography teachers present were representatives of the Austrian federal states’ geography teachers and responsible for the teachers training curricula in their federal states. Thus, TROP ICSU benefited from a significant multiplier effect.

This workshop was held by Barbara Birli and Sigbert Huber from Environment Agency Austria in German and followed the following agenda:

- Introduction: Brief introduction of persons, tour de table
- Feedback on the teachers’ questionnaire
- Presentation of TROP ICSU project and TROP ICSU website: the sorting function, teaching tools and lesson plans
- Hands-on session on own devices: Joint use of lesson plan: “Glaciers”
 - Task: https://serc.carleton.edu/quantskills/activities/glacial_retreat.html
 - Simulator: <https://phet.colorado.edu/en/simulation/legacy/glaciers>
- Questions and Feedback session, feedback from teachers on usability of TROP ICSU web site, lesson plans and simulators

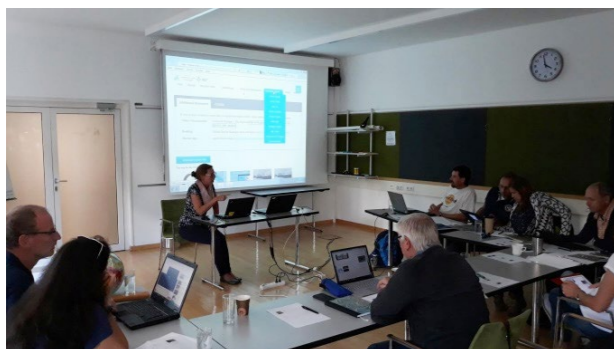


Presentation of the role in the project TROP ICSU

Teachers were informed about the project as such, followed by a trial session, where each teacher was advised using the website and 1-3 tools and lesson plans pro-



Presentation of the aims of TROP ICSU



Presentation of the TROP ICSU website



Teachers using the website

vided there. Teachers used their own tablets or laptops to do so.

The teachers engaged in high schools provided feedback on the website as a useful tool and suggested to present it also to teachers of other school types such as NMS (school for kids 10-15) as they might benefit in particular from the predefined sets of teaching material. Also chemistry teachers might be interested in receiving such a training workshop.

A feedback form was compiled and handed over to the teachers. The results will be analysed as next step.

All photos ©Sigbert Huber and Barbara Birli

Soil Icon

The Global Soil Icon Contest was launched in December 2017, with an announcement in IUSS Alert No. 150. For details please see https://www.iuss.org/index.php?article_id=678.

A total of 22 interesting soil icons were received. In addition to awarding 2,500 USD from the Stimulus Fund to the winning icon, which will be used during the International Decade of Soils (2015-2024), the best 12 icons will be presented on the IUSS website (one per month), showcasing manifold approaches to picture the importance of soil in our daily lives.

Present soil icons from the months of July, August, September, October and November 2018.

Below please find the soil icon of the month of July 2018:



Please find below some information on the icon, as it was submitted for the contest:

Submission for the IUSS Global Soil Icon Contest

Authors: **Andrea Jilling** and **Mark Anthony**

(Department of Natural Resources, University of New Hampshire, Durham)

Designing a global soil icon poses unique challenges. Soils vary across Earth, with unique colors, textures, mineralogy, and microbial, plant and animal life forms. We put our heads together, and considered what conceptually and visually unites soil from every sector of

Earth. Conceptually this was not very difficult, as we are both soil scientists with active involvement in public outreach, teaching about soils in schools and non-profits. Soils everywhere are the foundation of life. Soils give rise to the food we consume, the clothes we wear, they support our infrastructure, and provide medicines. In the environment, soils purify water, mediate carbon and nutrient cycling processes, and have the potential to mitigate climate change. There is no denying that soil use and management is vital to sustainability. Visually, we wanted to represent as much diversity in soil as possible, which became the fundamental challenge. Icons must be simple, evocative, and memorable. So here was our process:

The design

We designed the icon as a globe. Since soil is found nearly everywhere, the globe explicitly highlights the international nature of the International Union of Soil Sciences (IUSS). As the globe is always revolving, so too do soil processes across space and time. Using a globe, we include the biosphere, hydrosphere, and atmosphere, which are all interacting with soil properties and processes.

We scavenged the Internet and found that generic soil icons focus on pedology and the physical characteristics of soils. Since this captures a key element of soils, we designed the continents to reflect different soil horizons, from bedrock to the organic horizon. We refused to stop here because that alone ignores the biology of soil. In our icon, biotic and abiotic attributes are equally highlighted because they both provide key soil services. The roots form the outline of the continents. We focus on the roots, which at the landscape level connect plants together, but in the context of our logo, connect the continents, which have also been inextricably linked through human migration, trade, and global change. Our attention to roots is also a fresh take on plant-soil interactions since most soil science icons highlight the aboveground component that we consume for food and fiber.

Within the important context of globalization and sustainability, we also paid particular attention to the relative sizes of the major continents. On a typical map, countries of the Global South are artificially shrunken while those of the Global North are enlarged. The contributions to soil sciences by the Global South are also

not given the same opportunities as scientific communities within the Global North. Particular focus was put on Africa and South America since these countries have been and continue to be unequally impacted by climate change and economic development. A global soil icon that emphasizes the Global South also pushes us in the direction of greater scientific equity and sustainable living.

With respect to sustainability, the plant not only represents the biotic components of soil but also the unique importance of soils in feeding, building, and sustaining societies. Managing soils anywhere is a global benefit since soils drive global carbon and nutrient fluxes that impact climate change everywhere. Roots are holding together the continents, but they are vulnerable to land use change and climate change. By holding the continents together in this way, the need to sustainably manage our soils is brought to the forefront.

The process

The icons strikes the right balance between simplicity and content. We designed the continents to be overly simplistic, which will be more impactful since a logo must be easily reproduced. The icon was also produced digitally, which gave us more creative freedom to explore all of the different elements of soil, even though most did not make it into the final icon. Even though our icon is simple, we made sure it was also informative, teaching about the abiotic attributes of soil horizons and the biology of plants.

About the co-authors

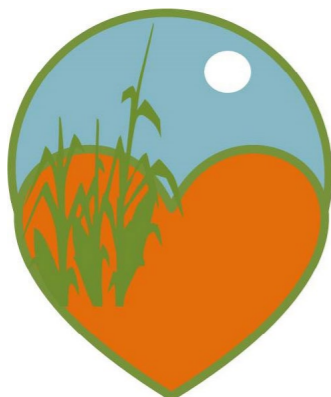
Andrea Jilling:

Andrea is a soil biogeochemist researching how plant roots interact with both the living and non-living components of the soil environment to influence nutrient cycling. Specifically, she examines the role of mineral particles as potential mediators of nitrogen availability to plants and microbes. She often thinks and experiments within this intersection of mineralogy and biology – investigating how geochemical processes and biological interactions occurring at the nanoscale influence nitrogen cycling at the scale of a microbe, plant, or even landscape. Andrea is also an active leader within the Graduate Student Senate at the University of New Hampshire and has focused her efforts on increasing the financial wellness of graduate students.

Mark Anthony:

Mark is a passionate microbial ecologist focused on the dimensions of fungal biodiversity in soils. He explores the fundamentals of microbial biodiversity from theoretical and applied lenses. A large portion of his research examines how abiotic global change stressors interact with plant invasions to influence soil biodiversity. As a result, he often works with the local Nature Conservancy to organize local communities around forest stewardship and invasive species management, always highlighting the importance of soil management. As a member of the LGBTQ+ community, he also works to make sure that universities are inclusive of all people. Just like healthy soils require biodiversity, so too do the institutions where soil science occurs. He focuses on policies that promote equity in academia, and he's passionate about the diversity and function of Earth's soils!

In August 2018, the Soil Icon "Soils at the heart of life" could be seen on the IUSS website:



Submitted by **Rebecca Hood-Nowotny**, University of Natural Resources and Life Sciences Vienna, Department of Forest and Soil Sciences, Institute of Soil Research, this icon has been created with the soils' live-saving properties in mind:

"Soils are the true heart of life they have sustained us all since time immemorial. Just like our hearts, when they break they cease to be productive, they need nurturing and protection from the harsh elements; we should not leave them bare and exposed to erosion. Soils cleanse out the pollutants, support nearly all life forms and have amazing potential to soak up our excessive carbon dioxide; our soils are certainly our saviour. Just as we should our next generation, we should protect them, nourish them and celebrate their diversity".

In September 2018 the following icon adorned the IUSS Website:



Icon Title: **From Big Things, Little Things Grow**

And this is what the artist said about the icon she created: An artistic representation of the process of soil generation – from parent material – through residual soils – to healthy surface soil. Soil, which with a little help from the sun and the rain, can support growth and life. The circular shape of the logo represents life and the never-ending cycles of growth as well as the constant weathering and generation of soil. The spiral begins on the outside, with the 'big things', the parent materials. The spiral continues through the layers of a soil profile until it ends in the centre with a healthy surface soil that, when mixed with a little sunlight and water can support growth – life that starts as a 'little thing' which in turn supports bigger things.

I chose a rainbow of colours for the logo to represent the awe-inspiring natural variety of colours that soil can be. I wanted to be sure to include representation of the Red Chromosol, a red brown earth that has been selected as the state soil for New South Wales by the NSW Branch of Soil Science Australia. It is a soil I have grown up with, one that has inspired an ever-growing love for soil, and a need to see it looked after and protected. That love is represented through the heart-shaped seedling growing in the centre of the logo.

Icon Author: **Nicole Cheung**

Nicole graduated in 2005 with a degree in Land and Water Science, majoring in Soil Science, from the University of Sydney. Nicole has over 8 years' experience working in the Contaminated Lands Industry, and is currently a Senior Consultant working at Coffey Pty Ltd with the Sydney Environments Team.

Nicole enjoys applying her knowledge of soils to projects and sites around Sydney and throughout New South Wales. Looking for ways to remediate soil and groundwater to support ecosystem renewal and urban growth. Through work, Nicole is giving soil a new lease

of life to support the ever growing and changing ecosystems that require healthy soil for a healthy life.

In October, IUSS presented this icon on its website:



Description by the artist:

It is often said of national parks and nature trails that we should "take only pictures, leave only footprints". Soil is vital to so much more than just agriculture, and I've used a stylized foot as the overall shape to signify both the human connection and our responsibility for management of the soils we leave our footprints upon, whether in sustainable agriculture, carbon capture programs, or conserving nature reserves. Soil varies widely in different places and at different depths, inhabited by different forms of life; this is represented in the three striations of soil that compose the center of the icon. Soil doesn't exist in isolation; some of the most important things it does is in holding plants and water that we care about, represented by the green and blue portions.

Artist: **Ming-Dao Chia**

An Honours year student in Plant Science at the Australian National University (Research School of Biology), working on soil microbiome metagenomics, and interested in improving science communication.

And, last but not least, the soil icon of November:



Authors: **Juan Bernate**, Graphic Designer; **Franco Obando**, Soil Scientist Ph.D Corporación Universitaria del Meta, Unimeta

Short explanation, as provided by the artists: The outer circle represents the earth. The lower blue and ochre colored inner semicircles represent the saturated and vadose zone respectively and their corresponding interactive soil and ecosystem functions. The root of a plant and its foliage represented by a green leaf indicates the key soil function as a source for production of food and fiber. All semicircles converge towards the atmosphere indicating the dynamics and cycling of soil processes and functions for earth ecosystem. The human footprints on the outside represent the impact of human interventions and the hope that man's survival on earth depends on sustainable land management.

IUSS Fact Sheets and Viewpoints

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

Viewpoints

In the beginning of each month a Viewpoint on soil issues from the desk of Rattan Lal, IUSS president, was published on the IUSS website:

- The Urbanization Challenge
- Drylands
- Did the Stone Age End Because the World Ran Out of Stones?
- Beyond Food and Fuel: The Power of Soil to Address Global Issues (special viewpoint on the occasion of the 21st WCSS 2018)
- Drought and Ancient Civilizations
- The Soil-Centric Agricultural Reformation

The viewpoints can also be watched on the IUSS YouTube channel: <https://youtu.be/IJWEmKAvESU>



Conference and Meeting Reports

Report on the 2018 SoWaSe – ESSC International Conference

Soil and Water Security: Challenges for the next 30 years!
June 6-8, 2018, Imola (Italy)



By Camilla Forti, Chiara Ferronato
Department of Agricultural and Food Sciences. Alma Mater Studiorum – University of Bologna, Italy

To celebrate 30 years of activities, the ESSC organized the **ESSC International Conference: SoWaSe 2018 “Soil and Water Security: Challenges for the next 30 years!”** The conference was hosted by the Department of Agricultural and Food Sciences of Alma Mater Studiorum-University of Bologna in Imola, from June 6th to 8th 2018.

The objective was to stimulate reflections on the importance of environmental resources for humankind, paying special attention to the new challenges and opportunities concerning Soil and Water Security and Conservation for the next 30 years.

The International Conference was attended by 85 scientists from different EU and non-EU countries, in particular from Austria, Belgium, the Czech Republic, Germany, Hungary, Italy, India, Romania, Slovenia, Spain, Cameroon, China, Gambia, Georgia, Kazakhstan, Pakistan, Russia, and Ukraine.

The conference hosted fifteen oral presentations, four poster sections and two stand exhibitors, Elementar and Schweizerbart Science publishers.

The Conference has been supported by Global Soil Partnership (GSP), World Association of Soil and Water Conservation (WASWAC), European Commission (EC), International Union of Soil Sciences (IUSS), International Soil Conservation Organization (ISCO), World Agricultural Heritage Foundation (WAHF) Italian Society of Soil Science (SISS), Italian Society of Pedology (SIPE) National Academy of Agriculture (ANA), , RES Emilia Romagna, Regione Emilia Romagna, Imola Municipality, Comacchio Municipality, University of Ferrara, CREA, European Con-



Fig. 1 – From left to right: J. Rubio; Li Rui; L. Vittori Antisari; C. Dazzi; I. Pla Sentis, ©ESSC

federation of Soil Science Society (ECSSS). The event has been sponsored by Fondazione Cassa di risparmio Imola and Geolab onlus.

Prof. Carmelo Dazzi, president of the European Society for Soil Conservation (ESSC), delivered the opening speech of the Conference, followed by Prof. Li Rui, president of WASWAC, and Prof. Ildefons Pla Sentis, president of ISCO. Afterwards, Prof. José Luis Rubio, past president of ESSC, and Prof. Giorgio Cantelli Forti, president of ANA, brought their best wishes for the conference work. The opening ceremony was concluded by Prof. Livia Vittori Antisari, president of the Scientific Committee of the Conference who welcomed the conveners as a delegate of the hosting institution, the University of Bologna (Fig.1).

Scientific Program

The International Conference was organized in four scientific sessions.

The first one (*Soil Degradation and Food Security: Learning from the past to foresee the future*) was introduced by a lecture of Prof. Wim Cornelis (Department of Environment, Ghent University, Belgium), who gave a talk about how restoring soil structure, stressing that conserving soil and water are essential in the global struggle for food security (Fig. 2). To do so, we should learn from good and less good soil-management practices from the past and improve them in order to deal with the challenges of the future. During the session, the following speakers explored a wide range of issues related to soil degradation such as soil desertification or pollution, in relation to food security and human health.



Fig. 2 – Carmelo Dazzi awards Wim Cornelis after his invited lecture, ©ESSC

The second session (*Soil functions monitoring and safeguarding*) was presented by Prof. Edoardo Costantini (CREA-AA, Italy), who focused on the importance of monitoring soil functions as a way of maintaining or restoring soil fertility (Fig. 3). He presented some of the results of an important project on the restoration of soil functionality in degraded areas within organic vineyards. Presentations given after his speech followed the topic of monitoring soil functions as a key to understand soil health. Great attention was paid to the soil organic carbon cycle and speciation.

Prof. Ildefons Pla Sentis from University of Lleida (Spain) introduced the third session (*Soil and water management in a changing environment*) underlining that soil and water security is a fundamental issue for the future of humankind on Earth (Fig. 4). He presented



Fig. 3 – José Rubio awards Edoardo Costantini after his invited lecture, ©ESSC



Fig. 4 – Adam Kertész awards Ildefons Pla Sentis after his invited lecture, ©ESSC

some examples of integrated use and management of soil and water resources adapted to the new social and economic pressures around the World. During the scientific sessions several presentations were given, in which different methodologies and models to monitor soil properties and processes and to predict soil evolution were explained.

In the last session (*Smart agriculture: modelling and prediction for the next 30 years*), the invited lecture by Prof. Pandi Zdruli (CIHEAM, Bari, Italy) highlighted the importance of sustainable soil management in order to ensure food security by investing in soil conservation and water, bio-engineering, agricultural research and alternative affordable sources of energy for irrigation (Fig.5). During this session most of dissertations talked about soil mapping and modelling,



Fig. 5 – Wim Cornelis awards Pandi Zdruli after his invited lecture, ©ESSC

smart agriculture practices as examples of new sustainable techniques.

Closing session

Before the conclusion of the conference, the ESSC awarded three young researchers for their commitment with a grant of 500 € each. The winners were Eva Pažourková (Department of Hydraulics and Hydrology, Czech Technical University in Prague), for her study on *Soil conservation in a forested mountain catchment*, written with Josef Křeček, Jana Nováková, Ladislav Palán; Parvathy Chandrasekhar (Institute for Integrated Management of Material Fluxes and of Resources, United Nations University – Flores, Germany), for her work on *A modelling study on the temporal dynamics of soil hydraulic properties influenced by agricultural management practices*, written with Janis Kreiselmeier, Thomas Weninger, Karl-Heinz Feger, Stefan Julich, Andreas Schwen, Kai Schwärzel and Tara Čolović (Faculty of Forestry of Belgrade University, Serbia) for her study on *The influence of socio-demographic factors on the state of soil erosion in certain areas in Serbia*, written with Miodrag Zlatić (Figs 6, 7, 8).

One poster for each scientific section was also awarded:

- *Slash and burn effect on Mozambican soils* by Dominique Serrani, Stefania Cocco, Valeria Cardelli, Marziyeh Hoseini, Rogério Borguete Alves Rafael, Giuseppe Corti for Session 1;
- *Discriminating the effects of forest management on litter and soil in a mediterranean pine forest by VisNIR* by Romina Lorenzetti, Cesar Guerrero, Erika Di Iorio, Alessandro Elio Agnelli, Claudio Colombo, Alessandra Lagomarsino for Session 2;
- *Soil conservation in a forested mountain catchment* by Eva Pažourková, Josef Křeček, Jana Nováková, Ladislav Palán for Session 3;
- *Spectral data for rapid characterization of compost-on-farm quality* by Romina Lorenzetti, Simone Priori, Giovanni L'Abate, Edoardo A.C. Costantini for Session 4.

Social Program

On Wednesday 6th, the evening ended with a cheerful social dinner at the Fortress of Riolo Terme, a small village close to Imola, admiring the Fortress, eating traditional food, and listening to a nice concert of the "Roaring Emily Jazz Band" offered by the organizing



Fig. 6 – Eva Pažourková, ©ESSC



Fig. 7 – Parvathy Chandrasekhar, ©ESSC



Fig. 8 – Tara Čolović, ©ESSC



Fig. 9 – A big cake with the ESSC logo, ©ESSC

committee. The dinner also was a good chance to celebrate the 30 year of activity of the ESSC, together with the member of the council of the ESSC, with a special cake, dances and good food (Fig. 9).

Field and Cultural Excursion

On Friday 8th, a field excursion was organized in Ostelato (FE), to visit the particular soils of the Azienda Vivai Maccanti, involved in a regional project "SaveSOC2", funded by EU, which focuses on the study of best agri-

cultural practices that minimize organic matter deterioration process. During the excursion, some researchers explained the particular origin of the area, resulting from a recent reclamation land (1960s).

A representative soil profile was excavated, in order to show to the participants the different alternation of buried organic horizons and the sedimentary history recorded by the soil (Fig. 10).

An interesting discussion occurred in front of the profile, where all the soil scientists could observe the pedological features of the soil, ask question and curiosities, and give some suggestions.

In the afternoon, the attendants visited the ancient Delta Museum in Comacchio (FE), which narrates the history of the ancient Po delta through several dioramas and audio guides.

Closing Remarks

More information and a comprehensive programme of the Conference and the book of abstracts are available at: <https://events.unibo.it/sowase-essc-conference-imola2018/program>



Fig. 10 – Discussions on the soil profile, ©ESSC

NARO-MARCO International Symposium

"Nitrogen Cycling and Its Environmental Impacts in East Asia"

2nd International Conference of Nitrogen Cycling and Its Environmental Impacts in East Asia

Date: November 19-22, 2018

Venue: Tsukuba International Congress Center (Epochal Tsukuba), Tsukuba, Ibaraki, Japan

By Sadao Eguchi

The National Agriculture and Food Research Organization (NARO), Japan, and the Monsoon Asia Agro-Environmental Research Consortium (MARCO) carried out the NARO-MARCO International Symposium "Nitrogen Cycling and Its Environmental Impacts in East Asia", with great support from the Japanese Society of Soil Science and Plant Nutrition (JSSSPN), the Institute of Soil Science, Chinese Academy of Science (CAS),

China, the National Institute for Environmental Studies (NIES), Japan, the Japan International Research Center for Agricultural Sciences (JIRCAS), and the global-scale international project "Towards INMS (International Nitrogen Management System)" which aims at maximizing the benefit and minimizing the threat from the use of reactive nitrogen and has been launched for the 4 year period from October 2017, led by the United Nations Environment Program (UNEP) and implemented by the International Nitrogen Initiative (INI).

This Symposium is also positioned as the "2nd International Conference of Nitrogen Cycling and Its Environmental Impacts in East Asia" to continue the series of International Nitrogen Conference in East Asia, mainly supported by Towards INMS. The first one have been held in Nanjing, China, on October 19-22, 2017; moreover, the preliminary one had also been held in Tsukuba, Japan, on August 23-24, 2016. This Symposium included the Special Session (Poster Session) organized by JSSSPN and tried to contribute to the "International Decade of Soils 2015-2024" of the International Union



Photo courtesy of NARO (National Agriculture and Food Research Organization)

of Soil Science (IUSS). This Symposium also tried to contribute to the UN Sustainable Development Goals (SDGs) in the 2030 Agenda for Sustainable Development.

We had 143 participants from 7 countries (Japan, China, Korea, Philippines, Iran, Austria, and UK); moreover, the participants from Japan also included several foreign researchers or students from China, Vietnam, USA, etc. We had 23 oral presentations which included 3 keynotes by Prof. Wilfried Winiwarter, International Institute for Applied Systems Analysis (IIASA), Austria, Prof. Xiaoyuan Yan, Institute of Soil Science, CAS, China, and Prof. Timothy Jickells, University of East Anglia, UK. In the Poster Session, we had 44 poster presentations, of which 2 posters were selected for the Best Poster Awards based on the votes from all the participants. In the evening after the daytime Oral & Poster Sessions, the Towards INMS Workshop was held twice on 19 and 20 November, with more than 30 participants, about a half of which are already involved in the Towards INMS project members. On the last day of the Symposium, the Scientific Field Excursion entitled “Understanding nitrogen cycling and its environmental impacts in Ibaraki Prefecture, Japan” was held with about 40 participants, who really enjoyed the taste of local food (new brands of strawberry, Japanese pair, and pork in Ibaraki Prefecture) and realized the nitrogen footprint of the agricultural and livestock products by our dietary life and its impacts on the water quality of the Lake Kasumigaura.

Thanks to the very hard work of all the participants and valuable free discussions with presenters and audience, we have successfully met the aims of the Symposium; i.e., to share current information and knowledge and to exchange opinions between participants on the nitrogen cycling and its environmental impacts in East Asia and the world; discuss on the research results and future directions for solving the regional and global scale nitrogen-related problems; contribute to Towards INMS project for realizing sustainable nitrogen use through optimization of nitrogen cycling at various scales; and provide a forum for planning future cooperation reinforcement between participants, organizations, regions, and countries.

To keep in mind this unforgettable Symposium, we would like to share our group photo taken at the stairs in Epochal Tsukuba on the first day.

A soil exhibition in France

By Christian Feller, Uzès (France), 14-11-2018

In the South of France, in the city of Alès (Gard), a double exhibition on “Soils” and “Volcanoes” has been opened (October 2018 - January 2019) under the general title:

Terre, planète active (“Earth, an active planet”).

It was organized by the “EUREKALES” association in the Alès’ “Scientific and Cultural Center”.



Information about the Exhibition (©Eurekales)

AFES¹ and IUSS¹ have sponsored the soil exhibition with Christian Feller (IRD², IUSS), Tiphaine Chevallier (IRD²) and Jean-Claude Lacassin (SCP²) as scientific advisors.

Target of this exhibition is the general public with a focus on secondary (sometimes primary) school students (8-18 years old). So, different, very simple experiments with soil are shown – or done by the students themselves, or the general public – to understand soil properties, soil functions and/or soil services provided to society.



Pupils learning about soil (©Eurekales)

During October 2018 alone, the soil exhibition attracted 1166 visitors including a large number of pupils and students.

Three conferences, which were equally held at the “Pole scientifique et culturel d’Alès” (Alès, France), accompanied this soil exhibition:

- “Soil, a wonder beneath our feet” by Christian Feller (IRD, IUSS), 13 October 2018
- “Soil and climate change” by Tiphaine Chevallier (IRD), 16 November 2018
- “Soil and biodiversity” by Eric Blanchart (IRD), 13 December 2018

¹ AFES: the French soil science society; IUSS: International Union of Soil Sciences.

² IRD: « Institut de Recherche pour le Développement »; SCP: « Société du Canal de Provence ».



IUSS Alerts

June - November 2018

Information for and from the global soil science community

IUSS Alerts are e-mailed to 2,000 subscribers 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 2018.

GSP Special Announcement: Zero-draft Code of Conduct for the Use and Management of Fertilizers – Online Consultation

After an online consultation between 21 December 2017 and 11 February 2018 and with the support of an open-ended working group (OEWG) of fertilizer experts, the Intergovernmental Technical Panel on Soils (ITPS) produced a zero-draft International Code of Conduct for the Use and Management of Fertilizers.

While many GSP member countries agreed to endorse the Fertilizer Code in its current form and present it to the Committee on Agriculture (COAG) in October 2018, some members felt that the document could be improved and would benefit from further stakeholder engagement and consultation, thus, ensuring the Code of Conduct will be truly relevant and have the maximum effect and buy in from all. FAO/GSP are therefore holding a second online consultation to gather comments and feedback on the current draft Fertilizer Code of Conduct and use this feedback to fine-tune it.

Please provide your feedback and comments by Sunday 15th July, 2018.

Online survey: http://www.fao.org/fsnforum/activities/discussions/CoCoFe_II

CountrySIS – Soil Information Survey

The Pillar 4 of the Global Soil Partnership is working on improving quality and accessibility of soil information worldwide. One of our primary objectives is to support the countries in establishing, harmonizing and bringing together their own soil information systems and data products. In order to plan further activities and projects in accordance with the needs and capacities of all country members, we kindly ask you to participate in the survey, concerning current status of soil information in your country.

The deadline for the submission is 15th of July 2018! Please distribute the form to all relevant experts/institutions which are collecting and maintaining soil information in your country. In case of multiple soil databases / information systems in your country, please submit a separate form for each database/information system

(multiple forms may be submitted from the same country). In case your country doesn't have a soil database / information system, please fill-in the form anyway (there is a corresponding option).

By providing the comprehensive information through the survey, you will ensure that your country is taken into account in the GSP planning for soil data related projects for the upcoming years. The summary of the survey results will be published on the GSP website.

To access the survey, please use the following link: <https://goo.gl/forms/OU1IRhn2FNtQyod72>

Call for manuscripts

“Technological and Methodological Advances in Measuring, Mapping and Monitoring Soil Carbon and Nutrients in Space and Spacetime” Special issue in Nutrient Cycling in Agroecosystems Journal

<https://link.springer.com/journal/10705>

We aim at producing a special issue listing good practice examples of how novel technologies such as soil sensing and image recognition, automated sensor networks, unmanned aerial vehicles (UAVs) and publicly available remote sensing products (such as NASA's Landsat 7 & 8 and ASTER missions, ESA's Sentinel 2 and other Copernicus land products, JAXA's Advanced Land Observing Satellite ALOS, LiDAR, TanDEMx and similar missions), in combination with statistical / machine learning, data mining and high performance computing, can be used to generate most accurate maps of soil carbon and soil nutrients in space and spacetime.

Important dates:

- First call: June 1st, 2018
- Manuscript submission until December 1st, 2018
- Manuscript evaluation until February 20th, 2019
- Special issue publication in March 2019.

Read more: <http://opengeohub.org/#SI.NutrientMapping>

Fast methods for predicting the soil-water retention curve

The soil-water retention curve is essential for understanding and modeling water and solute transport in the vadose zone and water availability for plants. However, measuring the soil-water retention curve is highly time-consuming and a fast and accurate method to predict it is needed. In an upcoming issue of the Vadose Zone Journal, researchers developed models to predict the soil-water retention curve using visible–near infrared spectroscopy and a soil fines (soil clay-size fraction and organic matter) based pedotransfer function, covering a wide range of soil texture, from sandy to loamy soils, and organic matter contents.

Read more: https://www.soils.org/science-policy/sspr/2018-05-30/?_cldee=sigbert.huber@umweltbundesamt.at#5757

[From: ASA-CSSA-SSSA Science Policy Report, 30 May 2018]

UK farmers to be given first ever targets on soil health

A new bill will be brought before parliament this year mandating, for the first time, measures and targets to preserve and improve the health of the UK's soils, amid growing concern that we are sleepwalking into a crisis of soil fertility that could destroy our ability to feed ourselves.

The UN has warned that the world's soils face exhaustion and depletion, with an estimated 60 harvests left before they are too degraded to feed the planet, and a 2014 study in the UK found matters are not much better, estimating 100 harvests remaining.

Read more: <https://www.theguardian.com/environment/2018/mar/13/uk-farmers-to-be-given-first-ever-targets-on-soil-health>

Organic matter preserved in 3-billion-year-old mudstones at Gale crater, Mars

The Curiosity rover has been sampling on Mars for the past 5 years. Eigenbrode *et al.* used two instruments in the SAM (Sample Analysis at Mars) suite to catch traces of complex organics preserved in 3-billion-year-old sediments. Heating the sediments released an array of organics and volatiles reminiscent of organic-rich sedimentary rock found on Earth. Most methane on Earth is produced by biological sources, but numerous abiotic processes have been proposed to explain Martian methane. Webster *et al.* report atmospheric measurements of

methane covering 3 Martian years and found that the background level varies with the local seasons. The seasonal variation provides an important clue for determining the origin of Martian methane.

Read more:

<http://science.sciencemag.org/content/360/6393/1096>

Environment and host as large-scale controls of ectomycorrhizal fungi

Explaining the large-scale diversity of soil organisms that drive biogeochemical processes – and their responses to environmental change – is critical. However, identifying consistent drivers of belowground diversity and abundance for some soil organisms at large spatial scales remains problematic. Here we investigate a major guild, the ectomycorrhizal fungi, across European forests at a spatial scale and resolution that is – to our knowledge – unprecedented, to explore key biotic and abiotic predictors of ectomycorrhizal diversity and to identify dominant responses and thresholds for change across complex environmental gradients. We show the effect of 38 host, environment, climate and geographical variables on ectomycorrhizal diversity, and define thresholds of community change for key variables. We quantify host specificity and reveal plasticity in functional traits involved in soil foraging across gradients. We conclude that environmental and host factors explain most of the variation in ectomycorrhizal diversity that the environmental thresholds used as major ecosystem assessment tools need adjustment and that the importance of belowground specificity and plasticity has previously been underappreciated.

Read more: <https://www.nature.com/articles/s41586-018-0189-9>

Eurosoil 2020 – Programme preparation and Call to join Steering Committees

The Swiss Soil Science Society is proud to welcome the European soil community on 23-28th August 2020 to the Eurosoil 2020 in Geneva. Our objective is to “connect people and soil”. The organizing committee led by Prof. Pascal Boivin, has started to prepare a program accordingly. Eurosoil 2020 shall be not only a pure scientific conference. It strives to attract, apart from scientists, representatives of soil-related stakeholders and the interested public, and to give them a stage for their soil-related issues. Therefore, we need your feedback and your contribution.

In a first step, we have defined 6 conference themes based on specific Sustainable Development Goals as defined by the United Nations. Brief descriptions and a preliminary list of topics shall be the basis for an open call for symposia/events to be launched this autumn. We ask you for your feedback on these six conference themes. Specific questions to be answered: (i) In general, do you think that these themes can be the basis for a conference with objectives as set out above? (ii) Are important items missing? (iii) Should certain proposed themes/topics not be included? Suggestions for changes, additions and omissions are most welcome. Moreover, we want Eurosoil2020 to depart from the classical symposia forms whenever it is necessary. In line with the overall objective, we aim at a diversified mixture of classic oral sessions with a broad range of interactive symposia and events (e.g. PICO, world cafes, panel discussions, Rapid fire, ...). You may suggest any original form of exchange and debate around this question, such as lunch sessions, debates etc. Our Professional Congress Organizer (MCI) is particularly engaged in innovative forms of scientific events and we are open to this. Finally, we are looking for volunteers to join one or more Steering Committees for the different themes or sub-topics, and for young scientists to help us boost young scientist's involvement. The task of the steering committees is mainly to help with launching the call for proposals for each SDG Theme in autumn 2018 and in creating an exciting program by evaluating the proposed symposia/events in spring/summer 2019.

Should you have questions, you may approach any member of the organizing committee (eurosoil2020.com).

Read more: www.eurosoil2020.com

Michael Stocking († 2018)

With sadness, the British Soil Science Society announces the death of Michael Stocking, Prof Emeritus in the School of International Development, on 21 May 2018. He completed his PhD at Oxford University in 1969 and, over almost 50 years, developed an international profile and reputation as a researcher and adviser in tropical agricultural development, land resources, conservation of biodiversity and soil conservation. He was one of very few soil scientists known by anthropologists and political economy specialists.

Read more: <https://www.uea.ac.uk/alumni/your-uea/latest-news/prof-michael-stocking>

International Science Council held first General Assembly in Paris

The International Science Council (ISC), formed from the merger of two organizations representing the natural and social sciences, held its inaugural General Assembly in Paris on July 4. In a historic meeting hosted by the French Académie des Sciences, the International Council for Science (ICSU) and the International Social Science Council (ISSC) merged to form the International Science Council, a unique global non-governmental organization representative of both the natural and social sciences.

[from the ISC Special Newsletter, 6 July 2018]

Read more: <https://mailchi.mp/icsu/l55rfn3vbl-699877?e=95903252eb>

Listening to earthworms burrowing and roots growing – acoustic signatures of soil biological activity

Soil is a critical living system that supports key biogeochemical cycles, a rich array of ecological processes, and contributes to numerous ecosystem services. The complex aggregation and arrangement of mineral and organic soil constituents give rise to an important and fragile trait called soil structure, considered central to soil agro-ecological functioning. Soil structure results from a dynamic equilibrium that may take decades to build but seconds to alter (e.g., passage of a heavy vehicle), and reported recovery times from such damage range from months to centuries. The maintenance of favourable soil structure for agricultural production is particularly challenging due to its sensitivity to tillage and other aspects of crop management. For example, it is estimated that about 68 Mha of land worldwide are affected by soil compaction, highlighting the importance of soil structure management for sustainable agricultural production and environment protection.

Read more: <https://www.nature.com/articles/s41598-018-28582-9>

Novel soil bacteria possess diverse genes for secondary metabolite biosynthesis

In soil ecosystems, microorganisms produce diverse secondary metabolites such as antibiotics, antifungals and siderophores that mediate communication, competition and interactions with other organisms and the environment.

Most known antibiotics are derived from a few culturable microbial taxa and the biosynthetic potential of the vast majority of bacteria in soil has rarely been investigated.

Read more: https://www.nature.com/articles/s41586-018-0207-y.epdf?shared_access_token=AaRnTrLVF6Z_IWZie-UwUNRgNOjAjWel9jnR3ZoTv0NhPqqq2tyNkb-sR6YIQw4Z_qLzjWerD_atLdsncOox_Ml5pzoyJVqWnrLY6H4HBJTtQZrBsxlucEoZ9v7Y4FbtCZEOUmZc4JN-4QJW0T6lCr7zOIIAbfbbqIMdNCoFNvk%3D

Heatwave unveils ancient settlements in Wales

The dry spell has left parched fields with unmistakable “crop marks” painted into the landscape.

The Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) has been busy recording the details – before they disappear when it next rains.

The crop marks are made by vegetation drawing on better nutrients and water supplies trapped in long-gone fortification ditches – leading to lush green growth that stands out.

https://www.bbc.com/news/amp/uk-wales-44746447?__twitter_impression=true

Field, Lab, Earth Podcast is launched by ASA, CSSA, SSSA

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. Opinions and conclusions expressed by authors are their own and are not considered as those of the American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, its staff, its members, or its advertisers.

See podcast: <https://itunes.apple.com/us/podcast/field-lab-earth/id1398459753>

[From the ASA-CSSA-SSSA Science Policy Report, 27 June 2018]

Journal of Environmental Quality (July-August): Special Issue on Predicting Soil Organic Carbon in Agroecosystems under Climate Change

Adapting to the anticipated impacts of climate change is a pressing issue facing agriculture, as precipitation and temperature changes are expected to have major effects on agricultural production in many regions of the world. These changes will also affect soil organic matter decomposition and associated stocks of soil organic carbon (SOC), which have the potential to feedback to climate change and affect agroecosystem resiliency. This special issue brings together multiple efforts to assess effects of climate change on SOC stocks around the globe in grassland, pasture, and crop agroecosystems under varying management practices. The overall goal of these efforts is to identify optimum practices to enhance SOC accumulation. Fourteen of the 20 contributions apply dynamic process-based models to assess climate and/or long-term management impacts on SOC stocks, and four papers use statistical SOC models across landscapes or regions. Also included are one meta-analysis and one long-term study.

[Gollany and Venterea, 2018 (from the Introductory paper in the Special Issue)]

Launch of the Brazilian-Portuguese version of the Soil Atlas of Latin America and the Caribbean – Atlas de solos da AMÉRICA LATINA e do CARIBE

The European Commission – Joint Research Centre (JRC) launched the “Atlas de solos da AMÉRICA LATINA e do CARIBE” during the 21st world Congress of Soil Science (21WCSS) in Rio, Brazil. The launch event took place in collaboration with FAO at the beginning of the conference. Around 2,000 printed copies were distributed during the conference.

Read more: <https://esdac.jrc.ec.europa.eu/content/soil-atlas-latin-america>

Predicting soil organic carbon in agroecosystems under climate change

Soil organic carbon is an important component of soil health in agroecosystems. It can affect crop yields and also serves as a carbon sink. However, changes in climate will likely alter soil organic carbon dynamics. Understanding this relationship between changes in climate and soil organic carbon is important for soil scientists, agronomists, crop breeders, and farmers. An upcoming issue of

the Journal of Environmental Quality (JEQ) will include a special section on this topic. The impacts of future changes in temperature and precipitation patterns on agricultural production are unknown, so there is a need to find the best agriculture management practices to maintain or increase soil organic carbon to improve agroecosystem resiliency against extreme weather.

Read more: <https://dl.sciencesocieties.org/content/Predicting-Soil-Organic-Carbon-Agroecosystems-under-Climate-Change>

[From: ASA-CSSA-SSSA Science Policy Report, 8 August, 2018]

This city’s buried treasure isn’t under the dirt. It is the dirt.

While air pollution and spoiled waterways are the most visibly threatened environmental resources, the soils that lie beneath our feet have lately been receiving some long overdue attention as well – especially in the New York metropolitan area, which scientists say sits on top of some of the best soil on the continent. Degraded soils are a big concern in New York, where lead contamination levels can be high. For much of the 20th century, soil excavated at construction sites was regarded as toxic waste and sent for disposal outside the city. But dirt, suddenly, is somewhat glamorous and New York City has been leading this reassessment.

Read more: <https://www.nytimes.com/2018/07/25/nyregion/the-citys-buried-treasure-isnt-under-the-dirt-it-is-the-dirt.html?hp&action=click&pgtype=Homepage&clickSource=story-heading&module=second-column-region®ion=top-news&WT.nav=top-news>

[From: ASA-CSSA-SSSA Science Policy Report, 8 August, 2018]

The soil science imperative

Any thriving natural or agricultural ecosystem begins with soil. And how we choose to manage soil impacts not just the amount and quality of food we produce, but whether we exacerbate or mitigate climate change, and the health of the terrestrial and aquatic ecosystems on which life depends. The last few years have seen a growing recognition of the importance of soil – from movements to expand small-scale farming, to global efforts to improve soil in industrial agriculture, to strategies to boost the role of soil in mitigating climate change. Soil science can be a driving force for achieving sustainable development

when it responds directly to the needs of practitioners and decision-makers from local to national and global scales.

Read more: https://global.nature.org/content/the-soil-science-imperative?utm_campaign=social.nature&utm_medium=social&utm_source=twitter&utm_content=1533154405

[From: ASA-CSSA-SSSA Science Policy Report, 8 August, 2018]

Biodegradation of synthetic polymers in soils: Tracking carbon into CO₂ and microbial biomass

Plastic materials are widely used in agricultural applications to achieve food security for the growing world population. The use of biodegradable instead of non-biodegradable polymers in single-use agricultural applications, including plastic mulching, promises to reduce plastic accumulation in the environment. We present a novel approach that allows tracking of carbon from biodegradable polymers into CO₂ and microbial biomass. The approach is based on ¹³C-labeled polymers and on isotope-specific analytical methods, including nanoscale secondary ion mass spectrometry (NanoSIMS). Our results unequivocally demonstrate the biodegradability of poly(butylene adipate-co-terephthalate) (PBAT), an important polyester used in agriculture, in soil. Carbon from each monomer unit of PBAT was used by soil microorganisms, including filamentous fungi, to gain energy and to form biomass. This work advances both our conceptual understanding of polymer biodegradation and the methodological capabilities to assess this process in natural and engineered environments.

Read more: <http://advances.sciencemag.org/content/4/7/eaas9024>

Understanding soil through its microbiome – First global survey of soil genomics reveals a war between fungi and bacteria

Soil is full of life, essential for nutrient cycling and carbon storage. To better understand how it functions, an international research team led by EMBL and the University of Tartu (Estonia) conducted the first global study of bacteria and fungi in soil. Their results show that bacteria and fungi are in constant competition for nutrients and produce an arsenal of antibiotics to gain an advantage over one another. The study can also help predict the impact of climate change on soil, and help us make

better use of natural soil components in agriculture. Nature published the results on 1 August 2018.

Read more: <https://news.embl.de/science/understanding-soil-through-its-microbiome/>

Manure slipping through (soil) cracks

Excess nutrients from farms can be transported to groundwater reservoirs by water starting at the surface and flowing through soil. But the flow of water through soil is a “highly dynamic process,” says Genevieve Ali, a researcher at the University of Manitoba. “It can vary from year to year, season to season, or even rainstorm to rainstorm.” It can also fluctuate depending on soil type and even if organic additions, like manure, are applied. Ali is lead author of a new study that shows water infiltrates deeper into cracking clay (vertisolic soils) when liquid hog manure is applied. The study also showed that even though water infiltration went deeper in the presence of manure, it did not reach depths of 39 inches (100 cm). That’s how deep tile drains – designed to remove excess subsurface water – are typically installed in the study region.

Read more: <https://www.soils.org/discover-soils/story/manure-slipping-soil-cracks>

ESB Earthworm Identikit

The Earthworm Society of Great Britain and Northern Ireland (ESB) aims to promote and support scientific research so that earthworms and their environment can be better understood. Through its work the society aims to encourage the conservation of earthworms and their habitats. The ESB Earthworm Identikit provides five identification tools. The first is a multi-access key tailored specifically for UK earthworms. The second is also a multi-access key, but it emphasises different features and photographs are also accessible from this key. The third – the Circle Pack Key – allows you to explore the distribution of morphological features across different earthworm genera. The fourth – a side by side comparison tool – allows you to directly compare features from two or more different species of earthworms and also to compare photographs where they exist.

<http://www.earthwormsoc.org.uk/fullscreen/earthwormkey>

NEW! The World Soil Day Award

The World Soil Day Award (WSDA) consists of a medal and a USD 15,000 check. It will be awarded for the first time in Bangkok, Thailand on 5 December 2018 to prize the best World Soil Day event held in the framework

of the 2017 communication campaign ‘Caring for the Planet starts from the Ground’. It honors individuals, communities, organizations and countries that organized remarkable and engaging World Soil Day activities or campaigns in the previous year.

Read more: <http://www.fao.org/world-soil-day/world-soil-day-award/en/>

Land and Soil Management Award 2018/19 call: For good agriculture and environmental conditions

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.

The call for application is open to farmers, landowners, land managers, groups of farmers, on their own or in collaboration with research institutes, universities and/or private companies.

Deadline for application: December 31, 2018.

Read more: <http://www.europeanlandowners.org/awards/soil-land-award>

Glinka World Soil Prize – Call for nomination OPEN until 30 September

Are you a Soil Champion? The GSP is currently accepting submissions to the 3rd edition of the Glinka World Soil Prize (WSP). This annual award recognizes individuals or organizations committed to solving acute soil degradation problems. Winners will be awarded with a USD 15 000 check, the Glinka medal and gain recognition around the world.

Read more: <http://newsletters.fao.org/q/1mbXXH8z2cZLpmwtLt47/wv>

[Source: Global Soil Partnership Newsletter #20]

G20 Declaration and 21st WCSS

GSP helps soils standing high on the agenda. The G20 Declaration from the Meeting of Agriculture Ministers on 28 July 2018 spotted soils high on the agenda with a dedicated section on how healthy soils support the role of agriculture in sustainable human development. The successful GSP participation to the 21th World Congress

on Soil Science (12-17 August 2018) in Rio de Janeiro with the slogan ‘Sustainable Soil Management for All’ was also crucial to promote responsible and sustainable management of soils at global level.

Read more: <http://www.fao.org/global-soil-partnership/resources/highlights/detail/en/c/1149427/>

[Source: Global Soil Partnership Newsletter #20]

International Symposium on Black Soils and 1st meeting of the INBS

The 1st International Symposium on Black Soils (ISBS18) and 1st meeting of the International Network of Black Soils (INBS), organized by FAO-GSP and the Heilongjiang Academy of Agricultural Sciences, was held from 10 to 12 September 2018 in Harbin, China to take stock of the status of black soils in the different countries and to plan future steps to preserve our black treasure. Black soils play a key role in global food production and in the fight against climate change, as highlighted by FAO Director-General José Graziano da Silva.

Read more: <http://www.fao.org/director-general/newsroom/news/detail/en/c/1152010/>

[Source: Global Soil Partnership Newsletter #20]

Stakeholders’ views on the impact of EU policies for sustainable soil management

This survey is part of the RECARE project work on impact assessment of EU policies for soil protection. With this survey, we would like to collect views from stakeholders, both policy makers and other practitioners, working with soil management on what they think the impact of EU policies has been in their country or region. The survey asks for views on up to two soil threats with which the respondent is familiar. The survey includes five questions and takes approximately 10 minutes to complete. It is open till October 8, 2018.

Read more: <https://polls.ecologic.eu/index.php/484191?lang=en>

[Source: European Soil Data Centre Newsletter No.113 (August - September 2018)]

USDA releases standard indicators and laboratory procedures to assess soil health

USDA is releasing a set of standard indicators and associated laboratory procedures to assess soil health. These measures – recommended through a multi-organizational collaboration among soil health experts in the federal, university, public and private sectors – are being developed to improve conservation plan-

ning and implementation across the United States. The USDA’s NRCS has posted a draft Technical Note detailing these soil health indicators and associated laboratory methods in the Federal Register for public review and comment.

NRCS is accepting comments through December 13, 2018.

You may download the draft Technical Note at <https://go.usa.gov/xUFJE> in the box called Highlights.

[From: ASA-CSSA-SSSA Science Policy Report, 19 September 2018]

China Focus: China adopts new law on soil pollution prevention

China’s top legislature passed a law on soil pollution prevention and control, as the country has escalated its fight against pollution. The law was adopted after the third reading at a session of the Standing Committee of the National People’s Congress (NPC).

The new law filled the legal void on soil protection and will go into effect on January 1, 2019. National standards for soil pollution risk control will be set by the environmental authority of the State Council based on soil contamination status, public health risks and ecological risks, among others, according to the law. The law also states that a nationwide soil condition census should be conducted at least once every 10 years. A network of monitoring stations should be established nationwide, with data and other information collected shared among authorities in environmental, agricultural, natural resources, housing, water resources, health and forestry and grassland sectors, it said. Environmental and health authorities of the State Council are required to conduct screening and evaluation of toxic and harmful substances in the soil and make public a list of them. According to the law, the central and provincial-level governments should establish funds to prevent and control soil pollution.

Read more: http://www.xinhuanet.com/english/2018-09/01/c_137434559.htm

How Trees Secretly Talk to Each Other in the Forest

What do trees talk about? In the Douglas fir forests of Canada, see how trees “talk” to each other by forming underground symbiotic relationships – called mycorrhizae – with fungi to relay stress signals and share resources with one another.

Watch the video: <https://video.nationalgeographic.com/video/decoder/how-trees-secretly-talk-to-each-other-in-the-forest>

Ancient Mayan Clearcutting Still Impacts Carbon in Soil Today

Even 1,000 years after a forest regrows, the soil beneath still won't hold as much carbon as it once could, a new study suggests. Today, much of the land cleared by the Maya has been reclaimed by the rainforest, and one would think the area has completely recovered from the exploitation. But in a new study in the journal *Nature Geosciences*, geochemist Peter Douglas of McGill University and his colleagues examined soils from the area.

Read more: <https://www.smithsonianmag.com/smart-news/ancient-mayan-clearcutting-still-impacts-soil-carbon-today-180970089/>

World Soil Day, 5 December 2018

Are you ready to 'Be the solution to soil pollution'?

#StopSoilPollution is at the heart of the Global Soil Partnership's mandate as demonstrated by the Global Symposium on Soil Pollution. We work to ensure that people have safe and nutritious food to ensure active and healthy life without endangering essential ecosystems services.

Read more: <http://www.fao.org/world-soil-day/en/>

Use the WSD communication toolkit!

Create buzz around WSD! FAO have prepared a range of stunning communication materials in several languages – posters, infographics, cards, event banners, social media graphics, t-shirts, animations and the WSD logo in various languages...

Download the materials from: <http://www.fao.org/world-soil-day/campaign-materials/en/>

Add your event on the WSD interactive map!

Why not set up a meeting with farmers on sustainable soil management, or organize a soil clean-up, a soil science lab experiment, a visit to a soil museum, or even a soil sampling contest? Organize a World Soil Day (WSD) event and register it on the map. Spread the word, and let us know if you need help. And do share your success by sending photos of the event to FAO.

Read more: <http://www.fao.org/world-soil-day/worldwide-events/en/>

Register your event: <http://www.fao.org/world-soil-day/worldwide-events/add-events/en/>

Help translate the WSD logo in your language!

Have you checked whether the WSD logo is available in your local language? If not, send us the translation and our team will prepare a high quality logo version, which will be shared on our website.

Read more: <http://www.fao.org/world-soil-day/wsd-logo/en/>
[From: The Global Soil Partnership – Special announcement No. 10, 17 October 2018]

Video related to World Soil Day on December 5

The Soil Science Society of Mexico would like to share a short video in Spanish accompanied by the request to celebrate World Soil Day on December 5. The IUSS supports this message and kindly asks you to provide reports including high resolution photos from your events celebrating the World Soil Day for sharing on the IUSS website and for publication in the IUSS Bulletin.

Read more: https://youtu.be/nRBCg_xvcVk

Take part in a survey about soil organic carbon management (SOC)

The CIRCASA Project Team would like to ask for your views on the role of Soil Organic Carbon (SOC) management for climate change mitigation and sustainable development.

The survey is part of the H2020 CIRCASA project (<https://www.circasa-project.eu/>). The aim of CIRCASA is to improve international research cooperation and strengthen the international research community in the field of soil carbon sequestration in agricultural soils at European Union and global levels. To support this aim a Strategic Research Agenda is being co-designed with stakeholders. With this survey, the organisers would like to learn more about stakeholders' perceptions on the role of Soil Organic Carbon (SOC) management for climate change mitigation and sustainable development. It will take about 30 minutes to complete the survey.

Access the survey: <https://polls.ecologic.eu/index.php/791211?lang=en>

The Mysterious 'Alien Soil' Growing Deep Underground

Almost a third of a mile underground, in the dark, damp vaults of the vast Frasassi cave system in central Italy, curious patterns appear on the walls. Stretching for miles, the designs are slimy to the touch, similar to the consistency of wet clay. "The most simple phrase I can think of [to describe them] would be alien soil," says Jennifer Macalady, an associate professor of geosciences at Penn State University. These mysterious formations are known as biovermiculations, a term that describes their worm-like shapes. They can be found not only in caves, but basically anywhere that's dark, moist, and underground – mines, sewers, even your basement. They're visually distinctive for the repetitive patterns they form: centimeter-wide lines that branch into labyrinthine configurations that sometimes resemble the folds of a human brain.

Read more: <https://www.sciencefriday.com/articles/the-mysterious-alien-soil-growing-deep-underground/>

Life Under a Rock: Bacteria in Extreme Environments

How long does it take hypolithic cyanobacteria communities to grow? And do cyanobacteria grow differently in different deserts? High school science teacher Michael R. Wing set out to answer those questions as the leader of the Worldwide Artificial Hypoliths Project. Teaching material for Grade Level 9-12; 15 min – 1 hr, activity type: data analysis, ecology, microbiology

Read more: <https://www.sciencefriday.com/educational-resources/life-hidden-beneath-the-rocks/>

Enhanced greenhouse gas production potential from urban wetland soils

Tidal wetlands in close proximity to urban centers receive significant anthropogenic inputs from surface runoff, sewage overflow, and treated wastewater. While wetlands are important in global carbon dynamics due to large carbon soil pool, this benefit is offset by potential methane and nitrous oxide emissions effluxes from these low-oxygen ecosystems. How soluble carbon and nitrogen pollution, typical of anthropogenic inputs, will impact wetland greenhouse gas production rates is unclear. In a paper recently published in the *Soil Science Society of America Journal*, researchers investigate the impact acetate and inorganic nitrogen additions had upon carbon dioxide and methane production in a series of laboratory incubation experiments with wetland soils of varied salinities. Experiments demonstrated that acetate additions,

not inorganic nitrogen additions enhanced both carbon dioxide and methane production rates from all soils.

Read more: <https://dl.sciencesocieties.org/content/Enhanced-Greenhouse-Gas-Production-Potential-from-Urban-Wetland-Soils>

[From: ASA-CSSA-SSSA Science Policy Report: 45, 17 October 2018]

Some plants nurture soil bacteria that keep them healthy

The bacteria which inhabit human beings, particularly the guts of those beings, have been found in recent years to be important for fending off disease. That something similar happens in other animal species is doubtless true as well. But work by Seon-Woo Lee at Dong-A University and Jihyun Kim at Yonsei University, both in South Korea, suggests that it is not only animals which benefit from such bacterial shielding, but plants do too. In their study, a soil bacterium known as TRM appeared to provide protection for 40 percent of the tomato plants grown. These results suggest that plant wilt may be tackled by applying certain bacteria or chemicals to soil.

Read more: <https://www.economist.com/science-and-technology/2018/10/11/some-plants-nurture-soil-bacteria-that-keep-them-healthy>

[From: ASA-CSSA-SSSA Science Policy Report: 45, 17 October 2018]

Stories from the soil

Soil health is a hot topic, and for good reason. Soils are one of our most vital resources and we must give them the attention they deserve. The goal of Stories From The Soil is to advance the collaborative and innovative soil health efforts occurring across the United States by sharing the soil management practices of leading growers, researchers, and land stewards. There has been tremendous progress in recent years in better understanding the importance of soil health practices to provide agricultural and horticultural productivity and sustainability. Follow along as we tell these stories and learn more about the soil beneath our feet.

[From: ASA-CSSA-SSSA Science Policy Report, 3 October 2018]

The dollars and cents of soil health: A farmer's perspective

Last year, the United States lost 2 million acres of land in active crop production. As the global population

grows towards a projected 9.8 billion people by 2050, so does demand for the food, fuel and fiber grown in America. The result? American farmers are looking for sustainable ways to produce high yields year after year. To support this growing demand, many farmers are incorporating soil health management principles into their operations. Conservation practices such as cover crops and no-till are widely recommended to build soil health over time, but do these practices actually improve crop yields and lead to stable profit margins? To answer this question fully we will rely on universities, private scientists, government researchers and those most directly impacted: farmers themselves.

Read more: <https://www.usda.gov/media/blog/2018/03/12/dollars-and-cents-soil-health-farmers-perspective>
[From: ASA-CSSA-SSSA Science Policy Report, 14 November 2018]

Upcoming Conferences and Meetings

SSSA International Soils Meeting "Soils Across Latitudes"

January 6-9, 2019, San Diego, California, USA. Fostering collaboration with other North American Soil Science Societies, The Soil Science Society of America will host scientists, professionals, educators, and students at the SSSA International Soils Meeting. "Soils Across Latitudes" will be held Jan. 6-9, 2019, in San Diego, California in collaboration with the Canadian Society of Soil Science and the Mexican Society of Soil Science.
Website: <https://www.sacmeetings.org/>

International Scientific Conference "XXII Dokuchaev Conference for Young Scientists"

25 February-1 March, 2019, Saint-Petersburg, Russia. The organizing committee of the International Scientific Conference "XXII Dokuchaev Conference for Young Scientists" «Soil as the System of Functional Connections in Nature» invites you to take part in the conference. Participants of the conference can be students, post-graduate students and young scientists under 35 years old. Deadline for application for participation as a speaker: October 31, 2018

Abstracts should be uploaded before December 20, 2018
Website: <http://www.dokuchaevskie.ru/?lang=en>

Intersoil 2019 – International Conference on Soil, Sediments and Water

Polluted soil and brownfields: Risks and opportunities for a new economy
March 26-28, 2019, Lille, France.
Call for papers open until October 18, 2018
Read more: <https://www.intersol.fr/>

EGU General Assembly 2019

April 7-12, 2019, Vienna, Austria. The EGU General Assembly 2019 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.
Abstract submission: 22 October 2018 – 10 January 2019
Read more: <https://www.egu2019.eu/>

EGU General Assembly – SSS5.13/BG2.68 Advances in remote sensing for biogeochemical cycling at the landscape scale

7-11 April 2019, Vienna.
During the last decades visible and near infrared (visNIR) spectroscopy proved a high throughput tool required for the large number of samples for which the patterns in soil properties such as C, N, clay content are investigated. Pilot studies have demonstrated the potential of remote sensing using platforms from UAV to satellites for mapping these properties. The development of miniature sensors on UAVs as well as hyperspectral sensors on board of satellites is in full progress. This session calls for contributions on calibration of spectral models, mapping of soil properties using these models and application of the soil property maps in biogeochemical cycling studies. Convenors: Bas van Wesemael, Kristof Van Oost, Sabine Chabrilat. Confirmed keynote speaker: Eyal Ben Dor, Tel Aviv University
Deadline for Roland Schlich travel support: 1 December 2018
Abstract submission deadline: 10 January 2019 at 13:00 CET
Read more: <https://www.egu2019.eu/>

AquaConSoil 2019 – Sustainable use and management of soil, sediment and water resources

May 20-24, 2019, Antwerp, Belgium. AquaConSoil2019 will take place in the cultural capital of Flanders. Antwerp is both a bustling industrial port city and an outstanding historic centre for Belgian craftwork and artistry. It will host delegates from research institutes and universities, governmental and consultant organisations and from industry. AquaConSoil is organized by Deltares, in cooperation with a Flemish consortium under the lead of VITO / VLAKWA and OVAM.
Deadline for abstract submission: Nov. 15, 2018
Read more: www.aquaconsoil.org

Spring school on mapping and assessment of soils

20-24 May 2019, Wageningen Campus, the Netherlands. Are you interested in improving your skills in digital soil mapping, geostatistics and R environment for statistical computing? Are you interested in a better understanding of soils and their assessment? If so, the spring school courses are a good choice for you.
Read more: <http://www.isric.org/utilise/capacity-building/springschool>

Biennial Meeting of the Soil Ecology Society

May 28-31, 2019, Toledo, Ohio, USA. Session topics will include rhizospheres, soil organic matter, soil biodiversity, new genomic methods, faunal ecology, soil ecosystem resilience, and more.
Read more: <http://www.soilecologysociety.com/>

LuWQ2019 – 4th International Interdisciplinary Conference on LAND USE AND WATER QUALITY: Agriculture and the Environment

June 3-6, 2019, Aarhus, Denmark.
A conference on the cutting edge of science, management and policy to minimise effects of agriculture and land use changes on the quality of groundwater and surface waters. Target groups (professionals, fields of expertise, audience) are scientists, managers and policy makers involved in the policy cycle for water quality improvement.
Abstract submission deadline: 15 October 2018
Read more: <http://www.luwq2019.dk>

SUITMA 10 – Soils of Urban, Industrial, Traffic, Mining and Military Areas

June 16-21, 2019, Seoul, Korea.
On behalf of the organizing committee, it is our great pleasure to invite you to the 10th conference of the IUSS Working Group on Soils of Urban, Industrial, Traffic, Mining and Military Areas (SUITMA10). The theme of SUITMA10 is **SUITMA+20**; visioning the future by reflecting on 20 years of SUITMA since its birth in 1998. SUITMA has progressed significantly. Sincere enthusiasm in sharing knowledge with its membership family is the ongoing legacy from its founding fathers. Understanding the properties, functioning, impacts and long-term evolution of soils from major human influences has given insights to the role of anthropogenic change whilst enabling improved management of urban ecosystems. Abstract submission deadline: January 31, 2019
Read more: www.suitma10.org

ISMOM 2019 – 8th International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms "Understanding Soil Interfacial Reactions for Sustainable Soil Management and Climatic Change Mitigation"

23-28 June, 2019, Seville, Spain.
It is a pleasure to invite you to participate in the 8th ISMOM (International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms). This symposium is part of a series of international symposia organized by Commission 2.5 (Soil chemical, physical and biological interfacial reactions) of the International Union of Soil Sciences (IUSS) and aims 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, "Understanding Soil Interfacial Reactions for Sustainable Soil Management and Climatic Change Mitigation" follows successful 4-yearly meetings in Canada, France, Italy, China and Chile. There will not be parallel sessions, and generous periods will be allotted to poster presentations, discussions and social events.
Deadline for abstract submission: 1st February 2019
Read more or download the latest flyer: https://www.iuss.org/index.php?article_id=311

WRB Summer 2019



June 30th-July 5th, 2019, 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. Rules of soil characterization and classification are an important part of such a professional language. As so many „languages” – national systems are used in the world the common *Lingua Franca* is needed to understand each other. World Reference Base for Soil Resources (WRB) is probably the best proposal to facilitate international exchange of information in soil science. WRB summer workshop is organized under the auspices of IUSS Working Group WRB by experts organizing the soil classification trainings for nearly 10 years. The aim of event is to help the beginners using WRB or enhance skills in soil classification during one day indoor and 3 days intensive field activities. The venue is in the beautiful UNESCO World Heritage city of Toruń. Students, PhD students and young researchers are particularly invited (but senior researchers are also welcomed).

Read more: <https://sites.google.com/site/summerwrb/home>

9th PEDOFRACT Conference

Second week of July 2019, Barco de Ávila (Spain). General topic “Advances in soil scaling: theories, techniques and applications”

The keynote lectures will be given by: John Crawford (Rothamsted Research, United Kingdom), Patricia Garnier (INRA-AgroParisTech, Université Paris-Saclay, France), Kirill Gerke (Russian Academy of Sciences, Moscow, Russian Federation), Saskia Keesstra (Soil, Water and Land Use, Wageningen University and Research, the Netherlands), Alexandra Kravchenko (Dept. of Plant, Soil, and Microbial Sciences, Michigan State University, USA), Hans-Jörg Vogel (Department Soil System Science, Helmholtz Centre for Environmental Research – UFZ, Germany).

Similar to previous PEDOFRACTS the collection of papers will be published in a special issue of a broadminded journal. More information will be made available shortly.

Please let the organizers know via pedofract2019.etsi-aab@upm.es, if you will be interested in the participation in the workshop.

Wageningen Soil Conference 2019 – Understanding soil functions

August 27-30, 2019, Wageningen, the Netherlands.

Wageningen University & Research is delighted to invite you to join us at the fourth edition of the Wageningen Soil Conference. As in previous editions, the aim is to discuss the importance of soils. In the 2019 edition, the focus will be on “Understanding soil functions: from ped to planet”. 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 workshops in the afternoons.

Website: <https://www.wur.nl/en/Research-Results/Projects-and-programmes/Wageningen-Soil-Conference-2019.htm>

International Workshop on Archaeological Soil Micromorphology (WASM)

September 2-4, 2019, Basel, Switzerland.

We have set the date directly before the Annual Meeting of the European Association of Archaeologists (EAA) in Bern (4-7 September). With this approach, we aim to combine the practical discussion of samples at the workshop and a more theoretical component (geoarchaeology-session at the EAA Annual Meeting).

Contact: geoarchaeology@unibas.ch

30th Congress of Soil Science Society of Poland ‘Soil – Source of Life’

September 2-7, 2019, Lublin, Poland

The 30th Congress of the Polish Soil Science Society will be organized under the slogan “Soil is the source of life”. The main organizer of the Congress is Maria Curie-Skłodowska University in Lublin, with the participation of the Board of the Polish Soil Science Society, Lublin University of Life Sciences, Institute of Agrophysics of the Polish Academy of Sciences in Lublin, Institute of Cultivation, Fertilization and Soil Science – State Research Institute in Puławy, Roztocze National Park and Polesie National Park.

First announcement: http://www.soilcongress2019.umcs.pl/images/docs/announcement_1.pdf

Website: <http://soilcongress2019.umcs.pl>

Contact: soilcongress@umcs.pl

9th ESSC International Congress on ‘Soil’s Contribution to People: from Food to Life supporting Services’

September 26-28, 2019, Agricultural University of Tirana, Albania. On behalf of the ESSC (European Society for Soil Conservation) and the Organizing Committee, we are pleased to invite you to attend the 9th ESSC International Congress on ‘Soil’s Contribution to People: from Food to Life supporting Services’. The objective is to stimulate reflections on the importance of soil resources on man’s existence and as a source of food and life supporting services.

Read more: https://iuss.boku.ac.at/files/circular_letter_essc_2018_imola_grants.pdf



New Publications

Field to Palette: Dialogues on Soil and Art in the Anthropocene

Edited by Alexandra Toland, Jay Stratton Noller and Gerd Wessolek. (Forthcoming by CRC Press, October 2018).

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

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

Global Soil Organic Carbon Map (GSOCmap)

By the Global Soil Partnership. Published in 2018 by FAO, Rome, Italy. 167 pages, ISBN: 978-92-5-130439-6, the book can be downloaded for free from the FAO website (see link below).

GSOCmap is the first global soil organic carbon map ever produced through a consultative and participatory process involving member countries, which makes this map totally new and unique. In fact, the map was prepared by member countries, under the guidance of the Intergovernmental Technical Panel on Soils and the Global Soil Partnership Secretariat. Countries agreed on the methodology to produce the map and were trained on modern tools and methodologies to develop national maps. The Global Soil Partnership then gathered

all national maps to produce the final product, ensuring a thorough harmonization process.

This technical report is a companion report to the GSOCmap V1.2.0. It presents methodologies and process of compiling the Global Soil organic Carbon Map.

Read more: <http://www.fao.org/documents/card/en/c/18891EN>

Soil Organic Carbon Mapping Cookbook 2nd Edition

By FAO / Global Soil Partnership. Published in 2018 by FAO, Rome, Italy. 200 pages, ISBN: 978-92-5-130440-2, the book can be downloaded for free from the FAO website (see link below).

The Soil Organic Carbon Mapping cookbook provides a step-by-step guidance for developing 1 km grids for soil carbon stocks. It includes the preparation of local soil data, the compilation and pre-processing of ancillary spatial data sets, upscaling methodologies, and uncertainty assessments. Guidance is mainly specific to soil carbon data, but also contains many generic sections on soil grid development, as it is relevant for other soil properties. This second edition of the cookbook provides generic methodologies and technical steps to produce SOC maps and has been updated with knowledge and practical experiences gained during the implementation process of GSOCmap V1.0 throughout 2017. Guidance is mainly specific to SOC data, but as this cookbook contains generic sections on soil grid development it can be applicable to map various soil properties.

Read more: <http://www.fao.org/documents/card/en/c/18895EN/>

Soil pollution: a hidden reality

By FAO. Published in 2018 by FAO, Rome, Italy. 156 pages, ISBN: 978-92-5-130505-8, the book can be downloaded for free from the FAO website (see link below).

This document presents key messages and the state-of-the-art of soil pollution, its implications on food safety and human health. The publication has been reviewed by the Intergovernmental Technical Panel on Soil (ITPS) and contributing authors. It addresses scientific evidences on soil pollution and highlights the need to assess the extent of soil pollution globally in order to achieve food safety and sustainable development. This is linked to FAO's strategic objectives (SO), especially SO1, SO2, SO4 and SO5 because of the crucial role of soils to ensure effective nutrient cycling to produce nutritious and safe food, reduce atmospheric CO₂ and N₂O con-

centrations and thus mitigate climate change, develop sustainable soil management practices that enhance agricultural resilience to extreme climate events by reducing soil degradation processes.

Read more: <http://www.fao.org/documents/card/en/c/19183EN>

This document will be a reference material for those interested in learning more about sources and effects of soil pollution.

Our land 2018 at a glance

Published jointly by the Ministry for the Environment and Stats NZ in the series New Zealand's Environmental Reporting in April 2018. The report can be downloaded for free (see link below).

This is the first report focused solely on land in the environmental reporting series begun in 2015. Our land 2018 reports on the state of the soil, and the state of indigenous biodiversity and ecosystems. The aim is to provide an overview of condition, and changes over time, to support decision-making at all levels of society. Read more: <http://www.mfe.govt.nz/sites/default/files/media/Environmental%20reporting/Our-land-2018-at-a-glance-final.pdf>

Soil and water resources protection in the changing environment

Zlatić/Kostadinov (Eds.), *Advances in Geoecology* Volume 45, Published by Schweizerbart in 2018, 334 pages, 131 figures, 92 tables, ISBN 978-3-510-65418-5 (US-ISBN: 1-59326-267-1), price hardback: 119.00 €.

This book contains a selection of peer-reviewed contributions to the 3rd Conference of the World Association of Soil and Water Conservation (WASWAC), held in Belgrade in Serbia, August 22-26, 2016. The keynote paper documents the current status of soil erosion in Europe in view of a changing climate (Chapter I). Nine papers are devoted to "Mechanisms and Processes of Land degradation" (Chapter II), covering models, measurement and rates in various parts of the world.

The volume is of particular interest for all readers involved in resp. interested in soil, landscape and water resources protection and the role climate change and legislative processes play. It offers analysis, facts, new data, suggestions and portrays the current state of recommendations on soil and water resources issues, which are crucial elements in the functioning of environment.

Read more: <https://www.schweizerbart.de/publications/detail/isbn/9783510654185>

Soil and Sustainable Development Goals

Edited by Rattan Lal, Rainer Horn and Takashi Kosaki. Published in the series *GeoEcology Essays* in July 2018 by Schweizerbart. 196 pages, 49 figures, 21 tables, ISBN 978-3-510-65425-3, US-ISBN 1-59326-269-8, price paperback EUR 29.90; reduced price for IUSS members: EUR 25.00 (plus shipping costs).

In 2015, the UN formulated seventeen global Sustainable Development Goals (SDGs), among them ending poverty, eliminating hunger, protecting the planet and ensuring peace and prosperity. Although judicious management of soils is critical to advancing most of these goals, the word soil is not once mentioned in any of these laudable goals. SDG#15, for example, mentions land degradation but does not specifically focus on soils. In line with previous UN programs, SDGs thus reflect an utter lack of awareness of the importance of the most basic of all natural resources on which depends all terrestrial life – soils.

Consequently, this book aims to document the importance of soil and soil protection to reaching these Sustainable Development Goals. This fifteen-chapter book, authored by experienced and knowledgeable researchers from around the world, is a synthesis of the knowledge and state-of-the-science, linking soil properties and processes to specific SDGs. The volume highlights individual soil related aspects of these SDGs, such as the contribution of soil science, soil management and use, measures to minimize erosion, climatic effects, carbon sequestration by soils, soil restoration, the role hydrology plays in sustainable soil management, ways to preserve soil structure of fertile volcanic soils.

Soil and water pollution, which must be controlled in order to preserve soil and environmental health are also discussed. Other chapters deal with how to convince the general public of the usefulness of the SDGs and point out how the public may contribute to them, ways to manage Chernozems and the role IUSS plays in furthering and implementing the soil related measures are also discussed herein.

Read more: www.schweizerbart.com/9783510654253

Managing soil health for sustainable agriculture Volume 1: Fundamentals

Edited by Don Reicosky. Published in July 2018 by Burleigh Dodds Science Publishing. 340 pages, ISBN-13: 9781786761880, price hardback £160.00.

There has been growing concern that both intensive agriculture in the developed world and rapid expansion of crop cultivation in developing countries is damaging

the health of soils which are the foundation of farming. At the same time we are discovering much more about how complex soils are as living biological systems. This volume reviews the latest research on soil science. After an overview of the role of soil as a provider of ecosystem services and in conservation agriculture, the book reviews soil structure and chemistry as well organic matter, soil microorganisms and fauna. The second part of the book discusses soil dynamics, from water and nutrient cycles to carbon capture and erosion mechanisms. Read more: <https://shop.bdspublishing.com/checkout/Store/bds/Detail/WorkGroup/3-190-56260>

Managing soil health for sustainable agriculture Volume 2: Monitoring and management

Edited by Don Reicosky. Published in July 2018 by Burleigh Dodds Science Publishing. 458 pages, ISBN-13: 9781786761927, price hardback £200.00.

This second volume of what is likely to become a standard reference for soil scientists and agronomists as well as the farming community and government agencies responsible for monitoring soil health discusses key methods for monitoring soil health, gives a comprehensive review of techniques to manage soil health from no-till and conservation tillage techniques to the use of rotations, intercropping and cover crops and includes case studies of ways of supporting smallholders in maintaining soil health in regions such as Africa, Asia and South America.

Read more: <https://shop.bdspublishing.com/checkout/Store/bds/Detail/WorkGroup/3-190-56261>

World Atlas of Desertification – Rethinking land degradation and sustainable land management

Publication by Joint Research Centre (European Commission), August 8, 2018. 256 pages, A3 format, ISBN 978-92-79-75350-3 (Printed version), ISBN 978-92-79-75349-7 (Online version), price: for free.

The third edition of the World Atlas of Desertification (WAD3) takes a fresh look at land degradation – a phenomenon triggered by human land use that is likely to threaten our ability to make productive use of the Earth while still maintaining the critical global environmental goods and services in the future. WAD3 offers an information framework from which to identify the nature of potential problems and pursue solutions that conform to local conditions. The two decades since publication of WAD2 saw a tremendous growth in our understand-

ing of coupled-human and natural systems, and an overwhelming increase in global environmental datasets and analytical tools. Building on these advances, WAD3 portrays the dynamic human footprint on Earth and its consequences for the land resources. WAD3 identifies areas of concern where multiple lines of evidence converge that suggest potential problems so that they might be confirmed and suggest actions to reverse, arrest, or adapt to them.

You can order the printed atlas from the EU Bookshop <https://publications.europa.eu/en/web/general-publications/publications>

or download the atlas here: <https://wad.jrc.ec.europa.eu/>

Soil and Climate

Edited by Rattan Lal and B. A. Stewart. 1st Edition published in the series *Advances in Soil Science*, August 30, 2018 by CRC Press. 434 Pages - 86 B/W Illustrations, ISBN 9781498783651, price hardback GBP 145.00, ebook GBP 35.99.

Climate is a soil-forming factor and soil can mitigate climate change through a reduction in the emissions of greenhouse gases and sequestration of atmospheric CO₂. Thus, there is a growing interest in soil management practices capable of mitigating climate change and enhancing environmental quality. *Soil and Climate* addresses global issues through soil management and outlines strategies for advancing Sustainable Development Goals (SDGs). Special topics on soil as a source or sink of CO₂, silicate weathering and carbon sequestration, nutrients required for carbon sequestration, physical protection and the mean residence time, and predicting soil carbon stocks are discussed in detail throughout the book.

Read more: <https://www.crcpress.com/Soil-and-Climate/Lal-Stewart/p/book/9781498783651>

Soil: how much do we value this critical resource?

By Jones A, Ballabio C, Fernandez Ugalde O, Hervas J, Lugato E, Montanarella L, Orgiazzi A, Panagos P, Paya Perez A, and Van Liedekerke M, by JRC, European Commission, 2018. Ebook JRC1111081. Soil condition underpins food security, green growth, bioeconomies and aboveground biodiversity; it regulates climate, the hydrological and nutrient cycles, while mitigating climate change. Soils provide resilience against floods and droughts, buffer the effects of pollutants and preserve cultural heritage. Healthy, functional soils underpin several targets of the

Sustainable Development Goals. Pressures on this finite, non-renewable resource, due to competition for land or inappropriate land management choices, severely impact soil functions. Highlights from recent JRC research are given in this publication.

Read more: https://esdac.jrc.ec.europa.eu/public_path/shared_folder/doc_pub/JRC_Soil_Highlights_eBook_0.pdf

Opportunities for soil sustainability in Europe

By EASAC (the European Academies' Science Advisory Council), EASAC policy report 36, September 2018, 48 pages, ISBN: 978-3-8047-3898-0, © German National Academy of Sciences Leopoldina 2018.

Soils provide numerous essential services in terrestrial ecosystems, ranging from the support of plant growth in agriculture and forestry to moderation of flood risks, water purification, large-scale carbon storage, and support of biodiversity. However, despite soils' essential roles, they are threatened by sealing, compaction, reductions in quality and organic-carbon content, and erosion, and insufficiently included in sustainability planning in the EU. A multidisciplinary group of European experts has examined the implications of recent scientific research for integrated policy solutions towards ensuring the sustainability of Europe's soils, and identified many opportunities for policy-makers to safeguard this valuable resource for the benefit of the EU's citizens

Read more: <https://easac.eu/publications/details/opportunities-for-soil-sustainability-in-europe/>

Soil and water resources protection in the changing environment

Edited by Zlatić/Kostadinov. Published in the series *Advances in Geocology*, Volume 45, by Schweizerbart in September 2018. 334 pages, 131 figures, 92 tables, US-ISBN: 1-59326-267-1, ISBN 978-3-510-65418-5, price hardcopy: 119.00 €.

This book contains a selection of peer-reviewed contributions to the 3rd Conference of the World Association of Soil and Water Conservation (WASWAC), held in Belgrade in Serbia, August 22-26, 2016. The keynote paper documents the current status of soil erosion in Europe in view of a changing climate (Chapter I). Nine papers are devoted to "Mechanisms and Processes of Land degradation" (Chapter II), covering models, measurement and rates in various parts of the world. Chapter III contains five papers highlighting "Soil and water conservation strategies to adapt to and to mitigate the effects of climate change" addressing, among other things chang-

ing land use and effects of changing climate on soils and vegetation. Three papers in Chapter IV assess the observed benefits of soil and water conservation measures, such as their effect on topsoil thickness. The papers in Chapter V – "Sustainable watershed management" – discuss erosion intensity, measures to control erosion and assessing the risk of erosion in watersheds. Chapter VI (six papers) "Social and economic aspects and policies related to soil and water conservation" embarks on a discussion the relationship of human activity on soil and water conservation efforts, the role compliance with supranational legislation, compensation of damage done by natural disasters and other societal concerns relevant to soil and water preservation and management.

Read more: www.schweizerbart.com/9783510654185

The Soils of Egypt

Edited by El-Ramady, H., Alshaal, T., Bakr, N., Elbana, T., Mohamed, E. and Belal, A.-A. 1st ed. 2019 by Springer, 227 pages, 126 illustrations, 121 illustrations in color, ISBN 978-3-319-95515-5; Prices hardcover: 149.79 € (D) | 153.99 € (A) | CHF 154.00; prices ebook: 118.99 € (D) | 118.99 € (A) | CHF 123.00.

This book reviews the distribution of soils across Egypt, their history, genesis, pollution and management. The conservation of Egyptian soils, soils and their connections to human activities, as well as some future soil issues are also highlighted. It is well known that soil is the main source for food, feed, fuel and fiber production. Accordingly, the study of soils is not only a crucial issue but also an urgent task for all nations worldwide. Due to their important roles in agroecosystems as well as many aspects of our lives, soils have direct and indirect functions in the agricultural, industrial and medicinal sectors. Therefore, understanding the physical, chemical and biological properties of soils, as well as soil security, have now become emerging issues. Climate change has a very dangerous dimension in Egypt concerning the rising sea level. Many coastal zones are already threatened by this sea level rise, and may ultimately disappear. At the same time, water shortages and soil pollution represent the main challenges for the Egyptian nation.

Read more: <https://www.springer.com/us/book/9783319955155>

Status of Local Soil Contamination in Europe.

By Paya Perez A. and Rodriguez Eugenio N. (JRC). Published in September 2018 by the Publications Office of the European Union, ISBN: 978-92-79-80073-3 (print),

978-92-79-80072-6 (pdf). In this report the findings of the questionnaire commissioned by the European Commission Joint Research Centre for the revision of the Indicator "Progress in the management of contaminated site in Europe" in 2016 are presented. It has been produced with the contribution of data provided by the National Reference Centres (NRCs) in member states and cooperating countries within EIONET and funded by the country to work with the EEA and relevant European Topic Centres (ETCs) in specific thematic areas related to the EEA work programme. This report from the JRC finds that over 5,000 new sites are under remediation or risk-reduction measures since 2011.

Read more: <https://ec.europa.eu/jrc/en/publication/status-local-soil-contamination-europe-revision-indicator-progress-management-contaminated-sites>

Soil Amendments for Sustainability: Challenges and Perspectives

1st Edition edited by Amitava Rakshit, Binoy Sarkar, Purushothaman Abhilash. Published September 13, 2018 by CRC Press, 404 pages, 20 color & 118 B/W illustrations, ISBN 9780815370772, price hardback GBP 115.00, price e-book (VitalSource): GBP 35.99.

This book focuses on the pros and cons of amendment materials to restore the functioning of soil resources. It presents a holistic overview on affected land revitalization, clean up and revegetation using these amendments that could be implemented in the long term management of the soil-plant-atmosphere-animal continuum. Read more: <https://www.crcpress.com/Soil-Amendments-for-Sustainability-Challenges-and-Perspectives/Rakshit-Sarkar-Abhilashis/p/book/9780815370772>

Global Soil Security: Towards More Science-Society Interfaces

1st Edition edited by Anne Richer de Forges, Florence Carré, Alex B. McBratney, Johan Bouma, Dominique Arrouays. Published September 21, 2018 by CRC Press, 138 pages, ISBN 9781138093058, price hardback GBP 115.00, price e-book (VitalSource): GBP 35.99.

Global Soil Security: Towards More Science-Society Interfaces contains contributions presented at the 2nd Global Soil Security conference, held 5-6 December 2016 in Paris. These chapters focus on how to achieve soil security. This involves scientific, economic, industrial and political engagement to inform soil-users, policy makers and citizens with the objective of implementing appropriate actions. The contributions to this book ad-

dress the five dimensions of soil security, namely: capability, condition, capital, connectivity and codification. Read more: <https://www.crcpress.com/Global-Soil-Security-Soil-Science-Society-Interfaces-Proceedings-of-the-Arrouays-Carre-Forges-McBratney/p/book/9781138093058>

Engineering Practices for Management of Soil Salinity – Agricultural, Physiological, and Adaptive Approaches

1st Edition edited by S. K. Gupta, Megh R. Goyal, Anshuman Singh, Published by Apple Academic Press on 27 September 2018, 420 pages | 13 Color Illus. | 25 B/W Illus., ISBN: 978-1-77188-676-5, price hardback GBP 111.20. Abiotic stresses are known to adversely impact agricultural productivity on millions of hectares globally, and it is projected that these problems are likely to increase, primarily due to anthropogenic interventions as well as climatic changes. Understanding abiotic stresses – especially salt stress on soil – calls for an interdisciplinary approach because salt-stressed soils need hydro-technical, chemical, and agronomic interventions as well as an understanding of plant response when exposed to these stresses. This volume explores and conveys the latest information on emerging technologies in the management of abiotic salt stress and their field applications.

Read more: <https://www.routledge.com/Engineering-Practices-for-Management-of-Soil-Salinity-Agricultural-Physiological/Gupta-Goyal-Singh/p/book/9781771886765>

Nickel in Soils and Plants

Edited by Christos Tsadilas, Jörg Rinklebe, Magdi Selim. 1st Edition published by CRC Press in September 2018, 391 pages | 8 Color Illus. | 59 B/W Illus., ISBN: 978-1-49-877460-4, ISBN ebook: 978-1-31-515466-4, price hardback: GBP 116.00, price ebook (VitalSource): GBP 72.50.

Nickel (Ni), the fifth common element on the earth is widespread in the environment. Recently Ni has been proved essential for normal growth of many organisms, and at the same time Ni can become toxic to organisms when high in concentration. In several parts of the world, high Ni concentrations are causing serious environmental impacts. This book will be the first to discuss the problems related to Ni presence and raise the need for full investigation and more efforts to support this goal. It will present the recent advances in research on Ni nutrition of plants, Ni contamination of

the environment--that is, soils, waters and plants--and methods of remediation.

Read more: <https://www.routledge.com/Nickel-in-Soils-and-Plants/Tsadilas-Rinklebe-Selim/p/book/9781498774604>

Novel Bioremediation Processes for Treatment of Seleniferous Soils and Sediment

By Shrutika Laxmikant Wadgaonkar. 1st Edition published by CRC Press on 17 October 2018. 214 pages, ISBN: 978-1-13-838480-4, price paperback GBP 53.59.

The aim of this Ph.D. was to develop a technology for the remediation of seleniferous soils/sediments and to explore microbial reduction of selenium oxyanions under different respiration conditions and bioreactor configurations. Seleniferous soil collected from the wheat-grown agricultural land in Punjab (India) was characterized and its soil washing was optimized by varying parameters, where addition of oxidizing agents showed maximum selenium removal efficiency. Aquatic plants, *Lemna minor* and *Egeria densa* were used to study phytoremediation of the selenium-rich soil leachate containing oxidizing agents.

Read more: <https://www.routledge.com/Novel-Bioremediation-Processes-for-Treatment-of-Seleniferous-Soils-and-Wadgaonkar/p/book/9781138384804>

Climate Change Impacts on Soil Processes and Ecosystem Properties, Volume 35

Edited by: William Horwath, Yakov Kuzyakov. 1st Edition published by Elsevier on 18 October 2018, 236 pages, Hardcover ISBN: 9780444638656, Paperback ISBN: 9780444639509, eBook ISBN: 9780444638687, price eBook: EUR 166.90.

Climate Change Impacts on Soil Processes and Ecosystem Properties, Volume 35, presents current and emerging soil science research in the areas of soil processes and climate change, while also evaluating future research needs. The book combines the five areas of soil science (microbiology, physics, fertility, pedology and chemistry) to give a comprehensive assessment. This integration of topics is rarely done in a single publication due to the disciplinary nature of the soil science areas. Users will find it to be a comprehensive resource on the topic.

Read more: <https://www.elsevier.com/books/climate-change-impacts-on-soil-processes-and-ecosystem-properties/horwath/978-0-444-63865-6>

Compactaciones naturales y antrópicas en suelos argentinos (Natural and anthropogenic compactations in soils of Argentina)

By Perla A. Imbellone and Carina R. Álvarez (Eds.) Asociación Argentina de la Ciencia del Suelo. Buenos Aires. 2018. ISBN 978-987-46870-1-2. In Spanish, with abstracts in English. 547 p.

This book deals with the genesis and properties of natural and anthropogenic pans from different regions of Argentina. It is divided into two parts: the first one includes an introductory chapter about the different types of hardening and the characteristics and implications of pans with a special reference to fragipans. These pans are also discussed in three study cases in the provinces of Buenos Aires, Córdoba (Pampean Region) and Chaco (Northeast). Compact layers in a semiarid region (Cataramarca) and stone-lines in subtropical soils (Misiones) are also included. The chapters describe the soil formation factors, morphological, physical and chemical properties and the processes leading to hardening, as well as the implications for land use. The second part includes twelve chapters describing anthropogenic surface and subsurface densifications induced by conventional and no tillage farming and cattle trampling. Density, porosity, strength, macro- and microstructure and biosensors (roots) are some of the indicators discussed to evaluate densification. Preventive measures and remediation strategies are proposed.

Open Access eBook: https://www.suelos.org.ar/publicaciones/Compact_Nat_y_antropicas.zip

The Soils of Argentina

Edited by Rubio, Gerardo, Lavado, Raul S., Pereyra, Fernando X. Published in the World Soils Book Series by Springer, 268 pages, ISBN 978-3-319-76853-3, price hardcover EUR 139,99 | GBP 119.99 | USD 169.99; price eBook: EUR 118,99 | GBP 95.50 | USD 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>

Microbiology for Sustainable Agriculture, Soil Health, and Environmental Protection

Edited by Deepak Kumar Verma, 1st Edition published 15 November 2018 by Apple Academic Press, 504 pages | 15 Colour Illus. | 24 B/W Illustrations, ISBN: 9781771886697, price hardback: £139.00.

With contributions from a broad range of experts in the field, this volume focuses on important areas of microbiology related to soil and environmental microbiology associated with agricultural importance. The information and research on soil and environmental microbiology presented here seeks to act as a gateway to sustaining and improving agriculture and environmental security. Part I focuses on soil microbiology, dealing extensively with studies on the isolation, culture, and use of Rhizobium spp. and mycorrhizae to improve soil fertility, plant growth, and yield. This includes research progress on biogeochemical cycles, plant growth promoting rhizobacteria (PGPR), microbial interactions in soil and other soil activities, microbial diversity in soil, biological control and bioremediation, and improvement of beneficial microorganisms (N2 fixers, phosphate solubilizers, etc.). Part 2 goes on to focus on microbiology for crop disease management and pathogenic control in sustainable environment, with part 3 focusing on Microbiology for Soil Health and Crop Productivity Improvement. Part 4 presents two chapters on the environmental pollution and its control, looking at the interaction of microbes in aqueous environments and eco-friendly approaches. Read more: <https://www.routledge.com/Microbiology-for-Sustainable-Agriculture-Soil-Health-and-Environmental/Verma/p/book/9781771886697>

Soil Basics, Management and Rhizosphere Engineering for Sustainable Agriculture

By Channarayappa C., D P Biradar, 1st Edition published 6 November 2018 by CRC Press, 777 pages | 367 B/W Illustrations, ISBN: 9781138486928, e-book (VitalSource) ISBN: 9781351044271; price hardback: £180.00.

Increase in global population, drastic changes in the environment, soil degradation and decrease in quality

and quantity of agricultural productivity warranted us to adapt sustainable farming practices. This book focuses on soil health management and creating biased rhizosphere that can effectively augment the needs of sustainable agriculture.

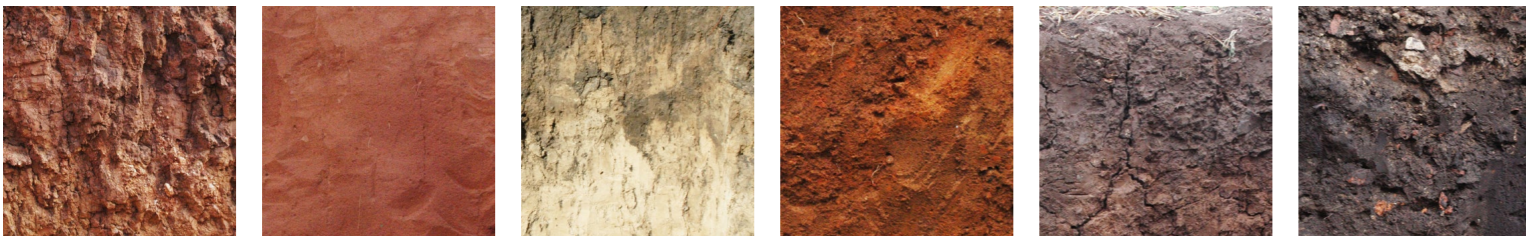
Read more: <https://www.routledge.com/Soil-Basics-Management-and-Rhizosphere-Engineering-for-Sustainable-Agriculture/C-Biradar/p/book/9781138486928>

Field to Palette

Dialogues on Soil and Art in the Anthropocene 1st Edition edited by Alexandra Toland, Jay Stratton Noller, Gerd Wessolek, published 12 November by CRC Press, 683 pages | 340 colour illustrations, paperback ISBN: 9781138297456, hardback ISBN: 9781138585096, e-book (VitalSource) ISBN: 9781315099217; price: £53.99 (paperback); £130.00 (hardback), from £27.00 (eBook – VitalSource).

This tome is an investigation of the cultural meanings, representations, and values of soil in a time of planetary change. The book offers critical reflections on some of the most challenging environmental problems of our time, including land take, groundwater pollution, desertification, and biodiversity loss. At the same time, the book celebrates diverse forms of resilience in the face of such challenges, beginning with its title as a way of honoring locally controlled food production methods championed by "field to plate" movements worldwide. By focusing on concepts of soil functionality, the book weaves together different disciplinary perspectives in a collection of dialogue texts between artists and scientists, interviews by the editors and invited curators, essays and poems by earth scientists and humanities scholars, soil recipes, maps, and DIY experiments. With contributions from over 100 internationally renowned researchers and practitioners, Field to Palette presents a set of visual methodologies and worldviews that expand our understanding of soil and encourage readers to develop their own interpretations of the ground beneath our feet.

Read more: <https://www.routledge.com/Field-to-Palette-Dialogues-on-Soil-and-Art-in-the-Anthropocene/Toland-Noller-Wessolek/p/book/9781138297456>



In Memoriam

José Luis Panigatti Crinigan

(1939-2018)



José Luis Panigatti Crinigan (© María Elena Zaccagnini)

Dr. José Luis Panigatti passed away on September 26, 2018, in Cerrito, Provincia de Entre Ríos, Argentina. He held the offices of President of the Latin-American Soil Science Society (SLCS) between 2012 and 2014, President of the XIX Latin-American Soil Science Congress of Mar del Plata, Argentina 2012, and President of the Argentinian Soil Science Association. Dr. José Luis Panigatti worked at the Instituto Nacional de Tecnología Agropecuaria (INTA) for more than forty years as a researcher in the area of soils and served as the National Coordinator of the Soils Program of INTA and National Assistant Director of Operations of the National Directorate. He authored and co-authored diverse works on soil science and published numerous scientific papers, technical documents, Argentinian Soil Charts and books of his specialty, amongst which we can recognize the book "Argentina 200 years 200 Soils" which earned him the Dr. Carlos María Biedma award in 2011, granted by the Argentinian Society of Geographical Studies (GAEA)

He was a passionate extensionist by profession, an entrepreneur, and a man committed to his ideals. It is because of this that he was given the First National Award on Geography (shared) in 1986-1989 granted by the Culture and Education Ministry, the Special Conservation Award (shared) granted by the U.S. Fish and Wildlife Service in 1997, and the Honor Diploma of the Nacional Agricultural Merit Award "El Gauchito" on Agricultural Engineering. The Argentinian Soil Science Society mourns the loss of a great man who with passion, courage, and devotion to his convictions fought his entire life to achieve a Soil legislation in Argentina, the SLCS mourns its former President, and the Latin-American Soil Science Society General Secretariat deeply feels the loss of the human being with whom we collaborated and formed friendships during his time as President of the SLCS. May his soul rest in peace.

Laura Bertha Reyes

Tan Kim Hong

(1926-2018)



Dr. Kim H. Tan in between his wife and Dr. Fachri Ahmad
(photo Dr. Fachri Ahmad)

Dr. Tan Kim Hong, also known as Kim Howard Tan passed away on April 28th, 2018 in Greensboro, Georgia, USA. Dr. Tan was a Professor Emeritus at the Department of Crops and Soil Science, University of Georgia, Athens, USA. Dr. Tan taught soil science for more than 30 years in Indonesia and USA. He was a fellow of the Soil Science Society of America and the American Society of Agronomy.

Dr. Tan was born in Jakarta, Indonesia, on March 24th, 1926. He received a master's degree (1955) in agronomy from the University of Indonesia. He received a Ph.D. degree (1958) from University of Indonesia in pedology

under the supervision of Dr. Jr. J. Van Schuylenborgh. His thesis was "On the Genesis and Classification of Soils Derived from Andesitic Volcanic Material under a Monsoon Climate". He was the head of the Department of Soil Science and Professor at University of Indonesia from 1957 to 1967.

Dr. Tan became a Professor at the University of Georgia in 1968. At the University of Georgia, he taught basic soil science, soil chemistry, advanced soil chemistry and methodology of soil and plant analysis. He coached the Soil Judging Team of the Agronomy Department in Georgia for more than ten years. During his 28 years tenure, Dr. Tan was the recipient of numer-

ous honors and awards for excellence in teaching. To name a few: Dr. Tan was awarded the Distinguished Faculty award by the College of Agriculture Alumni Association in 1972, the prestigious D. W. Brooks award in 1982 and the Excellence in Teaching award in 1986 by the Gamma Sigma Delta.

Dr. Tan was the author and co-author of more than 200 articles, abstracts, proceedings, and book chapters. He edited and authored 13 books. His most renowned text book is Principles of Soil Chemistry, first published in 1982 is now in its fourth edition (2010) with Taylor & Francis –CRC Press. The book is used as the main Soil Chemistry textbook in many universities around the world and has been translated to Bahasa Indonesia. According to the review published in the IUSS Bulletin: "...bridges the gap between pure chemistry and soil science and presents soil as a basic entity in a wide range of disciplines."

Dr. Tan's research is recognized internationally, particularly on the genesis of volcanic ash soils and soil humic materials. His book on Andosol, a Hutchinson Ross Benchmark publication in 1984 was sold out as soon as it was out of the press and made him widely known as one of the authorities on Andosol. His scientific contribution published in the 1960s revealed the unique characteristics of the Andosols in Indonesia. In 2008, he published "Soils in the Humid Tropics and Monsoon Region of Indonesia." The book was based on his knowledge and difficult-to-access Dutch archives. It is one of few English text books on Indonesian soil that interweaves new knowledge with old data. The Indonesian soil science community is indeed indebted to him for this contribution.

Dr. Tan's humic acid research has made him one of the authorities on humic acid chemistry and organic-inorganic interaction reactions. His article published in Geoderma in 1968 revealed polysaccharide constituents in soil fulvic and humic acids. He was one of the first researchers who used FTIR in characterizing humic materi-

als. He synthesized the knowledge in his book "Humic Matter in Soil and the Environment. Principles and Controversies", now in its second edition (2014) published by Taylor & Francis.

After his retirement in 1995, he was invited to teach soil chemistry and environmental soil science at various universities overseas. He was a Fulbright visiting professor at the Universidad Nacional del Sur, Bahia Blanca, Argentina from 2002 to 2003. While he was at Universitas Andalas in Padang Indonesia as a visiting Professor in 1996, Dian got to know him personally. Dr. Tan was an excellent lecturer and scientist. He even helped me in the field collecting soil samples from 2 volcanoes in West Sumatra for my Ph.D. study. Accompanied by his wife Ibu (Mrs.) Yelly Tan, we explored West Sumatra for a week. They are a very nice couple, loving each other for ages. *Selamat jalan Pak Tan* (Good bye Dr. Tan), your legend continues with us, your students. Rest in peace Pak Tan.

*Dian Fiantis,
Department of Soil Science, Faculty of Agriculture, Universitas Andalas, Limau Manis Campus, Padang 25163, Indonesia*

Hidenori Wada

(1928-2018)



Hidenori Wada (© Miyuki Wada)

Hidenori Wada passed away in his home in Tokyo on August 7, 2018. He was born in Tokyo on May 7, 1928. He graduated from the Department of Agricultural Chemistry, at the University of Tokyo to obtain his Doctor of Agriculture. Then he became Research Associate, at the University of Tokyo. From 1964 to 1965, he was Visiting Researcher at Ghent University, Belgium. After coming back to Japan, he became Associate Professor, at the University of Tokyo and then Professor, at the University of Tokyo until 1989. From October 1989 to February 1999, he was Visiting Expert of Japan International Cooperation Agency (JICA), Khon Kaen University, Thailand to help understand the mechanism of the soil salinity

problem there and countermeasures. In 2008, he also became Emeritus Professor, Shenyang University, China.

Dr Hidenori Wada was the first Chairman of the Paddy Soil Fertility Working Group, International Society of Soil Science (ISSS), established in 1986. He was also Organizing Committee Member for the 14th International Congress of Soil Science (ICSS), Kyoto (1990) to organize SYMPOSIUM II-6 (Soil emissions affecting the environment).

He was also Councilor of the Japan Soil Association (1987.7-2009.5), President of the Japanese Society of

Soil Microbiology (1988-1990) and was Advisor to organisations such as the Japan Soil Association, Central Research Institute of Electric Power Industry, Ibaraki Prefecture, the Fertilization Research Foundation, Japan.

He was awarded the Japan Society of Soil Science and Plant Nutrition Award on "Studies on organic matter in paddy soils" in 1971 and the Japan Prize of Agricultural Science on "Studies of paddy soils based on dynamic micropedology" in 1986.

Dr. Hidenori Wada applied various micropedological approaches to the study of dynamics of paddy soils, and established a new branch of soil science called "dynamic micropedology".

Dr. Wada was impressed by the studies of Dr. W.L. Kubiena when he was in Belgium. After coming back to Japan, he devoted himself to the study of paddy soil science on various topics such as pedogenic processes in paddy soils, the process of Mn and Fe deposition in paddy soils, aggregate and plant debris, material transformation and its accompanying microorganisms at micro-sites.

We all miss Dr Hidenori Wada contributing to soil science, his gentle smile and warm thoughts towards us. Recalling the many fond memories of the past, we pray that his soul may rest in peace.

Kazuyuki INUBUSHI

György Várallyay

(1935-2018)



György Várallyay
(Photo taken by György Wessely, Institute for Soil Science and Agricultural Chemistry CAR HAS ©)

György Várallyay passed away in Budapest on December 2, 2018. He was born in Debrecen on July 17, 1935. He graduated from the Agricultural University of Gödöllő as agricultural engineer in 1957. In 1960 he became Research Associate, first at the Soils Department of the National Agricultural Quality Inspection Institute at Mosonmagyaróvár, then he was transferred to the Research and Utilization Department of Salt-affected Soils of the Research Institute for Soil Science and Agrochemistry

(RISSAC) in Budapest. He became head of the Soil Science Department in 1976 and 5 years later director of the Institute. He held this position till 1997, at which time he received a research professorship.

He started teaching in 1977 as invited lecturer at the Ain-Samsz University in Cairo. In 1983, he was admitted as a Guest Professor at the Agricultural University of Gödöllő (GATE). He also taught at the Agricultural

University of Debrecen and at Eötvös Loránd University in Budapest. In 1988 he received a university professorship at GATE, and in 1992 he became head of GATE's Soil Science Department at the RISSAC. He occupied the head of the department position until his retirement in 2005.

In 1968 he defended his candidate dissertation (CSc) in agricultural sciences, then academic doctoral thesis (DSc) in 1988. He became a member of the Soil Science, Agrochemistry and Water Management Scientific Committee, which he chaired between 1993 and 1997. He also participated in the work of three other environmental science committees of the Hungarian Academy of Sciences (HAS). Meanwhile, in 1993, he was elected a corresponding member, and then in 1998 a member of the HAS. In 1998 Professor Várallyay was also selected as external member of the Slovak Agricultural Academy. He was the chairman of the Hungarian Soil Science Society between 1990 and 1999, and then the honorary president. He was member of the International Soil Science Society (ISSS) and the International Union of Soil Sciences (IUSS), for which he served as Deputy Chairman in 1978-1982, and then as Chairman of Committee VI. of Soil Technology (CSS), member of the Committee of International Programs (CIP), and the Awards and Honors Committee. In 2008 he was awarded the IUSS Honorary Member title - as the fourth Hungarian in the nearly 100 years of history of the Society! He was a member of the Scientific Council of the European Soil Science Bureau (ESB) as well. Furthermore, he was also a member of numerous international scientific organizations and programs (UNESCO, ICSU, MAB, IGBP, NHP / OHP, ICID, and ISTRO). In Hungary he played a public role as member of the National Environmental Council. He was editor-in-chief of the scientific journal of *Agrokémia és Talajtan* (Agrochemistry and Soil Science) and was included in the Editorial Board of the *Hidrológiai Közlöny* (Hydrological Gazette), *Acta Agronomica Hungarica*, and *Geoderma*.

He was awarded the Middle Cross of the Order of Merit of the Republic of Hungary (1997); Honorary Doctor of Agriculture and Food Science Faculty at the University of West Hungary (2002); Széchenyi Prize (2004).

Dr. György Várallyay's main research areas were soil mapping, computer aided soil information systems (GIS) and soil databases, and environmental monitoring issues. In addition, he dealt with soil water management problems, their regulations, and the various phenomena of soil degradation, i.e. soil quality reduction. He dealt with the exploration, prediction and prevention of salt accumulation, salinisation, soil acidification, structural depletion, and compaction problems. He developed a successful method for predicting the salinization process.

György Várallyay's greatest international achievement was the creation of a world map of soil degradation, together with several leading soil researchers. He also achieved similar results in the construction of the salinization map and Europe soil map. He was the creator of several thematic soil maps in Hungary.

He was the author or co-author of over five hundred and fifty scientific publications and twenty-three books. His publications were published in Hungarian and English.

We all miss Dr György Várallyay's contribution to soil science, his thoughtful clear guidance and comprehensive professional knowledge and enjoyable conversation. We were lucky to work with you, and learned from you. The charm of your personality and the memory of your teaching will be kept forever. May your soul rest in peace!

Kálmán Rajkai



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. Krolkowski †	Poland
	L. Vettori †	Brazil
1982	Ph. Duchaufour †	France
	W. Flaig †	Germany
	V. Kovda †	USSR
	E. Mueckenhausen †	Germany
1986	E.W. Russell †	UK
	H. Jenny †	USA
	D. Kirkham †	USA
1990	S.K. Mukherjee †	India
	R. Tavernier †	Belgium
	G. Aubert †	France
	E.G. Hallsworth †	Australia
	J.S. Kanwar	India
1998	P. Schachtschabel †	Germany
	R.W. Simonson †	USA
	I. Szabolcs †	Hungary
	G.H. Bolt †	Netherlands
	R. Dudal †	Belgium
	K.H. Hartge †	Germany
	M. Kutilek †	Czech Rep.
	J. Quirk	Australia
W.G. Sombroek †	Netherlands	
1998	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	Syria	
	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

Year	Dokuchaev Award	Country	Von Liebig Award	Country	Jeju Award	Country
2006	Victor Targulian	Russia	Rattan Lal	USA		
2010	Dan Yaalon	Israel	Don Sparks	USA		
2014	Alex McBratney	Australia	Magdi Selim	USA		
2018	Johan Bouma	Netherlands	John Ryan	Ireland	John Bennett	Australia

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